



## 3L Series – Submittal/Technical Data

### Resilient Seated Butterfly Valves 2-Way – 2"- 24" and 3-Way – 2"- 20"

#### 3L Series Butterfly Valves - Valve Body Specifications

Technical Specifications		
Service	Hot Water, Chilled Water, Condenser Water up to 50% Glycol	
Size Range	2-Way	2" through 24" (DN 50 to 600)
	3-Way	2" through 20" (DN 50 to 500)
Body Style	One Piece Lug, 2-Way and 3-Way, for ANSI 125 and ANSI 150 Flanges	
Flow Characteristics	Modified Equal Percentage - See Page 3L-3	
Flow Coefficients	See Page 3L-8	
Fluid Temperature Limits	-20 to 250°F (-28° to 121°C)	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Leakage	Bubble tight at rated maximum differential pressure	
Body Cold Working Pressure Ratings	250 psi (17.2 Bar)	
Close-Off - Pressure Ratings Dead End Service Rated	2" to 12"	50 or 175 psi
	14" to 24"	50 or 150 psi
	Automated versions for 250 psi Dead End rated service available.	
	See pages 3L-12 to 3L-22	
Materials  (other materials available upon request)	Body	A536 Gr. 65-45-12 High Temperature Polyester Coated Ductile Iron
	Disc	3LNE Series - Nylon 11 coated 3LSE Series - 316 Stainless Steel
	Seat	EPDM (Ethylene Propylene Diene Monomer)
	Stem	416 Stainless Steel
	Upper & Lower Stem Bearing	Steel/Bronze + PTFE Self-lubricating
	Tee	Ductile Iron (3-Way valves only)
Weights	See Dimensions	
Design Standard	MSS SP-67, API 609, Category A	
Testing Standard	MSS SP-61, API 598, EN 12266-1	
Face to Face	MSS SP-67, API 609, Category A, EN 558	
Approvals & Certifications	ABS, ATEX, Bureau Veritas, CRN, DNV, FDA 21 CFR 177.1550, NSF 61/372, PED, PE(S)R	

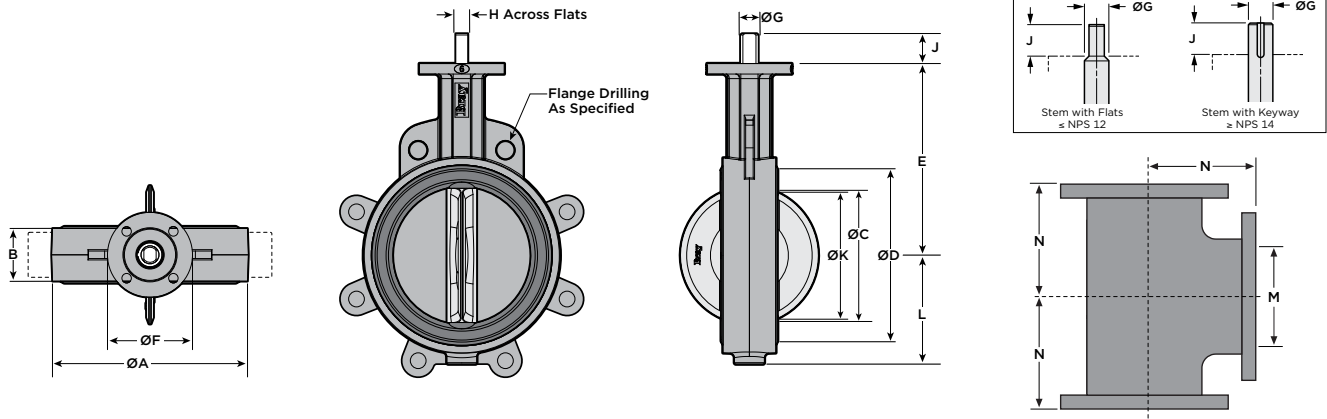
**Disclaimer** - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

#### 3L Series Butterfly Valves - Cv's at Various Angles of Openings

##### Low and Standard Pressure Cv Disc Values

Valve Size	ANGLE OF DISC OPENING								
	10°	20°	30°	40°	50°	60°*	70°	80°	90°
2"	1	1	15	29	46	66	73	86	87
2.5"	1	8	26	44	66	98	141	177	185
3"	2	22	43	71	112	171	256	338	360
4"	8	37	78	118	192	310	505	689	740
5"	9	53	98	170	288	470	759	1131	1218
6"	13	86	175	297	479	757	1190	1715	1900
8"	19	121	254	429	754	1247	2096	3376	3765
10"	37	178	365	728	1215	2005	3342	5814	6661
12"	69	240	492	1008	1696	2868	4961	8455	10066
14"	110	287	609	1141	1975	3328	5571	9269	11598
16"	147	421	844	1547	2651	4440	7412	12214	15395
18"	190	470	968	1807	3228	5509	9382	18231	20120
20"	230	675	1341	2455	4210	7056	11803	19637	25329
24"	317	952	1957	3592	6128	10267	17226	29061	39396

## 3L Series Butterfly Valves - Valve Dimensions



### VALVE BODY DIMENSIONS in. (mm)

Valve Model Number	Size		A	B	C	D	E	F	G	H	J	K*	L	
	in.	mm											Wafer	Lug
3L_E-02S**	2	50	3.7 (94)	1.7 (43)	2.0 (51)	2.8 (71)	5.5 (140)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	1.3 (32)	2.2 (56)	2.3 (58)
3L_E-25S**	2.5	65	4.3 (106)	1.8 (46)	2.5 (64)	3.3 (84)	6.0 (152)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	1.9 (48)	2.5 (63)	2.6 (65)
3L_E-03S**	3	80	4.9 (124)	1.8 (46)	3.0 (76)	4.0 (100)	6.3 (159)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	2.5 (64)	2.8 (71)	2.8 (71)
3L_E-04x**	4	100	6.1 (154)	2.1 (52)	4.1 (103)	5.1 (129)	7.0 (178)	3.5 (90)	0.6 (16)	0.43 (11)	1.25 (32)	3.6 (91)	3.4 (87)	4.1 (104)
3L_E-05x**	5	125	7.1 (179)	2.2 (56)	5.0 (128)	6.2 (157)	7.5 (191)	3.5 (90)	0.8 (19)	0.51 (13)	1.25 (32)	4.6 (117)	4.0 (102)	4.6 (117)
3L_E-06x**	6	150	8.1 (206)	2.2 (56)	5.8 (146)	7.1 (180)	8.0 (203)	3.5 (90)	0.8 (19)	0.51 (13)	1.25 (32)	5.4 (137)	4.5 (115)	5.1 (129)
3L_E-08x**	8	200	10.5 (267)	2.4 (60)	7.8 (197)	9.3 (237)	9.5 (241)	5.9 (150)	0.9 (22)	0.63 (16)	1.25 (32)	7.5 (190)	5.8 (146)	6.1 (154)
3L_E-10x**	10	250	12.6 (324)	2.7 (68)	9.8 (249)	11.4 (291)	10.8 (273)	5.9 (150)	1.2 (30)	0.87 (22)	2.0 (51)	9.5 (242)	7.1 (181)	7.7 (195)
3L_E-12x**	12	300	14.9 (373)	3.1 (78)	11.8 (299)	13.5 (342)	12.3 (311)	5.9 (150)	1.2 (30)	0.87 (22)	2.0 (51)	11.5 (291)	8.1 (206)	9.0 (229)
3L_E-14x**	14	350	17.1 (433)	3.1 (78)	13.3 (337)	15.3 (388)	13.6 (346)	5.9 (150)	1.4 (35)	.39x.39 (10x10)	2.0 (51)	13.0 (331)	9.4 (238)	9.9 (252)
3L_E-16x**	16	400	19.2 (488)	4.0 (102)	15.3 (387)	17.4 (442)	14.8 (375)	5.9 (150)	1.4 (35)	.39x.39 (10x10)	2.0 (51)	14.9 (377)	10.8 (273)	11.3 (287)
3L_E-18x**	18	450	21.1 (536)	4.5 (114)	17.3 (438)	19.5 (495)	16.0 (406)	8.3 (210)	2.0 (50)	.47x.39 (12x10)	2.5 (64)	16.8 (427)	12.0 (305)	12.2 (309)
3L_E-20x**	20	500	23.3 (591)	5.0 (127)	19.3 (489)	21.6 (548)	17.3 (438)	8.3 (210)	2.0 (50)	.47x.39 (12x10)	2.5 (64)	18.8 (476)	14.0 (356)	14.0 (356)
3L_E-24S**	24	600	28.2 (716)	6.1 (154)	23.3 (591)	25.6 (650)	19.5 (495)	8.3 (210)	2.5 (64)	.62x.62 (16x16)	4.0 (102)	22.7 (575)	17.6 (446)	17.6 (446)

L\*\* = (2C) 2-Way - Normally Closed  
 (2N) 2-Way - Normally Open  
 (3) 3-Way + Configuration Number (see pg. 3L-6)

X or S = (L) Low Pressure or (S) Standard Pressure

\_ = (N) Nylon Coated Disc or (S) Stainless Steel Disc

**Note:** K dimension is the disc chordal diameter at the valve face.

### VALVE BODY DIMENSIONS in. (mm) - Continued

Size	Top Plate Drilling			Lug Bolt Data			Tee		Adp. Code	Weights - lbs. (kg)			
	in.	mm	Bolt Circle	Hole Qty	Hole Dia.	BC	Holes	Threads		M	N	Wafer	Lug
2	50	2.8 (70)	4	0.4 (10)	4.8 (122)	4	5/8-11	2.0 (51)	4.5 (114)	A	6 (2.7)	7 (3.2)	19 (8.6)
2.5	65	2.8 (70)	4	0.4 (10)	5.5 (140)	4	5/8-11	2.5 (64)	5.0 (127)	A	7 (3.2)	8 (3.36)	27 (12.3)
3	80	2.8 (70)	4	0.4 (10)	6.0 (152)	4	5/8-11	3.0 (76)	5.5 (140)	A	8 (3.6)	9 (4.1)	39 (17.7)
4	100	2.8 (70)	4	0.4 (10)	7.5 (191)	8	5/8-11	4.0 (102)	6.5 (165)	B	12 (5.4)	16 (7.3)	62 (28.1)
5	125	2.8 (70)	4	0.4 (10)	8.5 (216)	8	3/4-10	5.0 (127)	7.5 (191)	C	15 (6.8)	21 (9.5)	79 (35.78)
6	150	2.8 (70)	4	0.4 (10)	9.5 (241)	8	3/4-10	6.0 (152)	8.0 (203)	C	19 (8.6)	25 (11.3)	96 (43.5)
8	200	4.9 (125)	4	0.6 (15)	11.8 (300)	8	3/4-10	8.0 (203)	9.0 (229)	D	34 (15.4)	40 (18.1)	155 (70.3)
10	250	4.9 (125)	4	0.6 (15)	14.3 (363)	12	7/8-9	10.0 (254)	11.0 (279)	E	51 (23.1)	62 (28.1)	270 (122.5)
12	300	4.9 (125)	4	0.6 (15)	17.0 (432)	12	7/8-9	12.0 (305)	12.0 (305)	E	68 (3.8)	91 (41.3)	380 (172.4)
14	350	4.9 (125)	4	0.6 (15)	18.8 (478)	12	1-8	14.0 (356)	14.0 (356)	F	105 (47.6)	122 (55.3)	435 (197.3)
16	400	4.9 (125)	4	0.6 (15)	21.3 (541)	16	1-8	16.0 (406)	15.0 (381)	F	150 (68.0)	166 (75.3)	550 (249.5)
18	450	6.5 (165)	4	0.8 (21)	22.8 (579)	16	1-1/8-8	18.0 (457)	16.5 (419)	G	212 (96.1)	233 (105.7)	665 (301.6)
20	500	6.5 (165)	4	0.8 (21)	25.0 (635)	20	1-1/8-8	20.0 (508)	18.0 (457)	G	285 (129.3)	340 (154.0)	855 (387.8)
24	600	6.5 (165)	4	0.8 (21)	29.5 (749)	20	1-1/4-8	-	-	H	410 (186.0)	490 (222.3)	-

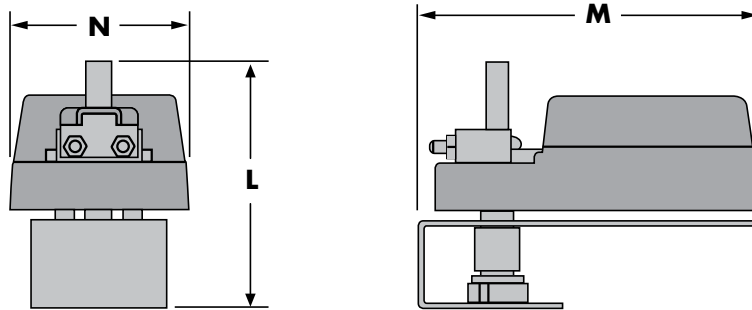
### BOLT SIZE - in.

Size	Bolt Size - in.	
	in.	mm
2	50	5/8 - 11 Threads UNC-2B
2.5	65	
3	80	
4	100	
5	125	3/4 - 10 Threads UNC-2B
6	150	
8	200	7/8 - 9 Threads UNC-2B
10	250	
12	300	
14	350	1 - 8 Threads UN-2B
16	400	
18	450	1-1/8 - 8 Threads UN-2B
20	500	
24	600	1-1/4 - 8 Threads UN-2B

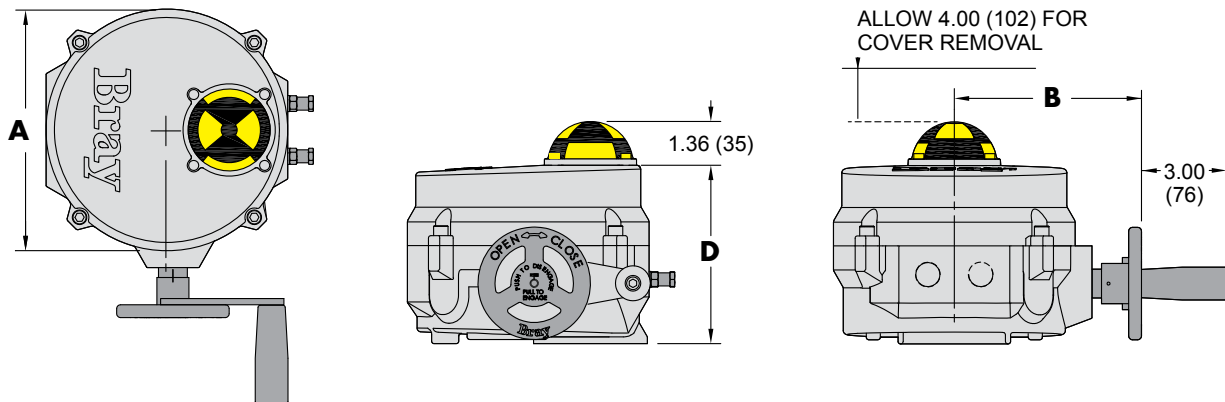
\*\*\*Tee weight is the weight of the Tee alone. For 3-Way assemblies add the weight of two lug valves.

## 3L Series Butterfly Valves - Actuator Dimensions

COMMERCIAL ACTUATOR DIMENSIONS in. (mm)				
Actuator Model Number	L	M	N	Weight lbs. (kg)
DCS-140 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.9 (2.2)
DC-310 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.4 (2.0)
D-140/210 Series	6.7 (170)	7.5 (191)	4.0 (102)	2.9 (1.3)
DS-180 Series	7.4 (188)	11.0 (279)	4.0 (102)	6.4 (2.9)
Tandem Actuators	11.8 (300)	18.0 (457)	4.0 (102)	12.8 (5.8)



INDUSTRIAL ACTUATOR DIMENSIONS in. (mm)					
Actuator Model Number	A	B	D*		Weight lbs. (kg)
			2-Way	3-Way	
70-0081 (Small Frame)	7.5 (191)	5.8 (147)	5.6 (141)	8.6 (218)	13 (6)
70-0121/0201/E301	10.1 (256)	7.8 (198)	6.6 (168)	10.7 (273)	28 (13)
70-0501/0651	12.1 (308)	9.5 (241)	7.2 (183)	13.2 (335)	48 (22)
70-1300/1800	12.1 (308)	9.5 (241)	12.5 (316)	20.5 (521)	118 (54)
AU-4068	32.1 (815)	28.9 (734)	12.3 (312)	22.3 (566)	195 (88)
AU-7080	32.1 (815)	31.9 (810)	12.3 (312)	-	285 (129)

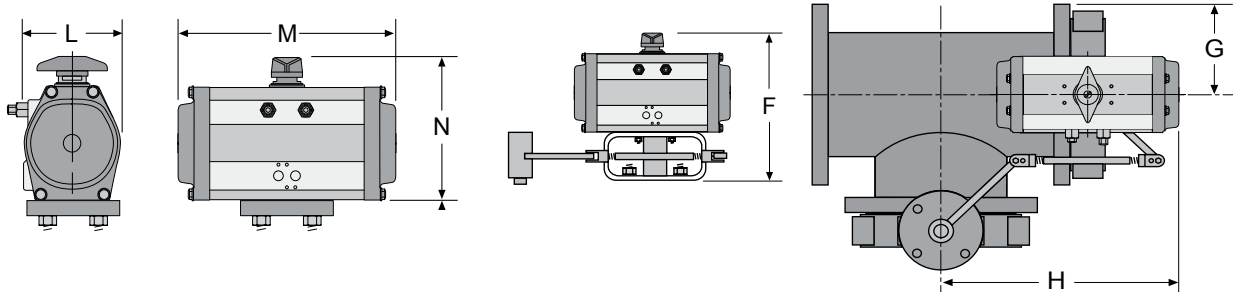


## 3L Series Butterfly Valves - Actuator Dimensions

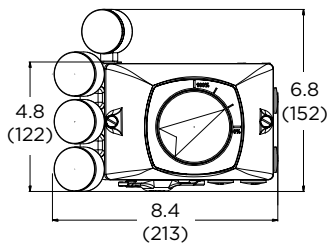
### PNEUMATIC ACTUATOR DIMENSIONS in. (mm)

Actuator Model Number	L	M	N	F	G	H	Weight lbs. (kg)	
							Double Acting	Spring Return
92/93-063	3.1 (79)	5.6 (142)	4.5 (114)	7.5 (191)	3.0 (76)	9.1 (231)	3.4 (1.5)	4.1 (1.9)
92/93-083	4.1 (104)	7.4 (188)	5.4 (137)	8.4 (213)	4.5 (114)	13.3 (338)	6.3 (3)	8.1 (4)
92/93-093	4.4 (112)	9.1 (231)	5.8 (147)	8.8 (224)	5.5 (140)	14.9 (378)	8.5 (4)	10.8 (5)
92/93-119	5.2 (132)	12.4 (325)	7.3 (185)	11.4 (290)	8.0 (203)	19.9 (505)	16.9 (8)	22.3 (10)
92/93-128	5.6 (142)	12.8 (734)	8.1 (2.6)	12.2 (310)	8.0 (203)	19.9 (505)	21.0 (10)	27.6 (13)
92/93-160	7.2 (183)	15.5 (394)	9.4 (239)	13.5 (343)	10.5 (267)	26.6 (676)	38.8 (18)	53.2 (24)
92/93-210	9.0 (229)	19.6 (498)	11.6 (295)	17.6 (447)	13.8 (351)	33.1 (841)	77.8 (35)	109.6 (50)
92/93-255	10.8 (274)	28.8 (732)	13.5 (343)	19.5 (495)	13.8 (351)	33.1 (841)	167.0 (76)	210.8 (96)
98-45E2-...	14.8 (376)	52.8 (1341)	9.7 (246)	-	-	-	183 (83)	355 (161)
98-14E3-...	21.3 (541)	72.6 (1844)	12.1 (307)	-	-	-	485 (220)	937 (425)
98-73E2-...	16.8 (427)	60.1 (1527)	11.8 (300)	-	-	-	254 (115)	547 (248)

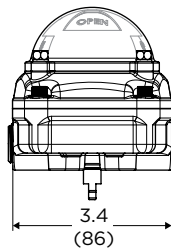
Allow 3.0" for Series 92/93 actuator removal and up to 12" for Series 98



**VP200 Pneumatic Positioner**



**Series 5A Switch Box**



**Series 6A Electro Pneumatic Positioner**

