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FIGURE A

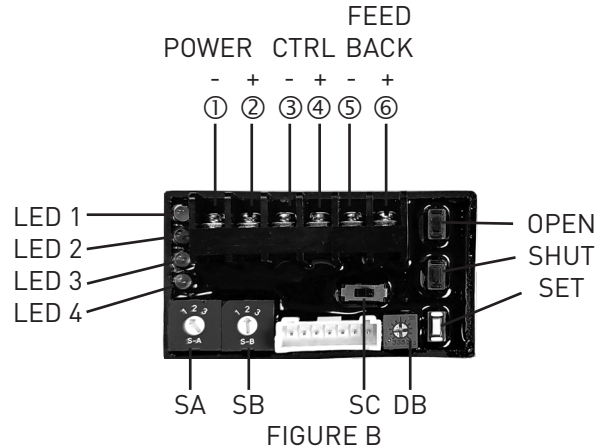


FIGURE B



**The SF-ZC control pack, when shipped together with a Series 1000-X actuator, is factory calibrated and set for 90° rotation; NO ADJUSTMENT IS NECESSARY. If you are replacing an SF-ZC setting of the position limits is MANDATORY before use.**

**NOTE: ACTUATOR IS EQUIPPED WITH MECHANICAL STOPS. THESE ARE FOR MANUAL OPERATION ONLY AND SHOULD NOT BE USED TO SET THE POSITION LIMITS ON THE ACTUATOR.**

**WARNING: FEEDBACK SIGNAL IS DEVICE POWERED. APPLICATION OF LOOP POWER MAY CAUSE PERMANENT DAMAGE.**

### INITIAL SETUP

If not connected to the actuator, install the SF-ZC by plugging the three cables from the actuator into the unit. Connect the appropriate power to terminals 1&2. Connect the control signal to terminals 3&4. The control signal is polarity sensitive and **must be correctly connected positive (+) and negative (-)**.

If feedback is being used, connect the wiring to terminals 5&6. The SF-ZC provides position feedback of 4-20mA. If 2-10Vdc feedback is required apply a 500 ohm resistor in parallel across terminals 5&6.

At this point, the Green LED "L1" should be illuminated. If Red LED "L2" is illuminated then the control signal is faulty or SC switch in Figure B above is not set correctly for your control signal. Ensure the SC switch is set for your input control signal (2-10V or 4-20mA). Once there are no Red LED's illuminated, your actuator is ready to operate. Increase/decrease your control signal to confirm proper operation. See the chart below for failure mode conditions on the SF-ZC control pack.

| SF-ZC CONTROL PACK LED'S |   |   |
|--------------------------|---|---|
| LED                      | CAUSE DESCRIPTION   | REMEDY  |
| LED-1 (GREEN)            | POWER IS PRESENT ON INPUT TERMINALS   | NORMAL OPERATION  |
| LED-2 (RED)              | IMPROPER CONTROL SIGNAL, NOT PRESENT OR INCORRECT POLARITY  | CHECK SC SWITCH TO ENSURE PROPER CONTROL SIGNAL(2-10v/4-20mA) - CHECK TO ENSURE SIGNAL IS PRESENT   |
| LED-3 (RED)              | POTENTIOMETER IS NOT CALIBRATED WITH ACTUATOR   | MANUALLY MOVE ACTUATOR TO MID POSITION THEN RETURN TO SERVICE. (CALL FOR ASSISTANCE IF PERSISTS)  |
| LED-4 (RED)              | OVER-TORQUE CONDITION PRESENT - VALVE BINDING, OR MANUAL OVERRIDE HAS BEEN USED AND ACTUATOR IS OUT OF SYNC WITH CONTROLLER | CHECK TO MAKE SURE VALVE IS NOT BINDING. RESET CONTROL PACK BY ROTATING SA FROM 1 TO 2 AND BACK TO 1, OR REMOVE/REPLACE POWER TO THE UNIT |

**NOTE: THE ACTUATOR WILL NOT OPERATE UNLESS THE AUTO/MANUAL OVERRIDE PUSH BUTTON IS DEPRESSED.**



FIGURE C



FIGURE D

### **MANUAL OVERRIDE PUSH BUTTON**

The Series 1000-X units are equipped with a manual override power button which disconnects the power internally to the motor - Figure C above. This enables manual operation of the actuator using the provided hand crank or the optional hand wheel. The alarm LED's on the SF-ZC will still be illuminated in manual mode. To clear alarm manually move to mid travel then return to auto.

### **SWITCH SETTINGS**

SA is used for setting the “direct acting” (2V/4mA=closed and 10V/20mA=open) or “reverse acting” (2V/4mA=open and 10V/20mA=closed) rotation of the actuator. Direct acting is setting (1) and reverse acting is setting (3). SA is also used for placing the actuator in “set mode” – setting (2). Set mode is used to manually stroke the actuator by pressing the “open” or “shut” button and for setting the stroke limit position of the actuator (see below). SB is used for setting the fail position of the actuator in case of a control signal loss only, **not** power loss. Figure D above shows the side of the control pack with settings for SA and SB. **The SF-ZC unit is factory set to SA-1 and SB-2 “direct acting” and fail “in place”.** The SC switch is used for selecting the input control signal (2-10V or 4-20mA). DB is used for setting the sensitivity on the “dead band” – rotate clockwise for less sensitive, rotate CCW for more sensitive. Units are factory set to mid-range sensitivity.

### **SETTING THE POSITION LIMITS**

Refer to FIG B for button/switch details. If the SF-ZC is shipped inside of an actuator the position limits are preset and need no adjustment. **If the SF-ZC is purchased as a replacement you MUST perform the following sequence to set the limits.** All position limits should be set prior to the point the actuator reaches the mechanical limit, failure to adhere to this requirement may cause permanent damage. To re-set the position limits of the unit, **SA should be placed in “set mode” by switching to position “2”.** At this point, the “open” or “shut” buttons can be pressed to stroke the actuator. When setting the closed limit, push the “shut” button or manually rotate actuator to desired position and make sure the control signal is applied with the proper V or mA required for close, e.g. 2V or 4mA. While holding the white “set button”, depress the “shut” button and hold until LED illuminates, then release both buttons. The closed limit is now set. When setting the open limit, push the “open” button or manually rotate actuator to desired position and make sure the control signal is applied with the proper V or mA required for open, e.g. 10V or 20mA. While holding the white “set button”, depress the “open” button and hold until LED 2 illuminates, then release both buttons. The open limit is now set. SA can now be set back to (1) direct acting or (3) reverse acting. Increase/Decrease control signal to confirm proper operation.

**NOTE: ACTUATOR IS EQUIPPED WITH MECHANICAL STOPS. THESE ARE FOR MANUAL OPERATION ONLY AND SHOULD NOT BE USED TO SET THE POSITION LIMITS ON THE ACTUATOR.**

For the complete IOM on the Series 1000-X actuators, please visit [www.valvesolutions.com](http://www.valvesolutions.com) or if technical support is needed during setup or troubleshooting, please call 770-740-0800.