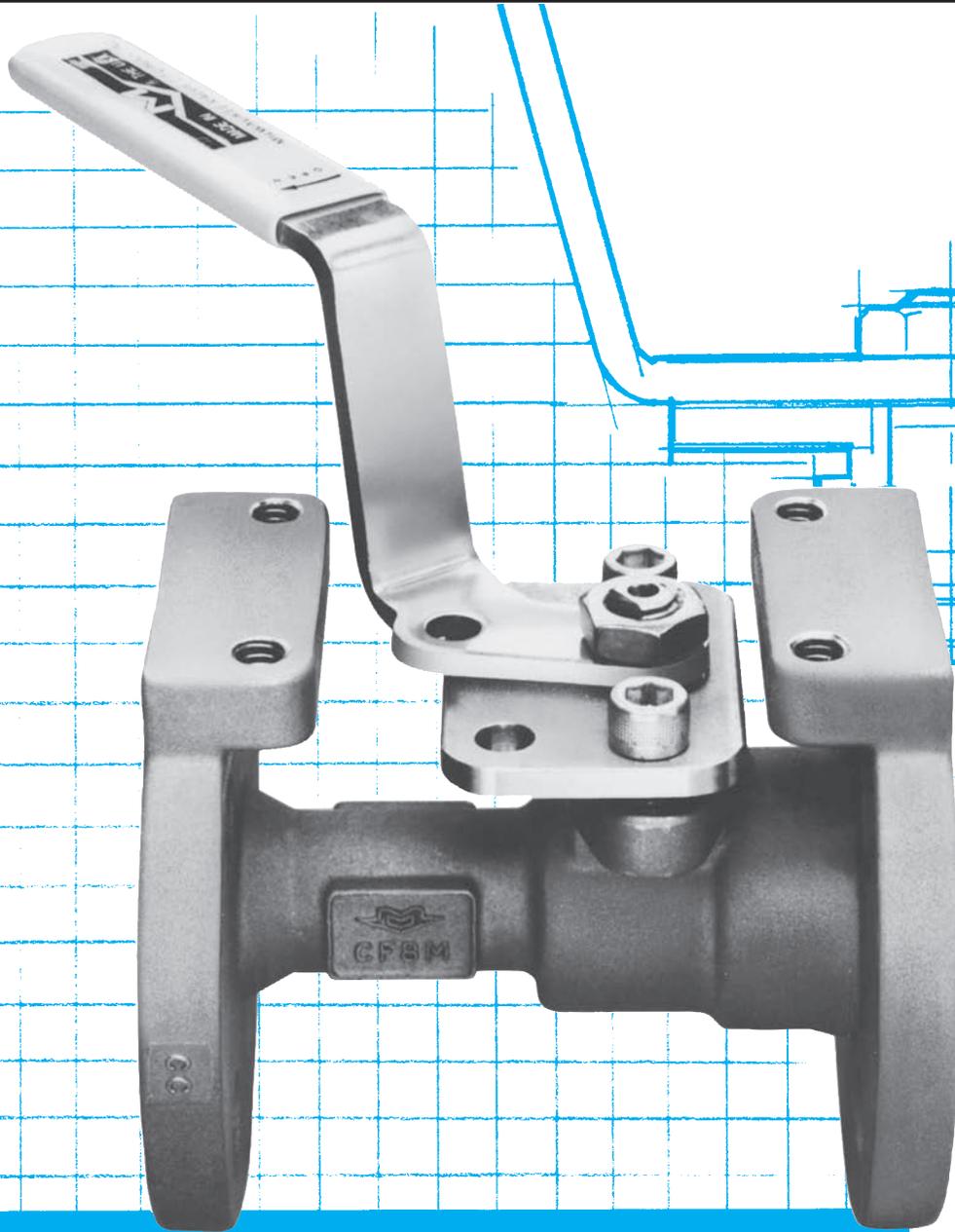
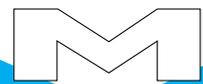


# F90/91SS150/300, F90/91CC150/300 AND F90/91CS150/300 UNIBODY FLANGED-END BALL VALVES



**INNOVATION** IN EVERY VALVE



**MILWAUKEE VALVE**

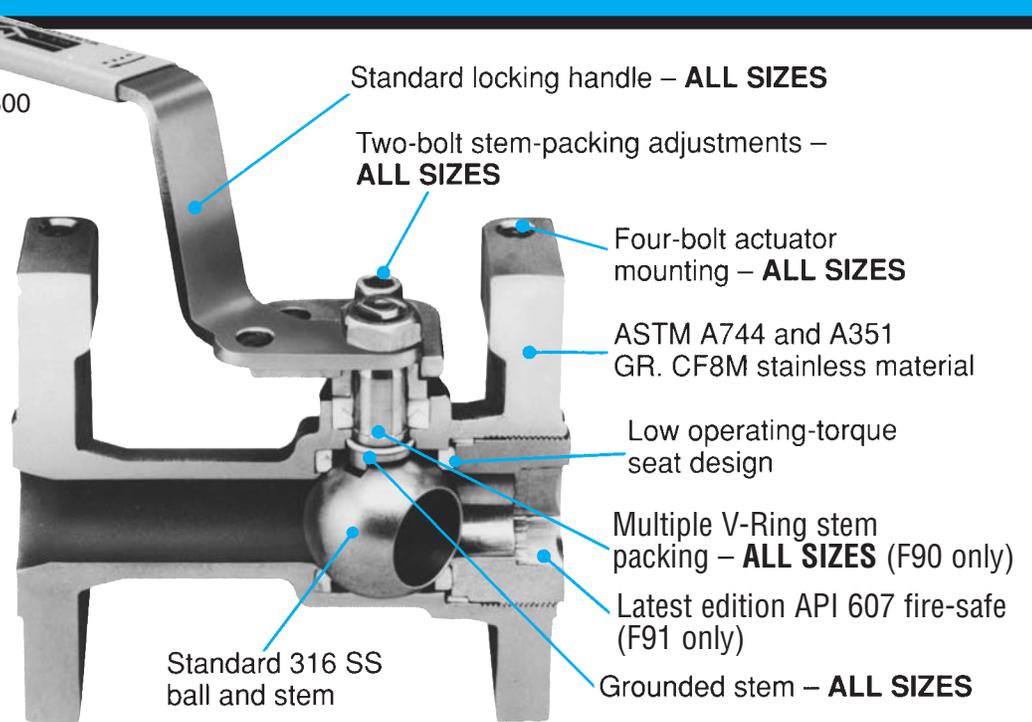
# F90/91SS150/300, F90/91CC150/300 AND F90/91CS150/300 UNIBODY FLANGED-END BALL VALVE

The F90/91SS150/300, F90/91CC150/300 and F90/91CS150/300 Series unibody flanged-end ball valves are the most advanced flanged ball valves available in the world.

These products were designed “from scratch” to comply with the **new** requirements of ANSI B.16.34, API 607 and 608, ANSI B.16.5/10 (revised flange finish) and other national and end-user specifications.

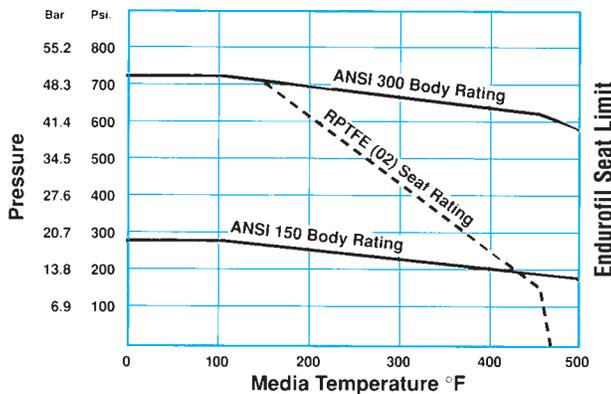
Lower operating torque, superior stem and seat operating life and the **best** actuator mounting configuration in the industry make the F90 Series the logical choice for your severe-service applications.

The F90/91 Series is available in 1/2” thru 6” sizes in ANSI 150 and 300 classes.



## PERFORMANCE DATA

### PRESSURE TEMPERATURE RATINGS



### TORQUE RATING AND C<sub>v</sub>

VALVE SIZE	150# 0-300 PSID BREAKAWAY OR TORQUE (in lbs.)	300# 301-740 PSID MAXIMUM BREAKAWAY TORQUE (in lbs.)	C <sub>v</sub>
1/2	40	40	15
3/4	60	60	25
1	125	125	37
1-1/2	190	190	90
2	240	300	120
3	500	750	460
4	900	1,000	640
6	1,900	N/A	1,025

## SPECIFICATIONS

Approved valves shall have multiple V-Ring stem packing and grounded stem.

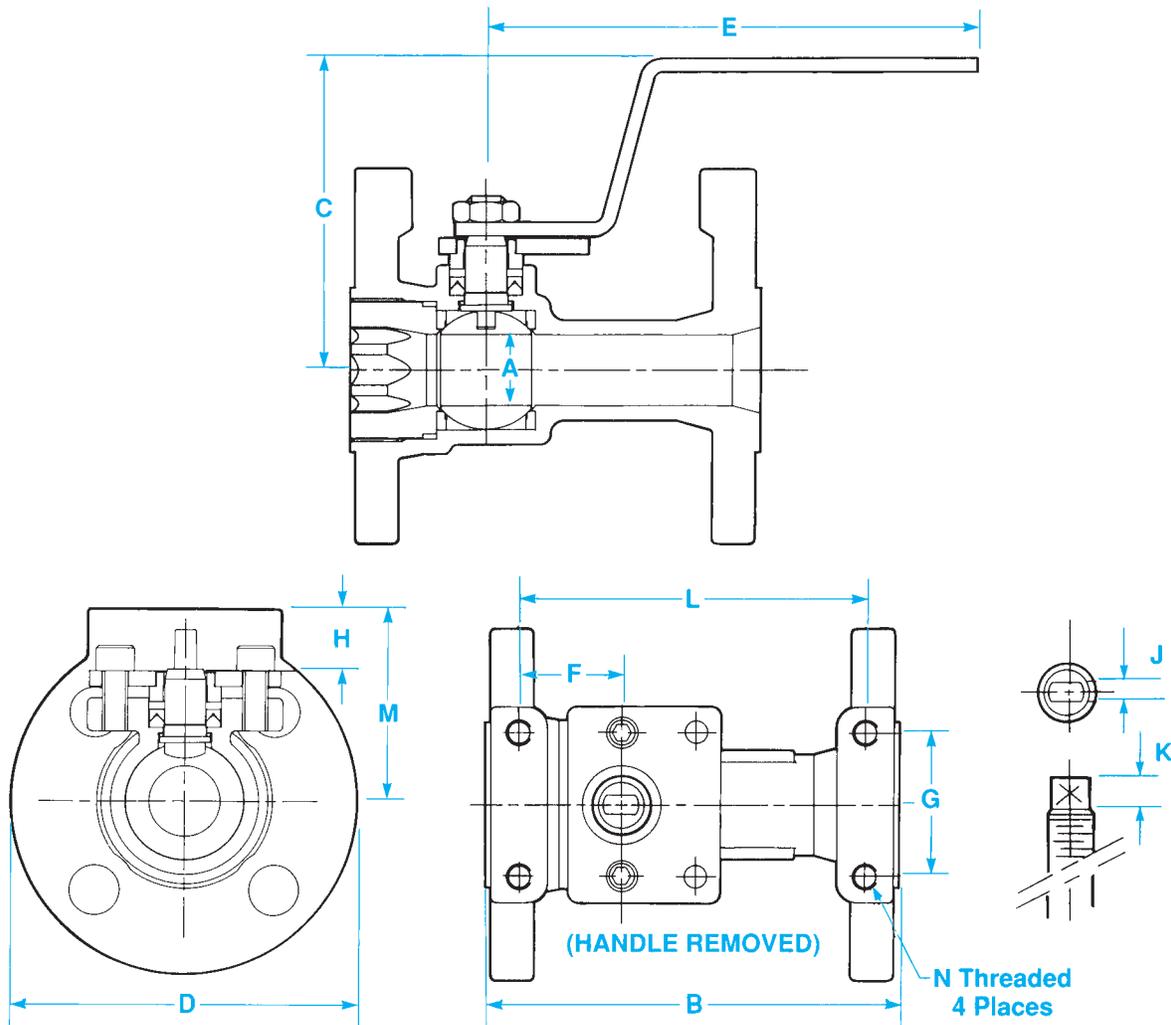
All body and tailpiece materials shall comply with ASTM specifications.

Valves must be tested to ANSI B.16.34 current edition.

All valves must have four-bolt actuator-mounting configuration and two-bolt stem-packing adjustment.

All valves must meet specifications as set in NACE MR0175 AND MSS-SP-72.

# DIMENSIONS



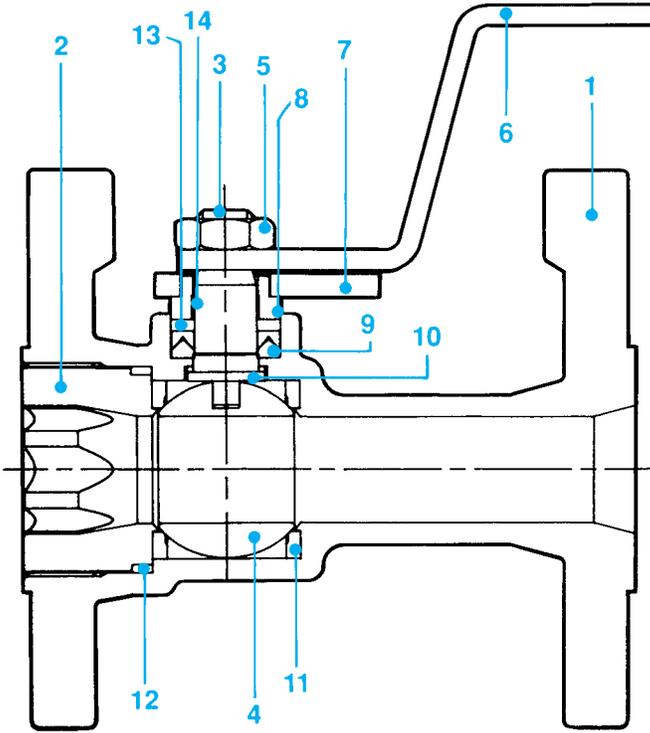
**ANSI 150 LB. – DIMENSIONS – INCHES AND MILLIMETERS (90/91 – SERIES BALL VALVES)**

SIZE	A		B		C		D		E		F		G		H		J		K		L		M		N
	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	
1/2"	0.50	13	4.25	108	2.50	64	3.50	89	5.06	129	0.81	21	1.75	44	0.71	18	0.20	5	0.32	8	2.88	73	1.88	48	5/16 - 18
3/4"	0.69	18	4.62	117	3.65	93	3.88	99	5.97	152	0.94	24	1.75	44	0.57	15	0.28	7	0.48	12	3.13	80	2.06	52	5/16 - 18
1"	0.88	22	5.00	127	3.80	97	4.25	108	5.97	152	1.25	32	1.75	44	0.82	21	0.28	7	0.48	12	4.19	106	2.46	63	5/16 - 18
1-1/2"	1.25	32	6.50	165	4.77	121	5.00	127	8.85	225	1.81	46	1.75	44	0.06	2	0.45	12	0.63	16	5.63	143	2.50	64	5/16 - 18
2"	1.50	38	7.00	178	4.72	120	6.00	152	8.85	225	2.07	52	2.25	57	0.31	8	0.45	12	0.63	16	6.19	157	3.00	76	5/16 - 18
3"	2.31	59	8.00	203	6.80	172	7.50	191	11.00	279	3.09	79	3.50	89	0.34	9	0.45	12	1.20	31	7.13	181	3.75	95	3/8 - 16
4"	3.12	79	9.00	229	7.96	202	9.00	229	14.12	359	3.92	100	4.00	102	0.30	8	0.66	17	1.35	34	8.00	203	5.27	134	7/16 - 14
6"	4.50	114	10.50	267	9.44	240	11.00	279	18.00	457	4.70	119	4.00	102	0.58	15	0.91	23	1.88	48	9.44	240	6.63	168	7/16 - 14

**ANSI 300 LB. – DIMENSIONS – INCHES AND MILLIMETERS (90/91 – SERIES BALL VALVES)**

SIZE	A		B		C		D		E		F		G		H		J		K		L		M		N
	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	
1/2"	0.50	13	5.50	140	2.50	64	3.75	95	5.06	129	0.81	21	1.75	44	0.71	18	0.20	5	0.32	8	4.00	102	1.88	48	5/16 - 18
3/4"	0.69	18	6.00	152	3.65	93	4.62	117	5.97	152	0.94	24	1.75	44	0.84	21	0.28	7	0.48	12	4.38	111	2.31	59	5/16 - 18
1"	0.88	22	6.50	165	3.80	97	4.88	124	5.97	152	1.25	32	1.75	44	0.91	23	0.28	7	0.48	12	5.69	145	2.56	65	5/16 - 18
1-1/2"	1.25	32	7.50	191	4.77	121	6.12	155	8.85	225	1.81	46	1.75	44	0.62	16	0.45	12	0.63	16	6.56	167	3.06	78	5/16 - 18
2"	1.50	38	8.50	216	4.72	120	6.50	165	8.85	225	1.97	50	2.25	57	1.10	28	0.45	12	0.63	16	7.50	191	3.80	97	5/16 - 18
3"	2.31	59	11.12	282	6.80	172	8.25	209	11.00	279	2.91	74	3.50	89	1.18	30	0.45	12	1.20	31	9.88	251	4.60	117	3/8 - 16
4"	3.12	79	12.00	305	7.96	202	10.00	254	14.12	359	3.92	100	4.00	102	0.80	20	0.66	17	1.35	34	10.68	271	5.77	147	7/16 - 14
6"	4.50	114	15.88	403	9.44	240	12.50	318	18.00	457	4.70	119	4.00	102	1.11	28	0.91	23	1.88	48	14.38	365	7.38	188	7/16 - 14

# MATERIAL LIST



PART	F90C 150/300	F90S 150/300
1. <b>Body</b>	Carbon Steel ASTM-A216 WCB	Stainless Steel ASTM A351/A744 GR. CF8M
2. <b>Ball Retainer</b>	Carbon Steel ASTM-A216 WCB	Stainless Steel ASTM A351/A744 GR. CF8M
3. <b>Stem</b>	Stainless Steel ASTM-A276 Type 316	Stainless Steel ASTM-A276 Type 316
4. <b>Ball</b>	Stainless Steel ASTM-276 Type 316	Stainless Steel ASTM-276 Type 316
5. <b>Handle Nut</b>	Stainless Steel 18-8	Stainless Steel 18-8
6. <b>Handle</b>	1/2"-2" Stainless Steel Type 304 3"-6" Ductile Iron	1/2"-2" Stainless Steel Type 304 3"-6" Ductile Iron
7. <b>Packing Plate</b>	1/2"-1" Stainless Steel Type 304 1-1/2"-6" ASTM A351 GR. CF8M	1/2"-1" Stainless Steel Type 304 1-1/2"-6" ASTM A351 GR. CF8M
8. <b>Gland Follower</b>	Stainless Steel Type 304	Stainless Steel Type 304
9. <b>Packing</b>	PTFE	PTFE
10. <b>Thrust Washer</b>	PTFE	PTFE
11. <b>Seat (02 Standard)</b>	15% Glass Filled Reinforced PTFE	15% Glass Filled Reinforced PTFE
12. <b>Retainer Seal</b>	PTFE	PTFE
13. <b>Ground Washer</b>	Graphite	Graphite
14. <b>Bearing, Gland Follower</b>	PTFE	PTFE

# ORDERING INFORMATION

**4" F90SS150R-02-XH-AD**

**Size:**  
1/2"-6"

**Series:**  
F90 = Unibody Flanged,  
Non API Fire Safe  
F91 = Unibody Flanged,  
API Fire Safe

**Body Material:**  
C = Carbon Steel  
S = Stainless Steel  
M = Monel  
H = Hastalloy C

**Ball/Stem Material:**  
C = Carbon Steel-Plated  
S = Stainless Steel  
M = Monel  
H = Hastalloy C

**End Connection Type:**  
150 = ANSI 150 Flanged  
300 = ANSI 300 Flanged

**Seat Material:**  
01 = Virgin PTFE  
02 = Reinforced PTFE  
03 = Steam Service  
Modified PTFE  
04 = UHMW  
Polyethylene  
06 = Eurafill

**Port Size:**  
R = Single Reduced Bore

**External Options:**  
OS = Stainless Oval Handle  
(1/2"-2" Only)  
XH = Extended Handle  
(1/2"-2" Only)  
Patent pending.

**Internal Options:**  
AD = Assemble Dry  
CC = Chlorine Prepared  
GB = Grounded Ball  
OC = Oxygen Clean  
VB = Vented Ball

Note: If specifying more than one internal option, list ALPHABETICALLY.

NOTE: The information presented in this brochure is correct at time of printing. Milwaukee Valve reserves the right to change design, dimensions and/or material specifications without notice.

Valves built to take it... since 1901

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**MILWAUKEE VALVE**

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