

## **INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS**

### **For Chemline A- & Q-Series Electric Failsafe Actuator**

#### ***General:***

The Chemline Q & A-Series reversing electric actuators feature a fail-safe rechargeable battery pack option which is capable of 25 cycles under battery power alone. This option also includes a low voltage indicator light on the housing exterior and an internal “Local/Remote” switch to facilitate calibration during start-up maintenance.

Available torque output:	QA: 150 in-lb	AA: 400 in-lb
	QB: 300 in-lb	AB: 700 in-lb
		AC: 1100in-lb
		AD: 2000in-lb

Available voltages: 12, 24, 120 & 220 VAC, 12 & 24 VDC

#### ***Operation:***

The fail-safe option uses a high energy, rechargeable flat pack battery to provide power to the actuator upon loss of primary power. The actuator is powered by a 12 VDC motor. As long as power is available from the primary power source, the fail-safe relay directs the power through the control relay to the actuator motor and limit switches.

Upon loss of power the fail-safe will de-energize, interrupting the normal power circuits and connecting the battery pack to a circuit that bypasses the control relay and powers the actuator to the fail position (either open or closed). Once the condition that initiated the fail-safe action no longer exists, the circuit board’s detection and controls circuits will automatically reset. Immediately upon reset and dependent upon the input to the control circuit, the actuator may drive to the non-fail-safe position. The failsafe position is set to fully-closed at the factory but can be changed to fully-open once installed.

#### ***Power-open and power-closed Operation:***

To cycle valve open and closed using input voltage and maintain designated fail position, the following is required:

- A. Constant input voltage to terminals #1 & #4 at location J1
  - B. Contact closure at terminals #5 & #6 = valve open
  - C. Contact open at terminals #5 & #6 = valve closed
- (The local-remote switch becomes the open-closed switch)

**Installation & Maintenance Instructions A- & Q- Series Failsafe Actuators cont.*****Installation:***

Refer to **ASSEMBLY DRAWING #029FS** and proceed as follows:

To remove actuator cover it is necessary to remove the manual override knob (A-Series) or handle (Q-Series) by loosening the slotted setscrew. Remove the cover bolts.

For AC powered units: connect incoming AC power to Terminal Block J1, Hot lead to terminal #1 and Neutral lead to terminal #4.

For DC powered units: connect incoming DC power to Terminal Block J1, Positive lead to terminal #1 and Negative lead to terminal #4.

**NOTE:** Battery must be disconnected during shipment. Reconnect battery after installation.

***Calibration and Adjustment:***

To ensure reliable operation, the battery pack should be replaced every year. To ensure maximum battery capability over the year, the battery charging voltage must be precisely adjusted to 12.5 – 12.8 volts (no load). The proper adjustment is made during final testing at the factory, but it should be checked upon installation.

**NOTE:** Use a digital volt meter or digital multimeter with +/- 1.2% accuracy

1. After disconnecting power, remove cover. First remove manual override knob by loosening the slotted setscrew. Then remove the cover bolts.
2. Unplug the battery cable from the circuit board. Check the battery voltage at the terminal block, the middle contact is negative. If the voltage is not 12.2 volts then it is necessary to charge the battery.
3. Reconnect power (unplug the battery cable). With power supplied to the actuator, measure the voltage at Terminal Block J2 – terminal #2 is negative. If the voltage measured is not 12.5 – 12.8 VDC, adjust the potentiometer “CHARGE”. See drawing # 048FS.
4. Reconnect the battery cable. If the battery is fully charged, the low voltage indicator light will be flashing intermittently. If the battery is low on charge (i.e. the battery voltage is below 11.5 VDC) the low battery indicator light should be easily visible (ON).
5. Move the “REMOTE/LOCAL” selector switch #4 to “LOCAL”. This will allow you to operate the actuator without the need for assistance from the remote control panel. You can now operate the actuator by moving selector switch “OPEN-CLOSE”. See drawing # 048FS. The shaft of the actuator should run until it stops in the “Fully Open” position, and the green LED is illuminated, or in the “Fully Closed” position and the red LED is illuminated. See drawing #050FS. If necessary to readjust the micro switches “OPEN” or “CLOSED”, move the selector switch “OPEN (local) – CLOSED (remote)” to “OPEN (local)” and adjust open closed.
6. Move “REMOTE-LOCAL” switch to “REMOTE”. Apply power to the actuator, the actuator shaft should run until it stops in the “FULL OPEN” position.

## Installation & Maintenance Instructions A- & Q- Series Failsafe Actuators cont.

### Maintenance:

**WARNING:** Be sure that power is off before removing actuator cover.

The Chemline Battery Pack provides power output that is more than sufficient to ensure actuator operation in the adverse conditions that usually exist in emergency situations. Although this pack is rugged, like any other power source, there are several precautions that should be observed to ensure long battery life.

1. Battery voltage should be maintained between 12 VDC minimum and 13 VDC maximum, measured at battery test jacks located on the fail-safe circuit board (see adjustment and calibration – steps 4 & 5).
2. A shelf life of three (3) years should be expected from a battery pack.
3. Store battery pack at an average temperature of 26°C (80° F). Lower temperatures increase shelf life. Conversely, higher temperatures decrease shelf life.
4. The minimum operating temperature is –9° C (+15° F). Heater/thermostat is recommended if temperatures of 0° C (+32° F) or lower are anticipated – the heater/thermostat option is not powered by the battery pack and requires a separate external power source. The maximum operating temperature is 52° C (125° F). Sustained exposure to temperatures over 52° C (125° F) can result in destruction of the battery.

### Engineering Data:

Maximum Battery Current Charge: 200 mA (13 Volts); V = 10.8; C = 700 mAH

### Electrical Requirements:

SIZE	115VAC		220VAC		12VDC		24VDC		12VAC		24VAC		CYCLE TIME 90 ° (SEC)	WEIGHT (LBS)
	AMP	DUTY	AMP	DUTY	AMP	DUTY	AMP	DUTY	AMP	DUTY	AMP	DUTY		
QA	0.4	100%	0.2	75%	2.0	75%	4.0	75%	2.5	75%	4.0	75%	5	7.25
QB	0.4	75%	0.2	75%	2.0	75%	4.0	75%	2.5	75%	4.0	75%	5	7.25
AA	0.4	75%	0.2	75%	2.5	75%	4.0	75%	3.0	75%	3.5	75%	10	15.85
AB	0.4	50%	0.2	75%	2.5	75%	4.0	75%	3.0	75%	3.5	75%	10	15.8
AC	0.4	75%	0.2	75%	2.0	75%	2.5	75%	2.8	75%	2.5	75%	25	16.4
AD	0.4	50%	0.2	50%	2.0	50%	2.5		3.0	50%	2.5	50%	25	19.35

**NOTE:** All amp ratings are considered locked rotor.

**CAUTION:** Actuators mounted outdoors must be protected from direct sunlight to keep internal temperatures below 52° C (125° F).

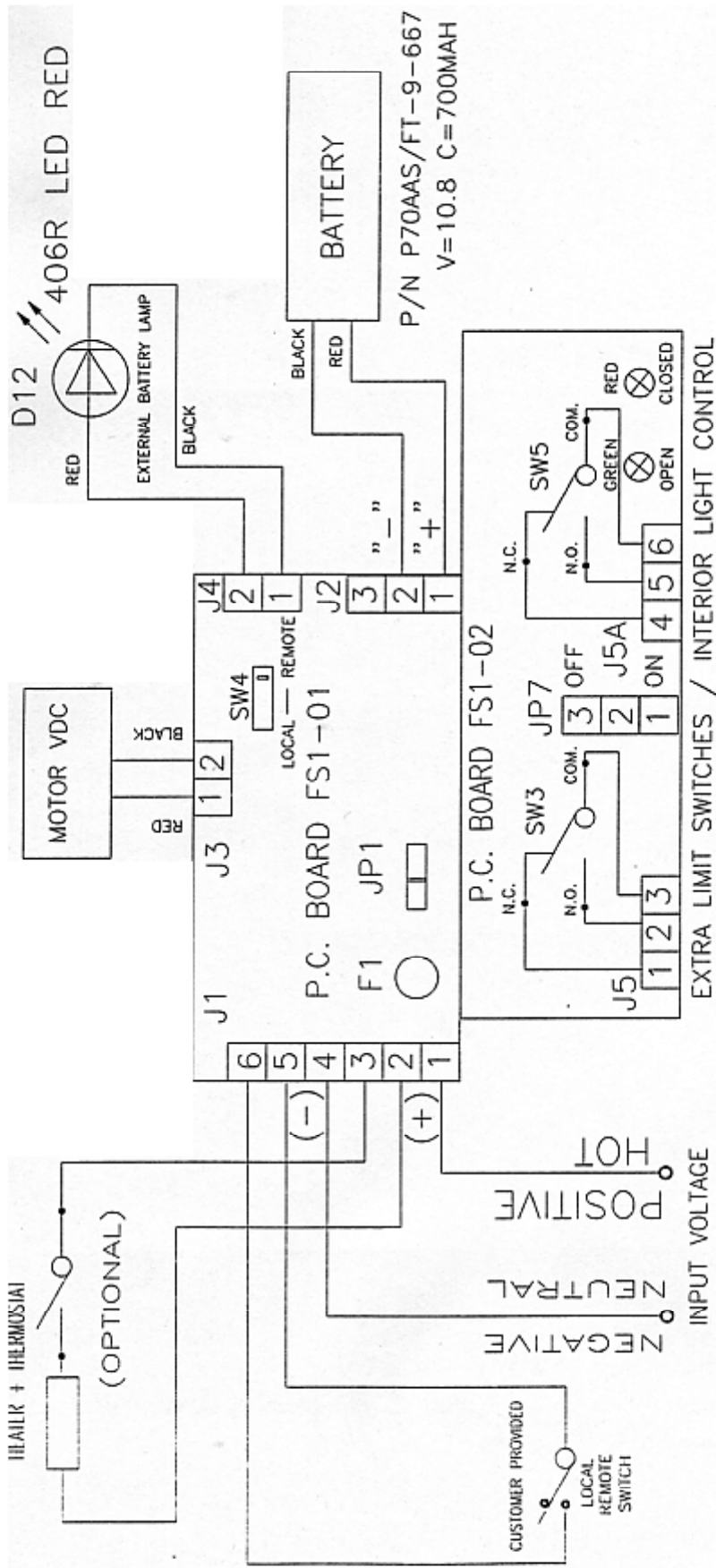
**NOTE:** Battery must be disconnected during shipment. Reconnect battery after installation.

Fuse Replacement: If actuator does not function, check for blown overload protection fuse (F1). Replace only with original fuse type 2AG FAST-ACTING

For 120/220VAC 1.0 A

For 12 VAC or VDC 3.0 A

For 24 VAC or VDC 4.0 A



EXTRA LIMIT SWITCHES / INTERIOR LIGHT CONTROL

NOTES 1:

F1 - FUSE IR5 # 19373 FAST-ACTING

FOR 120VAC/220VAC - 2.0A

12VAC/12VDC - 3.0A

24VAC/24VDC - 4.0A

Motor Leads at J3 reversed for B + C92 or

"Fail Open" operation

CHEMLINE PLASTICS

Q and A SERIES FAILSAFE  
WIRING DIAGRAM

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SIZE A DWG. NO. 0029FS REV B

SCALE NTS SHEET 1 OF 1



# PART LIST BOARD FS-01

#	SYMBOL	DESCRIPTION	#	SYMBOL	DESCRIPTION
01	UI	VOLT. REG.	18	ZD-1	ZENER DIODE
02	TT1	TRANSISTOR	19	R1,R2	RESISTOR
03	TT2	TRANSISTOR	20	R3	RESISTOR
04	F-1	FUSE 1.5A	21	R4	RESISTOR
05	RY-1	RELAY	22	R5	RESISTOR
06	J4	TERM. BLOCK	23	R7	RESISTOR
07	J2	CONN.HEADER	24	R8	RESISTOR
08	J3	CONN.HEADER	25	R9	RESISTOR
09	J1	TERM. BLOCK	26	R10	RESISTOR
10	J5	TERM. BLOCK	27	R11	RESISTOR
11	SW4	SWITCH	28	R11	RESISTOR
12	C1	CAPACITOR	29	TR-1	TRANSFORMER
13	C2,C3	CAPACITOR	30	BR-1	BRIDGE RECT.
14	C4	CAPACITOR	31	JP1	JUMPER
15	C5	CAPACITOR	32	JP4,5,6	JUMPER
16	D1-D5	DIODE			
17	D6-D9	DIODE			

