

Engineering Specification

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

Representative _____

Model: 88

Ductile Iron Full Lug Butterfly Valves

Sizes: 2" – 24"

Typical Service

These soft-seated butterfly valves are designed for a variety of general applications in the control of water, air, oil, gases, and corrosive media. Examples of applications where these valves can be used are irrigation, cooling water, and fire protection systems. They are equally effective for on-off, throttling, or isolation service requirements. Lug style valves are designed for dead-end service to the full pressure rating of the valve. Model 88 butterfly valve is especially well suited for higher velocity service and vacuum service. All valves are 100% factory tested to guarantee bi-direction, drop tight shutoff at fully rated pressure.

Features

- Phenolic backed (2" – 14"), aluminum backed (14" – 60"),
- Non-collapsible, resilient elastomer seat. Available in EPDM or Viton.
- ISO 5211 mount is standard. Double D shaft is standard 2" – 10" while keyway design is supplied 14" – 60"
- Stem is a one-piece design for maximum strength and is retained in valve body for blowout proof operation. 316SS is standard for 316SS discs (2" – 12") and 431SS is standard for 316SS discs (14" – 60")
- Stem bushings provide shaft support for proper stem alignment and minimize stem deflection. Duralon bushings are standard material in 2" – 12" sizes. Bronze bushings are standard in 14" – 60" sizes.
- Stem seals prevent external contamination of stem area and provide backup for the primary shaft seal formed by the disc/seat interface.
- ASTM-A-536 ductile iron body available in full lug (Model 88) designed for use between ANSI 125 and 150 flanges. Face-to-face dimension comply with API 609 and MSS-SP-67.
- 10 position locking handle is standard for sizes 2"-6", gear operator is standard for sizes 8"-60", and available for 2"-6" by request

Approvals

The Valves are MSS-SP-67 Type I – Valves for tight shut-off (tested per section 10.2.1). As specified in MSS-SP-67, we conduct 100% shell testing at 1.5 times rated pressure and seat leakage testing at 1.1 times rated pressure.

Performance Guidelines

Guidelines for throttling service:

Liquids – Line velocity should not exceed 20ft./sec.

Gases – Line velocity should not exceed 15,000 ft./min.



Model 88 (Full Lug)



Pressure/Temperature - Non-Shock

Model	Size	Material	Rating
88	2" - 12"	Ductile Iron	200psi
88	14" - 60"	Ductile Iron	150psi

Max. temp. can be limited by seat material.
Consult Factory.
Not Recommended for Steam Service.

Materials

MODEL 88	
Body	Ductile Iron Epoxy Electrostatic Sprayed (RAL9005-NSF)
Stem	316SS (2"-12"), 431SS (14"-60")
Disc	316SS
Seat	EPDM - 5°F to 250°F (-15°C to +121°C)

Actuator Options

Electric Actuator
Service: On-Off & Modulating
Torque Range (in-lb): 347 to 20,000
Enclosure: Weatherproof (IP67, Type 4, 4X) or (ATEX/IECEx Ex d IIB T4)
Power Supply 110/220V AC 1PH, 50/60Hz, $\pm 10\%$, 24V AC/DC
Motor: Class F Reversible Motor
Limit Switches: (2) Operational & (2) Auxillary, Open / Close, 6A 125/250VAC
Mounting: ISO 5211

NOTICE

Do not use EPDM when hydrocarbons are present

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

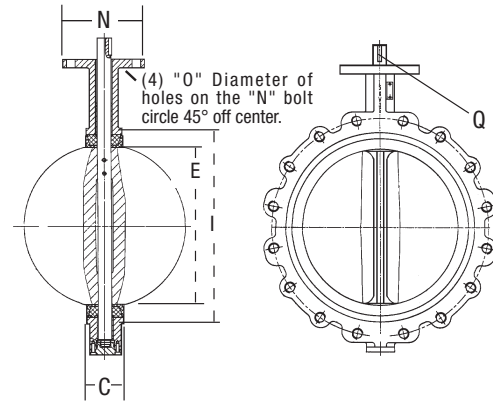
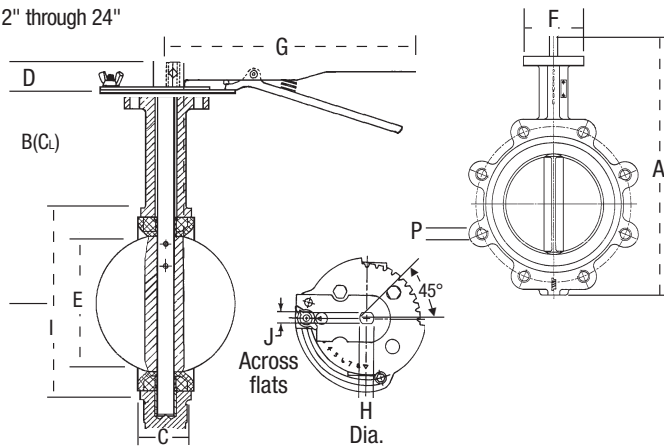
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Mueller Steam Specialty™

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Dimensions and Weights *Top Works Detail Per ISO 5211

2" through 24"

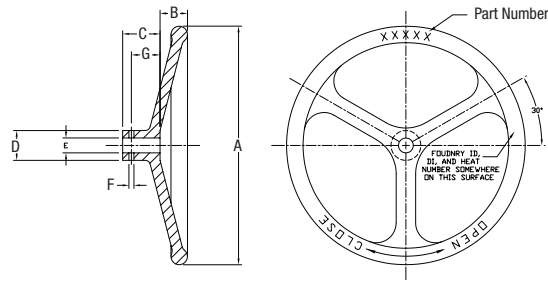


SIZE	DIMENSIONS															
	A		B		C		D		E		F		G		H	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2"	10 3/4	273	6 1/2	161	1 1/2	42	1 1/4	32	2 1/2	54	3 1/6	77	10 1/2	267	1 1/2	13
2 1/2"	11 1/2	295	6 1/2	175	1 1/4	45	1 1/4	32	2 1/2	64	3 1/6	77	10 1/2	267	1 1/2	13
3"	12 1/2	308	7 1/2	181	1 1/4	45	1 1/4	32	3 1/2	79	3 1/6	77	10 1/2	267	1 1/2	13
4"	13 3/4	346	7 1/2	200	2	52	1 1/4	32	4 1/2	105	3 1/6	92	10 1/2	267	1 1/2	13
5"	14 3/4	372	8 3/4	213	2 3/16	56	1 1/4	32	4 7/8	124	3 1/6	92	10 1/2	267	1 1/2	13
6"	15 3/4	397	8 3/4	226	2 3/16	56	1 1/4	32	6 1/2	156	3 1/6	92	10 1/2	267	1 1/2	13
8"	18 1/2	479	10 1/4	260	2 3/8	60	1 1/4	45	8	202	5	125	14	356	1 1/2	13
10"	21 1/4	540	11 1/2	292	2 3/8	66	1 1/4	45	9 1/2	251	5	125	14	356	1 1/2	13
12"	24 3/4	626	13 1/4	337	3	76	1 1/4	45	11 1/2	301	6	150	14	356	1 1/4	32
14"	26 3/4	679	14 1/2	368	3	76	1 1/4	45	13 1/2	333	6	150	—	—	1 1/4	32
16"	30	762	15 3/4	400	3 3/8	87	2	50	15 1/2	391	6 1/2	175	—	—	1 1/2	33
18"	31 1/2	800	16 3/4	422	4 1/8	105	2	50	17 1/2	442	6 1/2	175	—	—	1 1/2	38
20"	35 1/6	897	18 1/2	480	5 1/8	130	2 1/2	53	19 1/2	493	8 1/4	210	—	—	1 1/2	41
24"	42 1/2	1088	22 1/2	562	6	152	2 1/4	58	23 1/2	594	8 1/4	210	—	—	2	50
30"	50 3/4	1286	26	660	6 1/2	167	2.5984	66	29 1/2	747	11 1/2	300	NA	NA	2 1/2	63.35
36"	58 3/4	1494	28 3/4	720	8	203	4.6456	118	35 1/2	899	11 1/2	300	NA	NA	3	75
42"	69 3/4	1773	33 3/4	858	9 1/2	251	5.1181	130	41 1/2	1051	11 1/2	300	NA	NA	3 3/4	95
48"	77 3/4	1976	37	941	10 1/2	276	5.9055	150	47 1/2	1203	13 3/4	350	NA	NA	4 1/2	105
54"	84 3/4	2150	40	1015	15	381	7.0866	180	53 1/2	1356	14	356	NA	NA	4 3/4	120
60"	88 1/2	2240	41 3/4	1050	15	381	7.0866	180	59 1/2	1508	14	356	NA	NA	6 1/4	160

SIZE	TOP PLATE DRILLING				TAPPED LUG DATA				KEY WAY		WEIGHT (LBS.)†	
	N		O		Bolt Circle		No	Bolt	Q		lb	kg
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
2"	2	50	1/4	7	4 1/4	121	4	5/8"-11UNC x 1 1/2"	—	—	8	6
2 1/2"	2	50	1/4	7	5 1/2	140	4	5/8"-11UNC x 1 3/4"	—	—	10	7
3"	2	50	1/4	7	6	150	4	5/8"-11UNC x 1 3/4"	—	—	10	7
4"	2 1/4	70	3/8	10	7 1/2	191	8	5/8"-11UNC x 2"	—	—	17	12
5"	2 3/4	70	3/8	10	8 1/2	216	8	3/4"-10UNC x 2 3/8"	—	—	25	16
6"	2 3/4	70	3/8	10	9 1/2	241	8	3/4"-10UNC x 2 3/8"	—	—	27	20
8"	4	102	1/2	13	11 1/4	298	8	3/4"-10UNC x 2 3/8"	—	—	40	29
10"	4	102	1/2	13	14 1/4	362	12	7/8"-9UNC x 2 3/8"	—	—	63	48
12"	5	125	1/2	13	17	432	12	7/8"-9UNC x 3"	1/4 x 1 1/4	6 x 32	107	78
14"	5	125	1/2	13	18 3/4	476	12	1"-8UNC x 3"	1/4 x 1 1/4	6 x 32	156	99
16"	5 1/2	140	1 1/16	18	21 1/4	540	16	1"-8UNC x 3 3/8"	3/16 x 1 13/16	8 x 46	203	140
18"	5 1/2	140	1 1/16	18	22 3/4	578	16	1 1/8"-7UNC x 4 1/2"	3/8 x 1 1/8	10 x 40	269	188
20"	6 1/2	165	7/8	22	25	635	20	1 1/8"-7UNC x 5 1/2"	3/8 x 1 1/8	10 x 40	392	248
24"	6 1/2	165	7/8	22	29 1/2	750	20	1 1/4"-7UNC x 6"	1/2 x 2 1/2	13 x 60	593	450
30"	10	254	1 1/16	18	36	915	28	1 1/4"-7UNC x 9 1/2"	—	2-18	1389	630
36"	10	254	1 1/16	18	42 3/4	1086	32	1 1/2"-6UNC x 11 1/4"	—	2-20	1389	630
42"	10	254	1 1/16	18	49 1/2	1258	36	1 1/2"-6UNC x 11 1/4"	—	2-25	2795	1268
48"	11 1/4	298	7/8	22	56	1425	44	1 1/2"-6UNC x 12 1/2"	—	2-28	3955	1794
54"	14	356	1 1/4	32	62 3/4	1594	44	1 3/4"-5UNC x 14 1/4"	—	2-32	5057	2294
60"	14	356	1 1/4	32	69 1/4	1759	52	1 3/4"-5UNC x 15"	—	2-40	6382	2895

SEATING TORQUE	
Buna-N, EPDM (in./lbs.)	
Size	Normal Conditions WET/DRY
2"	134/214
2 1/2"	190/289
3"	250/387
4"	390/644
5"	600/959
6"	907/1,542
8"	1,697/2,919
10"	2,500/4,857
12"	3,300/7,071
14"	3,500/7,305
16"	5,500/10,027
18"	8,200/13,437
20"	10,000/17,925
24"	18,680/28,020
30"	33,475/50,125
36"	46,575/69,885
42"	80,105/120,374
48"	112,504/167,675
54"	145,670/197,805
60"	211,540/255,890

(FULL OPEN)	
Size	CV Rating
2"	135
2 1/2"	220
3"	30



Key:

F = Mounting Flange Diameter

N = Mounting Bolt Circle Diameter

O = Diameter of Holes

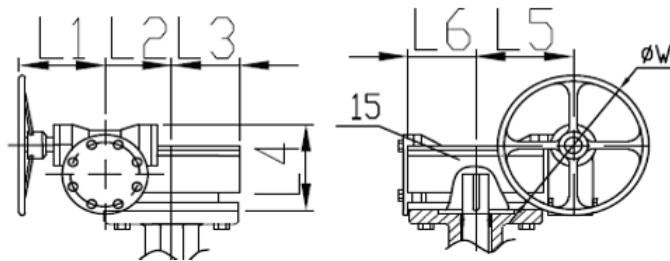
D = Length of Stem Sticking Out From the Top of the Flange Surface

J = Across Flats, Stem Dimension for Sizes 2" to 10"

H = Shaft Diameter for Sizes 2" to 10"

Q = Stem Key Dimension for Sizes 12" to 24"

A	B	C	D	E	F	G	WEIGHT	BFV SIZE
Ø6.00	1.25	1.88	Ø1.50	Ø.64 - Ø.66 1.44	Ø.183 - Ø.193	1.44	4 lbs	2" - 6"
Ø12.00	1.38	1.88	Ø1.50	Ø.75 - Ø.77	Ø.245 - Ø.255	1.44	7 lbs	8" - 12"
Ø18.00	1.62	1.88	Ø2.19	Ø.75 - Ø.77	Ø.245 - Ø.255	1.44	12 lbs	14" - 16"
Ø18.00	1.62	1.88	Ø2.19	Ø1.00 - Ø1.02	Ø.245 - Ø.255	1.44	18 lbs	18" - 20"
Ø24.00	1.62	2.38	Ø2.00	Ø1.00 - Ø1.02	Ø.245 - Ø.255	1.44	26 lbs	24" - 36"



Gear Actuator Dimensions (mm)

SIZE	ØW	L1	L2	L3	L4	L5	L6
30"	400	190	140	160	208	223	146
36"	400	190	162	170	230	238	170
42"	400	190	162	170	230	238	170
48"	450	245	236	180	279	310	250
54"	810	280	316	223	350	385	319
60"	810	280	316	223	350	385	319

Recommended Bolt Torque Values

Size	Thread Size	Number Required	Bolt Length (in)	Torque min. (Ft-lbs)	Torque max. (Ft-lbs)
2"	5/8"-11UNC	4	1 1/4"	20	60
2 1/2"	5/8"-11UNC	4	1 1/2"	20	60
3"	5/8"-11UNC	4	1 1/2"	20	60
4"	5/8"-11UNC	8	1 3/4"	20	60
5"	3/4"-10UNC	8	1 3/4"	30	100
6"	3/4"-10UNC	8	2"	30	100
8"	3/4"-10UNC	8	2 1/4"	30	100
10"	7/8"-9UNC	12	2 1/4"	50	200
12"	7/8"-UNC	12	2 1/2"	50	200
14"	1"-8UNC	12	2 3/4"	70	300
16"	1"-8UNC	16	2 3/4"	70	300
18"	1 1/8"-7UNC	16	3 1/2"	100	400
20"	1 1/8"-7UNC	20	3 1/2"	100	400
24"	1 1/4"-7UNC	20	3 3/4"	150	500
30"	1 1/4"-7UNC	28	7"	140	520
36"	1 1/2"-6UNC	32	9"	200	800
42"	1 1/2"-6UNC	36	9 1/4"	200	800
48"	1 1/2"-6UNC	44	10 1/4"	200	800
54"	1 3/4"-5UNC	44	12 1/4"	700	1400
60"	1 3/4"-5UNC	52	13"	700	1400

How to order Mueller Steam Specialty Model 88 Butterfly Valves

Example: 04.0-88IHH61

This is a 4 lugged body valve with a ductile iron body, 316 SS stem,
316 SS Disc, EPDM Seat and a ten position handle

4.0 - 88 - I H H - 6 - 1

SIZE: _____

MODEL: _____

88 - Full Lug (Replaces previous Model 66M)

BODY: _____

I - Ductile Iron

STEM: _____

H - 316SS (Standard 2" – 12")

P - 431SS (Standard 14" – 24")

DISC: _____

H - 316SS

SEAT: _____

4 - Viton

6 - EPDM

OPERATOR: _____

1 - 10-Position Lever handle (Lockable in both open and closed positions)

5 - Gear Operator (Recommended for 10 and above)

E - Electric Actuator



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