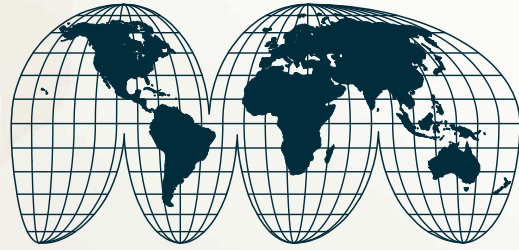


Smart Solutions. Powerful Products.



PBV[®] Unibody and Two-Piece
Flanged Floating Ball Valves



Manufacturer of Quality Valve Products Around the Globe

At Forum™ Energy Technologies we are committed to improving our clients' operational and financial performance by supplying the most comprehensive range of valve products in the industry through our family of trusted valve brands.



Engineering Expertise

Forum™ utilizes the latest state of the art engineering software to provide custom design services for any application. Finite element analysis is just one of many Design Verification Tools FET uses for designing valves to specific customer requirements.



CAD & NC Capabilities

With FET's fast and efficient workflow, CAD drawings can be released to the network for manufacturing and purchasing. The result is faster deliveries.



Accurate Inventories

Daily cycle counting & order picking using wireless barcode guns and automated part delivery systems results in more accurate inventories and faster product delivery.



Quality Control

All FET Companies manufacture quality products designed and tested to meet the standards of Qualifying Authorities around the world. Advanced engineering and our Quality Management System assure that our valve products continue to exceed your expectations for performance.



Customer Service

Forum™'s Customer Service Department is fully staffed with trained customer service representatives ready to help you with your ordering information, technical specifications and logistics.



Contents

PBV® Series 4400/6400, 4500/6500 Two-Piece, 5400 Unibody, and 6415 Two-Piece Flanged Floating Ball Valves

Product Range	3	Dimensional Data	
How to Order	4	Series 6400, Class 150, 300 & 600	13
Technical Data		Series 4400, Class 150, 300 & 600	15
Pressure Temperature Ratings	5	Series 5400 RP Unibody Stem Packing Ball Valves	
Maximum Stem Break Torque	6	Standard Design Features	16
Actuator Mounting Data		Dimensional Data	
Series 4400, 5400 & 6400		Series 5400, Class 150, 300 & 600	17
Class 150, 300 & 600	7	Series 4500 RP & 6500 FP Two-Piece O-Ring Stem Seal Ball Valves • API 6D	
Series 4500 & 6500		Standard Design Features	18
Class 150, 300 & 600 • API 6D	8	Dimensional Data	
Flow Coefficients (Cv)	8	Series 4500, Class 150, 300 & 600	18
Pressure Conversion.....	8	Series 6500, Class 150, 300 & 600	19
Approximate Valve Weights	8	Parts and Materials	
Certification of Quality and Design	9	Stem Packing Design	20, 21
NACE Compliance	9	Stem O-Ring Design • API 6D	22
Design Standards.....	9	Maintenance and Repair Kits	23
Standard Features	10	Series 6415 Flanged Two-Piece Bolted Body Forged Floating Ball Valves • Class 1500	
Firesafe ISO Design	11	Standard Design Features, Dimensional Data	24
Series 4400 RP & 6400 FP Two-Piece Stem Packing Ball Valves		Parts and Engineering Data, How to Order	25
Standard Design Features	12, 14		

Product Range

Shell Mat.	CL	Series No.	Service Sector	Design Feature	Body Design	Port	Ends	Size (in.)											
								1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	
Carbon Steel & Stainless Steel	150	6400	Industrial	Packing	LP 2 pc.	Full	Flanged	•	•	•	•	•	•	•	G	G	G	—	
		6500	Oil & Gas	O-Ring	LP 2 pc.	Full		—	—	•	•	•	•	•	•	G	G	G	—
		4400	Industrial	Packing	LP 2 pc.	Reduced		—	—	—	•	•	•	•	•	G	G	G	—
		4500	Oil & Gas	O-Ring	LP 2 pc.	Reduced		—	—	—	•	•	•	•	•	G	G	G	—
		5400	Industrial	Packing	LP/S Uni.	Reduced		—	•	•	•	•	•	•	G/S	G/S	G/S	G/S	G/S
	300	6400	Industrial	Packing	LP 2 pc.	Full		•	•	•	•	•	•	•	G	G	G	G	—
		6500	Oil & Gas	O-Ring	LP 2 pc.	Full		—	—	•	•	•	•	•	G	G	G	G	—
		4400	Industrial	Packing	LP 2 pc.	Reduced		—	—	—	•	•	•	•	G	G	G	G	—
		4500	Oil & Gas	O-Ring	LP 2 pc.	Reduced		—	—	—	•	•	•	•	G	G	G	G	—
		5400	Industrial	Packing	LP/S Uni.	Reduced		—	•	•	•	•	•	•	G/S	G/S	G/S	G/S	G/S
	600	6400	Industrial	Packing	LP 2 pc.	Full		•	•	•	•	•	•	•	G	G	G	G	—
		6500	Oil & Gas	O-Ring	LP 2 pc.	Full		—	—	•	•	•	•	•	G	G	G	G	—
		4400	Industrial	Packing	LP 2 pc.	Reduced		—	•	•	•	•	•	•	G	G	G	G	—
		4500	Oil & Gas	O-Ring	LP 2 pc.	Reduced		—	—	—	•	•	•	•	•	—	—	—	—

Note: LP = Long Pattern Design
 S = Short Pattern Design
 G = Gear Operated Only

How to Order

Specifying PBV® Flanged Floating Ball Valve Figure Numbers

Example: C-6410-31-2236-FT-NL-I This number represents a Carbon Steel, Full Port, Two-piece Body, Stem Packed Flanged Floating Type, Class 150 Ball Valve, Fire Tested, with Raised Face End Connections, WCB Body with 316 Stainless Steel Trim, Virgin TFM Seats, PTFE Seals, NACE Compliance, Lever Operated with ISO 5211 Mounting Pad.

C - 6 4 10 - 3 1 - 22 36 - F T - N L - I

Mat. Code	Port Config.	Valve Type	Press. Class	Fire Tested	End Conn.	Body Mat.	Trim Mat.	Seat Mat.	Stem Seal Mat.	NACE Option	Operator	Design	Modifier Code
C Carbon Steel	4 Reduced Port 2 Pc. Body	4 Stem Packing Flanged Floating Type	10 150 CL	3 Fire Tested	1 RF	22 WCB	00 Same as Body	C Carbon Filled	T PTFE	N NACE	L Lever	I ISO 5211 Mounting Pad	XXX
S Stainless Steel	5 Reduced Port Unibody	5 O-Ring Stem Flanged Floating Type	30 300 CL		3 RTJ	28 LCC	36 316SS	D Devlon®	Y Viton® GF	S Non NACE	G Gear Operator		
	6 Full Port 2 Pc. Body	5 O-Ring Stem Flanged Floating Type	60 600 CL		2 Non-Std. per EDS-11	36 CF8M	71 Monel®	F Virgin TFM	E EPDM		B Bare Stem		
							73 Hastelloy®	G Glass Filled PTFE	L Graphite		A Actuator		
								N Nylon	W* Viton® B				
								P PEEK™	H* HNBR*				
								Z Metal Seats					

Note: *ED resistant o-ring seals for 4500/6500 series.

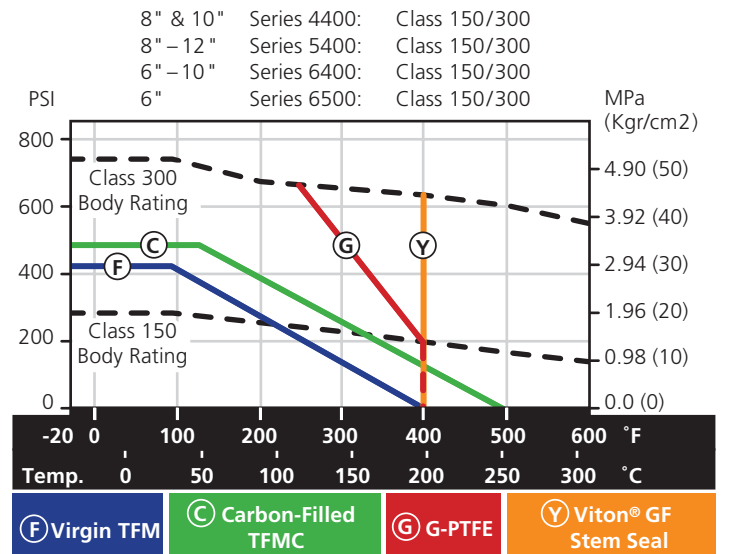
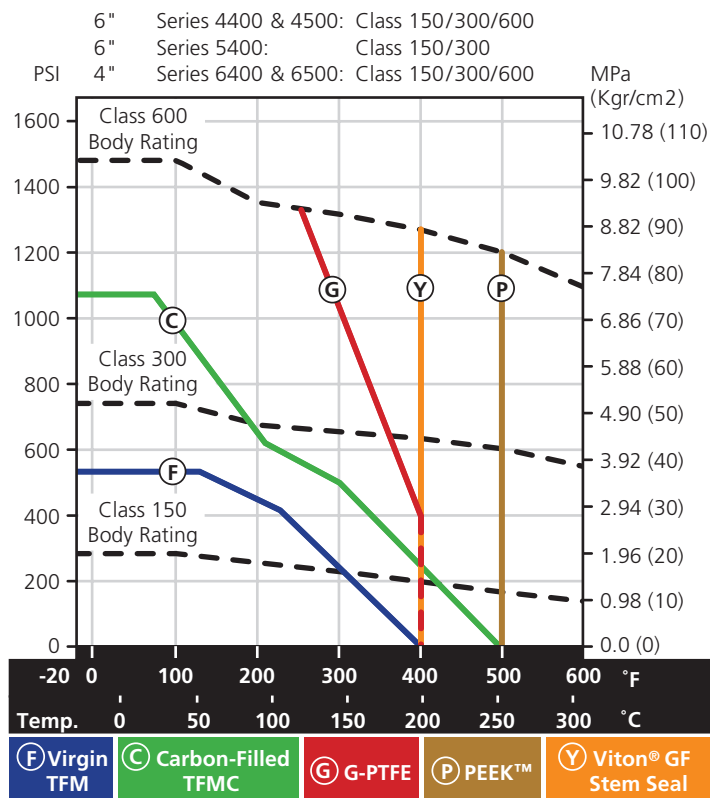
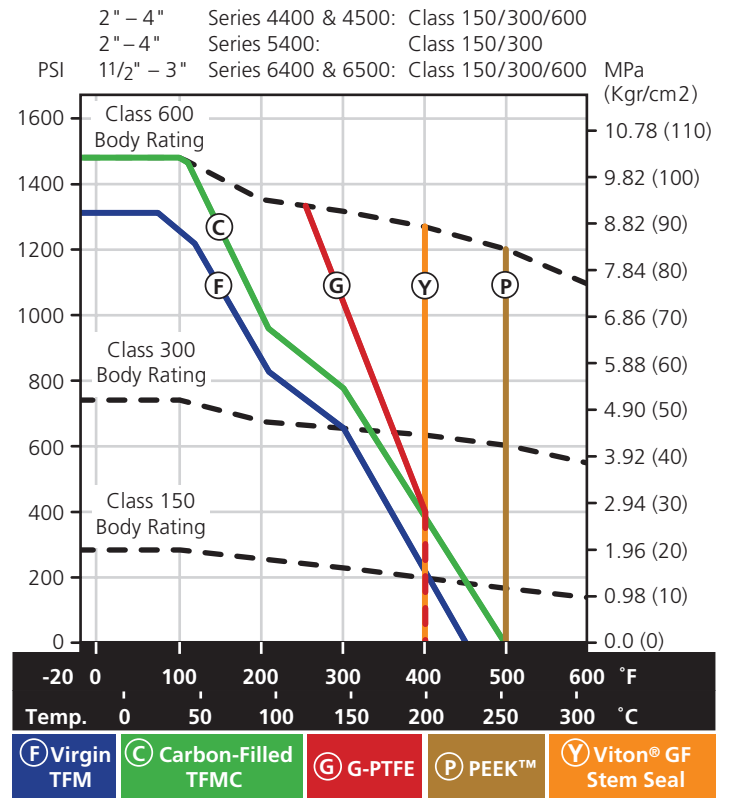
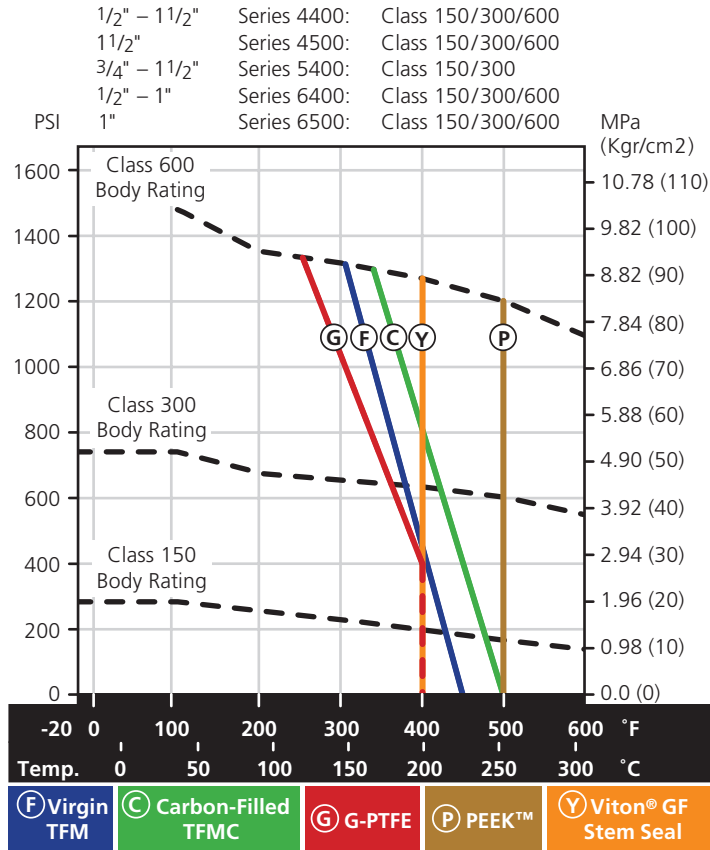
FET's PBV® Valve Brand Family of Flanged Floating Ball Valve Products



To learn more about this product line and other PBV® valve products for on and offshore oilfield and industrial applications, visit our website at www.f-e-t.com.

Pressure Temperature Ratings

The pressure temperature ratings for PBV®s Flanged Floating Ball Valves are determined by the body material, seal material and the seat material rating. The charts below are indicative of the standard seat materials. For ratings of other materials, contact your PBV® customer service representative.



Maximum Stem Break Torque at Various Pressures

Use the chart below to locate the curve number for the valve series, valve class and valve size. Locate the curve number on the chart to the right. Find the valve design pressure on the horizontal axis and read up until you intersect the selected curve number. Read across horizontally to find the maximum break torque.

Example: for a 2" Series 6400 Class 150 valve at 200 psi: Use curve #5 from the table below. The intersection of curve #5 and 200 psi results in 1205 in./lbs. maximum break torque.

Valve Curve Numbers

Ser.	Size (in.)										
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12
Class 150											
4400	—	—	—	—	4	5	6	8	9	10	—
4500	—	—	—	3	15	16	12	13	—	—	—
5400	—	1	2	3	4	5	6	8	9	10	11
6400	1	2	3	4	5	6	8	9	10	11	—
6500	—	—	3	15	16	12	13	14	—	—	—
Class 300											
4400	—	—	—	—	4	5	6	8	9	10	—
4500	—	—	2	3	15	16	12	13	—	—	—
5400	—	1	2	3	4	5	6	8	9	10	11
6400	1	2	3	4	5	6	8	9	10	11	—
6500	—	—	3	15	16	12	13	14	—	—	—
Class 600											
4400	—	1	2	3	4	5	7	19	—	—	—
4500	—	—	—	3	15	16	17	18	—	—	—
6400	1	2	3	4	5	7	19	—	—	—	—
6500	—	—	3	15	16	17	18	—	—	—	—

Max. Stem Break Torque at Maximum Operating Pressure (in.-lb.)

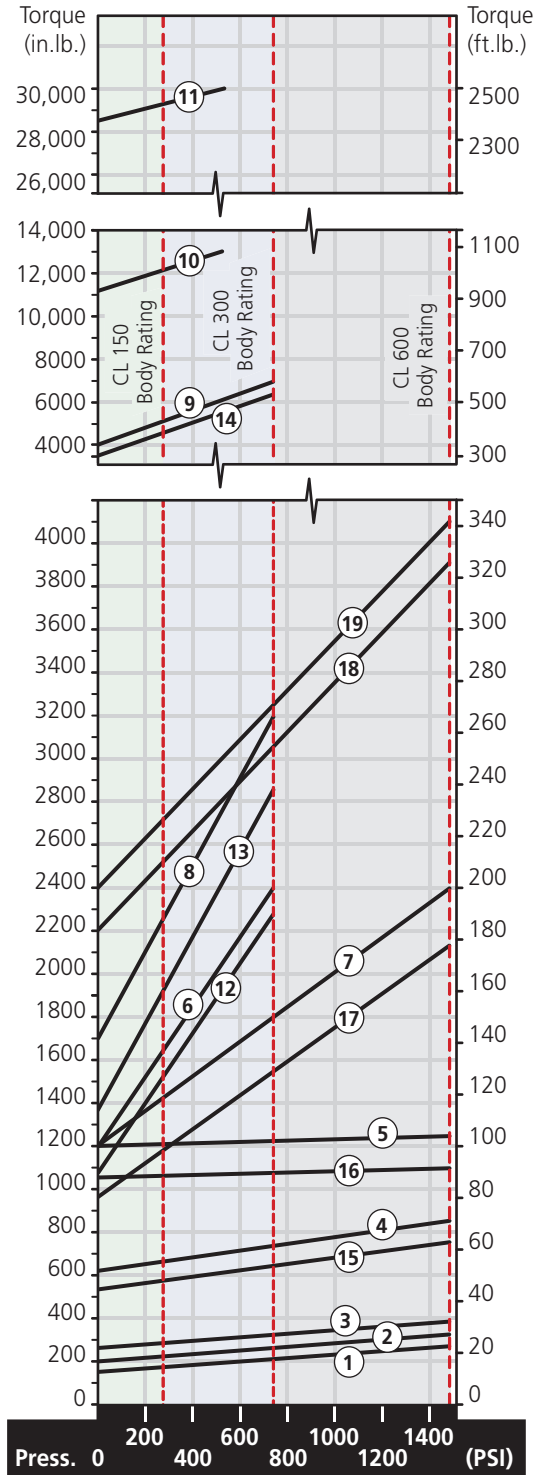
Based on TFM and TFMC Seat Testing

Ser.	Size (in.)										
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12
Class 150											
4400	—	—	—	—	660	1210	1660	2270	5150	12,000	—
4500	—	—	—	280	570	1060	1530	1930	—	—	—
5400	—	170	230	280	660	1210	1660	2270	5150	12,000	29,250
6400	170	230	280	660	1210	1660	2270	5150	12,000	29,250	—
6500	—	—	280	570	1060	1530	1930	4600	—	—	—
Class 300											
4400	—	—	—	—	730	1230	2400	3190	6990	13,000	—
4500	—	—	—	320	640	1080	2270	2850	—	—	—
5400	—	200	260	320	730	1230	2400	3190	6990	13,000	30,000
6400	200	260	320	730	1230	2400	3190	6990	13,000	30,000	—
6500	—	—	320	640	1080	2270	2860	6440	—	—	—
Class 600											
4400	—	260	320	380	850	1250	2400	4090	—	—	—
4500	—	—	—	380	760	1100	2160	3900	—	—	—
6400	260	320	380	850	1250	2400	4100	—	—	—	—
6500	—	—	380	760	1100	2160	3900	—	—	—	—

Notes:

- 1) Torque values are for new valves with TFM/TFMC and clean water service. • For Nylon seats, add an additional 25% minimum. For PEEK™ seats, multiply values x 2.2.
- 2) No additional safety factors have been added.
- 3) Stem torque service condition factors: For powered actuators, it's recommended to add an additional 25% min. • For dirty service, add an additional 50% minimum. • For dry gas service, add 25% minimum.

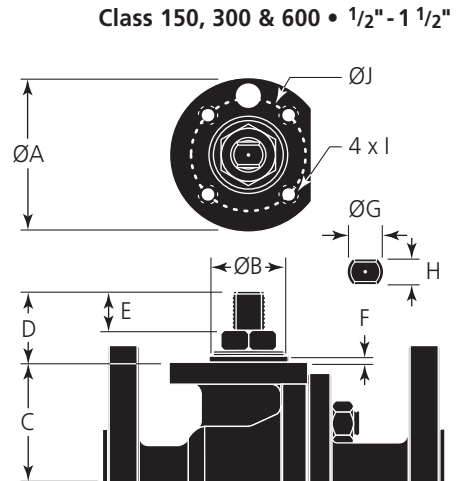
- 4) To prevent stem side loading and eliminate potential stem galling, the following tolerances for mounting actuators are recommended: Actuator mounting bracket flanges must be parallel within .015". • The maximum allowed run out on the stem coupling bores are .008" • 8", 10" & 12", Class 300, have a maximum operating pressure of 550 psig.



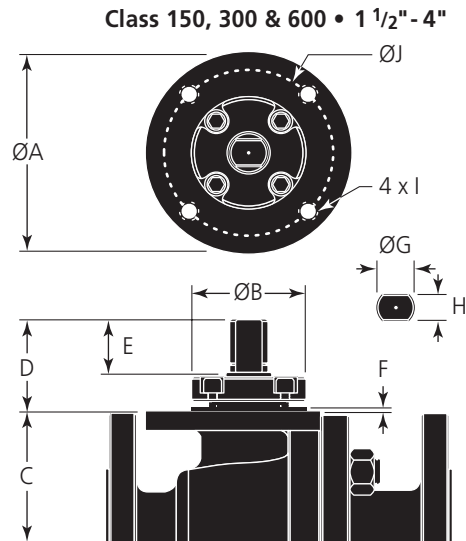
Torque Chart (Above) is for TFM or TFMC Seats. See Note 1 for other seat materials or contact your PBV® sales representative.

Actuator Mounting Data • Series 4400/5400/6400 • 1/2"-12" Class 150, 300 & 600

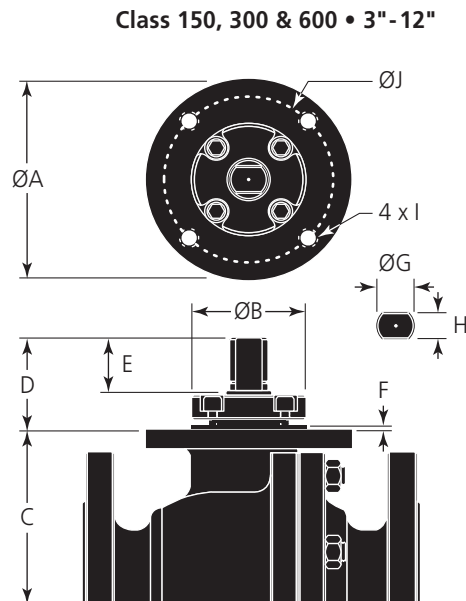
Vlv Size (in.)	A	B	C	D	E	F	G +000/-003	H +000/-003	I UNC	J	ISO 5211
	Series 6400, Class 150/300, 1/2" - 1"										
1/2	1.97	0.984	1.54	1.04	0.33	0.08	0.437	0.314	1/4-20	1.42	F03
3/4	1.97	0.984	1.64	1.04	0.33	0.08	0.437	0.314	1/4-20	1.42	F03
1	2.56	1.378	1.98	1.18	0.34	0.08	0.500	0.394	1/4-20	2.00	F05
Series 6400, Class 600, 1/2" - 1"											
1/2	1.97	0.984	1.54	1.04	0.33	0.08	0.437	0.314	1/4-20	1.42	F03
3/4	1.97	0.984	1.65	1.04	0.33	0.08	0.437	0.314	1/4-20	1.42	F03
1	2.56	1.378	1.98	1.18	0.34	0.08	0.500	0.394	1/4-20	2.00	F05
Series 5400, Class 150/300, 3/4" - 1 1/2"											
3/4	1.97	0.984	1.02	0.78	0.27	0.06	0.313	0.197	1/4-20	1.42	F03
1	2.20	0.984	1.26	0.90	0.31	0.08	0.375	0.236	1/4-20	1.65	F04
1 1/2	2.56	1.378	2.12	1.19	0.34	0.08	0.500	0.394	1/4-20	2.00	F05
Series 4400, Class 600, 3/4" - 1 1/2"											
3/4	1.97	0.984	1.54	1.04	0.33	0.08	0.437	0.314	1/4-20	1.42	F03
1	1.97	0.984	1.65	1.04	0.33	0.08	0.437	0.314	1/4-20	1.42	F03
1 1/2	2.56	1.378	1.98	1.19	0.34	0.08	0.500	0.394	1/4-20	2.00	F05



Vlv Size (in.)	A	B	C	D	E	F	G +000/-003	H +000/-003	I UNC	J	ISO 5211
	Series 6400, Class 150/300, 1 1/2" - 2"										
1 1/2	3.54	1.771	2.59	1.79	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
2	3.54	1.771	3.48	2.19	1.07	0.08	0.906	0.669	5/16-18	2.75	F07
Series 6400, Class 600, 1 1/2" - 2"											
1 1/2	3.54	1.771	2.59	1.79	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
2	3.54	1.771	3.48	2.19	1.07	0.08	0.906	0.669	5/16-18	2.75	F07
Series 5400, Class 150/300, 2" - 4"											
2	3.54	1.771	2.55	1.79	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
3	3.54	1.771	3.69	2.15	1.06	0.08	0.906	0.669	5/16-18	2.75	F07
4	3.54	1.771	4.26	2.15	1.06	0.08	0.906	0.669	5/16-18	2.75	F07
Series 4400, Class 150/300, 2" - 3"											
2	3.54	1.771	2.59	1.79	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
3	3.54	1.771	3.48	2.19	1.06	0.08	0.906	0.669	5/16-18	2.75	F07
Series 4400, Class 600, 2" - 3"											
2	3.54	1.771	2.59	1.79	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
3	3.54	1.771	3.48	2.19	1.06	0.08	0.906	0.669	5/16-18	2.75	F07



Vlv Size (in.)	A	B	C	D	E	F	G +000/-003	H +000/-003	I UNC	J	ISO 5211
	Series 6400, Class 150/300, 3" - 10"										
3	4.92	2.755	4.30	2.21	1.03	0.08	0.906	0.669	3/8-16	4.00	F10
4	5.90	3.346	5.31	2.52	1.10	0.08	1.279	0.905	1/2-13	4.95	F12
6	6.88	3.937	7.05	3.32	1.72	0.08	1.633	1.062	5/8-11	5.50	F14
8	8.26	4.724	9.09	3.88	2.00	0.08	1.870	1.259	3/4-10	6.50	F16
10	8.26	4.724	11.02	4.08	2.21	0.08	2.283	1.496	3/4-10	6.50	F16
Series 6400, Class 600, 3" - 4"											
3	5.90	3.346	4.65	2.54	1.11	0.08	1.279	0.906	1/2-13	4.95	F12
4	5.90	3.937	5.83	3.43	1.73	0.08	1.633	1.062	1/2-13	4.95	F12
Series 5400, Class 150/300, 6" - 12"											
6	5.90	3.346	5.83	2.52	1.10	0.08	1.279	0.905	1/2-13	4.95	F12
8	6.88	3.937	7.02	3.30	1.72	0.08	1.633	1.062	5/8-11	5.50	F14
10	8.26	4.724	8.51	3.88	2.00	0.08	1.870	1.259	3/4-10	6.50	F16
12	8.26	4.724	10.24	4.06	2.19	0.08	2.283	1.496	3/4-10	6.50	F16
Series 4400, Class 150/300, 4" - 10"											
4	4.92	2.755	4.30	2.21	1.03	0.08	0.906	0.669	3/8-16	4.00	F10
6	5.90	3.346	5.31	2.52	1.10	0.08	1.279	0.905	1/2-13	4.95	F12
8	6.89	3.937	7.05	3.32	1.72	0.08	1.633	1.062	5/8-11	5.50	F14
10	8.26	4.724	9.09	3.88	2.00	0.08	1.870	1.259	3/4-10	6.50	F16
Series 4400, Class 600, 4" - 6"											
4	5.90	3.346	4.65	2.54	1.11	0.08	1.279	0.906	1/2-13	4.95	F12
6	5.90	3.937	5.83	3.43	1.73	0.08	1.633	1.062	1/2-13	4.95	F12

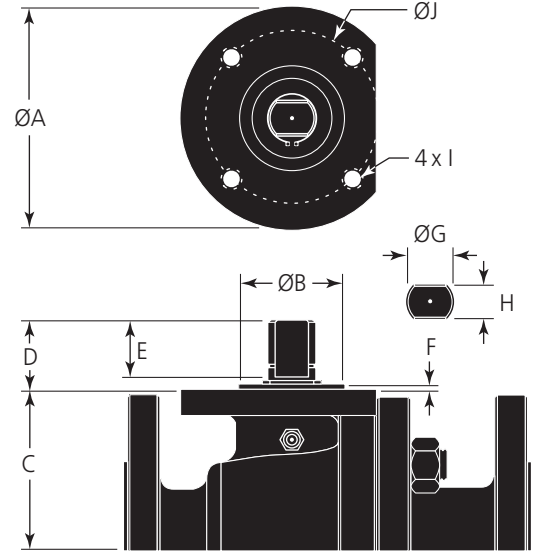


Actuator Mounting Data, Flow Coefficients (C_v) & Weights

Series 4500/6500 • 1" - 6" Class 150, 300 & 600

Vlv Size (in.)	A	B	C	D	E	F	G +000/-003	H +000/-003	I UNC	J	ISO 5211
Series 6500, Class 150/300, 1" - 6"											
1	2.56	1.378	1.98	0.85	0.64	0.08	0.591	0.394	1/4-20	2.00	F05
1 1/2	3.54	1.771	2.59	1.10	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
2	3.54	1.771	3.48	1.47	1.08	0.08	0.906	0.669	5/16-18	2.75	F07
3	4.92	2.755	4.30	1.50	1.08	0.08	0.906	0.669	3/8-16	4.00	F10
4	5.90	3.346	5.31	1.58	1.11	0.08	1.279	0.905	1/2-13	4.95	F12
6	6.88	3.937	7.05	2.24	1.70	0.08	1.633	1.062	5/8-11	5.50	F14
Series 6500, Class 600, 1" - 4"											
1	2.56	1.378	1.98	0.85	0.64	0.08	0.591	0.394	1/4-20	2.00	F05
1 1/2	3.54	1.693	2.59	1.10	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
2	3.54	1.771	3.48	1.48	1.08	0.08	0.906	0.669	5/16-18	2.75	F07
3	5.90	3.346	4.65	1.59	1.11	0.08	1.279	0.906	1/2-13	4.95	F12
4	5.90	3.937	5.83	2.20	1.70	0.08	1.633	1.062	1/2-13	4.95	F12
Series 4500, Class 150/300, 1 1/2" - 6"											
1 1/2	2.56	1.378	1.94	0.85	0.64	0.08	0.591	0.394	1/4-20	2.00	F05
2	3.54	1.771	2.59	1.10	0.71	0.08	0.767	0.551	5/16-18	2.75	F07
3	3.54	1.771	3.48	1.47	1.08	0.08	0.906	0.669	5/16-18	2.75	F07
4	4.92	2.755	4.30	1.50	1.08	0.08	0.906	0.669	3/8-16	4.00	F10
6	5.90	3.346	5.31	1.58	1.11	0.08	1.279	0.905	1/2-13	4.95	F12
Series 4500, Class 600, 1 1/2" - 6"											
1 1/2	2.56	1.378	1.94	0.85	0.64	0.08	0.591	0.394	1/4-20	2.00	F05
2	3.54	1.771	2.60	1.07	0.71	0.08	0.768	0.551	5/16-18	2.75	F07
3	3.54	1.771	3.48	1.48	1.08	0.08	0.906	0.669	5/16-18	2.75	F07
4	5.90	3.346	4.65	1.59	1.11	0.08	1.279	0.906	1/2-13	4.95	F12
6	5.90	3.937	5.83	2.20	1.70	0.08	1.633	1.062	1/2-13	4.95	F12

Class 150, 300 & 600 • 1" - 6"



Flow Coefficients (C_v) and Pressure Conversion Chart

Series	Size (in.)									
	1/2	3/4	1	1 1/2	2	3	4	6	8	10
4410, 4430, 4460, 4510, 4530, 4560	—	17	36	70	180	350	880	1550	3580	6675
5410 with insert downstream	9	15	28	108	158	337	489	973	1255	2110
5410 with insert upstream	8	14	27	106	153	317	449	899	1180	2005
5430 with insert downstream	11	18	33	130	190	404	580	1168	1580	2600
5430 with insert upstream	10	16	30	127	183	380	540	1070	1400	2370
6410, 6430, 6460, 6510, 6530, 6560	28	52	90	250	480	1200	2250	5400	9600	16,000

Flow Coefficients (C_v) Factor

Capacity factors for the Series 4400, 5400, 6400, 4500 and 6500 valves listed above are to be used as a reference for correct valve sizing. C_v equals the volume of water in gallons per minute that will flow through a given opening with a pressure drop of one psi.

Pressure Conversion

Directions: These formulas may be used to convert from one scale to another:

$$\begin{aligned} \text{psi} \times .06894757 &= \text{bar} & \text{bar} \times 14.50377 &= \text{psi} \\ \text{psi} \times .07030697 &= \text{Kg/cm}^2 & \text{Kg/cm}^2 \times 14.22334 &= \text{psi} \\ \text{psi} \times 6894.757 &= \text{Pascal} & \text{Pascal} \times .0001450377 &= \text{psi} \end{aligned}$$

Approximate Valve Weights (lbs.)

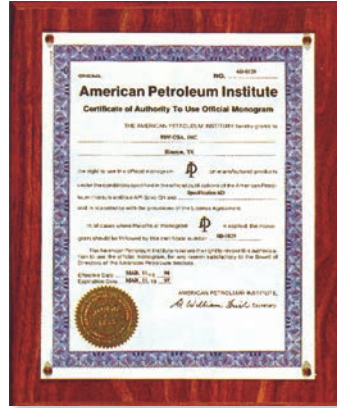
Series	Size (in.)											
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	
4410	—	—	—	—	19	35	76	140	210	390	—	
4430	—	—	—	—	26	54	106	190	250	420	—	
4460	—	11	11	22	33	70	140	269	—	—	—	
5410	—	5	6	12	19	35	53	103	164	289	TBD	
5430	—	7	12	20	24.4	51	82	179	285	415	TBD	
6410	4	5	7	14	22	48	75	180	285	600	—	
6430	6	9	12	21	29	65	105	235	313	TBD	—	
6460	6	13.5	13.1	27	46	91	177	—	—	—	—	

Compliance

Certification of Quality and Design

Due to upgrades in industry standards, material innovations, and PBV®'s constant commitment to product advancement, data presented in this brochure is subject to change. Please contact your PBV® sales person for updated and/or current drawings and material compliance. This information is available on our website at www.f-e-t.com.

API 6D



ISO 9001-2008



All API 6D, ISO and other licenses are maintained on a current basis.

NACE Compliance

The demand for valves to be resistant to sulfide stress cracking, and to perform in corrosive hydrocarbon environments, has become commonplace. Facilities handling H₂S bearing hydrocarbons have increased dramatically over recent years. Hydrogen sulfide concentration, total system pressure, application temperature, existence of elemental sulfur, and chloride content all have a bearing on appropriate material selection in this severe environment.

All materials are in accordance with the pre-selected materials listed in NACE MR0175/ISO 15156. Customers shall determine whether or not the service conditions are such that NACE MR0175/ISO 15156 applies.

In addition, PBV® Floating Ball Valves, with standard trim, fully comply with NACE MR0103 upon request.

PBV® Floating Ball Valves are Designed to Meet the Following Industry Standards:

Item	Industry Standard	British Standard
Valve Shell Pressure - Temperature	ASME B16.34	BS 5351
Seat Pressure - Temperature	See PBV® Pressure Temperature Ratings	
Shell Wall Thickness	ASME B16.34	BS 5351
Face-to-Face Dimensions	ASME B16.10	BS 2080 (optional)
End Flange Dimensions	ASME B16.5*	BS 1560
Pressure Test	API 598 or API 6D	BS 6755 Part 1 (optional)
Firesafe Test	API 607 and API 6FA	BS 6755 Part 2 (optional)
Design Standard	API 608, API 6D, ASME B16.34	BS 5351
Attachment of Actuator	ISO 5211	
Quality Standard - Steel Castings	MSS-SP55	
Management System	ISO 9001-2008	

*Class 150 and 300 valves use Tables F9 and F12 Flanged Fittings for flange thickness, per ASME B16.34, paragraph 6.2.2.

Standard Design Features

PBV® Floating Ball Valves

Standard design features, product line range, material selection, and centrally located operations facility all combine to make PBV® the first choice for floating ball valves.

The inherent ball valve characteristics of quick quarter-turn operation, bi-directional shut-off capability, ease of automation, and low maintenance are enhanced with many additional features such as Series 300 Stainless Steel gland, heavy bolting meeting NACE MR0175, 125-250 Ra flange finish and port diameters in conformance with API 608.

Body and Trim Material

Body materials are ASME material grades WCB, LCC and CF8M, with Stainless Steel trim; other body or trim materials, including Alloy 20, Monel® and Hastelloy® are available upon request. Seat and seal options include materials designed to stand up to severe environments and repeated cycling.

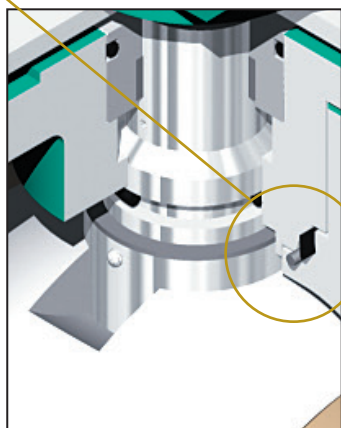
Whether your intended use is in the petrochemical, pharmaceutical or pulp and paper industry, PBV® floating ball valves are designed to provide you with a higher standard in service and value.

PBV® Quality Procedures

Every valve is tested and inspections are performed throughout the production process to ensure that product quality meets PBV® standards. Quality holdpoints include receiving inspection to verify part conformance, pressure testing in conformance with API 6D or 598 to assure the integrity of the shell and seals, and final inspection to confirm that all marking, tagging and processing have been performed in accordance with PBV® and leading industry standards.

Encapsulated Body Seals

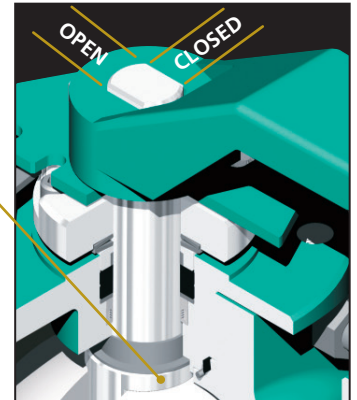
With fully encapsulated body seals, there is no opportunity for seal movement or slippage, thereby improving sealing.



Ball Position Indicator and Blowout Proof Stem Features

The stem is designed with a double flats shape at the top of the stem to indicate ball position.

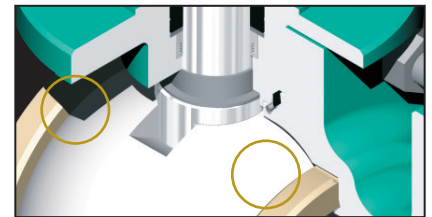
PBV®'s blowout proof stem feature is accomplished by the use of a lower stem collar design.



Bubble-Tight Sealing

Bubble-tight sealing is achieved by the use of two rigid seats firmly secured in the valve body on either side of the ball.

Media flow is cut off on the downstream side by up-stream pressure pushing against the ball.

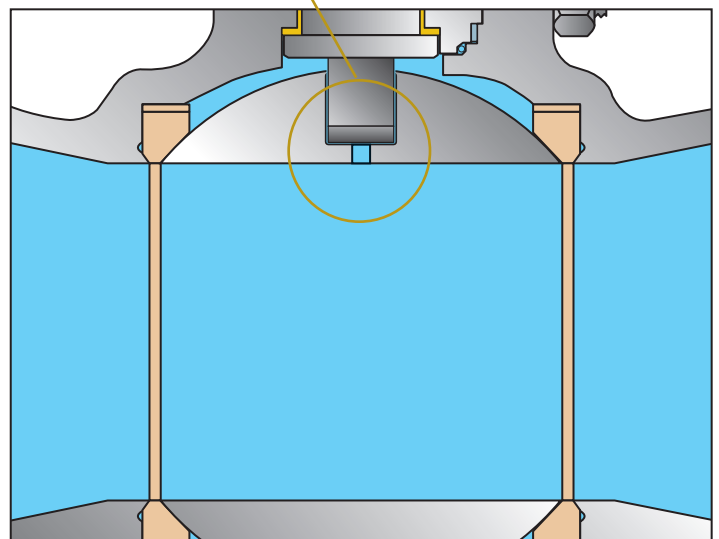


Bi-Directional Sealing

With the bi-directional sealing design, either end can be installed upstream without compromising the integrity of the bubble-tight seal.

Equalized Cavity Pressure

The pressure equalization hole at the top of the ball combined with the seat design are both engineered to maintain the pressure balance in the line and in the body cavity while the valve is in the open position.



Firesafe ISO Design

PBV®'s Series 4400/6400/5400/4500/6500 valves have all been proven to be Firesafe to API 607 or API 6FA. As illustrated, full metal-to-metal contact is attained at all sealing areas after the primary soft seals have been destroyed during a fire.

Stem Packing Seal

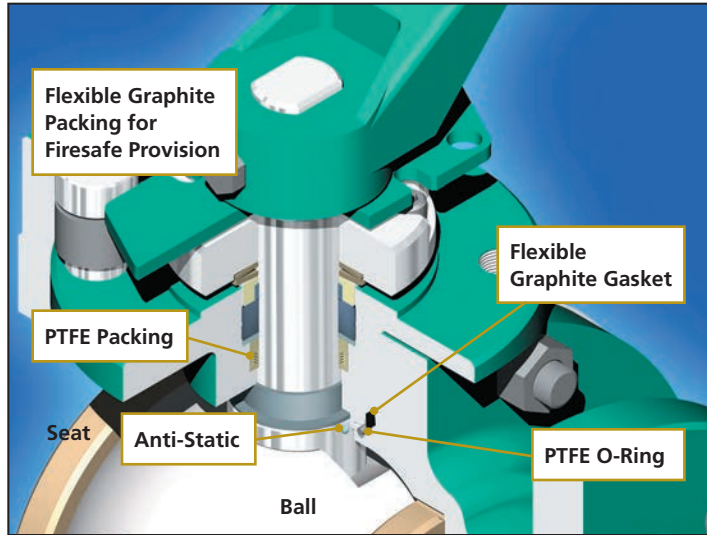


Figure 1. Before Fire

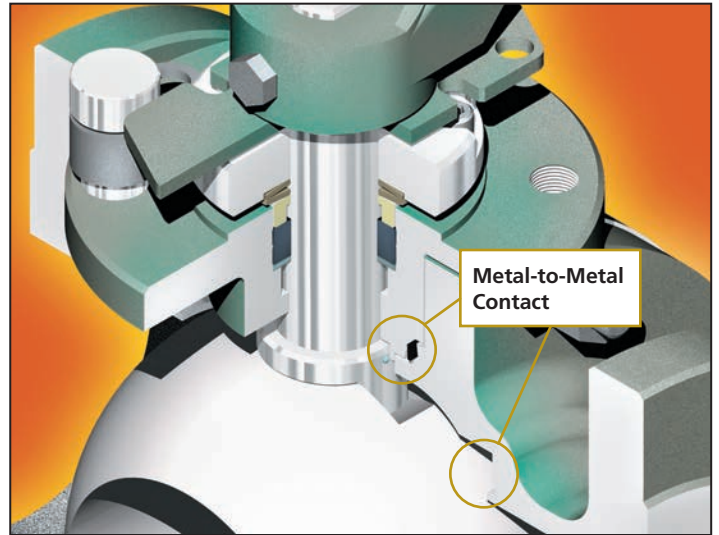


Figure 2. After Fire

Live Load & Double Packing Stem Seal Features

Belleville spring washers are used to achieve live loading and minimize the need to retighten packing.

Primary PTFE Chevron stem seal and secondary firesafe flexible graphite stem seal are standard for all PBV® ball valves which provide low break torque, excellent emission control and good chemical and thermal resistance.

Anti-Static Device

Internal parts that are insulated from the valve body by non-conductive seat and seal materials may build up a static electric charge. To ensure electrical continuity between the stem and the ball and body, PBV® includes anti-static devices as an integral part of all floating ball valves.

O-Ring Stem Seal

A fitting is provided on the valve for injection of corrosion inhibiting grease into the stem seal cavity, which prevents water intrusion and subsequent corrosion.

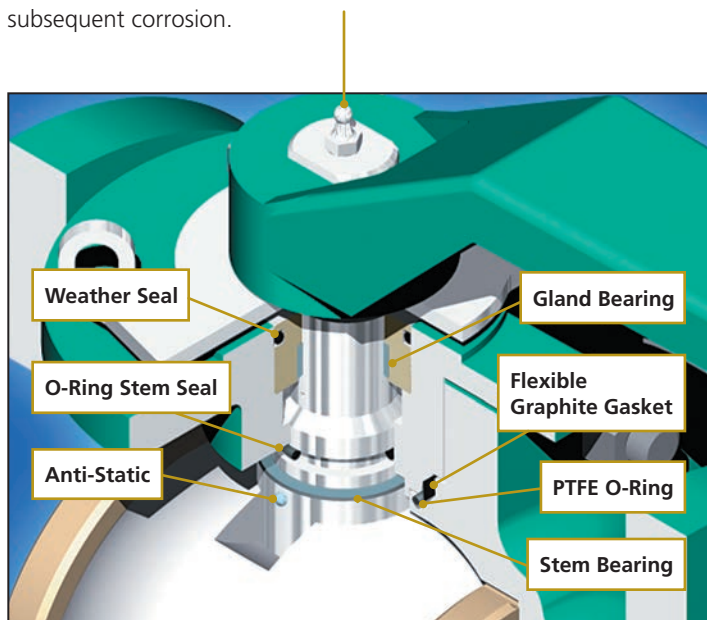


Figure 3. Before Fire

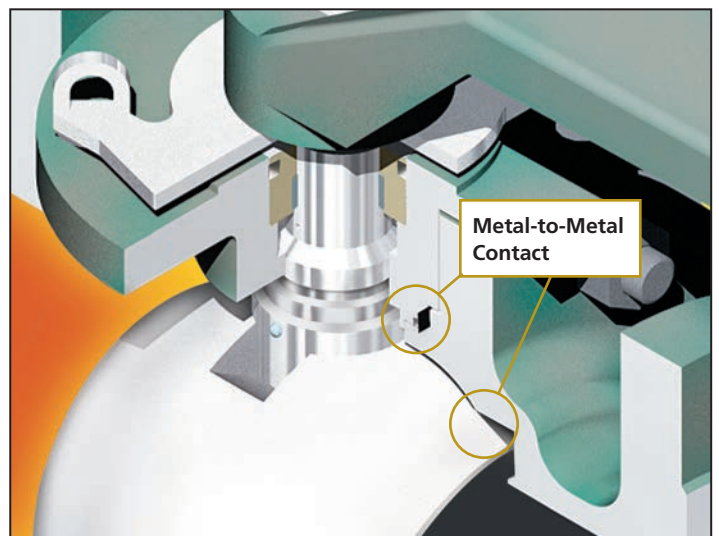
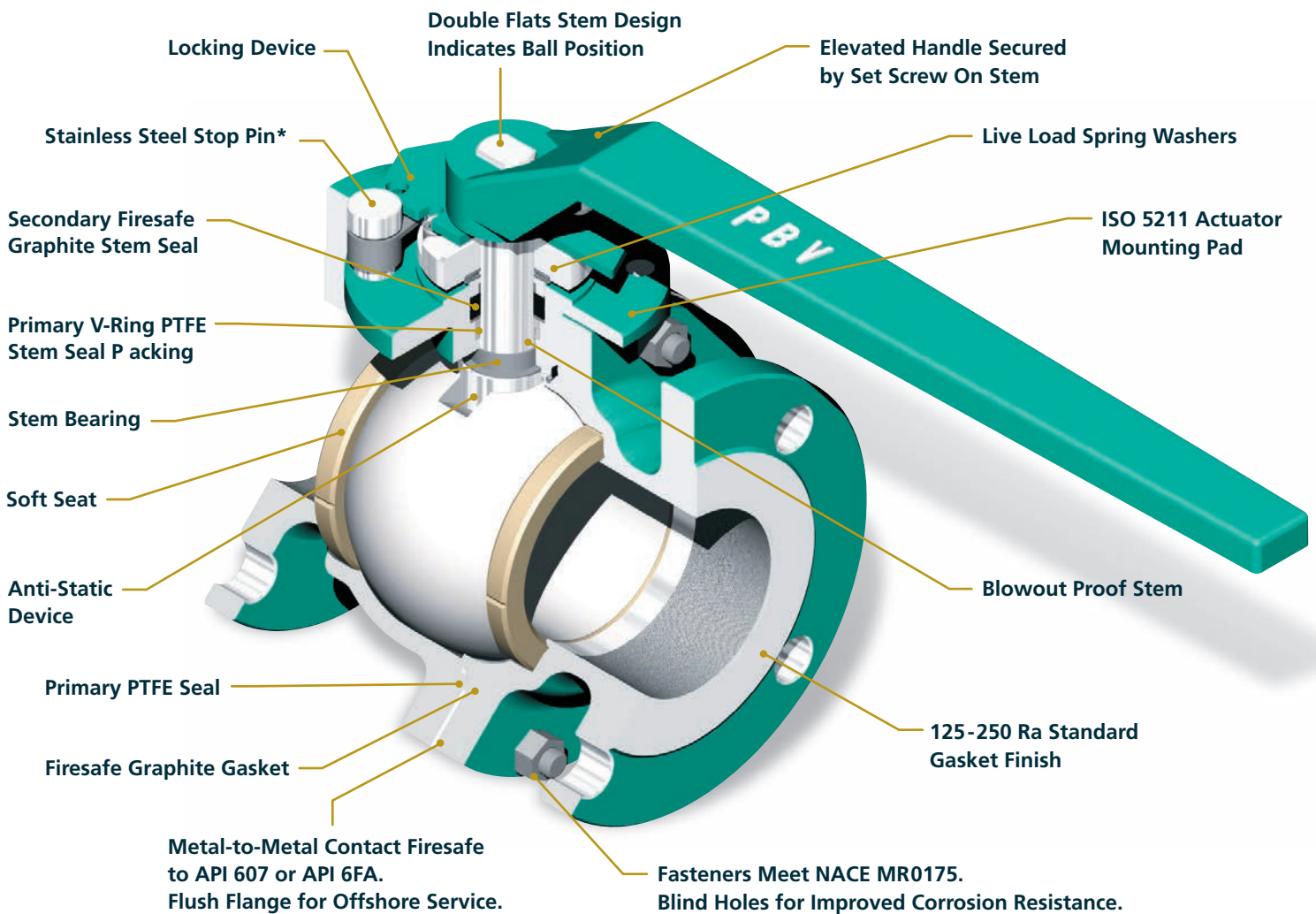


Figure 4. After Fire

Standard Features

Series 6400 Full Port, Two-Piece Body, Stem Packing Ball Valve

This is an illustrated cross section of a typical PBV® full port, two-piece body, floating ball valve exhibiting standard design features. The actual design of a particular valve may be slightly different from this illustration depending on its size and pressure class.



*Alternate stop pin designs available for other sizes.



PBV® Flanged Floating Ball Valves installed in a typical manifold application.

Dimensional Data

Series 6400 Full Port • 1/2" - 10" Class 150, 300 & 600

Test Pressure

Class	Shell (Hydrostatic)	Seat (Air)
Class 150	450 psi	80 psi
Class 300	1125 psi	80 psi
Class 600	2250 psi	80 psi

Class 150, 300 & 600 1/2" - 1" (in.)

Valve Sz. (in.)	A	C	D	E	F	G	NxØH	I	J	L
	Class 150, 1/2" - 1"									
1/2	0.49	1.38	3.50	0.06	0.44*	4.25	4xØ.62	2.38	4.38	5.12
3/4	0.71	1.69	3.88	0.06	0.44*	4.62	4xØ.62	2.75	4.53	5.12
1	0.97	2.00	4.25	0.06	0.44	5.00	4xØ.62	3.12	5.63	6.32
Class 300, 1/2" - 1"										
1/2	0.49	1.38	3.75	0.06	0.56	5.50	4xØ.62	2.62	4.38	5.12
3/4	0.71	1.69	4.62	0.06	0.62	6.00	4xØ.75	3.25	4.53	5.12
1	0.97	2.00	4.88	0.06	0.69	6.50	4xØ.75	3.50	5.63	6.32
Class 600, 1/2" - 1"										
1/2	0.49	1.38	3.75	0.25	0.82	6.50	4xØ.62	2.62	4.38	5.12
3/4	0.71	1.69	4.62	0.25	0.87	7.50	4xØ.75	3.25	4.53	5.12
1	0.97	2.00	4.88	0.25	0.95	8.50	4xØ.75	3.50	5.63	6.32

*Not to ASME B16.5

Class 150, 300 & 600 1 1/2" - 2" (in.)

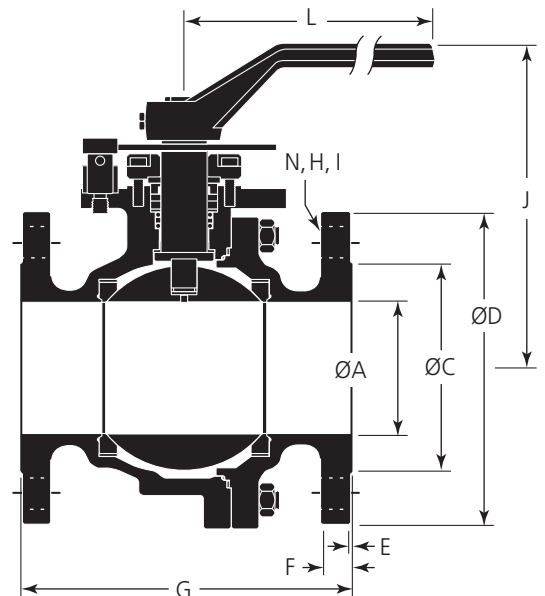
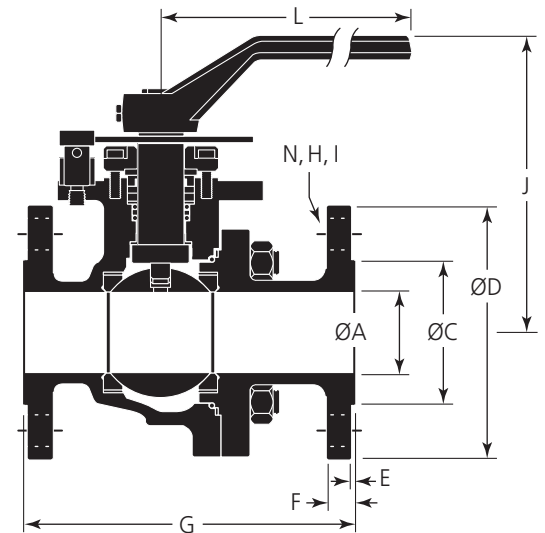
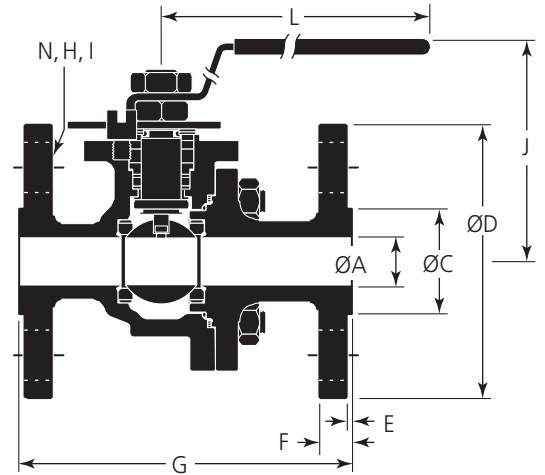
Valve Sz. (in.)	A	C	D	E	F	G	NxØH	I	J	L
	Class 150, 1 1/2" - 2"									
1 1/2	1.50	2.88	5.00	0.06	0.56	6.50	4xØ.62	3.88	5.81	9.00
2	2.00	3.62	6.00	0.06	0.62	7.00	4xØ.75	4.75	6.95	16.50
Class 300, 1 1/2" - 2"										
1 1/2	1.50	2.88	6.12	0.06	0.81	7.50	4xØ.88	4.50	5.81	9.00
2	2.00	3.62	6.50	0.06	0.88	8.50	8xØ.75	5.00	6.95	16.50
Class 600, 1 1/2" - 2"										
1 1/2	1.50	2.88	6.12	0.25	1.13	9.50	4xØ.88	4.50	5.81	9.00
2	2.00	3.62	6.50	0.25	1.28	11.50	8xØ.75	5.00	6.95	16.50

Class 150, 300 & 600 3" - 10" (in.)

Valve Sz. (in.)	A	C	D	E	F	G	NxØH	I	J	L
	Class 150, 3" - 10"									
3	3.00	5.00	7.50	0.06	0.75	8.00	4xØ.75	6.00	7.80	16.50
4	4.00	6.19	9.00	0.06	0.94	9.00	8xØ.75	7.50	8.71	19.70
6	6.00	8.50	11.00	0.06	1.00	15.50	8xØ.88	9.50	11.69	43.00
8	8.00	10.62	13.50	0.06	1.12	18.00	8xØ.88	11.75	—	—
10	10.00	12.75	16.00	0.06	1.19	21.00	12xØ1.00	14.25	—	—
Class 300, 3" - 10"										
3	3.00	5.00	8.25	0.06	1.12	11.12	8xØ.88	6.62	7.80	16.50
4	4.00	6.19	10.00	0.06	1.25	12.00	8xØ.88	7.88	8.71	19.70
6	6.00	8.50	12.50	0.06	1.44	15.88	12xØ.88	10.62	11.69	43.00
8	8.00	10.62	15.00	0.06	1.62	19.75	12xØ1.00	13.00	—	—
10	10.00	12.75	17.50	0.06	1.88	22.38	16xØ1.12	15.25	—	—
Class 600, 3" - 4"										
3	3.00	5.00	8.25	0.25	1.50	14.00	8xØ.88	6.62	8.06	19.70
4	4.00	6.19	10.75	0.25	1.75	17.00	8xØ1.00	8.50	10.60	43.00

Note: 6"-10" gear operated

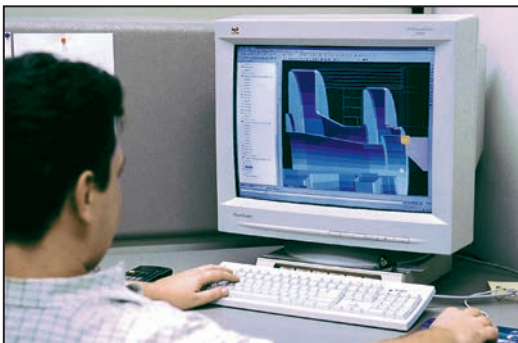
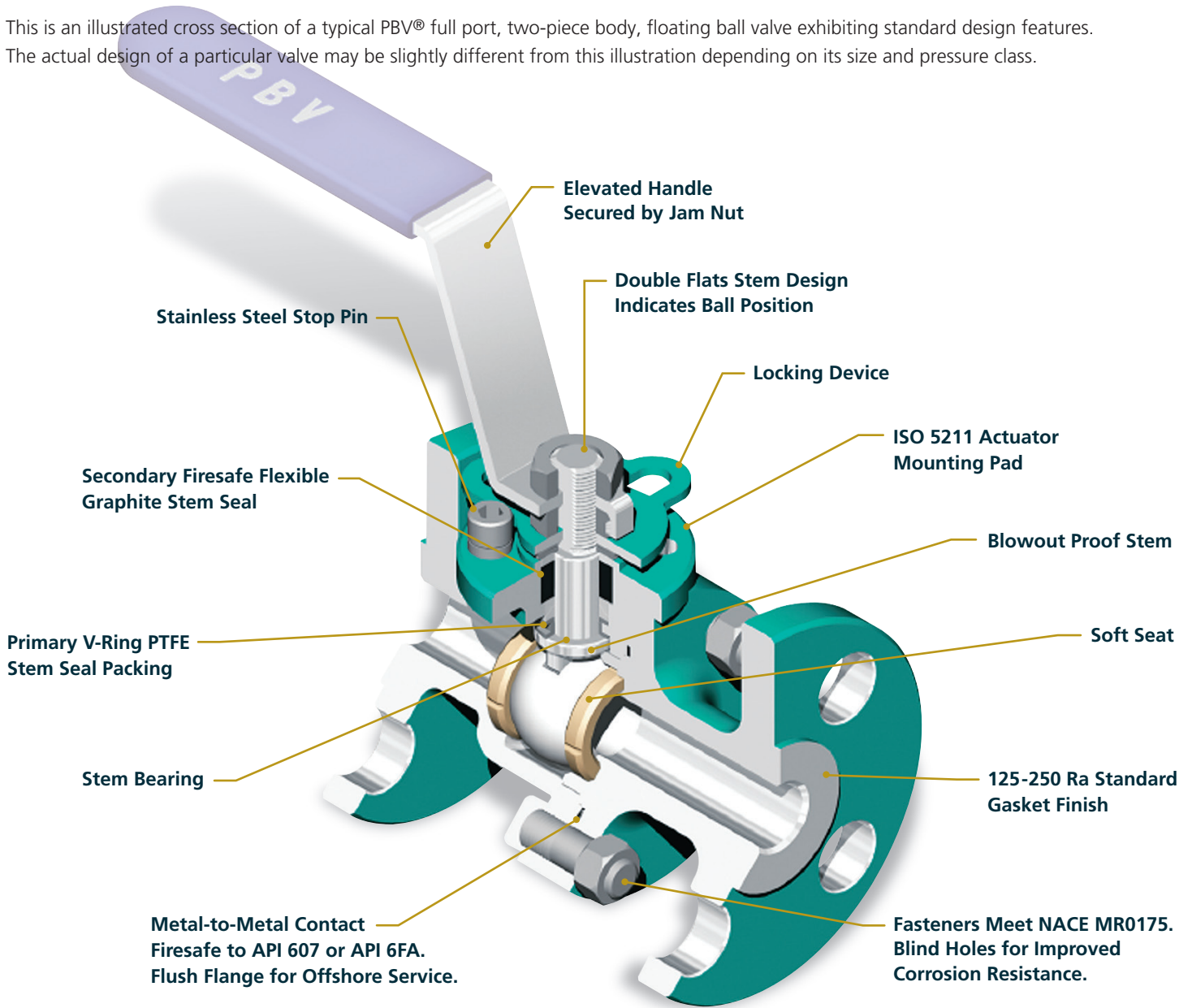
N • No. Holes
H • Bolt Hole Diam.
I • Bolt Center Diam.



Standard Features

Series 4400 Regular Port, Two-Piece Body, Stem Packing Ball Valve

This is an illustrated cross section of a typical PBV® full port, two-piece body, floating ball valve exhibiting standard design features. The actual design of a particular valve may be slightly different from this illustration depending on its size and pressure class.



All PBV® Flanged Floating Ball Valves are designed to precise engineering standards and PBV® employs a stringent multi-point inspection program throughout the entire manufacturing process to ensure product quality.



You can learn more about PBV®'s Flanged Floating product line, their manufacturing capabilities and Forum's other quality valve products at our website www.f-e-t.com.



Dimensional Data

Series 4400 Regular Port • 3/4" - 10" Class 150, 300 & 600

Test Pressure

Class	Shell (Hydrostatic)	Seat (Air)
Class 150	450 psi	80 psi
Class 300	1125 psi	80 psi
Class 600	2250 psi	80 psi

Class 600 3/4" - 1 1/2" (in.)

Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
	Class 600, 3/4" - 1 1/2"										
3/4	0.50	0.78	1.69	4.62	0.25	0.87	7.50	4xØ.75	3.25	5.00	5.12
1	0.72	0.98	2.00	4.88	0.25	0.94	8.50	4xØ.75	3.50	5.12	5.12
1 1/2	0.97	1.57	2.88	6.12	0.25	1.13	9.50	4xØ.88	4.50	5.65	6.32

Class 150, 300 & 600 2" - 3" (in.)

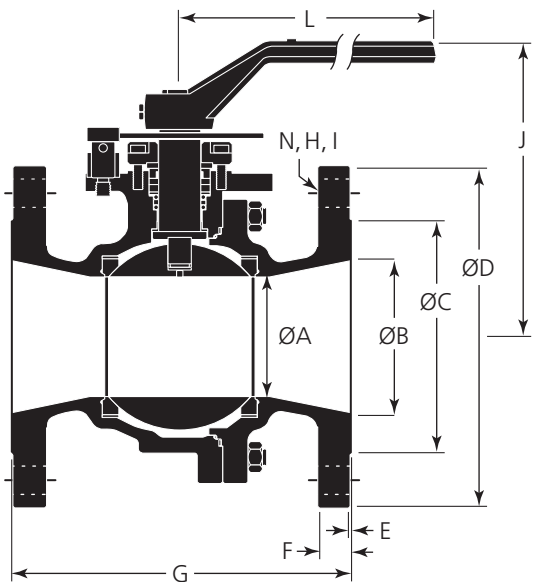
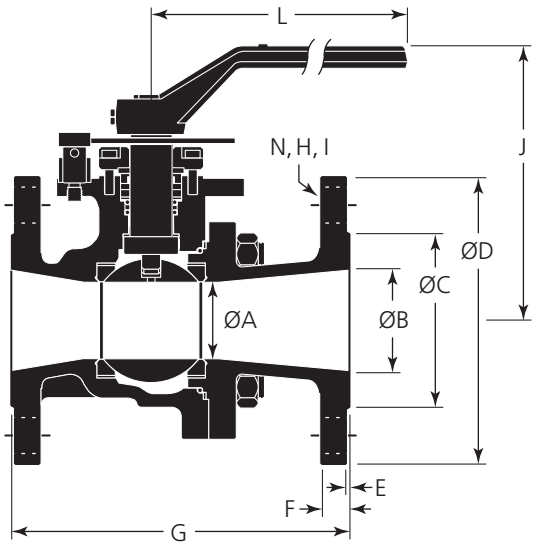
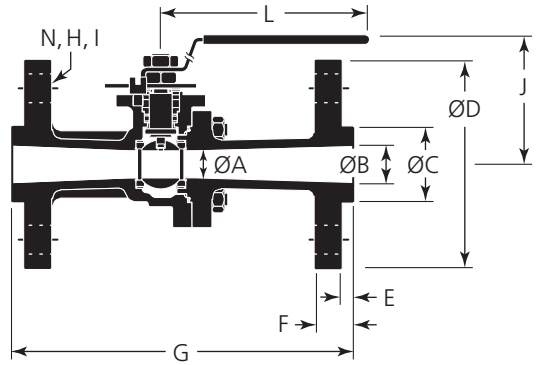
Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
	Class 150, 2" - 3"										
2	1.50	2.00	3.62	6.00	0.06	0.62	7.00	4xØ.75	4.75	5.81	9.00
3	2.00	3.00	5.00	7.50	0.06	0.75	8.00	4xØ.75	6.00	6.95	16.50
Class 300, 2" - 3"											
2	1.50	2.00	3.62	6.50	0.06	0.88	8.50	8xØ.75	5.00	5.81	9.00
3	2.00	3.00	5.00	8.25	0.06	1.12	11.12	8xØ.88	6.62	6.95	16.50
Class 600, 2" - 3"											
2	1.50	2.00	3.62	6.50	0.25	1.28	11.50	8xØ.75	5.00	5.81	9.00
3	2.00	3.00	5.00	8.25	0.25	1.50	14.00	8xØ.88	6.62	6.95	16.50

Class 150, 300 & 600 4" - 10" (in.)

Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
	Class 150, 4" - 10"										
4	3.00	4.00	6.19	9.00	0.06	0.94	9.00	8xØ.75	7.50	7.80	16.50
6	4.00	6.00	8.50	11.00	0.06	1.00	15.50	8xØ.88	9.50	8.71	19.70
8	6.00	8.00	10.62	13.50	0.06	1.12	18.00	8xØ.88	11.75	—	11.10
10	8.00	10.00	12.75	16.00	0.06	1.19	21.00	12xØ1.00	14.25	—	20.70
Class 300, 4" - 10"											
4	3.00	4.00	6.19	10.00	0.06	1.25	12.00	8xØ.88	7.88	7.80	16.50
6	4.00	6.00	8.50	12.50	0.06	1.44	15.88	12xØ.88	10.62	8.71	19.70
8	6.00	8.00	10.62	15.00	0.06	1.62	19.75	12xØ1.00	13.00	—	16.70
10	8.00	10.00	12.75	17.50	0.06	1.88	22.38	16xØ1.12	15.25	—	28.3
Class 600, 4" - 6"											
4	3.00	4.00	6.19	10.75	0.25	1.75	17.00	8xØ1.00	8.50	8.06	19.70
6	4.00	6.00	8.50	14.00	0.25	2.14	22.00	12xØ1.12	11.50	10.60	43.00

Note: 8" - 10" gear operated

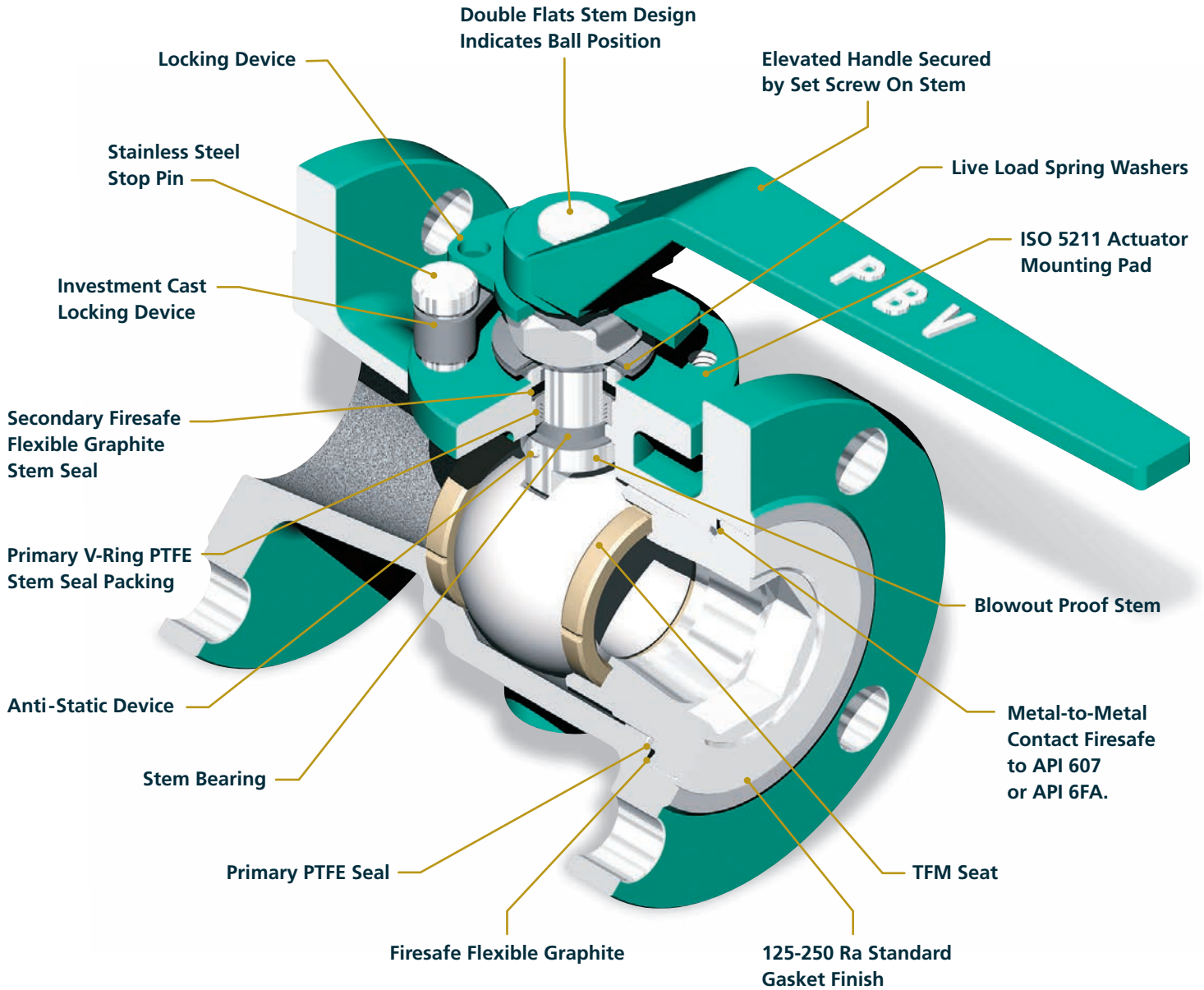
N • No. Holes
H • Bolt Hole Dia.
I • Bolt Center Dia.



Standard Features

Series 5400 Regular Port, Unibody, Stem Packing Ball Valve

This is an illustrated cross section of a typical PBV® regular port, unibody, floating ball valve exhibiting standard design features. The actual design of a particular valve may be slightly different from this illustration depending on its size and pressure class.



PBV® Flanged Floating Ball Valves are designed for Oil & Gas Production and other applications.

Dimensional Data

Series 5400 Regular Port • 3/4"-12" Class 150 & 300

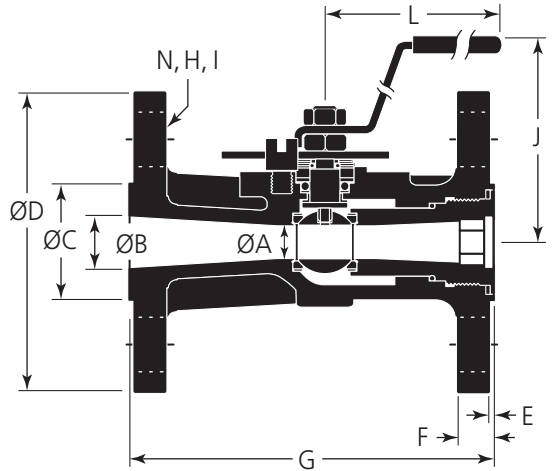
Test Pressure

Class	Shell (Hydrostatic)	Seat (Air)
Class 150	450 psi	80 psi
Class 300	1125 psi	80 psi

N • No. Holes
 H • Bolt Hole Dia.
 I • Bolt Center Dia.

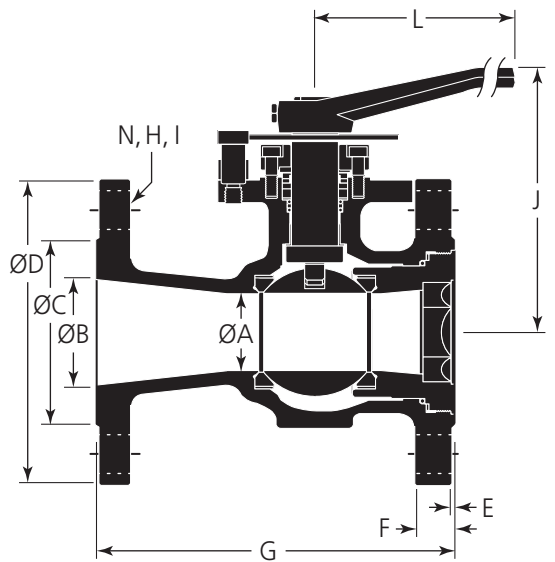
Class 150 & 300 3/4" - 1 1/2" (in.)

Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
	Class 150, 3/4" - 1 1/2"										
3/4	0.49	0.79	1.69	3.88	0.06	0.44	4.62	4xØ.62	2.75	4.25	5.50
1	0.71	0.98	2.00	4.25	0.06	0.44	5.00	4xØ.62	3.12	4.68	6.30
1 1/2	1.18	1.50	2.88	5.00	0.06	0.57	6.50	4xØ.62	3.88	5.80	6.30
Class 300, 3/4" - 1 1/2"											
3/4	0.49	0.79	1.69	4.62	0.06	0.62	6.00	4xØ.75	3.25	4.25	5.50
1	0.71	0.98	2.00	4.88	0.06	0.69	6.50	4xØ.75	3.50	4.68	6.30
1 1/2	1.18	1.50	2.88	6.12	0.06	0.81	7.50	4xØ.88	4.50	5.80	6.30



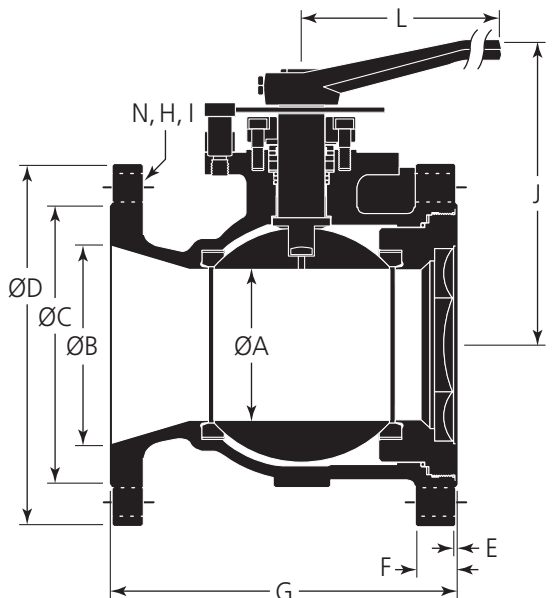
Class 150 & 300 2" - 4" (in.)

Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
	Class 150, 2" - 4"										
2	1.50	2.00	3.62	6.00	0.06	0.68	7.00	4xØ.75	4.75	5.74	9.00
3	2.28	3.00	5.00	7.50	0.06	0.81	8.00	4xØ.75	6.00	7.13	16.50
4	3.00	4.00	6.19	9.00	0.06	1.00	9.00	8xØ.75	7.50	7.69	16.50
Class 300, 2" - 4"											
2	1.50	2.00	3.62	6.50	0.06	0.88	8.50	8xØ.75	5.00	5.74	9.00
3	2.28	3.00	5.00	8.25	0.06	1.12	11.12	8xØ.88	6.62	7.13	16.50
4	2.28	4.00	6.19	10.00	0.06	1.25	12.00	8xØ.88	7.88	7.69	16.50



Class 150 & 300 6" - 12" (in.)

Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
	Class 150, 6" - 12"										
6	4.49	6.00	8.50	11.00	0.06	1.00	10.50	8xØ.88	9.50	9.22	19.70
8	6.00	8.00	10.62	13.50	0.06	1.12	11.50	8xØ.88	11.75	—	—
10	7.32	10.00	12.75	16.00	0.06	1.19	13.00	12xØ1.00	14.25	—	—
12	8.94	12.00	15.00	19.00	0.06	1.25	14.00	12xØ1.00	17.00	—	—
Class 300, 6" - 12"											
6	4.49	6.00	8.50	12.50	0.06	1.44	15.88	12xØ.88	10.62	10.30	43.00
8	6.00	8.00	10.62	15.00	0.06	1.62	16.50	12xØ1.00	13.00	—	—
10	7.32	10.00	12.75	17.50	0.06	1.88	18.00	16xØ1.12	15.25	—	—
12	8.94	12.00	15.00	20.50	0.06	2.00	19.75	16xØ1.25	17.75	—	—

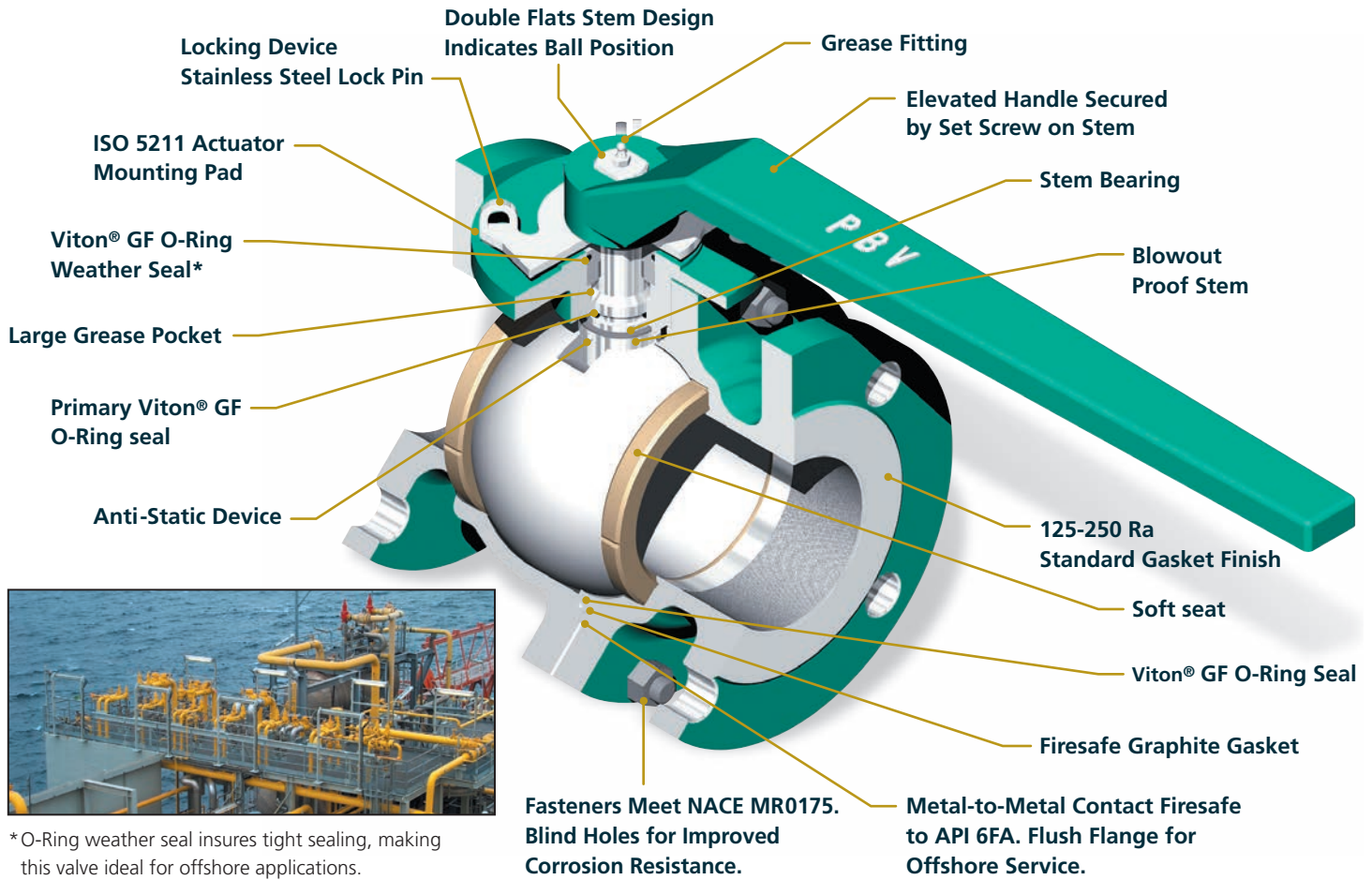


Note: 8"-12" gear operated

Standard Features

Series 4500 Regular Port & 6500 Full Port Two-Piece, O-ring Stem Ball Valves • API 6D

This is an illustrated cross section of a typical PBV® full port, two-piece body, floating ball valve exhibiting standard design features. The actual design of a particular valve may be slightly different from this illustration depending on its size and pressure class.

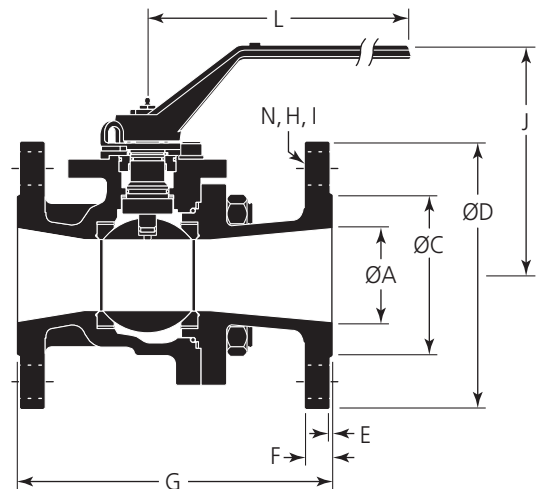


*O-Ring weather seal insures tight sealing, making this valve ideal for offshore applications.

Series 4500, Regular Port, 1 1/2" - 6" Class 150, 300 & 600 (in.)

Valve Sz. (in.)	A	B	C	D	E	F	G	NxØH	I	J	L
Class 150, 1 1/2" - 6"											
1 1/2	0.97	1.50	2.88	5.00	0.06	0.56	6.50	4xØ.62	3.88	4.34	7.50
2	1.50	2.00	3.62	6.00	0.06	0.62	7.00	4xØ.75	4.75	5.10	9.00
3	2.00	3.00	5.00	7.50	0.06	0.75	8.00	4xØ.75	6.00	6.22	16.50
4	3.00	4.00	6.19	9.00	0.06	0.94	9.00	8xØ.75	7.50	7.10	16.50
6	4.00	6.00	8.50	11.00	0.06	1.00	15.50	8xØ.88	9.50	7.75	19.70
Class 300, 1 1/2" - 6"											
1 1/2	0.97	1.50	2.88	6.12	0.06	0.81	7.50	4xØ.88	4.50	4.34	7.50
2	1.50	2.00	3.62	6.50	0.06	0.88	8.50	8xØ.75	5.00	5.00	9.00
3	2.00	3.00	5.00	8.25	0.06	1.12	11.12	8xØ.88	6.62	6.83	16.50
4	3.00	4.00	6.19	10.00	0.06	1.25	12.00	8xØ.88	7.88	7.10	16.50
6	4.00	6.00	8.50	12.50	0.06	1.44	15.88	12xØ.88	10.62	7.75	19.70
Class 600, 1 1/2" - 6"											
1 1/2	0.97	1.50	2.88	6.12	0.25	1.13	9.50	4xØ.88	4.50	4.34	9.00
2	1.50	2.00	3.62	6.50	0.25	1.28	11.50	8xØ.75	5.00	5.00	9.00
3	2.00	3.00	5.00	8.25	0.25	1.50	14.00	8xØ.88	6.62	6.23	16.50
4	3.00	4.00	6.19	10.75	0.25	1.75	17.00	8xØ1.00	8.50	7.11	19.70
6	4.00	6.00	8.50	14.00	0.25	2.14	22.00	12xØ1.12	11.50	8.30	43.00

N • No. Holes
H • Bolt Hole Dia.
I • Bolt Center Dia.



Dimensional Data

Series 6500 Full Port • 1"-6" Class 150, 300 & 600

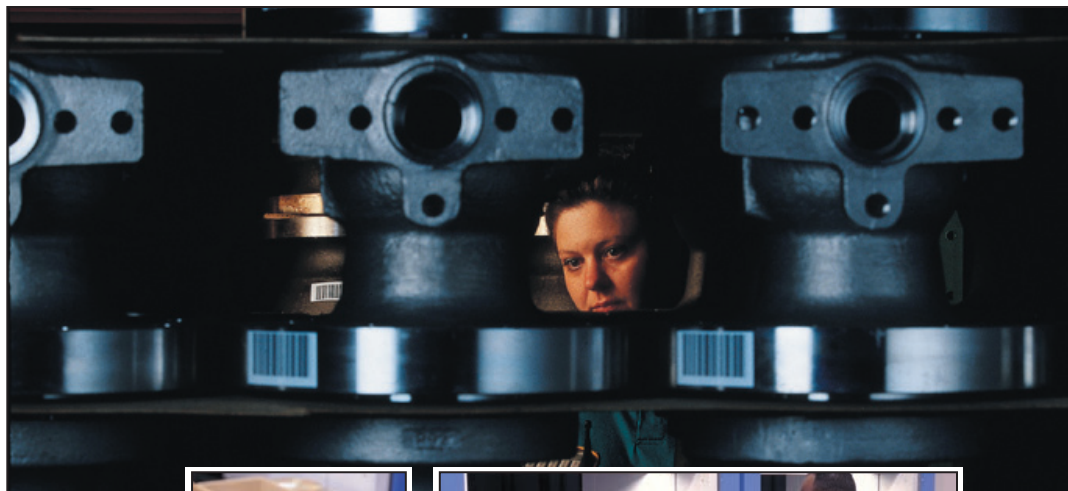
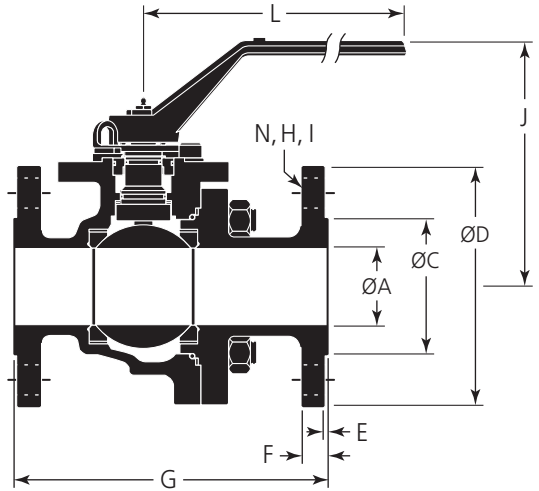
Test Pressure

Class	Shell (Hydrostatic)	Seat (Air)	Seat (Hydrostatic)
Class 150	450 psi	80 psi	320 psi
Class 300	1125 psi	80 psi	825 psi
Class 600	2250 psi	80 psi	1650 psi

Class 150, 300 & 600 1" - 6" (in.)

Valve Sz. (in.)	A	C	D	E	F	G	NxØH	I	J	L
Class 150, 1" - 6"										
1	0.97	2.00	4.25	0.06	0.44	5.00	4xØ.62	3.12	4.34	7.50
1½	1.50	2.88	5.00	0.06	0.56	6.50	4xØ.62	3.88	5.00	9.00
2	2.00	3.62	6.00	0.06	0.62	7.00	4xØ.75	4.75	6.23	16.50
3	3.00	5.00	7.50	0.06	0.75	8.00	4xØ.75	6.00	7.10	16.50
4	4.00	6.19	9.00	0.06	0.94	9.00	8xØ.75	7.50	7.75	19.70
6	6.00	8.50	11.00	0.06	1.00	15.50	8xØ.88	9.50	9.56	43.00
Class 300, 1" - 6"										
1	0.97	2.00	4.88	0.06	0.69	6.50	4xØ.75	3.50	4.34	7.50
1½	1.50	2.88	6.12	0.06	0.81	7.50	4xØ.88	4.50	5.00	9.00
2	2.00	3.62	6.50	0.06	0.88	8.50	8xØ.75	5.00	6.23	16.50
3	3.00	5.00	8.25	0.06	1.12	11.12	8xØ.88	6.62	7.10	16.50
4	4.00	6.19	10.00	0.06	1.25	12.00	8xØ.88	7.88	7.75	19.70
6	6.00	8.50	12.50	0.06	1.44	15.88	12xØ.88	10.62	9.56	43.00
Class 600, 1" - 4"										
1	0.97	2.00	4.88	0.25	0.95	8.50	4xØ.75	3.50	4.34	7.50
1½	1.50	2.88	6.12	0.25	1.13	9.50	4xØ.88	4.50	5.00	9.00
2	2.00	3.62	6.50	0.25	1.28	11.50	8xØ.75	5.00	6.23	16.50
3	3.00	5.00	8.25	0.25	1.50	14.00	8xØ.88	6.62	7.11	19.70
4	4.00	6.19	10.75	0.25	1.75	17.00	8xØ1.00	8.50	8.30	43.00

N • No. Holes
H • Bolt Hole Dia.
I • Bolt Center Dia.

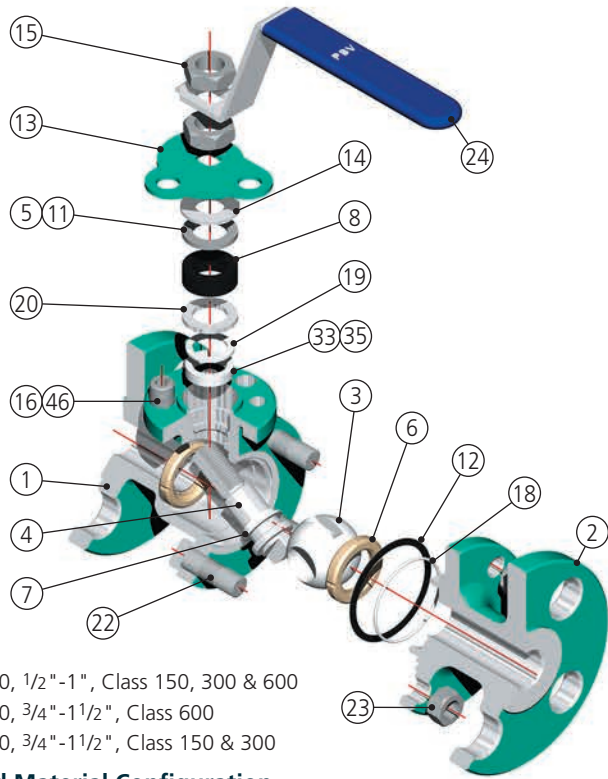


Computerized Inventory Keeps Your Order On Time

PBV®'s computerized inventory control ensures the parts for your order are in stock and ready for assembly. All parts and assemblies are tracked and inspected throughout the entire manufacturing process, assuring your order arrives on time and ready for immediate installation.



Parts & Materials for Stem Packing Design Valves

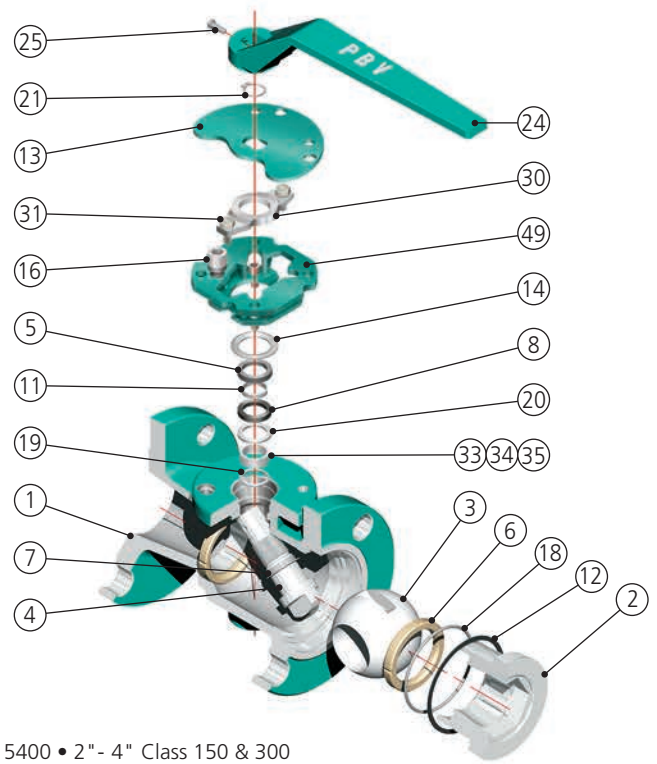


Series 6400, 1/2" - 1", Class 150, 300 & 600
 Series 4400, 3/4" - 1 1/2", Class 600
 Series 5400, 3/4" - 1 1/2", Class 150 & 300

Standard Material Configuration

Item No.	Description	Material		
1	Body	WCB	LCC	CF8M
2	Cap/Insert*	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	17-4 PH		
5	Gland	Stainless Steel		
6	Ball Seat	TFM/TFMC		
7	Stem Bearing	G/F PTFE		
8	Secondary Packing	Flexible Graphite		
11	Gland Bearing	PTFE		
12	Body Gasket	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
14	Spring Washer	Stainless Steel		
15	Jam Nut	Stainless Steel		
16	Stop	17-4 PH		
18	Body O-Ring*	Virgin PTFE		
19	Primary Packing Washer	Stainless Steel		
20	Secondary Packing Washer	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	7M	8
24	Handle	Stainless Steel		
26	ID Tag (not shown)	Stainless Steel		
33	Primary Packing (Top)	Virgin PTFE		
35	Primary Packing (Bottom)	Virgin PTFE		
46	Lock Washer	Stainless Steel		

Note: *Series 5400 not shown.



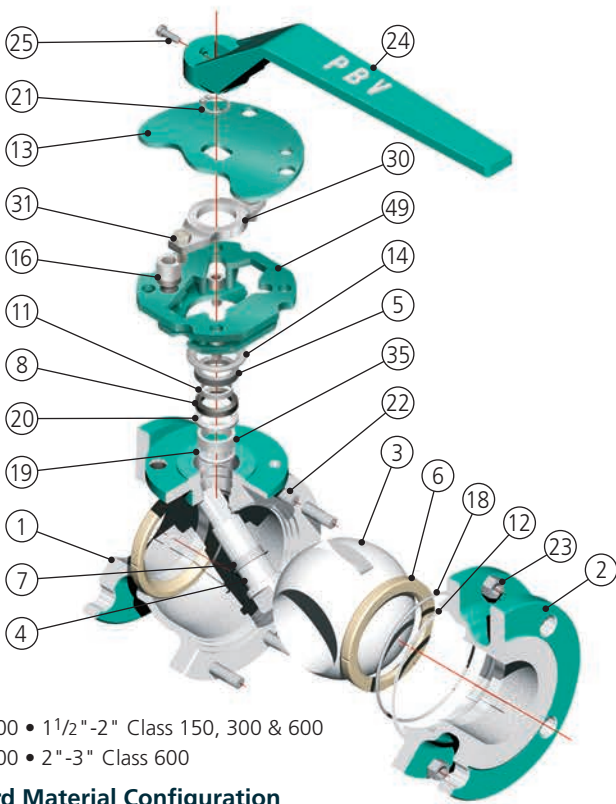
Series 5400 • 2" - 4" Class 150 & 300

Standard Material Configuration

Item No.	Description	Material		
1	Body	WCB	LCC	CF8M
2	Insert	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	ASTM A276 316		
5	Gland	Stainless Steel		
6	Ball Seat*	TFM		
7	Stem Bearing*	G/F PTFE		
8	Secondary Packing*	Flexible Graphite		
11	Gland Bearing*	G/F PTFE		
12	Body Gasket*	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
14	Spring Washer	Stainless Steel		
16	Stop	17-4 PH		
18	Body O-Ring*	Virgin PTFE		
19	Primary Packing Washer	Stainless Steel		
20	Secondary Packing Washer	Stainless Steel		
21	Snap Ring	Stainless Steel		
24	Handle	Ductile Iron		
25	Handle Screw	Carbon Steel		
26	ID Tag (not shown)	Stainless Steel		
30	Gland Plate	Stainless Steel		
31	Gland Bolt	ASTM A193 B8		
33	Primary Packing (Top)*	Virgin PTFE		
34	Primary Packing (Middle)*	Virgin PTFE		
35	Primary Packing (Bottom)*	Virgin PTFE		
49	Stop Bracket	Stainless Steel		

Note: *Recommended spare parts

Parts & Materials for Stem Packing Design Valves

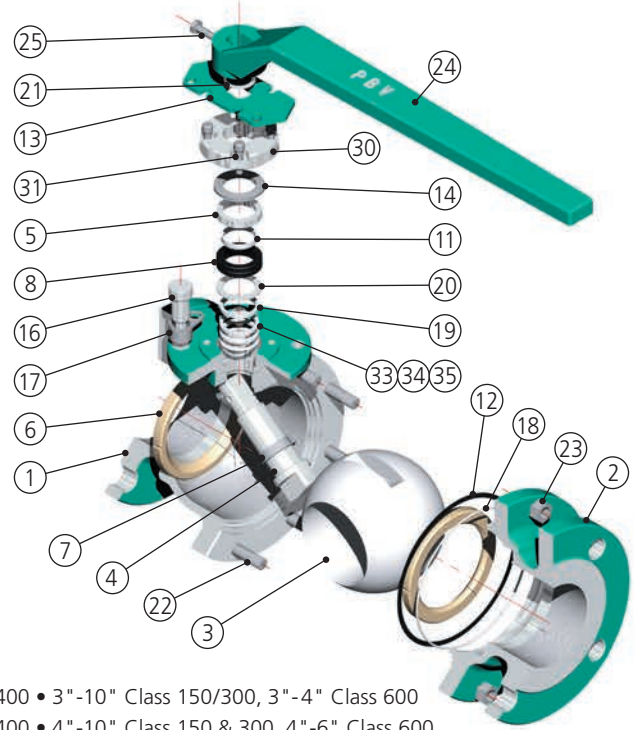


Series 6400 • 1 1/2"-2" Class 150, 300 & 600
Series 4400 • 2"-3" Class 600

Standard Material Configuration

Item No.	Description	Material		
1	Body	WCB	LCC	CF8M
2	Cap	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	ASTM A276 316		
5	Gland	Stainless Steel		
6	Ball Seat*	TFM/TFMC		
7	Stem Bearing*	G/F PTFE		
8	Secondary Packing*	Flexible Graphite		
11	Gland Bearing*	G/F PTFE		
12	Body Gasket*	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
14	Spring Washer	Stainless Steel		
16	Stop	AISI 304 17-4 PH		
18	Body O-Ring*	Virgin PTFE		
19	Primary Packing Washer	Stainless Steel		
20	Secondary Packing Washer	Stainless Steel		
21	Snap Ring	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	7M	8
24	Handle	Ductile Iron		
25	Handle Screw	Carbon Steel		
26	ID Tag (not shown)	Stainless Steel		
30	Gland Plate	Stainless Steel		
31	Gland Bolt	ASTM A193 B8		
33	Primary Packing (Top)*	Virgin PTFE		
34	Primary Packing (Middle)*	Virgin PTFE		
35	Primary Packing (Bottom)*	Virgin PTFE		
49	Stop Bracket	Stainless Steel		

*Recommended spare parts. **Note:** 1) Gear is optional.



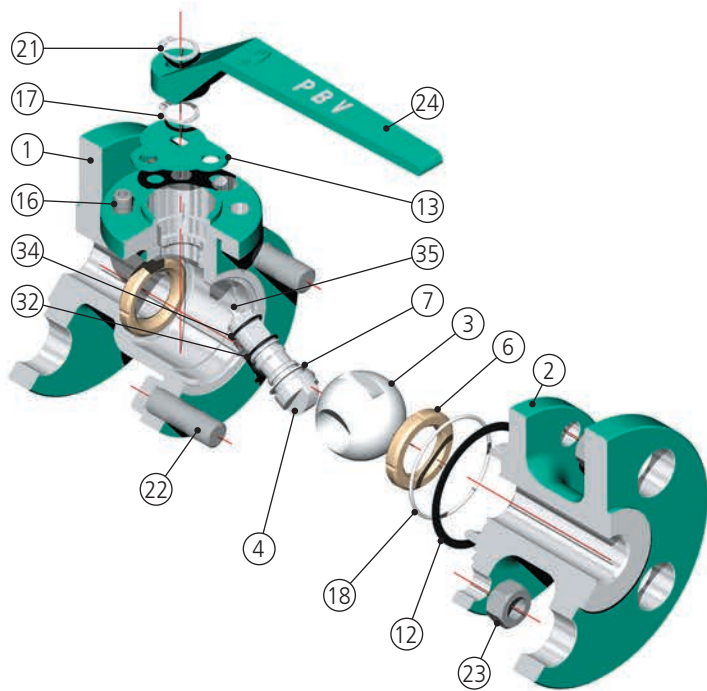
Series 6400 • 3"-10" Class 150/300, 3"-4" Class 600
Series 4400 • 4"-10" Class 150 & 300, 4"-6" Class 600
Series 5400 • 6"-12" Class 150 & 300

Standard Material Configuration

Item No.	Description	Material		
1	Body (Note 3)	WCB	LCC	CF8M
2	Cap/Insert (Note 3)	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	ASTM A276 316		
5	Gland	Stainless Steel		
6	Ball Seat	TFM/TFMC		
7	Stem Bearing	G/F PTFE		
8	Secondary Packing	Flexible Graphite		
11	Gland Bearing	G/F PTFE		
12	Body Gasket	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
14	Spring Washer	Stainless Steel		
16	Stop	17-4 PH		
17	Lock Plate	Stainless Steel		
18	Body O-Ring	Virgin PTFE		
19	Primary Packing Washer	Stainless Steel		
20	Secondary Packing Washer	Stainless Steel		
21	Snap Ring	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	7M	8
24	Handle	Ductile Iron		
25	Handle Screw	Carbon Steel		
26	ID Tag (not shown)	Stainless Steel		
30	Gland Plate	Stainless Steel		
31	Socket Head Screw	Stainless Steel		
33	Primary Packing (Top)	Virgin PTFE		
34	Primary Packing (Middle)	Virgin PTFE		
35	Primary Packing (Bottom)	Virgin PTFE		

Note: 1) 8"-12" gear operated
2) Ser. 5400 body & insert design same as 2"-4" illustration on pg. 20.

Parts & Materials for Stem O-Ring Design Valves • API 6D

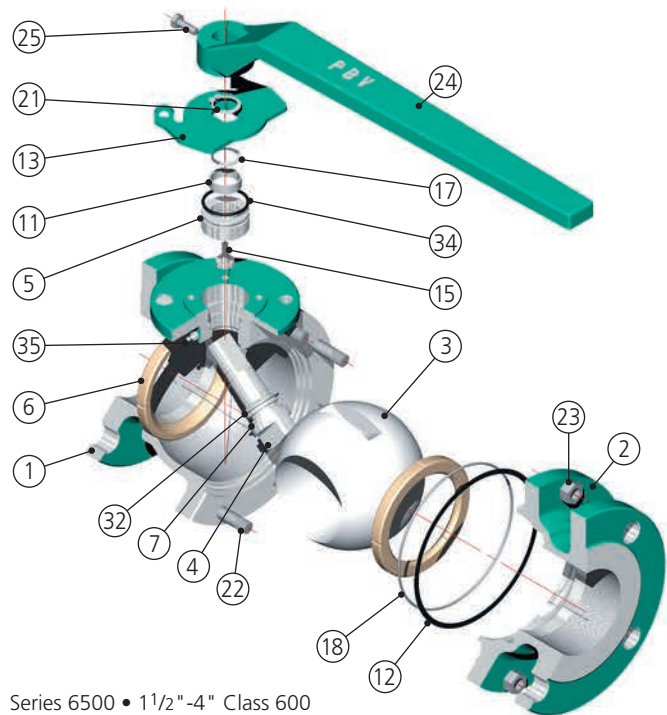


Series 6500 • 1" Class 150, 300 & 600

Standard Material Configuration For Oil & Gas Service-API 6D

Item No.	Description	Material		
1	Body	WCB	LCC	CF8M
2	Cap	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	ASTM A276 316 (SS)		
6	Ball Seat*	TFMC		
7	Stem Bearing*	G/F PTFE		
12	Body Gasket*	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
16	Stop	Stainless Steel		
17	Snap Ring	Stainless Steel		
18	Body O-Ring*	Viton® GF		
21	Snap Ring	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	7M	8
24	Handle	Ductile Iron		
26	ID Tag (not shown)	Stainless Steel		
32	Primary O-Ring, Stem*	Viton® GF		
34	Weather Seal*	Viton® GF		
35	Grease Fitting	Stainless Steel		

*Recommended spare parts.



Series 6500 • 1 1/2"-4" Class 600

Series 4500 • 1 1/2"-6" Class 150, 300 & 600

Standard Material Configuration For Oil & Gas Service-API 6D

Item No.	Description	Material		
1	Body	WCB	LCC	CF8M
2	Cap	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	ASTM A276 316		
5	Gland	Stainless Steel		
6	Ball Seat	TFM/ TFMC (Note 3)		
7	Stem Bearing	G/F PTFE		
11	Gland Bearing	G/F PTFE		
12	Body Gasket	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
15	Lock Pin	Stainless Steel		
16	Stop (not shown)	Stainless Steel		
17	Snap Ring	Stainless Steel		
18	Body O-Ring	Viton® GF		
19	Lock Washer (not shown)	Stainless Steel		
21	Snap Ring	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	7M	8
24	Handle	Ductile Iron		
25	Handle Screw	Carbon Steel		
26	ID Tag (not shown)	Stainless Steel		
32	Primary O-Ring, Stem	Viton® GF		
34	Weather Seal	Viton® GF		
35	Grease Fitting	Stainless Steel		

Note: 1) Gear is optional.

2) Nylon: Series 6500, 3" & 4", Class 600,
Series 4500, 4" & 6", Class 600

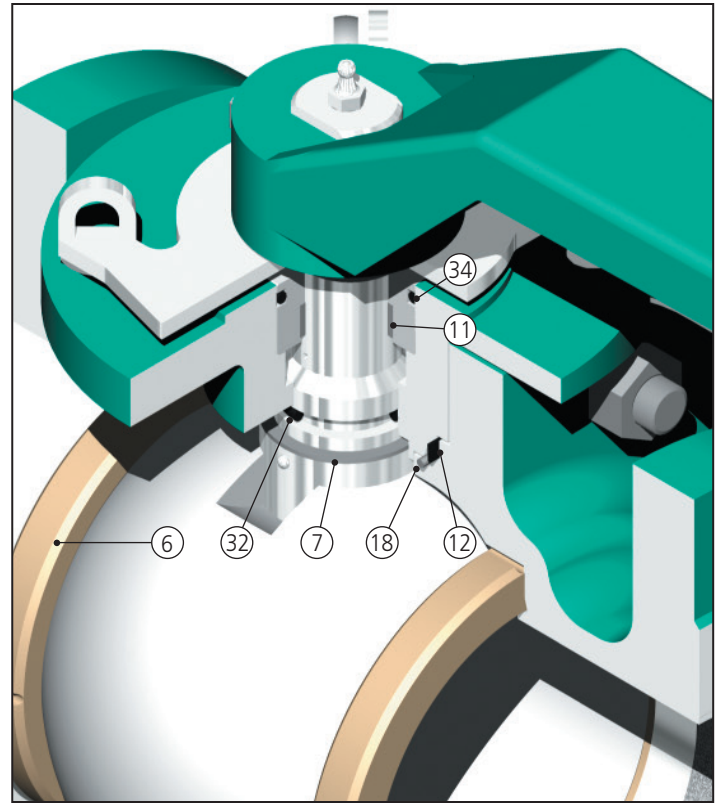
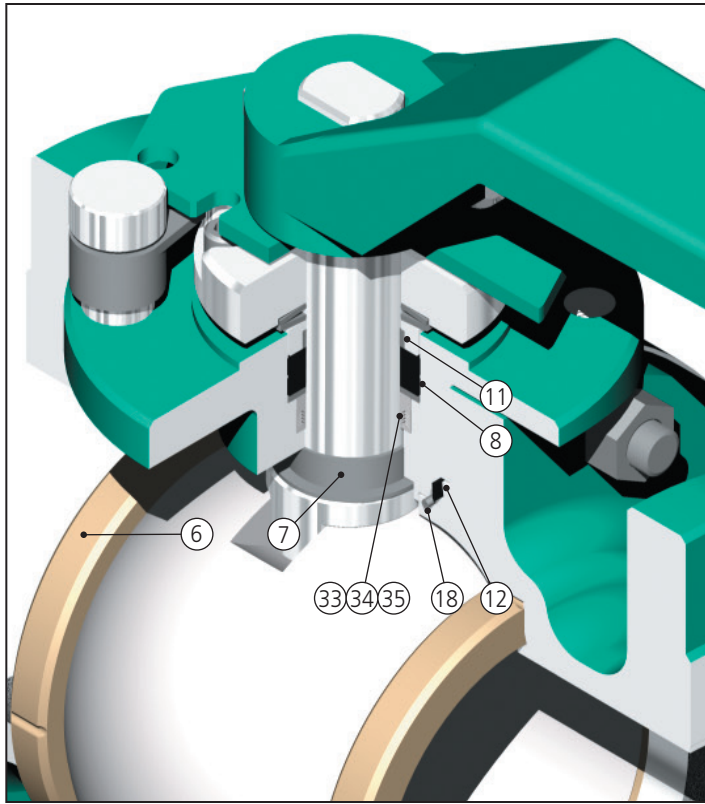
Maintenance and Repair Kits

The time spent in shutting down a line to perform repairs can never be recovered. That is why at PBV®, we strive to make a high quality product with features designed to prolong valve life and minimize maintenance and repairs. However, at some point maintenance of your floating ball valve product may be required.

Maintenance can extend the longevity of your initial investment. To assist your maintenance engineer, step-by-step instructions are provided with all PBV® repair kits. These Installation, Maintenance

and Operating Instructions describe the process from the most basic adjustments to the total replacement of seats and seals. Repair kits are available from stock and contain the parts shown below.

If complete valve disassembly becomes necessary, the threaded insert on the Series 5400 valves can be removed to provide access to the inner workings of the valve. The bolted body design of Series 4400/4500 and 6400/6500 valves is easily dismantled without the need of special tooling.



Stem Packing Design Repair Kit List

Item No.	Qty.	Description
6	2	Seat
7	1	Stem Bearing
8	Note	Secondary Graphite Seal
11	1	Gland Bearing
12	1	Body Gasket
18	1	Body O-Ring
33	1	Primary Packing (Top)
34	Note	Primary Packing (Middle)
35	1	Primary Packing (Bottom)

Note: Quantity depends on valve size and pressure class.

Stem O-Ring Design Repair Kit List

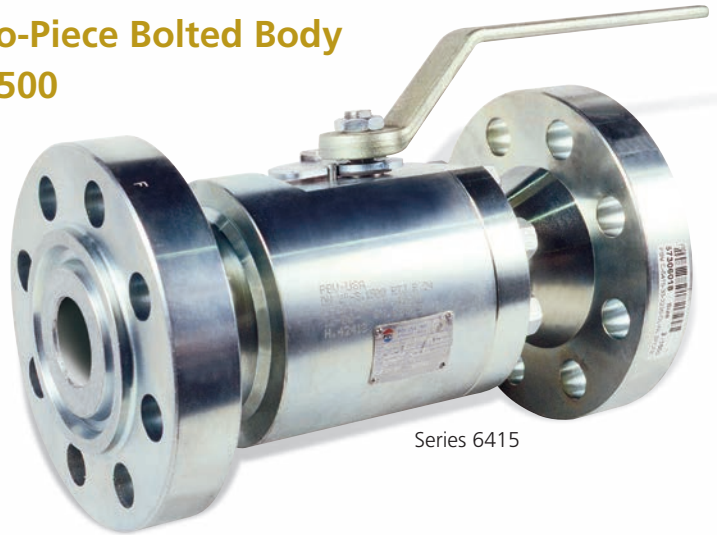
Item No.	Qty.	Description
6	2	Seat
7	1	Stem Bearing
11	1	Gland Bearing
12	1	Body Gasket
18	1	Body O-Ring
32	1	Primary Stem O-Ring Seal
34	1	Outer Weather O-Ring Seal

Standard Features

PBV® Series 6415 API 6D Flanged Two-Piece Bolted Body Forged Floating Ball Valves • Class 1500

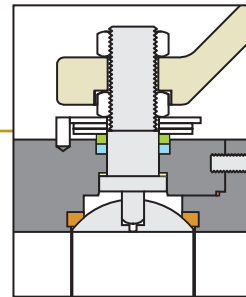
Standard Features

- Flanged Oil Field Design in Class 1500 API 6D
- 316 Stainless Steel Trim
- Fire Tested to API 6FA and BS 6755 Part 2
- ISO 5211 Actuator Mounting Pads
- Two-piece Bolted Construction
- Meets NACE MR0175 Latest Edition and ASME/ANSI B16.34
- Available in Full Port Only
- Blowout Proof Stem Design
- CSA Z245.15 compliance available
- Antistatic per BS-5351



Series 6415

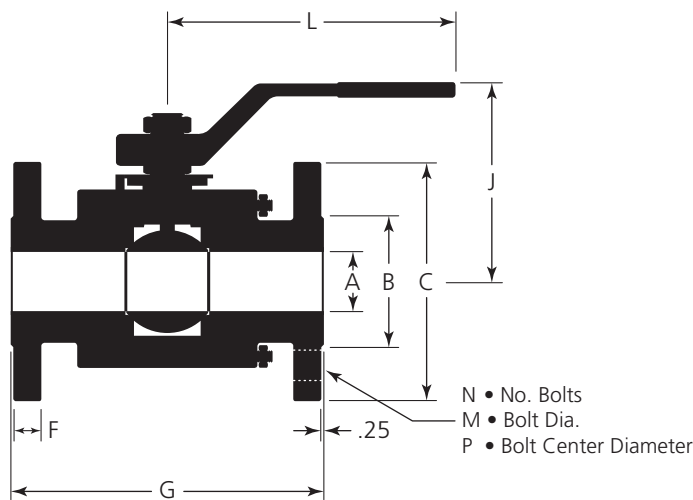
Superior materials include Devlon® seats, Stainless Steel trim and forged bodies for tough demands in oil field applications.



Both RF and RTJ ends allow for customer specific connections.



Dimensional Data (in.)



Class 1500, Full Port

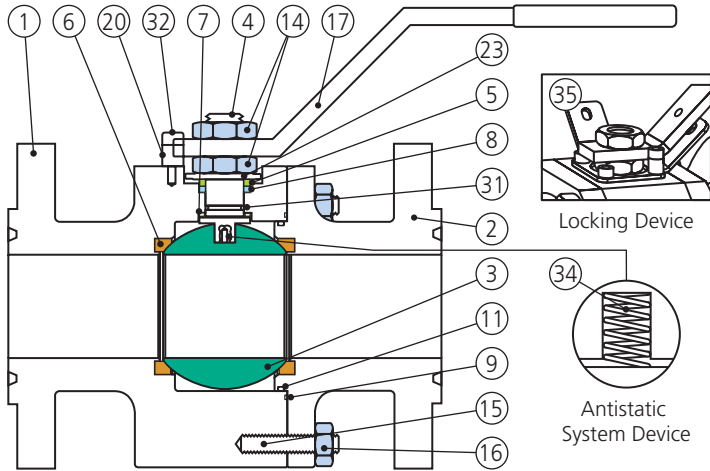
Size (in.)	Class	A	B	C	F	G	J	L	N	M	P	Wt. (lbs.)
1/2	1500	0.55	1.38	4.75	0.88	8.5	3.94	6.7	4	0.88	3.25	19.84
3/4	1500	0.75	1.69	5.12	1.00	9.0	4.33	6.9	4	0.88	3.50	22.05
1	1500	1.00	2.00	5.88	1.12	10.0	4.72	8.5	4	1.00	4.00	32.62
1 1/2	1500	1.50	2.88	7.00	1.25	12.0	6.10	12.4	4	1.12	4.88	59.52
2	1500	2.00	3.62	8.50	1.50	14.5	6.30	12.4	8	1.00	6.50	103.61

Manufactured in Strict Conformance with the Following Industry Standards

Item	Industry Standard
Valves- Flanged, Threaded and Welding End	API 6D - ASME B16.34 - BS 5351
Pipe Flanges and Flanged Fittings	ASME B16.5
Products Registered in all Provinces and Territories	Canadian Registration Number (CRN)
Quality System	ISO 9001
Sulfide Stress Cracking Resistant Metallic Materials for Oil Field Equipment	NACE MR0175 Latest Edition

Parts and Engineering Data

Series 6415 • Class 1500



Parts & Materials

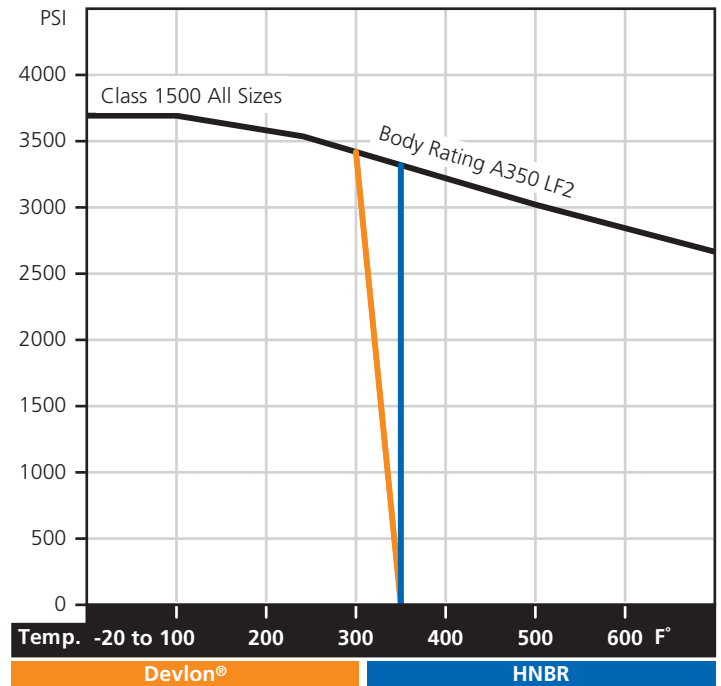
Item No.	Description	Materials
1	Body	ASTM A350 LF2
2	Cap	ASTM A350 LF2
3	Ball	ASTM A479 TP316
4	Stem	17-4-PH
5	Gland	ASTM A479 TP316
6	Seat*	Devlon®
7	Thrust Washer*	PTFE
8	Stem Packing*	Graphite
9	Gasket*	316+ Graphite (Spiral Wound)
11	Body Gasket*	HNBR
14	Stem Nut	A2.70
15	Body Stud	ASTM A193 L7M
16	Body Hex Nut	ASTM A194 Gr. 7M
17	Handle	Steel+ Zinc Plated
20	Stop Pin	Carbon Steel
23	Spring Disc	AISI 301
31	O-Ring*	HNBR
32	Screw	8.8
34	Antistatic Device	AISI 302
35	Locking Device	Zinc Plated

Break Torques (ft.-lb.)

Size (in.)	Torque
1/2	34
3/4	41
1	108
1 1/2	112
2	154

Note: All values are full bore valves and are effective without safety factor. (Generally this factor is about torque values plus 25%).

Pressure Temperature



*Recommended spare parts.

Note: Flange according to ANSI B16.5. Antistatic device according to BS-5351. Face to face according to API 6D-ANSI B16.10. Valves according to BS 5351/B16.34. Fire safe according to BS-6755 Pt. 2*/API 6FA. External surface phosphated. Tested per API 6D.

How To Order

Specifying Series 6415 Flanged Valve Figure Numbers

Example: 2" C-6415-33-2536-DL-NL This number represents a 2" 6415 Series Floating Ball Valve with Carbon Steel A350 LF2 Construction in Full Port configuration, ANSI Class 1500, Firesafe, RTJ Flanged Ends, LF2 Body/Cap, 316 SS Ball and Stem, Devlon® Seats, Graphite Stem Seal Packing, NACE Conformance with Lever Handle.

P C - 64 15 - 3 3 - 25 36 - D L - N L

Series	Material	Port	Class	Rating	Connection	Body/ Closure Material	Ball/ Stem	Seat	Stem Seal	NACE	Actuation	Locking Device
P PBV	C Carbon Steel A350 LF2	64 Full Port Floating Design	15 ANSI 1500	3 Firesafe to API 6FA	1 RF 3 RTJ	25 A350 LF2 36 316F	36 316SS 00 Same As Body	D Devlon® P PEEK™	L Graphite Packing H HNBR	N MR0175	L Lever Handle G Gear Operated B Bare Stem	LD Locking Device

Our goal is to become the leading provider of mission critical oilfield products and related services in terms of customer satisfaction, safety and financial performance.

Our experienced management team and employees are dedicated to solving our customers' problems. We invest in long term relationships and cooperate on product development with our clients, we consider them our partners.

OUR CORE VALUES

Integrity: In everything we do, in every interaction, both internally and externally, we strive to operate with the upmost integrity and mutual respect.

Long-term view: We are building our company for the long-term, a company that we can be proud of.

Open communication: We believe partnerships with our customers and co-workers must be based on trust, professionalism and transparency.

Customer focused: Our products enhance our customer's performance and we listen to their needs and work with them to solve their challenges.

Good place to work: We are committed to creating a workplace that fosters innovation, teamwork and pride. Every team member is integral to our success and is treated equally and fairly.

No one gets hurt: The safety of our employees and customers is our first priority coupled with a healthy respect for the environment.

For more information about our products and full Terms & Conditions please visit www.f-e-t.com.



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