

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)





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

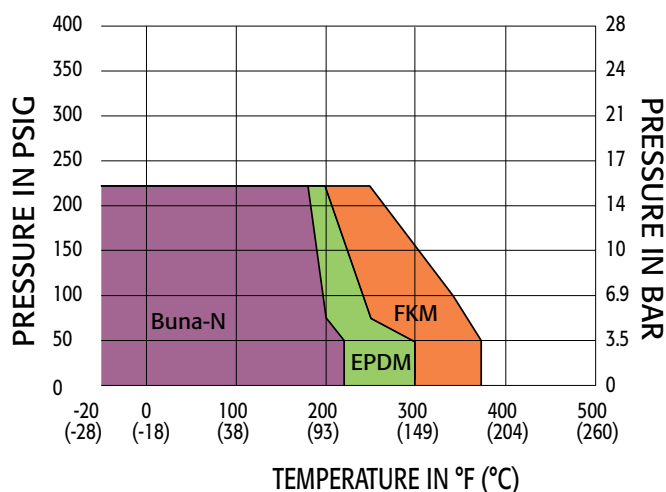
*16"-20" valves have quantity 2



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"



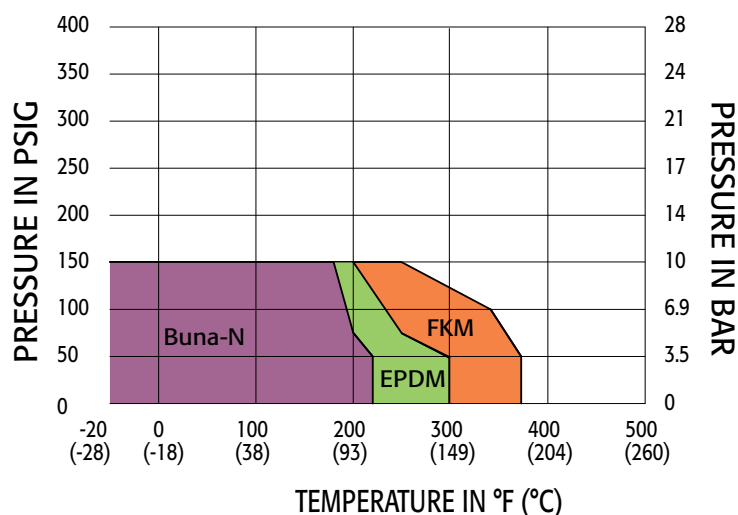
Approximate Operating Torque (In·lbs)

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	-	-

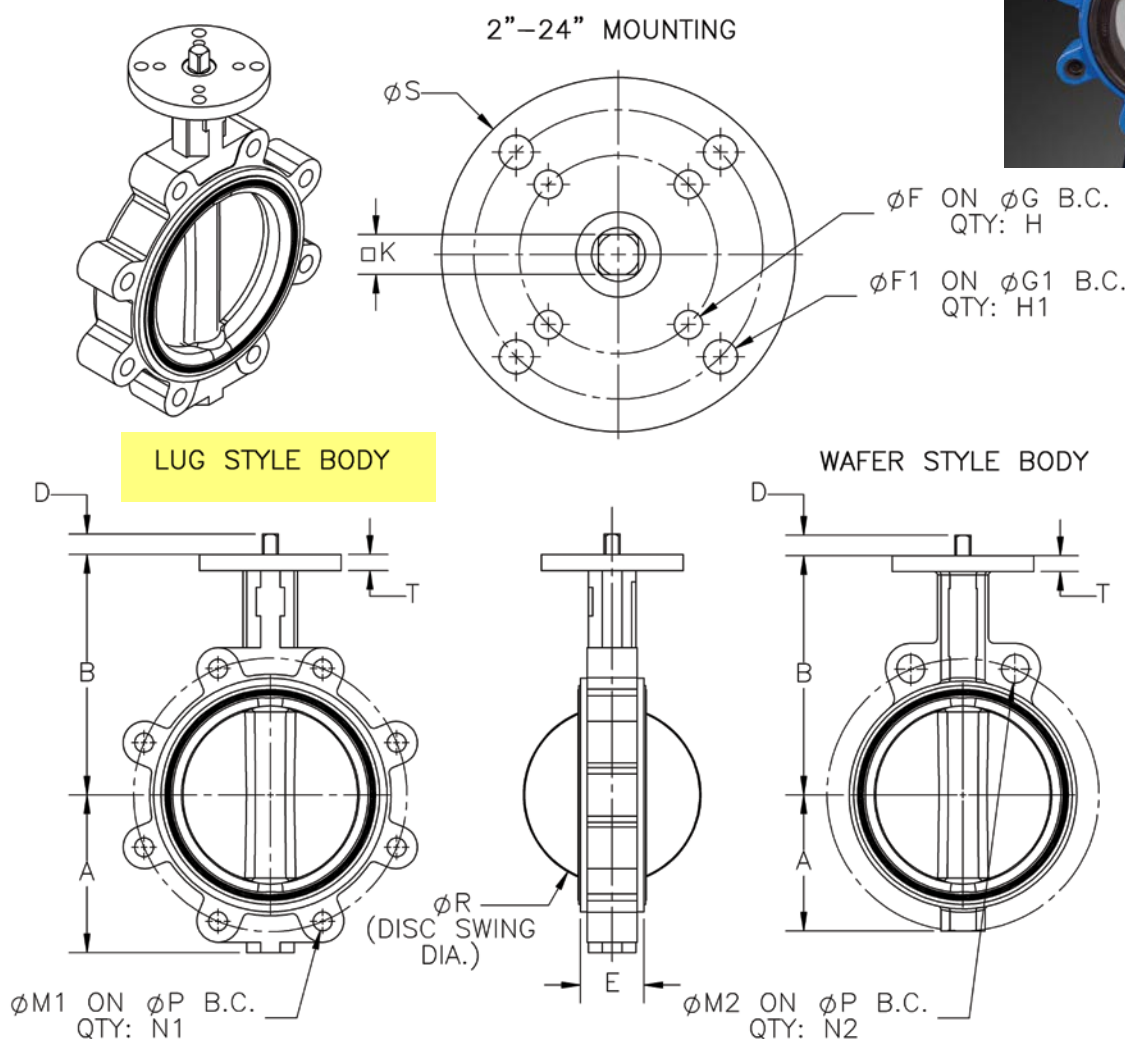
Seat Temperature Ratings

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"



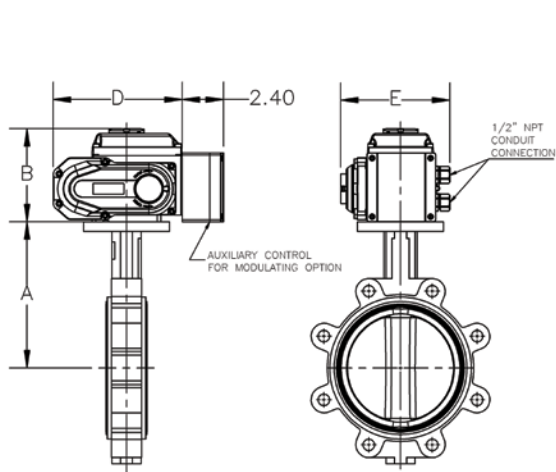
ANSI/ASME Class 150

Size	A		B		D	E	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	2.07	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	2.53	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	3.10	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	4.09	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	4.85	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	6.13	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	7/8 - 9	12	1.02	23	28	2	2	2	11.75	295	295	7.97	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	9.86	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	11.87	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	13.13	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	15.34	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	17.34	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	19.35	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	23.33	8.27	1.26	485	412

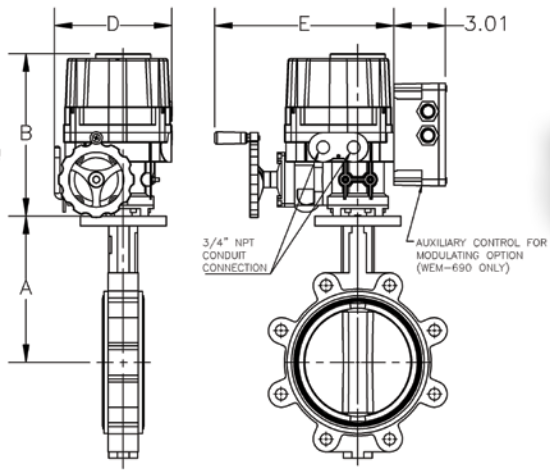
- Unless otherwise specified, all dimensions are in inches.
- Face-To-Face dimensions (E) are across the body flats (metal-to-metal). Approximately 1/16" of the rubber seat protrudes from each side for flange sealing.
- 2" - 24" Lug valve end connections conform to ANSI B16.5 Class 150, Wafer valve end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

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

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

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			
<i>blank</i> 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

WE/XE Series

WE/XE Series



WE CSA Approved,
Type 4 & 4X,
IP67



XE
ATEX/IECEX
Ex d IIB T4 Gb, IP67



SE Type 4,
4X & 6, IP68

Acuator Models	Output Torque	90° Cycle Time (sec)	Motor Size	Full Load Amps					Locked Rotor Amps					Duty Cycle	Handwheel Turns	Weight
				AC/DC	1 Phase		3 Phase		AC/DC	1 Phase		3 Phase				
WE / XE	In-Lbs.	60 / 50 Hz	Watts	24V	110V/60Hz	220V/60Hz	380V	440V	24V	110V/60Hz	220V/60Hz	380V	440V	IEC 34-1 S4	N	Lbs.
-690	690	13 / 16	15	5	1.2	0.6	N/A	N/A	12.8	1.4	0.7	N/A	N/A	70%	10	16.4
-1350	1350	21 / 25	40	6	2	1	0.28	0.36	16.9	2.5	1.2	0.75	0.66	70%	11	36.7
-1700	1700	21 / 25	40	7.4	2.3	1.1	0.28	0.36	16.9	2.5	1.2	0.75	0.66	70%	11	36.7
-2640	2640	26 / 31	40	8.9	2.3	1.3	0.27	0.34	30.8	2.9	1.4	1	0.87	70%	13.5	48.6
-4400	4400	26 / 31	90	N/A	4.5	1.9	0.42	0.47	N/A	5	2.4	1.73	1.5	70%	13.5	50.8
-5200	5200	26 / 31	90	N/A	4.5	2	0.42	0.47	N/A	5	2.4	1.73	1.5	70%	13.5	50.8
-6900	6900	31 / 37	180	N/A	5.1	2.4	0.61	0.67	N/A	7.3	3.8	2.73	2.38	50%	16.5	64
-10500	10500	31 / 37	180	N/A	5.4	3.4	0.61	0.67	N/A	7.3	3.8	2.73	2.38	50%	16.5	64
-17500	17500	95 / 112	180	N/A	5.8	2.4	0.61	0.67	N/A	7.3	3.8	2.73	2.38	50%	49.5	167
-25900	25900	95 / 112	180	N/A	6.3	3.4	0.61	0.67	N/A	7.3	3.8	2.73	2.38	50%	49.5	167

Standard Specifications

Enclosure	Series WE - Weatherproof, CSA Type 4, 4X, IP67 Series XE - Explosion(Flame) Proof, ATEX/IECEX Ex d IIB T4 Gb, IP67 Series SE - Submersible, Type 4, 4X, & 6, IP68, 10m for 72hr
AWWA	Conforms to AWWA C540-93 requirements
Power supply	12/24VDC, 24/110/220VAC 1PH, 220/380/440/460/480VAC 3 PH, 50/60Hz, ±10%
Duty cycle	IEC60034-1 S4, 50%-70%, 1200 starts per hour (50% max torque at 25°C/77°F)
Motor	Class F Reversible Induction motor
Limit switches	Open / Close, SPDT, 16A 1/2HP 125/250VAC, 0.6A 125VDC, 0.3A 250VDC; (2) Operational & (2) Auxillary
Torque switches	Open / Close, SPDT, 16A 1/2HP 125/250VAC, 0.6A 125VDC, 0.3A 250VDC (except size -690)
Stall protection	Built-in thermal protection, Open 302°F (150°C) / Close 207°F (97°C)
Travel angle	0 to 90° ± 10° / 0 to 270° ± 10°
Indicator	Continuous position indicator
Manual override	Declutching mechanism
Self locking	Provided by double worm gearing
Mechanical stopper	Open / Close (external adjustable screws)
Space heater	7-10W Anti-condensation
Cable Conduit	Two 3/4" NPT
Lubrication	Grease moly (EP type)
Terminal block	Spring loaded lever push type
Materials	Steel, Aluminium alloy, Al bronze, Polycarbonate
Ambient temperature	Standard: -4°F — 158°F Explosion Proof standard: -4°F — 140°F
Ambient humidity	90% RH Max. (non-condensing)
Anti-Vibration	XYZ 10g, 0.2~34Hz, 30 minutes
External coating	Anodizing treatment before dry powder, Polyester

WE & XE Series

ELECTRIC ACTUATORS

Options

Option	WE	XE	SE	Available Models
Explosion Proof Enclosure (ATEX/IECEx II 2 G, Ex d IIB T4 Gb, IP67)	-	X	-	-500 to -25900
Submersible Enclosure (Type 4, 4X & 6, IP68, 10m for 72hr)	-	-	X	-690 to -10500
Potentiometer Unit (1k Ω to 10k Ω)	X	X	X	-500 to -25900
(TMC3) Electronic Modulating Card; 4-20mA, 1-5mA, 0-10VDC, 1-5VDC, 0-135 Ω command signal	X	X	X	WE-500 to -25900 XE/SE-1350 to -25900
(TDC) High Resolution Electronic Modulating Card; 4-20mA, 1-5VDC, 0-5VDC, 0-10VDC command signal	X	X	X	WE-500 to -25900 XE/SE-1350 to -25900
Local Control Unit (local/remote control)	X	-	-	-500 to -25900
Semi-Integral Control Unit (local/remote control with feedback)	X	-	-	-1350 to -25900
Intelligent Digital Control Unit (local/remote control with feedback and digital LCD display)	X	-	-	-1350 to -80000
Current Position Transmitter (4-20mA output)	X	X	X	-500 to -25900
Low Temp Kit (-40°F)	X	X	X	-500 to -25900
24V AC/DC Control	X	X	X	WE/XE-500A to -2640A SE-690A to -2640A
DC Motor (24VDC)	X	X	X	WE/XE-500C to -2640C SE-690C to -2640C
Rotation 120°, 180°, 270° turn	X	X	X	-690 to -10500
Visual LED Indicator (open, close, power, torque)	X	X	X	-1350 to -25900
Fire-Proof Covering (1050°C $\pm$ 5°C for 50 min)	-	-	-	Consult Factory for FE Series
Fire-Proof Covering (250°C $\pm$ 5°C for 150 min)	-	-	-	Consult Factory for FE Series

Enclosure Ratings

Series WE - Weatherproof, CSA Type 4, 4X, IP67

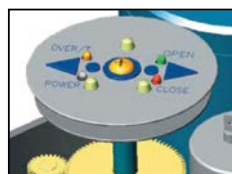
Series XE - Explosion(Flame) Proof, ATEX/IECEx
Ex d IIB T4 Gb, IP67

Series SE - Submersible, Type 4, 4X, & 6, IP68,
10m for 72hr



XE Explosion Proof Enclosure

- ATEX/IECEx Certification



Signal LED Unit
Large indicator with
monitoring lamps
(Over torque, open
and close)



Wiring Diagram References

Model	Description	Drawing
WE-500	115 VAC/1 Phase, Two Position	SE 1010
WE-500A	24 VAC/24 VDC, Two Position	SE 1168/SE 1130
WEM-500	115 VAC/1 Phase, Modulating with TMC3 Servo Card	SE 1085
WE-690	115 VAC/1 Phase, Two Position	SE 1032
WEM-690	115 VAC/1 Phase, Modulating with TMC3 Servo Card	SE 1235
WE/XE-1350 thru 25900	115 VAC/1 Phase, Two Position	SE 1080
WE/XE-1350A thru 2640A	24 VAC/24 VDC, Two Position	SE 1221/SE 1220
WEM/XEM-1350 thru 25900	115 VAC/1 Phase, Modulating with TMC3 Servo Card	SE 1052
Digital Control Unit	3 Phase/Modulating	SE 1222
Digital Control Unit	3 Phase/Two Position	SE 1301
Semi-Integral Unit	1 Phase/Proportional	SE 1176
Semi-Integral Unit	1 Phase/Two Position	SE 1097

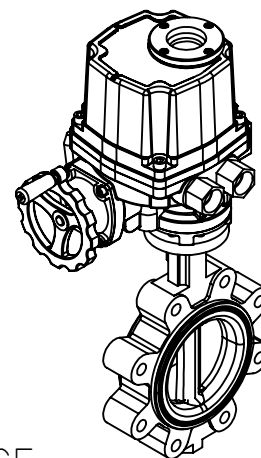
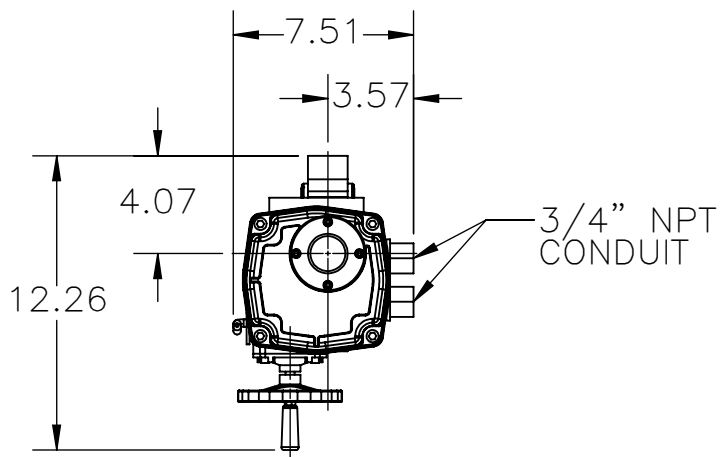
» See www.atcontrols.com to download specific wiring diagrams
(Download > Sort by Document Type > Electric Schematic)

High Speed Electric Actuators

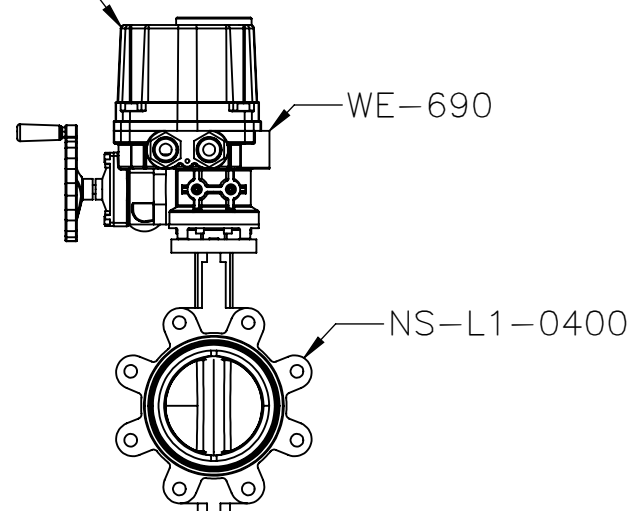
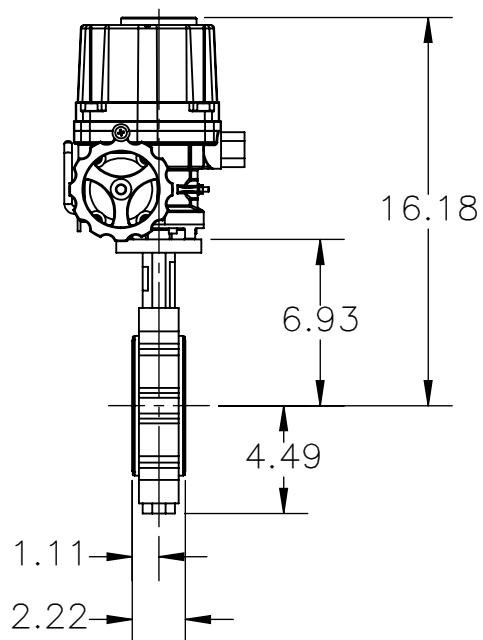
Model	Output Torque (In-Lbs)	Speed (60Hz) (seconds)	Torque Switch Setting (In-Lbs)
WE-690*HS2	290	4.5	N/A
WE-690*HS1	400	7.0	N/A
WE-1350*HS2	840	7.0	1,350
WE-1350*HS1	1,200	10.5	1,350
WE-2640*HS2	1,390	8.5	2,640
WE-2640*HS1	2,050	13.0	2,640
WE-4400*HS2	2,350	8.5	4,400
WE-4400*HS1	3,500	13.0	4,400
WE-6900*HS2	4,500	10.5	6,900
WE-10500*HS1	6,700	15.5	10,500
WE-17500*HS2	12,000	31.0	17,500
WE-25900*HS1	18,000	47.0	25,900

Motor specifications remain the same.

*Must specify voltage - see part number matrix on pg 22

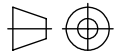


4.72" CLEARANCE
REQUIRED FOR
COVER REMOVAL



9955 INTERNATIONAL BLVD.
CINCINNATI, OHIO 45246
PHONE: (513) 247-5465
FAX: (513) 247-5462

DO NOT SCALE DRAWING



DESCRIPTION

NS-L1-400 / WEB1 (WE-690 ELECTRIC ACTUATOR
DIRECT MOUNTED TO A 4" 150# LUG-STYLE NS
SERIES RSBFV)

DRAWN BY SJK

DATE 05/01/20

CHECKED BY KWT

DATE 05/01/20

RELEASED BY KWT

DATE 05/01/20

SHEET 1 of 1

MATERIAL

DRAWING NO.

T13103

REVISION

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