



MW NEWAY

Trunnion Mounted Ball Valve

Complete Solutions for Engineered Valves



NEWAY VALVE

Cat.no.:E-TMBV-2009

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Complete Solutions for Engineered Valves

Being one of the leading valve manufacturer in the world, NEWAY specializes in the development of innovative designs, through intensive R&D programs and engineering excellence. We engineer and manufacture valve solutions for all industries.

NEWAY'S Main product lines include Gate, Globe, Check, Butterfly and Ball valves with quality and innovative designs that are recognized by many global users and EPC's. These products have been installed throughout the world in Gas, Oil, Refining, Chemical, Marine, Power Generation and Pipeline Transmission Industries Applications.

NEWAY'S Facilities

NEWAY has developed and implemented a group management system base on multi-plan manufacturing. Valves are manufactured in six specialized production facilities that are linked by an intranet system of over 400 computers that link engineering to the CNC and machine centers as well as the bar-coded warehouse system. NEWAY had implemented an Enterprise Resource Planning(ERP) manufacturing management system and has in-house testing capabilities that include fire-safe, cryogenic, high pressure gas and fugitive emission testing. In short, NEWAY'S facilities are one of the most advanced in valve manufacturing in the world today.

Quality Assurance

NEWAY'S quality assurance is dedicated to the pursuit of zero defect valves to customers. We perform active Six Sigma quality management to continually enhance process control management based on advanced data statistical analysis. NEWAY'S industrial certificates include ISO 9001, CE/PED, TA-Luft, API 6A, API 6D, ABS, and Fire Safe approvals.

Introduction

This catalogue includes the latest developments in NEWAY Ball Valves with 4 different designs:

- BT series 2PC cast steel trunnion mounted type
- BS series 3PC forged steel trunnion mounted type
- BE series top entry trunnion mounted type
- BW series fully welded trunnion mounted type

All Ball Valves conform to BS5351 and API 6D, and are Fire-Safe tested and certified to API 6FA and API 607.

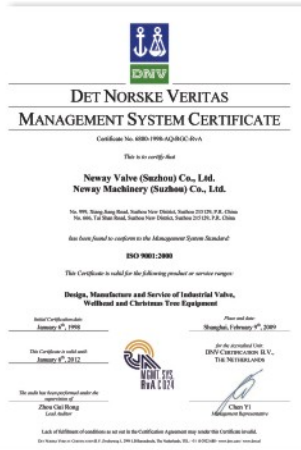
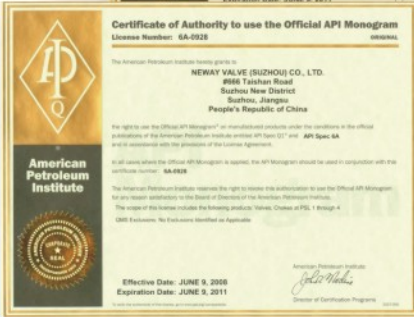
Quality Commitment

ISO 9001

API 6D



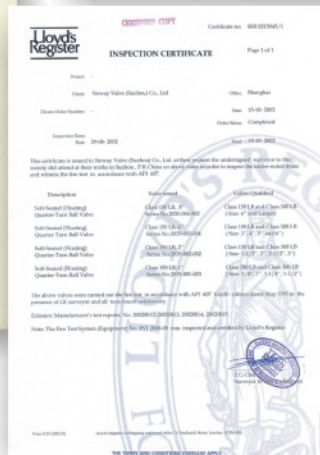
API 6A



TA Luft



API 591



Fire Safe Test

Neway recognizes the importance of valve quality for the safety and protection of personnel health and property. It is our quality commitment to focus our resources to provide our customer's with first class products at a competitive price, that are designed, manufactured, inspected and tested in accordance with our customer's specifications and that comply with all international standards.

CE/PED

With respect to the facts that the current industrial standards do not always take into consideration the likelihood and consequences of possible deterioration in service, related to specific service fluids or the external environment in which they operate, we request that our customers communicate with our engineering department to identify and implement standards that will provide valves that withstand deterioration in service, and ensure safety over the valves expected lifetime.

ABS



Product Range

Valve Size		2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"	28"	30"	32"	36"	40"	42"	48"	52"	54"	56"	60"	
2PC TM Ball Valve	150	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
	300	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆																
	600	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆																
	900	◆		◆	◆	◆	◆	◆																				
	1500	◆		◆	◆	◆	◆																					
	2500																											
3PC TM Ball Valve	150	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	900	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆						
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	2500	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆													
Top Entry Ball Valve	150	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	900	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆						
	1500	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆						
	2500	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆													
Fully Welded TM Ball Valve	150	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
	300	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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	900	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆						
	1500	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆						
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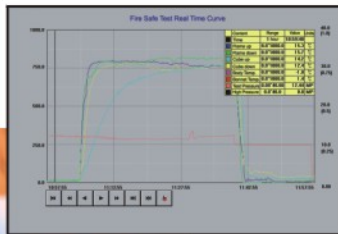
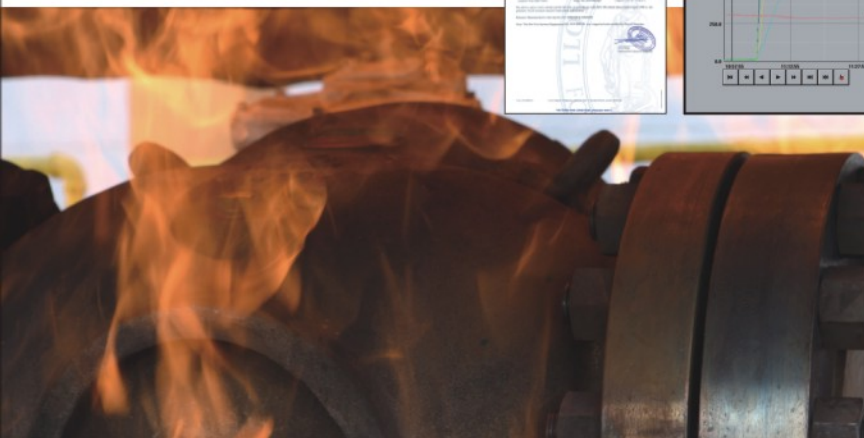
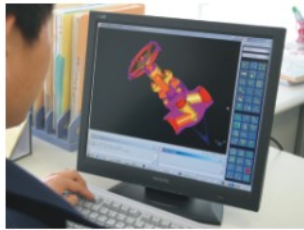
API 6D Trunnion Mounted Ball Valve

Technical Innovation

NEWAY's technical research center utilizes the most advanced computer technology to improve existing product lines and develop new ones. A comprehensive internal computer network links the highly trained engineering team to manufacturing and administration so everyone can be updated instantly.

NEWAY's mission is to engineer safe, cost-effective valves. The latest AutoCAD® and I-DEAS® software are used by the product design and research team. The advanced finite element analysis feature enables virtual verification of new product designs prior to production. Besides dramatically reducing new product development time, this feature ensures quality and cost control. All designs are then rigorously tested in NEWAY's state-of-the-art flow loop to confirm and validate designs. The end result is a final product that meets and exceeds international quality and safety standards, yet is easy on the budget.

NEWAY's technical personnel stand ready to support its customers, whether distributor, agent or end user, with on-line and/or on-site technical support and training.



Fire Test certification is standard for all NEWAY ball valves. The soft seated ball valves are witnessed and certified by Lloyd's Register. NEWAY's computer controlled fire testing lab is the facility capable of testing and certifying floating and trunnion mounted ball valves per API 6FA and API 607 standards.

NEWAY Owned Foundries



NEWAY understands that consistently producing high quality castings and forgings is the single most important factor in maintaining valve integrity and assuring long, trouble-free service life. Valve casting quality is of utmost importance for pressure containing equipment in process control pipelines with personnel and environmental safety at stake. NEWAY's valve castings have been certified by many end users as part of their Quality Assurance program, prior to vendor approval.

Whereas most other valve manufacturers outsource this operation, NEWAY has invested millions developing two state-of-the-art foundries to maintain tight quality standards. One foundry specializes in large size sand castings using the organic ester water glass casting process; and, the other one produces small sized investment castings using the lost wax casting method. Each foundry is equipped with a wide range of quality inspection equipment and instruments, including a spectrum analyzer, non-destructive testing equipment and mechanical property testing equipment. NEWAY maintains tight quality control throughout the whole valve foundry process to ensure that stringent quality standards are maintained and delivery commitments are met at a competitive price. This extraordinary level of commitment to quality has made NEWAY the supplier of choice for many world class customers.



Supply Range & capacity :

Plant Name	Dafeng Foundry	Suzhou Foundry
Process Technology	Lost wax investment casting	Organic ester water glass sand casting
Size Range(in)	1/2" ~10"	2" ~64"
Pressure Rating	ASME Class 150~600	ASME Class 150~2500
Weight(Kg)	1~150	100~11000
Material	WCB, WCC, LCB, LCC, WC6, WC9, C5, C12, C12A, CF8, CF8M, CF3, CF3M, CN7M, Monel, Inconel, Duplex Steel, 4A	
Monthly Capacity(Ton)	1500	1800
Quality Certificate	ISO9001, CE/PED, AD W0	

Advanced Manufacturing

The latest computer technologies are also widely applied at NEWAY in its manufacturing facilities, including a large number of computer numeric controlled (CNC) machining centers, horizontal and vertical lathes and drilling machines. These machines directly tie into NEWAY's ERP management system, resulting in significantly improved machining quality and timely order processing. NEWAY internally machines all of the parts for its valves through the 60" ball valve size, insuring consistent quality and just-in-time (JIT) deliveries.



Quality Control



NEWAY houses its own extensive and advanced inspection and testing department, equipped with the latest equipment and instruments. Here, highly trained and certified technicians perform radiographic, ultrasonic, dye-penetrant, magnetic particle, PMI, impact, hardness, and tensile testing.



NEWAY also maintains its own state-of-the-art cryogenic, vacuum, fugitive emission, and fire testing facilities as well as hydro-testing facilities to ensure the highest product quality and performance.

Six Sigma, zero defect policies and continuous improvement processes have allowed NEWAY to obtain numerous certifications, such as ISO 9001 (issued by DNV), API 6-D, CE/PED, ABS, API6A, TA-Luft, API591 and GOST.



In fact, today, due to its extensive product portfolio, high quality focus, competitive delivery lead times and value pricing, NEWAY has earned as many end user customer approvals as its major competitors, and is viewed by many customers as a world-class manufacturer.



NEWAY Key Quality Control Processes:

- 1 Chemical composition testing (PMI)
- 2 Mechanical property testing (Tensile\Impact\Hardness)
- 3 Micro-structure testing
- 4 NDT (RT/UT/PT/MT)
- 5 Dimension inspection
- 6 Ultrasonic Cleaning
- 7 Visual inspection
- 8 Pressure testing
- 9 Painting thickness testing

Notes: Other Special Tests & Inspections are available upon request (low temperature, low emission, vacuum test, high pressure air test etc.)



Product Overview

1



2



3



5

Product Overview

4



- 1 Fully welded Ball Valve, 56" Class 600
- 2 Metal to Metal Ball Valve, F51 Material, 14" Class 900
- 3 Top Entry Ball Valve
- 4 Pneumatic Actuated Ball valve
- 5 Motor Actuated Ball Valves
- 6 Hydraulic Actuated Ball Valves
- 7 Under ground Ball Valves with gas over oil actuator



6



7

How to order

Example:



Neway figure numbers are designed to cover essential features. When ordering, please show the figure numbers and a detailed description to avoid misunderstanding of your requirements.

Following descriptions provide a basic guideline in valve specification:

① Valve Sizes

Full bore:

In	2	2-1/2	3	3-1/2	4	5	6	8	10	12	14
mm	50	65	80	90	100	125	150	200	250	300	350
In	16	18	20	22	24	26	28	30	32	34	36
mm	400	450	500	550	600	650	700	750	800	850	900
In	38	40	42	44	48	52	54	56	60	--	--
mm	950	1000	1050	1100	1200	1300	1350	1400	1500		

Reduced Bore:

In	2x 1-1/2	2- 1/2x2	3x2	4x3	6x4	8x6	10x8	12x10	14x12	16x14	18x16
mm	50*40	65*50	80*50	100*80	150*100	200*150	250*200	300*250	350*300	400*350	450*400
In	20x18	22x20	24x20	26x24	28x24	30x24	32x30	34x30	36x30	38x32	40x36
mm	500*450	550*500	600*500	650*600	700*600	750*600	800*750	850*750	900*750	950*800	1000*900

② Valve Types

Symbol	Valve Type	Symbol	Valve Type
BT	2-pcs Casting Trunnion Mounted type	BW	Fully Welded Trunnion Mounted type
BS	3-pcs Forging Trunnion Mounted type	BSP	Double Piston Effective Trunnion Mounted type
BE	Top Entry Trunnion Mounted type	BWP	Double Piston Effective Full Welded Trunnion Mounted type

③ ASME Class

Code	1	3	4	6	8	9	15	25
Class (LB)	150	300	400	600	800	900	1500	2500

④ End Connections

Symbol	End	Symbol	End
R	Raised face flanged end	S	Socket weld end
J	RTJ flanged end	N	Screwed end
B	Butt-weld end	SN	Socket Weld/Screwed End
F	Flat Face Flanged End	NC	55° Taper Screwed End

⑤ Operator

Symbol	Description	Symbol	Description
	Lever	BS	Bare shaft
G	Gear operator	H	Hydraulic actuator
M	Electric actuator	L	Gas over oil actuator
P	Pneumatic actuator	C	Gear operator (Operation force ≤ 350N)

⑥ Body Materials

Material	Classification Steel	A STM Ref.	Recommended Temperature Limits		Application
			°C	°F	
WCB(A105)	Carbon	A216 Grade WCB	-29 to 425	-20 to 800	Steam, water oil, oil vapour, gas and general service
LCB(LF2)	Carbon	A352 Grade LCB	-46 to 350	-50 to 650	Low temperature
LCC	Carbon	A352 Grade LCC	-46 to 350	-50 to 650	
WC6(F11)	Chromium Moly 1.25%Cr,0.5% Mo	A217 Grade WC 6	-29 to 590	-20 to 1100	Steam, water oil, oil vapour, gas and general service
WC9(F22)	Chromium Moly 2.25%Cr,1% Mo	A217 Grade WC 9	-29 to 590	-20 to 1100	
C5	Chromium Moly 5%Cr,0.5% Mo	A217 Grade C 5	-29 to 650	-20 to 1200	Corrosive/erosive oil refinery service
CF8M(316)	Stainless 18%Cr,9% Ni 2%Mo	A354 Grade CF8M	-196 to 815	-320 to 1500	High and low temperature corrosion resistance
CF8(304)	Stainless 18%Cr,8% Ni	A351 Grade CF 8	-196 to 815	-320 to 1500	
CF3M(316L)	Low Carbon Stainless 18%Cr,9% Ni 2%Mo	A351 Grade CF3M	-196 to 815	-320 to 1500	Cryogenic service is also available upon request
CF3(304L)	Low Carbon Stainless 18%Cr,8% Ni	A351 Grade Cf3	-196 to 815	-320 to 1500	
CN7M Alloy 20	Stainless 19%Cr,29% Ni	A351 Grade CN7M	-196 to 425	-320 to 800	Corrosion resistance

⑦ Trim Codes

Seat Insert		O-ring		Stem		Ball		Seat	
Code	Material	Code	Material	Code	Material	Code	Material	Code	Material
1	PTFE	1	NBR	1	F6a	1	F6a	1	F6a
2	NYLON1010	2	VITON A	2	F304	2	F304	2	F304
3	PEEK	3	VITON AED	3	A105N/ENP	3	A105N/ENP	3	A105N/ENP
4	Polyphenylene	4	VITON B	4	17-4PH	4	17-4PH	4	17-4PH
5	DEVLON V	5	HSN	5	AISI 4140	5	AISI 4140	5	AISI 4140
6	KEL-F	6	HNBR	6	F316	6	F316	6	F316
7	NYLON 12	7	PTFE COATED VITON	7	F304L	7	F304L	7	F304L
8	PCTFE	8	VITON GLT	8	F316L	8	F316L	8	F316L
9	MOLON	9	BUNA-N	9	LF2/ENP	9	LF2/ENP	9	LF2/ENP
A	PVDF	A	ELAST-O-LION 101	A	F51	A	F51	A	F51
		B	EPDM						

Note: Other materials upon request.

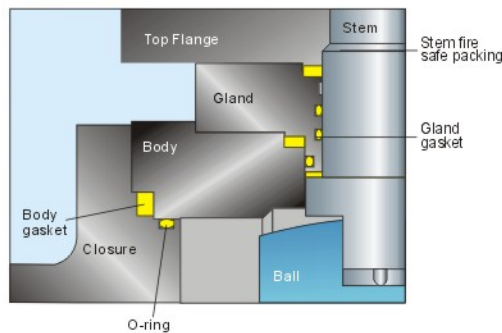
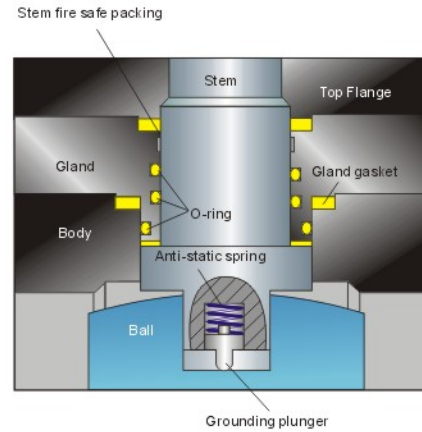
Design Features

Anti Blow-out Stem

The stem is made separately from the ball. The lower end of the stem is designed with an integral collar to be blowout-proof.

Anti-static Device

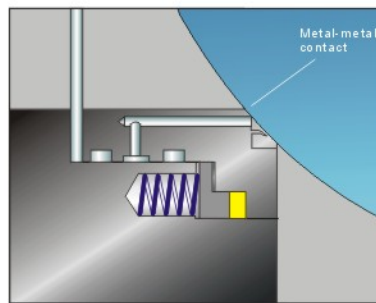
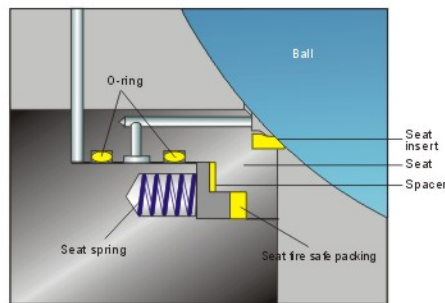
The Antistatic Device is a standard feature of the NEWAY ball valve. A spring-loaded pin assures the electrical continuity between the ball, stem and body, to avoid sparking during the turning of the stem to open and close the valve.



Super Fire safe design

External leakage prevention

Leakage from the valve stem area is prevented with two O-rings seals and a gland gasket. Leakage through the valve body joint is also blocked by an O-ring seal and a body gasket. After a fire has deteriorated the O-rings, gland gasket and body gasket, the Firesafe stem packing prevents external process media leakage.



Before Fire

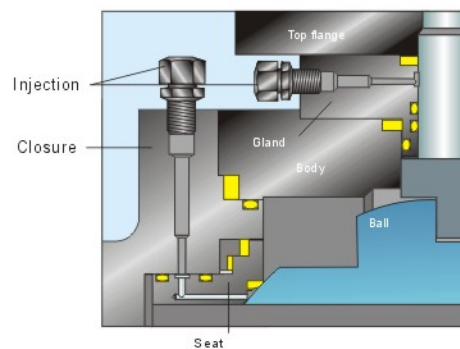
After Fire

Internal leakage prevention

When soft goods such as O-rings, soft seats and a spacer are decomposed or deteriorated by fire, the edge of the metal seat preloaded by the seat spring comes into contact with the ball to shut off the process media and minimize internal leakage through the valve bore. Also the fire safe graphite packing is compressed by the seat spring to prevent process media between the valve body and the seat.

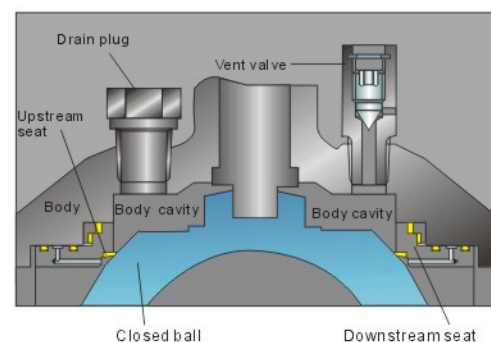
Emergency sealant injection system

For 6 inch and larger NEWAY Trunnion mounted ball valves, sealant injected fittings will be installed on both the stem and seats. When the sealing materials (soft seat or the stem o-ring) are damaged or decomposed by fire or other accidental causes, the seat and stem leakage can be prevented by the injection of sealant into these fittings. The fitting contains a check valve and also contains an internally installed check valve to provide backup sealing.

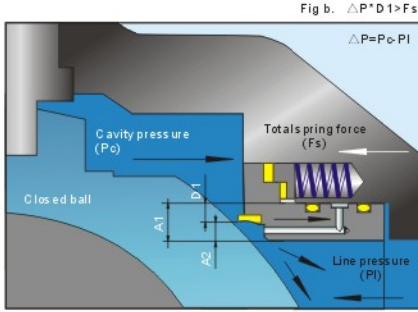
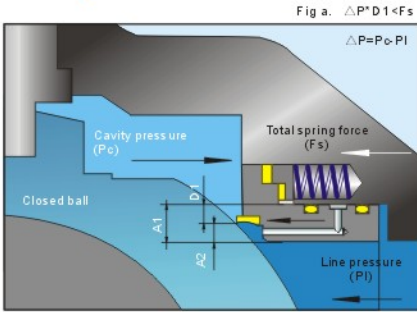


Double block and bleed

Each seat shuts off the process media independently on the upstream and downstream side of the ball, allowing double block operation. When the pressure is simultaneously applied to both sides of the ball in the closed position, the valve bore and the body cavity will be isolated from each other, and the pressure within the body cavity can be released through the drain plug.

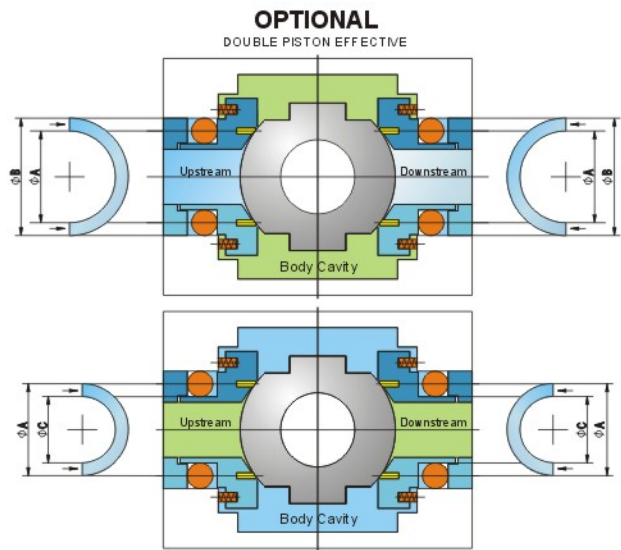
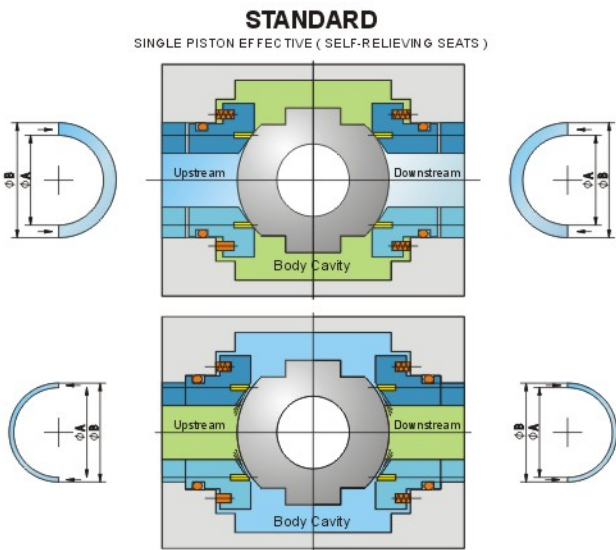


Cavity Pressure Relief



When cavity pressure (P_c) is lower than seat spring and line pressure (P_I), i.e. $\Delta P \cdot D1 < F_s$, then contact between ball and seat ring is assured to provide a tight seal.

When cavity pressure is higher than seat spring and line pressure, i.e. $P \cdot D1 > F_s$, the self-relieving action allows the valve seat to move slightly away from the ball surface. Therefore, any excess pressure inside the body cavity is discharged into the pipeline to restore the balance between the body cavity and the pipeline (either upstream or downstream side).



Self Relieving Seats (single piston effect)

The single piston is the the standard design for trunnion mounted ball valves. Both the upstream and downstream fluid pressure pushes the seat rings toward the ball. If the thrust created by the body cavity pressure is greater than the spring preload and the fluid pressure thrust, the seats are pushed against the ball. Then, any overpressure in the body cavity is released automatically in the valves' fully opened or fully closed position.

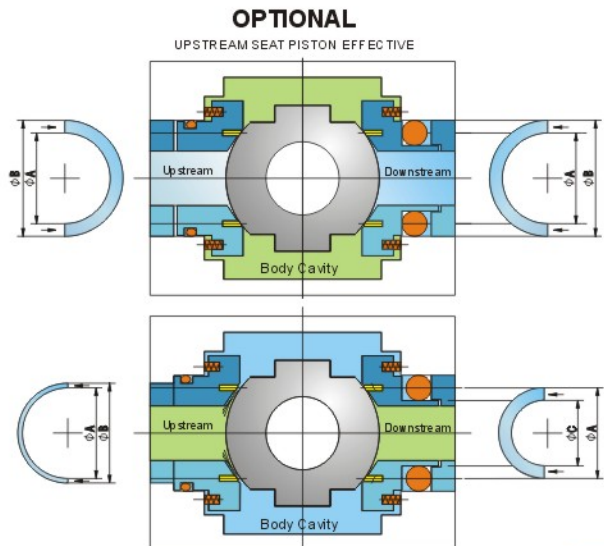
Double Piston Effect Seats

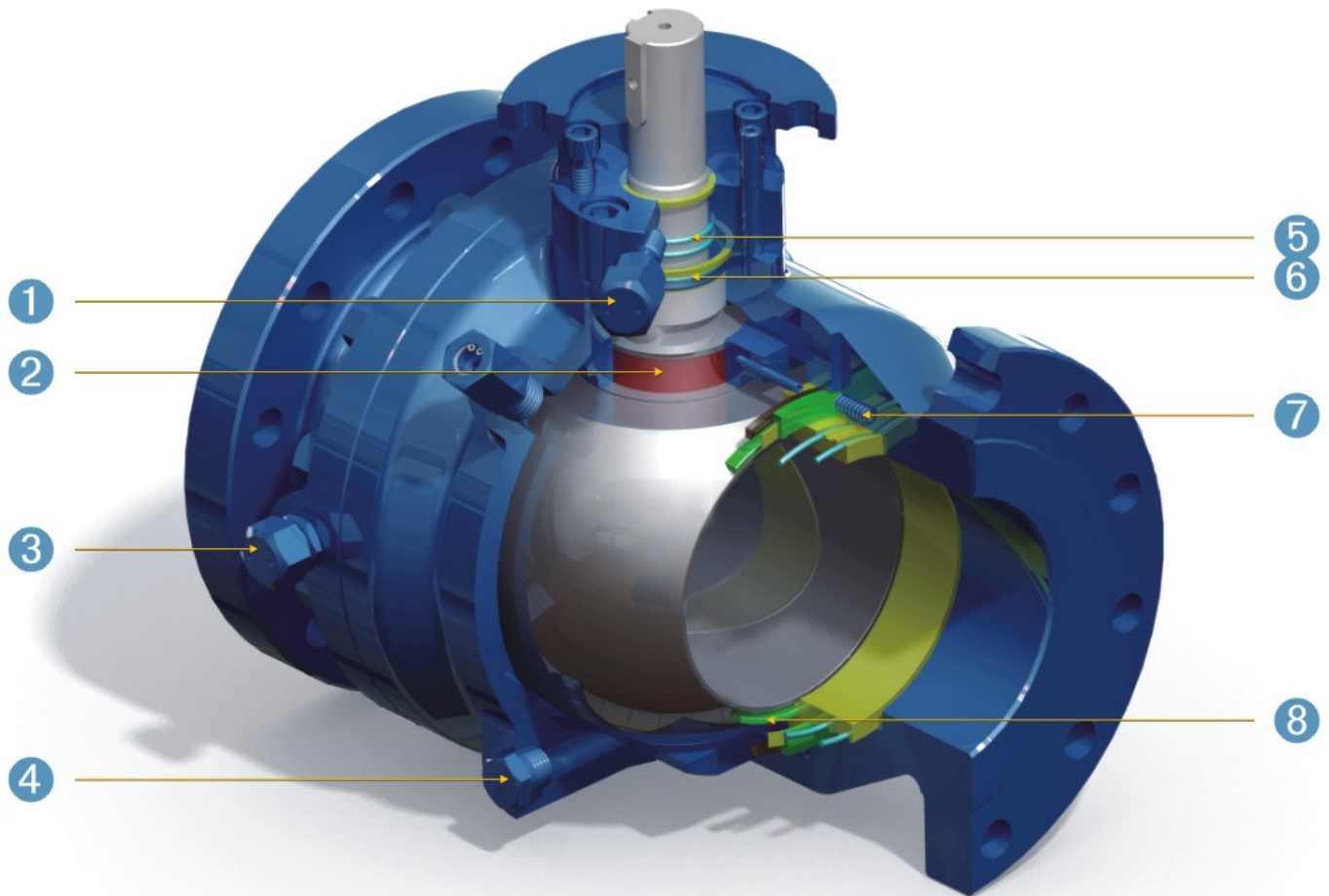
Double piston effect seats are pressure energized in both directions. Upstream and downstream pressure creates the thrust. So the seat rings are pushed toward the ball at all times. If the upstream seat fails, the downstream seat can still insure valve tightness. Interesting in specific applications (high integrity required) or for some pipe testing. Since double piston effect valves do not have the self-relieving function, they can not release valve body cavity overpressure. A pressure relief design feature is added.

Self Relieving Upstream Seat and Double Piston Effective Downstream Seat

The fluid pushes the double piston effect seat toward the ball on the downstream side. So the seat is pressure energized at all times. If the upstream seat failed, the downstream seat can still insure valve tightness.

On the other side, the upstream seat is designed with a single piston effect being pressure energized in one direction only. If the thrust created by the body cavity pressure is greater than the spring preload and the fluid pressure thrust, the seats are pushed against the ball. Then, any overpressure between downstream seats and the body cavity shall be released automatically into upstream side.





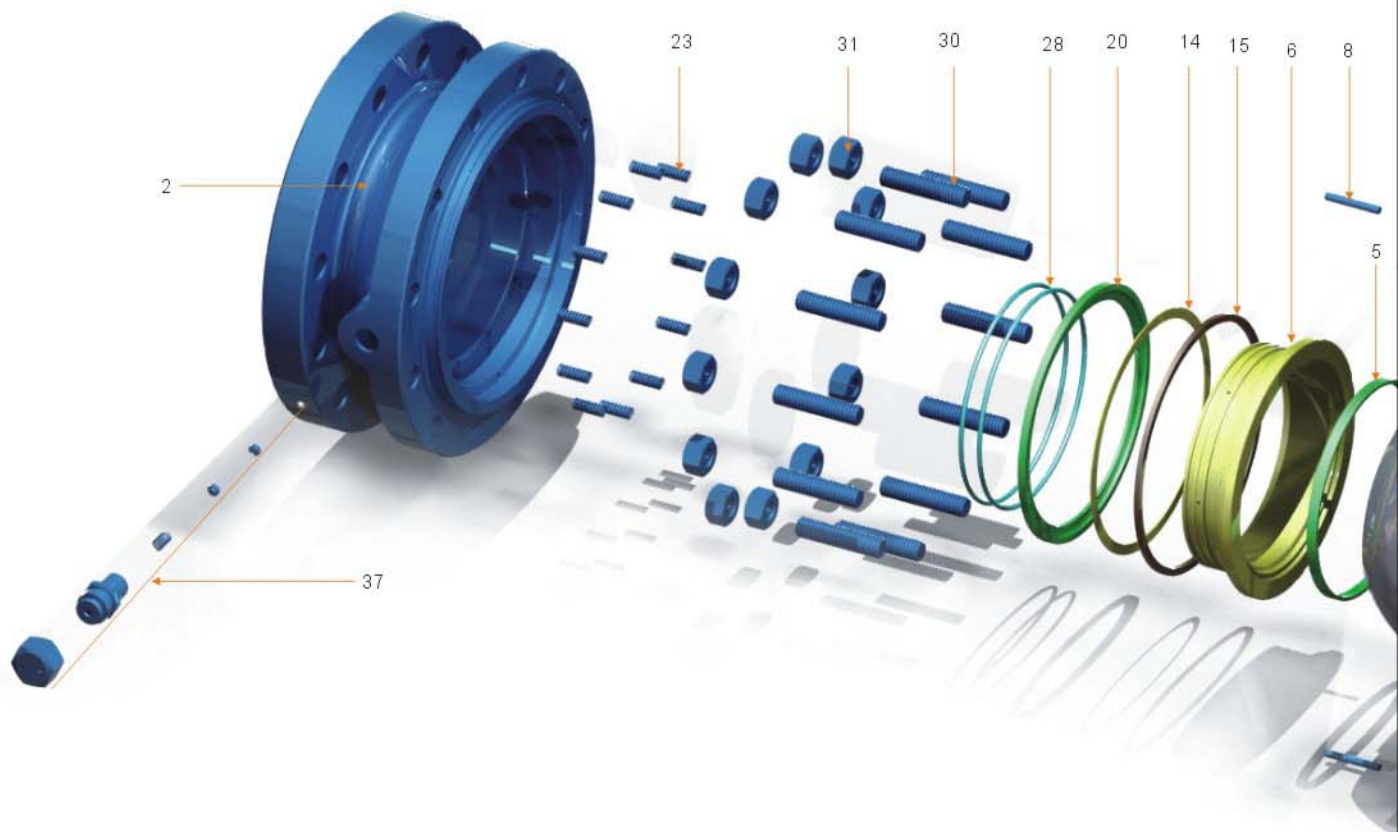
- ① Emergency Sealant Injection: Fitting prevents leakage from the stem.
- ② Blow-out Proof Stem: Internally inserted stem functions as the backseat for assured stem sealing at all pressures.
- ③ Emergency Sealant Injection: Fitting prevents leakage from the seat.
- ④ Drain plug : Relieves the body cavity.
- ⑤ Double Sealing O-rings: Prevents leakage from stem area.
- ⑥ O-ring & Gasket Combination: Prevents leakage from body joint area.
- ⑦ Floating Spring: Loaded seats assure sealing, even at low pressures.
- ⑧ Metal-to-Metal Sealing: When soft seals are deteriorated by fire, seat float to shut off the line media.

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTMA216-WCB	ASTMA351-CF8M	ASTMA216-WCB	ASTMA352-LCB
2	Closure	ASTMA216-WCB	ASTMA351-CF8M	ASTMA216-WCB	ASTMA352-LCB
3	Ball	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
4	Seat Assembly	Assembled By No.5&6	Assembled By No.5&6	Assembled By No.5&6	Assembled By No.5&6
5 ①	Seat Insert	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK
6	Seat Ring	ASTMA105N/ENP	ASTMA182-F316	ASTMA105/ENP	ASTMA350-LF2/ENP
7	Stem	ASTMA105N/ENP	ASTMA182-F316	ASTMA105/ENP	ASTMA350-LF2/ENP
8	Trunnion Alignment Pin	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
9	Thrust Washer	PTFE	PTFE	PTFE	PTFE
10	Trunnion Support	ASTMA216-WCB/ENP	ASTMA351-CF8M	ASTMA216-WCB/ENP	ASTMA352-LCB/ENP
11	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
12	Body Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
13	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
14	Spacer	PTFE	PTFE	PTFE	PTFE
15	Firesafe Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
16	Gland Cap	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
17	Top Flange	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
18	Thrust Washer	25%Glass Fiber+PTFE	25%Glass Fiber+PTFE	25%Glass Fiber+PTFE	25%Glass Fiber+PTFE
19	Bearing	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
20	Seat Follower	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
21	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
22	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
23	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
24	Anti-static Device	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
25 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
26 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
27 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
28 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
29	Body Stud	ASTMA193-B7	ASTMA193-B8	ASTMA193-B7M	ASTMA320-L7M
30	Body Nut	ASTMA194-2H	ASTMA194-8	ASTMA194-2HM	ASTMA194-7M
31	Screw	Carbon Steel	Stainless Steel	Carbon Steel	ASTMA320-L7M
32	Screw	Carbon Steel	Stainless Steel	Carbon Steel	ASTMA320-L7M
33	Gland Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
34	Key	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
35	Spring Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
36	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
37	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

①- Please contact factory for materials supplied.

Index no	Part
1	Body
2	Closure
3	Ball
4	Seat Assembly (⑤+⑥)
5	Seat Insert
6	Seat Ring
7	Stem
8	Trunnion Alignment Pin
9	Thrust Washer
10	Trunnion Support
11	Gasket
12	Body Gasket
13	Gasket
14	Spacer
15	Firesafe Gasket
16	Gland Cap
17	Top Flange
18	Thrust Washer
19	Bearing

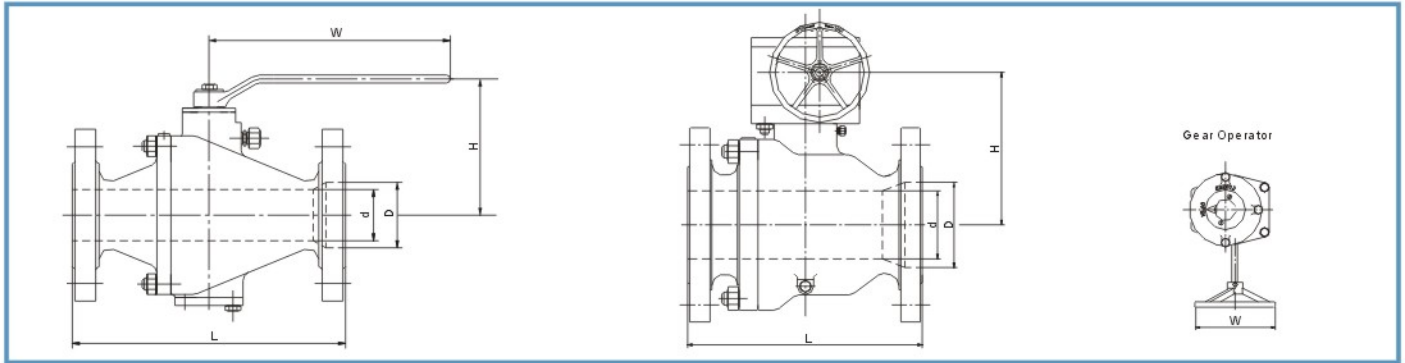
Index no	Part
20	Seat Follower
21	Vent Valve
22	Drain
23	Seat Spring
24	Anti-static Device
25	O-Ring
26	O-Ring
27	O-Ring
28	O-Ring
29	Body Stud
30	Body Nut
31	Screw
32	Screw
33	Gland Pin
34	Key
35	Spring Pin
36	Seat Injection
37	Stem Injection





BT Series Ball Valve

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



150 LB Dimensions

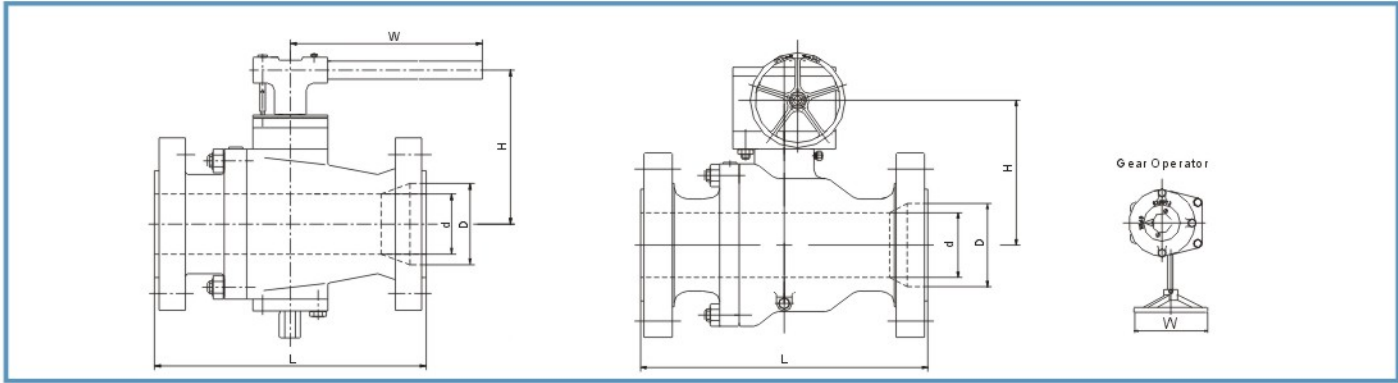
Full Port											
Size		d		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	7.01	178	6.50	165	9.06	230	37.5	17
3	80	2.99	76	7.99	203	7.60	193	15.75	400	72.8	33
4	100	4.02	102	9.02	229	9.09	231	18.11	460	110.2	50
6	150	5.98	152	15.51	394	12.95	329	39.37	1000	205.0	93
8	200	7.99	203	17.99	457	15.47	393	19.69	*500	366.0	166
10	250	10.00	254	20.98	533	15.79	401	19.69	*500	601.9	273
12	300	12.01	305	24.02	610	17.36	441	19.69	*500	1047.2	475
14	350	13.27	337	27.01	686	18.94	481	19.69	*500	1256.6	570
16	400	15.24	387	30.00	762	23.54	598	19.69	*500	1715.2	778
18	450	17.24	438	34.02	864	25.31	643	19.69	*500	2061.3	935
20	500	19.25	489	35.98	914	27.87	708	19.69	*500	2623.5	1190
22	550	21.26	540	40.00	1016	31.42	798	19.69	*500	2967.4	1346
24	600	23.27	591	42.01	1067	33.98	863	19.69	*500	3481.0	1579

Reduced Port													
Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	7.99	203	6.50	165	9.06	230	66.1	30
4*3	100*80	2.99	76	4.02	102	9.02	229	7.60	193	15.75	400	103.6	47
6*4	150*100	4.02	102	5.98	152	15.51	394	9.09	231	15.75	400	198.4	90
8*6	200*150	5.98	152	7.99	203	17.99	457	12.95	329	18.11	460	354.9	161
10*8	250*200	7.99	203	10.00	254	20.98	533	15.47	393	39.37	1000	590.8	268
12*10	300*250	10.00	254	12.01	305	24.02	610	15.47	393	19.69	*500	1029.5	467
14*12	350*300	12.01	305	13.27	337	27.01	686	17.36	441	19.69	*500	1234.6	560
16*14	400*350	13.27	337	15.24	387	30.00	762	18.94	481	19.69	*500	1688.7	766
18*16	450*400	15.24	387	17.24	438	34.02	864	23.54	598	19.69	*500	1988.5	902
20*18	500*450	17.24	438	19.25	489	35.98	914	25.31	643	19.69	*500	2491.2	1130
22*20	550*500	19.25	489	21.26	540	40.00	1016	25.31	643	19.69	*500	2866.0	1300
24*20	600*500	19.25	489	23.27	591	42.01	1067	27.87	708	19.69	*500	3351.0	1520

300 LB Dimensions

Full Port											
Size		d		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	8.50	216	6.50	165	9.06	230	39.7	18
3	80	2.99	76	11.14	283	7.60	193	15.75	400	86.2	40
4	100	4.02	102	12.01	305	9.09	231	2.95	75	138.9	63
6	150	5.98	152	15.87	403	12.95	329	39.37	1000	330.7	150
8	200	7.99	203	19.76	502	15.47	393	59.06	1500	529.1	240
10	250	10.00	254	22.36	568	15.79	401	19.69	*500	672.4	305
12	300	12.01	305	25.51	648	17.36	441	19.69	*500	1117.7	507
14	350	13.27	337	30.00	762	18.94	481	19.69	*500	1327.2	602
16	400	15.24	387	32.99	838	23.54	598	19.69	*500	2204.6	1000
18	450	17.24	438	35.98	914	25.31	643	19.69	*500	2557.3	1160
20	500	19.25	489	39.02	991	27.87	708	19.69	*500	2910.1	1320
22	550	21.26	540	42.99	1092	31.42	798	19.69	*500	3395.1	1540
24	600	23.27	591	45.00	1143	33.98	863	19.69	*500	4131.4	1874

*Gear Operator



300 LB Dimensions

Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	11.14	283	6.50	165	9.06	230	83.8	38
4*3	100*80	2.99	76	4.02	102	12.01	305	7.60	193	15.75	400	132.3	60
6*4	150*100	4.02	102	5.98	152	15.87	403	9.09	231	29.53	750	324.1	147
8*6	200*150	5.98	152	7.99	203	19.76	502	12.95	329	39.37	1000	515.9	234
10*8	250*200	7.99	203	10.00	254	22.36	568	15.47	393	59.06	1500	650.4	295
12*10	300*250	10.00	254	12.01	305	25.51	648	15.47	393	19.69	*500	1075.8	488
14*12	350*300	12.01	305	13.27	337	30.00	762	17.36	441	19.69	*500	1256.6	570
16*14	400*350	13.27	337	15.24	387	32.99	838	18.94	481	19.69	*500	2006.2	910
18*16	450*400	15.24	387	17.24	438	35.98	914	23.54	598	19.69	*500	2248.7	1020
20*18	500*450	17.24	438	19.25	489	39.02	991	25.31	643	19.69	*500	2821.9	1280
22*20	550*500	19.25	489	21.26	540	42.99	1092	25.31	643	19.69	*500	2998.2	1360
24*20	600*500	19.25	489	23.27	591	45.00	1143	27.87	708	19.69	*500	3681.7	1670

600 LB Dimensions

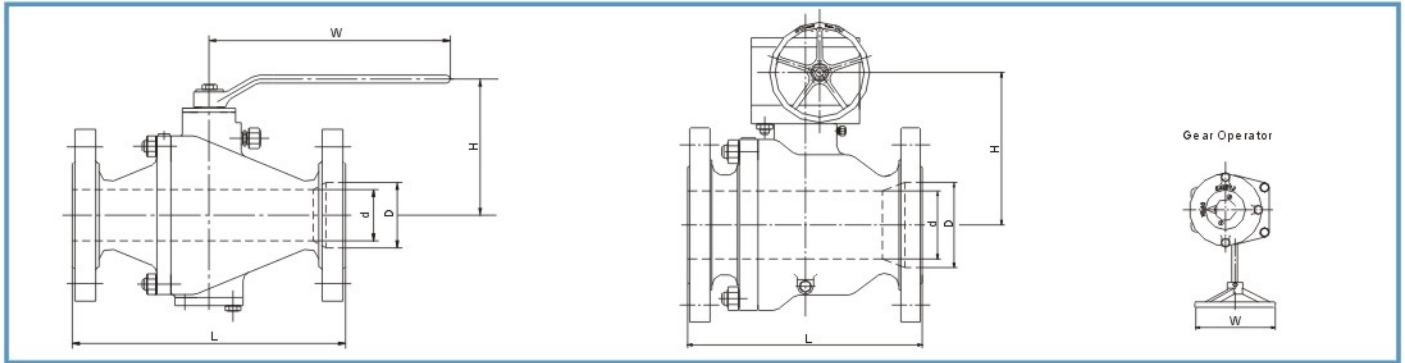
Size		d		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	11.50	292	6.93	176	15.75	400	59.5	27
3	80	2.99	76	14.02	356	9.72	247	29.53	750	110.2	50
4	100	4.02	102	17.01	432	10.87	276	39.37	1000	176.4	80
6	150	5.98	152	22.01	559	14.29	363	59.06	1500	775.6	351
8	200	7.99	203	25.98	660	14.29	363	19.69	*500	771.6	350
10	250	10.00	254	30.98	787	16.77	426	19.69	*500	1322.8	600
12	300	12.01	305	32.99	838	21.57	548	19.69	*500	1807.8	820
14	350	13.27	337	35.00	889	23.54	598	19.69	*500	2491.2	1130
16	400	15.24	387	39.02	991	25.51	648	19.69	*500	3417.1	1550
18	450	17.24	438	42.99	1092	29.13	740	19.69	*500	4629.6	2100
20	500	19.25	489	47.01	1194	31.89	810	19.69	*500	6172.8	2800
24	600	23.27	591	55.00	1397	36.22	920	19.69	*500	7993.8	3626

Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	14.02	356	6.93	176	15.75	400	90.4	41
4*3	100*80	2.99	76	4.02	102	17.01	432	9.72	247	29.53	750	154.3	70
6*4	150*100	4.02	102	5.98	152	22.01	559	10.87	276	39.37	1000	269.0	122
8*6	200*150	5.98	152	7.99	203	25.98	660	14.29	363	59.06	1500	562.2	255
10*8	250*200	7.99	203	10.00	254	30.98	787	14.29	363	19.69	*500	970.0	440
12*10	300*250	10.00	254	12.01	305	32.99	838	16.77	426	19.69	*500	1366.8	620
14*12	350*300	12.01	305	13.27	337	35.00	889	21.57	548	19.69	*500	2336.9	1060
16*14	400*350	13.27	337	15.24	387	39.02	991	23.54	598	19.69	*500	3174.6	1440
18*16	450*400	15.24	387	17.24	438	42.99	1092	25.51	648	19.69	*500	4100.5	1860
20*18	500*450	17.24	438	19.25	489	47.01	1194	29.13	740	19.69	*500	5291.0	2400
24*20	600*500	19.25	489	23.27	591	55.00	1397	31.89	810	19.69	*500	7142.9	3240

*Gear Operator

BT Series Ball Valve

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

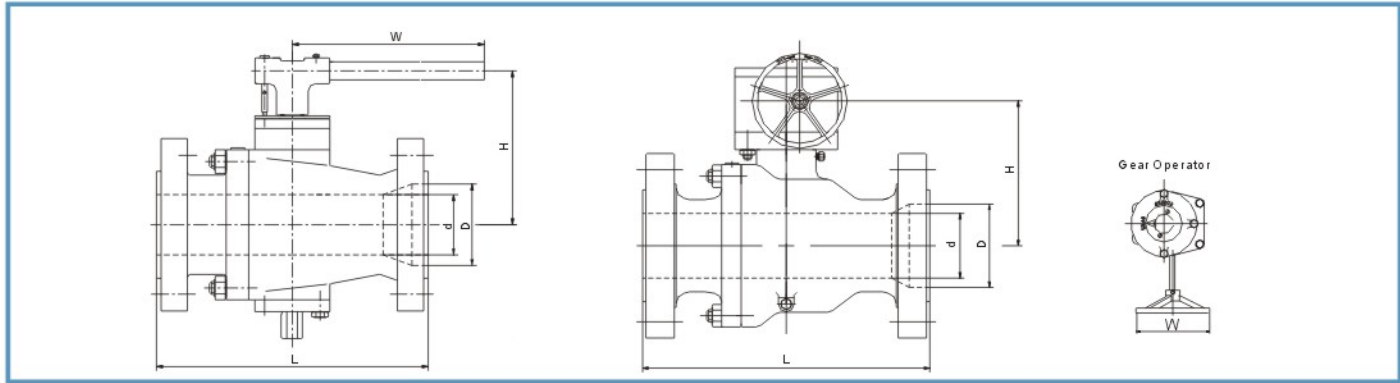


900 LB Dimensions

Full Port											
Size		d		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	14.49	368	7.56	192	18.11	460	114.6	52
3	80	2.99	76	15.00	381	9.80	249	39.37	1000	213.8	97
4	100	4.02	102	17.99	457	12.40	315	59.06	1500	304.2	138
6	150	5.98	152	24.02	610	12.72	323	19.69	*500	634.9	288
8	200	7.99	203	29.02	737	15.00	381	19.69	*500	987.7	448
10	250	10.00	254	32.99	838	20.39	518	19.69	*500	1649.0	748
12	300	12.01	305	37.99	965	22.36	568	19.69	*500	2244.3	1018
14	350	12.76	324	40.51	1029	26.18	665	19.69	*500	3082.0	1398
16	400	14.76	375	44.49	1130	28.74	730	19.69	*500	4030.0	1828
18	450	16.73	425	47.99	1219	31.30	795	19.69	*500	5132.3	2328
20	500	18.62	473	52.01	1321	32.48	825	24.02	*610	6455.0	2928
24	600	22.52	572	60.98	1549	38.31	973	24.02	*610	9210.8	4178

Reduced Port													
Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	15.00	381	7.56	192	18.11	460	183.0	83
4*3	100*80	2.99	76	4.02	102	17.99	457	9.80	249	39.37	1000	227.1	103
6*4	150*100	4.02	102	5.98	152	24.02	610	12.40	315	59.06	1500	443.1	201
8*6	200*150	5.98	152	7.99	203	29.02	737	12.72	323	19.69	*500	767.2	348
10*8	250*200	7.99	203	10.00	254	32.99	838	15.00	381	19.69	*500	1318.3	598
12*10	300*250	10.00	254	12.01	305	37.99	965	20.39	518	19.69	*500	1737.2	788
14*12	350*300	12.01	305	12.76	324	40.51	1029	22.36	568	19.69	*500	2425.0	1100
16*14	400*350	12.76	324	14.76	375	44.49	1130	26.18	665	19.69	*500	3130.5	1420
18*16	450*400	14.76	375	16.73	425	47.99	1219	28.74	730	19.69	*500	4250.4	1928
20*18	500*450	16.73	425	18.62	473	52.01	1321	31.30	795	19.69	*500	5352.7	2428
24*20	600*500	18.62	473	22.52	572	60.98	1549	32.48	825	24.02	*610	7888.0	3578

*Gear Operator



1500 LB Dimensions

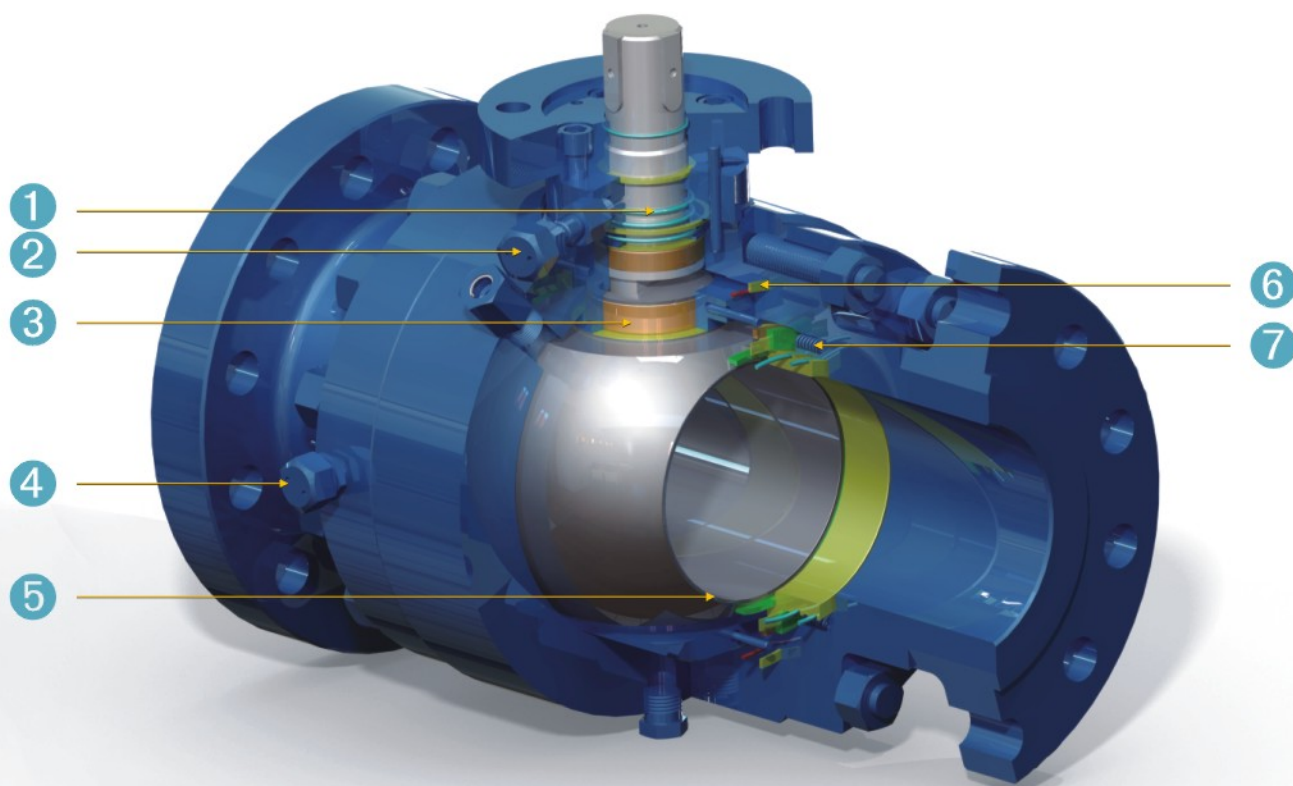
Full Port

Size		d		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	14.49	368	9.92	252	29.53	750	189.6	86
3	80	2.99	76	18.50	470	11.81	300	59.06	1500	299.8	136
4	100	4.02	102	21.50	546	10.71	272	19.69	*500	487.2	221
6	150	5.75	146	27.76	705	13.43	341	19.69	*500	855.4	388
8	200	7.64	194	32.76	832	19.41	493	19.69	*500	1278.7	580
10	250	9.49	241	39.02	991	22.24	565	19.69	*500	2089.9	948
12	300	11.38	289	44.49	1130	27.56	700	19.69	*500	2949.7	1338
14	350	12.52	318	49.49	1257	29.41	747	19.69	*500	3853.6	1748
16	400	14.25	362	54.49	1384	31.30	795	24.02	*610	4911.8	2228
18	450	16.02	407	60.51	1537	34.53	877	24.02	*610	6283.1	2850
20	500	17.99	457	65.51	1664	38.78	985	24.02	*610	10714.3	4860

Reduced Port

Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	18.50	470	9.92	252	29.53	750	216.0	98
4*3	100*80	2.99	76	4.02	102	21.50	546	11.81	300	59.06	1500	304.2	138
6*4	150*100	4.02	102	5.75	146	27.76	705	10.71	272	19.69	*500	634.9	288
8*6	200*150	5.75	146	7.64	194	32.76	832	13.43	341	19.69	*500	987.7	448
10*8	250*200	7.64	194	9.49	241	39.02	991	19.41	493	19.69	*500	1649.0	748
12*10	300*250	9.49	241	11.38	289	44.49	1130	22.24	565	19.69	*500	2248.7	1020
14*12	350*300	11.38	289	12.52	318	49.49	1257	27.56	700	19.69	*500	3086.4	1400
16*14	400*350	12.52	318	14.25	362	54.49	1384	29.41	747	19.69	*500	4012.3	1820
18*16	450*400	14.25	362	16.02	407	60.51	1537	31.30	795	24.02	*610	5132.3	2328
20*18	500*450	16.02	407	17.99	457	65.51	1664	34.53	877	24.02	*610	9082.9	4120

*Gear Operator



- ① Two O-ring Seals: Prevents leakage from stem area.
- ② Emergency Sealant Injection Fitting: Allows external interventions to prevent stem leakage.
- ③ Blow-out Proof Stem (internally inserted): Safety feature that functions to assure stem sealing at all pressures.
- ④ Emergency Sealant Injection Fitting: Allows external intervention to prevent seat leakage.
- ⑤ Back-up Metal to Metal Sealing: When primary soft-seat material is deteriorated by fire, the metal-to-metal provides shutoff.
- ⑥ O-ring & Gasket Combination: Prevents leakage from body joint area.
- ⑦ Floating Spring-loaded Seats: Assure sealing even at low pressures.

No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
2	Closure	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
3	Ball	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
4	Seat Assembly (5&6)	Assembled By No.5&6	Assembled By No.5&6	Assembled By No.5&6	Assembled By No.5&6
5 ①	Seat Insert	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK
6	Seat Ring	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
7	Stem	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
8	Trunnion Alignment Pin	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
9	Thrust Washer	PTFE	PTFE	PTFE	PTFE
10	Trunnion Support	ASTMA216-WCB/ENP	ASTMA351-CF8M	ASTMA216-WCB/ENP	ASTMA352-LCB/ENP
11	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
12	Body Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
13	Spacer	PTFE	PTFE	PTFE	PTFE
14	Weather Seal Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
15	Firesafe Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
16	Gland Cap	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
17	Top Flange	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
18	Thrust Washer	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
19	Bearing	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
20	Seat Follower	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
21	Vent Valve	Assembly	Assembly	Assembly	Assembly
22	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
23	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
24	Anti-static Device	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
25	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
26 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
27 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
28 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
29 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
30	Body Stud	ASTMA193-B7	ASTMA193-B8	ASTMA193-B7M	ASTMA320-L7M
31	Body Nut	ASTMA194-2H	ASTMA194-8	ASTMA194-2HM	ASTMA194-7M
32	Screw	Carbon Steel	Stainless Steel	Carbon Steel	ASTMA320-L7M
33	Screw	Carbon Steel	Stainless Steel	Carbon Steel	ASTMA320-L7M
34	Gland Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
35	Key	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
36	Spring Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
37	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
38	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
39	Bearing	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
40	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite

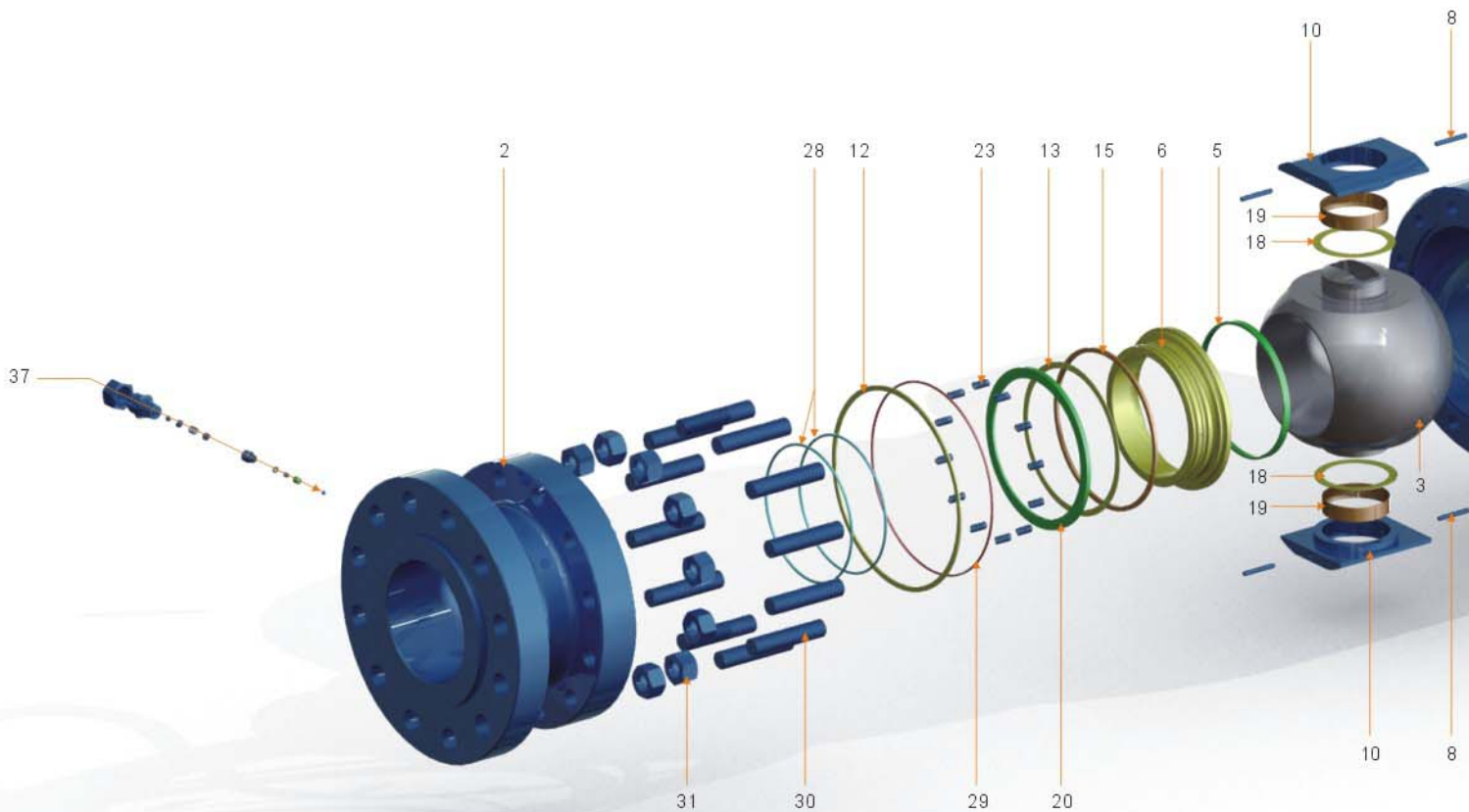
①- Please contact factory for materials supplied.

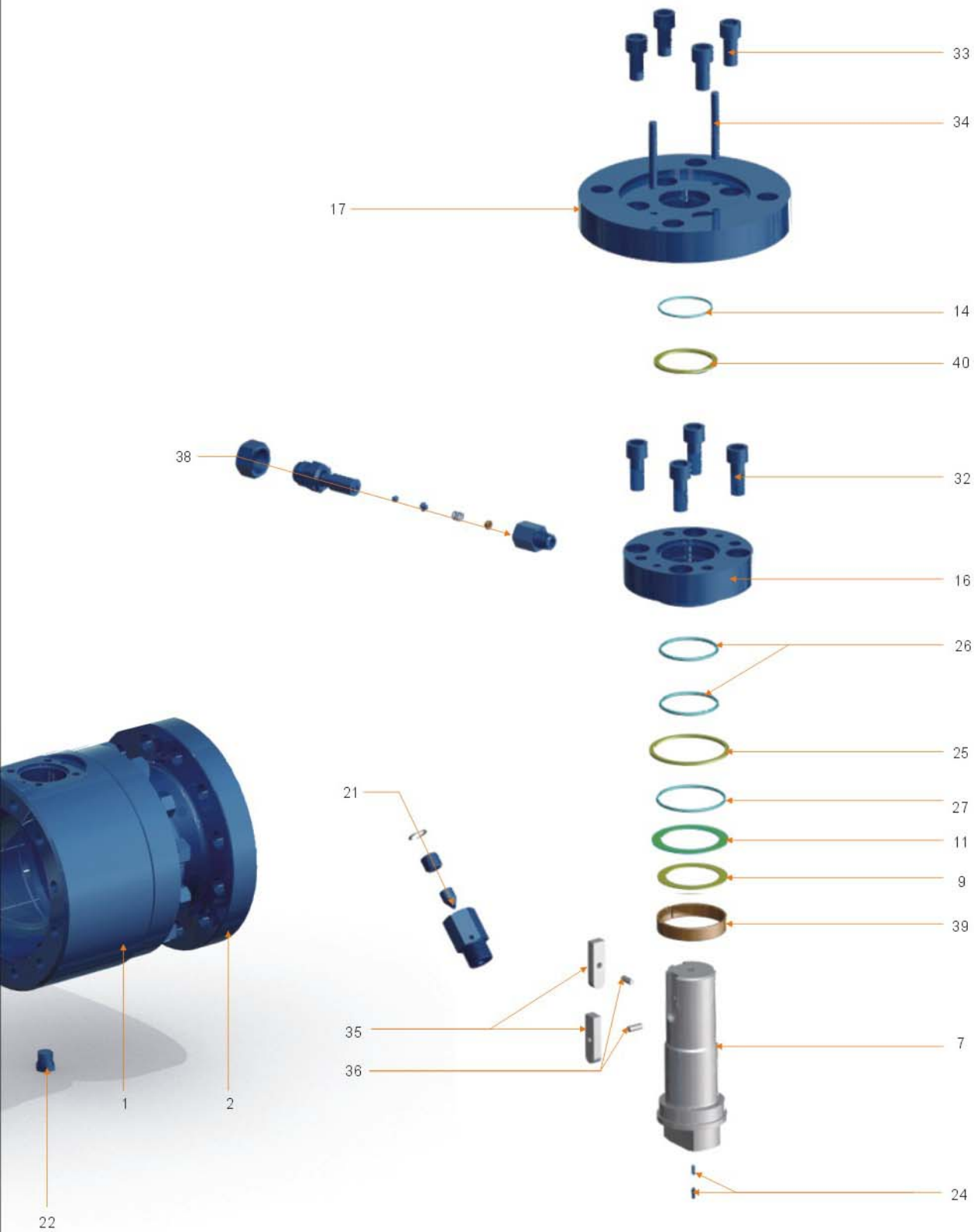
BS Series Ball Valve (6" & Larger)

Material Specifications

Index no	Part
1	Body
2	Closure
3	Ball
4	Seat Assembly (5+6)
5	Seat Insert
6	Seat Ring
7	Stem
8	Trunnion Alignment Pin
9	Thrust Washer
10	Trunnion Support
11	Gasket
12	Body Gasket
13	Spacer
14	Weather Seal Ring
15	Firesafe Gasket
16	Gland Cap
17	Top Flange
18	Thrust Washer
19	Bearing
20	Seat Follower

Index no	Part
21	Vent Valve
22	Drain
23	Seat Spring
24	Anti-static Device
25	Gasket
26	O-Ring
27	O-Ring
28	O-Ring
29	O-Ring
30	Body Stud
31	Body Nut
32	Screw
33	Screw
34	Gland Pin
35	Key
36	Spring Pin
37	Seat Injection
38	Stem Injection
39	Bearing
40	Gasket



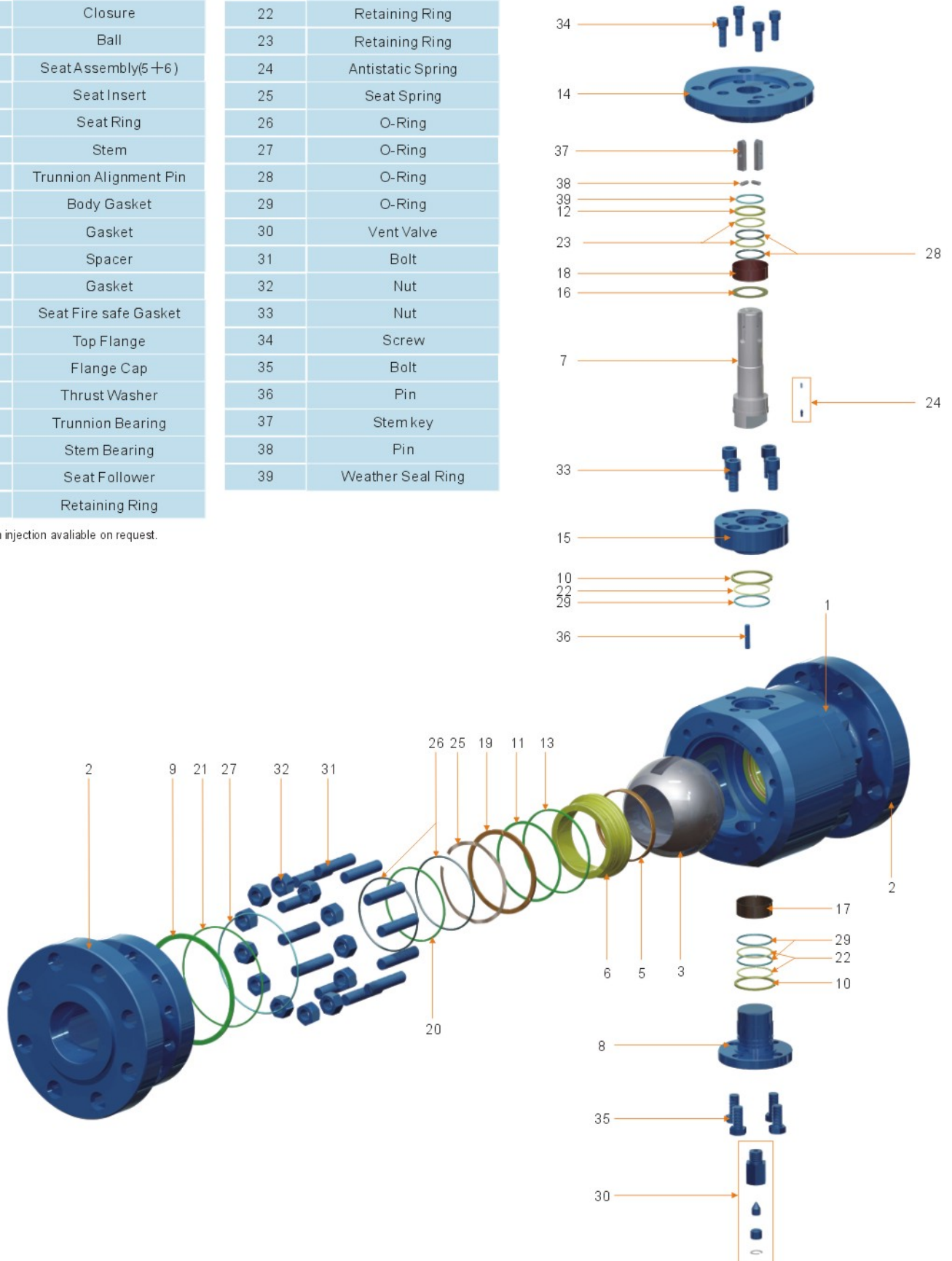


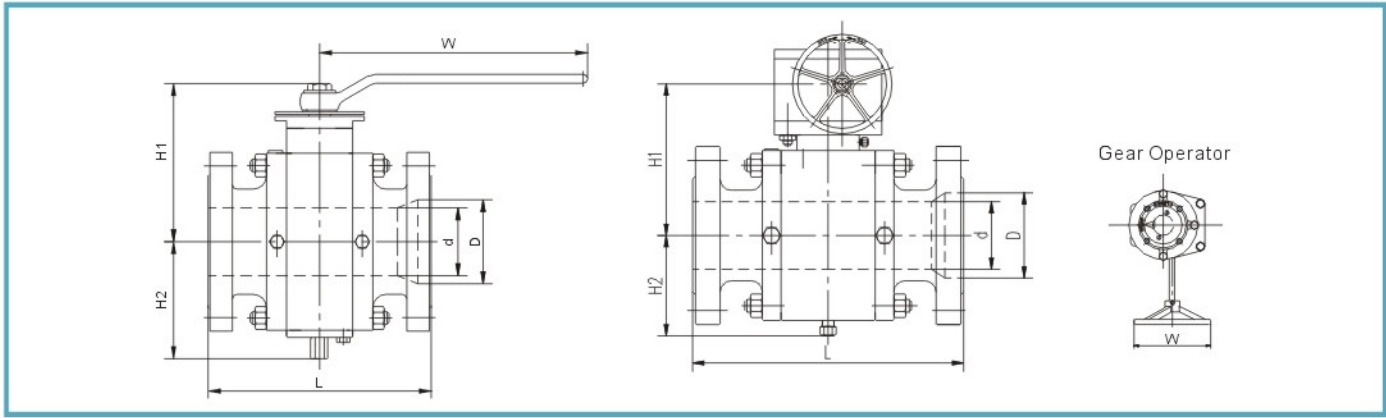
BS Series Ball Valve (2" - 4")

Material Specifications

Index no	Part	Index no	Part
1	Body	21	Retaining Ring
2	Closure	22	Retaining Ring
3	Ball	23	Retaining Ring
4	Seat Assembly(5+6)	24	Antistatic Spring
5	Seat Insert	25	Seat Spring
6	Seat Ring	26	O-Ring
7	Stem	27	O-Ring
8	Trunnion Alignment Pin	28	O-Ring
9	Body Gasket	29	O-Ring
10	Gasket	30	Vent Valve
11	Spacer	31	Bolt
12	Gasket	32	Nut
13	Seat Fire safe Gasket	33	Nut
14	Top Flange	34	Screw
15	Flange Cap	35	Bolt
16	Thrust Washer	36	Pin
17	Trunnion Bearing	37	Stem key
18	Stem Bearing	38	Pin
19	Seat Follower	39	Weather Seal Ring
20	Retaining Ring		

* Seat & stem injection available on request.





150 LB Dimensions

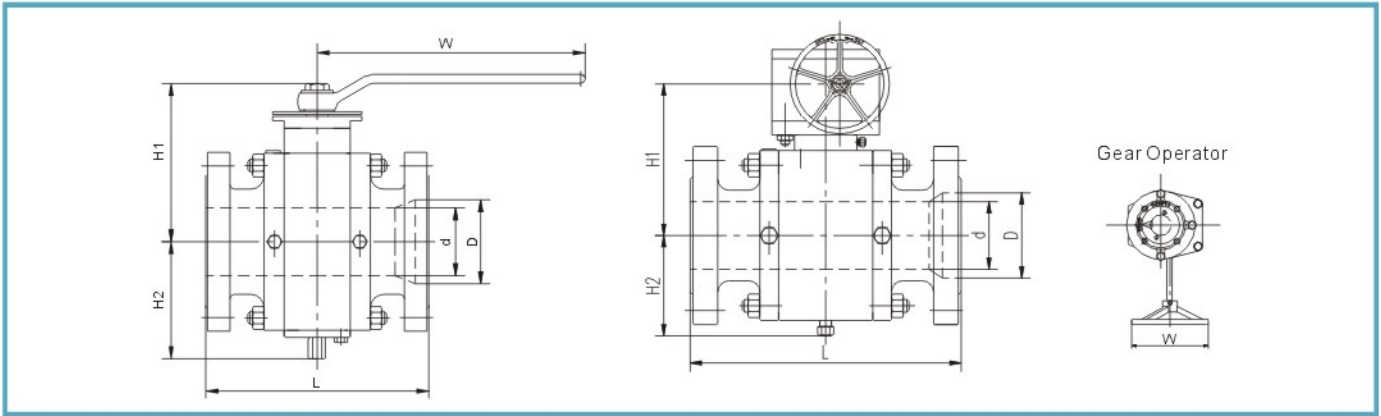
Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	7.01	178	7.87	200	4.33	110	10.43	265	46.3	21
3	80	2.99	76	7.99	203	11.81	300	4.96	126	11.22	285	70.6	32
4	100	4.02	102	9.02	229	12.40	315	6.50	165	11.22	285	110.2	50
6	150	5.98	152	15.51	394	13.19	335	6.50	165	11.81	*300	361.6	164
8	200	7.99	203	17.99	457	15.94	405	7.87	200	11.81	*300	760.6	345
10	250	10.00	254	21.02	534	16.81	427	8.66	220	11.81	*300	970.0	440
12	300	12.01	305	24.02	610	18.31	465	10.31	262	19.69	*500	1272.1	577
14	350	13.27	337	27.01	686	19.92	506	11.54	293	23.62	*600	1893.7	859
16	400	15.24	387	30.00	762	24.49	622	13.43	341	23.62	*600	2522.1	1144
18	450	17.24	438	34.02	864	26.22	666	16.22	412	23.62	*600	3174.6	1440
20	500	19.25	489	35.98	914	28.74	730	17.13	435	23.62	*600	4285.7	1944
22	550	21.26	540	39.02	991	32.80	833	18.90	480	23.62	*600	5185.2	2352
24	600	23.27	591	42.01	1067	35.24	895	20.39	518	31.50	*800	6179.5	2803
26	650	25.00	635	45.00	1143	35.43	900	21.06	535	31.50	*800	7054.7	3200
28	700	27.01	686	49.02	1245	36.81	935	21.34	542	31.50	*800	8924.2	4048
30	750	29.02	737	50.98	1295	39.76	1010	23.82	605	31.50	*800	13668.4	6200
32	800	30.75	781	54.02	1372	41.73	1060	25.59	650	31.50	*800	12103.2	5490
34	850	32.76	832	57.99	1473	42.40	1077	25.59	650	31.50	*800	14779.5	6704
36	900	34.49	876	60.00	1524	43.90	1115	27.56	700	31.50	*800	21164.0	9600
40	1000	38.50	978	67.99	1727	55.12	1400	34.06	865	31.50	*800	22643.3	10271
42	1050	40.24	1022	78.23	1987	62.91	1598	35.43	900	31.50	*800	26697.5	12110
48	1200	45.98	1168	83.46	2120	67.80	1722	41.02	1042	31.50	*800	40476.2	18360

Reduced Port															
Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	7.99	203	7.87	200	4.33	110	10.43	265	58.4	27
4*3	100*80	2.99	76	4.02	102	9.02	229	11.81	300	4.96	126	11.22	285	88.2	40
6*4	150*100	4.02	102	5.98	152	15.51	394	12.40	315	6.50	165	11.22	285	149.9	68
8*6	200*150	5.98	152	7.99	203	17.99	457	13.19	335	6.69	170	11.81	*300	390.2	177
10*8	250*200	7.99	203	10.00	254	21.02	534	15.94	405	7.87	200	11.81	*300	676.8	307
12*10	300*250	10.00	254	12.01	305	24.02	610	16.81	427	8.66	220	11.81	*300	1122.1	509
14*12	350*300	12.01	305	13.27	337	27.01	686	18.31	465	10.31	262	19.69	*500	1591.7	722
16*14	400*350	13.27	337	15.24	387	30.00	762	19.92	506	11.54	293	23.62	*600	2138.5	970
18*16	450*400	15.24	387	17.24	438	34.02	864	24.49	622	13.43	341	23.62	*600	2846.1	1291
20*18	500*450	17.24	438	19.25	489	35.98	914	26.22	666	15.43	392	23.62	*600	3681.7	1670
22*18	550*450	17.24	438	21.26	540	39.02	991	26.22	666	15.43	392	23.62	*600	5165.3	2343
24*20	600*500	19.25	489	23.27	591	42.01	1067	28.74	730	17.13	435	23.62	*600	4241.6	1924
26*22	650*550	21.26	540	25.00	635	45.00	1143	32.80	833	18.90	480	23.62	*600	4883.2	2215
28*24	700*600	23.27	591	27.01	686	49.02	1245	35.24	895	20.39	518	31.50	*800	5952.4	2700
30*24	750*600	23.27	591	29.02	737	50.98	1295	35.24	895	20.39	518	31.50	*800	6433.0	2918
32*26	800*650	25.00	635	30.75	781	54.02	1372	35.43	900	21.06	535	31.50	*800	8829.4	4005
34*28	850*700	27.01	686	32.76	832	57.99	1473	36.81	935	21.34	542	31.50	*800	9799.4	4445
36*30	900*750	29.02	737	34.49	876	60.00	1524	39.76	1010	23.82	605	31.50	*800	11011.9	4995
40*34	1000*850	32.76	832	38.50	978	67.99	1727	42.40	1077	25.59	650	31.50	*800	18077.6	8200
42*36	1050*900	34.49	876	40.24	1022	78.23	1987	43.90	1115	27.56	700	31.50	*800	23966.1	10871
48*40	1200*1000	38.50	978	45.98	1168	83.46	2120	55.12	1400	34.06	865	31.50	*800	29806.0	13520

* Gear Operator

BS Series Ball Valve

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

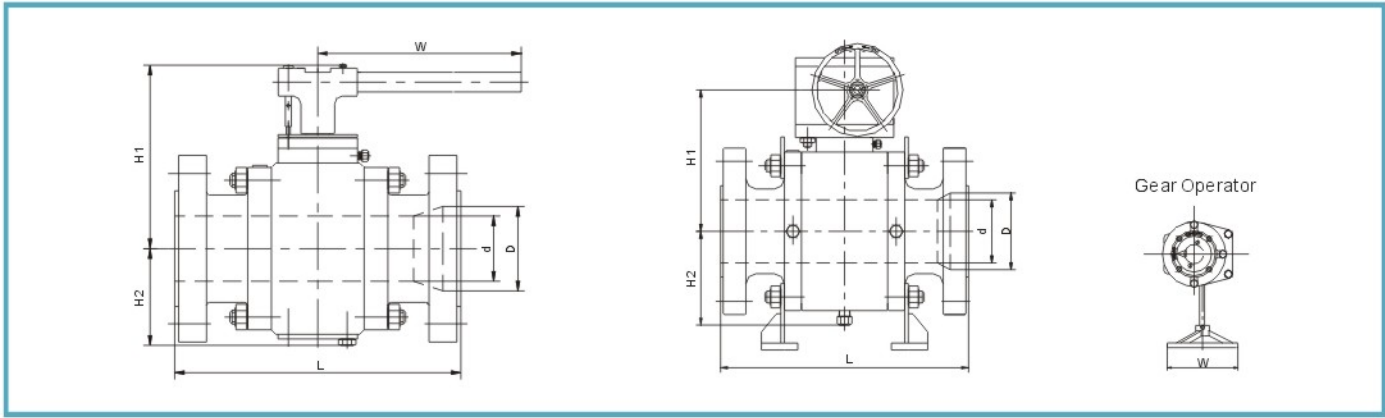


300 LB Dimensions

Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	8.50	216	8.11	206	4.45	113	10.43	265	55.1	25
3	80	2.99	76	11.14	283	12.40	315	5.08	129	15.75	400	101.4	46
4	100	4.02	102	12.01	305	12.99	330	6.65	169	29.53	750	169.8	77
6	150	5.98	152	15.87	403	13.58	345	5.83	148	11.81	*300	377.0	171
8	200	7.99	203	19.76	502	16.34	415	7.28	185	11.81	*300	709.9	322
10	250	10.00	254	22.36	568	16.81	427	8.90	226	15.75	*400	1190.5	540
12	300	12.01	305	25.51	648	18.31	465	10.59	269	19.69	*500	1682.1	763
14	350	13.27	337	30.00	762	20.43	519	11.81	300	23.62	*600	2149.5	975
16	400	15.24	387	32.99	838	25.12	638	13.78	350	23.62	*600	3086.4	1400
18	450	17.24	438	36.98	914	26.89	683	15.83	402	23.62	*600	3780.9	1715
20	500	19.25	489	39.02	991	29.45	748	17.56	446	23.62	*600	5465.2	2479
22	550	21.26	540	42.99	1092	33.62	854	19.37	492	23.62	*600	4894.2	2220
24	600	23.27	591	45.00	1143	36.10	917	20.91	531	31.50	*800	6371.3	2890
28	700	27.01	686	52.99	1346	37.72	958	21.89	556	31.50	*800	10086.0	4575
30	750	29.02	737	55.00	1397	40.75	1035	24.41	620	31.50	*800	12323.6	5590
32	800	30.75	781	60.00	1524	42.80	1087	26.22	666	31.50	*800	13756.6	6240
34	850	32.76	832	64.02	1626	43.46	1104	26.22	666	31.50	*800	16247.8	7370
36	900	34.49	876	67.99	1727	45.00	1143	28.27	718	31.50	*800	18595.7	8435
40	1000	38.50	978	75.98	1930	56.50	1435	34.92	887	31.50	*800	24691.4	11200
42	1050	40.24	1022	80.00	2032	64.49	1638	36.34	923	31.50	*800	28769.8	13050
48	1200	45.98	1168	85.43	2170	69.49	1765	42.05	1068	31.50	*800	41887.1	19000

Reduced Port															
Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	Kg
3*2	80*50	2.01	51	2.99	76	11.14	283	8.11	206	4.45	113	10.43	265	79.4	36
4*3	100*80	2.99	76	4.02	102	12.01	305	12.40	315	5.08	129	15.75	400	121.3	55
6*4	150*100	4.02	102	5.98	152	15.87	403	12.99	330	6.65	169	29.53	750	246.9	112
8*6	200*150	5.98	152	7.99	203	19.76	502	13.58	345	5.83	148	11.81	*300	489.4	222
10*8	250*200	7.99	203	10.00	254	22.36	568	16.34	415	7.28	185	11.81	*300	839.9	381
12*10	300*250	10.00	254	12.01	305	25.51	648	16.81	427	8.90	226	19.69	*500	1278.7	580
14*12	350*300	12.01	305	13.27	337	30.00	762	18.31	465	10.59	269	23.62	*600	2028.2	920
16*14	400*350	13.27	337	15.24	387	32.99	838	20.43	519	11.81	300	23.62	*600	2314.8	1050
18*16	450*400	15.24	387	17.24	438	35.98	914	25.12	638	13.78	350	23.62	*600	3373.0	1530
20*18	500*450	17.24	438	19.25	489	39.02	991	26.89	683	15.83	402	23.62	*600	4034.4	1830
22*18	550*450	17.24	438	21.26	540	42.99	1092	26.89	683	15.83	402	23.62	*600	4431.2	2010
24*20	600*500	19.25	489	23.27	591	45.00	1143	29.45	748	17.56	446	23.62	*600	4894.2	2220
28*24	700*600	23.27	591	27.01	686	52.99	1346	36.10	917	20.91	531	31.50	*800	7054.7	3200
30*24	750*600	23.27	591	29.02	737	55.00	1397	36.10	917	20.91	531	31.50	*800	8708.1	3950
34*28	850*700	27.01	686	32.76	832	64.02	1626	37.72	958	21.89	556	31.50	*800	10681.2	4845
36*30	900*750	29.02	737	34.49	876	67.99	1727	40.75	1035	24.41	620	31.50	*800	13448.0	6100
40*34	1000*850	32.76	832	38.50	978	75.98	1930	43.46	1104	26.22	666	31.50	*800	18077.6	8200
42*36	1050*900	34.49	876	40.24	1022	80.00	2032	45.00	1143	28.27	718	31.50	*800	20282.2	9200
48*40	1200*1000	38.50	978	45.98	1168	85.43	2170	56.50	1435	34.92	887	31.50	*800	33068.8	15000

* Gear Operator



600 LB Dimensions

Full Port

Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	11.50	292	8.11	206	4.45	113	15.75	400	72.8	33
3	80	2.99	76	14.02	356	12.40	315	5.08	129	29.53	750	141.1	64
4	100	4.02	102	17.01	432	12.99	330	6.65	169	39.37	1000	257.9	117
6	150	5.98	152	22.01	559	13.58	345	5.83	148	11.81	*300	628.3	285
8	200	7.99	203	25.98	660	16.34	415	7.28	185	11.81	*300	996.5	452
10	250	10.00	254	30.98	787	16.81	427	8.90	226	19.69	*500	1622.6	736
12	300	12.01	305	32.99	838	18.31	465	10.59	269	23.62	*600	2204.6	1000
14	350	13.27	337	35.00	889	20.43	519	11.81	300	23.62	*600	2929.9	1329
16	400	15.24	387	39.02	991	25.12	638	13.78	350	23.62	*600	3813.9	1730
18	450	17.24	438	42.99	1092	26.89	683	15.83	402	23.62	*600	5037.5	2285
20	500	19.25	489	47.01	1194	29.45	748	17.56	446	23.62	*600	6203.7	2814
22	550	21.26	540	50.98	1295	33.62	854	19.37	492	31.50	*800	7429.5	3370
24	600	23.27	591	55.00	1397	36.10	917	20.91	531	31.50	*800	10846.6	4920
28	700	27.01	686	60.98	1549	37.72	958	21.89	556	31.50	*800	13359.8	6060
30	750	29.02	737	65.00	1651	40.75	1035	24.41	620	31.50	*800	14748.7	6690
32	800	30.75	781	70.00	1778	42.80	1087	26.22	666	31.50	*800	17250.9	7825
34	850	32.76	832	75.98	1930	43.46	1104	26.22	666	31.50	*800	18650.8	8460
36	900	34.49	876	82.01	2083	45.00	1143	28.27	718	31.50	*800	23478.8	10650
40	1000	38.5	978	85.00	2159	56.50	1435	34.92	887	31.50	*800	32407.4	14700
42	1050	40.24	1022	85.63	2175	64.49	1638	36.34	923	31.50	*800	36177.2	16410
48	1200	45.98	1168	95.87	2435	69.49	1765	42.05	1068	31.50	*800	53351.0	24200

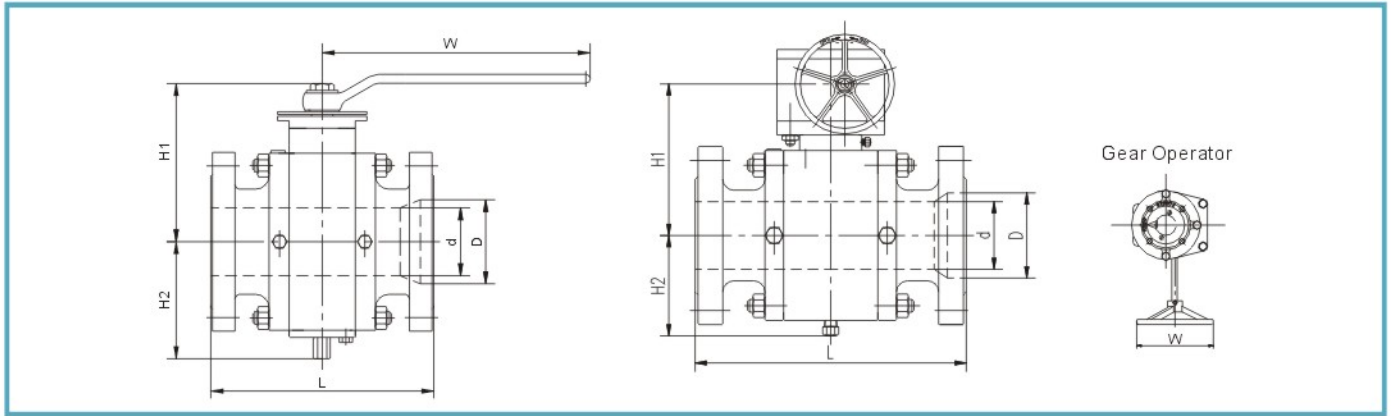
Reduced Port

Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	14.02	356	8.11	206	4.45	113	15.75	400	103.7	47
4*3	100*80	2.99	76	4.02	102	17.01	432	12.40	315	5.08	129	29.53	750	189.6	86
6*4	150*100	4.02	102	5.98	152	22.01	559	12.99	330	6.65	169	39.37	1000	357.1	162
8*6	200*150	5.98	152	7.99	203	25.98	660	13.58	345	5.83	148	11.81	*300	670.2	304
10*8	250*200	7.99	203	10.00	254	30.98	787	16.34	415	7.28	185	11.81	*300	1181.7	536
12*10	300*250	10.00	254	12.01	305	32.99	838	16.81	427	8.90	226	19.69	*500	1838.6	834
14*12	350*300	12.01	305	13.27	337	35.00	889	18.31	465	10.59	269	23.62	*600	2403.0	1090
16*14	400*350	13.27	337	15.24	387	39.02	991	20.43	519	11.81	300	23.62	*600	2888.0	1310
18*16	450*400	15.24	387	17.24	438	42.99	1092	25.12	638	13.78	350	23.62	*600	4135.8	1876
20*18	500*450	17.24	438	19.25	489	47.01	1194	26.89	683	15.83	402	23.62	*600	5564.4	2524
22*18	550*450	17.24	438	21.26	540	50.98	1295	26.89	683	15.83	402	23.62	*600	5357.1	2430
24*20	600*550	19.25	489	23.27	591	55.00	1397	29.45	748	17.56	446	23.62	*600	7583.8	3440
28*24	700*600	23.27	591	27.01	686	60.98	1549	36.10	917	20.91	531	31.50	*800	9369.5	4250
30*24	750*600	23.27	591	29.02	737	65.00	1651	36.10	917	20.91	531	31.50	*800	10427.7	4730
34*28	850*700	27.01	686	32.76	832	75.98	1930	37.72	958	21.89	556	31.50	*800	15873.0	7200
36*30	900*750	29.02	737	34.49	876	82.01	2083	40.75	1035	24.41	620	31.50	*800	18959.4	8600
40*34	1000*850	32.76	832	38.50	978	85.00	2159	43.46	1104	26.22	666	31.50	*800	22089.9	10020
42*36	1050*900	34.49	876	40.24	1022	85.63	2175	45.00	1143	28.27	718	31.50	*800	24470.9	11100
48*40	1200*1000	38.50	978	45.98	1168	95.87	2435	56.50	1435	34.92	887	31.50	*800	37918.9	17200

* Gear Operator

BS Series Ball Valve

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

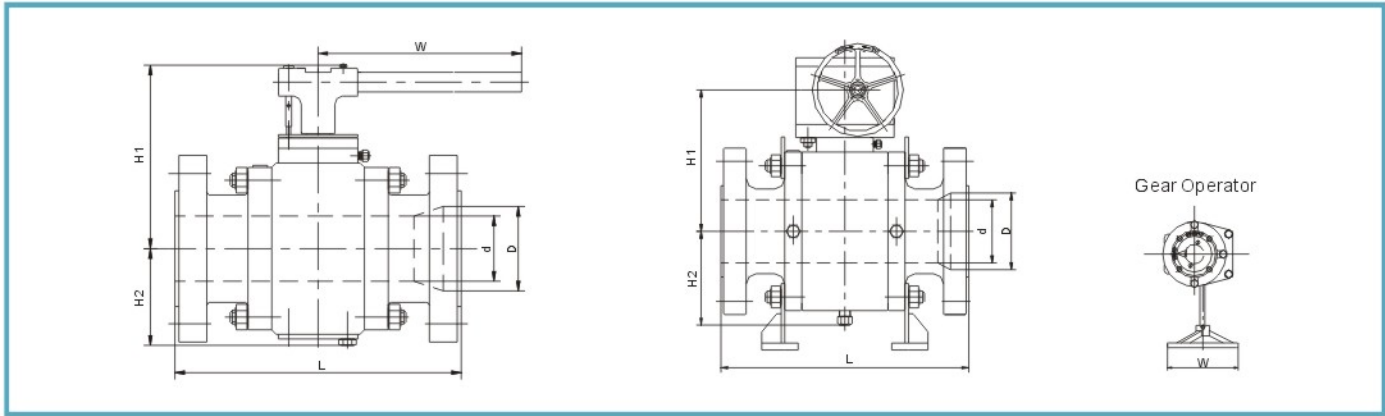


900 LB Dimensions

Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	14.49	368	4.69	119	4.69	119	18.11	460	143.3	65
3	80	2.99	76	15.00	381	5.24	133	5.24	133	39.37	1000	202.8	92
4	100	4.02	102	17.99	457	6.93	176	6.93	176	59.06	1500	339.5	154
6	150	5.98	152	24.02	610	6.02	153	6.02	153	11.81	*300	864.2	392
8	200	7.99	203	29.02	737	7.60	193	7.60	193	15.75	*400	1351.4	613
10	250	10.00	254	32.99	838	9.25	235	9.25	235	19.69	*500	1807.8	820
12	300	12.01	305	37.99	965	11.02	280	11.02	280	23.62	*600	2480.2	1125
14	350	12.76	324	40.51	1029	12.28	312	12.28	312	23.62	*600	3549.4	1610
16	400	14.76	375	44.49	1130	14.37	365	14.37	365	23.62	*600	4431.2	2010
18	450	16.73	425	47.99	1219	16.30	414	16.30	414	23.62	*600	6194.9	2810
20	500	18.62	473	52.01	1321	18.07	459	18.07	459	23.62	*600	8730.2	3960
22	550	20.63	524	55.98	1422	19.96	507	19.96	507	31.50	*800	9722.2	4410
24	600	22.52	572	60.98	1549	21.54	547	21.54	547	31.50	*800	17901.2	8120
28	700	26.26	667	69.02	1753	22.56	573	22.56	573	31.50	*800	22491.2	10202
30	750	28.11	714	74.02	1880	25.12	638	25.12	638	31.50	*800	25617.3	11620
32	800	30.00	762	80.00	2032	27.01	686	27.01	686	31.50	*800	26679.9	12102
34	850	31.89	810	85.00	2159	27.09	688	27.09	688	31.50	*800	38496.5	17462
36	900	33.74	857	90.00	2286	29.09	739	29.09	739	31.50	*800	44431.2	20154

Reduced Port															
Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
3*2	80*50	2.01	51	2.99	76	15.00	381	8.54	217	4.69	119	18.11	460	156.5	71
4*3	100*80	2.99	76	4.02	102	17.99	457	12.87	327	5.24	133	39.37	1000	244.7	111
6*4	150*100	4.02	102	5.98	152	24.02	610	13.50	343	6.93	176	59.06	1500	471.8	214
8*6	200*150	5.98	152	7.99	203	29.02	737	14.09	358	6.02	153	11.81	*300	1058.2	480
10*8	250*200	7.99	203	10.00	254	32.99	838	16.97	431	7.60	193	15.75	*400	1433.0	650
12*10	300*250	10.00	254	12.01	305	37.99	965	17.44	443	9.25	235	19.69	*500	1913.6	868
14*12	350*300	12.01	305	12.76	324	40.51	1029	19.06	484	11.02	280	23.62	*600	2888.0	1310
16*14	400*350	12.76	324	14.76	375	44.49	1130	21.26	540	12.28	312	23.62	*600	4034.4	1830
18*16	450*400	14.76	375	16.73	425	47.99	1219	25.98	660	14.37	365	23.62	*600	4861.1	2205
20*18	500*450	16.73	425	18.62	473	52.01	1321	27.56	700	16.30	414	23.62	*600	6922.4	3140
22*18	550*450	16.73	425	20.63	524	55.98	1422	27.56	700	16.30	414	23.62	*600	7248.7	3288
24*20	600*500	18.62	473	22.52	572	60.98	1549	30.31	770	18.07	459	23.62	*600	10582.0	4800
28*24	700*600	22.52	572	26.26	667	69.02	1753	37.20	945	21.54	547	31.50	*800	16710.8	7580
30*24	750*600	22.52	572	28.11	714	74.02	1880	37.20	945	21.54	547	31.50	*800	17594.8	7981
34*28	850*700	26.26	667	31.89	810	85.00	2159	38.86	987	22.56	573	31.50	*800	24695.8	11202
36*30	900*750	28.11	714	33.74	857	90.00	2286	41.97	1066	25.12	638	31.50	*800	34508.4	15653

* Gear Operator



1500 LB Dimensions

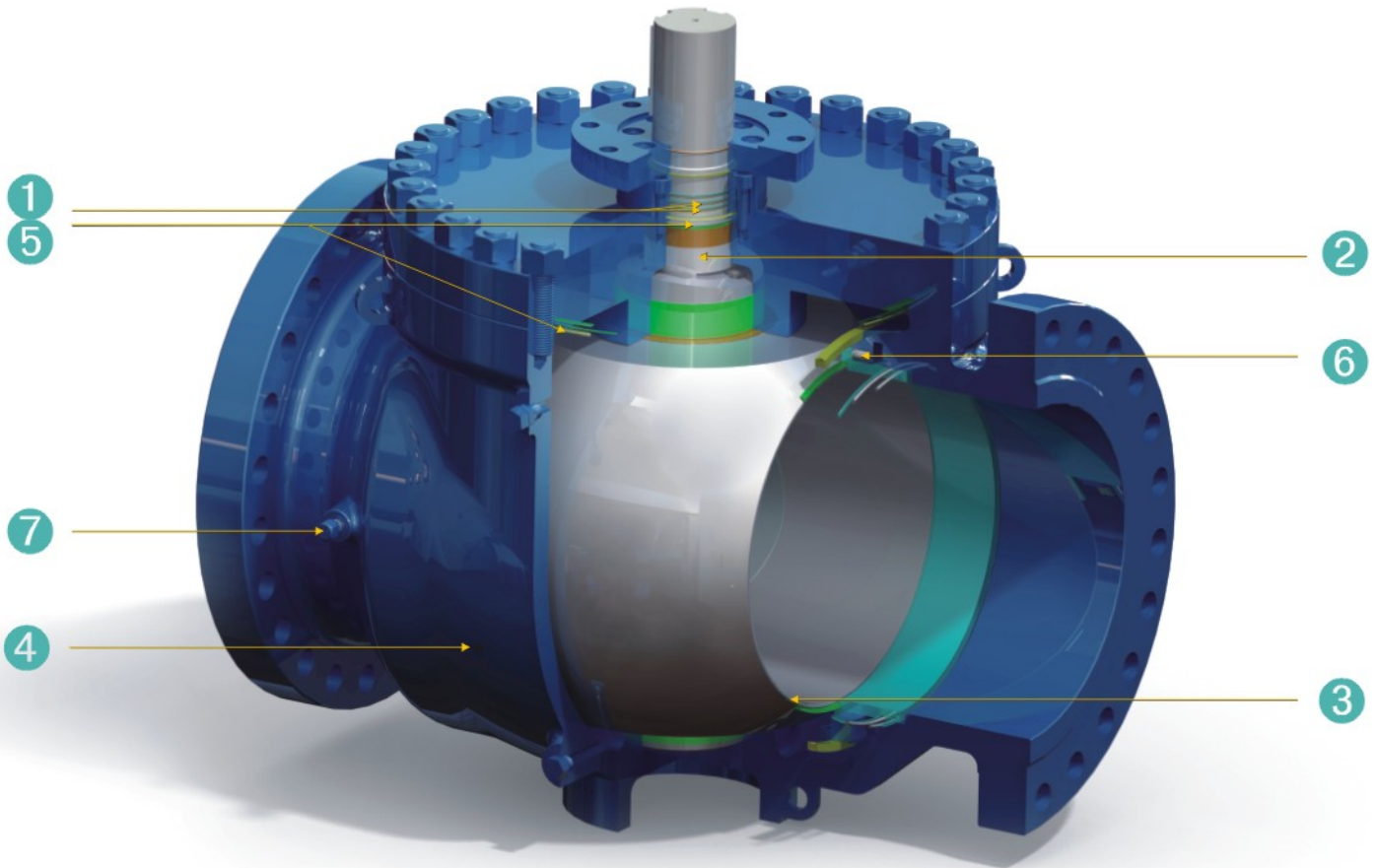
Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
4	100	4.02	102	21.50	546	6.54	166	6.54	166	11.81	*300	571.0	259
6	150	5.75	146	27.76	705	7.56	192	7.56	192	15.75	*400	1047.2	475
8	200	7.64	194	32.76	832	9.37	238	9.37	238	19.69	*500	1810.0	821
10	250	9.41	239	39.02	991	10.79	274	10.79	274	23.62	*600	4025.6	1826
12	300	11.38	289	44.49	1130	12.52	318	12.52	318	23.62	*600	4784.0	2170
14	350	12.52	318	49.49	1257	19.02	483	19.02	483	23.62	*600	4960.3	2250
16	400	14.25	362	54.49	1384	21.02	534	21.02	534	23.62	*600	6084.7	2760
18	450	16.02	407	60.51	1537	23.86	606	23.86	606	23.62	*600	8037.9	3646
20	500	17.99	457	65.51	1664	27.01	686	27.01	686	31.50	*800	9914.0	4497
22	550	19.69	500	71.50	1816	28.78	731	28.78	731	31.50	*800	12634.5	5731
24	600	21.50	546	80.43	2043	30.51	775	30.51	775	31.50	*800	15765.0	7151

Reduced Port															
Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
6*4	150*100	4.02	102	5.75	146	27.76	705	13.58	345	6.54	166	59.06	1500	760.6	345
8*6	200*150	5.75	146	7.64	194	32.76	832	14.37	365	7.56	192	11.81	*300	1320.5	599
10*8	250*200	7.64	194	9.49	241	39.02	991	16.65	423	9.37	238	15.75	*400	2636.7	1196
12*10	300*250	9.49	241	11.38	289	44.49	1130	22.05	560	10.79	274	19.69	*500	2954.1	1340
14*12	350*300	11.38	289	12.52	318	49.49	1257	23.94	608	12.52	318	23.62	*600	6424.2	2914
16*14	400*350	12.52	318	14.25	362	54.49	1384	26.06	662	19.09	485	23.62	*600	5445.3	2470
18*16	450*400	14.25	362	15.98	406	60.51	1537	31.34	796	21.02	534	23.62	*600	6503.5	2950
20*18	500*450	16.02	407	17.76	451	65.51	1664	33.43	849	23.86	606	23.62	*600	7385.4	3350
22*18	550*450	16.02	407	19.49	495	71.50	1816	33.43	849	11.93	303	23.62	*600	7936.5	3600
24*20	600*500	17.99	457	20.98	533	80.43	2043	37.95	964	27.01	686	31.50	*800	12896.8	5850

2500 LB Dimensions

Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	1.73	44	17.76	451	9.41	239	5.63	143	15.75	*400	198.4	90
3	80	2.52	64	22.76	578	10.43	265	7.52	191	19.69	*500	440.9	200
4	100	3.50	89	26.50	673	11.10	282	7.83	199	19.69	*500	848.8	385
6	150	5.24	133	35.98	914	20.59	523	11.77	299	23.62	*600	1715.2	778
8	200	7.13	181	40.24	1022	24.21	615	14.88	378	27.56	*700	2980.6	1352
10	250	8.86	225	50.00	1270	23.03	585	17.13	435	29.92	*760	4711.2	2137
12	300	10.51	267	55.98	1422	27.72	704	21.26	540	29.92	*760	7202.4	3267

* Gear Operator



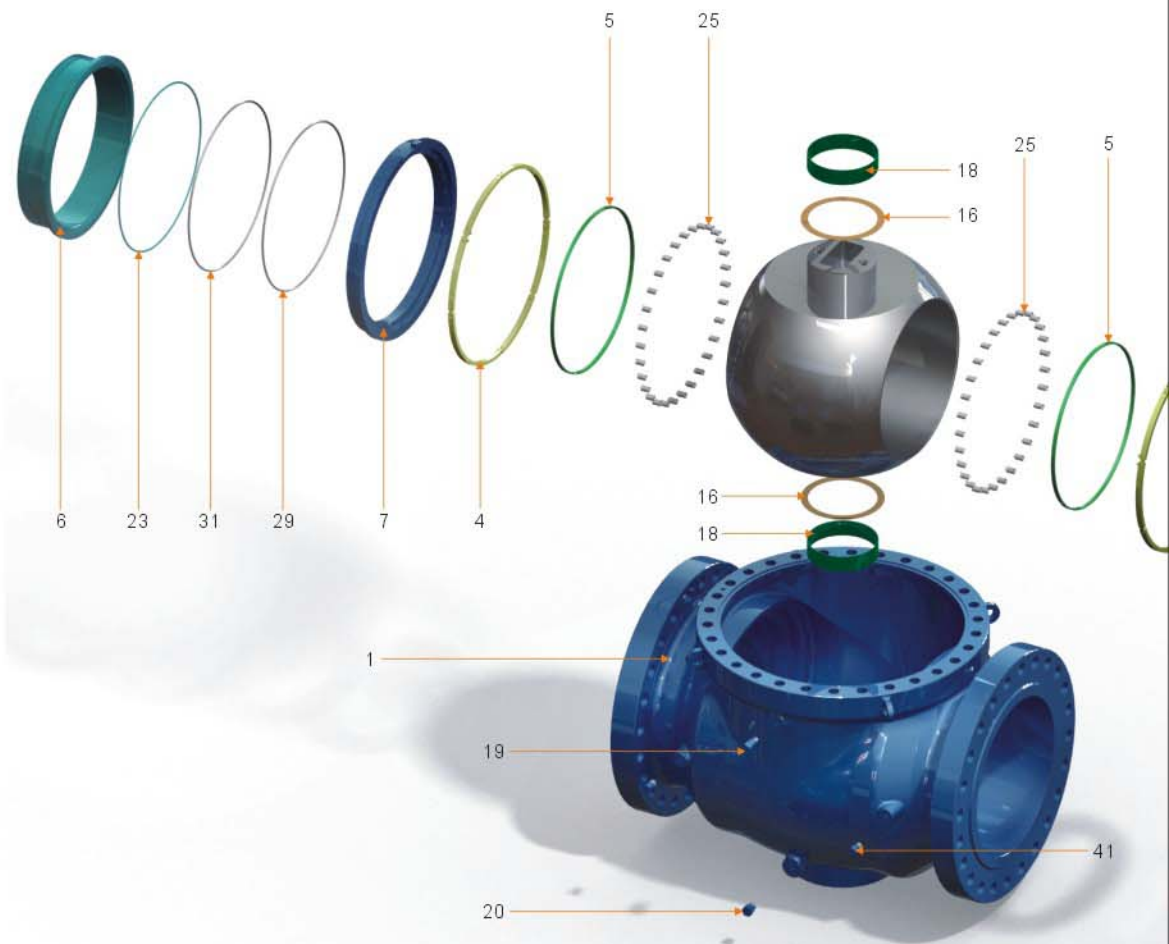
- ① Two O-ring Seals: Prevents leakage from stem area.
- ② Blow-out Proof Stem (internally inserted): Safety feature that functions to assure stem sealing at all pressures.
- ③ Back-up Metal to Metal Sealing: If primary soft-seat materials are burned, the metal-to-metal provides shutoff.
- ④ One-piece Body: Same rigidity as pipe.
- ⑤ O-ring & Gasket Combination: Prevents leakage from body joint area.
- ⑥ Floating Spring-loaded Seats: Assure sealing even at low pressures.
- ⑦ Emergency Sealant Injection Fitting: Allows external intervention to prevent seat leakage.

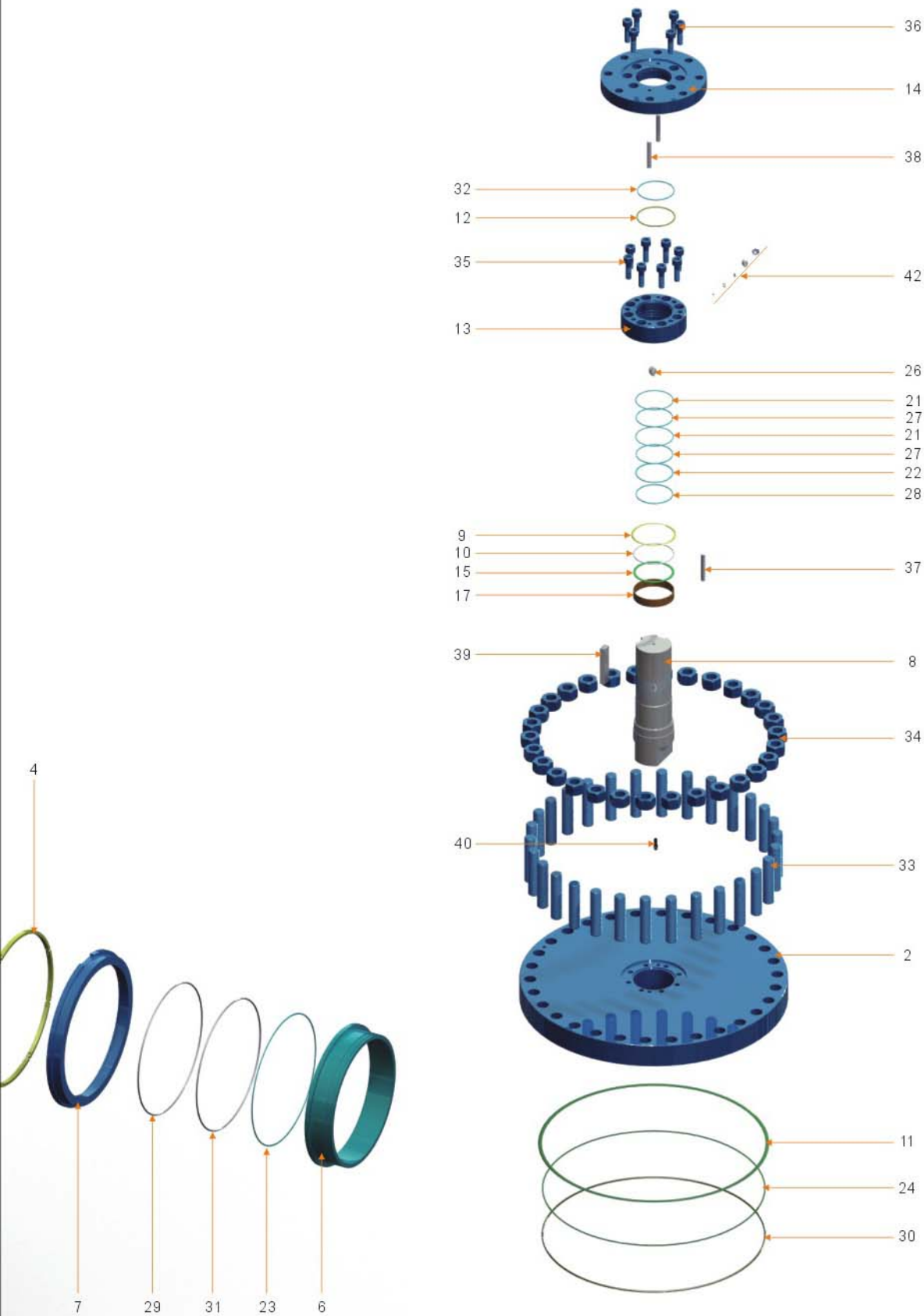
No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTMA216-WCB	ASTMA351-CF8M	ASTMA216-WCB	ASTMA352-LCB
2	Closure	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
3	Ball	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
4	Seat Assembly (5&6)	Assembled By No.5&6	Assembled By No.5&6	Assembled By No.5&6	Assembled By No.5&6
5 ①	Seat Insert	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK
6	Seat Ring	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
7	Spring Seat	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
8	Stem	ASTMA105N/ENP	ASTMA182-F316	ASTMA105N/ENP	ASTMA350-LF2/ENP
9	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
10	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
11	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
12	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
13	Gland Cap	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
14	Top Flange	ASTMA105N	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
15	Thrust Washer	PTFE	PTFE	PTFE	PTFE
16	Thrust Washer	PTFE	PTFE	PTFE	PTFE
17	Bearing	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
18	Bearing	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
19	Vent Valve	Assembly	Assembly	Assembly	Assembly
20	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
21	Retainer Ring	PTFE	PTFE	PTFE	PTFE
22	Retainer Ring	PTFE	PTFE	PTFE	PTFE
23	Retainer Ring	PTFE	PTFE	PTFE	PTFE
24	Retainer Ring	PTFE	PTFE	PTFE	PTFE
25	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
26	Anti-static Device	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
27 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
28 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
29 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
30 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
31 ①	O-Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
32 ①	Weather Seal Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
33	Body Stud	ASTMA193-B7	ASTMA193-B8	ASTMA193-B7M	ASTMA320-L7M
34	Body Nut	ASTMA194-2H	ASTMA194-8	ASTMA194-2HM	ASTMA194-7M
35	Screw	Carbon Steel	Stainless Steel	Carbon Steel	ASTMA320-L7M
36	Screw	Carbon Steel	Stainless Steel	Carbon Steel	ASTMA320-L7M
37	Gland Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
38	Gland Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
39	Key	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
40	Spring Pin	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
41	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
42	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

①- Please contact factory for materials supplied.

Index No	Part
1	Body
2	Closure
3	Ball
4	Seat Assembly (5&6)
5	Seat Insert
6	Seat Ring
7	Spring Seat
8	Stem
9	Gasket
10	Gasket
11	Gasket
12	Gasket
13	Gland Cap
14	Top Flange
15	Thrust Washer
16	Thrust Washer
17	Bearing
18	Bearing
19	Vent Valve
20	Drain
21	Retainer Ring

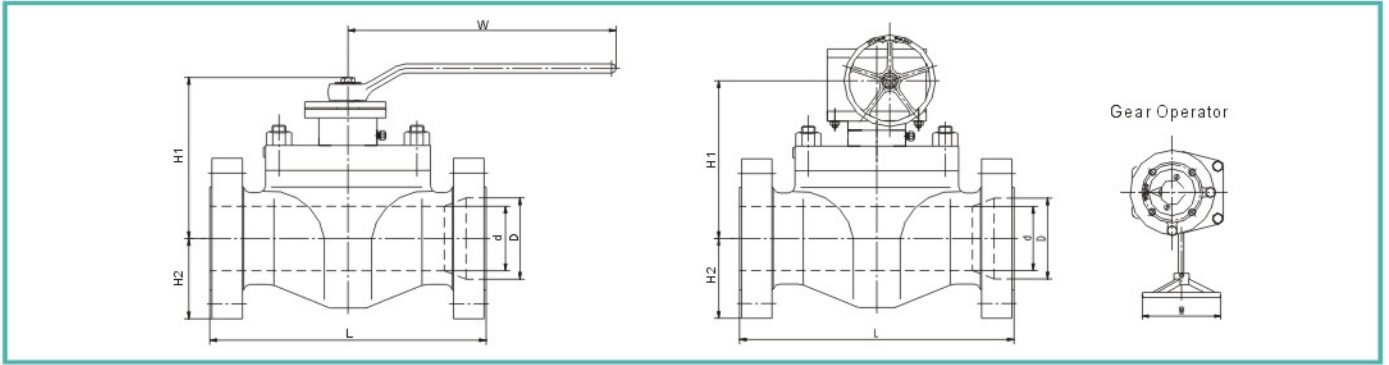
Index no	Part
22	Retainer Ring
23	Retainer Ring
24	Retainer Ring
25	Seat Spring
26	Anti-static Device
27	O-Ring
28	O-Ring
29	O-Ring
30	O-Ring
31	O-Ring
32	Weather Seal Ring
33	Body Stud
34	Body Nut
35	Screw
36	Screw
37	Gland Pin
38	Gland Pin
39	Key
40	Spring Pin
41	Seat Injection
42	Stem Injection





BE Series Ball Valve

Top entry, trunnion mounted design



600 LB Dimensions

Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1-1/2	40	1.50	38	9.49	241	8.23	209	2.76	70	15.75	400	66.1	30
2	50	2.01	51	11.50	292	7.68	195	4.33	110	15.75	400	83.8	38
3	80	2.99	76	14.02	366	9.45	240	4.33	110	29.53	750	176.4	80
4	100	4.02	102	17.01	432	11.02	280	6.89	175	39.37	1000	330.7	150
6	150	5.98	152	22.01	559	12.01	305	7.68	195	11.81	*300	652.6	296
8	200	7.99	203	25.98	660	15.75	400	11.02	280	11.81	*300	965.6	438
10	250	10.00	254	30.98	787	17.13	435	11.22	285	19.69	*500	1325.0	601
12	300	12.01	305	32.99	838	17.32	440	12.60	320	23.62	*600	1377.9	625
14	350	13.27	337	35.00	889	19.88	505	13.39	340	23.62	*600	2711.6	1230
16	400	15.24	387	39.02	991	23.23	590	16.14	410	23.62	*600	3384.0	1535
18	450	17.24	438	42.99	1092	27.56	700	17.52	445	23.62	*600	4706.8	2135
20	500	19.25	489	47.01	1194	30.51	775	20.08	510	23.62	*600	5820.1	2640
24	600	23.27	591	55.00	1397	33.07	840	25.20	640	23.62	*600	8730.2	3960

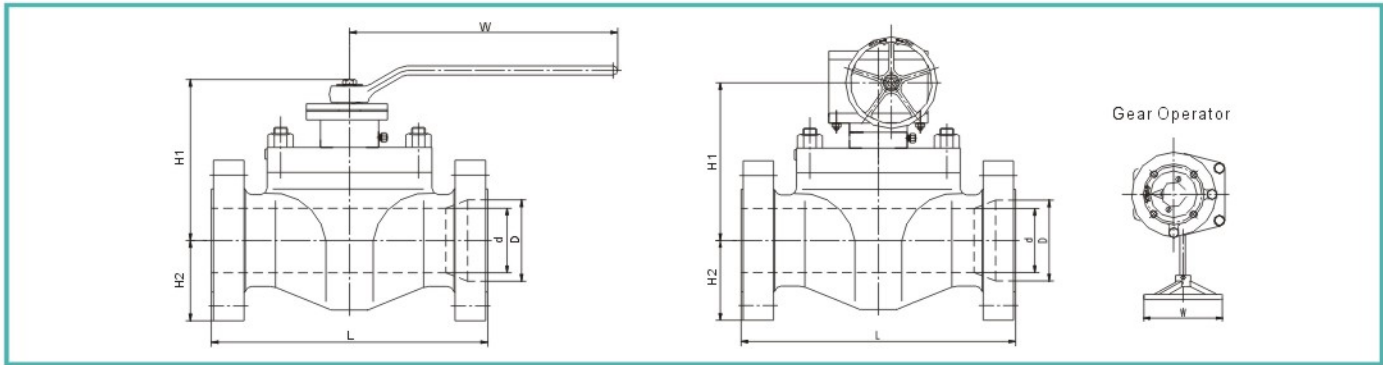
Reduced Port															
Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2*1-1/2	50*40	1.50	38	2.01	51	11.50	292	8.23	209	2.76	70	15.75	400	88.2	40
3*2	80*50	2.01	51	2.99	76	14.02	366	7.68	195	4.33	110	15.75	400	119.0	54
4*3	100*80	2.99	76	4.02	102	17.01	432	9.45	240	4.33	110	29.53	750	218.3	99
6*4	150*100	4.02	102	5.98	152	22.01	559	11.02	280	6.89	175	39.37	1000	467.4	212
8*6	200*150	5.98	152	7.99	203	25.98	660	12.01	305	7.68	195	11.81	*300	670.2	304
10*8	250*200	7.99	203	10.00	254	30.98	787	15.75	400	11.02	280	11.81	*300	1124.3	510
12*10	300*250	10.00	254	12.01	305	32.99	838	17.13	435	11.22	285	19.69	*500	1988.5	902
14*12	350*300	12.01	305	13.27	337	35.00	889	17.32	440	12.60	320	23.62	*600	2403.0	1090
16*14	400*350	13.27	337	15.24	387	39.02	991	19.88	505	13.39	340	23.62	*600	2888.0	1310
18*16	450*400	15.24	387	17.24	438	42.99	1092	23.23	590	16.14	410	23.62	*600	3615.5	1640
20*18	500*450	17.24	438	19.25	489	47.01	1194	27.56	700	17.52	445	23.62	*600	5357.1	2430
24*20	600*500	19.25	489	23.27	591	55.00	1397	30.51	775	20.08	510	23.62	*600	7583.8	3440

* Gear Operator

900 LB Dimensions

Full Port													
Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1-1/2	40	1.50	38	12.01	305	8.46	215	3.15	80	15.75	400	88.2	40
2	50	2.01	51	14.49	368	7.87	200	4.72	120	29.53	750	114.6	52
3	80	2.99	76	15.00	381	9.45	240	5.12	130	39.37	1000	191.8	87
4	100	4.02	102	17.99	457	11.02	280	6.89	175	59.06	1500	352.7	160
6	150	5.98	152	24.02	610	13.78	350	8.66	220	11.81	*300	848.8	385
8	200	7.99	203	29.02	737	15.35	390	10.24	260	15.75	*400	1234.6	560
10	250	10.00	254	32.99	838	18.90	480	12.20	310	23.62	*600	1807.8	820
12	300	12.01	305	37.99	965	21.18	538	16.14	410	23.62	*600	2480.2	1125

* Gear Operator



900 LB Dimensions

Reduced Port

Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2*1-1/2	50*40	1.50	38	2.01	51	14.49	368	8.46	215	3.15	80	15.75	400	97.0	44
3*1-1/2	80*40	2.01	51	2.99	76	15.00	381	7.87	200	4.72	120	29.53	750	123.5	56
4*3	100*80	2.99	76	4.02	102	17.99	457	9.45	240	9.45	240	39.37	1000	207.2	94
6*4	150*100	4.02	102	5.98	152	24.02	610	11.02	280	11.02	280	59.06	1500	498.2	226
8*6	200*150	5.98	152	7.99	203	29.02	737	13.78	350	13.78	350	11.81	*300	1058.2	480
10*8	250*200	7.99	203	10.00	254	32.99	838	15.35	390	15.35	390	15.75	*400	1433.0	650
12*10	300*250	10.00	254	12.01	305	37.99	965	18.90	480	18.90	480	23.62	*600	1913.6	868

*Gear Operator

1500 LB Dimensions

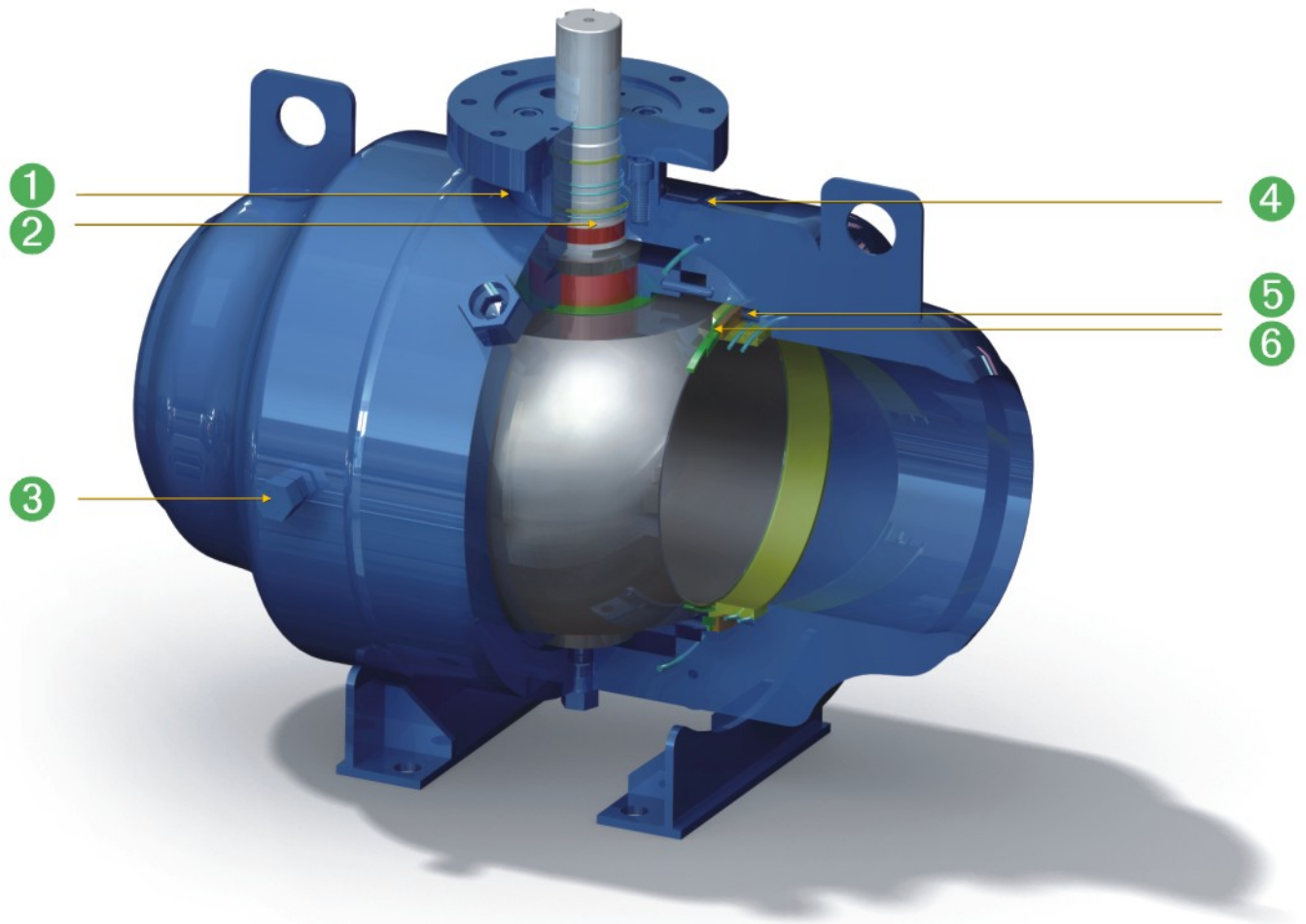
Full Port

Size		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1-1/2	40	1.50	38	12.01	305	8.66	220	3.54	90	15.75	400	88.2	40
2	50	2.01	51	14.49	368	8.07	205	4.72	120	29.53	750	132.3	60
3	80	2.99	76	18.50	470	8.27	210	4.92	125	39.37	1000	253.5	115
4	100	4.02	102	21.50	546	9.65	245	6.30	160	11.81	*300	427.7	194
6	150	5.75	146	27.76	705	13.19	335	10.04	255	15.75	*400	1278.7	580
8	200	7.64	194	32.76	832	16.81	427	13.39	340	19.69	*500	1657.8	752
10	250	9.49	241	39.02	991	19.76	502	15.00	381	23.62	*600	2634.5	1195
12	300	11.38	289	44.49	1130	20.98	533	17.24	438	23.62	*600	4784.0	2170

Reduced Port

Size		d		D		L		H1		H2		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2*1-1/2	50*40	1.50	38	2.01	51	14.49	368	8.66	220	3.54	90	15.75	400	97.0	44
3*1-1/2	80*40	2.01	51	2.99	76	18.50	470	8.07	205	4.72	120	29.53	750	180.8	82
4*3	100*80	2.99	76	4.02	102	21.50	546	8.27	210	4.92	125	39.37	1000	330.7	150
6*4	150*100	4.02	102	5.75	146	27.76	705	9.65	245	6.30	160	11.81	*300	650.4	295
8*6	200*150	5.75	146	7.64	194	32.76	832	13.19	335	10.04	255	15.75	*400	1521.2	690
10*8	250*200	7.64	194	9.49	241	39.02	991	16.81	427	13.39	340	19.69	*500	2050.3	930
12*10	300*250	9.49	241	11.38	289	44.49	1130	19.76	502	15.00	381	23.62	*600	2954.1	1340

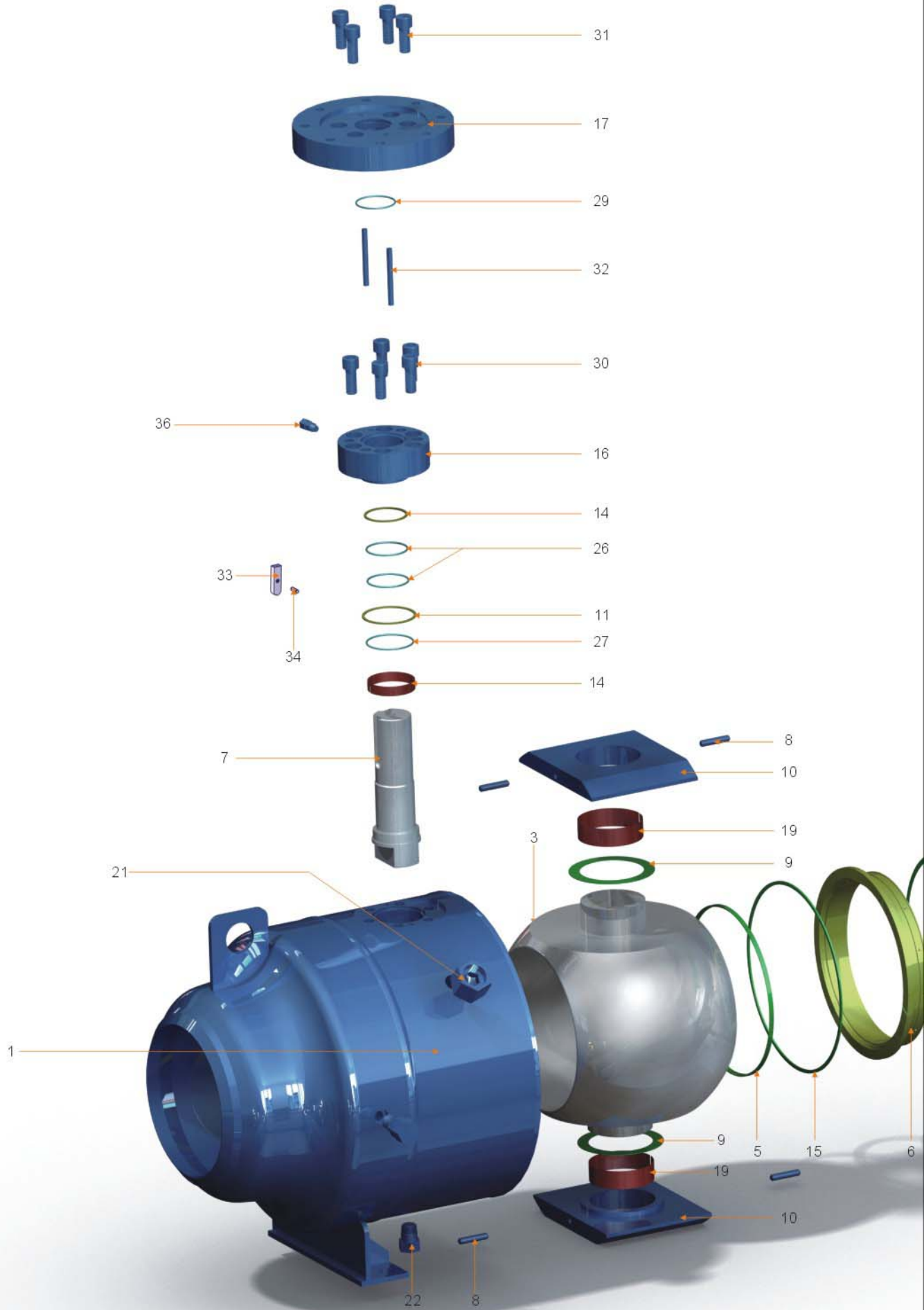
*Gear Operator



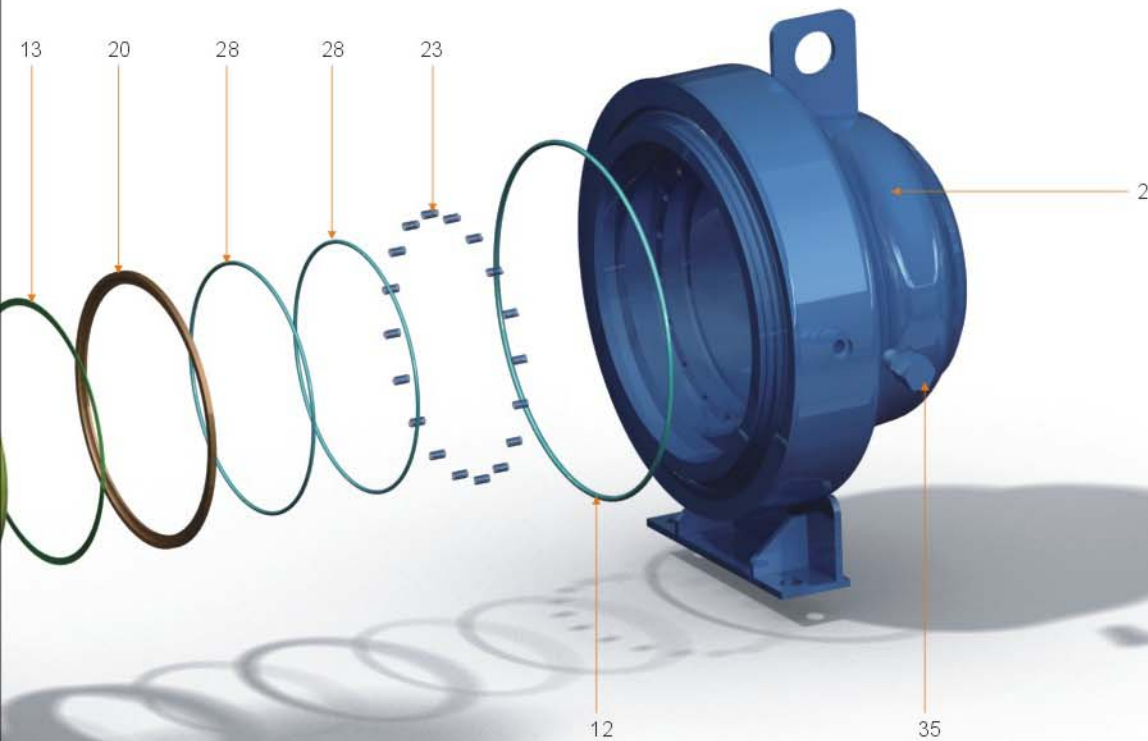
- ① Blow-out Proof Stem (internally inserted): Safety feature that functions to assure stem sealing at all pressures.
- ② Emergency Sealant Injection Fitting: Allows external intervention to prevent stem leakage.
- ③ Emergency Sealant Injection Fitting: Allows external intervention to prevent seat leakage.
- ④ Fully Welded Construction: Eliminates external leakage through the body connections and closures.
- ⑤ Back-up Metal to Metal Sealing: If primary soft-seat materials are burned, the metal-to-metal provides shutoff.
- ⑥ Floating Spring-loaded Seats: Assure sealing even at low pressures.

NO.	Part Name	Standard	Sour Service	Stainless Steel	Low Temperature Service
1	Body	ASTMA105N	ASTMA105N	ASTMA182 F316	ASTMA350 LF2
2	Closure	ASTMA105N	ASTMA105N	ASTMA182 F316	ASTMA350 LF2
3	Ball	ASTMA105N/ENP	ASTMA105N/ENP	ASTMA182 F316	ASTMA350 LF2/ENP
4	Seat Assembly (5+6)	Assembled by No.5&6	Assembled by No.5&6	Assembled by No.5&6	Assembled by No.5&6
5 ①	Seat Insert	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK	RPTFE / NYLON / PEEK
6	Seat Ring	ASTMA105N/ENP	ASTMA105N/ENP	ASTMA182 F316	ASTMA350 LF2/ENP
7	Stem	ASTMA105N/ENP	ASTMA105N/ENP	ASTMA182 F316	ASTMA350 LF2/ENP
8	Trunnion Alignment Pin	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
9	Thrust Washer	PTFE	PTFE	PTFE	PTFE
10	Trunnion Support	ASTMA216 WCB/ENP	ASTMA216 WCB/ENP	ASTM A351 CF8	ASTMA352 LCB/ENP
11	Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
12	Body Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
13	Spacer	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
14	Stem Bearing	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2
15	Firesafe Gasket	Graphite	Graphite	Graphite	Graphite
16	Gland Cap	ASTMA105N	ASTMA105N	ASTMA182 F316	ASTMA350 LF2
17	Top Flange	ASTMA105N	ASTMA105N	ASTMA182 F316	ASTMA350 LF2
18	Thrust Washer	PTFE	PTFE	PTFE	PTFE
19	Bearing	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2	316+PTFE+MoS2
20	Seat Follower	ASTMA105N/ENP	ASTMA105N/ENP	ASTMA182 F316	ASTMA350 LF2/ENP
21	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
22	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
23	Seat Spring	INCONEL X-750	INCONEL X-750	INCONEL X-750	INCONEL X-750
24	Anti Static Device	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
25	Gasket	316SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
26 ①	O-ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
27 ①	O-ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
28 ①	O-ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
29 ①	Weather Seal Ring	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON	NBR / HNBR / VITON
30	Screw	Carbon Steel	Carbon Steel	Stainless Steel	ASTMA320-L7M
31	Screw	Carbon Steel	Carbon Steel	Stainless Steel	ASTMA320-L7M
32	Gland Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
33	Key	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
34	Spring Pin	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
35	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
36	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

①- Please contact factory for materials supplied.

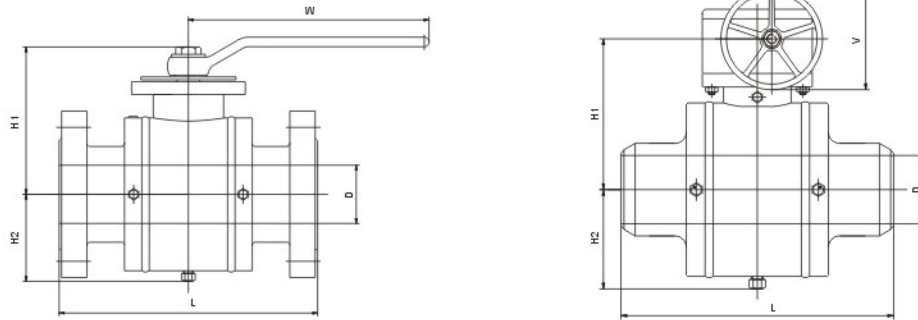


Index No	Part	Index No	Part
1	Body	19	Bearing
2	Closure	20	Seat Follower
3	Ball	21	Vent Valve
4	Seat Assembly (5+6)	22	Drain
5	Seat Insert	23	Seat Spring
6	Seat Ring	24	Anti Static Device
7	Stem	25	Gasket
8	Trunnion Alignment Pin	26	O-Ring
9	Thrust Washer	27	O-Ring
10	Trunnion Support	28	O-Ring
11	Gasket	29	Weather Seal Ring
12	Body Gasket	30	Screw
13	Spacer	31	Screw
14	Stem Bearing	32	Gland Pin
15	Firesafe Gasket	33	Key
16	Gland Cap	34	Spring Pin
17	Top Flange	35	Seat Injection
18	Thrust Washer	36	Stem Injection



BW Series Ball Valve

Fully welded, trunnion mounted design



150 LB Dimensions

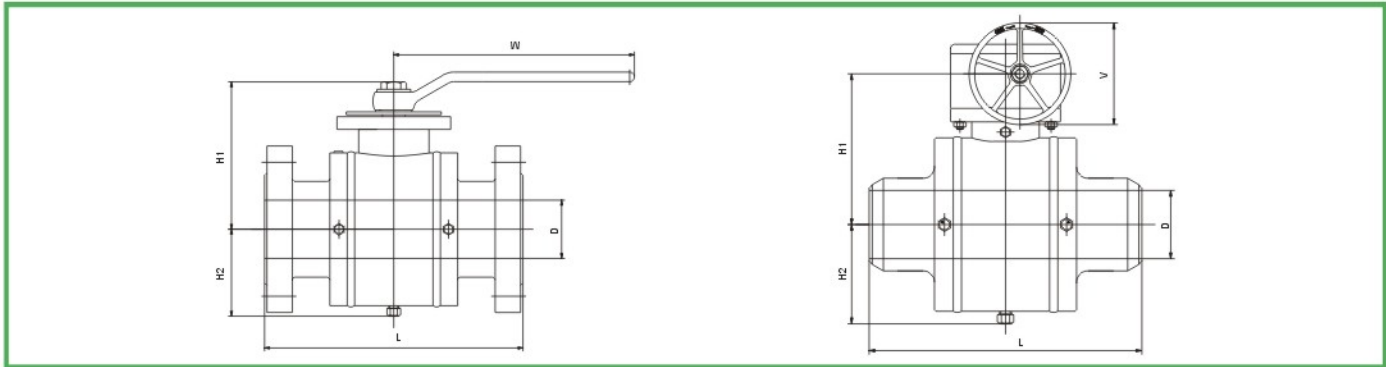
Size		D		L				H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	7.01	178	8.50	216	7.87	200	4.33	110	10.43	265			66.1	30
3	80	2.99	76	7.99	203	11.14	283	11.81	300	4.96	126	11.22	285			132.3	60
4	100	4.02	102	9.02	229	12.01	305	12.40	315	6.50	165	11.22	285			202.8	92
6	150	5.98	152	15.51	394	17.99	457	13.19	335	6.50	165			11.81	300	418.9	190
8	200	7.99	203	17.99	457	20.51	521	15.94	405	7.87	200			11.81	300	760.6	345
10	250	10.00	254	20.98	533	22.01	559	16.81	427	8.66	220			11.81	300	1091.3	495
12	300	12.01	305	24.02	610	25.00	635	18.31	465	10.31	262			19.69	500	1554.2	705
14	350	13.27	337	27.01	686	30.00	762	19.92	506	11.54	293			23.62	600	1893.7	859
16	400	15.24	387	30.00	762	32.99	838	24.49	622	13.43	341			23.62	600	2248.7	1020
18	450	17.24	438	34.02	864	35.98	914	26.22	666	16.22	412			23.62	600	3174.6	1440
20	500	19.25	489	35.98	914	39.02	991	28.74	730	17.13	435			23.62	600	4228.4	1918
22	550	21.26	540	40.00	1016	40.00	1016	32.80	833	18.90	480			23.62	600	5185.2	2352
24	600	23.27	591	42.01	1067	45.00	1143	35.24	895	20.39	518			31.50	800	6179.5	2803
26	650	25.00	635	45.00	1143	49.02	1245	35.43	900	21.06	535			31.50	800	7054.7	3200
28	700	27.01	686	49.02	1245	52.99	1346	36.81	935	21.34	542			31.50	800	8917.5	4045
30	750	29.02	737	50.98	1295	55.00	1397	39.76	1010	23.82	605			31.50	800	10626.1	4820
32	800	30.75	781	54.02	1372	60.00	1524	41.73	1060	25.59	650			31.50	800	12103.2	5490
34	850	32.76	832	57.99	1473	64.02	1626	42.40	1077	25.59	650			31.50	800	14779.5	6704
36	900	34.49	876	60.00	1524	67.99	1727	43.90	1115	27.56	700			31.50	800	16787.9	7615
40	1000	38.50	978	69.02	1753	77.01	1956	55.12	1400	34.06	865			31.50	800	24310.0	11027
42	1050	40.24	1022	73.03	1855	82.01	2083	62.91	1598	35.43	900			31.50	800	26697.5	12110
48	1200	45.98	1168	84.02	2134	84.02	2134	67.80	1722	41.02	1042			31.50	800	40476.2	18360
54	1350	51.73	1314	97.99	2489	97.99	2489	70.71	1796	45.87	1165			31.50	800	71869.5	32600
56	1400	53.62	1362	101.30	2573	101.30	2573	71.65	1820	50.39	1280			31.50	800	80467.4	36500
60	1500	57.52	1461					73.43	1865	58.90	1496			31.50	800	86199.3	39100

300 LB Dimensions

Size		D		L				H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	8.50	216	8.50	216	8.11	206	4.45	113	10.43	265			68.3	31
3	80	2.99	76	11.14	283	11.14	283	12.40	315	5.08	129	15.75	400			152.1	69
4	100	4.02	102	12.01	305	12.01	305	12.99	330	6.65	169	29.53	750			200.6	91
6	150	5.98	152	15.87	403	15.87	403	13.58	345	5.83	148			11.81	300	465.2	211
8	200	7.99	203	19.76	502	20.51	521	16.34	415	7.28	185			11.81	300	828.9	376
10	250	10.00	254	22.36	568	22.01	559	16.81	427	8.90	226			11.81	300	1190.5	540
12	300	12.01	305	25.51	648	25.00	635	18.31	465	10.59	269			19.69	500	1682.1	763
14	350	13.27	337	30.00	762	30.00	762	20.43	519	11.81	300			23.62	600	1984.1	900
16	400	15.24	387	32.99	838	32.99	838	25.12	638	13.78	350			23.62	600	2866.0	1300
18	450	17.24	438	35.98	914	35.98	914	26.89	683	15.83	402			23.62	600	3780.9	1715
20	500	19.25	489	39.02	991	39.02	991	29.45	748	17.56	446			23.62	600	4607.6	2090
22	550	21.26	540	42.99	1092	42.99	1092	33.62	854	19.37	492			23.62	600	4894.2	2220
24	600	23.27	591	45.00	1143	45.00	1143	36.10	917	20.91	531			31.50	800	6371.3	2890
28	700	27.01	686	52.99	1346	52.99	1346	37.72	958	21.89	556			31.50	800	10086.0	4575
30	750	29.02	737	55.00	1397	55.00	1397	40.75	1035	24.41	620			31.50	800	12323.6	5590
32	800	30.75	781	60.00	1524	60.00	1524	42.80	1087	26.22	666			31.50	800	13756.6	6240
34	850	32.76	832	64.02	1626	64.02	1626	43.46	1104	26.22	666			31.50	800	16247.8	7370
36	900	34.49	876	67.99	1727	67.99	1727	45.00	1143	28.27	718			31.50	800	18595.7	8435
40	1000	38.50	978	77.01	1956	77.01	1956	56.50	1435	34.92	887			31.50	800	24681.4	11200
42	1050	40.24	1022	82.01	2083	82.01	2083	64.49	1638	36.34	923			31.50	800	28769.8	13050
48	1200	45.98	1168	85.43	2170	85.43	2170	69.49	1765	42.05	1068			31.50	800	41887.1	19000
54	1350	51.73	1314					1796	1796	45.87	1165			31.50	800	71869.5	32600
56	1400	53.62	1362	100.12	2543	100.12	2543	71.65	1820	50.39	1280			31.50	800	80467.4	36500
60	1500	57.52	1461	103.43	2627	103.43	2627	73.43	1865	58.90	1496			31.50	800	86199.3	39100

Fully welded, trunnion mounted design

BW Series Ball Valve



400 LB Dimensions

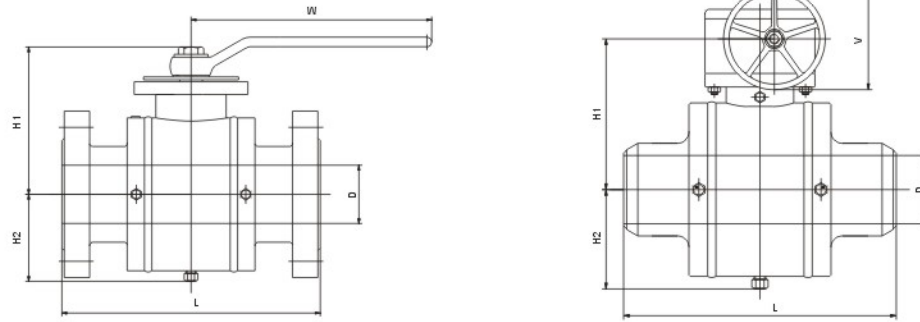
Size		D		L						H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		RTJ		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	11.50	292	11.50	292	11.61	295	8.11	206	4.45	113	15.75	400			99.2	45
3	80	2.99	76	14.02	356	14.02	356	14.13	359	12.40	315	5.08	129	29.53	750			176.4	80
4	100	4.02	102	15.98	406	15.98	406	16.14	410	12.99	330	6.65	169	39.37	1000			330.7	150
6	150	5.98	152	19.49	495	19.49	495	19.61	498	13.58	345	5.83	148			11.81	300	546.7	248
8	200	7.99	203	23.50	597	23.50	597	23.62	600	16.34	415	7.28	185			11.81	300	965.6	438
10	250	10.00	254	26.50	673	26.50	673	26.61	676	16.81	427	8.90	226			19.69	500	1545.4	701
12	300	12.01	305	30.00	762	30.00	762	30.12	765	18.31	465	10.59	269			23.62	600	1377.9	625
14	350	13.27	337	32.52	826	32.52	826	32.64	829	20.43	519	11.81	300			23.62	600	2711.6	1230
16	400	15.24	387	35.51	902	35.51	902	35.63	905	25.12	638	13.78	350			23.62	600	3384.0	1535
18	450	17.24	438	38.50	978	38.50	978	38.62	981	26.89	683	15.83	402			23.62	600	4706.8	2135
20	500	19.25	489	41.50	1054	41.50	1054	41.73	1060	29.45	748	17.56	446			23.62	600	5820.1	2640
22	550	21.26	540	45.00	1143	45.00	1143	45.39	1153	33.62	854	19.37	492			31.50	800	7429.5	3370
24	600	23.27	591	48.50	1232	48.50	1232	48.86	1241	36.10	917	20.91	531			31.50	800	8730.2	3960
28	700	27.01	686	55.00	1397	55.00	1397	55.51	1410	37.72	958	21.89	556			31.50	800	13359.8	6060
30	750	29.02	737	60.00	1524	60.00	1524	60.51	1537	40.75	1035	24.41	620			31.50	800	14748.7	6690
32	800	30.75	781	65.00	1651	65.00	1651	65.63	1667	42.80	1087	26.22	666			31.50	800	17250.9	7825
34	850	32.76	832	70.00	1778	70.00	1778	70.63	1794	43.46	1104	26.22	666			31.50	800	18650.8	8460
36	900	34.49	876	74.02	1880	74.02	1880	74.61	1895	45.00	1143	28.27	718			31.50	800	23478.8	10650
40	1000	38.50	978	85.43	2170	85.43	2170			56.50	1435	34.92	887			31.50	800	32407.4	14700
42	1050	40.24	1022	85.63	2175	85.63	2175			64.49	1638	36.34	923			31.50	800	36177.2	16410
48	1200	45.98	1168	95.87	2435	95.87	2435			69.49	1765	42.05	1068			31.50	800	53351.0	24200
54	1350	51.73	1314	0.00		0.00				70.71	1796	45.87	1165			31.50	800	71869.5	32600
56	1400	53.62	1362	106.69	2710	106.69	2710			71.65	1820	50.39	1280			31.50	800	80467.4	36500
60	1500	57.52	1461	110.00	2794	110.00	2794			73.43	1865	58.90	1496			31.50	800	86199.3	39100

600 LB Dimensions

Size		D		L						H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		RTJ		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	11.50	292	11.50	292	11.61	295	8.11	206	4.45	113	18.11	460			99.2	45
3	80	2.99	76	14.02	356	14.02	356	14.13	359	12.40	315	5.08	129	29.53	750			176.4	80
4	100	4.02	102	17.01	432	17.01	432	17.13	435	12.99	330	6.65	169	39.37	1000			330.7	150
6	150	5.98	152	22.01	559	22.01	559	22.13	562	13.58	345	5.83	148			11.81	300	546.7	248
8	200	7.99	203	25.98	660	25.98	660	26.14	664	16.34	415	7.28	185			11.81	300	965.6	438
10	250	10.00	254	30.98	787	30.98	787	31.14	791	16.81	427	8.90	226			19.69	500	1545.4	701
12	300	12.01	305	32.99	838	32.99	838	33.11	841	18.31	465	10.59	269			23.62	600	1377.9	625
14	350	13.27	337	35.00	889	35.00	889	35.12	892	20.43	519	11.81	300			23.62	600	2711.6	1230
16	400	15.24	387	39.02	991	39.02	991	39.13	994	25.12	638	13.78	350			23.62	600	3384.0	1535
18	450	17.24	438	42.99	1092	42.99	1092	43.11	1095	26.89	683	15.83	402			23.62	600	4706.8	2135
20	500	19.25	489	47.01	1194	47.01	1194	47.24	1200	29.45	748	17.56	446			23.62	600	5820.1	2640
22	550	21.26	540	50.98	1295	50.98	1295	51.38	1305	33.62	854	19.37	492			31.50	800	7429.5	3370
24	600	23.27	591	55.00	1397	55.00	1397	55.39	1407	36.10	917	20.91	531			31.50	800	8730.2	3960
28	700	27.01	686	60.98	1549	60.98	1549	61.50	1562	37.72	958	21.89	556			31.50	800	13359.8	6060
30	750	29.02	737	65.00	1651	65.00	1651	65.51	1664	40.75	1035	24.41	620			31.50	800	14748.7	6690
32	800	30.75	781	70.00	1778	70.00	1778	70.63	1794	42.80	1087	26.22	666			31.50	800	17250.9	7825
34	850	32.76	832	75.98	1930	75.98	1930	76.61	1946	43.46	1104	26.22	666			31.50	800	18650.8	8460
36	900	34.49	876	82.01	2083	82.01	2083	82.64	2099	45.00	1143	28.27	718			31.50	800	23478.8	10650
40	1000	38.50	978	85.00	2159	85.43	2170	85.43	2170	56.50	1435	34.92	887			31.50	800	32407.4	14700
42	1050	40.24	1022	85.63	2175	85.63	2175	85.63	2175	64.49	1638	36.34	923			31.50	800	36177.2	16410
48	1200	45.98	1168	95.87	2435	95.87	2435	95.87	2435	69.49	1765	42.05	1068			31.50	800	53351.0	24200
54	1350	51.73	1314							70.71	1796	45.87	1165			31.50	800	71869.5	32600
56	1400	53.62	1362	106.69	2710	106.69	2710	106.69	2710	71.65	1820	50.39	1280			31.50	800	80467.4	36500
60	1500	57.52	1461	110.00	2794	110.00	2794	110.00	2794	73.43	1865	58.90	1496			31.50	800	86199.3	39100

BW Series Ball Valve

Fully welded, trunnion mounted design



900 LB Dimensions

Size		D		L						H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		RTJ		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	14.49	368	14.49	368	14.61	371	8.54	217	4.69	119	18.11	460			114.6	52
3	80	2.99	76	15.00	381	15.00	381	15.12	384	12.87	327	5.24	133	39.37	1000			191.8	87
4	100	4.02	102	17.99	457	17.99	457	18.11	460	13.50	343	6.93	176			11.81	300	352.7	160
6	150	5.98	152	24.02	610	24.02	610	24.13	613	14.09	358	6.02	153			11.81	300	848.8	385
8	200	7.99	203	29.02	737	29.02	737	29.13	740	16.97	431	7.60	193			15.75	400	1234.6	560
10	250	10.00	254	32.99	838	32.99	838	33.11	841	17.44	443	9.25	235			19.69	500	1807.8	820
12	300	12.01	305	37.99	965	37.99	965	38.11	968	19.06	484	11.02	280			23.62	600	2480.2	1125
14	350	12.76	324	40.51	1029	40.51	1029	40.87	1038	21.26	540	12.28	312			23.62	600	3549.4	1610
16	400	14.76	375	44.49	1130	44.49	1130	44.88	1140	25.98	660	14.37	365			23.62	600	4431.2	2010
18	450	16.73	425	47.99	1219	47.99	1219	48.50	1232	27.56	700	16.30	414			23.62	600	6194.9	2810
20	500	18.62	473	52.01	1321	52.01	1321	52.52	1334	30.31	770	18.07	459			23.62	600	7627.9	3460
22	550	20.63	524							34.65	880	19.96	507			31.50	800	9722.2	4410
24	600	22.52	572	60.98	1549	60.98	1549	61.73	1568	37.20	945	21.54	547			31.50	800	12118.6	5497
28	700	26.26	667							38.86	987	22.56	573			31.50	800	22491.2	10202
30	750	28.11	714	74.02	1880					41.97	1066	25.12	638			31.50	800	25224.9	11442
32	800	30.00	762	80.00	2032					44.09	1120	27.01	686			31.50	800	26679.9	12102
34	850	31.89	810	85.00	2159					44.76	1137	27.09	688			31.50	800	38496.5	17462
36	900	33.74	857	90.00	2286					46.34	1177	29.09	739			31.50	800	44431.2	20154

1500 LB Dimensions

Size		D		L						H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		RTJ		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	2.01	51	14.49	368	14.49	368	14.61	371	8.70	221	5.12	130	29.53	750			132.3	60
3	80	2.99	76	18.50	470	18.50	470	18.62	473	11.69	297	5.98	152			11.81	300	253.5	115
4	100	4.02	102	21.50	546	21.50	546	21.61	549	13.58	345	6.54	166			11.81	300	427.7	194
6	150	5.75	146	27.76	705	27.76	705	27.99	711	14.37	365	7.56	192			15.75	400	1278.7	580
8	200	7.64	194	32.76	832	32.76	832	33.11	841	16.65	423	9.37	238			19.69	500	1657.8	752
10	250	9.49	241	39.02	991	39.02	991	39.37	1000	22.05	560	10.79	274			23.62	600	2634.5	1195
12	300	11.38	289	44.49	1130	44.49	1130	45.12	1146	23.94	608	12.52	318			23.62	600	4784.0	2170
14	350	12.52	318	49.49	1257	49.49	1257	50.24	1276	26.06	662	19.02	483			23.62	600	4960.3	2250
16	400	14.25	362	54.49	1384	54.49	1384	55.39	1407	31.34	796	21.02	534			23.62	600	6084.7	2760
18	450	16.02	407	60.51	1537	60.51	1537	61.38	1559	33.43	849	23.86	606			23.62	600	8037.9	3646
20	500	17.99	457	65.51	1664	65.51	1664	66.38	1686	37.95	964	27.01	686			31.50	800	9914.0	4497
22	550	19.49	495	71.50	1816	71.50	1816			40.35	1025	28.78	731			31.50	800	12634.5	5731
24	600	21.02	534	80.43	2043	80.43	2043	81.54	2071	41.93	1065	30.51	775			31.50	800	15765.0	7151

2500 LB Dimensions

Size		D		L						H1		H2		W		V		Weight	
in	mm	in	mm	RF		BW		RTJ		in	mm	in	mm	in	mm	in	mm	lb	Kg
2	50	1.73	44	17.76	451	17.76	451	17.87	454	9.06	230	4.76	121			11.81	300	198.4	90
3	80	2.52	64	22.76	578	22.76	578	22.99	584	11.18	284	5.75	146			15.75	400	440.9	200
4	100	3.50	89	26.50	673	26.50	673	26.89	683	11.93	303	6.46	164			15.75	400	848.8	385
6	150	5.24	133	35.98	914	35.98	914	36.50	927	15.51	394	8.66	220			23.62	600	1715.2	778
8	200	7.13	181	40.24	1022	40.24	1022	40.87	1038	19.21	488	12.28	312			23.62	600	2980.6	1352
10	250	8.86	225	50.00	1270	50.00	1270	50.87	1292	23.62	600	16.73	425			23.62	600	4711.2	2137
12	300	10.51	267	55.98	1422	55.98	1422	56.89	1445	34.33	872	24.76	629			29.92	760	7202.4	3267

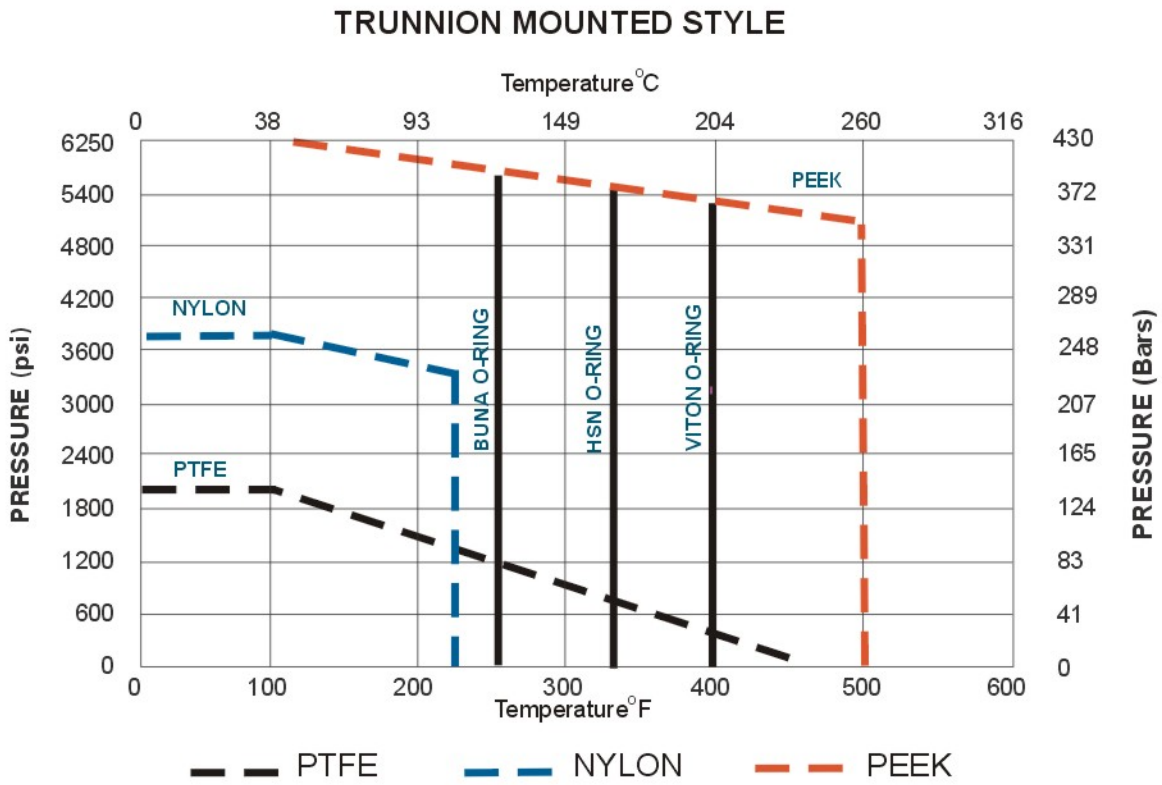
Seat

Properties		PTFE	NYLON	PEEK	PCTFE	DEVLON V-API
Temperature Range °F		-328~428	-58~248	-148~500	-328~302	-148~302
Temperature Range °C		-200~220	-50~120	-100~260	-200~150	-100~150
Pressure Rating		150~600	150~1500	150~2500	150~1500	150~1500
Mechanical Property	Hardness (D)	58	72	88	85	78
	Tensile Strength(MPa)	14~34	55.2	134	35.9	79.9
	Tensile Elongation(Break,%)	350	250	2.2	150	5.4
Physical Property	Specific Gravity (g/cm3)	2.17	1.02	1.44	2.12	1.14
	Water Absorption 24hrs(%)	0.00	1	0.06	0.00	0.1
	Water Absorption saturation	<0.01	1.6	0.2	<0.01	3
Service Application		Chemical & low temperature	High Pressure & Hydrocarbon	High pressure & temperature	Cryogenic	High Pressure & Hydrocarbon

Sealing

Type	NBR	HNBR	VITON	FFKM	EPDM
Temperature Range °F	-22~230	-40~302	-4~392	-4~620	-58~302
Temperature Range °C	-30~110	-40~150	-20~200	-20~327	-50~150
Specific Gravity (g/cm3)	1.31	1.34	1.85	2	0.87
Hardness (shore A)	75	75	75	75	75

* Other elastomer materials available upon request.



O-ring Materials for Trunnion Mounted Ball Valve are both for seat and stem

Above Ratings are For soft seal components. Please consult ASME B16.34 for Body and Closure Pressure / Temperature ratings.

Operating Torque

in	150LB (RPTFE)		300LB (RPTFE)		400LB (RPTFE)		600LB (RPTFE)	
	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs
1-1/2	40	29.52	50	36.90	58	42.81	80	59.05
2	50	36.90	60	44.28	75	55.35	120	88.57
3	60	44.28	100	73.81	167	123.26	240	177.14
4	129	95.21	210	154.99	331	244.30	460	339.51

in	150LB (NYLON)		300LB (NYLON)		400LB (NYLON)		600LB (NYLON)	
	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs
6	380	280.46	580	428.08	660	487.12	900	664.26
8	800	590.45	1400	1033.29	1613	1190.49	2150	1586.83
10	1100	811.87	2200	1623.74	2493	1839.99	3050	2251.09
12	1600	1180.90	2510	1852.54	3153	2327.11	4300	3173.67
14	1800	1328.51	3200	2361.80	5280	3896.97	5723	4223.93
16	3200	2361.80	4600	3995.09	6143	4533.92	8900	6568.76
18	3400	2509.41	5510	4066.72	9900	7306.82	13500	9963.84
20	4800	3542.70	7600	5609.28	11000	8118.69	16000	11809.00
22	5400	3985.54	9400	6937.79	12300	9078.17	17500	12916.10
24	7000	5166.44	12300	9078.17	14800	10923.33	19500	14392.22
26	8000	5904.50	15000	11070.94	20000	14761.25	27600	20370.53
28	9000	6642.56	18000	13285.13	22000	16237.38	30000	22141.88
30	12950	9557.91	20000	14761.25	26600	19632.46	34000	25094.13
32	15000	11070.94	23000	16975.44	32000	23618.00	39000	28784.44
34	18000	13285.13	28000	20665.75	39000	28784.44	50000	36903.13
36	21000	15499.31	33000	24356.07	44000	32474.75	60000	44283.76

in	900LB (NYLON)		1500LB (NYLON)		2500LB (PEEK)	
	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs
1-1/2	140	103.33	240	177.14	290	214.04
2	200	147.61	320	236.18	550	435.93
3	427	315.15	500	369.03	990	730.68
4	750	553.55	1000	738.06	1960	1446.60
6	1200	885.68	2900	2140.38	5500	4059.34
8	3800	2804.64	5500	4059.34	8600	6347.34
10	5000	3690.31	8400	6199.73	16000	11809.00
12	9000	6642.56	12000	8856.75	30000	22141.88
14	11000	8118.69	15000	11070.94		
16	16000	11809.00	22000	16237.38		
18	24000	17713.50	30000	22141.88		
20	27000	19927.69	37000	27308.32		
22	30000	22141.88	46000	33950.88		
24	35000	25832.19	53000	39117.32		
26	38000	28046.38	65000	47974.07		
28	46000	33950.88				
30	60000	44283.76				
32	70000	51664.38				
34	76000	56092.76				
36	80000	59045.01				

Note:

1. Torque is calculated based on normal temperature, with RPTFE seat for 150LB-600LB and NYLON seat for 150LB-1500LB.
2. Torque shown in this table is to be used as a guide for actuator selection. A safety factor of 1.3~1.5 is recommended for actuator sizing.
3. Torque may be changed according to different fluid and trim material.

Flow Coefficient (Cv value) Specification

Size (inch)	150LB	300LB	600LB	900LB	1500LB
1/2	25	25	20	16	16
3/4	56	56	48	34	34
1	95	95	64	55	55
1-1/2	308	308	308	165	165
2	500	430	370	320	320
3	1360	1100	1020	920	820
4	2500	2000	1850	1760	1600
6	5300	5250	4400	4300	4150
8	10750	10100	8450	8475	8010
10	17500	16820	14250	14160	13220
12	26750	25950	22550	21200	18800
14	31850	30900	28500	26700	24180
16	44000	42600	38150	36600	33150
18	58000	55870	51150	49000	45703
20	75500	72500	68500	64600	60750
22	91770	86850	80150		
24	113400	109340	98860		

Notes:

- 1.All sizes are full port.
- 2.Pressure ratings are to API 6D.

Method of Calculating Flow

The Flow Coefficient C_v value is the flow rate of water (gallons/minute) through a fully opened valve, with a pressure drop of 1 psi across the valve. To find the flow of liquid through the valve from the C_v , use the following formulas.

Liquid Flow:

$$QL = C_v (P/G)^{1/2}$$

QL = Flow rate of liquid (gal. /min.)

P = differential pressure across the valve

G = specific gravity of liquid (for water, G=1)

Gas Flow:

$$Q_g = 61 C_v (P_2 P/g)^{1/2}$$

(For non-critical flow, $P_2/P < 1.0$)

Q_g = Flow rate of gas (CFH at STP)

P_2 = outlet pressure (psia)

g = specific gravity of gas (for air, g=1.0)

Product Warranty

Seller will replace without charge or refund the purchase price of products provided by Seller which prove to be defective in material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recommends it and that written claim, specifying the alleged defect, is presented to the Seller within 18 months from the date of shipment or 12 months after installation, whichever occurs first. Seller shall in no event bear any labor, equipment, engineering or other costs incurred in connection with repair or replacement. The warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states Buyer's exclusive remedy and seller's exclusive liability.



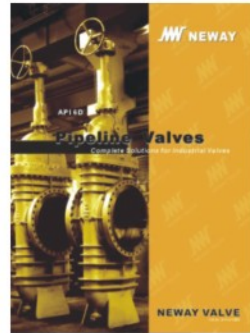
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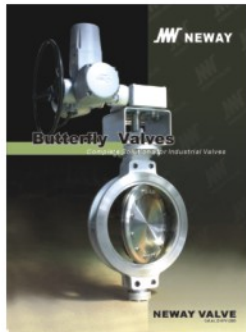
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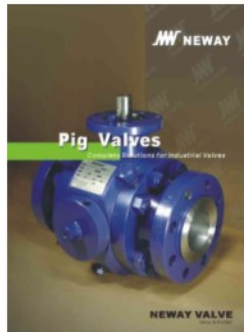
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Cat.no.:E-PV



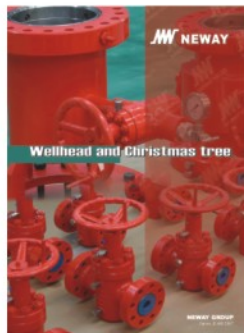
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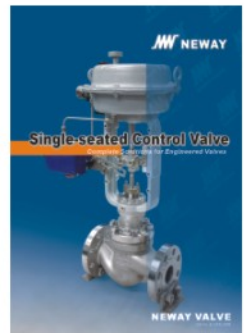
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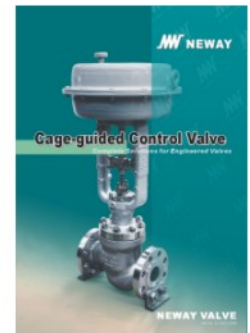
Cat.no.:E-HPCV



Cat.no.:E-WE



Cat.no.:E-CSS



Cat.no.:E-CSC

JW NEWAY
NEWAY VALVE (SUZHOU) CO., LTD.

No.999 Xiangjiang Road, Suzhou New District, P.R. China
 Post Code:215129
 Tel: 86-512-666-51365
 Fax: 86-512-666-51360
 E-Mail: neway@neway.com.cn
 http://www.newayvalve.com

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