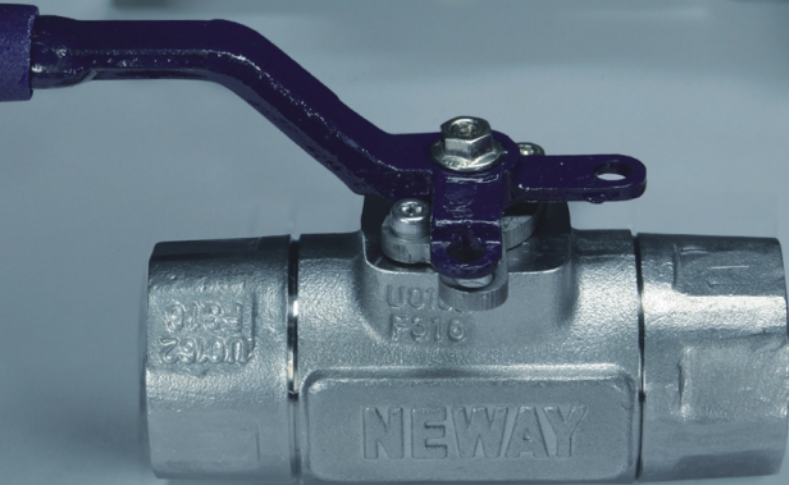


**MW NEWAY**

# Floating Ball Valve

Complete Solutions for Engineered Valves



**NEWAY VALVE**

Cat.no.:E-FBV-2010

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## Complete Solutions for Engineered Valves

As one of the leading valve manufacturers in the world, NEWAY specializes in the development of innovative designs through intensive R&D programs and a commitment to excellence, engineering and manufacturing valve solutions for all industries.

NEWAY's main product lines include Gate, Globe, Check, Butterfly and Ball valves with quality innovative designs, 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 industrial applications.

## NEWAY'S Facilities

NEWAY's facilities are among one of the most advanced in valve manufacturing in the world today. NEWAY has developed and implemented a group management system base on multi-plant manufacturing. Valves are manufactured in six specialized production facilities that are linked by an intranet system of over 600 computers, connecting engineering to the CNC machining centers, and the bar-coded warehouse system. NEWAY has implemented an Enterprise Resource Planning (ERP) manufacturing management system. In-house testing capabilities include fire-safe, cryogenic, high pressure gas and fugitive emission testing.

## 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

In this catalogue, you will find the latest developed NEWAY Ball Valves, which include 4 different designs:

- BA series 1PC uni-body floating type
- B series 2PC cast steel floating type
- BB series 2PC forged steel floating type
- BC series 3PC forged steel floating type

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



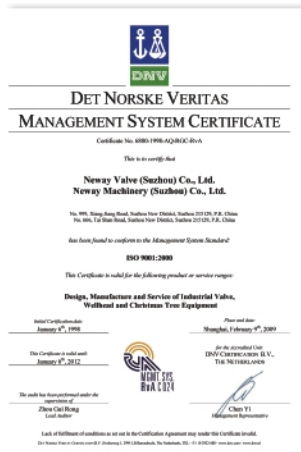
# Quality Commitment

ISO 9001

API 6D



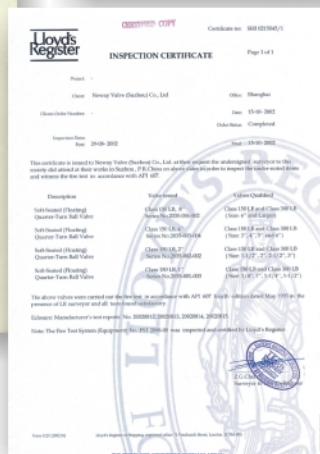
API 6A



TA Luft



API 591



ABS

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 customers with first class products at a competitive price, designed, manufactured, inspected and tested in accordance with our customers specifications and complying with all international standards.

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 environments in which they operate. Therefore we request that our customers communicate with our engineering department. Our valve optimization program continuously strives to provide valves that withstand deterioration in service, and ensure safety over the valves expected lifetime.

# Standard and Product Range

## Reference Standard:

Pressure-Temperature Ratings	ASME B16.34	
Shell Wall Thickness	ASME B16.34; ISO 17292 (BS 5351)	
Face to face Dimensions	Flange Connections	ASME B16.10;
	Socketed Welding & NPT	Neway Standard
End Connection Dimensions	Raised Flange	ASME B16.5;
	Butt-Weld	ASME B16.25
	Socketed Weld	ASME B16.11
	NPT	ASME B1.20.1
Pressure Test	API 598 and ISO 14313 (API 6D)	
Fire Safe	API 607 and API 6FA	
Marking Standard	MSS-SP 25	
Surface Quality Visual Method	MSS-SP 55	
Sour Service	NACE Std. MR 0175 or MR 0103	
Low Fugitive Emission	ISO 15848; TA-Luft	

## Product Range

Valve Size		1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"	
BS5351 Floating Ball Valve	1PC	150	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
		300	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
	2PC	150	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
		300	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
		600	◆	◆	◆	◆	◆							
		900	◆	◆	◆	◆	◆							
		1500	◆	◆	◆	◆	◆							
		2500	◆	◆	◆									
	3PC	150	◆	◆	◆	◆	◆							
		300	◆	◆	◆	◆	◆							
		600	◆	◆	◆	◆	◆							
		900	◆	◆	◆	◆	◆							
		1500	◆	◆	◆	◆	◆							
		2500	◆	◆	◆	◆	◆							

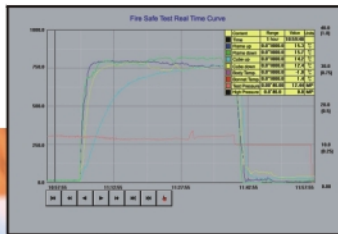
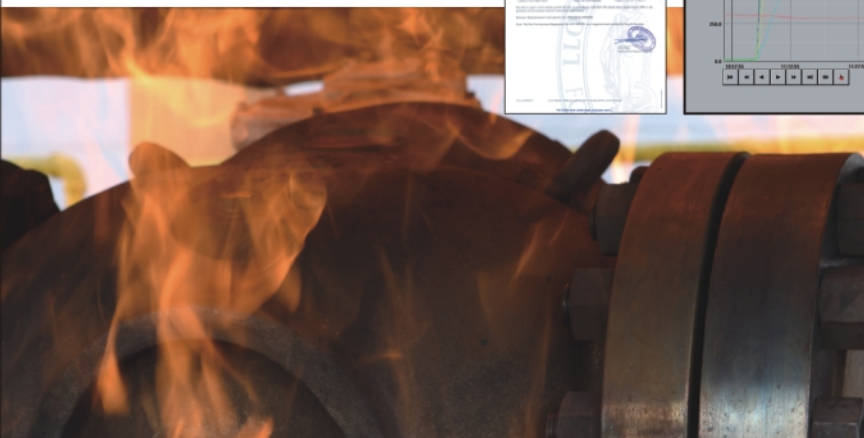
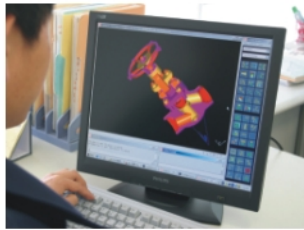


# Technical Innovation

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 safe 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	ANSI Class 150~600	ANSI 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	ISO9001, CE/PED, Norsok



# 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.

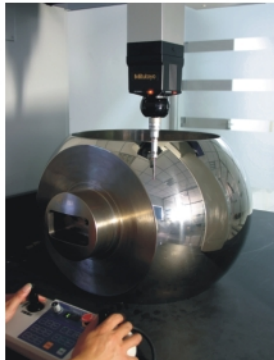


NEWAY also maintains its own state-of-the-art cryogenic, vacuum, fugitive emission, and fire testing facilities as well as hydro-testing facilities to ensure the highest product quality and performance.



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 offers four series of floating ball valves:

- BA Series, one piece, uni-body design
- B Series, two piece, split body design
- BB Series, two piece, forged steel split body design
- BC Series, three piece, forged steel design

All floating ball valves are designed to conform to BS 5351 and ASME B16.34 are certified to industry standards such as BS 6755, API 6FA and API 607. A wide range of body and trim material is available to service working temperature from -196 to 200°C (-320 to 392°F). Valve Size: 1/2" to 12". Pressure Rating: ASME Class 150 - 2500. NACE MR0175 is also available upon request for sour service.



3 PC Floating Ball Valve



Pneumatic Actuator Ball valve



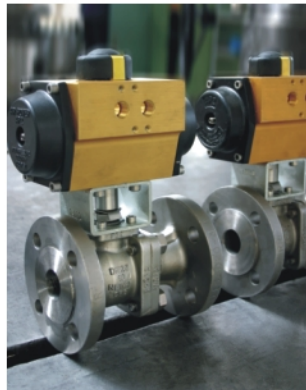
2PC Forged Steel Design



Extended Bonnet Temperature Service



Hastelloy Ball Valve



Pneumatic Actuator Ball valve



1PC Cast Steel Design



2PC Cast Steel Design



Stainless Steel

# How to order

## Example:



Newway part numbers are designed to cover essential features. When ordering, please show the part 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	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6	8	10	12
mm	10	15	20	25	32	40	50	65	80	90	100	125	150	200	250	300

#### Reduced bore:

in	3/8*1/4	1/2*3/8	3/4*1/2	1*3/4	1-1/2*1	2*1-1/2	2-1/2*2	3*2	4*3	6*4	8*6	10*8	12*10
mm	10*6.4	15*10	20*15	25*20	40*25	50*40	65*60	80*50	100*80	150*100	200*150	250*200	300*250

### ② Valve Types

Symbol	Valve Type	Symbol	Valve Type
BA	Uni-body Floating ball valve - cast	BBA	Uni-body Floating ball valve - forged
B	2-pcs Floating ball valve - cast	BB	2-pcs floating ball valve - forged
BC	3-pcs floating ball valve - forged	BCC	3-pcs floating ball valve - cast

### 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	A105	LF2	F316	F304	F316L	F304L	Alloy 20	F51
ASTM Ref	A105N	A350 LF2	A182 F316	A182 F304	A182 F316L	A182 F304L	Alloy 20	A182 F51

Material	WCB	LCB	LCC	CF8M	CF8	CF3M	CF3	CN7M	4A
ASTM Ref	A216 WCB	A352 LCB	A352 LCC	A351 CF8M	A351 CF8	A351 CF3M	A351 CF3	A351 CN7M	A890 4A

## ⑦ Trim Codes

Seat		O-ring		Stem		Ball		Packing	
Code	Material	Code	Material	Code	Material	Code	Material	Code	Material
1	PTFE	1	NBR	1	AISI 410	1	AISI 410	1	PTFE
2	NYLON 1010	2	VITON	2	F304	2	F304	2	Graphite
3	PEEK	3	VITON AED	3	A105/ENP	3	A105/ENP	9	Garlock(low emission)
7	NYLON 12	4	VITON B	4	17-4PH	4	17-4PH		
8	PCTFE	5	HNBR-70	5	AISI 4140/ENP	5	AISI 4140/ENP		
C	FILLED PTFE	8	VITON GLT	6	F316	6	F316		
F	TFM1700	9	BUNA-N	9	LF2/ENP	9	LF2/ENP		
		N	None O-Ring	A	F51	A	F51		

Note: Other materials upon request.

# Design Features

## Blow-out Proof 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, assuring sealing at all pressures.(Fig.1)

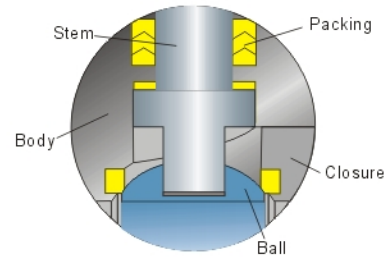


Fig.1

## Anti-Static Device

The Anti-static device is a standard feature of NEWAY ball valves. A spring-loaded pin assures the electrical continuity between the ball, stem and body, to avoid arcing due to static buildup. (Fig.2)

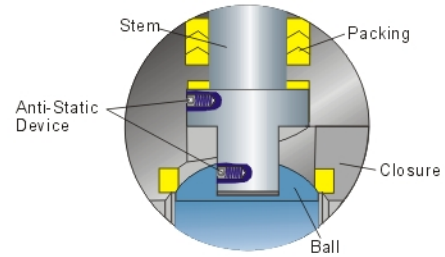
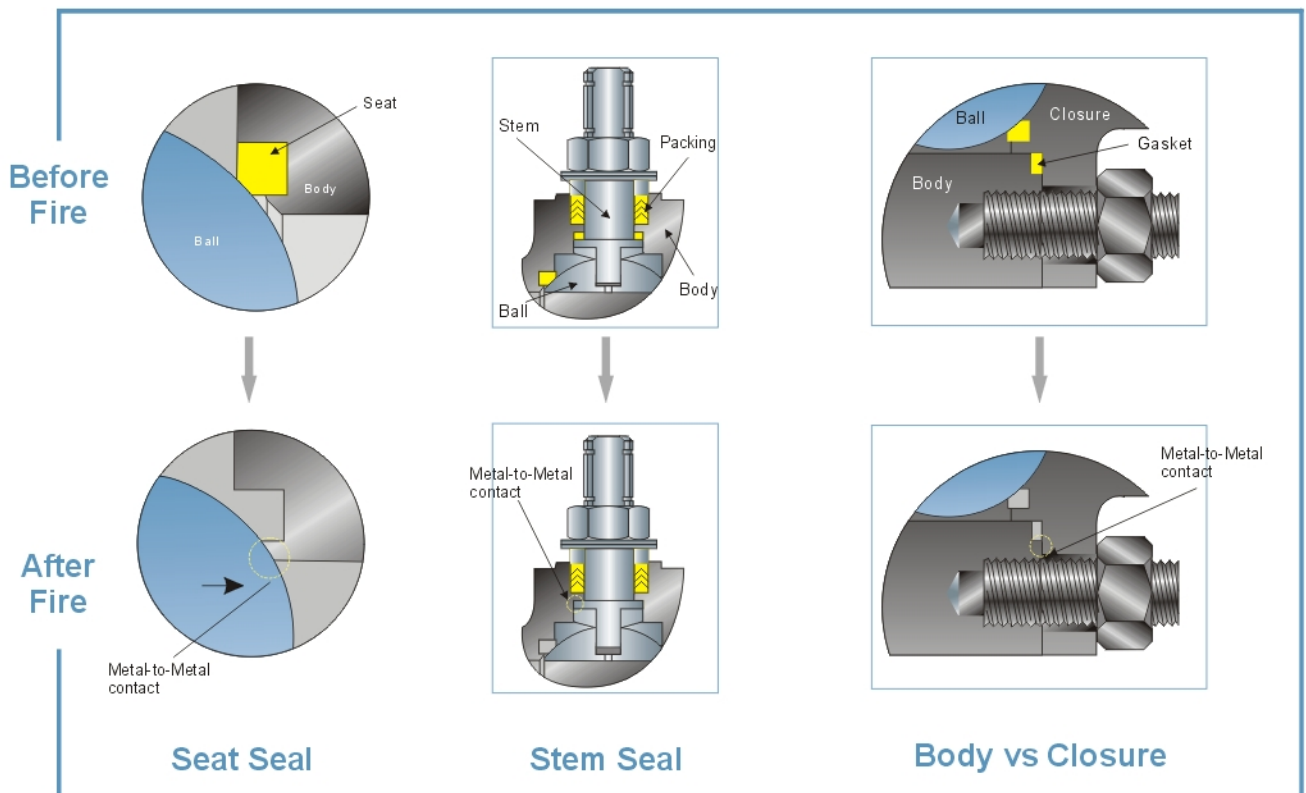


Fig.2

## Fire Safe - Metal to Metal Sealing

When Soft materials such as O-Rings, soft seats and spacer are destroyed in a fire, the metal seat will be pushed to contact with the ball. Then the valves are shut off to avoid the seat emission (Fig.3 a). In the fire, the graphite packing can work well and the contact will be in metal to metal. The valves are prevented from the emission between stem, body and bonnet (Fig.3 b & 3 c)

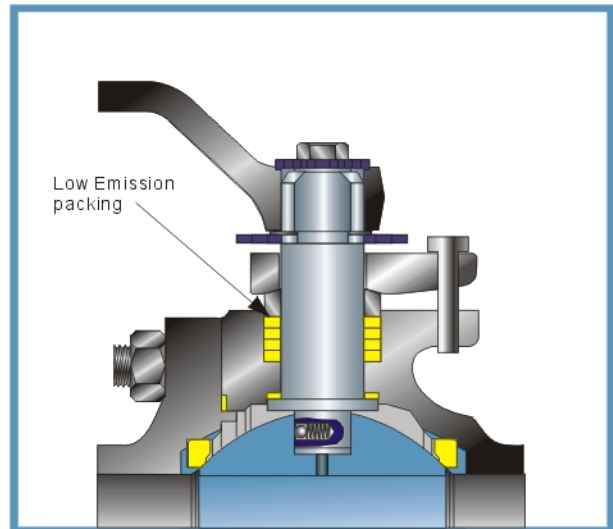
Additionally, the design of fire safe metal seat can prevent the soft seat rings from the erosion in the pipeline and also reduce the creep deformation of soft seal effectively. Now all NEWAY floating valves are designed to be fire safe and certificated in accordance with API607.



Emission control features are standard on all NEWAY BA, B and BB series flanged floating ball valves with emission control packing to eliminate the leakage of fugitive emissions. These valves have been designed and tested to meet the 100 PPM maximum allowed emissions per the Shell ISO15848 test.

## Eliminate Stem Leakage

NEWAY controls the finish of the stem's surface to be between Ra0.4 and Ra0.8 which ensures that the graphite packing will migrate into any stem micro scratches, functioning as a lubricant to reduce stem torque. The surface of the stuffing box is controlled to be no more than Ra3.2. This rougher finish holds the packing ring in place, resulting in better sealing performance.



## Low Emission Packing

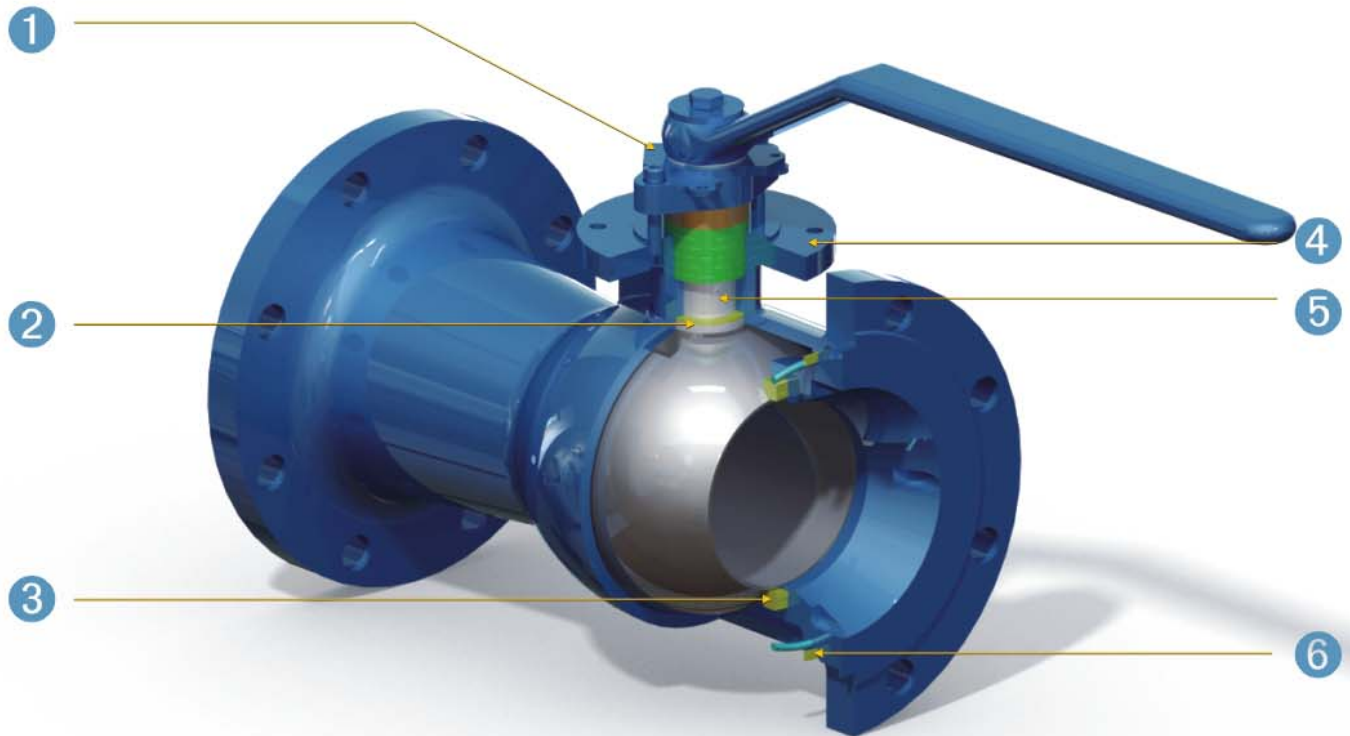
The low emission pack set combines a parallel and vertical layer of sealing elements made of graphite. These die-formed graphite rings feature heat resistance, low creep and less relaxation from stress. This structure means low friction on rotary and rising stems, providing stabilized seal performance and long cycle life for the valve.

For medium and low temperature service, the standard V shape PTFE packing rings are installed for low emission control.



Low Emission Test



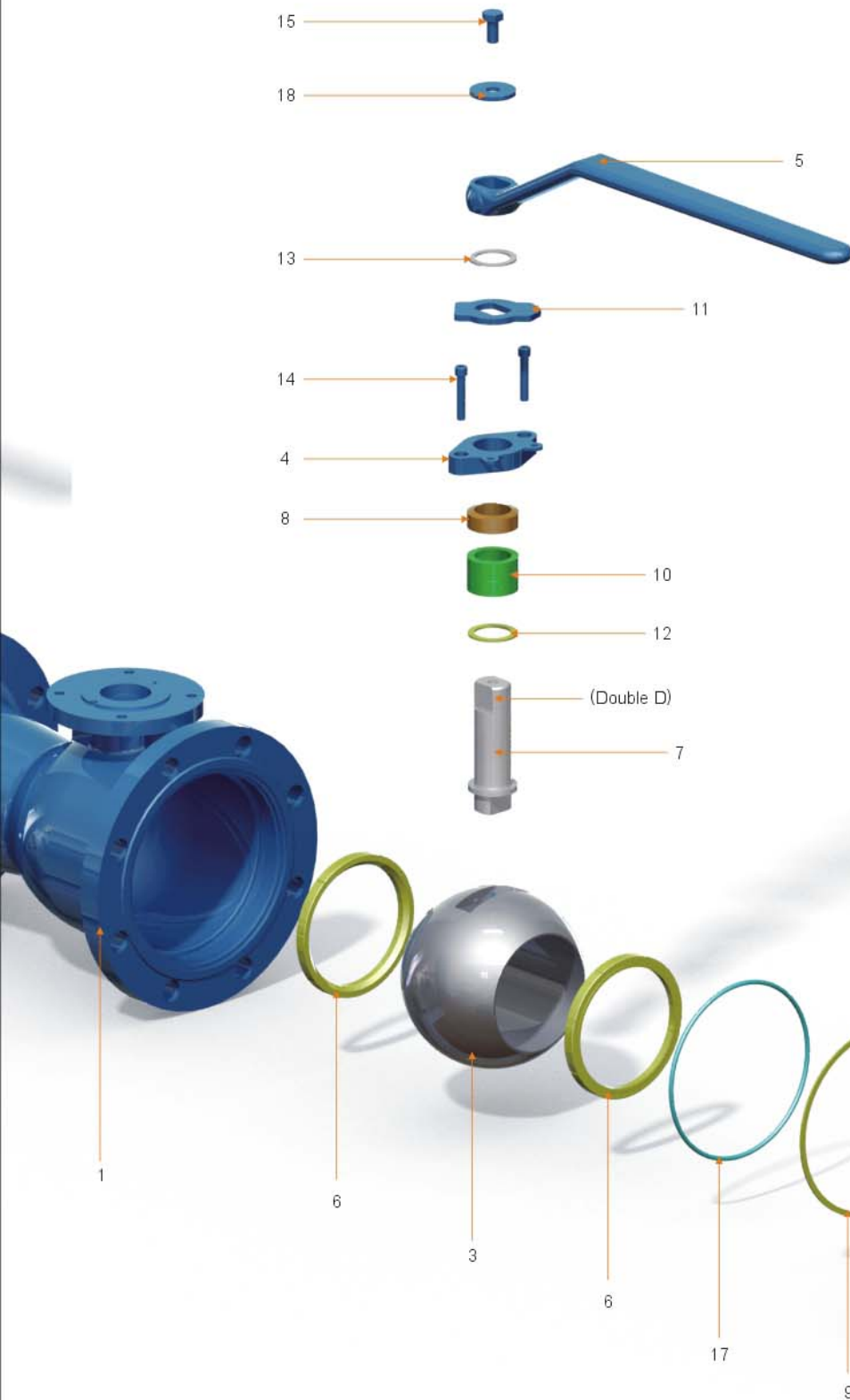


- 1 Secure Line Flow Locking Device: Valve is equipped with an integral locking device to secure line flow.
- 2 Blow-out Proof Stem: The lower end of the separate stem is T-shaped to create an integral collar making the stem blowout-proof.
- 3 Fire Safe Design: Metal to metal sealing shuts off valve flow when soft sealing materials are destroyed by fire.
- 4 ISO 5211 Mount Pad: Simplifies the installation of actuators with standardized connections.
- 5 Double "D" Stem Head: Insures handle lever will always be mounted correctly, parallel to the media flow, indicating valve open and closed positions.
- 6 Emission-free Gasket: The primary gasket is emission free graphite to eliminate leakage.

## APPLICATIONS

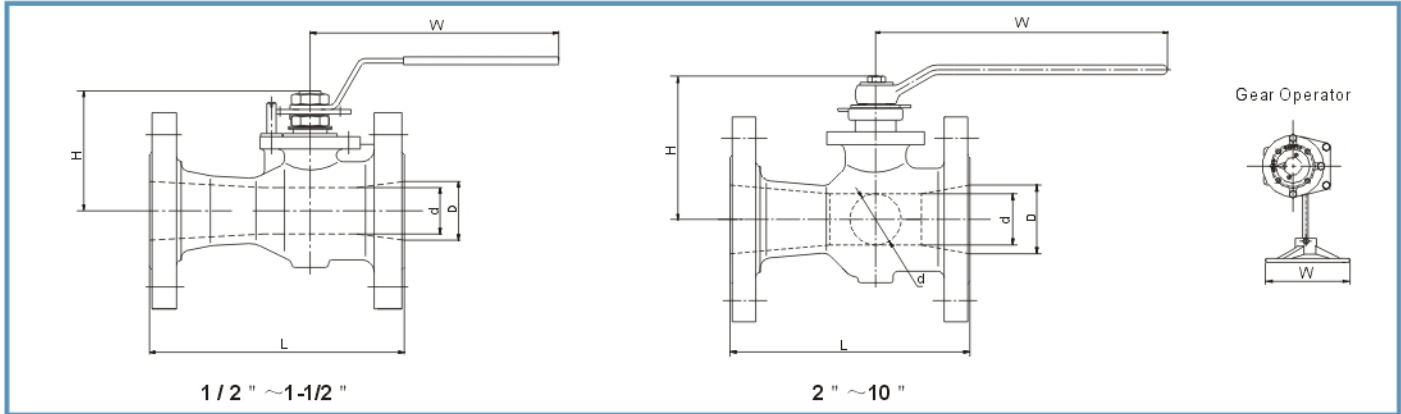
- Refinery
- Petrochemical
- Paper
- Chemical
- Pharmaceutical
- Food and Beverage

Index no	Part
1	Body
2	Closure
3	Ball
4	Gland Flange
5	Lever
6	Seat Ring
7	Stem
8	Gland
9	Gasket
10	Packing Set
11	Stop Plate
12	Thrust Washer
13	Retainer
14	Bolt
15	Bolt
16	Anti-Static Device
17	O-Ring
18	Washer



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	ASTMA182-F316
4	Gland Flange	ASTMA216-WCB	ASTMA351-CF8	ASTMA216-WCB	ASTMA352-LCB
5	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
6	Seat Ring	PTFE	PTFE	PTFE	PTFE
7	Stem	ASTMA182-F6a	ASTMA182-F316	ASTMA182-F6a	ASTMA182-F316
8	Gland	ASTMA276-420	ASTMA182-F316	ASTMA276-420	ASTMA182-F316
9	Gasket	Graphite	316 + Graphite	Graphite	316 + Graphite
10	Packing Set	Graphite	Graphite	Graphite	Graphite
11	Stop Plate	Carbon Steel	S.S.	Carbon Steel	S.S.
12	Thrust Washer	PTFE	PTFE	PTFE	PTFE
13	Retainer	Carbon Steel	S.S.	Carbon Steel	S.S.
14	Bolt	ASTMA193-B7	ASTMA193-B8	ASTMA193-B7M	ASTMA320-L7M
15	Nut	Carbon Steel	S.S.	Carbon Steel	S.S.
16	Anti-Static Device	S.S.	S.S.	S.S.	S.S.
17	O-Ring	Viton A	Viton A	Viton A	HNBR
18	Washer	Carbon Steel	S.S.	Carbon Steel	S.S.





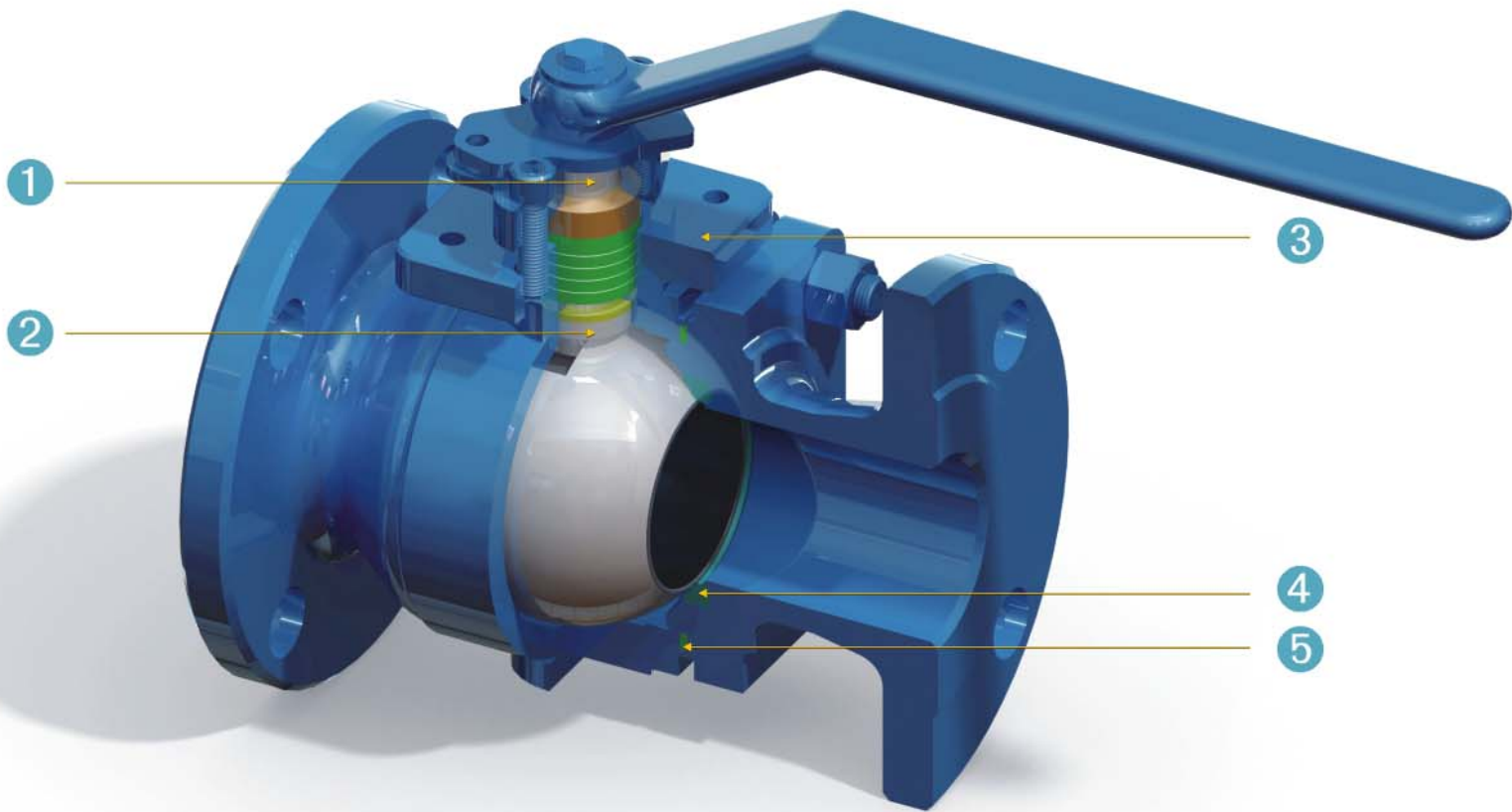
## 150 LB Dimensions

Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2	15	0.37	10	0.50	13	4.25	108	2.13	54	4.72	120	3.3	1.5
3/4	20	0.50	13	0.75	19	4.61	117	2.32	59	5.51	140	5.5	2.5
1	25	0.75	19	1.00	25	5.00	127	2.52	64	5.51	140	6.6	3.0
1-1/2	40	1.18	30	1.50	38	6.50	165	3.54	90	6.30	160	11.0	5.0
2	50	1.50	38	2.00	51	7.01	178	4.02	102	10.43	265	19.2	8.7
2-1/2	65	2.00	51	2.50	64	7.52	191	4.41	112	10.43	265	27.3	12.4
3	80	2.50	64	3.00	76	7.99	203	4.76	121	10.43	265	36.8	16.7
4	100	3.00	76	4.00	102	9.02	229	6.54	166	11.81	300	53.8	24.4
6	150	4.50	114	6.00	152	10.51	267	8.19	208	15.75	400	110.2	50.0
8	200	6.00	152	8.00	203	11.50	292	9.69	246	11.81	*300	222.7	101.0
10	250	7.36	187	10.00	254	12.99	330	11.93	303	16	*400	330.7	150.0

## 300 LB Dimensions

Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2	15	0.37	10	0.50	13	5.51	140	2.13	54	4.72	120	6.2	2.8
3/4	20	0.50	13	0.75	19	5.98	152	2.32	59	5.51	140	7.9	3.6
1	25	0.75	19	1.00	25	6.50	165	2.52	64	5.51	140	10.6	4.8
1-1/2	40	1.18	30	1.50	38	7.48	190	3.54	90	6.30	160	21.2	9.6
2	50	1.50	38	2.00	51	8.50	216	4.02	102	10.43	265	24.3	11.0
2-1/2	65	2.00	51	2.50	64	9.49	241	4.41	112	10.43	265	33.3	15.1
3	80	2.50	64	3.00	76	11.14	283	4.76	121	10.43	265	49.6	22.5
4	100	3.00	76	4.00	102	12.01	305	6.54	166	11.81	300	81.6	37.0
6	150	4.50	114	6.00	152	15.87	403	8.19	208	11.81	*300	159.8	72.5
8	200	5.67	144	8.00	203	16.50	419	9.69	246	15.75	*400	275.6	125.0
10	250	7.36	187	10.00	254	17.99	457	11.93	303	15.75	*400	451.9	205.0

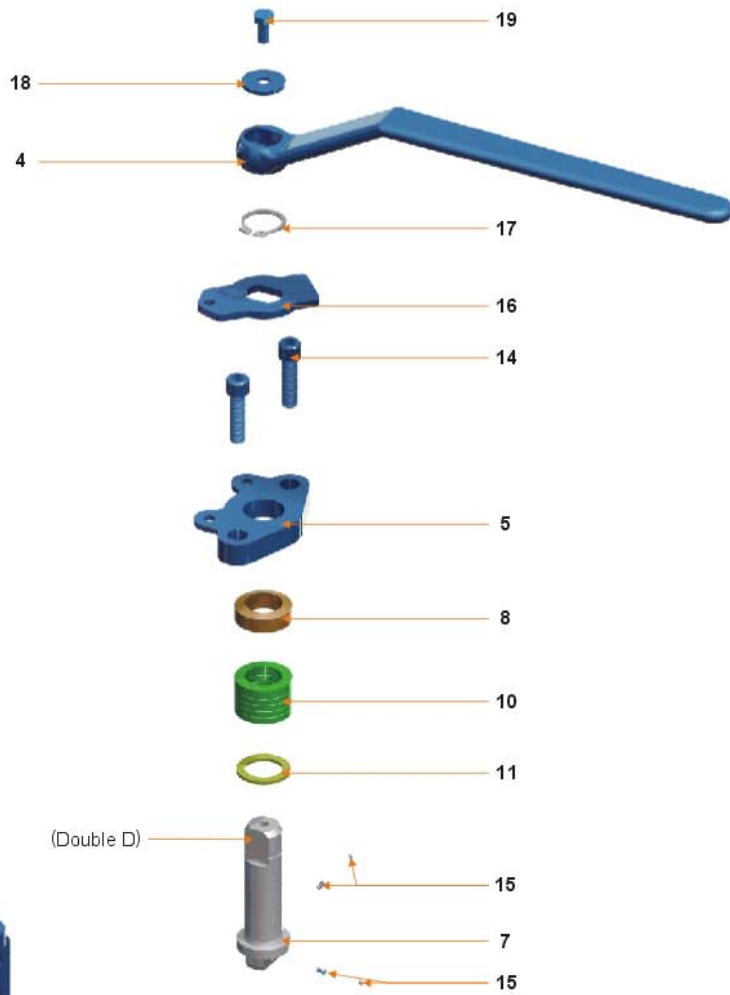
\*Gear Operator



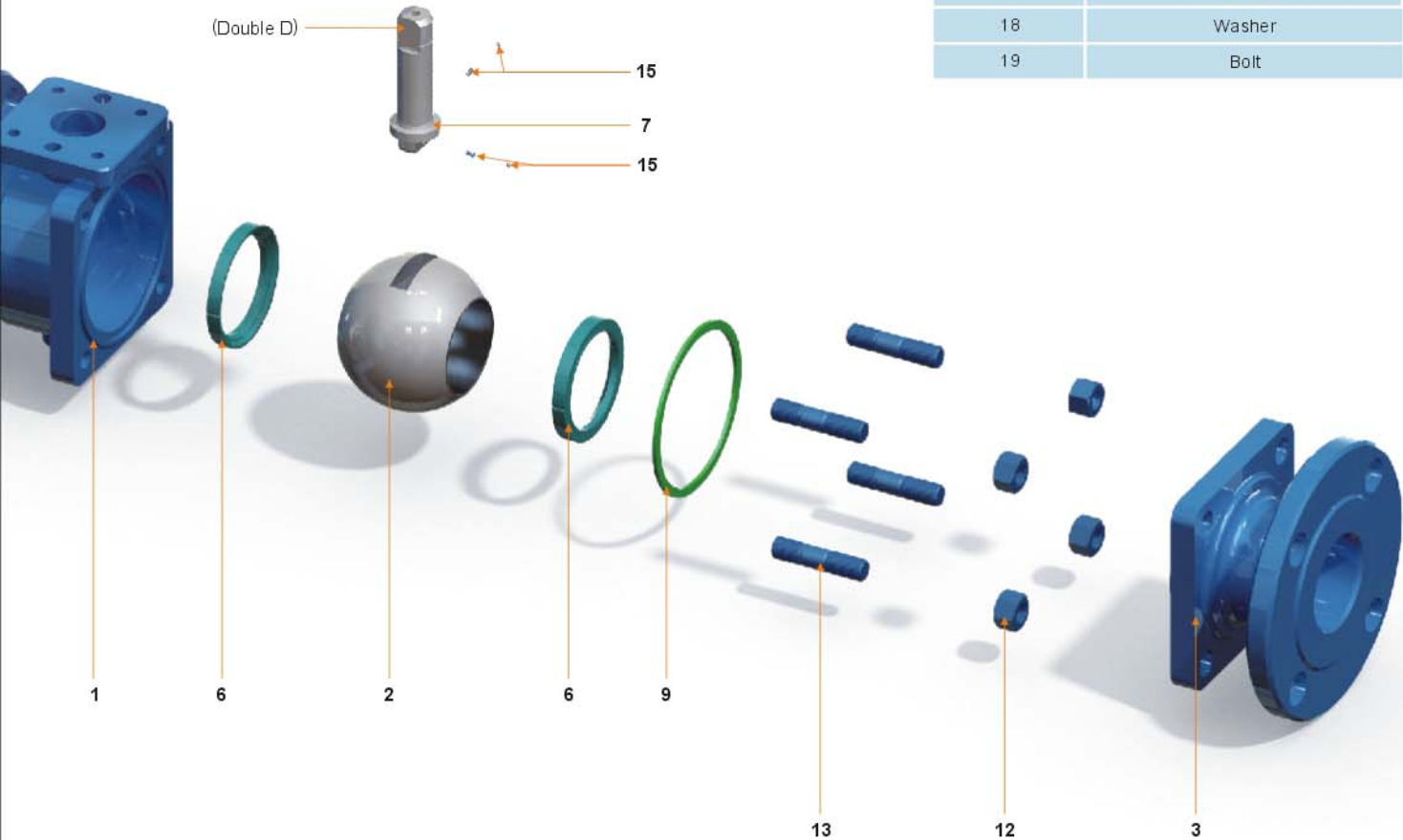
- 1 Double "D" Stem Head: Insures handle lever will always be mounted correctly, parallel to the media flow, indicating valve open and closed positions.
- 2 Blow-out Proof Stem: The lower end of the separate stem is T-shaped to create an integral collar making the stem blowout-proof.
- 3 ISO 5211 Mount Pad: Simplifies the installation of actuation devices with standardized connections.
- 4 Fire Safe Design: Metal to metal sealing shuts off valve flow when soft sealing materials are destroyed by fire.
- 5 Emission-free Gasket: The primary gasket is emission free graphite to eliminate leakage.

## APPLICATIONS

- Refinery
- Petrochemical
- Power
- Chemical
- Pharmaceutical

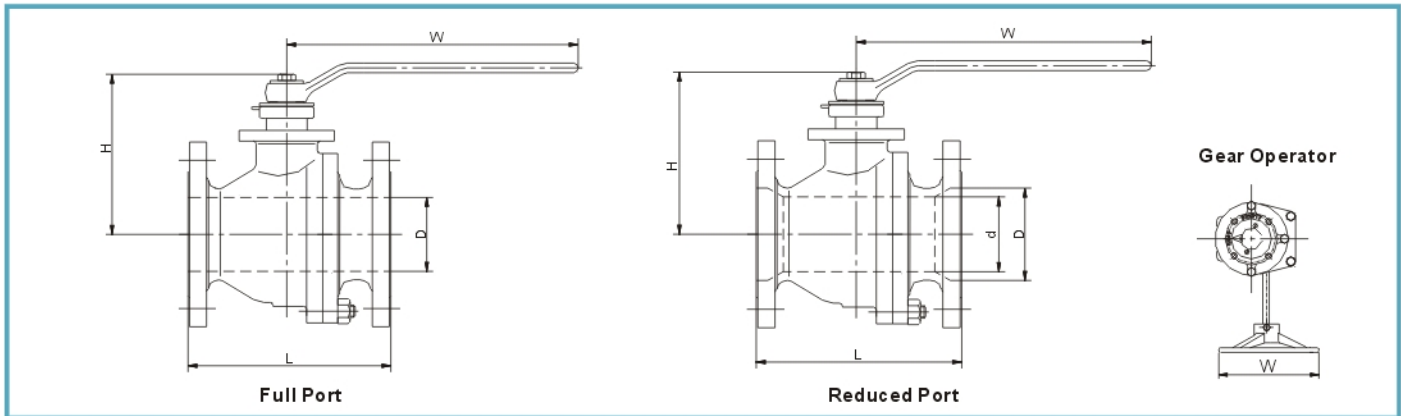


Index no	Part
1	Body
2	Closure
3	Ball
4	Lever
5	Gland Flange
6	Seat Ring
7	Stem
8	Gland
9	Gasket
10	Packing Set
11	Thrust Washer
12	Stud
13	Nut
14	Bolt
15	Anti-Static Device
16	Stop Plate
17	Retainer
18	Washer
19	Bolt





No	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTMA216-WCB	ASTM A351-CF8M	ASTMA216-WCB	ASTM A352-LCB
2	Closure	ASTMA216-WCB	ASTM A351-CF8M	ASTMA216-WCB	ASTM A352-LCB
3	Ball	ASTM A105/ENP	ASTM A182-F316	ASTM A105/ENP	ASTM A182-F316
4	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
5	Gland Flange	ASTMA216-WCB	ASTM A351-CF8	ASTMA216-WCB	ASTM A352-LCB
6	Seat Ring	PTFE	PTFE	PTFE	PTFE
7	Stem	ASTM A182-F6a	ASTM A182-F316	ASTM A182-F6a	ASTM A182-F316
8	Gland	ASTM A276-420	ASTM A182-F316	ASTM A276-420	ASTM A182-F316
9	Gasket	316SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
10	Packing Set	Graphite	Graphite	Graphite	Graphite
11	Thrust Washer	PTFE	PTFE	PTFE	PTFE
12	Stud	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7M	ASTM A320-L7M
13	Nut	ASTM A194-2H	ASTM A194-8	ASTM A194-2HM	ASTM A194-7M
14	Bolt	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7M	ASTM A320-L7M
15	Anti-Static Device	S.S.	S.S.	S.S.	S.S.
16	Stop Plate	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
17	Retainer	Carbon Steel	S.S.	S.S.	S.S.
18	Washer	Carbon Steel	S.S.	S.S.	S.S.
19	Bolt	Carbon Steel	S.S.	S.S.	S.S.



## 150 LB Dimensions

Full Port

Size		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
1/2	15	0.50	13	4.25	108	2.32	59	5.12	130	4.0	1.8
3/4	20	0.75	19	4.61	117	2.48	63	5.12	130	4.4	2.0
1	25	1.00	25	5.00	127	2.99	76	6.30	160	7.9	3.6
1-1/2	40	1.50	38	6.50	165	3.82	97	9.06	230	15.9	7.2
2	50	2.00	51	7.01	178	4.21	107	9.06	230	24.5	11.1
2-1/2	65	2.50	64	7.48	190	5.59	142	15.75	400	30.9	14.0
3	80	3.00	76	7.99	203	5.98	152	15.75	400	48.5	22.0
4	100	4.00	102	9.02	229	7.01	178	27.56	700	116.8	53.0
5	125	5.00	127	14.02	356	9.92	252	43.31	1100	127.9	58.0
6	150	6.00	152	15.51	394	10.71	272	11.81	*300	238.1	108.0
8	200	7.99	203	17.99	457	13.46	342	11.81	*300	429.9	195.0
10	250	10.00	254	20.98	533	13.58	345	15.75	*400	687.8	312.0
12	300	12.00	305	24.02	610	18.86	479	23.62	*600	762.8	346.0

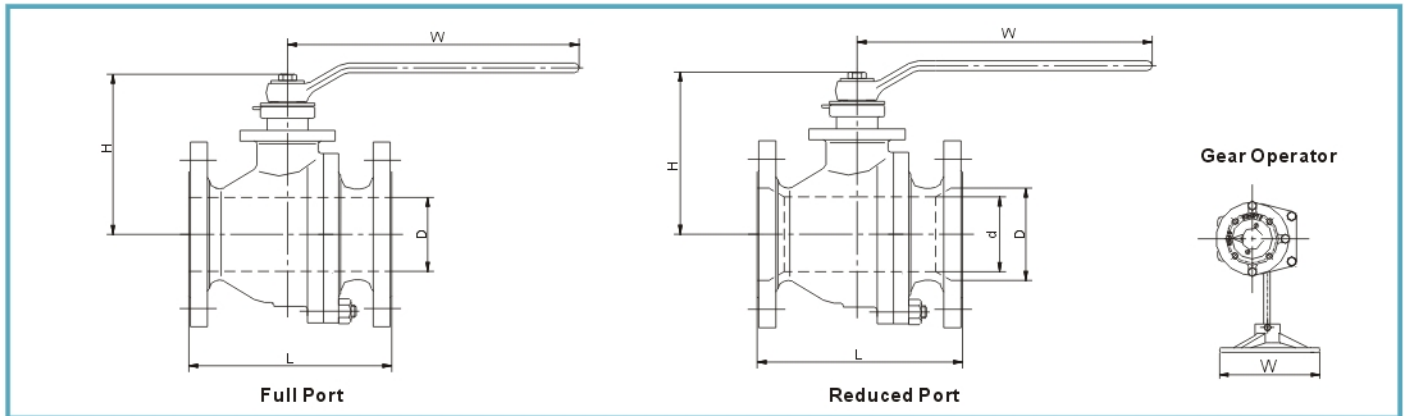
Reduced Port

Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
3/4*1/2	20*15	0.50	13	0.75	19	4.63	118	3.23	82	5.12	130	6.6	3.0
1*3/4	25*20	0.75	19	1.00	25	5.00	127	3.35	85	5.12	130	9.9	4.5
1-1/2*1	40*25	1.00	25	1.50	38	6.50	165	3.94	100	6.30	160	15.4	7.0
2*1-1/2	50*40	1.50	38	2.00	51	7.01	178	4.53	115	9.06	230	19.8	9.0
2-1/2*2	65*50	2.00	51	2.50	64	7.48	190	4.72	120	9.06	230	33.1	15.0
3*2	80*50	2.00	51	3.00	76	7.99	203	6.02	153	15.75	400	35.3	16.0
4*3	100*80	3.00	76	4.00	102	9.02	229	6.38	162	15.75	400	65.0	29.5
6*4	150*100	4.00	102	6.00	152	15.51	394	7.52	191	18.11	460	105.8	48.0
8*6	200*150	6.00	152	8.00	203	17.99	457	11.42	290	11.81	*300	271.2	123.0
10*8	250*200	8.00	203	10.00	254	20.98	533	13.39	340	11.81	*300	480.6	218.0
12*10	300*250	10.00	254	12.00	305	24.02	610	17.40	442	15.75	*400	507.1	230.0

\*Gear Operator

# B Series Ball Valve

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



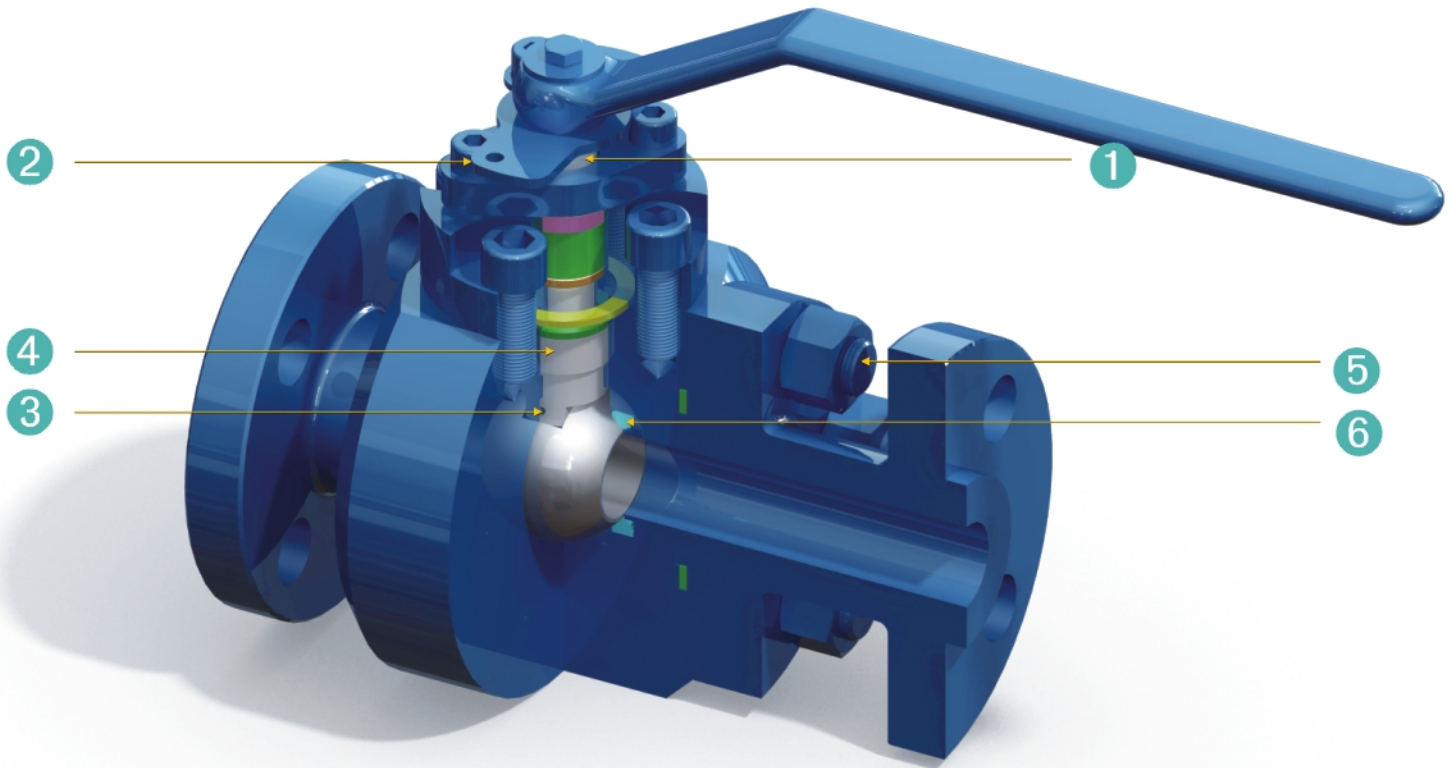
## 300 LB Dimensions

Full Port											
Size		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
1/2	15	0.50	13	5.51	140	2.32	59	5.12	130	5.1	2.3
3/4	20	0.75	19	5.98	152	2.48	63	5.12	130	7.9	3.6
1	25	1.00	25	6.50	165	2.95	75	6.30	160	11.2	5.1
1-1/2	40	1.50	38	7.48	190	3.82	97	9.06	230	22.0	10.0
2	50	2.00	51	8.50	216	4.21	107	9.06	230	30.9	14.0
2-1/2	65	2.50	64	9.49	241	5.59	142	15.75	400	50.7	23.0
3	80	3.00	76	11.14	283	5.98	152	15.75	400	67.5	30.6
4	100	4.00	102	12.01	305	7.01	178	27.56	700	110.2	50.0
5	125	5.00	127	15.00	381	9.92	252	43.31	1100	205.0	93.0
6	150	6.00	152	15.87	403	10.71	272	11.81	*300	255.7	116.0
8	200	8.00	203	19.76	502	13.46	342	15.75	*400	517.0	234.5
10	250	10.00	254	22.36	568	13.58	345	15.75	*400	1086.9	493.0

Reduced Port													
Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
3/4*1/2	20*15	0.50	13	0.75	19	5.98	152	3.23	82	5.12	130	7.7	3.5
1*3/4	25*20	0.75	19	1.00	25	6.50	165	3.35	85	5.12	130	12.1	5.5
1-1/2*1	40*25	1.00	25	1.50	38	7.48	190	3.94	100	6.30	160	22.0	10.0
2*1-1/2	50*40	1.50	38	2.00	51	8.50	216	4.53	115	9.06	230	24.3	11.0
2-1/2*2	65*50	2.00	51	2.50	64	9.49	241	4.72	120	9.06	230	51.8	23.5
3*2	80*50	2.50	64	3.00	76	11.14	283	6.02	153	15.75	400	66.1	30.0
4*3	100*80	3.00	76	4.00	102	12.01	305	6.38	162	15.75	400	86.0	39.0
6*4	150*100	4.00	102	6.00	152	15.87	403	7.52	191	18.11	460	159.8	72.5
8*6	200*150	6.00	152	8.00	203	19.76	502	11.42	290	11.81	*300	326.3	148.0
10*8	250*200	8.00	203	10.00	254	22.36	568	13.39	340	15.75	*400	705.5	320.0

\* Gear Operator





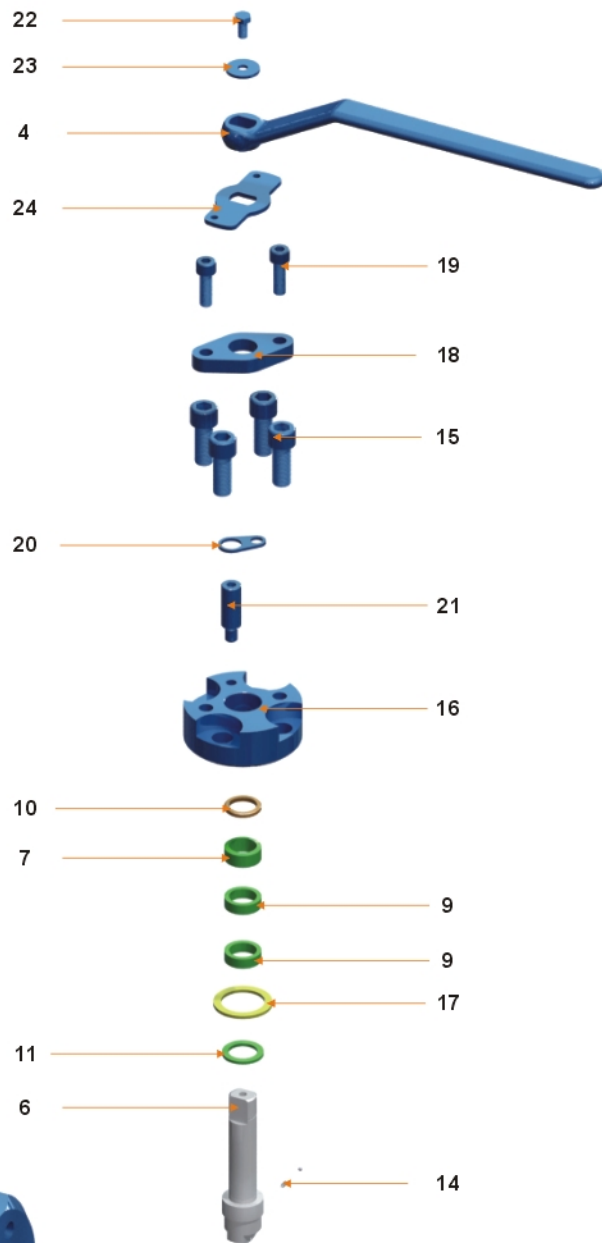
- 1 Double "D" Stem Head: Insures handle lever will always be mounted correctly, parallel to the media flow, indicating valve open and closed positions.
- 2 Secure Line Flow Locking Device: Valve is equipped with an integral locking device to secure line flow.
- 3 Anti-static Device: Spring-loaded pins assures the electrical continuity between the ball, stem and body, to avoid arcing due to static buildup.
- 4 Blow-out Proof Stem: The lower end of the separate stem is T-shaped to create an integral collar making the stem blowout-proof.
- 5 Bolted Body / Flanged Adapter: Maintains seal integrity with properly torqued stud/not.
- 6 Fire Safe Design: Metal to metal sealing shuts off valve flow when soft sealing materials are destroyed by fire.

## APPLICATIONS

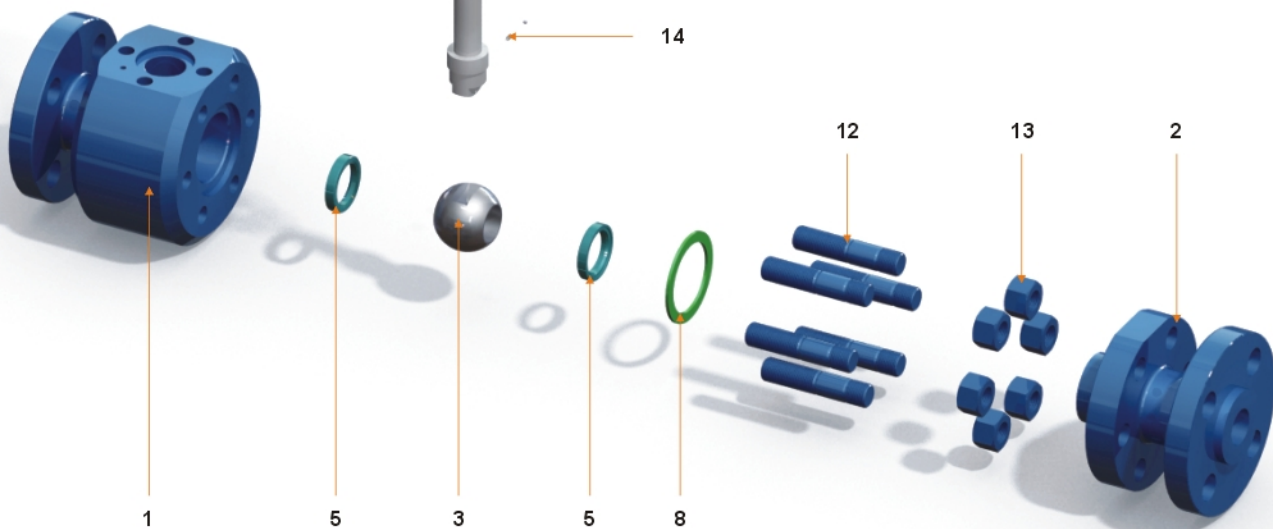
- Refinery
- Petrochemical
- Power
- Chemical
- Pharmaceutical
- Paper

# BB Series Ball Valve

## Material specifications



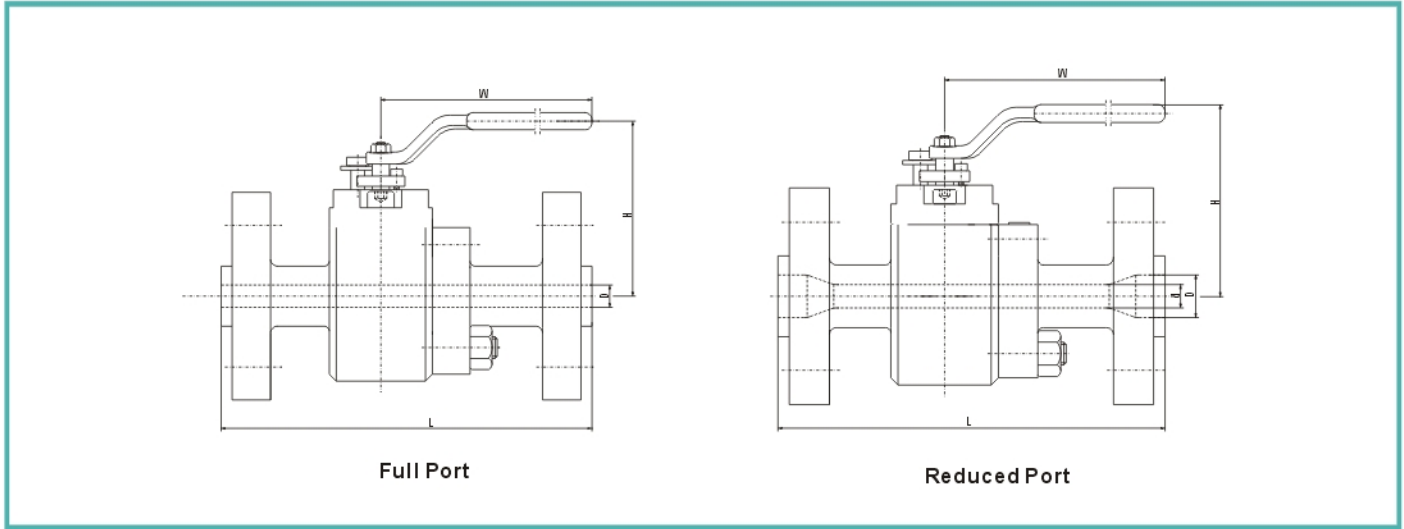
Index no	Part
1	Body
2	Bonnet
3	Ball
4	Lever
5	Seat Ring
6	Stem
7	Gland
8	Gasket
9	Packing Set
10	Space Ring
11	Thrust Washer
12	Stud
13	Nut
14	Anti Static Device
15	Screw
16	Gland Cap
17	Gasket
18	Gland Cap
19	Bolt
20	Locking Plate
21	Screw
22	Bolt
23	Washer
24	Stop Plate



No	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTM A105N	ASTM A182-F316	ASTM A105N	ASTM A350-LF2
2	Bonnet	ASTM A105N	ASTM A182-F316	ASTM A105N	ASTM A350-LF2
3	Ball	ASTM A105N/ENP	ASTM A182-F316	ASTM A105N/ENP	ASTM A182-F316
4	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
5	Seat Ring	PTFE	PTFE	PTFE	PTFE
6	Stem	ASTM A182-F6a	ASTM A182-F316	ASTM A182-F6a	ASTM A182-F316
7	Gland	ASTM A276-420	ASTM A182-F316	ASTM A276-420	ASTM A182-F316
8	Gasket	316+Graphite	316+Graphite	316+Graphite	316 + Graphite
9	Packing Set	Graphite	Graphite	Graphite	Graphite
10	Space Ring	ASTM A276-420	ASTM A276-420	ASTM A276-420	ASTM A276-420
11	Thrust Washer	PTFE	PTFE	PTFE	PTFE
12	Stud	ASTM A193-B7	ASTM A193-B8	ASTM A193-B7M	ASTM A320-L7M
13	Nut	ASTM A194-2H	ASTM A194-8	ASTM A194-2HM	ASTM A194-7M
14	Anti Static Device	S.S.	S.S.	S.S.	S.S.
15	Screw	Carbon Steel	S.S.	Carbon Steel	S.S.
16	Gland Cap	ASTM A105N	ASTM A182-F316	ASTM A105N	ASTM A350-LF2
17	Gasket	316+Graphite	316+Graphite	316+Graphite	316+Graphite
18	Gland Flange	ASTM A216-WCB	ASTM A351-CF8	ASTM A216-WCB	ASTM A352-LCB
19	Bolt	Carbon Steel	S.S.	Carbon Steel	S.S.
20	Locking Plate	Carbon Steel	S.S.	Carbon Steel	S.S.
21	Screw	Carbon Steel	S.S.	Carbon Steel	S.S.
22	Nut	Carbon Steel	S.S.	Carbon Steel	S.S.
23	Washer	Carbon Steel	S.S.	Carbon Steel	S.S.
24	Stop Plate	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

# BB Series Ball Valve

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



## 600 LB Dimensions

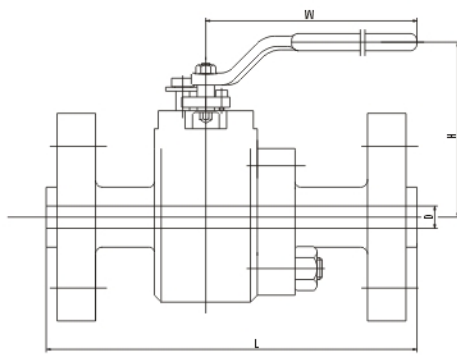
Full Port											
Size		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2"	15	0.50	12.7	6.50	165	4.21	107	5.91	150	7.7	3.5
3/4"	20	0.75	19	7.52	191	5.08	129	7.09	180	12.8	5.8
1"	25	1.00	25.4	8.50	216	5.93	150.5	9.06	230	14.3	6.5
1-1/2"	40	1.50	38	9.49	241	7.72	196	11.81	300	29.1	13.2
2"	50	2.00	51	11.50	292	9.00	228.5	13.78	350	63.9	29.0

Reduced Port													
Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2*3/8	15*10	0.37	9.5	0.50	12.7	6.50	165	3.15	80	4.45	113		
3/4**1/2	20*15	0.50	12.7	0.75	19	7.52	191	4.21	107	5.91	150	11.0	5.0
1*3/4	25*20	0.75	19	1.00	25.4	8.50	216	5.08	129	7.09	180	11.7	5.3
1-1/2*1	40*25	1.00	25.4	1.50	38	9.49	241	5.93	150.5	9.06	230	23.4	10.6
2*1-1/2	50*40	1.50	38	2.00	51	11.50	292	7.72	196	11.81	300	55.1	25.0

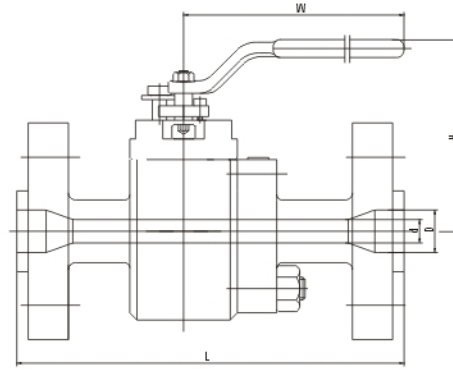
## 900 LB Dimensions

Full Port											
Size		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2"	15	0.50	12.7	8.50	216	4.21	107	5.91	150	18.7	8.5
3/4"	20	0.75	19	9.02	229	5.08	129	7.09	180	24.3	11.0
1"	25	1.00	25.4	10.00	254	5.93	150.5	9.06	230	35.3	16.0
1-1/2"	40	1.50	38	12.01	305	7.72	196	11.81	300	72.8	33.0
2"	50	2.00	51	14.49	368	9.00	228.5	14.57	370	99.2	45.0





Full Port



Reduced Port

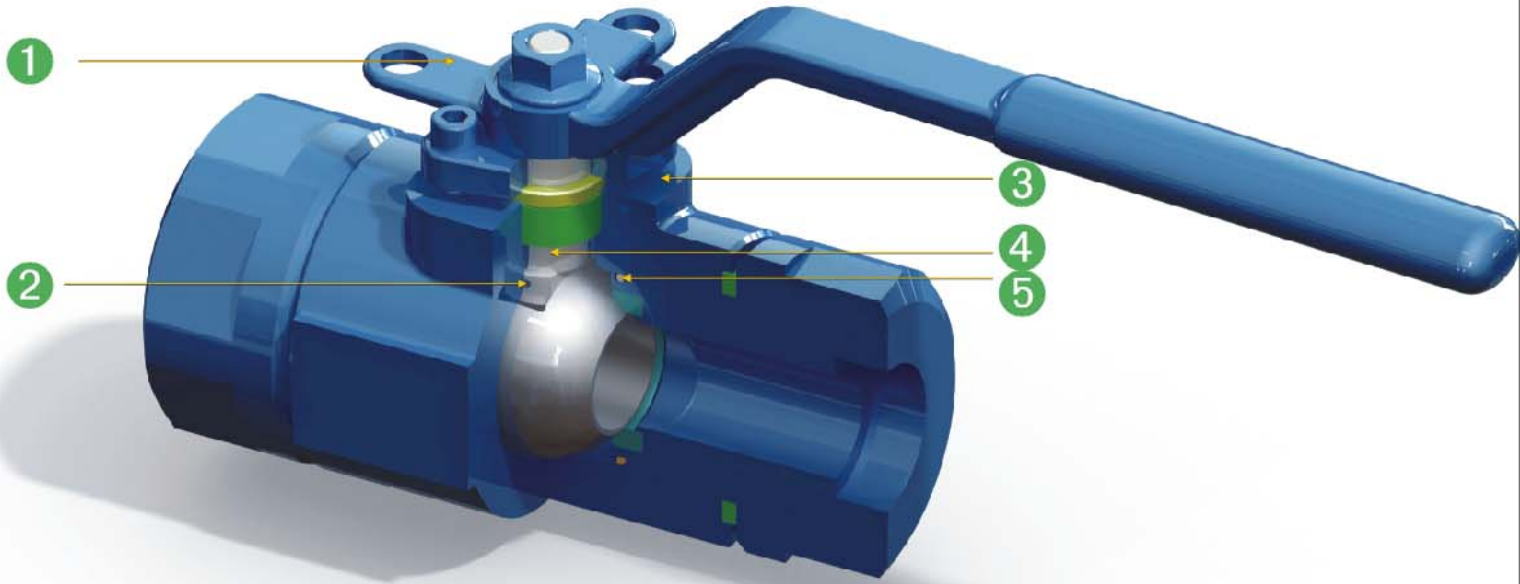
## 900 LB Dimensions

Port cedRedu													
Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2*3/8	15*10	0.37	9.5	0.50	12.7	8.50	216	3.15	80	4.45	113	0.0	
3/4*1/2	20*15	0.50	12.7	0.75	19	9.02	229	4.21	107	5.91	150	22.0	10.0
1*3/4	25*20	0.75	19	1.00	25.4	10.00	254	5.08	129	7.09	180	33.1	15.0
1-1/2*1	40*25	1.00	25.4	1.50	38	12.01	305	5.93	150.5	9.06	230	0.0	
2*1-1/2	50*40	1.50	38	2.00	51	14.49	368	7.72	196	11.81	300	88.2	40.0

## 1500 LB Dimensions

Full Port													
Size		D		L		H		W		Weight			
in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg		
1/2"	15	0.50	12.7	8.50	216	4.21	107	5.91	150	15.0	6.8		
3/4"	20	0.75	19	9.02	229	5.08	129	7.09	180	24.3	11.0		
1"	25	1.00	25.4	10.00	254	5.93	150.5	9.06	230	35.3	16.0		
1-1/2"	40	1.50	38	12.01	305	7.72	196	11.81	300	71.9	32.6		
2"	50	2.00	51	14.49	368	9.00	228.5	14.57	370	141.1	64.0		

Port cedRedu													
Size		d		D		L		H		W		Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
1/2*3/8	15*10	0.37	9.5	0.50	12.7	8.50	216	3.15	80	4.45	113	0.0	
3/4*1/2	20*15	0.50	12.7	0.75	19	9.02	229	4.21	107	5.91	150	22.0	10.0
1*3/4	25*20	0.75	19	1.00	25.4	10.00	254	5.08	129	7.09	180	33.1	15.0
1-1/2*1	40*25	1.00	25.4	1.50	38	12.01	305	5.93	150.5	9.06	230	61.7	28.0
2*1-1/2	50*40	1.50	38	2.00	51	14.49	368	7.72	196	11.81	300	90.4	41.0

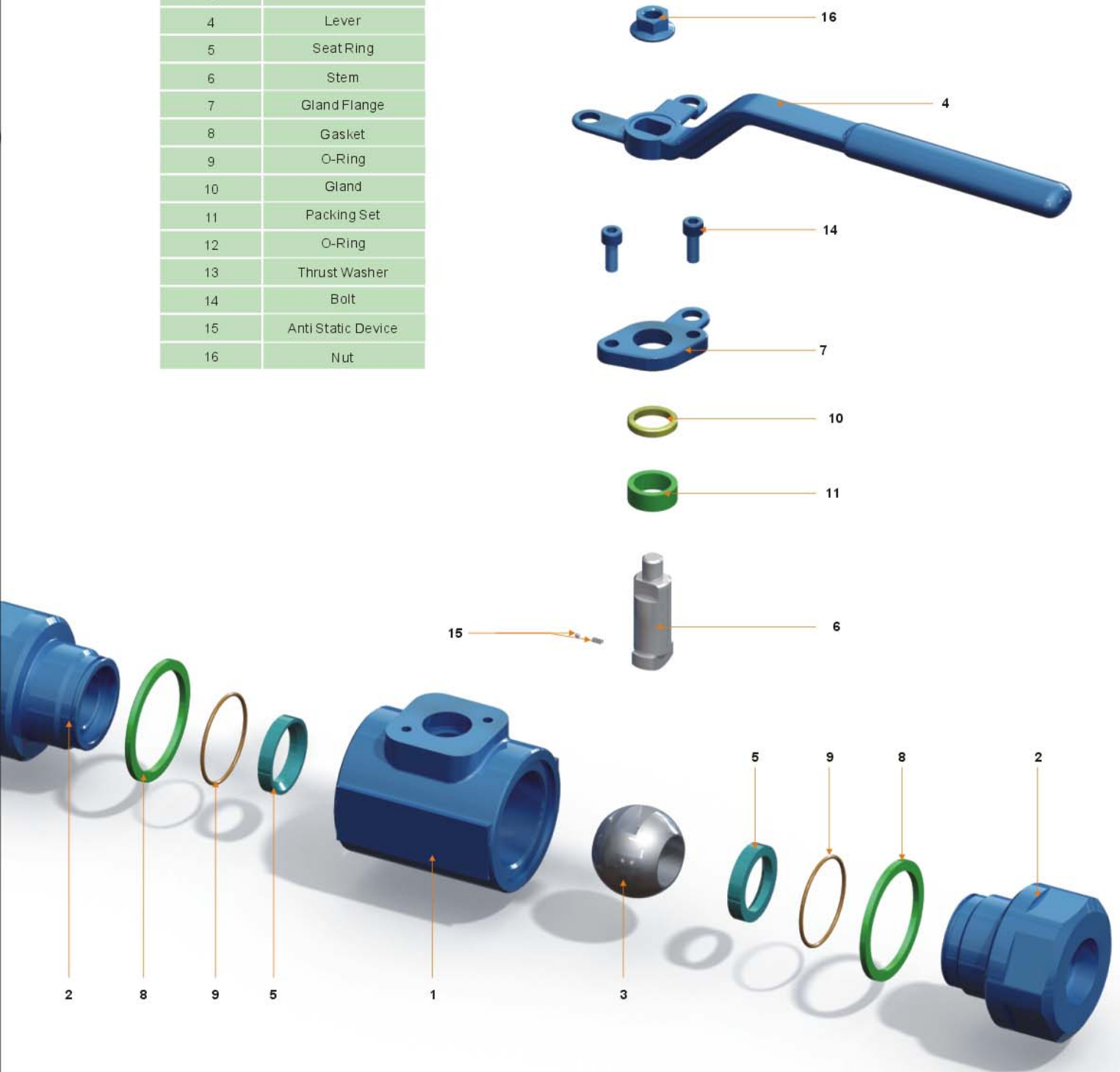


- 1 Secure Line Flow Locking Device: Valve is equipped with an integral locking device to secure line flow.
- 2 Anti-static Device: Spring-loaded pins assures the electrical continuity between the ball, stem and body, to avoid arcing due to static buildup.
- 3 ISO 5211 Mount Pad: Simplifies the installation of actuators with standardized connections.
- 4 Blow-out Proof Stem: The lower end of the separate stem is T-shaped to create an integral collar making the stem blowout-proof.
- 5 O-ring Seal Design: Protects threads from crevice corrosion.

## APPLICATIONS

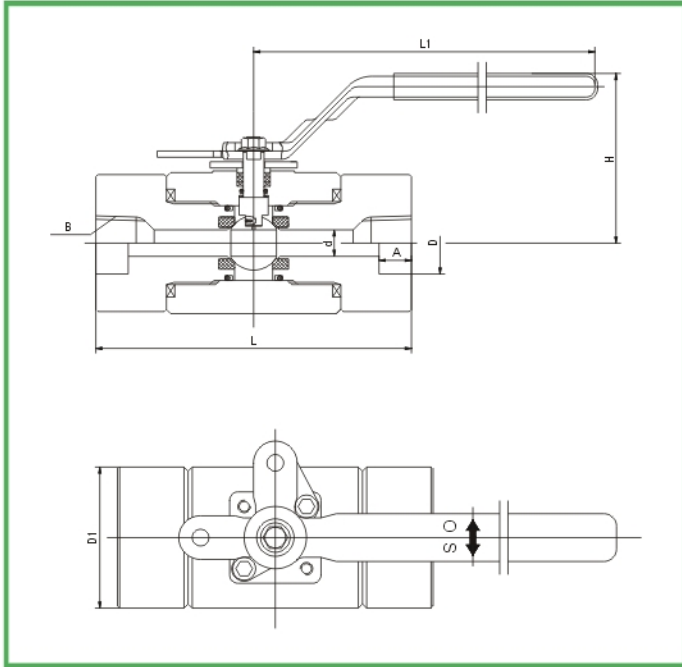
- Refinery
- Chemical
- Power
- Petrochemical

Index no	Part
1	Body
2	Bonnet
3	Ball
4	Lever
5	Seat Ring
6	Stem
7	Gland Flange
8	Gasket
9	O-Ring
10	Gland
11	Packing Set
12	O-Ring
13	Thrust Washer
14	Bolt
15	Anti Static Device
16	Nut

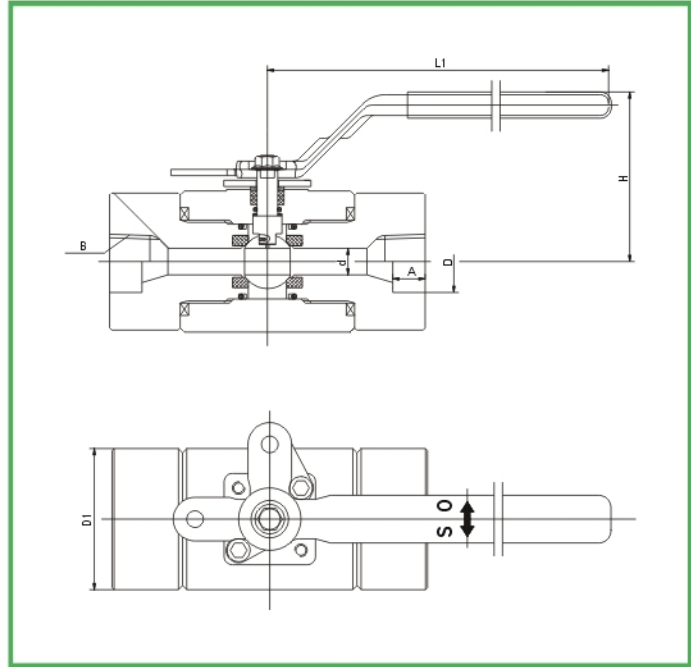


No.	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTM A105N	ASTM A182-F316	ASTM A105N	ASTM A350-LF2
2	Bonnet	ASTM A105N	ASTM A182-F316	ASTM A105N	ASTM A350-LF2
3	Ball	ASTM A105N/ENP	ASTM A182-F316	ASTM A105N/ENP	ASTM A182-F316
4	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
5	Seat Ring	PTFE	PTFE	PTFE	PTFE
6	Stem	ASTM A182-F6a	ASTM A182-F316	ASTM A182-F6a	ASTM A182-F316
7	Gland Flange	ASTM A216-WCB	ASTM A351-CF8	ASTM A216-WCB	ASTM A352-LCB
8	Gasket	S.S.+ Graphite	S.S.+ Graphite	S.S.+ Graphite	S.S.+ Graphite
9	O-Ring	Viton AED	Viton AED	Viton AED	Viton AED
10	Gland	ASTM A276-420	ASTM A182-F316	ASTM A276-420	ASTM A182-F316
11	Packing Set	Graphite	Graphite	Graphite	Graphite
12	O-Ring	Viton AED	Viton AED	Viton AED	Viton AED
13	Thrust Washer	PTFE	PTFE	PTFE	PTFE
14	Bolt	Carbon Steel	S.S.	Carbon Steel	S.S.
15	Anti Static Device	S.S.	S.S.	S.S.	S.S.
16	Nut	Carbon Steel	S.S.	Carbon Steel	S.S.





Full Bore



Reduced Bore

## 800 /1500/2500LB Dimensions

Full Bore																		
Size		d		L		H		L1		A		D		D1		B	Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		kg	lb
1/4	8	0.25	6.4	0.25	76	2.99	41	1.60	100	3.94	9.5	0.37	14.2	0.56	33.0	1/4-18NPT	0.6	1.4
3/8	10	0.38	10	0.37	84	3.31	45	1.76	120	4.72	9.5	0.37	17.6	0.69	38.0	3/8-18NPT	0.9	1.9
1/2	15	0.50	13	0.51	104	4.09	62	2.44	150	5.91	9.5	0.37	21.8	0.86	42.0	1/2-14NPT	1.2	2.7
3/4	20	0.75	20	0.79	127	5.00	82	3.23	180	7.09	12.5	0.49	27.2	1.07	58.0	3/4-14NPT	2.9	6.3
1	25	1.00	25	0.98	157	6.18	100	3.94	230	9.06	12.5	0.49	33.9	1.33	72.0	1-11.5NPT	5.4	12.0
1-1/2	40	1.50	38	1.50	197	7.76	135	5.31	300	11.81	12.5	0.49	48.8	1.92	105.0	1-1/2-11.5NPT	14.3	31.6
2	50	2.00	51	2.01	210	8.27	165	6.50	370	14.57	16.0	0.63	61.2	2.41	134.0	2-11.5NPT	24.6	54.1

Reduced Bore																		
Size		d		L		H		L1		A		D		D1		B	Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		kg	lb
3/8*1/4	10*8	0.25	6.4	0.25	76	2.99	40.6	1.60	100	3.94	9.5	0.37	17.6	0.69	33	3/8-18NPT	0.5	1.2
1/2*3/8	15*10	0.37	9.5	0.37	84	3.31	44.8	1.76	120	4.72	9.5	0.37	21.8	0.86	38	1/2-14NPT	0.8	1.7
3/4*1/2	20*15	0.51	13	0.51	104	4.09	62	2.44	150	5.91	12.5	0.49	27.2	1.07	42	3/4-14NPT	1.1	2.4
1*3/4	25*20	0.79	20	0.79	127	5.00	82	3.23	180	7.09	12.5	0.49	33.9	1.33	58	1-11.5NPT	2.7	5.9
1-1/2*1	40*25	0.98	25	0.98	157	6.18	100	3.94	230	9.06	12.5	0.49	48.8	1.92	72	1-1/2-11.5NPT	5.1	11.3
2-*1-1/2	50*40	1.50	38	1.50	197	7.76	135	5.31	300	11.81	16	0.63	61.2	2.41	105	2-11.5NPT	14.0	30.9

### 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

### 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	
4	2500	2000	1850		
6	5300	5250			
8	10750	10100			
10	17500	16820			
12	26750	25950			

\* Other elastomer materials available upon request.

#### Notes:

- 1.All the sizes are in full port.
- 2.Pressure Ratings are according to B 16.34.

#### Method of Calculating Flow

The Flow Coefficient Cv of a valve 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 Cv, use the following formulas:

#### Liquid Flow:

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

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

P = differential pressure across the valve

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

#### Gas Flow:

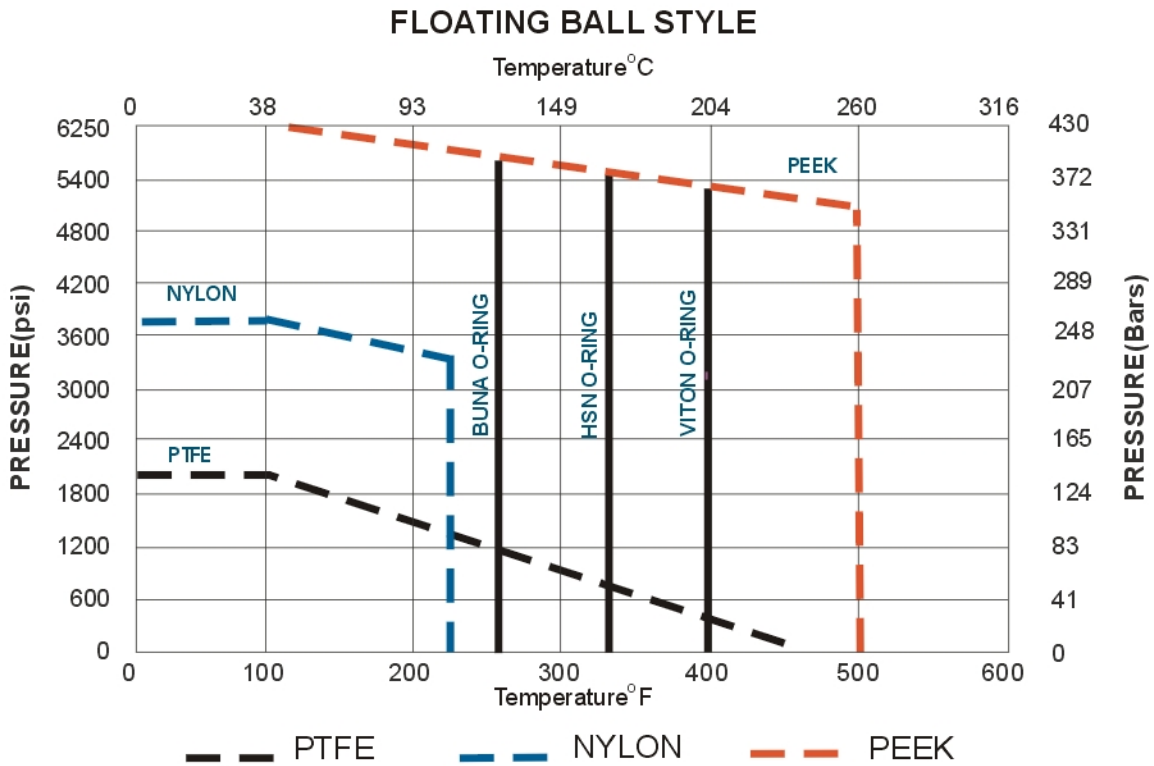
$$Qg = 61Cv (P_2/P/g)^{1/2}$$

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

Qg = Flow rate of gas (CFH at STP)

P<sub>2</sub> = outlet pressure (psia)

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



O-Ring materials for floating ball valves are for seat and stem. All Body/bonnet seals are graphite.  
 Above ratings are for soft seal components. Please consult ASME B16.34 for Body and Closure Pressure /Temperature ratings.

### Operating Torque

in	150LB		300LB		400LB		600LB	
	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs
1/4	5	3.69	6	4.43	8	5.90	12	8.86
3/8	5	3.69	6	4.43	8	5.90	12	8.86
1/2	6	4.43	9	6.64	11	8.12	16	11.81
3/4	10	7.38	12	8.86	14	10.33	20	14.76
1	15	11.07	20	14.76	29	21.40	42	31.00
1-1/4	32	23.62	48	35.42	45	33.21	60	44.28
1-1/2	40	29.52	60	44.28	62	45.76	90	66.42
2	50	36.90	70	51.66	90	66.42	130	95.94
2-1/2	80	59.04	90	66.42	104	76.75	150	110.70
3	90	66.42	120	88.56	138	101.84	200	147.60
4	180	132.84	230	169.74	255	188.19	370	273.06
5	340	250.92	420	309.96				
6	840	619.92	930	686.34				
8	1100	811.80	1930	1424.34				
10	2000	1476.00	4500	3321.00				
12	3200	2361.60						

in	800LB		900LB		1500LB		2500LB	
	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs	N.m	Ft/Lbs
1/4	15	11.07	15	11.07	22	16.24	32	23.62
3/8	15	11.07	15	11.07	22	16.24	32	23.62
1/2	19	14.02	20	14.76	32	23.62	56	41.33
3/4	33	24.35	35	25.83	45	33.21	100	73.80
1	65	47.97	70	51.66	120	88.56	190	140.22
1-1/4	90	66.42	100	73.80	170	125.46	310	228.78
1-1/2	130	95.94	140	103.32	189	139.48	360	265.68
2	187	138.01	200	147.60	420	309.96		
2-1/2	280	206.64	320	236.16				
3	403	297.41	431	318.08				

Note:

1. Torque is calculated based on normal temperature, with RPTFE seat for 150LB~300LB and NYLON seat for 600LB~1500LB.
2. For cryogenic service, torque shall be increased about 2~2.5 times.
3. 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.
4. Torque may be changed according to different fluid and trim material.



## Product Warranty

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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.



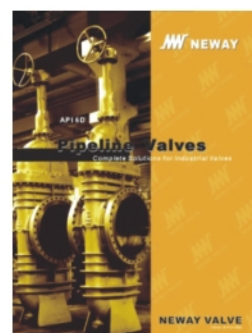
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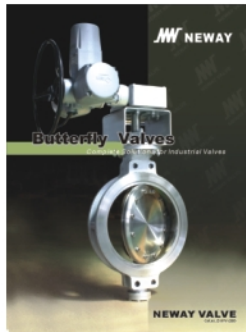
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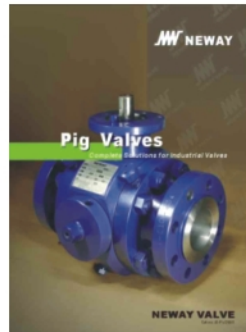
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Cat.no.:E-PLV



Cat.no.:E-BFV



Cat.no.:E-PV



Cat.no.:E-AV



Cat.no.:6AGV



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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