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STOCKHAM - Butterfly Valves

CRANE[®]

Energy Flow Solutions

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Alphabetical Index

A			
Accessories			
Handles and Options.....	20		
Extension Stems/Chainwheels	20		
B			
Body Design	5		
Bolt and Stud Bolt Data	23		
C			
Cast Iron Body	9-12, 19		
Chainwheels	20		
Contractor Valves	18-19		
Cross Reference for Commonly Used Valves	4		
Cv Values	23		
D			
Design	5		
Disc Design	5		
Ductile Iron Body	9-17		
E			
Electric Actuators	21		
Extension Stems	20		
F			
FDA Approved Sleeves	7		
Figure Number System	7		
G			
Gear Operators (See Options)	20		
General Information	5		
H			
Handles (Also See Levers)	20		
(Standard, Memory Stop)			
High Performance Butterfly Valves	24-29		
High Performance Valve Torques	22		
L			
Levers (See Options)	20		
Lug Body	13-16, 19, 29		
M			
Materials	5		
(see Figure Number System pg. 7)			
O			
Options	20		
Ordering Information	25		
P			
Pneumatic Actuators	21		
Pressure Ratings	28		
Q			
Quality Management	5		
R			
Resilient Sleeve Valves			
Cast Iron	9-12, 19		
Ductile Iron	9-17		
S			
Sleeve Design	5		
Stem Bushings	5		
Stem Design	5		
T			
Testing	5		
Resilient Seated Valve Torques	22		
W			
Wafer Body	9-12		

Figure Number Index

<u>Fig. No.</u>	<u>Page</u>	<u>Fig. No.</u>	<u>Page</u>
LD-502.....	9	LD-722.....	15
LG-502.....	9	LD-721.....	16,17
LD-512.....	10	LG-712-BS3-E-M	19
LG-512.....	10	LG-722-BS3-E-M	19
LD-522.....	11	17A/C-121RTG.....	29
LG-522.....	11	17A/C-221RTG.....	29
LD-521.....	12	37A/C-121RTG.....	29
LG-521.....	12	37A/C-221RTG.....	29
LD-702.....	13		
LD-712.....	14		

Cross Reference for Commonly Used Valves

STOCKHAM LG / LD SERIES	CENTER LINE 200 SERIES	NIBCO LD / WD SERIES	NIBCO N200/150 SERIES	MILWAUKEE	HAMMOND 6000 SERIES	MUELLER 51/52 SERIES	BRAY 30/31 SERIES	WATTS BF/DBF SERIES	DEMCO NEC SERIES	DEZURIK BRS SERIES	GRINNELL SERIES 1000
LG702DS3B	CS02131X	LD3110-0	N200246	ML122B	6201-00	52ANI30	11010-622	BF03-111-2-0	521531-9	L1NBRCIDIS4	LC-1100-3
LG712DS3B	CS021312	LD3110-3	N200246LH	ML222B	6201-01	52ANI31	11010-622-X	BF03-111-2-5	521531-1	L1NBRCIDIS4LT	LC-1101-3
LG722DS3B	CS021315	LD3110-5	N200246GO	ML322B	6201-03	52ANI35	11010-622-X	BF03-111-2G	521531-213X2	L1NBRCIDIS4MG	LC-1102-3
LG702DS3E	CS02135X	LD3010-0	N200236	ML122E	6200-00	52ANI60	11010-118	BF03-111-1-0	521535-9	L1EPDMCIDIS4	LC-1200-3
LG712DS3E	CS021352	LD3010-3	N200236LH	ML222E	6200-01	52ANI61	11010-118-X	BF03-111-1-5	521535-1	L1EPDMCIDIS4LT	LC-1201-3
LG722DS3E	CS021355	LD3010-5	N200236GO	ML322E	6200-03	52ANI65	11010-118-X	BF03-111-1-G	521535-213X2	L1EPDMCIDIS4MG	LC-1202-3
LG712BS3B	CS061312	LD2100-0	N200245	ML123B	6210-00	52ANK30	11010-113	BF03-121-1-0	521431-9	L1NBRCIBZS4	LC-1180-3
LG722BS3B	CS061315	LD2100-3	N200245LH	ML223B	6210-01	52ANK31	11010-113-X	BF03-121-1-5	521431-1	L1NBRCIBZS4LT	LC-1181-3
LG721BS3B	C2661315	LD2100-5	N200245GO	ML323B	6210-03	52ANK35	11010-113-X	BF03-121-1-G	521431-213X2	L1NBRCIBZS4MG	LC-1182-3
LG712BS3E	CS061352	LD2000-0	N200235	CL123E	6211-00	52ANK60	11010-112	BF03-121-1-0	521435-9	L1EPDMCIBZS4	LC-1280-3
LG722BS3E	CS061355	LD2000-3	N200235LH	CL223E	6211-03	52ANK61	11010-112-X	BF03-121-1-5	521435-1	L1EPDMCIBZS4LT	LC-1281-3
LG721BS3E	C2661355	LD2000-5	N200235GO	CL323E	6211-05	52ANK65	11010-112-X	BF03-121-1G	521435-213X2	L1EPDMCIBZS4MG	LC-1282-3
LG712SS2B	CS044312	LD3122-0	NA	ML124B	6220-00	52AHH30	11010-125	BF03-131-2-0	522231-9	L1NBRCIS2	NA
LG722SS2B	CS044315	LD3122-3	NA	ML224B	6220-01	52AHH31	11010-125-X	BF03-131-2-5	522231-1	L1NBRCIS2LT	NA
LG721SS2B	C2644315	LD3122-5	NA	ML324B	6221-03	52AHH35	11010-125-X	BF03-131-2G	522231-213X2	L1NBRCIS2MG	NA
LG712SS2E	CS044352	LD3022-0	NA	ML124E	6221-00	52AHH60	11010-124	BF03-131-1-0	522235-9	L1EPDMCIS2	NA
LG722SS2E	CS044355	LD3022-3	NA	ML224E	6221-01	52AHH61	11010-124-X	BF03-131-1-5	522235-1	L1EPDMCIS2LT	NA
LG721SS2E	C2644355	LD3022-5	NA	ML324E	6221-03	52AHH65	11010-124-X	BF03-131-1G	522235-213X2	L1EPDMCIS2MG	NA
LG512DS3B	AS021312	WD3100-0	N200146	MW122B	6100-00	51ANI30	11010-622	BF04-111-2-0	121531-9	W1NBRCIDIS4	WC-1100-3
LG522DS3B	AS021315	WD3100-3	N200146LH	MW222B	6100-01	51ANI31	11010-622-X	BF04-111-2-5	121531-1	W1NBRCIDIS4LT	WC-1101-3
LG521DS3B	A2651315	WD3100-5	N200146GO	MW322B	6100-03	51ANI35	11010-622-X	BF04-111-2G	121531-213X2	W1NBRCIDIS4MG	WC-1102-3
LG512DS3E	AS021352	WD3000-0	N200136	MW122E	6101-00	51ANI60	11010-118	BF04-111-1-0	121535-9	W1EPDMCIDIS4	WC-1200-3
LG522DS3E	AS021355	WD3000-3	N200136LH	MW222E	6101-01	51ANI61	11010-118-X	BF04-111-1-5	121535-1	W1EPDMCIDIS4LT	WC-1201-3
LG521DS3E	A2651355	WD3000-5	N200136GO	MW322E	6010-03	51ANI65	11010-118-X	BF04-111-1-G	121535-213X2	W1EPDMCIDIS4MG	WC-1202-3
LG512BS3B	AS061312	WD2100-0	N200145	MW123B	6110-00	51ANK30	11010-113	BF04-121-2-0	121431-9	W1NBRCIBZS4	WC-1180-3
LG522BS3B	AS061315	WD2100-3	N200145LH	MW223B	6110-01	51ANK31	11010-113-X	BF04-121-2-5	121431-1	W1NBRCIBZS4LT	WC-1181-3
LG521BS3B	A2661315	WD2100-5	N200145GO	MW323B	6110-03	51ANK35	11010-113-X	BF04-121-2-G	121431-213X2	W1NBRCIBZS4MG	WC-1182-3
LG512BS3E	AS061352	WD2000-0	N200135	CW123E	6111-00	51ANK60	11010-112	BF04-121-1-0	121435-9	W1EPDMCIBZS4	WC-1280-3
LG522BS3E	AS061355	WD2000-3	N200135LH	CW223E	6111-01	51ANK61	11010-112-X	BF04-121-1-5	121435-1	W1EPDMCIBZS4LT	WC-1281-3
LG521BS3E	A2661355	WD2000-5	N200135GO	CW323E	6111-03	51ANK65	11010-112-X	BF04-121-1G	121435-213X2	W1EPDMCIBZS4MG	WC-1282-3
LG512SS2B	AS044312	WD3122-0	NA	MW124B	6120-00	51AHH30	11010-125	BF04-131-2-0	122231-9	W1NBRCIS2	NA
LG522SS2B	AS044315	WD3122-3	NA	MW224B	6120-01	51AHH31	11010-125-X	BF04-131-2-5	122231-1	W1NBRCIS2LT	NA
LG521SS3B	A2644315	WD3122-5	NA	MW324B	6120-03	51AHH35	11010-125-X	BF04-131-2-G	122231-213X2	W1NBRCIS2MG	NA
LG512SS2E	AS044352	WD3022-0	NA	MW124E	6121-00	51AHH60	11010-124	BF04-131-1-0	122235-9	W1EPDMCIS2	NA
LG522SS2E	AS044355	WD3022-3	NA	MW224E	6121-01	51AHH61	11010-124-X	BF04-131-1-5	122235-1	W1EPDMCIS2LT	NA
LG521SS3E	A2644355	WD3022-5	NA	MW324E	6121-03	51AHH65	11010-124-X	BF04-131-1G	122235-213X2	W1EPDMCIS2MG	NA

NA = Not Available

General Information

Many years of valve experience have been incorporated into the design and production of Stockham butterfly valves. The simplicity of design, ease of installation and low installed cost are just some of the reasons for such wide acceptance of these valves. The same quality that is built into all Stockham valves ensures the user that our butterfly valves will continue to be proven performers.

QUALITY MANAGEMENT Stockham is committed to a philosophy of total quality management. It begins with design, assuring compliance with relevant MSS and ASME standards, and it extends to materials and services to satisfy our customers' needs.

MATERIALS Standard body materials for butterfly valves include cast iron, ductile iron and carbon steel. Body and trim materials are produced to conform to the chemical and physical requirements of the American Society for Testing and Materials (ASTM). Valve materials and ASTM specifications are shown on each product page.

RATED WORKING PRESSURE The maximum cold working pressure for all cast iron butterfly valves is 200 psi for sizes 2" – 12", and 150 psi on sizes 14" – 36".

DESIGN: RESILIENT, CARTRIDGE-TYPE SLEEVE, WAFER AND LUG, SIZE 20"

BODY Available in wafer and lug types, with extended necks to accommodate 2" of insulation. Face-to-face dimensions meet MSS SP-67 and API 609. Bodies are epoxy coated as standard through 12".

Lug body valves are recommended for lines where bi-directional dead-end service is required for removal of downstream piping for equipment maintenance purposes. In such cases, our standard lug style valves and our M-Series contractor valves provide this capability.

STEM A one-piece stem design is standard. Standard material is Type 416 stainless steel, with Type 316 stainless available.

Stem bushings are furnished on all valves to provide longer life with lower torques.

DISC Discs are precision machined to assure tight shutoff.

Standard disc materials are ductile iron (nickel plated), aluminum bronze, and CF8M (Type 316 stainless steel).

SLEEVE Standard iron valves have a cartridge-type, replaceable sleeve. The seating material is a resilient elastomer integrally molded to a rigid phenolic backing ring which forms a non-collapsible seat sleeve. Sleeves extend past body faces to provide seal against mating flanges. "M-Series" valves utilize a molded-in liner which allows these valves to be used for bi-directional dead-end service. Other valves have cartridge-type replacement sleeves. High performance valves do not utilize cartridge seating technology, refer to page 27.

Viton® is a registered trademark of DuPont Performance Elastomers L.L.C.

Temperature ranges for sleeve materials in continuous service are:

Buna-N (Nitrile Rubber)	20° - 180°F
EPDM (Nordel)	20° - 250°F
Viton®	20° - 250°F

NOTE: Soft seated valves are not recommended for steam service.

OPERATION

Levers are available on all valve sizes through 12". Manual gear operators may be supplied on all sizes. Operating torque requirements on valves 8" and larger suggest the use of gear operators. See page 20 for further information about lever handles and gears.

Stockham butterfly valves are also available with pneumatic or electric actuators. For more information, see page 21.

MARKING Each valve is supplied with a nameplate to identify the figure number and pressure rating of the valve.

TESTING Each valve is individually tested with a shell test and seat test in conformance with MSS SP-67:

Shell—1.50 x Body CWP	
Seat -	Type I - Tight shutoff requirements at rated pressure at ambient temperature

PACKAGING

Valves are packaged in pallet box containers or on pallets, adequately protected for shipment. M-Series valves are boxed through 6" size, with handles detached.

WEIGHTS AND DIMENSIONS

Dimensions and weights shown in this catalog are for estimating purposes only and are subject to change without notice. It is our intent to maintain basic dimensional requirements of accepted standards.

Resilient Seated Butterfly Valves



Reliability You Need

Features:

- Complete Size Range: 2"-48"
- Suitable for both Gaseous and Liquid Service
- Positive Shut-Off Bi-Directionally
- PTFE Bushing Standard
- Locking Handle Standard 2"-12"
- End of Line Service Standard on Lug Style
- Ease of Automation
- Field Repairable
 - 2"-12" Phenolic Backed Seat*
 - 14"-30" Aluminum Backed Seat

Typical Applications:

- HVAC
- Chemical/Petrochemical Processing
- Food and Beverage
- Power and Utilities
- Pulp and Paper

*2-12" low temperature Viton® has aluminum backed seats.

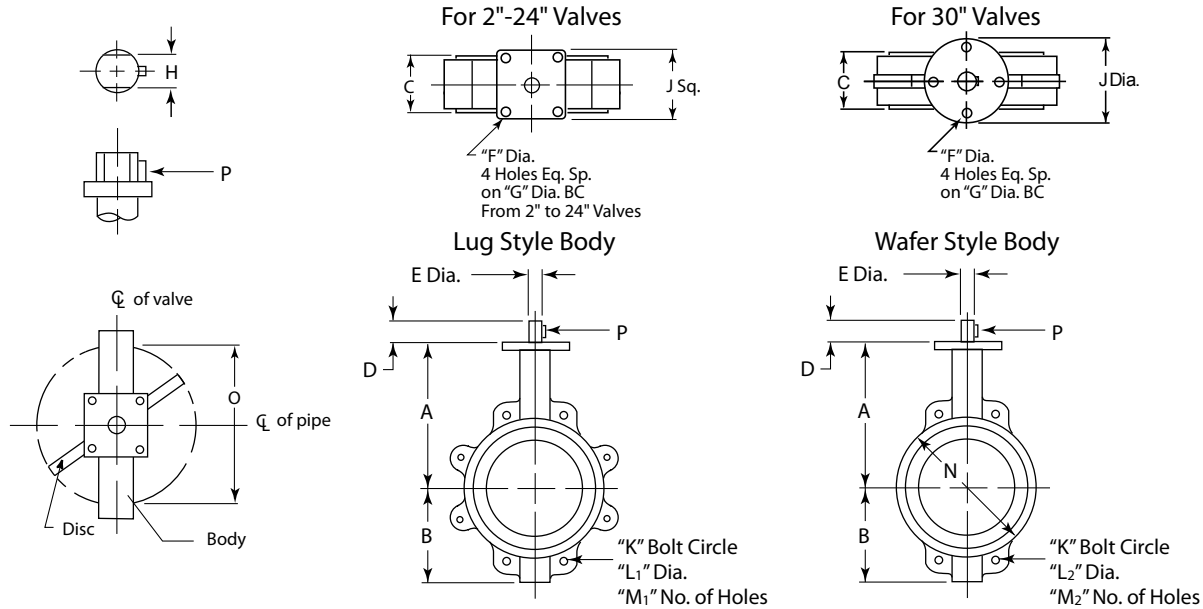
Resilient Seated Butterfly Valves Figure Number System

Valve Body	Body Material	Body Type	Type Operation	Pressure Rating	Disc Material	Stem Material	Sleeve Material	Style
L-Butterfly	G-Cast Iron	5-Wafer	0-Bare Stem	1-150	B-Aluminum Bronze	S2-Type 316 Stainless Steel	B-Buna-N	M-Contractor Series with molded seats
	D-Ductile Iron	7-Lug, DES* or Double Flanged	1-Lever	2-200	D-Ductile Iron, Nickel Plated (2" - 12" Only)	S3-Type 416 Stainless Steel	E-EPT (EPDM)	
			2-Gear	3-285	S-Type 316 Stainless Steel		AB-Abrasion Resistant Buna-N	
			3-Air Actuator				V-Viton®	
			4-Electric Actuator					
			5-Lever with Memory Stop					
			7-Gear with Memory Stop					
			8-Gear with Chainwheel					
			9-Buried Gear with Drive Nut					
			10-Buried Gear					
		*Dead End Service					FDA APPROVED	
							FE-EPT	
							FB-Buna-N	

NOTES:

Please consult price sheet and catalog for items listed. You may not build figure numbers to specify all possible combinations listed above. For High Performance BFV figure numbers refer to page 25.

Top Works / Dimensional Data



Dimensions 2" - 30" Wafer & Lug

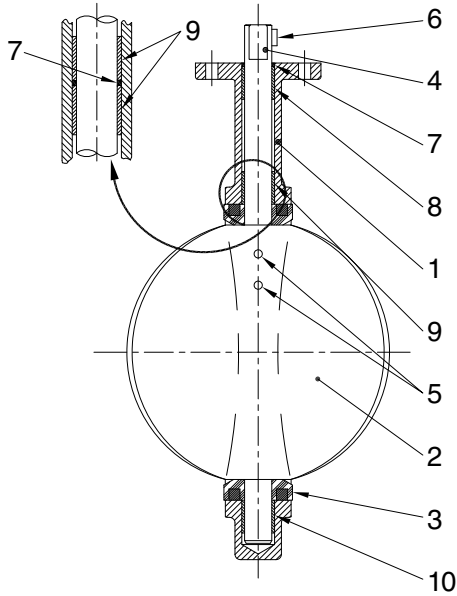
For installation and maintenance instructions, please refer to the IOM manual available at www.craneevalveit.com

Inches / mm	A	B	C	D	E	F	G	H	J	K	L ₁	L ₂	M ₁	M ₂	N	O	P
2"	6 3/16	3 3/16	1 7/8	1 1/4	1/2	3/8	2.76	0.39	2 3/4	4 3/4	5/8-11	1 1/16	4	4	4	1.26	Woodruff #3
50	161.93	80.96	47.63	31.75	12.70	9.53	70	10	69.85	120.65		17.46			101.60	32.0	
2 1/2"	6 7/8	3 1/2	2	1 1/4	1/2	3/8	2.76	0.39	2 3/4	5 1/2	5/8-11	1 1/16	4	4	4 3/4	1.83	Woodruff #3
65	174.63	88.90	50.80	31.75	12.70	9.53	70	10	69.85	139.70		17.46			120.65	46.5	
3"	7 1/8	3 3/4	2	1 1/4	1/2	3/8	2.76	0.39	2 3/4	6	5/8-11	1 1/16	4	4	5	2.54	Woodruff #3
80	180.98	95.25	50.80	31.75	12.70	9.53	70	10	69.85	152.40		17.46			127.00	64.5	
4"	7 7/8	4 1/2	2 1/8	1 1/4	5/8	3/8	2.76	0.47	2 3/4	7 1/2	5/8-11	1 1/16	8	4	6 1/4	3.54	Woodruff #9
100	200.03	114.30	53.98	31.75	15.88	9.53	70	12	69.85	190.50		17.46			158.75	89.9	
5"	8 3/8	5	2 3/8	1 1/4	3/4	3/8	2.76	0.55	2 3/4	8 1/2	3/4-10	1 3/16	8	4	7 1/2	4.36	Woodruff #9
125	212.73	127.00	60.33	31.75	19.05	9.53	70	14	69.85	215.90		20.64			190.50	110.7	
6"	8 7/8	5 1/2	2 3/8	1 1/4	3/4	3/8	2.76	0.55	2 3/4	9 1/2	3/4-10	1 3/16	8	4	8 3/8	5.72	Woodruff #9
150	225.43	139.70	60.33	31.75	19.05	9.53	70	14	69.85	241.30		20.64			212.73	145.3	
8"	10 1/4	6 7/8	2 1/2	1 3/4	7/8	7/16	4.02	0.67	3 3/4	11 3/4	3/4-10	1 3/16	8	4	10 5/8	7.6	Woodruff #9
200	260.35	174.63	63.50	44.45	22.23	11.11	102	17	95.33	298.45		20.64			269.88	193.0	
10"	11 1/2	8	2 3/4	1 3/4	1 1/8	7/16	4.02	0.87	3 3/4	14 1/4	7/8-9	1 5/16	12	4	12 7/8	9.5	Woodruff #15
250	292.10	203.20	69.85	44.45	28.58	11.11	102	22	95.33	361.95		23.81			327.03	241.3	
12"	13 1/4	9 5/8	3 1/8	1 3/4	1 1/4	7/16	4.02	0.95	3 3/4	17	7/8-9	1 5/16	12	4	15 7/8	11.45	Woodruff #15
300	336.55	244.48	79.38	44.45	31.75	11.11	102	24	95.33	431.80		23.81			403.23	290.8	
14"	14 1/2	10 1/2	3 1/8	1 3/4	1 1/4	7/16	4.02	0.95	3 3/4	18 3/4	1-8	1 1/16	12	4	17 1/8	12.78	Woodruff #15
350	368.30	266.70	79.38	44.45	31.75	11.11	102	24	95.33	476.25		26.99			434.98	324.6	
16"	15 3/4	12 7/8	3 1/2	2	1 5/8	7/8	6.50	1.06	6 1/2	21 1/4	1-8	1 1/16	16	4	19 1/4	14.97	5/16" Sq. x 1 3/4"
400	400.05	327.02	88.90	50.80	33.34	22.23	165	27	165.10	539.75		26.99			488.95	380.2	
18"	16 5/8	13 5/8	4 1/4	2	1 1/2	7/8	6.50	1.06	6 1/2	22 3/4	1 1/8-7	1 1/4	16	4	21 1/4	16.83	3/8" Sq. x 1 1/2"
450	422.28	346.08	107.95	50.80	38.10	22.23	165	27	165.10	577.85		31.75			539.75	427.5	
20"	18 7/8	15 1/8	4 3/8	2 3/4	1 5/8	7/8	6.50	1.26	6 1/2	25	1 1/8-7	1 1/4	20	4	23 3/8	18.67	3/8" Sq. x 1 3/4"
500	479.43	384.18	136.53	63.50	41.28	22.23	165	32	165.10	635.00		31.75			650.88	474.2	
24"	22 1/8	18 3/8	6 1/8	2 3/4	2	7/8	6.50	1.42	6 1/2	29 1/2	1 1/4-7	1 3/8	20	4	27 7/8	22.62	1/2" Sq. x 2 1/4"
600	561.98	466.73	155.58	69.85	50.80	22.23	165	36	165.10	749.30		34.93			708.03	574.5	
30"	25 1/2	24 3/4	6 3/4	3 1/4	2 1/2	7/8	8 1/2	N/A	11 1/4	36	1 1/4-7	1 1/4	28	4	34 3/8	28.6	5/8" Sq. x 2 5/8"
750	647.70	628.65	171.45	82.55	63.50	22.23	215.90		285.75	914.40		31.75			873.13	726.4	

L1 and M1 refer to Lug style valves, L2 and M2 refer to Wafer Style. "C" dimension is listed with elastomer in the relaxed condition. Approximately 1/8" total compression is required for proper sealing with pipe flanges. Valves are designed for installation between ASME B16.1 Class 125 (Iron) and B16.5 Class 150 (Steel) flanges. Gaskets are not needed, and should not be used since the seat face seals against the mating flange. If the valve is to be installed in between any other flanges, consult your Stockham agent or the factory for additional information. Stockham recommends that a blind flange be used on end of line applications. "O" dimension is the valve clearance dimension.

Figures LD-502, LG-502

200 CWP • Wafer Body • Bare Shaft



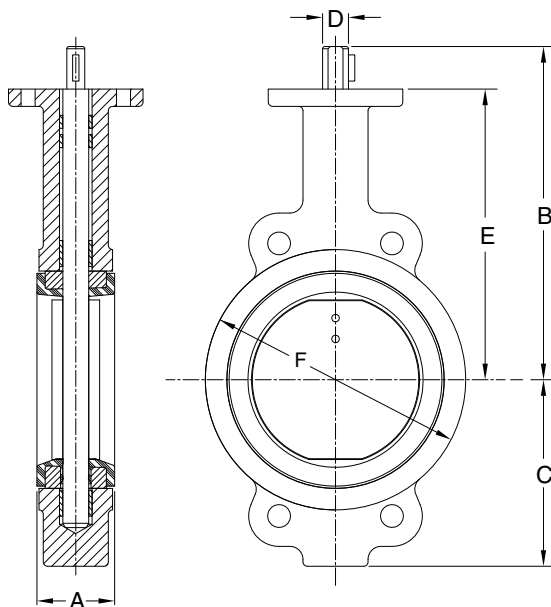
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body Epoxy Coated	Ductile Iron Cast Iron	A-536 Gr. 65-45-12 A-126 CL. B
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

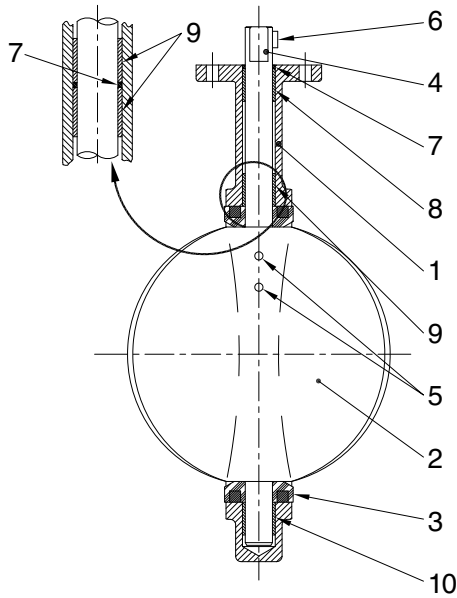
Size	Wt.	A*	B	C	D	E	F
2	6	1.75	7.63	3.19	0.50	6.38	4.00
	(2.72)	(44)	(194)	(81)	(12.70)	(162)	(102)
2½	7	1.88	8.12	3.50	0.50	6.88	4.75
	(3.18)	(48)	(206)	(89)	(12.70)	(175)	(121)
3	10	1.88	8.38	3.75	0.50	7.12	5.13
	(4.54)	(48)	(213)	(95)	(12.70)	(181)	(130)
4	13	2.13	9.13	4.50	0.62	7.88	6.75
	(5.90)	(54)	(232)	(114)	(15.88)	(200)	(171)
5	18	2.25	9.63	5.00	0.75	8.38	7.75
	(8.16)	(57)	(245)	(127)	(19.05)	(213)	(197)
6	20	2.31	10.13	5.50	0.75	8.88	8.63
	(9.07)	(59)	(257)	(140)	(19.05)	(226)	(219)
8	32	2.50	12.00	6.88	0.88	10.25	10.56
	(14.51)	(64)	(305)	(174)	(22.23)	(260)	(268)
10	42	2.75	13.25	8.00	1.13	11.50	13.06
	(19.05)	(70)	(337)	(203)	(28.58)	(292)	(332)
12	70	3.12	15.00	9.63	1.25	13.25	16.13
	(31.75)	(79)	(381)	(244)	(31.75)	(337)	(410)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

Figures LD-512, LG-512

200 CWP • Wafer Body • Lever Operated



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body Epoxy Coated	Ductile Iron Cast Iron	A-536 Gr. 65-45-12 A-126 CL. B
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

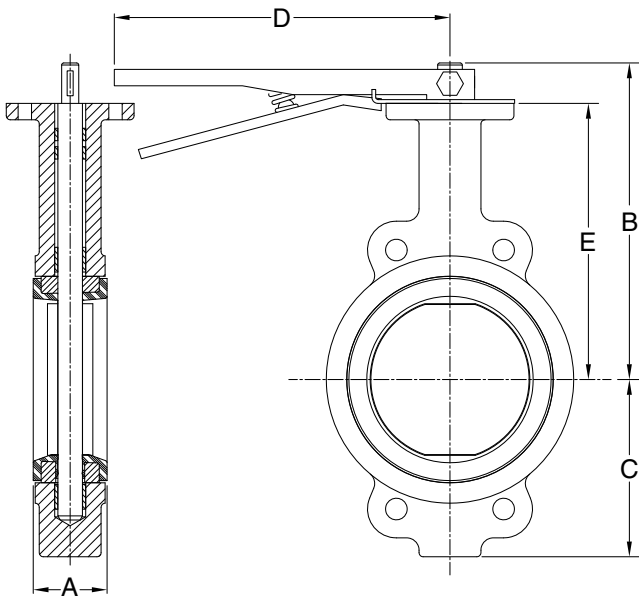
1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.

Dimensions and Weights

Size	Wt.	A*	B	C	D	E
2	8	1.75	7.63	3.19	10.50	6.38
	(3.62)	(44)	(194)	(81)	(268)	(162)
2½	9	1.88	8.12	3.50	10.50	6.88
	(4.08)	(48)	(206)	(89)	(268)	(175)
3	12	1.88	8.38	3.75	10.50	7.12
	(5.44)	(48)	(213)	(95)	(268)	(181)
4	15	2.13	9.12	4.50	10.50	7.88
	(6.80)	(54)	(232)	(114)	(268)	(200)
5	20	2.25	9.63	5.00	10.50	8.38
	(9.06)	(57)	(245)	(127)	(268)	(213)
6	22	2.31	10.13	5.50	10.50	8.88
	(9.97)	(59)	(257)	(140)	(268)	(226)
8	36	2.50	12.00	6.88	14.00	10.25
	(16.31)	(64)	(305)	(174)	(356)	(260)
10	46	2.75	13.25	8.00	14.00	11.50
	(20.85)	(70)	(337)	(203)	(356)	(292)
12	74	3.12	15.00	9.63	14.00	13.25
	(33.55)	(79)	(381)	(244)	(356)	(337)

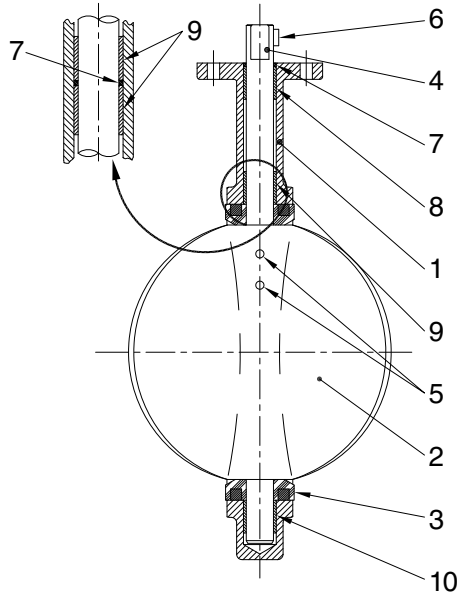
Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.



Figures LD-522, LG-522

200 CWP • Wafer Body • Handwheel Gear Operated



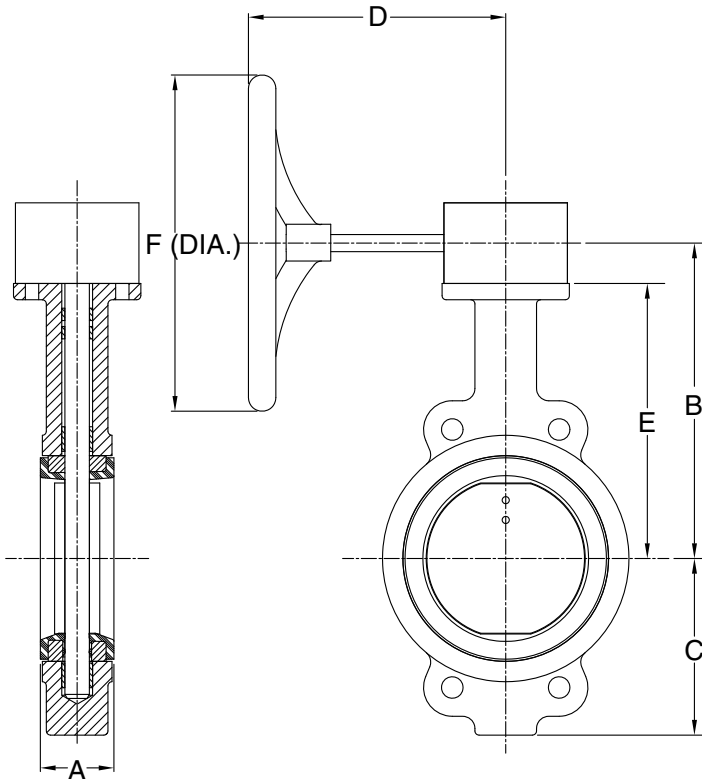
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body Epoxy Coated	Ductile Iron Cast Iron	A-536 Gr. 65-45-12 A-126 CL. B
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

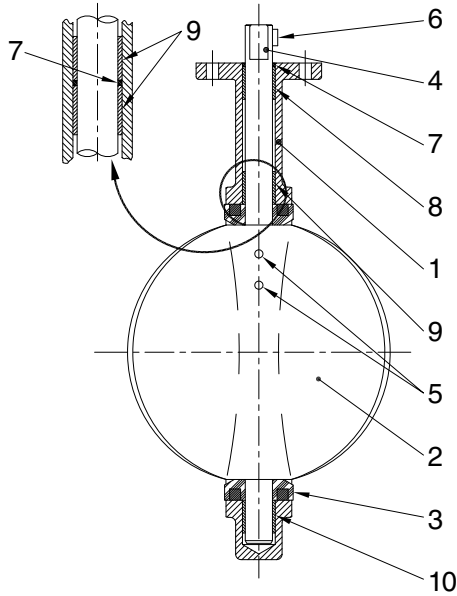
Size	Wt.	A*	B	C	D	E	F
2	20 (9.08)	1.75 (44)	8.00 (203)	3.19 (81)	6.00 (152)	6.38 (162)	12.00 (305)
	21 (9.54)	1.88 (48)	8.50 (216)	3.50 (89)	6.00 (152)	6.88 (175)	12.00 (305)
3	24 (10.9)	1.88 (48)	8.75 (222)	3.75 (95)	6.00 (152)	7.12 (181)	12.00 (305)
	27 (12.26)	2.13 (54)	9.50 (241)	4.50 (114)	9.00 (229)	7.88 (200)	12.00 (305)
5	32 (14.52)	2.25 (57)	10.00 (254)	5.00 (127)	9.00 (229)	8.38 (213)	12.00 (305)
	34 (15.43)	2.31 (59)	10.50 (267)	5.50 (140)	9.00 (229)	8.88 (226)	12.00 (305)
8	50 (22.69)	2.50 (64)	11.75 (298)	6.88 (174)	9.00 (229)	10.25 (260)	12.00 (305)
	60 (27.23)	2.75 (70)	13.00 (330)	8.00 (203)	9.00 (229)	11.50 (292)	12.00 (305)
12	88 (39.93)	3.12 (79)	14.75 (375)	9.63 (244)	9.00 (229)	13.25 (337)	12.00 (305)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

Figures LD-521, LG-521

150 CWP • Wafer Body • Handwheel Gear Operated



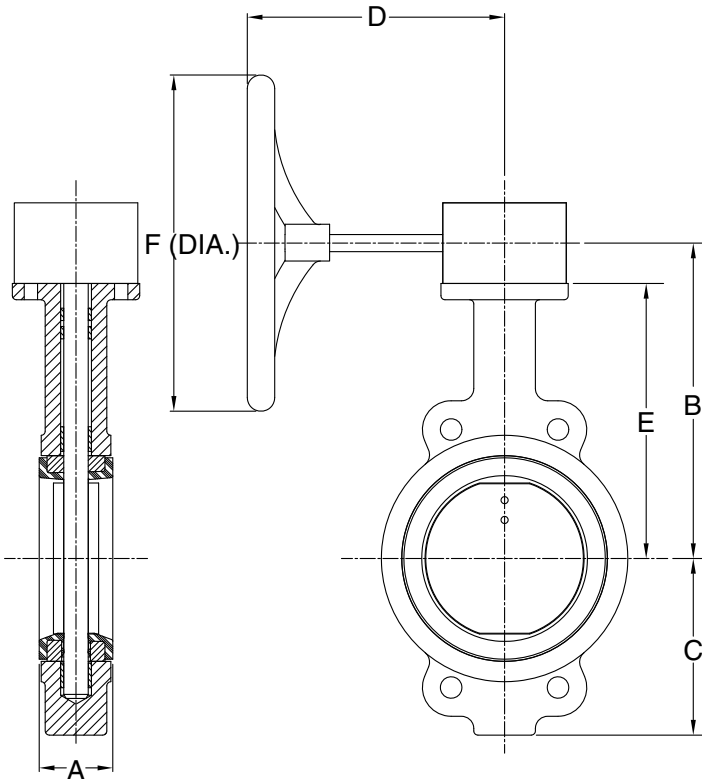
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Ductile Iron Cast Iron	A-536 Gr. 65-45-12 A-126 CL. B
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

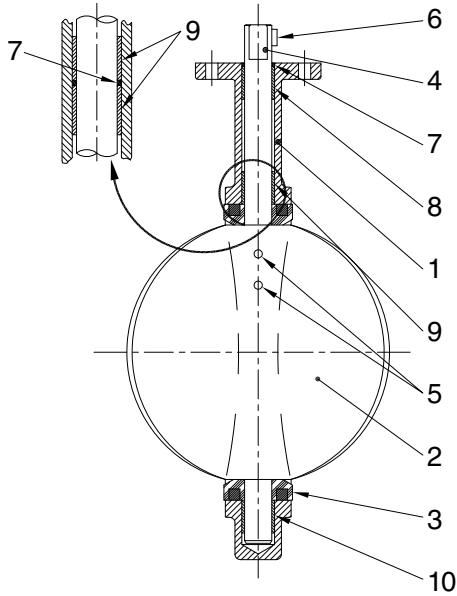
Size	Wt.	A*	B	C	D	E	F
14	113	3.12	16.00	10.50	9.04	14.50	12.00
	(51.3)	(79)	(406)	(266)	(226)	(368)	(305)
16	152	3.50	18.00	12.88	11.08	15.75	18.00
	(69.0)	(89)	(457)	(327)	(277)	(400)	(457)
18	200	4.25	18.88	13.63	11.08	16.62	18.00
	(90.7)	(108)	(480)	(346)	(277)	(422)	(457)
20	310	5.25	22.12	15.13	12.6	18.88	18.00
	(140.6)	(133)	(562)	(384)	(321)	(479)	(457)
24	475	6.12	25.38	18.37	13.2	22.12	18.00
	(231.4)	(155)	(645)	(466)	(335)	(562)	(457)
30	840	6.75	28.06	24.75	14.3	25.50	18.00
	(381.0)	(171.45)	(648.86)	(628)	(362)	(647.70)	(457)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

Figure LD-702

200 CWP • Lug Body • Bare Shaft



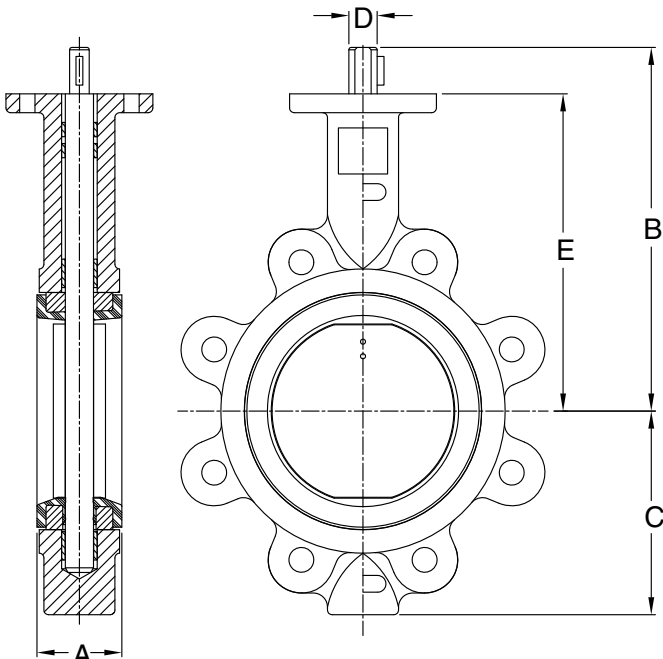
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body - Epoxy Coated	Ductile Iron	A-536 Gr. 65-45-12
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

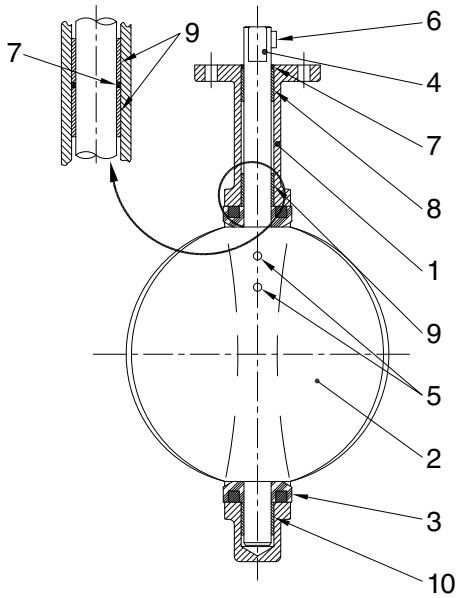
Size	Wt.	A*	B	C	D	E
2	7	1.75	7.63	3.19	0.50	6.38
	(3.18)	(44)	(194)	(81)	(12.70)	(162)
2½	8	1.88	8.12	3.50	0.50	6.88
	(3.63)	(48)	(206)	(89)	(12.70)	(175)
3	14	1.88	8.38	3.75	0.50	7.12
	(6.35)	(48)	(213)	(95)	(12.70)	(181)
4	26	2.13	9.13	4.50	0.63	7.88
	(11.79)	(54)	(232)	(114)	(15.88)	(200)
5	28	2.25	9.63	5.00	0.75	8.38
	(12.70)	(57)	(245)	(127)	(19.05)	(213)
6	31	2.31	10.13	5.50	0.75	8.88
	(14.06)	(59)	(257)	(140)	(19.05)	(226)
8	49	2.50	12.00	6.88	0.88	10.25
	(22.23)	(64)	(305)	(174)	(22.23)	(260)
10	72	2.75	13.25	8.00	1.13	11.50
	(32.66)	(70)	(337)	(203)	(28.58)	(292)
12	105	3.12	15.00	9.63	1.25	13.25
	(47.63)	(79)	(381)	(244)	(31.75)	(337)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

Figure LD-712

200 CWP • Lug Body • Lever Operated



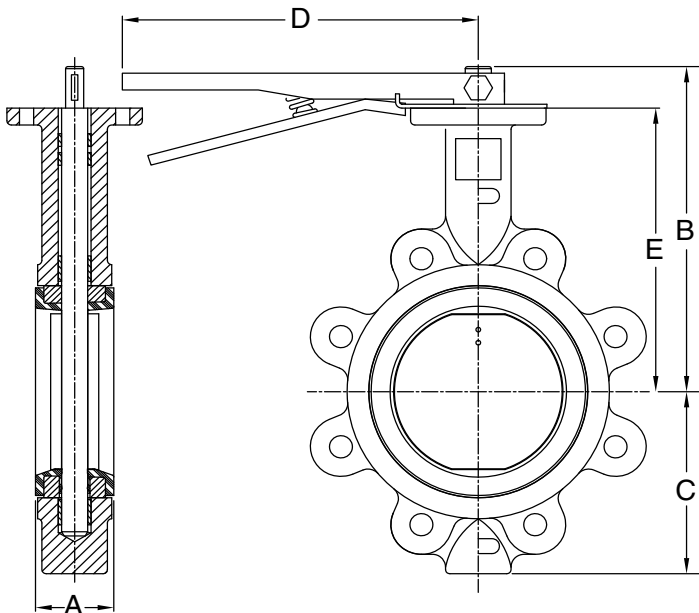
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body - Epoxy Coated	Ductile Iron	A-536 Gr. 65-45-12
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

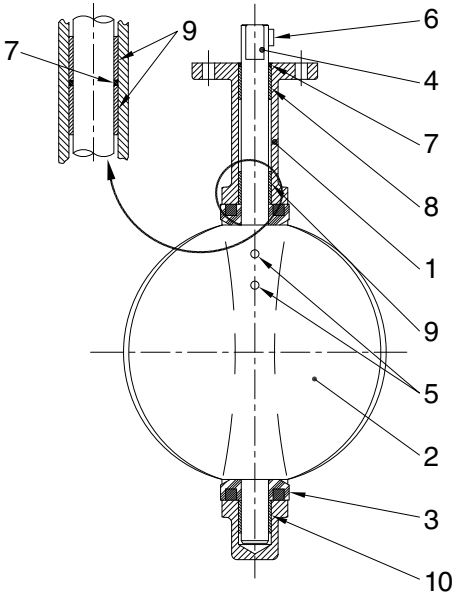
Size	Wt.	A*	B	C	D	E
2	9	1.75	7.63	3.19	10.50	6.38
	(4.08)	(44)	(194)	(81)	(268)	(162)
2½	10	1.88	8.12	3.50	10.50	6.88
	(4.53)	(48)	(206)	(89)	(268)	(175)
3	16	1.88	8.38	3.75	10.50	7.12
	(7.25)	(48)	(213)	(95)	(268)	(181)
4	28	2.13	9.12	4.50	10.50	7.88
	(12.69)	(54)	(232)	(114)	(268)	(200)
5	30	2.25	9.63	5.00	10.50	8.38
	(13.60)	(57)	(245)	(127)	(268)	(213)
6	33	2.31	10.13	5.50	10.50	8.88
	(14.96)	(59)	(257)	(140)	(268)	(226)
8	53	2.50	12.00	6.88	14.00	10.25
	(24.03)	(64)	(305)	(174)	(356)	(260)
10	76	2.75	13.25	8.00	14.00	11.50
	(34.46)	(70)	(337)	(203)	(356)	(292)
12	109	3.12	15.00	9.63	14.00	13.25
	(49.53)	(79)	(381)	(244)	(356)	(337)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

Figure LD-722

200 CWP • Lug Body • Handwheel Gear Operated



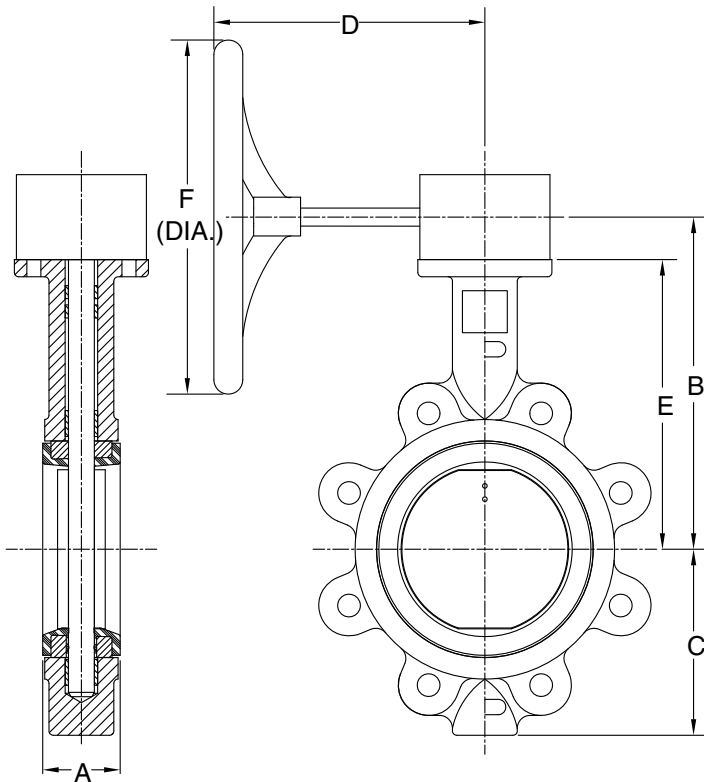
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body - Epoxy Coated	Ductile Iron	A-536 Gr. 65-45-12
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

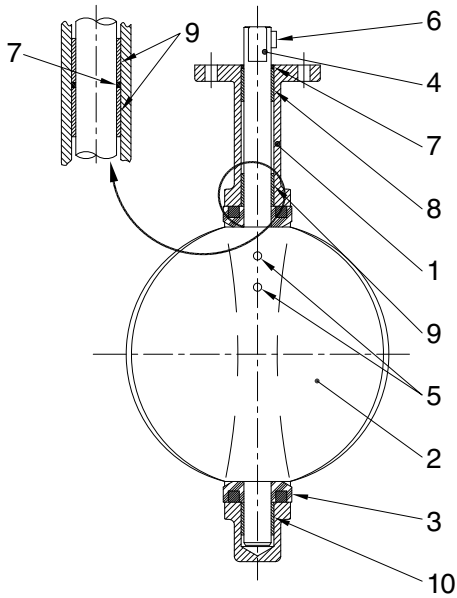
Size	Wt.	A*	B	C	D	E	F
2	21	1.75	8.00	3.19	6.00	6.38	12.00
	(9.54)	(44)	(203)	(81)	(152)	(162)	(305)
2½	22	1.88	8.50	3.50	6.00	6.88	12.00
	(9.99)	(48)	(216)	(89)	(152)	(175)	(305)
3	28	1.88	8.75	3.75	6.00	7.12	12.00
	(12.71)	(48)	(222)	(95)	(152)	(181)	(305)
4	40	2.13	9.50	4.50	9.00	7.88	12.00
	(18.15)	(54)	(241)	(114)	(229)	(200)	(305)
5	42	2.25	10.00	5.00	9.00	8.38	12.00
	(19.06)	(57)	(254)	(127)	(229)	(213)	(305)
6	45	2.31	10.50	5.50	9.00	8.88	12.00
	(20.42)	(59)	(267)	(140)	(229)	(226)	(305)
8	67	2.50	11.75	6.88	9.00	10.25	12.00
	(30.41)	(64)	(298)	(174)	(229)	(260)	(305)
10	90	2.75	13.00	8.00	9.00	11.50	12.00
	(40.84)	(70)	(330)	(203)	(229)	(292)	(305)
12	123	3.12	14.75	9.13	9.00	13.25	12.00
	(55.81)	(79)	(375)	(244)	(229)	(337)	(305)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

Figure LD-721

150 CWP • Lug Body • Handwheel Gear Operated



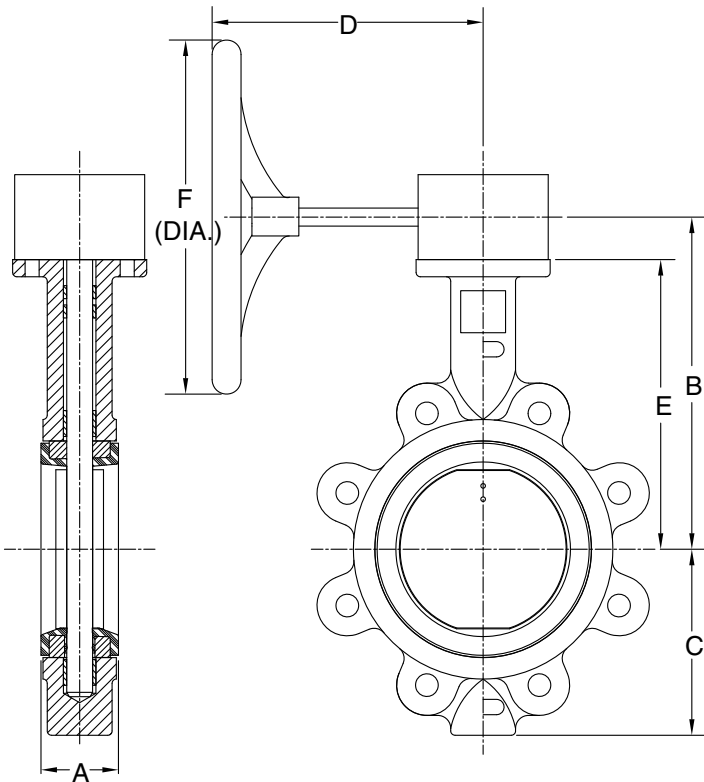
Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Ductile Iron	A-536 Gr. 65-45-12
2	Disc	Ductile Iron Stainless Steel Aluminum Bronze	A-536 Gr. 65-45-12 A-351 Gr. CF8M B-148 Alloy C95400
*3	Seat	Buna-N EPDM, Viton®	
4	Shaft	316 Stainless Steel 416 Stainless Steel	A-276 Type 316 A-582 Type 416
*5	Taper Pin	300 Series Stainless	
6	Key	Carbon Steel	A-575 AISI 1018
*7	O-Ring	Buna-N	
8	Bushing	PTFE	
9	Bushing	PTFE	
10	Bushing	PTFE	

* Recommended spare parts.

Notes:

1. Line flange dimensions comply with ASME B16.5.
2. MSS SP-67 Type I.
3. Order parts by item number, valve size and figure number.



Dimensions and Weights

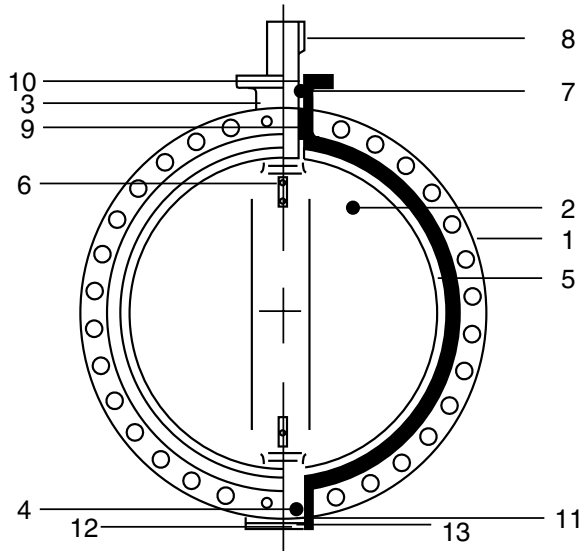
Size	Wt.	A*	B	C	D	E	F
14	173	3.12	16.00	10.50	9.04	14.50	12.00
	(78.49)	(79)	(406)	(266)	(226)	(368)	(305)
16	230	3.50	18.00	12.88	11.08	15.75	18.00
	(104.35)	(89)	(457)	(327)	(277)	(400)	(457)
18	265	4.25	18.88	13.63	11.08	16.62	18.00
	(120.23)	(108)	(480)	(346)	(277)	(422)	(457)
20	431	5.25	22.12	15.13	12.6	18.88	18.00
	(195.52)	(133)	(562)	(384)	(321)	(479)	(457)
24	680	6.12	25.38	18.37	13.2	22.12	18.00
	(308.50)	(155)	(645)	(466)	(335)	(562)	(457)
30	1150	6.75	28.06	24.75	14.3	25.50	18.00
	(521.67)	(171)	(649)	(628)	(362)	(648)	(457)

Inches (millimeters) - Pounds (kilograms)

*A dimension is listed with elastomer in relaxed condition.

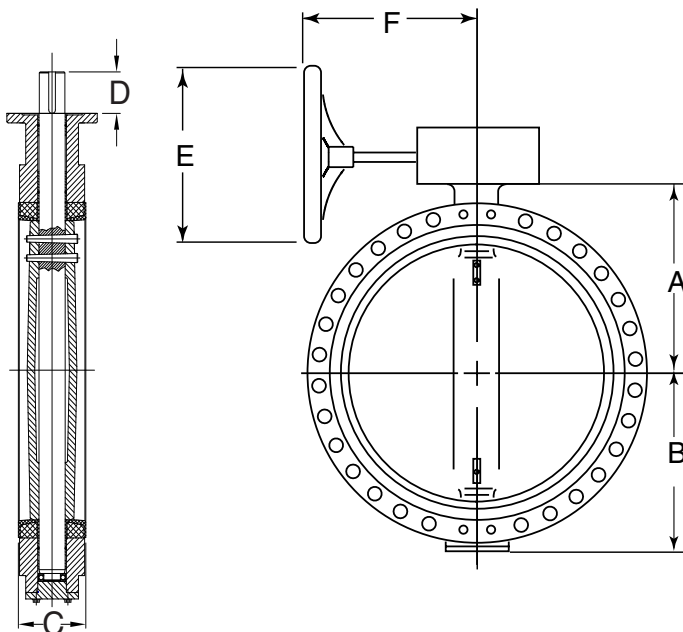
Figure LD-721

150 CWP • Flanged Body • Gear Operated



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Ductile Iron	A-536 Gr. 65-45-12
2	Disc	Ductile Iron	A-536 Gr. 65-45-12
3	Upper Shaft	416 Stainless Steel	
4	Lower Shaft	416 Stainless Steel	
5	Seat	Buna-N or EPDM	
6	Taper Pin	316 Stainless Steel	
7	O-Ring	Buna-N	
8	Key	Carbon Steel	
9	Bushing	PTFE	
10	Bushing	Luberized Bronze	
11	Thrust Washer	Luberized Bronze	
12	End Plate	Ductile Iron	
13	O-Ring	Buna-N	



Dimensions and Weights

Valve Size	Weight	A	B	C	D	E	F
36	1660	26.88	24.75	8.12	5.63	17.40	16.2
	(754)	(682.63)	(628.65)	(206.38)	(142.88)	(435.00)	(411)
42	2495	31.75	28.25	10.00	5.90	17.40	16.2
	(1131)	(806.45)	(717.55)	(254.00)	(150.00)	(435.00)	(411)
48	3711	37.00	34.00	10.88	5.90	17.40	20.1
	(1683)	(940.70)	(864.00)	(276.40)	(150.00)	(435.00)	(510)

Inches (millimeters) - Pounds (kilograms)

Contractor Butterfly Valves



Cast Iron Body

The End of the Line for Valve Problems

Features:

- Bi-Directional Dead-End
- 2" - 12" Cast Iron Lugged Body
- 10-Position Lever
- Optional Gear Operator
- Aluminum Bronze Disc
- EPDM Molded-In Liner

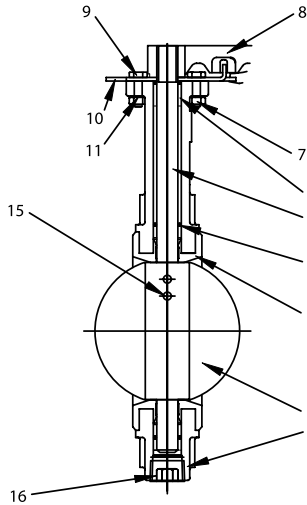
Typical Applications:

- HVAC
- Commercial Plumbing
- Hot/Cold Domestic Water
- Chilled Water Applications

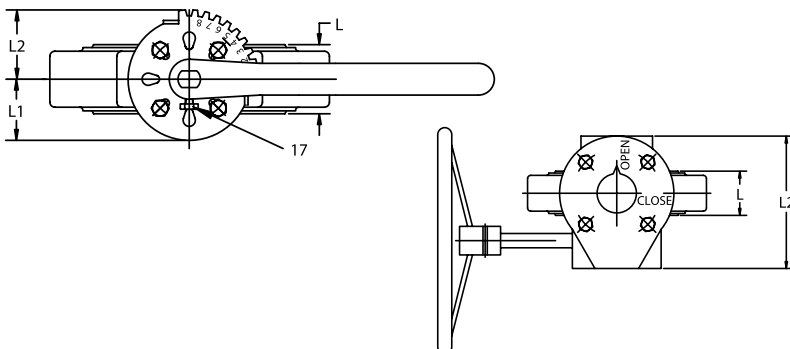
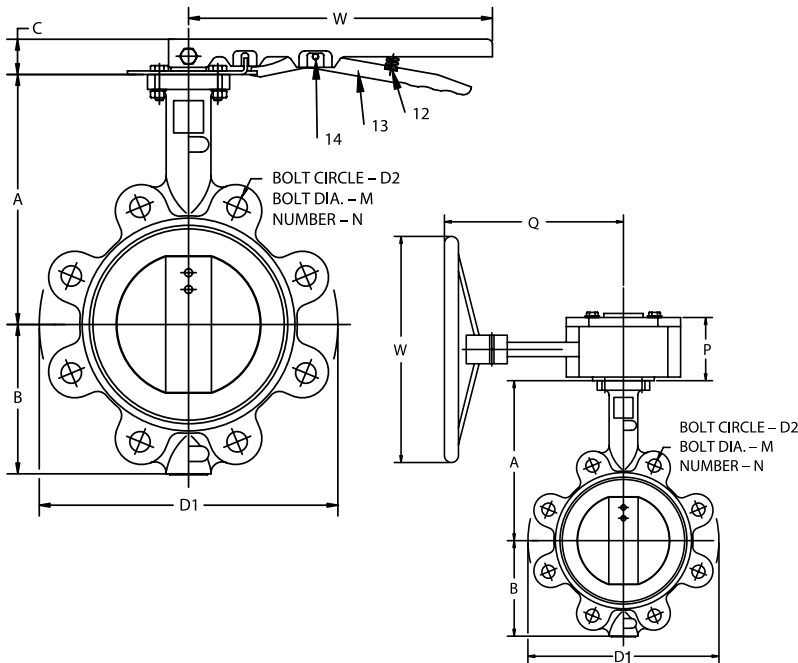
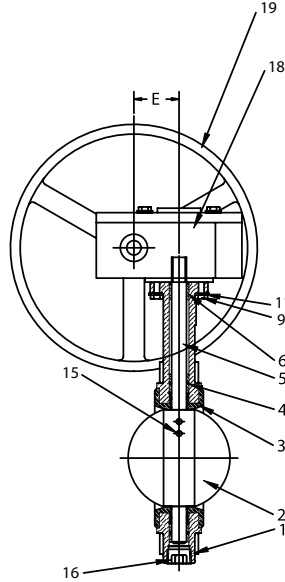
Figures LG-712-BS3-E-M / LG-722-BS3-E-M

200 CWP • Lug Body • Lever or Handwheel Gear Operated

**LG-712-BS3-E-M
Lever Operated**



**LG-722-BS3-E-M
Handwheel Gear Operated**



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Cast Iron	A-126 CL. B
2	Disc	Aluminum Bronze	B-148 Alloy C95400
3	Molded-In Liner	EPDM	
4	O-Ring	Buna-N	
5	Shaft	416SS	A-582 Type 416
6	Bushing	PTFE	
7	Nut ¹	Carbon Steel	A-575 AISI 1018
8	Handle ¹	Ductile Iron	
9	Bolt	Carbon Steel	
10	Indicator Plate ¹	Carbon Steel	
11	Washer	Carbon Steel	
12	Spring ¹	Stainless Steel	
13	Latch ¹	Ductile Iron	
14	Roll Pin ¹	Carbon Steel	
15	Taper Pin	Stainless Steel	
16	Plug	Carbon Steel	
17	Screw ¹	Carbon Steel	
18	Gear Box ²		
19	Handwheel ²	Cast Iron	

NOTES:

- ¹ Lever Operated only.
- ² Gear Operated Handwheel only.
- "L" dimension is elastomer shown is relaxed condition. Approximately 1/8" total compression required for seal.
- Line flange dimensions comply with ASME B16.1.
- Body's mounting flange complies with ISO 5211.
- Order parts by item number, valve size and figure number.
- Meets MSS SP-25, API 609, MSS SP-67.

Dimensions

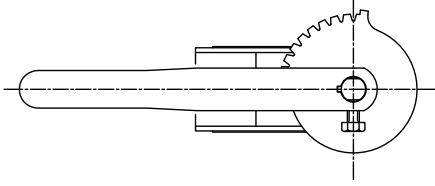
Size	A	B	712 C	712 D1	722 D1	D2	722 E	L	712 L1
2	6.37	3.15	1.25	6.09	4.00	4.75	1.77	1.815	2
2½	6.87	3.50	1.25	7.06	4.75	5.50	1.77	1.933	2
3	7.12	3.75	1.25	7.50	5.12	6.00	1.77	1.929	2
4	7.12	4.50	1.25	8.65	6.75	7.50	1.77	2.177	2
5	8.37	5.00	1.25	10.00	7.75	8.50	2.14	2.315	2
6	8.87	5.46	1.25	11.25	8.62	9.50	2.14	2.327	2
8	10.25	7.77	1.75	13.37	10.56	11.75	2.67	2.524	3
10	11.50	8.00	1.75	16.00	13.06	14.25	2.67	2.799	3
12	13.25	9.53	1.75	18.81	16.12	17.00	2.67	3.189	3

Size	712 L2	722 L2	M	N	722 P	722 Q	712 W	722 W
2	2.50	5	0.69	4	2.953	9.370	10.50	11.81
2½	2.50	5	0.69	4	2.953	9.370	10.50	11.81
3	2.50	5	0.69	4	2.953	9.370	10.50	11.81
4	2.50	5	0.69	8	2.953	9.370	10.50	11.81
5	2.50	6.016	0.81	8	3.307	9.370	10.50	11.81
6	2.50	6.016	0.81	8	3.307	9.370	10.50	11.81
8	3.681	6.732	0.81	8	3.307	8.898	14.00	11.81
10	3.681	6.732	0.94	12	3.307	8.898	14.00	11.81
12	3.681	6.732	0.94	12	3.307	8.898	14.00	11.81

Inches

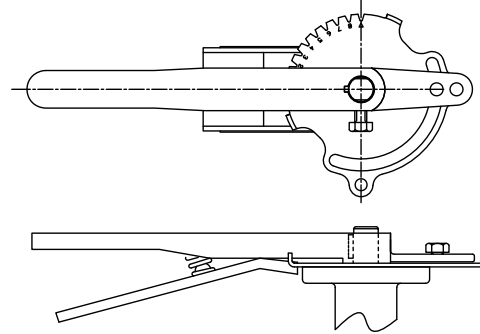
Accessories / Handle Features & Options (LD Series Only)

Standard



The standard handle functions with a ten-position indicator plate to assist in throttling or to provide shutoff.

Memory Stop



Extended plates with radial slots are optional for memory stop applications. In these cases, bolts and nuts are furnished and special handles are used as shown.

Gear Operator Options:

1. MEMORY STOP FOR GEAR OPERATORS

A memory stop suitable for visual position indication may be provided; however, a more positive stop on the input side of the gear operator is available in the traveling nut stop for nonvisual position indication.

2. OPERATING NUT FOR GEAR OPERATOR

An operating nut may be supplied on the gear shaft, in place of a handwheel.

3. CHAINWHEELS

Some overhead installations require the convenience of chainwheels to enable operation from a lower elevation level.

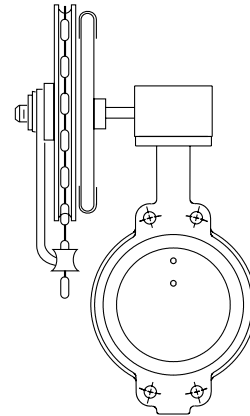
Direct-mounted chainwheels are available. Another option, utilizing an adjustable sprocket rim and guide which is fastened to a round handwheel, may be furnished.

4. EXTENSION STEMS

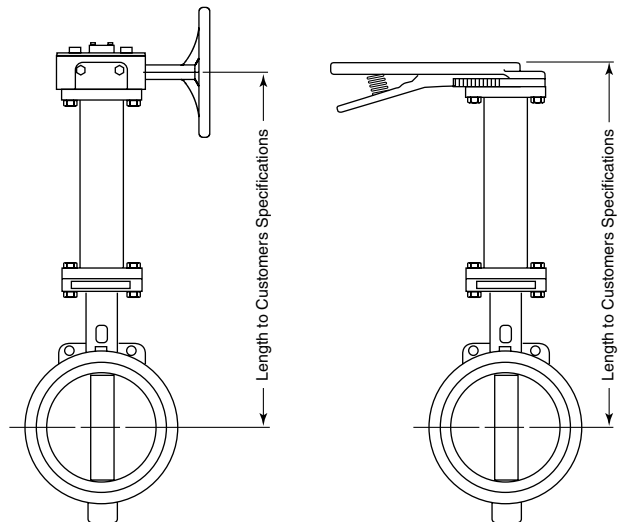
Installations may require extension stems to elevate the operating location of a valve.

Extension stems as illustrated may be supplied for operation by either lever, gear, or actuator.

Chainwheels



Extension Stems



Accessories / Actuators (LD Series Only)

ELECTRIC ACTUATORS

All butterfly valves can be furnished with factory-mounted electric actuators, or the actuators and linkage kits may be furnished for field mounting.

Standard actuator features include:

- Several Basic Models of Electric Actuation are available in torques ranging from 45 to 250,000 in-lbs.
- Permanent lubrication—no maintenance program required.
- Can be mounted at any angle.
- Precision cut, hardened steel gears.
- Reversible and non-reversible motors.
- Standard electrical voltage 115/1/60, other voltages available.
- Manual override in the event of power failure.
- Literature, data sheets, wiring diagrams and sizing charts are available upon request.

INFORMATION REQUIRED WITH ORDER OR INQUIRY:

1. Valve size and figure number.
2. Service conditions—media, temperature, and maximum differential pressure.
3. Required closing or opening time.
4. Duty cycle—continuous or intermittent duty.
5. Electrical supply—AC or DC, phase and cycles if AC voltage.
6. Type of motor—weatherproof, dust-tight, or explosion-proof.
7. Accessories—switches, potentiometers, or other special requirements such as a control station. Please include the number, type and electrical ratings you require.
8. Cycling requirement—on/off or modulating.



PNEUMATIC ACTUATORS

All butterfly valves can be furnished with pneumatic actuators fully mounted and tested at the factory, or actuators and linkage kits may be furnished for field mounting.

- Both direct mount and bracketed rack-and-pinion designs are readily available. In either case, both double acting and spring return models can be furnished.
- Please refer to the specific actuator bulletin for details on the materials of construction of the required actuator.
- Range of torque output is from 70 to 100,000 inch-pounds.
- Accessories such as solenoid valves, limit switches, positioners and manual override can also be furnished.
- Literature, data sheets and valve sizing charts are available upon request.

INFORMATION REQUIRED WITH ORDER OR INQUIRY:

1. Valve size and figure number.
2. Service conditions—media, temperature, and maximum differential pressure.
3. Cycling requirements—on/off or modulating.
4. Air pressure available to operate actuator.
5. Need for solenoid valves, NEMA requirements, and optional speed controls.
6. Need for limit switches, NEMA requirements.
7. Accessories—switches, potentiometers, or other special requirements, such as a control station. Please include the number, type and electrical ratings you require.



Torque Requirements (LD Series Only)

Resilient Seated Valve Torques (In-Lbs.)

Valve Size	Standard Disc Differential Pressure								Undercut Diff. Press.	
	50 PSI ΔP Bushing		100 PSI ΔP Bushing		150 PSI ΔP Bushing		200 PSI ΔP Bushing		75 PSI ΔP Bushing	
	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE
2"	106	100	117	106	129	111	140	117	-	-
2½"	152	150	166	163	181	176	195	189	-	-
3"	213	207	230	220	248	232	265	244	-	-
4"	321	290	386	323	450	357	515	390	-	-
5"	481	423	598	481	715	540	832	598	-	-
6"	692	599	878	691	1,063	783	1,248	875	-	-
8"	1,326	1,060	1,716	1,183	2,106	1,307	2,496	1,430	1,124	819
10"	2,239	1,671	3,010	1,872	3,780	2,074	4,550	2,275	1,363	909
12"	3,959	2,568	4,953	2,795	5,948	3,023	6,942	3,250	2,457	1,445
14"	4,881	2,640	6,226	3,070	7,570	3,500	-	-	4,400	2,300
16"	7,020	4,260	8,580	4,880	10,140	5,500	-	-	5,900	3,600
18"	10,105	6,287	12,202	7,243	14,300	8,200	-	-	8,300	5,500
20"	13,923	8,360	16,582	9,180	19,240	10,000	-	-	11,100	6,700
24"	23,617	15,427	26,953	16,813	30,290	18,200	-	-	17,300	12,100
30"	39,721	27,313	43,391	29,407	47,060	31,500	-	-	27,300	21,100

To determine torque values for actuator sizing in single outlet valve applications, use PTFE bushings/200 PSI torque values and multiply by 1.5.

High Performance Valve Torques (In-Lbs.)

Valve Size	Soft Seat															
	ASME Class 150				ASME Class 300											
	Seat Upstream (SUS)		Seat Downstream (SDS)		Seat Upstream (SUS)						Seat Downstream (SDS)					
	0-150 PSIG	285 PSIG	0-150 PSIG	285 PSIG	0-150 PSIG	285 PSIG	400 PSIG	500 PSIG	600 PSIG	700 PSIG	0-150 PSIG	285 PSIG	400 PSIG	500 PSIG	600 PSIG	700 PSIG
3"	200	270	200	320	220	300	440	520	595	700	220	350	520	600	675	700
4"	225	470	410	610	250	520	610	670	790	970	460	675	850	1,000	1,150	1,300
6"	540	680	860	1,320	600	750	940	1,120	1,330	1,630	950	1,450	1,750	2,100	2,300	2,750
8"	910	1,620	1,620	2,580	1,000	1,800	1,950	2,440	2,810	3,390	1,800	2,850	3,400	4,000	4,500	5,250
10"	1,620	2,530	2,630	4,550	1,800	2,790	3,840	4,640	5,370	6,510	2,900	5,000	5,700	6,700	7,600	8,750
12"	2,530	3,600	4,160	6,350	2,790	4,000	6,140	7,480	8,590	11,390	4,600	7,000	8,000	9,500	11,000	12,850
14"	3,720	5,970	6,200	9,000	4,130	6,640	8,630	10,200	12,100	14,940	8,200	11,500	14,500	17,000	18,000	22,000
16"	5,530	9,180	9,000	14,700	6,140	10,200	14,000	17,070	19,640	24,440	14,000	17,000	23,500	26,500	30,000	35,100
18"	6,840	11,900	14,500	20,100	7,600	13,220	17,100	20,400	23,990	29,460	17,500	24,000	30,000	34,000	38,000	44,500
20"	10,020	16,970	18,000	27,200	11,140	18,860	25,010	31,530	36,310	42,990	23,500	32,000	40,000	44,500	51,500	59,400
24"	18,330	32,290	28,100	43,000	20,370	35,870	48,260	58,820	71,330	85,080	38,000	52,000	61,500	70,000	79,500	90,000

Engineering Data (LD Series Only)

Machine Bolt, Stud Bolt and Cap Screw Data

WAFER			
Valve Size	Machine Bolts		Bolt Dia.
	Needed per Valve	Length (B)	
2	4	4	5/8
2½	4	4	5/8
3	4	4½	5/8
4	8	5	5/8
5	8	5	¾
6	8	5½	¾
8	8	5½	¾
10	12	6	7/8
12	12	6½	7/8
14	12	7	1
16	16	8	1
18	16	8½	1½
20	20	10	1½

LUG							
Valve Size	Machine Bolts		Stud Bolts		Cap Screws		Bolt Dia.
	Needed per Valve	Length (B)	Needed per Valve	Length (C)	Needed per Valve	Length (D)	
2	4	4	4	4½	8	1¼	5/8
2½	4	4	4	5¼	8	1½	5/8
3	4	4½	4	5¼	8	1½	5/8
4	8	5	8	5¾	16	1¾	5/8
5	8	5	8	6	16	1¾	¾
6	8	5½	8	6¼	16	2	¾
8	8	5½	8	6¾	16	2¼	¾
10	12	6	12	7¼	24	2¼	7/8
12	12	6½	12	7¾	24	2½	7/8
14	12	7	12	8¼	24	2¾	1
16	16	8	16	8¾	32	2¾	1
18	16	8½	16	10	32	3½	1½
20	20	10	20	11¼	40	4¼	1½
24	-	-	20	12¾	40	4¾	1½
30	-	-	24	13¾	48	4½	1½
				5¾	+8	4¼	1½

All butterfly valves shall be suitable for installation with pipe flanges conforming to ASME Standard B16.1 (Class 125 iron flanges) and B16.5 (Class 150 steel flanges excluding slip-on flanges). Machine bolts are suitable for use with lug type valves only when lugs are drilled and not tapped. Short stud bolts may be used by inserting from both sides of lug body valve, with lengths that are one-half of lengths shown above.

Certain size valves installed with slip-on flanges or weld neck flanges with lined pipe require spacer plates for proper disc clearance. Consult factory for further information.

C_v Values – Valve Sizing Coefficients (US-GPM @1ΔP)

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.06	3	7	15	27	44	70	105	115
2½"	0.10	6	12	25	45	75	119	178	196
3"	0.20	9	18	39	70	116	183	275	302
4"	0.30	17	36	78	139	230	364	546	600
5"	0.50	29	61	133	237	392	620	930	1022
6"	0.80	45	95	205	366	605	958	1437	1579
8"	2	89	188	408	727	1202	1903	2854	3136
10"	3	151	320	694	1237	2047	3240	4859	5340
12"	4	234	495	1072	1911	3162	5005	7507	8250
14"	6	338	715	1549	2761	4568	7230	10844	11917
16"	8	464	983	2130	3797	6282	9942	14913	16388
18"	11	615	1302	2822	5028	8320	13168	19752	21705
20"	14	791	1674	3628	6465	10698	16931	25396	27908
24"	22	1222	2587	5605	9989	16528	26157	39236	43116
30"	37	2080	4406	9546	17010	28147	44545	66818	73426

Consult factory for larger sizes.

Soft Seat High Performance Butterfly Valves

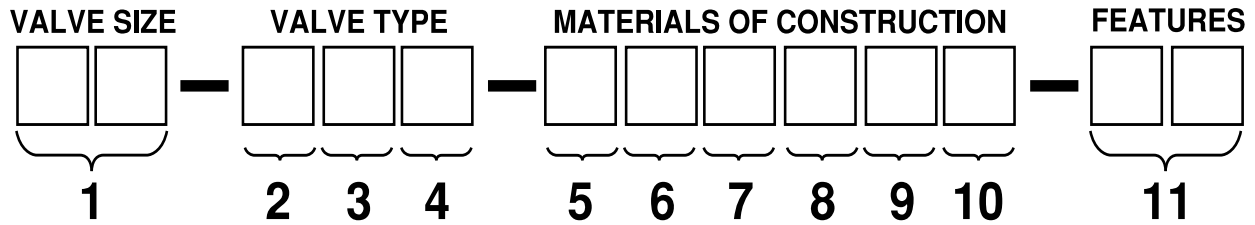


High Quality High Performance

Typical Applications:

- Hydrocarbon Processing
- Chemical/Petrochemical Processing
- Marine and Commercial Shipbuilding
- Power and Utilities
- Pulp and Paper

Soft Seat High Performance Butterfly Ordering Information



1. Size	Code
2"	02
2½"	25
3"	03
4"	04
to 24"	24

2. Body Class	Code
ASME 150	1
ASME 300	3

3. Body Type	Code
Lugged - Double Dead End	7

4. Shaft Design	Code
Straight (2" - 12")	A
Balanced (14" - 24")	C

5. Body Material	Code
Carbon Steel	1
Stainless Steel	2

6. Disc Material	Code
316 SS	2

7. Shaft Material	Code
17-4PH SS	1

8. Seat Material / O-Ring	Code
RTFE / Silicone	R

9. Packing Material	Code
TFE	T

10. Bearing Material	Code
Glass Backed TFE	G

11. Actuator Type	Code
Bare Shaft	BD
Ratchet Handle	HD
Worm Gear	3D
Pneumatic Double Acting	4
Pneumatic SR Fail Close	5
Pneumatic SR Fail Open	6
Electric	8

EXAMPLE: 03-37A-121RTG-HD

This would be the part number for a 3" Class 300, Dead-End Lug Style body, straight shaft design, carbon steel body, 316 SS disc, 17-4PH SS shaft, RTFE/Silicone seat and O-rings, TFE packing, glass-packed TFE bearings, with a ratchet handle.

Soft Seat High Performance Butterfly Components

KEY
Square key valve-to-operator connection provides an externally controlled failure point upon over-torquing.

GLAND FLANGE
Applies load against packing gland to prevent external leakage. Fully adjustable.

PACKING
Chevron design TFE prevents external leakage out valve neck to full ASME hydrostatic shell test pressures (150% of C.W.P.).

WEDGE RING
Stainless steel band wedged between valve body and retainer ring by set screws to lock seat and retainer ring in position on valve sizes 2" through 30". Socket head cap screws are used on valve sizes 36" and larger.

SET SCREWS
Cone point screws force wedge ring outward to lock seat retainer in position on valve sizes 2" through 30". Socket head cap screws are used on valve sizes 36" and larger.

OVERTRAVEL STOP
Prevents disc from rotating into the wrong quadrant.

SOFT-SEAT
Patented bi-directional RTFE seat with encapsulated elastomeric O-ring core for resiliency.

BLOW-OUT PROOF SHAFT
Solid shaft provides alignment and rigid support for disc.

PACKING GLAND
Separate part from gland flange, preventing uneven load distribution against packing.

BEARINGS
Both above and below the disc, bearings are of composite material: PTFE bonded to epoxy-glass filament wound ring. Used to align shaft with high capacity, low wear, and low friction coefficient.

DISC SPACERS
Disc is centered by use of thrust spacers around shaft in sizes 2" to 5". Disc position stops or thrust bolt arrangements are used for larger valve sizes.

WEDGE PINS
Provide positive mechanical attachment of disc to shaft.

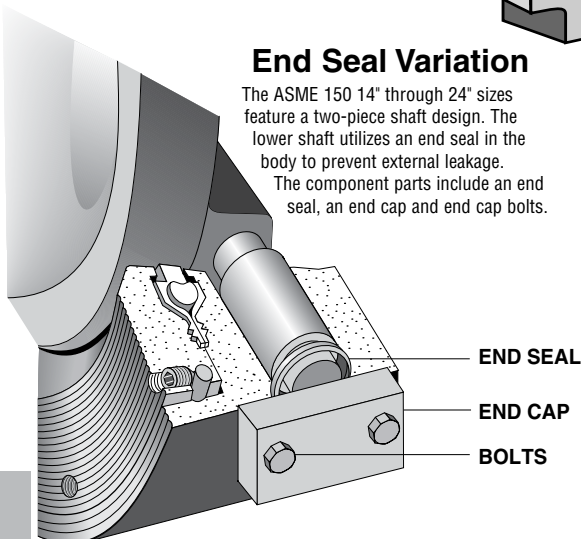
BODY
ASME B16.34 design in either wafer or lug configuration.

DISC
360° uninterrupted spherical edge for sealing. Profile is designed for maximum flow and equal percentage control.

RETAINER RING
Retains seat in valve. Standard surface finish is 125 to 200 AARH and is compatible with both standard gaskets and spiral wound gasket designs. Outside diameter is recessed within gasket sealing surface to prevent external leakage.

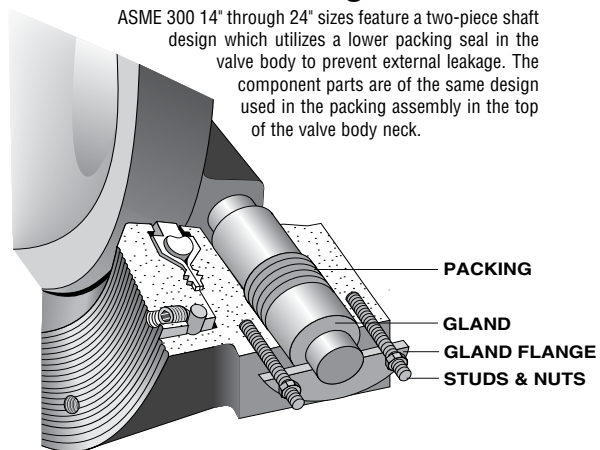
End Seal Variation

The ASME 150 14" through 24" sizes feature a two-piece shaft design. The lower shaft utilizes an end seal in the body to prevent external leakage. The component parts include an end seal, an end cap and end cap bolts.



Lower Packing Variation

ASME 300 14" through 24" sizes feature a two-piece shaft design which utilizes a lower packing seal in the valve body to prevent external leakage. The component parts are of the same design used in the packing assembly in the top of the valve body neck.



Soft Seat High Performance Materials and Specifications

STANDARD MATERIALS OF CONSTRUCTION

Carbon Steel Construction

COMPONENTS	-20°F to 450°F 121RTG CONSTRUCTION
BODY	Carbon Steel A216 Gr WCB, or A105
DISC	316 Stainless Steel A351 CF8M
SHAFT & PINS	17-4 PH Stainless Steel A564 Gr 630
SEAT	Reinforced TFE
PACKING	TFE
BEARINGS	Glass-Backed TFE

Stainless Steel Construction

COMPONENTS	-20°F to 450°F 221RTG CONSTRUCTION
BODY	Stainless Steel A351 CF8M
DISC	316 Stainless Steel A351 CF8M
SHAFT & PINS	17-4 PH Stainless Steel A564 Gr 630
SEAT	Reinforced TFE
PACKING	TFE
BEARINGS	Glass-Backed TFE

TYPICAL SOFT SEAT SPECIFICATION

1.0 Scope

This specification covers the design and testing of high pressure offset seat butterfly valves.

2.0 Applicable Standards

The following standards shall apply

- ASME B16.5: Pipe Flanges and Flanged Fittings (24" size and smaller).
- ASME B16.34: Valves-Flanged and Buttwelding End.
- MSS SP-25: Standard Marking System for Valves, Fittings, Flanges and Unions.
- MSS SP-61: Pressure Testing of Steel Valves.
- MSS SP-68: High Pressure-Offset Seat Butterfly Valves.
- API 609: Butterfly Valves, Lug-Type and Wafer-Type.
- PED Pressure Equipment Directive Section H.

3.0 Design Requirement

- 3.1 Valves shall be High Performance Butterfly with offset seat and eccentric shaft. They shall be capable of sealing against full differential pressure in either flow direction.
- 3.2 Valve seat shall be both self and pressure energized with an elastomeric core. The self energizing member shall be isolated from the line media.

- 3.3 Valves shall have retained top and bottom low friction bearings.

- 3.4 Shaft design shall be single piece through 12".

- 3.5 Retainer rings must be recessed in the body so that the line gasket prevents any potential external leakage.

- 3.6 Valves shall have internal stop to prevent disc over-travel.

- 3.7 Valves shall be Stockham or approved equal.

4.0 Materials

- 4.1 Valves shall be constructed of new material.

- 4.2 Carbon steel valves shall be constructed from materials below:

- 4.2.1 Body-ASTM A105 or A216 Gr. WCB.

- 4.2.2 Disc-ASTM A182 F316 or A351 Gr. CF8M.

- 4.3 Shafts shall be ASTM A564 type 630 H 1150 or 316 SS.

5.0 Inspection and Test

- 5.1 Valves shall be hydrostatically shell tested per ASME B16.34 and MSS SP-61.

- 5.2 Valves shall be seat tested per MSS SP-61. No leakage is permitted for resilient seated valves.

- 5.3 API 598 testing available upon request.

Soft Seat High Performance Pressure / Temperature Ratings

PRESSURE/TEMPERATURE RATINGS

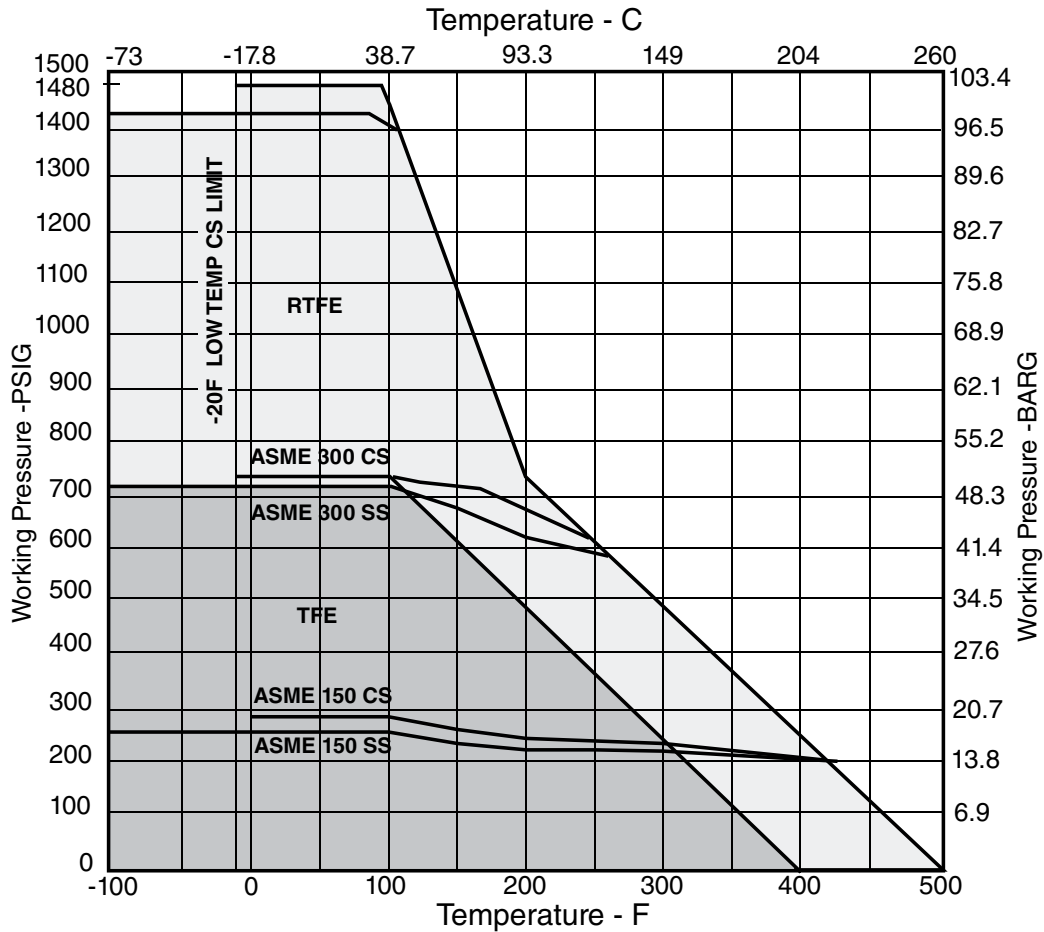
As temperature increases, the pressure retaining capability of materials decreases. The graph below illustrates the pressure/temperature ratings of the Stockham ASME Class 150 and Class 300.

The heavy lines define the carbon steel valve body (or "shell") in conformance to ASME B16.34. The shaded areas define the ratings of the TFE and RTFE Seat materials.

Seat ratings are based on differential pressure with the disc in the fully closed position.

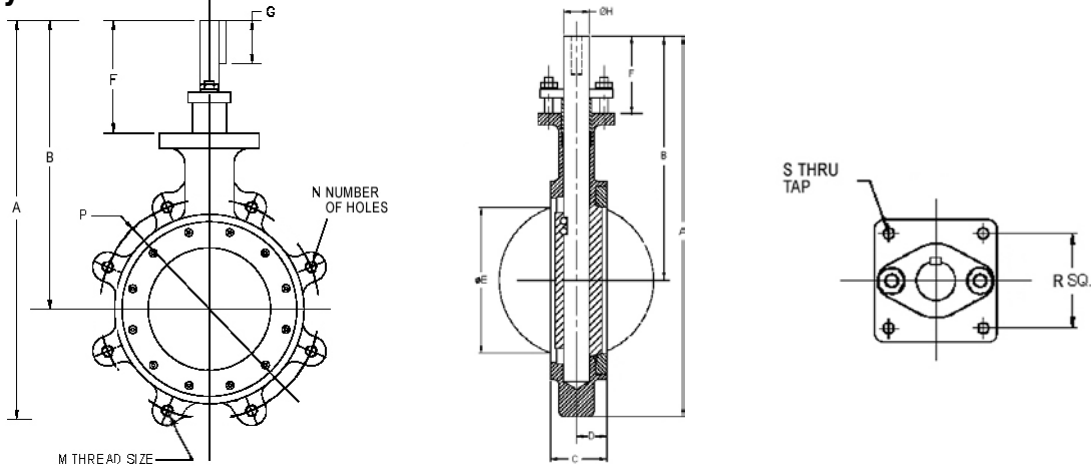
NOTE: Soft seated valves are not recommended for steam service.

ASME B16.34 Body and Stockham Soft Seat Pressure - Temperature Ratings



Figures 17A/C-121RTG, 17A/C-221RTG, 37A/C-121, 37A/C-221RTG Soft Seat High Performance Lug Body Dimensions

Lug Body Dimensions



ASME Class 150 Valves

Valve Size	A	B	C	D	E	F	G	H	M	N	P	R	S	Weight (LBS.)
2"	10.59	7.59	1.75	1.06	1.72	3.34	3/16	.500	5/8-11	4	4.750	2.25	3/8-16	11
2 1/2"	10.30	7.59	1.88	1.09	2.09	3.34	3/16	.500	5/8-11	4	5.500	2.25	3/8-16	11
3"	11.98	8.60	1.92	1.20	2.75	3.60	3/16	.625	5/8-11	4	6.000	2.25	3/8-16	13
4"	13.55	9.42	2.13	1.26	3.62	3.67	3/16	.625	5/8-11	8	7.500	2.25	3/8-16	25
5"	15.16	10.28	2.25	1.34	4.55	3.81	1/4	.750	3/4-10	8	8.500	2.25	3/8-16	30
6"	15.93	10.81	2.29	1.38	5.55	3.81	1/4	.750	3/4-10	8	9.500	2.25	3/8-16	35
8"	17.94	11.93	2.50	1.49	7.28	3.80	3/8	1.000	3/4-10	8	11.750	2.25	3/8-16	48
10"	20.85	12.97	2.81	1.70	9.20	4.09	3/8	1.250	7/8-9	12	14.250	3.25	3/8-16	91
12"	24.96	15.46	3.23	1.86	11.15	4.83	3/8	1.500	7/8-9	12	17.00	3.25	3/8-16	127
14"	27.14	16.07	3.62	2.19	12.76	4.82	3/8	1.500	1-8	12	18.750	3.25	3/8-16	183
16"	31.66	19.61	4.00	2.31	14.58	6.92	1/2	1.750	1-8	16	21.250	4.25	1/2-13	250
18"	34.53	21.35	4.50	2.45	16.38	7.35	1/2	2.000	1 1/8-8	16	22.750	4.25	1/2-13	305
20"	36.70	22.76	5.00	2.94	18.38	7.63	3/4	2.250	1 1/8-8	20	25.000	5.00	3/4-10	414
24"	41.57	25.13	6.06	3.12	21.88	7.88	3/4	2.500	1 1/4-8	20	29.500	5.00	3/4-10	702

ASME Class 300 Valves

Valve Size	A	B	C	D	E	F	G	H	M	N	P	R	S	Weight (LBS.)
2"	10.59	7.59	1.75	1.06	1.72	3.34	3/16	.500	5/8-11	8	5.000	2.25	3/8-16	11
2 1/2"	10.30	7.59	1.88	1.09	2.09	3.34	3/16	.500	3/4-10	8	5.880	2.25	3/8-16	11
3"	11.98	8.60	1.92	1.20	2.75	3.60	3/16	.625	3/4-10	8	6.625	2.25	3/8-16	17
4"	13.54	9.42	2.13	1.25	3.62	3.67	3/16	.625	3/4-10	8	7.875	2.25	3/8-16	24
5"	15.16	10.28	2.25	1.34	4.55	3.81	1/4	.750	3/4-10	8	9.250	2.25	3/8-16	30
6"	16.31	10.81	2.29	1.38	5.55	3.81	3/8	1.000	3/4-10	12	10.625	2.25	3/8-16	49
8"	19.50	12.22	2.88	1.54	7.06	4.08	3/8	1.250	7/8-9	12	13.000	3.25	3/8-16	80
10"	22.10	14.22	3.25	1.70	9.00	4.84	3/8	1.500	1-8	16	15.250	3.25	3/8-16	115
12"	28.40	17.90	3.62	1.86	10.72	6.90	1/2	1.750	1 1/8-8	16	17.750	4.25	1/2-13	199
14"	34.31	19.74	4.62	2.48	12.08	7.36	1/2	2.000	1 1/8-8	20	20.250	4.25	1/2-13	324
16"	38.14	21.82	5.25	2.59	13.72	7.82	3/4	2.250	1 1/4-8	20	22.500	5.00	3/4-10	401
18"	40.26	23.00	5.88	3.03	15.56	7.87	3/4	2.500	1 1/4-8	24	24.750	5.00	3/4-10	517
20"	43.62	25.13	6.31	3.24	17.22	8.74	3/4	3.000	1 1/4-8	24	27.00	5.00	3/4-10	735
24"	49.94	28.27	7.19	3.62	20.61	8.89	1	3.500	1 1/2-8	24	32.00	7.00	1-8	1020

NOTES:

1. General

- Standard valves tested to MSS SP-61. API 598 testing available on request.
- Dimensions shown are for reference only. Certified drawings available on application.

2. For all sizes:

- Face-to-face dimensions (C) meet, within specified tolerance, MSS SP-67 and API 609 requirements.
- Valves are designed for installation between ASME B16.5 flanges.



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