



# FLOWKS

How Quality Lasts!  
Oil&Gas&Power&Cryogenics

www.flowks.com sales@flowks.com

## FLOWKS

FLOWKS VALVE INC.

25211 Grogans Mill Rd, Ste 180, The Woodlands, Texas 77380, USA

Tel: +1-832-998-8996

E-mail: sales@flowks.com

http: //www.flowks.com

**API 6D  
BALL VALVE**



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Flowks Valve is a manufacturer specializing in all kinds of industrial valves. After years of experience in supplying valves for distributors and projects, Flowks Valve has been recognized as a skilled and responsible supplier. The reputation relies on our strict inspection procedure from CAD design, material purchasing, machining, assembling, hydraulic & air testing to packing & delivery. Each step is carried out by our experienced and dedicated craftsmen.

We offer various types of valves with different materials, including special materials like Monel, Inconel, duplex, copper, bronze, etc. We follow different standards such as API, ANSI, DIN, BS and JIS.

We are capable of supplying valves with special testings and treatments like radiographic examination (RT), ultrasonic examination (UT), liquid penetrant test (LPT), magnetic particle test (MPT), low temperature impact test and PMI. Special coating like FCC and TCC is also available. Our valves are widely used in different industries. We provide OEM service.

If you find anything interesting, please do not hesitate to contact us.

What you will get is quality products with competitive prices.

Look forward to having a chance to serve your esteemed company.



Modern and advanced testing tools with strict and scientific management, assures that each valve can be in full compliance with customer requirements.



PMI



Metallographic Test



Salt Spray Test



Tensile Test



Impact Test



Hardness Test



Ultrasonic Test (UT)  
03



Liquid Penetrant Test (LPT)



Radiographic Test (RT)

Flowks serves numerous domestic and foreign projects. We have good ability and experience in providing valves for severe services, designing valves for special applications, quick delivery of spare parts for replacement, etc.

Our valves are widely used in different industries.

- Onshore Oil & Gas
- Fine Chemicals
- LNG-Liquefied Natural Gas
- Water & Waste Water Treatment
- Metallurgy Industry
- Power Plant
- Marine Weapon
- Pulp & Paper
- Offshore Oil & Gas



Ship Building



Power Plant



Oil Production



LNG



Offshore Oil & Gas



Petro-chemical



### Product Range for Ball Valve:

Structure: integral body / split body, full bore / reduced bore, floating / trunnion mounted .

Material: carbon steel, stainless steel, duplex, aluminium bronze, MONEL, Inconel, etc

Standard: API 6D, API 608, BS 5351

Pressure: Class 150~4500

Size: 1/4"~56"

### Size Chart

SIZE		ASME CLASS						
in.	(mm)	150	300	400	600	900	1500	2500
2	(50)	●	●	●	●	●	●	●
3	(80)	●	●	●	●	●	●	■
4	(100)	●	●	●	●	●	■	■
6	(150)	●	■	■	■	■	■	■
8	(200)	●	■	■	■	■	■	■
10	(250)	■	■	■	■	■	■	■
12	(300)	■	■	■	■	■	■	■
14	(350)	■	■	■	■	■	■	■
16	(400)	■	■	■	■	■	■	■
18	(450)	■	■	■	■	■	■	■
20	(500)	■	■	■	■	■	■	■
22	(550)	■	■	■	■	■	■	■
24	(600)	■	■	■	■	■	■	■
26	(650)	■	■	■	■	■	■	■
28	(700)	■	■	■	■	■	■	■
30	(750)	■	■	■	■	■	■	■
32	(800)	■	■	■	■	■	■	■
34	(850)	■	■	■	■	■	■	■
36	(900)	■	■	■	■	■	■	■
38	(950)	■	■	■	■	■	■	■
40	(1000)	■	■	■	■	■	■	■
42	(1050)	■	■	■	■	■	■	■
48	(1200)	■	■	■	■	■	■	■
54	(1350)	■	■	■	■	■	■	■
56	(1400)	■	■	■	■	■	■	■
60	(1500)	■	■	■	■	■	■	■

Flowks trunnion mounted ball valves offer increased value by incorporating advanced design features.

### ■ TRUNNION-MOUNTED BALL

The ball is fixed and the seat rings are floating, free to move along the valve axis. Side load generated by the pressure acting on the ball is absorbed by bearings. At low pressure the seat sealing action is achieved by the thrust of the springs acting on the seat rings. As the pressure increases the fluid pressure pushes the seat rings against the ball.

### ■ INDEPENDENT BALL AND STEM

The ball and stem are independent to effect of the side thrust generated by acting on the ball.



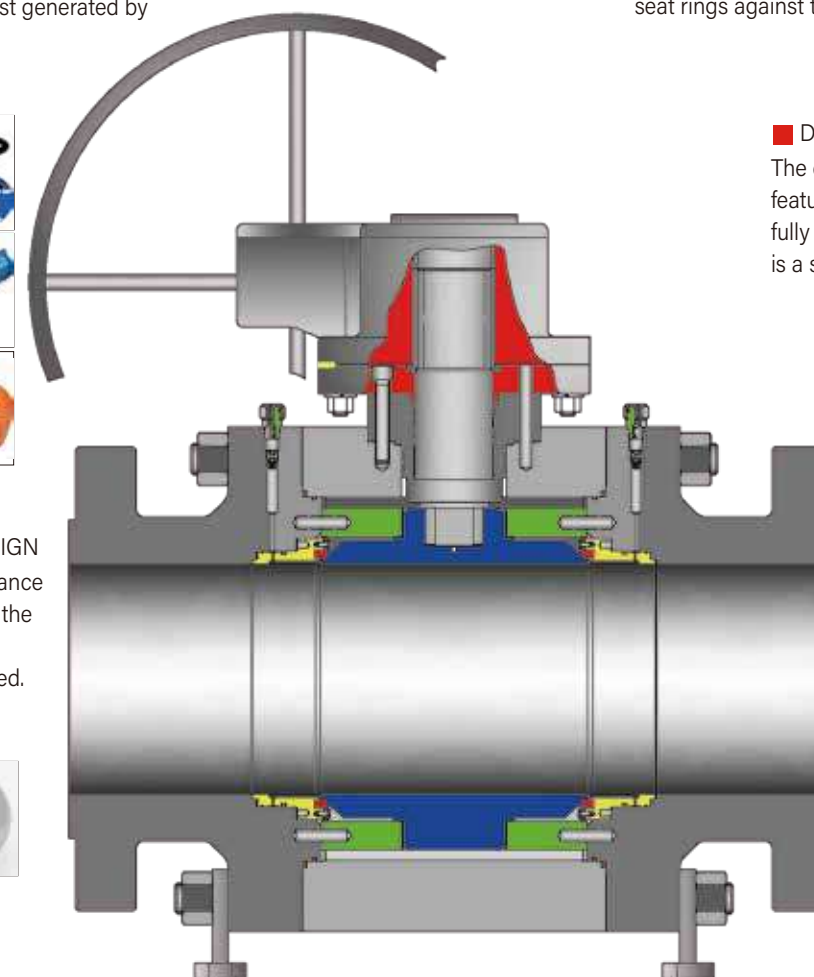
### ■ ANTI-STATIC DESIGN

The electrical conductance continuity between all the metallic components guaranteed and certified.



### ■ FLOATING SEAT RING

Two independent floating seat rings assure the bi-directional tightness of the valve. The seats are carefully designed to minimize the torque required to operate the valves without losing sealing power, which is assured from zero differential pressure to the valve's maximum rated pressure.



### ■ DOUBLE BLOCK & BLEED

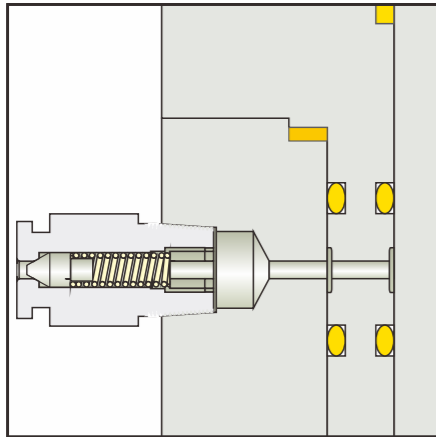
The double block and bleed feature, both with the ball in the fully closed or fully open position, is a standard feature.

### ■ LOW EMISSION VALVES

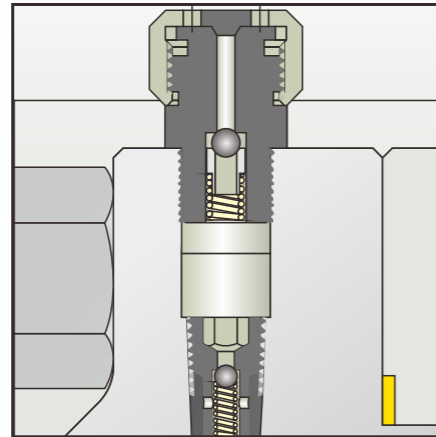
Accurate machining of stem and bonnet sealing surfaces ensures compliance with the most severe pollution control regulations.



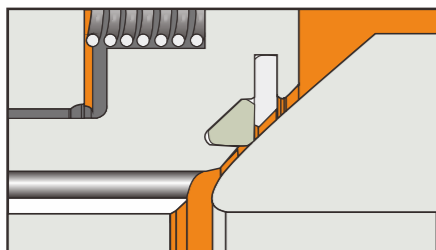
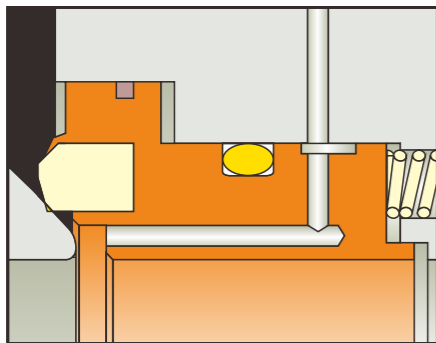
An emergency sealant injection is located between the upper O-rings and the graphite gasket.



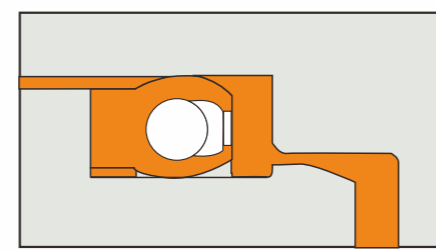
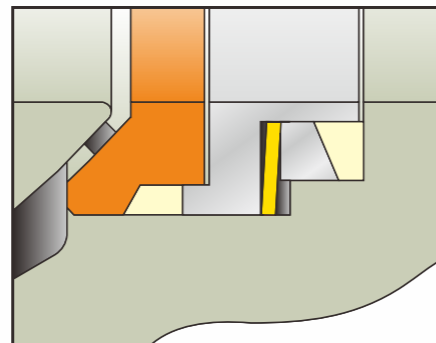
An emergency sealant injection is available in the seating area.



With a compensating seat design, the contact area between ball and seat ring is automatically enlarged under higher pressure from medium, in order to ensure sealing performance. When there's lower pressure from medium, the contact area is smaller, which achieves lower stem torque.



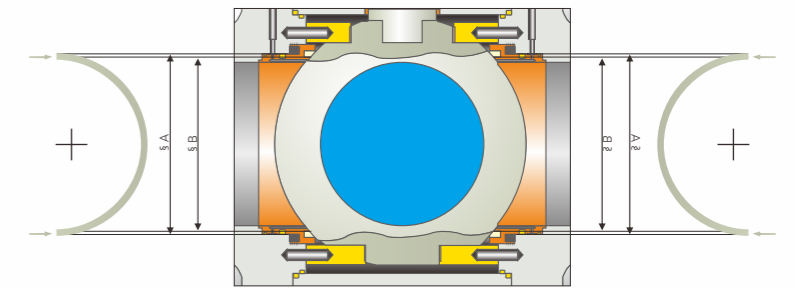
Metal-to-metal seat design is used for abrasive service or high temperature that resilient material is prohibited.



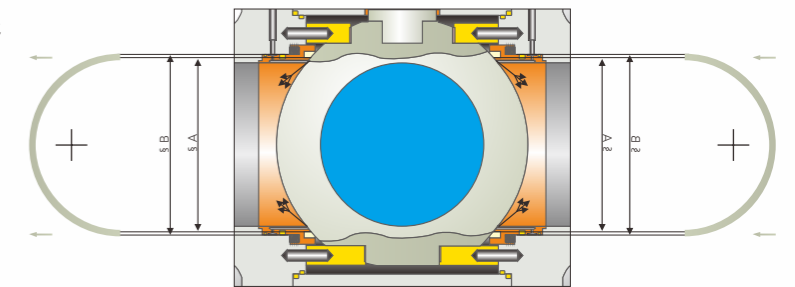
✓ **STANDARD SINGLE PISTON EFFECT (SELF-RELIEVING SEATS)**

Fluid pressure, both upstream and downstream, creates a resultant thrust that pushes the seat rings against the ball. Fluid pressure acting in the body cavity creates a resultant thrust that pushes the seat rings away from the ball. The single piston design permits the automatic release of any over pressure in the body cavity when the valve is in the fully open or fully closed position, therefore the seat rings are "self-relieving".

**SINGLE PISTON EFFECT**



PRESSURE ACTING UPSTREAM AND/OR DOWNSTREAM

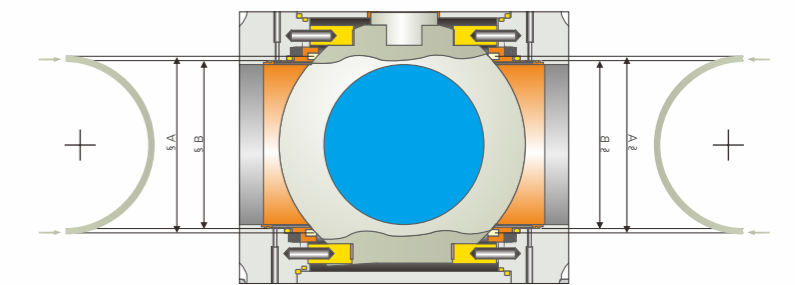


PRESSURE ACTING IN THE BODY CAVITY

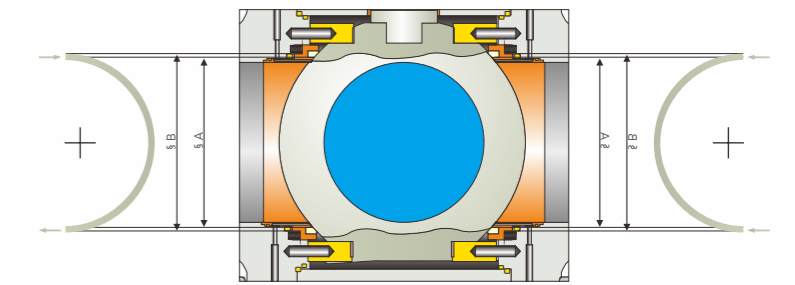
✓ **OPTIONAL DOUBLE PISTON EFFECT**

Fluid pressure, both upstream and downstream, as well as in the body cavity creates a resultant thrust that pushes the seat rings towards the ball. Valves with double piston effect seat rings require a relief valve in order to reduce the build-up of over pressure in the body cavity.

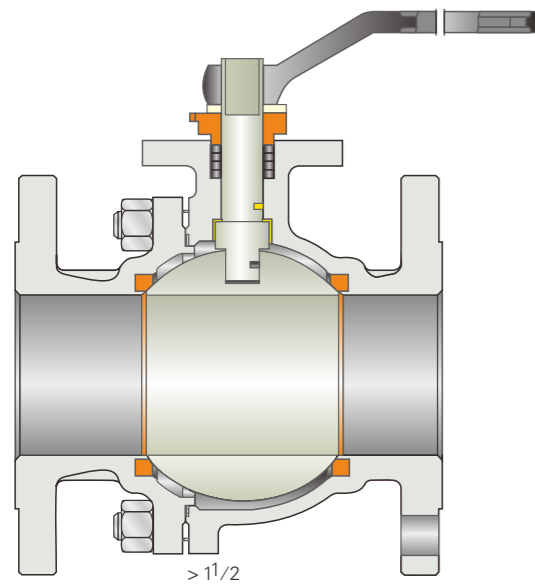
**DOUBLE PISTON EFFECT**



PRESSURE ACTING UPSTREAM AND/OR DOWNSTREAM



PRESSURE ACTING IN THE BODY CAVITY



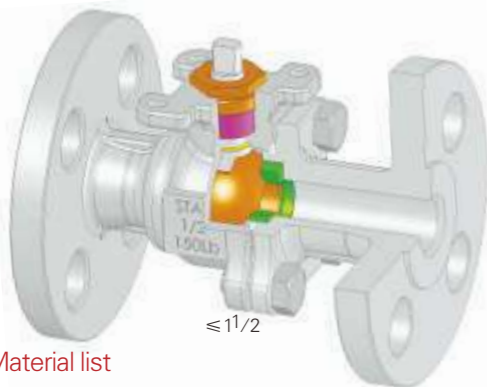
**CAST STEEL FLOATING BALL VALVE**

**Design description:**

Full port design, bolted bonnet, split body, floating ball type, blow-out proof stem, fire durable construction, anti-static device, stopper device, ISO 5211 mounting pad, flanged or butt welding ends. Available with worm gear operator.

**Standards**

Temp & pressure ratio: ASME B 16.34, BS 5351 API 6D  
 Wall thickness: ASME B 16.34, BS 5351  
 Bore dimension: API 6D, BS 5351  
 Face to face dimension: ASME B 16.10, BS 2080  
 Flange dimension: ASME B 16.5, BS 1560  
 Test & inspect : API 598, API 6D, BS 5146  
 Body material: WCA, WCB, WCC, LCB, LCC, C5, WC6, WC9, C12, CA15, CF8, CF8M, CF3, CF3M, etc.  
 Special material: 4A, C95500, C95800, M35-1, CN7M, CW-6MC, UNS N10276, etc.



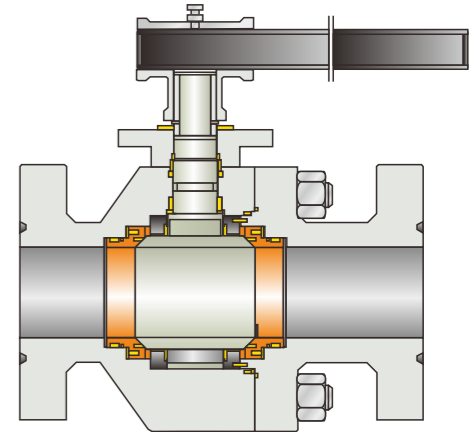
**Material list**

Item	Part name	Carbon steel	Low temp. steel	Stainless steel	Alu bronze	Duplex	Nickel alloy steel
1	Body	A216-WCB	A352-LCB	A351-CF8M	B148-C95800	A890 4A	A494 M35-1
2	Bonnet	A216-WCB	A352-LCB	A351-CF8M	B148-C95800	A890 4A	A494 M35-1
3	Ball	A182-F304	A182-F316	A182-F316	B148-C95800	A890 4A	Monel400
4	Stem	A276-F304	A276-F316	A276-F316	Monel400	A182 F51	Monel400
5	Seat ring	Graphite+304	Graphite+F316	RPTFE	RPTFE	RPTFE	RPTFE
6	Bonnet gasket	A193-B7	A193-L7	Graphite+F316	Graphite+625	Graphite+625	Graphite+625
7	Bonnet stud	A194-2H	A194-4	A193-B8M	A193-B8M	A193-B8M	A193-B8M
8	Bonnet stud nut	Graphite	Graphite	A194-8M	A194-8M	A194-8M	A194-8M
9	Packing	A216-WCB	A352-LCB	Graphite	Graphite	Graphite	Graphite
10	Gland flange	A193-B7	A193-L7	A351-CF8M	B148-C95800	A487 4A	Monel400
11	Gland bolt	Caron steel	Caron steel	A193-B8M	A193-B8M	A193-B8M	A193-B8M
12	Stop plate	AISI 1025	AISI 1025	Caron steel	Caron steel	Caron steel	Caron steel
13	Handle			AISI 1025	AISI 1025	AISI 1025	AISI 1025

↘ 105+ENP, F304, F316, Monel400, Inconel625, C95800  
 ↘ 304+PTFE, 316+PTFE, 304+Graphite, 316+graphite, 625+PTFE, 625+Graphite  
 ↘

**Material list**

Item	Part name	Carbon steel	Low temp. Steel	Stainless steel
1	Body	ASTM A105	ASTM A350 LF2	ASTM A182 F316
2	Bonnet	ASTM A105	ASTM A350 LF2	ASTM A182 F316
6	Sealant injection	ANSI 1045	ANSI 1045	A276-316
7	O-ring	VITON	VITON	VITON
8	O-ring	VITON	VITON	VITON
9	Seat retainer	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
10	Spring	PTEE	PTEE	PTEE
11	Ball	Inconel x-750	Inconel x-750	Inconel x-750
12	Sliding bearing	ASTM A 105+ENP	ASTM A350 LF2+ENP	ASTM A182 F316
13	Anti-static spring	304+PTEE	304+PTEE	316+PTEE
14	Gasket	A276-316	A276-316	A276-316
22	O-ring	A182-F6a	A182-F6a	17-4PH
24	O-ring	304+PTEE	304+PTEE	316+PTEE
25	Packing	VITON	VITON	VITON
26	Screw	VITON	VITON	VITON
30	Drain	Graphite	Graphite	Graphite
45	Backseat	ASTM A 193-B7/B7M	ASTM A 193-L7M	ASTM A 193-B8M
46	Back pin	ANSI 1045	ASTM A182 F316	ASTM A182 F316
49	Gland	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
50	Gasket	ANSI 1045	ASTM A350 LF2+ENP	ASTM A182 F316
51	Positioning pin	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
52	Packing bushing	304+Graphite	304+Graphite	316+Graphite
53	Cap	ANSI 1045	ANSI 1045	A276-316
54	Holder	VITON	VITON	VITON
55		ASTM A182-F6a	VITON	ASTM A182 F316
57		ASTM A105	ASTM A182-F6a	ASTM A182 F316
59		ANSI 1025	ASTM A350 LF2	A276-316



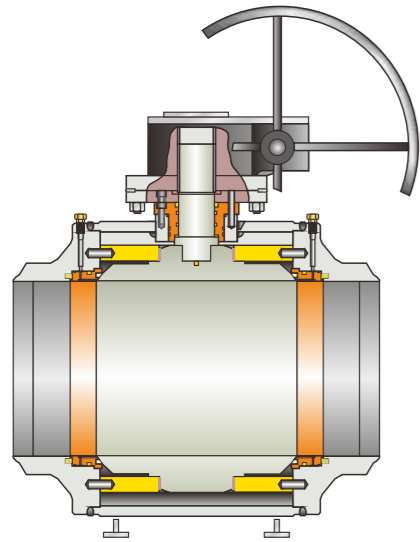
**Standards:**

Design & manufacture  
 API 6A 19th edition.  
 Flange dimension  
 API 6A 19th edition.  
 Face to face dimension  
 API 6A 19th edition.  
 Test & inspect  
 API 6A 19th edition.  
 NACE MR-01-75 complied.  
 Fire-safe design API 607.

Working Pressure : 2000psi-10000psi  
 Size: 1~13/16" — 9" (52~230)  
 Working Temperature: -46 ~ +121

Material: AA, BB, CC, DD, EE, FF, HH  
 PSL1~4 PRI~2





Standards:

Pressure temperature ratio:  
ASME B16.34, BS 5351  
Wall thickness:  
ASME B16.34, BS 5351  
Bore dimension:  
API 6D, BS 5351  
Face to face dimension:  
ASME B16.10, API 6D  
Ends dimension:  
ASME B16.5, BS 1560  
Test and inspect:  
API 6D, BS 5146  
Main materials:  
A105, LF2, F304, F304L, F316L

ALL WELDED BALL VALVE

Material list

Item	Part name	Carbon steel	Low temp. Steel	Stainless steel
1	Body	ASTM A105	ASTM A350 LF2	ASTM A182 F316
2	Bonnet	ASTM A105	ASTM A350 LF2	ASTM A182 F316
6	Sealant injection	ANSI 1045	ANSI 1045	A276-316
7	O-ring	VITON	VITON	VITON
8	O-ring	VITON	VITON	VITON
9	Seat retainer	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
10	Spring	PTEE	PTEE	PTEE
11	Ball	Inconel x-750	Inconel x-750	Inconel x-750
12	Sliding bearing	ASTM A 105+ENP	ASTM A350 LF2+ENP	ASTM A182 F316
13		304+PTEE	304+PTEE	316+PTEE
14	Anti-static spring	A276-316	A276-316	A276-316
22	Gasket	A182-F6a	A182-F6a	17-4PH
24	O-ring	304+PTEE	304+PTEE	316+PTEE
25	Packing	VITON	VITON	VITON
26	Screw	VITON	VITON	VITON
30	Drain	Graphite	VITON	Graphite
45	Backseat	ASTM A 193-B7/B7M	Graphite	ASTM A 193-B8M
46	Back pin	ANSI 1045	ASTM A 193-L7M	ASTM A182 F316
49	Gland	ASTM A105	ASTM A182 F316	ASTM A182 F316
50	Gasket	ANSI 1045	ASTM A350 LF2+ENP	ASTM A182 F316
51	Positioning pin	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
51	O-ring	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
52	Packing bushing	304+Graphite	ASTM A350 LF2+ENP	316+Graphite
53	Cap	ANSI 1045	304+Graphite	A276-316
54	Holder	VITON	ANSI 1045	VITON
55		ASTM A182-F6a	VITON	ASTM A182 F316
57		ASTM A105	ASTM A182-F6a	ASTM A182 F316
59		ANSI 1025	ASTM A350 LF2	A276-316
			ANSI 1025	

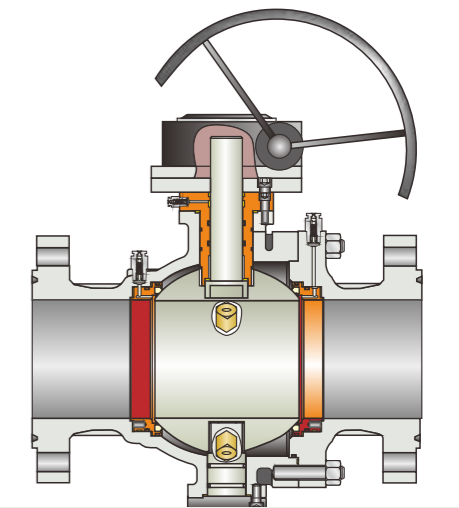
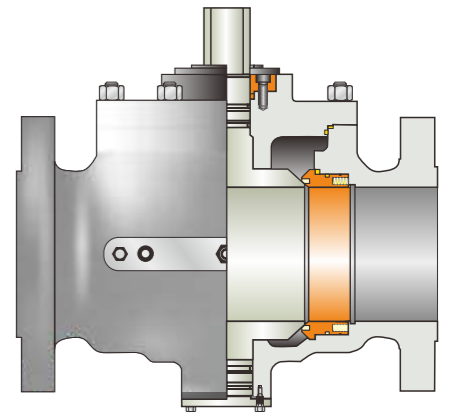
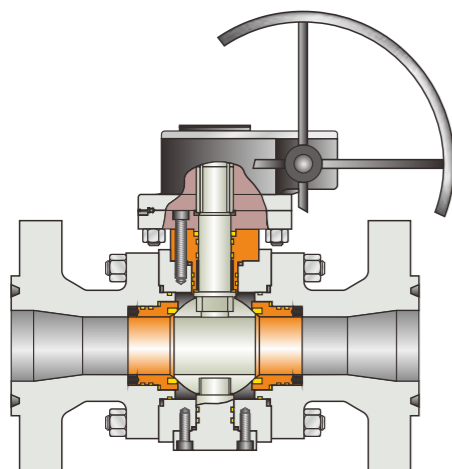


REDUCED BORE BALL VALVE

Name list

1	Body	15b	Operator flange/body socket screw
2	Closure	15d	Stop seat socket screw(1)(2)
3	Ball	16a	Seat spring
4	Seat	16b	Antistatic spring
5	Stem	17a	Stem greaser
6	Bearing retainer	17e	Vent bleeder valve
7	Stem cover	17g	Drain plug
8a	Operator flange	20b	Ball bushing
9a	Stem key	21a	Stem thrust washer
10b	Stem gasket	21b	Ball thrust washer
10c	Stem cover gasket	22a	Bearing retainer pin
11b	Stem O-ring	22b	Operator flange/body pin
11c	Stem cover O-ring	23a	Lifting lug(2)
11d	Seat O-ring	23b	Valve support (2)
15a	Stem cover/body socket screw(2)	24a	Stop seat washer(1)(2)

(1) Only for DN > 8" (2) Not visible in below drawing.



TOP ENTRY BALL VALVE

Design description:

Size: 2"~48"  
Class: 150~2500  
Top entry body  
Trunnion mounted ball, full & reduced bore  
Anti-static device  
Blowout proof stem  
Fire safe design  
Emergency sealant injection(6"& larger)

Standards

Design & manufacture: ASME B 16.34/API 6D  
Face to face dimension: ASME B 16.10/API 6D  
Flange dimension: ASME B 16.5  
BW dimension: ASME B 16.25  
Fire-safe: API 607/API 6FA  
Inspect & test: API 598  
NACE MR-01-75

TRUNNION MOUNTED BALL VALVE

Material list

Item	Part name	Carbon steel	18Cr-9Ni-2Mo	Low-temp steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet	A216-WCB	A351-CF8M	A352-LCB
3	Ball	A182-F3041	A182-F3161	A182-F3041
4	Stem	A276-304	A276-316	A276-304
5	Seat	A105+ENP	A182-F316	A350-LF2+ENP
6	Stem gasket		Claa filled PTEE	
7	Seat spring	Inconel X-750	Inconel X-750	A313-304
8	Seat O-ring	Viton	Viton	Viton
9	Stem O-ring	Viton	Viton	Viton
10	Bonnet gasket	Graphite+304(2)	Graphite+316(2)	Graphite+304(2)
11	Bonnet O-ring	Viton	Viton	Viton
12	Anti-static spring	17-7PH	17-7PH	17-7PH
13	Cap	A216-WCB	A182-F316	A182-F304
14	Bonnet stud	A193-B7	A193-B8	A320-E7
15	Bonnet nut	A194-2H	A194-8	A194-4
16	Trunnion	A276-304	A276-316	A276-304
17	Trunnion bearing	304+PTEE	316+PTEE	304+PTEE
18	Gland flange	A216-WCB	A351-CF8M	A352-LCB
19	Gland bolt	A193-B7	A193-B8	A193-B7
20	Stop plate	Carbon steel	Carbon steel+Zn	Carbon steell
21	Worm gear		Carbon steel	

Note:1) A 105+ENP optional; 2) Spiral wound construction

Design description:

Full bore design  
Bolted bonnet, split body  
Three piece body for 12"& above  
Trunnion mounted ball type  
Blowout proof stem  
Fire durable construction  
Anti static device  
Stopper device  
ISO 5211 mounting pad  
Flanged or butt welding ends  
Available with worm gear operator

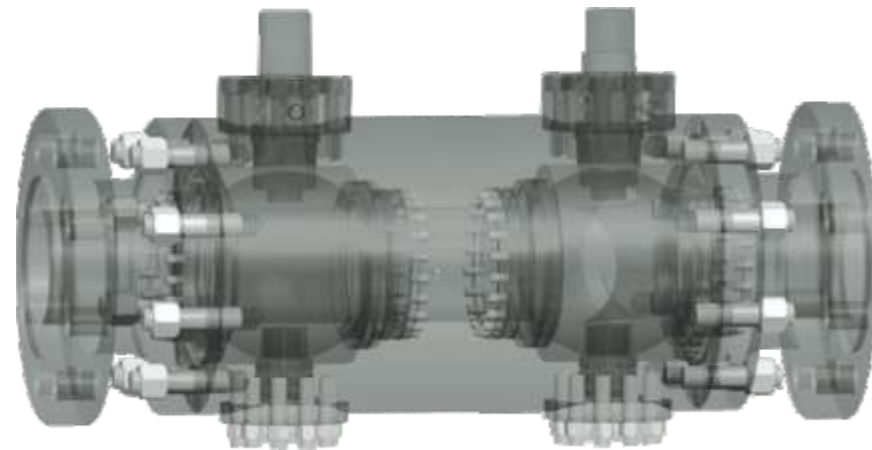
Standards:

Design & manufacture:  
API 608/API 6D/ISO 14313  
ASME B16.34  
Fire safe: API 607  
Anti-static: API 608  
Face to face dimension: ASME B16.10  
Flange dimension: ASME B16.5  
BW dimension: ASME B16.25  
Inspect & test: API 598

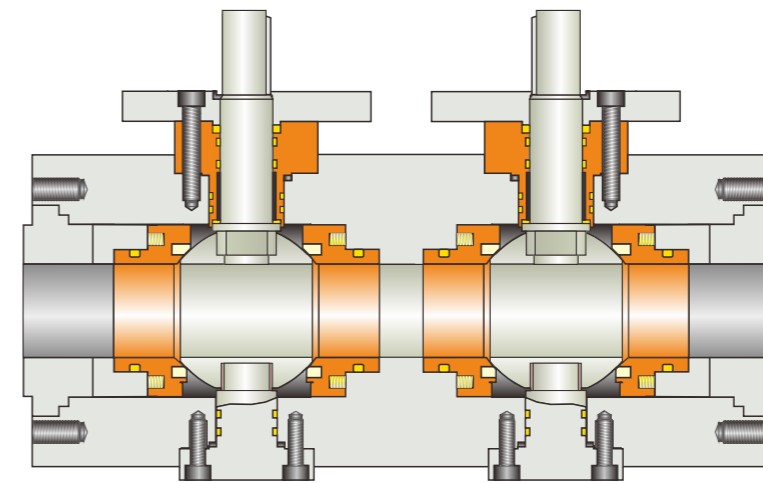


## COMBINED BALL VALVES SIDE ENTRY AND TOP ENTRY BOLTED BONNET

Double Block and Bleed Valves with double fixed balls hinged on supports, and floating metal or soft seats.  
Central Needle Vent Valve.  
Pressure Range: from ASME Class 150 to ASME Class 2500.  
Temperature range: from -46 to 450 .  
Side Entry Forged Steel Valves.  
On request, Top-Entry design.  
Low pressure loss through the valve.  
Low actuation torque.  
Full bore or Reduced bore.  
Different kinds of end connections (RF/RTJ Flanges, Butt Weld, Clamp Connection, Socket Welding).



Wide availability of materials depending on the specifications (carbon steel, stainless steel or Duplex steel for service in corrosive environments, Chrome-Molybdenum alloy steel for high temperature service, etc.).  
Materials with anti-corrosion properties according to NACE MR0175.  
On request, seat pocket area overlay, seal area overlay, or completed cladding on wetted surface (welded overlays in Inconel 625, Stainless Steel 316, etc., or Electroless Nickel Plating).  
Suitable for manual (wrench of gear) or motorized actuation (hydraulic, pneumatic, gas-over-oil or electric actuator).



### DOUBLE BLOCK AND BLEED BALL VALVE

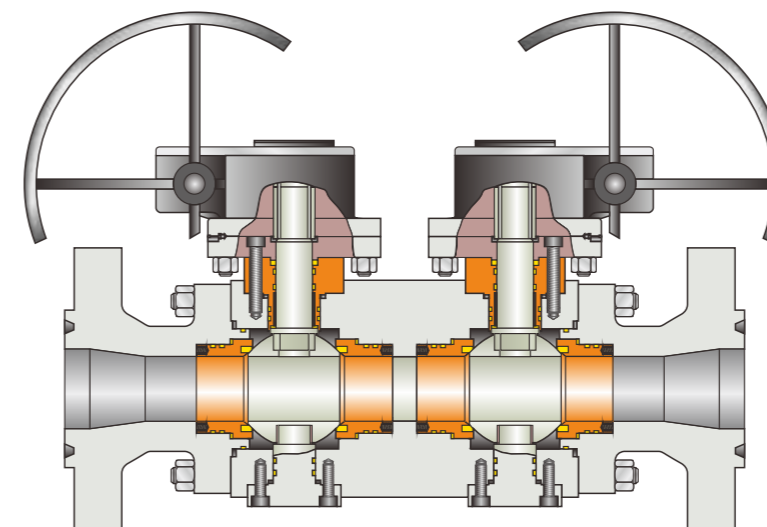
#### Standards:

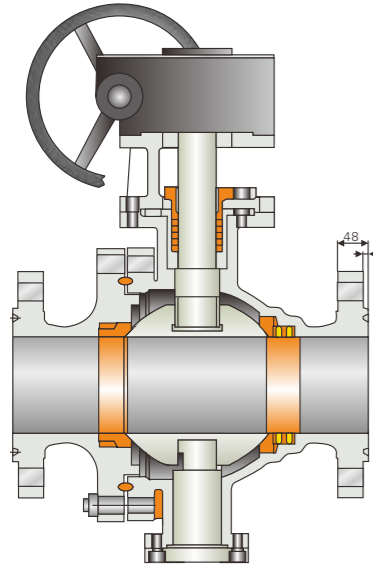
Pressure temperature ratio:  
ASME B16.34  
Wall thickness:  
ASME B16.34, BS 5351  
Bore dimension:  
API 6D, BS 5351  
Face to face dimension:  
MFR standard  
Ends dimension:  
ASME B16.5, BS 1560  
Test and inspect:  
API 6D, BS 5146  
Main materials:  
A105, LF2, F304, F304L, F316L

### ALL WELDED BALL VALVE

#### Material list

Item	Part name	Carbon steel	Low temp. Steel	Stainless steel
1	Body	ASTM A105	<b>ASTM A350 LF2</b>	ASTM A182 F316
2	Bonnet	ASTM A105	<b>ASTM A350 LF2</b>	ASTM A182 F316
6	Sealant injection	ANSI 1045	<b>ANSI 1045</b>	A276-316
7	O-ring	VITON	<b>VITON</b>	VITON
8	O-ring	VITON	<b>VITON</b>	VITON
9	Seat retainer	ASTM A105	<b>ASTM A350 LF2+ENP</b>	ASTM A182 F316
10	Ring	PTEE	<b>PTEE</b>	PTEE
11	Spring	Inconel x-750	<b>Inconel x-750</b>	Inconel x-750
12	Sliding bearing	ASTM A 105+ENP	<b>ASTM A350 LF2+ENP</b>	ASTM A182 F316
13	Stop	304+PTEE	<b>304+PTEE</b>	316+PTEE
14	Anti-static spring	A276-316	<b>A276-316</b>	A276-316
22	Gasket	A182-F6a	<b>A182-F6a</b>	17-4PH
24	O-ring	304+PTEE	<b>304+PTEE</b>	316+PTEE
25	Packing	VITON	<b>VITON</b>	VITON
26	Screw	VITON	<b>VITON</b>	VITON
30	Drain	Graphite	<b>Graphite</b>	Graphite
45	Backseat	ASTM A 193-B7/B7M	<b>ASTM A 193-L7M</b>	ASTM A 193-B8M
46	Back pin	ANSI 1045	<b>ASTM A182 F316</b>	ASTM A182 F316
49	Gland	ASTM A105	<b>ASTM A350 LF2+ENP</b>	ASTM A182 F316
49	Gasket	ANSI 1045	<b>ASTM A350 LF2+ENP</b>	ASTM A182 F316
50	Positioning pin	ASTM A105	<b>ASTM A350 LF2+ENP</b>	ASTM A182 F316
51	O-ring	304+Graphite	<b>ASTM A350 LF2+ENP</b>	316+Graphite
52	Packing bushing	ANSI 1045	<b>304+Graphite</b>	A276-316
53	Cap	ANSI 1045	<b>ANSI 1045</b>	VITON
54	Holder	VITON	<b>VITON</b>	ASTM A182 F316
55		ASTM A182-F6a	<b>ASTM A182-F6a</b>	ASTM A182 F316
57		ASTM A105	<b>ASTM A350 LF2</b>	ASTM A182 F316
59		ANSI 1025	<b>ANSI 1025</b>	A276-316





**~ BELLOW SEALED BALL VEALVE**

**~ Standard**

Pressure temperature ratio: ASME B16.34  
 Wall thickness: ASME B16.34, BS5351  
 Bore dimension: API 6D, BS5351  
 Face to face dimension: ASME B16.10, API 6D  
 Ends dimension: ASME B16.5, BS1560  
 Inspect: API 6D, BS5146  
 Main materials: A105, LF2, F304、F304L, F316L

**~ Material list**

Position	Part name	Material
1	Hexagon nut	ASTM A193 B8M
2	Gasket	ASTM A182 304
3	Trunnion	ASTM A182 304
4	Gasket	ASTM A182 304
5	Bolt	ASTM A193 B8M
6	Spring	INCONEL 750
7	Seat	ASTM A182 304
8	Line	17-7 PH
9	Bonnet	ASTM A351 CF8
10	Retainer	ASTM A182 304
11	Nut	ASTM A194 8M
12	Nut	ASTM A194 8M
13	Worm gear	Assembly
14	Yoke	ASTM A351 CF8
15	Gland	ASTM A351 CF8
16	Body	ASTM A351 CF8
17	Stem	ASTM A351 CF8
18	Ball	ASTM A182 304+STL
19	Gasket	ASTM A182 304
20	Steam Connector	ASTM A182 304
21	Steam Connector	ASTM A182 304
22	Bolt	ASTM A193 B8M
23	Packing	Graphite+304
24	Steam Connector	ASTM A182 304

**~ METAL SEAT FLOATING BALL VALVE**

**~ Material list**

Item	Part name	Carbon steel	High temperature steel	High temperature steel	Stainless steel
1	Body	A216-WCB	A217-WC6	A217-WC9	A351-CF8M
2	Bonnet	A216-WCB	A217-WC6	A217-WC9	A351-CF8M
3	Ball	A182-F6+STL	A182-F304+STL	A182-F304+STL	A182-F316+HVOF
4	Stem	A276-F6	A276-F304	A276-F304	A276-F316
5	Seat ring	A182 F6+STL	A182 F304+STL	A182 F304+STL	A182 F316+HVOF
6	Bonnet gasket	Graphite+304	Graphite+304	Graphite+304	Graphite+F316
7	Bonnet stud	A193-B7	A193-B16	A193-B16	A193-B8M
8	Bonnet stud nut	A194-2H	A194-4	A194-4	A194-8M
9	Packing	Graphite	Graphite	Graphite	Graphite
10	Gland flange	A216-WCB	A217-WC6	A217-WC9	A351-CF8M
11	Gland bolt	A193-B7	A193-B16	A193-B16	A193-B8M
12	Stop plate	Caron steel	Caron steel	Caron steel	Caron steel
13	Handle	AISI 1025	AISI 1025	AISI 1025	AISI 1025

**~ Products overview**

Ball valve for compressed natural gas tanker is pneumatic operated. It is much better in performance than common tanker ball valve. With a slide seat ring, the sealing performance can be ensured at the moment when valve is opened. It can be also used in liquefied air tanker and liquefied argon tanker.

**~ Standards:**

Design & manufacture: DIN EN 1983-2006.  
 NPT dimension: ASME B 1.20.1.  
 Pressure-temperature ratio: ASME B 16.34.  
 Inspect & test: API 598.

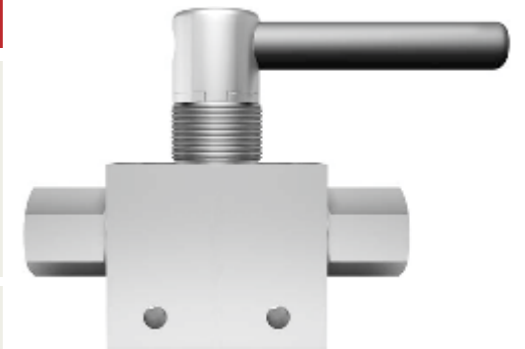


1	Side body	ASTM A182M F316
2	Middle body	ASTM A182M F316
3	Ball	ASTM A182M F316
4	Seat ring	ASTM A182M F316
5	O-ring	NBR
6	Stem	ASTM A182M F316
7	Pin	ASTM A276 Gr.316
8	Stop block	ASTM A276 Gr.316
9	O-ring	NBR
10	Lever	CF8

**HIGH PRESSURE BALL VALVE**

**~ Products overview**

Flowks trunnion mounted high pressure ball valve offers low torque in a compact design, providing positive shutoff in applications up to 15000 psig(1034 bar).



**~ Other features include:**

- ~ Flow coefficients (Cv) from 0.44 to 11.3
- ~ Gaugeable Swagelok medium-pressure tube fitting and female NPT end connections
- ~ 2-way (on-off) and 3-way (switching) flow patterns
- ~ Nitrogen seat tested and shell tested to ensure product integrity
- ~ Positionable bar handle and ISO 5211-compliant pneumatic actuators
- ~ Manual valve panel and shoulder mounting are available as options.

**~ Pressure-Temperature Ratio**

Temperature (°F)	O-Ring Material		
	Fluorocarbon FKM	HNBR	Per- fluorocarbon FFKM
0(-17)to250(121)	15 000(1034)	15 000(1034)	-
20(-6)to185(85)	-	-	15 000(1034)

Working Pressure,psig(bar)

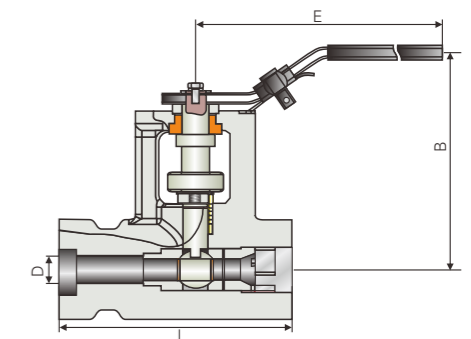
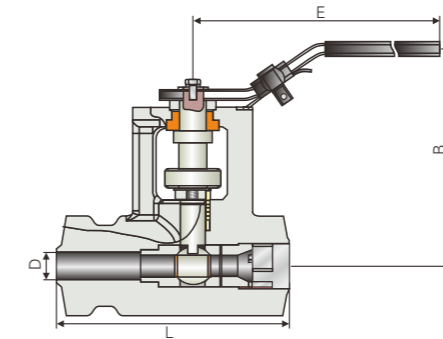


### Application

- Main water feeding pipeline drain
- Main steam pipeline drain
- Inner cylinder drain
- Outer cylinder drain
- Reheat connecting pipe drain
- Reheater inlet drain
- Reheater desalt drain
- Primary economizer recirculation flow element
- Primary main water feeding flow element
- Main steam valve inlet pressure (right)
- Reheat steam pressure (left, right)
- Regulating stage outlet pressure
- Superheater secondary desalt pipeline
- Exhaustion economizer vent

### Design description:

1. Zero Leakage: Flowks guarantees Zero Leakage.
2. One-piece Forged Steel Design: The design is one piece and has no body or yoke joints thereby eliminating leakage.
3. Double Stem Blow out Protection: A special designed gland bushing ensures the correct alignment of stem and at the same time prevents loading the stem to the point where it could push the ball through the seat.
4. Reliable packing gland design and the use of belle ville springs provide long lasting, maintenance free, stem packing seal and tightness.
5. Isolated Body Cavity: The ball and seat are in full constant contact, isolating the body cavity from flow to prevent build-up of solids.
6. Quarter Turn Valve: Less torque is required to operate the valve due to a top and bottom fully guided stem and life-lubricated thrust bearing which reduces torque. It's quarter turn operation and zero leakage make this valve ideal for Emergency Shut Down applications.
7. Locking Device: The locking device prevents mis operation and ensures that the valve opens and closes at the cone position.
8. Application of HVOF Coatings: The ball and seat are chromium or tungsten carbide impregnated by HVOF coating techniques with surface hardness of Rc 68–72 and are mate lapped to a very high RMS finish (0.05 micro meters RMS), providing Zero Leakage, and long, maintenance free service life.
9. Inconel 718 Spring: The Belleville Spring maintains tight constant contact between seats and ball, there fore protecting seats in an open and closed position and allowing valve to seal bubble tight under both high and low pressure operations.
10. Belleville Spring Guide Sleeve: In case of incorrect installation or reverse flow pressure, the design prevents the ball and the upstream seat from blowing out.



### Material list

Item	Description	Materials for Class 900# 1500# 2500# 3200#				Materials for Class 3500# 4500#			
		A105	F22/A182	F91/A182	F316 A182	A105	F22/A182	F91/A182	F316/A182
1	Body	A105	F22	F91	F316	A105	F22	F91	F316
2	Spring	Inconel 718				Inconel 718			
3	Upstream Seat	410 SS	431 SS	431 SS		431 SS			
4	Ball	F6a.Cl.3/H.F	Gr.660/H.F	Inconel 718		Inconel 718			
5	Seat	F6a.Cl.3/H.F	Gr.660/H.F	Inconel 718		Inconel 718			
6	Stem	F6a.Cl.3/A182	Gr.660/A638	Inconel 718		Inconel 718			
7	Packing rings	431 SS				431 SS			
8	Packing	Graphite + 316 SS				Graphite + 316 SS			
9	Clamp	431 SS				431 SS			
10	Gland	F6a.Cl.3				F6a.Cl.3			
11	Stud	B8M/A 193				B8M/A 193			
12	Nut	8M/A 194				8M/A 194			
13	Handle	CS				CS			

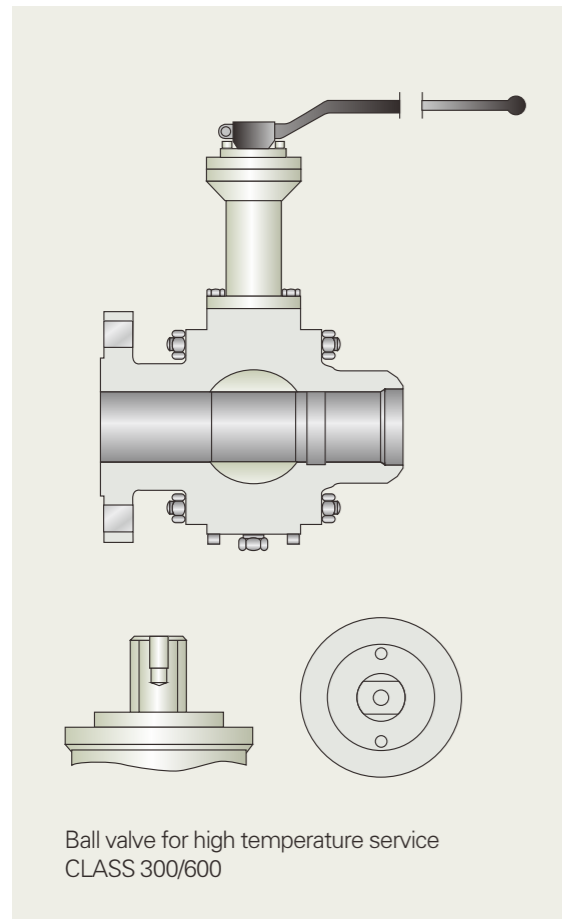
### CLASS 900#-3200#

NPS	Dimensions	D Bore	B(in)	E(in)	SW	L(in)		Weight(Lb)	
						BW	SW	BW	
1/2, 3/4, 1, 1-1/4, 1-1/2		0.65	6.67	11.90	6.83	6.83	17.85	18.07	
2, 2-1/2		1.00	8.81	12.87	8.89	8.89	57.97	59.07	
3		1.40	10.80	17.36	10.73	10.73	122.10	122.10	
4		1.40	10.80	17.36	10.73	10.73	120.78	120.78	

### CLASS 3500#-4500#

NPS	Dimensions	D Bore	B(in)	E(in)	SW	L(in)		Weight(Lb)	
						BW	SW	BW	
1/2, 3/4, 1, 1-1/4, 1-1/2		0.65	8.81	12.87	8.89	8.89	55.76	56.86	
2, 2-1/2		1.00	10.80	17.36	10.73	10.73	121.88	118.35	

\* For Product with special size or class, please consult with the factory.



Ball valve for high temperature service CLASS 300/600

Material list

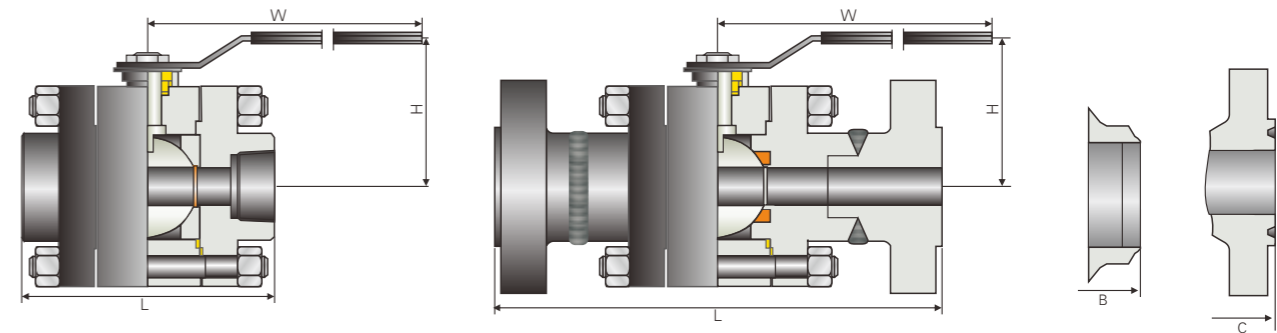
Item	Description	Material
1	Body 1	A105
2	Body 2	A105
3	Ball	A351 CF8M+ Cr-Carbide
5	Stem	A276 XM-19
6	Stem seal	AISI 316 Nitrided
7	Stem packing 1	Graphite
8	Gland packing	AISI 316
9	Spring washer	Inconel X750
13	Cover bolt	A4-70
14	Body seal 1	Graphite
34	Body seal 2	Graphite
41	Stud	A193 B7M
42	Nut	A194 2HM
44a	Ring seat 1	AISI 316
45	Spring	Inconel X750
46	Seat seal	Graphite
47	Metal seat	AISI 316+ Cr-Carbide
68	Stem ext. Casing	AISI 304
69	Stem extension	AISI 304
71	Extension ring	Graphite
75	Extension bolt	A4-70
86	Extension bolt	A350 LF2
109	Drain plug	Graphite
110	Cover seal	AISI 316 Nitrided
127	Subjection ring seal	Carbon graphite
128	Stem bearing	AISI 316
151	Body cover 2	A-105
163	Body cover 1	A4-70
165	Body cover 2 bolt	Carbon graphite
	Stem bearing	

Design description

- ~ Trunnion mounted
- ~ (DBB) Double block & bleed (DBB)
- ~ Three piece construction
- ~ Cavity pressure relief
- ~ Bidirectional Sealing
- ~ Full bore
- ~ Stem with double packing and live loaded system
- ~ Anti blowout stem
- ~ Anti static stem
- ~ Metal seated
- ~ Spring loaded seats
- ~ Optionally with protected seats

Standards

- ~ BS 5351 EN ISO 17292
- ~ ISO 5211 / ISO 5211 mounting pad
- ~ B16.10 / Face to Face B16.10
- ~ Flanges acc. B 16.5
- ~ BW acc. B 16.25
- ~ Fire safe acc. ISO 5208, BS 6755
- ~ Testing acc. ISO 12266 and API 598
- ~ Material acc. ACE MR01-75



CLASS 800-CLASS 1500, BS 5351

Specification(NPS)	(F.P)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L1	92	92	92	111	127	140	152	152
Handwheel Diameter	B	108	108	108	146	178	178	200	200
Valve center line to top height	H	51	51	51	108	81	85	105	105
Bore diameter	d	CL800	9	13	18	23	28	35	49
		CL1500	9	13	19	25	32	38	49
Weight		2.5	2.4	2.3	3.4	5.4	6.4	11	13
		2.5	2.4	2.5	3.7	5.8	6.8	11.5	13.7

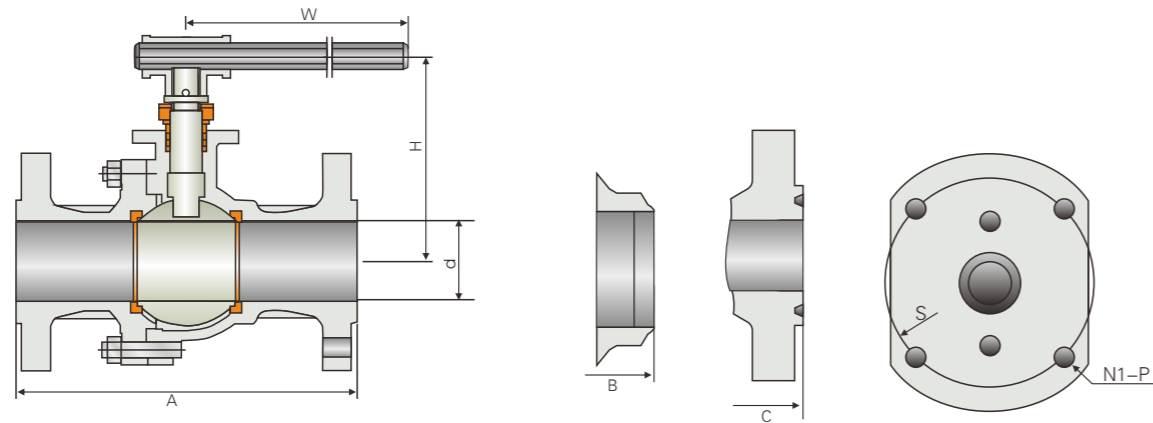
CLASS 2500, BS 5351

Specification(NPS)	(F.P)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L1	-	-	110	125	135	-	160	-
Handwheel Diameter	B	-	-	170	230	230	-	310	-
Valve center line to top height	H	-	-	95	110	125	-	-	-
Bore diameter		-	-	13	19	25	-	38	-
Weight		-	-	2.7	4.1	6.3	-	12	-

CLASS 1500-CLASS 2500

Specification(NPS)	(F.P)	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L1	CL1500	216	229	254	279	368
		CL2500	264	273	308	349	451
Handwheel Diameter	B	CL1500	230	230	350	280	400
		CL2500	280	280	95	350	400
Valve center line to top height	H	CL1500	75	85	85	105	130
		CL2500	75	85	95	105	130
Bore diameter	d	CL1500	13	19	25	32	49
		CL2500	13	19	25	32	42
Weight		CL1500	2.5	5.8	5.8	6.8	13.7
		CL2500	2.7	6.3	6.3	6.8	15

DN	CLASS	L	E	A	B	C	F	H	G	V	X	Y	Z	ISO 5211	No of Holes	d
2"	600	292	165	92	127	35	98	293	138	22	17	20	30	F07	8	19
3"	600	356	210	127	168.5	40	131	350	187	28	22	22	40	F10	8	22



CLASS 150 CAST STEEL FLOATING BALL VALVE

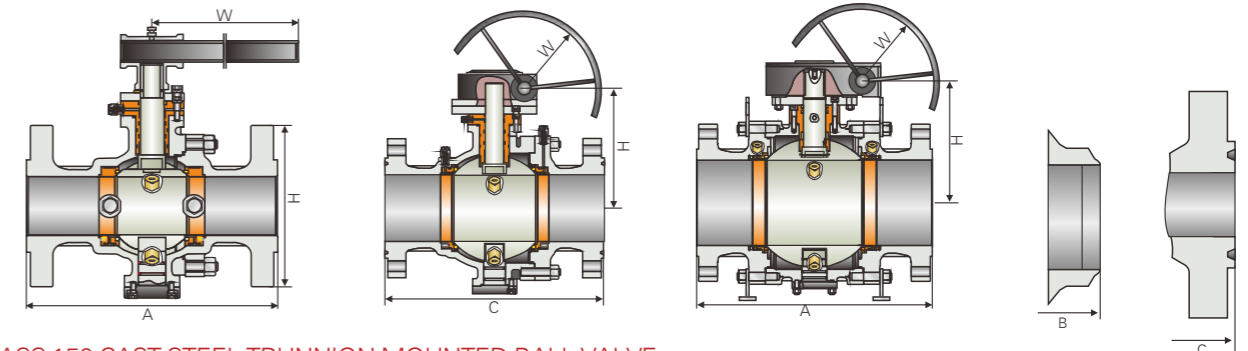
DN	NPS	d	RF(A)	BW(B)	Weight	N.m	H	W	d1	S	N1-P
15	1/2	13	108	140	2.0	3	59	130	15	42	4-φ5
20	3/4	19	117	152	2.75	5	65	130	20	42	4-φ5
25	1	25	127	165	4.0	11	79	130	25	42	4-φ5
32	1 1/4	32	140	178	6.0	14	93	140	32	50	4-φ6
40	1 1/2	38	165	190	8.5	16	122	250	40	70	4-φ8
50	2	49	178	216	11.0	25	130	250	49	70	4-φ8
65	2 1/2	62	191	241	17.5	50	170	400	62	70	4-φ10
80	3	74	203	283	23.0	65	200	400	74	102	4-φ10
100	4	100	229	305	34.0	125	220	450	125	102	4-φ12
150	6	150	394	403	78.0	410	295	450	150	125	4-φ12
200	8	201	457	419	170.0	700	340	1000	200	125	
250	10	250	533	457		1105	365				

CLASS 300 CAST STEEL FLOATING BALL VALVE

DN	NPS	d	RF(A)	BW(B)	Weight	N.m	H	W	d1	S	N1-P
15	1/2	13	140	140	2.5	7	59	130	15	42	4-φ5
20	3/4	19	152	152	3.7	12	65	130	20	42	4-φ5
25	1	25	165	165	5.2	26	79	130	25	42	4-φ5
32	1 1/4	32	178	178	8.0	32	93	140	32	50	4-φ6
40	1 1/2	38	191	191	11.0	38	122	250	40	70	4-φ8
50	2	49	216	216	15.0	60	130	250	49	70	4-φ8
65	2 1/2	62	241	241	23.0	120	170	400	62	70	4-φ8
80	3	74	283	283	31.0	160	200	400	74	102	4-φ10
100	4	100	305	305	46.0	280	220	450	125	102	4-φ10
150	6	150	403	403	105.0	950	295	450	150	125	4-φ12
200	8	201	502	521	260.0	1550	340	1000	200	125	4-φ12

CLASS 600 CAST STEEL FLOATING BALL VALVE

DN	NPS	d	RF(A)	BW(B)	Weight	N.m	H	W	d1	S	N1-P
15	1/2	13	165	165	--	19	59	140	15	42	4-φ5
20	3/4	19	190	190	--	35	65	140	20	42	4-φ5
25	1	25	216	216	--	68	79	140	25	42	4-φ5
32	1 1/4	32	229	229	--	99	93	180	32	50	4-φ6
40	1 1/2	38	241	241	--	130	122	320	40	70	4-φ8
50	2	49	292	292	23.0	190	130	320	49	102	4-φ10
65	2 1/2	62	330	330	37.0	360	170	600	62	102	4-φ10
80	3	74	356	356	52.0	460	200	600	74	125	4-φ12
100	4	100	432	432	95.0	770	220	800	125	140	4-φ16
150	6	150	559	559	222.0	1450	295	--	150	140	4-φ16



CLASS 150 CAST STEEL TRUNNION MOUNTED BALL VALVE

DN	NPS	D	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	49	178	216	191	57	130	88	350	40	
65	2 1/2	62	191	241	203	71	145	100	400	49	
80	3	74	203	283	216	95	160	110	500	62	
100	4	100	229	305	241	192	185	135	1050	74	
150	6	150	394	403	406	495	272	177	300	100	
200	8	201	457	521	470	832	330	235	350	150	
250	10	252	610	559	546	1105	380	287	400	201	
300	12	303	686	635	622	1655	385	300	500	252	
350	14	334	762	762	699	2695	410	324	500	303	
400	16	385	864	838	775	3164	455	365	500	334	
450	18	436	914	914	876	3793	510	405	500	385	
500	20	487	1067	991	927	5500	565	445	500	436	
550	22	538		1092		6650	600	970	500	436	
600	24	589		1143	1080	7529	640	525	500	437	

CLASS 300 CAST STEEL TRUNNION MOUNTED BALL VALVE

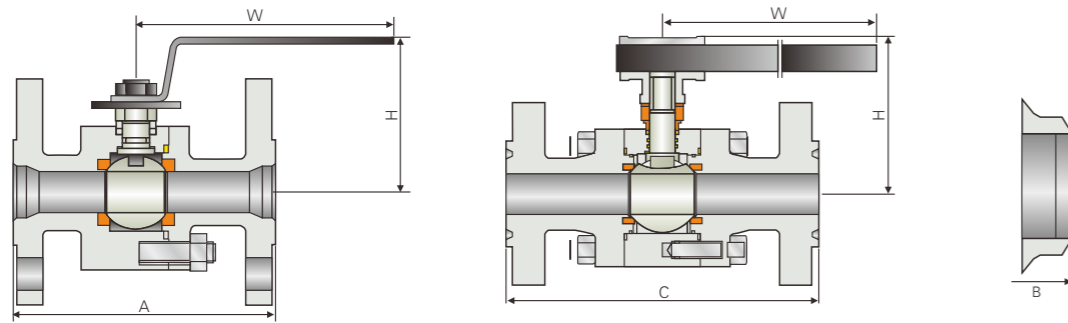
DN	NPS	D	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	49	216	216	232	99	130	88	350	40	
65	2 1/2	62	241	241	257	124	145	100	400	49	
80	3	74	283	283	298	212	160	110	500	62	
100	4	100	305	305	321	335	185	135	1050	74	
150	6	150	403	403	419	544	272	177	300	100	
200	8	201	502	521	518	1250	330	235	350	150	
250	10	252	568	559	584	1736	380	287	400	201	
300	12	303	648	635	664	2388	385	300	500	252	
350	14	334	762	762	778	3224	410	324	500	303	
400	16	385	838	838	854	5139	455	365	500	334	
450	18	436	914	914	930	7970	510	405	500	385	
500	20	487	991	991	1010	10570	565	445	500	436	
550	22	538	1092	1092	1114	12140	600	970	500	436	
600	24	589	1143	1143	1165	17240	640	525	500	437	

CLASS 600 CAST STEEL TRUNNION MOUNTED BALL VALVE

DN	NPS	D	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	49	292	292	295	168	130	88	600	40	
65	2 1/2	62	330	330	333	210	145	100	1000	49	
80	3	74	356	356	359	360	160	110	1500	62	
100	4	100	432	432	435	572	185	135	500	74	
150	6	150	559	559	562	912	272	177	500	100	
200	8	201	660	660	664	2177	330	235	500	150	
250	10	252	787	787	791	3093	380	287	500	201	
300	12	303	838	838	841	4282	385	300	500	252	
350	14	334	889	889	892	7458	410	324	500	303	
400	16	385	991	991	994	9310	455	365	500	334	
450	18	436	1092	1092	1095	14639	510	405	500	385	
500	20	487	1194	1194	1200	20011	565	445	500	436	
550	22	538	1295	1295	1305	24785	600	970	500	436	
600	24	589	1397	1397	1407	31226	640	525	500	437	

CLASS 900 CAST STEEL TRUNNION MOUNTED BALL VALVE

DN	NPS	D	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	49	368	368	371	228	130	88	600	40	
65	2 1/2	62	419	419	422	263	145	100	1000	49	
80	3	74	381	381	384	512	160	110	1500	62	
100	4	100	457	457	460	946	185	135	500	74	
150	6	150	610	610	613	1784	272	177	500	100	
200	8	201	838	838	841	4116	330	235	500	150	
250	10	252	965	965	968	5910	380	287	500	201	
300	12	303	1029	1029	1038	10137	385	300	500	252	
350	14	322	1130	1130	1140	14141	410	324	500	303	
400	16	373	1219	1219	1232	18866	455	365	500	322	
450	18	423	1321	1321	1334	22400	510	405	500	373	
500	20	471	1549	1549	1568	28544	565	445	500	423	
550	22	522	-	-	-	42427	600	970	500	423	
600	24	570	-	-	-	43276	640	525	500	471	



CLASS 150 FORGED STEEL FLOATING BALL VALVE

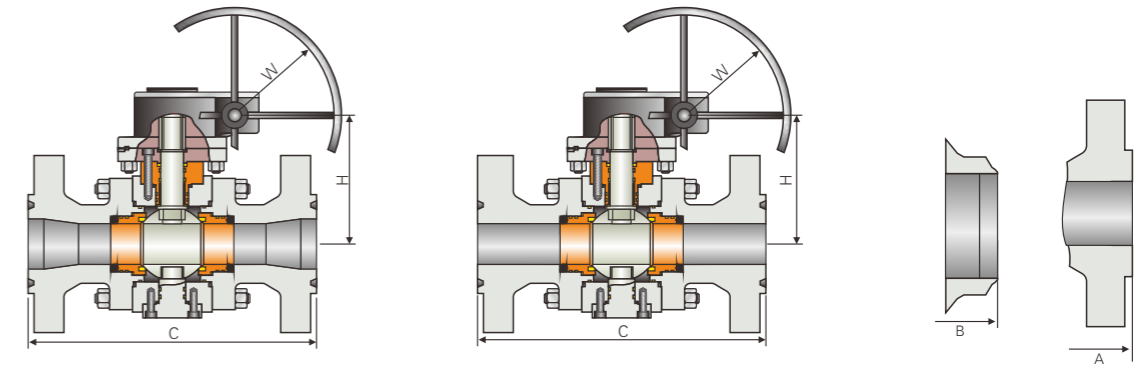
DN	NPS	RF(A)	BW(B)	N.m	H	W	Weight
15	1/2	108	140	3	84	130	
20	3/4	117	152	5	88	130	
25	1	127	165	11	95	140	
32	1 1/4	140	178	14	120	140	
40	1 1/2	165	190	16	120	250	
50	2	178	216	25	130	250	

CLASS 300 FORGED STEEL FLOATING BALL VALVE

DN	NPS	RF(A)	BW(B)	N.m	H	W	Weight
15	1/2	140	140	7	84	130	
20	3/4	152	152	12	88	130	
25	1	165	165	26	95	140	
32	1 1/4	178	178	32	120	140	
40	1 1/2	191	191	38	120	250	
50	2	216	216	60	130	250	

CLASS 600 FORGED STEEL FLOATING BALL VALVE

DN	NPS	RF(A)	BW(B)	N.m	H	W	Weight
15	1/2	165	165	19	84	130	
20	3/4	190	190	35	88	130	
25	1	216	216	68	95	140	
32	1 1/4	229	229	99	120	140	
40	1 1/2	241	241	130	120	250	
50	2	292	292	190	130	250	



CLASS 900 FORGED STEEL TRUNNION MOUNTED BALL VALVE

DN	NPS	d	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	49	368	368	371	228	192	142	600	40	
65	2 1/2	62	419	419	422	263	-	-	800	49	
80	3	74	381	381	384	512	279	172	1000	62	
100	4	100	457	457	460	946	315	205	1500	74	
150	6	150	610	610	613	1784	323	272	500	100	
200	8	201	737	737	740	4116	381	335	500	150	
250	10	252	838	838	841	5910	518	406	500	201	
300	12	303	965	965	968	10137	568	461	500	252	
350	14	322	1029	1029	1038	14141	665	513	500	303	
400	16	373	1130	1130	1140	18866	730	583	500	322	
450	18	423	1219	1219	1232	22400	975	646	500	373	
500	20	471	1321	1321	1334	28544	825	706	500	423	
600	24	570	1549	1549	1568	43276	973	831	500	471	

CLASS 1500 FORGED STEEL TRUNNION MOUNTED BALL VALVE

DN	NPS	d	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	49	368	368	371	390	130	88	600	40	
65	2 1/2	62	419	419	422	488	145	100	800	49	
80	3	74	470	470	473	831	160	110	1000	62	
100	4	100	546	546	549	1524	185	135	1500	74	
150	6	144	705	705	711	2934	272	177	500	100	
200	8	192	832	832	841	7215	330	235	500	144	
250	10	239	991	991	1000	11128	380	287	500	192	
300	12	287	1130	1130	1146	16103	385	300	500	239	
350	14	315	1257	1257	1276	24518	410	324	500	287	
400	16	360	1384	1384	1407	29630	455	365	500	315	
450	18	406	1537	-	1559	34392	510	405	500	360	
500	20	454	1664	-	1686	40918	565	445	500	406	
600	24	546	-	-	1972	65351	640	525	500	454	

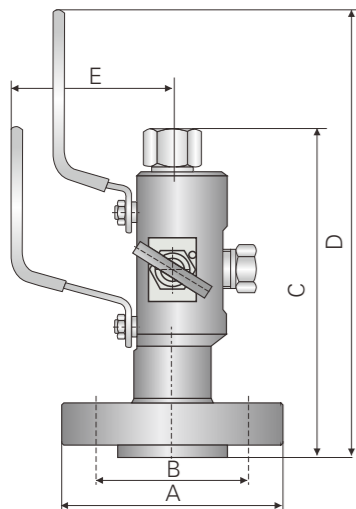
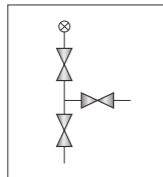
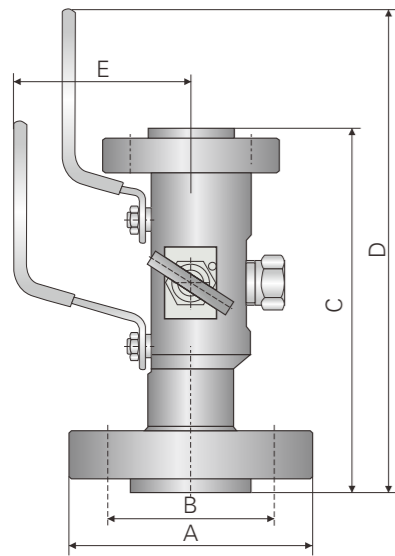
CLASS 2500 FORGED STEEL TRUNNION MOUNTED BALL VALVE

DN	NPS	d	RF(A)	BW(B)	RTJ(C)	N.m	H1	H2	W	D1	Weight
50	2	42	451	451	454	589	130	88	600	32	
65	2 1/2	52	508	508	540	736	145	100	800	42	
80	3	62	578	578	584	1577	160	110	1000	52	
100	4	87	673	673	683	1965	185	135	1500	62	
150	6	131	914	914	927	5501	272	177	500	87	
200	8	179	1022	1022	1038	11785	330	235	500	131	
250	10	223	1270	1270	1292	13222	380	287	500	179	
300	12	265	1422	1422	1445	20075	385	300	500	223	
350	14	292	-	-	-	-	410	324	500	265	
400	16	333	-	-	-	-	455	365	500	292	

Double block and bleed: 4"~24" 100~600mm  
 Size: 4"~24" 100~600mm  
 Pressure: 150LB~2500LB  
 1.6MPa~32MPa

**Standards:**

Design standards: API 6D Structure Length: ASME B16.10  
 Flange: ASME B16.5 Test and inspection: AIP 598

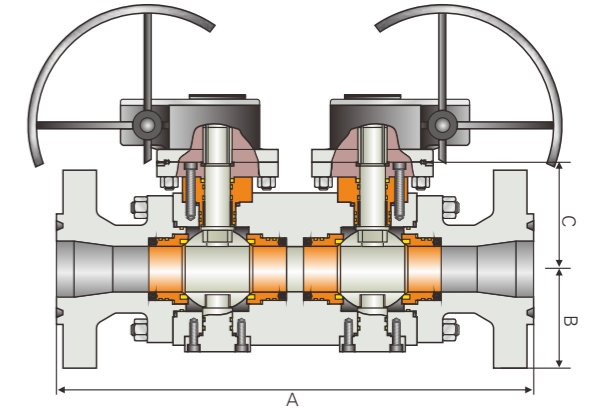
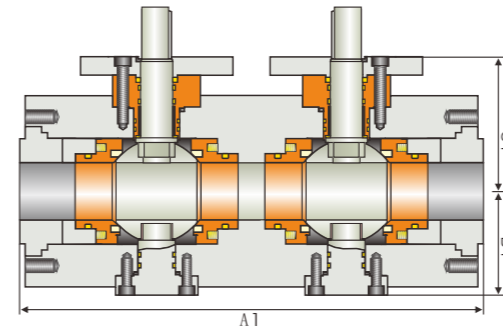


ITEM N.O.	Connections Size	A	B	C	D	E
JQS-14N4-300/600LB	1/2"RF*3/4"RF	95.3	66.7	182	245	88
JQS-14N6-300/600LB	3/4"RF*3/4"RF	117.5	82.6	182	245	88
JQS-14N8-300/600LB	1"RF*3/4"RF	123.8	88.9	182	245	88
JQS-14N10-300/600LB	1-1/2"RF*3/4"RF	155.6	114.3	182	245	88
JQS-14N12-300/600LB	2"RF*3/4"RF	165.1	127	182	245	88
JQS-14N16-300/600LB	3"RF*3/4"RF	209.6	168.3	182	245	88
JQS-14N4-900/1500LB	1/2"RTJ*3/4"RF	120.7	82.6	182	245	88
JQS-14N6-900/1500LB	3/4"RTJ*3/4"RF	130.2	88.9	182	245	88
JQS-14N8-900/1500LB	1"RTJ*3/4"RF	149.2	101.6	182	245	88
JQS-14N10-900/1500LB	1-1/2"RTJ*3/4"RF	177.8	123.8	182	245	88
JQS-14N12-900/1500LB	2"RTJ*3/4"RF	215.9	165.1	182	245	88

Material: ASTM A105N/A108  
 ASTMA182F316/F316L/F304/F304L

ITEM N.O.	Connections Size	A	B	C	D	E
JQS-12N4-300/600LB	1/2"RF*1/2"NPT	95.3	66.7	182	245	88
JQS-12N6-300/600LB	3/4"RF*1/2"NPT	117.5	82.6	182	245	88
JQS-12N8-300/600LB	1"RF*1/2"NPT	123.8	88.9	182	245	88
JQS-12N10-300/600LB	1-1/2"RF*1/2"NPT	155.6	114.3	182	245	88
JQS-12N12-300/600LB	2"RF*1/2"NPT	165.1	127	182	245	88
JQS-12N16-300/600LB	3"RF*1/2"NPT	209.6	168.3	182	245	88
JQS-12N4-900/1500LB	1/2"RTJ*1/2"NPT	120.7	82.6	182	245	88
JQS-12N6-900/1500LB	3/4"RTJ*1/2"NPT	130.2	88.9	182	245	88
JQS-12N8-900/1500LB	1"RTJ*1/2"NPT	149.2	101.6	182	245	88
JQS-12N10-900/1500LB	1-1/2"RTJ*1/2"NPT	177.8	123.8	182	245	88
JQS-12N12-900/1500LB	2"RTJ*1/2"NPT	215.9	165.1	182	245	88

Material: ASTM A105N/A108  
 ASTMA182F316/F316L/F304/F304L



**CLASS 150**

SIZE (in.)	A				B	C	W.T (lbs)
	RF	BWE	RTJ				
2"	312	378	334	98	105		
3"	355	495	378	127	130		
4"	401	534	422	165	130		
6"	690	800	711	235	288		
8"	800	912	823	239	288		
10"	933	978	956	277	326		
12"	1068	1111	1089	316	364		
14"	1201	1334	1223	341	395		
16"	1334	1467	1356	383	437		
18"	1512	1600	1533	417	471		
20"	1600	1734	1622	454	508		
24"	1867	2000	1890	529	590		

**CLASS 300**

SIZE (in.)	A				B	C	W.T (lbs)
	RF	BWE	RTJ				
2"	378	378	406	102	120		
3"	495	495	522	148	164		
4"	534	534	562	165	130		
6"	705	800	733	206	237		
8"	879	912	907	239	288		
10"	994	978	1022	277	326		
12"	1134	1111	1162	316	364		
14"	1334	1334	1362	341	395		
16"	1467	1467	1495	383	437		
18"	1600	1600	1628	432	486		
20"	1734	1734	1768	478	532		
24"	2000	2000	2039	578	640		

**CLASS 600**

SIZE (in.)	A				B	C	W.T (lbs)
	RF	BWE	RTJ				
2"	511	511	516	105	129		
3"	623	623	628	147	164		
4"	756	756	761	165	184		
6"	978	978	984	212	237		
8"	1155	1155	1162	254	304		
10"	1377	1377	1384	303	359		
12"	1467	1467	1472	330	378		
14"	1556	1556	1561	360	414		
16"	1734	1734	1740	401	455		
18"	1911	1911	1916	449	503		
20"	2090	2090	2100	485	543		
24"	2445	2445	2462	584	646		

**CLASS 900**

SIZE (in.)	A				B	C	W.T (lbs)
	RF	BWE	RTJ				
2"	644	644	649	108	129		
3"	667	667	672	147	164		
4"	800	800	805	165	184		
6"	1068	1068	1073	212	237		
8"	1290	1290	1295	254	304		
10"	1467	1467	1472	303	359		
12"	1689	1689	1694	345	398		
14"	1801	1801	1817	358	410		
16"	1878	1878	1995	407	458		
18"	2133	2133	2156	452	502		
20"	2312	2312	2335	498	553		
24"	2711	2711	2744	597	664		

**CLASS1500**

SIZE (in.)	A				B	C	W.T (lbs)
	RF	BWE	RTJ				
2"	644	644	649	105	129		
3"	823	823	828	147	164		
4"	956	956	961	165	184		
6"	1234	1234	1244	260	280		
8"	1456	1456	1472	283	332		
10"	1734	1734	1750	349	399		
12"	1978	1978	2006	387	431		
14"	2200	2200	2233	421	482		
16"	2422	2422	2462	474	540		
18"	2690	2690	2728	570	628		
20"	2912	2912	2951	690	725		
24"	3400	3400	3451	733	780		

**CLASS 2500**

SIZE (in.)	A				B	C	W.T (lbs)
	RF	BWE	RTJ				
2"	789	789	795	144	177		
3"	1012	1012	1022	187	203		
4"	1178	1178	1195	250	271		
6"	1600	1600	1622	280	300		
8"	1789	1789	1817	475	485		
10"	2223	2223	2261	502	505		
12"	2489	2489	2529	514	547		

Material parameters						
Property		Nylon	Teflon	PEEK	Delrin	PPL
Temperature Range Fahrenheit		-30~200	-320~400	-328~500	-58~230	-50~750
Pressure Rating		900~1500	150~600	150~1500	150~1500	150~300
Mechanical Properties	Hardness	D75	D58	D85	R-120	D80
	Tensile	8700 (min)	2100~2400	11000(min)	6600~7500 (min)	2000~2350 (min)
	Elongation	250~290	250	30 (min)	220	275~310
Physical Properties	Specific Gravity	1.04	2.2	1.3	1.41	1.9~2.1
	Water Solubility	0.2	<0.01	0.18	0.15	0.1~0.2
	Divergence Rate	5*10 <sup>6</sup> RAD	10 <sup>4</sup> RAD	10 <sup>9</sup> RAD	10 <sup>7</sup> RAD	9*10 <sup>6</sup> RAD
Application Range		Ambient Temperature High Pressure Working Condition	Chemical Media and Low Temperature Working Condition	High Temperature High Pressure Steam Working Condition	Ambient Temperature High Pressure Working Condition	High Temperature High Corrosion Working Condition

General Standard Rubber Material					
Name of Rubber	International Standard Abbreviation	Hardness Range (Shore A)	Applicable Temperature (°C)	Standard Material	International Standard Abbreviation
Nitrile Rubber (GR-N)	NBR	40~95	-40~120	N7096、N8000、N9000	
TFE/P	AFL/AS	50~95	-40~280	100S、200S、300S、600S	
Viton	FKM/FPM	50~95	-30~250	V7500、V8033、2601、2604	
Ethylene Propylene Rubber	EPDM/EPM	40~95	-40~150	E7050、E7002	
Hydrogenated Butadiene-acrylonitrile Rubber	HNBR	55~95	-55~160	H7000、H8300	
Silicon Rubber	VMQ	28~85	-80~230	S7000、S7031	
Chloroprene Rubber	CR	30~95	-40~125	C7000	
Fluorosilicone Rubber	FVMQ	45~85	-68~235	F7004、F8004	
Polyurethane	AU/EU	60~98	-80~100	U7000、U7005	
Chlorohydrin Rubber	CO/ECO/GECO	50~85	-40~135	D7000	
SBR	SBR	50~75	-40~70	B7000	
Butyl Rubber	IIR	50~75	-55~100	I7000	
Natural Rubber	NR	40~90	-50~100	A4000	
Polyethylene Rubber	AEM	40~90	-30~175	G7000	
Polyacrylate Rubber	ACM	45~85	-25~175	P7000	
Fluoroether Rubber	FFKM	75~95	-25~327	Kalrez® 1050LF、6375、4079、7075、0040	
Other Fluororubber	Viton	50~95	-65~285	A-401C、B-601C GF600S GLT-200S、GFLT、ETP	

