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VALVE

PBV Ball Valves

Flanged Floating Ball Valves

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Corrosion/Stress Cracking Resistant Firesafe Design
for On & Offshore Oilfield and Industrial Applications

P.B.V.®

A GFT COMPANY

Flanged Floating Ball Valves

Series 4400/6400 2-Piece
and Series 5400 Unibody
Stem Packing Ball Valves

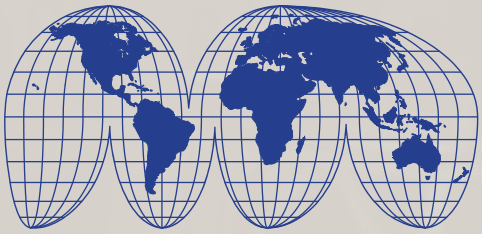
Series 6500/4500 2-Piece
O-ring Stem Ball Valves

Class 150, 300 and 600
Sizes 1/2" - 12"

Their Options Are Our Standards

GLOBAL FLOW™ TECHNOLOGIES

Manufacturer of Quality Valve Products Around the Globe



At Global Flow™ Technologies, formerly Zy-Tech, 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

GFT 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 GFT uses for designing valves to specific customer requirements.

CAD and NC capabilities

With GFT's fast and efficient workflow, CAD drawings can be released to the network for manufacturing and purchasing. All computer generated machine programs can be quickly changed for weld overlays or other processes. The result is faster deliveries.

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

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All GFT 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

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

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Licensed for manufacture in accordance with API 6D-0129 and fire tested to API 6FA or 607

Product Range

Shell Material	Class	Series Number	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	•	•	•	•	•	•	•	•	•	•	—
		6500	Oil & Gas	O-Ring	LP 2 pc	Full		—	—	•	•	•	•	•	•	—	—	—
		4400	Industrial	Packing	LP 2 pc	Regular		—	—	—	—	•	•	•	•	•	•	—
		4500	Oil & Gas	O-Ring	LP 2 pc	Regular		—	—	—	•	•	•	•	•	—	—	—
		5400	Industrial	Packing	LP/S Uni	Regular		—	•	•	•	•	•	•	S	S	S	S
	300	6400	Industrial	Packing	LP 2 pc	Full	Flanged	•	•	•	•	•	•	•	•	•	•	—
		6500	Oil & Gas	O-Ring	LP 2 pc	Full		—	—	•	•	•	•	•	•	—	—	—
		4400	Industrial	Packing	LP 2 pc	Regular		—	—	—	—	•	•	•	•	•	•	—
		4500	Oil & Gas	O-Ring	LP 2 pc	Regular		—	—	—	•	•	•	•	•	—	—	—
		5400	Industrial	Packing	LP/S Uni	Regular		—	•	•	•	•	•	•	•	S	S	S
	600	6400	Industrial	Packing	LP 2 pc	Full	Flanged	•	•	•	•	•	•	•	—	—	—	—
		6500	Oil & Gas	O-Ring	LP 2 pc	Full		—	—	•	•	•	•	•	—	—	—	—
		4400	Industrial	Packing	LP 2 pc	Regular		•	•	•	•	•	•	•	•	—	—	—
		4500	Oil & Gas	O-Ring	LP 2 pc	Regular		—	—	—	•	•	•	•	•	—	—	—

LP = Long Pattern Design
S = Short Pattern Design

Specifying PBV® Valve Figure Numbers

Example: C-6410-31-2236-FT-NL-I This number represents a Carbon Steel, Full 2-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	

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

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

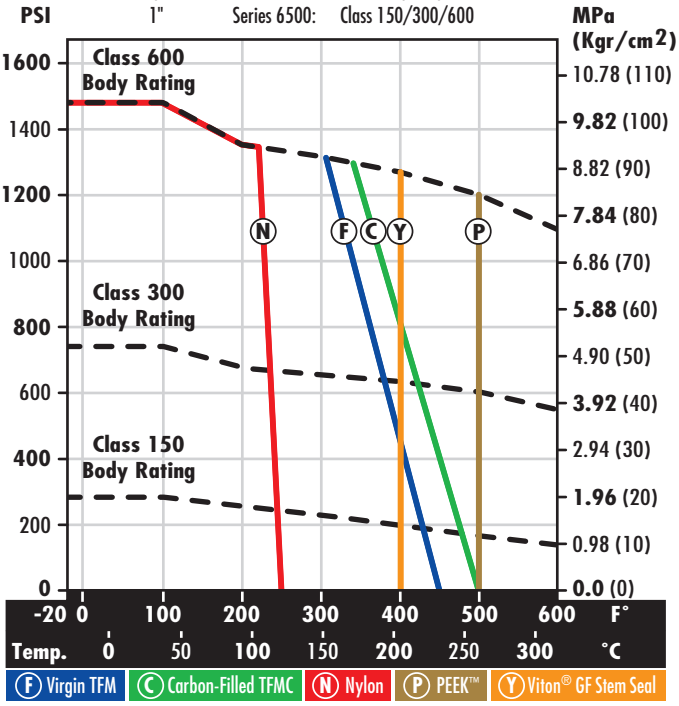
GFT's PBV® Valve Brand Family of Flanged Floating Ball Valve Products

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.globalflowtech.com.

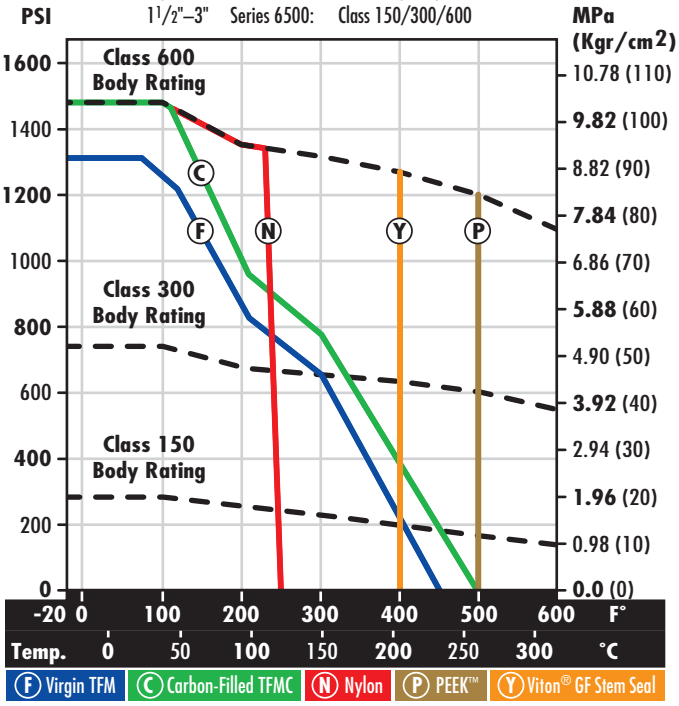
Pressure Temperature Ratings

The pressure temperature ratings for PBV® Valve'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® Valve customer service representative.

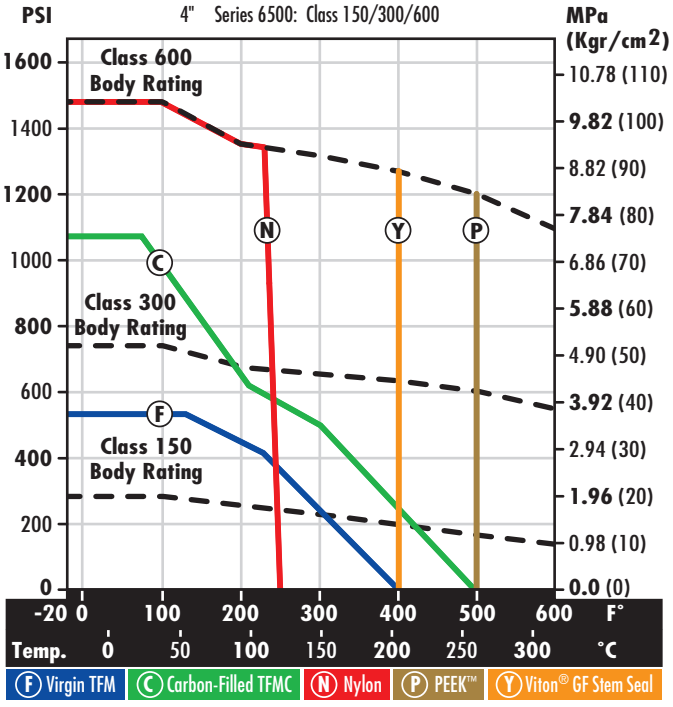
1/2"–1 1/2" Series 4400: Class 150/300/600
1 1/2" Series 4500: Class 150/300/600
3/4"–1 1/2" Series 5400: Class 150/300
1/2"–1" Series 6400: Class 150/300/600
1" Series 6500: Class 150/300/600



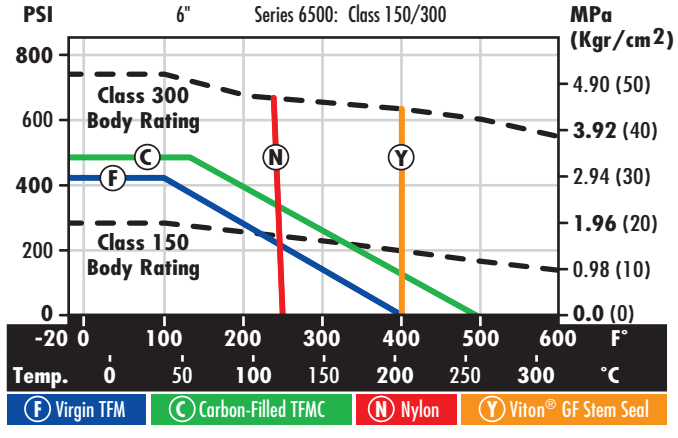
2"–4" Series 4400: Class 150/300/600
2"–4" Series 4500: Class 150/300/600
2"–4" Series 5400: Class 150/300
1 1/2"–3" Series 6400: Class 150/300/600
1 1/2"–3" Series 6500: Class 150/300/600



6" Series 4400: Class 150/300/600
6" Series 4500: Class 150/300/600
6" Series 5400: Class 150/300
4" Series 6400: Class 150/300/600
4" Series 6500: Class 150/300/600



8" & 10" Series 4400: Class 150/300
8"–12" Series 5400: Class 150/300
6"–10" Series 6400: Class 150/300
6" Series 6500: Class 150/300



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 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

Series	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	—	—	2	3	15	16	12	13	—	—	—
5400	1	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	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	—	—	2	3	15	16	17	18	—	—	—
6400	1	2	3	4	5	7	19	—	—	—	—
6500	—	—	3	15	16	17	18	—	—	—	—

Maximum Stem Break Torque at Maximum Operating Pressure (in.-lb.) Based on TFM and TFMC Seat Testing

Series	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	—	—	220	280	380	1100	1530	1930	—	—	—
5400	180	180	220	280	660	1210	1660	2270	5150	12,000	29,250
6400	180	220	280	660	1210	1660	2270	5150	12,000	29,250	—
6500	—	—	280	380	1100	1530	1930	4600	—	—	—
	Class 300										
4400	—	—	—	—	730	1230	2400	3200	7000	13,000	—
4500	—	—	260	370	640	1080	2270	2850	—	—	—
5400	200	200	260	370	730	1230	2400	3200	7000	13,000	30,000
6400	200	260	370	730	1230	2400	3200	7000	13,000	30,000	—
6500	—	—	370	640	1080	2270	2850	6440	—	—	—
	Class 600										
4400	—	270	320	390	850	1250	2400	4600	—	—	—
4500	—	—	320	390	760	1100	2160	3900	—	—	—
6400	270	320	390	850	1250	2400	4600	—	—	—	—
6500	—	—	390	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, add an additional 120% minimum.
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" and 12", Class 300, have a maximum operating pressure of 550 psig.

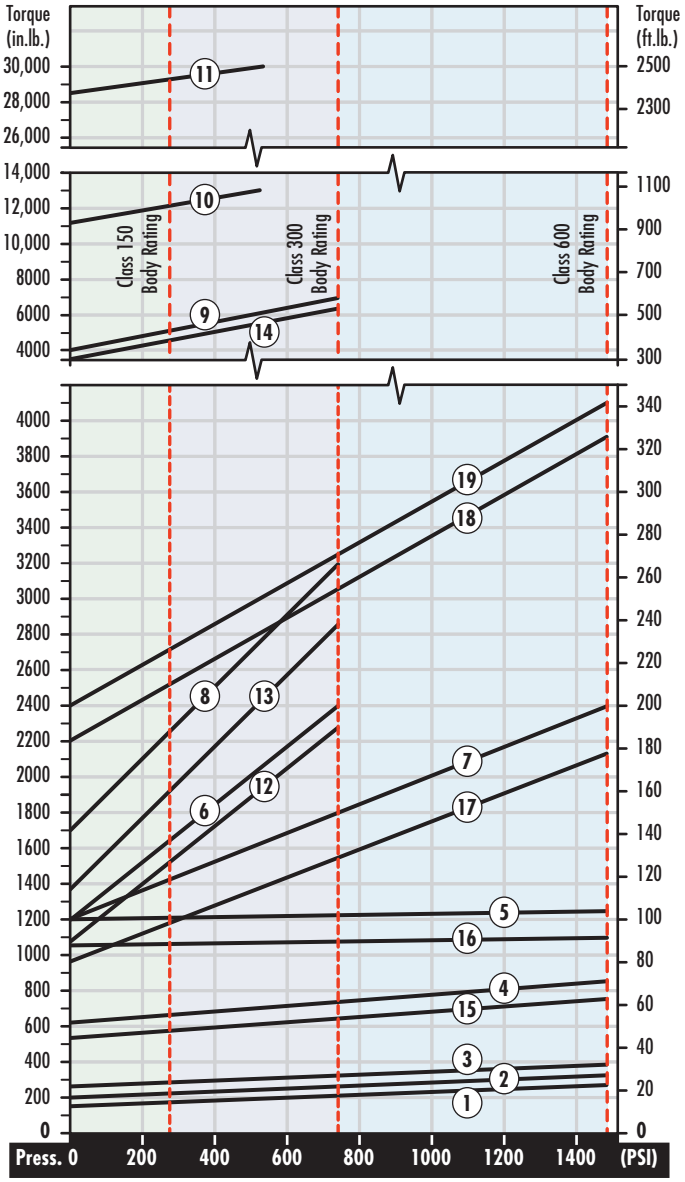


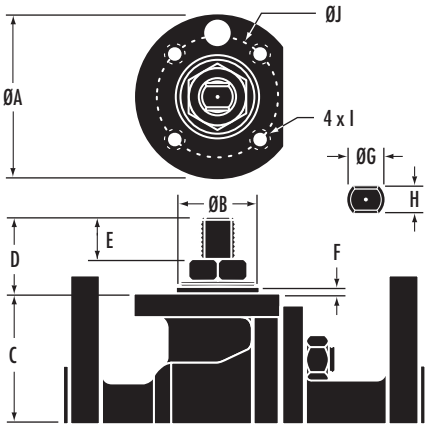
Chart is for TFM or TFMC Seats. See Note 1 for other seat materials or contact your PBV® Valve sales representative.

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	—	—	—	—

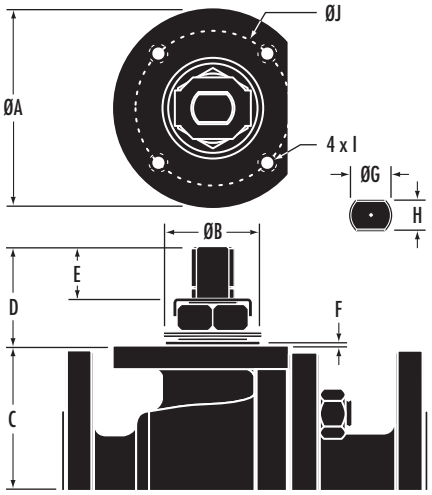
Series 4400, 5400 & 6400, 1/2" - 1 1/2", Class 150, 300 & 600 (in.)

Valve Size	A	B	C	D	E	F	G +000/ -003	H +000/ -003	I	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 UNC	1.42	F03
3/4	1.97	0.984	1.64	1.04	0.33	0.08	0.437	0.314	1/4-20 UNC	1.42	F03
1	2.56	1.378	1.98	1.18	0.34	0.08	0.500	0.394	1/4-20 UNC	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 UNC	1.42	F03
3/4	1.97	0.984	1.65	1.04	0.33	0.08	0.437	0.314	1/4-20 UNC	1.42	F03
1	2.56	1.378	1.98	1.18	0.34	0.08	0.500	0.394	1/4-20 UNC	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 UNC	1.42	F03
1	2.20	0.984	1.26	0.90	0.31	0.08	0.375	0.236	1/4-20 UNC	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 UNC	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 UNC	1.42	F03
1	1.97	0.984	1.65	1.04	0.33	0.08	0.437	0.314	1/4-20 UNC	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 UNC	2.00	F05



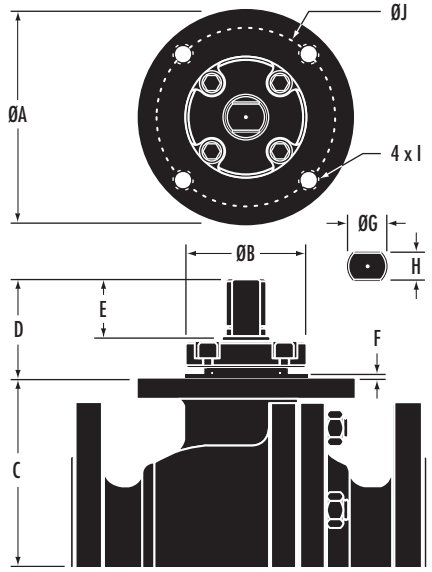
Series 4400, 5400 & 6400, 1 1/2" - 4", Class 150, 300 & 600 (in.)

Valve Size	A	B	C	D	E	F	G +000/ -003	H +000/ -003	I	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 UNC	2.75	F07
2	3.54	1.771	3.48	2.19	1.07	0.08	0.906	0.669	5/16-18 UNC	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 UNC	2.75	F07
2	3.54	1.771	3.48	2.19	1.07	0.08	0.906	0.669	5/16-18 UNC	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 UNC	2.75	F07
3	3.54	1.771	3.69	2.15	1.06	0.08	0.906	0.669	5/16-18 UNC	2.75	F07
4	3.54	1.771	4.26	2.15	1.06	0.08	0.906	0.669	5/16-18 UNC	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 UNC	2.75	F07
3	3.54	1.771	3.48	2.19	1.06	0.08	0.906	0.669	5/16-18 UNC	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 UNC	2.75	F07
3	3.54	1.771	3.48	2.19	1.06	0.08	0.906	0.669	5/16-18 UNC	2.75	F07



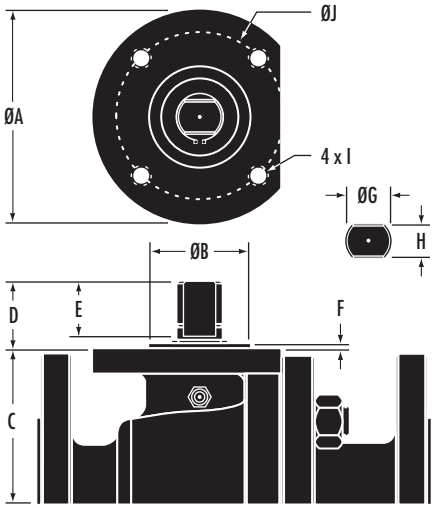
Series 4400, 5400 & 6400, 3" - 12", Class 150, 300 & 600 (in.)

Valve Size	A	B	C	D	E	F	G +000/ -003	H +000/ -003	I	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 UNC	4.00	F10
4	5.90	3.346	5.31	2.52	1.10	0.08	1.279	0.905	1/2-13 UNC	4.95	F12
6	6.88	3.937	7.05	3.32	1.72	0.08	1.633	1.062	5/8-11 UNC	5.50	F14
8	8.26	4.724	9.09	3.88	2.00	0.08	1.870	1.259	3/4-10 UNC	6.50	F16
10	8.26	4.724	11.02	4.08	2.21	0.08	2.283	1.496	3/4-10 UNC	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 UNC	4.95	F12
4	5.90	3.937	5.83	3.43	1.73	0.08	1.633	1.062	1/2-13 UNC	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 UNC	4.95	F12
8	6.88	3.937	7.02	3.30	1.72	0.08	1.633	1.062	5/8-11 UNC	5.50	F14
10	8.26	4.724	8.51	3.88	2.00	0.08	1.870	1.259	3/4-10 UNC	6.50	F16
12	8.26	4.724	10.24	4.06	2.19	0.08	2.283	1.496	3/4-10 UNC	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 UNC	4.00	F10
6	5.90	3.346	5.31	2.52	1.10	0.08	1.279	0.905	1/2-13 UNC	4.95	F12
8	6.89	3.937	7.05	3.32	1.72	0.08	1.633	1.062	5/8-11 UNC	5.50	F14
10	8.26	4.724	9.09	3.88	2.00	0.08	1.870	1.259	3/4-10 UNC	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 UNC	4.95	F12
6	5.90	3.937	5.83	3.43	1.73	0.08	1.633	1.062	1/2-13 UNC	4.95	F12



Series 4500 & 6500, 1"- 6", Class 150, 300 & 600 (in.)

Valve Size	A	B	C	D	E	F	G +000/ -003	H +000/ -003	I	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 UNC	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 UNC	2.75	F07
2	3.54	1.771	3.48	1.47	1.08	0.08	0.906	0.669	5/16-18 UNC	2.75	F07
3	4.92	2.755	4.30	1.50	1.08	0.08	0.906	0.669	3/8-16 UNC	4.00	F10
4	5.90	3.346	5.31	1.58	1.11	0.08	1.279	0.905	1/2-13 UNC	4.95	F12
6	6.88	3.937	7.05	2.24	1.70	0.08	1.633	1.062	5/8-11 UNC	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 UNC	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 UNC	2.75	F07
2	3.54	1.771	3.48	1.48	1.08	0.08	0.906	0.669	5/16-18 UNC	2.75	F07
3	5.90	3.346	4.65	1.59	1.11	0.08	1.279	0.906	1/2-13 UNC	4.95	F12
4	5.90	3.937	5.83	2.20	1.70	0.08	1.633	1.062	1/2-13 UNC	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 UNC	2.00	F05
2	3.54	1.771	2.59	1.10	0.71	0.08	0.767	0.551	5/16-18 UNC	2.75	F07
3	3.54	1.771	3.48	1.47	1.08	0.08	0.906	0.669	5/16-18 UNC	2.75	F07
4	4.92	2.755	4.30	1.50	1.08	0.08	0.906	0.669	3/8-16 UNC	4.00	F10
6	5.90	3.346	5.31	1.58	1.11	0.08	1.279	0.905	1/2-13 UNC	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 UNC	2.00	F05
2	3.54	1.771	2.60	1.07	0.71	0.08	0.768	0.551	5/16-18 UNC	2.75	F07
3	3.54	1.771	3.48	1.48	1.08	0.08	0.906	0.669	5/16-18 UNC	2.75	F07
4	5.90	3.346	4.65	1.59	1.11	0.08	1.279	0.906	1/2-13 UNC	4.95	F12
6	5.90	3.937	5.83	2.20	1.70	0.08	1.633	1.062	1/2-13 UNC	4.95	F12



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:

psi x .06894757 = bar
psi x .07030697 = Kg/cm^2
psi x 6894.757 = Pascal

bar x 14.50377 = psi
Kg/cm^2 x 14.22334 = psi
Pascal x .0001450377 = psi

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® Valve sales person for updated and/or current drawings and material compliance. This information is available on our website at www.globalflowtech.com.

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

API 6D

ISO 9001-2000

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 H_2S 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/ISO15156 applies.

In addition, PBV® Valve Floating Ball Valves, with standard trim, fully comply with NACE MR0103 2003 upon request.

PBV® Valve 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	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	

Standard Design Features for All PBV® Valve Floating Ball Valves

Standard design features, product line range, material selection, and centrally located operations facility all combine to make PBV® Valve 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 2002, 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.

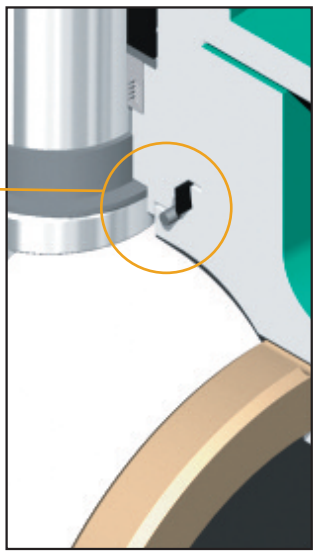
Whether your intended use is in the petrochemical, pharmaceutical or pulp and paper industry, PBV® Valve floating ball valves are designed to provide you with a higher standard in service and value.

PBV® Valve Quality Procedures

Every valve is tested and inspections are performed throughout the production process to insure that product quality meets PBV® Valve 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® Valve and leading industry standards.

Encapsulated Body Seals

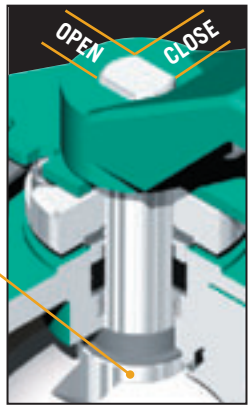
With fully encapsulated body seals, there is no opportunity for seal movement or slippage, thereby improving sealing.



Ball Position Indicator And Blowout Proof Stem Features

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

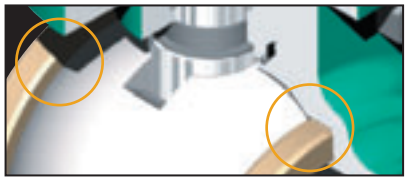
PBV® Valve's blowout proof stem feature is accomplished by the use of a lower stem collar design.



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.

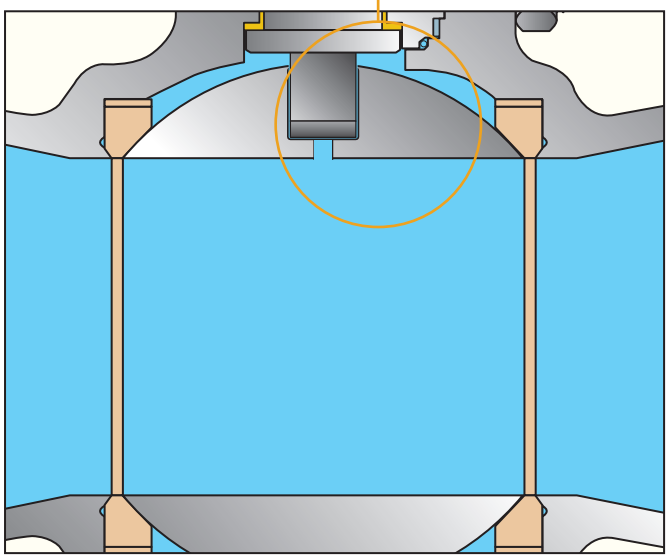


Bi-Directional Sealing

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.



PBV® Valve'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

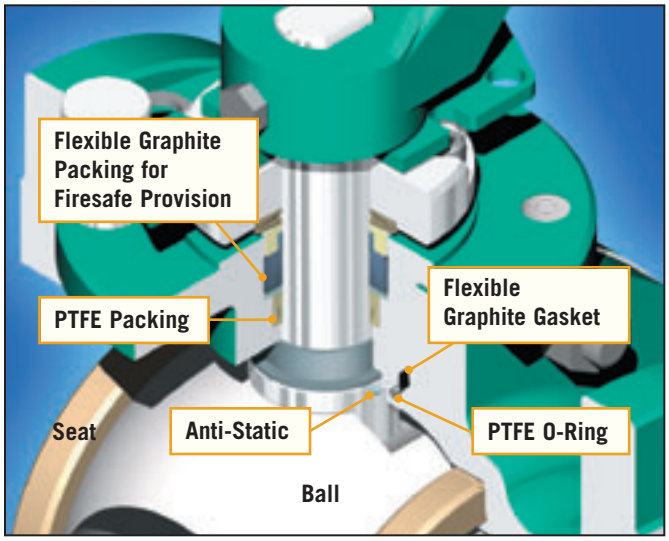


Figure 1. Before Fire

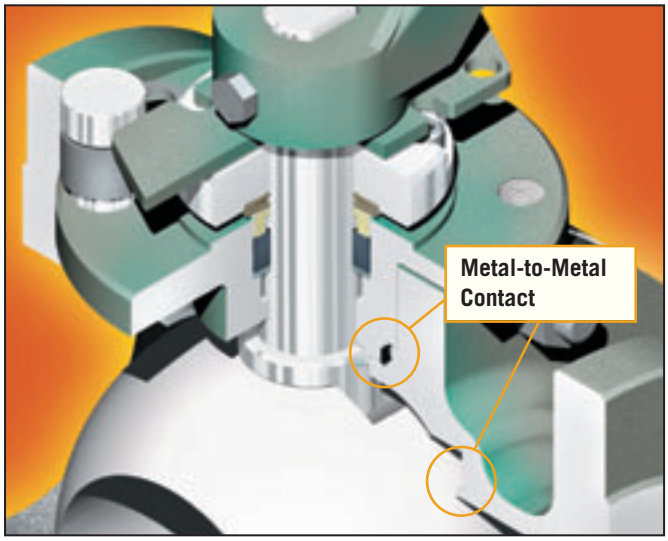


Figure 2. After Fire

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 steal are standard for all PBV® Valve 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® Valve 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.

Packing adjustments are not required with the o-ring stem seal. The o-ring stem seal provides low break torque and excellent emission control. Viton® GF seals are standard and will provide broad chemical resistance from -15˚F to 400˚F.

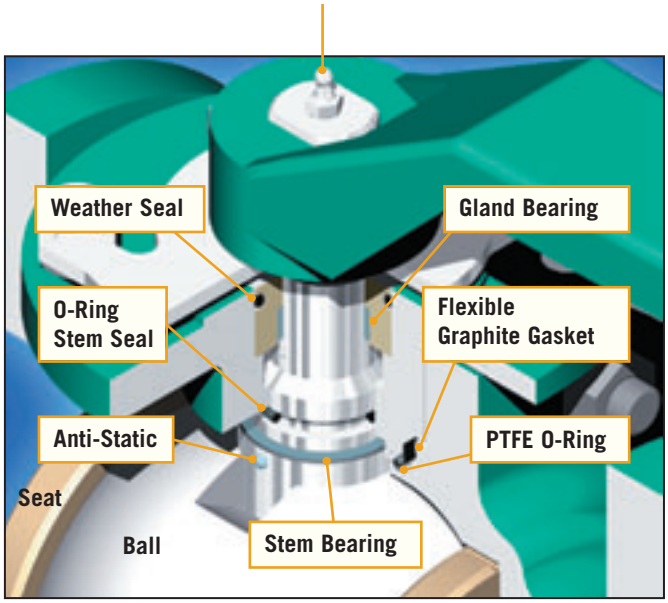


Figure 3. Before Fire

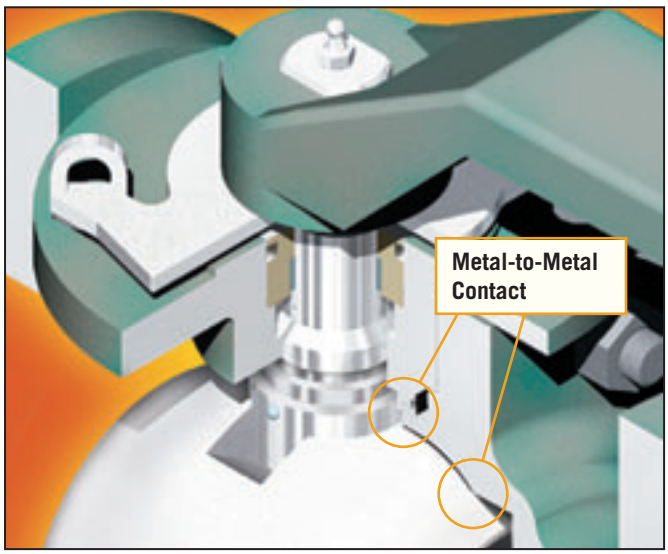
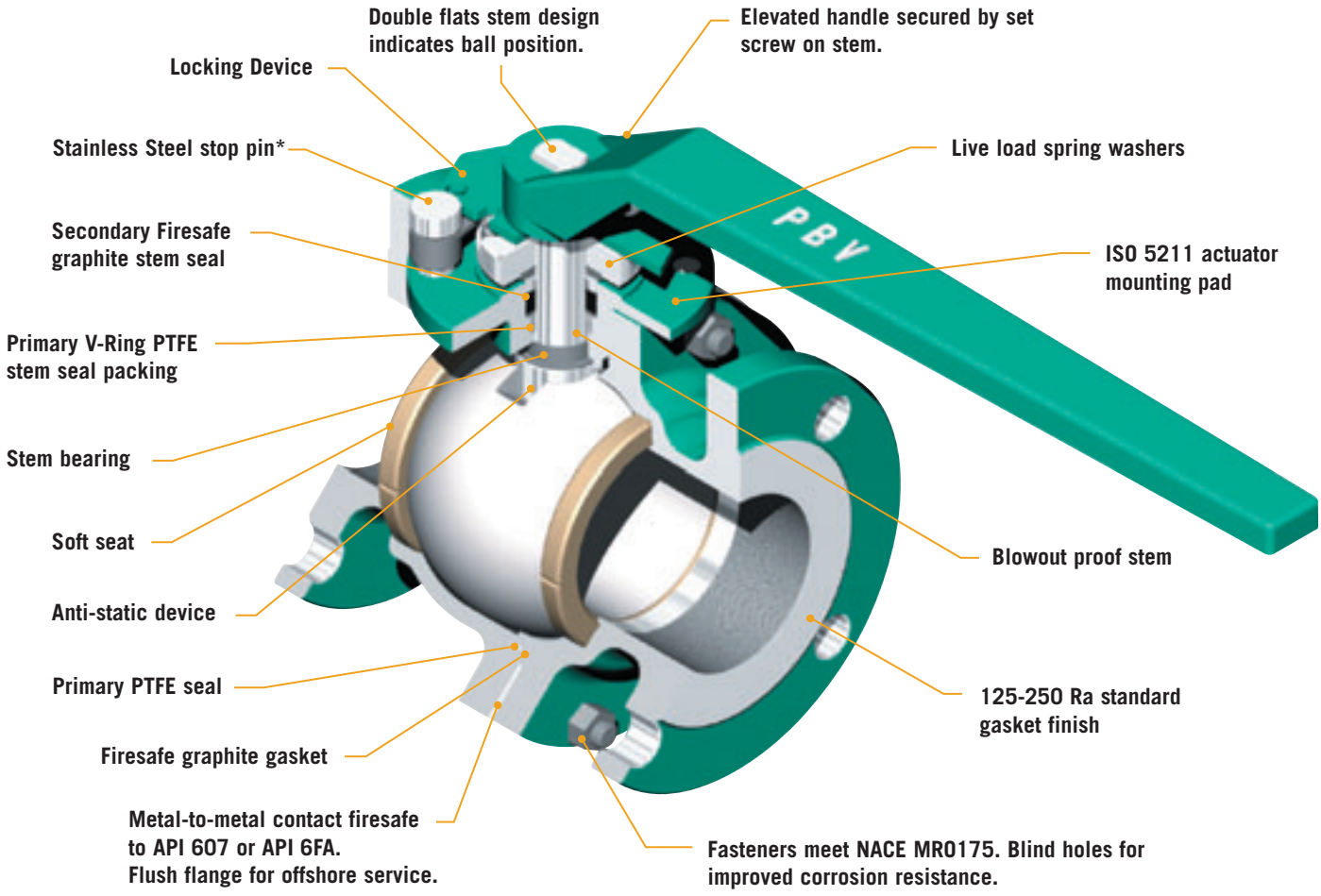


Figure 4. After Fire

Series 6400 Full Port, 2-Piece Body, Stem Packing Ball Valve

Standard Features

This is an illustrated cross section of a typical PBV® Valve full port, 2-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.

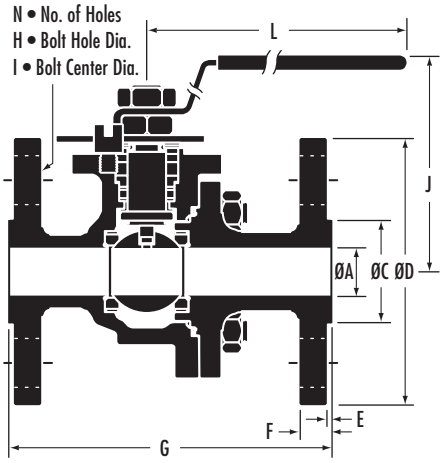
PBV® Flanged Floating Ball Valves installed in a typical manifold application.

Dimensional Data (in.)

Test Pressure	Shell (hydrostatic)	Seat (air)
Class 150	450 psi	80 psi
Class 300	1125 psi	80 psi
Class 600	2250 psi	80 psi

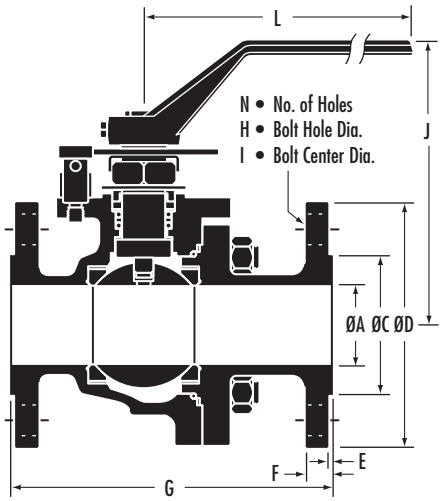
Series 6400, 1/2"-1", Class 150, 300 & 600 (in.)

Valve Size	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



Series 6400, 1 1/2"-2", Class 150, 300 & 600 (in.)

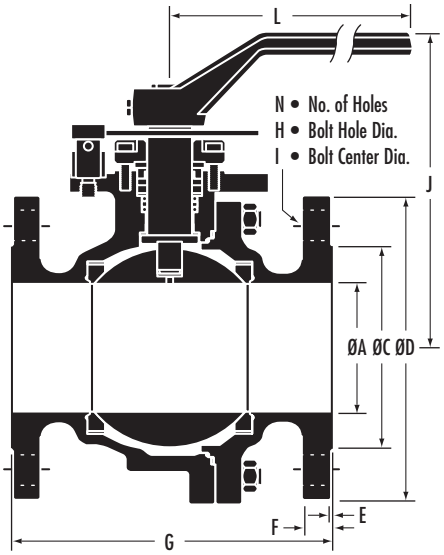
Valve Size	A	C	D	E	F	G	NxøH	I	J	L
	Class 150, 1 1/2"-2"									
1 1/2	1.50	2.88	5.00	0.06	0.56	6.50	4xø.62	3.88	5.81	9.00
2	2.00	3.62	6.00	0.06	0.62	7.00	4xø.75	4.75	6.95	16.50
	Class 300, 1 1/2"-2"									
1 1/2	1.50	2.88	6.12	0.06	0.81	7.50	4xø.88	4.50	5.81	9.00
2	2.00	3.62	6.50	0.06	0.88	8.50	4xø.75	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	4xø.75	5.00	6.95	16.50



Series 6400, 3"-10", Class 150, 300 & 600 (in.)

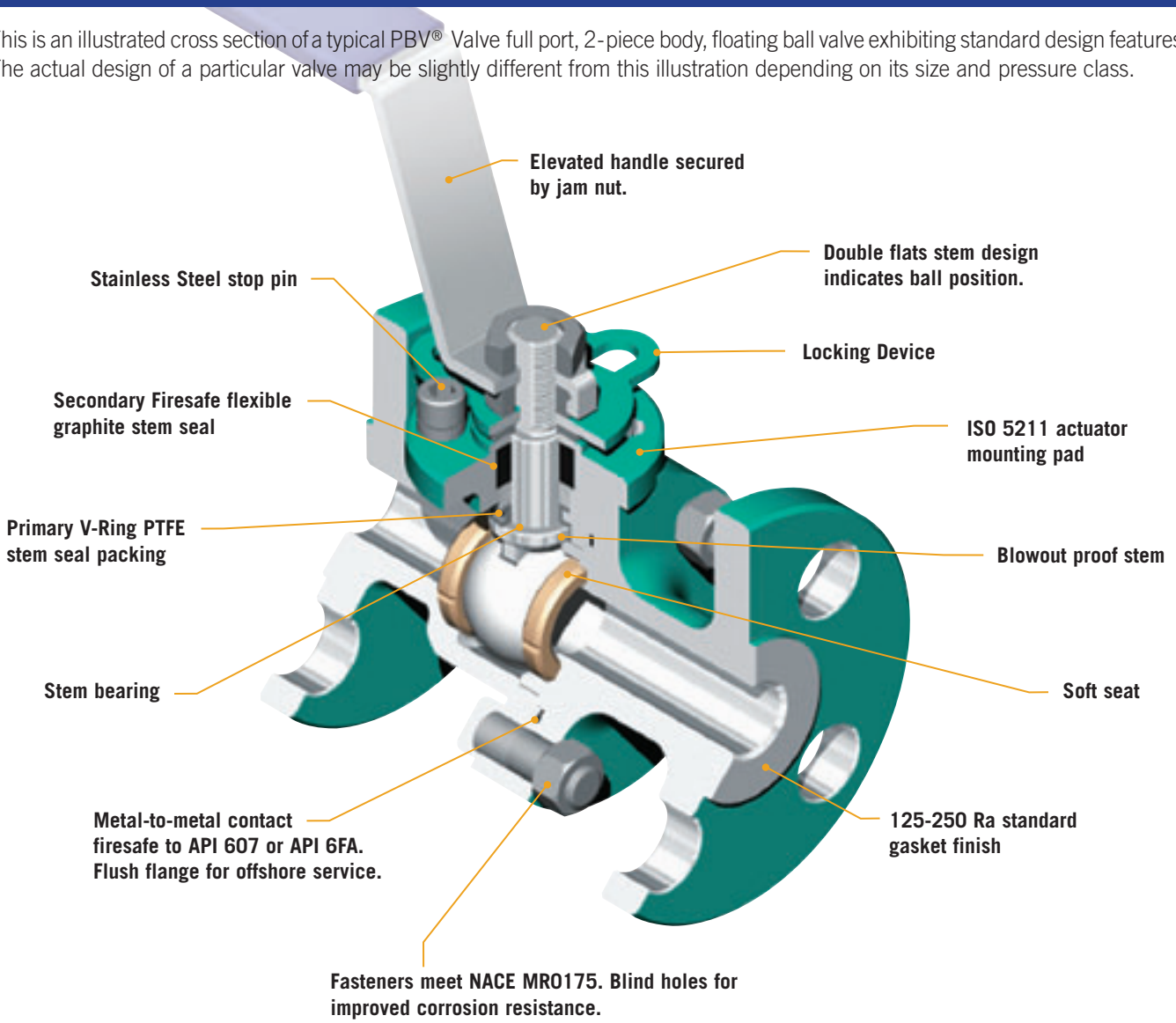
Valve Size	A	C	D	E	F	G	NxøH	I	J	L
	Class 150, 3"-10"									
3	3.00	5.00	7.50	0.06	0.75	8.00	4xø.75	6.00	7.80	16.50
4	4.00	6.19	9.00	0.06	0.94	9.00	8xø.75	7.50	8.71	19.70
6	6.00	8.50	11.00	0.06	1.00	15.50	8xø.88	9.50	11.69	43.00
8	8.00	10.62	13.50	0.06	1.12	18.00	8xø.88	11.75	14.60	58.00
10	10.00	12.75	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	14.60	58.00
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" Optional gear operation.



Series 4400 Regular Port, 2-Piece Body, Stem Packing Ball Valve

This is an illustrated cross section of a typical PBV® Valve full port, 2-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.

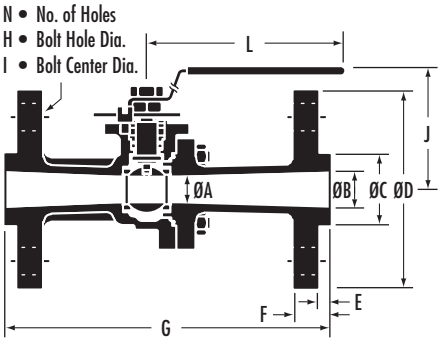


All PBV® Flanged Floating Ball Valves are designed to precise engineering standards and PBV® Valve employs a stringent multi-point inspection program throughout the entire manufacturing process to insure product quality.

You can learn more about PBV®'s Flanged Floating product line, their manufacturing capabilities and GFT's other quality valve products at our website www.globalflowtech.com.

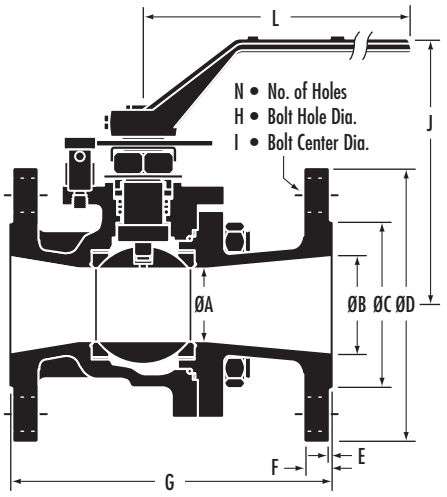
Dimensional Data (in.)

Test Pressure	Shell (hydrostatic)	Seat (air)
Class 150	450 psi	80 psi
Class 300	1125 psi	80 psi
Class 600	2250 psi	80 psi



Series 4400, 3/4" - 1 1/2", Class 600 (in.)

Valve Size	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



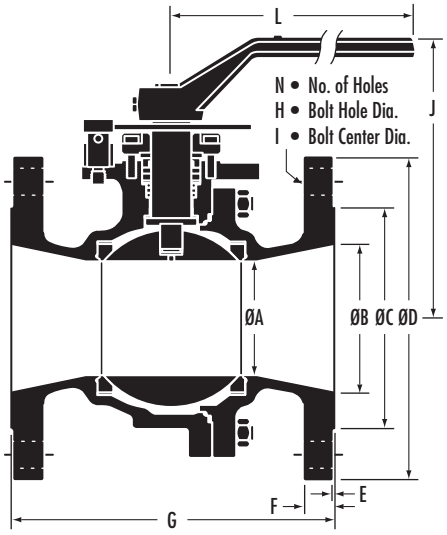
Series 4400, 2"-3", Class 150, 300 & 600 (in.)

Valve Size	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

Series 4400, 4" - 10", Class 150, 300 & 600 (in.)

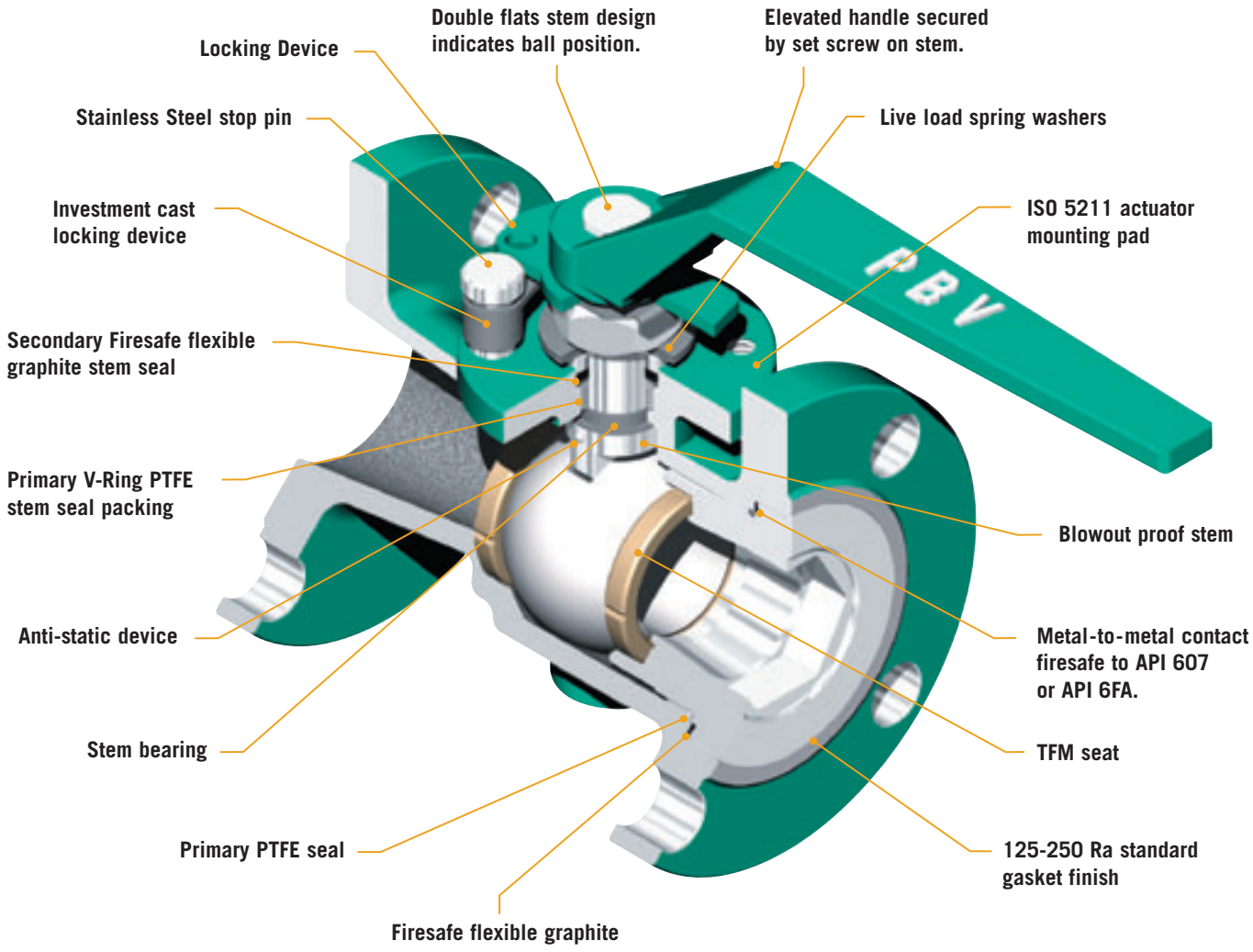
Valve Size	A	B	C	D	E	F	G	NxøH	I	J	L
	Class 150, 4"-10"										
4	3.00	4.00	6.19	9.00	0.06	0.94	9.00	8xø.75	7.50	7.80	16.50
6	4.00	6.00	8.50	11.00	0.06	1.00	15.50	8xø.88	9.50	8.71	19.70
8	6.00	8.00	10.62	13.50	0.06	1.12	18.00	8xø.88	11.75	11.70	43.00
10	8.00	10.00	12.75	16.00	0.06	1.19	21.00	12xø1.00	14.25	14.60	58.00
	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	11.70	43.00
10	8.00	10.00	12.75	17.50	0.06	1.88	22.38	16xø1.12	15.25	14.60	58.00
	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: 6" - 10" Optional gear operation.



Series 5400 Regular Port, Unibody, Stem Packing Ball Valve

This is an illustrated cross section of a typical PBV® Valve 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.



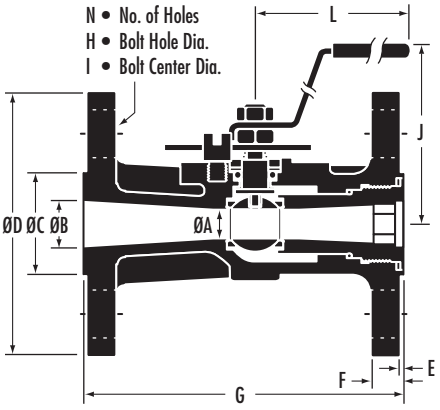
PBV® Flanged Floating Ball Valves are designed for Oil & Gas Production and other applications.

Dimensional Data (in.)

Test Pressure	Shell (hydrostatic)	Seat (air)
Class 150	450 psi	80 psi
Class 300	1125 psi	80 psi

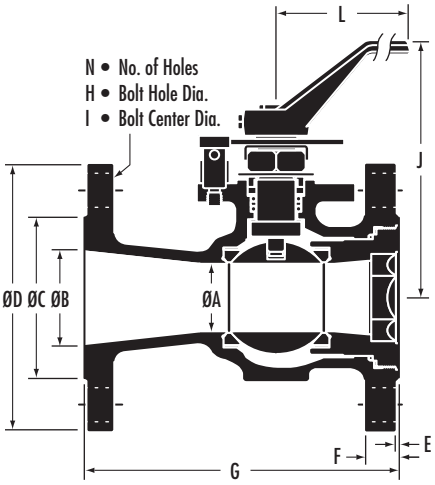
Series 5400, 3/4"-1 1/2", Class 150 & 300 (in.)

Valve Size	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



Series 5400, 2"-4", Class 150 & 300 (in.)

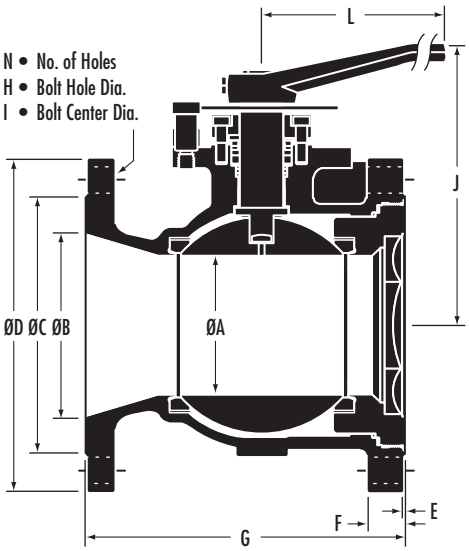
Valve Size	A	B	C	D	E	F	G	NxøH	I	J	L
	Class 150, 2"-4"										
2	1.50	2.00	3.62	6.00	0.06	0.68	7.00	4xø.75	4.75	5.74	9.00
3	2.28	3.00	5.00	7.50	0.06	0.81	8.00	4xø.75	6.00	7.13	16.50
4	3.00	4.00	6.19	9.00	0.06	1.00	9.00	8xø.75	7.50	7.69	16.50
	Class 300, 2"-4"										
2	1.50	2.00	3.62	6.50	0.06	0.88	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	3.00	4.00	6.19	10.00	0.06	1.25	12.00	8xø.88	7.88	7.69	16.50



Series 5400, 6"-12", Class 150 & 300 (in.)

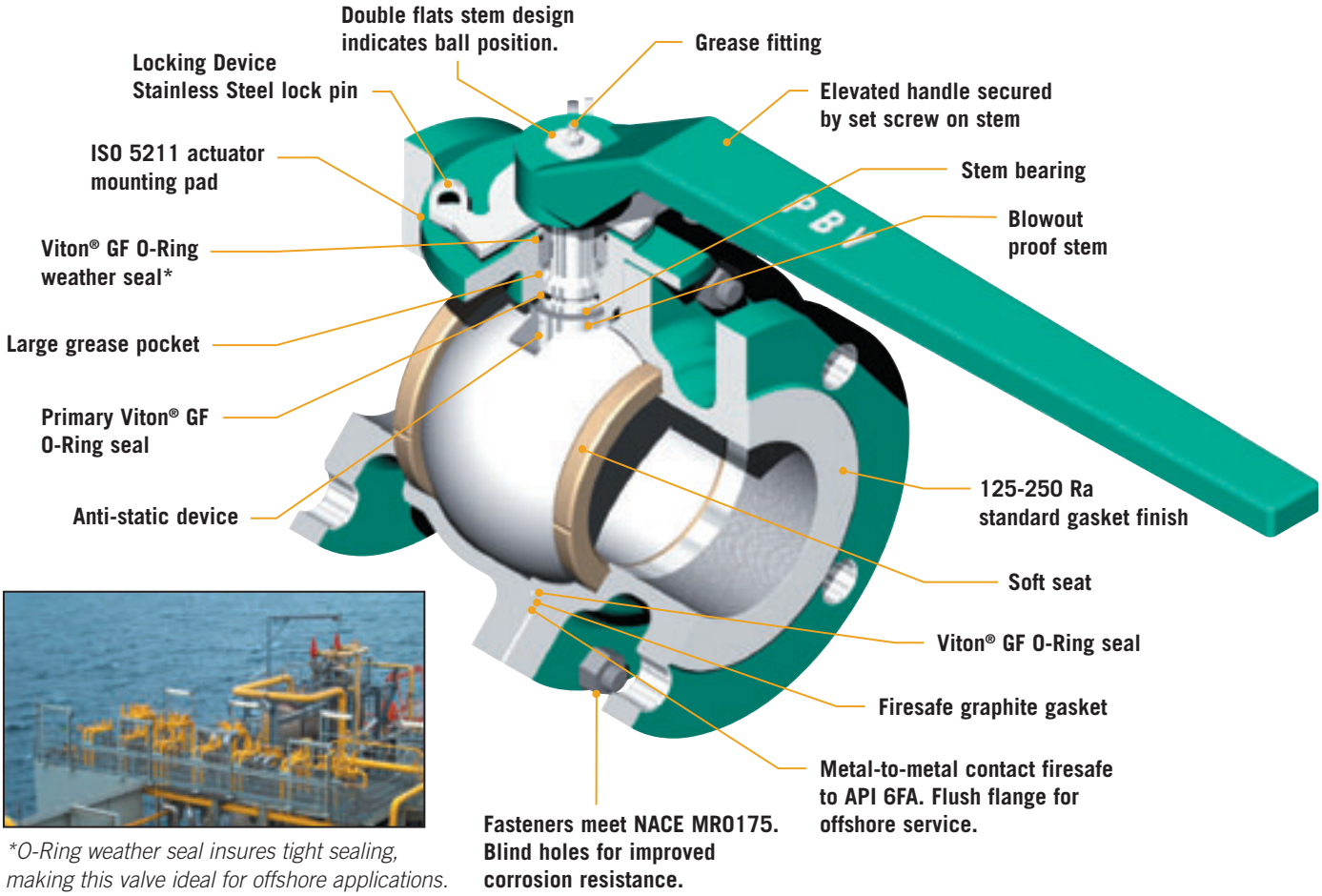
Valve Size	A	B	C	D	E	F	G	NxøH	I	J	L
	Class 150, 6"-12"										
6	4.49	6.00	8.50	11.00	0.06	1.00	10.50	8xø.88	9.50	9.22	19.70
8	6.00	8.00	10.62	13.50	0.06	1.12	11.50	8xø.88	11.75	11.65	43.00
10	7.32	10.00	12.75	16.00	0.06	1.19	13.00	12xø1.00	14.25	14.00	58.00
12	8.94	12.00	15.00	19.00	0.06	1.25	14.00	12xø1.00	17.00	21.22	—
	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	11.65	43.00
10	7.32	10.00	12.75	17.50	0.06	1.88	18.00	16xø1.12	15.25	14.00	58.00
12	8.94	12.00	15.00	20.50	0.06	2.00	19.75	16xø1.25	17.75	—	—

Note: 8"-12" Optional gear operation.



Series 4500 Regular & 6500 Full Port, 2-Piece, O-Ring Stem Ball Valves • API 6D

This is an illustrated cross section of a typical PBV® Valve full port, 2-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.

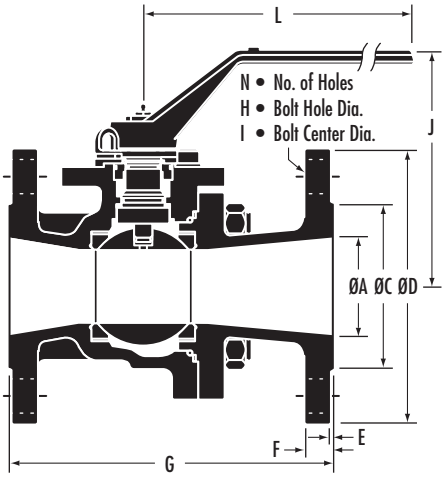


**O-Ring weather seal insures tight sealing, making this valve ideal for offshore applications.*

Series 4500 Regular Port, Dimensional Data, Class 150, 300 & 600

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

Valve Size	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

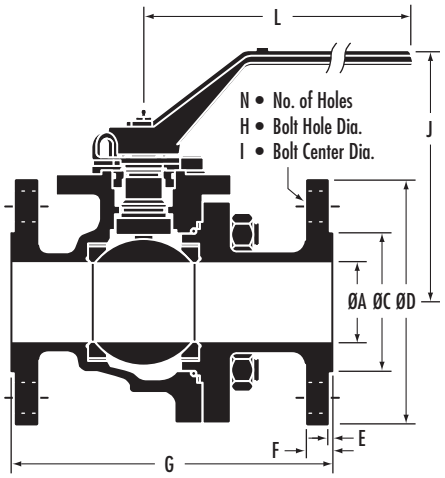


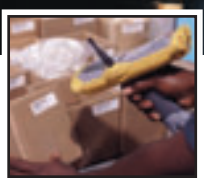
Dimensional Data (in.)

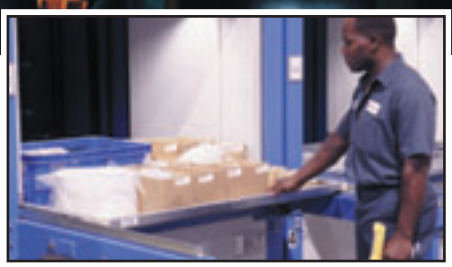
Test Pressure	Shell (hydrostatic)	Seat (air)	Seat (hydrostatic)
Class 150	450 psi	80 psi	320 psi
Class 300	1125 psi	80 psi	825 psi
Class 600	2250 psi	80 psi	1650 psi

Series 6500, 1"- 6", Class 150, 300 & 600 (in.)

Valve Size	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
1 1/2	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
1 1/2	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
1 1/2	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





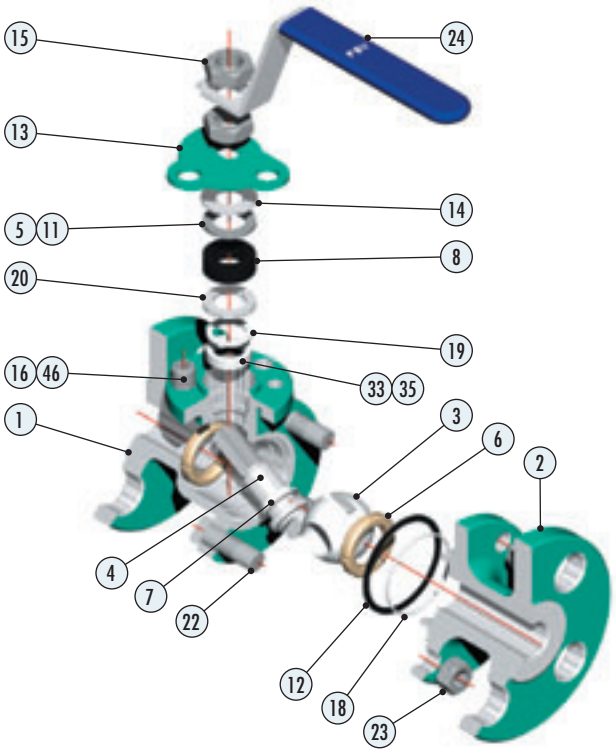


Computerized Inventory Keeps Your Order On Time

PBV®'s computerized inventory control insures 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 and Materials for Stem Packing Design Valves

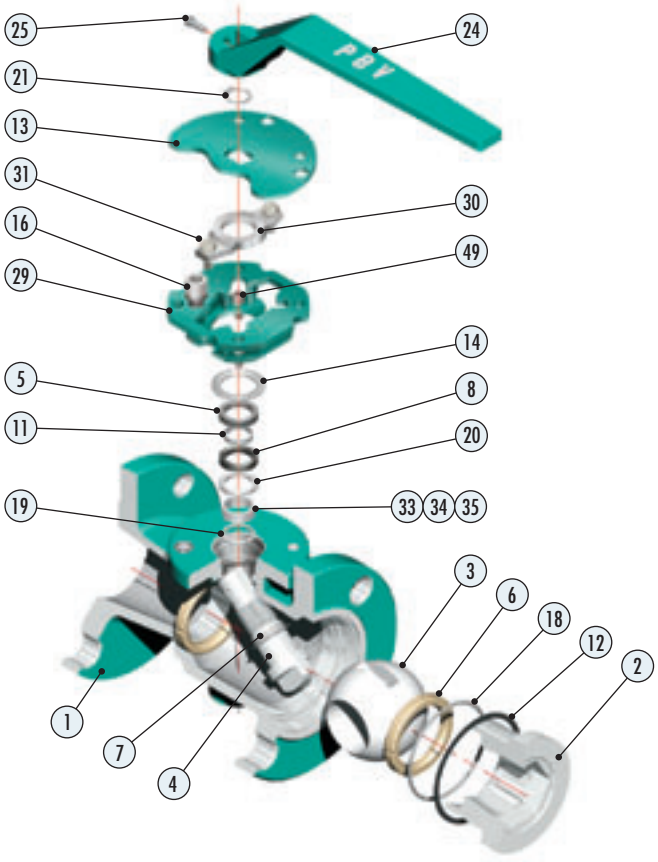


Series 6400, 1/2"-1", Class 150, 300 & 600
Series 4400, 3/4"-1 1/2", Class 600
Series 5400, 3/4"-1 1/2", Class 150, 300 & 600

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	L7	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		

*Series 5400 not shown.

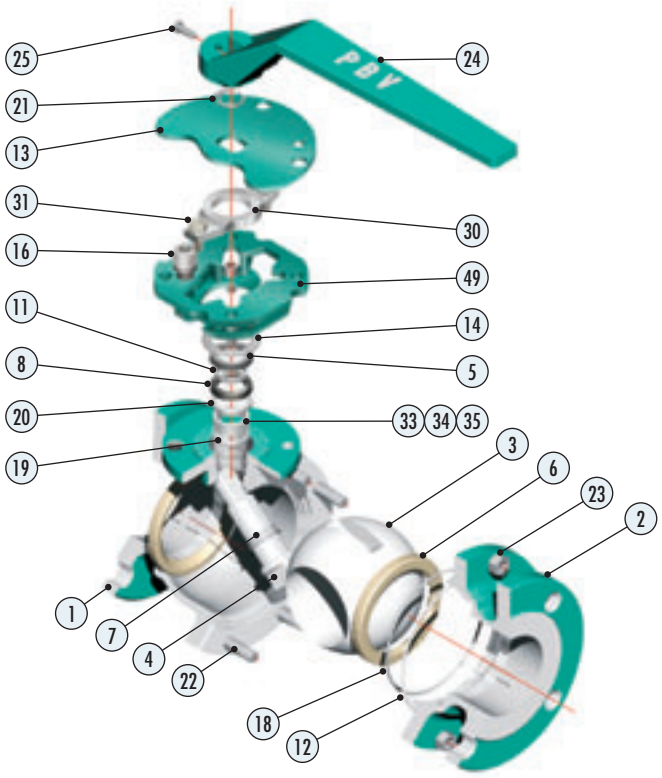


Series 5400, 2"-4", Class 150 & 300

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	G/F PTFE		
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		

*Recommended spare parts

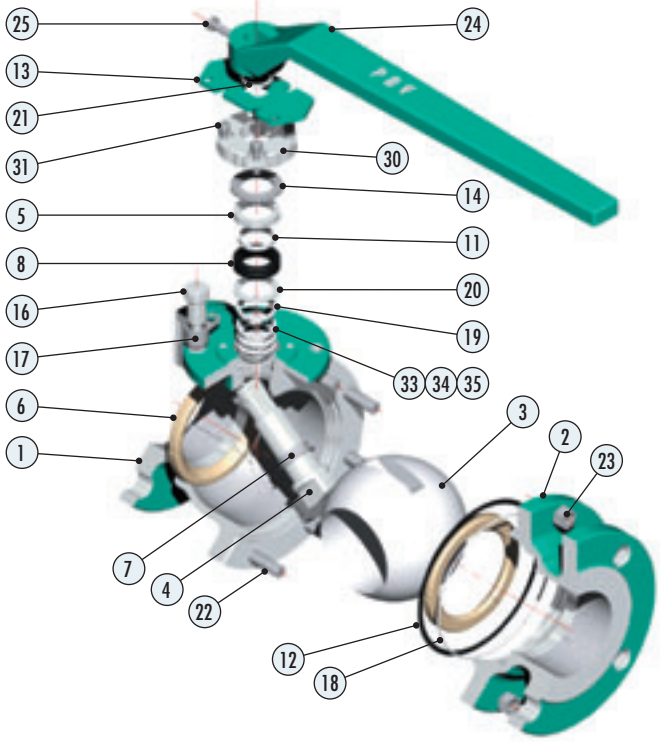


Series 6400, 1 1/2 - 2" Class 150, 300 & 600
Series 4400, 2" - 3", Class 150, 300 & 600

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*	G/F PTFE		
20	Secondary Packing Washer	Stainless Steel		
21	Snap Ring	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	L7	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.



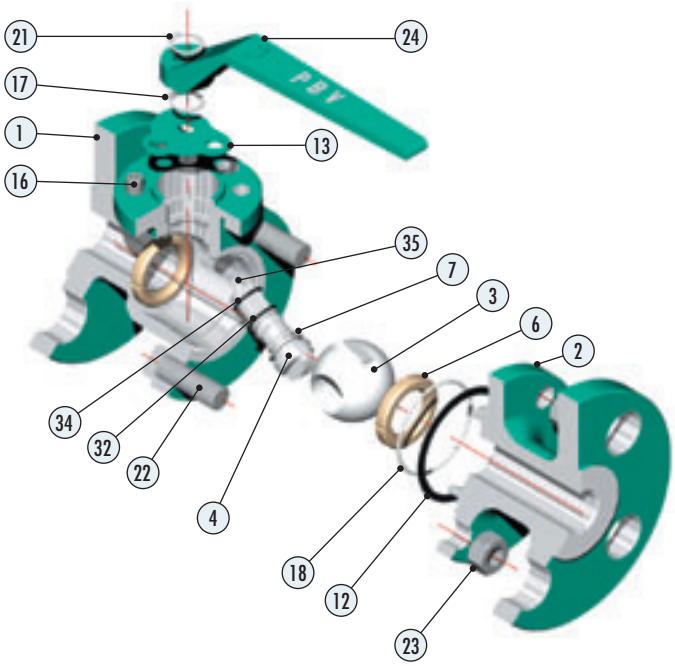
Series 6400, 3"-10", Class 150 & 300, 3"- 4", Class 600
Series 4400, 4" - 10", Class 150 & 300, 4" - 6", Class 600
Series 5400, 6" - 12", Class 150 & 300

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	G/F PTFE		
20	Secondary Packing Washer	Stainless Steel		
21	Snap Ring	Stainless Steel		
22	Stud	B7M	L7M	B8
23	Nut	2HM	L7	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		

Notes: 1. 8" & 10" use bar type handle. 2. Gear is optional.
3. Series 5400 body & insert design same as 2"- 4" illustration on page 16.

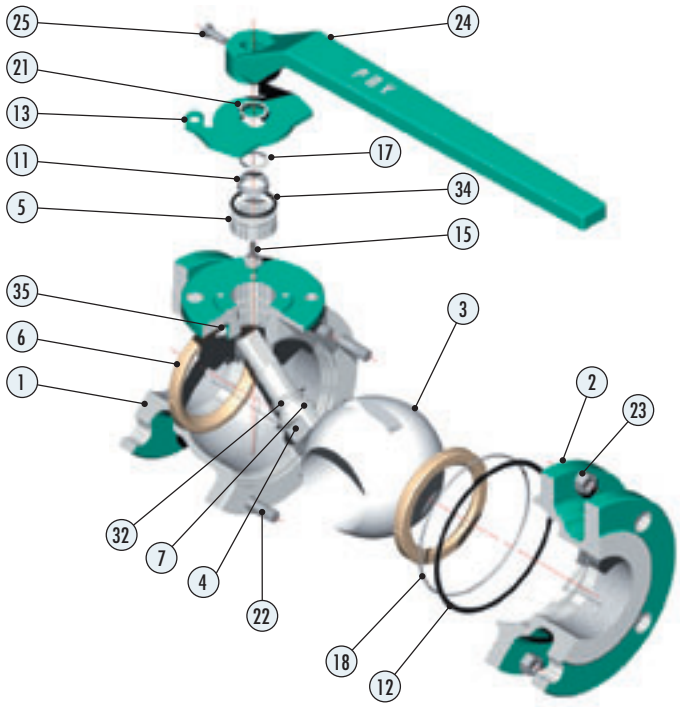
Parts and Materials for Stem O-Ring Design Valves • API 6D



Series 6500, 1", Class 150 & 300

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		



Series 6500, 1 1/2"- 6", Class 150 & 300, 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

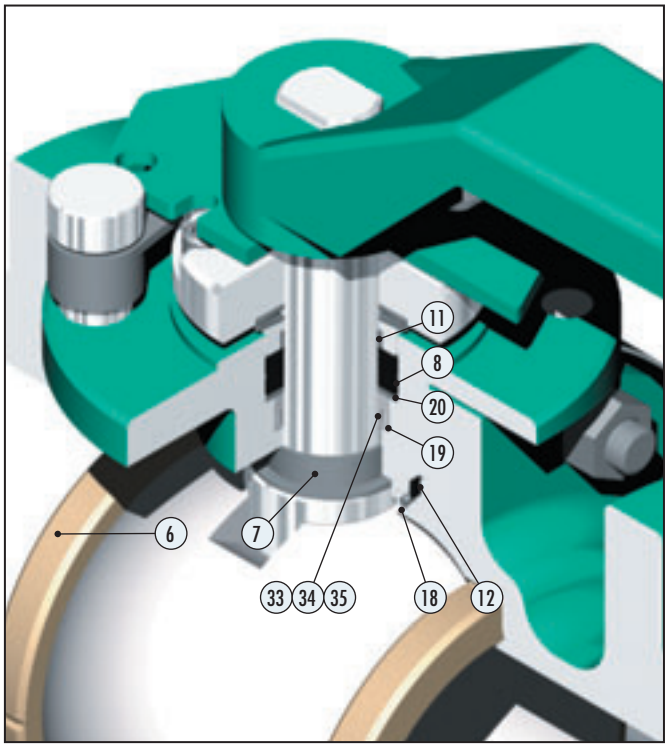
Item No.	Description	Material		
1	Body	WCB	LCC	CF8M
2	Cap	WCB	LCC	CF8M
3	Ball	ASTM A351 CF8M		
4	Stem	ASTM A276 316		
5	Gland	Stainless Steel		
6	Ball Seat	TFM/TFMC (Note 3)		
7	Stem Bearing	G/F PTFE		
11	Gland Bearing	G/F PTFE		
12	Body Gasket	Graphite		
13	Stop Plate/Lock Device	Stainless Steel		
15	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		

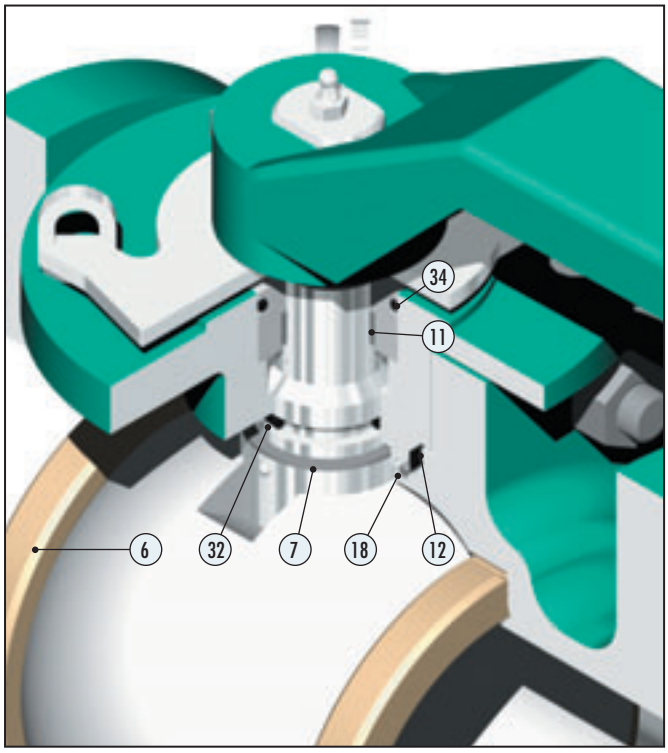
Notes: 1. 8" & 10" use bar type handle.
2. Gear is optional.
3. Nylon: Ser. 6500, 3" & 4", Class 600, Ser. 4500, 4" & 6", Class 600

The time spent in shutting down a line to perform repairs can never be recovered. That is why at PBV® Valve, 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® Valve 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.	Quantity	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
19	1	Primary Packing Washer
20	1	Secondary Packing washer
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.	Quantity	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

PBV® Valve General Terms and Conditions of Sale

By acceptance of the goods described herein, the Purchaser expressly acknowledges and agrees to the following general terms and conditions of sale (the "Terms and Conditions"):

1. Warranty: The warranty described below applies only to new or unused goods or goods reconditioned by PBV® Valve (Seller). The Seller specifically disclaims any warranty for used goods or goods sold as is. For a period of one (1) year after date of shipment of any of the goods described herein, Seller warrants such goods shall remain free from failure due to defects in workmanship and materials incorporated therein by or for Seller provided such failure shall not have been caused or contributed to by improper usage, storage, service application, installation or maintenance, repairs, alterations, or modifications effected by or for the user; or misuse, negligence or accident. In the event of failure for which Seller has assumed warranty obligations hereunder, and provided Purchaser provides written notification of such failure immediately to Seller, Seller agrees to repair, or at its option, to replace the goods sold at its sole expense. Apart from the warranty and undertaking above set forth, or unless otherwise specifically consented to in writing by Seller, Seller assumes no obligation or liability for losses, expenses or damages, direct or consequential, suffered or incurred as a result of any failure of, or defect in, the goods described herein, including but not limited to, such losses, expenses or damages as may result from the necessity to remove, replace, restore or transport the goods from any location or service in which they may be used, regardless of the cause of such failure or defect. This warranty extends only to the original Purchaser of the goods and is the only warranty made by Seller in connection herewith; provided, however, that if such original purchaser is a reseller or distributor of Seller's goods, such warranty shall also extend to any person or entity that purchases such goods directly from such reseller or distributor. There are no other warranties, express or implied, of any kind given with respect to the goods, their merchantability, fitness for any particular purpose or usage, or otherwise, nor is any person authorized to extend on behalf of Seller any form of warranty other than that above set forth. The goods described herein are not sold or distributed by Seller for personal, family or household purposes, nor are they normally suited for use as such.

2. Prices: Prices and other terms of sale where set forth in current price sheets are subject to change without notice. Stenographic or clerical errors are subject to correction.

3. Acceptance of Orders and Assignment: All orders are subject to acceptance by Seller at its home office, Stafford, Texas, only. No assignment of the Purchaser's rights or obligations under any purchase order may be made without the prior written consent of the Seller.

4. Terms, Payment and Partial Shipment: All accounts are payable net 30 days from invoice date. Seller shall charge one percent (1%) per month interest charged on accounts after 30 days from invoice date, or twelve percent (12%) annually. All accounts are payable in United States dollars, free of exchange, collection, or any other charges. If in the sole discretion of Seller, the financial condition of the Purchaser at any time so requires, Seller retains the right to require full or partial payment in advance, to set spending limits for credit accounts or to require other adequate assurances of financial responsibility. Seller reserves the right to make partial shipments from time to time and render invoices therefore, which shall be due and payable as provided in said invoices.

5. Freight Charges: Unless otherwise specifically noted, standard shipping charges (calculated by product weight, not including packaging) shall be added or be in addition to the price quoted and Purchaser agrees to pay the same to Seller.

6. Taxes: Unless otherwise specifically noted, the amount of any sales, use, value added, occupancy, excise tax, or other tax, of any nature, federal, state, or local, for which Seller is legally liable, either initially or through failure of payment by Purchaser, shall be added or be in addition to the price quoted and Purchaser agrees to pay the same to Seller.

7. Unavoidable Conditions: Seller shall not be liable for failure to deliver or delays in delivery occasioned by causes beyond its control, including, without limitation, strikes, lockouts, fires, embargoes, war or other outbreaks of hostilities, acts of God, inability to obtain shipping space, machinery, breakdowns, delays of carriers or suppliers, and governmental acts or regulations.

8. Returns and Cancellations: Return requests must be made within 90 days of shipment, and no product may be returned without a prior written Returned Goods Authorization (RGA) form signed by Seller and freight prepaid by Purchaser. All standard materials returned are subject to a handling charge, freight in both directions, a 25% minimum restocking fee and charges for any required reconditioning, clean up or re-certification, unless otherwise specified in writing by Seller. All returned standard materials are subject to inspection and final disposition by Seller's quality department. Special material items, buyouts, and modified products are non-returnable. Overages, shortages and incorrect material claims must be made in writing within ten (10) days of receipt of goods. Cancellation of orders once placed with and accepted by Seller may be made only with its written consent. Cancellation of orders are subject to a cancellation charge to be determined by impact at time of cancellation or modification of order. Cancellation of non-standard material or excessive quantities as determined by Seller may incur up to 100% cancellation charge depending on stage of work in progress.

9. No Waiver: Seller's failure to insist upon compliance with any of the terms, covenants, or conditions listed herein or to exercise any right hereunder shall not be construed as a waiver or relinquishment of the future performance of any such term, covenant or condition, or the future exercise of such right or a waiver or relinquishment or waiver of any other term, covenant or condition or the exercise of any other rights hereunder.

10. Drawings, Data and Confidential Information: The weights, dimensions, capacities, prices, performance ratings and other data included in catalogues, prospectuses, circulars, advertisements, illustrated matter and price lists constitute a guide. These data shall not be binding except to the extent that they are by reference expressly included in the purchase order. Any drawings or technical documents intended for use in the manufacture or construction of machinery, equipment, plants, parts, or other material and any ancillary services associated therewith, or any part thereof, and submitted to the Purchaser prior or subsequent to the formation of the purchase order (the "Material"), remain the exclusive property of the Seller; provided however, that the Material shall become the property of the Purchaser only if the Purchaser and Seller agree in writing. The Material shall not, without the Seller's consent, be utilized by the Purchaser or copied, reproduced transmitted or communicated to an unauthorized third party.

11. Governing Law: This contract shall be governed by, construed and enforced in accordance with the laws of the State of Texas, without regard to its conflicts of law rules that would apply the laws of any other jurisdiction.

12. Totality of Agreement, Special Provisions, Modifications, Severability: These Terms and Conditions constitute the entire agreement of the parties with respect to all matters and things herein mentioned. Purchaser warrants, represents and agrees that it has inspected the goods and otherwise made inquiry and review, upon its own behalf, concerning the nature, characteristics and quality of the materials and workmanship incorporated therein at or prior to delivery, that it is fully contented and satisfied therewith and has independently determined that the goods are in all respects fit and usable for all purposes for which they are intended to be employed by Purchaser. It is expressly acknowledged and agreed by and between the parties that neither party has, nor is now, relying upon any collateral, prior or contemporaneous agreement, written or oral, assurance or assurances, representations or warranties, of any kind or nature as to or respecting the condition or capabilities of the goods and the other matters and things, rights and responsibilities herein fixed and described. No modification, waiver or discharge of any term or provision of these Terms and Conditions shall be implied by law, nor shall any alteration, modification or acquittance of any such term or provision be effective for any purpose unless signed in writing by or on behalf of the party charged therewith. All products are subject to prior sales. All sales are subject to these Terms & Conditions.

13. Export Regulations: Seller's products can only be exported in accordance with U.S. Export Administration Regulations and other U.S. legal requirements. Diversion contrary to U.S. law is prohibited.

Represented By:

P.B.V.®
A GFT COMPANY

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