



**Manufacturing** : OS Valve Co., Ltd.

257-4, Seokjung-Ri, Daekot-Myun, Gimpo-City, Gyeonggi-Do, Korea

Tel : +82-31 987 3881, Fax : +82-31 981 6834

**Marketing & Sales** : OSUNG Envitech Co., Ltd.

339-1, Dangha-Dong, Seo-Ku, Incheon, Korea

Tel : +82-32 564 6969, Fax : +82-32 564 6835

[www.oscompany.co.kr](http://www.oscompany.co.kr)

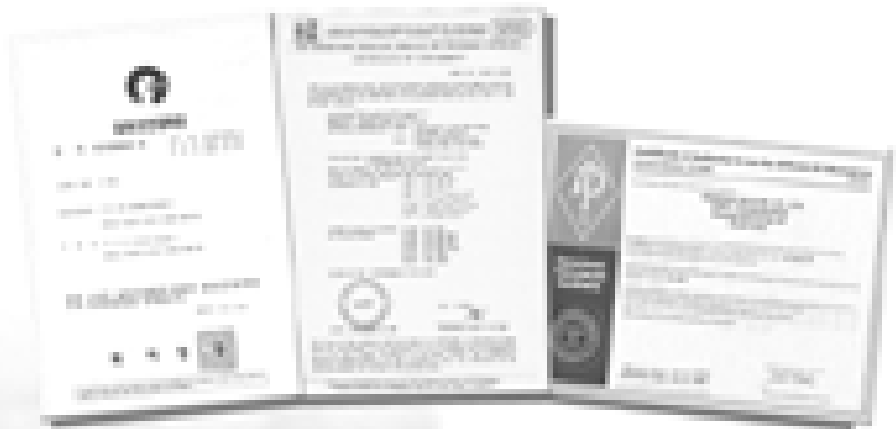
The background of the page is a technical drawing of a ball valve assembly, rendered in a light, semi-transparent style against a dark red background. The drawing shows the internal ball, stem, handle, and various seals and components of the valve. In the upper left corner, there is a circular inset showing a close-up of the ball valve's internal structure, specifically the ball and its seating rings.

# **OSV Forged Steel Ball Valves**

# General Information

The OS Ball Valves reflect many years of manufacturing and field testing experiences based on approved design criteria and sound engineering practices.

Many OSV members have worked in valve business for more than 10 years. You can now rely on our ball valves to have dependent cost saving, and safe operation in your system.



# TECHNICAL FEATURES

## 1. DESIGN

Floating Ball Valves are manufactured in the main types ; One piece End Entry Type, Two piece Screwed and Bolted Construction, Three piece Bolted Construction, Valves can be supplied as Full or Reduced Bore and manufactured in forged construction. Bolted and Screwed Body connections reliable service and maintenance on site. Valves can be supplied with among Raised Face, Ring Type Joint, Socketweld and Screwed End connections. Pressure rating is from ANSI 150 to ANSI 2500. Higher pressures can be supplied on your request. Valves are supplied with Lever.

## 2. MATERIAL SELECTION

Valves are manufactured in a range of materials such as Carbon steel, Low temperature Carbon steel, Stainless steel, Duplex, Super Duplex, Monel, Titanium, Inconel and other Special Alloys.

## 3. BODY / CONNECTOR SEAL

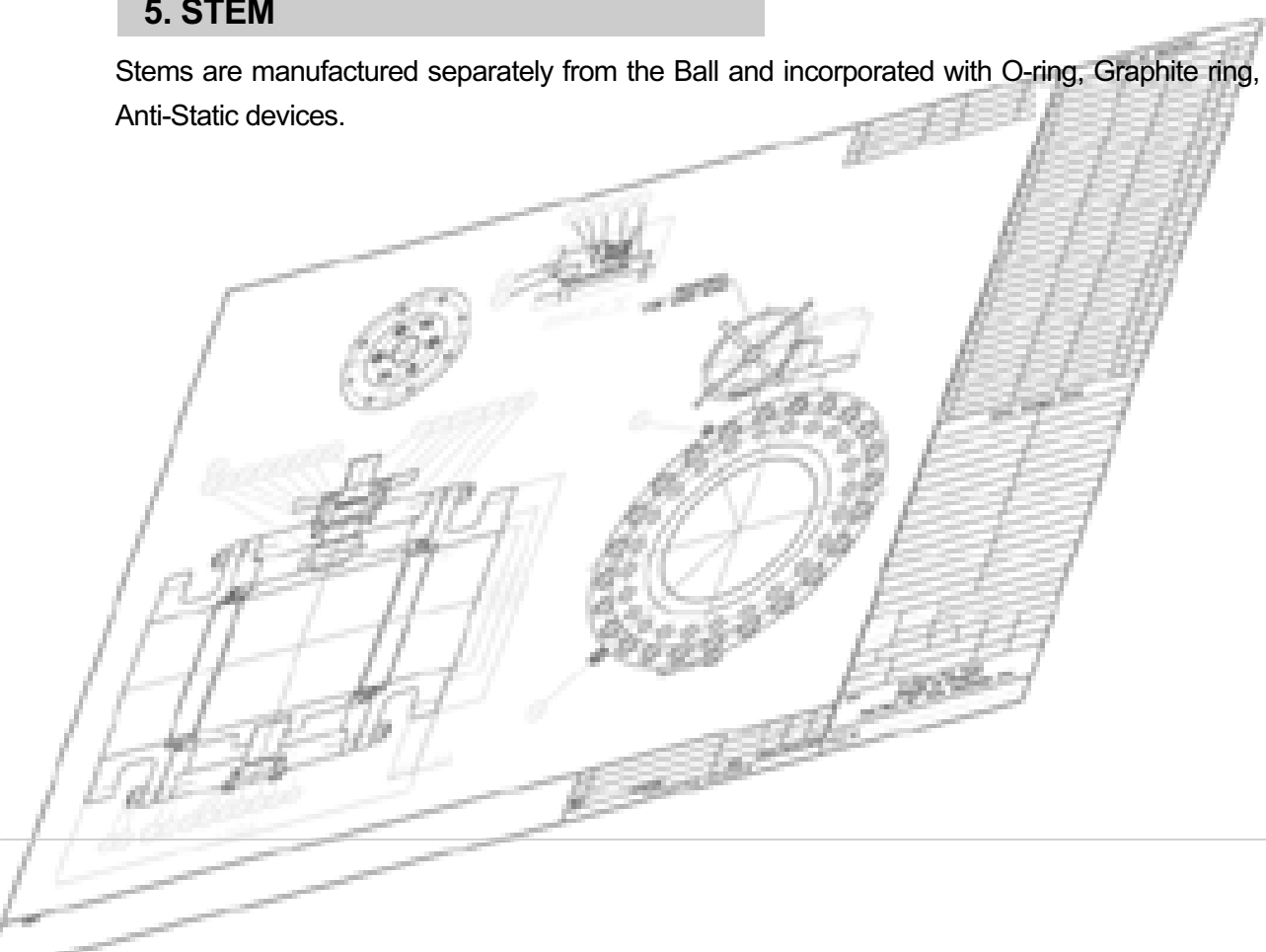
Graphite ring, O-ring or PTFE seals guarantee perfect sealing between Body and Connector. The Graphite ring continues to provide a safe sealing harsh environment such as fire. O-ring can be supplied suitable for AED applications.

## 4. SEAT

Valves seat design gives a perfect sealing with various materials in both high and low pressure applications.

## 5. STEM

Stems are manufactured separately from the Ball and incorporated with O-ring, Graphite ring, RTFE ring and Anti-Static devices.



# TECHNICAL FEATURES

## 6. MAUBTEBABCE

### 6.1 O-RING and SEAT-RING Renewal Methods

#### 2. Body Ball valve

- a. Break end connector loose with wrench.
- b. Disassemble the body and the connector.
- c. Disassemble o-ring, seat-ring, ball and seat ring in order.
- d. Place new o-ring and seat ring then reassemble.
- e. Assemble the body and the connector.
- f. Tighten end connector into body.
- g. Test according to regulated pressure.

#### 3. Body Ball valve

- a. Remove three pairs of bolts with the exception of one pair which remain in position but loosened.
- b. Turn and separate body from connector.
- c. Remove the body seals, and seat-rings.
- d. Clean the contact area of body and connector, and place new seals and seat-rings.
- e. Turn the body to the other way and tighten the connector bolts to reassemble at this point.
- f. Test according to regulated pressure.

### 6.2 GLAND PACKING Renewal Method

- a. Disassemble Stem Nut, Name Plate, Lever, Stop Pin, and Disc Spring, Gland in order and then remove Gland Packing.
- b. Clean the parts and install new Gland Packing.
- c. Reassemble the parts.
- d. Turn the Lever and check the operation condition.
- e. Test according to regulated pressure.

## 7. TEST

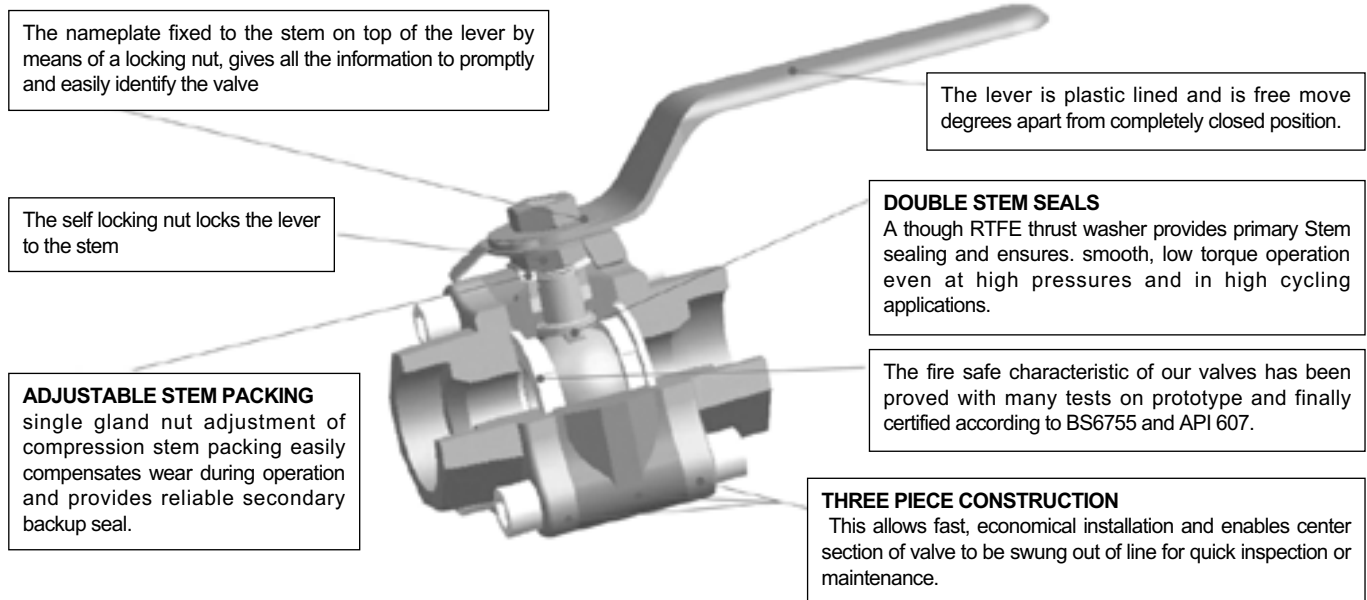
Valves are tested in accordance with BS 6755 Pt 1, API 6D, API 598 and ASME B16.34. Valves should be Inspected by regulated pressure whether there is any leakage or not, after valves are fabricated and installed.

## 8. ACCESSORIES

Include locking device, pipe, extended bonnet and actuators are included. Suitable materials, components seats and oring can be supplied for valves with explosive decompression or Cryogenic applications.



## 3-Piece



### DESIGN

Our OS ball valves have been designed fully in accordance with the requirements of BS5351.

### FULL AND REDUCED BORE

The valves are manufactured in sizes ranging from 3/8" (10mm) through 2" (50mm) and pressure rating at ANSI150 and 2500LB for both the full bore and reduced bore versions. The ends are NPT threaded or socket welded.

### FLOATING BALL

The floating ball is pressed against the seat by the pressure of the medium in the line. The greater the pressure the tighter the contact area. Pressures and temperatures allowable by each type on the graph pressure temperature limits.

### BUBBLE TIGHT SEALING MECHANISM

Floating ball design supports the ball with two rigid RTFE seats placed in the valve body, one on the upstream pressure pushes the ball, which compresses the downstream side seat to completely shut off fluid flow.

### ANTI BLOWOUT STEM

A design ensures the valve stem cannot be blown out of the body in the even of the gland being removed while the valve is under pressure.

### FIRE SAFETY

API 607 is internationally recognized as the official standards for defining fire safe testing procedures and evaluation. The fire safe characteristic of our valves has been proved with many test on proto types and finally certified according to API607.

### BALL VENT

The optional upstream relief hole in the zone of ball and body cavity will relieve excess pressure up stream and preserve the integrity of valve with preventing possible seat damage.

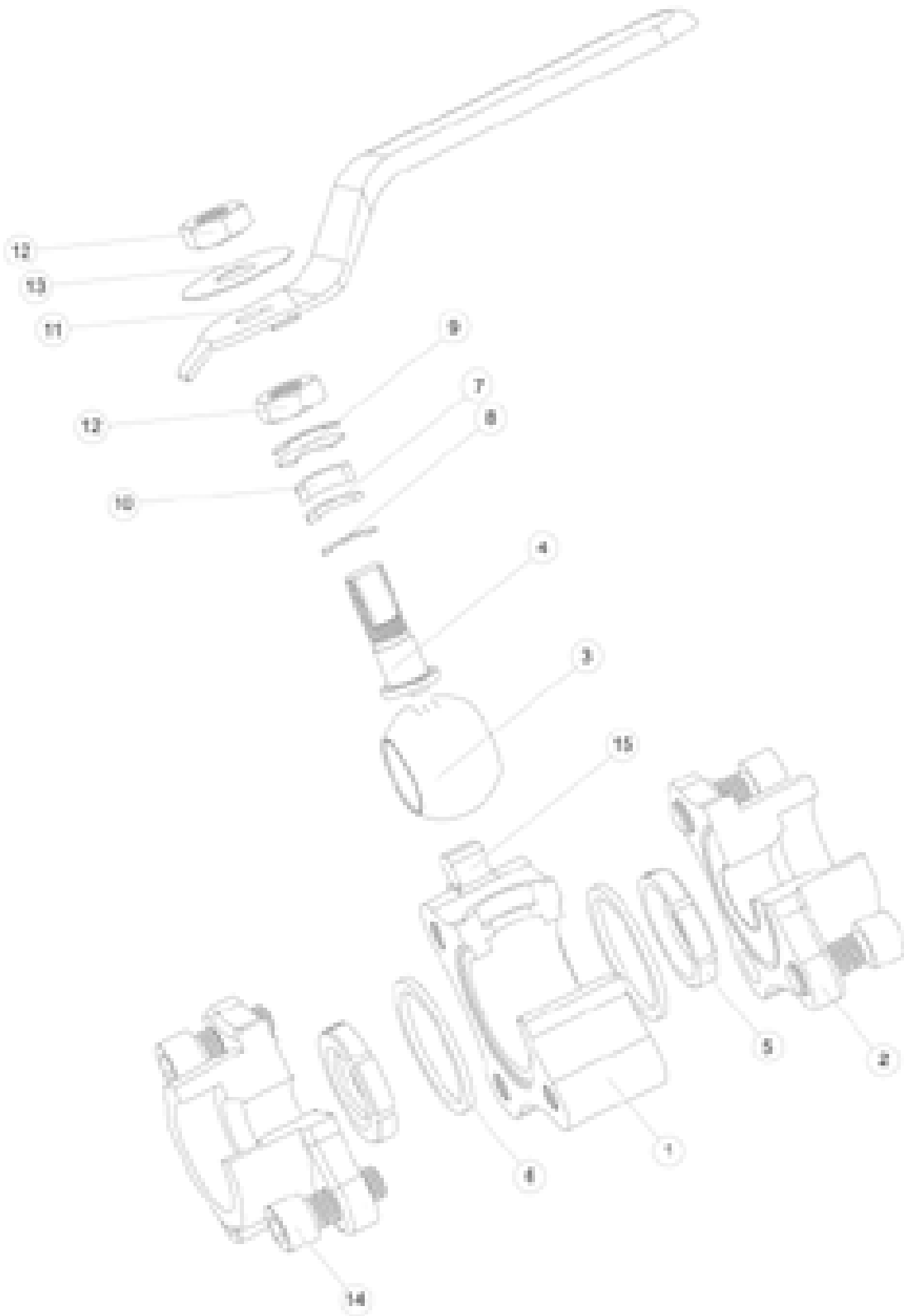
### ANTI-STATIC DEVICE

If the fluid handled by the valve is flammable, the valve must be provided with an antistatic device which achieves electrical continuity between the ball stem and the valve body.

### TESTING TO BS6755 AND API 598

The hydro tests for seat sealing and body sealing are carried out respectively at 110% and 150% of the rated cold working pressures. Low pressure seat test is carried out at 80 psi with dry air. The hydro test seat pressure shall not exceed the seat rating.

# TECHNICAL FEATURES





## OSV STANDARD COMPONENT MATERIAL

No	DESCRIPTION	CARBON STEEL	STAINLESS STEEL		
		A105	F304	F316	F316L
1	BODY A105	A182-F304	A182-F316	A182-F316L	
2	CONNECTOR	A105	A182-F304	A182-F316	A182-F316L
3	BALL	Stainless Steel A351-CF8M			A182-F316L
4	STEM	Stainless Steel S276-T316			A182-F316L
5	SEAT-RING	RTFE-Teflon / 15% Glass Fiber Filled			
		RTFE-Teflon / 25% Glass Fiber Filled			
		NYLON, PEEK			
6	GASKET	O-RING, PTFE(TEFLON), GRAPHITE			
7	packing	ptfe(teflon), graphite			
8	THRUST SEAL	RTFE-25% Carbon Fiber Filled			
9	DISC SPRING	Carbon Steel A283D, Stainless Steel			
10	GLAND	Stainless Steel A276-T316			
11	LEVER	A283D	Stainless Steel		
12	STEM NUT	Stainless Steel A276-T304			
13	NAME PLATE	ALUMINUM			
14	CONNECTOR BOLT	A193-B7	A193-B8		
15	STOP PIN	Stainless Steel A276-T304			

## TEST PRESSURE

(psi)

ANSI Class	Max	Shell	Seats	
	Working Pressure	(Hydro)	Hydro	Pneu
150#	275	425	303	80
300#	720	1100	792	80
600#	1440	2175	1600	80
800#	1920	2900	2112	80
900#	2160	3250	2400	80
1500#	3600	5400	3960	80
2500#	6000	9000	6600	80

\*Body & seat rating given in above conforms to API 598

(kg/cm<sup>2</sup>)

JIS/KS	Max	Shell	Seats	
	Working Pressure	(Hydro)	Hydro	Pneu
10K	14	20	16	6
20K	34	50	38	6
30K	51	75	57	6
40K	68	100	75	6
63K	107	160	118	6

\*Body & seat rating given in above conforms to JIS B 2003 / KS B 2304



# TECHNICAL FEATURES

## Valve Body Pressure Rating

ANSI Class 150#, 300#, 600#, 800#, 900#, 1500#, 2500#  
JIS / KS 10K, 20K, 30K, 40K, 63K

## Body and End Piece

Two & Three-piece construction.  
Available in stainless or carbon steel.

## Body Bolts & Nuts

ASTM A193 Gr.B7(B8) or ASTM A194 Gr. 2H(B8).  
Other Bolts are available according to body materials.

## Ball and Stem

316 Stainless steel, balls are solid forged or casted.

## Seats

Reinforced PTFE, NYLON and PEEK Seats.  
Other seats are available, consult OS Valve.

## Body Seal and Stem Packing

PTFE as standard.  
Other packing are available, consult OS Valve.

## Operation

Valves are supplied with handle operator.  
A locking device or pneumatic and electric automation.  
Options are available.

## Seat / Seal Leakage

Conform to API 598 or ANSI B 16.34 OR BS6755.  
All valves are tested to bubble-tight standards.

## Design Specification

ANSI B 16.34  
BS 5351  
API 6D  
Face to face dimension - ANSI B 16.10  
Flange dimension-ANSI B 16.5  
BS 5251, NACE MR-01-75, and API 607(BS6755) optionally available.

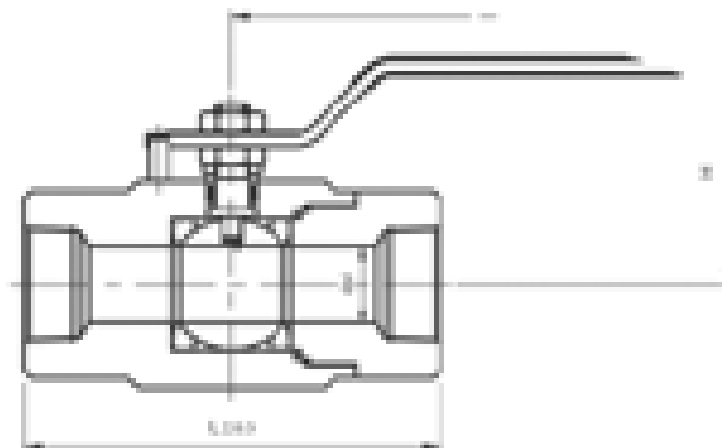
\*Monel, titanium, hastelloy C and other special materials are available to customer spec.  
\*Fire safe or Anti-statics are optional



# OSV 800#, 1500#

## 2-PIECE BALL VALVE

Screwed Ends, Full & Reduced Bore.



### CLASS 800#

(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	H	W	WEIGHT(kg)	Cv Factors	
							R/B	F/B
1/4"		85	11	52	116	0.9	8	
3/8"	1/4"	85	11	52	116	0.9	8	8
1/2"	3/8"	85	11	52	116	0.9	8	8
3/4"	1/2"	90	14.5	55	116	1.0	13	32
1"	3/4"	110	20	68	147	1.9	32	54
1 1/4"	1"	135	25	82	179	3.3	46	105
1 1/2"	1 1/4"	135	32	88	179	4.1	83	190
2"	1 1/2"	150	38	93	179	5.4	120	275
	2"	185	50	102	250	7.0		460

### CLASS 1500#

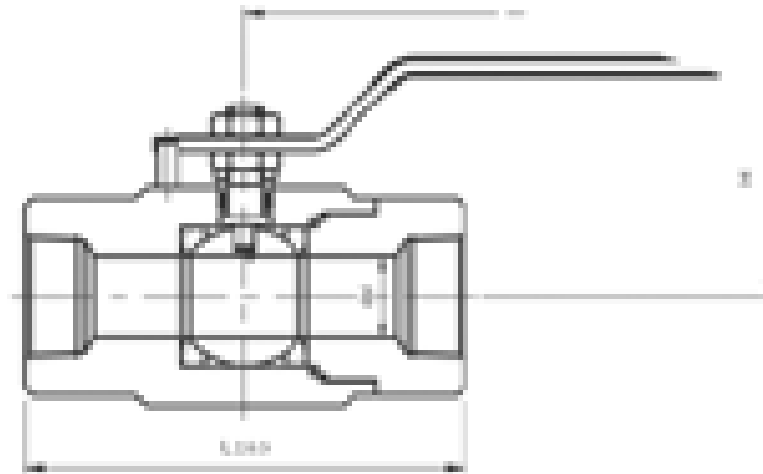
(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	H	W	WEIGHT(kg)	Cv Factors	
							R/B	F/B
1/4"		93	11	68	147	1.2	8	
3/8"	1/4"	93	11	68	147	1.2	8	8
1/2"	3/8"	93	11	68	147	1.2	8	8
3/4"	1/2"	115	14.5	82	147	2.3	13	32
1"	3/4"	140	20	88	179	4.0	32	54
1 1/4"	1"	140	25	93	179	4.5	46	105
1 1/2"	1 1/4"	157	32	102	250	6.5	83	190
2"	1 1/2"	182	38	115	250	8.5	120	275
	2"	220	50	136	300	13.0		460

# OSV 800#

## 3-PIECE BALL VALVE

Screwed Ends, Full & Reduced Bore.



### CLASS 800#

(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	H	W	WEIGHT(kg)	Cv Factors	
							R/B	F/B
1/4"		78	11	52	116	0.9	8	
3/8"	1/4"	78	11	52	116	0.9	8	8
1/2"	3/8"	78	11	52	116	0.9	8	8
3/4"	1/2"	85	14.5	68	116	1.2	13	32
1"	3/4"	105	20	82	147	2	32	54
1 1/4"	1"	114	25	88	179	4.3	46	105
1 1/2"	1 1/4"	130	32	93	179	5	83	190
2"	1 1/2"	142	38	102	179	7.8	120	275
	2"	160	50	110	250	11.6		460

# OS 1500#, 2500#

## 3-PIECE BALL VALVE

Screwed Ends, Full & Reduced Bore.

### CLASS 1500#

(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	H	W	WEIGHT(kg)	Cv Factors	
							R/B	F/B
1/4"		90	11	82	147	2.8	8	
3/8"	1/4"	90	11	82	147	2.8	8	8
1/2"	3/8"	90	11	82	147	2.8	8	8
3/4"	1/2"	100	14	82	147	3.4	13	32
1"	3/4"	120	20	88	179	5	32	54
1 1/4"	1"	130	25	88	179	10	46	105
1 1/2"	1 1/4"	145	32	110	250	12	83	190
2"	1 1/2"	160	38	110	250	15	120	275
	2"	170	50	135	300	19		460

### CLASS 2500#

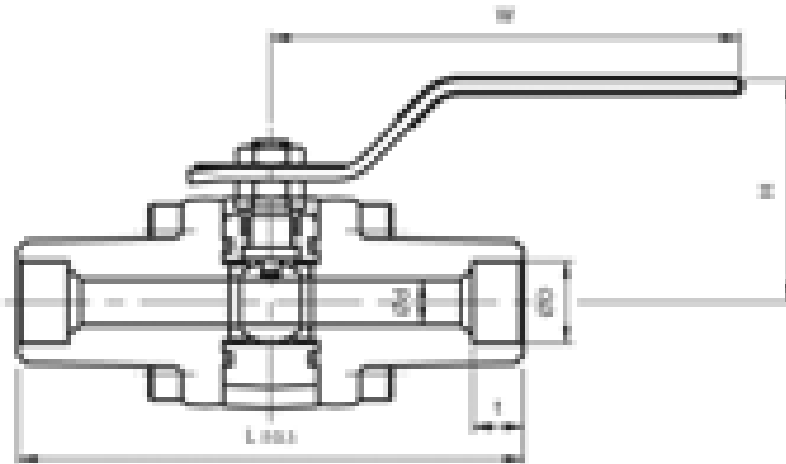
(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	H	W	WEIGHT(kg)	Cv Factors	
							R/B	F/B
1/4"		100	11	82	147	5	8	
3/8"	1/4"	100	11	82	147	5	8	8
1/2"	3/8"	100	11	82	147	5	8	8
3/4"	1/2"	110	14	82	147	6.6	13	32
1"	3/4"	130	20	88	179	10	32	54
1 1/4"	1"	140	25	88	179	13	46	105
1 1/2"	1 1/4"	150	32	110	250	16	83	190
2"	1 1/2"	170	38	110	250	21	120	275
	2"	180	50	135	300	28		460

# OSV 800#

## 3-PIECE BALL VALVE

Socket Welded Ends, Full & Reduced Bore.



### CLASS 800#

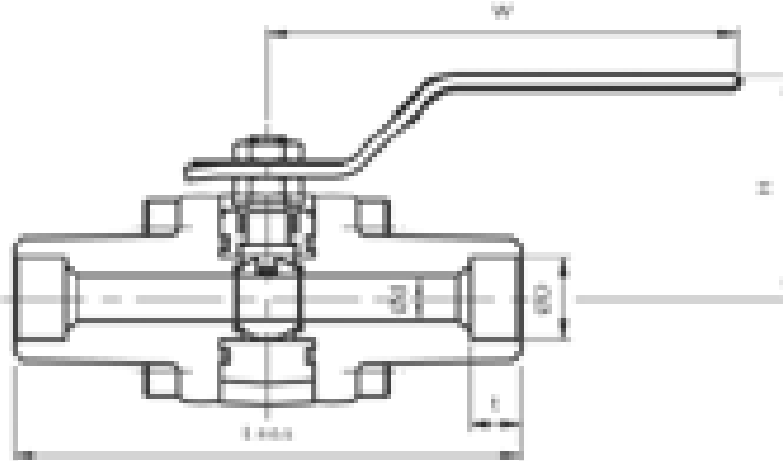
(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	D		t		H	W	WEIGHT(kg)	Cv Factors	
				R/B	F/B	R/B	F/B				R/B	F/B
1/4"		146	11	14.3		9.7		52	116	0.9	8	
3/8"	1/4"	146	11	17.6	14.3	9.7	9.7	52	116	0.9	8	8
1/2"	3/8"	146	11	21.8	17.6	9.7	9.7	52	116	0.9	8	8
3/4"	1/2"	151	14.5	27.2	21.8	12.7	9.7	68	116	1.2	13	32
1"	3/4"	157	20	33.9	27.2	12.7	12.7	82	147	2.0	32	54
1 1/4"	1"	170	25	42.6	33.9	12.7	12.7	88	179	4.3	46	105
1 1/2"	1 1/4"	181	32	48.8	42.6	12.7	12.7	93	179	5.0	83	190
2"	1 1/2"	190	38	61.3	48.8	15.8	12.7	102	179	7.8	120	275
	2"	205	50		61.3		15.8	110	250	11.6		460

# OSV 1500#, 2500#

## 3-PIECE BALL VALVE

Socket Welded Ends, Full & Reduced Bore.



### CLASS 1500#

(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	D		t		H	W	WEIGHT(kg)	Cv Factors	
				R/B	F/B	R/B	F/B				R/B	F/B
1/4"		146	11	14.3		9.7		82	147	3.2	8	
3/8"	1/4"	146	11	17.6	14.3	9.7	9.7	82	147	3.2	8	8
1/2"	3/8"	146	11	21.8	17.6	9.7	9.7	82	147	3.2	8	8
3/4"	1/2"	151	14.5	27.2	21.8	12.7	9.7	82	147	3.9	13	32
1"	3/4"	157	20	33.9	27.2	12.7	12.7	88	179	5.6	32	54
1 1/4"	1"	170	25	42.6	33.9	12.7	12.7	88	179	11	46	105
1 1/2"	1 1/4"	181	32	48.8	42.6	12.7	12.7	110	250	13	83	190
2"	1 1/2"	190	38	61.3	48.8	15.8	12.7	110	250	17	120	275
	2"	205	50		61.3		15.8	135	300	22		460

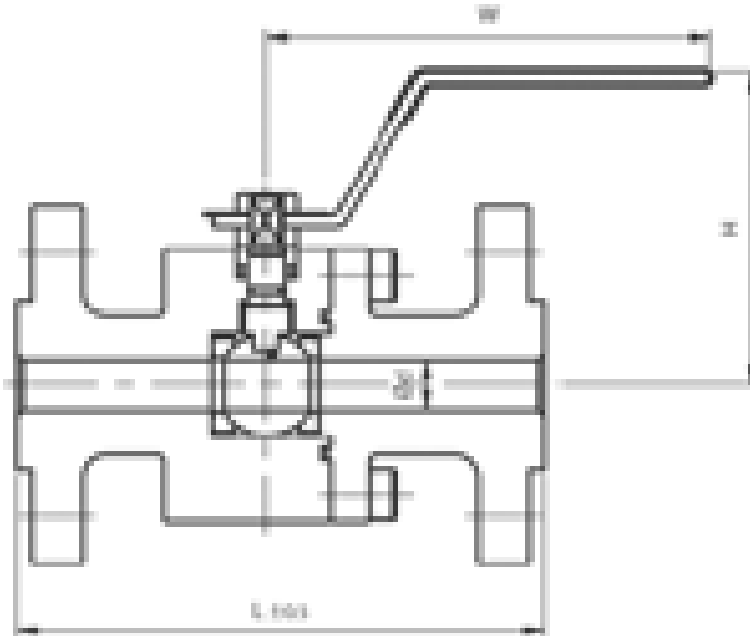
### CLASS 2500#

(UNIT-mm)

REDUCED BORE	FULL BORE	L	d	D		t		H	W	WEIGHT(kg)	Cv Factors	
				R/B	F/B	R/B	F/B				R/B	F/B
1/4"		170	11	14.3		9.7		82	147	6	8	
3/8"	1/4"	170	11	17.6	14.3	9.7	9.7	82	147	6	8	8
1/2"	3/8"	170	11	21.8	17.6	9.7	9.7	82	147	6	8	8
3/4"	1/2"	185	14.5	27.2	21.8	12.7	9.7	82	147	7.5	13	32
1"	3/4"	195	20	33.9	27.2	12.7	12.7	88	179	11	32	54
1 1/4"	1"	200	25	42.6	33.9	12.7	12.7	88	179	15	46	105
1 1/2"	1 1/4"	220	32	48.8	42.6	12.7	12.7	110	250	18	83	190
2"	1 1/2"	240	38	61.3	48.8	15.8	12.7	110	250	23	120	275
	2"	270	50		61.3		15.8	130	300	30		460

### 2-PIECE BALL VALVE

Full & Reduced Bore.



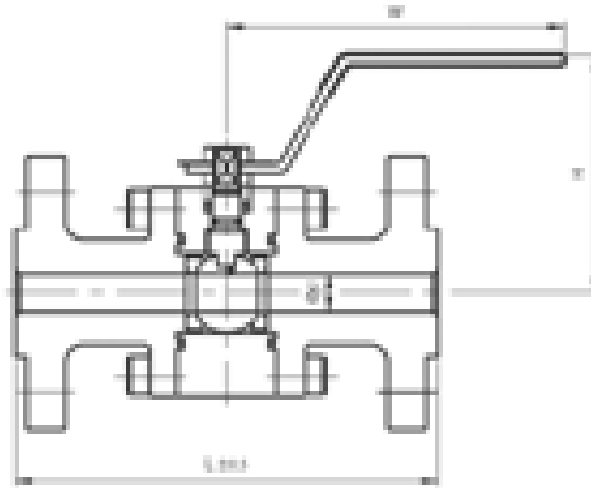
### CLASS 150#, JIS / KS 10K

(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)	
					150#	10K
1/2" × 3/8"	108	11	79	116	2.1	2.2
1/2" × 1/2"	108	14.5	82	116	2.3	2.4
3/4" × 1/2"	117	14.5	82	116	2.8	2.8
3/4" × 3/4"	117	20	103	147	3.5	3.5
1" × 3/4"	127	20	103	147	4.2	4.9
1" × 1"	127	25	121	178	5.1	5.8
1 1/4" × 1"	140	25	121	178	5.6	6.6
1 1/2" × 1 1/4"	140	32	126	178	6.7	6.9
1 1/2" × 1 1/4"	165	32	126	178	8.5	7.8
1 1/2" × 1 1/2"	165	38	131	178	9.8	9.0
2" × 1 1/2"	178	38	131	178	11.5	11.3
2" × 2"	178	50	135	200	14.7	14.5

### 3-PIECE BALL VALVE

Full & Reduced Bore.



#### CLASS 300#, JIS / KS 20K

(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)	
					300#	20K
1/2" × 3/8"	140	11	79	116	2.1	2.4
1/2" × 1/2"	140	14.5	82	116	2.3	2.9
3/4" × 1/2"	152	14.5	82	116	2.8	4.2
3/4" × 3/4"	152	20	103	147	3.5	5
1" × 3/4"	165	20	103	147	4.2	5.4
1" × 1"	165	25	121	178	5.1	6.5
1 1/4" × 1"	178	25	121	178	5.6	6.7
1 1/2" × 1 1/4"	178	32	126	178	6.7	8.0
1 1/2" × 1 1/4"	190	32	126	178	8.5	11.2
1 1/2" × 1 1/2"	190	38	131	178	9.8	13.4
2" × 1 1/2"	216	38	131	178	11.5	13.8
2" × 2"	216	50	135	200	14.7	16.6

#### CLASS 600#, JIS / KS 30K & 40K

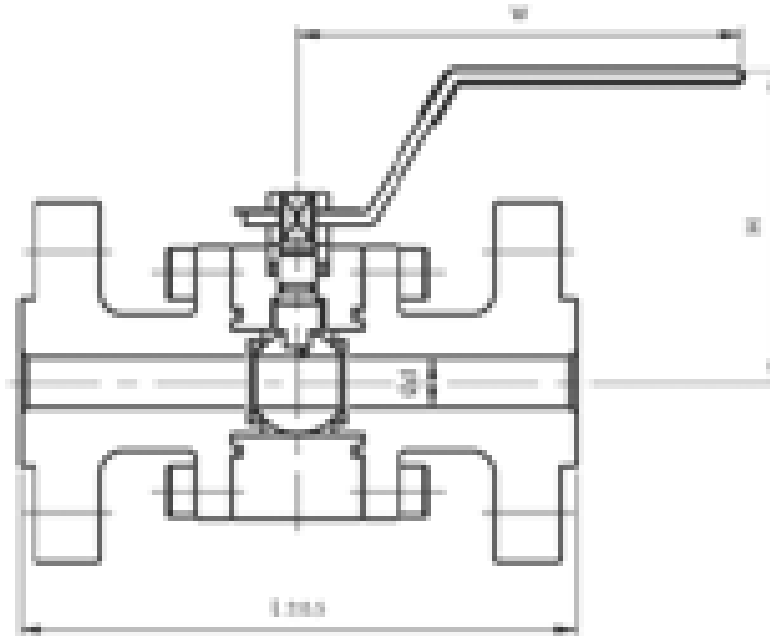
(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)		
					600#	30K	40K
1/2" × 3/8"	108	11	79	116	3.4	3.7	3.9
1/2" × 1/2"	165	14.5	82	116	4.1	4.6	4.9
3/4" × 1/2"	190	14.5	82	116	5.7	5.0	5.2
3/4" × 3/4"	190	20	103	147	6.1	6.2	6.5
1" × 3/4"	216	20	103	147	7.2	7.0	7.3
1" × 1"	216	25	121	178	8.0	8.4	8.7
1 1/4" × 1"	229	25	121	178	9.4	8.6	8.9
1 1/2" × 1 1/4"	229	32	126	178	11.2	10.4	10.9
1 1/2" × 1 1/4"	241	32	126	178	15.5	13.0	13.5
1 1/2" × 1 1/2"	241	38	131	178	17.6	15.6	16.2
2" × 1 1/2"	292	38	131	178	20.0	18.0	18.5
2" × 2"	292	50	135	200	25.0	21.6	22.1



## 3-PIECE BALL VALVE

Full & Reduced Bore.



### JIS / KS 63K

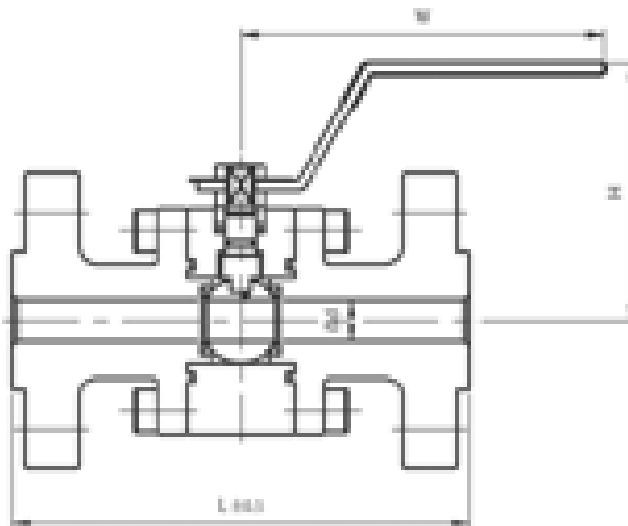
(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)
1/2" × 3/8"	165	11	79	116	6.5
1/2" × 1/2"	165	14.5	82	116	8.4
3/4" × 1/2"	190	14.5	82	116	8.6
3/4" × 3/4"	190	20	103	147	10.6
1" × 3/4"	216	20	103	147	11.4
1" × 1"	216	25	121	178	14.2
1 1/4" × 1"	229	25	121	178	14.6
1 1/2" × 1 1/4"	229	32	126	178	18.0
1 1/2" × 1 1/4"	305	32	126	178	21.6
1 1/2" × 1 1/2"	305	38	131	178	27.0
2" × 1 1/2"	368	38	131	178	28.4
2" × 2"	368	50	135	200	32.0

# OSV 900#, 1500#

## 3-PIECE BALL VALVE

Full & Reduced Bore.



### CLASS 900#

(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)
1/2" × 3/8"	216	11	79	116	6.5
1/2" × 1/2"	216	14.5	82	116	8.4
3/4" × 1/2"	228.6	14.5	82	116	8.6
3/4" × 3/4"	228.6	20	103	147	10.6
1" × 3/4"	254	20	103	147	11.4
1" × 1"	254	25	121	178	14.2
1 1/4" × 1"	279.4	25	121	178	14.6
1 1/2" × 1 1/4"	279.4	32	126	178	18.0
1 1/2" × 1 1/4"	304.8	32	126	178	21.6
1 1/2" × 1 1/2"	304.8	38	131	178	27.0
2" × 1 1/2"	368.3	38	131	178	36.0
2" × 2"	368.3	50	135	200	40.0

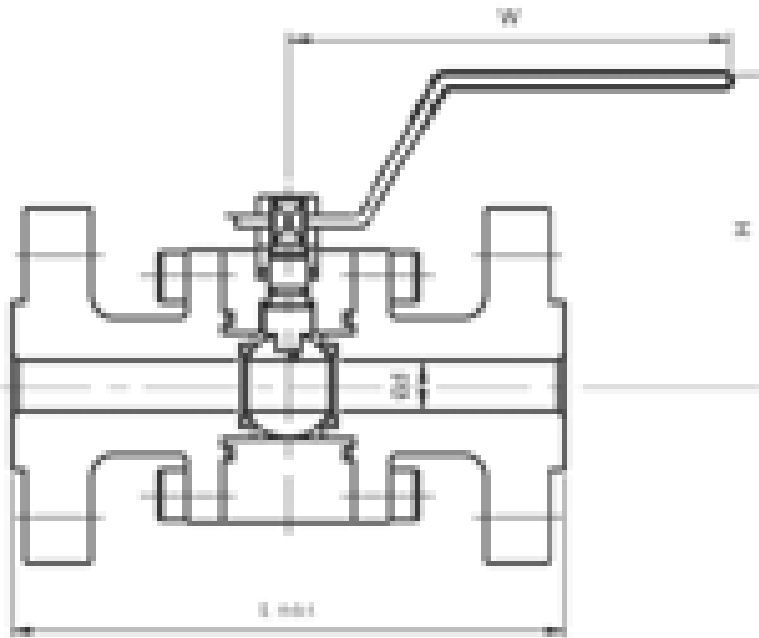
### CLASS 1500#

(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)
1/2" × 1/2"	216	14.5	82	116	10.6
3/4" × 3/4"	228.6	20	103	147	11.5
1" × 1"	254	25	121	178	14.1
1 1/2" × 1 1/4"	279.4	32	126	178	18.0
1 1/2" × 1 1/2"	304.8	38	131	178	27.0
2" × 2"	368.3	50	135	200	40.0

## 3-PIECE BALL VALVE

Full & Reduced Bore.



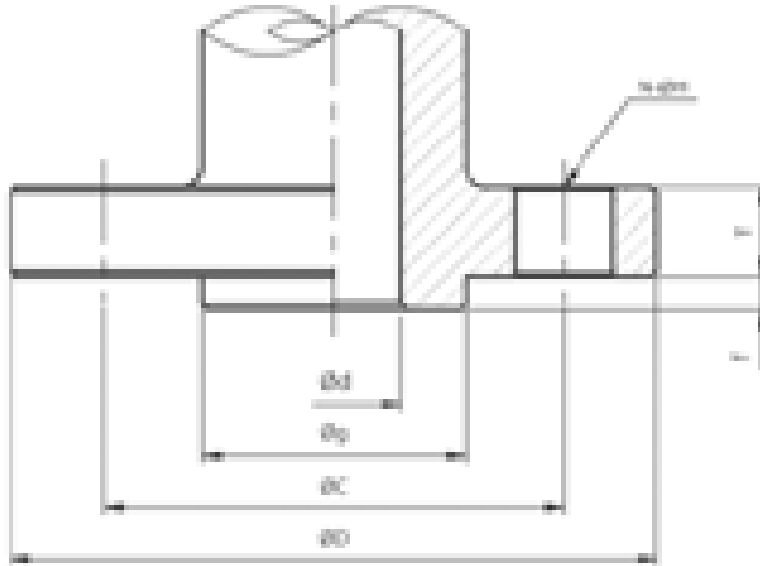
### CLASS 2500#

(UNIT-mm)

SIZE	L	d	H	W	WEIGHT(kg)
1/2" × 1/2"	263.6	14.5	82	147	12.5
3/4" × 3/4"	273	20	103	178	16
1" × 1"	308	25	121	178	26
1 1/2" × 1 1/4"	349	32	126	178	34
1 1/2" × 1 1/2"	384	38	131	200	46
2" × 2"	451	50	135	250	67

# ANSI CLASS 150# - 2500#

## FLANGE DIMENSIONS



(UNIT-mm)

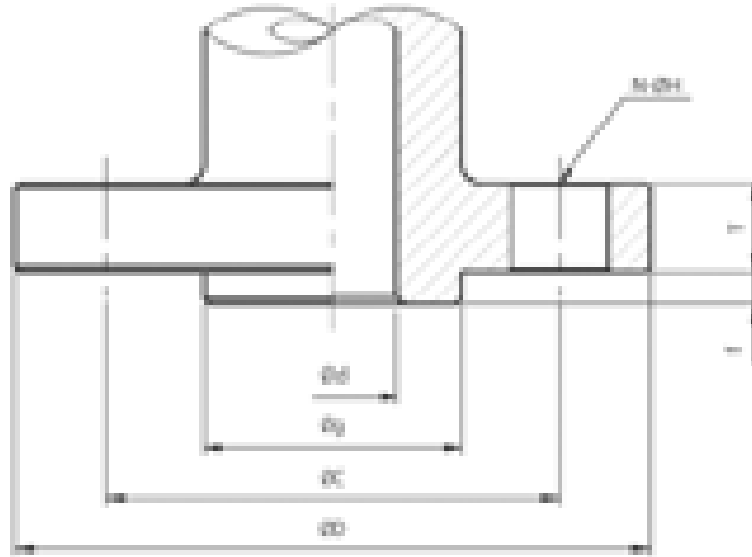
SIZE	CLASS 150#							CLASS 300#						
	d	g	C	D	f	T	N-H	d	g	C	D	f	T	N-H
1/2"	12.7	34.9	60.3	90	1.6	9.6	4-16	12.7	34.9	66.7	95	1.6	12.7	4-16
3/4"	19.1	52.9	69.9	100	1.6	11.2	4-16	19.1	42.9	82.6	115	1.6	14.3	4-19
1"	25.4	50.8	79.4	110	1.6	12.7	4-16	25.4	50.8	88.9	125	1.6	15.9	4-19
1 1/2"	38.1	73.0	98.4	125	1.6	15.9	4-16	38.1	73.0	114.3	155	1.6	19.1	4-22
2"	50.8	92.1	120.7	150	1.6	17.5	4-19	50.8	92.1	127.0	165	1.6	20.7	8-19

SIZE	CLASS 600#							CLASS 900# 1500#						
	d	g	C	D	f	T	N-H	d	g	C	D	f	T	N-H
1/2"	12.7	34.9	66.7	95	6.4	14.3	4-16	12.7	34.9	82.6	120	6.4	22.3	4-22
3/4"	19.1	52.9	82.6	115	6.4	15.9	4-19	19.0	42.9	88.9	130	6.4	25.4	4-22
1"	25.4	50.8	88.9	125	6.4	17.5	4-19	25.4	50.8	101.6	150	6.4	28.6	4-25
1 1/2"	38.1	73.0	114.3	155	6.4	22.3	4-22	38.1	73.0	123.8	180	6.4	31.8	4-29
2"	50.8	92.1	127.0	165	6.4	25.4	8-19	49.6	92.1	165.1	215	6.4	38.1	8-25

SIZE	CLASS 2500#						
	d	g	C	D	f	T	N-H
1/2"	11.2	34.9	88.9	135	6.4	30.2	4-22
3/4"	14.2	52.9	95.2	140	6.4	31.8	4-22
1"	19.1	50.8	108.0	160	6.4	35.0	4-25
1 1/2"	28.5	73.0	146.0	205	6.4	44.5	4-32
2"	38.1	92.1	171.4	235	6.4	50.9	8-29

# JIS / KS 10K - 63K

## FLANGE DIMENSIONS



(UNIT-mm)

SIZE	JIS / KS 10K							JIS / KS 20K						
	d	g	C	D	f	T	N-H	d	g	C	D	f	T	N-H
1/2"	15	51	70	95	1	11	4-15	15	51	70	95	1	13	4-15
3/4"	20	56	75	100	1	12	4-15	20	56	75	100	1	15	4-15
1"	25	67	90	125	1	12	4-19	25	67	90	125	1	15	4-19
1 1/2"	40	81	105	140	2	14	4-19	40	81	105	140	2	16	4-19
2"	50	96	120	155	2	14	4-19	50	96	120	155	2	16	8-19

SIZE	JIS / KS 30K							JIS / KS 40K						
	d	g	C	D	f	T	N-H	d	g	C	D	f	T	N-H
1/2"	15	55	80	115	1	17	4-19	15	55	80	115	1	19	4-19
3/4"	20	60	85	120	1	17	4-19	20	60	85	120	1	19	4-19
1"	25	70	95	130	1	19	4-19	25	70	95	130	1	21	4-19
1 1/2"	40	90	120	160	2	20	4-23	38	90	120	160	2	22	4-23
2"	50	105	130	165	2	20	8-19	40	150	130	165	2	24	8-19

SIZE	JIS / KS 63K						
	d	g	C	D	f	T	N-H
1/2"	12	55	85	120	1	22	4-19
3/4"	17	60	95	135	1	24	4-23
1"	22	70	100	140	1	26	4-23
1 1/2"	35	90	130	175	2	30	4-25
2"	48	105	145	185	2	32	8-23

# SPECIAL BALL VALVES

## 3-Way ball valves

<b>Valve Size</b>	1/2"~2"
<b>Style</b>	Bi-directional flow valve, Diverter and 3-way valves 120° Type
<b>Valve pressure rating</b>	Various according to clamp and gasket material
<b>Vacuum rating</b>	1 × 10.3 Torr and 1 × 10.5 Torr are optional
<b>Body material</b>	Stainless Steel
<b>Interior wetted surface finish</b>	30 Ra Standard Electropolishing to 15 Ra or other options are available
<b>Seats/Seals</b>	PTFE/Viton O-ring
<b>Optional</b>	Fire-safe, Pneumatic or Electric Actuator Cavity Filled seats, for more detail consult with OS Valve



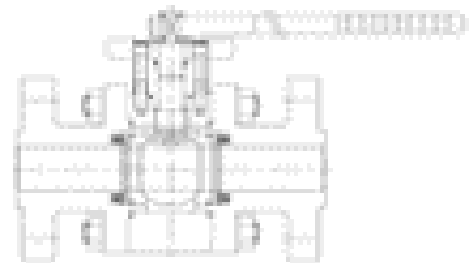
## 3-Way side entry ball valves

<b>Valve Size</b>	1/2"~2"
<b>Style</b>	Bi-directional flow valve, T-port or L-port
<b>Valve pressure rating</b>	ANSI Class 600 Max. 1440 psig at 100° F
<b>End connection</b>	SW & BW ends, Flange end (if desire)
<b>Body material</b>	Carbon and Stainless Steel
<b>Seats</b>	RTFE with Four seats, Other materials are available
<b>Operator</b>	Lever
<b>Optional</b>	Fire-safe, Pneumatic or Electric Actuator, Locking device



## Metal seated or Carbon seated ball valves

<b>Valve Size</b>	1/2"~2"
<b>Valve pressure rating</b>	ANSI Class 150, 300, 600
<b>End connection</b>	SW & BW ends, Flange end
<b>Body material</b>	Carbon and Stainless Steel
<b>Seats</b>	Solid Satellite 6 or Carbon seat
<b>Seal &amp; backup seal</b>	Graphite
<b>Operator</b>	Lever
<b>Optional</b>	Pneumatic or Electric Actuator Locking device



\*For details, Consult with OS Valve Engineering.

# ENGINEERING DATA

- CONFORMANCE STANDARDS
- PRESSURE/TEMPERATURE
- CV COEFFICIENT/FLOW CHART/TORQUE
- LIST OF MATERIAL SPECIFICATIONS-ASME/ANSI B16.34
- PRESSURE-TEMPERATURE RATINGS FOR STANDARD CLASS VALVES-ASME/ANSI B16.34



# CONFORMANCE STANDARDS

OSV conforms to the following standards and OSV is able to apply any other standard if specified by the customer.

## AMERICAN STANDARDS

ANSI	B 16.5	-Pipe flanges and flange fittings.
	B 16.10	-Face-to-face and end-to-end dimension of valves.
	B 16.25	-Butt - weld ends.
	B 16.34	-Valves - flanged, thread and weld ends.
	B 1.20,1	-Pipe threads, general purpose(inch).
	B 31.3	-Chemical plant and petroleum refinery piping.
	B 31.4	-Liquid transportation system for hydrocarbons. -Liquid petroleum gas, Anhydrous ammonia and alcohols.
	B 31.8	-Gas transmission and distribution system.
ASTM		-Material specifications of material used.
ASME		-Boilers and pressure vessel code, sections V, VIII, IX
API	SPEC Q1	-Specification for qualifying programs.
	SPEC 6D	-Specification for pipeline valves.(Steel gate, Plug, ball and Check valves)
	Std 607	-Fire test for soft-seated quarter-turn valves.
	Std 598	-Valve inspection and testing.
MSS	SP-6	-Standard finishes for contact of pipe flanges and connecting, end flanges of valves.
	SP-25	-Standard marking system for valves, fittings, flanges and unions.
	SP-44	-Steel pipeline flanges.
	SP-53	-Magnetic particle examination method.
	SP-54	-Visual method.
	SP-72	-Ball valves with flange or butt-weld ends for general service.
	SP-61	-Pressure testing of steel valves.
	SP-82	-Valves pressure testing method.
SSPC, SP1-10		-Surface preparation specification

## INTERNATIONAL STANDARDS

ISO 9001	- Quality system, model of quality assurance in design, development, production, installation and servicing.
ISO 5211	- Part-turn valve actuator attachment.
7121	- Flanged steel ball valves.
EN 10204	- Type of inspections documents.
NACE-MR-01-75	- Sulfide stress cracking resistant materials.

## BRITISH STANDARDS

BS 1560	-Circular flanges for pipes, flange and fittings.
BS 20.8	-Face to face, center-to -center, end -to - end and center-to-end dimensions of valves.
BS 5146	-Inspection and tests of valves.
BS 5351	-Steel ball valves for the petroleum, petrochemical and allied instruments.
BS 6755 PT2	-Testing of valves, Specification for fire - type testing requirements.

## GERMAN STANDARDS

DIN 1690	-Technical delivery conditions for casting of metallic materials.
2505	- Calculation of flange joints.
2544-48	-Cast steel flanges.
2526	- Finishing of flange packing surfaces.
3202	- Face-to-face dimension of flange valves.
3230	- Bodies of valves, calculation.

## JIS / KS

JIS B 2002	- Face to face and end to end dimension of valve.
JIS B 2003	- General rules for inspection of valves.
JIS B 2220	- Steel welding pipe flanges.
KSB 2304	- Ball valve.
KSB 2308	- Korea standard flanged ball valves.



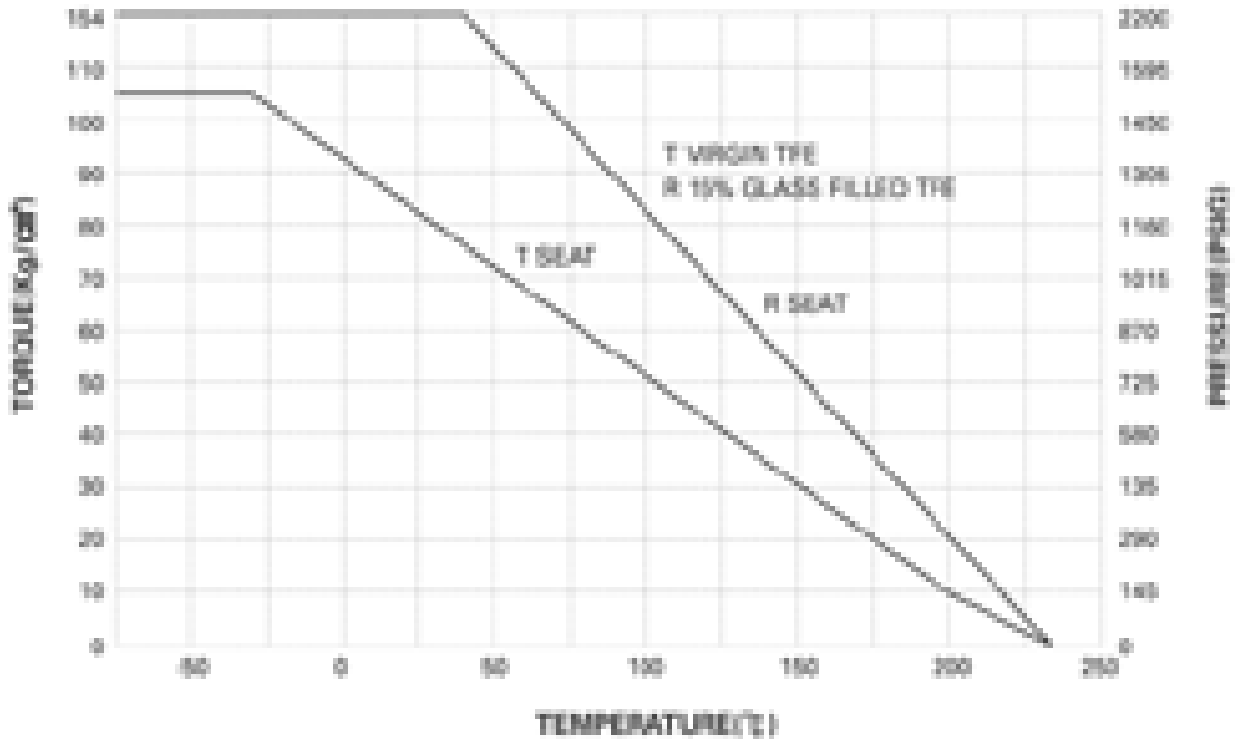
# PRESSURE / TEMPERATURE

## Technical Data

Pressure@ Maximum Temperature	Seat Material	Pressure Rating 20° F to-100° F (-29° C to 38° C)
100PSI@450° F(232° C)	Virgin TFE	2200 PSIG
250PSI@250° F(121° C)	Polyethylene	
100PSI@450° F(232° C)	Carbon/Glass TFE	

## Working Pressure in PSIG

Seat Material	Virgin TFE	15%Glass Filled TFE
Temperature@Pressure(PSIG)		
100° F (38° C)	2200	2200
200° F (93° C)	1500	1600
300° F (148° C)	800	900
400° F (204° C)	600	245
500° F (232° C)	100	175



# CV COEFFICIENT/FLOW CHART / TORQUE

## BALL VALVE Cv COEFFICIENT

CV coefficient is rate of flow in gallons per minute at 60° F water with pressure drop of 1 psig a given opening.

$$Q = CV \sqrt{\frac{\Delta P}{G}}$$

Q: Flow rate (US Gallons/min)

ΔP: Pressure drop (psi)

G: Specific gravity

Q<sub>l</sub> (m<sup>3</sup>/h): Liquid rate

P<sub>m</sub> (kg/cm<sup>2</sup>): (P<sub>1</sub>+P<sub>2</sub>)/2 = Absolute pressure average

Q<sub>g</sub> (m<sup>3</sup>/h): Gas flow rate at 760mmHg and temperature 15° C

K: Revised factor of viscosity

Q<sub>s</sub> (Kg/h): Steam flow rate

h (Kg/cm<sup>2</sup>) = P<sub>1</sub>+P<sub>2</sub>: Pressure drop

P<sub>1</sub> (Kg/cm<sup>2</sup>): Absolute inlet pressure

t (° C): Flowing temperature

P<sub>2</sub> (Kg/cm<sup>2</sup>): Absolute outlet pressure

G<sub>1</sub> (m<sup>3</sup>/h): Liquid specific gravity (sir=1)

s (° C): Steam superheat

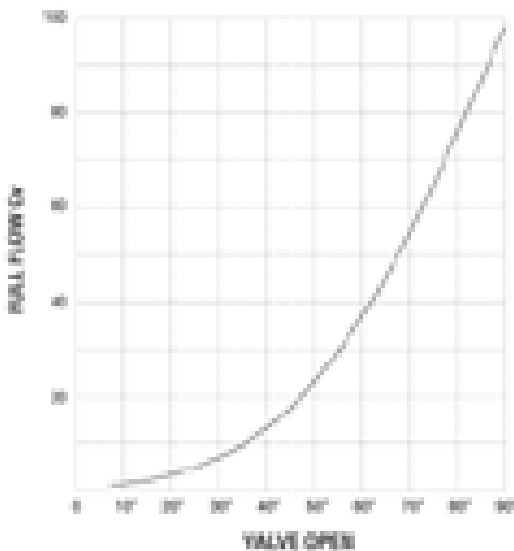
FOR LIQUID
$Q_1 = \frac{0.8547 * Cv * \sqrt{h}}{K \sqrt{G_1}}$
FOR GAS
$Q_1 = \frac{4047 * Cv * \sqrt{h * p_m}}{\sqrt{G_g(273+t)}}$
FOR STEAM
$Q_1 = \frac{19.4 * Cv * \sqrt{p_2 * h}}{\sqrt{(1+0.0013S)}}$

For gas and steam: Max, H=1/2P<sub>1</sub>, Min P<sub>2</sub>=1/2P<sub>1</sub>

G1 : LIQUID SPECIFIC GRAVITY						Gg : GAS SPECIFIC GRAVITY					
Alcohols	0.8	Gasolin	0.80~0.83	Sulfuric acid	1.84	Acetylene	0.907	Ethylene	0.974	Nitrogen	0.967
Ammonia	0.89	Kerosene	0.76~0.80	X		Ammonia	0.596	Hydrogen	0.069	Oxygen	1.105
Benzene	0.70~0.76	Lubricant oil	0.90~0.96			Butane	2.009	Methane	0.554	Propan	1.562
Ether	0.73	Sea water	1.01~1.05			Chlorine	2.486	Natural gas	0.570	X	

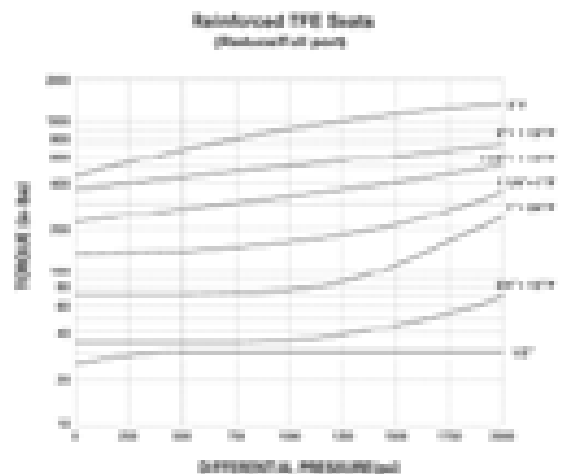
## FLOW CHARACTERISTIC

Flow characteristic of ball valve is shown on the diagram by flow CV(%) and valve open(deg.)



## TORQUE

The following chart is shown by average torque data as per each size of approximately 100pcs samples. According to actual fluid & service condition, it should have 20% to tolerance. So, actual torque for actuator add to a safety factor 60% in value are shown on data



# LIST OF MATERIAL SPECIFICATIONS-ASME/ANSI B16.34

## B16.34 Applicable ASTM Specification

Material Group No.	Nominal Designation	Forgings Spec.-Grade Notes	Castings Spec-Grade Notes	Tubular Product Spec.-Grade Notes
1.1	Carbon	A105(1)(2) A350-LF2	A216-WCB(1)	A672-B70 A672-V70
1.10	21/4Cr-Mo	A182-F22 04	A217-WC9 (3)(5)	
2.1	18Cr-8Ni	A182-F304(7) A182-F304H	A351-CF3(8) A351-CF8(7)	A312-TP304(7) A312-TP304H A358-304(7) A376-TP304H A430-FP304(7) A430-FP304H
2.2	16Cr-12Ni-2Mo	A182-F316 A182-F304H		A312-TP316(7) A312-TP316H A358-316(7) A312-TP316(7) A376-TP316H A 430-FP 316(7) (9) A 430- FP 316H
	18Cr-8Ni		A351-CF3A(10)	A351-CF8A(10)
	18Cr-13Ni-3Mo			A312-TP317(7)
2.3	18Cr-9Ni-2Mo		A351-CF3M(11) A351-CF8M(7)	
	18Cr-8Ni	A182-F304L		A312-TP304L(8)
	16 Cr-12Ni -2 Mo	A182-F316L		A312-TP 316L
2.8	22Cr-5Ni-3MoN	A182-F51		A789-S31803 A790-S31803

**NOTES :**

- (1) Upon prolonged exposure to temperatures above 800° F(425° C), the carbide phase of carbon steel may be converted to graphite. (2) Only killed steel shall be used above 850° F(455° C)
- (3) Use normalized and tempered material only. (4) Permissible, but not recommended for prolonged usage above about 1100° F(595° C)
- (5) Not to be used over 1100° F(595° C) (6) At temperatures over 1100° F(540° C), use only when the carbon is 0.04% or higher.
- (7) Not to be used over 800° F(425° C)
- (8) For temperatures above 1000° F(540° C), use only if the material is heat treated by heating it to a minimum of 1900° F(1040° C) and quenching in water or rapidly cooling by other means.
- (9) Not to be used over 650° F(345° C) (10) Not to be used over 850° F(455° C)

## PRESSURE-TEMPERATURE RATINGS FOR STANDARD CLASS VALVES - ASME / ANSI B16.34

**Ratings for Group 1.10 Materials** (° F/psi)

temperature, ° F	Working Pressure by Classes, psi					
	150	300	600	900	1500	2500
-20 to 100	285	740	1,480	2,220	3,705	6,170
200	260	675	1,350	2,025	3,375	5,625
300	230	655	1,315	1,970	3,280	5,470
400	200	635	1,270	1,900	3,170	5,280
500	170	600	1,200	1,795	2,995	4,990
600	140	550	1,095	1,640	2,735	4,560
650	125	535	1,075	1,610	2,685	4,475
700	110	535	1,065	1,600	2,665	4,440
750	95	505	1,010	1,510	2,520	4,200
800	80	410	825	1,235	2,060	3,430
850	65	270	535	805	1,340	2,230
900	50	170	345	515	860	1,430
950	35	105	205	310	515	860
1000	20	20	105	155	260	430

**Ratings for Group 1.10 Materials** (° F/psi)

temperature, ° F	Working Pressure by Classes, psi					
	150	300	600	900	1500	2500
-20 to 100	290	750	1,500	2,250	3,750	6,250
200	260	750	1,500	2,250	3,750	6,250
300	230	730	1,455	2,185	3,640	6,070
400	200	705	1,410	2,115	3,530	5,880
500	170	665	1,330	1,995	3,325	5,540
600	140	605	1,210	1,815	3,025	5,040
650	125	590	1,175	1,765	2,940	4,905
700	110	570	1,135	1,705	2,840	4,730
750	95	530	1,065	1,595	2,660	4,430
800	80	510	1,015	1,525	2,540	4,230
850	65	485	975	1,460	2,435	4,060
900	50	450	900	1,350	2,245	3,745
950	35	375	755	1,130	1,885	3,145
1000	20	260	520	780	1,305	2,170
1050	20(1)	175	350	525	875	1,455
1100	20(1)	110	220	330	550	915
1150	20(1)	70	135	205	345	570
1200	20(1)	40	80	125	205	345

# Pressure-Temperature Ratings [CON.D]

## Ratings for Group 2.1 Materials (°F/psi)

Temperature °F	Working Pressure by Classes. psi					
	150	300	600	900	1500	2500
-20 to 100	275	720	1,440	2,160	3,600	6,000
200	230	600	1,200	1,800	3,000	5,000
300	205	540	1,055	1,585	2,640	4,400
400	190	495	940	1,410	2,350	3,920
500	170	485	875	1,310	2,185	3,640
600	140	435	830	1,245	2,075	3,460
650	125	430	815	1,225	2,040	3,400
700	110	425	805	1,210	2,015	3,360
750	95	425	795	1,195	1,990	3,320
800	80	405	790	1,180	1,970	3,280
850	65	395	780	1,165	1,945	3,240
900	50	390	770	1,150	1,920	3,200
950	35	380	750	1,125	1,870	3,120
1000	20	320	645	965	1,610	2,685
1050	20		620	925	1,545	2,570
1100	20	255	515	770	1,285	2,145
1150	20	200	390	585	980	1,630
1200	20	155	310	465	770	1,285
1250	20	115	220	330	550	915
1300	20	85	165	245	410	685
1350	20	80	125	185	310	515
1400	20	50	95	145	240	400
1450	20	35	70	105	170	285
1500	20	25	50	70	120	120

**NOTES :**

- (1) All pressures are given as pressure.
- (2) Pressure in kg/cm<sup>2</sup> are shown for convenience.
- (3) Material groups are as listed in page 26.
- (4) For temperature limitations, see footnotes on page 26.

## Ratings for Group 2.2 Materials (°F/psi)

Temperature °F	Working Pressure by Classes. psi					
	150	300	600	900	1500	2500
-20 to 100	275	720	1,440	2,160	3,600	6,000
200	230	620	1,240	1,880	3,095	5,160
300	215	560	1,120	1,680	2,795	4,660
400	195	515	1,025	1,540	2,570	4,280
500	170	480	955	1,435	2,390	3,980
600	140	450	900	1,355	2,255	3,760
650	125	445	890	1,330	2,220	3,700
700	110	430	870	1,305	2,170	3,620
750	95	425	855	1,280	2,135	3,560
800	80	420	845	1,265	2,110	3,520
850	65	420	835	1,255	2,090	3,480
900	50	415	830	1,245	2,075	3,460
950	35	385	775	1,160	1,930	3,220
1000	20	350	700	1,050	1,750	2,915
1050	20	345	685	1,030	1,720	2,865
1100	20	305	610	915	1,525	2,545
1150	20	235	475	710	1,185	1,970
1200	20	185	370	555	925	1,545
1250	20	145	295	440	735	1,230
1300	20	115	235	350	585	970
1350	20	95	190	290	480	800
1400	20	75	150	225	380	630
1450	20	60	115	175	290	485
1500	20	40	85	125	205	345

## Ratings for Group 2.3 Materials (°F/psi)

Temperature	Working Pressure by Classes. psi					
	150	300	600	900	1500	2500
-20 to 100	230	600	1,200	1,800	3,000	5,000
200	195	505	1,015	1,520	2,530	4,220
300	175	455	910	1,360	2,270	3,780
400	160	415	825	1,240	2,065	3,440
500	145	380	765	1,145	1,910	3,180
600	140	360	720	1,080	1,800	3,000
650	125	350	700	1,050	1,750	2,920
700	110	345	685	1,030	1,715	2,880
750	95	335	670	1,010	1,680	2,800
800	80	330	660	985	1,645	2,740
850	65	320	645	965	1,610	2,680

**NOTES :**

- (1) All pressures are given as pressure.
- (2) Pressure in kg/cm<sup>2</sup> are shown for convenience.
- (3) Material groups are as listed in page 26.
- (4) For temperature limitations, see footnotes on page 26.

## Ratings for Group 2.3 Materials (°F/psi)

Temperature	Working Pressure by Classes. psi					
	150	300	600	900	1500	2500
-20 to 100	290	750	1,500	2,250	3,750	6,250
200	260	720	1,440	2,160	3,600	6,000
300	230	665	1,330	1,995	3,325	5,540
400	200	615	1,230	1,845	3,070	5,120
500	170	575	1,150	1,730	2,880	4,800
600	140	555	1,115	1,670	2,785	4,640
650	125	550	1,100	1,650	2,750	4,580
700	110	540	1,085	1,625	2,710	4,520
750	95	530	1,085	1,595	2,660	4,430