



# Electric *Fail-Safe Actuators*

MOMENTARY  
SELECTOR SWITCH

MAINTAINED  
SELECTOR SWITCH



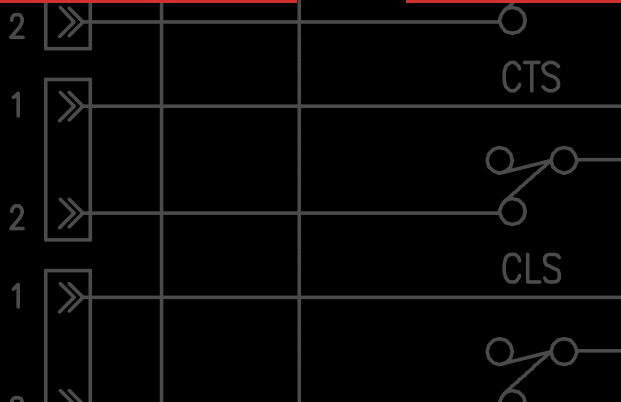
## Spring Return Electric Fail-Safe

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*

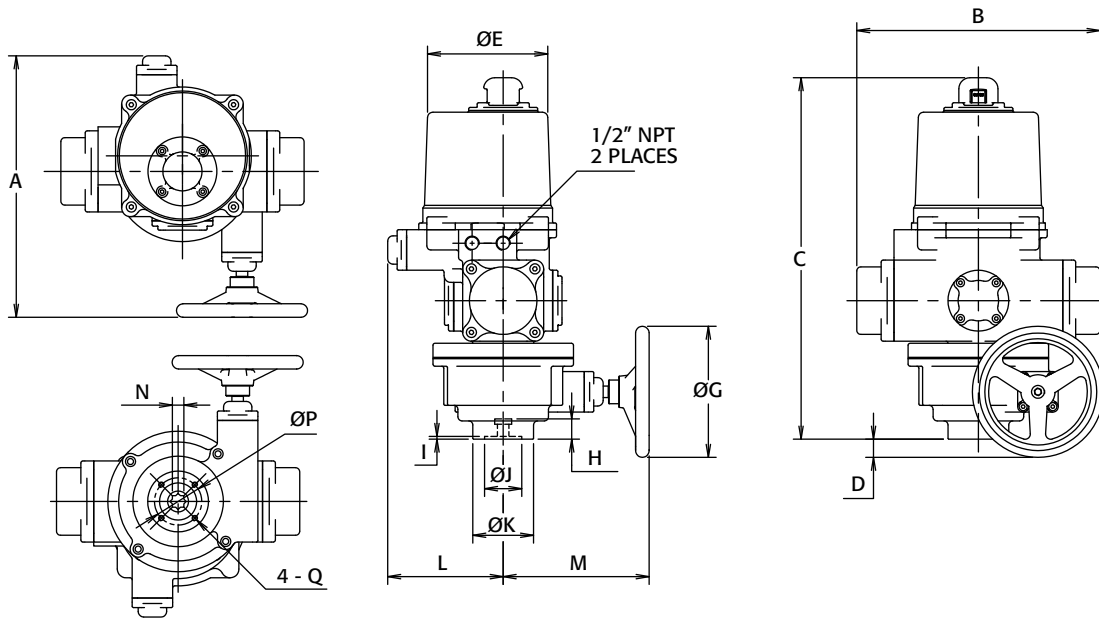


### ***Features and General Information***

- 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

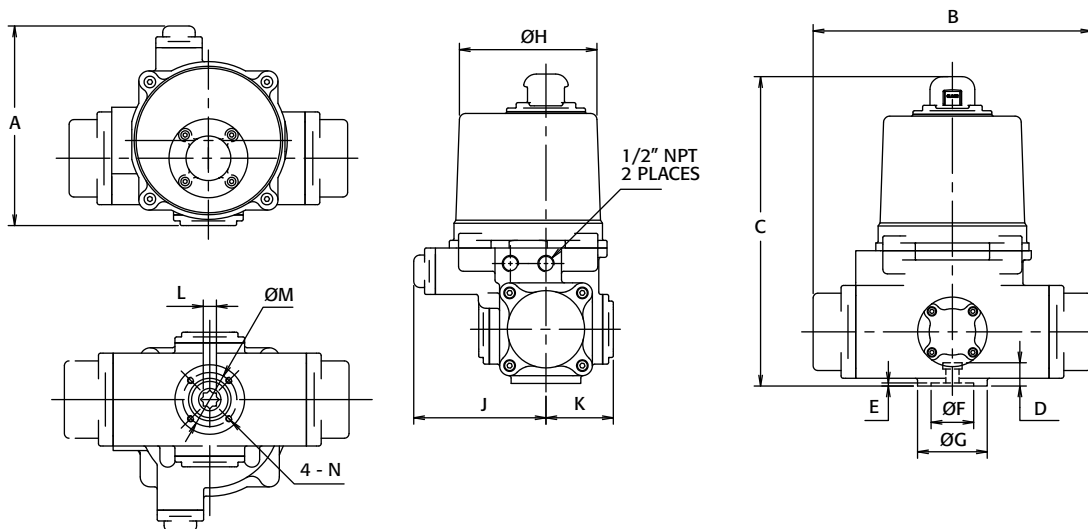
## FSE Series with Manual Override



### DIMENSIONS (IN)

SIZE	A	B	C	D	E	G	H	I	J	K	L	M	N	P	Q	ISO 5211	LBS
<b>FSE-440MO</b>	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
<b>FSE-1150MO</b>	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
<b>FSE-1770MO</b>	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
<b>FSE-2300MO</b>	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



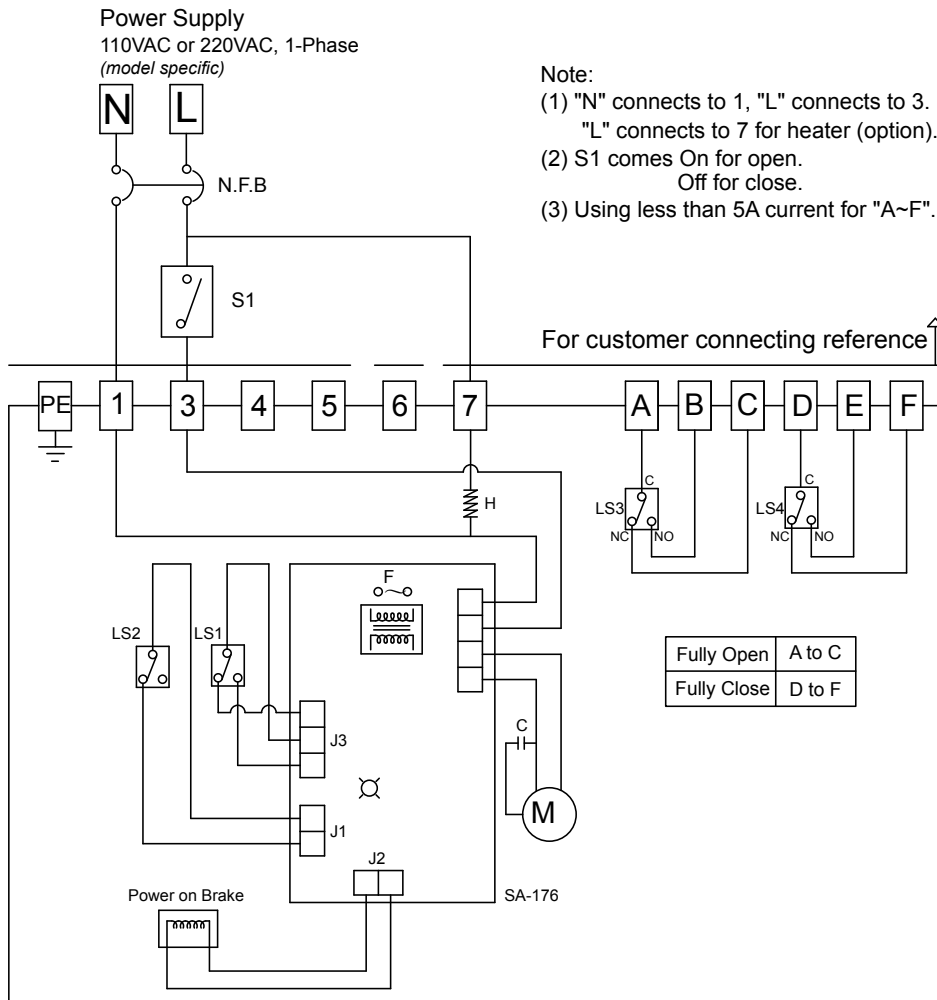
### DIMENSIONS (IN)

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	ISO 5211	LBS
<b>FSE-440</b>	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
<b>FSE-1150</b>	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
<b>FSE-1770</b>	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
<b>FSE-2300</b>	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*

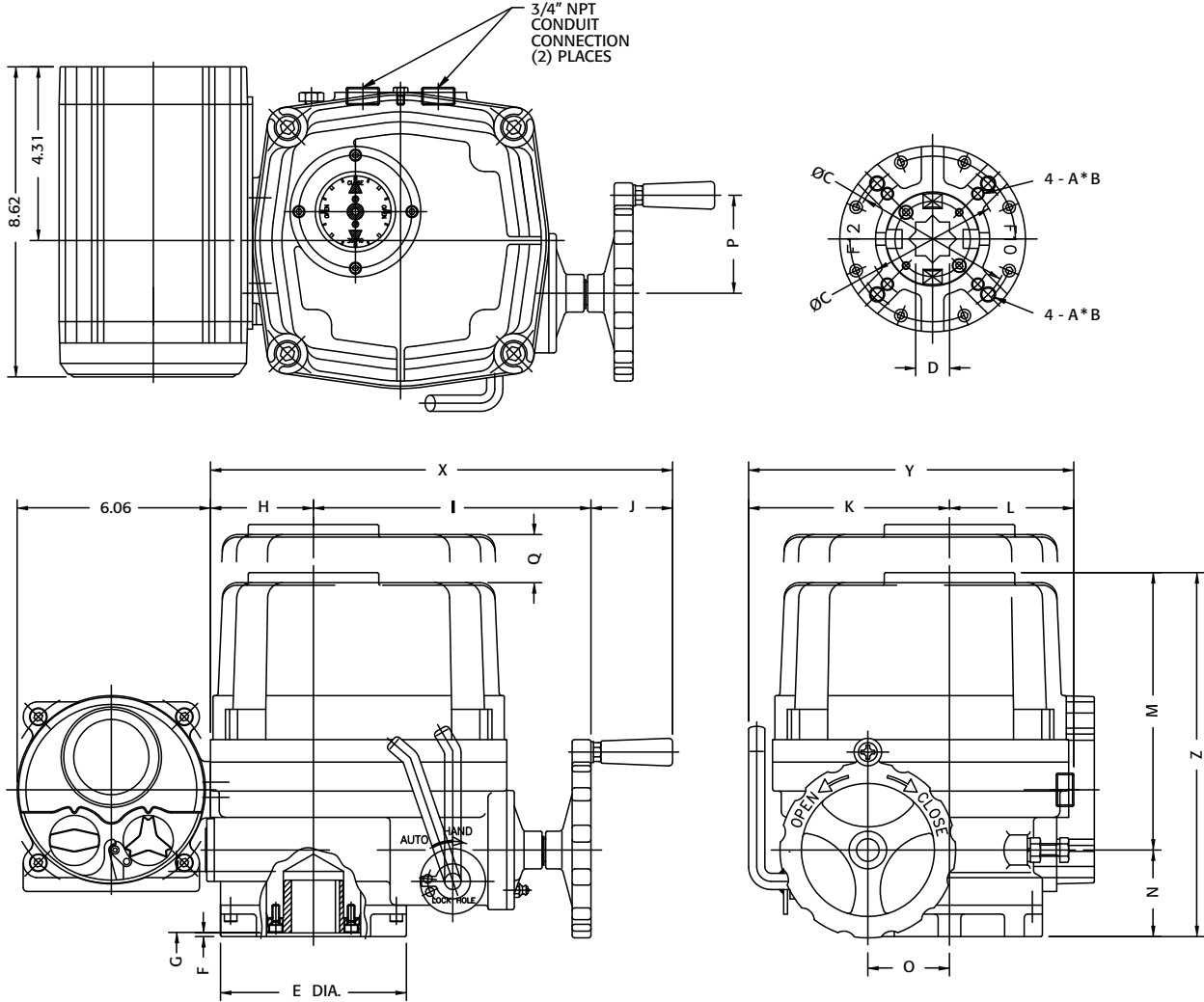


### **Features and General Information**

- 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 and Close/Fault
- 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)

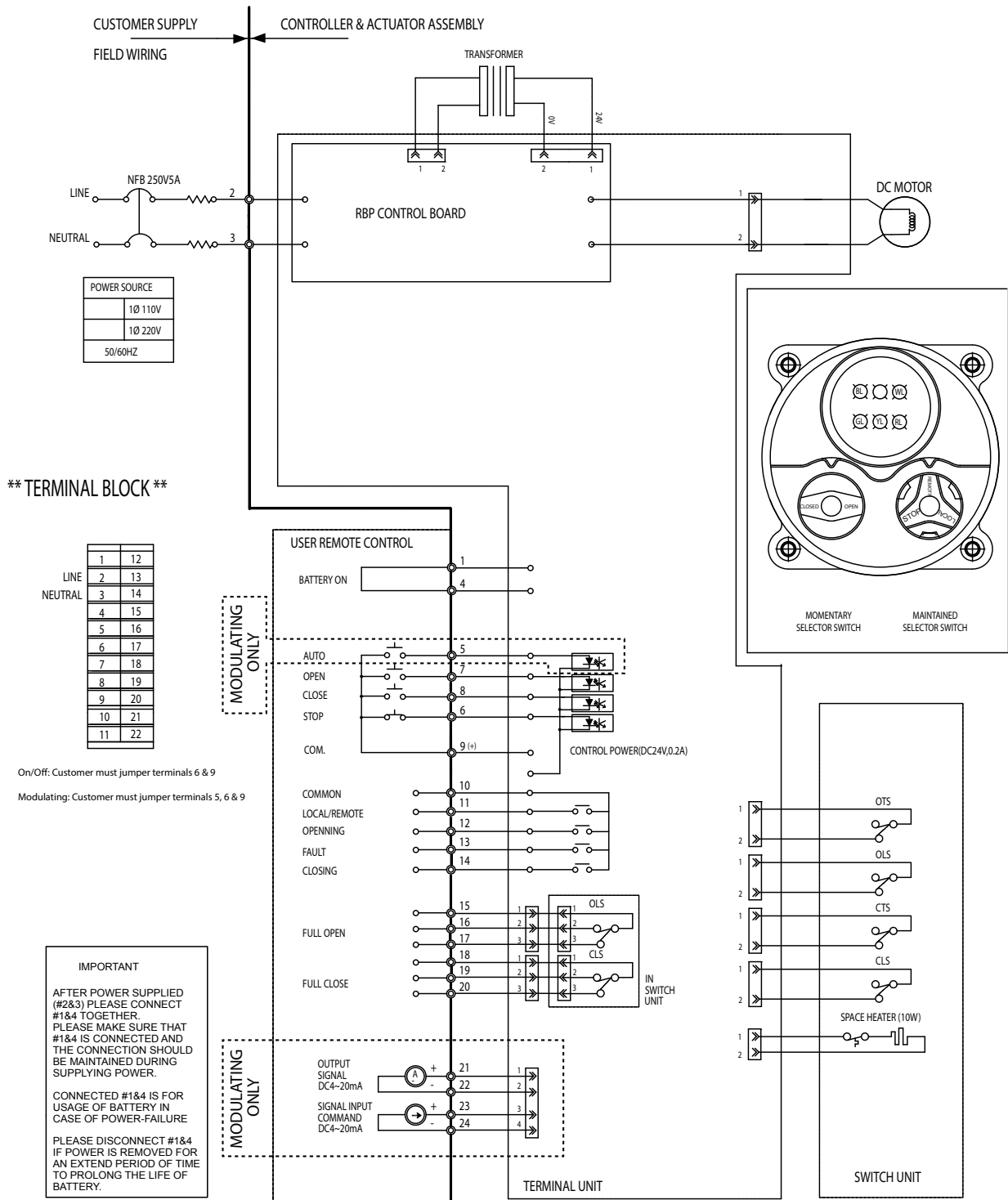
SIZE	A	B	C	D sq	E	F	G	H	I	J	K	L	M	N	O	P	Q	X	Y	Z	ISO 5211	LBS
<b>BFS-690</b>	M8	0.47	2.756	0.669	3.46	0.12	1.26	1.97	6.18	2.01	3.94	2.76	6.57	2.09	1.57	2.36	4.72	10.16	6.69	9.25	F07	35
<b>BFS-1350</b>	M8/M10	0.47/0.59	2.756/4.016	0.748	4.92	0.12	1.65	2.87	7.87	2.56	5.59	3.43	7.56	2.68	2.13	3.07	6.30	13.31	9.02	10.55	F07/F10	49
<b>BFS-1700</b>	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
<b>BFS-2640</b>	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  
⊙ : MARKS FOR TERMINAL

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

**\*\* 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® Fail-Safe Actuator Series Part Number Reference

Model	
FSE	Fail-Safe Electric Spring Return Actuator
BFS	Battery Backup Fail-Safe Electric Actuator

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

Actuator Sizes (FSE)	
Size	
-440	440 In-Lbs
-1150	1150 In-Lbs
-1770	1770 In-Lbs
-2300	2300 In-Lbs

Actuator Sizes (BFS)	
Size	
-690	690 In-Lbs
-1350	1350 In-Lbs
-1700	1700 In-Lbs
-2640	2640 In-Lbs

Motor	
X	110/120VAC/1PH (blank on BFS Series)
C	24VDC FSE On/Off only
D	24VAC/1PH FSE On/Off only
E	220VAC/1PH

Action Note: Add all miscellaneous options to end of part number	
Blank	No options
MO	Manual Override (standard on BFS)
FC	Fail Close (must be determined at time of order for FSE Series)
FO	Fail Open (must be determined at time of order for FSE Series)

### 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.

LOCAL/REMOTE



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