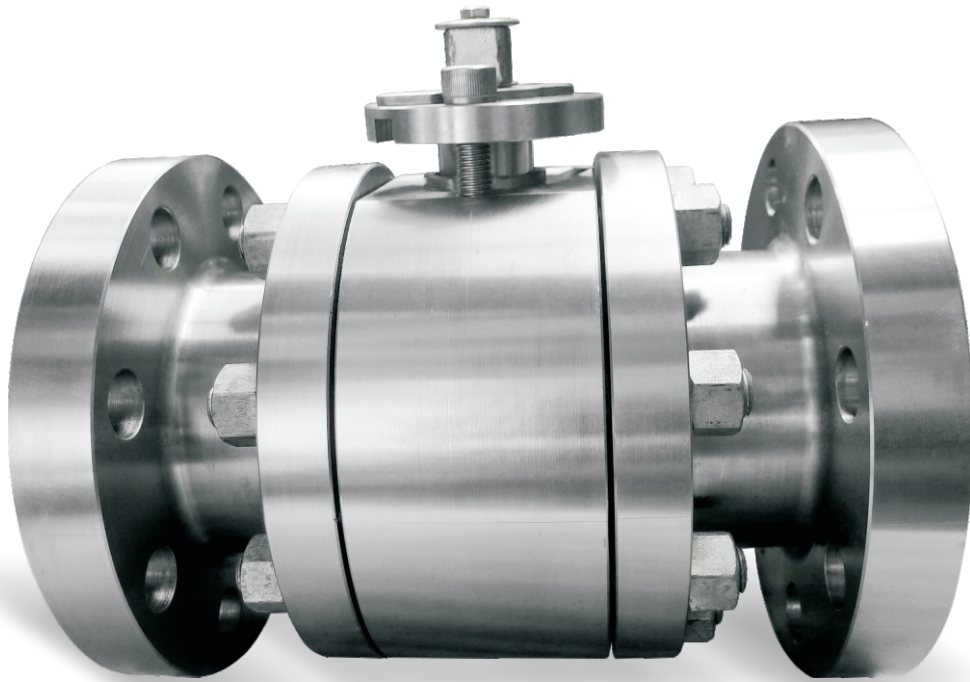


# FLOATING BALL VALVE



**SIO**  
Valves & Automation

## Applicable Standards

The following list contains the most important applicable standards for ball valves. Redstar valves may be designed, manufactured and tested in accordance with other international standards on request.

### API- American Petroleum Institute

#### Spec. 6D

Specification for pipeline valves.

#### Std. 598

Valve inspection and test.  
P.O.A. consult factory.

#### Std. 605

Large diameter carbon steel flanges.

#### Std. 607

Fire test for soft seated quarter- turn valves.

#### Std. Q1

Specification for quality management system requirements.

### ASME/ANSI- American National Standard Institute

#### B 16.5

Steel pipe flanges and flanged fittings.

#### B 16.10

Face-to-face and end-to-end dimensions of ferrous valves.

#### B 16.34 / BPVC Sec. VIII

Steel valves- flanged and butt welding ends.

#### B 31.3

Chemical plant and petroleum refinery piping.

#### B 31.4

Liquid petroleum transportation piping systems.

#### B 31.8

Gas transmission and distribution piping systems.

### EC-European Community

#### CE Marked

(P.E.D. 97/23/EC, Cat. 3)  
P.O.A. consult factory.

### ISO-International Organization \ for Standardization

#### ISO 9001

Quality systems-Model for quality assurance in design/development, production, installation and servicing.

#### ISO 15156

Materials for use in H2S containing environments in oil and gas production.

### MSS- Manufacturers Standardization Society

#### SP 6

Standard finishes for contact faces of pipe flanges and connecting - end flanges of valves and fittings.

#### SP 25

Standard marking system for valves, fittings, flanges and unions.

#### SP 55

Quality standard for steel castings - visual method.

### Hydrogen Sulfide (H2S Environments)

#### NACE Mr0175

#### ISO 15156

General principles for cracking resistant materials in H2S containing environments in oil & gas production.

### CSA-Canadian Standards Association

#### CSA Z245.15

Standard for steel valves for intended use in oil or gas pipeline systems.

#### CSA Z245.12

Standard for steel flanges intended to be used for transporting fluids.

#### CSA Z662

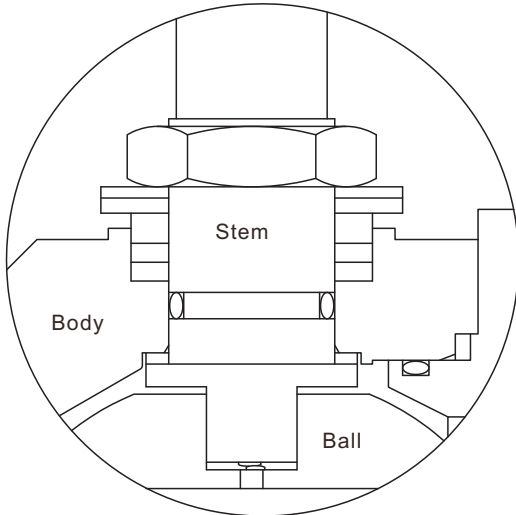
Oil and gas pipeline systems.



# Floating Ball Valves

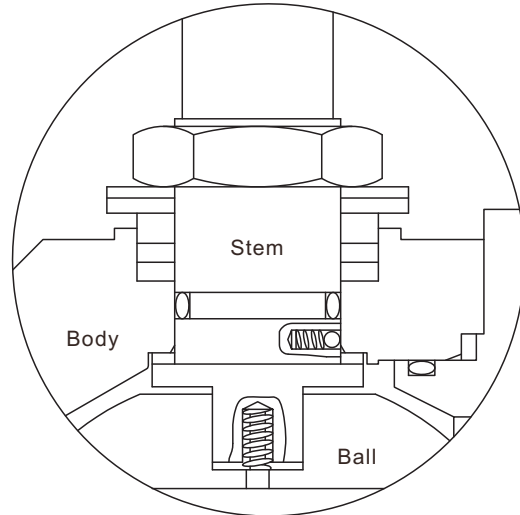
## Design Feature

*Blow-out Proof Stem*



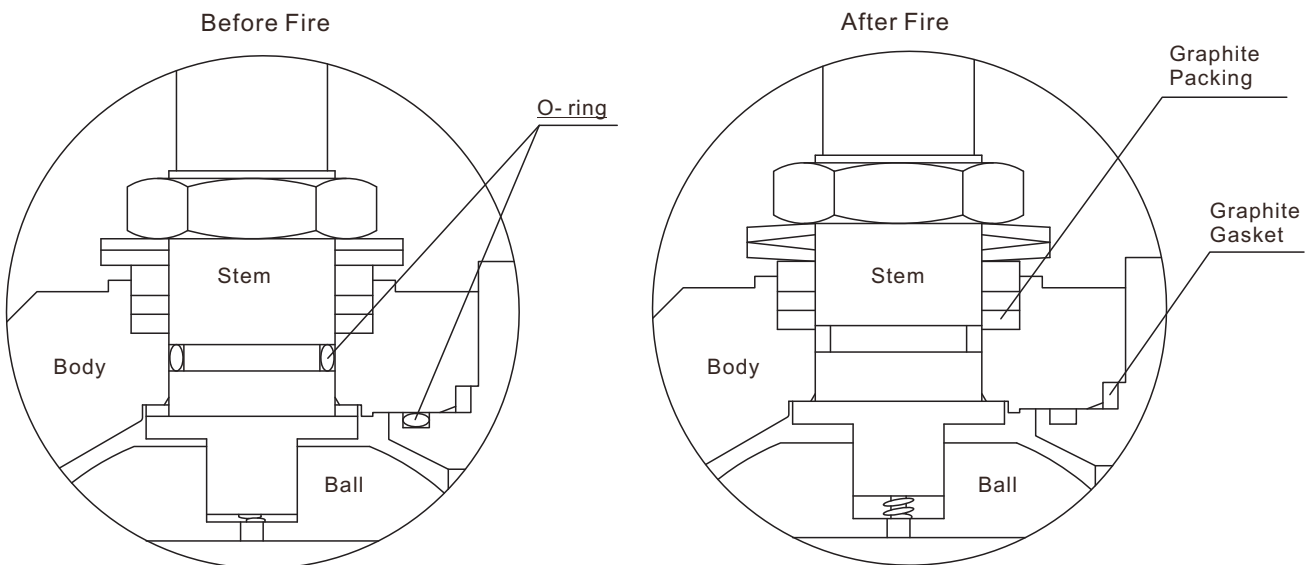
The stem is made separately from the ball with integral T-type round shoulder, installed internally from body side, retained by body to assure sealing safety at all pressure.

*Anti-Static Device*



Spring plus graphite type anti-static device is applied between the ball, stem and body, to keep the electrical continuity between all the metallic components, and ensure the resistance lower than the most severe service requirement.

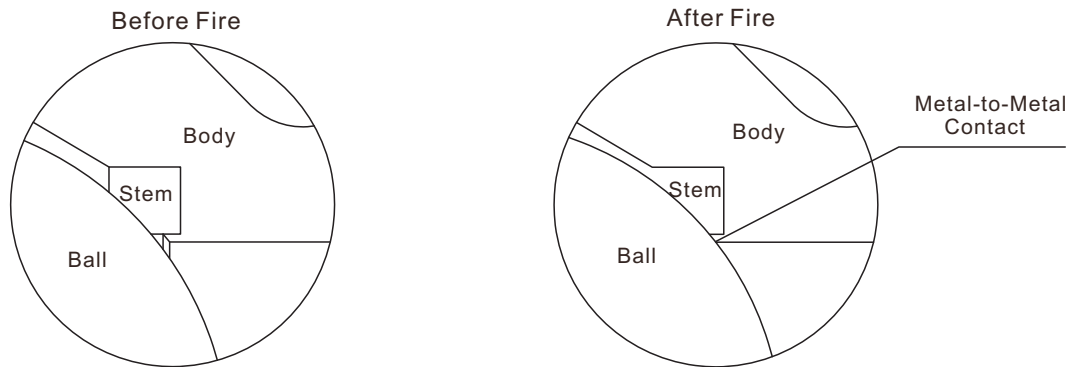
*Fire Safe*



### a) External leakage prevention

All the possible external leakage point between stem and body, body and adapter are made with primary O-ring seal and secondary graphite packing or gasket seal. When fire burned out the primary O-ring seal, the secondary graphite packing/gasket seal still can prevent the process medium without external leakage

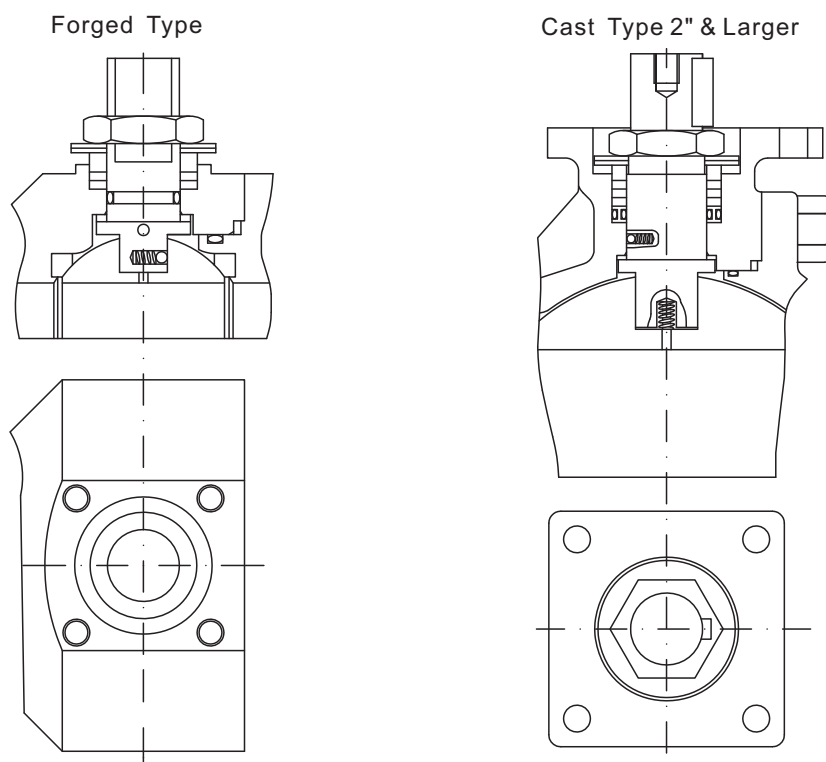
## b) Internal leakage prevention



When fire burned out the primary soft seat seal, the upstream medium pressure push the ball to downstream against the secondary metal seat lip to shut off the process medium and prevent internal leakage through the valve bore.

## Top Mounting

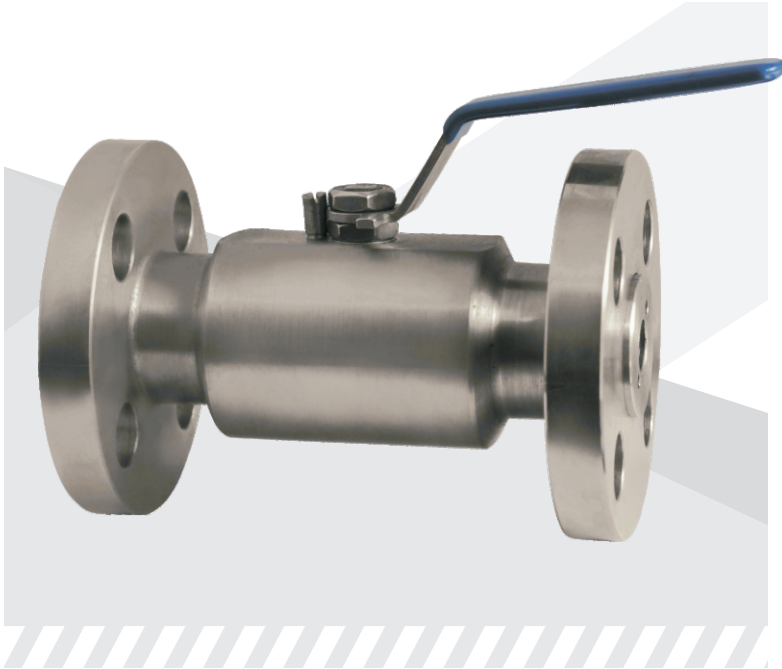
All valves are designed and manufactured with ISO 5211 top mounting, for 2" & larger cast floating ball valve, actuator can be directly mounted on the valve.



## Environment Friendly Valve

Accurate machining of stem and body sealing surfaces with double sealing (O-ring primary seal plus graphite packing seal), and dish spring live loaded ensure the low emission complying with the most severe pollution-control regulations. The test certifications are available on request.

## 1PC Body Floating Ball Valve



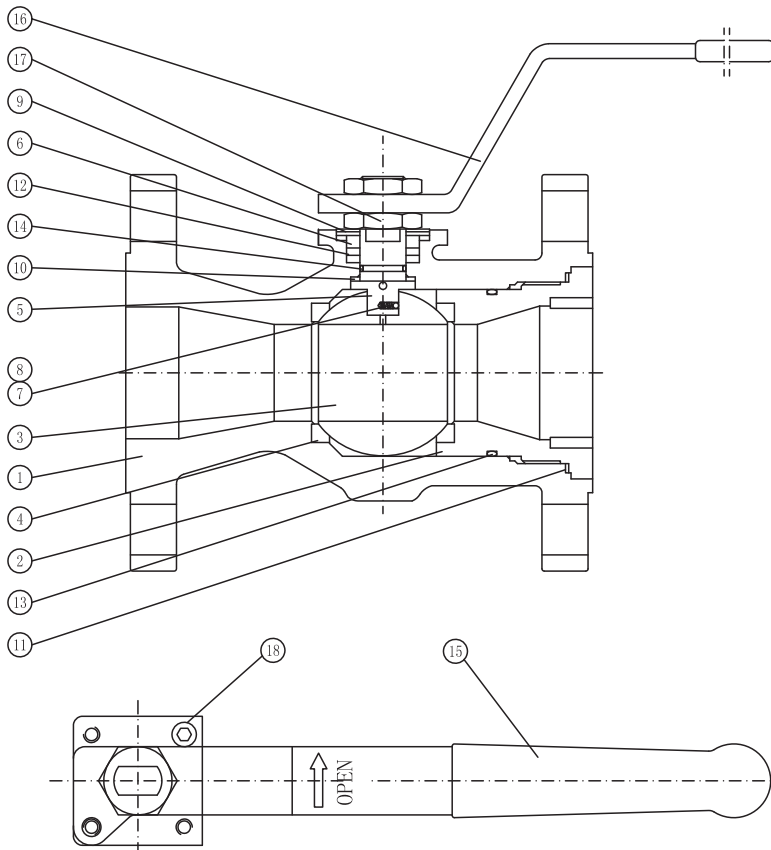
### Feature

Size: 3/4"-6"
Class: 150-300
One Pieces Cast / Forged Steel Body
Floating Ball, Reduced Bore
Anti-Static Device
Blow-out Proof Stem
Fire Safe Design

### Specifications

Design	ASME B16.34/API608
Face to Face	ASME B16.10
End to end	ASME B16.10
End Flange	ASME B16.50
Test	API 598
Fire Safe Test	API 607 / API 6FA
Specia	INACE MR0175

### Main Part Name



No	Part Name
1	Body
2	Adapter
3	Ball
4	Seat
5	Stem
6	Gland
7	Steel ball
8	Antistatic Spring
9	Dish Spring
10	Thrust Washer
11	*Gasket
12	*Packing
13	*O-ring
14	*O-ring
15	Lever Cover
16	Lever
17	Nut
18	Stopper

## 2pc Body Cast Floating Ball Valve



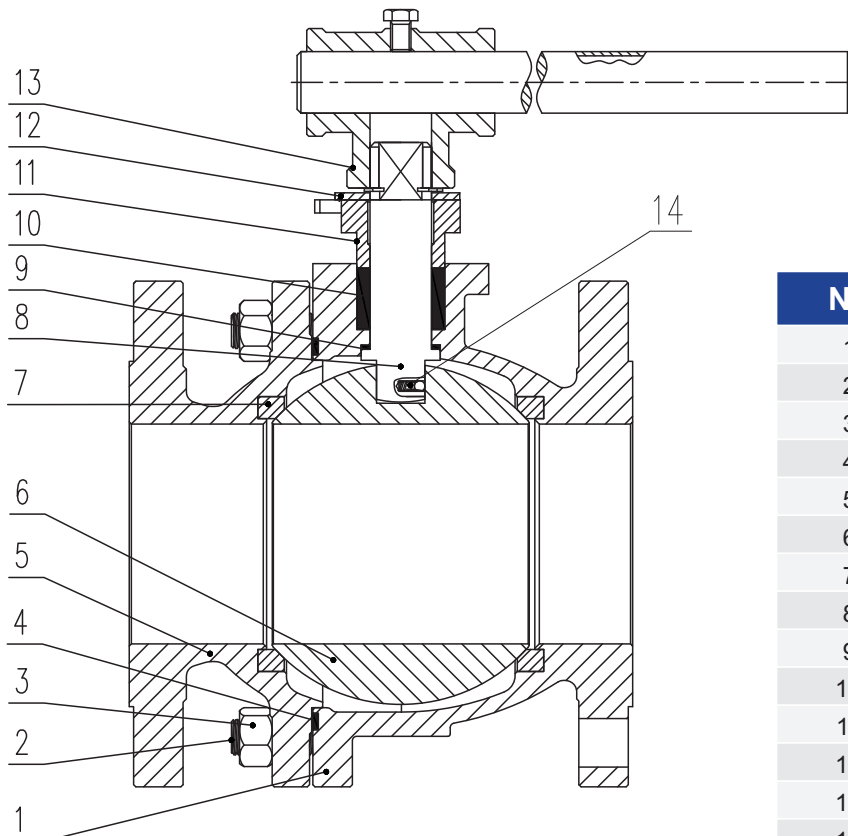
### Feature

Size: 1/2"~8"
Class: 150~300
Two Pieces Cast Steel Body
Floating Ball, Full & Reduced Bore
Anti-static Device
Blow-out proof Stem
Fire Safe Design
Low Emission

### Specifications

Design	ASME B 16.34/ API 6D / BS EN ISO 17292(BS5351)
Face to Face	ASME B16.10
End To End	ASME B16.10
End Flange	ASME B16.50
BW End	ASME B16.25
Test	API 598/BS EN 1266(BA6755)
Fire Safe Test	API 607/ API 6FA
Special	NACE MR 0175

## Main Part Name



No	Part Name
1	Body
2	Stud Bolts
3	Nuts
4	Middle Gasket
5	Bonnet
6	Ball
7	Seat
8	Stem
9	Lower Gasket
10	Packing
11	Gland
12	Position plate
13	Lever
14	Anti-Static Device

**2PC/3PC Body Forged Floating Ball Valve**



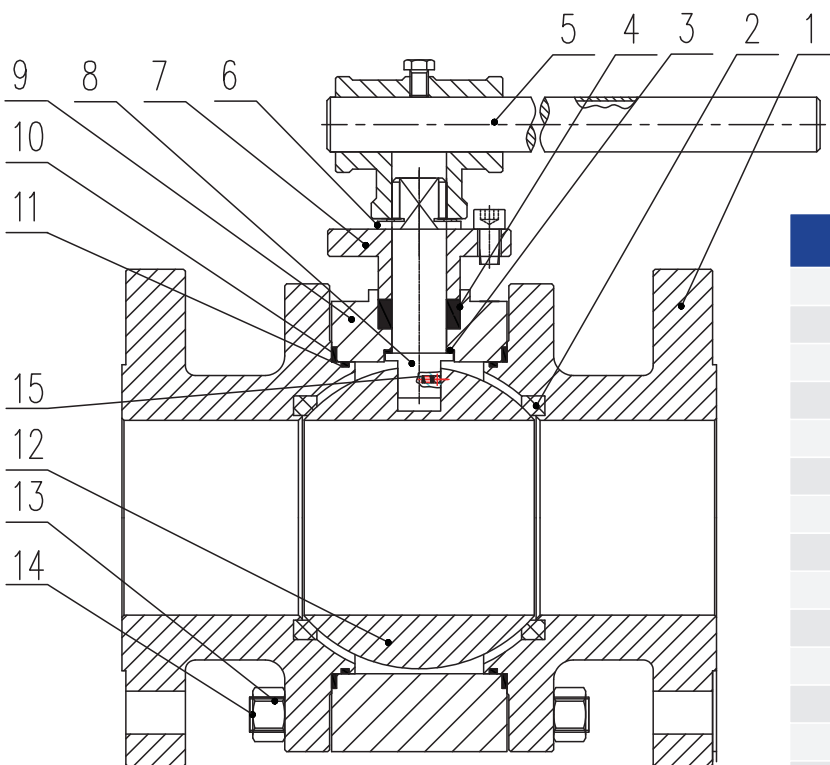
**Feature**

- Size: 1/2"~ 8"
- Class: 150~2500
- 2PC/3PC Forged Steel Body
- Floating Ball, Full & Reduced Bore
- Anti-Static Device
- Blow-out Proof Stem
- Fire Safe Design
- Low Emission

**Specifications**

Design	ASME B 16.34/ API 6D / BS EN ISO 17292(BS5351)
Face to Face	ASME B16.10
End To End	ASME B16.10
End Flange	ASME B16.50
BW End	ASME B16.25
Test	API 598/BS EN 1266(BA6755)
Fire Safe Test	API 607/ API 6FA
Special	NACE MR 0175

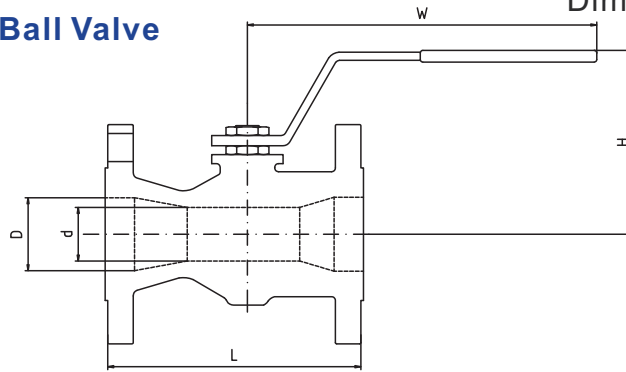
**Main Part Name**



No	Part Name
1	Bonnet
2	Seat Ring
3	Lower Gasket
4	Packing
5	Lever
6	Positioning Plate
7	Gland
8	Stem
9	Body
10	Middle Gasket
11	O-Ring
12	Ball
13	Nut
14	Stud Bolts
15	Anti-static Device

## Dimensions and Weights

### 1PC Body Floating Ball Valve



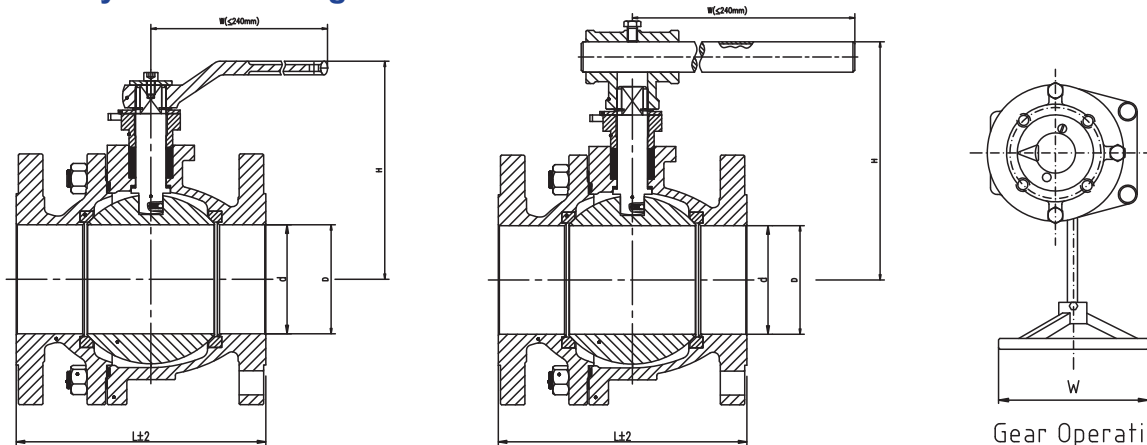
**Class 150**

Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3/4	15	18	117	89	129	6.0
1	19	25	127	90	170	6.6
1-1/2	32	40	165	106	224	7.8
2	38	50	178	111	224	12
3	59	80	203	146	356	23
4	76	102	229	171	356	38
6	102	150	267	246	546	80

**Class 300**

Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3/4	15	18	152	89	129	6.6
1	19	25	165	90	170	7.2
1-1/2	32	40	191	106	224	13
2	38	50	216	111	224	18
3	59	80	283	160	356	36
4	76	102	305	186	506	54
6	102	150	403	284	762	108

### 2pc Body Cast Floating Ball Valve



**Full Bore Class 150**

Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg
2	51	178	138	350	9.5
2-1/2	64	191	155	400	15
3	76	203	175	400	19
4	102	229	200	450	30
6	152	394	230	*300	75
8	203	457	290	*400	115

**Gear Operation**

**Full Bore Class 300**

Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg
2	51	216	138	400	13
2-1/2	64	241	155	400	21
3	76	283	175	450	27
4	102	305	200	500	40
6	152	403	230	*300	95
8	203	502	290	*400	150

**Reduced Bore Class 150**

Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	178	132	240	8.6
2-1/2*2	51	64	191	138	350	13.0
3*2	51	76	203	138	350	18.9
4*3	76	102	229	175	400	23
6*4	102	152	267	200	450	55
8*6	152	203	292	230	*300	83

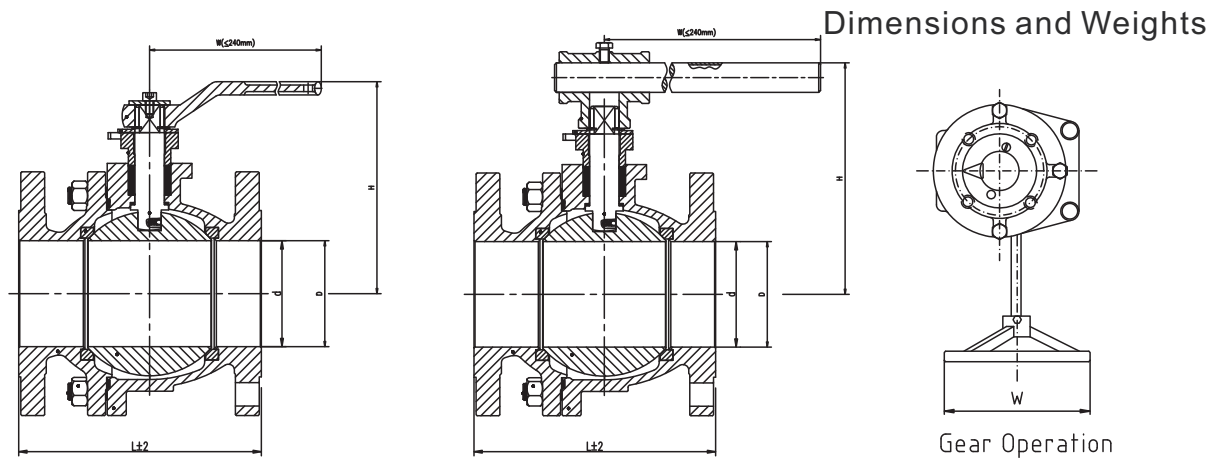
**Reduced Bore Class 300**

Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
2*1-1/2	38	51	216	132	240	12
2-1/2*2	51	64	241	138	400	19
3*2	51	76	283	138	400	26
4*3	76	102	305	175	450	38
6*4	102	152	403	200	500	75
8*6	152	203	419	230	*300	130

\* Gear Operated



## 2PC/3PC Body Forged Floating Ball Valve



Full Bore						Class 150					
Size	d	L	H	W	Weight	Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg	in	mm	mm	mm	mm	Kg
1/2	13	108	85	160	2.8	3/4	19	117	93	160	3.7
3/4	19	117	93	160	3.7	1	25	127	112	180	5.3
1	25	127	112	180	5.3	1-1/2	38	165	125	240	8.3
1-1/2	38	165	125	240	8.3	2	51	178	126	350	11.2
2	51	178	126	350	11.2	2-1/2	64	191	139	400	18.4
2-1/2	64	191	139	400	18.4	3	76	203	164	400	23
3	76	203	164	400	23	4	102	229	185	450	39.3
4	102	229	185	450	39.3	6	152	394	270	*300	90
6	152	394	270	*300	90	8	203	457	360	*400	140
8	203	457	360	*400	140	10	254	533	410	*400	230
10	254	533	410	*400	230						

Reduced Bore						Class 150							
Size	d	D	L	H	W	Weight	Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg	in	mm	mm	mm	mm	mm	Kg
3/4*1/2	13	19	117	85	160	3.5	1*3/4	19	25	127	93	160	5.0
1*3/4	19	25	127	93	160	5.0	1-1/2*1	25	38	165	112	180	7.5
1-1/2*1	25	38	165	112	180	7.5	2*1-1/2	38	51	178	125	240	10
2*1-1/2	38	51	178	125	240	10	2-1/2*2	51	64	191	126	350	16
2-1/2*2	51	64	191	126	350	16	3*2	51	76	203	126	350	21
3*2	51	76	203	126	350	21	4*3	76	102	229	164	400	35
4*3	76	102	229	164	400	35	6*4	102	152	267	185	450	73
6*4	102	152	267	185	450	73	8*6	152	203	292	270	*300	120
8*6	152	203	292	270	*300	120	10*8	203	254	330	360	*400	200
10*8	203	254	330	360	*400	200							

\* Gear Operated

Full Bore						Class 300					
Size	d	L	H	W	Weight	Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg	in	mm	mm	mm	mm	Kg
1/2	13	140	85	160	3.0	3/4	19	152	93	160	4.0
3/4	19	152	93	160	4.0	1	25	165	112	180	6.6
1	25	165	112	180	6.6	1-1/2	38	191	125	240	12.9
1-1/2	38	191	125	240	12.9	2	51	216	126	400	18.9
2	51	216	126	400	18.9	2-1/2	64	241	139	400	28
2-1/2	64	241	139	400	28	3	76	283	164	450	39
3	76	283	164	450	39	4	102	305	185	500	60
4	102	305	185	500	60	6	152	403	270	*300	130
6	152	403	270	*300	130	8	203	502	360	*400	195
8	203	502	360	*400	195	10	254	568	410	*400	290
10	254	568	410	*400	290						

Reduced Bore						Class 300							
Size	d	D	L	H	W	Weight	Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg	in	mm	mm	mm	mm	mm	Kg
3/4*1/2	13	19	152	85	160	3.7	1*3/4	19	25	165	93	160	5.8
1*3/4	19	25	165	93	160	5.8	1-1/2*1	25	38	191	112	180	10.5
1-1/2*1	25	38	191	112	180	10.5	2*1-1/2	38	51	216	125	240	16.1
2*1-1/2	38	51	216	125	240	16.1	2-1/2*2	51	64	241	126	400	24.5
2-1/2*2	51	64	241	126	400	24.5	3*2	51	76	283	126	400	34.7
3*2	51	76	283	126	400	34.7	4*3	76	102	305	164	450	53
4*3	76	102	305	164	450	53	6*4	102	152	403	185	500	100
6*4	102	152	403	185	500	100	8*6	152	203	419	270	*300	170
8*6	152	203	419	270	*300	170	10*8	203	254	457	360	*400	250
10*8	203	254	457	360	*400	250							

\* Gear Operated

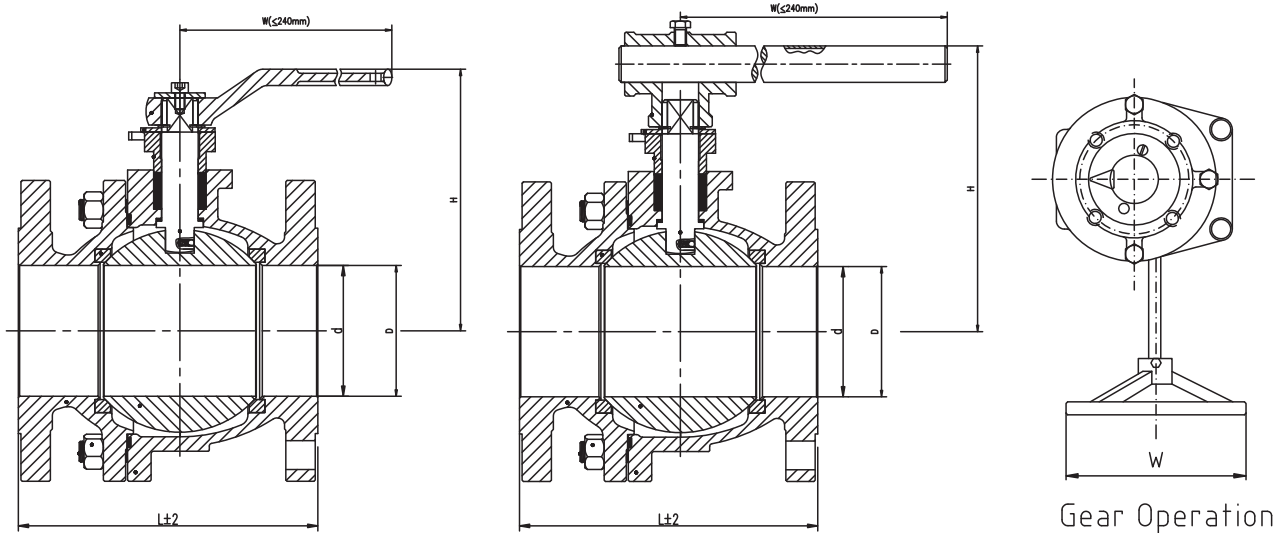
Full Bore						Class 600					
Size	d	L	H	W	Weight	Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg	in	mm	mm	mm	mm	Kg
1/2	13	165	85	160	3.5	3/4	19	191	93	180	5.0
3/4	19	191	93	180	5.0	1	25	216	112	240	7.5
1	25	216	112	240	7.5	1-1/2	38	241	125	350	15
1-1/2	38	241	125	350	15	2	51	292	130	400	23
2	51	292	130	400	23	3	76	356	178	500	48
3	76	356	178	500	48	4	102	432	190	700	80
4	102	432	190	700	80						

Reduced Bore						Class 600							
Size	d	D	L	H	W	Weight	Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg	in	mm	mm	mm	mm	mm	Kg
3/4*1/2	13	19	191	85	160	4.0	1*3/4	19	25	216	93	180	5.5
1*3/4	19	25	216	93	180	5.5	1-1/2*1	25	38	241	112	240	10.5
1-1/2*1	25	38	241	112	240	10.5	2*1-1/2	38	51	292	125	350	20
2*1-1/2	38	51	292	125	350	20	3*2	51	76	356	130	400	29
3*2	51	76	356	130	400	29	4*3	76	102	432	178	500	59
4*3	76	102	432	178	500	59	6*4	102	152	559	190	700	95
6*4	102	152	559	190	700	95							

\* Gear Operated

## 2PC/3PC Body Forged Floating Ball Valve

### Dimensions and Weights



Full Bore		Class 900			
Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg
1/2	13	216	85	160	5
3/4	19	229	93	180	8
1	25	254	112	240	10
1-1/2	38	305	128	400	20
2	51	368	132	450	25
3	76	381	182	600	50

Reduced Bore		Class 900				
Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3/4*1/2	13	19	229	85	160	7.0
1*3/4	19	25	254	93	180	9.5
1-1/2*1	25	38	305	112	240	16.5
2*1-1/2	38	51	368	128	400	23
3*2	51	76	381	132	450	42
4*3	76	102	457	182	600	65

\* Gear Operated

Full Bore		Class 1500			
Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg
1/2	13	216	85	160	5
3/4	19	229	93	180	8
1	25	254	112	240	10
1-1/2	38	305	128	400	20
2	51	368	132	450	30

Reduced Bore		Class 1500				
Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3/4*1/2	13	19	229	85	160	7.0
1*3/4	19	25	254	93	180	9.5
1-1/2*1	25	38	305	112	240	16.5
2*1-1/2	38	51	368	128	400	23
3*2	51	76	470	132	450	50

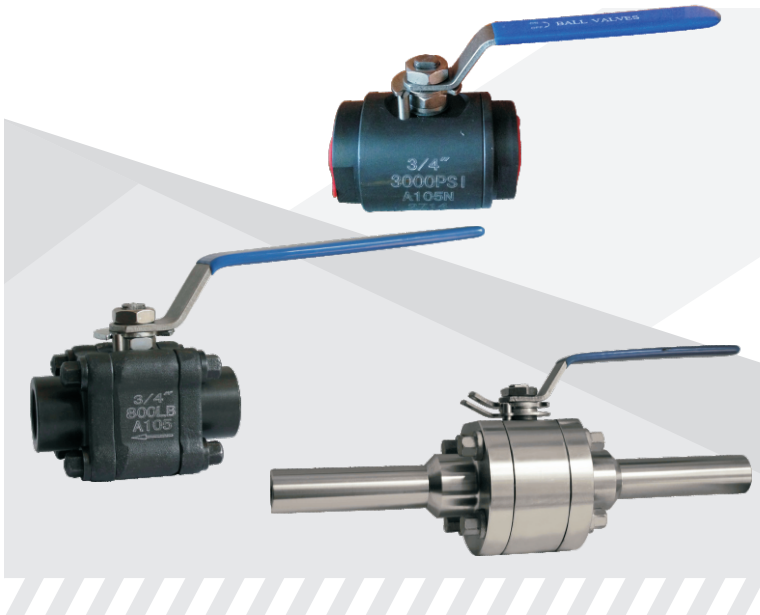
\* Gear Operated

Full Bore		Class 2500			
Size	d	L	H	W	Weight
in	mm	mm	mm	mm	Kg
1/2	13	264	93	180	7.5
3/4	19	273	96	240	12
1	25	308	117	350	15
1-1/2	38	384	132	450	30
2	44	451	138	550	37.5

Reduced Bore		Class 2500				
Size	d	D	L	H	W	Weight
in	mm	mm	mm	mm	mm	Kg
3/4*1/2	13	19	273	93	180	11
1*3/4	19	25	308	96	240	14
1-1/2*1	25	38	384	117	350	25
2*1-1/2	38	44	451	132	450	35
3*2	44	64	578	138	550	60

\* Gear Operated

## Small Sizes Forged Floating Ball Valve



## Feature

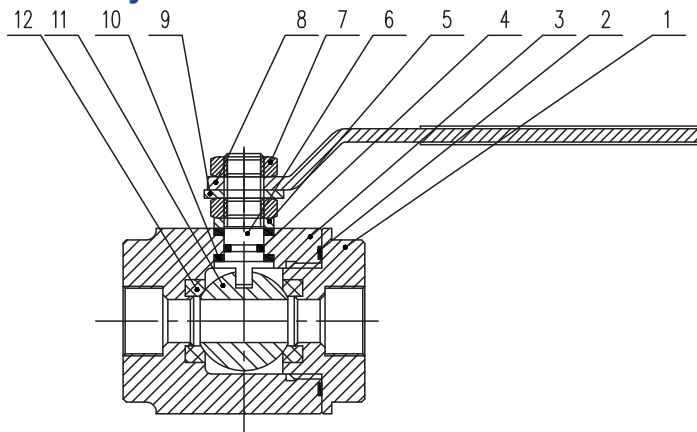
- Size: 1/2"~ 2"
- Class: 800~ 2500
- Two/ Three Pieces forged Steel Body
- Floating Ball
- Anti-Static Device
- Blow-out Proof Stem

## Specifications

- Design: ASME B16.34
- BS EN ISO 17929( BS5351)
- End to End Manufacture Standard
- Screwed End ASME B1.20.1
- Socket welding Ends ASME B16.11
- Test API 598/ BS EN 1266(BS6755)
- Special NACE MR 0175

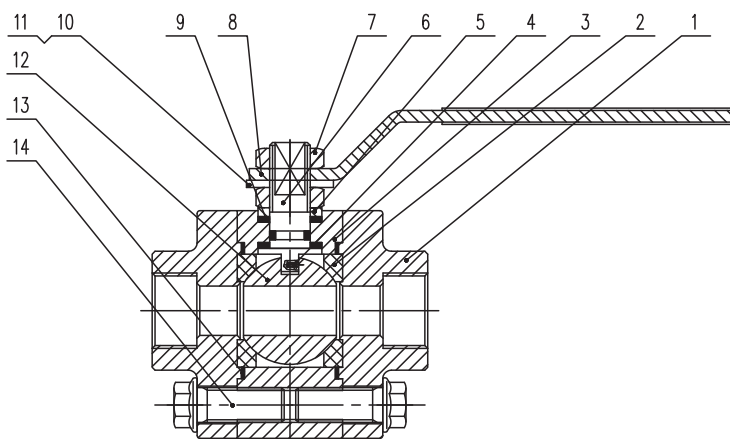
## Main Part name

### 2 PCS body



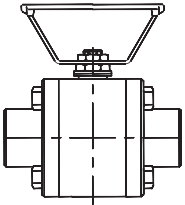
No	Name
1	Bonnet
2	Middle Gasket
3	Body
4	O ring
5	Gland
6	Stem
7	Stem Nut
8	Lever
9	Locating Piece
10	lower gasket
11	ball
12	seat

### 3 PCS Body



No	Name
1	Bonnet
2	seat
3	body
4	spring
5	Gland
6	Stem
7	Stem NUT
8	Lever
9	Packing
10	Position Plate
11	Position Pin
12	ball
13	Body Gasket
14	Bolt

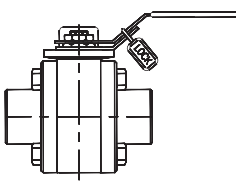
## Available Options



### Oval Safety Handle

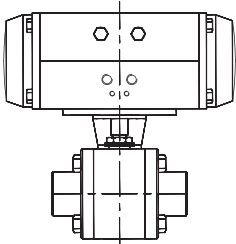
Oval safety handwheels are used where the standard lever can be accidentally bumped open or closed. The oval safety handle can be either carbon steel or stainless steel.

### Locking Device

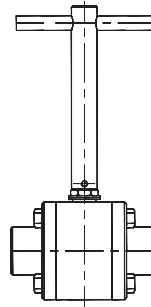


Locking device is supplied as option in order to prevent unauthorized opening/closing. locking device can lock the valve in either the open or closed position and cannot be breached by removing the lever.

### Easy Automation - Pneumatic Actuator

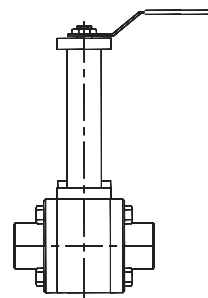


valves are available with pre-assembled valve/pneumatic actuator packages. standard design allows users to direct mount most brands of valve actuators with the need of an additional bracket always available in the factory.



### "T"-handle

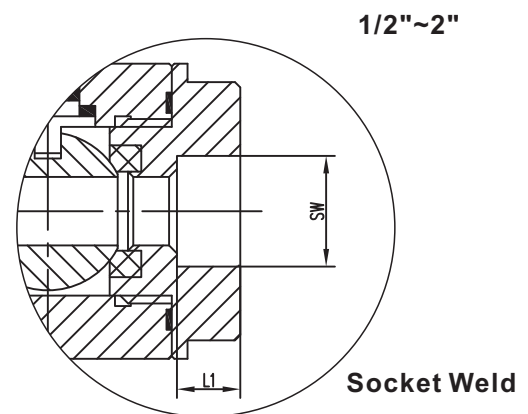
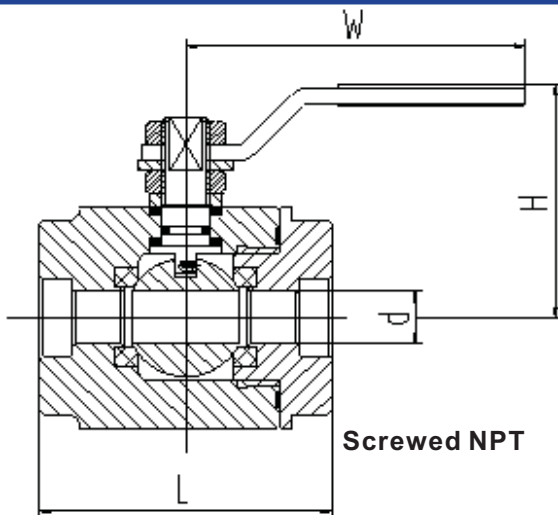
"T"-handle is usually used where access to the valve is limited and can be supplied for vertical or horizontal valve installation. The "T"-handle can be either carbon steel or stainless steel.



### Extended Bonnet For Insulation

valve can be supplied with an extended bonnet to allow insulation up to 3 inches (76mm) thick. The insulation can be installed all around the valve without blocking access to the valve or other operator.

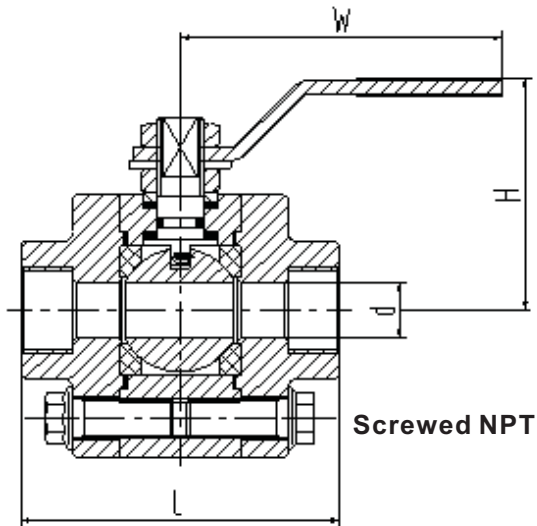
## 2 Pieces body, #800/1500 / 2000/ 3000PSI



FB	d	L	H	W	L1	SW
1/4"	10	73	65	130	9.6	14.2
3/8"	10	73	65	130	9.6	17.6
1/2"	13	73	65	130	9.6	21.8
3/4"	18	97	72	160	12.7	27.1
1"	24	105	92	220	12.7	33.8
1-1/4"	30	118	108	250	12.7	42.6
1-1/2"	38	133	112	250	12.7	48.7
2"	49	148	126	290	15.9	61.2

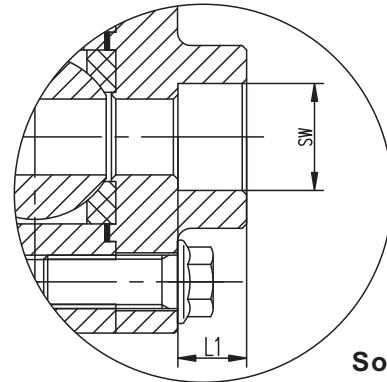
RB	d	L	H	W	L1	SW
3/8"x1/4"	10	73	65	130	9.6	17.6
1/2"x3/8"	10	73	65	130	9.6	21.8
3/4"x1/2"	13	73	65	130	12.7	27.1
1"x3/4"	18	97	72	160	12.7	33.8
1 1/4"x1"	24	105	92	220	12.7	42.6
1 1/2"x1 1/4"	30	118	108	250	12.7	48.7
2"x1 1/2"	38	133	112	250	15.9	61.2
2 1/2"x2"	49	148	126	290	15.9	74.1

### 3 Pieces body, #800/1500 / 2000/ 3000PSI



Soft Seated

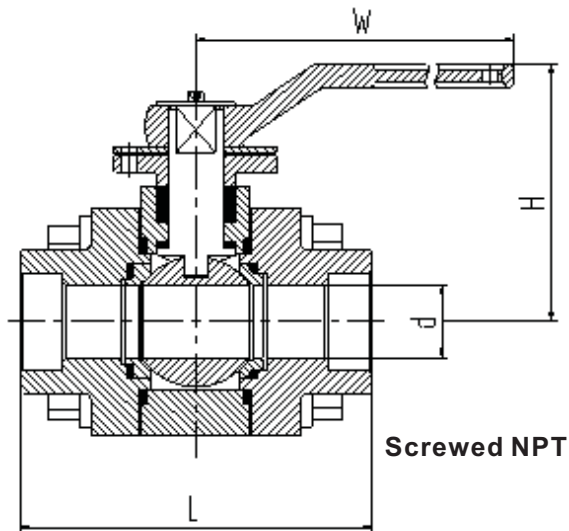
1/2"~2"



Socket Weld

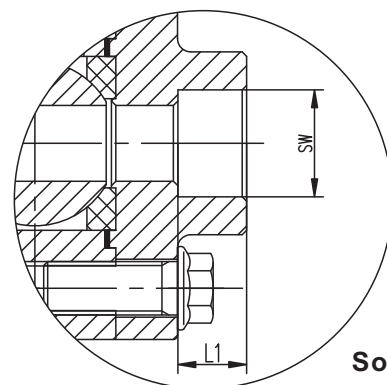
FB	d	L	H	W	L1	SW
1/4"	10	92	68	130	9.6	14.2
3/8"	10	92	68	130	9.6	17.6
1/2"	13	92	68	130	9.6	21.8
3/4"	18	111	75	160	12.7	27.1
1"	24	127	92	220	12.7	33.8
1-1/4"	30	140	112	250	12.7	42.6
1-1/2"	38	152	118	250	12.7	48.7
2"	49	178	128	290	15.9	61.2

RB	d	L	H	W	L1	SW
3/8"x1/4"	10	92	68	130	9.6	17.6
1/2"x3/8"	10	92	68	130	9.6	21.8
3/4"x1/2"	13	92	68	130	12.7	27.1
1"x3/4"	18	111	75	160	12.7	33.8
1 1/4"x1"	24	127	92	220	12.7	42.6
1 1/2"x1 1/4"	30	140	112	250	12.7	48.7
2"x1 1/2"	38	152	118	250	15.9	61.2
2 1/2"x2"	49	178	128	290	15.9	74.1



Metal Seated

1/2"~2"



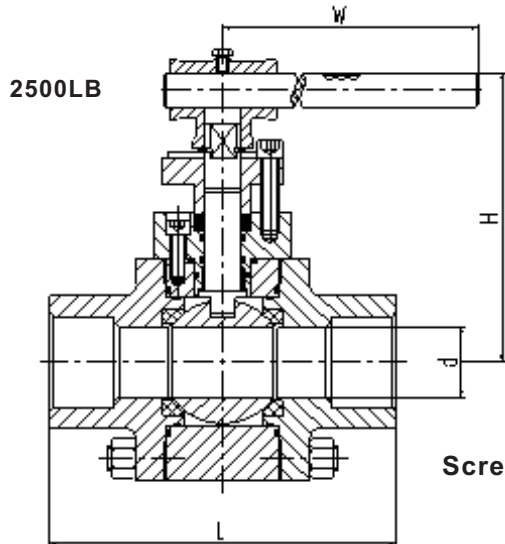
Socket Weld

FB	d	L	H	W	L1	SW
1/4"	10	105	76	160	9.6	14.2
3/8"	10	105	76	160	9.6	17.6
1/2"	13	105	76	160	9.6	21.8
3/4"	18	111	80	190	12.7	27.1
1"	24	127	89	190	12.7	33.8
1-1/4"	30	160	115	250	12.7	42.6
1-1/2"	38	160	115	250	12.7	48.7
2"	49	172	125	290	15.9	61.2

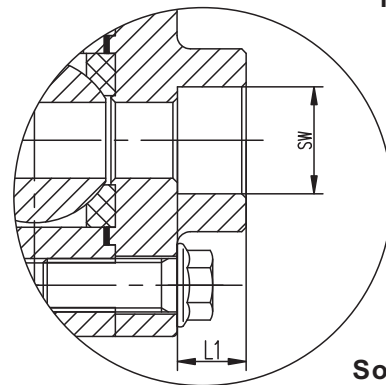
RB	d	L	H	W	L1	SW
3/8"x1/4"	10	105	76	160	9.6	17.6
1/2"x3/8"	10	105	76	160	9.6	21.8
3/4"x1/2"	13	105	76	160	12.7	27.1
1"x3/4"	18	111	80	190	12.7	33.8
1 1/4"x1"	24	127	89	190	12.7	42.6
1 1/2"x1 1/4"	30	160	115	250	12.7	48.7
2"x1 1/2"	38	160	115	250	15.9	61.2
2 1/2"x2"	49	172	125	290	15.9	74.1

Note: Redstar reserves the right to make any modifications without notice.

## 3 Pieces body, #2500/ 6000PSI



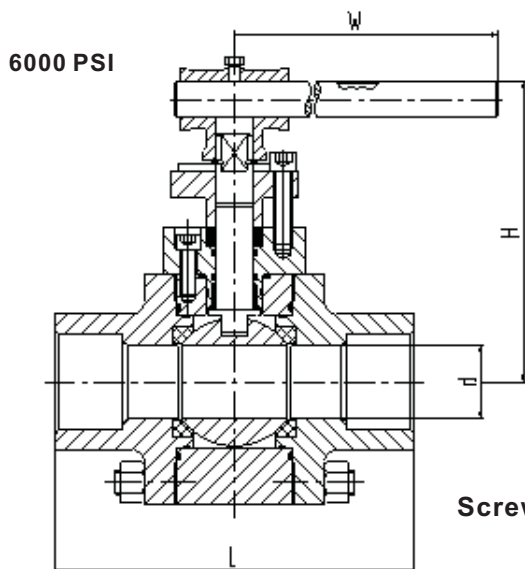
Screwed NPT



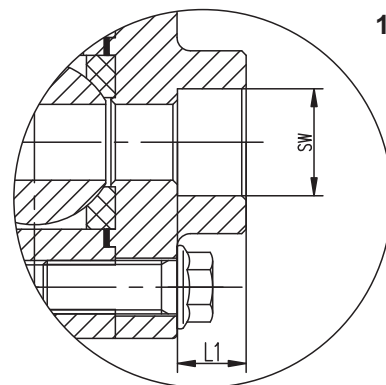
Socket Weld

FB	d	L	H	W	L1	SW
1/4"	10	111	100	195	9.6	14.2
3/8"	10	111	100	195	9.6	17.6
1/2"	13	111	100	195	9.6	21.8
3/4"	18	127	107	195	12.7	27.1
1"	24	140	121	260	12.7	33.8
1-1/4"	30	152	154	360	12.7	42.6
1-1/2"	38	178	154	360	12.7	48.7
2"	42	203	162	360	15.9	61.2

RB	d	L	H	W	L1	SW
3/8"x1/4"	10	111	100	195	9.6	17.6
1/2"x3/8"	10	111	100	195	9.6	21.8
3/4"x1/2"	13	111	100	195	12.7	27.1
1"x3/4"	18	127	107	195	12.7	33.8
1 1/4"x1"	24	140	121	260	12.7	42.6
1 1/2"x1 1/4"	30	152	154	360	12.7	48.7
2"x1 1/2"	38	178	154	360	15.9	61.2
2 1/2"x2"	42	203	162	360	15.9	74.1



Screwed NPT



Socket Weld

FB	d	L	H	W	L1	SW
1/4"	10	152	100	195	9.6	14.2
3/8"	10	152	100	195	9.6	17.6
1/2"	13	152	100	195	9.6	21.8
3/4"	18	165	107	195	12.7	27.1
1"	24	178	121	260	12.7	33.8
1-1/4"	30	264	154	360	12.7	42.6
1-1/2"	38	320	154	360	12.7	48.7
2"	49	320	162	360	15.9	61.2
3"	76	381	162	360	15.9	89.1

RB	d	L	H	W	L1	SW
3/8"x1/4"	10	152	100	195	9.6	17.6
1/2"x3/8"	10	152	100	195	9.6	21.8
3/4"x1/2"	13	152	100	195	12.7	27.1
1"x3/4"	18	165	107	195	12.7	33.8
1 1/4"x1"	24	178	121	260	12.7	42.6
1 1/2"x1 1/4"	30	264	154	360	12.7	48.7
2"x1 1/2"	38	320	154	360	15.9	61.2
2 1/2"x2"	49	320	162	360	15.9	74.1

Note: Redstar reserves the right to make any modifications without notice.

## Torque Value & Cv Value

### Floating Ball Valve Design Torque

Size (inch)	Design Torque									
	Class 150		Class 300		Class 600		Class 900		Class 1500	
	N.m	Lbf.ft	N.m	Lbf.ft	N.m	Lbf.ft	N.m	Lbf.ft	N.m	Lbf.ft
1/2	12	9	17	13	30	22	38	28	51	38
3/4	14	10	23	17	38	28	56	41	71	52
1	27	20	48	35	66	49	98	72	130	96
1-1/2	55	41	89	66	120	89	189	139	238	176
2	75	55	100	74	160	118	240	177	350	258
2-1/2	125	92	141	104	233	172	390	288	550	406
3	162	119	216	159	308	227	610	450	980	723
4	234	173	476	351	635	468	---	---	---	---
6	804	593	1338	987	1944	1434	---	---	---	---
8	1410	1040	3100	2286	---	---	---	---	---	---
10	2600	1918	5400	3983	---	---	---	---	---	---

#### Notes:

1. All valves are in normal temperature, with PTFE seat for Class 150~300 and Nylon seat for Class 600~1500.
2. For cryogenic ball valve, torque will be 2~2.5 times the above torque.
3. Torque shown in this table is to be used as a guide for actuator selection. A safety factor of 1.5 is recommended for actuator sizing.
4. Torque may be changed according to different medium and trim material.

## Flow Coefficient

Nominal Size in/mm	Class 150 PN 20		Class 300 PN 50		Class 600 PN 100		Class 900 PN 150		Class 1500 PN 250	
	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv
1/2 15	25	21	25	18	20	17	16	14	16	14
3/4 20	56	48	56	40	4	3	34	29	34	29
1 25	95	81	95	69	64	54	55	47	55	47
1 1/2 40	308	262	308	223	308	262	165	140	165	140
2 50	500	425	430	361	370	315	320	272	320	272
3 80	1360	1156	1100	983	1020	867	920	782	820	697
4 100	2500	2125	2000	1806	1850	1573	1760	1496	1600	1360
6 150	4060	3451	4056	2933	3410	2899	4300	3655	4150	3528

#### CALCULATION OF FLOW COEFFICIENT

Flow coefficient Cv(Kv is the metric equivalent) is the rate of flow in gallon per minute with pressure drop of 1 psi across the valve. The flow coefficients shown in the above table are determined with equations as follows;

For liquids:

$$Q_1 = C_v (AP / SG)^{1/2}$$

Where:

Q<sub>1</sub> = Flow of liquid (gallon/minute)

ΔP = Pressure drop in psi (P<sub>1</sub>-P<sub>2</sub>)

SG = Specific gravity (1 for liquid)

For gases (non-critical):

$$Q_g = 61 \cdot C_v (P_2 \cdot P_1 / SG)^{1/2}$$

Where:

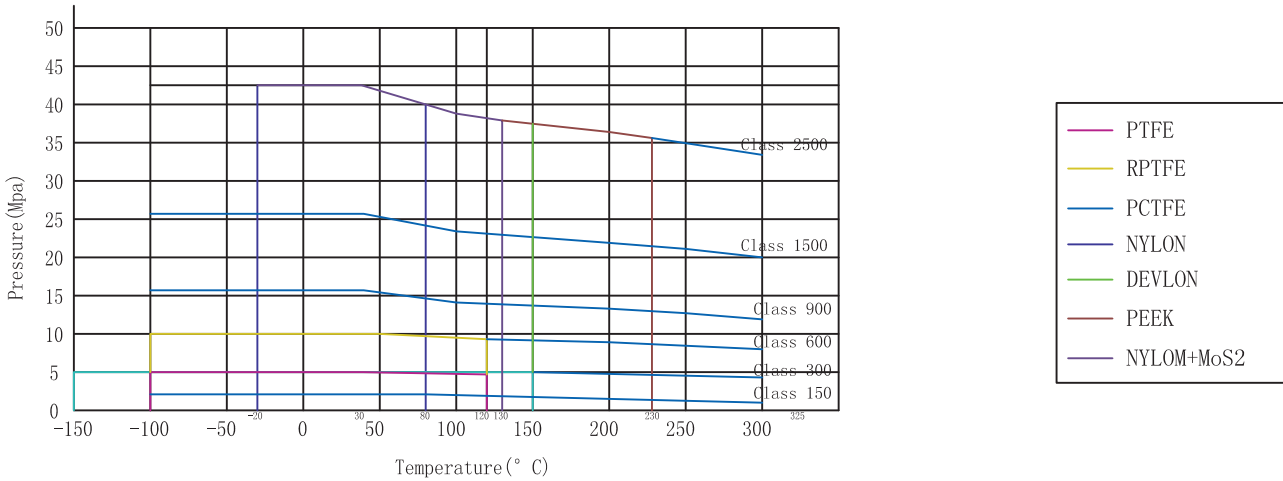
Q<sub>g</sub> = Flow of gases (SFH at STP)

P<sub>2</sub> = Outlet pressure (psi)

P<sub>1</sub> = Inlet pressure (psi)

SG = Specific gravity (1 for gas)

## Temperature VS Pressure for Soft Seat



### MATERIAL OF CONSTRUCTION

PART	MATERIAL OPTIONS
BODY	ASTM - A 216 WCB / WCC / LF2 / A 105 / A 351 CF8M / A 351 CF3M / A 352 LCB / LCC / A 217 CA15 / DUPLEX SS / INCONEL / 254 SMO.
BODY ADAPTER	ASTM - A 216 WCB / WCC / LF2 / A 105 / A 351 CF8M / A 351 CF3M / A 352 LCB / LCC / A 217 CA15 / DUPLEX SS / INCONEL / 254 SMO.
BALL	ASTM - A 216 WCB/WCC + ENP / A 351 CF8M / A 351 CF3M / A 217 CA 15 / DUPLEX SS / INCONEL / MONEL
STEM HOUSING	ASTM - A 216 WCB / A351 CF8M / A 351 CF3M / A 352 LCB / A 217 CA 15
STEM	A 479 SS 316 / A 479 SS 316L / A 182 F 6A / A 564 TYPE 630 / A 479 SS 410 / AISI 4140 + ENP / ASTM A 182 F51, F53, F44 / INCONEL (625, 825, 718)
SEAT	ASTM - A 105 + ENP / A 182 F316 / ASTM A 182 F6A / DUPLEX SS / INCONEL / F44 / Lf2
SEAT INSERT	RPTFE / NYLON / PEEK / DEVLON / PCTFE
STEM GASKET	GRAPHITE / LIP SEAL
BODY GASKET	GRAPHITE / REINFORCED SPIRAL-WOUND SS 316 GRAPHITE / LIP SEAL
STEM H. GASKET	GRAPHITE / LIP SEAL
TRUNNION GASKET	GRAPHITE / LIP SEAL
O RING	VITON (SPECIAL O-RING ON REQUEST)
TRUNNION	A 479 SS 316 / A 479 SS 316L / A 182 F 304 / A 182 F 316 / A 182 F 410 / A 564n TYPE 630 / A 105 / LF2 / DUPLEX SS / INCONEL
ISO MTG FLANGE	STEEL
SPRINGS	ASTM - A 313 SS 302 / ASTM B 637 (INCONEL 750) / INCONEL 718
THRUST WASHER	PHOSPHOR BRONZE / A 479 SS 316 + BRONZE + PTFE COATED / A 479 SS 316 + PTFE COATED
STUDS / BOLTS / CAP SCREW`	ASTM - A 320 L7, L7M / A 193 B8M / A 193 B7 / A 193 GR. B7M
NUT	ASTM - A 194 GR 7M / A 194 GR 8M / A 194 2H / A 194 GR 2HM
BEARING	A 479 SS 316 + PTFE COATED
COUPLING	STEEL + PLATING
SUPPORT STAND	STEEL
LIFTING HOOK	STEEL
BRACKET	STEEL
DRAIN PLUG/ NEEDLE VALVE	STANDARD

Note : Materials not listed above can be offered on request.



## Product Selection Code

Size	Design	Construction	End Connection	Ratings	Bore	Body	Ball Coating	Seat Coating	O-Ring	Fire Safety	Operation	Special Test
1/2" ~ 56"	N S M P W X C D T L E U B	1 2 3	RF RS FF FS RT SW SN BS NP BW DN BT SG LG TG BN O	1 2 3 4 5 6 8 9 0	F R	C 1 7 L 8 2 4 6 3 5 A U W X M O	C 1 7 L 8 2 4 6 3 5 A U W I M O	1 2 4 6 3 5 U I M T G N L D P E V O	0 1 2 3 4 5 6 7 8 9	F N	B G L A C O	SI PP SE BE DP SP LP JK LT XX

### Design

Size - 1/2" ~56"

### Design

N - Side Entry Soft Seated Trunnion  
S - Side Entry Soft Seated Floater  
M - Side Entry Metal Seated Trunnion  
P - Side Entry Metal Seated Floater  
W - Side Entry Welded Body Trunnion  
X - Side Entry Welded Body Floater  
C - Side Entry Cryogenic Trunnion  
D - Side Entry Cryogenic Floater  
T - Side Entry Multi Port (T Port)  
L - Side Entry Multi Port (L Port)  
E - Top Entry Soft Seated Trunnion  
U - Top Entry Metal Seated Trunnion  
B - Top Entry Cryogenic Trunnion

### Construction

1 - One Piece  
2 - Two Piece  
3 - Three Piece

### End Connection

RF - Flanged Raised Face Serrated  
RS - Flanged Raised Face Smooth  
FF - Flanged Flat Face Serrated  
FS - Flanged Flat Face Smooth  
RT - Flanged RTJ  
SW - Socket Weld  
SN - Socket Weld With Nipple Extension  
BS - Screwed BSP  
NP - Screwed NPT  
BW - Butt Weld  
DN - DIN  
BT - Screwed BSPT  
SG - Small Groove  
LG - Large Groove  
TG - Tongue & Groove  
BN - Butt Weld + Nipple Ext.  
O - Other than above

### Ratings

1 - 150# / PN16  
2 - 1500#  
3 - 300# / PN40  
4 - 400# / PN64  
5 - 2500#  
6 - 600#  
8 - 800#  
9 - 900#  
O - Other than above

### Bore

F - Full  
R - Reduced / Regular

### Body & Ball

C - WCB  
1 - A105  
7 - WCC  
L - LCB  
8 - LF2  
2 - LCC  
4 - CF8 / SS304 / F304  
6 - CF8M / SS316 / F316  
3 - CF3 / SS304L / F304  
5 - CF3M / SS316L / F316L  
A - CA 15 / SS 410 / F6A  
U - Duplex SS  
W - Super Duplex  
I - Inconel  
M - Monel  
O - Other than above

### Ball/Seat Coating (If applicable)

e - ENP  
w - Overlay  
h - Hard Chrome  
s - Stellite  
c - Chrome Carbide  
t - Tungsten Carbide  
n - Chromium Nitride  
O - Other than above

### Seat

1 - A105  
2 - LF2  
4 - F304  
6 - F316  
3 - F304L  
5 - F316L  
U - Duplex SS  
I - Inconel  
M - Monel  
T - PTFE  
G - RPTFE  
N - Nylon-PA 12  
L - Nylon-Devlon  
D - Delrin  
P - PEEK  
E - PCTFE  
V - VITON  
O - Other than above

### O-Ring

0 - None  
1 - Viton  
2 - Teflon  
3 - HNBR  
4 - NBR  
5 - EPDM  
6 - FVMQ  
7 - FFKM  
8 - AFLAS  
9 - Special

### Fire Safety

F - Fire Safe  
N - Non-Fire Safe

### Operator

B - Bare Stem  
G - Gear  
L - Hand Lever  
A - Actuated  
C - Chain Wheel  
O - Other than above

### Special Requirement

SI - Sealant Injection  
PP - Pup Piece  
SE - Stem Extension  
BE - Bonnet Extension  
DP - Double Piston Effect  
Non Relieving)  
SP - Short Pattern  
LP - Long Pattern  
JK - Jacketed  
LT - Low Temp. (-46°C/-50°F)  
XX - Special Requirement  
To Be Specified

### Examples

12	N	3	RT	9	F	1	1e	L	1	F	G	BE,SI
----	---	---	----	---	---	---	----	---	---	---	---	-------

Above stands for 12 inch side entry soft seated trunnion, three pieces body, RTJ ends, 900#, Full Bore, A 105 Body, A105 Ball with ENP coating, Nylon seat, viton O-ring, Fire Safe, Gear Operated, Bonnet extension with sealant injection facility



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WUXING INDUSTRIAL ZONE, OUBEI, YONGJIA, ZHEJIANG

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