

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.

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 (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", IP67 rated 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.



Model 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	250 psi
88	14" – 60"	Ductile Iron	150 psi

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, ± 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.

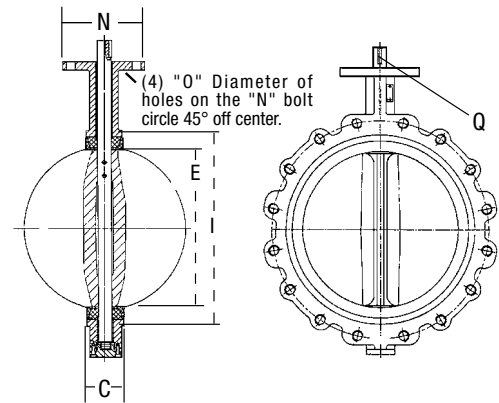
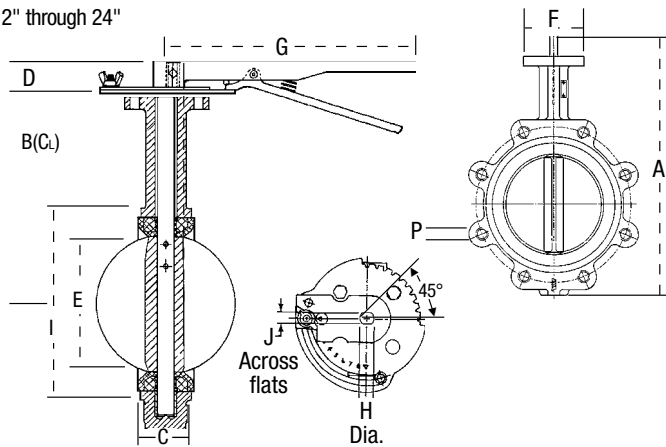
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Mueller Steam Specialty™

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Dimensions and Weights *Top Works Detail Per ISO 5211

2" through 24"

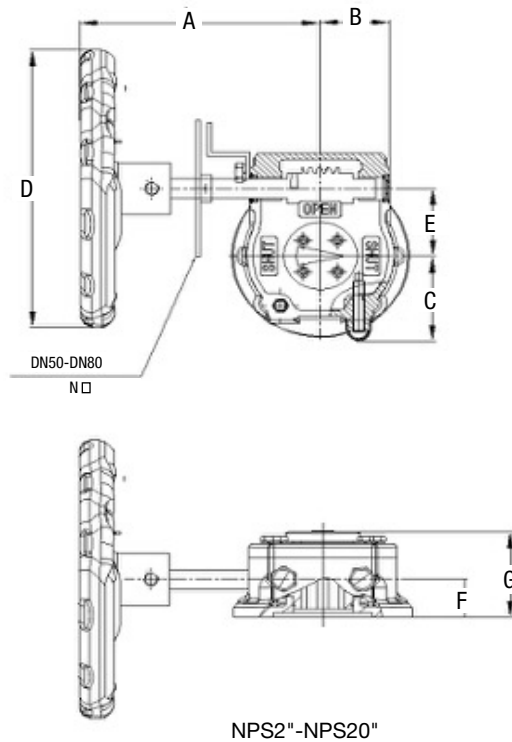


SIZE	DIMENSIONS															
	A		B		C		D		E		F		G		H	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2"	10 3/4	273	6 3/8	161	1 1/8	42	1 1/4	32	2 1/8	54	3 1/16	77	10 1/2	267	1 1/2	13
2 1/2"	11 1/8	295	6 7/8	175	1 1/4	45	1 1/4	32	2 1/2	64	3 1/16	77	10 1/2	267	1 1/2	13
3"	12 1/8	308	7 1/8	181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

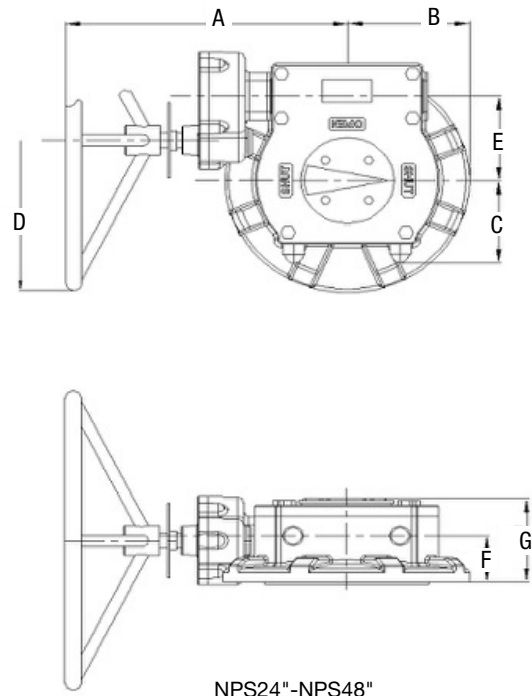
SIZE	TOP PLATE DRILLING				TAPPED LUG DATA				KEY WAY		WEIGHT (LB)†	
	N	O	Bolt Circle	No	Bolt	Q			in.	mm	lb	kg
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb	kg
2"	2	50	1/4	7	4 3/4	121	4	5/8"-11UNC x 1 1/2"	-	-	8	6
2 1/2"	2	50	1/4	7	5 1/2	140	4	5/8"-11UNC x 1 3/4"	-	-	10	7
3"	2	50	1/4	7	6	150	4	5/8"-11UNC x 1 3/4"	-	-	10	7
4"	2 3/4	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 1/8"	-	-	25	16
6"	2 3/4	70	3/8	10	9 1/2	241	8	3/4"-10UNC x 2 1/8"	-	-	27	20
8"	4	102	1/2	13	11 3/4	298	8	3/4"-10UNC x 2 3/8"	-	-	40	29
10"	4	102	1/2	13	14 3/4	362	12	7/8"-9UNC x 2 5/8"	-	-	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 1/8	18	21 1/4	540	16	1"-8UNC x 3 3/8"	5/16 x 1 1/8	8 x 46	203	140
18"	5 1/2	140	1 1/8	18	22 3/4	578	16	1 1/8"-7UNC x 4 1/8"	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 1/8"	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 3/8	13 x 60	593	450
30"	10	254	1 1/8	18	36	915	28	1 1/4"-7UNC x 9 1/4"		2-18	1389	630
36"	10	254	1 1/8	18	42 3/4	1086	32	1 1/2"-6UNC x 11 1/4"		2-20	1389	630
42"	10	254	1 1/8	18	49 1/2	1258	36	1 1/2"-6UNC x 11 3/4"		2-25	2795	1268
48"	11 3/4	298	7/8	22	56	1425	44	1 1/2"-6UNC x 12 3/4"		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 3/4	1759	52	1 3/4"-5UNC x 15"		2-40	6382	2895

SEATING TORQUE	
Buna-N, EPDM (in./lb)	
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"	302
4"	600
5"	1,022
6"	1,579
8"	3,136
10"	5,340
12"	8,250
14"	11,917
16"	16,388
18"	21,705
20"	27,908
24"	43,116
30"	58,255
36"	86,380
42"	135,540
48"	176,675
54"	205,125
60"	245,744



NPS2"-NPS20"

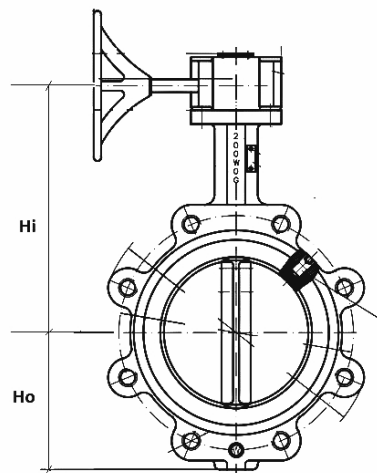


NPS24"-NPS48"

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		
NPS 2	27:1	5¼	136	1¾	45	1¾	45	5½	140	1¼	35	1	27.5	2	52	4	1¾
NPS 2½	27:1	5¼	136	1¾	45	1¾	45	5½	140	1¼	35	1	27.5	2	52	4	1¾
NPS 3	27:1	5¼	136	1¾	45	1¾	45	5½	140	1¼	35	1	27.5	2	52	4	1¾
NPS 4	37:1	5½	140	2	52	2½	65	6¼	160	2	52	1¼	32	2¾	69	10¼	4¾
NPS 5	37:1	5½	140	2	52	2½	65	6¼	160	2	52	1¼	32	2¾	69	10¼	4¾
NPS 6	37:1	5½	140	2	52	2½	65	6¼	160	2	52	1¼	32	2¾	69	10	4½
NPS 8	37:1	8¼	212	2⅞	63	2½	65	7¾	200	2	52	1¼	32	2¾	69	10	4½
NPS 10	37:1	8¼	212	2⅞	63	2½	65	7¾	200	2	52	1¼	32	2¾	69	9¾	4½
NPS 12	38:1	9	230	3	75	2¾	72	11	280	2⅞	62	1¼	32	2¾	71	15	6¾
NPS 14	38:1	9	230	3	75	2¾	72	11	280	2⅞	62	1¼	32	2¾	71	14¾	6¾
NPS 16	40:1	11¾	300	3½	88	3½	88	15¾	400	3	79	1¼	46	3¾	95	27	12¼
NPS 18	47:1	12½	317	3½	88	4	100	15¾	400	3½	89	2	50	4	101	34⅞	15¾
NPS 20	61:1	14⅞	366	4½	113	4¼	105	15¾	400	4⅞	112	2¼	55	2¾	118	54¼	24⅞
NPS 24	167:1	14⅞	370	4½	113	4¼	105	15¾	400	4⅞	112	2¼	55	2¾	118	64⅞	29¼
NPS 26	167:1	14⅞	370	4½	113	4¼	105	15¾	400	4⅞	112	2¼	55	2¾	118	64⅞	29¼
NPS 28	208:1	14¾	360	6	150	6	150	15¾	400	5	129	2⅞	62	5	127	90⅞	41
NPS 30	208:1	14¾	360	6	150	6	150	15¾	400	5	129	2⅞	62	5	127	90⅞	41
NPS 32	208:1	14¾	360	6	150	6	150	15¾	400	5	129	2⅞	62	5	127	90⅞	41
NPS 36	290:1	15¾	385	6½	165	6	150	23½	600	6¼	157	2¾	70	6¼	160	139	63
NPS 40	290:1	15¾	385	6½	165	6	150	23½	600	6¼	157	2¾	70	6¼	160	139	63
NPS 42	348:1	15¾	385	6½	165	6	150	23½	600	6¼	157	2¾	70	6¼	160	147¾	67
NPS 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
54"	43.41	1103	35.52	902
60"	43.41	1103	35.52	902



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 1/4"	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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