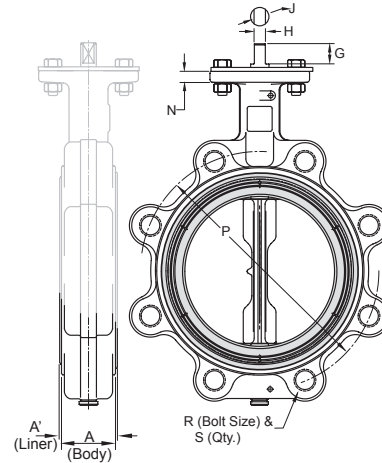
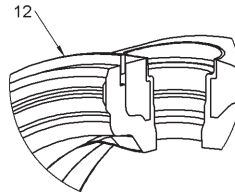
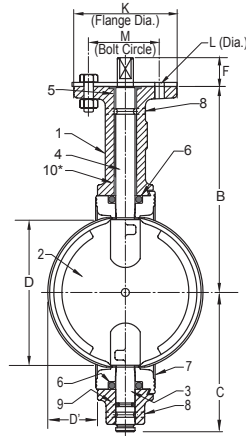


BUTTERFLY VALVES	
INDEX	
6411-01/6411-01/6411-03 2" - 12"	BFV-1
6411-01/6411-01/6411-03 14" - 24"	BFV-2
5100HI SERIES 2" - 12"	BFV-3
5100HI SERIES 14" - 24"	BFV-4
5200HI SERIES 2" - 12"	BFV-5
5200HI SERIES 14" - 24"	BFV-6
6100 SERIES 2" - 12"	BFV-7
6100 SERIES 14" - 24"	BFV-8
6100 SERIES 30" - 48"	BFV-9
6100HP SERIES	BFV-10
6200 SERIES 2" - 12"	BFV-11
6200 SERIES 14" - 24"	BFV-12
6200 SERIES 30" - 48"	BFV-13
6200HP SERIES 2" - 12"	BFV-14
6200HP SERIES 14" - 24"	BFV-15
BUTTERFLY FEATURES & OPTIONS	BFV-16-17
BUTTERFLY HEIGHT	BFV-18
ENGINEERING SPECIFICATIONS	BFV-19
CHEMICAL RESISTANCE GUIDE	BFV-20
FLANGE BOLTING	BFV-21
INSTALLATION	BFV-22
FLOW SIZING	BFV-23
FLOW COEFFICIENTS	BFV-24
ACTUATION SIZING CHARTS	BFV-25

BUTTERFLY VALVE FIGURE NUMBER SYSTEM				
6	2	1	1	01
SERIES	BODY DESCRIPTION/MATERIAL	DISC & STEM MATERIAL DESCRIPTION	LINER MATERIAL	OPTIONS
6 - 6000 SERIES	1 - WAFER / IRON (ASTM B126B)*	0 - NICKEL COATED DUCTILE IRON / 416 S.S.	0 - BUNA - N	00 - BARE STEM
5 - 5000 SERIES	2 - LUG / IRON (ASTM B126B)*	1 - ALUMINUM/BRONZE (ASTM B148) / 416 S.S.	1 - EPDM	01 - 10 POSITION LEVER LOCK
* 5000 SERIES IS ONLY AVAIL- ABLE IN CAST IRON WAFER OR LUG BODY WITH ALUMINUM BRONZE DISC, EPDM LINER, LEVER OR GEAR OPERATOR.	3 - WAFER / DUCTILE (ASTM A536)	2 - 316 S.S. / 316 S.S.	3 - VITON	02 - INFINITE POSITION W/ MEMORY STOP
	4 - LUG / DUCTILE (ASTM A536)	3 - BRONZE (ASTM B148) / 316 S.S.	4 - EPOXY COATED IRON	03 - GEAR OPERATOR W/ HAND- WHEEL
	8 - WAFER / DUCTILE EPOXY COATED	4 - NICKEL COATED DUCTILE IRON / 316 S.S.	5 - BLACK NEOPRENE	04 - BURIED SERVICE GEAR OPERATOR W/ OPERATING NUT
	9 - LUG / DUCTILE EPOXY COATED	5 - EPOXY COATED IRON	6 - WHITE NEOPRENE	
	*HAMMOND VALVE RESERVES THE RIGHT TO UPGRADE TO DUCTILE IRON BODIES WITHOUT NOTICE AND WITHOUT ADDITIONAL COST.	6 - NYLON COATED IRON	7 - HYPALON	
			8 - TEFLON OVER BUNA	

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MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	DUCTILE IRON-ASTM A536
2	DISC	ALUMINUM BRONZE-ASTM B 148**
3	BOTTOM STEM	STAINLESS STEEL TYPE 416
4	TOP STEM	STAINLESS STEEL TYPE 416
5	TOP BEARING	REINFORCED NYLON
6	SEAL	
7	LINER	EPDM
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM, BUNA, VITON
10	LOWER BEARING	REINFORCED NYLON
11	OPERATOR	LEVER HANDLE
		EPOXY COATED LEVER HANDLE
		GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR
12	RETAINING RING	ACTUATOR-AIR/SPRING
		ACTUATOR-ELECTRIC
12	RETAINING RING	1066 SPRING STEEL (65Mn)

DIMENSIONS

		VALVE SIZE									
		INCHES DN	2	2-1/2	3	4	5	6	8	10	12
A (Body)	INCHES	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06	
	mm	43	46	46	52	55	55	60	68	78	
A ¹ (Body)	INCHES	1.82	1.94	1.94	2.20	2.32	2.32	2.51	2.82	3.21	
	mm	46	49	49	55	58	58	63	71	82	
B	INCHES	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06	
	mm	139	152	158	177	191	203	238	268	306	
C	INCHES	3.06	3.31	3.75	4.25	4.94	5.56	5.56	7.88	9.25	
	mm	77	84	95	108	125	141	166	200	235	
D (Chord Dia)	INCHES	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68	
	mm	37	51	67	93	119	143	196	246	296	
D ¹ (Intrusion)	INCHES	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50	
	mm	7	11	17	27	38	49	72	93	114	
F	INCHES	1.13	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50	
	mm	28	28	28	28	28	28	38	38	38	
G	INCHES	0.81	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06	
	mm	20	20	20	20	20	20	27	27	27	
H	INCHES	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71	
	mm	8	8	8	10	10	11	13	18	18	
J	INCHES	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00	
	mm	12	12	12	14	14	14	19	25	25	
K	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56	
	mm	11	11	11	11	11	11	14	14	14	
L (Dia)	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00	
	mm	82	82	82	82	82	82	127	127	127	
M	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	
	mm	11	11	11	11	11	11	12	12	12	
N	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00	
	mm	120	139	152	190	215	241	298	362	431	
P	INCHES	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9	
	mm	4	4	4	8	8	8	8	12	12	
R	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56	
	mm	11	11	11	11	11	11	14	14	14	
S	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00	
	mm	82	82	82	82	82	82	127	127	127	
T	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	
	mm	11	11	11	11	11	11	12	12	12	
U	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00	
	mm	120	139	152	190	215	241	298	362	431	
V	INCHES	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9	
	mm	4	4	4	8	8	8	8	12	12	

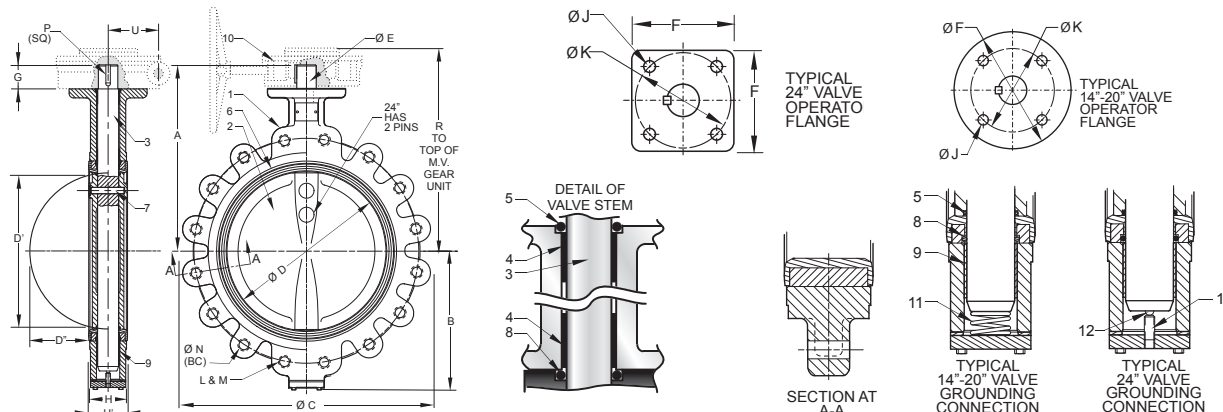
***Note:** Lead free refers to the wetted surface of the pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%. Source: California Health and Safety Code (116875).

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Tested and Certified by
IAFMO R&T to NSF/ANSI 372
for lead free compliance.

Iron Butterfly Valve for Potable Water
150 psi Non-Shock WOG
Dead End Service to 150 psi Max
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	DUCTILE IRON ASTM A536
2	DISC	ALUMINUM BRONZE ASTM B 148
3	STEM	STAINLESS STEEL TYPE 416
4	TOP BEARING	REINFORCED NYLON
5	STEM O-RING	EPDM, BUNA, VITON (1)
6	LINER	EPDM
7	STEM PIN	ANSI 4140 OR AISI 6150
8	LINER O-RING	EPDM, BUNA, VITON (1)
9	LOWER BEARING	REINFORCED NYLON
10	OPERATOR	GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR (2)
		ACTUATOR-AIR/SPRING (2)
11	GROUNDING SPRING	STAINLESS STEEL TYPE 302
12	GROUNDING BALL	AISI-1022
13	TENSION SCREW	AISI-1020

(1)- O-Ring Matches Liner; Viton Default if no Direct Match.

(2)- Consult Automation Department.

DIMENSIONS

	INCHES DN	VALVE SIZE				
		14	16	18	20	24
A	INCHES	15.50	16.75	18.50	19.75	22.43
	mm	398	425	469	501	569
B	INCHES	11.56	12.69	13.63	15.13	18.06
	mm	258	322	346	384	458
C	INCHES	21.00	23.50	25.00	27.50	32.10
	mm	533	596	635	698	815
D	INCHES	13.25	15.50	17.25	19.25	23.38
	mm	336	398	438	489	598
D ¹ (Chord Dia.)	INCHES	13.53	14.97	16.91	18.84	22.76
	mm	343	380	429	478	578
D ¹¹ (Intrusion)	INCHES	5.00	5.80	6.40	7.10	8.70
	mm	127	146	162	181	220
E	INCHES	1.63	1.63	2.13	2.13	2.13
	mm	41	41	54	54	54
F	INCHES	6.50	6.50	9.50	9.50	7.50
	mm	165	165	241	241	190
G	INCHES	2.00	2.00	3.00	3.00	3.06
	mm	50	50	76	76	77
H (Body)	INCHES	3.06	4.00	4.50	5.00	6.06
	mm	77	101	114	127	153
H ¹ (Liner)	INCHES	3.19	4.13	4.63	5.13	6.19
	mm	81	104	117	130	157
J	INCHES	0.69	0.69	0.81	0.81	0.81
	mm	17	17	20	20	20
K	INCHES	5.25	5.25	7.50	7.50	7.50
	mm	133	133	190	190	190
L	No. of Holes	12	16	16	20	20
	Thread Size	1-8	1-8	1 1/8-7	1 1/8-7	1 1/4-7
M						
N	INCHES	18.75	21.25	22.75	25.00	29.50
	mm	476	530	577	635	749
P (Key Size)	INCHES	0.38	0.38	0.50	0.50	0.50
	mm	9	9	12	12	12
R	INCHES	17.25	18.75	19.63	20.88	25.00
	mm	438	475	458	530	635
U	INCHES	3.13	3.13	4.50	4.50	4.63
	mm	79	79	114	114	117

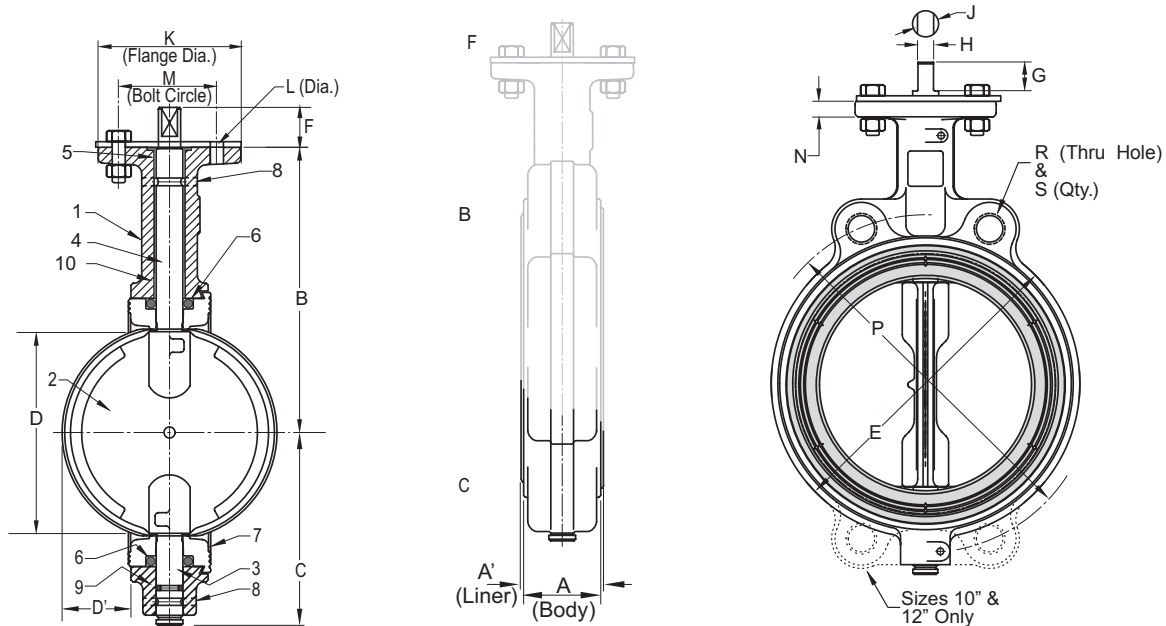
***Note:** Lead free refers to the wetted surface of the pipe, fittings and fixtures in potable water systems that have a weighted average lead content $\leq 0.25\%$. Source: California Health and Safety Code (116875).

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5100-HI Series* 2"-12"

Iron Butterfly Valve
200 psi Non-Shock WOG
For Dead End Service use 5200-HI Series
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL.B
2	DISC	ALUMINUM BRONZE ASTM B148
3	BOTTOM STEM	STAINLESS STEEL TYPE 416
4	TOP STEM	STAINLESS STEEL TYPE 416
5	TOP BEARING	REINFORCED NYLON
6	SEAL	EPDM
7	LINER	EPDM
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM
10	OPERATOR	LEVER HANDLE EPOXY COATED LEVER HANDLE GEAR OPERATOR GEAR OPERATOR WITH MEMORY STOP GEAR OPERATOR WITH LOCK

DIMENSIONS

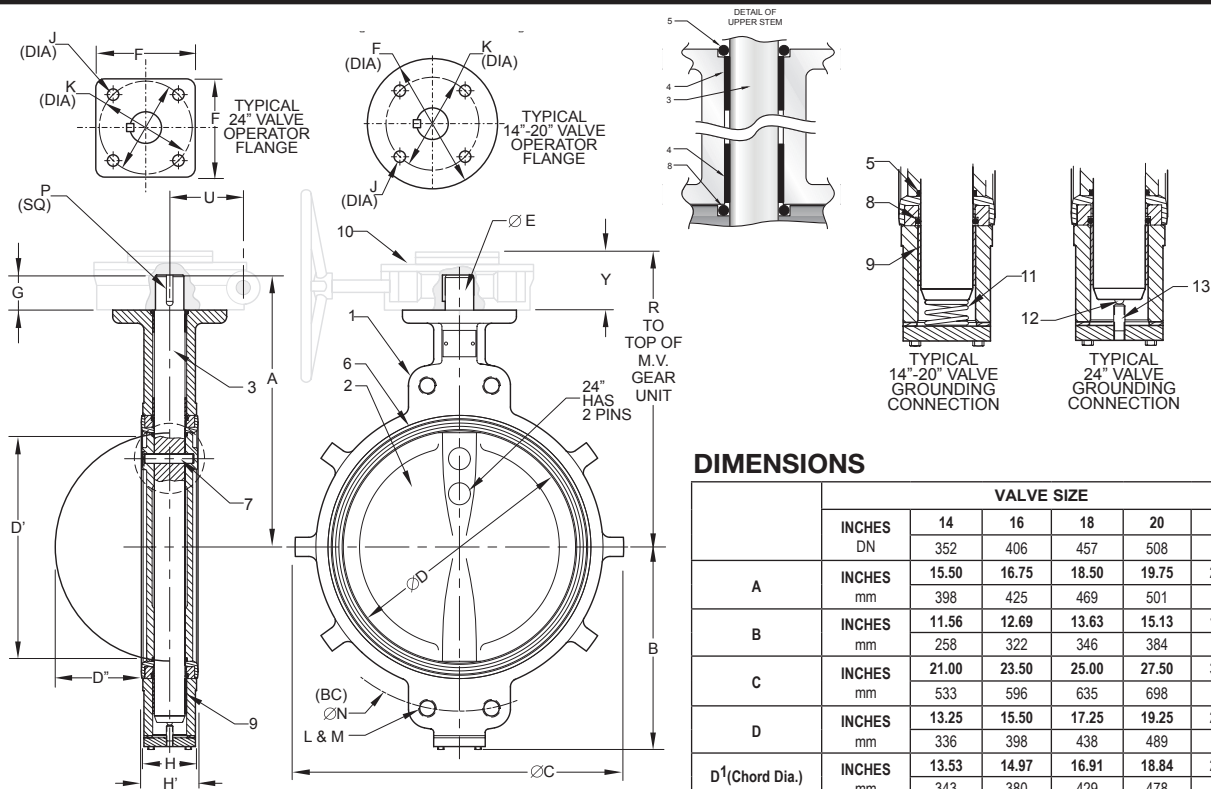
	INCHES DN	VALVE SIZE									
		2	2-1/2	3	4	5	6	8	10	12	
A (Body)	INCHES	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06	
	mm	43	46	46	52	55	55	60	68	78	
A ¹ (Liner)	INCHES	1.82	1.94	1.94	2.20	2.32	2.32	2.51	2.82	3.21	
	mm	46	49	49	55	58	58	63	71	82	
B	INCHES	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06	
	mm	139	152	158	177	191	203	238	268	306	
C	INCHES	3.06	3.31	3.75	4.25	4.94	5.56	5.56	7.88	9.25	
	mm	77	84	95	108	125	141	166	200	235	
D (Chord Dia)	INCHES	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68	
	mm	37	51	67	93	119	143	196	246	296	
D ¹ (Intrusion)	INCHES	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50	
	mm	7	11	17	27	38	49	72	93	114	
E	INCHES	4.13	4.88	5.38	6.88	7.75	8.75	11.00	13.38	16.13	
	mm	105	124	137	175	197	222	279	340	410	
F	INCHES	1.13	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50	
	mm	28	28	28	28	28	28	38	38	38	
G	INCHES	0.81	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06	
	mm	20	20	20	20	20	20	27	27	27	
H	INCHES	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71	
	mm	8	8	8	10	10	11	13	18	18	
J	INCHES	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00	
	mm	12	12	12	14	14	14	19	25	25	
K	INCHES	4	4	4	4	4	4	6	6	6	
	mm	101	101	101	101	101	101	152	152	152	
L (Dia)	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56	
	mm	11	11	11	11	11	11	14	14	14	
M	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00	
	mm	82	82	82	82	82	82	127	127	127	
N	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	
	mm	11	11	11	11	11	11	12	12	12	
P	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00	
	mm	120	139	152	190	215	241	298	362	431	
R	INCHES	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9	
	mm	15.875	15.875	15.875	15.875	19.0	19.0	19.0	24.3125	24.3125	
S	INCHES	2	2	2	2	2	2	2	4	4	
	mm	50.8	50.8	50.8	50.8	50.8	50.8	50.8	101.6	101.6	

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

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5100-HI Series* 14"-24"

Iron Butterfly Valve
150 psi Non-Shock WOG
For Dead End Service use 5200-HI Series
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B
2	DISC	ALUMINUM BRONZE ASTM B148
3	STEM	STAINLESS STEEL TYPE 416
4	TOP BEARING	REINFORCED NYLON
5	STEM O-RING	EPDM
6	LINER	EPDM
7	STEM PIN	ANSI 4140 OR AISI 6150
8	LINER O-RING	EPDM
9	LOWER BEARING	REINFORCED NYLON
10	OPERATOR	GEAR OPERATOR GEAR OPERATOR WITH MEMORY STOP GEAR OPERATOR WITH LOCK
11 14"-20"	GROUNDING SPRING	STAINLESS STEEL TYPE 302
12 24" Only	GROUNDING BALL	AISI-1022
13 24" Only	TENSION SCREW	AISI-1020

(1) - Consult Automation Department.

DIMENSIONS

	INCHES DN	VALVE SIZE				
		14	16	18	20	24
A	INCHES	15.50	16.75	18.50	19.75	22.43
	mm	398	425	469	501	569
B	INCHES	11.56	12.69	13.63	15.13	18.06
	mm	258	322	346	384	458
C	INCHES	21.00	23.50	25.00	27.50	32.10
	mm	533	596	635	698	815
D	INCHES	13.25	15.50	17.25	19.25	23.38
	mm	336	398	438	489	598
D ¹ (Chord Dia.)	INCHES	13.53	14.97	16.91	18.84	22.76
	mm	343	380	429	478	578
D ¹¹ (Intrusion)	INCHES	5.00	5.80	6.40	7.10	8.70
	mm	127	146	162	181	220
E	INCHES	1.63	1.63	2.13	2.13	2.13
	mm	41	41	54	54	54
F	INCHES	6.50	6.50	9.50	9.50	7.50
	mm	165	165	241	241	190
G	INCHES	2.00	2.00	3.00	3.00	3.06
	mm	50	50	76	76	77
H (Body)	INCHES	3.06	4.00	4.50	5.00	6.06
	mm	77	101	114	127	153
H ¹ (Liner)	INCHES	3.19	4.13	4.63	5.13	6.19
	mm	81	104	117	130	157
J	INCHES	0.69	0.69	0.81	0.81	0.81
	mm	17	17	20	20	20
K	INCHES	5.25	5.25	7.50	7.50	7.50
	mm	133	133	190	190	190
L	No. of Holes	4	4	4	4	4
M	Thread Size	1-8	1-8	1 1/8-7	1 1/8-7	1 1/4-7
N	INCHES	18.75	21.25	22.75	25.00	29.50
	mm	476	530	577	635	749
P (Key Size)	INCHES	0.38	0.38	0.50	0.50	0.50
	mm	9	9	12	12	12
R	INCHES	17.25	18.75	19.63	20.88	25.00
	mm	438	476	458	530	635
U	INCHES	3.13	3.13	4.50	4.50	4.63
	mm	79	79	114	114	117

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

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5200-HI Series* 2"-12"



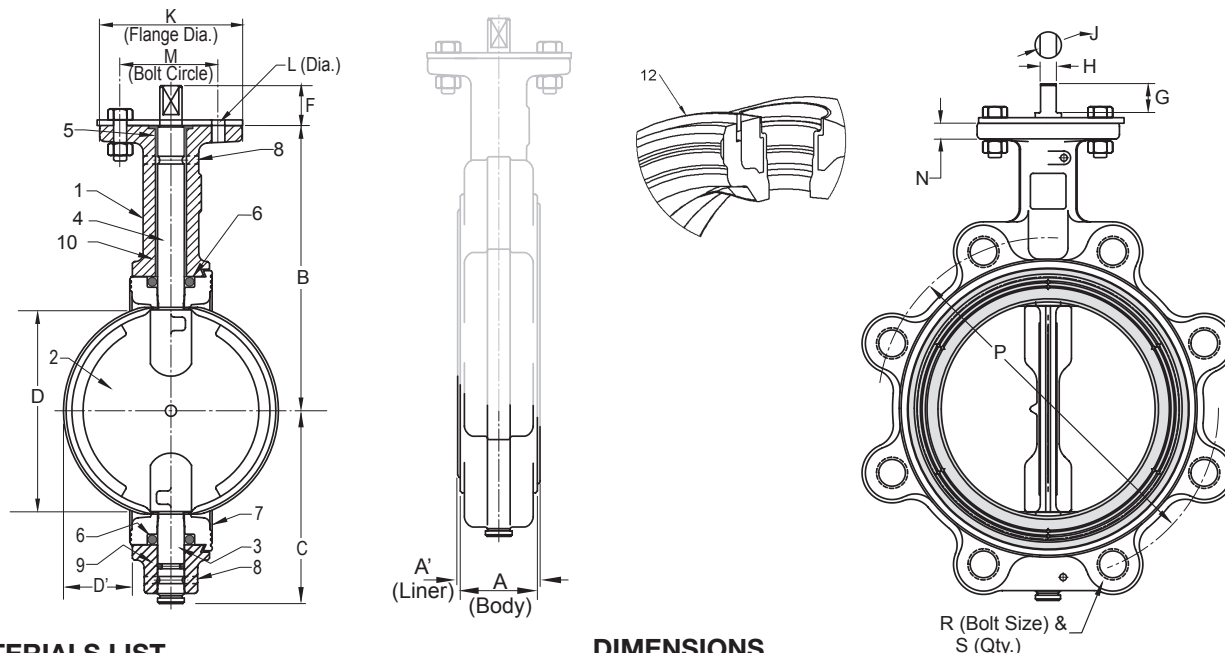
Tested and Certified by
IAFMO R&T to NSF/ANSI 372
for lead free compliance.

Iron Butterfly Valve for Potable Water

200 psi Non-Shock WOG

Bi-Directional Dead End Service to 200 psi Max

Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL B
2	DISC	ALUMINUM BRONZE ASTM B148
3	BOTTOM STEM	STAINLESS STEEL TYPE 416
4	TOP STEM	STAINLESS STEEL TYPE 416
5	TOP BEARING	REINFORCED NYLON
6	SEAL	EPDM
7	LINER	EPDM
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM
10	LOWER BEARING	REINFORCED NYLON
11	OPERATOR	LEVER HANDLE EPOXY COATED LEVER HANDLE GEAR OPERATOR GEAR OPERATOR WITH MEMORY STOP GEAR OPERATOR WITH LOCK
12	RETAINING RING	ST1066 SPRING STEEL (65Mn)

DIMENSIONS

		VALVE SIZE									
		INCHES	2	2-1/2	3	4	5	6	8	10	12
A (Body)	INCHES	DN	50	65	80	100	125	150	200	250	300
	INCHES	mm	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06
A ¹ (Liner)	INCHES	mm	1.82	1.94	1.94	2.20	2.32	2.32	2.51	2.82	3.21
	INCHES	mm	46	49	49	55	58	58	63	71	82
B	INCHES	mm	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06
	INCHES	mm	139	152	158	177	191	203	238	268	306
C	INCHES	mm	3.06	3.31	3.75	4.25	4.94	5.56	5.56	7.88	9.25
	INCHES	mm	77	84	95	108	125	141	166	200	235
D (Chord Dia)	INCHES	mm	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68
	INCHES	mm	37	51	67	93	119	143	196	246	296
D ¹ (Intrusion)	INCHES	mm	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50
	INCHES	mm	7	11	17	27	38	49	72	93	114
F	INCHES	mm	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50	1.50
	INCHES	mm	28	28	28	28	28	38	38	38	38
G	INCHES	mm	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06	1.06
	INCHES	mm	20	20	20	20	20	27	27	27	27
H	INCHES	mm	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71
	INCHES	mm	8	8	8	10	10	11	13	18	18
J	INCHES	mm	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00
	INCHES	mm	12	12	12	14	14	14	19	25	25
K	INCHES	mm	4	4	4	4	4	4	6	6	6
	INCHES	mm	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56
L (Dia)	INCHES	mm	11	11	11	11	11	11	14	14	14
	INCHES	mm	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00
M	INCHES	mm	82	82	82	82	82	82	127	127	127
	INCHES	mm	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50
N	INCHES	mm	11	11	11	11	11	11	12	12	12
	INCHES	mm	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00
P	INCHES	mm	120	139	152	190	215	241	298	362	431
	INCHES	mm	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9
R	INCHES	mm	4	4	4	8	8	8	8	12	12
	INCHES	mm	4	4	4	8	8	8	8	12	12
S	INCHES	mm	4	4	4	8	8	8	8	12	12
	INCHES	mm	4	4	4	8	8	8	8	12	12

***Note:** Lead free refers to the wetted surface of the pipe, fittings and fixtures in potable water systems that have a weighted average lead content $\leq 0.25\%$. Source: California Health and Safety Code (116875).

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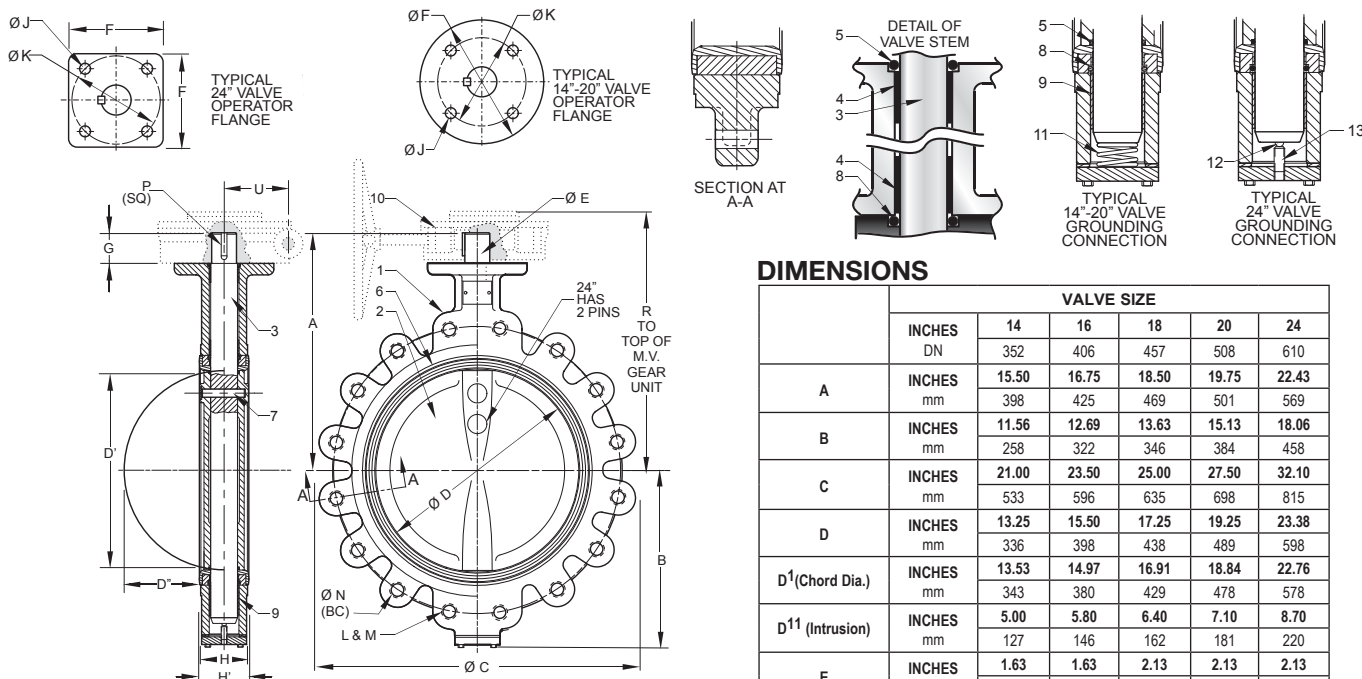


5200-HI Series* 14"-24"



Tested and Certified by
IAFMO R&T to NSF/ANSI 372
for lead free compliance.

Iron Butterfly Valve for Potable Water
150 psi Non-Shock WOG
Dead End Service to 150 psi Max
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B
2	DISC	ALUMINUM BRONZE ASTM B148
3	STEM	STAINLESS STEEL TYPE 416
4	TOP BEARING	REINFORCED NYLON
5	STEM O-RING	EPDM
6	LINER	EPDM
7	STEM PIN	ANSI 4140 OR AISI 6150
8	LINER O-RING	EPDM
9	LOWER BEARING	REINFORCED NYLON
10	OPERATOR	GEAR OPERATOR GEAR OPERATOR WITH MEMO- RY STOP GEAR OPERATOR WITH LOCK
11 14\"-20\"	GROUNDING SPRING	STAINLESS STEEL TYPE 302
12 24\" Only	GROUNDING BALL	AISI-1022
13 24\" Only	TENSION SCREW	AISI-1020

DIMENSIONS

	INCHES DN	VALVE SIZE				
		14	16	18	20	24
		352	406	457	508	610
A	INCHES	15.50	16.75	18.50	19.75	22.43
	mm	398	425	469	501	569
B	INCHES	11.56	12.69	13.63	15.13	18.06
	mm	258	322	346	384	458
C	INCHES	21.00	23.50	25.00	27.50	32.10
	mm	533	596	635	698	815
D	INCHES	13.25	15.50	17.25	19.25	23.38
	mm	336	398	438	489	598
D ¹ (Chord Dia.)	INCHES	13.53	14.97	16.91	18.84	22.76
	mm	343	380	429	478	578
D ¹¹ (Intrusion)	INCHES	5.00	5.80	6.40	7.10	8.70
	mm	127	146	162	181	220
E	INCHES	1.63	1.63	2.13	2.13	2.13
	mm	41	41	54	54	54
F	INCHES	6.50	6.50	9.50	9.50	7.50
	mm	165	165	241	241	190
G	INCHES	2.00	2.00	3.00	3.00	3.06
	mm	50	50	76	76	77
H (Body)	INCHES	3.06	4.00	4.50	5.00	6.06
	mm	77	101	114	127	153
H ¹ (Liner)	INCHES	3.19	4.13	4.63	5.13	6.19
	mm	81	104	117	130	157
J	INCHES	0.69	0.69	0.81	0.81	0.81
	mm	17	17	20	20	20
K	INCHES	5.25	5.25	7.50	7.50	7.50
	mm	133	133	190	190	190
L	No. of Holes	12	16	16	20	20
M	Thread Size	1-8	1-8	1 1/8-7	1 1/8-7	1 1/4-7
N	INCHES	18.75	21.25	22.75	25.00	29.50
	mm	476	530	577	635	749
P (Key Size)	INCHES	0.38	0.38	0.50	0.50	0.50
	mm	9	9	12	12	12
R	INCHES	17.25	18.75	19.63	20.88	25.00
	mm	438	476	458	530	635
U	INCHES	3.13	3.13	4.50	4.50	4.63
	mm	79	79	114	114	117

Note: Lead free refers to the wetted surface of the pipe, fittings and fixtures in potable water systems that have a weighted average lead content $\leq 0.25\%$. Source: California Health and Safety Code (116875).

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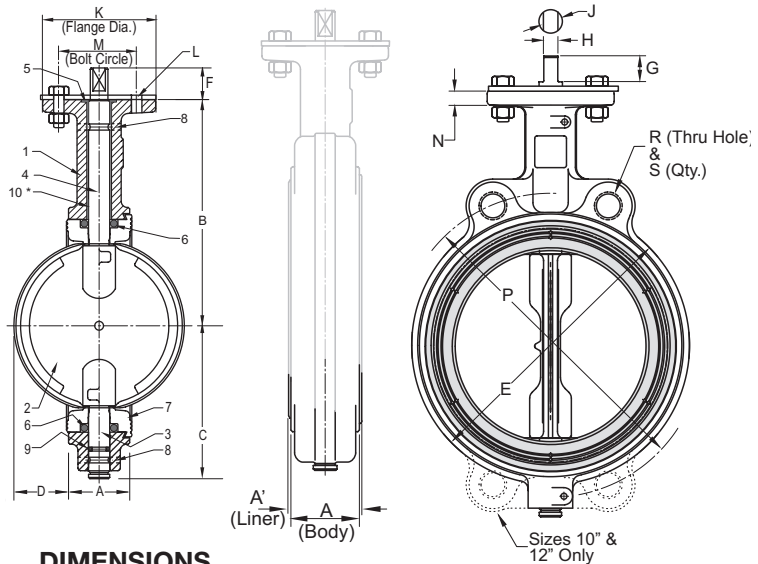
6100 Series* 2"- 12"

Iron Butterfly Valve
200 psi Non-Shock WOG
For Dead End Service use 6200 Series
Specifications: API-609 MSS SP-67 Type 1

MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL.B
		CAST IRON EPOXY COATED
		DUCTILE IRON ASTM A536
		DUCTILE IRON-EPOXY COATED
2	DISC	DUCTILE IRON-NYLON COATED
		NP DUCTILE IRON ASTM A536
		ALUMINUM BRONZE ASTM B 148 **
		STAINLESS STEEL TYPE 316
		NYLON COATED DUCTILE IRON
3	BOTTOM STEM	EPOXY COATED DUCTILE IRON
		STAINLESS STEEL TYPE 416
4	TOP STEM	STAINLESS STEEL TYPE 316
		STAINLESS STEEL TYPE 416
5	TOP BEARING	REINFORCED NYLON
6	SEAL	EPDM, BUNA, VITON (1)
7	LINER	BUNA
		EPDM
		VITON
		HYPALON
		NEOPRENE BLACK-FDA
		NEOPRENE WHITE-FDA
8	ROLL PIN	TEFLON OVER BUNA (150# WOG)
		STAINLESS STEEL
9	STEM SEAL	EPDM, BUNA, VITON (1)
10	LOWER BEARING	REINFORCED NYLON
11	OPERATOR	LEVER HANDLE
		EPOXY COATED LEVER HANDLE
		GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR
		ACTUATOR-AIR/SPRING
		ACTUATOR-ELECTRIC

(1) - VITON O-RINGS ARE USED WITH HYPALON, NEOPRENE, AND TEFLON LINERS.



DIMENSIONS

	INCHES DN	VALVE SIZE								
		2	2-1/2	3	4	5	6	8	10	12
A (Body)	INCHES	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06
	mm	43	46	46	52	55	55	60	68	78
A ¹ (Liner)	INCHES	1.82	1.94	1.94	2.20	2.32	2.32	2.51	2.82	3.21
	mm	46	49	49	55	58	58	63	71	82
B	INCHES	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06
	mm	139	152	158	177	191	203	238	268	306
C	INCHES	3.06	3.31	3.75	4.25	4.94	5.56	5.56	7.88	9.25
	mm	77	84	95	108	125	141	166	200	235
D (Chord Dia)	INCHES	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68
	mm	37	51	67	93	119	143	196	246	296
D ¹ (Intrusion)	INCHES	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50
	mm	7	11	17	27	38	49	72	93	114
E	INCHES	4.13	4.88	5.38	6.88	7.75	8.75	11.00	13.38	16.13
	mm	105	124	137	175	197	222	279	340	410
F	INCHES	1.13	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50
	mm	28	28	28	28	28	28	38	38	38
G	INCHES	0.81	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06
	mm	20	20	20	20	20	20	27	27	27
H	INCHES	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71
	mm	8	8	8	10	10	11	13	18	18
J	INCHES	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00
	mm	12	12	12	14	14	14	19	25	25
K	INCHES	4	4	4	4	4	4	6	6	6
	mm	102	102	102	102	102	102	152	152	152
L (Dia)	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56
	mm	11	11	11	11	11	11	14	14	14
M	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00
	mm	82	82	82	82	82	82	127	127	127
N	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50
	mm	11	11	11	11	11	11	12	12	12
P	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00
	mm	120	139	152	190	215	241	298	362	431
R	INCHES	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9
	mm	16	16	16	16	19	19	19	22	22
S	INCHES	2	2	2	2	2	2	2	4	4
	mm	51	51	51	51	51	51	51	102	102

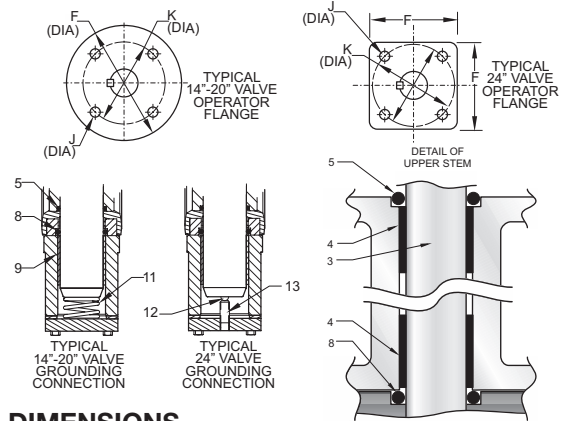
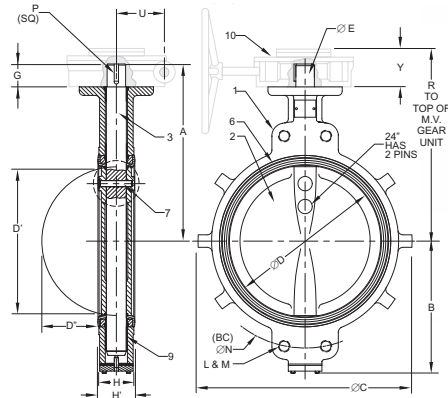
***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

****Recommend Aluminum Bronze Disc in Water Service.**

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6100 Series* 14"- 24"

Iron Butterfly Valve
150 psi Non-Shock WOG
For Dead End Service use 6200 Series
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B
		CAST IRON EPOXY COATED
		DUCTILE IRON ASTM A536
		DUCTILE IRON-EPOXY COATED
2	DISC	NP DUCTILE IRON ASTM A536
		ALUMINUM BRONZE ASTM B 148 **
		STAINLESS STEEL TYPE 316
3	STEM	STAINLESS STEEL TYPE 416
		STAINLESS STEEL TYPE 316
4	TOP BEARING	REINFORCED NYLON
5	STEM O-RING	EPDM, BUNA, VITON (1)
6	LINER	BUNA
		EPDM
		VITON
		HYPALON
7	STEM PIN	ANSI 4140 OR AISI 6150
8	LINER O-RING	EPDM, BUNA, VITON (1)
9	LOWER BEARING	REINFORCED NYLON
10	OPERATOR	GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR (2)
		ACTUATOR-AIR/SPRING (2)
11	GROUNDING SPRING	STAINLESS STEEL TYPE 302
12	GROUNDING BALL	AISI-1022
13	TENSION SCREW	AISI-1020

(1) - O-Ring Matches Liner; Viton Default if no Direct Match.

(2) - Consult Automation Department

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

****Recommend Aluminum Bronze Disc in Water Service.**

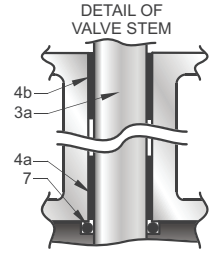
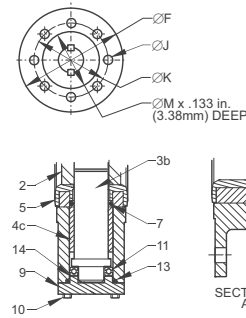
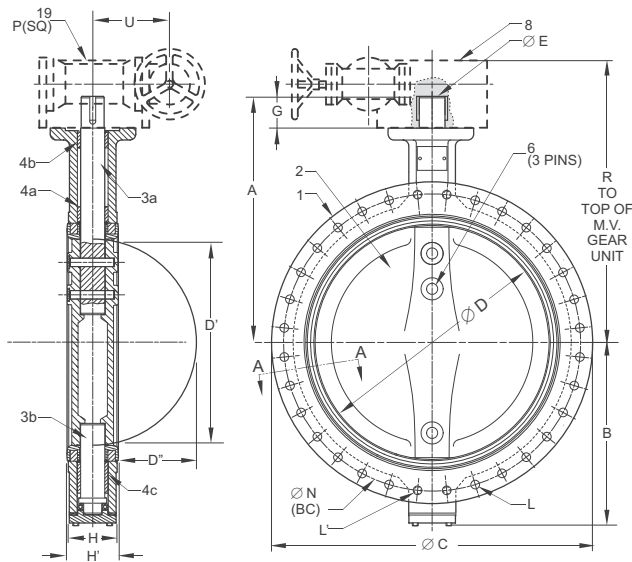
DIMENSIONS

	VALVE SIZE					
	INCHES DN	14	16	18	20	24
		352	406	457	508	610
A	INCHES	15.50	16.75	18.50	19.75	22.43
	mm	398	425	469	501	569
B	INCHES	11.56	12.69	13.63	15.13	18.06
	mm	258	322	346	384	458
C	INCHES	21.00	23.50	25.00	27.50	32.10
	mm	533	596	635	698	815
D	INCHES	13.25	15.50	17.25	19.25	23.38
	mm	336	398	438	489	598
D ¹ (Chord Dia.)	INCHES	13.53	14.97	16.91	18.84	22.76
	mm	343	380	429	478	578
D ¹¹ (Intrusion)	INCHES	5.00	5.80	6.40	7.10	8.70
	mm	127	146	162	181	220
E	INCHES	1.63	1.63	2.13	2.13	2.13
	mm	41	41	54	54	54
F	INCHES	6.50	6.50	9.50	9.50	7.50
	mm	165	165	241	241	190
G	INCHES	2.00	2.00	3.00	3.00	3.06
	mm	50	50	76	76	77
H (Body)	INCHES	3.06	4.00	4.50	5.00	6.06
	mm	77	101	114	127	153
H ¹ (Liner)	INCHES	3.19	4.13	4.63	5.13	6.19
	mm	81	104	117	130	157
J	INCHES	0.69	0.69	0.81	0.81	0.81
	mm	17	17	20	20	20
K	INCHES	5.25	5.25	7.50	7.50	7.50
	mm	133	133	190	190	190
L	No. of Holes	4	4	4	4	4
M	Thread Size	1-8	1-8	1 1/8-7	1 1/8-7	1 1/4-7
N	INCHES	18.75	21.25	22.75	25.00	29.50
	mm	476	530	577	635	749
P (Key Size)	INCHES	0.38	0.38	0.50	0.50	0.50
	mm	9	9	12	12	12
R	INCHES	17.25	18.75	19.63	20.88	25.00
	mm	438	476	458	530	635
U	INCHES	3.13	3.13	4.50	4.50	4.63
	mm	79	79	114	114	117

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6100 Series* 30"- 48"

Iron Butterfly Valve
150 psi Non-Shock WOG
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B DUCTILE IRON ASTM A536
2	DISC	ALUMINUM BRONZE ASTM B 148 ** C95400 NP DUCTILE IRON ASTM A536 STAINLESS STEEL TYPE 316
3a	UPPER STEM	STAINLESS STEEL TYPE 416
3b	LOWER STEM	STAINLESS STEEL TYPE 416
4a	UPPER STEM BEARING, SHORT	CAST BRASS
4b	UPPER STEM BEARING, LONG	CAST BRASS
4c	LOWER STEM BEARING	CAST BRASS
5	LINER	BUNA EPDM VITON
6	STEM PIN	STAINLESS STEEL TYPE 302
7	LINER O-RING	BUNA
8	OPERATOR	GEAR OPERATOR ACTUATOR-AIR/AIR (1) ACTUATOR-AIR/SPRING (1) ACTUATOR-ELECTRIC (1)
9	BOTTOM CAP	ASTM-1-126 CLB
10	BOTTOM CAP FASTENING BOLTS	STEEL
11	THRUST BEARING	AISI-1020
12	KEY	STEEL
13	BOTTOM CAP O-RING	BUNA
14	THRUST BEARING GASKET	ASTM A570 Gr. 33

(1) - Consult Automation Department.

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

****Recommend Aluminum Bronze Disc in Water Service.**

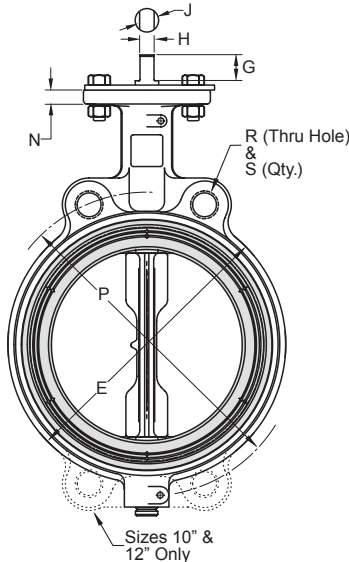
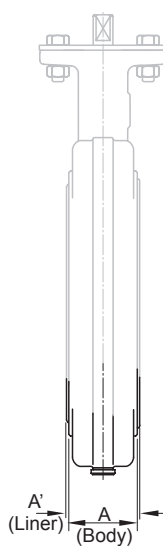
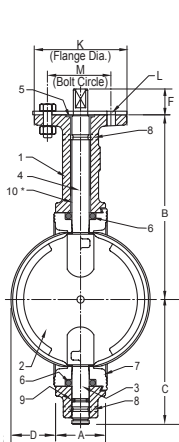
DIMENSIONS

	VALVE SIZE				
	INCHES DN	30 750	36 900	42 1100	48 1200
A	INCHES	29.37	33.00	39.69	42.94
	mm	746	838	1008	1090
B	INCHES	22.05	25.83	30.60	34.02
	mm	580	656	777	864
C	INCHES	36.00	45.98	49.50	56.00
	mm	914	1168	1257	1422
D	INCHES	29.29	34.04	40.55	45.67
	mm	744	864	1030	1160
D ¹ (Chord Dia.)	INCHES	28.56	33.10	39.33	44.35
	mm	725	840	999	1126
D ¹¹ (Intrusion)	INCHES	11.30	13.00	15.20	17.10
	mm	287	330	386	434
øE	INCHES	2.49	2.95	3.74	4.13
	mm	63	75	95	105
øF (Mtg. Flange)	INCHES	11.81	11.81	11.81	13.78
	mm	300	300	300	350
G	INCHES	3.00	4.50	6.00	6.00
	mm	76	114	152	152
H (Body Width)	INCHES	6.57	8.00	9.88	10.88
	mm	167	203	251	276
H ¹ (Liner Width)	INCHES	6.81	8.31	10.27	11.26
	mm	173	211	261	286
J	INCHES	0.71			0.87
	mm	18			22
øK B.C.	INCHES	10.00			11.73
	mm	254			298
L	No. of Holes (per Flange)	4			
	Thread	1.25 UNC-2B	1.50 UNC-2B		
	Bolt Size	1.25-7x5	1.5-6x6.25		
øM	INCHES	7.87			9.06
	mm	200			230
øN	INCHES	36.00	42.75	49.50	56.00
	mm	914	1086	1257	1422
P (Square Key Size)	INCHES	0.71	0.79	0.98	1.10
	mm	18	20	25	28
R	INCHES	32.40	38.50	43.90	49.20
	mm	823	978	1115	1249
U	INCHES	9.57	10.94	10.94	18.03
	mm	243	278	278	458

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6100HP Series* 2"-12"

Iron Butterfly Valve
250 psi Non-Shock WOG
For Dead End Service use 6200HP Series
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	DUCTILE IRON ASTM A536 DUCTILE IRON-EPOXY COATED
2	DISC	DUCTILE IRON-NYLON COATED NP DUCTILE IRON ASTM A536 ALUMINUM BRONZE ASTM B 148 STAINLESS STEEL TYPE 316
3	BOTTOM STEM	STAINLESS STEEL TYPE 416 STAINLESS STEEL TYPE 316
4	TOP STEM	STAINLESS STEEL TYPE 416 STAINLESS STEEL TYPE 316
5	TOP BEARING	REINFORCED NYLON
6	SEAL	EPDM, BUNA, VITON (1)
7	LINER	BUNA EPDM VITON HYPALON NEOPRENE BLACK-FDA NEOPRENE WHITE-FDA
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM, BUNA, VITON (1)
10*	LOWER BEARING	REINFORCED NYLON
11	OPERATOR	LEVER HANDLE EPOXY COATED LEVER HANDLE GEAR OPERATOR GEAR OPERATOR WITH MEMORY STOP GEAR OPERATOR WITH LOCK ACTUATOR-AIR/AIR ACTUATOR-AIR/SPRING ACTUATOR-ELECTRIC

(1) - VITON O-RINGS ARE USED WITH HYPALON, NEOPRENE, AND TEFLON LINERS.

DIMENSIONS

	VALVE SIZE									
	INCHES DN	2 50	2-1/2 65	3 80	4 100	5 125	6 150	8 200	10 250	12 300
A (Body)	INCHES mm	1.69 43	1.81 46	1.81 46	2.07 52	2.19 55	2.19 55	2.38 60	2.69 68	3.06 78
A ¹ (Liner)	INCHES mm	1.82 46	1.94 49	1.94 49	2.20 55	2.32 58	2.32 58	2.51 63	2.82 71	3.21 82
B	INCHES mm	5.50 139	6.00 152	6.25 158	7.00 177	7.53 191	8.00 203	9.38 238	10.56 268	12.06 306
C	INCHES mm	3.06 77	3.31 84	3.75 95	4.25 108	4.94 125	5.56 141	5.56 166	7.88 200	9.25 235
D (Chord Dia)	INCHES mm	1.49 37	2.01 51	2.64 67	3.67 93	4.71 119	5.66 143	7.72 196	9.70 246	11.68 296
D ¹ (Intrusion)	INCHES mm	0.28 7	0.44 11	0.69 17	1.06 27	1.50 38	1.94 49	2.84 72	3.69 93	4.50 114
E	INCHES mm	4.13 105	4.88 124	5.38 137	6.88 175	7.75 197	8.75 222	11.00 279	13.38 340	16.13 410
F	INCHES mm	1.13 28	1.13 28	1.13 28	1.13 28	1.13 28	1.13 28	1.50 38	1.50 38	1.50 38
G	INCHES mm	0.81 20	0.81 20	0.81 20	0.81 20	0.81 20	0.81 20	1.06 27	1.06 27	1.06 27
H	INCHES mm	0.35 8	0.35 8	0.35 8	0.40 10	0.40 10	0.44 11	0.53 13	0.71 18	0.71 18
J	INCHES mm	0.50 12	0.50 12	0.50 12	0.56 14	0.56 14	0.62 14	0.75 19	1.00 25	1.00 25
K		4	4	4	4	4	4	6	6	6
L (Dia)	INCHES mm	0.44 11	0.44 11	0.44 11	0.44 11	0.44 11	0.44 11	0.56 14	0.56 14	0.56 14
M	INCHES mm	3.25 82	3.25 82	3.25 82	3.25 82	3.25 82	3.25 82	5.00 127	5.00 127	5.00 127
N	INCHES mm	0.44 11	0.44 11	0.44 11	0.44 11	0.44 11	0.44 11	0.50 12	0.50 12	0.50 12
P	INCHES mm	4.75 120	5.50 139	6.00 152	7.50 190	8.50 215	9.50 241	11.75 298	14.25 362	17.00 431
R		5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9
S		2	2	2	2	2	2	2	4	4

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

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6200 Series* 2"-12"

Iron Butterfly Valve
200 psi Non-Shock WOG
Bi-Directional Dead End Service to 200 psi Max
BUNA & EPDM Only. All others 150 psi Uni-Directional
Specifications: API-609 MSS SP-67 Type 1

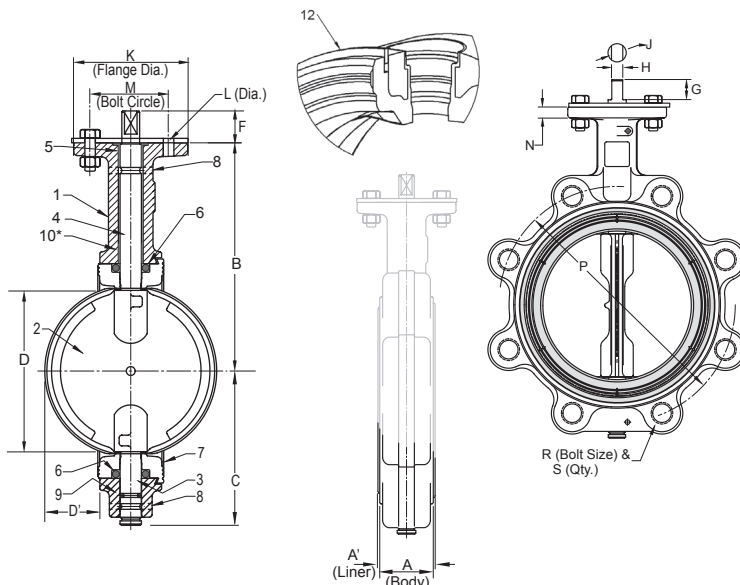
MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B
		CAST IRON EPOXY COATED
		DUCTILE IRON ASTM A536
		DUCTILE IRON-EPOXY COATED
2	DISC	DUCTILE IRON-NYLON COATED
		NP DUCTILE IRON ASTM A536
		ALUMINUM BRONZE ASTM B 148
		STAINLESS STEEL ASTM A351 CF8M
		NYLON COATED DUCTILE IRON EPOXY COATED DUCTILE IRON
3	BOTTOM STEM	STAINLESS STEEL TYPE 416
		STAINLESS STEEL TYPE 316 (2)
4	TOP STEM	STAINLESS STEEL TYPE 416
		STAINLESS STEEL TYPE 316 (2)
5	TOP BEARING	REINFORCED NYLON
6	SEAL	EPDM, BUNA, VITON (1)
7	LINER	BUNA
		EPDM
		VITON
		HYPALON
		NEOPRENE BLACK-FDA
		NEOPRENE WHITE-FDA TEFLON OVER BUNA (150# WOG)
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM, BUNA, VITON (1)
10	LOWER BEARING	REINFORCED NYLON
11	OPERATOR	LEVER HANDLE
		EPOXY COATED LEVER HANDLE
		GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR ACTUATOR-AIR/SPRING ACTUATOR-ELECTRIC
12	RETAINING RING	1066 SPRING STEEL (65Mn)

(1) - VITON O-RINGS ARE USED WITH HYPALON, NEOPRENE, AND TEFLON LINERS.

(2) 316 STEM USED WITH CF8M DISC

** EPDM AND BUNA LINER ONLY



DIMENSIONS

		VALVE SIZE									
		INCHES DN	2	2-1/2	3	4	5	6	8	10	12
A (Body)	INCHES	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06	
	mm	43	46	46	52	55	55	60	68	78	
A ¹ (Liner)	INCHES	1.82	1.94	1.94	2.20	2.32	2.32	2.51	2.82	3.21	
	mm	46	49	49	55	58	58	63	71	82	
B	INCHES	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06	
	mm	139	152	158	177	191	203	238	268	306	
C	INCHES	3.06	3.31	3.75	4.25	4.94	5.56	5.56	7.88	9.25	
	mm	77	84	95	108	125	141	166	200	235	
D (Chord Dia)	INCHES	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68	
	mm	37	51	67	93	119	143	196	246	296	
D ¹ (Intrusion)	INCHES	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50	
	mm	7	11	17	27	38	49	72	93	114	
F	INCHES	1.13	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50	
	mm	28	28	28	28	28	28	38	38	38	
G	INCHES	0.81	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06	
	mm	20	20	20	20	20	20	27	27	27	
H	INCHES	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71	
	mm	8	8	8	10	10	11	13	18	18	
J	INCHES	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00	
	mm	12	12	12	14	14	14	19	25	25	
K	INCHES	4	4	4	4	4	4	6	6	6	
	mm	101	101	101	101	101	101	152	152	152	
L (Dia)	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56	
	mm	11	11	11	11	11	11	14	14	14	
M	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00	
	mm	82	82	82	82	82	82	127	127	127	
N	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	
	mm	11	11	11	11	11	11	12	12	12	
P	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00	
	mm	120	139	152	190	215	241	298	362	431	
R	INCHES	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9	
	mm	15.875	15.875	15.875	15.875	19.0	19.0	19.0	22.225	22.225	
S	INCHES	4	4	4	8	8	8	8	12	12	
	mm	101	101	101	203	203	203	203	305	305	

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

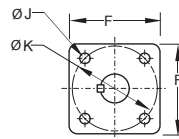
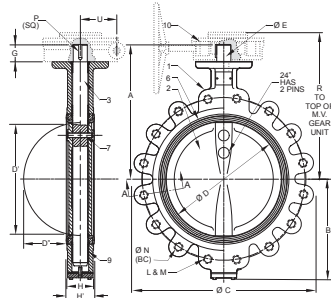
***Recommend Aluminum Bronze Disc in Water Service.

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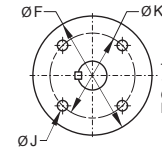


6200 Series* 14"-24"

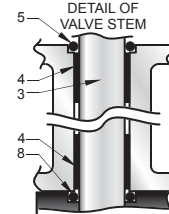
Iron Butterfly Valve
150 psi Non-Shock WOG
Dead End Service to 150 psi Max
Specifications: API-609 MSS SP-67 Type 1



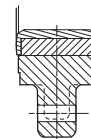
TYPICAL
24" VALVE
OPERATOR
FLANGE



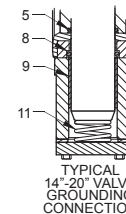
TYPICAL
14"-20" VALVE
OPERATOR
FLANGE



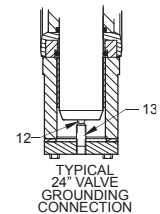
DETAIL OF
VALVE STEM



SECTION AT
A-A



TYPICAL
24" VALVE
GROUNDING
CONNECTION



TYPICAL
14"-20" VALVE
GROUNDING
CONNECTION

MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B
		CAST IRON EPOXY COATED
		DUCTILE IRON ASTM A536
		DUCTILE IRON-EPOXY COATED
2	DISC	NP DUCTILE IRON ASTM A536
		ALUMINUM BRONZE ASTM B 148 **
		STAINLESS STEEL ASTM A351 CF8M
3	STEM	STAINLESS STEEL TYPE 416
		STAINLESS STEEL TYPE 316 (3)
4	TOP BEARING	REINFORCED NYLON
5	STEM O-RING	EPDM, BUNA, VITON (1)
6	LINER	BUNA
		EPDM
		VITON
		HYPALON
7	STEM PIN	ANSI 4140 OR AISI 6150
8	LINER O-RING	EPDM, BUNA, VITON (1)
9	LOWER BEARING	REINFORCED NYLON
10	OPERATOR	GEAR OPERATOR
		GEAR OPERATOR WITH MEMO- RY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR (2)
		ACTUATOR-AIR/SPRING (2)
11	GROUNDING 14"-20" SPRING	STAINLESS STEEL TYPE 302
12	GROUNDING 24" Only BALL	AISI-1022
13	TENSION 24" Only SCREW	AISI-1020

(1) - O-Ring Matches Liner; Viton Default if no Direct Match.

(2) - Consult Automation Department.

(3) - 316 Stainless Steel used with CF8M Disc.

** Recommend Aluminum Bronze Disc in Water Service.

DIMENSIONS

	INCHES DN	VALVE SIZE				
		14	16	18	20	24
A	INCHES	15.50	16.75	18.50	19.75	22.43
	mm	398	425	469	501	569
B	INCHES	11.56	12.69	13.63	15.13	18.06
	mm	258	322	346	384	458
C	INCHES	21.00	23.50	25.00	27.50	32.10
	mm	533	596	635	698	815
D	INCHES	13.25	15.50	17.25	19.25	23.38
	mm	336	398	438	489	598
D ¹ (Chord Dia.)	INCHES	13.53	14.97	16.91	18.84	22.76
	mm	343	380	429	478	578
D ¹¹ (Intrusion)	INCHES	5.00	5.80	6.40	7.10	8.70
	mm	127	146	162	181	220
E	INCHES	1.63	1.63	2.13	2.13	2.13
	mm	41	41	54	54	54
F	INCHES	6.50	6.50	9.50	9.50	7.50
	mm	165	165	241	241	190
G	INCHES	2.00	2.00	3.00	3.00	3.06
	mm	50	50	76	76	77
H (Body)	INCHES	3.06	4.00	4.50	5.00	6.06
	mm	77	101	114	127	153
H ¹ (Liner)	INCHES	3.19	4.13	4.63	5.13	6.19
	mm	81	104	117	130	157
J	INCHES	0.69	0.69	0.81	0.81	0.81
	mm	17	17	20	20	20
K	INCHES	5.25	5.25	7.50	7.50	7.50
	mm	133	133	190	190	190
L	No. of Holes	12	16	16	20	20
M	Thread Size	1-8	1-8	1 1/8-7	1 1/8-7	1 1/4-7
N	INCHES	18.75	21.25	22.75	25.00	29.50
	mm	476	530	577	635	749
P (Key Size)	INCHES	0.38	0.38	0.50	0.50	0.50
	mm	9	9	12	12	12
R	INCHES	17.25	18.75	19.63	20.88	25.00
	mm	438	476	458	530	635
U	INCHES	3.13	3.13	4.50	4.50	4.63
	mm	79	79	114	114	117

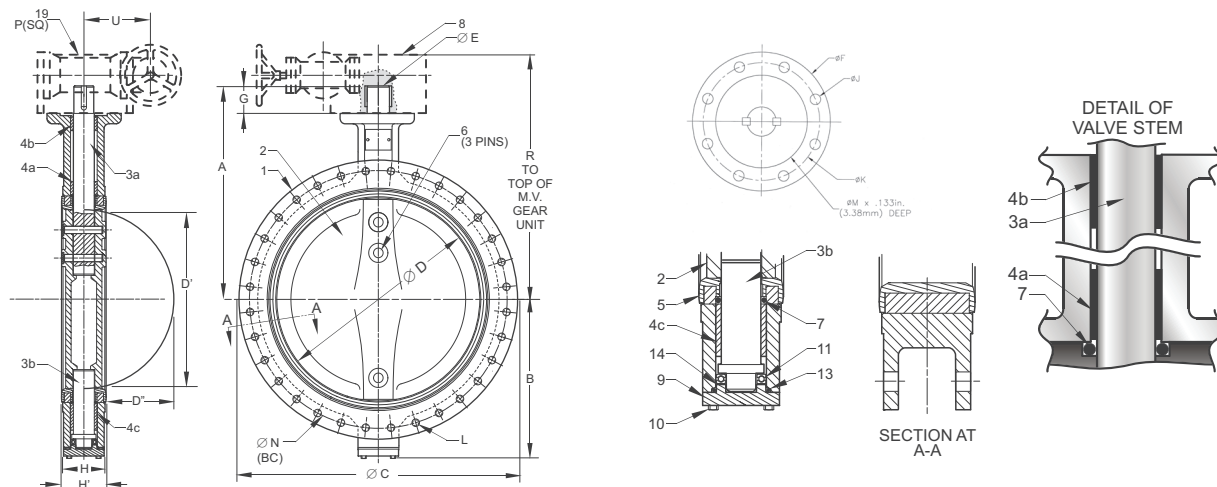
***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

****Recommend Aluminum Bronze Disc in Water Service.**

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6200 Series* 30"- 48"

Iron Butterfly Valve
150 psi Non-Shock WOG
ASME B16.47 Series A Flanges
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	CAST IRON ASTM A126 CL. B DUCTILE IRON ASTM A536
2	DISC	ALUMINUM BRONZE ASTM B 148 ** C95400 NP DUCTILE IRON ASTM A536 STAINLESS STEEL ASIM A351 CF8M
3a	UPPER STEM	STAINLESS STEEL TYPE 416 (2)
3b	LOWER STEM	STAINLESS STEEL TYPE 416 (2)
4a	UPPER STEM BEARING, SHORT	CAST BRASS
4b	UPPER STEM BEARING, LONG	CAST BRASS
4c	LOWER STEM BEARING	CAST BRASS
5	LINER	BUNA EPDM VITON
6	STEM PIN	STAINLESS STEEL TYPE 302
7	LINER O-RING	BUNA
8	OPERATOR	GEAR OPERATOR ACTUATOR-AIR/AIR (1) ACTUATOR-AIR/SPRING (1) ACTUATOR-ELECTRIC (1)
9	BOTTOM CAP	ASTM-1-126 CLB
10	BOTTOM CAP FASTENING BOLTS	STEEL
11	THRUST BEARING	AISI-1020
12	KEY	STEEL
13	BOTTOM CAP O-RING	BUNA
14	THRUST BEARING GASKET	ASTM A570 Gr. 33

(1) - Consult Automation Department.

(2) - CF8M Disc Carries 316 Stem.

DIMENSIONS

	INCHES DN	VALVE SIZE			
		30	36	42	48
A	INCHES	29.37	33.00	39.69	42.94
	mm	746	838	1008	1090
B	INCHES	22.05	25.83	30.60	34.02
	mm	580	656	777	864
C	INCHES	36.00	45.98	49.50	56.00
	mm	914	1168	1257	1422
D	INCHES	29.29	34.04	40.55	45.67
	mm	744	864	1030	1160
D ¹ (Chord Dia.)	INCHES	28.56	33.10	39.33	44.35
	mm	725	840	999	1126
D ¹¹ (Intrusion)	INCHES	11.30	13.00	15.20	17.10
	mm	287	330	386	434
øE	INCHES	2.49	2.95	3.74	4.13
	mm	63	75	95	105
øF (Mtg. Flange)	INCHES	11.81	11.81	11.81	13.78
	mm	300	300	300	350
G	INCHES	3.00	4.50	6.00	6.00
	mm	76	114	152	152
H (Body Width)	INCHES	6.57	8.00	9.88	10.88
	mm	167	203	251	276
H ¹ (Liner Width)	INCHES	6.81	8.31	10.27	11.26
	mm	173	211	261	286
J	INCHES	0.71			
	mm	18			
øK	INCHES	10.00			
B.C.	mm	254			
L	No. of Holes (per Flange)	28	32	36	44
	Thread	1.25 UNC-2B			
	Bolt Size	1.5-7x5			
øM	INCHES	7.87			
	mm	200			
øN	INCHES	36.00	42.75	49.50	56.00
	mm	914	1086	1257	1422
P (Square Key Size)	INCHES	0.71	0.79	0.98	1.10
	mm	18	20	25	28
R	INCHES	32.40	38.50	43.90	49.20
	mm	823	978	1115	1249
U	INCHES	9.57	10.94	10.94	18.03
	mm	243	278	278	458

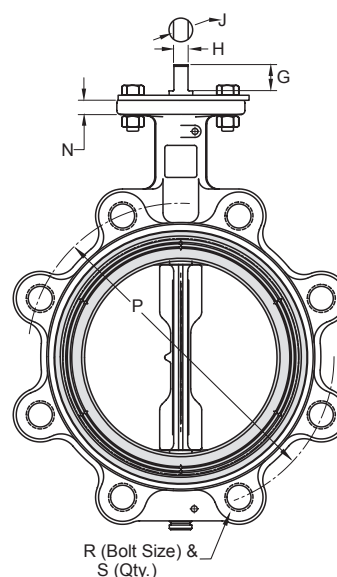
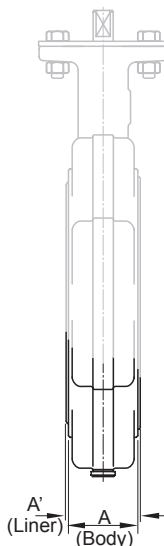
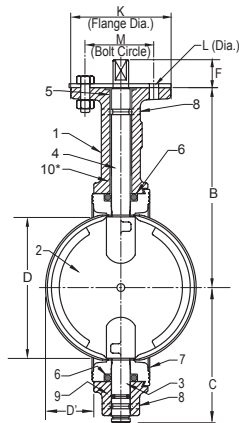
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****Recommend Aluminum Bronze Disc in Water Service.**

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6200HP Series* 2"-12"

Iron Butterfly Valve
250 psi Non-Shock WOG
Dead End Service to 200 psi Max
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	DUCTILE IRON ASTM A536
		DUCTILE IRON-EPOXY COATED
2	DISC	DUCTILE IRON-NYLON COATED
		NP DUCTILE IRON ASTM A536
		ALUMINUM BRONZE ASTM B 148
		STAINLESS STEEL TYPE 316
3	BOTTOM STEM	STAINLESS STEEL TYPE 416
		STAINLESS STEEL TYPE 316
4	TOP STEM	STAINLESS STEEL TYPE 416
		STAINLESS STEEL TYPE 316
5	TOP BEARING	REINFORCED NYLON
6	SEAL	EPDM, BUNA, VITON (1)
7	LINER	BUNA
		EPDM
		VITON
		HYPALON
		NEOPRENE BLACK-FDA
		NEOPRENE WHITE-FDA
8	ROLL PIN	STAINLESS STEEL
9	STEM SEAL	EPDM, BUNA, VITON (1)
10	LOWER BEARING	REINFORCED NYLON
11	OPERATOR	LEVER HANDLE
		EPOXY COATED LEVER HANDLE
		GEAR OPERATOR
		GEAR OPERATOR WITH MEMORY STOP
		GEAR OPERATOR WITH LOCK
		ACTUATOR-AIR/AIR
		ACTUATOR-AIR/SPRING
		ACTUATOR-ELECTRIC

(1) - VITON O-RINGS ARE USED WITH HYPALON, NEOPRENE, AND TEFLON LINERS.

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

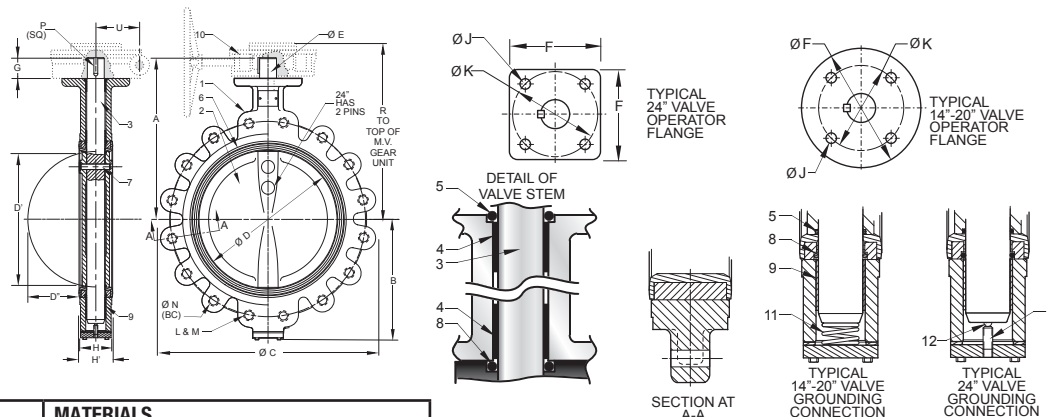
DIMENSIONS

		VALVE SIZE									
		INCHES DN	2	2-1/2	3	4	5	6	8	10	12
A (Body)	INCHES	1.69	1.81	1.81	2.07	2.19	2.19	2.38	2.69	3.06	
	mm	43	46	46	52	55	55	60	68	78	
A ¹ (Liner)	INCHES	1.82	1.94	1.94	2.20	2.32	2.32	2.51	2.82	3.21	
	mm	46	49	49	55	58	58	63	71	82	
B	INCHES	5.50	6.00	6.25	7.00	7.53	8.00	9.38	10.56	12.06	
	mm	139	152	158	177	191	203	238	268	306	
C	INCHES	3.06	3.31	3.75	4.25	4.94	5.56	5.56	7.88	9.25	
	mm	77	84	95	108	125	141	166	200	235	
D (Chord Dia)	INCHES	1.49	2.01	2.64	3.67	4.71	5.66	7.72	9.70	11.68	
	mm	37	51	67	93	119	143	196	246	296	
D ¹ (Intrusion)	INCHES	0.28	0.44	0.69	1.06	1.50	1.94	2.84	3.69	4.50	
	mm	7	11	17	27	38	49	72	93	114	
F	INCHES	1.13	1.13	1.13	1.13	1.13	1.13	1.50	1.50	1.50	
	mm	28	28	28	28	28	28	38	38	38	
G	INCHES	0.81	0.81	0.81	0.81	0.81	0.81	1.06	1.06	1.06	
	mm	20	20	20	20	20	20	27	27	27	
H	INCHES	0.35	0.35	0.35	0.40	0.40	0.44	0.53	0.71	0.71	
	mm	8	8	8	10	10	11	13	18	18	
J	INCHES	0.50	0.50	0.50	0.56	0.56	0.62	0.75	1.00	1.00	
	mm	12	12	12	14	14	14	19	25	25	
K	INCHES	4	4	4	4	4	4	6	6	6	
	mm	101	101	101	101	101	101	152	152	152	
L (Dia)	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.56	0.56	0.56	
	mm	11	11	11	11	11	11	14	14	14	
M	INCHES	3.25	3.25	3.25	3.25	3.25	3.25	5.00	5.00	5.00	
	mm	82	82	82	82	82	82	127	127	127	
N	INCHES	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	
	mm	11	11	11	11	11	11	12	12	12	
P	INCHES	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00	
	mm	120	139	152	190	215	241	298	362	431	
R	INCHES	5/8-11	5/8-11	5/8-11	5/8-11	3/4-10	3/4-10	3/4-10	7/8-9	7/8-9	
	mm	15.875	15.875	15.875	15.875	19.0	19.0	19.0	22.25	22.25	
S	INCHES	4	4	4	8	8	8	8	12	12	
	mm	101	101	101	203	203	203	203	305	305	

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6200HP Series* 14"-24"

Iron Butterfly Valve
200 psi Non-Shock WOG
Dead End Service to 150 psi Max
Specifications: API-609 MSS SP-67 Type 1



MATERIALS LIST

ITEM	PART	MATERIALS
1	BODY	DUCTILE IRON ASTM A536 DUCTILE IRON-EPOXY COATED
2	DISC	NP DUCTILE IRON ASTM A536 ALUMINUM BRONZE ASTM B 148 ** STAINLESS STEEL ASTM A351 CF8M
3	STEM	STAINLESS STEEL TYPE 416 STAINLESS STEEL TYPE 316 (3)
4	TOP BEARING	REINFORCED NYLON
5	STEM O-RING	EPDM, BUNA, VITON (1)
6	LINER	BUNA EPDM VITON HYPALON
7	STEM PIN	ANSI 4140 OR AISI 6150
8	LINER O-RING	EPDM, BUNA, VITON (1)
9	LOWER BEARING	REINFORCED NYLON
10	OPERATOR	GEAR OPERATOR GEAR OPERATOR WITH MEMO- RY STOP GEAR OPERATOR WITH LOCK ACTUATOR-AIR/AIR (2) ACTUATOR-AIR/SPRING (2) ACTUATOR-ELECTRIC (2)
11 14"-20"	GROUNDING SPRING	STAINLESS STEEL TYPE 302
12 24" Only	GROUNDING BALL	AISI-1022
13 24" Only	TENSION SCREW	AISI-1020

(1) - O-Ring Matches Liner; Viton Default if no Direct Match.

(2) - Consult Automation Department.

(3) - 316 Stainless Steel used with CF8M Disc.

** Recommend Aluminum Bronze Disc in Water Service.

DIMENSIONS

	VALVE SIZE					
	INCHES	14	16	18	20	24
	DN	352	406	457	508	610
A	INCHES	15.50	16.75	18.50	19.75	22.43
	mm	398	425	469	501	569
B	INCHES	11.56	12.69	13.63	15.13	18.06
	mm	258	322	346	384	458
C	INCHES	21.00	23.50	25.00	27.50	32.10
	mm	533	596	635	698	815
D	INCHES	13.25	15.50	17.25	19.25	23.38
	mm	336	398	438	489	598
D ¹ (Chord Dia.)	INCHES	13.53	14.97	16.91	18.84	22.76
	mm	343	380	429	478	578
D ¹¹ (Intrusion)	INCHES	5.00	5.80	6.40	7.10	8.70
	mm	127	146	162	181	220
E	INCHES	1.63	1.63	2.13	2.13	2.13
	mm	41	41	54	54	54
F	INCHES	6.50	6.50	9.50	9.50	7.50
	mm	165	165	241	241	190
G	INCHES	2.00	2.00	3.00	3.00	3.06
	mm	50	50	76	76	77
H (Body)	INCHES	3.06	4.00	4.50	5.00	6.06
	mm	77	101	114	127	153
H ¹ (Liner)	INCHES	3.19	4.13	4.63	5.13	6.19
	mm	81	104	117	130	157
J	INCHES	0.69	0.69	0.81	0.81	0.81
	mm	17	17	20	20	20
K	INCHES	5.25	5.25	7.50	7.50	7.50
	mm	133	133	190	190	190
L	No. of Holes	12	16	16	20	20
M	Thread Size	1-8	1-8	1 1/8-7	1 1/8-7	1 1/4-7
N	INCHES	18.75	21.25	22.75	25.00	29.50
	mm	476	530	577	635	749
P (Key Size)	INCHES	0.38	0.38	0.50	0.50	0.50
	mm	9	9	12	12	12
R	INCHES	17.25	18.75	19.63	20.88	25.00
	mm	438	476	458	530	635
U	INCHES	3.13	3.13	4.50	4.50	4.63
	mm	79	79	114	114	117

***Note:** The wetted surface of this product (In any material combination.) contacted by consumable water contains less than one quarter of one percent (.25%) of lead by weight.

****Recommend Aluminum Bronze Disc in Water Service.**

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HAMMONDVALVE

BUTTERFLY FEATURES & OPTIONS

STANDARD FEATURES

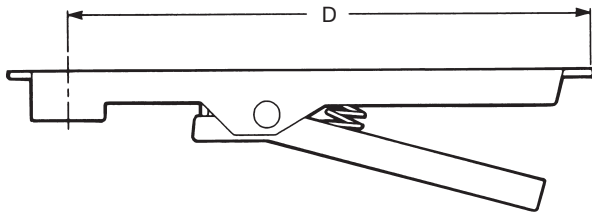
HEAVY DUTY DESIGN
PHENOLIC CARTRIDGE DESIGN
LOW TORQUE LINER
BUBBLE TIGHT SHUT OFF
LOW TORQUE POLYMER BEARING STD
DEAD END SERVICE (LUG ONLY)
FIELD REPAIRABLE

EXTENDED NECK BODY
LOW PROFILE DISC
BLOWOUT PROOF STEMS
STAINLESS STEEL STEMS (416)
BI-DIRECTIONAL SHUT OFF (EXCEPT AS NOTED)
VACUUM RATINGS TO 29" OF MERCURY

OPERATORS

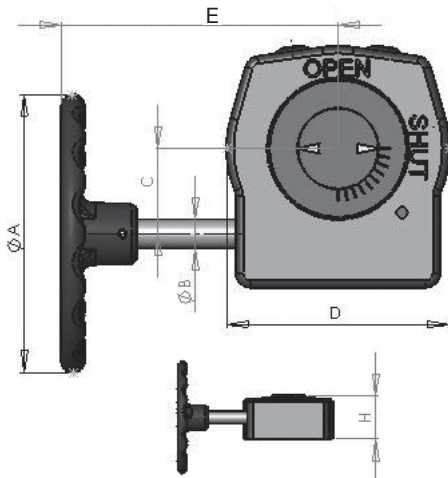
MANUAL

10 POSITION, PAD LOCKABLE, DUCTILE IRON LEVER HANDLE –STD, EPOXY COATING OPTIONAL.



VALVE SIZE	PART NUMBER	T-DIMENSION (inches)
2, 2-1/2, 3	84016-LL	9.50
4, 5	84016-RL	11.00
6	84016-SL	11.00
8	84016-UL	15.00
10, 12	84016-WL	15.00

WEATHER RESISTENT GEAR OPERATOR, CAST IRON, MEMORY STOP AND LOCKING DEVICE OPTIONAL.



VALVE SIZE	PART NUMBER	GEAR RATIO	ØA	ØB	C	D	E	H
2-3	8115-24N-L	24:1	6.00	0.63	1.80	4.20	8.80	2.30
4-5	8115-24N-R	24:1	6.00	0.06	1.80	4.20	8.80	2.30
6	8115-24N-S	24:1	6.00	0.63	1.80	4.20	8.80	2.30
8	8115-30N-U	30:1	9.00	0.75	2.60	6.03	8.50	3.23
10-12	8115-30N-W	30:1	9.00	0.75	2.60	6.03	8.50	3.23
14-16	8115-48N-16	50:1	12.00	0.75	3.10	6.97	13.40	3.46
18-20	8115-65N-20	80:1	12.00	1.00	4.93	10.30	12.60	4.63
24	8115-78N-24	120:1	16.00	1.00	4.93	10.30	12.60	6.00

ACTUATORS

PNEUMATIC OPERATORS
DOUBLE ACTING OPERATORS
SPRING-RETURN ACTUATORS
SOLENOID VALVES
ACTUATOR BRACKETS
LIMIT SWITCHES
VALVE POSITIONERS

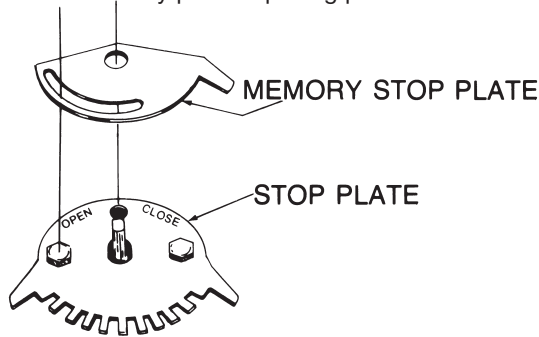
120 VOLT AC AND DC VOLTAGES
NEMA 4 AND 7 HOUSING
4-20 mA DC VALVE POSITIONERS
ACTUATOR BRACKETS
EXTRA LIMIT SWITCHES
ELECTRIC ACTUATORS

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OPTIONS & ACCESSORIES

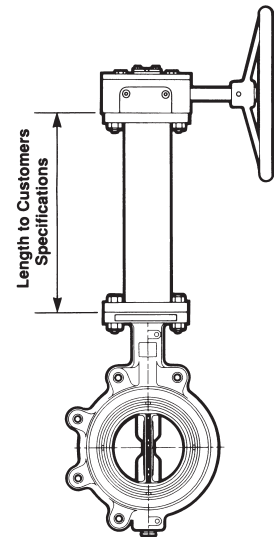
MEMORY STOP

The Memory Stop provides an adjustable stop when the valve is used in a balancing application. The Memory Stop can be set to any preset opening point.



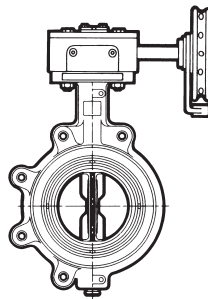
STEM EXTENSION

Provides means of operation at a required distance away from the valve body. Manual or automatic, actuators are easily adapted to mounting flange on the extension. To order, specify distance from valve mounting-flange to base of operator.



CHAINWHEEL

The chain wheel provides for remote operation of the valve in high, normally out-of-reach locations. Attaches to the gear operator easily for quick valve open/close response. Sprocket rim is aluminum; chain is steel. Specify the handwheel diameter ("A" dimension) and chain length. Chainwheel sold separately.



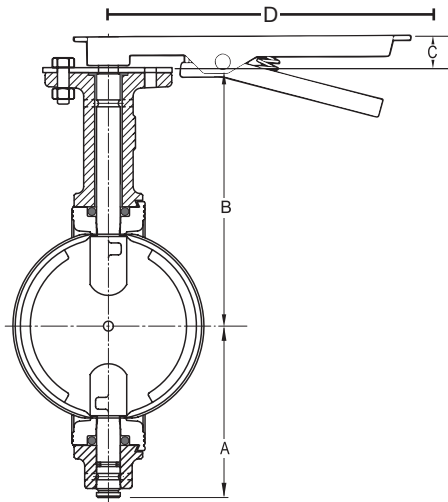
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Rev. 1

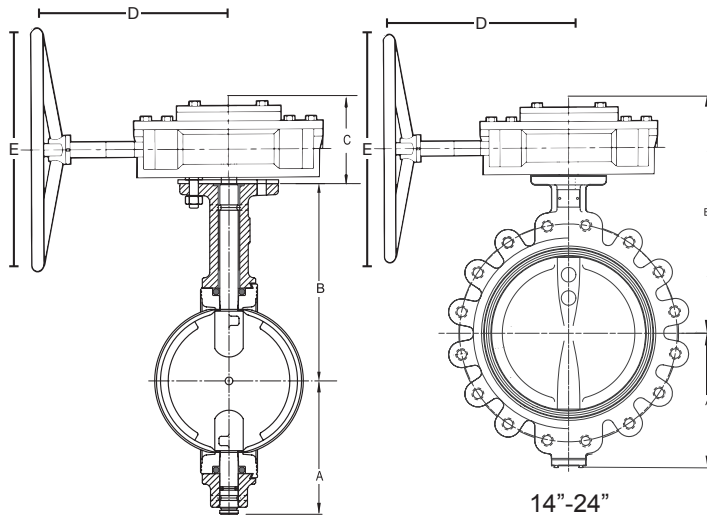
BFV-17

Butterfly Height With Lever or Gear Operator



2"-12"

Butterfly with Lever Handle						
Size		A	B	C	D	Height
2"	INCHES	3.06	5.50	1.13	9.50	19.19
2 1/2"	INCHES	3.31	6.00	1.13	9.50	19.94
3"	INCHES	3.75	6.25	1.13	9.50	20.63
4"	INCHES	4.25	7.00	1.13	11.00	23.38
5"	INCHES	4.94	7.53	1.13	11.00	23.60
6"	INCHES	5.56	8.00	1.13	11.00	24.69
8"	INCHES	5.56	9.38	1.50	15.00	31.44
10"	INCHES	7.88	10.56	1.50	15.00	34.94
12"	INCHES	9.25	12.06	1.50	15.00	37.81



2"-12"

14"-24"

Butterfly with Gear Operator							
Size		A	B	C	D	E	Height
2"	INCHES	3.06	5.50	2.30	8.80	6.00	10.86
2 1/2"	INCHES	3.31	6.00	2.30	8.80	6.00	11.61
3"	INCHES	3.75	6.25	2.30	8.80	6.00	12.30
4"	INCHES	4.25	7.00	2.30	8.80	6.00	13.55
5"	INCHES	4.94	7.53	2.30	8.80	6.00	14.77
6"	INCHES	5.56	8.00	2.30	8.80	6.00	15.86
8"	INCHES	5.56	9.38	3.23	8.50	9.00	18.17
10"	INCHES	7.88	10.56	3.23	8.50	9.00	21.67
12"	INCHES	9.25	12.06	3.23	8.50	9.00	24.54
14"	INCHES	11.56	17.25	-	13.40	12.00	28.81
16"	INCHES	12.69	18.75	-	13.40	12.00	31.44
18"	INCHES	13.63	19.63	-	12.60	12.00	33.26
20"	INCHES	15.13	20.88	-	12.60	12.00	36.01
24"	INCHES	18.06	25.00	-	12.60	16.00	43.06

Note: 30"-48" Please see specification sheet.

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ENGINEERING SPECIFICATIONS

DESIGN & TESTING

Hammond Valve butterfly valves are designed and tested in accordance with the latest editions of the Manufacturers Standardizations Society SP-67, and the American Petroleum Institute API-609. Available in both wafer and lug styles, all bodies are provided with extended necks to allow for up to 2" of insulation.

RATED WORKING PRESSURE

The maximum rated working pressure is 200 psi for 2" through 12" valves and 150 psi for 14" through 24". If necessary, HP-Series (Hi-Pressure) valves can be ordered with a maximum working pressure of 250 psi for 2" through 12" valves and 200 psi for 14" through 24".

Lug body valves are recommended for applications where dead end service is required to remove downstream piping for maintenance. Placement of a downstream flange is still always advised for safety; extreme care should always be taken with hot fluids. The pressure rating of Hammond butterfly valves in dead end service is a function of size and liner material. For valves in sizes 2" to 12" inclusive, the ratings are liner material dependent, and given in the table below. All valves 14" through 24" inclusive are rated at 150 psi (unidirectional) for dead end service, regardless of liner material. Valves larger than 24" should not be used in dead-end service.

ELASTOMER GUIDE

Material	Continuous Use Temp. (F)	Uses	Dead End Rating
EPDM	-30 to 275	Also known as EP or Nordel, EPDM is a general service elastomer for use in hot water and HVAC glycol systems. It is compatible with a wide range of fluids, including alcohol and acetone, but should never be used where even a trace of oil or hydrocarbon products may be present.	Bidirectional to 200 psig in all sizes from 2" through 12", inclusive.
Buna-N	+10 to 180	Also known as Nitrile, Buna-N has good strength and toughness, as well as good general chemical resistance, including most hydrocarbons. It's a good general service material for use in water, vacuum, acid, alts, alkalines, fats, oils, greases, hydraulic oils and glycols. Buna-N is not recommended for acetone, ketones, and nitrated or chlorinated hydrocarbons.	Bidirectional to 200 psig in all sizes from 2" through 12", inclusive.
Viton®	-20 to 300	Viton® is a registered trademark of DuPont, and is a fluorinated hydrocarbon elastomer with good overall resistance to petroleum based products in general. Viton is not recommended for steam or hot water service over 120 F, nor for concentrated alkalines.	Unidirectional to 150 psig in all sizes from 2" through 12" inclusive.
Neoprene (FDA Approved)	0 to 180	As an FDA approved material, Neoprene (available in black or white), is used in many food and beverage applications. Beyond these, it's recommended for moderate acids, oils, fats, greases and solvents.	Unidirectional to 150 psig in all sizes from 2" through 12" inclusive.
Hypalon®	0 to 180	Hypalon® is a registered trademark of DuPont. It is a chlorosulfonated polyethylene with good resistance to acids, hydrocarbon oils and fuels. It is not recommended for use with most esters, ethers, and ketones.	Unidirectional to 150 psig in all sizes from 2" through 12" inclusive.

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CHEMICAL RESISTANCE GUIDE

EXPLANATION OF RATINGS:

A - Excellent
B - Good
C - Fair
P - Poor

This guide has been prepared to aid in selecting the proper material for various media. This information is intended only as a general guide and should not be taken as a guarantee. To insure reliable performance, conduct an actual experiment using suggested elastomer, planned media, and actual service temperature and pressure conditions.

CHEMICALS	BUNA-N	EPDM	HYPALON	NEOPRENE	VITON	BRONZE	DUCTILE IRON	STAINLESS STEEL
Acetone	P	A	P	P	P	A	A	A
Air (Dry)	A	A	A	A	A	A	A	A
Alcohol, Butyl	B	B	B	B	A	B	A	A
Alcohol, Ethyl	C	A	B	B	-	B	A	B
Alcohol, Methyl	B	A	A	A	A	B	A	A
Asphalt	C	P	-	-	B	A	A	A
Aluminum Acetate	C	B	-	-	C	P	P	A
Ammonia Gas	B	A	P	B	P	A	-	A
Ammonia Liquid	C	A	P	B	P	P	-	A
Aniline Dies	P	B	C	C	B	P	B	A
Barium Nitrate	A	A	B	A	A	P	A	A
Beer	A	A	A	B	A	B	P	-
Beet Sugar Liquors	-	A	A	B	C	A	B	A
Benzene (Benzol)	P	P	P	P	B	B	A	B
Brines, Saturated	B	B	B	B	B	B	P	B
Butane	A	P	C	A	A	C	A	A
Calcium Chloride	C	A	A	A	A	B	A	B
Carbon Tetrachloride	P	P	-	-	C	P	C	A
Chlorinate (10 ppm)	C	B	-	-	B	P	-	B
Citric Acid	B	B	A	A	-	P	P	A
Diesel Oil Fuels	A	P	C	C	A	A	A	A
Dioxane	P	P	B	B	P	A	A	A
Ethylene Glycol	A	A	A	A	A	B	A	B
Freon	B	A	A	A	P	B	B	A
Fructose	A	A	-	-	A	-	A	P
Fuel Oil	A	P	C	C	A	B	B	A
Gas, Natural	B	P	A	A	A	B	A	A
Gas, Sour	C	P	-	-	B	B	B	B
Gaoline, Unleaded	P	P	B	B	A	B	A	A
Glucose	A	B	A	A	-	A	A	-
Grease	A	P	-	-	A	P	A	A
Ink, Newsprint	B	A	-	B	B	P	A	A
JP-4 Fuel	A	P	P	P	A	A	A	A
Kerosene	A	P	C	B	A	A	A	A
Ketones	P	A	P	P	P	A	A	A
Latex	A	C	C	C	B	-	A	A
Linseed Oil	A	C	B	B	A	A	A	A

CHEMICALS	BUNA-N	EPDM	HYPALON	NEOPRENE	VITON	BRONZE	DUCTILE IRON	STAINLESS STEEL
LPG	A	P	P	C	B	A	A	B
Mineral Oils	A	P	B	B	A	A	A	A
Minewater	A	B	C	C	A	C	P	-
Molasses	A	P	A	A	B	A	A	A
Naptha	B	P	P	P	B	B	A	P
Nitric Acid, 10%	P	B	A	B	A	P	P	B
Nitric Acid, 100%	P	P	-	-	C	P	P	B
Nitrogen	-	A	-	-	-	A	A	A
Oleic Acid	B	C	B	B	C	B	C	B
Oxygen	C	A	A	A	A	A	A	A
Paints, Solvents	P	A	-	-	-	A	A	A
Paraffin	A	P	A	A	A	A	B	A
Phenol Gas	P	C	C	C	B	P	P	A
Tar	C	P	-	C	B	A	A	A
Salt Water	A	A	A	B	A	C	P	B
Sewage	A	B	A	A	A	C	B	B
Soap Solutions	A	A	A	A	A	B	B	A
Sugar	A	A	B	B	A	P	B	A
Sulfate Liquor	P	C	B	B	B	P	-	A
Sulfite Liquor	C	A	B	B	B	P	B	B
Sulfuric Acid 0-77%	C	B	B	P	B	P	P	B
Sulfuric Acid 100%	P	P	B	P	P	P	P	P
Tannic Acid (Tannin)	B	A	A	A	B	B	B	B
Toluol (Tolurene)	C	P	P	P	B	A	A	A
Trichlorethylene	-	P	P	P	B	A	-	A
Turpentine	A	P	P	P	A	A	B	A
Varnish	B	P	-	-	B	B	-	-
Vinegar	P	A	A	B	A	P	P	A
Water and Lime	A	A	B	B	A	P	P	A

TEMPERATURE LIMITATIONS-

BUNA-N +10°F to 180°F
EPDM -30°F to 250°F
HYPALON® 0°F to 180°F
NEOPRENE-FDA 0°F to 180°F
VITON® -20°F to 300°F

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FLANGE BOLTING



MACHINE BOLTS



STUD BOLTS



CAP SCREWS

VALVE STYLE	CLASS	VALVE SIZE	BOLT DIA.	THREADS PER INCH	NUMBER OF TAPPED HOLES		MACHINE BOLT				STUD				CAP SCREW	
							MACHINE BOLT		CAP SCREW-BLIND		STUD		STUD-BLIND HOLE		CAP SCREW	
					THROUGH	BLIND	QTY	LENGTH	QTY	LENGTH	QTY	LENGTH	QTY	LENGTH	QTY	LENGTH
LUG	125	2	0.625	11	4	-	4	4.00	-	-	4	4.75	-	-	8	1.38
		2-1/2	0.625	11	4	-	4	4.50	-	-	4	5.00	-	-	8	1.50
		3	0.625	11	4	-	4	4.50	-	-	4	5.25	-	-	8	1.50
		4	0.625	11	8	-	8	5.00	-	-	8	5.75	-	-	16	1.75
		5	0.750	10	8	-	8	5.50	-	-	8	6.25	-	-	16	2.00
		6	0.750	10	8	-	8	5.50	-	-	8	6.25	-	-	16	2.00
		8	0.750	10	8	-	8	6.00	-	-	8	6.75	-	-	16	2.25
		10	0.875	9	12	-	12	6.50	-	-	12	7.50	-	-	24	2.25
		12	0.875	9	12	-	12	7.00	-	-	12	8.00	-	-	24	2.75
		14	1.000	8	12	-	12	7.50	-	-	12	8.50	-	-	24	2.75
		16	1.000	8	16	-	16	8.75	-	-	16	9.75	-	-	32	3.00
		18	1.125	7	16	-	16	9.50	-	-	16	10.75	-	-	32	3.50
WAFFER	125	20	1.125	7	16	8	16	10.25	8	3.50	16	11.50	8	5.50	40	3.50
		24	1.250	7	16	8	16	12.00	8	3.50	16	13.00	8	5.50	40	3.50
		2	0.625	11	-	-	4	4.50	-	-	4	5.00	-	-	8	1.50
		2-1/2	0.625	11	-	-	4	4.75	-	-	4	5.25	-	-	8	1.75
		3	0.625	11	-	-	4	5.00	-	-	4	5.50	-	-	8	1.75
		4	0.625	11	-	-	8	5.00	-	-	8	5.75	-	-	16	1.75
		5	0.750	10	-	-	8	5.25	-	-	8	6.00	-	-	16	2.00
		6	0.750	10	-	-	8	5.50	-	-	8	6.25	-	-	16	2.00
		8	0.750	10	-	-	8	6.00	-	-	8	6.75	-	-	16	2.25
		10	0.875	9	-	-	12	6.50	-	-	12	7.50	-	-	24	2.25
		12	0.875	9	-	-	12	7.00	-	-	12	8.00	-	-	24	2.75
		14	1.000	8	-	-	12	7.50	-	-	12	8.50	-	-	24	2.75
		16	1.000	8	-	-	16	8.50	-	-	16	9.50	-	-	32	3.00
		18	1.125	7	-	-	16	9.50	-	-	16	10.50	-	-	32	3.50
		20	1.125	7	-	8	16	10.25	8	3.50	16	11.50	8	5.25	40	3.50
		24	1.250	7	-	8	16	12.00	8	3.50	16	13.00	8	5.25	40	3.50

Bolting lengths do not include clearance for washers. If washers are to be used their thickness must be added to the suggested bolting length

Bolting should be in accordance with ASME B18.2.1

Hex nuts should be in accordance with ASME B18.2.2 (Heavy hex used for calculation)

Bolting and hex nuts are Unified Coarse Thread Series (UNC) Class 2A (bolts) and Class 2B (hex nuts) per ASME B1.1

20 inch and 24 inch lug valves have 4 blind tapped holes each side (8 total)

14 inch through 18 inch wafer valves have 4 thru tapped holes, 20 inch and 24 inch wafer valves have 4 blind tapped holes each side (8 total)

Consult factory for flange bolting above 24"

Large Diameter Butterfly Flange Bolting

Parameter	Size	30	36	42	48
#Tapped Holes (Thru)		24	28	32	40
#Tapped Holes (each side)					
Blind, at stems, 2 at top and 2 at btm.		4	4	4	4
All Cap Screw Installation:					
# of Cap Screws		48	56	64	80
Size (thd X length)		1-1/4-7x5.00	1-1/2-6x6.00	1-1/2-6x6.50	1-1/2-6x7.00
# of Cap Screws		8	8	8	8
Size (thd X length)		1-1/4-7x4.00	1-1/2-6x4.50	1-1/2-6x6.00	1-1/2-6x6.25
Installation with Studs/Thd'd Rod:					
# of Studs		24	28	32	40
Size (thd X length)		1-1/4-7x13.00	1-1/2-6x16.00	1-1/2-6x13.00	1-1/2-6x19.50
# of Cap Screws		8	8	8	8
Size (thd X length)		1-1/4-7x4.00	1-1/2-6x4.50	1-1/2-6x6.00	1-1/2-6x6.25

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INSTALLATION

Pipe Flanges

Butterfly valves are designed for installation between Class 125 cast iron or Class 150 pipe flanges (ANSI B16.1 and B16.5 respectively). Drilling templates for these pipe flange classes are identical.

Gaskets

The elastomer seat (liner) is lapped over into a recess in both faces of the body to provide a leak-proof seal between the valve and the faces of the pipe flanges. Never use gaskets.

Disc Position - Stem Position

Valves should be installed with the disc in the “near closed” position. Hammond Valve butterfly valves normally are shipped with the disc in 5% open position.

If the valves are being installed in a horizontal pipeline, and a choice of stem positions exists, good practice dictates that they be installed with the stem horizontal. This stem position minimizes liner and seal wear by distributing stem and disc weight evenly. It also prevents accumulation of foreign matter at the bottom of the disc when the valve is open.

Check for Possible Disc Interference

Before any flange bolts are tightened, valves should be centered within the bolts and then carefully opened and closed to assure free, unobstructed disc movement.

Disc interference may result when valves are installed in pipelines having smaller than normal inside diameters such as thick wall pipe, cement-lined pipe, or pipe containing baffles or other internal structures. Suitable corrective measures must be taken to remove all obstructions (taper boring the pipe or pipe liner, etc.).

Interference also may occur when butterfly valves are bolted directly to the outlet flange of swing check valves.

Installing Wafer Valves

Position the connecting pipe flanges accurately in the line allowing sufficient space between the flanges for the valve. Exercise particular care in handling the valve so as to prevent possible damage to the disc due to contact with the pipe, flanges or other hardware.

The wafer butterfly valves have two bolt holes which straddle the stem centerline just below the operator mounting pad. By inserting a bolt through one of these holes, and through the corresponding hole in each pipe flange, the suspended valve can be pivoted to its proper position between the flang-

es. Insertion of another bolt through the other body hole (and pipe flange holes) will hold the valve in place until remaining bolts are installed.

These should be a full, even contact between the elastomer sealing face of the valve and the metal face of the flange. **DO NOT** force the valve into place, doing so may damage the elastomer facing. When the valve is positioned correctly, complete the bolting of the pipe flange.

Installing Lug Valves

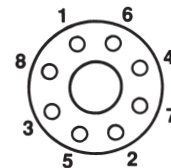
Hammond Valve lug body valves feature lugs which are through tapped. Consequently, pipe flange bolting can be accomplished with fully-threaded machine bolts, stud bolts or cap screws. Recommend full face flanges.

Tightening Bolts

When dead end service is anticipated the side of the valve marked ‘inlet’ should be installed facing pressure when downstream piping will be removed (note this is not always in the ordinary direction of flow). Placement of a downstream flange is recommended when the valve will be dead ended for extended periods, in the presence of elevated temperatures, dangerous or expensive fluids, or any combination thereof. Pressure rating on Hammond Valve lug-style Butterfly Valves in dead-end service is 200 psi for 2”-24” valves, 150 psi for 14”-24” valves. Snug bolts on each side evenly in crossover pattern, bringing both sides of the liner into compression evenly before final tightening. If one side must be tightened first, tighten bolts on the side marked “Inlet” first. Verify valve function, no interference.

After proper valve operation has been verified, tighten all bolts, using the crossover method. See drawing below for bolting sequence. This loads the joint evenly.

DO NOT over tighten the bolts. On wafer-type valves, use only sufficient torque to obtain a metal-to-metal contact between the pipe flange faces and the valve body around the elastomer sealing faces.



FLOW SIZING

The nomograph gives relationships of valve size, flow, velocity and pressure drop for various disc position.

Limitations:

Nomograph values are approximate. Do not use equations for any of the conditions listed below, please consult factory.

- For compressible fluids, where pressure (Δp) exceeds half of inlet pressure.
- For non-compressible fluids, where pressure drop causes cavitation or flashing.
- For dual-phase flow such as steam-water mixtures.

SAMPLE CALCULATION - LIQUID

Given:

Water (1.0 specific gravity) at 60°F is flowing through a 6-inch valve at a rate of 1,000 gpm.

Find:

Line velocity (ft./sec.) and pressure drop when valve is full-open (disc at 90°).

Solution:

From 6-inch valve size at lower left of nomograph, go diagonally up to the intersecting horizontal line for 1,000 gpm. From that point, proceed directly down to determine line velocity as 11 ft./sec.

16" TO 24" SIZES
10" TO 14" SIZES
2" TO 8" SIZES

For pressure drop, return to the 1,000 gpm intersection and continue up to "90° disc open" intersecting diagonal line. From this point, go horizontally to the left to determine pressure drop as 0.5 psi.

SAMPLE CALCULATION - GAS

Given:

Gas (.08 lb./cu. ft. density) is flowing through a 8-inch valve at a rate of 1,500 cu. ft./min.

Find:

Line velocity (ft./sec.) and pressure drop when valve is full-open (disc at 90°).

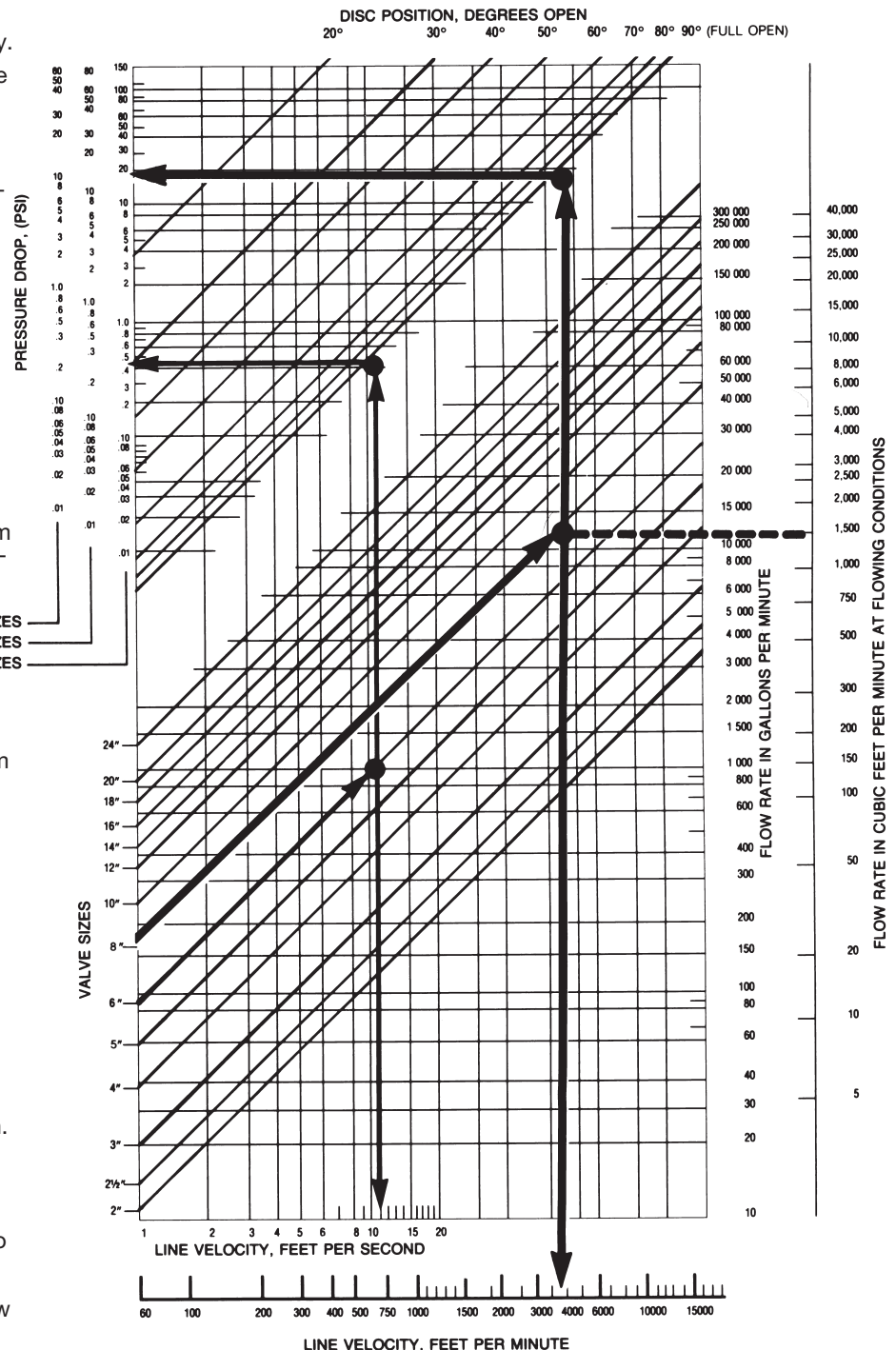
Solution:

From 8-inch valve size at lower left of nomograph, go diagonally up to the intersecting horizontal line for 1,500 cu. ft./min. From that point, proceed directly down to bottom line of nomograph to determine line velocity as 4000 (ft./min.).

For pressure drop, return to the 1,500 cu. ft./min. intersection and continue up to "90° disc open" intersecting diagonal line. From this point, go horizontally to the left to determine pressure drop as 17 psi. Now convert pressure drop to gas by dividing gas density by water density and multiplying by 17.

$$\Delta p = \frac{.08}{62.34} \times 17 = 0.22 \text{ psi}$$

NOMOGRAPH



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FLOW COEFFICIENTS

C_V VALUES

The valve flow coefficient (C_V) is a number which represents a valve's ability to pass flow. The bigger the C_V, the more flow a valve can pass with a given pressure drop. A C_V of 1 means a valve will pass 1 gallon per minute (gpm) of 60°F water with a pressure drop (Δp) of 1 (PSI) across the valve. A C_V of 350 means a valve will pass 350 gpm of 60°F water with a Δp of 1 PSI.

Valve Size	C _V @ VARIOUS DISC ANGLES							Full 90° Open (C _V)
	20°	30°	40°	50°	60°	70°	80°	
2	4.06	14.2	26.3	44.5	70.6	105	135	159
2-1/2	6.17	20.9	38.6	65.3	140	156	215	266
3	13.6	31.4	57.9	98.0	156	240	342	457
4	23.9	55.1	102	173	274	423	625	860
5	37.2	85.6	158	268	426	656	970	1320
6	53.3	123	227	384	610	941	1,420	2,020
8	94.3	217	401	679	1,080	1,660	2,500	3,540
10	145	334	617	1,040	1,660	2,560	3,830	5,580
12	209	481	888	1,500	2,390	3,690	5,620	8,080
14	335	670	1,226	1,935	2,893	4,406	6,752	9,578
16	443	886	1,622	2,560	3,827	5,829	8,933	12,671
18	567	1,138	2,075	3,275	4,896	7,457	11,429	16,211
20	711	1,422	2,609	4,116	6,156	9,377	14,371	20,385
24	1,038	2,078	3,792	5,985	8,947	13,628	20,887	29,627

GENERAL NOTES

- Liquid flow data is based on pressure drop and flow rate with viscosity similar to water at 60°F using flow coefficient.
- Nomograph flow rate for gases is in cubic feet per minute (cfm) at flowing conditions. To convert flow rate from standard cu. ft. per minute to cfm, use the following formula:

$$\text{CFM} : \frac{(\text{SCFM} \times 14.7) \times (460 + ^\circ\text{F})}{(\text{line pressure, psia}) \times 520}$$

- Gas density in lbs./cu. ft., equals:

$$\frac{\left(\frac{2.70 \times}{\text{line pressure, psia}} \right) \times \left(\frac{\text{specific gravity of gas (relative to air)}}{460 + ^\circ\text{F}} \right)}$$

4. Limitations:

Do not use equations for any of the conditions listed below, please consult factory.

- For compressible fluids, where pressure (Δp) exceeds half of inlet pressure.
- For non-compressible fluids, where pressure drop causes cavitation or flashing.
- For dual-phase flow such as steam-water mixtures.

C_V = Flow coefficient for valves; expresses flow rate in gallons per minute of 60F water with 1.0 psi pressure drop across valve.

$$C_v = Q \sqrt{\frac{SQ}{(62.34)(dp)}}$$

K = resistance coefficient.

$$K = d \sqrt{\frac{29.9}{C_v}}$$

SQ = weight density of fluid, in pounds per cubic feet.

d = internal diameter of pipe, in inches.

Q = rate of flow, in gallons per minute.

dp = differential pressure, in pounds per square inch gauge.

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ACTUATION SIZING CHARTS

OPERATING TORQUE (IN./LBS.) – MILWAUKEE VALVE “M & C” SERIES BUTTERFLY VALVES Required at valve stem at pressure differentials indicated.									
Fluid	Valve Size	25 psi	50 psi	75 psi	100 psi	125 psi	150 psi	175 psi	200 psi
For Oils and Similar Lubricating Liquids	2	50	51	52	53	55	56	58	60
	2-1/2	60	61	63	65	68	69	70	73
	3	74	80	83	89	94	100	102	104
	4	120	130	145	156	168	180	190	200
	5	185	210	230	250	275	300	310	340
	6	280	320	360	400	445	485	530	580
	8	500	580	650	750	830	920	1000	1080
	10	800	900	1070	1200	1480	1600	1700	1800
	12	1200	1480	1700	1800	2190	2400	2650	2900
	14	1790	2190	2435	2670	3030	3340		
	16	2310	2970	3340	3670	4200	4755		
	18	3055	3790	4320	4835	5620	6375		
	20	3805	4795	5410	6170	7275	8190		
	24	5615	6370	7980	9000	10632	11800		
For Water and Other Non-Lubricating Liquids	2	100	101	103	110	115	118	120	122
	2-1/2	105	107	108	112	118	120	125	128
	3	160	166	172	180	183	186	190	195
	4	273	285	298	310	323	335	348	360
	5	420	440	465	485	510	530	550	575
	6	625	660	700	745	790	825	870	900
	8	1100	1200	1280	1350	1450	1520	1600	1690
	10	1700	1900	2000	2210	2390	2550	2700	2880
	12	2500	2800	3100	3300	3580	3800	4100	4360
	14	3804	4164	4428	4800	5160	5508		
	16	4920	5508	6000	6600	7152	7608		
	18	6504	7200	8004	8700	9552	10200		
	20	8064	9108	10008	11100	12000	13104		
	24	11904	13500	14760	16200	17544	18888		
For Gases Including Non-Lubricating of Dry Gases	2	170	171	173	174	176	178	181	183
	2-1/2	240	245	248	250	253	257	260	263
	3	336	342	348	360	370	365	380	385
	4	570	585	595	610	620	635	645	660
	5	760	800	835	870	900	935	970	1000
	6	1250	1300	1350	1400	1440	1500	1540	1580
	8	2350	2440	2520	2600	2670	2700	2830	2900
	10	3700	3900	4000	4200	4400	4500	4700	4900
	12	5300	5580	5800	6100	6300	6600	6850	7100
	14	5706	6246	6642	7200	7740	8262		
	16	7380	8262	9000	9900	10700	11400		
	18	9756	10800	12000	13050	14328	15300		
	20	12096	13662	15012	16650	18000	19650		
	24	17856	20250	22146	243000	26300	28330		

Valve Size	Operating Torque (IN./LBS.) - Large Diameter Butterflies*					
	50 PSI		100 PSI		150 PSI	
	Wet	Dry	Wet	Dry	Wet	Dry
30"	31,500	46,750	34,000	51,000	36,750	55,000
36"	44,750	69,250	47,930	71,750	51,250	76,750
42"	76,750	115,250	78,750	123,250	88,000	131,750
48"	106,500	160,250	119,750	171,500	122,000	183,500

* Operating Torques Based on EPDM/Buna at Ambient Temperature

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