



Series ES RESILIENT SEATED BUTTERFLY

Series ES

General Purpose

Manual and Automated Butterfly Valves

Lug or Wafer body, ANSI 125/150 flanges

- Bi-directional, bubble tight shutoff for full pressure differential
- Cartridge rubber seat design
- ASTM A395 DI & A351 CF8M body materials
- Multiple seat and disc materials available
- Square stems and ISO 5211 mounting pad for direct mounting
- Cover a wide range of industries from General Purpose to Chemical, Food and Beverage, Pulp and Paper, Waste Water applications and more.

STANDARDS

DESIGN	API 609, ASME B16.34, ASME B16.42, MSS SP-67
PRESSURE TESTING	API 598
END CONNECTION	ASME B16.5 Class 150, EN1092-2 PN 10/16, JIS B2220 10K, ASME B16.47 Series A Class 150
FACE TO FACE	API 609 (EN558-1 for sizes not provided in API 609)
MOUNTING	ISO 5211
MATERIAL CERTIFICATION	EN 10204-3.1 MTR
QUALITY ASSURANCE	ISO 9001:2015
MARKINGS	API 609, ASME B16.34, MSS SP-25

CERTIFICATIONS

CANADA REGISTRATION	CRN OC22405.5
ABS TYPE APPROVAL	



Page Reference: ES Series Resilient Butterfly Valves

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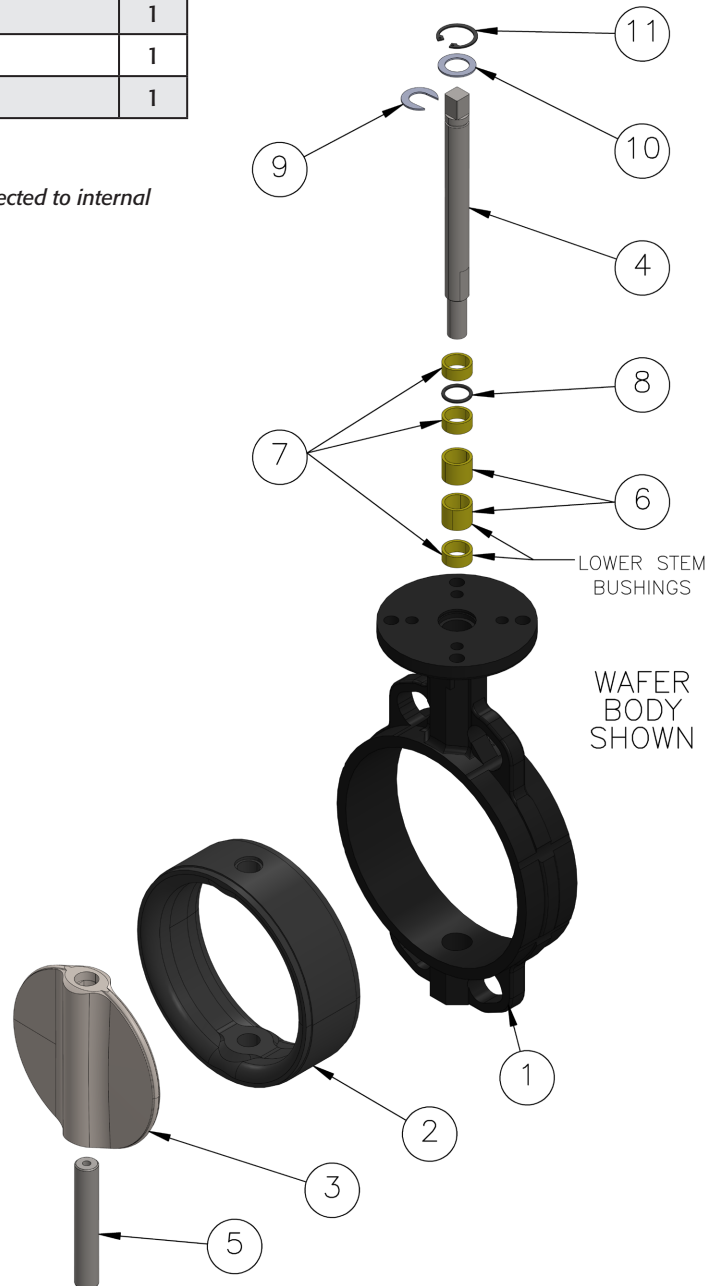
Bill of Materials (1-1/2"-14")

ITEM	DESCRIPTION	MATERIAL	QTY.
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	EPDM / Buna-N / (FKM / Viton®) / PTFE over EPDM / White Food Grade EPDM (up to 12" only)	1
3	Disc	A351 CF8M / Nylon Coated DI / Aluminum Bronze / Nickel Plated DI	1
4	Upper Stem*	ASTM A276 431 / 17-4 PH®	1
5	Lower Stem*	ASTM A276 431 / 17-4 PH®	1
6	Long Bushing	FRP #	2
7	Short Bushing	FRP #	3**
8	O-Ring	Buna-N #	1
9	Stem Retainer	ASTM A276 304	1
10	Thrust Washer	ASTM A276 304	1
11	Snap Ring	SK7 Steel	1

* 1-1/2"-3" valves have a one-piece stem.

**1-1/2" & 10" valves only have qty 2 (not in lower stem area).

Under normal operation, the O-Ring and bushings are not subjected to internal media & pressure.



Series ES RESILIENT SEATED BUTTERFLY

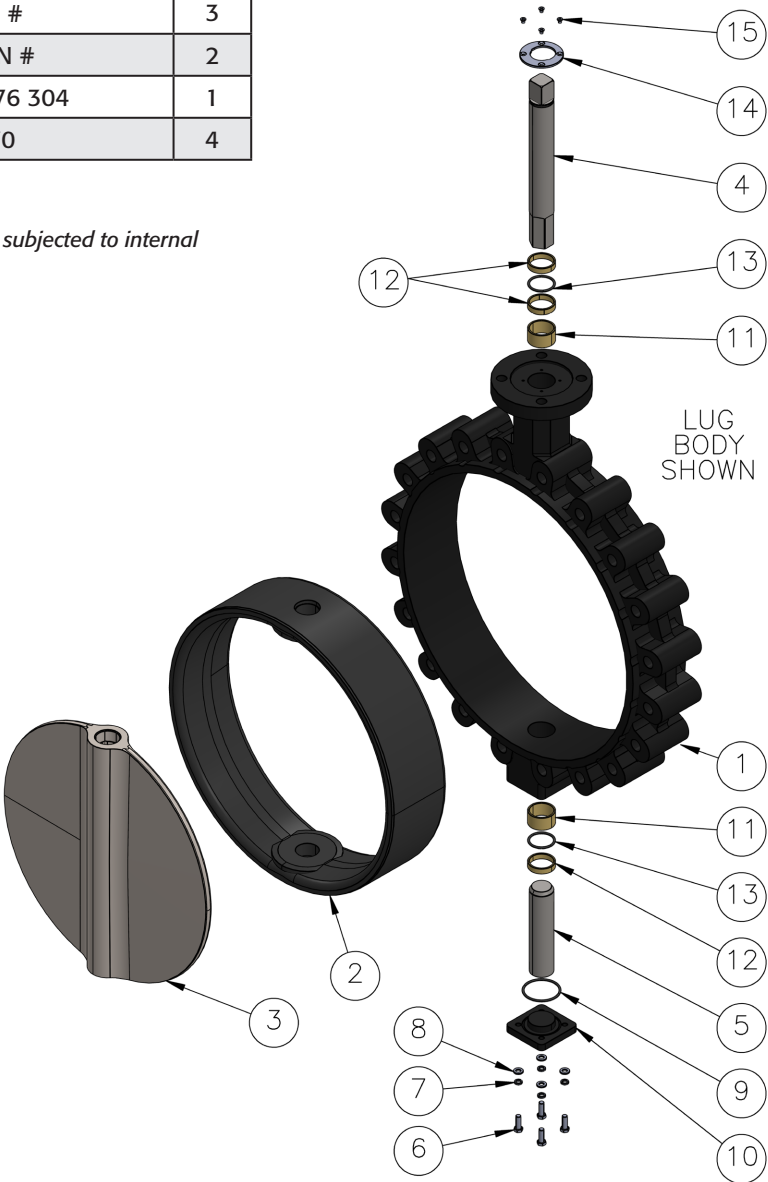
Bill of Materials (16"-24")

ITEM	DESCRIPTION	MATERIAL	QTY.
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	EPDM / Buna-N / (FKM / Viton®) / PTFE over EPDM	1
3	Disc	A351 CF8M / Nylon Coated DI / Aluminum Bronze / Nickel Plated DI	1
4	Upper Stem	ASTM A276 431 / 17-4 PH®	1
5	Lower Stem	ASTM A276 431 / 17-4 PH®	1
6	Bottom Cover Bolt	A2-70	2/4*
7	Bottom Cover Lock Washer	ASTM A276 304	2/4*
8	Bottom Cover Flat Washer	ASTM A276 304	2/4*
9	Bottom Cover O-Ring	Buna-N #	1
10	Bottom Cover	ASTM A395 / A351 CF8M	1
11	Long Bushing	Brass #	2
12	Short Bushing	Brass #	3
13	O-Ring	Buna-N #	2
14	Stem Retainer	ASTM A276 304	1
15	Stem Retainer Bolt	A2-70	4

* Wafer: 16"-18" - qty 2, 20"-24" - qty 4.

*Lug: 16"-24" - qty 4.

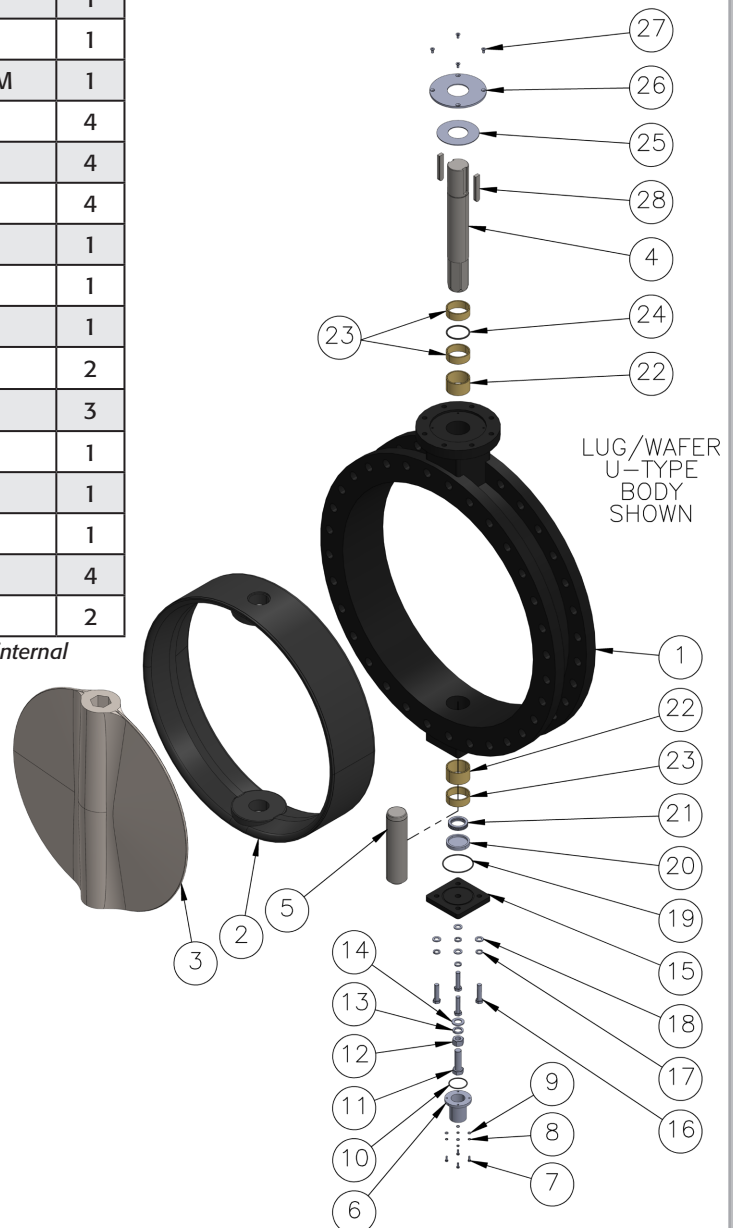
Under normal operation, the O-Ring and bushings are not subjected to internal media & pressure.



Bill of Materials (28"-48")

ITEM	DESCRIPTION	MATERIAL	QTY.
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	EPDM / Buna-N / (FKM / Viton®)	1
3	Disc	A351 CF8M / Nylon Coated DI / Aluminum Bronze / Nickel Plated DI	1
4	Upper Stem	ASTM A276 431 / 17-4 PH®	1
5	Lower Stem	ASTM A276 431 / 17-4 PH®	1
6	Adjust Bolt Cap	ASTM A276 304	1
7	Adjust Bolt Cap Bolt	A2-70	4
8	Adjust Bolt Cap Lock Washer	ASTM A276 304	4
9	Adjust Bolt Cap Flat Washer	ASTM A276 304	4
10	Adjust Bolt Cap O-Ring	Buna-N #	1
11	Adjust Bolt	A2-70	1
12	Adjust Bolt Nut	A2-70	1
13	Adjust Bolt Lock Washer	ASTM A276 304	1
14	Adjust Bolt Flat Washer	ASTM A276 304	1
15	Bottom Cover	ASTM A395 / A351 CF8M	1
16	Bottom Cover Bolt	A2-70	4
17	Bottom Cover Lock Washer	ASTM A276 304	4
18	Bottom Cover Flat Washer	ASTM A276 304	4
19	Bottom Cover O-Ring	Buna-N #	1
20	Adjust Bearing Housing	ASTM A276 304	1
21	Thrust Bearing	ASTM A295 E52100	1
22	Long Bushing	Brass #	2
23	Short Bushing	Brass #	3
24	O-Ring	Buna-N #	1
25	Stem Retainer	ASTM A276 304	1
26	Gland	ASTM A276 304	1
27	Gland Bolt	A2-70	4
28	Key	ASTM A29 1045	2

Under normal operation, the O-Ring and bushings are not subjected to internal media & pressure.



Series ES

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ES Series Butterfly Valve Cv Values (US-GPM @ 1 Δ P) - Rated Flow Coefficients

Disc Angle

Valve Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
1-1/2"	0.05	3	7	11	19	29	44	57	70
2"	0.1	5	12	24	45	64	90	125	135
2-1/2"	1	8	20	37	65	98	144	204	220
3"	2	12	22	39	70	116	183	275	302
4"	3	17	36	78	139	230	364	546	600
5"	5	29	61	133	237	392	620	930	1,022
6"	8	45	95	205	366	605	958	1,437	1,579
8"	13	89	188	408	727	1,202	1,903	2,854	3,136
10"	21	151	320	694	1,237	2,047	3,240	4,859	5,340
12"	30	234	495	1,072	1,911	3,162	5,005	7,507	8,250
14"	40	338	715	1,549	2,761	4,568	7,230	10,844	11,917
16"	50	464	983	2,130	3,797	6,282	9,942	14,913	16,388
18"	72	615	1,302	2,822	5,028	8,320	13,168	19,752	21,705
20"	86	971	1,674	3,628	6,465	10,698	16,931	25,396	27,908
24"	256	1,222	2,587	5,605	9,989	16,528	26,157	39,236	43,116
28"	289	1,633	3,522	7,630	12,599	20,036	30,482	46,899	58,696
30"	325	2,086	4,559	8,415	13,159	20,289	31,250	44,520	65,150
32"	365	2,387	4,791	8,736	13,786	20,613	31,395	48,117	68,250
36"	450	3,021	6,063	11,055	17,449	26,086	39,731	60,895	86,375
40"	512	4,183	8,395	15,307	24,159	36,166	55,084	84,425	119,750
48"	598	4,651	10,365	17,010	27,242	43,853	70,431	108,968	132,888
F _L	0.79	0.81	0.79	0.79	0.75	0.71	0.66	0.6	0.53
x _T	0.5	0.53	0.52	0.49	0.46	0.4	0.34	0.27	0.23
F _d	0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7

Approximate Operating Torque (In·lbs)

Valve Size	Lubricated				Non-Lubricated				PTFE Seat		
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID
1-1/2"	90	95	106	116	146	153	165	170	190	199	215
2"	105	115	126	140	175	184	198	205	228	239	257
2-1/2"	112	134	138	154	219	235	265	285	285	306	345
3"	170	176	201	221	333	363	365	387	433	472	475
4"	275	303	345	365	506	585	610	635	658	761	793
5"	433	482	532	556	755	830	889	899	982	1,079	1,156
6"	680	754	886	1,065	1,189	1,317	1,465	1,512	1,546	1,712	1,905
8"	1,215	1,365	1,592	1,947	2,089	2,398	2,636	2,730	2,716	3,117	3,427
10"	1,903	2,204	2,532	2,920	3,263	3,864	4,312	4,642	4,242	5,023	5,606
12"	2,784	3,285	3,813	4,602	4,535	5,454	6,185	6,480	5,896	7,090	8,041
14"	3,658	4,212	4,872	-	5,366	6,218	7,409	-	6,976	8,083	9,632
16"	4,516	5,914	6,855	-	6,655	8,390	10,120	-	8,652	10,907	13,156
18"	5,832	7,758	9,524	-	8,679	11,215	13,450	-	11,283	14,580	17,485
20"	7,632	10,620	13,650	-	11,226	14,890	18,560	-	14,594	19,357	24,128
24"	12,340	15,340	19,870	-	17,980	22,290	28,160	-	23,374	28,977	36,608
28"	20,745	29,636	32,818	-	31,117	44,454	49,227	-	-	-	-
30"	21,636	30,909	33,920	-	32,454	46,363	50,880	-	-	-	-
32"	26,090	37,272	49,090	-	39,135	55,908	73,635	-	-	-	-
36"	42,000	60,000	68,181	-	63,000	90,000	102,271	-	-	-	-
40"	51,545	73,636	89,090	-	77,317	110,454	133,635	-	-	-	-
48"	89,090	127,272	145,454	-	133,635	190,908	218,181	-	-	-	-

Seat Temperature Ratings

Seat	Temperature °F	1-1/2" - 12" Pressure (PSIG)	14" - 48" Pressure (PSIG)
EPDM	-20	225	150
	100	225	150
	200	225	150
	250	75	75
	300	50	50
Buna-N	0	225	150
	100	225	150
	180	225	150
	200	75	75
	220	50	50
FKM / Viton®	-10	225	150
	100	225	150
	250	225	150
	325	100	100
	360	50	50
PTFE over EPDM*	0	150	90
	75	150	90
	185	150	90
	200	75	75
	300	25	25
Food Grade EPDM	-20	225	-
	100	225	-
	200	225	-
	250	75	-

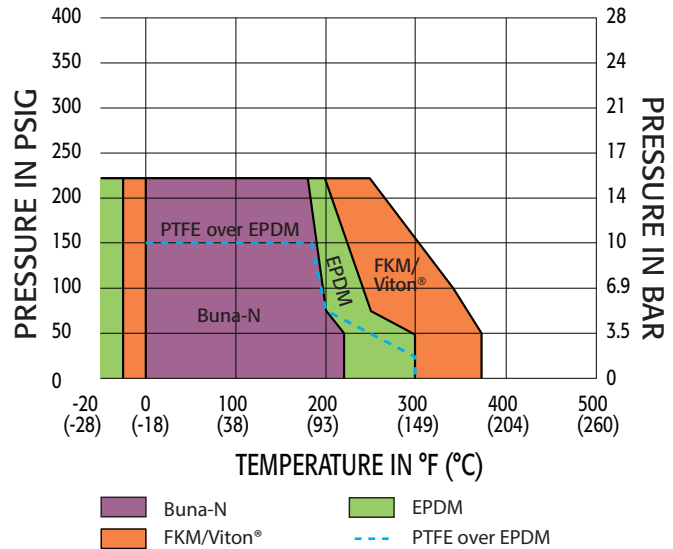
*PTFE only up to 24".

Nylon Coated DI disc limited to 300°F.

Torque (In·lbs) - Undercut Disc

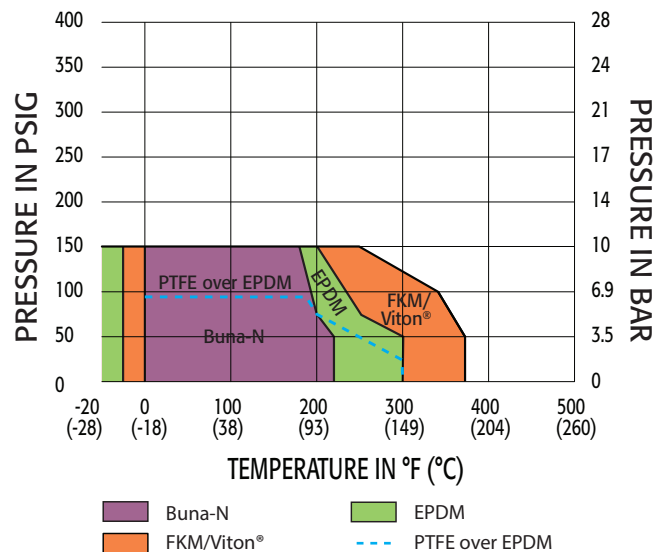
Valve Size	75 PSID		
	Lubricated	Non-Lubricated	PTFE Seat
6"	426	749	974
8"	772	1,328	1,726
10"	1,231	2,092	2,720
12"	1,820	2,966	3,856
14"	2,699	4,588	5,964
16"	3,938	6,100	7,930
18"	5,480	8,460	10,998
20"	7,250	10,500	13,650
24"	11,327	16,990	22,087

Pressure vs. Temperature Chart for ES Butterfly Valves 1-1/2"-12"



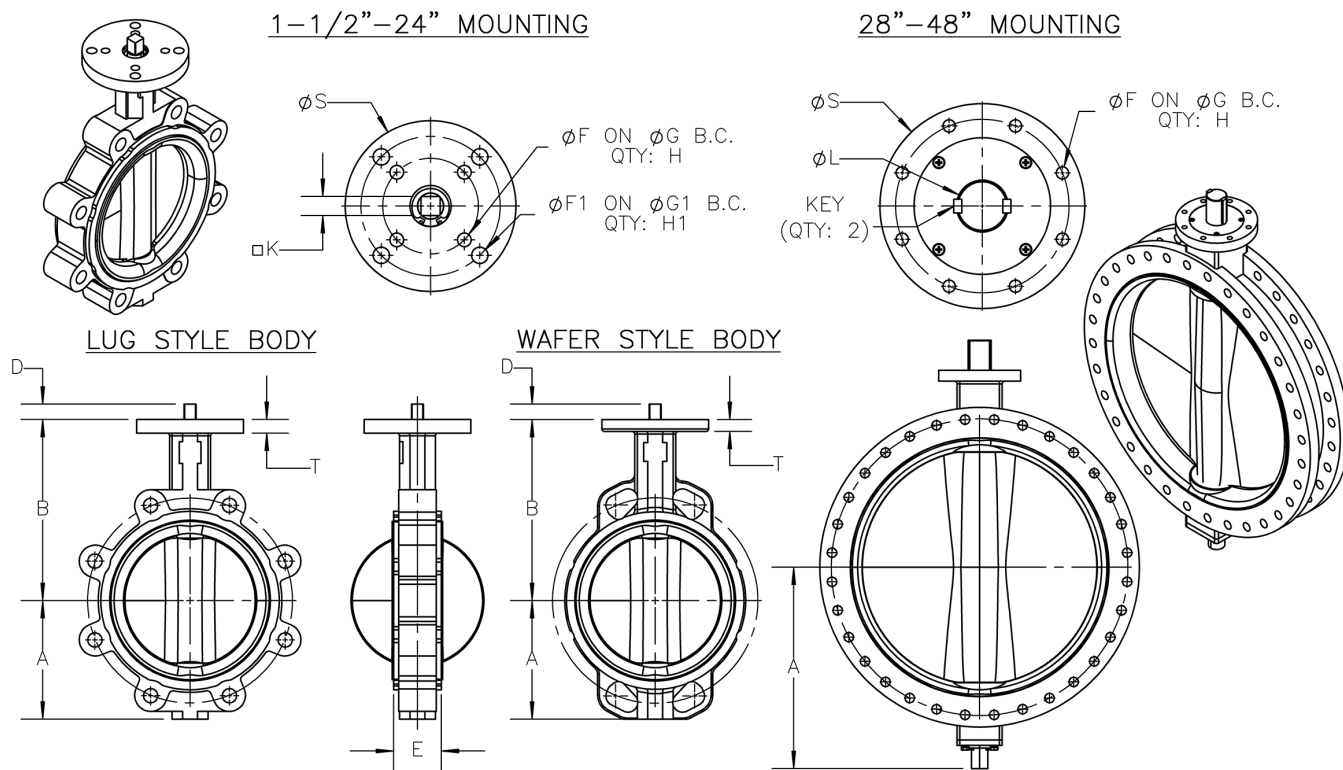
Note: Food Grade EPDM follows the EPDM curve but stops at 250°F.

Pressure vs. Temperature Chart for ES Butterfly Valves 14"-48"



Series ES RESILIENT SEATED BUTTERFLY

Dimensions | 1-1/2"-48"



Valve Overall & Mounting Pad Dimensions

Valve Size	A	B	D	E	ØF	ØG	H	ØF1	ØG1	H1	K	ØL	Key (mm)	ØS	T	Lug (lbs)	Wafer (lbs)
1-1/2"	2.56	4.72	0.63	1.30	0.39	2.756 (F07)	4	-	-	-	0.354	-	-	3.54	0.47	4	4
2"	3.15	5.51	0.63	1.69	0.39	2.756 (F07)	4	-	-	-	0.354	-	-	3.54	0.55	7	6
2-1/2"	3.50	5.91	0.63	1.81	0.39	2.756 (F07)	4	-	-	-	0.354	-	-	3.54	0.55	7	7
3"	3.74	6.22	0.63	1.81	0.39	2.756 (F07)	4	-	-	-	0.354	-	-	3.54	0.55	9	7
4"	4.49	6.93	0.63	2.05	0.39	2.756 (F07)	4	-	-	-	0.433	-	-	3.54	0.55	16	10
5"	5.00	7.48	0.71	2.20	0.39	2.756 (F07)	4	-	-	-	0.551	-	-	3.54	0.55	21	14
6"	5.47	8.35	0.71	2.20	0.39	2.756 (F07)	4	0.47	4.016 (F10)	4	0.551	-	-	4.92	0.55	25	17
8"	6.85	9.29	0.71	2.36	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.669	-	-	6.89	0.59	36	27
10"	7.99	10.43	0.94	2.68	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.866	-	-	6.89	0.67	57	40
12"	9.53	12.01	0.94	3.07	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.866	-	-	6.89	0.67	88	62
14"	10.51	14.49	0.94	3.07	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.866	-	-	6.89	0.79	146	79
16"	13.20	15.75	1.42	4.02	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	1.063	-	-	8.27	0.87	216	137
18"	14.42	16.61	1.42	4.49	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	1.063	-	-	8.27	0.98	304	166
20"	15.28	17.91 #	1.42	5.00	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	1.417	-	-	8.27	1.06	353	220
24"	18.83	22.24	1.81	6.06	0.87	6.496 (F16)	4	-	-	-	1.417	-	-	8.27	1.26	507	414
28"	24.25	24.57	4.33	6.50	0.71	10.000 (F25)	8	-	-	-	-	2.494	18x11	11.81	1.38	728	728
30"	25.39	25.59	4.33	6.50	0.71	10.000 (F25)	8	-	-	-	-	2.494	18x11	11.81	1.38	860	860
32"	26.97	26.38	4.33	7.48	0.71	10.000 (F25)	8	-	-	-	-	2.494	18x11	11.81	1.38	902	902
36"	29.13	28.35	4.33	7.87	0.71	10.000 (F25)	8	-	-	-	-	2.953	20x12	11.81	1.77	1082	1082
40"	32.28	31.69	4.33	8.50	0.71	10.000 (F25)	8	-	-	-	-	3.346	22x14	11.81	1.77	1642	1642
48"	38.54	37.40	5.12	10.87	0.87	11.732 (F30)	8	-	-	-	-	4.134	28x16	13.78	1.77	2571	2571

Note:

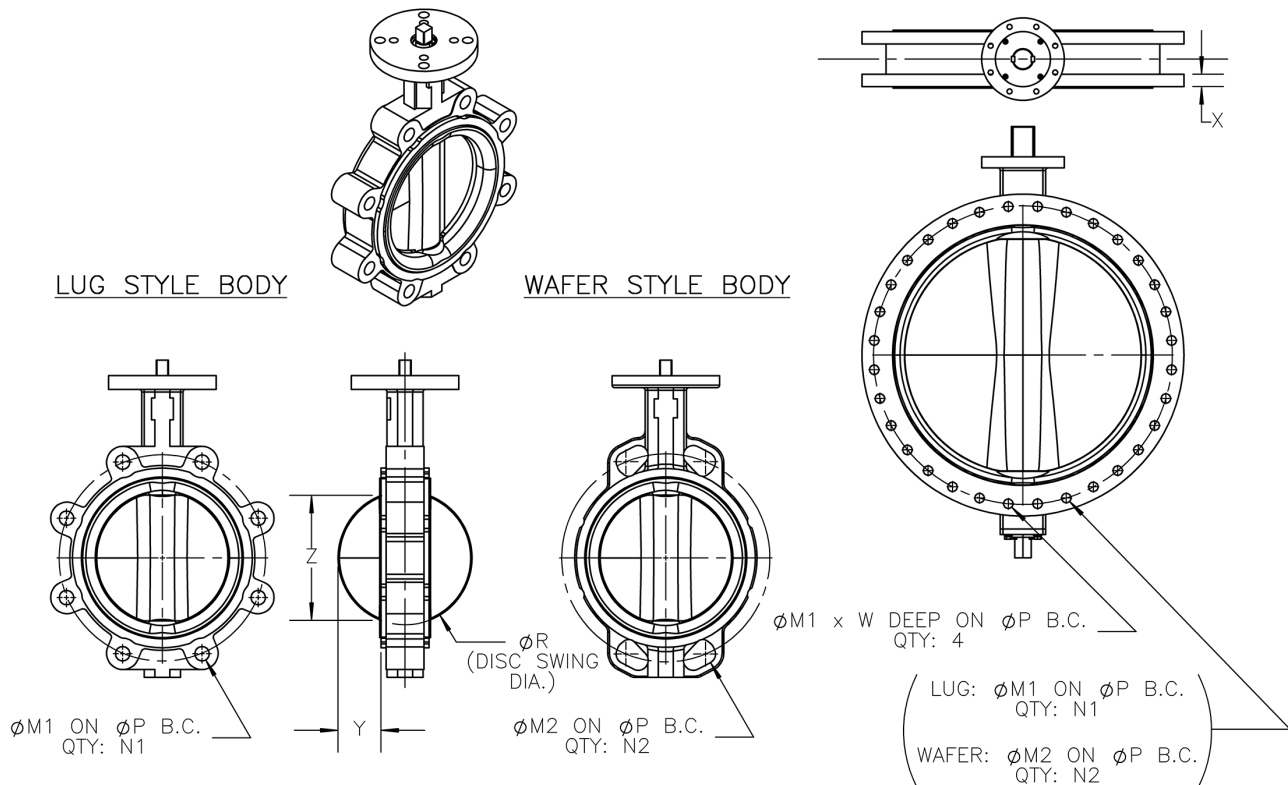
- Unless otherwise specified, all dimensions are in inches.
- # 20" Wafer: B - 17.32 (dimension in table applies to 20" lug valve).
- Face-To-Face dimensions (E) are across the body flats (metal-to-metal). Approximately 1/16" to 1/8" of the rubber seat protrudes from each side for flange sealing.

A-T Controls reserves the right to change product designs and technical/dimensional specifications without notice. See website for updates.

Dimensions | 1-1/2"-48"

1-1/2"-24" LUG & WAFER BODY

28"-48" U-TYPE BODY



Valve End Connection & Additional Dimensions

Valve Size	ØM1	N1	ØM2				N2				ØP				ØR	W	X	Y	Z
			Class 150	PN 10 (mm)	PN 16 (mm)	JIS 10K (mm)	Class 150	PN 10	PN 16	JIS 10K	Class 150	PN 10 (mm)	PN 16 (mm)	JIS 10K (mm)					
1-1/2"	1/2 - 13	4	0.63	19	19	19	4	4	4	4	3.87	110	110	105	1.69	-	-	0.20	1.09
2"	5/8 - 11	4	0.79	19	19	19	4	4	4	4	4.75	125	125	120	2.08	-	-	0.19	1.21
2-1/2"	5/8 - 11	4	0.79	19	19	19	4	4	4	4	5.50	145	145	140	2.54	-	-	0.36	1.78
3"	5/8 - 11	4	0.79	19	19	19	4	4	4	4	6.00	160	160	150	3.11	-	-	0.65	2.53
4"	5/8 - 11	8	0.79	19	19	19	4	4	4	4	7.50	180	180	175	4.11	-	-	1.03	3.56
5"	3/4 - 10	8	0.91	19	19	23	4	4	4	4	8.50	210	210	210	4.87	-	-	1.33	4.35
6"	3/4 - 10	8	0.91	23	23	23	4	4	4	4	9.50	240	240	240	6.14	-	-	1.97	5.73
8"	3/4 - 10	8	0.91	23	23	23	4	4	4	4	11.75	295	295	290	7.98	-	-	2.81	7.63
10"	7/8 - 9	12	1.02	23	28	25	4	4	4	4	14.25	350	355	355	9.87	-	-	3.60	9.50
12"	7/8 - 9	12	1.02	23	28	25	4	4	4	4	17.00	400	410	400	11.88	-	-	4.41	11.48
14"	1 - 8	12	1.14	-	-	-	4	-	-	-	18.75	-	-	-	13.15	-	-	5.04	12.79
16"	1 - 8	16	1.14	-	-	-	4	-	-	-	21.25	-	-	-	15.39	-	-	5.69	14.86
18"	1-1/8 - 7	16	1.26	-	-	-	4	-	-	-	22.75	-	-	-	17.36	-	-	6.44	16.77
20"	1-1/8 - 7	20	1.26	-	-	-	4	-	-	-	25.00	-	-	-	19.41	-	-	7.20	18.75
24"	1-1/4 - 7	20	1.38	-	-	-	20	-	-	-	29.50	-	-	-	23.39	-	-	8.66	22.59
28"	1-1/4 - 7	28**	1.38	-	-	-	24*	-	-	-	34.00	-	-	-	27.36	1.26	1.44	10.43	26.58
30"	1-1/4 - 7	28**	1.38	-	-	-	24*	-	-	-	36.00	-	-	-	29.33	1.26	1.44	11.42	28.60
32"	1-1/2 - 6	28**	1.65	-	-	-	24*	-	-	-	38.50	-	-	-	31.34	1.54	1.57	11.93	30.43
36"	1-1/2 - 6	32**	1.65	-	-	-	28*	-	-	-	42.75	-	-	-	34.06	1.54	1.71	13.09	33.13
40"	1-1/2 - 6	36**	1.65	-	-	-	32*	-	-	-	47.25	-	-	-	37.99	1.54	1.85	14.74	37.03
48"	1-1/2 - 6	44**	1.65	-	-	-	40*	-	-	-	56.00	-	-	-	45.67	1.54	2.13	17.40	44.36

Note:

- Unless otherwise specified, all dimensions are in inches.
- Nominal radial clearances given in Table D.1 in Annex D of API 609 Eighth Edition, February 2016 shall be followed for proper installation (disc chord length dimension Z and disc projection dimension Y).

End Connections

Wafer: • 1-1/2" - 12" conform to ASME B16.5 Class 150, EN1092-2 PN10/16, and JIS B2220 10K. • 14" - 24" conform to ASME B16.5 Class 150. • 28"-48" conform to ASME B16.47 Series A Class 150.

Lug: • 1-1/2" - 24" conform to ASME B16.5 Class 150. • 28"-48" conform to ASME B16.47 Series A Class 150.

• *28" - 48" Wafer valves have 4 additional ØM1 x W deep threaded holes at the top and bottom, all others are clearance holes all the way through the u-type flange. N2 represents the clearance hole quantity (quantity 4 threaded holes not included).

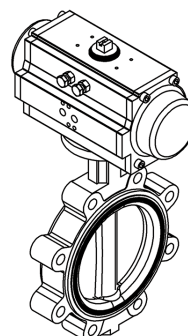
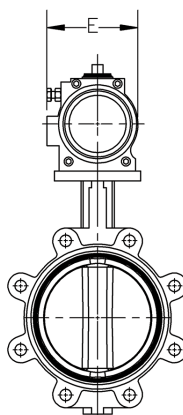
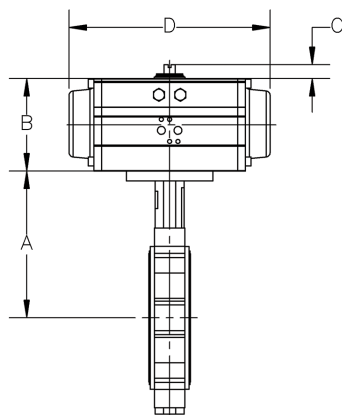
• **28" - 48" Lug valves have 4 ØM1 x W deep threaded holes at the top and bottom, all others are threaded all the way through the u-type flange. N1 represents the total hole quantity.

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Series ES RESILIENT SEATED BUTTERFLY

Valve Dimensions

Valve Size	A
1-1/2"	4.72
2"	5.51
2-1/2"	5.91
3"	6.22
4"	6.93
5"	7.48
6"	8.35
8"	9.29
10"	10.43
12"	12.01



Dimensions Double Acting Actuator

Actuator Size	B	C	D	E
3R40DA	3.47	0.787	7.60	3.35
3R80DA	4.30	0.787	9.29	4.18
3R130DA	4.61	0.787	11.02	4.27
3R200DA	5.28	0.787	11.50	4.78
3R300DA	6.14	0.787	13.39	5.59
3R500DA	6.81	1.181	15.35	5.98
3R700DA	7.36	1.181	16.89	6.38
3R850DA	7.82	1.181	19.37	6.85
3R1200DA	9.06	1.181	22.36	8.11

For more actuator information, please see the complete actuator catalog.

Dimensions Spring Return Actuator

Actuator Size	B	C	D	E
3R40SR	3.47	0.787	7.60	3.35
3R80SR	4.30	0.787	9.29	4.18
3R130SR	4.61	0.787	11.02	4.27
3R200SR	5.28	0.787	11.50	4.78
3R300SR	6.14	0.787	13.39	5.59
3R500SR	6.81	1.181	15.35	5.98
3R700SR	7.36	1.181	16.89	6.38
3R850SR	7.82	1.181	19.37	6.85
3R1200SR	9.06	1.181	22.36	8.11
3R1750SR	10.08	1.181	23.54	8.90
3R2400SR	11.46	1.181	24.80	10.24

For more actuator information, please see the complete actuator catalog.

Pneumatic Double Acting Actuator Sizing

ES Valve Size	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
1-1/2"	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA
2"	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA
2-1/2"	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA
3"	3R40DA	3R40DA	3R40DA	3R40DA	3R80DA	3R80DA	3R80DA	3R80DA
4"	3R40DA	3R80DA	3R80DA	3R80DA	3R80DA	3R80DA	3R80DA	3R80DA
5"	3R80DA	3R80DA	3R80DA	3R80DA	3R130DA	3R130DA	3R130DA	3R130DA
6"	3R130DA	3R130DA	3R130DA	3R200DA	3R200DA	3R200DA	3R300DA	3R300DA
8"	3R200DA	3R300DA	3R300DA	3R300DA	3R300DA	3R500DA	3R500DA	3R500DA
10"	3R300DA	3R500DA	3R500DA	3R500DA	3R500DA	3R700DA	3R850DA	3R850DA
12"	3R500DA	3R500DA	3R700DA	3R850DA	3R850DA	3R850DA	3R1200DA	3R1200DA

Pneumatic Double Acting actuators above are sized with 80 PSIG supply.

Consult factory for actuator sizing on valves larger than 12".

Automated sizing is not applicable to PTFE seats. Please see the PTFE seat torques in the catalog torque table.

Pneumatic Spring Return Actuator Sizing

ES Valve Size	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
1-1/2"	3R40SR	3R40SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR
2"	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR
2-1/2"	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R130SR	3R130SR	3R130SR
3"	3R80SR	3R80SR	3R80SR	3R80SR	3R200SR	3R200SR	3R200SR	3R200SR
4"	3R130SR	3R130SR	3R200SR	3R200SR	3R300SR	3R300SR	3R300SR	3R300SR
5"	3R200SR	3R300SR	3R300SR	3R300SR	3R300SR	3R300SR	3R500SR **	3R500SR **
6"	3R300SR	3R300SR	3R500SR	3R500SR	3R500SR	3R700SR	3R700SR	3R700SR
8"	3R500SR	3R700SR	3R850SR	3R850SR	3R1200SR	3R1200SR	3R1200SR	3R1200SR
10"	3R850SR	3R1200SR	3R1200SR	3R1750SR	3R1750SR	3R2400SR **	3R2400SR **	3R2400SR **
12"	3R1200SR	3R1750SR	3R1750SR	3R2400SR **	3R2400SR **	3R2400SR **	3R2400SR **	3R2400SR **

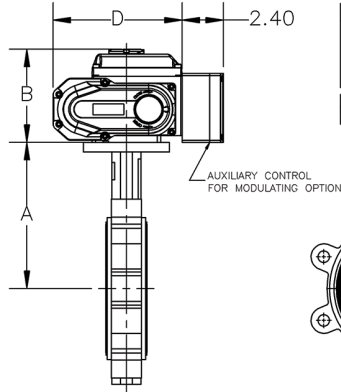
** Not a direct mount. The assembly uses a bracket & coupler.

Pneumatic Spring Return Actuators above are sized with 5 springs per side, fail-close.

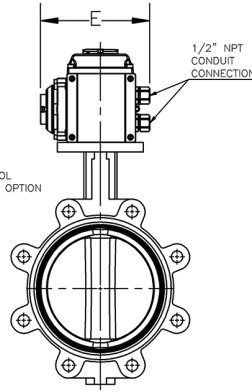
Consult Factory for actuator sizing on valves larger than 12".

Automated sizing is not applicable to PTFE seats. Please see the PTFE seat torques in the catalog torque table.

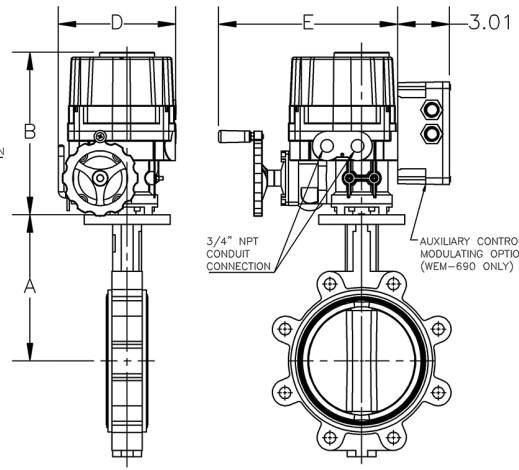
RESILIENT SEATED BUTTERFLY **Series ES**



KE SERIES ELECTRIC



WE SERIES ELECTRIC



Valve Dimensions

Valve Size	A
1-1/2"	4.72
2"	5.51
2-1/2"	5.91
3"	6.22
4"	6.93
5"	7.48
6"	8.35
8"	9.29
10"	10.43
12"	12.01

Dimensions Electric Actuator

Actuator Size	B	D	E
KE-440	5.14	6.74	5.44
KE-880	5.31	7.69	6.24
WE-690	9.25	6.69	10.16
WE-1350	10.55	9.02	13.31
WE-1700	10.55	9.02	13.31
WE-2640	11.42	10.2	14.49
WE-4400	11.97	10.2	14.49
WE-5200	11.97	10.2	14.49
WE-6900	12.99	11.69	16.14
WE-10500	12.99	11.69	16.14

For more actuator information, please see the complete actuator catalog

Electric (On/Off) Actuator Sizing

ES Valve Size	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
1-1/2"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
2"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
2-1/2"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
3"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
4"	KE-440	KE-440	KE-440	KE-440	KE-880	KE-880	KE-880	KE-880
5"	WE-690	WE-690	WE-690	WE-690	WE-1350	WE-1350	WE-1350	WE-1350
6"	WE-1350	WE-1350	WE-1350	WE-1350	WE-1350	WE-1700	WE-1700	WE-1700
8"	WE-1350	WE-1700	WE-1700	WE-2640	WE-2640	WE-2640	WE-4400	WE-4400
10"	WE-2640	WE-2640	WE-4400	WE-4400	WE-4400	WE-4400	WE-5200	WE-5200
12"	WE-4400	WE-4400	WE-4400	WE-5200	WE-5200	WE-6900	WE-6900	WE-6900

Consult Factory for actuator sizing on valves larger than 12"

Automated sizing is not applicable to PTFE seats. Please see the PTFE seat torques in the catalog torque table.

Electric (Modulating) Actuator Sizing

ES Valve Size	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
1-1/2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
2-1/2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
3"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-880	KEM-880	KEM-880
4"	KEM-440	KEM-440	KEM-440	KEM-880	KEM-880	KEM-880	KEM-880	KEM-880
5"	WEM-690	WEM-690	WEM-690	WEM-1350	WEM-1350	WEM-1350	WEM-1350	WEM-1350
6"	WEM-1350	WEM-1350	WEM-1350	WEM-1350	WEM-1700	WEM-1700	WEM-2640	WEM-2640
8"	WEM-1700	WEM-2640	WEM-2640	WEM-2640	WEM-2640	WEM-4400	WEM-4400	WEM-4400
10"	WEM-2640	WEM-4400	WEM-4400	WEM-4400	WEM-4400	WEM-5200	WEM-6900	WEM-6900
12"	WEM-4400	WEM-4400	WEM-5200	WEM-6900	WEM-6900	WEM-6900	WEM-10500	WEM-10500

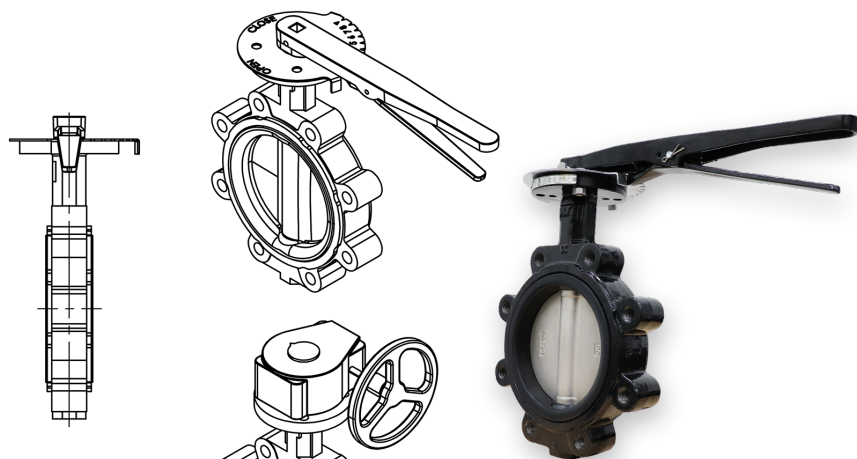
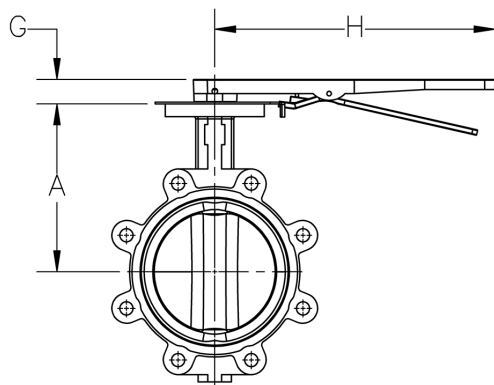
Consult Factory for actuator sizing on valves larger than 12"

Automated sizing is not applicable to PTFE seats. Please see the PTFE seat torques in the catalog torque table.

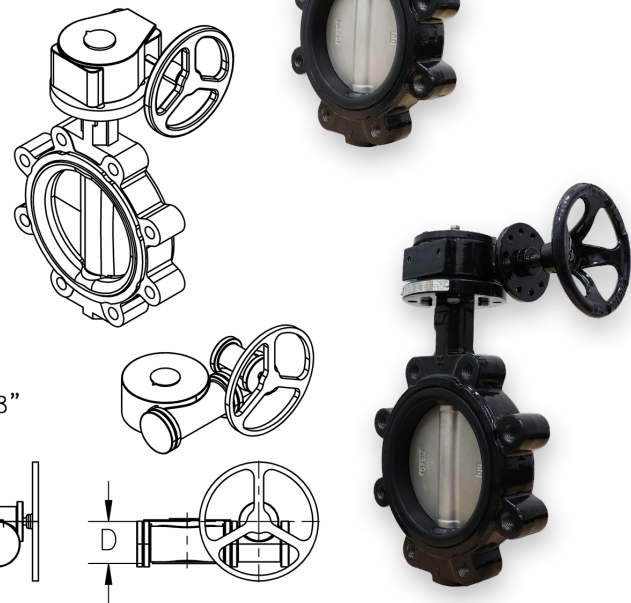
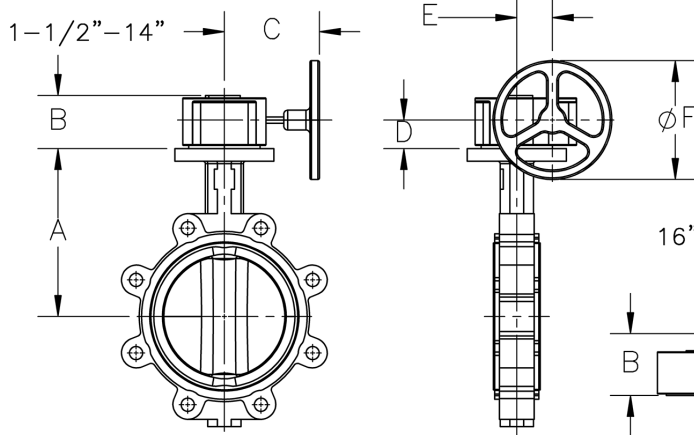
Series ES RESILIENT SEATED BUTTERFLY

Handle and Gear Operator Sizing

HANDLE (UP TO 12")



GEAR OPERATOR



Gear and Handle Dimensions

Valve Size	A	GEAR OPERATOR					HANDLE	
		B	C	D	E	ØF	G	H
1-1/2"	4.72	2.64	4.74	1.42	1.78	6.00	1.05	10.24
2"	5.51							
2-1/2"	5.91							
3"	6.22						1.05	10.24
4"	6.93						1.05	10.24
5"	7.48						1.25	14.17
6"	8.35	3.27	7.09	1.81	2.48	12.00	1.50	22.00
8"	9.29						-	-
10"	10.43						-	-
12"	12.01						-	-
14"	14.49						-	-
16"	15.75	6.14	7.80	4.17	7.13	12.00	-	-
18"	16.61						-	-
20"	17.91 #						-	-
24"	22.24						-	-
28"	24.57						-	-
30"	25.59	8.98	12.99	6.42	8.78	18.00	-	-
32"	26.38						-	-
36"	28.35						-	-
40"	31.69	8.98	15.06	6.42	9.37	18.00	-	-
48"	37.40						-	-

20" Wafer: A - 17.32 (dimension in table applies to 20" lug valve).

Part Number Matrix for

A-T Controls **ES Series Resilient Seated** Butterfly Valves

1 Valve Series			
ES	A-T Cartridge Seat Butterfly Valve		
2 Body Material			
Blank	A351 CF8M (No Designation)		
P	A395 Ductile Iron (Standard)		
3 End Connection			
L1	125/150# Lug		
W1	125/150# Wafer		
Note: 28"-48" utilize a u-type body. See valve drawings & dimensions for more information.			
4 Valve Size			
0150	1-1/2"	1600	16"
0200	2"	1800	18"
0250	2-1/2"	2000	20"
0300	3"	2400	24"
0400	4"	2800	28"
0500	5"	3000	30"
0600	6"	3200	32"
0800	8"	3600	36"
1000	10"	4000	40"
1200	12"	4800	48"
1400	14"		
5 Seat Material/Style			
B	Buna-N		
E	EPDM		
V	FKM / Viton®		
P	PTFE over EPDM (up to 24" only)		
F	White Food Grade (FDA compliant) EPDM (up to 12" only)		
6 Disc Material/Style			
N	Nylon Coated Ductile Iron		
S	A351 CF8M		
B	Aluminum Bronze		
D	Nickel Plated Ductile Iron		
W	Polished A351 CF8M		
U	Undercut Aluminum Bronze (6"-24")		
Y	Undercut Polished A351 CF8M (6"-24")		
Z	Undercut A351 CF8M (6"-24")		
7 Stem Bushing			
F	FRP (Standard up to 14")		
B	Brass (Standard 16" & Larger)		
8 Operator Designation			
X	Bare Stem		
S	Stainless Steel 10 Point Handle (up to 12")		
L	Locking Handle -10 Position (up to 12")		
I	Infinite Adjustment Handle (up to 12")		
G	Gear Operator		
9 Stem			
F	431 SST (standard)		
A	17-4 PH®		

How To ORDER MANUAL RESILIENT SEATED BUTTERFLY VALVES

1 2 - 3 - 4 - 5 6 7 - 8 9
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 ESP - L1 - 0400 - E S F - X F

How To ORDER AUTOMATED RESILIENT SEATED BUTTERFLY VALVES

1 2 - 3 - 4 - 5 6 7 - 89 / actuator size - options
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 ES P - W1 - 0400 - B N F - X F / 3RJS - XX
 (see Actuator Size Legend)

EXAMPLE:

ES-L1-0400-ESF-XF

4" ES Series RSBFV, Class 125/150 Lug Style, A351 CF8M Body, EPDM Seat, A351 CF8M Disc, FRP Stem Bushing, 431 SST Stem, Bare Stem.

ESP-W1-0400-BNF-LF

4" ES Series RSBFV, Class 125/150 Wafer Style, A395 Ductile Iron Body, Buna-N Seat, Nylon Coated Ductile Iron Disc, FRP Stem Bushings, 431 SST Stem, Locking Handle -10 Position.





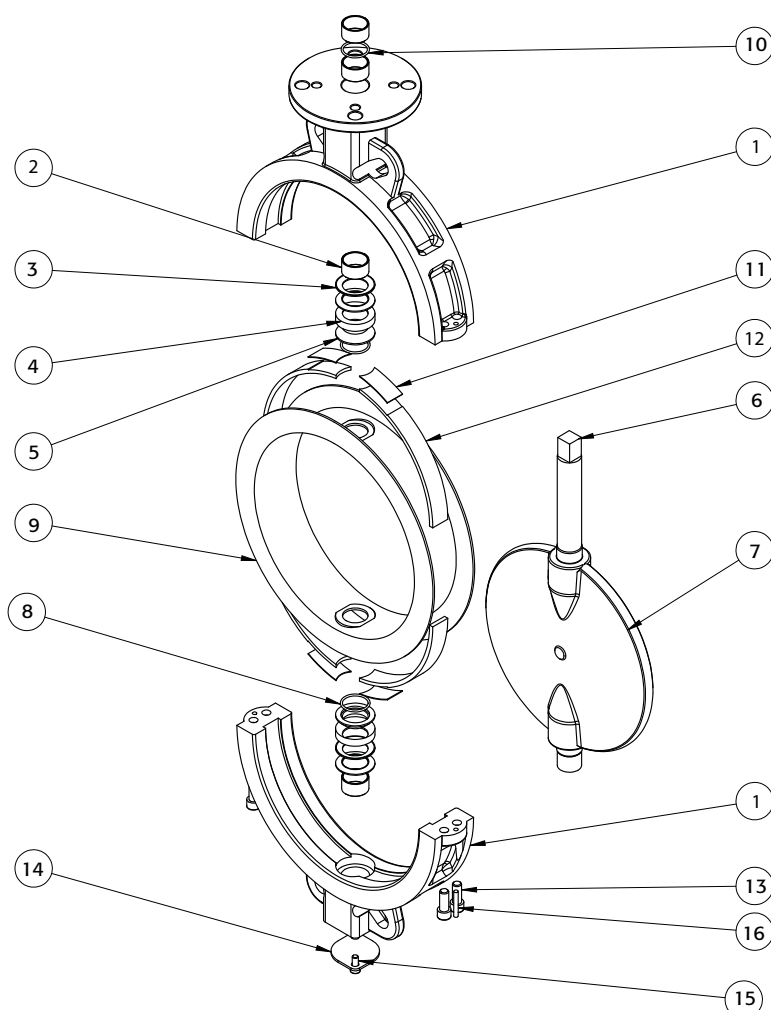
AS Series butterfly valves are PFA lined (encapsulated) for superior corrosion resistance against severe chemicals and corrosive services.



STANDARDS

Design	API 609
Pressure Testing	API 598
End Connections	ANSI/ASME B16.5
Face to Face Dimensions	ANSI/ASME B16.10
Mounting Dimensions	ISO 5211
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015
Marine/Offshore Applications	ABS Type Approval

- Bi-directional, bubble tight shut-off
- Rated to 150 psi
- Live Loaded packing
- Blow out proof stem
- 2-piece wafer or lug bodies are epoxy coated
- Resilient back up liner
- Multiple safety seals
- Operating Temp: -20°F to 355°F
- Sizes 2" - 24"



ITEM NO.	PART NUMBER	QTY.	MATERIAL
1	BODY	1	ASTM A216 GRADE WCB ASTM A351 GRADE CF8M
2	BUSHING	4	PTFE/CS BUSHING
3	BELLEVILLE WASHER	4	AISI 304
4	V-SEAL GLAND	2	AISI 304
5	V-SEAL RING	2	PTFE
6	STEM	1	17-4® PH
7	DISC	1	PFA/ASTM A351 GRADE CF8
8	LOWER O-RING	2	VITON® (non-wetted part)
9	SEAT	1	PTFE
10	UPPER O-RING	1	VITON® (non-wetted part)
11	PAD ENERGIZER	4	COMPOSITE
12	RESILIENT PAD	4	SILICONE RUBBER
13	BODY BOLT	*	ISO 3506-1 A2-70
14	COVER**	1	ASTM A1020 CARBON STEEL
15	COVER BOLT**	2	ISO 3506-1 A2-70
16	PIN***	2	CARBON STEEL

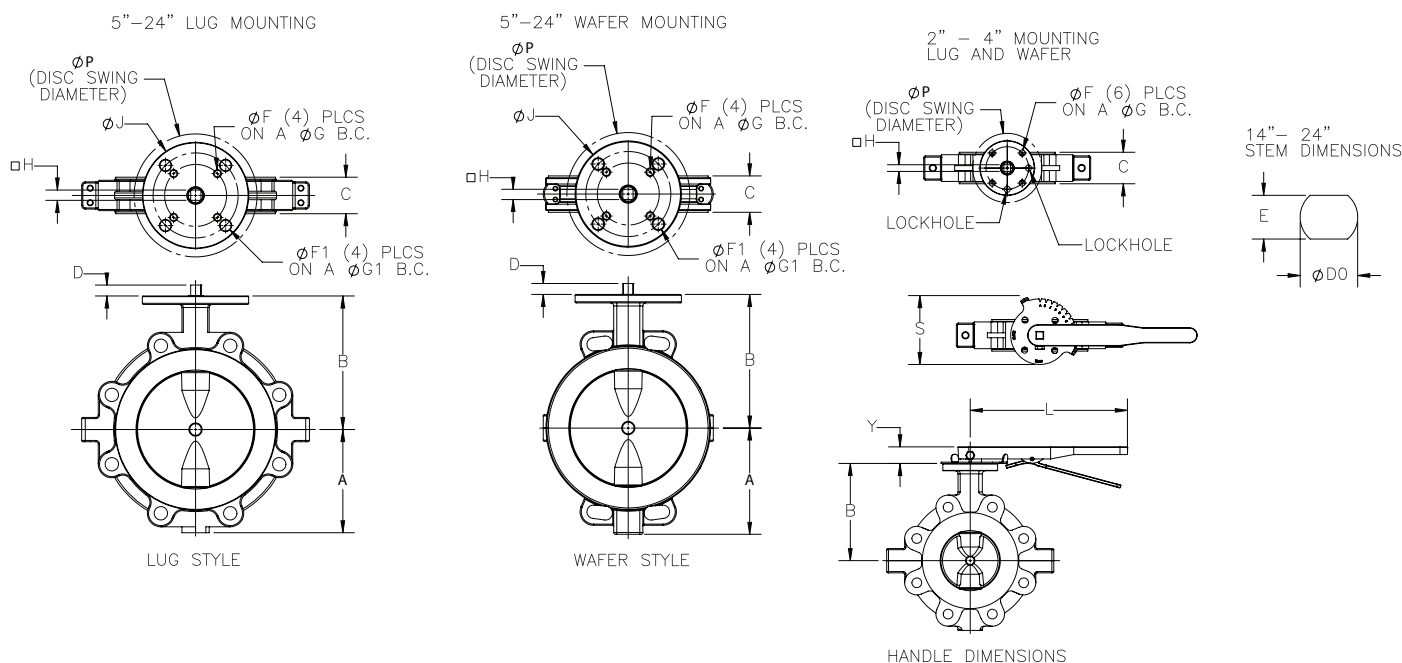
*QTY 2 FOR 2" - 5" VALVES; QTY 4 FOR 6" - 12" VALVES

**ONLY PRESENT ON 10" AND 12" VALVES, AND 8" LUG VALVE

***ONLY PRESENT ON 12" WAFER VALVE

SIZE	OPERATING TORQUE In-lbs (150 PSIG Air)	C _v (Fully Open)
2"	166	210
2-1/2"	228	210
3"	332	410
4"	531	710
5"	597	1,150
6"	863	1,750
8"	1,195	3,550
10"	2,655	5,100
12"	4,049	8,870
14"	7,523	9,200
16"	10,356	14,500
18"	13,808	20,100
20"	16,109	22,000
24"	26,465	31,000

Torques include 15% safety.



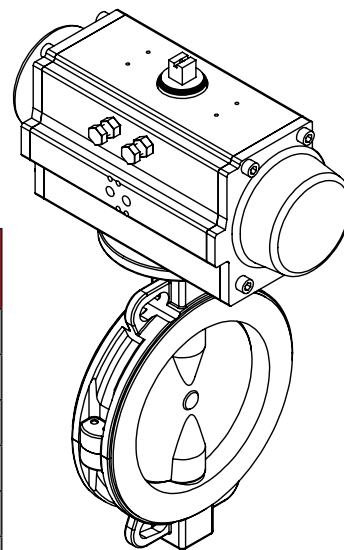
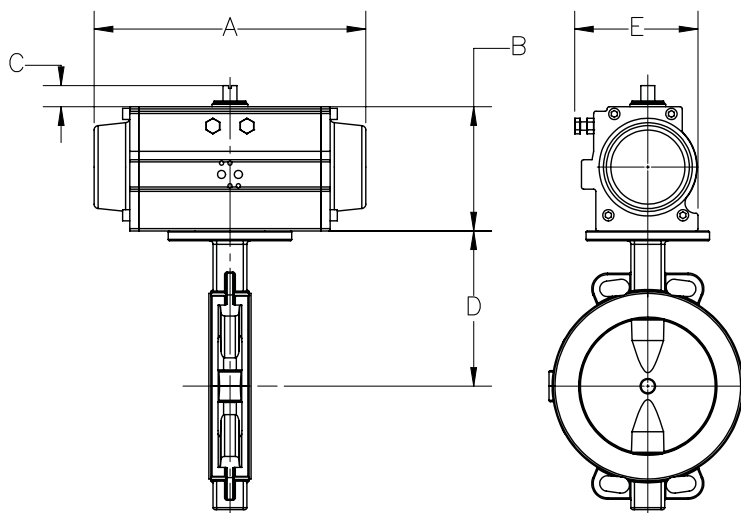
SIZE	A	B	C	D	ØD0	E	ØF	ØF1	ØG	ØG1	□H	ØJ	L	ØP	S	Y	END CONNECTIONS	ISO 5211	Lug (lbs)	Wafer (lbs)
2"	2.76*	4.53	1.75	0.67	N/A	N/A	0.38	N/A	2.756	N/A	0.433	3.54	10.51	2.45	4.45	1.18	ANSI B16.5 CLASS 150	F07	13.89	4.85
2½"	2.95*	4.53	1.75	0.67	N/A	N/A	0.38	N/A	2.756	N/A	0.433	3.54	10.51	2.45	4.45	1.18	ANSI B16.5 CLASS 150	F07	15.43	4.85
3"	3.15**	5.22**	1.81	0.67	N/A	N/A	0.38	N/A	2.756	N/A	0.433	3.54	10.51	3.23	4.45	1.18	ANSI B16.5 CLASS 150	F07	18.74	9.26
4"	4.53	6.30	2.10	0.67	N/A	N/A	0.38	N/A	2.756	N/A	0.433	3.54	10.51	4.06	4.45	1.18	ANSI B16.5 CLASS 150	F07	28.66	14.10
5"	5.12	6.89	2.23	0.71	N/A	N/A	0.38	N/A	2.756	N/A	0.551	3.54	CF	5.01	CF	CF	ANSI B16.5 CLASS 150	F07	37.48	17.42
6"	5.71	7.56	2.25	0.71	N/A	N/A	0.38	0.44	2.756	4.016	0.551	4.92	CF	6.03	CF	CF	ANSI B16.5 CLASS 150	F07/F10	50.04	22.93
8"	6.89	8.66	2.50	0.71	N/A	N/A	0.44	0.71	4.016	5.512	0.669	6.88	CF	7.94	CF	CF	ANSI B16.5 CLASS 150	F10/F14	67.24	37.48
10"	8.46	10.83	2.75	1.02	N/A	N/A	0.44	0.71	4.016	5.512	0.748	6.88	CF	9.83	CF	CF	ANSI B16.5 CLASS 150	F10/F14	113.54	55.12
12"	9.84	12.20	3.13	1.18	N/A	N/A	0.44	0.71	4.016	5.512	0.866	6.88	CF	11.95	CF	CF	ANSI B16.5 CLASS 150	F10/F14	140.21	76.06
14"	11.22	14.17	3.07	1.77	1.244	0.945	0.71	N/A	5.512	N/A	N/A	6.88	N/A	13.78	N/A	N/A	ANSI B16.5 CLASS 150	F14	CF	CF
16"	12.60	15.55	4.02	2.02	1.305	1.063	0.71	N/A	5.512	N/A	N/A	6.88	N/A	15.59	N/A	N/A	ANSI B16.5 CLASS 150	F14	CF	CF
18"	14.17	17.13	4.49	2.02	1.494	1.063	0.71	N/A	5.512	N/A	N/A	6.88	N/A	17.64	N/A	N/A	ANSI B16.5 CLASS 150	F14	CF	CF
20"	15.16	17.91	5.00	2.53	1.619	1.260	0.71	N/A	5.512	N/A	N/A	6.88	N/A	19.25	N/A	N/A	ANSI B16.5 CLASS 150	F14	CF	CF
24"	17.52	20.67	6.06	2.76	1.993	1.417	0.87	N/A	6.496	N/A	N/A	8.27	N/A	23.23	N/A	N/A	ANSI B16.5 CLASS 150	F16	CF	CF

* Dimension A is 2.36 for Wafer Valves, size 2" and 2½"

** For 3" Wafer valves, dimension A is 3.39 and dimension B is 5.91

A-T Controls reserves the right to change product designs and technical/dimensional specifications without notice. See website for updates.

Dimensions / Torques: AS Series



DIMENSIONS - AS Series Double Acting Package

SIZE	A	B	C	D	E	Actuator Size
2"	7.60	3.47	0.787	4.53	3.35	3R40DA
2-1/2"	7.60	3.47	0.787	4.53	3.35	3R40DA
3"	9.29	4.30	0.787	5.22*	4.18	3R80DA
4"	9.29	4.30	0.787	6.30	4.18	3R80DA
5"	9.29	4.30	0.787	6.89	4.18	3R80DA
6"	11.02	4.61	0.787	7.56	4.27	3R130DA
8"	11.50	5.28	0.787	8.66	4.78	3R200DA
10"	15.35	6.81	1.181	10.83	5.98	3R500DA
12"	16.89	7.36	1.181	12.20	6.38	3R700DA

Pneumatic Double Acting Actuators above are sized with 80 PSIG supply.
Consult Factory for actuator sizing on valves larger than 12".

*Dimension D is 5.91 for Wafer Valves, size 3".

For more actuator information, please see the complete actuator catalog.

DIMENSIONS - AS Series Spring Return Package

SIZE	A	B	C	D	E	Actuator Size
2"	9.29	4.30	0.787	4.53	4.18	3R80SR
2-1/2"	11.02	4.61	0.787	4.53	4.27	3R130SR
3"	11.50	5.28	0.787	5.22*	4.78	3R200SR
4"	13.39	6.14	0.787	6.30	5.59	3R300SR
5"	13.39	6.14	0.787	6.89	5.59	3R300SR
6"	15.35	6.81	1.181	7.56	5.98	3R500SR
8"	15.35	6.81	1.181	8.66	5.98	3R500SR
10"	22.36	9.06	1.181	10.83	8.11	3R1200SR
12"	24.80	11.46	1.181	12.20	10.24	3R2400SR **

** Not a direct mount. The assembly uses a bracket & coupler.

Pneumatic Spring Return Actuators above are sized with 5 springs per side, fail-close.

Consult Factory for actuator sizing on valves larger than 12".

*Dimension D is 5.91 for Wafer Valves, size 3".

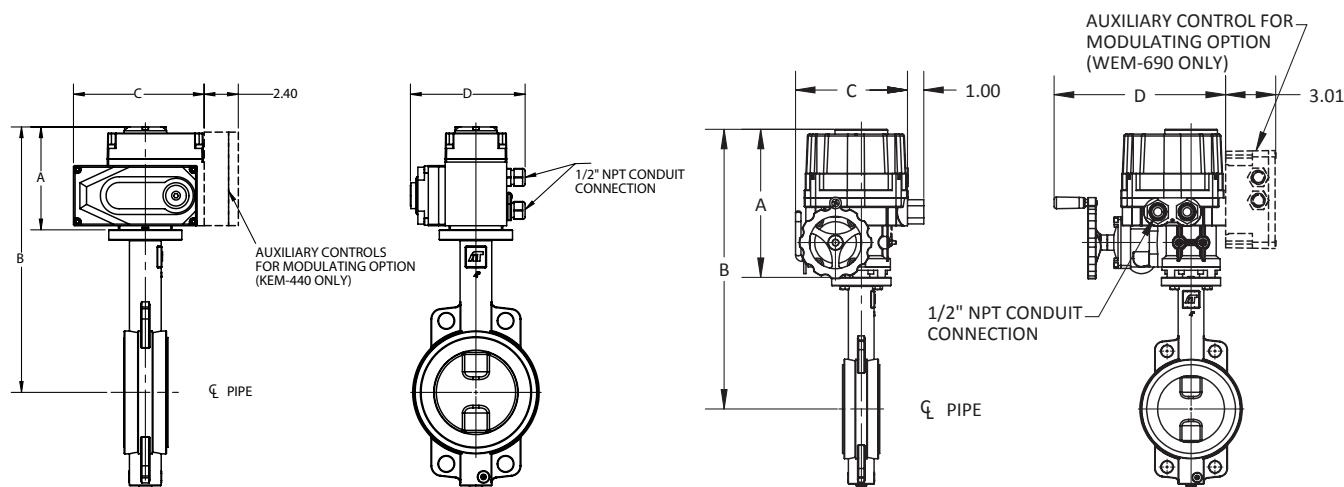
For more actuator information, please see the complete actuator catalog.

DIMENSIONS - AS Series Electric Automated Package

SIZE	A	B	C	D	On-Off Actuator	Modulating Actuator
2"	5.14	9.67	6.46	5.47	KE-440*	KEM-440*
2-1/2"	5.14	9.67	6.46	5.47	KE-440*	KEM-440*
3"	5.14	10.36**	6.46	5.47	KE-440*	KEM-440*
4"	8.66	14.96	6.69	10.16	WE-690	WEM-690
5"	8.66	15.55	6.69	10.16	WE-690	WEM-690
6"	10.24	17.80	9.02	13.31	WE-1350	WEM-1350
8"	10.24	18.90	9.02	13.31	WE-1350	WEM-1700
10"	11.42	21.85	10.20	14.49	WE-4400	WEM-4400
12"	11.42	23.62	10.20	14.49	WE-4400	WEM-5200

** Dimension B is 11.05 for Wafer Valves, size 3"

* MAY BE SUBSTITUTED WITH WE-500
DIMENSIONS BASED UPON ON/OFF APPLICATIONS



Triac KE Series Actuators

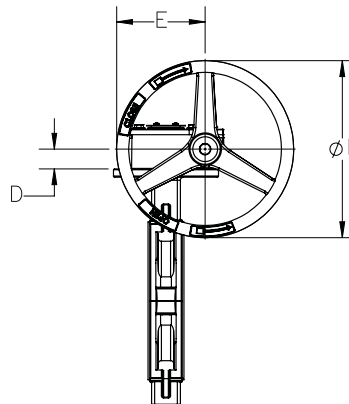
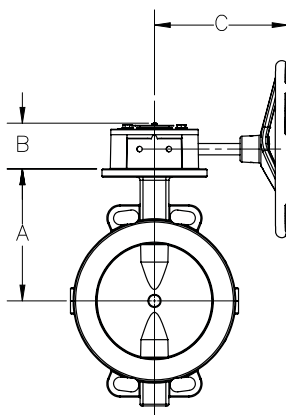
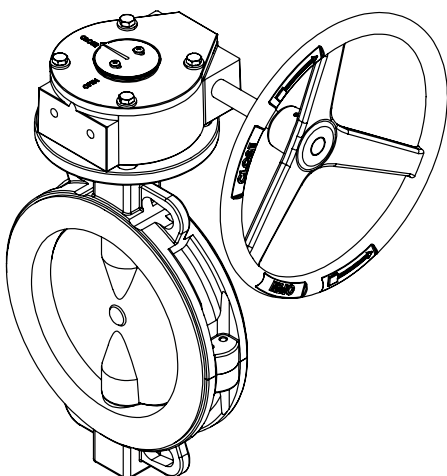
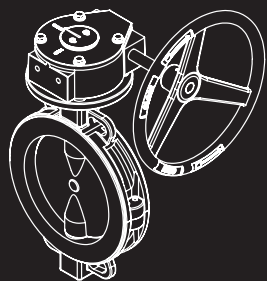
The Triac KE Series electric actuators are the perfect match for resilient or high-performance butterfly valves and dampers because of the self-locking worm drive. The KE Series actuators are used to control rotary valves, such as butterfly valves, ball valves, plug valves, etc. Widely used in applications such as petroleum, chemical, water treatment, ship, paper, power stations, heating supply, building automation, light industry etc.

Standard Features

- Convex lens visual position indicator makes it easier to observe without water collecting on the surface of the indicator
- Anti-condensation heater and thermostat
- Two auxiliary limit switches
- Self-locking gear train
- Manual override with wrench
- Available motor voltages: 12VDC, 24VDC, 120VAC & 220VAC
- Optional 4-20mA & 0-10 VDC proportional control



Unique low profile actuator,
ideal for tight spaces



DIMENSIONS - Gear Operator with AS Series valve

SIZE	A	B	C	D	E	F
2"	4.53	2.79	6.00	1.48	1.77	5.87
2½"	4.53	2.79	6.00	1.48	1.77	5.87
3"	5.22*	2.79	6.00	1.48	1.77	5.87
4"	6.30	2.79	6.00	1.48	1.77	5.87
5"	6.89	2.79	6.00	1.48	1.77	5.87
6"	7.56	2.79	6.00	1.48	1.77	5.87
8"	8.66	3.30	8.75	1.57	2.60	11.62
10"	10.83	3.30	8.75	1.57	2.60	11.62
12"	12.20	3.30	8.75	1.57	3.01	11.62

* Dimension A is 5.91 for Wafer Valves, size 3"
Consult factory for gear actuator sizing on valves larger than 12"

Part Number Matrix for

A-T Controls **AS Series Lined Resilient Seated** Butterfly Valves

1	Valve Series
AS	A-T Split Body Lined Butterfly Valve

2	Body Material
Blank	(No Designation) Stainless Steel (SST) Body
C	Carbon Steel (ASTM A216 Grade WCB)

3	End Connection
L1	125/150# Lug
W1	125/150# Wafer

4	Valve Size
0150	1-1/2" 1400 14"
0200	2" 1600 16"
0250	2-1/2" 1800 18"
0300	3" 2000 20"
0400	4" 2400 24"
0500	5"
0600	6"
0800	8"
1000	10"
1200	12"

5	Seat Material/Style
P	PTFE

6	Disc Material/Style
F	PFA Encapsulated over 304 SST (standard with WCB body)
M	PFA Encapsulated over 316 SST (standard with SST body)

7	Stem Bushing
R	PTFE

8	Operator Designation
X	Bare Stem
H	Standard 10 Point Handle
S	Stainless Steel 10 Point Handle
G	Gear Operator

9	Stem
A	17-4 PH® Stem

How To Order MANUAL AS SERIES BUTTERFLY VALVES

1 2 - 3 - 4 - 5 6 7 - 8 9
 ↓↓ ↓ ↓ ↓↓↓↓ ↓↓
ASC - L1 - 0600 - P F R - X A

EXAMPLE:

ASC-L1-0600-PFR-XA

6" A-T Controls Split Body Lined Butterfly Valve, ASTM A216 Grade WCB Body, 150# Lug Style, PTFE Seat, PFA Encapsulated over 304 SST Disc, PTFE Stem Bushing, 17-4 PH Stem.

Series NS

NSF 61 & 372 rated, Dead-End Service

Manual and Automated Butterfly Valves

Lug or Wafer body, ANSI 125/150 flanges

- Bi-directional, bubble tight shutoff for full pressure differential
- Vulcanized Molded rubber seat design
- ASTM A395 DI & A351 CF8M body materials
- Multiple seat and disc materials available
- Square stems and ISO 5211 mounting pad for direct mounting

STANDARDS

DESIGN	API 609, ASME B16.34, ASME B16.42, MSS SP-67
FACE TO FACE	API 609
END CONNECTION	ASME B16.5 (Class 150), PN 10/16 (Wafer only)
PRESSURE TESTING	API 598
MOUNTING	ISO 5211
MARKINGS	API 609, ASME B16.34, MSS SP-25
MATERIAL CERTIFICATION	EN 10204-3.1 MTR
QUALITY ASSURANCE	ISO 9001:2015

CERTIFICATIONS

DRINKING WATER SYSTEM COMPONENTS	NSF/ANSI 61 & 372 Health Effects & Lead Content
CANADA REGISTRATION	CRN OC20682.5
ABS TYPE APPROVAL	



Page Reference: NS Series Resilient Butterfly Valves

Page 20.....Product Details and Standards

Page 21.....Bill of Materials 2"-14" and 16"-24"

Page 22.....Cv Values, Operating Torques and Pressure & Temperature Ratings

Page 23.....Dimensions 2"-24"

Page 24.....Automated Pneumatic NS Series Sizing

Page 25.....Automated Electric NS Series Sizing

Page 26.....Handles and Gear Operator Sizing

Page 27.....How To Order: NS Series Part Number Matrix



Bill of Materials (2"-14")

ITEM	DESCRIPTION	MATERIAL	QTY.
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	EPDM (NSF) / Buna-N / (FKM/Viton®)	1
3	Disc	A351 CF8M (NSF) / Nylon Coated DI (NSF) / Nickel Plated DI / Aluminum Bronze	1
4	Upper Stem*	17-4 PH®	1
5	Lower Stem*	17-4 PH®	1
6	Flange Bushing	Brass #	2
7	Bushing	Brass #	3**
8	O-Ring	Buna-N #	1
9	X-Ring	Buna-N #	1
10	Bushing	PTFE #	1
11	Stem Retainer	ASTM A276 304	1
12	Thrust Washer	ASTM A276 304	1
13	Snap Ring	SK7 Steel	1

*2"-3" valves have a one-piece stem

**one bushing(7) is not shown; it is located below lower stem flange bushing(6)

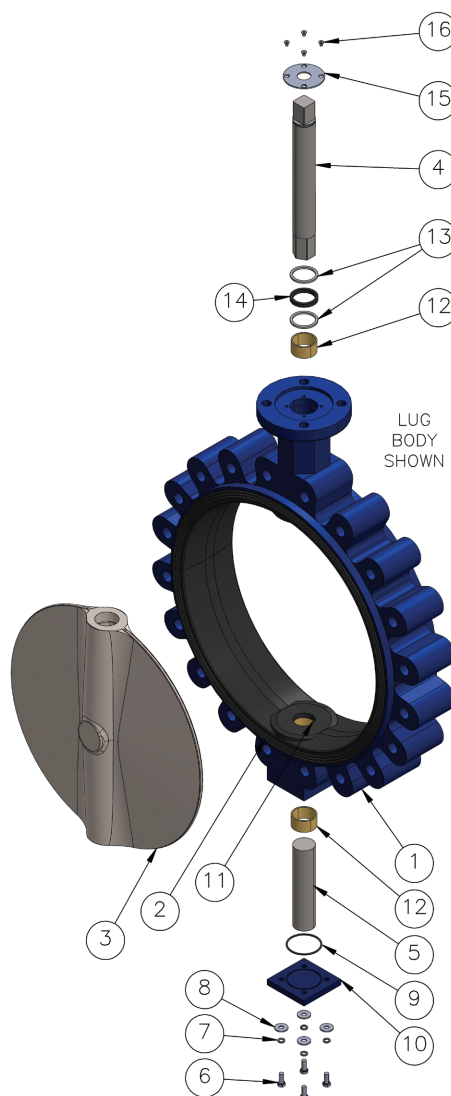
Under normal operation, the O-Ring and bushings are not subjected to internal media & pressure.

Bill of Materials (16"-24")

ITEM	DESCRIPTION	MATERIAL	QTY.
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	EPDM (NSF) / Buna-N / (FKM/Viton®)	1
3	Disc	A351 CF8M (NSF) / Nylon Coated DI (NSF) / Nickel Plated DI / Aluminum Bronze	1
4	Upper Stem	17-4 PH®	1
5	Lower Stem	17-4 PH®	1
6	Bottom Cover Bolt	A2-70	4*
7	Bottom Cover Lock Washer	ASTM A276 304	4*
8	Bottom Cover Flat Washer	ASTM A276 304	4*
9	Bottom Cover O-Ring	Buna-N #	1
10	Bottom Cover	ASTM A395 / A351 CF8M	1
11	Flange Bushing	Brass #	2
12	Long Bushing	Brass #	2
13	Short Bushing	PTFE #	2
14	Packing	Buna-N #	1
15	Gland	WCB / ASTM A276 316	1
16	Gland Bolt	ASTM A276 304	4

*16"-20" valves have quantity 2

Under normal operation, the O-Ring and bushings are not subjected to internal media & pressure.



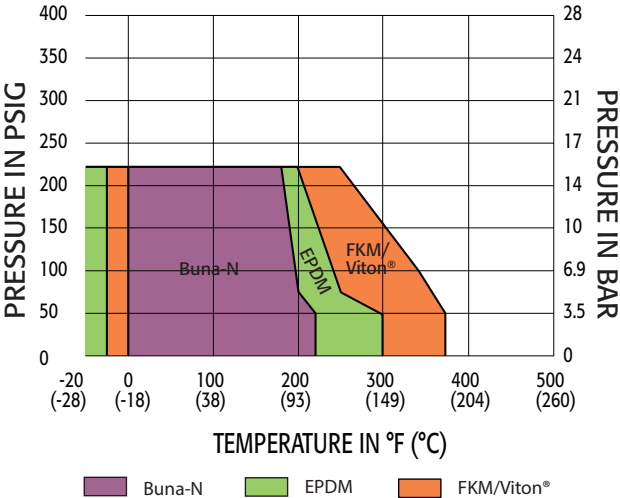
Series NS RESILIENT SEATED BUTTERFLY

Pressure Vs. Temperature & Torques: NS Series

NS Series Butterfly Valve Cv Values (US-GPM @ 1 Δ P) - Rated Flow Coefficients

Disc Angle									
Valve Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.1	5	12	24	45	64	90	125	135
2-1/2"	1	8	20	37	65	98	144	204	220
3"	2	12	22	39	70	116	183	275	302
4"	3	17	36	78	139	230	364	546	600
5"	5	29	61	133	237	392	620	930	1,022
6"	8	45	95	205	366	605	958	1,437	1,579
8"	13	89	188	408	727	1,202	1,903	2,854	3,136
10"	21	151	320	694	1,237	2,047	3,240	4,859	5,340
12"	30	234	495	1,072	1,911	3,162	5,005	7,507	8,250
14"	40	338	715	1,549	2,761	4,568	7,230	10,844	11,917
16"	50	464	983	2,130	3,797	6,282	9,942	14,913	16,388
18"	72	615	1,302	2,822	5,028	8,320	13,168	19,752	21,705
20"	86	971	1,674	3,628	6,465	10,698	16,931	25,396	27,908
24"	256	1,222	2,587	5,605	9,989	16,528	26,157	39,236	43,116
F _L	0.79	0.81	0.79	0.79	0.75	0.71	0.66	0.6	0.53
x _T	0.5	0.53	0.52	0.49	0.46	0.4	0.34	0.27	0.23
F _d	0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7

Pressure vs. Temperature Chart for NS Butterfly Valves 2"-12"



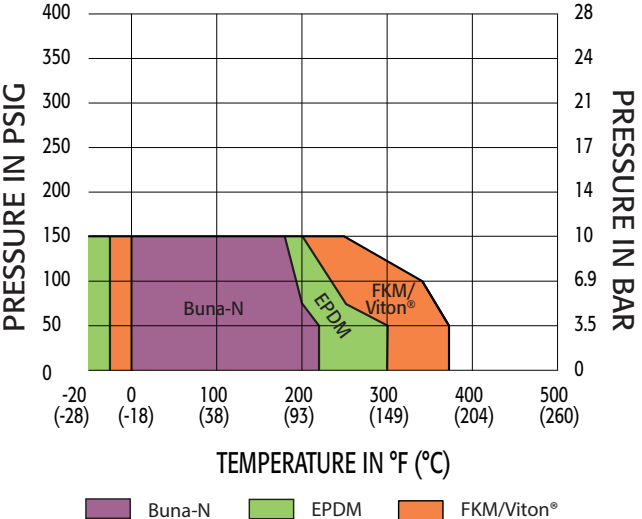
Valve Size	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	105	115	126	140	175	184	198	205
2-1/2"	112	134	138	154	219	235	265	285
3"	170	176	201	221	333	363	365	387
4"	275	303	345	365	506	585	610	635
5"	433	482	532	556	755	830	889	899
6"	680	754	886	1,065	1,189	1,317	1,465	1,512
8"	1,215	1,365	1,592	1,947	2,089	2,398	2,636	2,730
10"	1,903	2,204	2,532	2,920	3,263	3,864	4,312	4,642
12"	2,784	3,285	3,813	4,602	4,535	5,454	6,185	6,480
14"	3,658	4,212	4,872	-	5,366	6,218	7,409	-
16"	4,516	5,914	6,855	-	6,655	8,390	10,120	-
18"	5,832	7,758	9,524	-	8,679	11,215	13,450	-
20"	7,632	10,620	13,650	-	11,226	14,890	18,560	-
24"	12,340	15,340	19,870	-	17,980	22,290	28,160	-

Seat Temperature Ratings

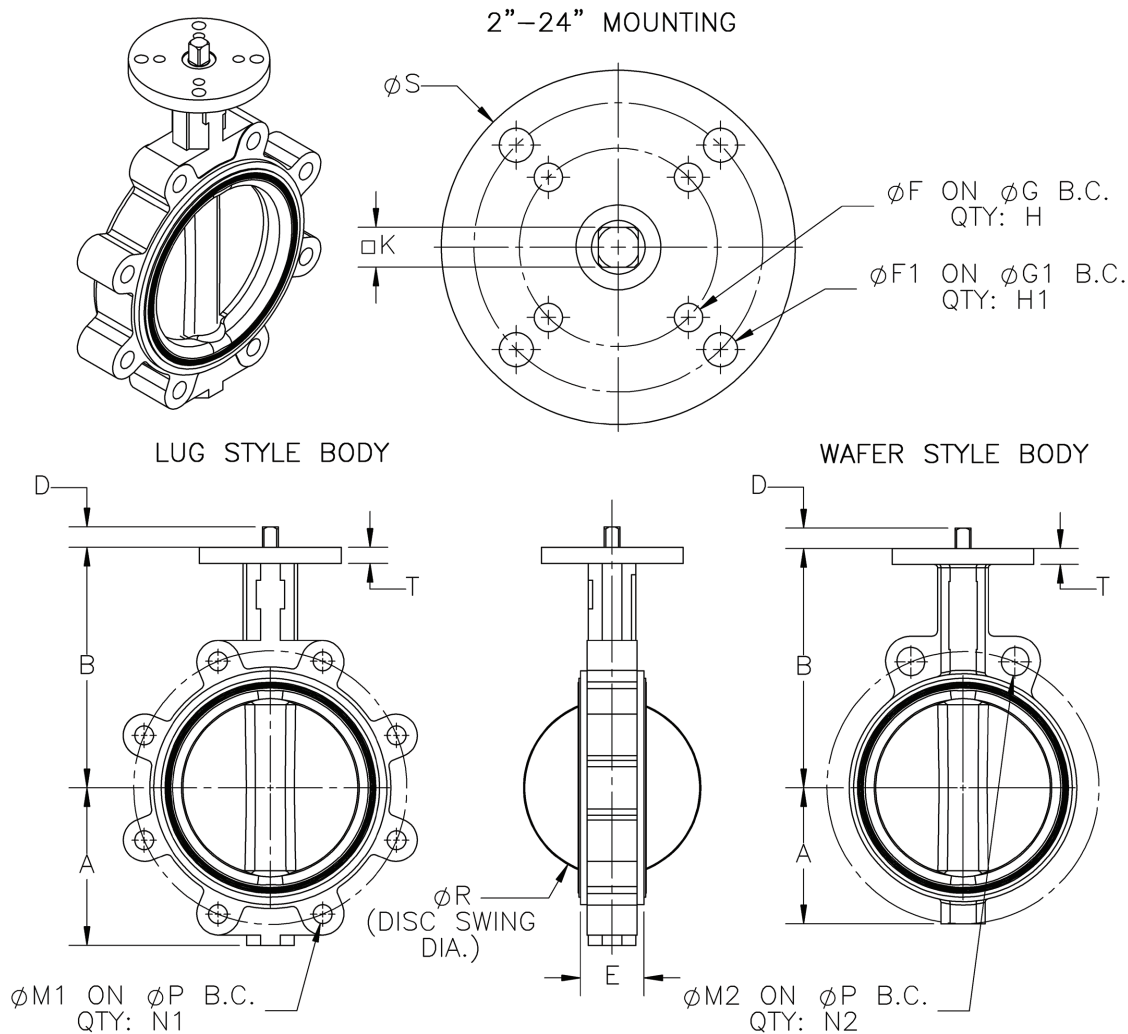
Seat	Temperature °F	2" - 12" Pressure (PSIG)	14" - 24" Pressure (PSIG)
EPDM	-20°	225	150
	100°	225	150
	200°	225	150
	250°	75	75
	300°	50	50
Buna-N	0°	225	150
	100°	225	150
	180°	225	150
	200°	75	75
	220°	50	50
FKM/Viton®	-10°	225	150
	100°	225	150
	250°	225	150
	325°	100	100
	360°	50	50

Nylon Coated DI disc limited to 300°F.

Pressure vs. Temperature Chart for NS Butterfly Valves 14"-24"



Dimensions | 2" - 24"



Dimensions: NS Series

ANSI/ASME Class 150

Size	A		B		D	E	ØF	ØG	H	ØF1	ØG1	H1	K	ØM1	N1	ØM2			N2			ØP			ØR	ØS	T	Lug (lbs)	Wafer (lbs)
	Lug	Wafer	Lug	Wafer												Class 150	PN 10 (mm)	PN 16 (mm)	Class 150	PN 10	PN 16	Class 150	PN 10 (mm)	PN 16 (mm)					
2"	3.15	2.40	5.51	5.51	0.63	1.69	0.39	2.756 (F07)	4	-	-	-	0.354	5/8 - 11	4	0.79	19	19	2	2	2	4.75	125	125	2.08	3.54	0.51	8	6
2-1/2"	3.50	2.68	5.91	5.91	0.63	1.81	0.39	2.756 (F07)	4	-	-	-	0.354	5/8 - 11	4	0.79	19	19	2	2	2	5.50	145	145	2.54	3.54	0.51	9	7
3"	3.74	2.99	6.22	6.22	0.63	1.81	0.39	2.756 (F07)	4	-	-	-	0.354	5/8 - 11	4	0.79	19	19	2	2	2	6.00	160	160	3.11	3.54	0.51	11	8
4"	4.49	3.62	6.93	6.93	0.63	2.05	0.39	2.756 (F07)	4	-	-	-	0.433	5/8 - 11	8	0.79	19	19	2	2	2	7.50	180	180	4.11	3.54	0.55	19	12
5"	5.00	4.21	7.48	7.48	0.71	2.20	0.39	2.756 (F07)	4	-	-	-	0.551	3/4 - 10	8	0.91	19	19	2	2	2	8.50	210	210	4.87	3.54	0.55	25	16
6"	5.47	4.72	8.35	8.31	0.71	2.20	0.39	2.756 (F07)	4	0.47	4.016 (F10)	4	0.551	3/4 - 10	8	0.91	23	23	2	2	2	9.50	240	240	6.14	4.92	0.55	30	18
8"	6.85	5.94	9.29	9.25	0.71	2.36	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.669	3/4 - 10	8	0.91	23	23	2	2	2	11.75	295	295	7.98	6.89	0.63	45	31
10"	7.99	7.32	10.43	10.43	0.94	2.68	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.866	7/8 - 9	12	1.02	23	28	2	2	2	14.25	350	355	9.87	6.89	0.63	69	49
12"	9.53	8.31	12.01	12.01	0.94	3.07	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.866	7/8 - 9	12	1.02	23	28	2	2	2	17.00	400	410	11.88	6.89	0.71	102	69
14"	10.51	10.63	14.49	14.49	0.94	3.07	0.47	4.016 (F10)	4	0.71	5.512 (F14)	4	0.866	1 - 8	12	1.14	23	28	4	4	4	18.75	460	470	13.15	6.89	0.79	128	85
16"	13.10	13.10	15.75	15.75	1.42	4.02	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	1.063	1 - 8	16	1.14	28	31	4	4	4	21.25	515	525	15.39	8.27	0.87	210	139
18"	14.28	14.28	16.61	16.61	1.42	4.49	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	1.063	1-1/8 - 7	16	1.26	28	31	4	4	4	22.75	565	585	17.36	8.27	0.98	231	163
20"	15.26	15.26	17.91	17.40	1.42	5.00	0.71	5.512 (F14)	4	0.87	6.496 (F16)	4	1.417	1-1/8 - 7	20	1.26	28	34	4	4	4	25.00	620	650	19.41	8.27	1.06	344	231
24"	18.69	18.80	22.24	22.24	1.81	6.06	0.87	6.496 (F16)	4	-	-	-	1.417	1-1/4 - 7	20	1.38	31	37	4	4	4	29.50	725	770	23.39	8.27	1.26	485	412

- Unless otherwise specified, all dimensions are in inches.
- Face-To-Face dimensions (E) are across the body flats (metal-to-metal). Approximately 1/16" of the rubber seat protrudes from each side for flange sealing.
- 2" - 24" Lug valve end connections conform to ANSI B16.5 Class 150, Wafer valve end connections conform to ANSI B16.5 Class 150 and EN1092-2 PN 10/16.
- Refer to the ES Series dimension table for disc projection (Y) and disc chord length (Z).

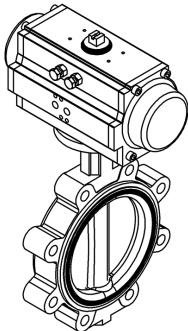
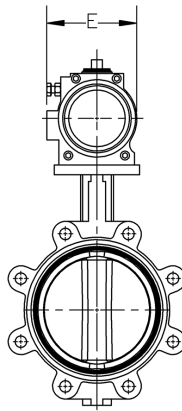
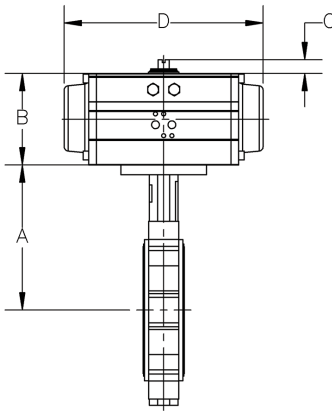
A-T Controls reserves the right to change product designs and technical/dimensional specifications without notice. See website for updates.

Series NS RESILIENT SEATED BUTTERFLY

Pneumatic Actuator Sizing : NS Series

Valve Dimensions

Valve Size	A	
	LUG	WAFER
2"	5.51	5.51
2-1/2"	5.91	5.91
3"	6.22	6.22
4"	6.93	6.93
5"	7.48	7.48
6"	8.35	8.31
8"	9.29	9.25
10"	10.43	10.43
12"	12.01	12.01



Dimensions Double Acting Actuator Dimensions Spring Return Actuator

Actuator Size	B	C	D	E
3R40DA	3.47	0.787	7.60	3.35
3R80DA	4.30	0.787	9.29	4.18
3R130DA	4.61	0.787	11.02	4.27
3R200DA	5.28	0.787	11.50	4.78
3R300DA	6.14	0.787	13.39	5.59
3R500DA	6.81	1.181	15.35	5.98
3R700DA	7.36	1.181	16.89	6.38
3R850DA	7.82	1.181	19.37	6.85
3R1200DA	9.06	1.181	22.36	8.11

Actuator Size	B	C	D	E
3R40SR	3.47	0.787	7.60	3.35
3R80SR	4.30	0.787	9.29	4.18
3R130SR	4.61	0.787	11.02	4.27
3R200SR	5.28	0.787	11.50	4.78
3R300SR	6.14	0.787	13.39	5.59
3R500SR	6.81	1.181	15.35	5.98
3R700SR	7.36	1.181	16.89	6.38
3R850SR	7.82	1.181	19.37	6.85
3R1200SR	9.06	1.181	22.36	8.11
3R1750SR	10.08	1.181	23.54	8.90
3R2400SR	11.46	1.181	24.80	10.24

For more actuator information, please see the complete actuator catalog

For more actuator information, please see the complete actuator catalog

Pneumatic Double Acting Actuator Sizing

NS	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA
2-1/2"	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA	3R40DA
3"	3R40DA	3R40DA	3R40DA	3R40DA	3R80DA	3R80DA	3R80DA	3R80DA
4"	3R40DA	3R80DA	3R80DA	3R80DA	3R80DA	3R80DA	3R80DA	3R80DA
5"	3R80DA	3R80DA	3R80DA	3R80DA	3R130DA	3R130DA	3R130DA	3R130DA
6"	3R130DA	3R130DA	3R130DA	3R200DA	3R200DA	3R200DA	3R300DA	3R300DA
8"	3R200DA	3R300DA	3R300DA	3R300DA	3R300DA	3R500DA	3R500DA	3R500DA
10"	3R300DA	3R500DA	3R500DA	3R500DA	3R500DA	3R700DA	3R850DA	3R850DA
12"	3R500DA	3R500DA	3R700DA	3R850DA	3R850DA	3R850DA	3R1200DA	3R1200DA

Pneumatic Double Acting actuators above are sized with 80 PSIG supply.
Consult factory for actuator sizing on valves larger than 12".

Pneumatic Spring Return Actuator Sizing

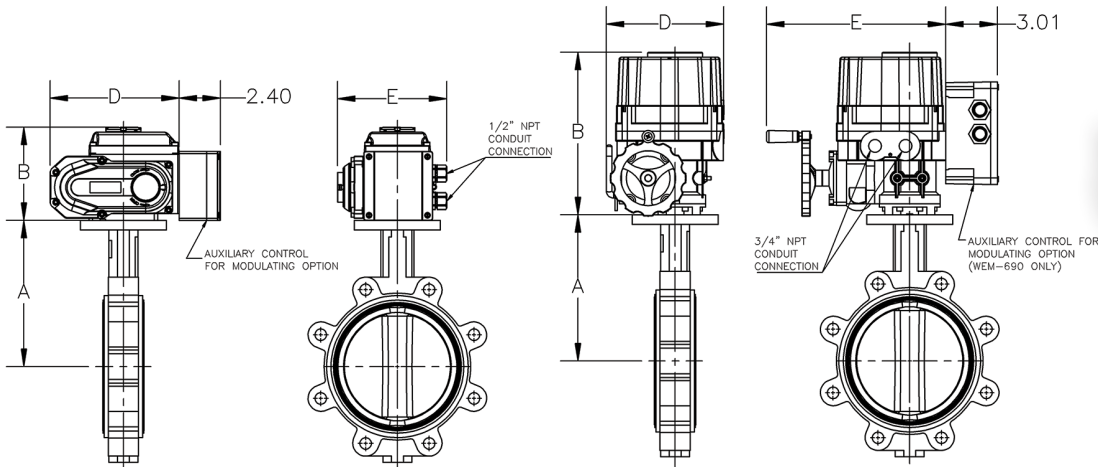
NS	Lubricated				Non-Lubricated			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR
2-1/2"	3R80SR	3R80SR	3R80SR	3R80SR	3R80SR	3R130SR	3R130SR	3R130SR
3"	3R80SR	3R80SR	3R80SR	3R80SR	3R200SR	3R200SR	3R200SR	3R200SR
4"	3R130SR	3R130SR	3R200SR	3R200SR	3R300SR	3R300SR	3R300SR	3R300SR
5"	3R200SR	3R300SR	3R300SR	3R300SR	3R300SR	3R300SR	3R500SR **	3R500SR **
6"	3R300SR	3R300SR	3R500SR	3R500SR	3R500SR	3R700SR	3R700SR	3R700SR
8"	3R500SR	3R700SR	3R850SR	3R850SR	3R1200SR	3R1200SR	3R1200SR	3R1200SR
10"	3R850SR	3R1200SR	3R1200SR	3R1750SR	3R1750SR	3R2400SR **	3R2400SR **	3R2400SR **
12"	3R1200SR	3R1750SR	3R1750SR	3R2400SR **	3R2400SR **	3R2400SR **	3R2400SR **	3R2400SR **

**Not a direct mount. The assembly uses a bracket & coupler.
Pneumatic Spring Return actuators above are sized with 5 springs per side, fail close.
Consult factory for actuator sizing on valves larger than 12".



RESILIENT SEATED BUTTERFLY Series NS

Electric Actuator Sizing: NS Series



KE SERIES ELECTRIC

WE SERIES ELECTRIC



Valve Dimensions

Valve Size	A	
	LUG	WAFER
2"	5.51	5.51
2-1/2"	5.91	5.91
3"	6.22	6.22
4"	6.93	6.93
5"	7.48	7.48
6"	8.35	8.31
8"	9.29	9.25
10"	10.43	10.43
12"	12.01	12.01

Dimensions Electric Actuator

Actuator Size	B	D	E
KE-440	5.14	6.74	5.44
KE-880	5.31	7.69	6.24
WE-690	9.25	6.69	10.16
WE-1350	10.55	9.02	13.31
WE-1700	10.55	9.02	13.31
WE-2640	11.42	10.2	14.49
WE-4400	11.97	10.2	14.49
WE-5200	11.97	10.2	14.49
WE-6900	12.99	11.69	16.14
WE-10500	12.99	11.69	16.14

For more actuator information, please see the complete actuator catalog

Electric (On/Off) Actuator Sizing

NS	Lubricated				Non-Lubricated			
Valve Size	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
2-1/2"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
3"	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440	KE-440
4"	KE-440	KE-440	KE-440	KE-440	KE-880	KE-880	KE-880	KE-880
5"	WE-690	WE-690	WE-690	WE-690	WE-1350	WE-1350	WE-1350	WE-1350
6"	WE-1350	WE-1350	WE-1350	WE-1350	WE-1350	WE-1700	WE-1700	WE-1700
8"	WE-1350	WE-1700	WE-1700	WE-2640	WE-2640	WE-2640	WE-4400	WE-4400
10"	WE-2640	WE-2640	WE-4400	WE-4400	WE-4400	WE-4400	WE-5200	WE-5200
12"	WE-4400	WE-4400	WE-4400	WE-5200	WE-5200	WE-6900	WE-6900	WE-6900

Consult factory for actuator sizing larger than 12"

Electric (Modulating) Actuator Sizing

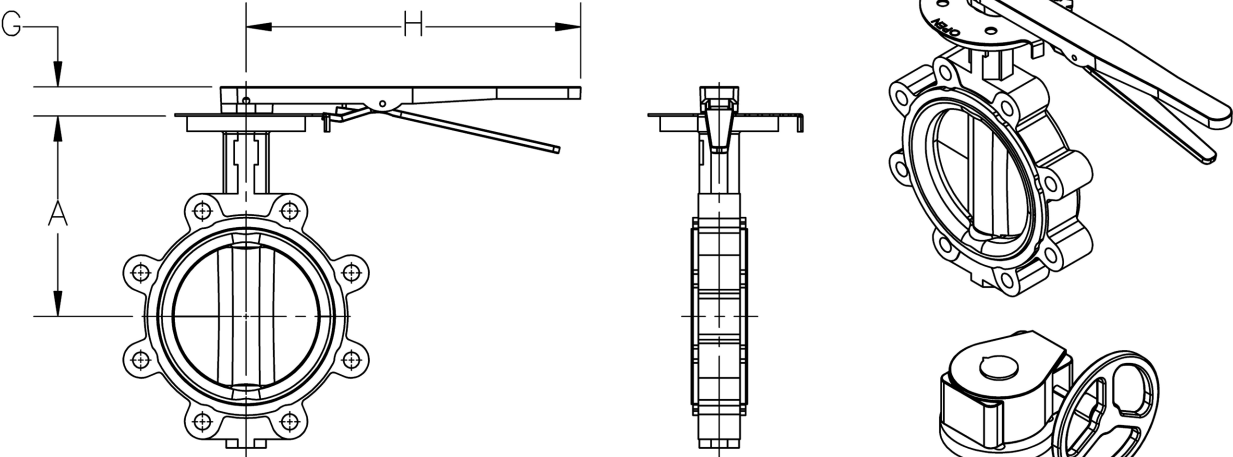
NS	Lubricated				Non-Lubricated			
Valve Size	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
2-1/2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
3"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-880	KEM-880	KEM-880
4"	KEM-440	KEM-440	KEM-440	KEM-880	KEM-880	KEM-880	KEM-880	KEM-880
5"	WEM-690	WEM-690	WEM-690	WEM-1350	WEM-1350	WEM-1350	WEM-1350	WEM-1350
6"	WEM-1350	WEM-1350	WEM-1350	WEM-1350	WEM-1700	WEM-1700	WEM-2640	WEM-2640
8"	WEM-1700	WEM-2640	WEM-2640	WEM-2640	WEM-2640	WEM-4400	WEM-4400	WEM-4400
10"	WEM-2640	WEM-4400	WEM-4400	WEM-4400	WEM-4400	WEM-5200	WEM-6900	WEM-6900
12"	WEM-4400	WEM-4400	WEM-5200	WEM-6900	WEM-6900	WEM-6900	WEM-10500	WEM-10500

Consult factory for actuator sizing larger than 12"

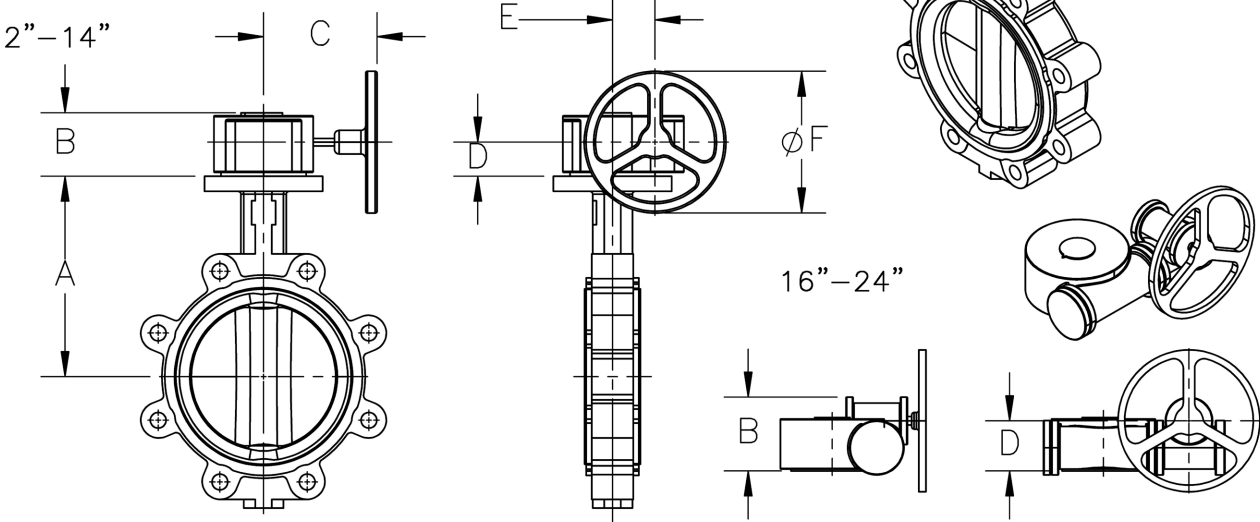
Series NS RESILIENT SEATED BUTTERFLY

Handle and Gear Operator Sizing

HANDLE (UP TO 12")



GEAR OPERATOR



SIZE	A		GEAR OPERATOR					HANDLE	
	Lug	Wafer	B	C	D	E	ØF	G	H
2"	5.51	5.51	2.64	4.74	1.42	1.78	6.00	1.05	10.24
2-1/2"	5.91	5.91							
3"	6.22	6.22							
4"	6.93	6.93							
5"	7.48	7.48							
6"	8.35	8.31	3.27	7.09	1.81	2.48	12.00	1.25	14.17
8"	9.29	9.25						1.50	22.00
10"	10.43	10.43						-	-
12"	12.01	12.01						-	-
14"	14.49	14.49						-	-
16"	15.75	15.75	6.14	7.80	4.17	7.13	12.00	-	-
18"	16.61	16.61						-	-
20"	17.91	17.40						-	-
24"	22.24	22.24						-	-

Part Number Matrix for

A-T Controls **Dead-End Service** and **NSF/ANSI 61 & 372 Certified** Valves

1	Valve Series
NS	A-T NSF 61 & 372 / Dead-End Service Butterfly Valve

2	Body Material
Blank	A351 CF8M (No Designation)
P	A395 Ductile Iron (Standard)

3	End Connection
L1	125/150# Lug
W1	125/150# Wafer

4	Valve Size		
0200	2"	1400	14"
0250	2-1/2"	1600	16"
0300	3"	1800	18"
0400	4"	2000	20"
0500	5"	2400	24"
0600	6"		
0800	8"		
1000	10"		
1200	12"		

5	Seat Material/Style
B	Buna-N (Dead-End Service only)
N	EPDM (NSF 61 & 372 and Dead-End Service)
V	FKM/Viton® (Dead-End Service only)

6	Disc Material/Style
N	Nylon Coated Ductile Iron (NSF 61 & 372)
S	A351 CF8M (NSF 61 & 372)
B	Aluminum Bronze
D	Nickel Plated Ductile Iron
W	Polished A351 CF8M
U	Undercut Aluminum Bronze (6"-24")
Y	Undercut Polished A351 CF8M (6"-24")
Z	Undercut A351 CF8M (6"-24")

How To Order MANUAL NS SERIES BUTTERFLY VALVES									
1	2	-	3	-	4	-	5	6	7 - 8 9
↓	↓		↓		↓		↓	↓	↓
N	S	-	L1	-	0400	-	N	B	R - X A



7	Stem Bushing
R	PTFE/Brass

8	Operator Designation
X	Bare Stem
S	Stainless Steel 10 Point Handle (up to 12")
L	Locking Handle -10 Position (up to 12")
I	Infinite Adjustment Handle (up to 12")
G	Gear Operator

9	Stem
A	17-4 PH® Stem

NOTE: In order for a complete valve to be NSF 61 & 372 rated, it must have a NSF 61 & 372 rated seat and a NSF 61 & 372 disc.

EXAMPLE:

NS-L1-0400-NBR-XA

4" NS Series RSBFV, Class 125/150 Lug Style, A351 CF8M Body, EPDM Dead-End Service Seat, Aluminum Bronze Disc, PTFE Stem Bushing, 17-4 PH Square Stem, Bare Stem.

NS-L1-0400-NSR-XA

NSF 61 & 372 Approved 4" NS Series RSBFV, Class 125/150 Lug Style, A351 CF8M Body, EPDM Dead-End Service Seat, A351 CF8M Disc, PTFE Stem Bushing, 17-4 PH Square Stem, Bare Stem.



Automated Tee Assemblies

A-T Controls' Butterfly Valve Tee Assemblies provide a cost-effective, alternative to a 3-way valve solution. Available for lug style butterfly valves, these unique tee assemblies can be customized to fit your application. Consult factory for valve selection and assembly options.

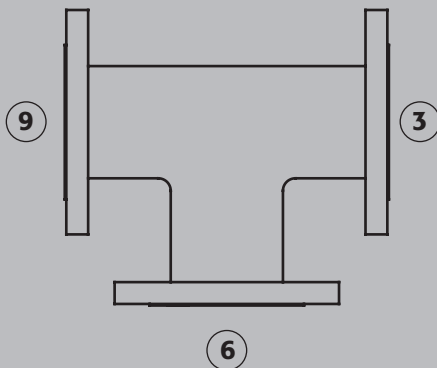
- Sizes 2" - 36"
- Lug style Ductile Iron body

Butterfly Valve Tee Assemblies



- Various Seat Options for special applications

When ordering please specify actuator and valve position:



Choose position:

Actuator (Primary):

☐ 3 ☐ 6 ☐ 9

Valve (Secondary) Location:

☐ 3 ☐ 6 ☐ 9

Valve Position:

- ☐ Primary Closed (CW) - Secondary Open (CCW)
- ☐ Primary Open (CCW) - Secondary Closed (CW)
- ☐ Primary Open (CCW) - Secondary Open (CCW)
- ☐ Primary Closed (CW) - Secondary Closed (CW)

Example:

Actuator (Primary): Position 3, Closed

Valve (Secondary): Position 6, Open

Flange bolting is the responsibility of the customer. Temporary flange bolts are supplied for shipping purposes only.



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