



A-T Controls, Inc.



Manual and Automated Resilient Seated Butterfly Valves

Featuring the KE Series actuator for electric automation on butterfly valves up to 4"



NS Series: NSF/ANSI 61 & 372 Certified and Dead-End Service Butterfly Valves

OS/OC Series: Wafer and Lug Style, Class 150 Resilient Seated Butterfly Valves

AS Series: Lined Butterfly Valves



Canada Registration Numbers (CRN)



VALVE NSF/ANSI 61 ALSO CERTIFIED TO NSF/ANSI 372 <SDZD>



Featuring **TRIAO** CONTROLS Actuators and Accessories

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 APPROVAL	(Pending)
CE	(Pending)



Page Reference: NS Series Resilient Butterfly Valves

Page 2.....Product Details and Standards

Page 3.....Bill of Materials 2"-14" and 16"-24"

Page 4.....Cv Values, Operating Torques and Pressure & Temperature Ratings

Page 5.....Dimensions 2"-24"

Page 6.....Automated Pneumatic NS Series Sizing

Page 7.....Automated Electric NS Series Sizing

Page 8.....Handles and Gear Operator Sizing

Page 9....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	1
3	Disc	A351 CF8M (NSF) / Nylon Coated DI (NSF) / 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)



Bill of Materials (16"-24")

ITEM	DESCRIPTION	MATERIAL	QTY.
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	EPDM (NSF) / Buna-N / FKM	1
3	Disc	A351 CF8M (NSF) / Nylon Coated DI (NSF) / 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

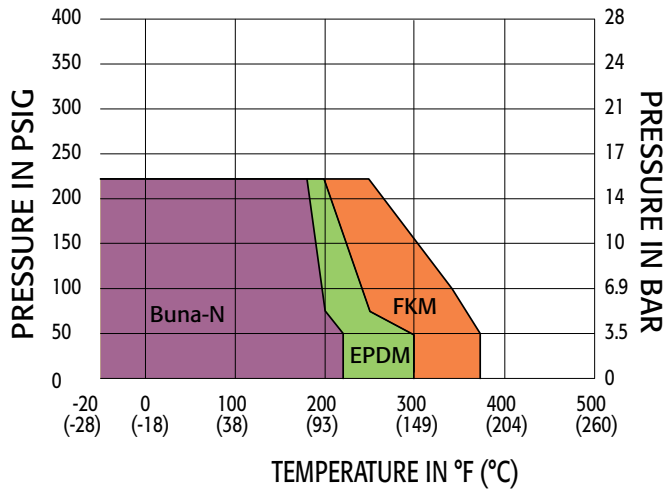
*16"-20" valves have quantity 2



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

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

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



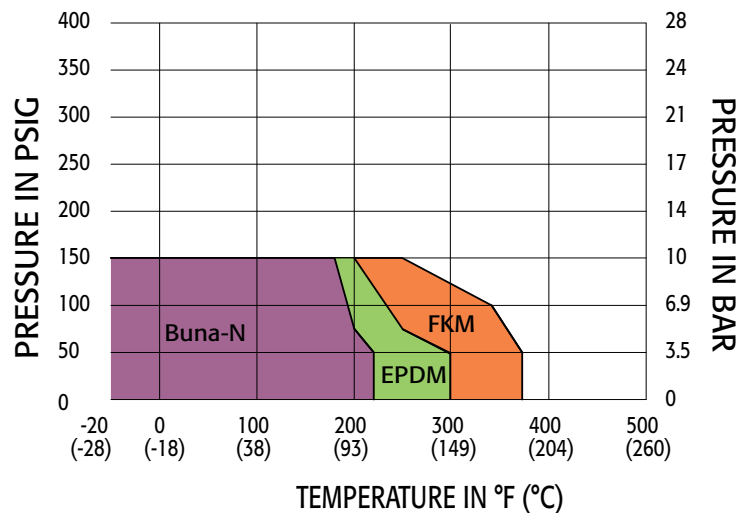
Approximate Operating Torque (In·lbs)

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

Seat Temperature Ratings

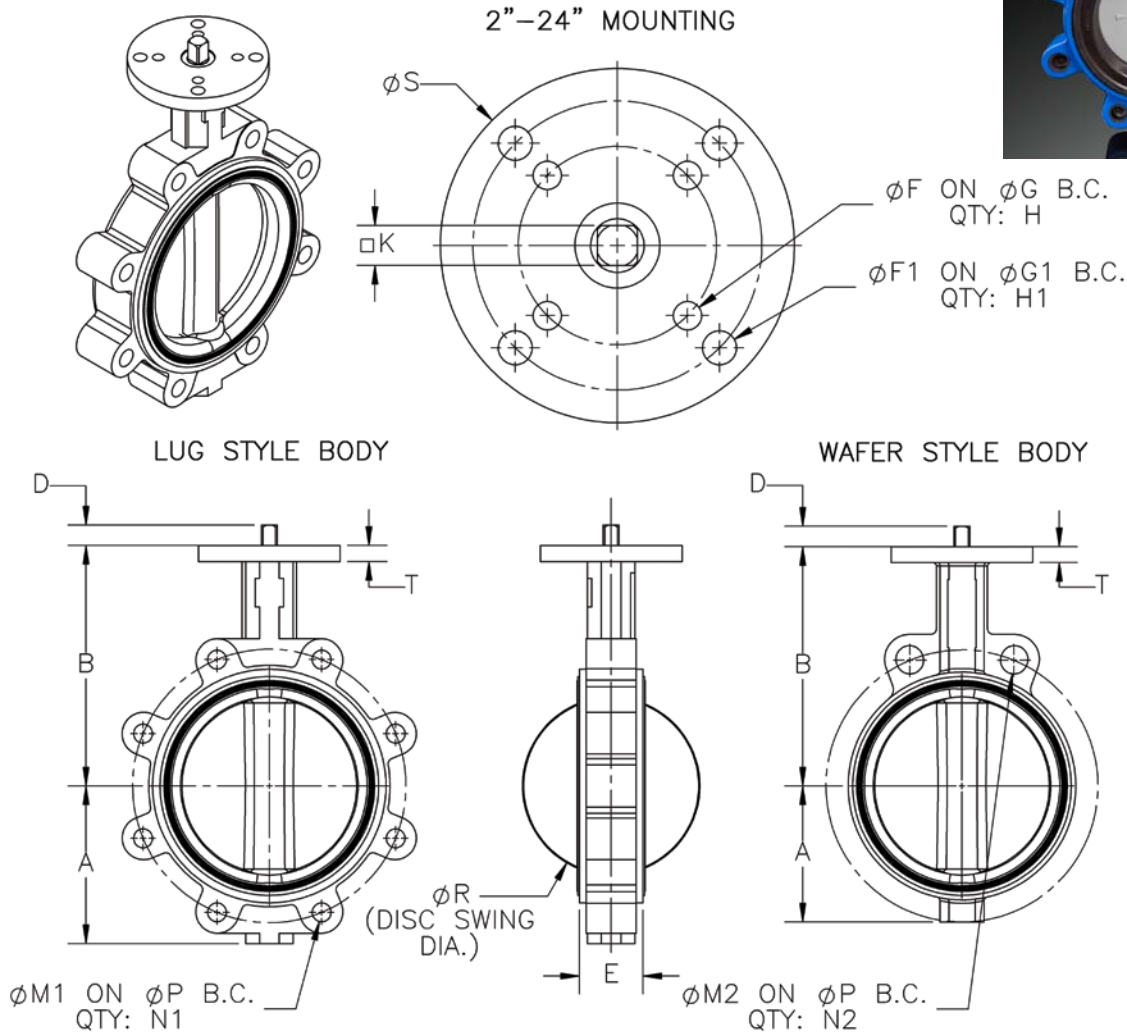
Seat	Temperature °F	2" - 12" Pressure (PSIG)	14" - 24" Pressure (PSIG)
EPDM	-20°	225 PSIG	150 PSIG
	100°	225 PSIG	150 PSIG
	200°	225 PSIG	150 PSIG
	250°	75 PSIG	75 PSIG
	300°	50 PSIG	50 PSIG
Buna-N	0°	225 PSIG	150 PSIG
	100°	225 PSIG	150 PSIG
	180°	225 PSIG	150 PSIG
	200°	75 PSIG	75 PSIG
	220°	50 PSIG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

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





Dimensions | 2" - 24"



ANSI/ASME Class 150

Size	A		B		D	E	ϕF	ϕG	H	$\phi F1$	$\phi G1$	H1	K	$\phi M1$	N1	$\phi M2$			N2			ϕP			ϕR	ϕS	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	2.07	3.54	0.51	6	8
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	2.53	3.54	0.51	7	9
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	3.10	3.54	0.51	8	11
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	4.09	3.54	0.55	12	19
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	4.85	3.54	0.55	16	25
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	6.13	4.92	0.55	18	30
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	7.97	6.89	0.63	31	45
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	9.86	6.89	0.63	49	69
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	11.87	6.89	0.71	69	102
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	13.13	6.89	0.79	85	128
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	15.34	8.27	0.87	139	210
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	17.34	8.27	0.98	163	231
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	19.35	8.27	1.06	231	344
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	23.33	8.27	1.26	412	485

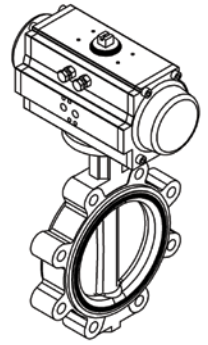
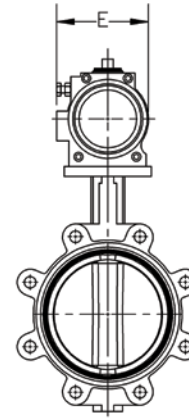
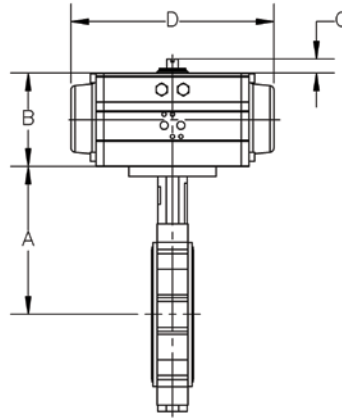
- Unless otherwise specified, all dimensions are in inches.
- Face-To-Face dimensions (E) are across the body flats (metal-to-metal). Approximately 1/16" of the rubber seat protrudes from each side for flange sealing.
- 2" - 24" Lug valve end connections conform to ANSI B16.5 Class 150, Wafer valve end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

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

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

Actuator Size	B	C	D	E
2R40DA	3.43	0.787	7.95	3.29
2R80DA	4.49	0.787	9.29	4.41
2R130DA	4.88	0.787	10.87	4.69
2R200DA	5.28	0.787	11.46	5.06
2R300DA	6.18	0.787	13.90	5.91
2R500DA	6.93	1.181	15.16	6.50
2R850DA	8.31	1.181	20.95	6.89
2R1200DA	9.17	1.181	22.68	7.60

Dimensions Spring Return Actuator

Actuator Size	B	C	D	E
2R80SR	4.49	0.787	9.29	4.41
2R130SR	4.88	0.787	10.87	4.69
2R200SR	5.28	0.787	11.46	5.06
2R300SR	6.18	0.787	13.90	5.91
2R500SR	6.93	1.181	15.16	6.50
2R850SR	8.31	1.181	20.95	6.89
2R1200SR	9.17	1.181	22.68	7.60
2R1750SR	10.12	1.181	24.37	8.31



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

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 Valve Size	WET				DRY			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	2R80SR	2R80SR	2R80SR	2R80SR	2R80SR	2R80SR	2R80SR	2R130SR
2-1/2"	2R80SR	2R80SR	2R80SR	2R80SR	2R130SR	2R130SR	2R130SR	2R130SR
3"	2R80SR	2R80SR	2R80SR	2R130SR	2R200SR	2R200SR	2R200SR	2R200SR
4"	2R200SR	2R200SR	2R200SR	2R200SR	2R300SR	2R300SR	2R300SR	2R300SR
5"	2R300SR	2R300SR	2R300SR	2R300SR	2R300SR	2R300SR	CF	CF
6"	2R300SR	2R300SR	2R500SR	2R500SR	2R500SR	2R850SR	2R850SR	2R850SR
8"	2R500SR	2R850SR	2R850SR	2R1200SR	2R1200SR	2R1200SR	2R1750SR	2R1750SR
10"	2R1200SR	2R1200SR	2R1750SR	2R1750SR	2R1750SR	CF	CF	CF
12"	2R1750SR	2R1750SR	CF	CF	CF	CF	CF	CF

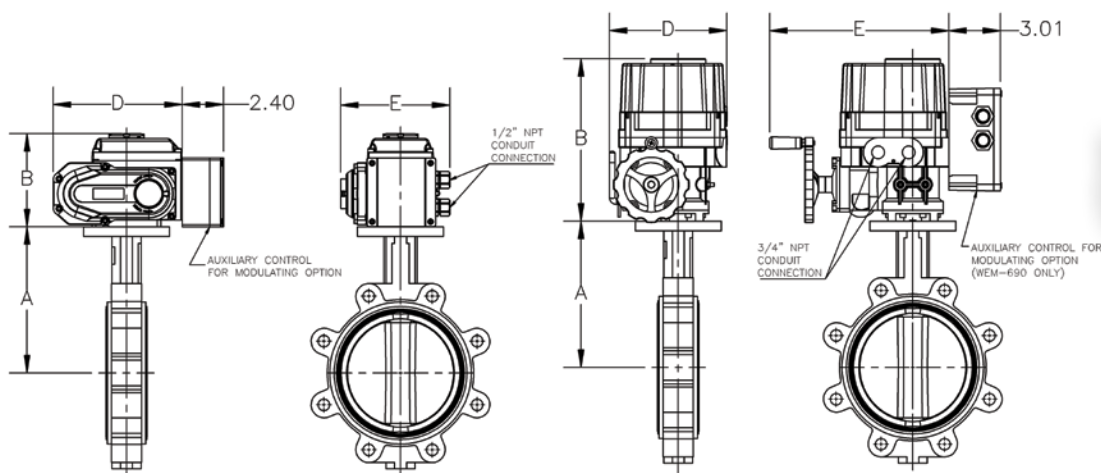
Pneumatic Spring Return actuators above are sized with 5 springs per side, fail close. Consult factory for actuator sizing on valves larger than 12".

CF - Consult Factory



Pneumatic Actuator Sizing: NS Series

RESILIENT SEATED BUTTERFLY **Series NS**



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 BFV	WET				DRY			
	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

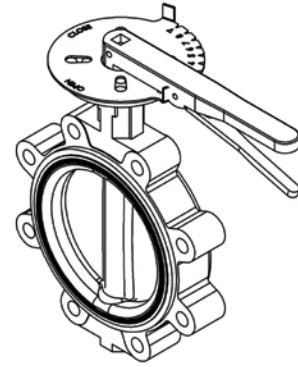
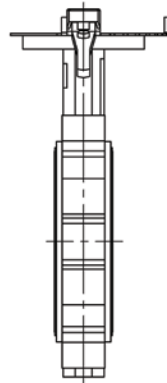
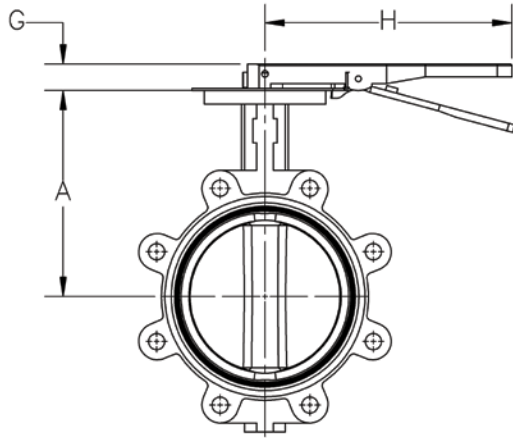
NS BFV	WET				DRY			
	50 PSID	100 PSID	150 PSID	225 PSID	50 PSID	100 PSID	150 PSID	225 PSID
2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
2-1/2"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440
3"	KEM-440	KEM-440	KEM-440	KEM-440	KEM-440	KEM-880	KEM-880	KEM-880
4"	KEM-440	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".

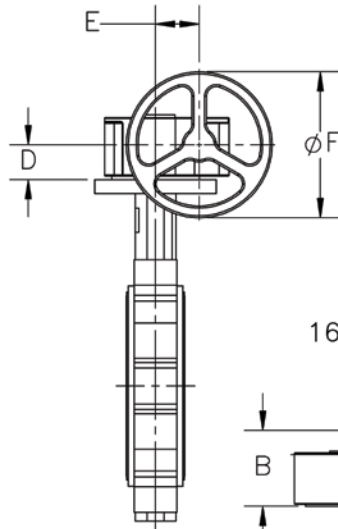
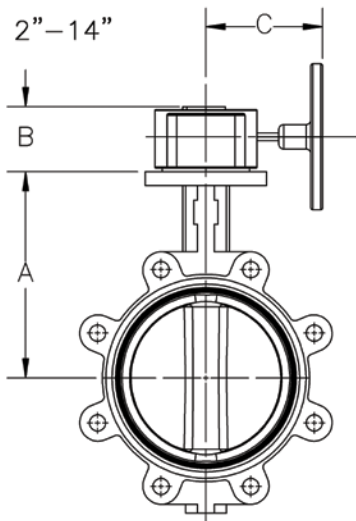
Electric Actuator Sizing: NS Series

Handle and Gear Operator Sizing

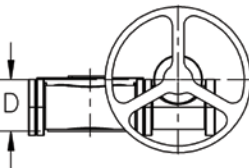
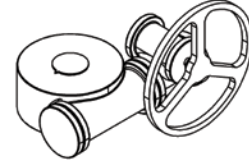
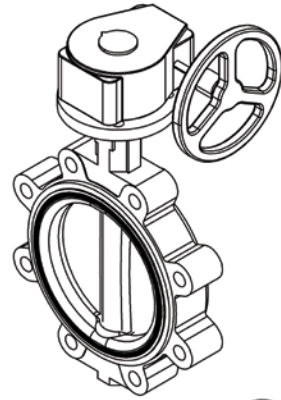
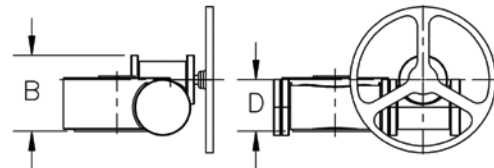
HANDLE (2"-6" ONLY)



GEAR OPERATOR



16"-24"



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	10.25
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	3.27	7.09	1.81	2.48	-	-	
10"	10.43	10.43							
12"	12.01	12.01							
14"	14.49	14.49							
16"	15.75	15.75							
18"	16.61	16.61							
20"	17.91	17.40	6.14	7.80	4.17	7.13	-	-	
24"	22.24	22.24							
			7.21	11.85	5.04	7.87	16.00	-	-

Part Number Matrix for

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

A-T Controls **NS Series** Butterfly 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 (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



7 Stem Bushing	
R	PTFE/Brass
8 Operator Designation	
X	Bare Stem
S	Stainless Steel 10 position Handle
L	Locking Handle -10 position (up to 6")
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.

HOW TO ORDER MANUAL NS SERIES BUTTERFLY VALVES									
1	2	-	3	-	4	-	5 6 7	-	8 9
↓↓			↓		↓		↓↓↓		↓↓
NS			L1		0400		NBR		X A