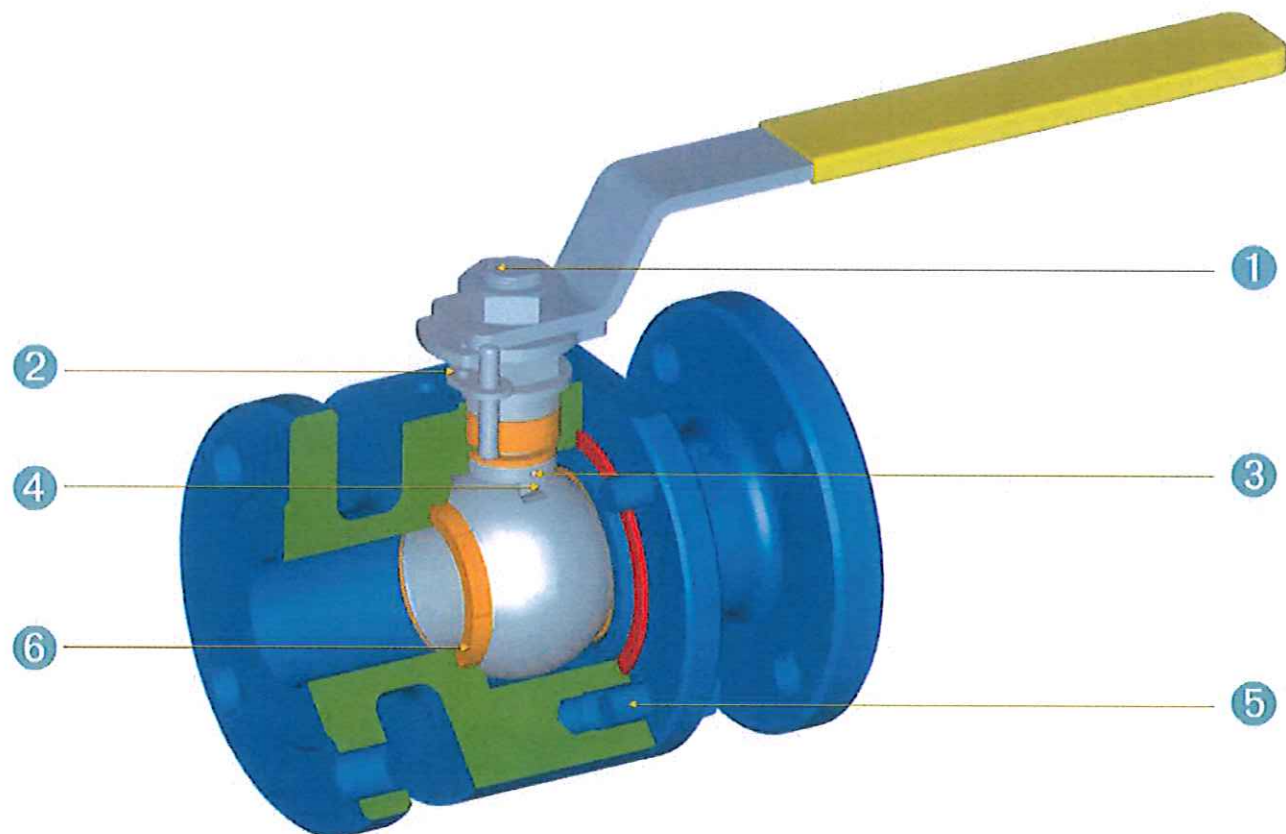
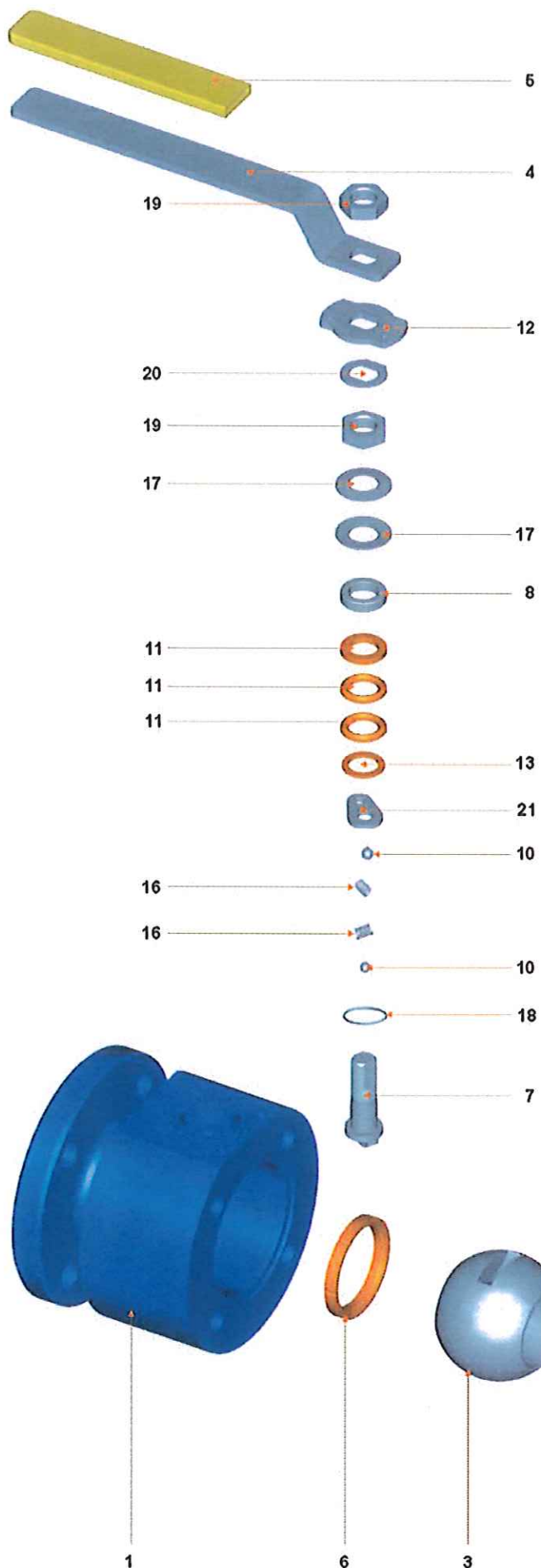




- ① **Double "D" Stem Head:** Insures handle lever will always be mounted correctly, parallel to the media flow, indicating valve open and closed positions.
- ② **Secure Line Flow Locking Device:** Valve is equipped with an integral locking device to secure line flow.
- ③ **Anti-static Device:** Spring-loaded pins assures the electrical continuity between the ball, stem and body, to avoid sparking during valve operation.
- 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 torques cap screws.
- ⑥ **Fire Safe Design:** Metal to metal sealing shuts off valve flow when soft sealing materials are destroyed by fire.

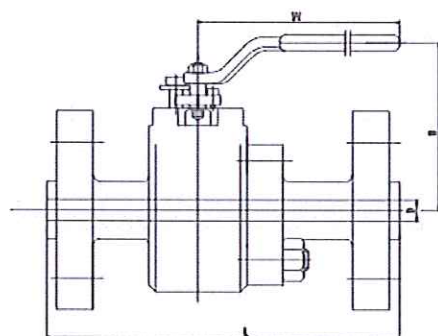
APPLICATIONS

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

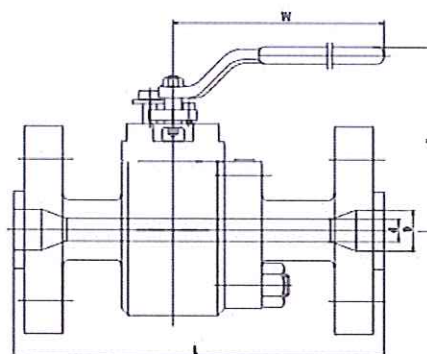


Index no	Part
1	Body
2	Closure
3	Ball
4	Lever
5	Lever Sleeve
6	Seat Ring
7	Stem
8	Packing Gland
9	Gasket
10	Anti-Static Ball
11	Packing Set
12	Stop Plate
13	Thrust Washer
14	Stud
15	Nut
16	Anti-Static Spring
17	Spring Washer
18	Stem O-Ring
19	Nut
20	Washer
21	Locking Plate

No	Part	Standard	Stainless Steel	Sour Service	Low Temperature Service
1	Body	ASTMA105	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
2	Closure	ASTMA105	ASTMA182-F316	ASTMA105N	ASTMA350-LF2
3	Ball	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316 ASTMA105N/ENP	ASTMA182-F316
4	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
5	Lever Sleeve	Polyethylene	Polyethylene	Polyethylene	Polyethylene
6	Seal 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	Graphite	Graphite	316 + Graphite
10	Steel Ball	S.S.	S.S.	S.S.	S.S.
11	Packing Set	PTFE	PTFE	PTFE	PTFE
12	Stop Plate	Carbon Steel	S.S.	Carbon Steel	S.S.
13	Thrust Washer	PTFE	PTFE	PTFE	PTFE
14	Stud	ASTMA193-B7	ASTMA193-B8	ASTMA193-B7M	ASTMA320-L7M
15	Nut	ASTMA194-2H	ASTMA194-8	ASTMA194-2HM	ASTMA194-7M
16	Spring	S.S.	S.S.	S.S.	S.S.
17	Spring Washer	Alloy Steel	Alloy Steel	Alloy Steel	Alloy Steel
18	Stop Pin	Carbon Steel	S.S.	Carbon Steel	S.S.
19	Nut	Carbon Steel	S.S.	Carbon Steel	S.S.
20	Washer	Carbon Steel	S.S.	Carbon Steel	S.S.
21	Locking Plate	Carbon Steel	S.S.	Carbon Steel	S.S.



Full Port



Reduced Port

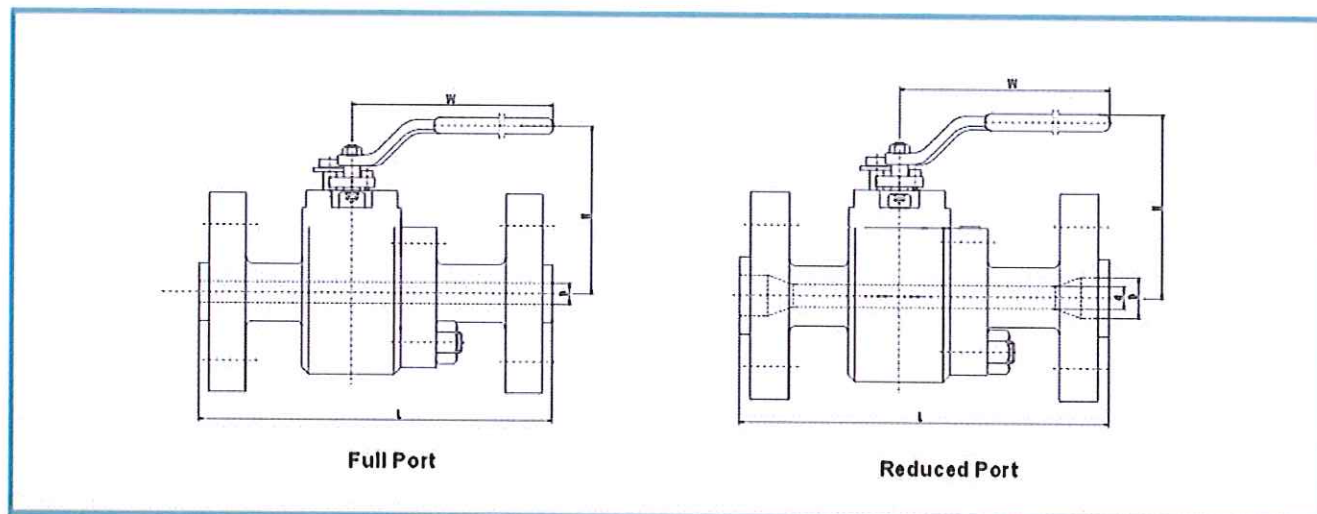
600 LB Dimensions

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	2.60	66	6.30	160	7.7	3.5
3/4"	20	0.75	19	7.52	191	3.46	88	6.69	170	12.8	5.8
1"	25	1.00	25.4	8.50	216	3.54	90	6.69	170	14.3	6.5
1-1/2"	40	1.50	38	9.49	241	4.72	120	11.02	280	29.1	13.2
2"	50	2.00	51	11.50	292	5.31	135	11.81	300	63.9	29.0
3"	80	2.99	76	14.02	356	7.09	180	17.72	450	132.3	60.0
4"	100	4.02	102	17.01	432	8.82	224	19.69	500	298.7	135.5

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	0.28	7	0.51	13	6.50	165	1.69	43	5.12	130	6.4	2.9
3/4" 1/2"	20*15	0.50	12.7	0.75	19	7.52	191	2.60	66	6.30	160	11.0	5.0
1" 3/4"	25*20	0.75	19	1.00	25.4	8.50	216	3.46	88	6.69	170	11.7	5.3
1-1/2" 1"	40*25	1.00	25.4	1.50	38	9.49	241	3.54	90	6.69	170	23.4	10.6
2" 1-1/2"	50*40	1.50	38	2.00	51	11.50	292	4.72	120	11.02	280	55.1	25.0
3" 2"	80*50	2.00	51	2.99	76	14.02	356	5.31	135	11.81	300	92.6	42.0
4" 3"	100*80	2.99	76	4.02	102	17.01	432	7.09	180	17.72	450	179.7	81.5
6" 4"	152*102	4.00	102	6.00	152.4	22.00	599	11.93	303	39.17	995	335	151.9

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	3.27	83	6.69	170	18.7	8.5
3/4"	20	0.75	19	9.02	229	4.41	112	6.69	170	24.3	11.0
1"	25	1.00	25.4	10.00	254	4.84	123	5.12	130	35.3	16.0
1-1/2"	40	1.50	38	12.01	305	5.63	143	11.81	300	72.8	33.0
2"	50	2.00	51	14.49	368	6.97	177	13.78	350	99.2	45.0
3"	80	2.99	76	15.00	381	7.87	200	17.72	450	191.8	87.0



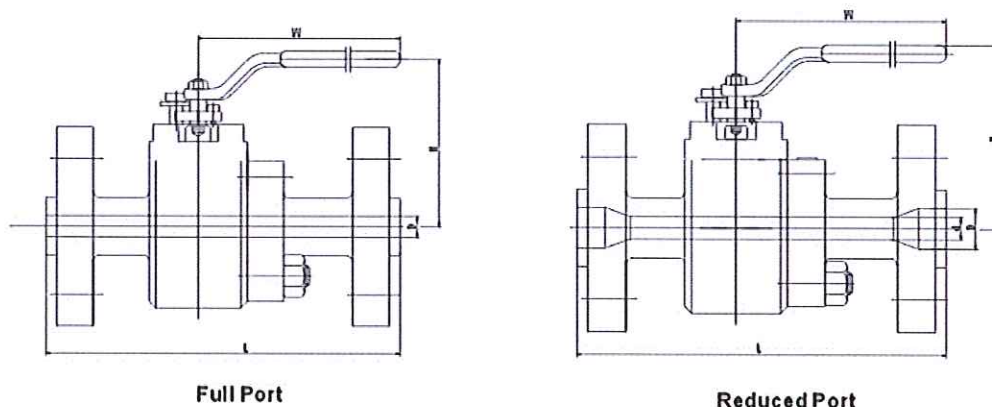
900 LB Dimensions

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	0.28	7	0.51	13	8.50	216	2.76	70	5.51	140	16.5	7.5
3/4"1/2	20*15	0.51	13	0.75	19	9.02	229	3.27	83	6.69	170	22.0	10.0
1"3/4	25*20	0.75	19	0.98	25	10.00	254	4.41	112	6.69	170	33.1	15.0
1-1/2"1	40*25	0.98	25	1.50	38	12.01	305	4.84	123	9.06	230	61.7	28.0
2"1-1/2	50*40	1.50	38	2.01	51	14.49	368	5.63	143	11.81	300	88.2	40.0
3"2	80*60	2.01	51	2.99	76	15.00	381	6.97	177	13.78	350	152.1	69.0

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	3.27	83	9.06	230	15.0	6.8		
3/4"	20	0.75	19	9.02	229	4.41	112	9.06	230	24.3	11.0		
1"	25	0.98	25	10.00	254	4.84	123	11.81	300	35.3	16.0		
1-1/2"	40	1.50	38	12.01	305	5.63	143	15.75	400	71.9	32.6		
2"	50	2.01	51	14.49	368	6.97	177	17.72	450	141.1	64.0		
3"	80	2.99	76	18.50	470	7.87	200	27.56	700	198.4	90.0		

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	0.28	7	0.51	13	8.50	216	2.76	70	6.69	170	16.5	7.5
3/4"1/2	20*15	0.51	13	0.75	19	9.02	229	3.27	83	9.06	230	22.0	10.0
1"3/4	25*20	0.75	19	0.98	25	10.00	254	4.41	112	9.06	230	33.1	15.0
1-1/2"1	40*25	0.98	25	1.50	38	12.01	305	4.84	123	11.81	300	61.7	28.0
2"1-1/2	50*40	1.50	38	2.01	51	14.49	368	5.63	143	15.75	400	90.4	41.0
3"2	80*60	2.01	51	2.99	76	18.50	470	6.97	177	17.72	450	180.8	82.0



2500 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	0.51	13	10.39	264	3.46	88	9.06	230	19.8	9.0
3/4"	20	0.75	19	10.75	273	4.61	117	9.06	230	33.1	15.0
1"	25	1.00	25	12.13	308	5.04	128	11.81	300	38.6	17.5
1-1/2"	40	1.50	38	14.49	368	5.83	148	15.75	400	75.0	34.0
2"	50	2.01	51	17.76	451	7.20	183	17.72	450	121.3	55.0
3"	80	2.99	76	22.76	578	8.07	205	27.56	700	242.6	110.0

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	0.76	7	0.51	13	10.39	264	2.95	75	6.69	170	17.7	8.0
3/4" 1/2"	20" 15	0.51	13	0.75	19	10.75	273	3.46	88	9.06	230	30.9	14.0
1" 3/4"	25" 20	0.75	19	0.98	25	12.13	308	4.61	117	9.06	230	35.3	16.0
1-1/2" 1"	40" 25	1.00	25	1.50	38	14.49	368	5.04	128	11.81	300	70.6	32.0
2" 1-1/2"	50" 40	1.50	38	2.01	51	17.76	451	5.83	148	15.75	400	114.6	52.0
3" 2"	80" 50	2.01	51	2.99	76	22.76	578	7.20	183	17.72	450	224.9	102.0

Seat

Properties		PTFE	NYLON	PEEK	PCTFE	DEVILON 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

Gasket

Type	Flexible Graphite	Spiral Wound 316+Graphite	Spiral Wound 316+PTFE
Temperature range °F	-328~500	-328~500	-328~500
Service Application	100% Fire-safe	100% Fire-safe	Cryogenic High Corrosion
Hardness	0~14	0~14	0~14

* Other elastomer materials available upon request

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			

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 flowrate 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

$$Q_L = C_v (P \Delta G)^{1/2}$$

Q_L = Flowrate of liquid (gal./min.)

P = differential pressure across the valve

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

Gas Flow

$$Q_g = 61 C_v (P \Delta G)^{1/2}$$

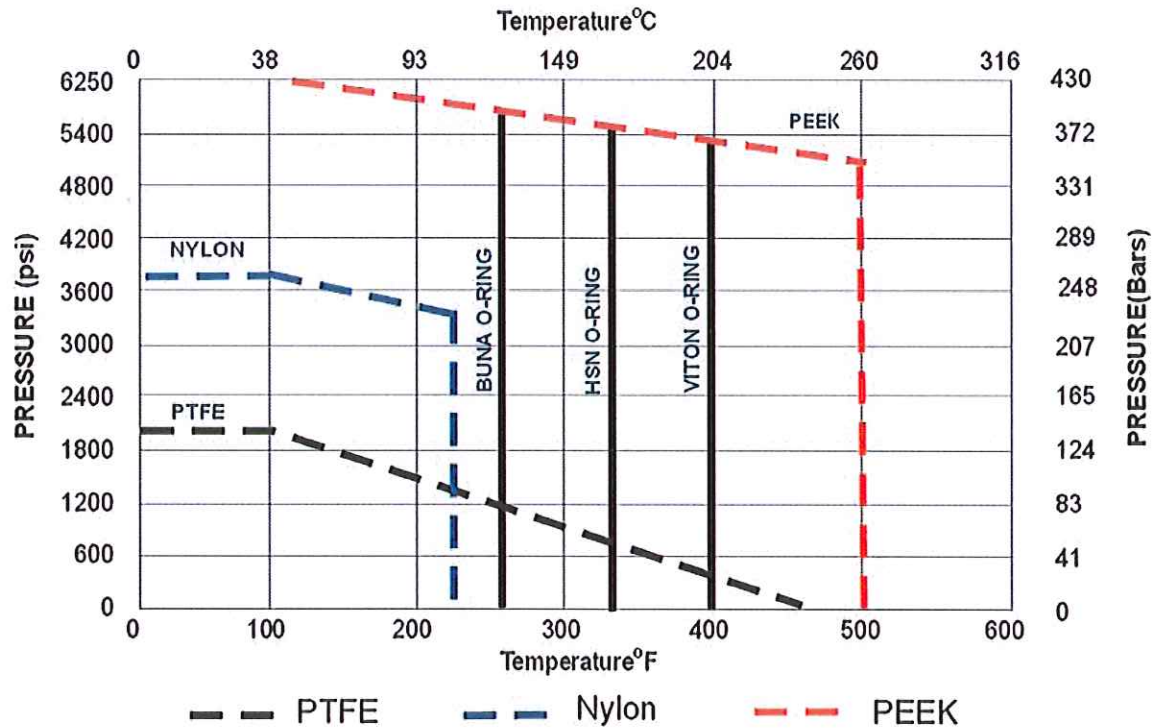
(For non-critical flow, P/P < 1.0)

Q_g = Flowrate of gas (CFH at STP)

P₁ = outlet pressure (psia)

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

FLOATING BALL STYLE(S) FB2 and FE1



O-Ring material for floating ball valves is only for 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

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.