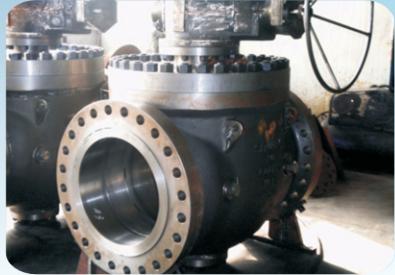




Ball valve series





Description

General

Since 1950 Ball valve has been available as a valve, and become one of the fastest-growing varieties of the valves in the last decades. Ball valve is not only of simple structure, good sealing, but also of smaller size, lighter weight, lower cost, easier installation, less driving torque value, easier operation, quicker opening and closure to a certain nominal range. During the past 50 years, Ball has developed into one of the main valve of the category. Ball valve can be used to cut off or access medium, and also control or regulate the fluid, while the V-ball valve can achieve more precise flow regulation and control. As one of the leading Chinese manufacturers of industrial valves, it is well capable of the production for various types of industrial valves. Ball valves have been serving in a wide range of rigorous conditions and demand of oil, natural gas, refining, petrochemicals, ships, power plants, as well as Pipeline industry. Production of the ball valve is in full compliance.

The ball valve structure

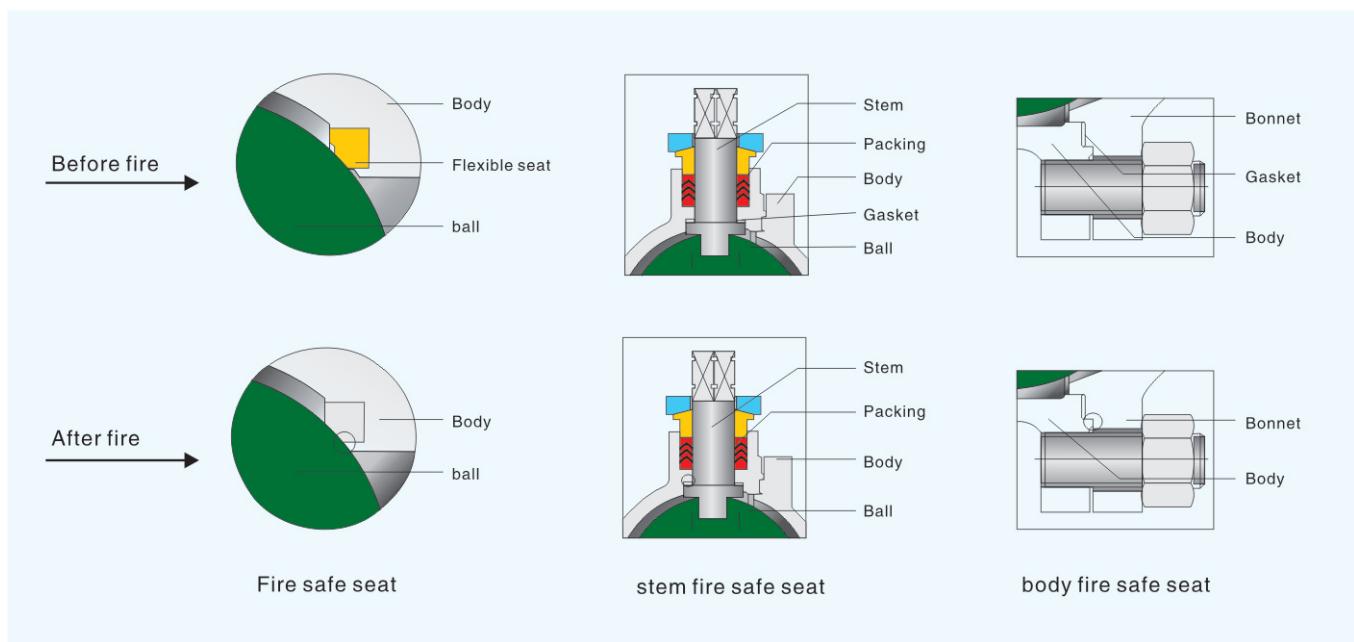
1. Small fluid resistance: The ball valve is of least fluid resistance in all types of valves, even reduced bore ball valve. The fluid resistance is quite small.
2. Quick and easy opening and closing: As long as the stem turns 90°, the ball valve will be able to complete the full open or closure actions.
3. Good sealing performance: The general use of ball valve seat ring, such as PTFE flexible materials, is easy to achieve sealing performance, and the sealing capability increases with the power of the medium pressure.
4. Reliable stem sealing: Because of the rotation actions of the operation, the stem packing seals will not be easily destroyed, and the sealing capability increases with the power of the medium pressure.
5. Easy remote control: Since the control of the ball valve needs only 90° rotation, it is easy to control and automate the remote control, so the ball valve can be mounted with pneumatic actuator, electrical actuator, hydraulic actuator, gas-liquid interaction actuator, or electro-hydraulic interaction actuator.
6. Smooth channel: Disables easy medium deposition, ensures smooth pipeline transit.

Floating ball valve features

Floating ball structure is simple and a good seal for class 150~class 600 pressure class to cut off or access the medium in all kinds of pipeline. Ball valve with different materials, can be applied to water, steam, oil products, liquefied natural gas, gas, nitric acid, acetic acid, such as oxidizing medium. One-piece ball valve includes: one-piece type, and forged spilt body type. All the floating ball are in accordance with API 608/BS 5351, and other standard design. fire test to meet the requirements of API 607, pressure range: class 150~class 600; operating temperature range: -196°C~540°C; size range: NPS 1/2~NPS 8.

Fire Safe Design

When the ball valve site happens to be on fire, and non-metallic sealing materials are destroyed after pyrolysis, ball valve with specially designed metal to metal seal auxiliary structure, can achieve effective control of valve in and out leakage.

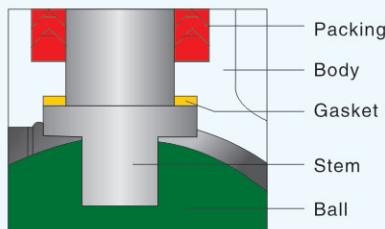


Description

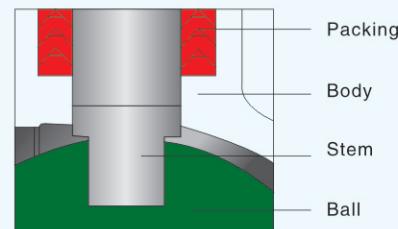


■ Stem blow-out proof design

Stem blow-out proof adopts the structural design of the T-shaped structure as a whole, even if the valve chamber is in the unusual pressure arising condition, as well as extreme cases like gland failure, the design can guarantee that stem will not be blown out by the medium. With the stem installed deep inside the valve body, it can function as the backseat which increases with the medium pressure and achieves reliable sealing in a variety of pressure conditions.



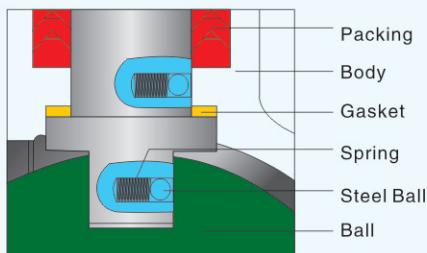
Stem deeper installed ensures blow-out proof



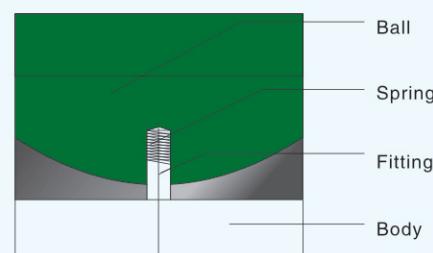
Stem normal installed is easily blown out

■ Anti-static design

Floating ball valve anti-static design adopts anti-static spring structure or steel static extraction device, so that the body between the ball forms an electrostatic channel (NPS= 1 of the ball) or through the stem between the valve body and the ball forms a static channel (NPS = 1-1/2 of the ball). and thus ensures the static electricity generated by friction in the process be grounded into the earth through the body, to avoid static electricity sparks that could cause an explosion or fire danger and so on.



NPS \geqslant 1-1/2 anti-static design



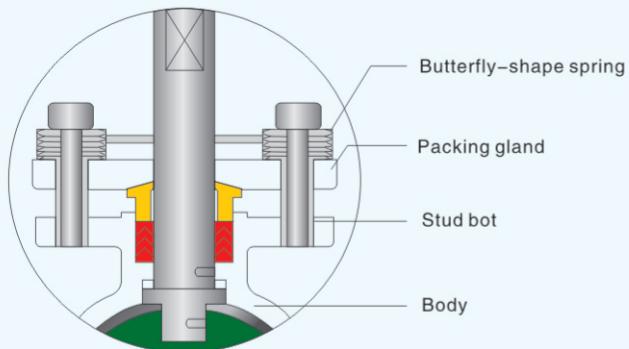
NPS \geqslant 1 anti-static design



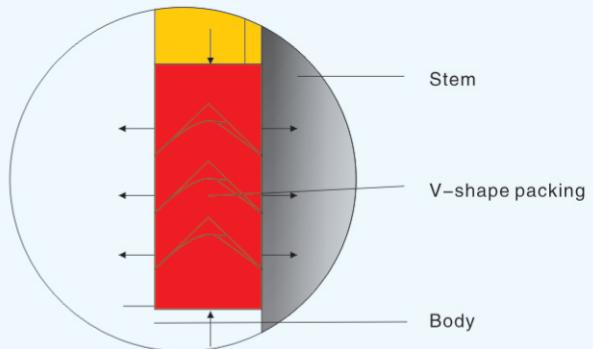
One-piece, side-entry, floating ball valve

■ Fugitive emission design

Adopts dynamic loading gland design and the V-packing seals that ensures continuous loading to the gland and guarantees lasting close sealing, prevents medium from leaking. Meanwhile the V-fill packing gland can compress the power and medium power effectively into the valve stem sealing.



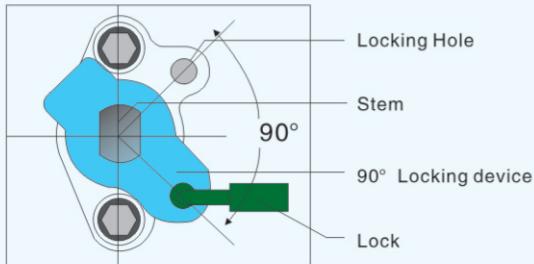
Butterfly-shaped packing compression seal



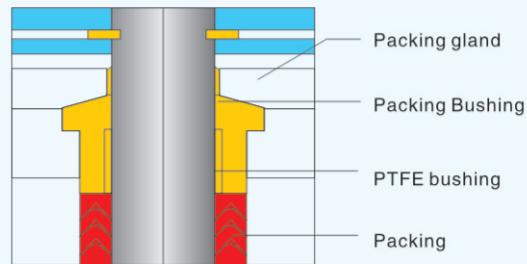
V-packing seals

■ The stem wear proof and misoperation proof

Design has changed the traditional packing gland into packing gland and bushing with spherical contact to ensure that the bushing always stay vertical. Inside the bushing there sets a PTFE bush to avoid the wear and reduce torque valve operation. The structural design to prevent the misoperation is set up with the approach of the 90° position locking devise that can be locked to prevent the misoperation. Stem head adopts flat head design. When opening the valve, the handle is parallel to the pipeline; when closing the valve, the handle is vertical to the pipeline, to ensure that the prevention of misoperation.

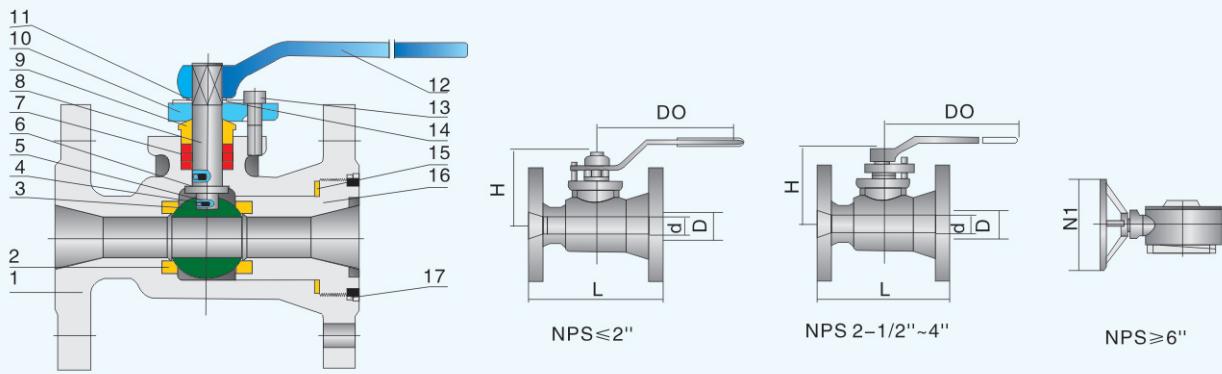


The stem wear proof design



Misoperation proof design

One-piece, side-entry, floating ball valve



Material List

No	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Seat	PTFE
3	Ball	304 S.S.
4	Steel Ball	304 S.S.
5	Spring	304 S.S.
6	Gasket	304 S.S.+Graphite
7	Packing	Graphite
8	Stem	ASTM A182 F6a
9	Bushing	ASTM A276 410
10	Gland	ASTM A216 Gr.WCB
11	Gauge Block	AISI 1010Zinc-coated
12	Handle	ASTM A216Gr.WCB
13	Nut	ASTM A193 Gr.B7
14	Retaining Ring	304 S.S.
15	Body Fire Safe Ring	304S.S.
16	Bonnet	ASTM A216 Gr.WCB

Standards

Face-to-Face dimension: ASME B 16.10
 Design and manufacture: API 608, BS 5351, API 6D
 Flanged End: ASME B16.5
 Shell Wall Thickness: BS 5351, ASME B16.34
 Valve Test: API 598

Features

Under medium pressure, the ball can have a certain amount of displacement and be pressed at the valve seat ring exit and achieves sealing. Floating ball valve structure is simple and of good seal, but since the full load from the ball under pressure is transferred to the ring at exit, its use is restricted in a certain range of pressure size, generally floating ball valve is applicable to low pressure in small size valve. One-piece ball valve was developed from many years of manufacturing experience. It's of side entry, simple structure, light weight, good sealing, low torque value, and different sealing materials that can meet different temperature range.

The body material is also available LCB, A351 CF8, CF8M, CF3, CF3M, duplex stainless steel etc. The trim/seat material can be customized upon request.

Dimensions & Weights

Class 150

NPS(in)	L(mm)	D(mm)	d(mm)	H(mm)	W(mm)	W1(mm)	WT(kg)
1/2	108	12.7	9.5	54	140	--	2.1
3/4	117	19	12.7	59	140	--	3
1	127	25.4	19	64	160	--	4.1
1-1/2	165	38	30	90	160	--	6.5
2	178	51	38	102	260	--	9
2-1/2	190	64	51	112	260	--	11.2
3	203	76	64	121	260	--	15.3
4	229	102	76	166	320	--	28.6
6	267	152	114	208	--	450	53
8	292	203	144	246	--	660	81
10	330	254	187	303	--	660	150

Class 300

NPS(in)	L(mm)	D(mm)	d(mm)	H(mm)	W(mm)	W1(mm)	WT(kg)
1/2	140	12.7	9.5	54	140	--	2.8
3/4	152	19	12.7	59	140	--	3.6
1	165	25.4	19	64	160	--	4.9
1-1/2	190	38	30	90	160	--	10.4
2	216	51	38	102	260	--	12
2-1/2	241	64	51	112	260	--	16.1
3	282	76	64	121	260	--	23
4	305	102	76	166	320	--	39.5
6	403	152	114	208	--	450	82
8	419	203	144	246	--	660	124
10	457	254	187	303	--	660	206



One-piece, top entry floating ball valve

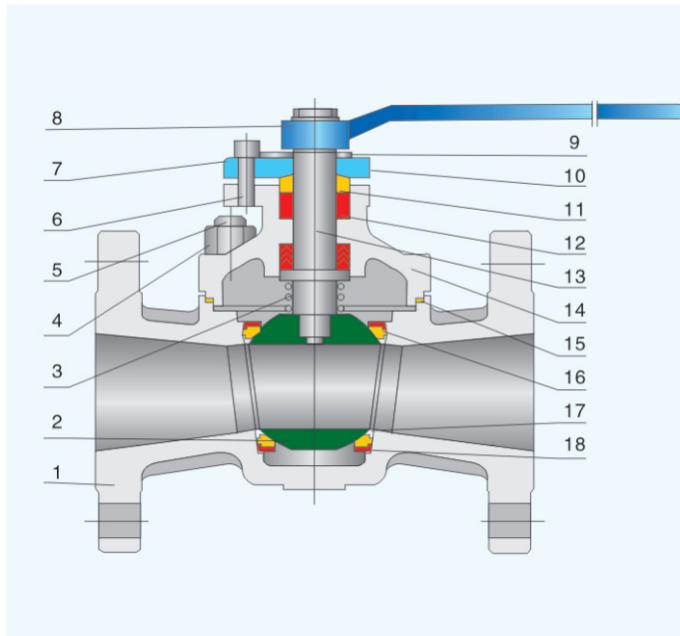
Standards

Face-to-Face dimension: ASME B 16.10, JIS B2002
Design and manufacture: API 608, BS 5351, API 6D, JIS B2071, B2081
Flanged End: ASME B16.5, JIS B2212, B2214
Shell Wall Thickness: BS 5351
Valve Test: API 598, JIS B2003
Pressure-temperature Rating: JIS B2071, B2081

The body material is also available LCB, A351 CF8, CF8M, CF3, CF3M, duplex stainless steel etc. The trim/seat material can be customized upon request.

Material List

No	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Ball	304 S.S.
3	Spring	304 S.S.
4	Nut	ASTM A194 Gr.2H
5	Stud	ASTM A193 Gr.B7
6	Nut	ASTM A193 Gr.B7
7	Gauge Block	AISI 1010 Zinc-coated
8	Handle	ASTM A216 Gr.WCB
9	Gland	304 S.S.
10	Packing Gland	ASTM A216 Gr.WCB
11	Packing Bushing	ASTM A276 410
12	Packing	PTFE
13	Stem	ASTM A182 F6a
14	Bonnet	ASTM A216 Gr.WCB
15	Gasket	PTFE
16	Seat	PTFE
17	Inner-firesafe Metal	ASTM A276 410
18	Outer-firesafe Metal	ASTM A276 410



Features

Self-developed dual-slope ball valve, it can be widely used in the petroleum chemical, metallurgical, electricity, medicine and technology sectors such as technology and instrumentation on the pipeline, and serves for general medium and also sewage containing fiber. micro-granular, high viscosity of the fluid medium. Dual-slope ball valve under the performance of the spring, can automatically adjust the seal among the seat, valve body, and the ball to ensure reliable sealing under low and medium pressure conditions. The sealing between the stem and bonnet contact area comes from the compaction sealing from the stem and bonnet convex against the packing surface which effectively reduces the torque for opening and valves. This type also applies top entry design that makes easier to carry out repair or replacement of parts directly on the pipeline to achieve more convenient maintenance.

Fire Safe Design

To prevent from a large amount of leakage when the seat material is damaged in the fire, dual-slope ball valve applies a fire safe metal ring between the valve seat so when the seat is on fire, the ball will contact with the metal ring and save the sealing to ensure the prevention of the medium from leakage and the safety of the pipeline.

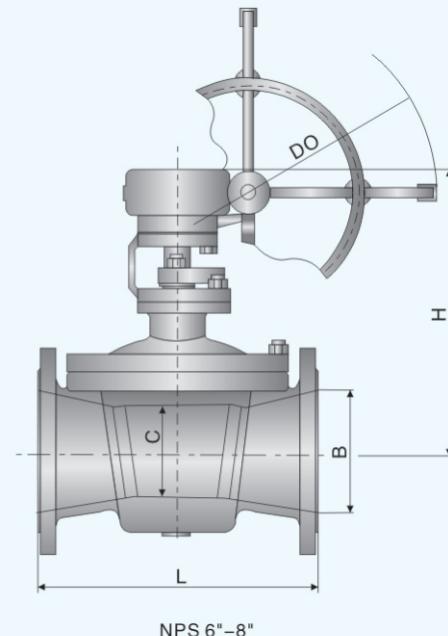
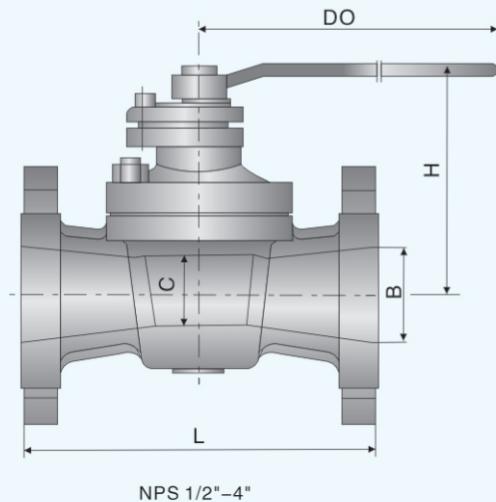
Stem blow-out proof Design

To prevent the stem from being blown out by the medium in the unusual pressure arising condition. Dual-slope ball valve adopts a convex with the stem blow-out proof at the bottom of the stem to achieve effective control of the ball valve stem.

Packing flat surface tightness

To reduce the opening torque value, and enable the quick and convenient operation. dual-slope ball valve applies the pre-tightening force of the spring to the surface between the packings and the stem shoulder and the cover shoulder to ensure tightness.

One-piece, top-entry, floating ball valve



Dimensions & Weights

Class 150

NPS(in)	L(mm)	C(mm)	B(mm)	H(mm)	Do(mm)	W1(mm)	WT(KG)
1/2	108	9.5	13	100	140	--	2.8
3/4	117	13	19	100	140	--	3.2
1	127	20.6	25	100	140	--	4.0
1-1/2	165	30.2	38	120	190	--	8.8
2	178	38	51	140	230	--	11.0
2-1/2	190	51	63	180	320	--	22.0
3	203	57.2	76	210	320	--	25.2
4	229	76.2	102	220	450	--	36.0
6	394	114.3	152	320	--	450	147.0
8	457	152.4	203	380	--	660	198.0

Class 300

NPS(in)	L(mm)	C(mm)	B(mm)	H(mm)	Do(mm)	W1(mm)	WT(KG)
1/2	140	9.5	13	100	140	--	3.1
3/4	152	13	19	100	140	--	4.3
1	165	20.6	25	100	140	--	4.4
1-1/2	190	30.2	38	120	190	--	12.6
2	216	38	51	140	230	--	14.0
2-1/2	241	51	63	180	320	--	23.8
3	282	57.2	76	210	320	--	38.6
4	305	76.2	102	220	450	--	42.5
6	403	114.3	152	320	--	450	150.2
8	502	152.4	203	380	--	660	206.2



Class150 / JIS10K, Class 300 / JIS20K Two-piece, split body, side entry design

■ Standards

Face-to-Face dimension: ASME B 16.10 JIS B2002

Design and manufacture: API 608, BS 5351, API 6D

Flanged End: ASME B16.5, JIS B2212, B2214

Shell Wall Thickness: BS 5351

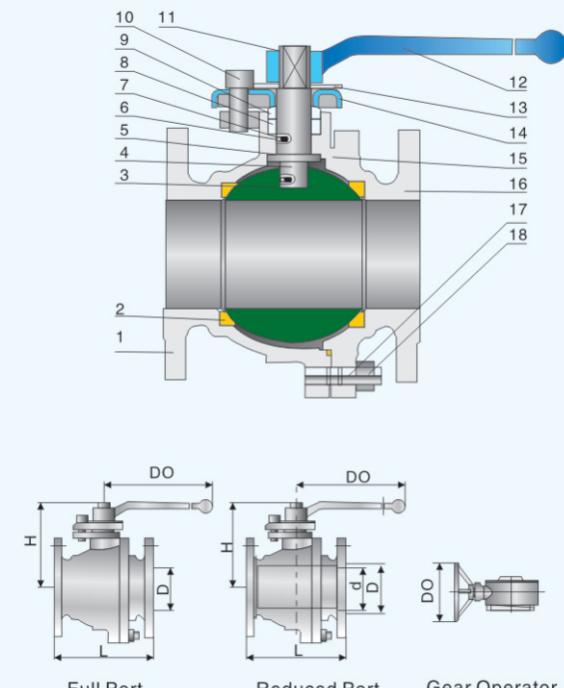
Valve Test: API 598, JIS B2003

Pressure-Temperature Rating: JIS B2071, B2081

The body material is also available LCB, A351 CF8, CF8M, CF3, CF3M, duplex stainless steel etc. The trim/seat material can be customized upon request.

■ Material List

No	Parts	Material
1	Body	ASTM A216 Gr.WCB
2	Seat	PTFE
3	Ball	304 S.S.
4	Stem	ASTM A182 F6a
5	Gasket	PTFE
6	Spring	304 S.S.
7	Steel Ball	304 S.S.
8	Packing	PTFE
9	Packing Bushing	ASTM A276 410
10	Nut	ASTM A193 Gr.B7
11	Retaining Ring	304 S.S.
12	Lever	ASTM A216 Gr.WCB
13	Gauge Block	AISI 1010 Zinc-coated
14	Packing Gland	ASTM A216 Gr.WCB
15	Body Gasket	PTFE
16	Bonnet	ASTM A216 Gr.WCB
17	Stud	ASTM A193 Gr.B7
18	Nut	ASTM A194 Gr. 2H



Dimensions & Weights

■ Class 150/10K

	NPS(in)	1/2	3/4	1	1-1/2	2	3	4	6	8
Full bore	D(mm)	13	19	25	38	51	64	76	102	203
	L(mm)	108	117	127	165	178	203	229	394	457
	H(mm)	61	66	76	95	142	156	181	270	345
	Do(mm)	130	130	160	230	400	400	700	300*	300*
	WT(kg)	2.4	3.3	4.8	8.2	15.6	19.8	32.0	94.0	162.0
	NPS(in)	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
Reduced bore	L(mm)	117	127	165	178	203	229	267	292	330
	D(mm)	19	25	38	63	76	102	152	203	254
	H(mm)	82	85	100	120	153	162	191	290	340
	Do(mm)	130	130	160	230	400	400	460	300*	300*
	d(mm)	13	19	25	51	63	76	105	152	203
	WT(kg)	2.6	4.5	6.0	14.6	19.0	32.5	58.0	117.0	160.0

■ Class 300/20K

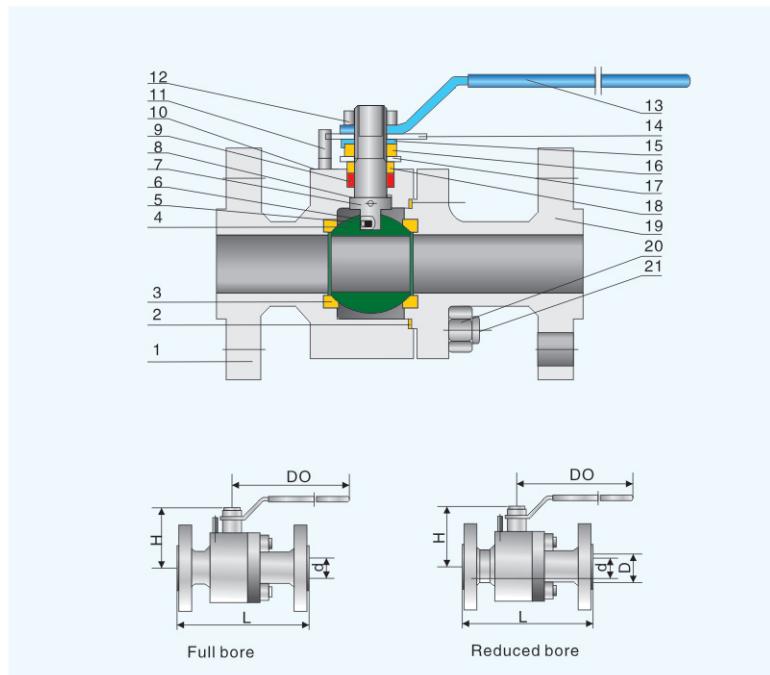
	NPS(in)	1/2	3/4	1	1-1/2	2	3	4	6	8
Full bore	D(mm)	13	19	25	38	51	64	76	102	203
	L(mm)	140	152	165	190	216	282	305	403	419
	H(mm)	62	68	80	100	148	162	188	283	360
	Do(mm)	150	150	180	250	400	400	700	300*	400*
	WT(kg)	3.0	3.5	6.2	11.0	25.0	40.0	57.5	128.0	252.0
	NPS(in)	3/4*1/2	1*3/4	1-1/2*1	2*1-1/2	3*2	4*3	6*4	8*6	--
Reduced bore	L(mm)	152	165	190	216	282	305	403	419	--
	D(mm)	19	25	38	63	76	102	152	203	--
	H(mm)	82	85	100	120	153	162	191	290	--
	Do(mm)	130	130	160	230	400	400	460	300*	--
	d(mm)	13	19	25	50	63	76	102	152	--
	WT(kg)	3.5	5.5	10.0	23.5	29.0	55.0	80.0	162.0	--

Class 600~900 Two-piece, split body, side entry design



Material List

No	Parts	Material
1	Body	ASTM A105
2	Gasket	PTFE
3	Seat	R-PTFE
4	Ball	304 S.S.
5	Steel Ball	304 S.S.
6	Anti-static Spring	304 S.S.
7	Stem	ASTM A182 F6a
8	Gasket	PTFE
9	Packing	PTFE
10	Nameplate	SS304
11	Position Pin	ASTM 1045
12	Nut	ASTM A194 Gr. 2H
13	Lever	ASTM A216 Gr.WCB
14	Gauge Block	AISI 1010 Zinc-coated
15	Bushing Gasket	ASTM 1045
16	Nut	ASTM A194 Gr. 2H
17	Gland	304 S.S.
18	Gland Bushing	ASTM A276 410
19	Bonnet	ASTM 1045
20	Nut	ASTM A194 Gr. 2H
21	Stud	ASTM A193 Gr.B7



The body material is also available LF2, A182 F304, F316, F304L, F316L, F51 etc. The trim/seat material can be customized upon request.

Dimensions & Weights

Class 600

	NPS(in)	1/2	3/4	1	1-1/2	2	3
Full bore	L(mm)	165	190	216	241	292	356
	D(mm)	13	19	25	38	51	76
	H(mm)	98	103	122	135	151	177
	Do(mm)	140	140	170	260	300	450
	WT(kg)	3.0	4.8	6.5	12.0	15.0	28.0
							--
Reduced bore	NPS(in)	3/4*1/2	1*3/4	1-1/2*1	2*1-1/2	3*2	--
	L(mm)	190	216	241	292	356	--
	D(mm)	19	25	38	51	76	--
	H(mm)	98	103	122	135	151	--
	Do(mm)	140	140	170	260	300	--
	d(mm)	13	19	25	38	51	--
	WT(kg)	2.8	3.2	5.5	7.1	12.8	--

Class 900

	NPS(in)	1/2	3/4	1	1-1/2	2	3
Full bore	L(mm)	216	229	254	305	368	381
	D(mm)	13	19	25	38	51	76
	H(mm)	115	122	125	157	178	208
	Do(mm)	160	230	230	400	400	500
	(kg)	4.2	9.6	13.8	21.8	39.0	58.0
							--
Reduced bore	NPS(in)	3/4*1/2	1*3/4	1-1/2*1	2*1-1/2	3*2	--
	L(mm)	229	254	305	368	381	--
	D(mm)	19	25	38	51	76	--
	H(mm)	115	122	125	157	178	--
	Do(mm)	160	230	230	400	400	--
	d(mm)	13	19	25	38	51	--
	WT(kg)	5.6	6.8	12.0	16.5	24.0	--



Trunnion mounting ball valve

General

Trunnion mounted ball valves are designed in accordance with API 6D for classes ASME Class 150,300,600,900,1500, and 2500,Tow-piece split body cast steel and Three-piece forged steel side entry design bolted connections between body and closure,trunnion bolted connection, body thickness comply with ANSI B16.34.Seat ring is floating type,springloaded to assure the contact with ball in order to provide an effective tight seal even at low differential pressure between cavity and downstream closure. Standard design is soft seated,Adifferent soft seat materials are available based on the customer working condition.Available in Full and Reduced Bore.Electrical,pneumatic and hydraulic actuators are available based on customer requirement.Valves have been designed for use with various combinations of materials such as:Carbon Steel,Low Carbonsteel, special alloy,stainless steel,Monel,Inconel.

Stem Design/Anti Blowout

The stem is made separately from the ball,anti blow-up design with suitable PTFE and graphite rings, See Fig 1

Anti-Static Device

All flow control–floating flange ball valves include dual grounding systems from stem to ball and stem to body.Valve testing to BS 5351 and BS 5146 was performed for all sizes, and witnessed by a third party inspection company.See fig.1

Emergency sealant injection

Trunnion type ball valves are fitted with emergency seals to restore sealing in case of soft seal damage.see fig.1 and fig.2

Body Joint Construction

Three pieces body end entry design,graphite ring or o-ring viton(or request)seal ensure absolute seal integrity.The bolted body designs include a tight tolerance overlapping metal fit between the body and the adapter to minimize any possibility of movement due to pipeline stress,High temperature spiral wound stainless steel/grafoil filled gasket is used for absolute seal.Body and adaptors are dimensioned for metal contact to ensure correct gasket crush.

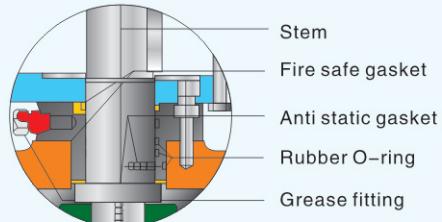


Fig.1



Fig.2

Double Block and Bleed

Ball valves can be equipped with drain valve which allows the block and bleed feature when the pressure is simultaneously applied to both sides of the ball,the medium can be relieved through the drain valve.Standard design of trunnion mounted ball valves assure that each seat ring performs the “single piston action”

Fig.3 shows pressure $A < A_1$.the contact between ball and seat ring assured.
Fig.4 shows pressure $B > B_1$.the self relieving action allows that valve seat will move slightly away from the ball surface,so any over pressure acting in the body cavity is discharged on the line to restore the balance between the body cavity and line

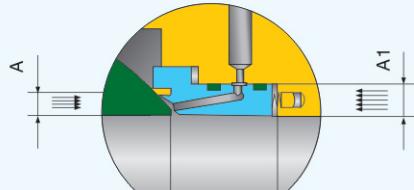


Fig.3

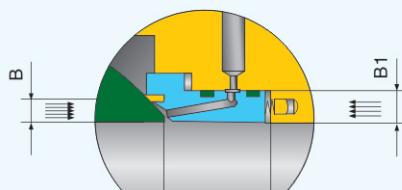


Fig.4

Top Flange

Top flange surface are machined and drilled, ready for mounting actuator.

Fire Safe

All fire-safe valves conform to API 607 and API 6FA standards.

Trunnion mounting ball valve



■ Features Two-piece body

Valve is designed in accordance with the requirements of API 6D for pipeline service. Antistatic and anti blow-out stem design.

Seat design gives perfect tightness and is available as either self-relieving type or double piston effect type.

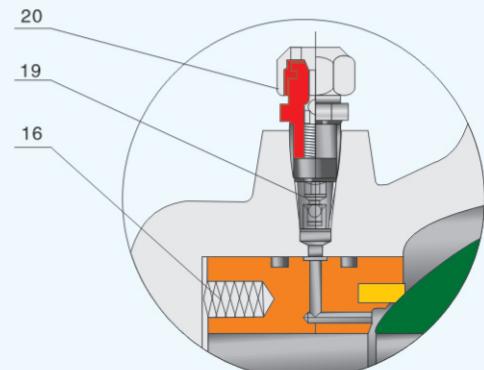
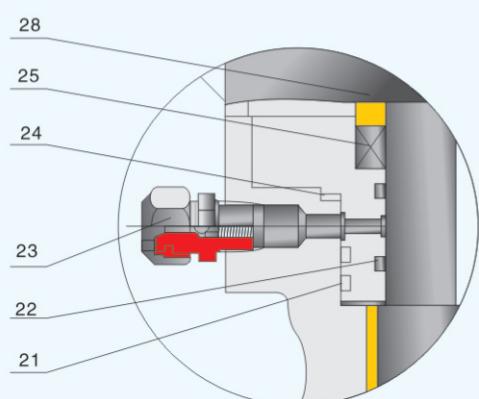
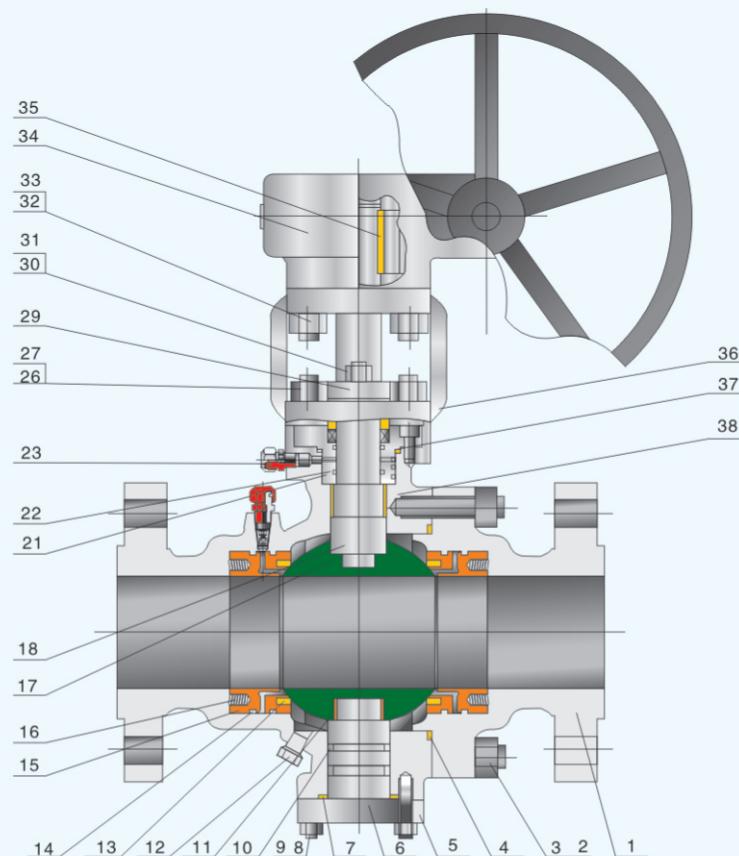
Design minimizes friction leading to low operating torque.

Available as double block and bleed device, which allows for venting and draining of line fluid from the body cavity.

Full and Reduced bore Available.

Ball valves fire safe tested according to BS EN 12266-2, API 6FA and API 607.

Electric, pneumatic and hydraulic actuators are available based on customer's requirement.



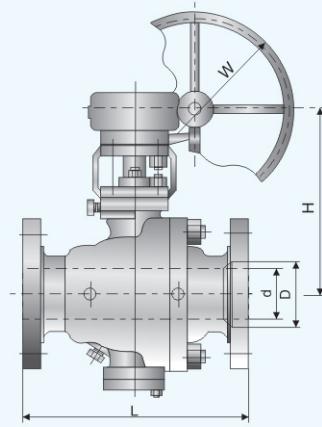
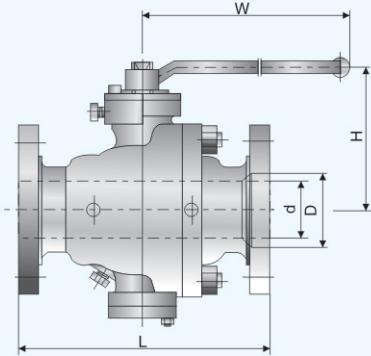


Two-piece, split body, cast steel, Side entry design

■ Material Specifications

No	Parts	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTM A216 WCB	ASTM A351 CF8M	ASTM A216 WCB	ASTM A352 LCB
2	Body stud	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7M	ASTM A320 L7M
3	Body Nut	ASTM A194 2H	ASTM A194 8	ASTM A194 2HM	ASTM A194 7M
4	Body Gasket	316ss+Graphite	316ss+Graphite	316ss+Graphite	316ss+Graphite
5	Low Cover	Carbon Steel	S.S.	Carbon Steel	Carbon Steel
6	Trunnion Support	ASTM A216 WCB/ENP	ASTM A216 WCB/ENP	ASTM A216 WCB/ENP	ASTM A216 WCB/ENP
7	Thrust Washer	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2
8	Stud	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7M	ASTM A320 L7M
9	Nut	ASTM A194 2H	ASTM A194 8	ASTM A194 2HM	ASTM A194 2M
10	O-Ring	NBR	NBR	NBR	NBR
11	Bearing	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2
12	Drain Plug	Assembly	Assembly	Assembly	Assembly
13	Seat Insert	25% Glass-filled PTFE	25% Glass-filled PTFE	25% Glass-filled PTFE	25% Glass-filled PTFE
14	O-Ring	NBR	NBR	NBR	NBR
15	Seat	ASTM A105/ENP	ASTM A182 F316	ASTM A105/ENP	ASTM A350 LF2/ENP
16	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
17	Ball	ASTM A 105/ENP	ASTM A182 F316	ASTM A105/ENP	ASTM A350 LF2/ENP
18	Stem	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
19	Seat Injection	Assembly	Assembly	Assembly	Assembly
20	Sealant Fitting	Assembly	Assembly	Assembly	Assembly
21	O-Ring	NBR	NBR	NBR	NBR
22	O-Ring	NBR	NBR	NBR	NBR
23	Sealant Fitting	Assembly	Assembly	Assembly	Assembly
24	Gasket	316ss+Graphite	316ss+Graphite	316ss+Graphite	316ss+Graphite
25	Packing	Graphite	Graphite	Graphite	Graphite
26	Stud	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7M	ASTM A320 L7M
27	Nut	ASTM A194 2H	ASTM A194 8	ASTM A194 2HM	ASTM A194 7M
28	Gland	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
29	Gland Flange	ASTM A216 WCB	ASTM A351 CF8M	ASTM A216 WCB	ASTM A352 LCB
30	Stud	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7M	ASTM A320 L7M
31	Nut	ASTM A 194 2H	ASTM A 194 8	ASTM A 194 2HM	ASTM A 194 7M
32	Stud	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7M	ASTM A320 L7M
33	Nut	ASTM A194 2H	ASTM A194 8	ASTM A194 2HM	ASTM A194 7M
34	Worm	Assembly	Assembly	Assembly	Assembly
35	Key	Carbon Steel	S.S.	Carbon Steel	ASTM A182 F304
36	Yoke	ASTM A216 WCB	ASTM A351 CF8M	ASTM A216 WCB	ASTM A352 LCB
37	Bolt	Carbon Steel	S.S.	Carbon Steel	Carbon Steel
38	Bearing	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2

The body material is also available A351 CF8, CF3,CF3M, duplex stainless steel etc. The trim/seat material can be customized upon request.



■ Full bore(Class 150/10K)

Size(in)	d(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
2	51	178	165	230	17
3	76	203	193	400	33
4	102	229	231	460	50
6	152	394	390	1000	93
8	203	457	495	*500	166
10	254	533	505	*500	273
12	305	610	560	*500	475
14	337	686	600	*500	570
16	387	762	750	*500	778
18	438	864	845	*500	935
20	489	914	910	*500	1190
22	540	1016	1000	*500	1346
24	591	1067	1065	*500	1579

■ Reduce bore(Class 150/10K)

Size(in)	d(mm)	D(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
3×2×3	51	76	203	165	230	30
4×3×4	76	102	229	193	400	47
6×4×6	102	152	394	231	400	90
8×6×8	152	203	457	390	460	161
10×8×10	203	254	533	495	1000	268
12×10×12	254	305	610	505	*500	467
14×12×14	305	337	686	560	*500	560
16×14×16	337	387	762	600	*500	766
18×16×18	387	438	864	750	*500	902
20×18×20	438	489	914	845	*500	1130
22×20×22	489	540	1016	910	*500	1300
24×22×24	540	591	1067	1000	*500	1520

■ Full bore(Class 300/20K)

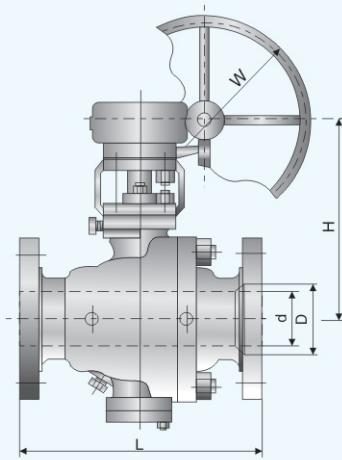
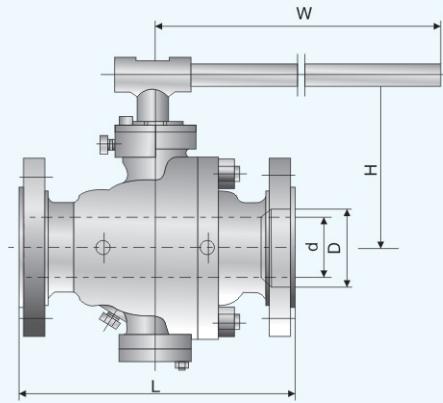
Size(in)	d(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
2	51	216	165	230	18
3	76	283	193	400	40
4	102	305	231	750	63
6	152	403	390	1000	150
8	203	502	495	1500	240
10	254	568	505	*500	305
12	305	648	560	*500	507
14	337	762	600	*500	602
16	387	838	750	*500	1000
18	438	914	845	*500	1160
20	489	991	910	*500	1320
22	540	1092	1000	*500	1540
24	591	1143	1065	*500	1874

■ Reduce bore(Class 300/20K)

Size(in)	d(mm)	D(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
3×2×3	51	76	283	165	230	38
4×3×4	76	102	305	193	400	60
6×4×6	102	152	403	231	750	147
8×6×8	152	203	502	390	1000	234
10×8×10	203	254	568	495	1500	295
12×10×12	254	305	648	505	*500	488
14×12×14	305	337	762	560	*500	570
16×14×16	337	387	838	600	*500	910
18×16×18	387	438	914	750	*500	1020
20×18×20	438	489	991	845	*500	1280
22×20×22	489	540	1092	910	*500	1360
24×22×24	540	591	1143	1000	*500	1670



Class 600 / 900 Two-piece, split body, cast steel, side entry design



■ Full bore(Class 600)

Size(in)	d(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
2	51	292	176	400	27
3	76	356	247	750	50
4	102	432	335	1000	80
6	152	559	420	1500	220
8	203	660	430	*500	350
10	254	787	520	*500	600
12	305	838	665	*500	820
14	337	889	720	*500	1130
16	387	991	780	*500	1550
18	438	1092	950	*500	2100
20	489	1194	1010	*500	2800
24	591	1397	1120	*500	3626

■ Reduce bore(Class 600)

Size(in)	d(mm)	D(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
3×2×3	51	76	356	176	400	41
4×3×4	76	102	432	247	750	70
6×4×6	102	152	559	335	1000	122
8×6×8	152	203	660	420	1500	255
10×8×10	203	254	787	430	*500	440
12×10×12	254	305	838	520	*500	662
14×12×14	305	337	889	665	*500	1060
16×14×16	337	387	991	720	*500	1440
18×16×18	387	438	1092	780	*500	1860
20×18×20	438	489	1194	950	*500	2400
24×22×24	489	591	1397	1010	*500	3240

■ Full bore(Class 900)

Size(in.)	d(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
2	51	368	192	460	52
3	76	381	279	1000	97
4	102	457	355	1500	138
6	152	610	385	*500	288
8	203	737	460	*500	448
10	254	838	600	*500	748
12	305	965	690	*500	1018
14	324	1029	785	*500	1398
16	375	1130	850	*500	1828
18	426	1219	915	*500	2328
20	473	1321	975	*610	2928
24	572	1549	1030	*610	4178

■ Reduce bore(Class 900)

Size(in.)	d(mm)	D(mm)	L(mm)	H(mm)	W(mm)	WT(kg)
3×2×3	51	76	381	192	460	83
4×3×4	76	102	457	279	1000	103
6×4×6	102	152	610	355	1500	201
8×6×8	152	203	737	385	*500	348
10×8×10	203	254	838	460	*500	598
12×10×12	254	305	965	600	*500	788
14×12×14	305	324	1029	690	*500	1100
16×14×16	324	375	1130	785	*500	1420
18×16×18	375	426	1219	850	*500	1928
20×18×20	426	473	1321	915	*500	2428
24×22×24	473	572	1549	975	610	3578

Three-piece, split body, forged steel, side entry design



■ Features Three-piece body

Valve is designed in accordance with the requirements of API 6D for pipeline service.

Antistatic and anti blow-out stem design.

Seat design gives perfect tightness and is available as either self-relieving type or double piston effect type.

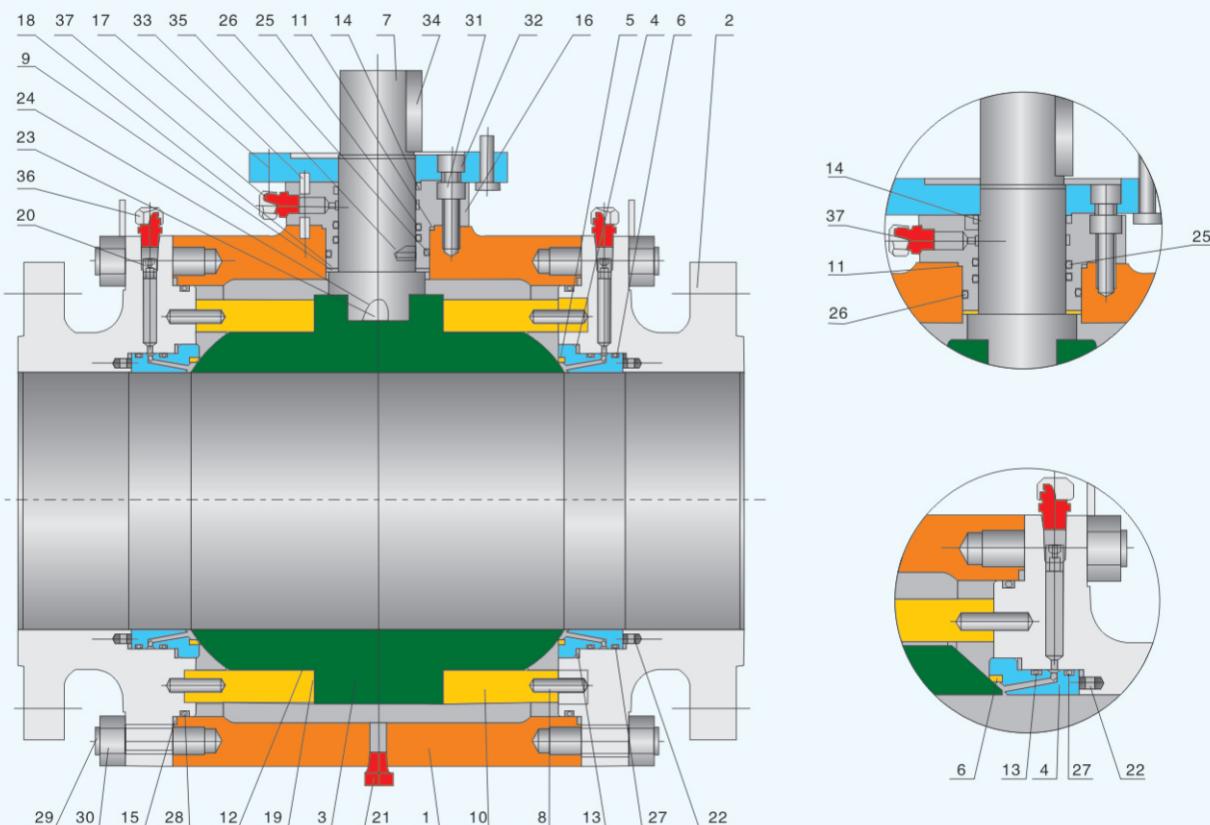
Design minimizes friction leading to low operating torque.

Available as double block and bleed device, which allows for venting and draining of line fluid from the body cavity.

Full and Reduced bore Available.

Ball valves fire safe tested according to BS EN 12266-2, API 6FA and API 607.

Electric, pneumatic and hydraulic actuators are available based on customer's requirement.





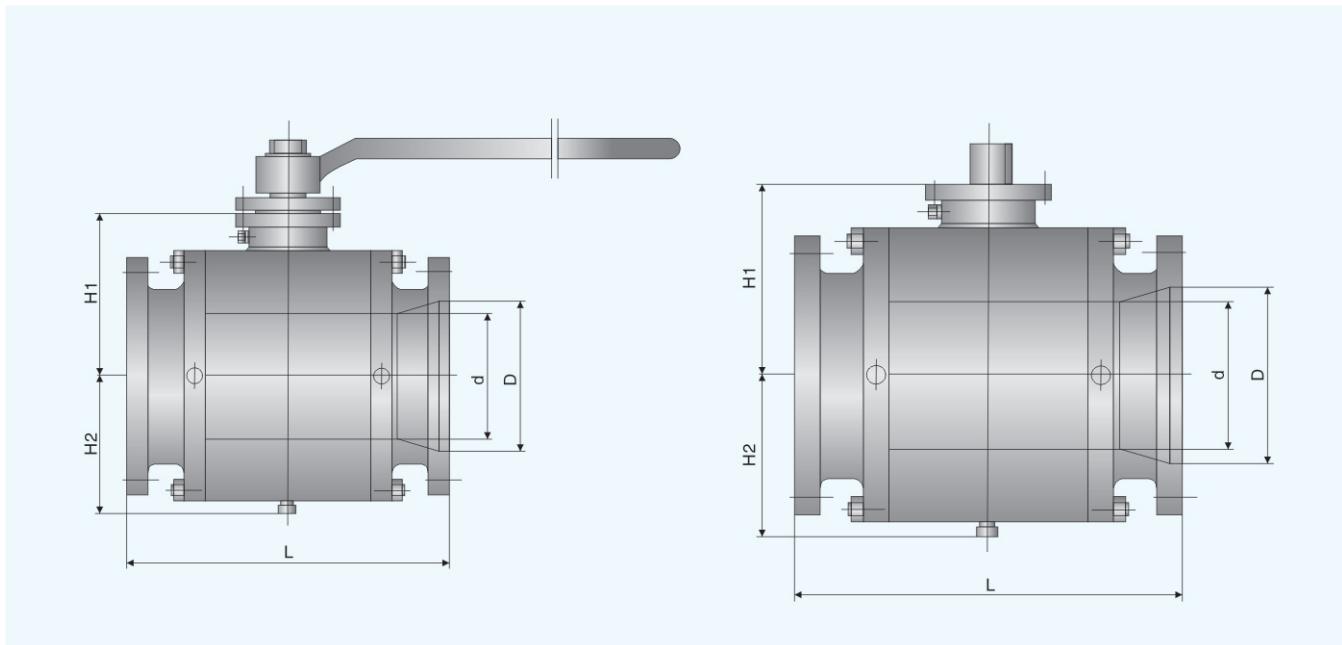
Three-piece, split body, forged steel, side entry design

■ Material List

No	Parts	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
2	Closure	ASTM A105	ASTM A182 F316	ASTM A105	ASTM A350 LF2
3	Ball	ASTM A105/ENP	ASTM A182 F316	ASTM A105/ENP	A350 LF2/ENP
4	Seat Assembly	Assembled	Assembly	Assembled	Assembled
5	Seat Insert	25% Glass-filled PTFE	25% Glass-filled PTFE	25% Glass-filled PTFE	25% Glass-filled PTFE
6	Seat Ring	ASTM A105/ENP	ASTM A182 F316	ASTM A105/ENP	A350 LF2/ENP
7	Stem	ASTM A182 F6a	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
8	Trunnion Alignment Pin	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
9	Shim	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
10	Trunnion Support	ASTM A105/ENP	ASTM A182 F316	ASTM A105/ENP	A350 LF2/ENP
11	Gasket	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite
12	Gasket	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite
13	Gasket	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite
14	Spacer	PTFE	PTFE	PTFE	PTFE
15	Firesafe Gasket	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite	316 S.S.+Graphite
16	Gland Cap	ASTM A 105	ASTM A 182 F316	ASTM A 105	ASTM A 350 LF2
17	Top Flange	ASTM A 105	ASTM A 182 F316	ASTM A 105	ASTM A 350 LF2
18	Thrust Washer	316 S.S.+PTFE+MoS2	316 S.S.+PTFE+MoS2	316 S.S.+PTFE+MoS2	316 S.S.+PTFE+MoS2
19	Bearing	316 S.S.+PTFE+MoS2	316 S.S.+PTFE+MoS2	316 S.S.+PTFE+MoS2	316 S.S.+PTFE+MoS2
20	Vent Valve	Assembly	Assembly	Assembly	Assembly
21	Drain	S.S.	S.S.	S.S.	S.S.
22	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
23	Grounding Spring	S.S.	S.S.	S.S.	S.S.
24	Grounding Plunger	ASTM A 182 F316			
25	O-Ring	Viton	Viton	Viton	Viton
26	O-Ring	Viton	Viton	Viton	Viton
27	O-Ring	Viton	Viton	Viton	Viton
28	O-Ring	Viton	Viton	Viton	Viton
29	Body Stud	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7M	ASTM A320 L7M
30	Body Nut	ASTM A194 2H	ASTM A194 8	ASTM A194 2HM	ASTM A194 7M
31	Screw	C.S.	S.S.	C.S.	ASTM A320 L7M
32	Screw	C.S.	S.S.	C.S.	ASTM A320 L7M
33	Gland Pin	C.S.	S.S.	C.S.	Carbon Steel
34	Key	C.S.	S.S.	C.S.	ASTM A182 L304
35	Spring Pin	C.S.	S.S.	C.S.	C.S.
36	Seat Injection	Assembly	Assembly	Assembly	Assembly
37	Stem Injection	Assembly	Assembly	Assembly	Assembly

The body material is also available A182 F304, F304L, F316L, F51, F53 etc. The trim/seat material can be customized upon request.

Class 150 / JIS10K Three-piece, split body, forged steel, side entry design



Full Port (Class 150/10K)

Size(in)	d(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
2	51	178	105	100	32
3	76	203	160	130	53
4	102	229	205	170	100
6	152	394	245	190	157
8	203	457	280	230	250
10	254	533	326	280	390
12	305	610	350	300	578
14	337	686	380	330	770
16	387	762	415	350	1100
18	438	864	440	400	1250
20	489	914	500	440	1800
22	540	991	520	470	2400
24	591	1067	585	530	3100
26	635	1143	630	570	3700
28	686	1244	645	650	4500
30	736	1295	700	700	5300
32	781	1371	740	750	6900
34	832	1473	770	780	8200
36	876	1524	820	800	9700
40	978	1753	900	900	13000
42	1022	1855	960	950	15000
48	1168	2134	1100	1100	23000

Reduced Port (Class 150/10K)

Size(in)	d(mm)	D(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
3×2×3	51	76	203	105	100	36
4×3×4	76	102	229	160	130	63
6×4×6	102	152	394	205	170	105
8×6×8	152	203	457	245	190	200
10×8×10	203	254	533	280	230	300
12×10×12	254	305	610	326	280	470
14×10×14	254	337	686	320	280	530
14×12×14	305	337	686	350	300	630
16×12×16	305	387	762	350	300	700
16×14×16	337	387	762	380	330	830
18×16×18	387	438	864	415	350	1100
20×16×20	387	489	914	415	350	1200
22×18×22	438	489	914	440	400	1300
24×20×24	489	591	1067	500	440	2100
30×24×30	635	736	1295	585	530	3400
36×30×36	781	876	1524	700	700	6400

Notes

- Face-to-Face dimensions are according to API 6D
- For 2" to 24" flanges are according to ASME B16.5
- For over 24" flanges are according to ASME B16.47 series A.



Class 300 / JIS20K, Class 600 Three-piece, split body, forged steel, side entry design

■ Full Port(Class 300/20K)

Size(in)	d(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
2	51	216	105	100	31
3	76	282	160	130	58
4	102	305	205	170	110
6	152	403	245	190	180
8	203	502	280	230	280
10	254	568	326	280	410
12	305	648	350	300	760
14	337	762	380	330	1100
16	387	838	415	350	1600
18	438	914	440	400	1700
20	489	991	500	440	2300
22	540	1092	520	470	2900
24	591	1143	585	530	3500
26	635	1245	630	570	4900
28	686	1346	645	650	6000
30	736	1397	700	700	6800
32	781	1524	740	750	8000
34	832	1626	770	780	9100
36	876	1727	820	800	11000
40	978	1956	900	900	14000
42	1022	2083	960	950	17000
48	1168	2170	1100	1100	25000

■ Reduced Port(Class 300/20K)

Size(in)	d(mm)	D(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
3×2×3	51	76	283	105	100	34
4×3×4	76	102	305	160	130	70
6×4×6	102	152	403	205	170	120
8×6×8	152	203	502	245	190	220
10×8×10	203	254	568	280	230	320
12×10×12	254	305	648	326	280	600
14×10×14	254	337	762	320	280	660
14×12×14	305	337	762	350	300	850
16×12×16	305	387	838	350	300	1000
16×14×16	337	387	838	380	330	1200
18×16×18	387	438	914	415	350	1700
20×16×20	387	489	991	415	350	1700
22×18×22	438	489	991	440	400	1850
24×20×24	489	591	1143	500	440	2700
30×24×30	591	736	1397	585	530	4600
36×30×36	736	876	1727	700	700	8000

■ Notes

- 1.Face-to-Face dimensions are according to API 6D
- 2.For 2" to 24" flanges are according to ASME B16.5
- 3.For over 24" flanges are according to ASME B16.47 series A.

■ Full Port(Class 600)

Size(in)	d(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
2	51	292	105	100	35
3	76	356	160	130	66
4	102	432	205	170	118
6	152	559	245	190	270
8	203	660	280	230	500
10	254	787	326	280	780
12	305	838	350	300	1100
14	337	889	380	330	1100
16	387	991	415	350	1600
18	438	1092	440	400	2160
20	489	1194	500	440	2700
22	540	1296	520	470	3900
24	591	1397	585	530	5000
26	635	1448	630	570	5700
28	686	1549	645	650	7000
30	736	1651	700	700	9000
32	781	1778	740	750	9800
34	832	1930	770	780	12000
36	876	2083	820	800	14000
40	978	2337	900	900	19000
42	1022	2437	960	950	22000
48	1168	2540	1100	1100	26000

■ Reduced Port(Class 600)

Size(in)	d(mm)	D(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
3×2×3	51	76	356	105	100	42
4×3×4	76	102	432	160	130	90
6×4×6	102	152	559	205	170	160
8×6×8	152	203	660	245	190	300
10×8×10	203	254	787	280	230	560
12×10×12	254	305	838	326	280	820
14×10×14	254	337	889	320	280	920
14×12×14	305	337	889	350	300	1200
16×12×16	305	387	991	350	300	1400
16×14×16	337	387	991	380	330	1400
18×16×18	387	438	1092	415	350	1700
20×16×20	387	489	1194	415	350	2100
22×18×22	438	489	1194	440	400	2400
24×20×24	489	591	1397	500	440	3300
30×24×30	591	736	1651	585	530	5900
36×30×36	736	876	2083	700	700	11000

■ Notes

- 1.Face-to-Face dimensions are according to API 6D
- 2.For 2" to 24" flanges are according to ASME B16.5
- 3.For over 24" flanges are according to ASME B16.47 series A.

Class 900 / 1500 / 2500 Three-piece, split body, forged steel, side entry design



■ Full Port(Class 900)

Size(in)	d(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
2	51	368	105	100	50
3	76	381	160	130	80
4	102	457	205	170	150
6	152	610	245	190	360
8	203	737	280	230	620
10	254	838	326	280	1100
12	305	965	350	300	1600
14	324	1029	380	330	1450
16	375	1130	415	350	2200
18	425	1219	440	400	2800
20	473	1321	500	440	4250
22	524	1422	520	470	6500
24	572	1549	585	530	7000
26	669	1651	630	570	8000
28	667	1753	645	650	9500
30	714	1880	700	700	12500
32	762	2032	740	750	12000
34	808	2159	770	780	18000

■ Reduced Port(Class 900)

Size(in)	d(mm)	D(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
3×2×3	51	76	381	105	100	55
4×3×4	76	102	457	160	130	100
6×4×6	102	152	610	205	170	220
8×6×8	152	203	737	245	190	450
10×8×10	203	254	838	280	230	560
12×10×12	254	305	965	326	280	820
14×10×14	254	337	1029	320	280	920
14×12×14	305	337	1029	350	300	1200
16×12×16	305	387	1130	350	300	1400
16×14×16	324	387	1130	380	330	1400
18×16×18	375	438	1219	415	350	1700
20×16×20	375	489	1321	415	350	2100
22×18×22	425	489	1321	440	400	2400
24×20×24	473	591	1549	500	440	3300
30×24×30	572	736	1880	585	530	5900
36×30×36	714	876	2286	700	700	11000

Notes:

1.Face-to-Face dimensions are according to API 6D

2.For 2" to 24" flanges are according to ASME B16.5

3.For over 24" flanges are according to ASME B16.47 series A.

■ Full Port(Class 1500)

Size(in)	d(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
2	51	368	110	105	60
3	76	470	165	130	100
4	102	546	220	170	210
6	146	705	260	230	500
8	194	832	310	290	850
10	241	991	370	360	1600
12	289	1130	430	440	2300
14	317	1257	450	450	2950
16	362	1384	500	600	4200

■ Reduced Port(Class 1500)

Size(in)	d(mm)	D(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
3×2×3	51	76	470	110	105	70
4×3×4	76	102	546	165	130	130
6×4×6	102	146	705	220	170	300
8×6×8	146	194	832	260	230	580
10×8×10	194	241	991	310	290	1100
12×10×12	241	289	1130	370	360	1800
14×10×14	241	317	1257	370	360	2200
14×12×14	289	317	1257	430	440	2600
16×12×16	289	362	1384	430	440	2900
16×14×16	317	362	1384	450	450	3300
18×16×18	362	407	1537	500	600	500
20×16×20	362	457	1664	500	600	5600

■ Full Port(Class 2500)

Size(in)	d(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
2	44.5	451	120	130	100
3	63.5	578	180	200	200
4	89	673	230	250	390
6	133	914	260	250	790
8	181	1022	400	350	1400
10	226	1270	450	420	2200
12	267	1422	520	510	3400

■ Reduced Port(Class 2500)

Size(in)	d(mm)	D(mm)	L(mm)	H1(mm)	H2(mm)	WT(kg)
3×2×3	44.5	63.5	578	120	130	170
4×3×4	63.5	89	673	180	200	280
6×4×6	89	133	914	260	250	520
8×6×8	133	181	1022	400	250	1100
10×8×10	181	226	1270	450	350	1700
12×10×12	226	267	1422	450	420	2600

■ Notes

1.Face-to-Face dimensions are according to API 6D

2.For 2" to 24" flanges are according to ASME B16.5



Metal seated ball valve

■ General

Metal seated ball valves are particularly applicable in severe service conditions such as granular medium, pasty stock, coag, lime-ash, and of advantage such as reliable sealing capacity and low operation torque value.

■ Utilize advanced technique of ball and seat hardening

Many techniques have been applied in ball and seat hardening such as, including supersonic spraying, nimonic alloy spraying-weld, surface peculiarly hardening, carbide spraying-weld and high strength high hardness ceramic materials etc., the hardness of ball and seat can generally reach HRC 62 above, even surpass HRC 70. Refractory of sealing material can generally reach 540 centigrade, and 980 centigrade at its highest. Materials bond-strength can reach 10000PSI or above, Sealing material is also of the capability of braze-proof and impact-proof.

■ High capability of seal

With peculiar lapping crafts for the ball, spinning the ball to the lapping appliance from different directions to make the ball surface reach sky-high circularity and cleanliness. the sealing capacity of valve can fully reach or surpass the requirement of standard.

■ Moveable seat design

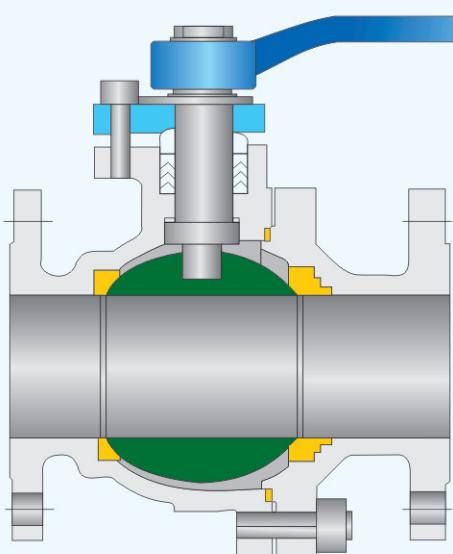
Achieves Zero leakage sealing in bi-directional flow and pressure relief for over-pressure protection.

■ High temperature warming design

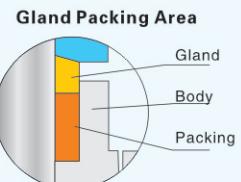
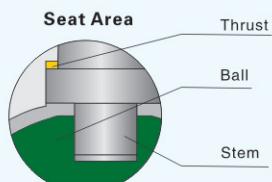
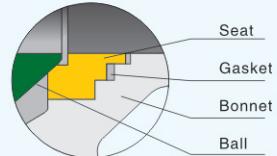
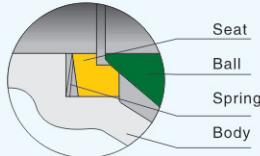
Cup spring supported S.S. ball Seats are of high hardness HV 1500 due to special surface treatment. cup spring made of Inconel alloy can self-compensate the thermal expansion caused by high temperature medium.

■ Fully fire safe design structure

Metal to Metal sealing structure in the sealing surface, and flexible graphite as packing. Stainless steel+flexible graphite as gasket, so when if fire burns up the valve can be sealed properly.



Seat Area(Upstream Side) Seat Area(Downstream Side)



Design features

Design Standards: API 608, BS 5351, JIS B2071, B2081

Face to face dimension: ASME B16.10, JIS B2002

Flanged End: ASME B16.5, JIS B2212, B2214

Testing and inspection: API 598, JIS B2003

Pressure-Temperature Rating: JIS B2071, B2081

Material List

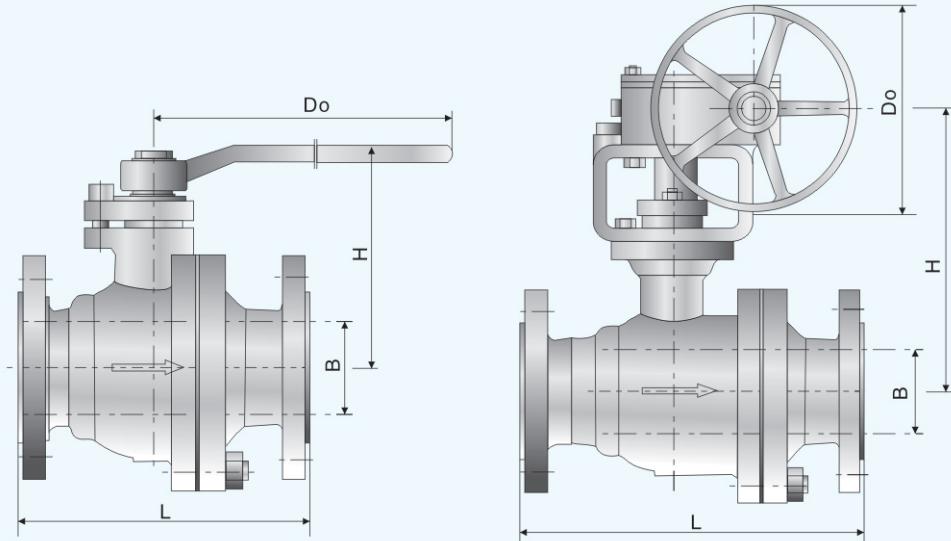
Item	Carbon Steel		Stainless Steel	
Temperature Rating	-29°C~250°C	250°C~425°C	-29°C~250°C	250°C~550°C
Body	ASTM A216 Gr.WCB			ASTM A351 CF8M
Ball	ASTM A 182 F304+TSC or STL			ASTM A 182 F316+TSC or STL
Stem	ASTM A182 F6a			ASTM A182 F316
Seat	ASTM A 182 F316+TSC or STL			ASTM A 182 F316+TSC or STL
Gasket	PEEK	Graphite+304 S.S.	PEEK	Graphite+316 S.S.
Gland Packing	PEEK	Graphite+304 S.S.	PEEK	Graphite+316 S.S.
Stem Bearing	PEEK	Graphite+304 S.S.	PEEK	Graphite+316 S.S.
Spring	17-7PH	Inconel x-750	316 Stainless Steel	Inconel x-750
Bolt	ASTM A 193 B7			ASTM A 193 B8M
Nut	ASTM A 194 2H			ASTM A 194 8M
Seat Seal Gasket	Graphite+304 S.S.			Graphite+316 S.S.

Applications of metal seated ball valve

Type	Size	Temperature Range	Auxiliary Seal	Ball/Seats Seal	Working Condition
Floating Ball Valve	Pressure Class: 150, 300, 600 NPS: 1/2" ~ 8"	-50°C~250°C	PEEK	Ball: nitriding or Nickel base/Co base alloy overlay Seat: Stellited Ball: Nickel base/Co base alloy overlay Seat: Stellited	1. finishing mixture 2. solid containing fluids 3. hight temperature and hight pressure
		-50°C~380°C	Graphite		
		-35°C~550°C	Graphite		



Class 150 / JIS10K, Class 300/JIS20K, Class 600 Two-piece, split body, side entry design



Dimensions (Class 150/10K)

Size(in)	1/2	3/4	1	1-1/2	2	1-1/2	3	4	6	8
B(mm)	12.7	19	25.4	38	51	64	76	102	152	203
L(mm)	108	117	127	165	178	190	203	229	267	292
H(mm)	54	59	64	90	102	112	121	166	208	246
Do(mm)	140	140	160	160	260	260	260	320	400	300
WT(kg)	2.1	3	4.1	6.5	9	11.2	15.3	28.6	53	81

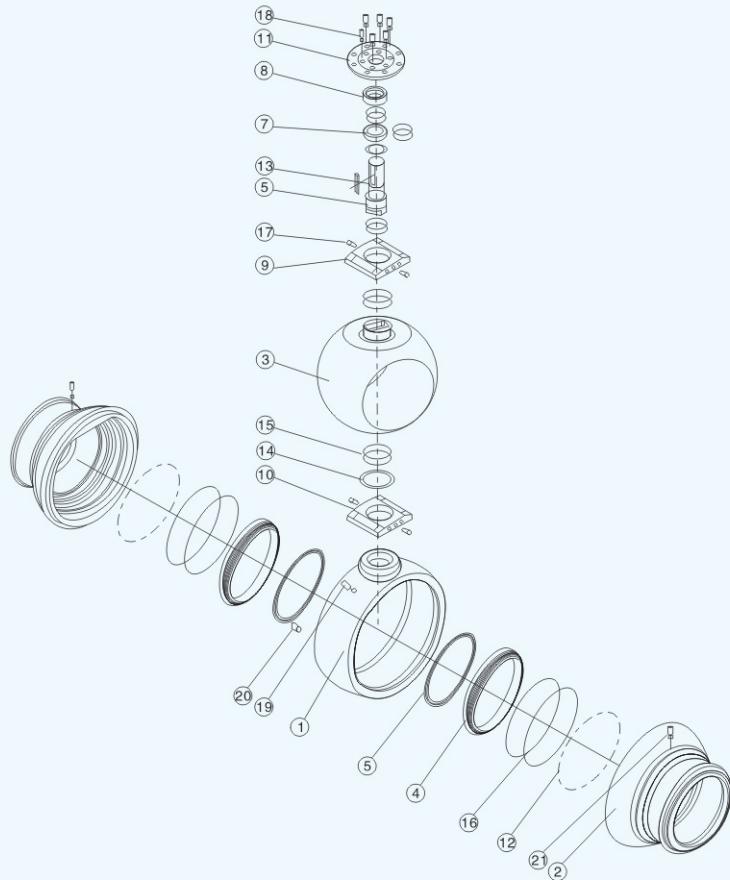
Dimensions (Class 300/20K)

Size(in)	1/2	3/4	1	1-1/2	2	1-1/2	3	4	6	8
B(mm)	12.7	19	25.4	38	51	64	76	102	152	203
L(mm)	140	152	165	190	216	241	282	305	403	419
H(mm)	54	59	64	90	102	112	121	166	208	246
Do(mm)	140	140	160	160	260	260	260	320	300	300
WT(kg)	2.8	3.6	4.9	10.4	10	16.1	23	39.5	82	124

Dimensions (Class 600)

Size(in)	1/2	3/4	1	1-1/2
B(mm)	13	19	25	38
L(mm)	165	190	216	241
H(mm)	180	180	250	300
Do(mm)	65	70	85	105
WT(kg)	8.5	11.5	16.3	19.5

Full port, split body, full weld ball valve

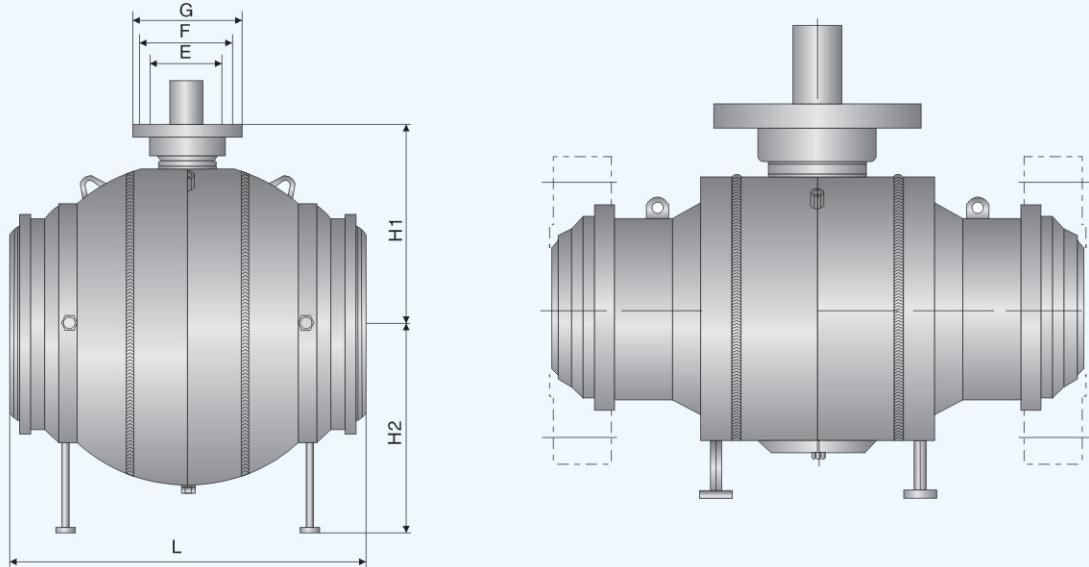


Material List

No	Name	Materials		
1	Body	ASTM A105	ASTM A350 LF2	ASTM A182 F316
2	Bonnet	ASTM A105	ASTM A350 LF2	ASTM A182 F316
3	Ball	ASTM A105+ENP	ASTM A350 LF2+ENP	ASTM A182 F316
4	Seat	ASTM A105+ENP	ASTM A350 LF2+ENP	ASTM A182 F316
5	Seal Ring	PTFE/MOLON/PEEK	PTFE/MOLON/PEEK	PTFE/MOLON/PEEK
6	Stem	ASTM A182 F6a	ASTM A350 LF2	ASTM A182 F316
7	Stuffing Box	ASTM A 182 F6a	ASTM A 276 410	ASTM A 182 F316
8	Packing Gland	ASTM A105	ASTM A350 LF2	ASTM A 182 F316
9	Up Support Plate	ASTM A105	ASTM A350 LF2	ASTM A 182 F316
10	Down Support Plate	ASTM A105	ASTM A350 LF2	ASTM A 182 F316
11	Adapter	ASTM A105	ASTM A350 LF2	ASTM A 182 F316
12	Spring	Inconel x-750	Inconel x-750	Inconel x-750
13	Key	45	45	45
14	Gasket	Stainless Steel+PTFE	Stainless Steel+PTFE	Stainless Steel+PTFE
15	Bushing	Carbon steel+PTFE	Carbon steel+PTFE	Carbon steel+PTFE
16	"O"ring	Fluorione Rubber	Fluorione Rubber	Fluorione Rubber
17	Pin	35	ASTM A276 410	ASTM A182 F316
18	Nut	ASTM A 193 B7M	ASTM A 320 L7M	ASTM A 193 B8
19	Relief Valve	Carbon steel components	Stainless steel components	Stainless steel components
20	Drain Valve	Carbon steel components	Stainless steel components	Stainless steel components
21	Fitting injection Valve	Carbon steel components	Stainless steel components	Stainless steel components



Class 150 Full port, split body, full weld ball valve



Valve CHART 1(Bare Shaft)

Valve CHART 2(Bare Shaft)

SIZE	DN	L(BW)	L(RF)	L(RTJ)	E	F	G	n-d1	H1	H2	WT(kg)
6	150	457	394	407	100	140	175	4-M16	235	200	180
8	200	521	457	470	130	165	210	4-M20	286	280	250
10	250	559	533	546	130	165	210	4-M20	325	320	400
12	300	635	610	622	130	165	210	4-M20	368	355	560
14	350	762	686	699	200	254	210	8-M16	405	400	830
16	400	838	762	775	200	254	300	8-M16	446	470	1050
18	450	914	864	877	200	254	300	8-M16	493	510	1450
20	500	991	914	927	230	298	350	8-M20	542	550	1750
22	550	1092	--	--	230	298	350	8-M20	580	600	2230
24	600	1143	1067	1080	230	298	350	8-M20	618	660	2850
26	650	1245	1143	--	230	298	350	8-M20	669	700	2980
28	700	1345	1245	--	230	356	415	8-M30	710	760	3500
30	750	1397	1295	--	260	356	415	8-M30	750	780	4800
32	800	1524	1372	--	260	356	415	8-M30	810	845	5500
34	850	1626	1473	--	--	--	--	--	--	--	--
36	900	1727	1524	--	300	406	475	8-M36	890	1000	8500
38	950	--	--	--	--	--	--	--	--	--	--
40	1000	1956	1753	--	300	406	475	8-M36	960	1200	11500
42	1050	2083	1790	--	300	406	475	8-M36	995	1280	--
48	1200	1995	2388	--	370	483	560	12-M36	1150	1350	--
56	1400	2489	2489	--	370	483	560	12-M36	1253	1430	--
60	1500	2667	2667	--	470	603	686	20-M36	1380	1550	--

Class 300 Full port, split body, full weld ball valve



CLASS 300

Size	DN	L(BW)	L(RF)	L(RTJ)	E	F	G	n-d1	H1	H2	WT(kg)
6	150	403	403	419	100	140	175	4-M16	235	200	200
8	200	521	502	518	130	165	210	4-M20	291	280	280
10	250	559	568	584	130	165	210	4-M20	328	320	410
12	300	635	648	664	200	254	300	8-M16	368	355	630
14	350	762	762	778	200	254	300	8-M16	410	400	900
16	400	838	838	854	200	254	300	8-M16	446	470	1155
18	450	914	914	930	230	298	350	8-M20	493	510	1580
20	500	991	991	1010	230	298	350	8-M20	542	555	1950
22	550	1092	1092	1114	230	298	350	8-M20	590	600	2530
24	600	1143	1143	1165	230	298	350	8-M20	641	660	2850
26	650	1245	1245	1270	260	356	415	8-M30	678	700	3360
28	700	1346	1346	1372	260	356	415	8-M30	720	760	3750
30	750	1397	1397	1422	260	356	415	8-M30	775	800	5500
32	800	1524	1524	1552	300	406	475	8-M36	815	850	5900
34	850	1626	1626	1654	--	--	--	--	--	--	--
36	900	1727	1727	1755	300	406	475	8-M36	895	1000	9000
38	950	--	--	--	--	--	--	--	--	--	--
40	1000	1956	1956	--	300	406	475	8-M36	970	1200	12000
42	1050	2083	2083	--	300	406	475	8-M36	1050	1300	--
48	1200	2170	2170	--	370	483	560	12-M36	1200	1450	--
56	1400	2743	2743	--	470	603	686	20-M36	1330	1600	--
60	1500	2820	2820	--	470	603	686	20-M36	1480	1700	--



Class 600 Full port, split body, full weld valve

■ CLASS 600

SIZE	DN	L(BW)	L(RF)	L(RTJ)	E	F	G	n-d1	H1	H2	T(kg)
6	150	559	559	562	130	165	210	4-M20	247	210	250
8	200	660	660	663	200	254	300	8-M16	293	280	340
10	250	787	787	790	200	254	300	8-M16	334	320	580
12	300	838	838	841	200	254	300	8-M16	382	365	850
14	350	889	889	892	200	254	300	8-M16	416	400	1150
16	400	991	991	994	200	254	300	8-M16	469	475	1360
18	450	1092	1092	1095	230	298	350	8-M20	508	530	2120
20	500	1194	1194	1200	260	356	415	8-M30	571	585	2650
22	550	1295	1295	1305	260	356	415	8-M30	620	600	3200
24	600	1397	1397	1407	260	356	415	8-M30	651	660	3750
26	650	1448	1448	1461	260	356	415	8-M30	704	720	3900
28	700	1549	1549	1562	300	406	475	8-M36	760	760	4200
30	750	1651	1651	1664	300	406	475	8-M36	790	820	6000
32	800	1778	1778	1794	300	406	475	8-M36	835	860	6800
34	850	1930	1930	1946	--	--	--	--	--	--	--
36	900	2083	2083	2099	370	483	560	12-M36	970	1020	10000
38	950	--	--	--	--	--	--	--	--	--	--
40	1000	1956	1956	--	370	483	560	12-M36	1150	1230	14000
42	1050	2083	2083	--	370	483	560	12-M36	1260	1320	--
48	1200	2170	2170	--	370	483	560	12-M36	1430	1470	--
56	1400	2743	2743	--	470	603	686	20-M36	1620	1640	--
60	1500	2820	2820	--	470	603	686	20-M36	1800	1830	--

Class 900 / 1500 / 2500 Full port, split body, full weld ball valve



■ CLASS 900

SIZE	DN	L(BW)	L(RF)	L(RTJ)	H1	H2	WT(kg)
6	150	610	610	613	350	270	350
8	200	737	737	740	420	360	550
10	250	838	838	841	490	380	1000
12	300	965	965	968	620	420	1450
14	350	1029	1029	1039	665	460	1700
16	400	1130	1130	1140	725	510	1950
18	450	1219	1219	1232	810	570	2600
20	500	1321	1321	1334	850	630	3900
22	550	--	--	--	880	720	5100
24	600	1549	1549	1568	920	800	6500
26	650	--	--	--	960	885	8000
28	700	1753	1753	1775	1050	960	9500
30	750	1880	1880	1902	1100	1030	12000
32	800	2032	2032	2054	1180	1120	13200
34	850	2159	2159	2188	1200	1250	15600
36	900	2286	2286	2315	1250	1300	17000
40	1000	2410	2410	2438	1500	1560	--
42	1050	2515	2515	2540	1630	1700	--
48	1200	2620	2620	2850	1850	1860	--

■ CLASS 1500

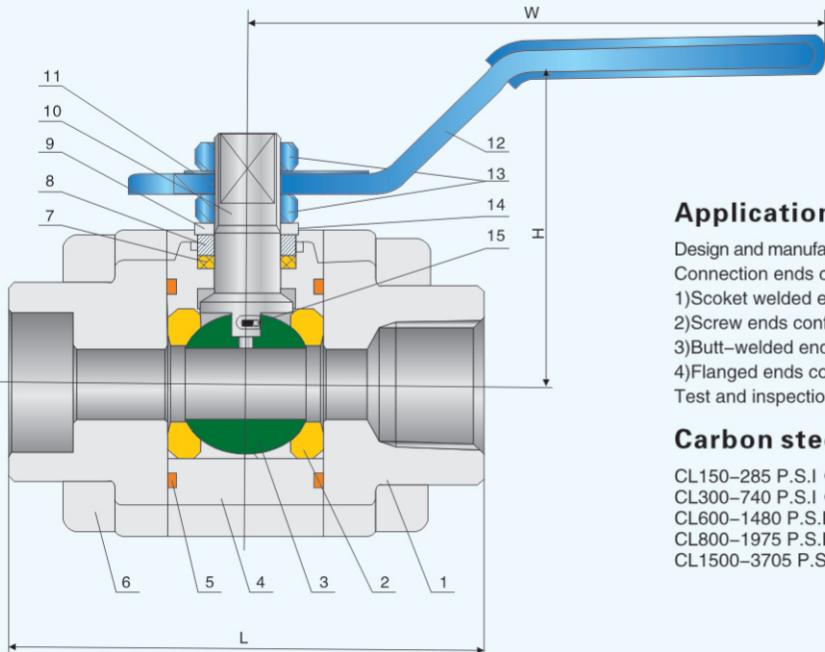
SIZE	DN	L(BW)	L(RF)	L(RTJ)	H1	H2	WT(kg)
6	150	705	705	711	380	280	450
8	200	832	832	842	475	380	760
10	250	991	991	1001	510	490	1450
12	300	1130	1130	1146	595	600	2230
14	350	1257	1257	1276	645	710	2800
16	400	1384	1384	1406	685	830	4120

■ CLASS 2500

SIZE	DN	L(BW)	L(RF)	L(RTJ)	H1	H2	WT(kg)
6	150	914	914	927	385	300	770
8	200	1022	1022	1038	495	400	1357
10	250	1270	1270	1292	530	510	2100
12	300	1422	1422	1444	615	620	3210
14	350	1681	1681	1681	665	730	5520
16	400	1918	1918	1918	700	850	6520



3PC Forged steel compact body ball valve



Application standards

Design and manufacture conform to BS 5351, MSS SP 118, JIS B2071, B2081; Connection ends conform to :

- 1) Socket welded ends conform to ANSI B 16.11
- 2) Screw ends conform to ANSI B1.20.1
- 3) Butt-welded ends conform to ANSI B-16.25
- 4) Flanged ends conform to ANSI B 16.5

Test and inspection conform to: API 598, GB/T 13927, JB /T9092, JIS B2003

Carbon steel temperature-pressure rate

CL150-285 P.S.I @ 100° F

CL300-740 P.S.I @ 100° F

CL600-1480 P.S.I @ 100° F

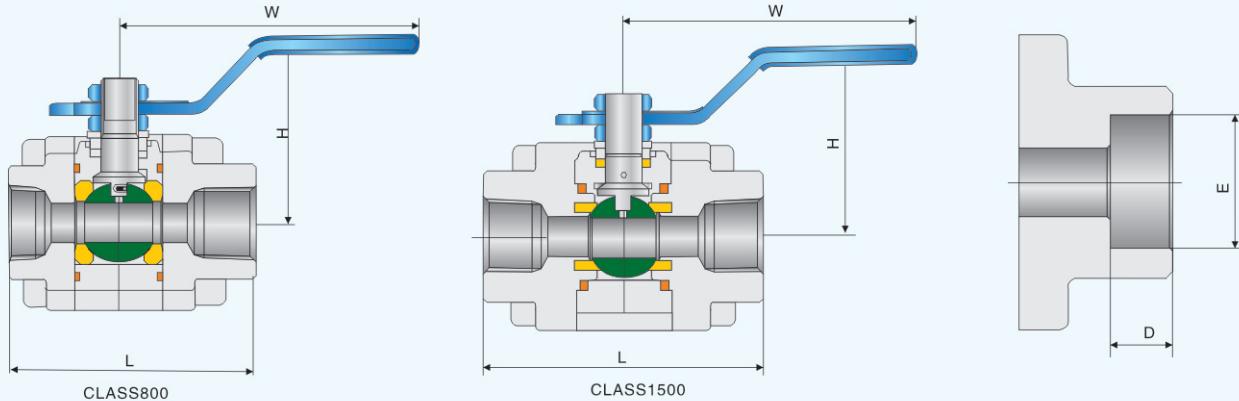
CL800-1975 P.S.I @ 100° F

CL1500-3705 P.S.I @ 100° F

Material List

No	Parts	Material				
1	Bonnet	A 105	Lf2	Lf2	F316	F316
2	Seat	RPTFE & PEEK				
3	Ball	F6	F304	F304(L)	F316(L)	F51
4	Body	A105	LF2	F304(L)	F316(L)	F51
5	O-ring	VITON	VITON	VITON	VITON	VITON
6	Stud	PTFE	B8	B8	B8M	B8M
7	Gasket	PTFE	PTFE	PTFE	PTFE	PTFE
8	Packing Bushing	410	PTFE	PTFE	PTFE	PTFE
9	Gland	410	304	F304(L)	F316(L)	F51
10	Stem	F6	304	F304(L)	F316(L)	F51
11	Nameplate	AI	AI	AI	AI	AI
12	Lever	1020+PVC	1020+PVC	1020+PVC	1020+PVC	1020+PVC
13	Nut	2H	8M	8M	8M	8M
14	Elastic Washer	65Mn	65Mn	304	304	304
15	Anti-static Spring	304	304	304	316L	316L

Class 800 / 1500 3PC Forged steel compact body ball valve



Full Bore Class 800/1500

	inch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
End to End(L=mm)	CLASS 800	67	67	73	88	105	116	128	146
	CLASS 1500	73	73	88	105	116	128	146	--
Lever(W=mm)	CLASS 800	120	120	120	145	145	175	175	260
	CLASS 1500	120	120	145	145	175	175	260	--
Center of Top(H=mm)	CLASS 800	50	50	52	60	65	86	93	110
	CLASS 1500	52	52	60	60	86	93	110	--
Inside Bore(D=mm)	CLASS 800	11	11	14	20.5	25	31.6	38	49
	CLASS 1500	11	11	14	20.5	25	31.6	38	--
WT(kg)	CLASS 800	0.75	0.75	0.95	1.7	2.4	3.7	4.9	8.7
	CLASS 1500	--	1.2	2.2	3.4	4.7	6.7	10.5	--

Reduced Bore Class 800/1500

	inch	1/2	3/4	1	1 1/4	1 1/2	2
End to End(L=mm)	CLASS 800	67	73	88	105	116	128
	CLASS 1500	73	88	105	116	128	146
Lever(W=mm)	CLASS 800	120	120	145	145	175	175
	CLASS 1500	120	145	145	175	175	260
Center of Top(H=mm)	CLASS 800	50	52	60	65	86	93
	CLASS 1500	52	60	60	86	93	110
Inside Bore(D=mm)	CLASS 800	11	14	20.5	25	31.6	38
	CLASS 1500	11	14	20.5	25	31.6	38
Weight(kg)	CLASS 800	0.75	0.95	1.7	2.4	3.7	4.9
	CLASS 1500	1.2	2.2	3.4	4.7	6.7	10.5

SOCKET WELD DIMENSIONS		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
ANSI B 16.11	E(mm)	14.1	17.6	21.9	27.4	34.2	42.7	48.8	61.1
	D(mm)	9.6	9.6	9.6	12.7	12.7	12.7	12.7	15.9



Trunnion mounted top entry ball valve

■ Structural Characteristics

We use the Germany advanced technology and apply it in our new products by years of R&D, we develop Feiqiu special Top-entry ball valve. With technology up to domestic leading level, these products can compete with the international counterparts. Besides the features borne by the side installed fixed ball valve (see fixed ball valve), they are also given the features below:

1. One-piece valve body, top installed trunnion to fix and support, flanged or butt welded structure.
2. Inconel bellows spring makes the sealed metal seat moving toward the ball, providing the two way seal function of inlet and outlet.
3. Distinctive technology of retractable valve seat, inline replace ability of ball arm, valve stem sealing ring, metal seat and bellows spring, and torque down to the minimum for the ease of operation.
4. Ease of repair and installation, long performance life. Access for repair and replacement of trims may be done with no need to remove the valve from the pipeline, thus to lengthen the service life.
5. Low torque, reliable sealing, and spherical seat different from ordinary ball valves, which can automatically adjust the position of seal.
6. Preset platform and bolt holes for drive device, and to ISO5211. Drive device can be installed according to users' different requirements.
7. DBB (double block and bleed) function.
8. Hand operated top installed ball valve adopts high strength one-piece ball arm structure to ensure the precise positioning of the ball.
9. Anti-blowout protective structure of valve stem to enhance the operational safety of the valve.

■ Technical Specifications

Technical Specifications		API series
Design Specifications		API6D、API608、BS5351
Pressure-Temperature Ratings		ASME B16.34
Face-to-Face		API6D、ASME B16.10
Flanged Ends		ASME B16.5、ASME B16.47
Butt-welding Ends		ASME B16.25
Inspection and Test		API6D、API598
Fire-safe Test		API607、API 6FA
Castings Quality Inspection		MSS-SP-55

■ Torque Chart (N.M)

The torque ratings listed below are for the reference to choose a drive device. The properties of medium, trims and valve open frequency shall be considered as extra factors. For instance, valves with corrosion-resistant trims to deal with clean lubricating mediums, their torque may be lowered by 20%. However, to deal with stringent mediums like slurry, granular medium and oxygen, the torque may be increased by 50%. The operating torque of drawing-down valves is subject to the corresponding diameter to their neckings. (Specific options as per the actual).

Size		Pressure Class						
DN	NPS	150	300	400	600	900	1500	2500
50×40	1 1/2	61	81	85	102	149	—	—
50	2	68	108	97	136	203	333	562
80×50	3×2	68	108	97	136	203	333	562
80	3	149	244	204	305	422	811	1460
100×80	4×3	149	244	204	305	422	811	1460
100	4	244	407	422	453	583	1505	1923
150×100	6×4	244	407	422	453	583	1505	1923
150	6	323	544	647	1006	1299	2940	5840
200×150	8×6	323	544	647	1006	1299	2940	5840
200	8	647	955	1157	2532	2766	6489	12181

Trunnion mounted top entry ball valve



Size		Pressure Class						
DN	NPS	150	300	400	600	900	1500	2500
250×200	10×8	647	955	1157	2532	2766	6489	12181
250	10	882	1822	2178	3941	5446	12181	15281
300×250	12×10	882	1822	2178	3941	5446	12181	15281
350×250	14×10	882	1822	2178	3941	5446	12181	15281
300	12	1577	2591	3064	6893	7909	15564	19834
350×300	14×12	1577	2591	3064	6893	7909	15564	–
400×300	16×12	1577	2591	3064	6893	7909	15564	–
350	14	1873	3224	3853	6205	10948	23512	–
400×350	16×14	1873	3224	3853	6205	10948	23512	–
400	16	3050	5447	6529	8817	13682	27039	–
450×400	18×16	3050	5447	6529	8817	13682	27039	–
500×400	20×16	3050	5447	6529	8817	13682	27039	–
450	18	3819	6197	7461	11231	17705	37085	–
500	20	4508	7830	9348	14919	29866	40309	–
550	22	5490	9453	11302	16058	39324	–	–
600×500	24×20	4508	7830	9348	15140	29866	40309	–
600	24	6723	11457	15535	21840	40810	64671	–
650	26	9289	15139	17869	24889	51822	–	–
700	28	11647	18067	21063	28767	53515	–	–
750×600	30×24	6723	11457	15535	21840	40810	–	–
750	30	13558	19207	24966	34398	57057	–	–
800	32	15224	24095	28235	38880	61123	–	–
850	34	17846	30249	33291	41789	70277	–	–
900×750	36×30	13558	19207	24966	34398	57057	–	–
900	36	22032	33331	36227	51521	81349	–	–
1000	40	25972	36490	45269	60368	–	–	–
1050	42	27034	40425	53515	70277	–	–	–
1200	48	42606	64985	79311	112293	–	–	–



Trunnion mounted top entry ball valve

Products Supply Range

Size		Pressure Class					
DN	NPS	150	300	600	900	1500	2500
50 × 40	2 × 2 1/2		●/△			☆/△	
50	2		●/△			☆/△	
80×50	3 × 2		●/△			☆/△	
80	3		☆/△			☆/△	
100×80	4 × 3		☆/△			☆/△	
100	4		☆/△			☆/△	
150×100	6 × 4		☆/△			☆/△	
150	6	●/☆/△/★		☆/△/★		☆/△/★	
200 × 150	8 × 6	☆/△/★		●/☆/△/★		☆/△/★	
200	8	☆/△/★		●/☆/△/★		☆/△/★	☆/△/★
250 × 200	10 × 8		☆/△/★			☆/△/★	☆/△/★
250	10		☆/△/★			☆/△/★	☆/△/★
300 × 250	12 × 10		☆/△/★			☆/△/★	☆/△/★
350 × 250	14 × 10		☆/△/★			☆/△/★	☆/△/★
300	12		☆/△/★			☆/△/★	☆/△/★
350 × 300	14 × 12		☆/△/★			☆/△/★	-
400 × 300	16 × 12		☆/△/★			☆/△/★	-
350	14		☆/△/★			☆/△/★	-
400 × 350	16 × 14		☆/△/★			☆/△/★	-
400	16		☆/△/★			☆/△/★	-
450 × 400	18 × 16		☆/△/★			☆/△/★	-
500 × 400	20 × 16		☆/△/★			☆/△/★	-
450	18		☆/△/★			☆/△/★	-
500	20		☆/△/★			☆/△/★	-
550	22		☆/△/★			☆/△/★	-
600 × 500	24 × 20		☆/△/★			☆/△/★	-
600	24		☆/△/★			☆/△/★	-
650	26		☆/△/★			-	
700	28		☆/△/★			-	
750 × 600	30 × 24		☆/△/★			-	
750	30		☆/△/★			-	
800	32		☆/△/★			-	
850	34		☆/★			-	
900 × 750	36 × 30		☆/△/★			-	
900	36		☆/★			-	
1000	40		☆/★			-	
1050	42		☆/★			-	
1200	48		☆/★			-	

Note: ● Stands for handle operated valves

△ Stands for gearbox operated valves

☆ Stands for air operated valves

★ Stands for electric operated valves

- Stands for no option

It can be manufactured according to user's requirements if not covered in the table.

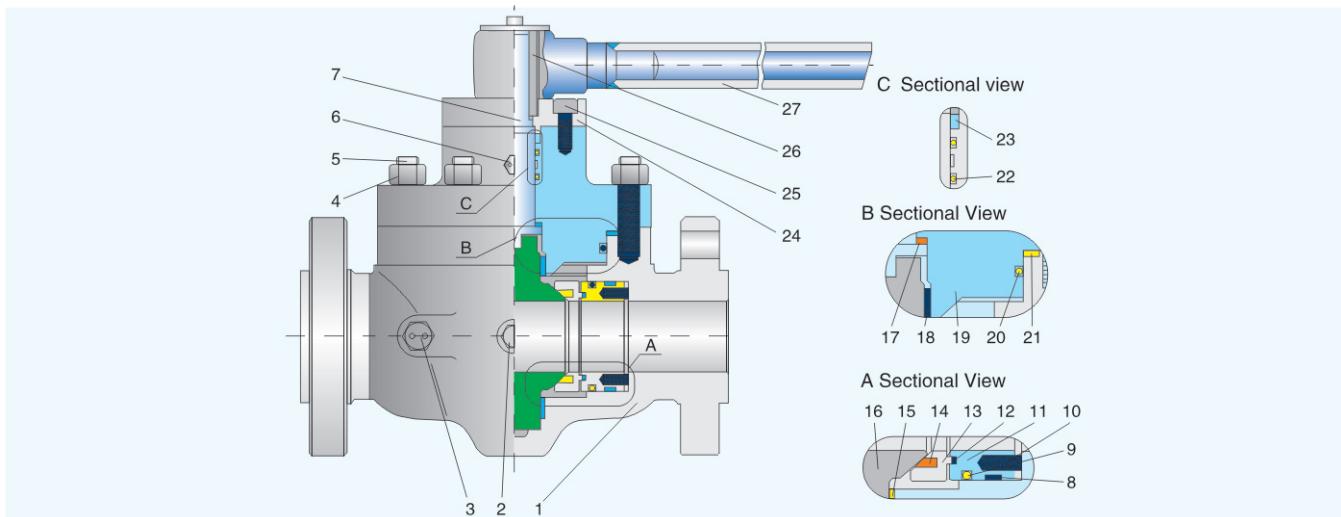
Trunnion mounted top entry ball valve



Performance Specification

Performance Specification		Pressure Class						
		150	300	400	600	900	1500	2500
Test Pressure (MPa)	Strength Test	2.94	7.67	10.20	15.30	22.98	38.30	63.83
	Sealing Test	2.16	5.62	7.48	11.23	16.85	28.08	46.81
	Air Test				0.6			
Applicable Temperature		-196°C ~ 550 (Different materials for different working conditions)						
Applicable Medium		Water, Steam, Oil, Gas, Liquid Gas, Natural Gas etc						
Size Range		DN50 ~ 1200(NP2" ~ 48"), We can produce according to your special requirements.						
Body/Trim Material		Carbon Steel, Stainless Steel, Duplex Stainless Steel, Ni-Alloy Steel, Ti Material						
Ends Connection		Flange Connection, Butt-welded Connection						
Actuating Device		Lever, Gearbox, Electric, Pneumatic etc.						

Valve Structural Schematic Drawing (Manual Top Entry Ball Valve)



The Material of Main Parts

No.	Parts Name	Material		
		Carbon Steel	SS	Low Temperature Steel
1	Body	A216 WCB	A351 CF8M	A352 LCC
2	Drain Valve	A29 1025	SS	SS
3	Sealant Injection Valve	A29 1025	SS	SS
4	Nut	A194 2H	A194 8	A194 7
5	Stud	A193 B7	A193 B8	A320 L7
6	Sealant Injection Valve	A29 1025	SS	SS
7	Stem	A182 F6a	A182 F316	A182 F316
8	Fire Safe Ring	Soft Graphite		
9	O-Ring	VITON		
10	Spring	INCONEL X-750		
11	Supporting Ring	A29 4140+ENP	A182 F316	A350 LF3
12	Gasket	Soft Graphite+SS		
13	Seat	A105+ENP A29 4140+ENP A182 F316 A350 LF3		
14	Sealing Ring	PTFE、NYLON、PEEK、PCTFE、MOLON		
No.	Parts Name	Material		
		Carbon Steel	SS	Low Temperature Steel
15	Bushing	PTFE+CS	PTFE+SS	PTFE+SS
16	Ball	A105+ENP	A182+E316	A350+LF3
17	Flat Bushing	PTFE+CS	PTFE+SS	PTFE+SS
18	Bushing	PTFE+CS	PTFE+SS	PTFE+SS
19	Bonnet	A216 WCB	A351 CF8M	A352 LCC
20	O-Ring	VITON		
21	Gasket	Soft Graphite+SS		
22	O-Ring	VITON		
23	Packing	Soft Graphite		
24	Cover	A29 4140+ENP	A182 F316	A350 LF3
25	Screw	A193 B7	A193 B8	A320 L7
26	Key	A29 1045	A29 1045	A29 1045
27	Lever	Q235A		

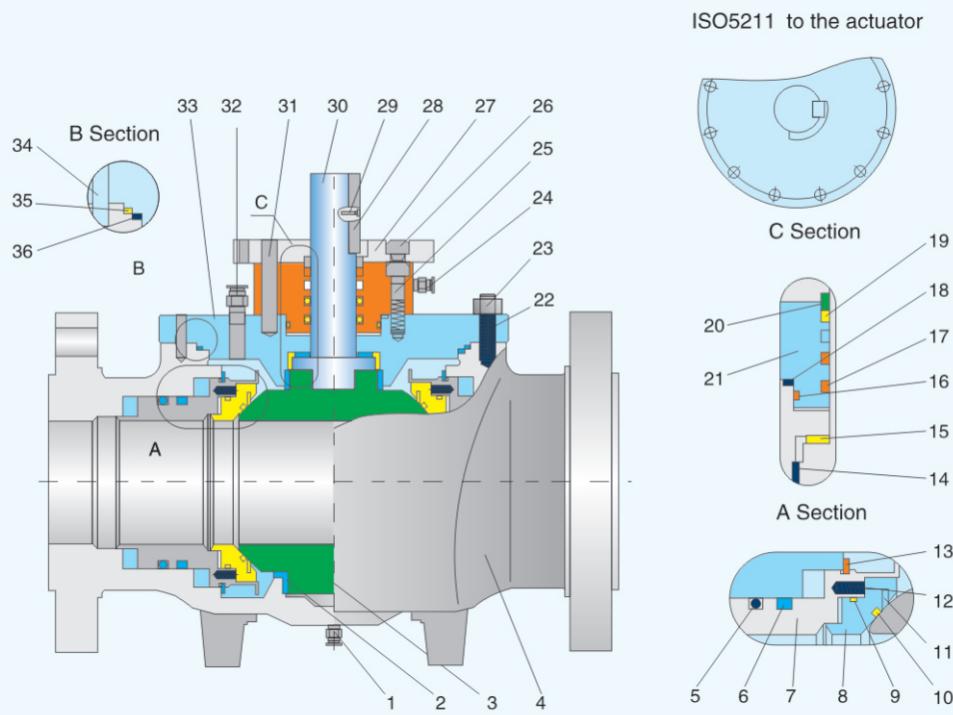
Notes: 1. Materials are available according to users' requirements and different working medium

2. Materials for Anti-sulfur valve shall be chosen according to NACE MR0175.



Trunnion mounted top entry ball valve

Valve Structural Schematic Drawing (Top Entry Ball Valve)



The Material of Main Parts

No.	Parts Name	Material		
		Carbon Steel	SS	Low Temperature Steel
1	Drain Valve	A29 1025	SS	SS
2	Bushing	PTFE+CS	PTFE+SS	PTFE+SS
3	Ball	A105+ENP	A182 F316	A350 LF3
4	Stem	A216 WCB	A351 CF8M	A352 LCC
5	O-Ring	VITON		
6	Fire Safe Ring	Soft Graphite		
7	Surporting Ring	A29 4140+ENP	A182 F316	A350 LF3
8	Seat	A105+ENP	A182 F316	A350 LF3
9	O-Ring	VITON		
10	O-Ring	VITON		
11	Sealing Ring	PTFE、NYLON、PCTFE、MOLON		
12	Spring	INCONEL X-750		
13	C Type Spring	17-4		
14	Bushing	PTFE+CS	PTFE+SS	PTFE+SS
15	Flat Bush Bearing	PTFE+CS	PTFE+SS	PTFE+SS
16	O-Ring	VITON		
17	O-Ring	VITON		
18	Gasket	Soft Graphite+SS		

No.	Parts Name	Material		
		Carbon Steel	SS	Low Temperature Steel
19	Packing	Soft Graphite		
20	Gland	A182 F6a	A182 F6a	A350 LF3
21	Cover	A29 4140+ENP	A182 F6a	A320 L7
22	Stud	A193 B7	A193 B8	A194 7
23	Nut	A194 2H	A194 8	A350 LF3
24	Sealant Injection Valve	A29 1025	SS	SS
25	Screw	A193 B7	A193 B8	A320 L7
26	Screw	A193 B7	A193 B8	
27	Connecting Plate	A105		
28	Key	A29 1045		
29	Screw	A193 B7		
30	Stem	A182 F6a	A182 F316	A182 F316
31	Locating Pin	A182 F6a		
32	Sealant Injection Valve	A29 1025	SS	SS
33	Bonnet	A216 WCB	A351 CF8M	A352 LCC
34	Locating Pin	A182 F6a		
35	Gasket	Soft Graphite+SS		
36	O-Ring	VITON		

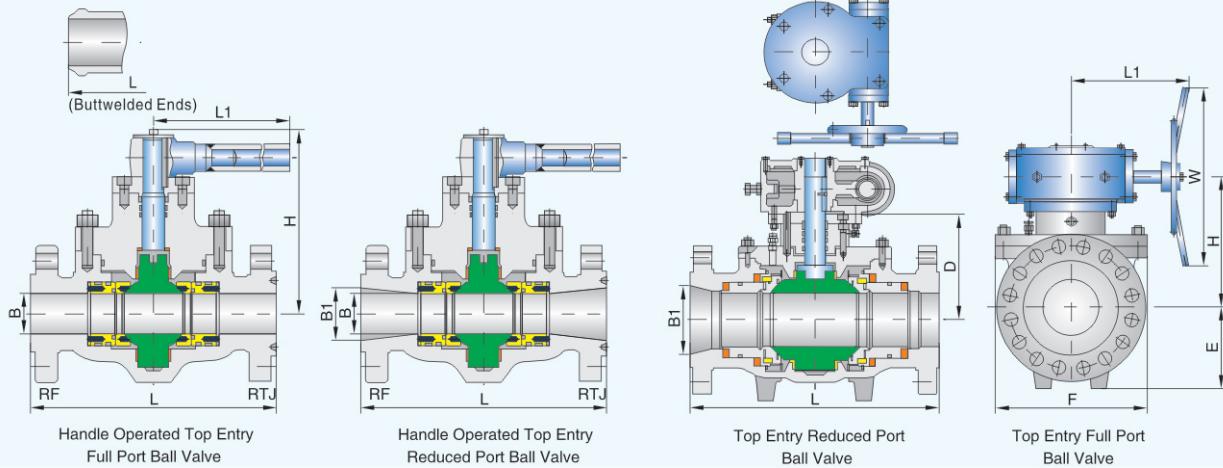
Note: 1. Materials are chosen according to the temperature & pressure for different working mediums.

2. It can be available to choose the materials according to user's requirements, besides the listed material in the chart.

3. Materials in accordance with NACE MR-01-75(latest edition) are available for sour gas service.

Remarks: RF stands for Raised Flange Connection; BW stands for Butt welded Ends Connection; RTJ stands for Ring Joint Connection.

Class 150 Trunnion mounted top entry ball valve



Main Outline Dimensions

Class 150 Full Port

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50	2	178	191	216	51	51	—	85	180	212	450	—	28
80	3	203	216	283	77	77	—	112	230	228	600	—	55
100	4	229	241	305	102	102	—	145	283	272	600	—	105
150	6	394	406	457	152	152	281	220	325	333	297	350	235
200	8	457	470	521	203	203	320	260	405	384	360	500	430
250	10	533	546	559	254	254	360	311	490	424	360	500	475
300	12	610	622	635	305	305	403	366	570	467	340	700	610
350	14	686	699	762	337	337	453	428	660	517	340	700	795
400	16	762	775	838	387	387	459	450	700	549	545	700	1160
450	18	864	876	914	438	438	502	473	755	577	575	700	1570
500	20	914	927	991	489	489	551	580	870	626	575	700	2000
550	22	991	1062	1092	540	540	578	590	955	653	575	700	2830
600	24	1067	1080	1143	591	591	606	600	1030	696	579	700	3300
650	26	1143	1168	1245	635	635	675	635	1075	765	570	700	3970
700	28	1245	1270	1346	686	686	735	700	1165	825	579	700	4755
750	30	1295	1321	1397	736	736	795	775	1250	865	579	700	5820
800	32	1372	1400	1524	781	781	840	825	1325	1012	605	620	7240
850	34	1473	1502	1626	832	832	875	880	1410	1047	605	620	7960
900	36	1524	1552	1727	876	876	931	930	1475	1103	605	620	9300
1000	40	1753	—	1956	978	978	1015	1025	1640	1170	950	1400	12950
1050	42	1855	—	2083	1022	1022	1065	1080	1710	1220	950	1400	15200
1200	48	2134	—	2388	1168	1168	1180	1225	1940	1335	950	1400	22750

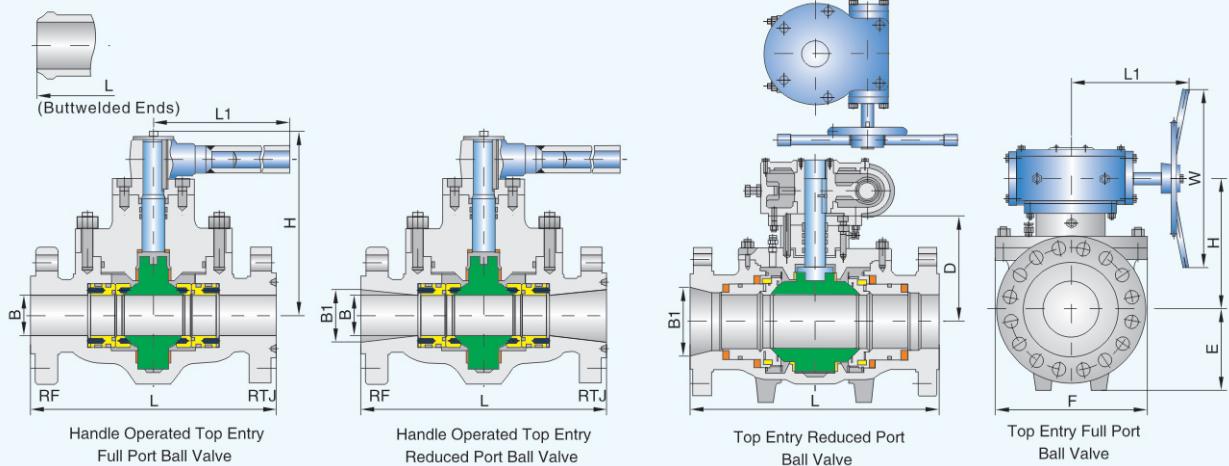
Class 150 Reduced Port

mm

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50×40	2×11/2	178	191	216	38	51	—	85	180	212	450	—	25
80×50	3×2	203	216	283	51	77	—	85	180	212	450	—	37
100×80	4×3	229	241	305	77	102	—	112	230	228	600	—	75
150×100	6×4	394	406	457	102	152	—	145	283	272	600	—	140
200×150	8×6	457	470	521	152	203	281	220	325	333	297	350	265
250×200	10×8	533	546	559	203	254	320	260	405	384	360	500	480
300×250	12×10	610	622	635	254	305	360	311	490	424	360	500	510
350×250	14×10	686	699	762	254	337	360	311	490	424	360	500	690
350×300	14×12	686	699	762	305	337	403	366	570	467	340	700	820
400×300	16×12	762	775	838	305	387	403	366	570	467	340	700	970
400×350	16×14	762	775	838	387	337	453	428	660	517	340	700	955
450×400	18×16	864	876	914	387	438	450	450	700	549	545	700	1295
500×400	20×16	914	927	991	387	489	459	450	700	549	545	700	1590
500×450	20×18	914	927	991	438	489	502	473	755	577	575	700	1800
600×500	24×20	1067	1080	1143	489	591	551	580	870	626	575	700	2440
750×600	30×24	1295	1321	1397	591	736	606	600	1030	696	579	700	4100
900×750	36×30	1524	1552	1727	736	876	795	775	1250	865	579	700	7200



Class 300 Trunnion mounted top entry ball valve



Main Outline Dimensions

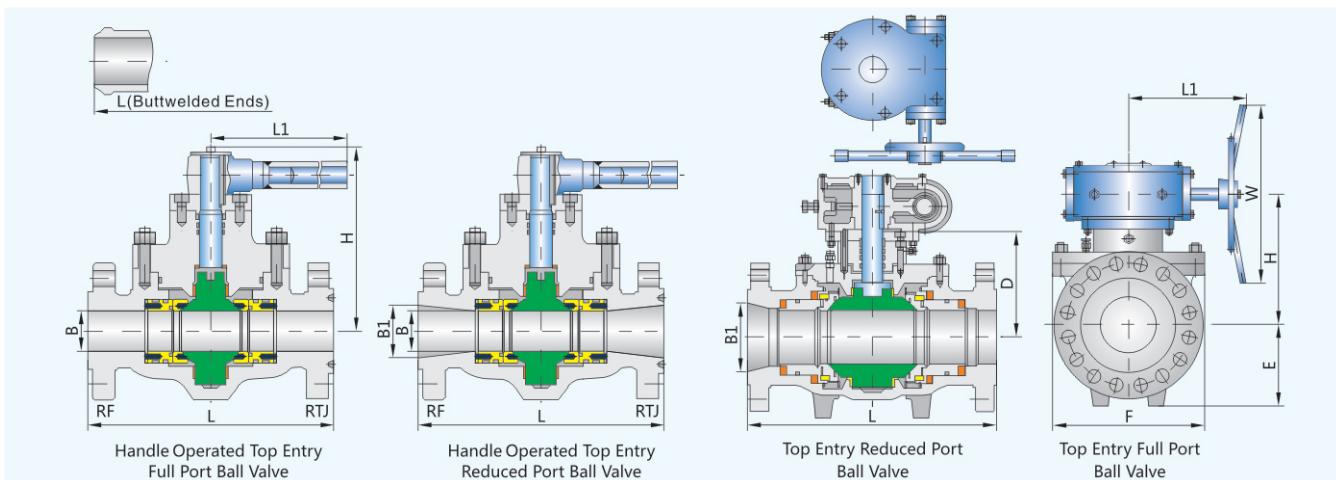
Class 300 Full Port

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50	2	216	216	232	51	51	—	85	180	212	450	—	33
80	3	283	283	298	77	77	—	112	230	228	600	—	64
100	4	305	305	321	102	102	—	145	283	272	1000	—	123
150	6	403	403	419	152	152	281	220	325	345	360	500	275
200	8	502	521	518	203	203	330	260	405	385	340	700	505
250	10	568	559	584	254	254	371	311	490	426	340	700	557
300	12	648	635	664	305	305	418	366	570	473	340	700	715
350	14	762	762	778	337	337	470	428	660	530	545	700	932
400	16	838	838	854	387	387	477	450	700	537	545	700	1360
450	18	914	914	930	438	438	522	473	755	597	575	700	1840
500	20	991	991	1010	489	489	573	580	880	663	579	700	2340
550	22	1092	1092	1114	540	540	600	590	965	690	579	700	3320
600	24	1143	1143	1165	591	591	631	600	1040	721	579	700	3870
650	26	1245	1245	1270	635	635	702	635	1085	874	605	620	4655
700	28	1346	1346	1372	686	686	764	700	1175	919	950	1400	5575
750	30	1397	1397	1422	736	736	827	775	1265	982	950	1400	6825
800	32	1524	1524	1553	781	781	874	825	1340	1029	950	1400	8490
850	34	1626	1626	1654	832	832	910	880	1425	1065	950	1400	9335
900	36	1727	1727	1756	876	876	968	930	1490	1123	950	1400	10900
1000	40	1956	1956	—	978	978	1056	1025	1655	1211	950	1400	15185
1050	42	2083	2083	—	1022	1022	1107	1080	1725	1262	950	1400	17820
1200	48	2170	2170	—	1168	1168	1228	1225	1960	1499	1045	1400	26675

Class 300 Reduced Port

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50×40	2×11/2	216	216	232	38	51	—	85	180	212	450	—	29
80×50	3×2	283	283	298	51	77	—	85	180	212	450	—	43
100×80	4×3	305	305	321	77	102	—	112	230	228	600	—	88
150×100	6×4	403	403	419	102	152	—	145	283	272	1000	—	164
200×150	8×6	502	521	518	152	203	281	220	325	345	360	500	311
250×200	10×8	568	559	584	203	254	330	260	405	385	340	700	563
300×250	12×10	648	635	664	254	305	371	311	490	426	340	700	598
350×250	14×10	762	762	778	254	337	371	311	490	426	340	700	809
350×300	14×12	762	762	778	305	337	418	366	570	473	340	700	960
400×300	16×12	838	838	854	305	387	418	366	570	473	340	700	1135
400×350	16×14	838	838	854	387	337	470	428	660	530	545	700	1120
450×400	18×16	914	914	930	387	438	477	450	700	537	545	700	1518
500×400	20×16	991	991	1010	387	489	477	450	700	537	545	700	1865
500×450	20×18	991	991	1010	438	489	522	473	755	597	575	700	2110
600×500	24×20	1143	1143	1165	489	591	573	580	880	663	579	700	2860
750×600	30×24	1397	1397	1422	591	736	631	600	1040	721	579	700	4810
900×750	36×30	1727	1727	1756	736	876	827	775	1265	982	950	1400	8440

Class 600 Trunnion mounted top entry ball valve



Main Outline Dimensions

Class 600 Full Port

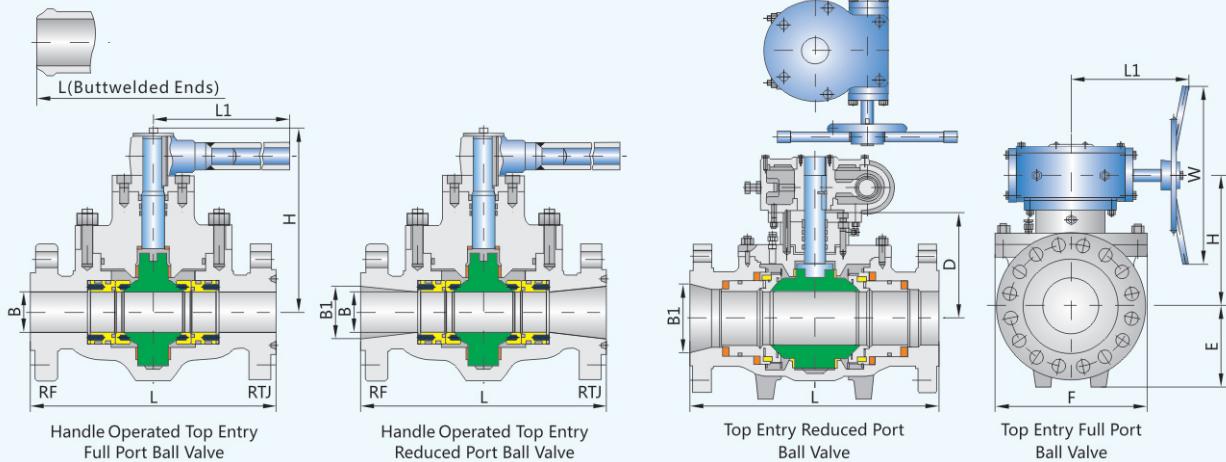
DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50	2	292	292	295	51	51	—	85	180	212	600	—	37
80	3	356	356	359	77	77	—	112	230	228	600	—	72
100	4	432	432	435	102	102	—	145	283	250	1000	—	137
150	6	559	559	562	152	152	281	220	325	336	1000	700	302
200	8	660	660	664	203	203	340	260	415	395	340	700	560
250	10	787	787	791	254	254	355	311	505	415	340	700	710
300	12	838	838	841	305	305	401	366	585	461	545	700	910
350	14	889	889	892	337	337	451	428	680	526	575	700	1190
400	16	991	991	994	387	387	493	450	730	568	575	700	1735
450	18	1092	1092	1095	438	438	539	473	784	629	575	700	2350
500	20	1194	1194	1200	489	489	592	580	900	682	579	700	3000
550	22	1295	1295	1305	540	540	621	590	890	711	579	700	4240
600	24	1397	1397	1407	591	591	653	600	1070	808	950	1400	4950
650	26	1448	1448	1461	635	635	725	635	1115	880	950	1400	5950
700	28	1549	1549	1562	686	686	790	700	1210	945	950	1400	7130
750	30	1651	1651	1664	736	736	850	775	1300	1005	950	1400	8730
800	32	1778	1778	1794	781	781	900	825	1380	1055	950	1400	10850
850	34	1930	1930	1946	832	832	940	880	1460	1095	950	1400	11930
900	36	2083	2083	2099	876	876	1000	930	1535	1155	950	1400	13950
1000	40	2337	2337	2337	978	978	1090	1025	1700	1360	1045	1400	16420
1050	42	2437	2437	2437	1022	1022	1140	1080	1775	1410	1045	1400	22350
1200	48	2540	2540	2540	1168	1168	1270	1225	2015	1570	1080	1400	32340

Class 600 Reduced Port

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50 x 40	2 x 1 1/2	292	292	295	38	51	—	85	180	212	450	—	33
80 x 50	3 x 2	356	356	359	51	77	—	85	180	212	600	—	48
100 x 80	4 x 3	432	432	435	77	102	—	112	230	228	1000	—	97
150 x 100	6 x 4	559	559	562	102	152	—	145	283	250	1000	—	181
200 x 150	8 x 6	660	660	664	152	203	281	220	325	336	340	700	340
250 x 200	10 x 8	787	787	791	203	254	340	260	415	395	340	700	625
300 x 250	12 x 10	838	838	841	254	305	355	311	505	415	545	700	760
350 x 250	14 x 10	889	889	892	254	337	355	311	505	415	545	700	1030
350 x 300	14 x 12	889	889	892	305	337	401	366	585	461	545	700	1230
400 x 300	16 x 12	991	991	994	305	387	401	366	585	461	545	700	1450
400 x 350	16 x 14	991	991	994	387	337	451	428	680	526	575	700	1430
450 x 400	18 x 16	1092	1092	1095	387	438	493	450	730	568	575	700	1940
500 x 400	20 x 16	1194	1194	1200	387	489	493	450	730	568	575	700	2380
500 x 450	20 x 18	1194	1194	1200	438	489	539	473	784	629	579	700	2700
600 x 500	24 x 20	1397	1397	1407	489	591	592	580	900	682	579	700	3660
750 x 600	30 x 24	1651	1651	1664	591	736	653	600	1070	808	950	1400	6150
900 x 750	36 x 30	2083	2083	2099	736	876	850	775	1300	1005	950	1400	10800



Class 900 Trunnion mounted top entry ball valve



Main Outline Dimensions

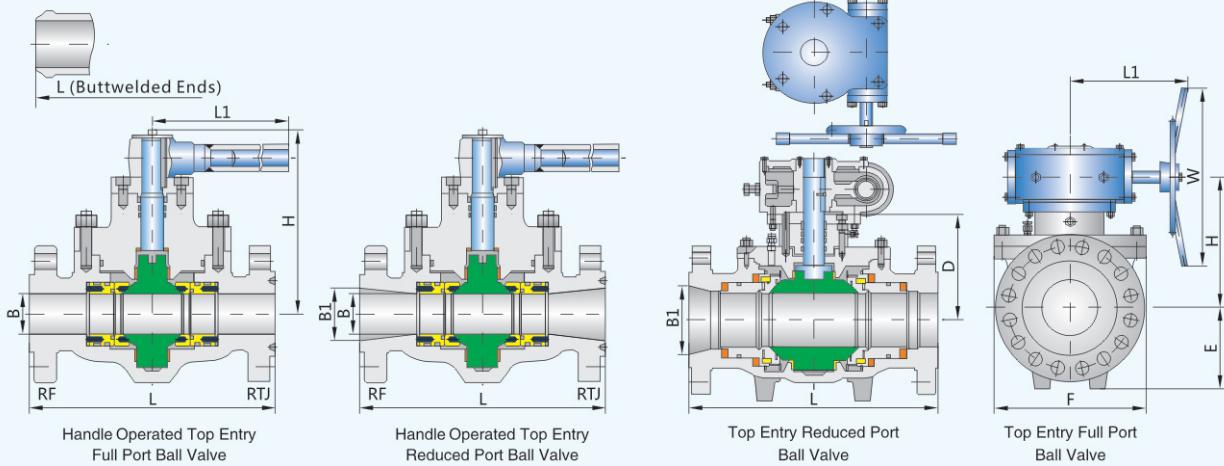
Class 900 Full Port

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50	2	368	368	371	51	51	–	85	195	215	600	–	52
80	3	381	381	384	77	77	–	112	240	193	1000	–	108
100	4	457	457	460	102	102	227	145	295	291	360	–	200
150	6	610	610	613	152	152	258	225	330	313	340	500	456
200	8	737	737	740	203	203	318	260	425	378	545	700	845
250	10	838	838	841	254	254	370	320	525	430	545	700	1070
300	12	965	965	968	305	305	418	375	600	493	575	700	1675
350	14	1029	1029	1038	324	324	470	440	695	545	575	700	1800
400	16	1130	1130	1140	375	375	515	465	750	605	579	700	2650
450	18	1219	1219	1232	425	425	560	485	800	650	579	700	3550
500	20	1321	1321	1334	473	473	620	600	925	775	950	1400	4530
600	24	1549	1549	1568	571	571	680	620	1095	835	950	1400	7450
650	26	1651	1651	1674	619	619	760	655	1145	915	950	1400	8925
700	28	1753	1753	1775	667	667	824	720	1240	979	950	1400	10695
750	30	1880	1880	1902	714	714	886	800	1335	1157	950	1400	13095
800	32	2032	2032	2054	762	762	938	848	1415	1209	1045	1400	16200
850	34	2159	2159	2188	810	810	980	905	1495	1251	1045	1400	17800
900	36	2286	2286	2315	857	857	1042	957	1570	1313	1045	1400	20930

Class 900 Reduced Port

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50 × 40	2 × 1 1/2	368	368	371	38	51	–	85	195	215	450	–	49
80 × 50	3 × 2	381	381	384	51	77	–	85	195	215	600	–	70
100 × 80	4 × 3	457	457	460	77	102	–	112	240	193	1000	–	146
150 × 100	6 × 4	610	610	613	102	152	227	145	295	291	360	–	273
200 × 150	8 × 6	737	737	740	152	203	258	225	330	313	340	500	573
250 × 200	10 × 8	838	838	841	203	254	318	260	425	378	545	700	943
300 × 250	12 × 10	965	965	968	254	305	370	320	525	430	545	700	1150
350 × 250	14 × 10	1029	1029	1038	254	324	370	320	525	430	545	700	1550
350 × 300	14 × 12	1029	1029	1038	324	305	418	375	600	493	575	700	1855
400 × 300	16 × 12	1130	1130	1140	305	375	418	375	600	493	575	700	2185
400 × 350	16 × 14	1130	1130	1140	324	375	470	440	695	545	575	700	2160
450 × 400	18 × 16	1219	1219	1232	375	425	515	465	750	605	579	700	2925
500 × 400	20 × 16	1321	1321	1334	375	473	515	465	750	605	579	700	3590
500 × 450	20 × 18	1321	1321	1334	425	473	560	485	800	650	579	700	4100
600 × 500	24 × 20	1549	1549	1568	473	571	620	600	925	775	950	1400	5520
750 × 600	30 × 24	1880	1880	1902	571	714	680	620	1095	835	950	1400	9225
900 × 750	36 × 30	2286	2286	2315	714	857	886	800	1335	1157	950	1400	15700

Class 1500 Trunnion mounted top entry ball valve



Main Outline Dimensions

Class 1500 Full Port

mm

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50	2	368	368	371	51	51	—	85	205	179	600	—	52
80	3	470	470	473	77	77	—	120	250	201	1000	—	152
100	4	546	546	549	102	102	240	155	310	295	340	700	280
150	6	705	705	711	146	146	273	240	370	333	545	700	640
200	8	832	832	841	194	194	335	280	455	410	575	700	1180
250	10	991	991	1000	241	241	385	340	565	460	575	700	1500
300	12	1130	1130	1146	289	289	436	400	670	511	575	700	2065
350	14	1257	1257	1276	317	317	485	467	730	575	579	700	2700
400	16	1384	1384	1407	362	362	530	495	790	620	579	700	3980
450	18	1537	1537	1559	407	407	585	520	840	740	950	1400	5325
500	20	1664	1664	1686	457	457	640	639	965	795	950	1400	6800
600	24	2043	2043	2071	534	534	708	640	1145	979	1045	1400	11900

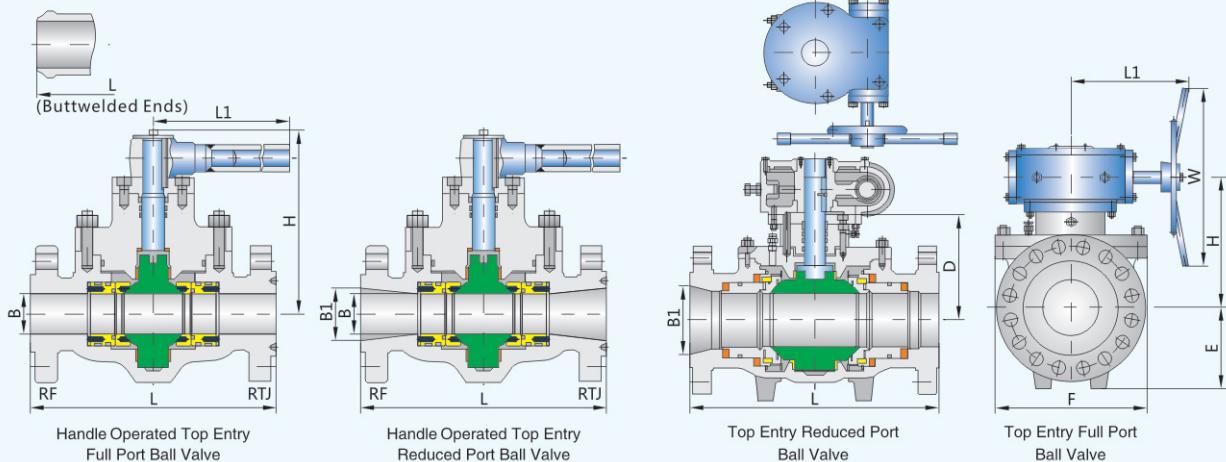
Class 1500 Reduced Port

mm

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50 x 40	2 x 1 1/2	368	368	371	38	51	—	85	205	179	450	—	49
80 x 50	3 x 2	470	470	473	51	77	—	85	205	179	600	—	98
100 x 80	4 x 3	546	546	549	77	102	—	120	250	201	1000	—	205
150 x 100	6 x 4	705	705	711	102	146	240	155	310	295	340	700	382
200 x 150	8 x 6	832	832	841	146	194	273	240	370	333	545	700	720
250 x 200	10 x 8	991	991	1000	194	241	335	280	455	410	575	700	1320
300 x 250	12 x 10	1130	1130	1146	241	289	385	340	565	460	575	700	1600
350 x 250	14 x 10	1257	1257	1276	241	317	385	340	565	460	575	700	2170
350 x 300	14 x 12	1257	1257	1276	317	317	436	400	565	460	575	700	2780
400 x 300	16 x 12	1384	1384	1407	289	362	436	400	670	511	575	700	3280
400 x 350	16 x 14	1384	1384	1407	317	362	485	467	670	511	579	700	3240



Class 2500 Trunnion mounted top entry ball valve



Main Outline Dimensions

Class 2500 Full Port

mm

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50	2	451	451	454	44.5	44.5	198	105	270	250	297	300	120
80	3	578	578	584	63.5	63.5	250	127	350	305	340	700	246
100	4	673	673	683	89	89	305	156	400	360	340	700	470
150	6	914	914	927	133	133	355	240	480	430	575	700	937
200	8	1022	1022	1038	181	181	438	280	530	513	575	700	1410
250	10	1270	1270	1292	226	226	530	365	720	620	590	700	2600
300	12	1422	1422	1445	267	267	590	430	860	740	505	620	4200

Class 2500 Reduced Port

mm

DN (mm)	NPS (in)	L			B	B1	D	E	F	H	L1	W	Weight (kg) RF
		RF	BW	RTJ									
50 × 40	2 × 1 1/2	451	451	454	38	44.5	—	93	250	150	600	—	80
80 × 50	3 × 2	578	578	584	44.5	63.5	198	105	270	250	297	300	160
100 × 80	4 × 3	673	673	683	63.5	89	250	127	350	305	340	700	300
150 × 100	6 × 4	914	914	927	89	133	305	156	400	360	340	700	670
200 × 150	8 × 6	1022	1022	1038	133	181	355	240	480	430	575	700	1150
250 × 200	10 × 8	1270	1270	1292	181	226	438	280	530	513	575	700	2100
300 × 250	12 × 10	1422	1422	1445	226	267	530	365	720	620	590	700	3300



■ Product structural features

Ball valve according to DIN is applicable to the cutting and connection of pipelines medium that are used in various industries such as petroleum, chemical industry, pharmacy, chemical fertilizer, electric power industry etc under nominal pressure of PN1.6~10MPa and working temperature within -196~250°C.

■ Main structural features

1. The product has indication of open–close and locking system;
2. The stem has function of anti–blow out, anti fire–safe and anti–static function;
3. The part material flange, and butting weld end dimension may be selected according to current operation condition and user's requirement, so that meeting the requirement of various engineering.

■ Technical specification

Structural Formation: Bolted, split body, side entry

Driving Manner: Hand–Operated

Driving Manner: Electric–Actuated

Design Standard: DIN3356

Face to Face: DIN3202, EN558–1

Flange Ends: DIN2543–2545, EN1092–1

Test & Inspection: DIN3230, ISO 5208

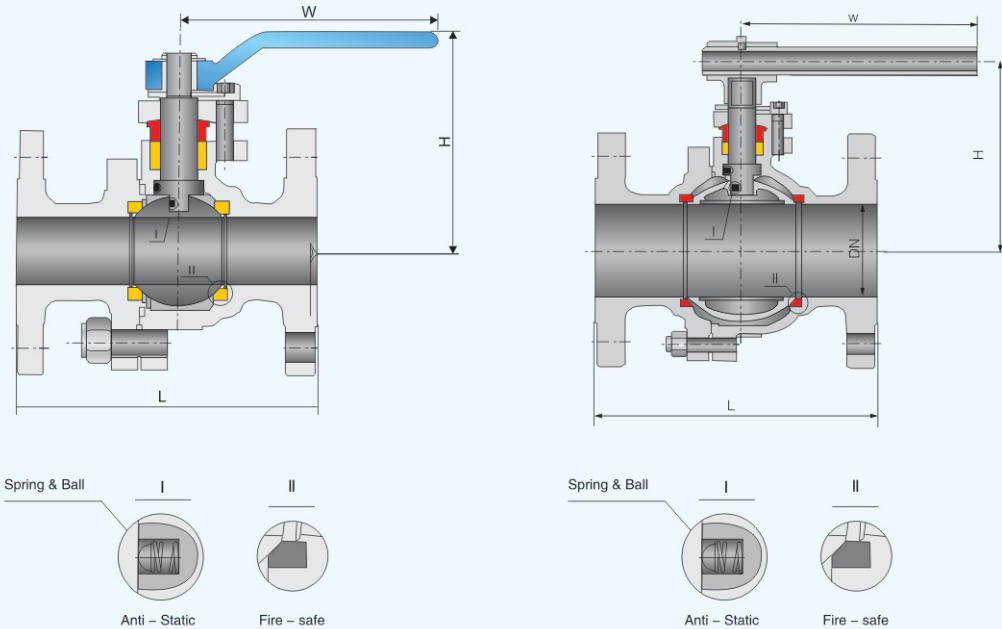
Notes: The size of serial, valve connecting flange can be design according to customers' requirement

■ Products performance specification

Nominal Pressure(MPa)	Shell Test (MPa)	Sealing Test (MPa)	Suitable Temp(°C)	Suitable Medium
1.6	2.4	1.76	-196~150°C	Water Oil & Gas
2.5	3.75	2.75		
4.0	6.0	4.4		
6.4	9.6	7.04		
10.0	10.5	11		



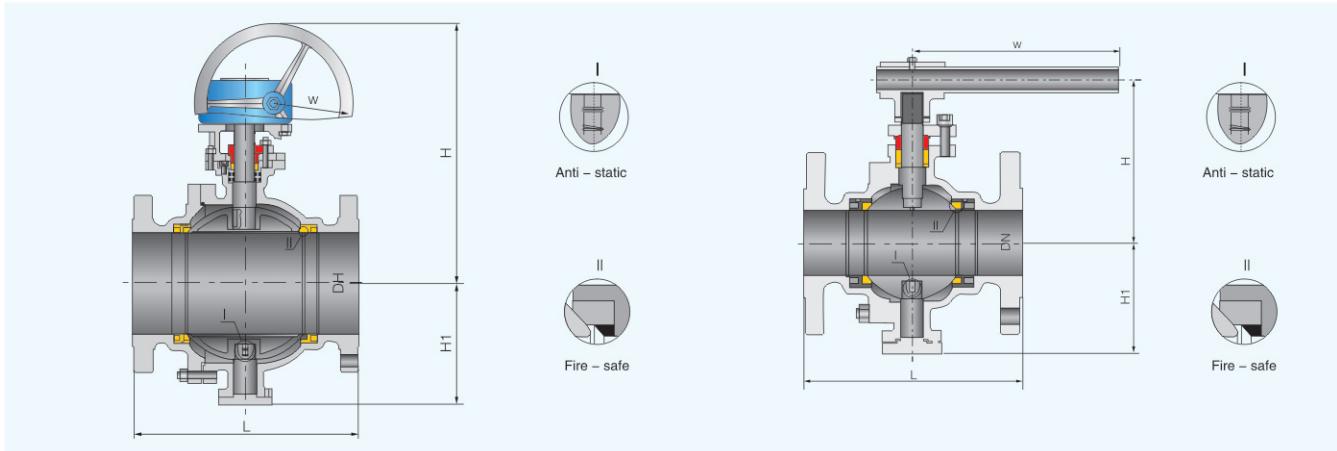
DIN Floating ball valve



■ Main dimensions of Floating Ball Valve

PN 16												
DN	15	20	25	32	40	50	65	80	100	125	150	200
L	130	140	150	165	180	200	220	250	280	320	360	400
H	78	84	95	150	150	190	195	215	250	285	330	370
H1	140	160	180	250	300	350	350	400	600	600	800	1000
WT(Kg)	3	4	5	10	14	20	25	30	40	65	73	85
PN 25												
DN	15	20	25	32	40	50	65	80	100	125	150	200
L	130	140	150	165	180	200	220	250	280	320	360	400
H	78	84	95	150	150	190	195	215	250	285	330	370
H1	140	160	180	250	300	350	350	400	600	600	800	1000
WT(Kg)	3	4	5	10	14	20	25	30	40	65	73	85
PN 40												
DN	15	20	25	32	40	50	65	80	100	125	150	200
L	130	140	150	165	180	200	220	250	280	403	403	502
H	82	100	104	150	150	190	195	215	250	260	275	335
H1	140	160	180	250	300	350	350	400	600	600	800	800
WT(Kg)	3	4	5	10	14	20	25	50	70	80	85	101

DIN Trunnion ball valve



Main dimensions of Trunnion Ball Valve

PN 16/25																			
DN		50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000
L	R F	179	191	203	229	356	394	457	533	610	686	762	846	914	1067	1245	1372	1524	1753
	B W	216	241	283	305	381	457	521	559	635	762	838	914	991	1143	1346	1524	1727	1880
H		107	125	152	178	300	330	398	495	580	625	670	698	840	1050	1100	1150	1247	1374
H1		102	114	127	152	184	219	273	360	395	430	470	550	580	700	800	950	1100	1200
W		230	400	400	650	1050	105	600	600	800	800	800	800	800	800	800	800	800	
WT(Kg)		12	16	22	35	58	74	205	322	460	576	864	1280	1600	3540	4500	5940	7540	9320
PN 40																			
DN		50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000
L	R F	216	241	283	305	381	403	502	568	648	762	838	914	991	1143	1346	1524	1727	1880
	B W	216	241	283	305	381	457	521	559	635	762	838	914	991	1143	1346	1524	1727	1880
H		107	125	152	178	300	330	398	495	580	625	670	698	840	1050	1100	1150	1247	1374
H1		102	114	127	152	184	219	273	360	395	430	470	550	580	700	800	950	1100	1200
W		230	400	400	650	1050	1050	600	600	800	800	800	800	800	800	800	800	800	
WT(Kg)		15	24	30	55	87	118	255	370	533	640	1030	1542	2100	4200	5300	7860	8684	10300
PN 64																			
DN		50	65	80	100	150	200	250	300	350	400	500	600	700					
L	R F	292	330	356	406	495	597	673	762	826	902	1054	1232	1397					
	H	108	155	197	235	300	374	445	512	550	615	810	1010	1180					
H1		114	124	133	159	250	294	395	445	500	530	660	800	900					
W		600	600	600	600	600	800	800	800	800	800	800	800	800					
WT(Kg)		23	35	49	91	192	355	640	880	1100	1540	2800	5300	5700					
PN 100																			
DN		50	65	80	100	150	200	250	300	350	400	500	600	700					
L	R F	292	330	356	432	559	660	787	838	889	991	1194	1397	1579					
	H	108	155	197	235	300	374	445	512	550	615	810	1010	1180					
H1		114	124	133	159	250	294	395	445	500	530	660	800	900					
W		600	600	600	600	600	800	800	800	800	800	800	800	800					
WT(Kg)		23	38	55	102	232	290	710	960	1700	1970	3250	5800	6700					