

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

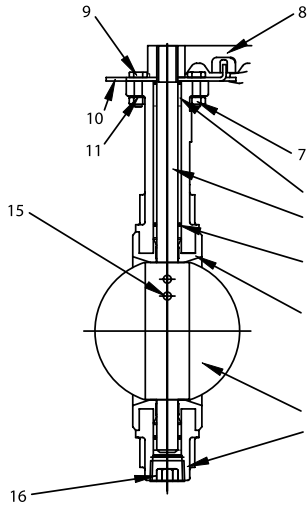
Typical Applications:

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

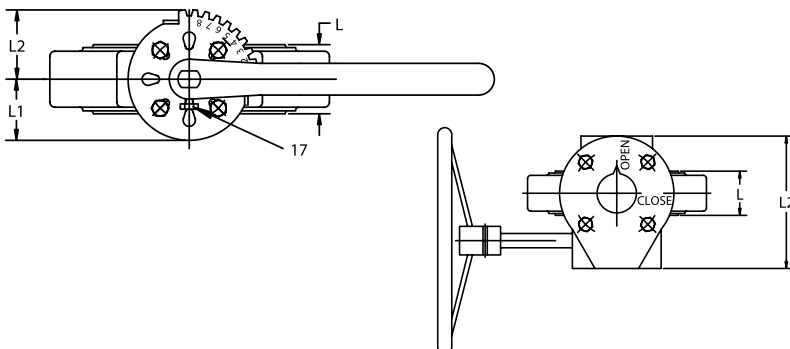
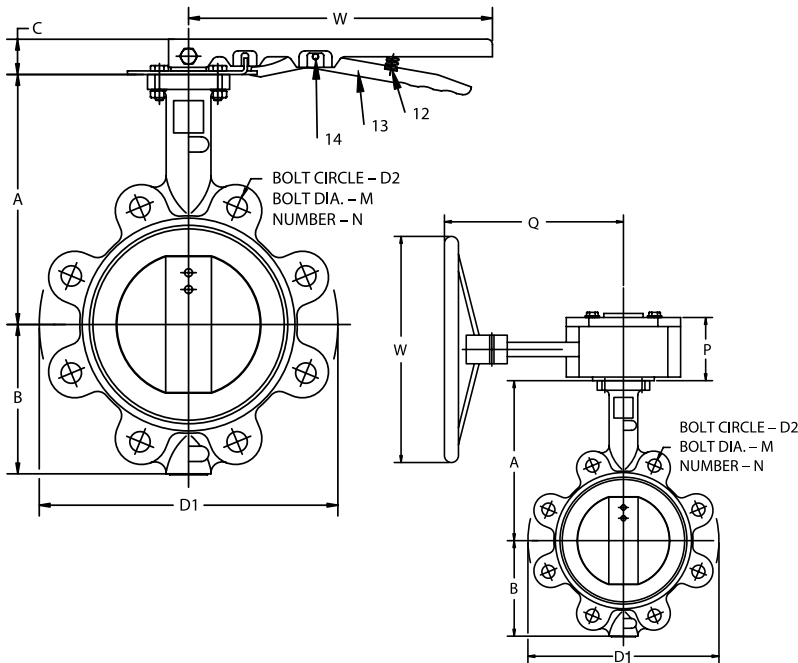
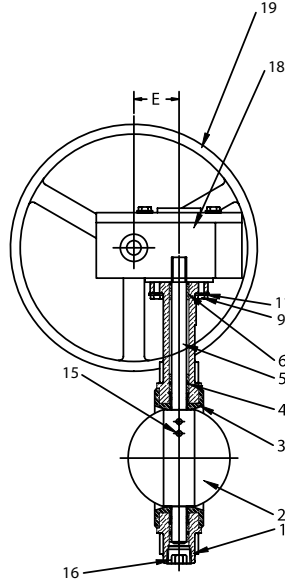
Figures LG-712-BS3-E-M / LG-722-BS3-E-M

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

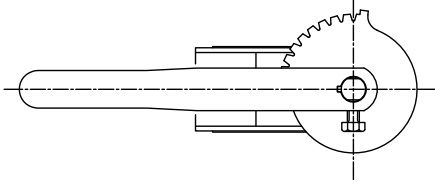
Size	A	B	712 C	712 D1	722 D1	D2	722 E	L	712 L1
2	6.37	3.15	1.25	6.09	4.00	4.75	1.77	1.815	2
2½	6.87	3.50	1.25	7.06	4.75	5.50	1.77	1.933	2
3	7.12	3.75	1.25	7.50	5.12	6.00	1.77	1.929	2
4	7.12	4.50	1.25	8.65	6.75	7.50	1.77	2.177	2
5	8.37	5.00	1.25	10.00	7.75	8.50	2.14	2.315	2
6	8.87	5.46	1.25	11.25	8.62	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

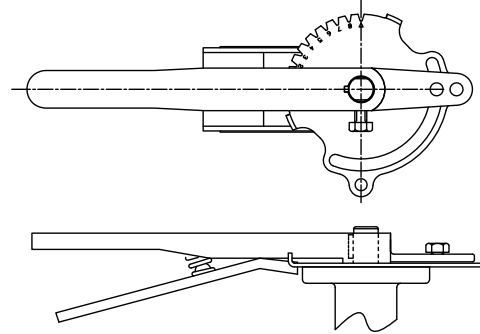
Accessories / Handle Features & Options (LD Series Only)

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.

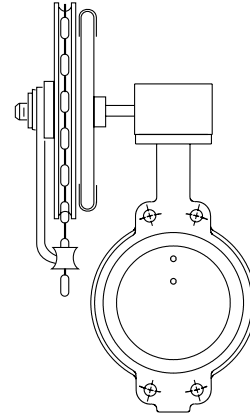
Direct-mounted chainwheels are available. Another option, utilizing an adjustable sprocket rim and guide which is fastened to a round handwheel, may be furnished.

4. EXTENSION STEMS

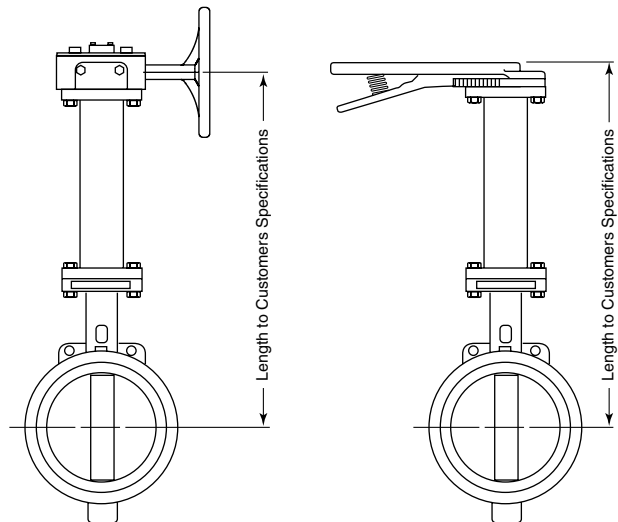
Installations may require extension stems to elevate the operating location of a valve.

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.