



MILWAUKEE VALVE

F20 Series Ball Valve

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⚠ State of California Prop 65 **WARNING:** Cancer and Reproductive Harm. For more information visit www.p65warnings.ca.gov.



F20 Series Ball Valve

Milwaukee Valve Company

F20CS/F20SS CLASS 150/300



2-Piece Full Port Flanged Ball Valve

Features and Benefits

- Locking Lever for Safety Lockout
- Live Loaded Packing for Extended Service
- Vented Ball in Ball Slot for Cavity Venting
- Standard Grounded Ball and Stem
- ISO 5211 Mounting Pad for Easy Actuation
- Spiral Wound Graphite and Stainless Body Seal
- NACE Compliant Fasteners for Sour Gas Service
- Blow-out Proof Stem
- Fire-safe to API 607 6th Edition
- Pressure Relieving Seat Design
- Meets All of the Latest: ASME, ASTM and API Standards

Operators Available

- Locking Lever Handle
- Gear Operated
- Pneumatic and Electric Actuation

Materials of Construction

- Body: WCB Carbon Steel or CF8M Stainless Steel
- Ball: 316 Stainless Steel
- Stem: 316 Stainless Steel
- Seats: Reinforced PTFE/or NXT (M-PTFE)
- Packing: Graphite

Specification

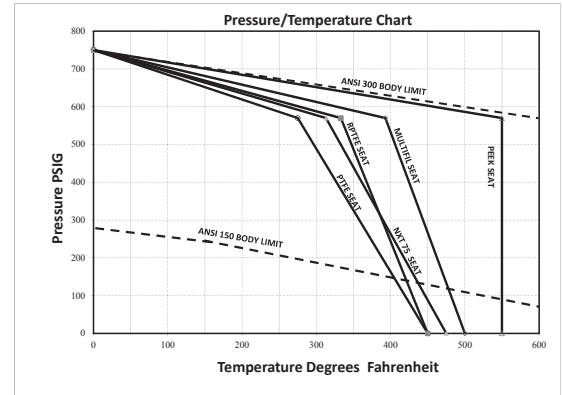
- Valve Sizes 1" thru 12" *
- ASME/ANSI Class 150/300
- B16.34 Design
- API 608 Design
- API 607 Fire-Safe 6th Edition
- API 598, MSS SP-72
- NACE MR0175

Pressure Ratings:	Class 150	Class 300
Carbon Steel	285 psi	740 psi
Stainless Steel	275 psi	720 psi

Valve is rated 150 psi Steam @ 365°F.
Multi-Fil PTFE Suitable for Steam
Applications > 150 psi.

TORQUE AND CV RATINGS

VALVE SIZE	Class 150 (0-285 PSID) TORQUE (in. lbs. / Nm)	Class 300 (285-740 PSID) TORQUE (in. lbs. / Nm)	Cv	VALVE SIZE	Class 150 (0-285 PSID) TORQUE (in. lbs. / Nm)	Class 300 (285-740 PSID) TORQUE (in. lbs. / Nm)	Cv
1	140 15.8	180 20.3	100	4	1600 180.8	1600 180.8	2500
1-1/2	220 24.9	300 33.9	270	6	2700 305.1	3000 339.0	5600
2	450 50.9	450 50.9	500	8	7200 813.6	10000 1130.0	10000
2-1/2	510 57.6	NA	785	10	8280 935.6	NA	16000
3	700 79.1	880 99.4	1300	12	13200 1491.6	NA	22300



* 1/2" & 3/4" - See F90/91 Series

How To Order Milwaukee Valve F20 Series Full Port Two Piece Flanged Ball Valve

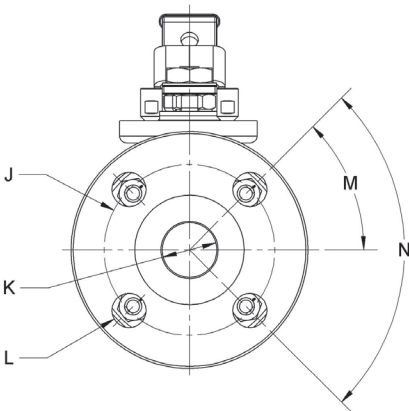
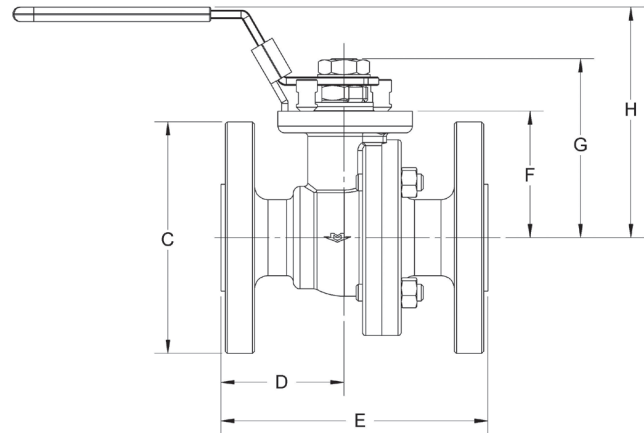
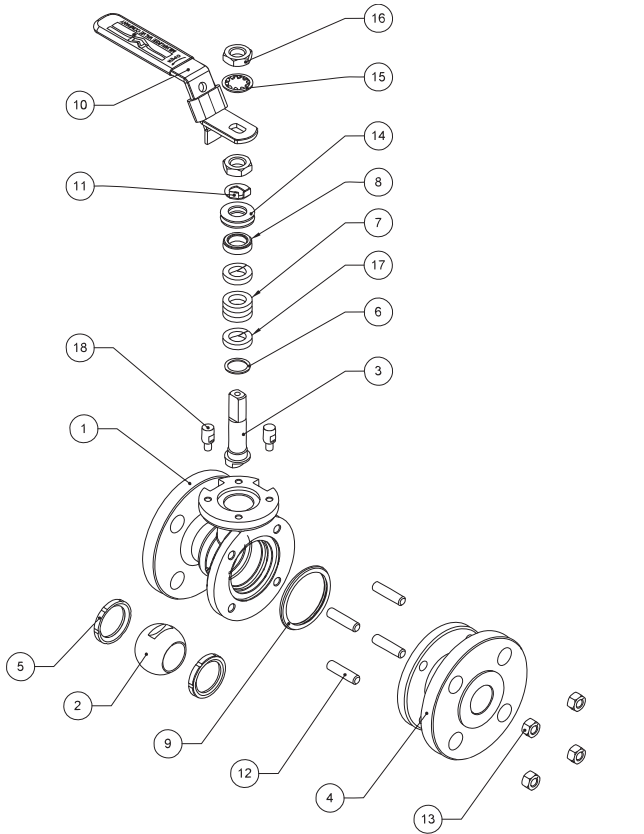
Series	ANSI Class	Body Material	Ball / Stem Material	Seat Material	Operator	Internal Options	Size
XXX	X	X	X	X	X	XXX	XXXX
F20	1-150 3-300	C-Carbon Steel (WCB) S-Stainless Steel (CF8M)	S-Stainless Steel (316) M-Monel (400)	N-NXT 1-Virgin PTFE 2-Reinforced PTFE 3-Multi-Fil PTFE (Steam Seat 250 psi)	2-Lever 3-Gear Operator	A-Assemble Dry V-Vented Ball O-Oxygen Clean C-Chlorine Clean F- Flat Faced Flg. T - PTFE Pkg.	100 - 1" 112 - 1-1/2" 200 - 2" 212 - 2-1/2" 300 - 3" 400 - 4" 600 - 6" 800 - 8" 1000 - 10" 1200 - 12"

F20	1	C	S	N	3	A	100
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150 Class, Carbon Steel Body, Stainless Steel Ball & Stem, NXT Seats, Gear Operator, Assembled Dry 1"

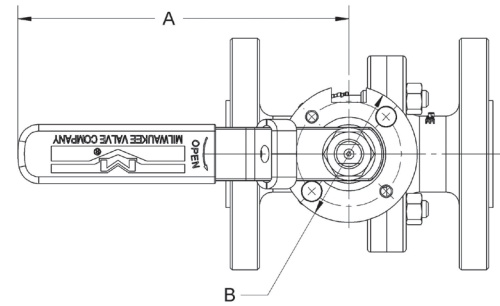


F20CS/F20SS CLASS 150/300 1"-3"



Material List

Item	Qty.	Description	F20 Class 150/300
1	1	Body	SS ASTM A351 GR CF8M
			CS ASTM A216 GR WCB
2	1	Ball	SS ASTM A351 GR CF8M
3	1	Stem	ASTM A479 Type 316
4	1	Tail Pieces	CS ASTM A216 GR WCB
			SS ASTM A351 GR CF8M
5	2	Seat Materials	NXT M-PTFE
			O3-MULTI FILLED/TFE/GRAPHITE
			O2-RPTFE
6	1	Thrust Washer	NXT M-PTFE
7	3	Graphite Packing	Graphite
8	1	Packing Gland	ASTM A479 Type 316
9	1	Body Seal	ASTM A240 TY 304 & Graphite
10	1	Handle Assy	Stainless Steel
10.1	1	Handle	ASTM A276 Type 304
10.2	1	Latch	ASTM A276 Type 304
11	1	Lock Tab	ASTM A276 Type 304
12	4	Body Stud	ASTM A194 GR8 Type 304
13	4	Body Stud Nut	ASTM A193 GR B8 Type 304
14	2	Belleville Washer	ASTM A276 Type 304
15	1	Lock Washer	ASTM A582 Type 303
16	2	Stem Nut	ASTM A194 GR8 Type 304
17	2	Packing End Ring	Graphite
18	2	Stop Pin	ASTM A276 Type 304



Class 150 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J (B.C.)	K (BORE)	L (QTY)	M	N
1	in.	6.2	2.56	4.33	2.3	5	2.36	3.34	4.31	3.13	1	0.63 (4)	2X45.0	8x90
	mm.	157.5	65	110	58.5	127	60	84.9	109.4	79.4	25.4	15.9		
1 1/2	in.	8.91	3.54	4.92	2.85	6.5	2.95	4.07	4.95	3.87	1.5	0.63 (4)	2X45.0	8x90
	mm.	226.4	90	125	72.5	165	75	103.4	125.7	98.4	38.1	15.9		
2	in.	8.91	3.54	5.91	3.09	7.01	3.54	4.66	5.54	4.75	2	0.75 (4)	2X45.0	8x90
	mm.	226.4	90	150	78.5	178	90	118.4	140.7	120.7	50.8	19.1		
2 1/2	in.	8.95	3.54	7.09	3.35	7.48	3.94	5.29	6.11	5.5	2.5	0.75 (4)	2X45.0	8x90
	mm.	227.3	90	180	85	190	100	134.4	155.2	139.7	63.5	19.1		
3	in.	8.95	3.54	7.48	3.41	8	4.72	6.09	6.94	6	3	0.75 (4)	2X45.0	8x90
	mm.	227.3	90	190	86.5	203	120	154.6	176.3	152.4	76.2	19.5		

Class 300 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J (B.C.)	K (BORE)	L (QTY)	M	N
1	in.	6.2	2.56	4.92	3.25	6.5	2.36	3.34	4.17	3.5	1	0.75 (4)	2X45.0	8x90
	mm.	157.5	65	125	82.5	165	60	84.9	106	88.9	25.4	19.1		
1 1/2	in.	8.91	3.54	6.1	3.35	7.51	2.95	4.07	4.86	4.55	1.5	0.88 (4)	2X45.0	8x90
	mm.	226.4	90	155	85	190.7	75	103.4	123.5	114.3	38.1	22.2		
2	in.	8.91	3.54	6.5	3.31	8.5	3.54	4.66	5.59	5	2	0.75 (8)	2X22.5	16X45
	mm.	226.4	90	165	84	216	90	118.4	142	127	50.8	19.1		
2 1/2	in.	8.95	3.54	7.48	4.74	9.49	3.94	5.29	6.15	5.87	2.5	0.88 (8)	2X22.5	16X45
	mm.	227.3	90	190	120.5	241	100	134.4	156.3	149.2	63.5	22.2		
3	in.	8.95	3.54	8.27	5.55	11.1	4.72	6.09	6.6	6.63	3	0.88 (8)	2X22.5	16X45
	mm.	227.3	90	210	141	282	120	154.6	174.1	168.3	76.2	22.2		

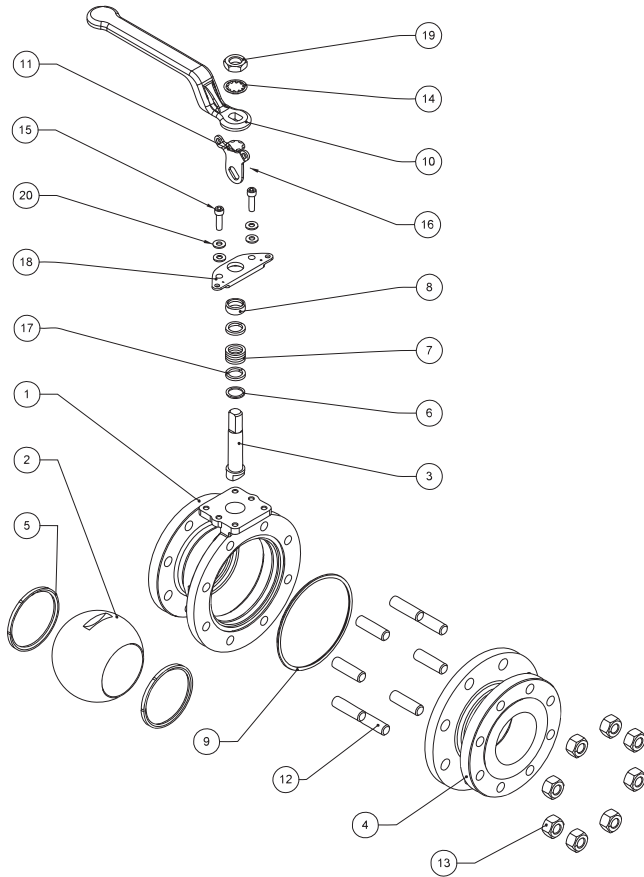
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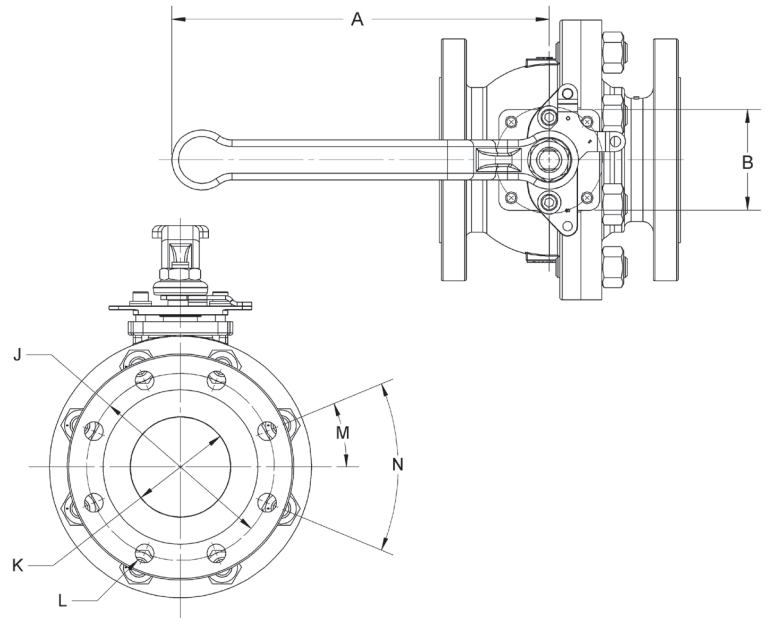
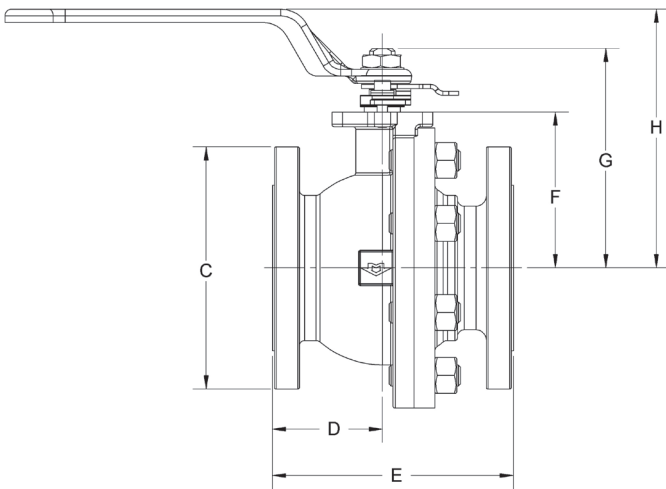


F20CS/F20SS CLASS 150/300 4"-6"

Material List



Item	Qty.	Description	F20 Class 150/300
1	1	Body	Stainless Steel A351 GR CF8M
			CS ASTM A216 GR WCB
2	1	Ball	SS ASTM A351 GR CF8M
3	1	Stem	ASTM A479 Type 316
4	1	Tail pieces	SS ASTM A351 GR CF8M
			CS ASTM A216 GR WCB
5	2	Seat Materials	NXT M-PTFE
			03-MULTI FILLED/TFE/GRAPHITE
			02-RPTFE
6	1	Thrust Washer	NXT M-PTFE
7	4	Graphite Packing	Graphite
8	1	Packing Gland	ASTM A479 Type 316
9	1	Body Seal	ASTM A240 TY 304 & Graphite
10	1	Handle Assy	Ductile Iron ASTM A536 GR. 65-45-12
11	1	Snap Ring	ASTM A276 Type 304
12	8	Body Stud	ASTM A193 GR B8 Type 304
13	8	Body Stud Nut	ASTM A194 GR 8 Type 304
14	1	Lock Washer	ASTM A582 Type 303
15	2	Gland Bolt	ASTM A193 GR B8 Type 304
16	1	Stop	SS ASTM A240 TY304
17	2	Packing End Ring	Graphite
18	1	Packing Plate	SS ASTM A351 GR CF8M
19	1	Stem Nut	ASTM A194 GR8 Type 304
20	4	Belleville Washer	ASTM A276 Type 304



Class 150 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J (B.C.)	K BORE	L (QTY)	M	N
4	in.	14.3	3.78	9.06	4.11	9.02	5.83	8.2	9.67	7.5	4	0.75 (8)	2X22.5	16X45
	mm.	358.8	96	230	104.5	229	148	208.4	245.7	190.5	101.6	19		
6	in.	25.13	4.92	11.02	7.76	15.51	7.87	10.6	11.79	9.5	6	0.88 (8)	2X22.5	16X45
	mm.	25.13	125	280	197	394	200	269.2	299.4	241.3	152.4	22.2		

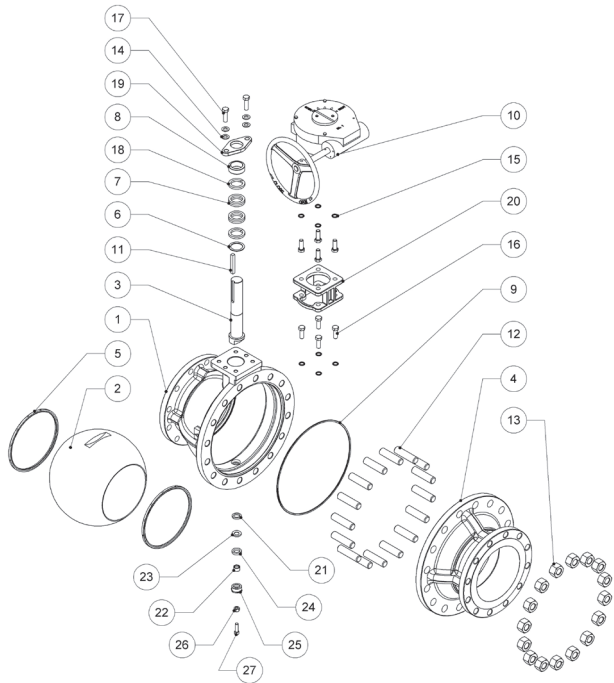
Class 300 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J (B.C.)	K BORE	L (QTY)	M	N
4	in.	14.3	3.78	10.04	6	12.01	5.83	8.2	9.7	7.87	4	0.88 (8)	2X22.5	16X45
	mm.	358.8	96	255	152.5	305	148	208.4	246.3	200	101.6	22.2		
6	in.	25.13	4.92	12.6	7.93	15.8	7.87	10.56	10.56	10.63	6	1.03 (8)	2X22.5	16X45
	mm.	25.13	125	320	201.5	403	2.00	268.2	268.2	269.9	152.4	26		

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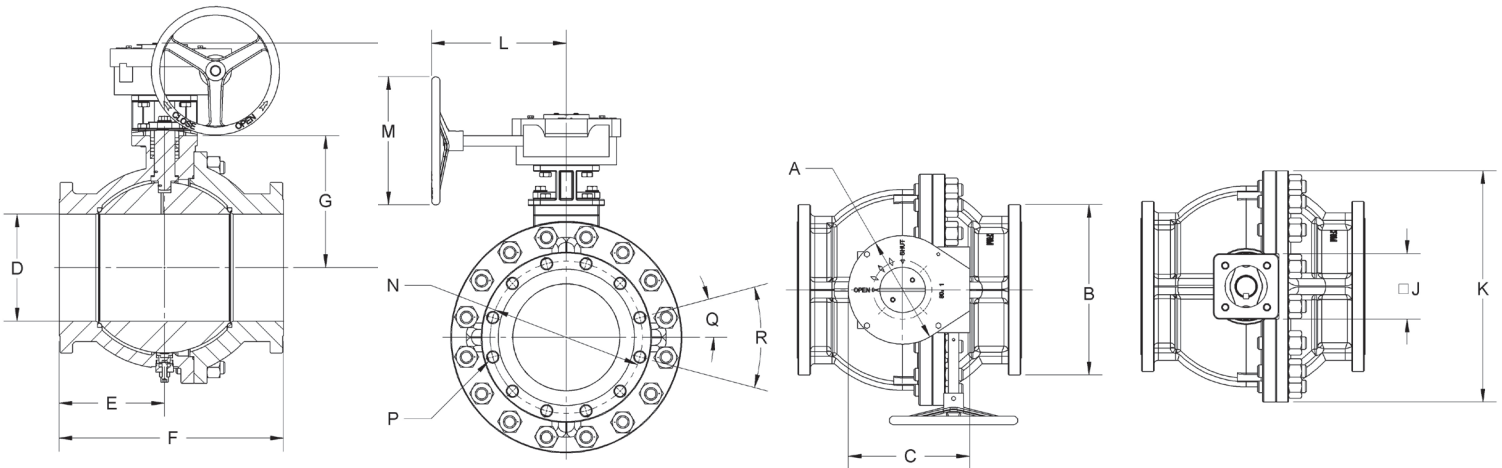


F20CS/F20SS CLASS 150/300 8"-12"



Material list

Item	Qty	Description	F20 Class 150/300
1	1	BODY	STAINLESS STEEL A351 GR CF8M CARBON STEEL ASTM A216 GR WCB
2	1	BALL	SS ASTM A351 GR CF8M
3	1	STEM	ASTM A479 TYPE 316
4	1	TAIL PIECE	STAINLESS STEEL A351 GR CF8M CARBON STEEL ASTM A216 GR WCB
5	2	SEAT	NXT 75 M-PTFE 03-MULTI FILLED/TFE/GRAPHITE
6	1	THRUST WASHER	NXT 75 M-PTFE
7	4	STEM PACKING	GRAPHITE
8	1	GLAND	ASTM A479 TYPE 316
9	1	BODY SEAL	ASTM A240 TYPE 304 & GRAPHITE
10	1	GEAR	CARBON STEEL
11	1	STEM KEY	C.D.STEEL-11L41, 1045 ANNEALED
12	SET	STUD BOLT	ASTM A193 GR B8 TYPE 304
13	SET	NUT	ASTM A194 GR 8 TYPR 304
14	4	WASHER	CHROME-VANADIUM STEEL GR. 6150
15	SET	LOCK WASHER	ASTM A276 TYPE 316
16	SET	BOLT	ASTM A276 TYPE 316
17	2	GLAND BOLT	ASTM A193 GR B8 TYPE 304
18	2	PACKING END RING	GRAPHITE
19	1	PACKING PLATE	SS ASTM A351 GR CF8M
20	1	GEAR BRACKET	CS; ASTM A216 GR WCB
21	1	BALL SUPPORT BOOSTER BEARING	15%GLASS FILLED REINFORCE TEFLON
22	1	BALL SUPPORT HOLDER	ASTM A276 TYPE 316
23	1	BALL SUPPORT BOOSTER	15% GLASS FILLED REINFORCE TEFLON
24	1	GRAPHITE PACKING	GRAPHITE
25	1	BALL SUPPORT GLAND	ASTM A276 TYPE 316
26	1	BODY STUD NUT	ASTM A194 GR 8 TYPE 304
27	1	BALL SUPPORT BOLT	ASTM A193 GR B8



Class 150 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J	K	L	M	N (B.C.)	P (QTY)	Q	R
8	in.	6.77	13.58	7.72	8	8.52	17.99	9.96	17.25	6.14	18.36	7.91	11.81	11.75	1.16 (16)	2X22.5	16X45
	mm.	172	245	196	203.2	216.5	457	253.1	438.2	156	466.4	200.9	300	298.5	29.4		
10	in.	10.16	15.94	11.34	10	9.86	20.98	12.31	20.96	6.14	21.63	12.6	14.25	14.25	1.16 (24)	2X15	24X30
	mm.	258	405	288	254	250.5	533	312.8	532.4	156	549.4	320.1	362	362	29.4		
12	in.	10.24	19.09	11.34	11.63	11.63	24.02	13.96	22.35	6.14	25.84	12.28	17	17	1.16 (24)	2X15	24X30
	mm.	260	485	288	295.5	295.5	610	354.6	567.7	156	656.3	311.9	431.8	431.8	29.4		

Class 300 # Dimensions

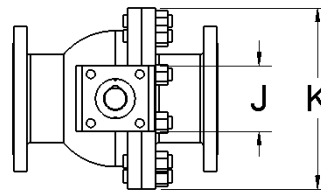
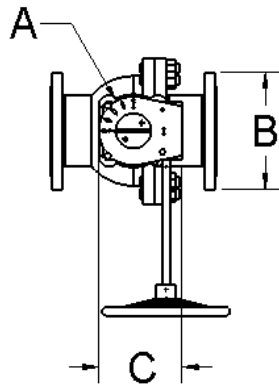
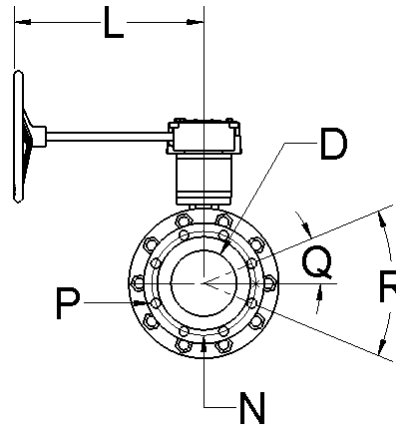
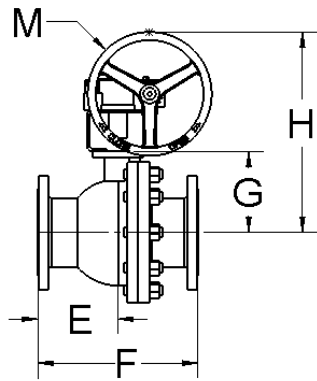
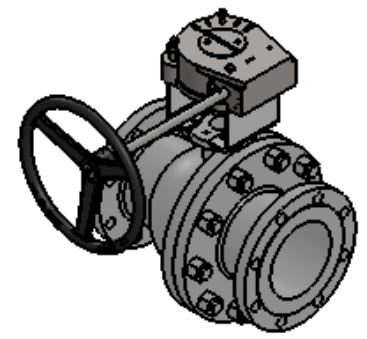
Size	Dim.	A	B	C	D	E	F	G	H	J	K	L	M	N (B.C.)	P (QTY)	Q	R
8	in.	6.77	14.96	7.72	8	9.11	19.76	9.96	17.25	6.14	18.64	7.91	13	13	1.16 (24)	2X15	24X30
	mm.	172	380	196	203.2	231.5	502	253.1	438.2	156	473.4	200.9	330.2	330.2	29.4		
10	in.	10.16	17.52	11.34	10	10.26	22.36	12.31	20.96	6.14	21.94	12.6	15.25	15.25	1.28 (32)	2X11.25	32X22.5
	mm.	258	445	288	254	260.5	568	312.8	532.4	156	557.4	320.1	387.4	387.4	32.6		
12	in.	10.24	20.47	11.34	11.63	12.24	25.51	13.96	22.35	6.14	26.1	12.28	17.75	17.75	1.41 (32)	2X11.25	32X2.5
	mm.	260	520	288	295.5	311	648	610	567.7	156	665.3	311.9	450.8	450.8	35.7		

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F20CS/F20SS CLASS 150/300 1" - 6" Gear Operated 2020



Class 150 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J	K	L	M	N (B.C.)	P (QTY)	Q	R
1	in.	4.25	4.33	4.92	1	2.3	5	2.36	8.34	3.25	3.66	8.7	5.91	3.13	0.63 (4)	2X45	8X90
	mm.	107.95	110	125	25.4	58.5	127	60	211.8	82.55	93	221	150	79.4	15.9		
1 1/2	in.	4.25	4.92	4.92	1.5	2.85	6.5	2.95	8.9	3.25	5.05	8.7	5.91	3.87	0.63 (4)	2X45	8X90
	mm.	107.95	125	125	38.1	72.5	165	75	226	82.55	128.27	221	150	98.4	15.9		
2	in.	4.25	5.91	4.92	2	3.09	7.01	3.54	9.52	3.25	6.04	8.7	5.91	4.75	0.75 (4)	2X45	8X90
	mm.	107.95	150	125	50.8	78.5	178	90	241.8	82.55	153.4	221	150	120.7	19.1		
2 1/2	in.	6	7.09	6.87	2.5	3.35	7.48	3.94	11.79	4.5	6.95	9.6	8.86	5.5	0.75 (4)	2X45	8X90
	mm.	152.4	180	174.5	63.5	85	190	100	300	114.3	176.5	243.84	225	139.7	19.1		
3	in.	6	7.48	6.87	3	3.41	8	4.72	12.57	4.5	8.24	9.6	8.86	6	0.75 (4)	2X45	8X90
	mm.	152.4	190	174.5	76.2	86.5	203	120	319.28	114.3	209.3	243.84	225	152.4	19.1		
4	in.	6.46	9.06	7.80	4	4.11	9.02	5.83	16.4	5.5	10.48	17.35	12	7.5	0.75 (8)	2X22.5	16X45
	mm.	164	230	198	101.6	104.5	229	148	416.56	139.7	266.2	440.7	304.8	190.5	19.1		
6	in.	6.46	11.02	7.80	6	7.76	15.51	7.87	19.43	5	13.70	17.35	12	9.50	0.88 (8)	2X22.5	16X45
	mm.	164	280	198	152.4	197	394	200	493.52	127	348	440.7	304.8	241.3	22.2		

Class 300 # Dimensions

Size	Dim.	A	B	C	D	E	F	G	H	J	K	L	M	N (B.C.)	P (QTY)	Q	R
1	in.	4.25	4.92	4.92	1	3.25	6.5	2.36	8.34	3.25	3.7	8.7	5.91	3.5	0.75 (4)	2X45	8X90
	mm.	107.95	125	125	25.4	82.5	165	60	211.8	82.55	94	221	150	88.9	19.1		
1 1/2	in.	4.25	6.1	4.92	1.5	3.35	7.51	2.95	8.9	3.25	5.09	8.7	5.91	4.55	0.88 (4)	2X45	8X90
	mm.	107.95	155	125	38.1	85	190.7	75	226	82.55	129.3	221	150	114.3	22.2		
2	in.	4.25	6.5	4.92	2	3.31	8.5	3.54	9.52	3.25	6.04	8.7	5.91	5	0.75 (8)	2X22.5	16X45
	mm.	107.95	165.1	125	50.8	84	216	90	241.8	82.55	153.4	221	150	127	19.1		
2 1/2	in.	6	7.48	6.87	2.5	4.74	9.49	3.94	11.79	4.5	7.03	9.6	8.86	5.87	0.88 (8)	2X22.5	16X45
	mm.	152.4	190	174.5	63.5	120.5	241	100	300	114.3	178.56	243.84	225	149.2	22.2		
3	in.	6	8.27	6.87	3	5.55	11.1	4.72	12.57	4.5	8.32	9.6	8.86	6.63	0.88 (8)	2X22.5	16X45
	mm.	152.4	210	174.5	76.2	141	282	120	319.28	114.3	211.3	243.84	225	168.3	22.2		
4	in.	6.46	10.04	7.80	4	6	12.01	5.83	16.4	5.5	10.60	17.35	12	7.87	0.88 (8)	2X22.5	16X45
	mm.	164	255	198	101.6	152.5	305	148	416.56	139.7	269.24	440.7	304.8	200	22.2		
6	in.	6.46	12.06	7.80	6	7.93	15.8	7.87	19.43	5	13.90	17.35	12	10.63	1.03 (8)	2X22.5	16X45
	mm.	164	306.32	198	152.4	201.5	403	200	493.52	127	353.06	440.7	304.8	269.9	26		