

Engineering Specification

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

Representative _____

Series 88

Ductile Iron Full Lug Butterfly Valves

Sizes: 2" – 48"

Typical Service

These concentric, soft seated butterfly valves are engineered for broad use across water, air, oil, and compatible gas systems. Typical applications include chilled and condenser water loops, irrigation networks, and process cooling circuits. The valves perform reliably in throttling and isolation service because the centered disc and resilient seat provide stable control and repeatable tight shutoff. Lug style valves are designed for dead-end service to the full pressure rating of the valve. Series 88 butterfly valves are especially well suited for higher velocity service and vacuum service. All valves are 100% factory tested to guarantee bi-directional, bubble tight shutoff at fully rated pressure.

Series 88 butterfly valves can be used both indoors and outdoors, with gear operators rated to IP67 to ensure a water-tight seal and long service life.

Features

- Phenolic backed seat (2" – 14"), aluminum backed seat (16" – 48")
- 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 12" – 48"
- Stem is a one-piece design for 2" - 24" and two piece design for 26" - 48" for maximum strength and is retained in valve body for blowout proof operation. 316SS is standard for (2" – 12") and 431SS is standard for (14" – 48")
- 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" – 48" sizes.
- The stem seal prevents external contamination of stem area and provide backup for the primary shaft seal formed by the disc/seat interface.
- ASTM A536 ductile iron body available in full lug (Series 88) designed for use between ANSI 125 and 150 flanges. Face-to-face dimensions comply with API 609 and MSS-SP 67 Type I.
- 10 position locking handle is standard for sizes 2" – 6", IP67 rated gear operator is standard for sizes 8" – 48", and available for 2" – 6" as an option.

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

Mueller Steam Specialty product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Mueller Steam Specialty Technical Service. Mueller Steam Specialty reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Mueller Steam Specialty products previously or subsequently sold.



Series 88 (Full Lug)

Call customer service if you need assistance with technical details.

PRESSURE/TEMPERATURE - NON-SHOCK			
MODEL	SIZE	MATERIAL	RATING
88	2" – 12"	Ductile Iron	200 psi
88	14" – 48"	Ductile Iron	150 psi

Max. temp. can be limited by seat material. Consult Factory. Not Recommended for Steam Service. 54" & 60" available upon request.

Materials

MODEL 88	
Body	Ductile Iron Epoxy Electrostatic Sprayed (RAL9005-NSF)
Stem	316SS (2" – 12"), 431SS (14" – 48")
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, ± 10%, 24V AC/DC
 Motor: Class F Reversible Motor
 Limit Switches: (2) Operational & (2) Auxiliary, Open / Close, 6A 125/250VAC
 Mounting: ISO 5211

Performance Guidelines

Guidelines for throttling service:

Liquids – Line velocity should not exceed 20 ft/sec

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

NOTICE

Do not use EPDM when hydrocarbons are present.

NOTICE

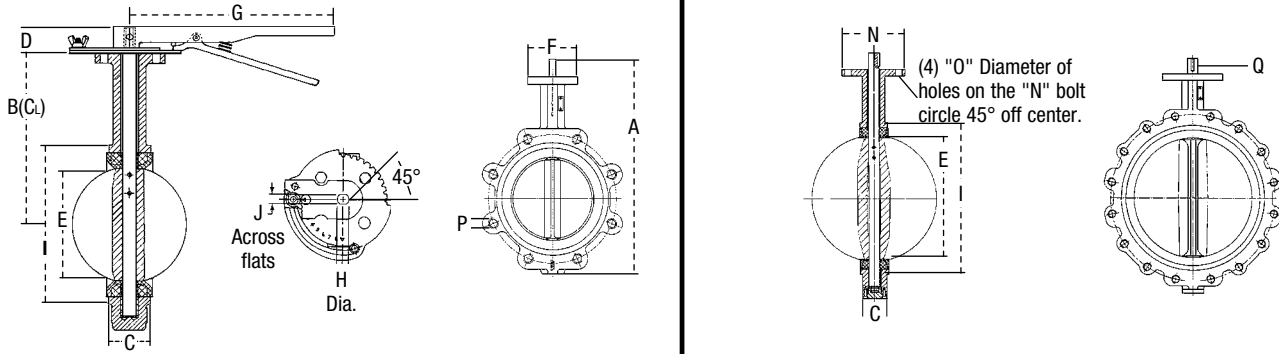
The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation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

Mueller Steam Specialty™

A WATTS Brand

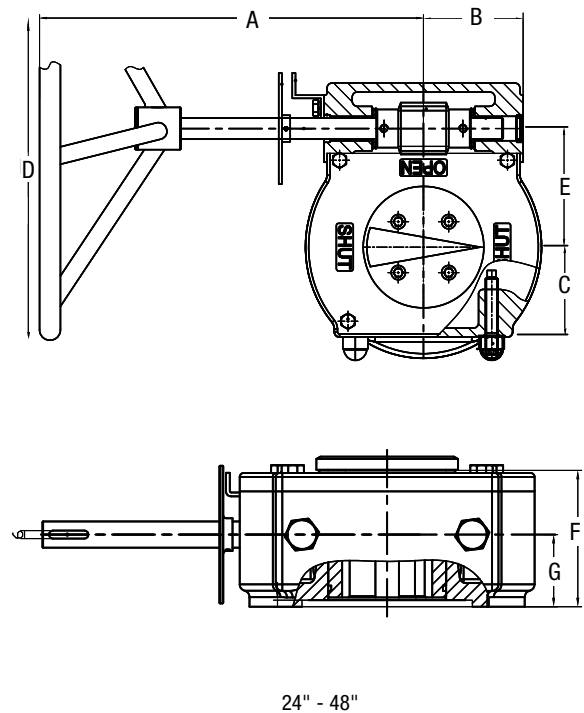
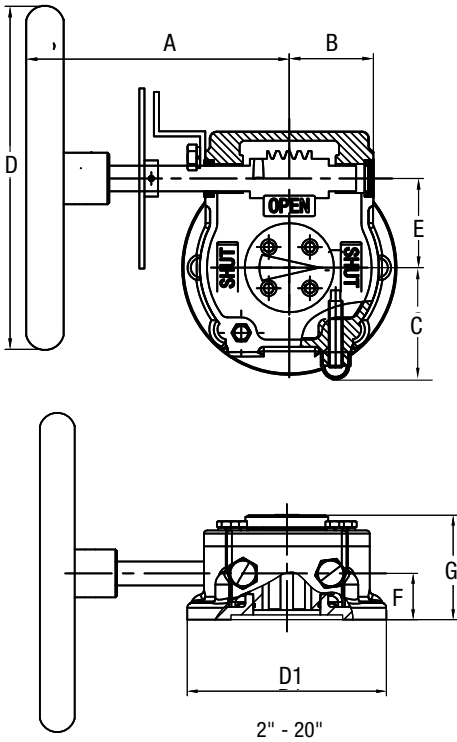
Dimensions and Weights *Top Works Detail Per ISO 5211

2" through 24"



SIZE	DIMENSIONS																			
	A		B		C		D		E		F		G		H		I		J	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2"	10 ³ / ₄	273	6 ⁵ / ₈	161	1 ¹ / ₂	42	1 ¹ / ₄	32	2 ¹ / ₂	54	3 ¹ / ₁₆	77	10 ¹ / ₂	267	1 ¹ / ₂	13	3 ³ / ₄	95	3 ⁵ / ₈	9
2 ¹ / ₂ "	11 ¹ / ₂	295	6 ⁷ / ₈	175	1 ³ / ₄	45	1 ¹ / ₄	32	2 ¹ / ₂	64	3 ¹ / ₁₆	77	10 ¹ / ₂	267	1 ¹ / ₂	13	4 ¹ / ₄	108	3 ⁵ / ₈	9
3"	12 ¹ / ₂	308	7 ¹ / ₈	181	1 ³ / ₄	45	1 ¹ / ₄	32	3 ¹ / ₈	79	3 ¹ / ₁₆	77	10 ¹ / ₂	267	1 ¹ / ₂	13	4 ³ / ₄	120	3 ⁵ / ₈	9
4"	13 ³ / ₈	346	7 ⁷ / ₈	200	2	52	1 ¹ / ₄	32	4 ¹ / ₈	105	3 ⁵ / ₈	92	10 ¹ / ₂	267	5 ¹ / ₈	16	6 ¹ / ₁₆	154	7 ¹ / ₁₆	11
5"	14 ³ / ₈	372	8 ³ / ₈	213	2 ¹ / ₁₆	56	1 ¹ / ₄	32	4 ¹ / ₈	124	3 ⁵ / ₈	92	10 ¹ / ₂	267	3 ¹ / ₄	19	7 ¹ / ₈	181	1 ¹ / ₂	13
6"	15 ³ / ₈	397	8 ⁷ / ₈	226	2 ¹ / ₁₆	56	1 ¹ / ₄	32	6 ¹ / ₈	156	3 ⁵ / ₈	92	10 ¹ / ₂	267	3 ³ / ₄	19	8 ³ / ₁₆	208	1 ¹ / ₂	13
8"	18 ¹ / ₈	479	10 ¹ / ₄	260	2 ¹ / ₈	60	1 ¹ / ₄	45	8	202	5	125	14	356	7 ¹ / ₈	22	10 ¹ / ₄	260	5 ¹ / ₈	16
10"	21 ¹ / ₄	540	11 ¹ / ₂	292	2 ¹ / ₈	66	1 ¹ / ₄	45	9 ¹ / ₈	251	5	125	14	356	1 ¹ / ₈	29	12 ¹ / ₈	320	13 ¹ / ₁₆	21
12"	24 ³ / ₈	626	13 ¹ / ₄	337	3	76	1 ¹ / ₄	45	11 ¹ / ₈	301	6	150	14	356	1 ¹ / ₄	32	14 ³ / ₄	375	-	-
14"	26 ³ / ₈	679	14 ¹ / ₂	368	3	76	1 ¹ / ₄	45	13 ¹ / ₈	333	6	150	-	-	1 ¹ / ₄	32	15 ¹ / ₁₆	405	-	-
16"	30	762	15 ¹ / ₄	400	3 ¹ / ₈	87	2	50	15 ¹ / ₈	391	6 ¹ / ₈	175	-	-	1 ¹ / ₁₆	33	18 ¹ / ₂	470	-	-
18"	31 ¹ / ₂	800	16 ¹ / ₈	422	4 ¹ / ₈	105	2	50	17 ¹ / ₈	442	6 ¹ / ₈	175	-	-	1 ¹ / ₂	38	20 ¹ / ₁₆	525	-	-
20"	35 ¹ / ₁₆	897	18 ¹ / ₈	480	5 ¹ / ₈	130	2 ¹ / ₈	53	19 ¹ / ₈	493	8 ¹ / ₄	210	-	-	1 ¹ / ₈	41	22 ¹ / ₄	565	-	-
24"	42 ¹ / ₈	1088	22 ¹ / ₈	562	6	152	2 ¹ / ₄	58	23 ³ / ₈	594	8 ¹ / ₄	210	-	-	2	50	27 ¹ / ₁₆	693	-	-
30"	50 ³ / ₈	1286	26	660	6 ¹ / ₂	167	2.5984	66	29 ³ / ₈	747	11 ¹ / ₈	300	NA	NA	2 ¹ / ₂	63.35	33 ³ / ₄	859	NA	NA
36"	58 ¹ / ₈	1494	28 ¹ / ₈	720	8	203	4.6456	118	35 ¹ / ₈	899	11 ¹ / ₈	300	NA	NA	3	75	40 ¹ / ₄	1025	NA	NA
42"	69 ³ / ₈	1773	33 ³ / ₄	858	9 ¹ / ₈	251	5.1181	130	41 ¹ / ₈	1051	11 ¹ / ₈	300	NA	NA	3 ³ / ₄	95	47	1196	NA	NA
48"	77 ³ / ₄	1976	37	941	10 ¹ / ₈	276	5.9055	150	47 ³ / ₈	1203	13 ³ / ₄	350	NA	NA	4 ¹ / ₈	105	53 ¹ / ₂	1363	NA	NA

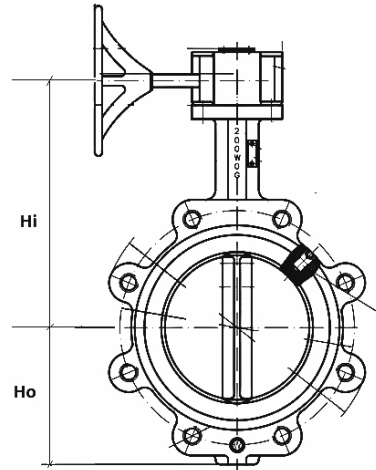
SIZE	TOP PLATE DRILLING				TAPPED LUG DATA				KEY WAY		WEIGHT (LB)†		SEATING TORQUE		(FULL OPEN)	
	in.	mm	in.	mm	in.	mm	No.	Lug Thread	in.	mm	lb	kg	Buna-N, EPDM (in./lb) Normal Conditions	Size	CV Rating	
2"	2	50	1/4	7	4 ³ / ₄	121	4	5/8"-11UNC	-	-	8	6	134/214	2"	135	
2 ¹ / ₂ "	2	50	1/4	7	5 ¹ / ₂	140	4	5/8"-11UNC	-	-	10	7	190/289	2 ¹ / ₂ "	220	
3"	2	50	1/4	7	6	150	4	5/8"-11UNC	-	-	10	7	250/387	3"	302	
4"	2 ³ / ₄	70	3/8	10	7 ¹ / ₂	191	8	5/8"-11UNC	-	-	17	12	390/644	4"	600	
5"	2 ³ / ₄	70	3/8	10	8 ¹ / ₂	216	8	3/4"-10UNC	-	-	25	16	600/959	5"	1,022	
6"	2 ³ / ₄	70	3/8	10	9 ¹ / ₂	241	8	3/4"-10UNC	-	-	27	20	907/1,542	6"	1,579	
8"	4	102	1/2	13	11 ³ / ₄	298	8	3/4"-10UNC	-	-	40	29	1,697/2,919	8"	3,136	
10"	4	102	1/2	13	14 ¹ / ₄	362	12	7/8"-9UNC	-	-	63	48	2,500/4,857	10"	5,340	
12"	5	125	1/2	13	17	432	12	7/8"-9UNC	1/4 x 1 1/4	6 x 32	107	78	3,300/7,071	12"	8,250	
14"	5	125	1/2	13	18 ³ / ₄	476	12	1"-8UNC	1/4 x 1 1/4	6 x 32	156	99	3,500/7,305	14"	11,917	
16"	5 ¹ / ₂	140	1 ¹ / ₁₆	18	21 ¹ / ₄	540	16	1"-8UNC	5/16 x 1 13/16	8 x 46	203	140	5,500/10,027	16"	16,388	
18"	5 ¹ / ₂	140	1 ¹ / ₁₆	18	22 ³ / ₄	578	16	1 1/8"-7UNC	3/8 x 1 1/16	10 x 40	269	188	8,200/13,437	18"	21,705	
20"	6 ¹ / ₂	165	7/8	22	25	635	20	1 1/8"-7UNC	3/8 x 1 1/16	10 x 40	392	248	10,000/17,925	20"	27,908	
24"	6 ¹ / ₂	165	7/8	22	29 ¹ / ₂	750	20	1 1/4"-7UNC	1/2 x 2 3/8	13 x 60	593	450	18,680/28,020	24"	43,116	
30"	10	254	1 1/16	18	36	915	28	1 1/4"-7UNC	-	2-18	1389	630	33,475/50,125	30"	58,255	
36"	10	254	1 1/16	18	42 ³ / ₄	1086	32	1 1/2"-6UNC	-	2-20	1389	630	46,575/69,885	36"	86,380	
42"	10	254	1 1/16	18	49 ¹ / ₂	1258	36	1 1/2"-6UNC	-	2-25	2795	1268	80,105/120,374	42"	135,540	
48"	11 ³ / ₄	298	7/8	22	56	1425	44	1 1/2"-6UNC	-	2-28	3955	1794	112,504/167,675	48"	176,675	



Gearbox Dimensions

SIZE (IN.)	RATIO	DIMENSIONS														WEIGHT	
		A		B		C		D		E		F		G		lb	kg
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
2"	27:1	5¼	136	1¾	45	1¾	45	5½	140	1¼	35	1	27.5	2	52	4	1¾
2½"	27:1	5¼	136	1¾	45	1¾	45	5½	140	1¼	35	1	27.5	2	52	4	1¾
3"	27:1	5¼	136	1¾	45	1¾	45	5½	140	1¼	35	1	27.5	2	52	4	1¾
4"	37:1	5½	140	2	52	2½	65	6¼	160	2	52	1¼	32	2¾	69	10¼	4¾
5"	37:1	5½	140	2	52	2½	65	6¼	160	2	52	1¼	32	2¾	69	10¼	4¾
6"	37:1	5½	140	2	52	2½	65	6¼	160	2	52	1¼	32	2¾	69	10	4⅝
8"	37:1	8¼	212	2⅞	63	2½	65	7¾	200	2	52	1¼	32	2¾	69	10	4½
10"	37:1	8¼	212	2⅞	63	2½	65	7¾	200	2	52	1¼	32	2¾	69	9¾	4½
12"	38:1	9	230	3	75	2¾	72	11	280	2⅞	62	1¼	32	2¾	71	15	6¾
14"	38:1	9	230	3	75	2¾	72	11	280	2⅞	62	1¼	32	2¾	71	14¾	6¾
16"	40:1	11¾	300	3½	88	3½	88	15¾	400	3	79	1¼	46	3¾	95	27	12¼
18"	47:1	12½	317	3½	88	4	100	15¾	400	3½	89	2	50	4	101	34⅞	15¾
20"	61:1	14⅞	366	4½	113	4¼	105	15¾	400	4⅞	112	2¼	55	2¾	118	54¼	24⅝
24"	167:1	14⅞	370	4½	113	4¼	105	15¾	400	4⅞	112	2¼	55	2¾	118	64⅞	29¼
26"	167:1	14⅞	370	4½	113	4¼	105	15¾	400	4⅞	112	2¼	55	2¾	118	64⅞	29¼
28"	208:1	14¾	360	6	150	6	150	15¾	400	5	129	2⅞	62	5	127	90⅞	41
30"	208:1	14¾	360	6	150	6	150	15¾	400	5	129	2⅞	62	5	127	90⅞	41
32"	208:1	14¾	360	6	150	6	150	15¾	400	5	129	2⅞	62	5	127	90⅞	41
36"	290:1	15¼	385	6½	165	6	150	23½	600	6¼	157	2¾	70	6¼	160	139	63
40"	290:1	15¼	385	6½	165	6	150	23½	600	6¼	157	2¾	70	6¼	160	139	63
42"	348:1	15¼	385	6½	165	6	150	23½	600	6¼	157	2¾	70	6¼	160	147¾	67
48"	519:1	18	455	7¾	195	7¾	196	23½	600	7¼	182	2¾	71	6⅞	165	209⅞	95

SIZE	Hi		Ho	
	<i>in.</i>	<i>mm</i>	<i>in.</i>	<i>mm</i>
2"	7.76	197	4.41	112
2-1/2"	8.31	211	4.76	121
3"	8.54	217	5.00	127
4"	9.29	236	5.75	146
5"	9.80	249	6.26	159
6"	10.31	262	6.73	171
8"	11.89	302	8.66	220
10"	13.15	334	9.76	248
12"	14.94	380	11.30	287
14"	16.16	411	12.28	312
16"	18.29	465	14.29	363
18"	19.15	487	14.88	378
20"	21.44	545	16.42	417
24"	24.98	635	20.71	526
30"	29.32	745	22.05	560
36"	31.95	812	25.83	656
42"	38.65	982	30.60	777
48"	41.91	1064	34.02	864



Recommended Bolt Torque Values

Size	Thread Size	Number Required	Bolt Length (in.)	Torque min. (ft-lb)	Torque max. (ft-lb)
2"	5/8"-11UNC	4	1 1/2"	20	60
2 1/2"	5/8"-11UNC	4	1 1/2"	20	60
3"	5/8"-11UNC	4	1 3/4"	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"	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	3"	70	300
18"	1 1/8"-7UNC	16	3 1/2"	100	400
20"	1 1/8"-7UNC	20	4"	100	400
24"	1 1/4"-7UNC	20	4 3/4"	150	500
30"	1 1/4"-7UNC	28	5 1/2"	140	520
36"	1 1/2"-6UNC	32	6 1/2"	200	800
42"	1 1/2"-6UNC	36	7"	200	800
48"	1 1/2"-6UNC	44	8"	200	800

How to order Mueller Steam Specialty Series 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" – 48")

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



A **WATTS** Brand

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