

Series FB

Floating
Ball Valve



AOP™

A Proud Cameron Brand

SERIES FB – FLOATING BALL VALVE

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SERIES FB – FLOATING BALL VALVE

INTRODUCTION

AOP offers a wide range of floating ball valves. The designs have been developed based on our customers requirements.

When you specify an AOP Ball Valve, you have selected a premier product.

With our state of the art manufacturing techniques, our valves are manufactured to the highest standards ensuring superior performance.

AOP Ball Valves are stocked by a network of authorized distributors to service the petroleum producing and refining industries.

AOP products are marketed worldwide by domestic and international representatives. Many of these representatives maintain local inventories for immediate delivery.

AOP offers check valves, needle valves, in addition to our threaded end, butt weld and flanged end ball valves.

Call AOP, our field representatives, or local distributors today for more information on how AOP can provide solutions for your upstream wellhead and downstream production needs.

STANDARD FEATURES ON ALL SERIES FB BALL VALVES

AOP two-piece, bolted body flanged end valves are designed to meet or exceed today's abrasive and corrosive applications. All AOP Series FB Ball Valves incorporate the following standard features:

- Stem is back-seated and positively retained: cannot be removed with the valve in service
- Stem lube fitting and weather seal
- Fire Tested and Certified to API 607 Latest Edition
- TFM, Nylon, and Peek seats available
- Anti-static device
- Standard locking handle
- Conforms to NACE MR0175/ISO 15156 for non-buried service, with stainless steel internals
- Available in both standard bore and full bore
- Double stem flat design indicates ball position
- B16.34
- ISO 5211 Mounting pad

Stem Lube Fitting and Weather Seal

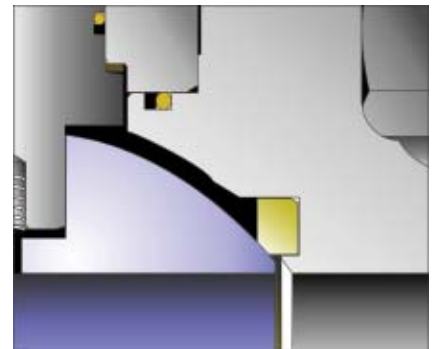
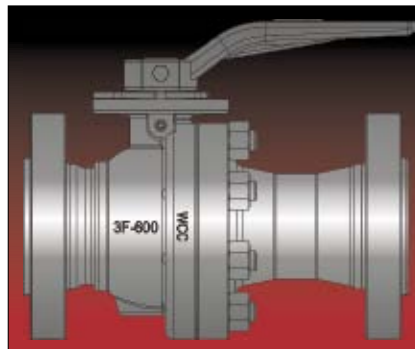
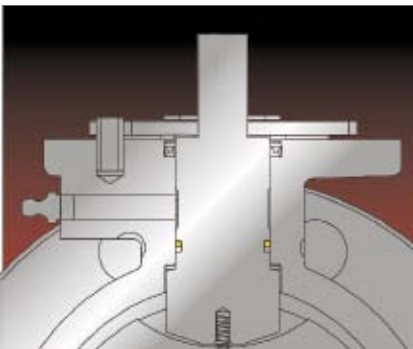
External stem lube fitting on the side of the valve, allows for effective lubrication of the stem journal. Weather seal prevents external attack by corrosion and foreign abrasives.

Bolted Body Design

AOP's Series FB Ball Valve is a rugged two-piece bolted design. Our premier ball valve is available in sizes 1 in. FP - 10 in. RP and pressures up to 3705 psi. Materials are available in carbon steel and stainless steel.

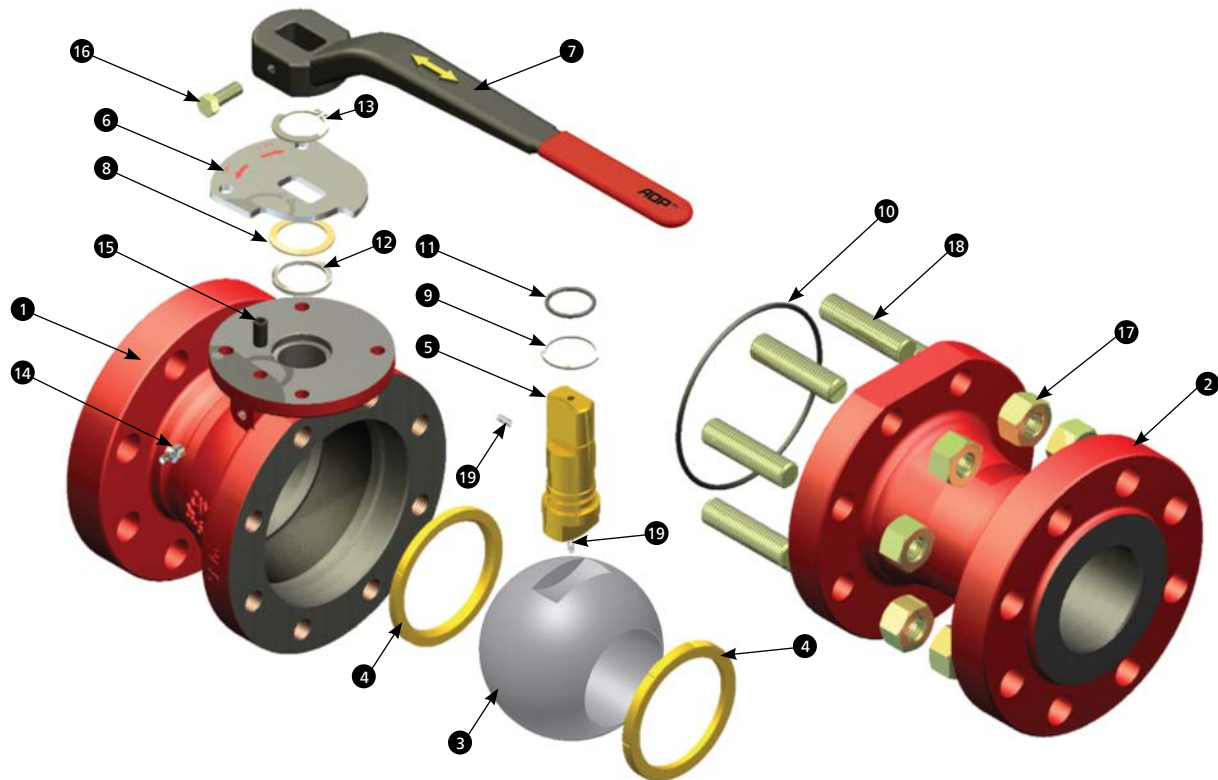
Standard NYLON and Reinforced TEFLON Seats

AOP seats provide bubble-tight sealing at high and low pressures. In the event of seat damage (e.g., fire) the design incorporates metal-to-metal sealing. Seat materials include Nylon and TFM.



SERIES FB – FLOATING BALL VALVE

MATERIALS LIST AND STANDARDS



SERIES FB MATERIALS LIST

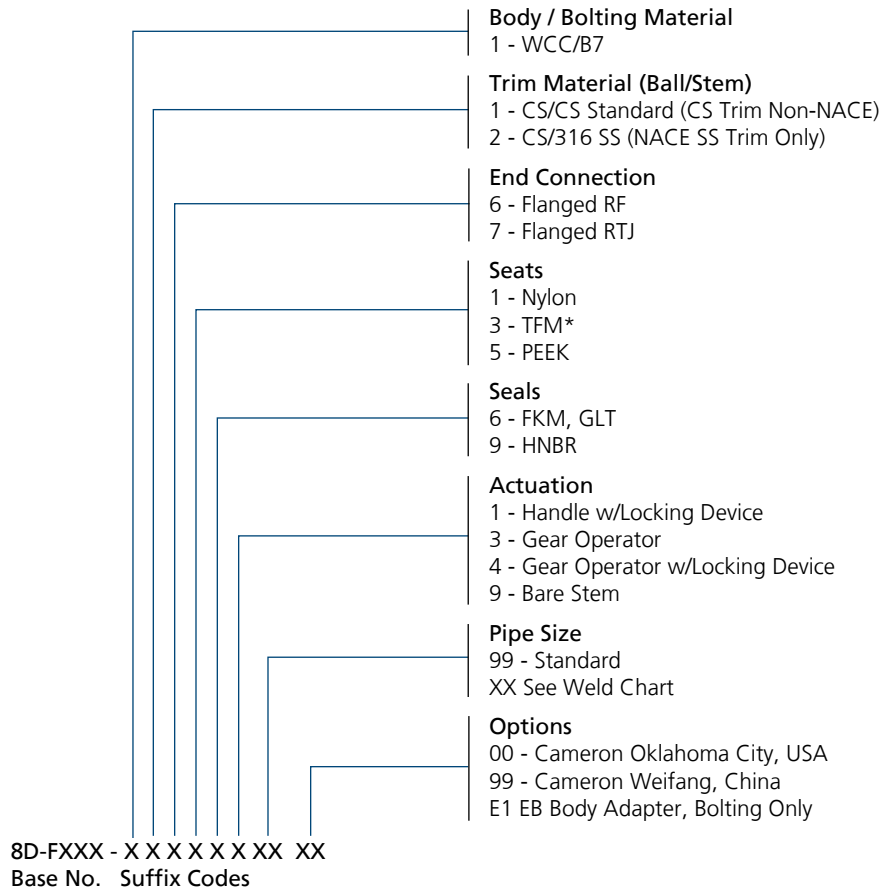
Item	Qty.	Part	Material (Standard)
1	1	Body	ASTM A216 WCC Carbon Steel
2	1	Adapter	ASTM A216 WCC Carbon Steel
3	1	Ball	A105 1 MIL ENP/316 Stainless Steel (NACE)
4	2	Seat	Nylon, TFM, Peek
5	1	Stem	4130/4140 1 MIL ENP/316 Stainless Steel (NACE)
6	1	Stop Plate	Zinc Plated Steel
7	1	Handle	A536 Gr. 65-45-12
8	1	Stem Washer	Teflon, Nylon
9	1	Stem Bearing	PTFE, Nylon
10	1	Body Seal	HNBR/FKM
11	1	Stem Seal	HNBR/FKM
12	1	Weather Seal	Nylon
13	1	Retaining Ring	Spring-Steel
14	1	Lube Fitting	Steel
15	1	Stop Pin	Steel
16	1	Handle Bolt	ASTM A574 Gr. 5
17	*	Hex Nut	ASTM A194 2H
18	*	Studs	ASTM A193-B7
19	2	Anti-Static Spring	Inconel X-750

* Quantity depends on Valve Size and Pressure Class.

Note: All Valves incorporating 316 Stainless Steel Trim Conform to NACE MR0175 / ISO 15156.

SERIES FB – FLOATING BALL VALVE

ASSEMBLY CODES / OPERATION NUMBERS



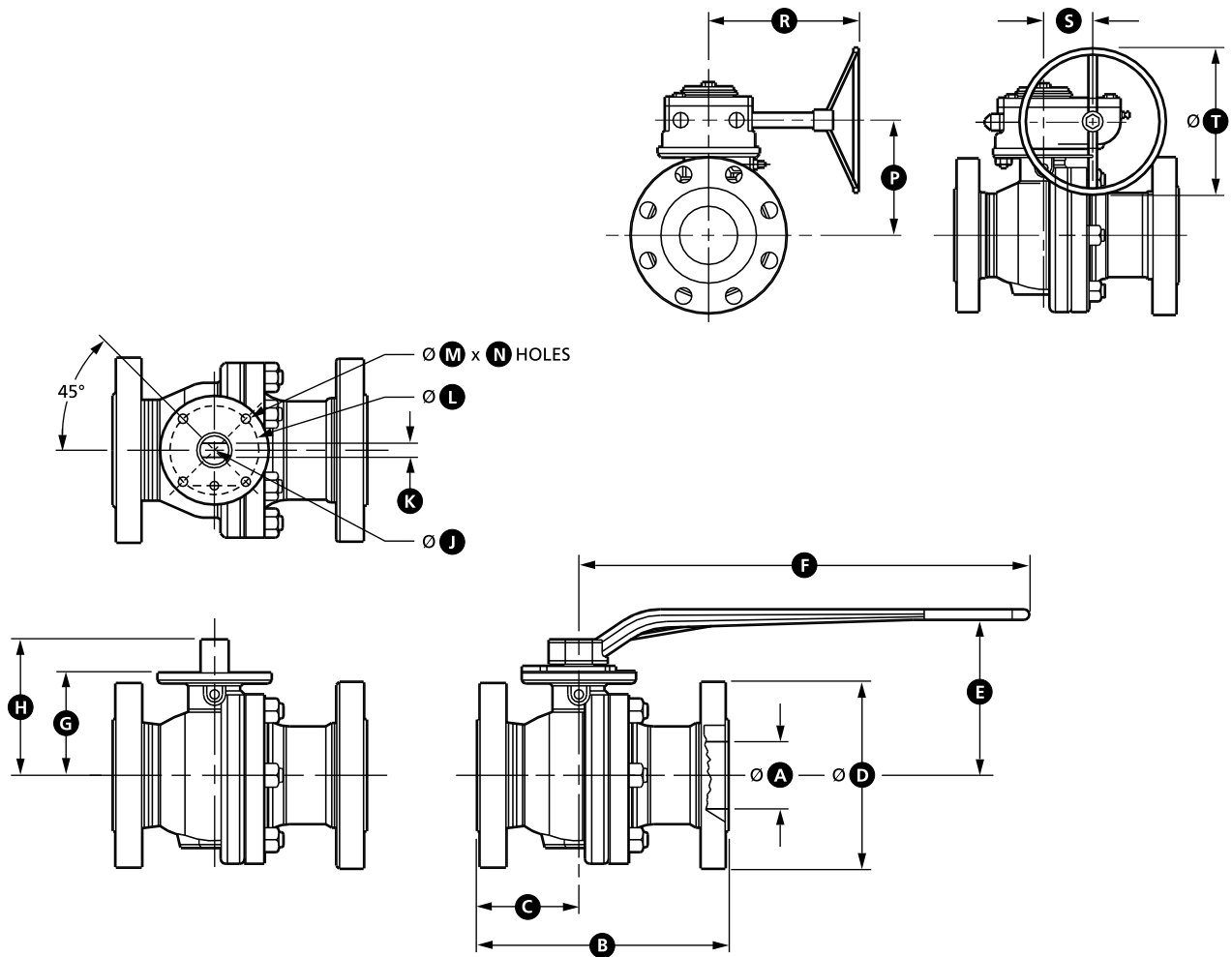
* TFM available in 1 in. through 8 x 6 in. Class 150 / 300 only.

ASSEMBLY BASE NUMBERS

Size (in.)	Model							
	150 RF	300 RF	600 RF	600 RTJ	900 RF	900 RTJ	1500 RF	1500 RTJ
1 FP	F100-	F300-	F600-	F600-	F900-	F900-	F500-	F500-
1.5 FP	F101-	F301-	F601-	F601-	F901-	F901-	F501-	F501-
2 RP	F102-	F302-	F602-	F602-	F902-	F902-	F502-	F502-
2 FP	F103-	F303-	F603-	F603-	F903-	F903-	F503-	F503-
3 RP	F105-	F305-	F605-	F605-	F905-	F905-	-	-
3 FP	F106-	F306-	F606-	F606-	-	-	-	-
4 RP	F107-	F307-	F607-	F607-	-	-	-	-
4 FP	F108-	F308-	F608-	F608-	-	-	-	-
6 RP	F109-	F309-	F609-	F609-	-	-	-	-
6 FP	F110-	F310-	-	-	-	-	-	-
8 RP	F111-	F311-	-	-	-	-	-	-
8 FP	F112	F312-	-	-	-	-	-	-
10 RP	F113	F313-	-	-	-	-	-	-

SERIES FB – FLOATING BALL VALVE

DIMENSIONS 1 in. - 2 in. x 1 1/2 in.

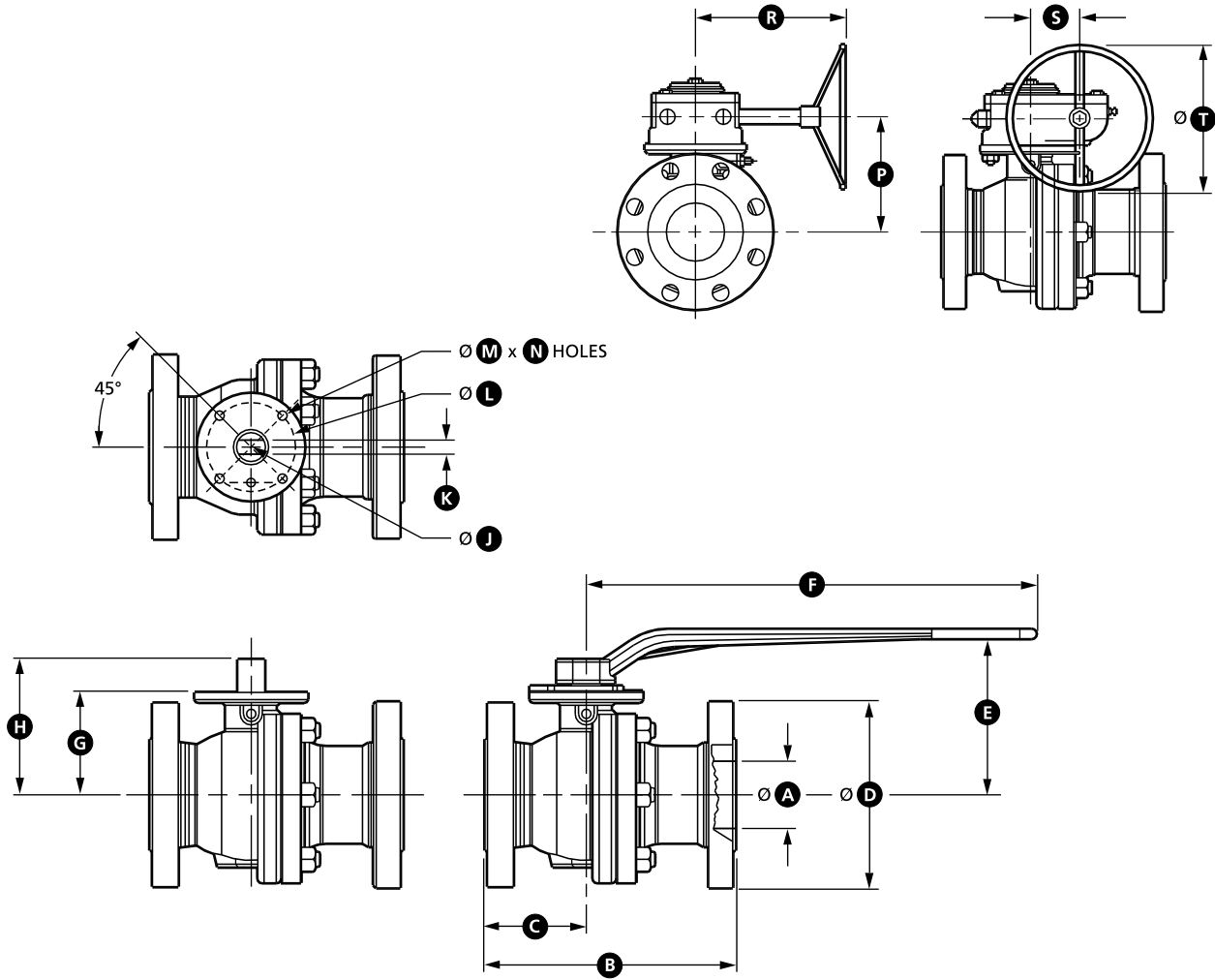


SERIES FB DIMENSIONAL DATA

Size in.	ASME Class	A	B		C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	Weight lbs.	
			RF	RTJ																w/Lever	w/Gear
1 x 1	150	1.00	5.00	-	2.09	4.25	5.00	10.00	2.25	2.98	0.810	0.352	1.969	0.28	4	3.38	4.69	1.67	5.00	11	16
	300	1.00	6.50	-	2.85	4.87	5.00	10.00	2.25	2.98	0.810	0.352	1.969	0.28	4	3.38	4.69	1.67	5.00	15	20
	600	1.00	8.50	8.50	3.85	4.87	5.00	10.00	2.25	2.98	0.810	0.352	1.969	0.28	4	3.38	4.69	1.67	5.00	25	30
	900	1.00	10.00	10.00	4.41	5.87	5.00	10.00	2.25	2.98	0.810	0.352	1.969	0.28	4	3.38	4.69	1.67	5.00	30	35
	1500	1.00	10.00	10.00	4.41	5.87	5.00	10.00	2.25	2.98	0.810	0.352	1.969	0.28	4	3.38	4.69	1.67	5.00	30	35
1 1/2 x 1 1/2	150	1.50	6.50	-	2.81	5.00	5.75	12.00	3.19	4.14	0.994	0.504	2.750	0.34	4	4.32	7.05	2.05	6.30	21	29
	300	1.50	7.50	-	3.31	6.12	5.75	12.00	3.19	4.14	0.994	0.504	2.750	0.34	4	4.32	7.05	2.05	6.30	28	37
	600	1.50	9.50	9.50	4.69	6.12	5.75	12.00	3.19	4.14	0.994	0.504	2.750	0.34	4	4.32	7.05	2.05	6.30	37	45
	900	1.50	12.00	12.00	6.00	7.00	5.75	12.00	3.19	4.07	1.120	0.564	2.750	0.35	4	4.32	7.05	2.05	6.30	52	60
	1500	1.50	12.00	12.00	6.00	7.00	5.75	12.00	3.19	4.07	1.120	0.564	2.750	0.35	4	4.32	7.05	2.05	6.30	52	60
2 x 1 1/2	150	1.50	7.00	-	3.25	6.00	5.75	12.00	3.19	4.14	0.994	0.504	2.750	0.34	4	4.32	7.05	2.05	6.30	25	33
	300	1.50	8.50	-	4.13	6.50	5.75	12.00	3.19	4.14	0.994	0.504	2.750	0.34	4	4.32	7.05	2.05	6.30	32	40
	600	1.50	11.50	11.62	4.26	6.50	5.75	12.00	3.19	4.14	0.994	0.504	2.750	0.34	4	4.32	7.05	2.05	6.30	43	51
	900	1.50	14.50	14.62	7.26	8.50	5.75	12.00	3.19	4.07	1.120	0.564	2.750	0.35	4	4.32	7.05	2.05	6.30	77	85
	1500	1.50	14.50	14.62	7.26	8.50	5.75	12.00	3.19	4.07	1.120	0.564	2.750	0.35	4	4.32	7.05	2.05	6.30	77	85

SERIES FB – FLOATING BALL VALVE

DIMENSIONS 2 in. x 2 in. - 3 in. x 3 in.

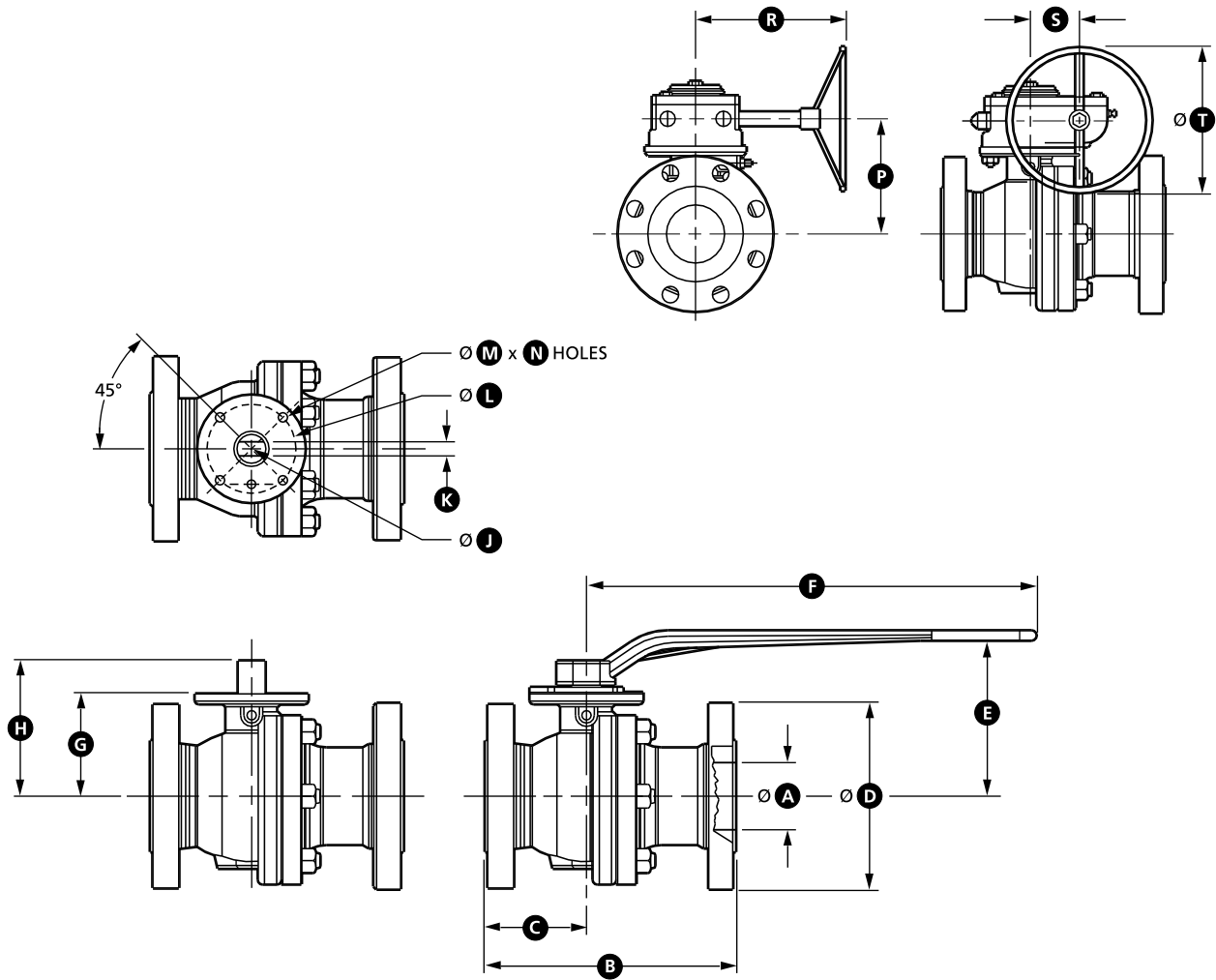


SERIES FB DIMENSIONAL DATA

Size	ASME	A	B		C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	Weight lbs.	
in.	Class		RF	RTJ																w/Lever	w/Gear
2 x 2	150	2.00	7.00	-	3.25	6.00	6.09	12.00	3.56	4.48	1.120	0.564	2.750	0.34	4	4.69	7.05	2.05	6.30	29	37
	300	2.00	8.50	-	4.13	6.50	6.09	12.00	3.56	4.48	1.120	0.564	2.750	0.34	4	4.69	7.05	2.05	6.30	36	44
	600	2.00	11.50	11.62	4.26	6.50	6.09	12.00	3.56	4.48	1.120	0.564	2.750	0.34	4	4.69	7.05	2.05	6.30	47	55
	900	2.00	14.50	14.62	7.06	8.50	6.70	20.00	3.88	5.19	1.310	0.682	4.016	0.40	4	5.47	9.18	2.80	7.87	95	116
	1500	2.00	14.50	14.62	7.06	8.50	6.70	20.00	3.88	5.19	1.310	0.682	4.016	0.40	4	5.47	9.18	2.80	7.87	95	116
3 x 2	150	2.00	8.00	-	3.69	7.50	6.09	12.00	3.56	4.48	1.120	0.564	2.750	0.34	4	4.69	7.05	2.05	6.30	40	48
	300	2.00	11.12	-	4.50	8.25	6.09	12.00	3.56	4.48	1.120	0.564	2.750	0.34	4	4.69	7.05	2.05	6.30	60	68
	600	2.00	14.00	14.12	5.00	8.25	6.09	12.00	3.56	4.48	1.120	0.564	2.750	0.34	4	4.69	7.05	2.05	6.30	69	77
	900	2.00	15.00	15.12	7.31	9.50	6.70	20.00	3.88	5.19	1.310	0.682	4.016	0.40	4	5.47	9.18	2.80	7.87	110	131
3 x 3	150	3.00	8.00	-	3.69	7.50	7.44	20.00	4.63	6.09	1.310	0.682	4.016	0.40	4	6.22	9.18	2.80	7.87	63	84
	300	3.00	11.12	-	4.44	8.25	7.44	20.00	4.63	6.09	1.310	0.682	4.016	0.40	4	6.22	9.18	2.80	7.87	83	104
	600	3.00	14.00	14.12	5.00	8.25	7.44	20.00	4.63	6.09	1.310	0.682	4.016	0.40	4	6.22	9.18	2.80	7.87	120	141

SERIES FB – FLOATING BALL VALVE

DIMENSIONS 4 in. x 3 in. - 6 in. x 4 in.

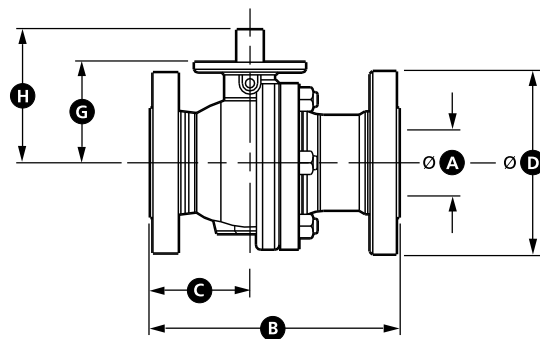
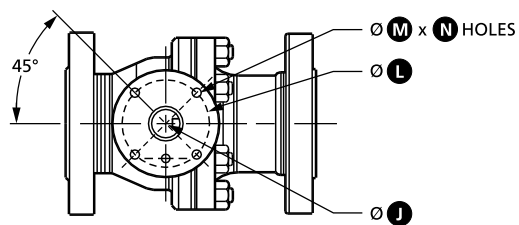
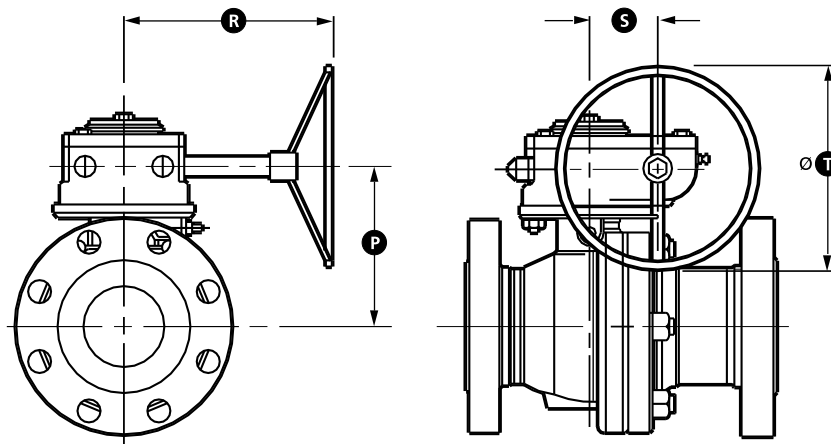


SERIES FB DIMENSIONAL DATA

Size in.	ASME Class	A	B		C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	Weight lbs.	
			RF	RTJ																w/Lever	w/Gear
4 x 3	150	3.00	9.00	-	4.25	9.00	7.44	20.00	4.63	6.09	1.310	0.682	4.016	0.40	4	6.22	9.18	2.80	7.87	73	94
	300	3.00	12.00	-	4.87	10.00	7.44	20.00	4.63	6.09	1.310	0.682	4.016	0.40	4	6.22	9.18	2.80	7.87	104	125
	600	3.00	17.00	17.12	6.00	10.75	7.44	20.00	4.63	6.09	1.310	0.682	4.016	0.40	4	6.22	9.18	2.80	7.87	139	160
4 x 4	150	4.00	9.00	-	4.25	9.00	10.19	24.00	5.88	7.68	1.498	0.842	4.016	0.41	4	7.47	9.18	2.80	7.87	96	117
	300	4.00	12.00	-	4.75	10.00	10.19	24.00	5.88	7.68	1.498	0.842	4.016	0.41	4	7.47	9.18	2.80	7.87	135	156
	600	4.00	17.00	17.12	6.00	10.75	10.19	24.00	5.88	7.68	1.498	0.842	4.016	0.41	4	7.47	10.56	2.80	11.80	180	201
6 x 4	150	4.00	10.50	-	5.00	11.00	10.19	24.00	5.88	7.68	1.498	0.842	4.016	0.41	4	7.47	9.18	2.80	7.87	116	137
	300	4.00	15.88	-	6.82	12.50	10.19	24.00	5.88	7.68	1.498	0.842	4.016	0.41	4	7.47	9.18	2.80	7.87	190	212
	600	4.00	22.00	22.12	8.50	14.00	10.19	24.00	5.88	7.68	1.498	0.842	4.016	0.41	4	7.47	10.56	2.80	11.80	288	310

SERIES FB – FLOATING BALL VALVE

DIMENSIONS 6 in. x 6 in. - 10 in. x 8 in.



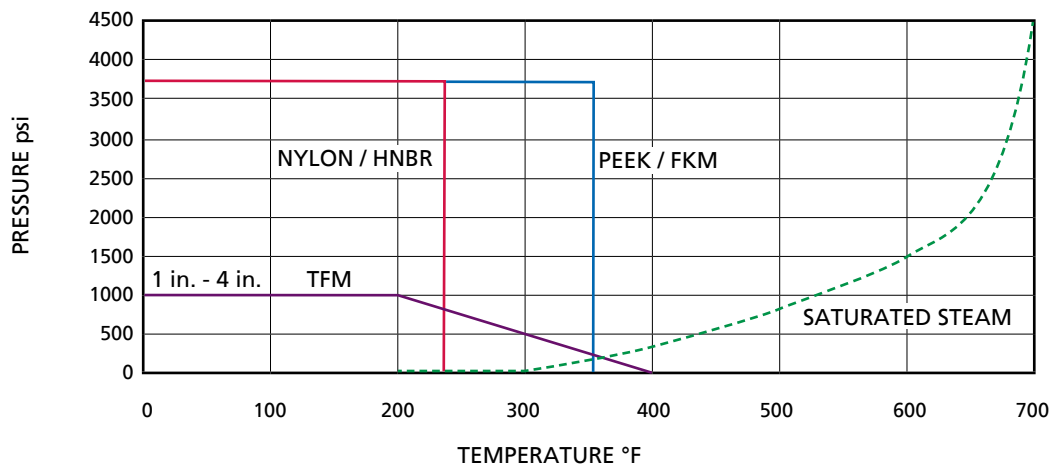
SERIES FB DIMENSIONAL DATA

Size in.	ASME Class	B		C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	Weight lbs.		
		RF	RTJ																	w/Lever	w/Gear	
6 x 6	150	6.00	15.50	-	7.75	11.00	-	-	8.50	10.92	2.125	-	5.512	0.67	4	0.500	10.39	11.71	4.11	11.80	205	255
	300	6.00	15.88	-	8.00	12.50	-	-	8.50	10.92	2.125	-	5.512	0.67	4	0.500	10.39	12.30	4.11	12.85	255	305
8 x 6	150	6.00	11.50	-	5.50	13.50	-	-	8.50	10.92	2.125	-	5.512	0.67	4	0.500	10.39	11.71	4.11	11.80	230	280
	300	6.00	16.50	-	8.25	15.00	-	-	8.50	10.92	2.125	-	5.512	0.67	4	0.500	10.39	12.30	4.11	12.85	325	375
8 x 8	150	8.00	18.00	-	9.12	13.50	-	-	10.12	13.31	2.375	-	6.496	0.78	4	0.625	12.29	17.50	5.12	14.44	340	410
	300	8.00	19.75	-	10.00	15.00	-	-	10.12	13.31	2.375	-	6.496	0.78	4	0.625	12.29	17.50	5.12	14.44	450	520
10 x 8	150	8.00	21.00	-	9.62	16.00	-	-	10.12	13.31	2.375	-	6.496	0.78	4	0.625	12.29	17.50	5.12	14.44	455	525
	300	8.00	22.38	-	11.12	17.50	-	-	10.12	13.31	2.375	-	6.496	0.78	4	0.625	12.29	17.50	5.12	14.44	575	645

SERIES FB – FLOATING BALL VALVE

ENGINEERING SPECIFICATIONS

PRESSURE/TEMPERATURE CHART



These pressure and temperature ratings are the maximum shut-off for each seat combination for continuous service at temperature. for maximum ASME body ratings consult the factory or ASME B16.34.

TORQUE VALUES in - lbs. (NYLON SEATS)

Bore Size (in.)	Pressure (psi)				
	285	740	1480	2220	3405
1	160	190	250	330	520
1 1/2	480	540	660	980	1350
2	720	960	1200	1720	2600
3	1200	1800	2160	-	-
4	1680	2280	2880	-	-
6	8220	11800	-	-	-
8	12600	18500	-	-	-

Torques are based on clean wet service.
If other conditions exist, a service factor should be applied.
Consult AOP for specific service.

TORQUE VALUES in - lbs. (TFM SEATS)

Bore Size (in.)	Pressure (psi)	
	285	740
1	130	160
1 1/2	360	480
2	600	720
3	1080	1680
4	1560	2160
6	7500	12000

Torques are based on clean wet service.
If other conditions exist, a service factor should be applied.
Consult AOP for specific service.

FLANGED VALVE CV VALUES

Size (in.)	Class				
	150	300	600	900	1500
1	98	98	93	90	90
1 1/2	260	209	225	205	205
2 RP	185	182	171	135	135
2 FP	442	454	302	290	290
3 RP	221	381	284	175	-
3 FP	1363	1197	1072	-	-
4 RP	509	606	464	-	-
4 FP	2452	2323	1729	-	-
6 RP	1020	1029	1068	-	-
6 FP	4700	5438	-	-	-
8 RP	2216	2343	-	-	-
8 FP	10206	8333	-	-	-
10 RP	3890	4172	-	-	-

Flow in US gallons of water per minute with a 1 psi pressure drop across the valve. Use this value in the flow formulas.

AOP™
A Proud Cameron Brand

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