



Electric *Fail-Safe Actuators*

MOMENTARY
SELECTOR SWITCH

MAINTAINED
SELECTOR SWITCH



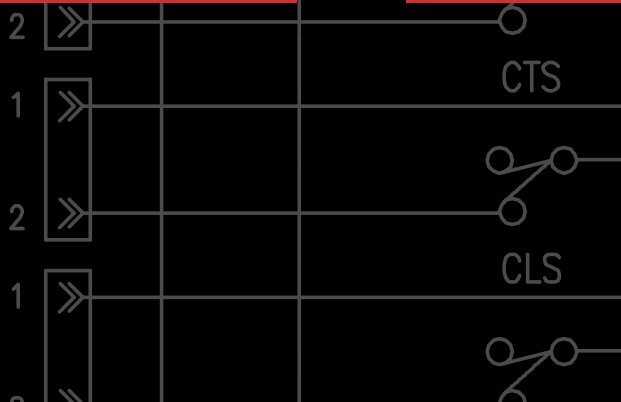
Spring Return Electric Fail-Safe

Mechanical Spring Torques
up to 2300 In-Lbs



Battery Backup Electric Fail-Safe

Torques up to 2640 In-Lbs
Emergency shutdown applications



IN
SWITCH
UNIT

Spring Return Electric Fail-Safe Actuators

FSE Series

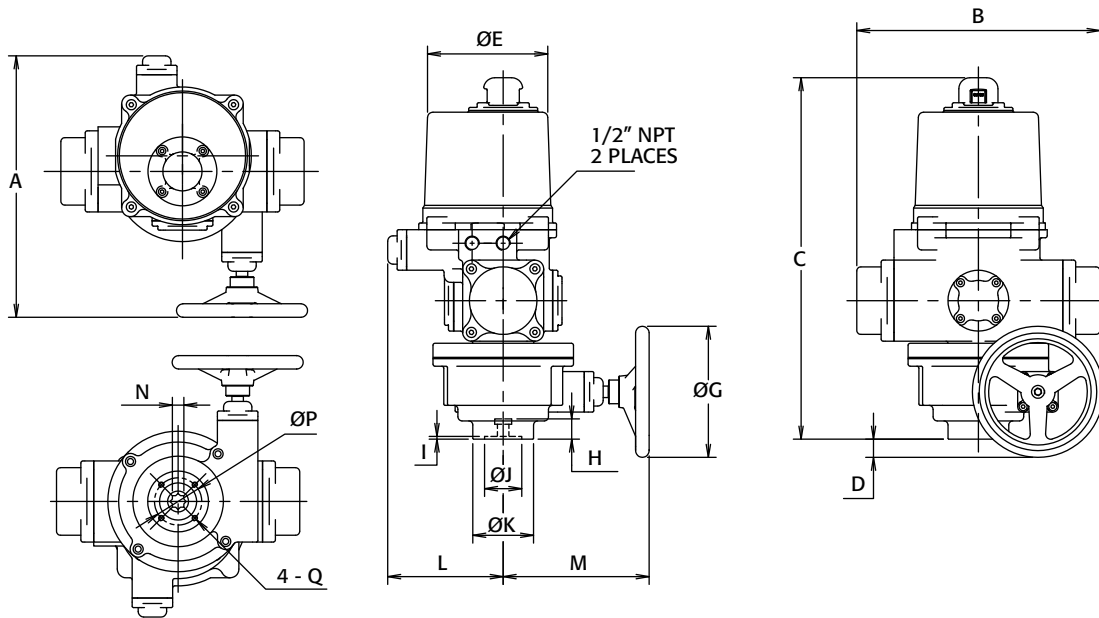


Features and General Information

- Corrosion resistant IP67, Type 4X construction
- Die cast aluminum housing and cover
- Powder polyurethane coated
- Four internal switches (2-Indication; 2-Motor Control)
- Stainless steel fasteners
- Visual position indicator
- Spring engagement mechanism design for extended cycle life
- Four models, 440 In-Lbs to 2300 In-Lbs
- 24VDC, 24VAC, 110/120VAC, 220/240VAC
- Heater and thermostat
- Optional manual override
- 50% Duty Cycle
- Standard Temperature Range (-22°F to 149°F)
(Low Temp option to -40°F)

Technical and Dimensional Information

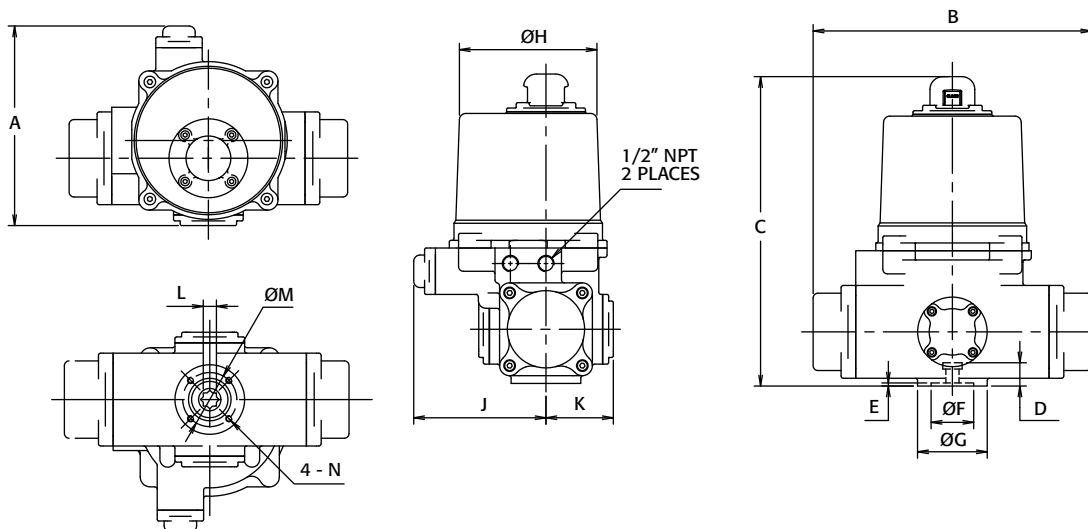
FSE Series with Manual Override



DIMENSIONS (IN)

SIZE	A	B	C	D	E	G	H	I	J	K	L	M	N	P	Q	ISO 5211	LBS
FSE-440MO	15.24	14.17	21.06	1.38	7.01	7.64	1.18	0.16	2.17	3.54	6.73	8.50	0.669	2.756	M8-1.25	F07	82
FSE-1150MO	19.06	18.19	25.12	2.68	10.31	11.61	1.61	0.20	2.76	4.92	9.72	9.33	0.866	4.016	M10-1.5	F10	163
FSE-1770MO	23.19	23.62	28.94	4.29	11.97	15.67	1.77	0.20	3.35	5.91	12.01	11.18	1.063	4.921	M12-1.75	F12	298
FSE-2300MO	23.19	23.62	28.94	4.29	11.97	15.67	1.77	0.20	3.35	5.91	12.01	11.18	1.063	4.921	M12-1.75	F12	298

FSE Series without Manual Override



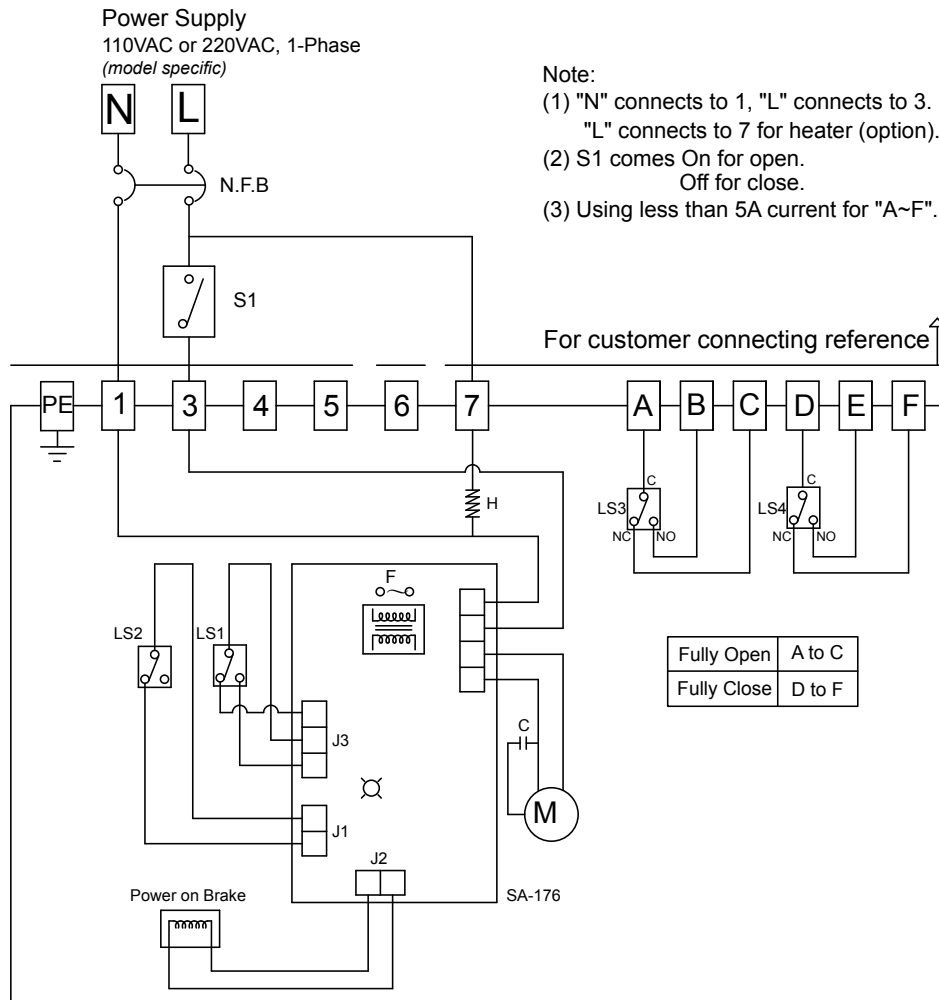
DIMENSIONS (IN)

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	ISO 5211	LBS
FSE-440	10.16	14.17	16.73	1.22	0.20	2.17	3.94	7.01	6.73	3.43	0.669	2.756	M8-1.25	F07	60
FSE-1150	14.37	18.19	19.80	1.61	0.20	2.76	5.51	10.43	9.72	4.33	0.866	4.016	M10-1.5	F10	126
FSE-1770	17.24	23.62	22.72	1.81	0.24	3.35	6.69	12.01	12.01	5.24	1.063	4.921	M12-1.75	F12	209
FSE-2300	17.24	23.62	22.72	1.81	0.24	3.35	6.69	12.01	12.01	5.24	1.063	4.921	M12-1.75	F12	209

Wiring Diagram

FSE Series 110VAC 1 Phase, On/Off

SE 1201



110/120 VAC, 1 Phase

Model	Max Torque		Motor Power	Operating Time (Sec/90°)		Current Ratings (60Hz/50Hz)			
	N.m	In. lbs.		Motor (60Hz/50Hz)	Spring	110VAC / 1 Phase		120VAC / 1 Phase	
						Run	Lock	Run	Lock
FSE-440	50	443	50W	7/9	3	1.0A / 1.3A	2.0A / 2.2A	1.0A / 1.3A	2.0A / 2.2A
FSE-1150	130	1151	130W	7/9	8	2.6A / 4.5A	10A / 10.5A	3.8A / 6.9A	11A / 11.5A
FSE-1770	200	1771	130W	11/13	12	2.6A / 4.5A	10A / 10.5A	3.8A / 6.9A	11A / 11.5A
FSE-2300	260	2302	130W	14/17	12	2.6A / 4.5A	10A / 10.5A	3.8A / 6.9A	11A / 11.5A

24V DC/AC, 1 Phase

Model	Max Torque		Motor Power	Operating Time (Sec/90°)		Current Ratings	
	N.m	In. lbs.		Motor	Spring	24V DC/AC 1 Phase	
						Run	Lock
FSE-440	50	443	50W	7	3	3.0A	4.0A
FSE-1150	130	1151	130W	8	8	9.0A	19.0A
FSE-1770	200	1771	130W	11	12	9.0A	19.0A
FSE-2300	260	2302	130W	17	12	9.0A	19.0A

220/240 VAC, 1 Phase

Model	Max Torque		Motor Power	Operating Time (Sec/90°)		Current Ratings (60Hz/50Hz)			
	N.m	In. lbs.		Motor (60Hz/50Hz)	Spring	220VAC / 1 Phase		240VAC / 1 Phase	
						Run	Lock	Run	Lock
FSE-440	50	443	50W	7/9	3	0.6A / 0.7A	1.0A / 1.2A	0.7A / 0.8A	1.3A / 1.5A
FSE-1150	130	1151	130W	7/9	8	1.5A / 2.2A	5.0A / 5.1A	2.1A / 3.8A	5.6A / 5.7A
FSE-1770	200	1771	130W	11/13	12	1.5A / 2.2A	5.0A / 5.1A	2.1A / 3.8A	5.6A / 5.7A
FSE-2300	260	2302	130W	14/17	12	1.5A / 2.2A	5.0A / 5.1A	2.1A / 3.8A	5.6A / 5.7A

Weight

Model	Weight (Lbs)	
	Standard	w/ Manual Override
FSE-440	60	82
FSE-1150	126	163
FSE-1770	209	298
FSE-2300	209	298

Backup Battery Electric Fail-Safe Actuators

BFS Series

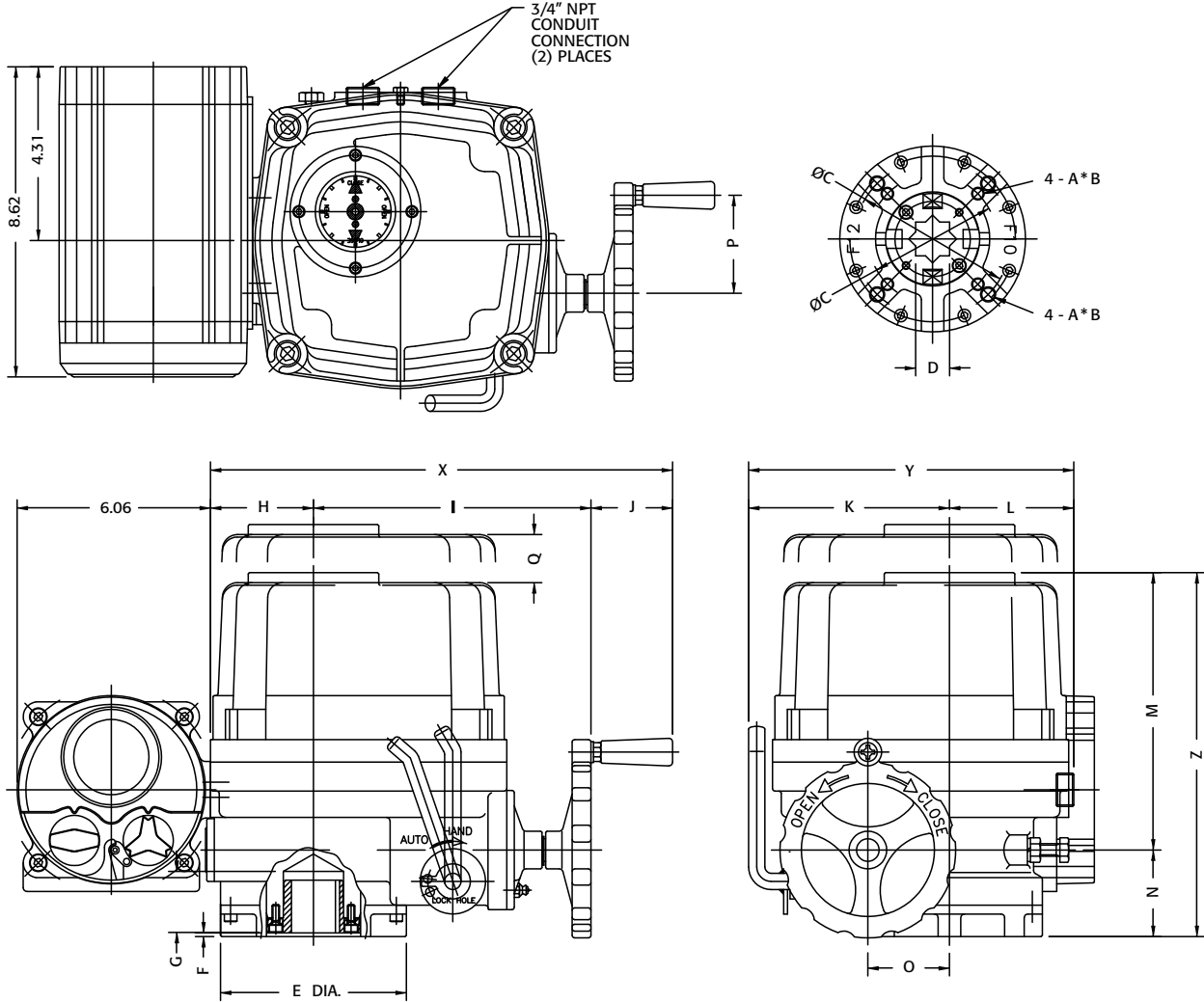


Features and General Information

- Corrosion resistant housing and enclosure Type 4, 4X, and 6, IP65
- Four internal switches (2-Indication; 2-Motor Control)
- Heater and thermostat standard
- Sealed, maintenance-free, rechargeable battery
- 110 VAC, 220 VAC (*model specific*)
- Local or Remote Control
- Battery power level indication
- LED indication for Power Supply/Open/Close/Fault
- Configurable to fail clockwise or counter-clockwise on loss of power
- Manual override with handwheel
- Standard ambient temperature range: -4°F to 140°F

Technical and Dimensional Information

BFS Series



LED LAMP SIGNAL	
WHITE	○ POWER
GREEN/BLACK/RED	○ BATTERY LEVEL
BLUE	○ REMOTE
YELLOW	○ FAULT
RED	○ OPEN
GREEN	○ CLOSE

- Configurable to fail close or fail open on loss of power supply
- VRLA battery capacity for 5 cycles after loss of power
- Battery recharges automatically when re-energized

BFS Motor Data (110VAC)

Model	Torque (In-Lbs)	Speed (Quarter-Turn)	Full Load Current
BFS-690	690	13	1 AMP
BFS-1350	1350	21	1.3 AMPS
BFS-1700	1700	21	1.5 AMPS
BFS-2640	2640	26	1.9 AMPS

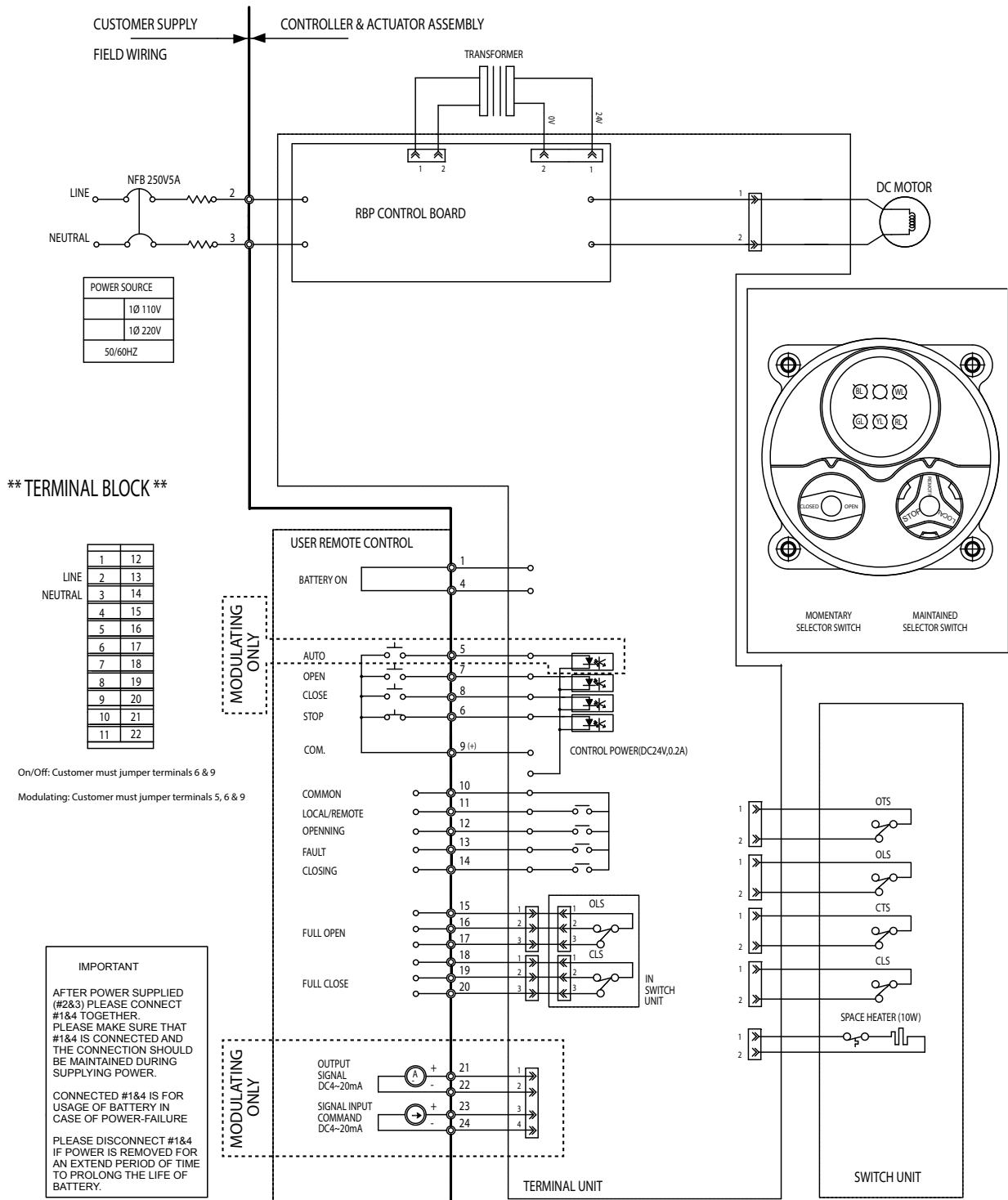
DIMENSIONS (IN)

SIZE	A	B	C	D sq	E	F	G	H	I	J	K	L	M	N	O	P	Q	X	Y	Z	ISO 5211	LBS
BFS-690	M8	0.47	2.756	0.669	3.46	0.12	1.26	1.97	6.18	2.01	3.94	2.76	6.57	2.09	1.57	2.36	4.72	10.16	6.69	9.25	F07	35
BFS-1350	M8/M10	0.47/0.59	2.756/4.016	0.748	4.92	0.12	1.65	2.87	7.87	2.56	5.59	3.43	7.56	2.68	2.13	3.07	6.30	13.31	9.02	10.55	F07/F10	49
BFS-1700	M8/M10	0.47/0.59	2.756/4.016	0.748	4.92	0.12	1.65	2.87	7.87	2.56	5.59	3.43	7.56	2.68	2.13	3.07	6.30	13.31	9.02	10.55	F07/F10	52
BFS-2640	M10/M12	0.59/0.71	4.016/4.921	1.063	5.83	0.12	1.93	3.23	8.70	2.56	6.30	3.90	8.70	2.72	2.56	3.07	7.09	14.49	10.20	11.42	F10/F12	62

Wiring Diagram

BFS Series On/Off or Modulating

ON/OFF - SE1231 MODULATING - SE1253



**** NOTE ****

Technical Explanation

AUTO : REMOTE mA CONTROL
OLS : OPEN LIMIT SWITCH
CLS : CLOSE LIMIT SWITCH
OTS : OPEN TORQUE LIMIT SWITCH
CTS : CLOSE TORQUE LIMIT SWITCH
RL : RED LAMP FOR OPEN
GL : GREEN LAMP FOR CLOSE
YL : YELLOW LAMP FOR FAULT
RY1 : REMOTE MONITOR RELAY

BATTERY : LED LAMP MODE
RL : RED LAMP FOR BAT 50%
GL : GREEN LAMP FOR FULL RECHARGE
BL : BLUE LAMP FOR 50 ~ 80%

WL : WHITE LAMP FOR POWER
BL : BLUE LAMP FOR REMOTE

⊙ : MARKS FOR TERMINAL

**** LIMIT SWITCH CONTACT POSITIONS ****

ROTOR	CON-TACT	VALVE OPENING (%)	
		0	100
OPEN (OLS)	1-3		
	1-2		
CLOSE (CLS)	1-3		
	1-2		

— : CONTACT ON

--- : CONTACT OFF



TRIAC® Electric Fail-Safe Actuators Part Number Reference



How to Order FSE Series

1 Model	
FSE	Fail-Safe Electric Spring Return Actuator

2 Control	
blank	(2) Position Control (Open / Close)
M	Standard Modulating Control Card

3 Actuator Sizes	
Size	
-440	440 In-Lbs
-1150	1150 In-Lbs
-1770	1770 In-Lbs
-2300	2300 In-Lbs

4 Motor	
X	110/120VAC/1PH
C	24VDC On/Off only
D	24VAC/1PH On/Off only
E	220VAC/1PH

5 Action	
blank	No options, Standard
MO	Manual Override

6 Fail Direction (must be determined at time of order)	
FC	Fail Close / Clockwise
FO	Fail Open / Counter-Clockwise

HOW TO ORDER					
1	2	-	3	4	5 - 6
↓	↓		↓	↓	↓
FSE	M	-	440	X	MO - FC

How to Order BFS Series

1 Model	
BFS	Battery Backup Fail-Safe Electric Actuator

2 Main Control	
blank	(2) Position Control (Open / Close)
M	Standard Modulating Control Card with 4-20mA transmitter
E	Ethernet On/Off
F	Ethernet Proportional Control/Position Feedback
P	Profibus DP On/Off
Q	Profibus DP Proportional Control/Position Feedback
R	Modbus RTU (RS485) On/Off
Z	Modbus RTU (RS485) Proportional Control/Position Feedback

3 Actuator Sizes	
Size	
-690	690 In-Lbs
-1350	1350 In-Lbs
-1700	1700 In-Lbs
-2640	2640 In-Lbs

4 Motor	
X	110VAC/1PH (Standard - omit when at end of part number)
E	220VAC/1PH

5 Secondary Control Options	
X	No options, Standard (omit when at end of the part number)
HS1	High Speed 1 (see High Speed Options)
HS2	High Speed 2 (see High Speed Options)
R	2-Wire Control+ (110 VAC control voltage)
S	2-Wire Control+ (24 VAC control voltage)
T	2-Wire Control+ (24 VDC control voltage)

+ Use 9 Miscellaneous Options 2 to specify direction

6 Miscellaneous Options 1 others available upon request	
blank	No options, Standard
X	Multiple Option Designation
T	0-10VDC or 4-20mA Transmitter (On/Off)
N	1000 Ohm Potentiometer
O	5000 Ohm Potentiometer
P	10K Ohm Potentiometer
S	(4) Auxillary limit switches (6 total)

HOW TO ORDER								
1	2	-	3	4	5	6	7	8 - 9
↓	↓		↓	↓	↓	↓	↓	↓
BFS	M	-	2640	-	-	-	-	-

7 Conduit Thread Options	
blank	Standard
X	Multiple Option Designation
M	M20
A	M25

8 Drive Bushing	
blank	Standard
X	Multiple Option Designation
N	Non Standard Drive Bushing Size
6	316 Stainless Steel Standard Drive Size

9 Miscellaneous Options 2	
blank	Standard
X	Multiple Option Designation
C	Corrosion Resistant NANO Polymer Coating
L	CCW Operation (specify for 2-wire control)
R	CW Operation (specify for 2-wire control)
P	Non Standard Coating Color

other options available upon request

Examples

FSE-440XMO-FC

Triac Spring Return Electric Fail clockwise, Fail-Safe Actuator, 440 In-Lbs Torque Output, 7 Sec Cycle Speed, Two Position Control, 115VAC/1PH, 2 Amps LR, (2) Auxiliary Limit Switches, Thermostat and Heater, 70mm bolt circle, 17mm female drive, Weight-82 Lbs, with 200mm dia handwheel manual override
***** FAIL CLOCKWISE *****

BFSM-2640

Triac Battery Failsafe System Electric Actuator, 2640 In-Lbs, 26 Second Operation, 115VAC/1PH, Modulating Control, Type 4 & 6, Compartment Heater & Thermostat, (2) Auxiliary Limit Switches, (2) Torque Switches, Diecast Anodized Aluminum Polyester Coated Construction, Class F Extended Duty Fan Motor, Manual Override, (2) 3/4" NPT Conduit Connections, F10/F12 ISO Mounting Pad, 27MM (1.063) Star Output Drive, Local / Remote Control
*****Fail Clockwise on Loss of Power*****

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

