FLOWSERVE

**FCD WCAIM2034-01**
(Part 17256)

# *Worcester Controls 10-40 39 Access M Mounted Limit Switch (Proximity Sensor) and Solenoid*

*Installation, Operation and Maintenance Instructions*

When shipped for field installation, the limit switch (proximity sensor)/solenoid assembly will be broken down into subassemblies. The subassemblies are: (1) the switch (sensor) operator assembly, consisting of the switches (sensors), bracket, springs and buttons; and (2) the enclosure (housing), probes, solenoid (if applicable), control block or air connection block, block gasket, PC board or terminal strip and cover. Hardware items and gasket are packaged separately. Retaining rings and O-rings shall be assembled.

Ambient temperature range of Access unit is 0°F minimum to 160°F maximum.

***NOTE:*** *Access M Mounted Limit Switch (Proximity Sensor)/Solenoid Kits fit only Revision R5 and later 39 Actuators. Included in the Access M Mounted Limit Switch (Proximity Sensor)/Solenoid Kits is a Rebuild/Accessory Addition Label which is to be marked and applied to actuator after switch has been installed.*

1. The Access M Mounted Limit Switch (Proximity Sensor)/Solenoid assembly will be mounted on the right-hand end cap (when viewed from actuator nameplate) with conduit connection on the right side of the housing (when viewed from the cover side of the switch).

**CAUTION: When actuator is installed in outdoor conditions, water can enter the exhaust hole(s) of the control block or air connection block, and then freeze. Flowserve suggests a cover be used, or mount the actuator such that the block exhaust hole(s) will not fill with water.**

The “standard” mounting configuration of the 39 actuator to the valve is in-line, fail-closed. In this configuration, SW-1, as described in Section 6 and in the wiring diagram, will give indication when the actuator is in the open position (green LED is on), or CCW (counterclockwise) limit of rotation. SW-2 gives indication of the closed position (red LED is on), or CW (clockwise) limit of rotation. See Section 8 for appropriate wiring diagram.

***NOTE:*** *The CW or CCW rotation of the actuator shaft is determined when viewing the actuator from the nameplate side of the actuator, while being able to read the label from left to right.*

Fail-open mounting configuration may be obtained by either inverting the actuator, using in-line coupling or mounting the actuator cross-line (sizes 10-20) or indexing the coupling (including valve ball and stem) 90° to the actuator shaft (sizes 25-40). In these cases SW-2, as described in Section 6 and in the wiring diagram, will give indication when the actuator is in the open position (green LED is on). SW-1 gives indication of the closed position (red LED is on). Actuator shaft rotation will vary, depending on which fail open mounting is used. See Section 8 for appropriate wiring diagram.

***NOTE:*** *LEDs not offered with 240 VAC single-voltage units.*

*Printed circuit boards (LEDs) not offered with proximity sensors.*

*The fail-open wiring diagrams in Section 8 and adjustments in Section 6 are for cross-line or 90° indexed mountings only. For wiring and adjustments of other fail closed or fail open configurations consult Flowserve.*

2. Remove cover from enclosure.

**CAUTION: The longer probe must be in the left hand through-hole looking at the housing from the cover side. (Both probes are the same length for the 1039 ACCESS only!)**

3. Assemble the enclosure, with probe assemblies, to the actuator inserting the housing gasket between the actuator end cap and the housing. Important! Do not apply any grease to the gasket, it must be installed dry. Secure with four machine screws. For all ACCESS M units, four threaded tamper proof plugs are installed over the machine screws. Once installed, no attempt should be made to remove these plugs. If it becomes necessary to remove enclosure from actuator end cap, consult Flowserve. Check the probes for freedom of movement by moving them back and forth slightly.

4. With assembly complete to this point, it is convenient to make conduit connections and bring wiring through enclosure. The power supply to the solenoid coil is 3 watts. Required amperage is shown below. It should be noted that the successful use of this device in hazardous, wet, or other detrimental environments depends on proper conduit construction techniques.

| Voltage | Holding Amps* |
|---|---|
| 24 VAC 50/60 Hz | .13 |
| 120 VAC 50/60 Hz | .025 |
| 240 VAC 50/60 Hz | .013 |
| 12 VDC | .25 |
| 24 VDC | .13 |

**Inrush is 80% greater than holding values on AC solenoids.*

5. When the switch (sensor) package is assembled, one of the probes will make contact with the switch (sensor) button. Simply press the switch (sensor) package until the mounting screws can be engaged. Tighten mounting screws until bracket is secure.

6. Switches (sensors) have been factory adjusted, but should be rechecked after installation. Adjustment is as follows:

   A. Limit Switches using PC Board and LEDs (24 VDC; 24, 120 VAC):

   With actuator mounted in "standard" fail-closed mounting configuration (see Step 1) and wired per appropriate wiring diagram, set actuator in full-closed position, CW limit of rotation, with the adjustment screw near its loose limit. Adjust closed position switch SW-2 (see Wiring Diagram) by tightening the adjustment screw until red LED turns on. Then for SPDT switch tighten adjustment screw one additional turn.

   For DPDT switch tighten adjustment screw additional ¼ turn only.

   With air supplied to actuator, energize the solenoid to change actuator to its full-open position, CCW limit of rotation. The yellow and orange LEDs should be lit indicating coil voltage and coil continuity, respectively. Adjust the open position switch, SW-1 in the same manner as the closed position switch until the green LED turns on. Then for SPDT switch tighten adjustment screw one additional turn. For DPDT switch tighten adjustment screw additional ¼ turn only. When the solenoid is de-energized, the actuator will return to its full-closed position. The yellow, orange and green LEDs will turn off indicating solenoid de-energized and actuator no longer in full open position and the red LED will turn on indicating the actuator is in the full-closed position.

   For fail-open mounting configuration, wire actuator per appropriate wiring diagram, set actuator in full-open position, CW limit of rotation, with adjustment screw near its loose limit. Adjust open position switch SW-2, by tightening the adjustment screw until the green LED turns on. Then for SPDT switch, tighten adjustment screw one additional turn. For DPDT switch tighten adjustment screw additional ¼ turn only.

   With air supplied to actuator, energize the solenoid to change actuator to its full-closed position, CCW limit of rotation. The yellow and orange LEDs should be lit indicating power to the coil and coil continuity, respectively. Adjust the closed position switch, SW-1 in the same manner as the open position switch until the red LED turns on. Then for SPDT switch, tighten adjustment screw one additional turn. For DPDT switch, tighten adjustment screw additional ¼ turn only. When the solenoid is de-energized, the actuator will return to its full-open position. The yellow, orange and red LEDs will turn off indicating solenoid de-energized and actuator no longer in full closed position and the green LED will turn on indicating the actuator is in the full open position.

***NOTES:*** *For DPDT switches, customer must wire directly to the outside set of terminals of each switch. The wires on the circuit board will be wired to the switches by the factory using the inside set of terminals of each switch.*

*If actuator is mounted in any other than "standard" configuration, consult Step 1 of Installation Instructions to insure proper orientation of probes and switches (sensors).*

   B. Limit Switches using PC Board and switch indication LEDs only. (240 VAC dual-voltage boards or 24 VDC; 24, 120 VAC units without a solenoid):

   With actuator mounted in "standard" fail-closed mounting configuration (see Step 1) and wired per appropriate wiring diagram, set actuator in full-closed position, CW limit of rotation, with the adjustment screw near its loose limit. Adjust closed position switch SW-2 (see Wiring Diagram) by tightening the adjustment screw until red LED turns on. Then for SPDT switch tighten adjustment screw one additional turn.

   For DPDT switch tighten adjustment screw additional ¼ turn only.

   With air supplied to actuator, energize the solenoid (if applicable) to change actuator to its full-open position, CCW limit of rotation. Adjust the open position switch, SW-1 in the same manner as the closed position switch until the green LED turns on. Then for SPDT switch tighten adjustment screw one additional turn. For DPDT switch tighten adjustment screw additional ¼ turn only. When the solenoid is de-energized or the air supply is off, the actuator will return to its full-closed position. The actuator is no longer in full-open position and the red LED will turn on indicating the actuator is in the full-closed position.

   For fail-open mounting configuration, wire actuator per appropriate wiring diagram, set actuator in full-open position, CW limit of rotation, with adjustment screw near its loose limit. Adjust open position switch SW-2, by tightening the adjustment screw until the green LED turns on. Then for SPDT switch, tighten adjustment screw one additional turn. For DPDT switch tighten adjustment screw additional ¼ turn only.

   With air supplied to actuator, energize the solenoid (if applicable) to change actuator to its full-closed position, CCW limit of rotation. The yellow and orange LEDs should be lit

indicating power to the coil and coil continuity, respectively (if applicable). Adjust the closed position switch, SW-1 in the same manner as the open position switch until the red LED turns on. Then for SPDT switch, tighten adjustment screw one additional turn. For DPDT switch, tighten adjustment screw additional ¼ turn only. When the solenoid is de-energized or the air supply is off, the actuator will return to its full-open position. The red LED will turn off indicating solenoid de-energized (if applicable) and actuator no longer in full-closed position and the green LED will turn on indicating the actuator is in the full-open position.

*NOTE: For DPDT switches, customer must wire directly to the outside set of terminals of each switch. The wires on the circuit board will be wired to the switches by the factory using the inside set of terminals of each switch.*

*If actuator is mounted in any other than "standard" configuration, consult Step 1 of Installation Instructions to insure proper orientation of probes and switches (sensors)*

C. Limit Switches Not Using PC Board and/or Not Using LEDs:

With actuator mounted in "standard" fail-closed mounting configuration (see Step 1) and wired per appropriate wiring diagram, set actuator in full-closed position, CW limit of rotation, with adjustment screw near its loose limit. Adjust closed position switch SW-2 (see wiring diagram) by tightening the adjustment screw until switch contacts click. Then for SPDT switch, tighten adjustment screw one additional turn. For DPDT switch, tighten adjustment screw ¼ turn only. Change actuator to its full-open position, CCW limit of rotation, and adjust open position switch SW-1 in the same manner.

For fail-open mounting configuration, wire actuator per appropriate wiring diagram, set actuator in full-open position, CW limit of rotation, with adjustment screw near its loose limit. Adjust open position switch SW-2 (see wiring diagram) by tightening the adjustment screw until switch contacts click. Then for SPDT switch, tighten adjustment screw one additional turn. For DPDT switch, tighten adjustment screw ¼ turn only. Change actuator to its full-closed position, CCW limit of rotation, and adjust closed position switch SW-1 in same manner.

*NOTE: For DPDT switches, customer must wire directly to the outside set of terminals of each switch. Inside set of terminals will be wired by the factory to the terminal strip.*

*If actuator is mounted in any other than "standard" configuration, consult Step 1 of Installation Instructions to insure proper orientation of probes and switches.*

D. Proximity Sensors (PC Board not used):

Sensors have to be wired (and powered) per appropriate wiring diagrams in Section 8. With actuator mounted in "standard" fail-closed mounting configuration (see Step 1) and the adjustment screw near its loose limit, set actuator in full-closed position, CW limit of rotation, and adjust closed position sensor SW-2 (see Wiring Diagram) by tightening the adjustment screw until sensor energizes its load. Then tighten the adjustment screw one additional turn. Supply power to solenoid (if applicable) and change actuator to full-open position, CCW limit of rotation. Adjust the open position sensor SW-1 in the same manner as the closed position sensor. When solenoid is de-energized (if applicable) the actuator will return to the full-closed position. The closed position sensor SW-2, will energize its load indicating the actuator is in the full-closed position. NOTE: Whenever actuator is in either the closed or open position, the LED on SW-2 or SW-1 respectively, will turn on.

For fail-open mounting configuration, wire actuator per appropriate wiring diagram, set actuator in full-open position, CW limit of rotation, with adjustment screw at its loose limit. Adjust open position sensor SW-2, by tightening the adjustment screw until sensor energizes its load. Then tighten the adjustment screw one additional turn. Supply power to solenoid (if applicable) and change actuator to its full-closed position, CCW limit of rotation. Adjust the closed position sensor SW-1, in the same manner as the open position sensor. When solenoid is de-energized (if applicable) the actuator will return to its full-open position. The open position sensor, SW-2, will energize its load indicating the actuator is in the full-open position. NOTE: Whenever actuator is in either the open or closed position, the LED on SW-2 or SW-1 respectively, will turn on.

7. Customer Wiring to Circuit Board Terminal Strip:

*NOTE: Wiring diagrams for units with a PC board as found in this instruction sheet are for the new PC board. The solenoid (power) and the limit switch circuits of the new PC board are now separate. The new board is rated for 10 amps maximum and can be identified by the board part number label. See table on page 7 for identification of color-coded part number label.*

The old circuit board in the original unit was designed for a single voltage and current for the solenoid (power) and limit switches, and was rated for 6 amps maximum. If used on a dual voltage installation, damage will occur in the control device.

Refer to wiring diagram on inside of cover or appropriate wiring diagram on the following pages.

Note that for "Standard" fail-closed position, TB4 Terminals #7 and #8 on PC board may be used to connect AC Hot or DC positive to the customer's position indication input circuits. Terminal #8 will be Hot (or positive) relative to terminal #1 when the actuator is full CCW. Terminal #7 will be Hot (or positive) relative to terminal #1 when the actuator is full CW. For fail-open position, Terminal #8 will be Hot (or positive) relative to terminal #1 when the actuator is full CW. Terminal #7 will be Hot (or positive) relative to terminal #1 when the actuator is full CCW.

8. Wiring instructions for limit switches and proximity sensors. Refer to Step 1 for any actuator mounting configuration other than "standard."

A. Limit Switch Ratings:

DPDT - 10 amps @ 125/250 VAC; .3 amps @ 125 VDC.

SPDT - 15.1 amps @ 125/250 VAC; .5 amps @ 125 VDC.

Make electrical connections in accordance with the appropriate wiring diagram on inside of cover or on the following pages.

B. Proximity Sensor Ratings: 5-200 mA, 20-140 VAC, 10-140 VDC, current leakage <.8 mA, sensing range 2 mm, switch frequency 25 Hz, not sensitive to polarity.

**⚠ WARNING: A load must be used when power is applied to sensors. Wiring without a load will cause sensor failure. (The load must draw a maximum of 200 mA at working voltage.)**

9. Cover Assembly:

Place the lubricated O-ring down over the threaded section of the housing onto the machined shoulder. The cover must be threaded onto housing tightly for proper performance. The assembly is now complete.

***NOTE:*** *For units with a metal cover, a light coat of grease (such as a #1 grease) shall be applied to the cover threads. A minimum of ⅓ the circumference of the threads to be lubricated.*

10. Control Block/Air Connection Block:

If control or air connection block is removed, be sure appropriate gasket is properly inserted between block and switch base (see Figure 1 on page 9 and Access exploded view). NOTE: If block gasket removed (with or without small black block plug) differs from those illustrated, replace with new style or note orientation for proper reassembly. Do not apply any grease to gasket, it must be installed dry.

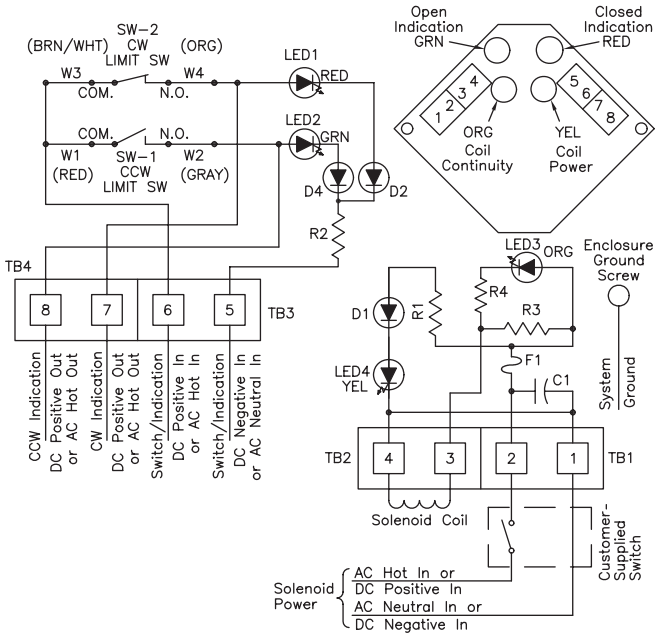
11. Air Supply Connection:

Connect air supply to ¼" NPT connection on control block. For units with no integral solenoid valve, air connection block has two ¼" NPT connections for inlet air (only one used for spring return units).

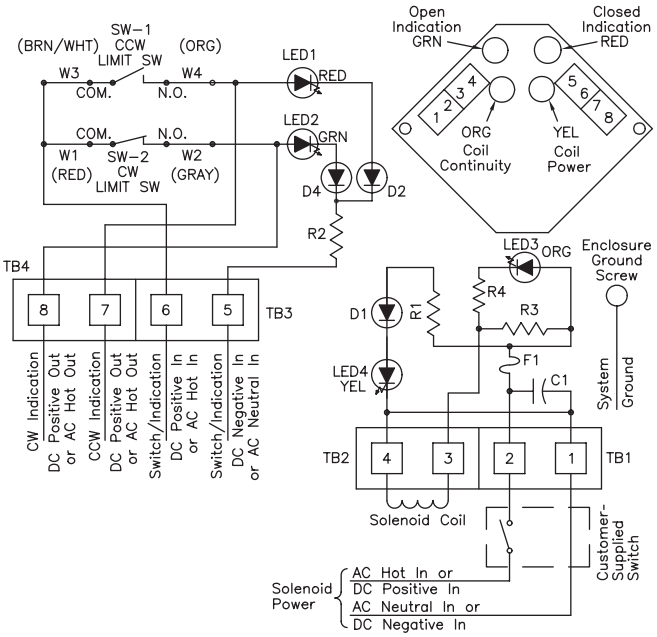
12. Operation:

A. Double-Acting with Control Block – Air is supplied to the ¼" NPT port on the block. When the solenoid is energized, the spring-loaded plunger is withdrawn, allowing the supply air to shift the spring-loaded spool within the block, which opens the supply path to the center chamber of the actuator. Air from the end chambers of the actuator is allowed to pass through the block and exhaust to atmosphere.

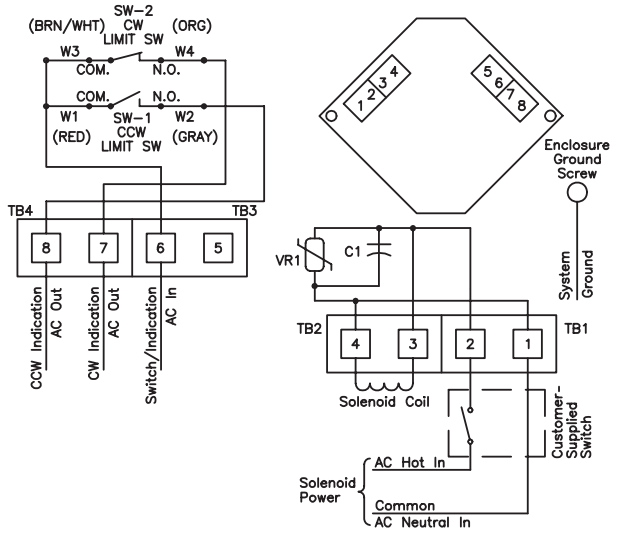
When the solenoid is de-energized, the spring-loaded plunger blocks the flow of air to the spool seal within the block and the spool spring shifts the spool within the block to a position which opens the supply path to the end chambers of the actuator. Air from the center chamber of the actuator is allowed to pass through the block and exhaust to atmosphere.



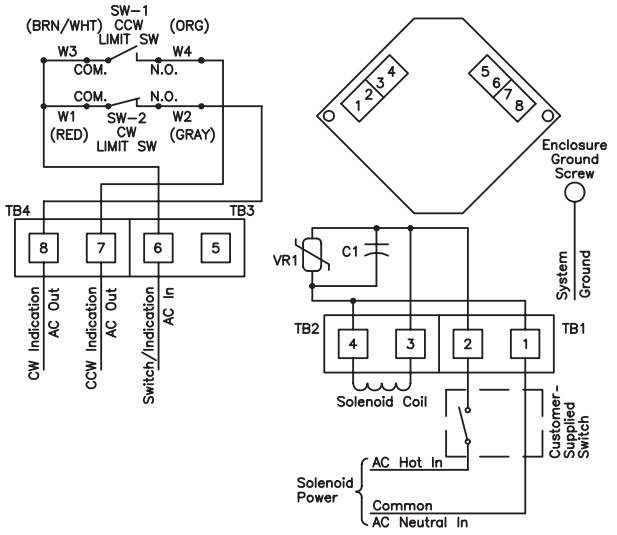

24 VDC; 24, 120 VAC – SINGLE VOLTAGE ONLY
(SOLENOID (POWER) & SWITCH VOLTAGES IDENTICAL)
(FAIL- CLOSED)



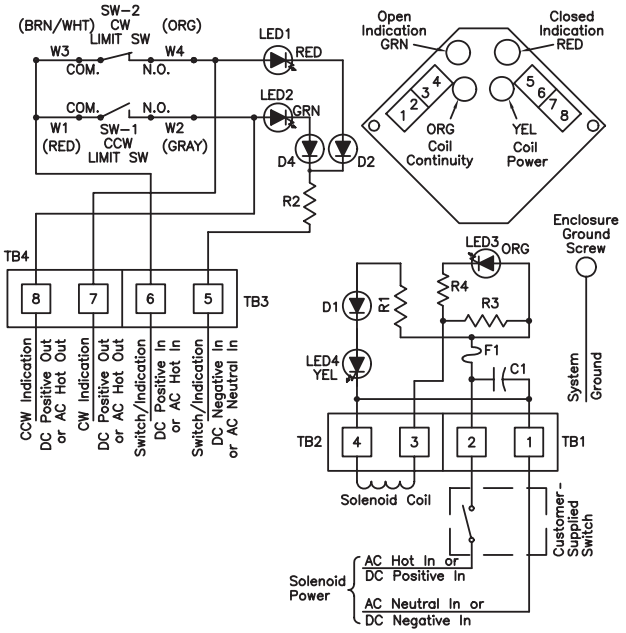

24 VDC; 24, 120 VAC – SINGLE VOLTAGE ONLY
(SOLENOID (POWER) & SWITCH VOLTAGES IDENTICAL)
(FAIL- OPEN)



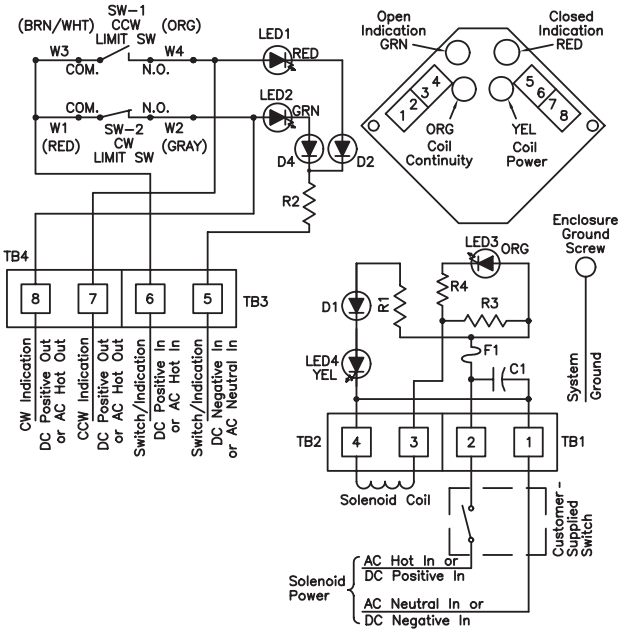

240 VAC
SOLENOID (POWER) & SWITCH VOLTAGE ONLY
(FAIL-CLOSED)



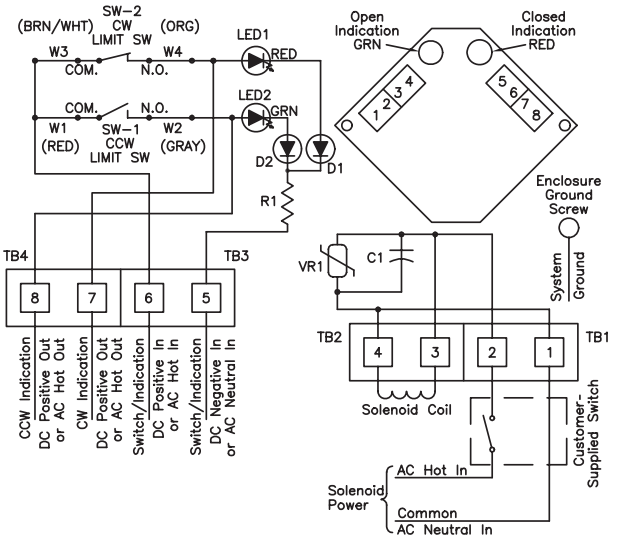

240 VAC
SOLENOID (POWER) & SWITCH VOLTAGE ONLY
(FAIL-OPEN)



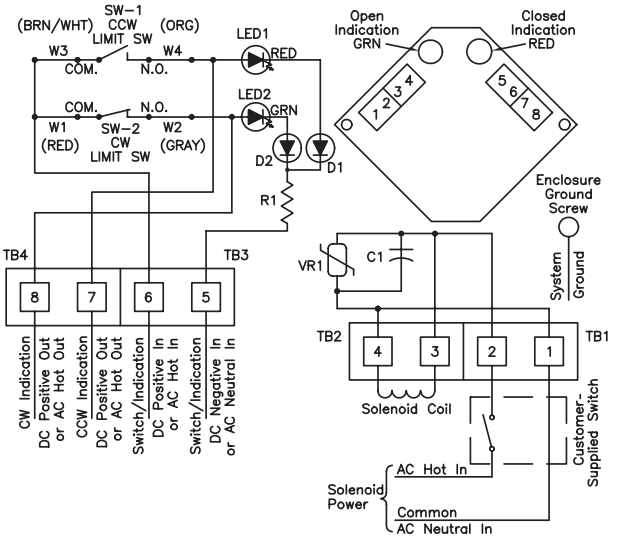

24 VDC; 24, 120 VAC – DUAL VOLTAGE ONLY
(SOLENOID (POWER) & SWITCH VOLTAGES ARE DIFFERENT)
(FAIL-CLOSED)



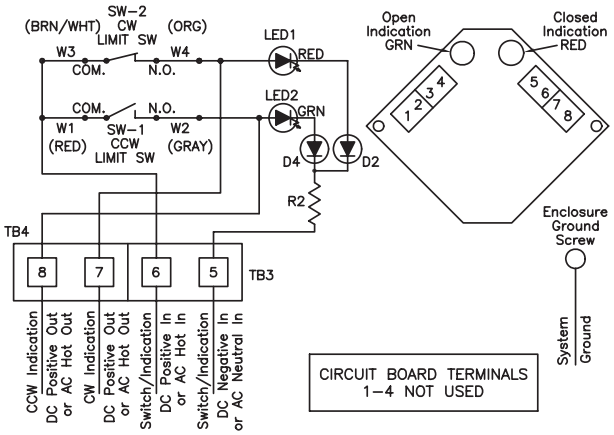

24 VDC; 24, 120 VAC – DUAL VOLTAGE ONLY
(SOLENOID (POWER) & SWITCH VOLTAGES ARE DIFFERENT)
(FAIL-OPEN)




240 VAC – DUAL VOLTAGE ONLY
(240 VAC SOLENOID (POWER) VOLTAGE)
(24 VAC OR 24 VDC SWITCH VOLTAGE)
(FAIL-CLOSED)




240 VAC – DUAL VOLTAGE ONLY
(240 VAC SOLENOID (POWER) VOLTAGE)
(24 VAC OR 24 VDC SWITCH VOLTAGE)
(FAIL-OPEN)




24 VDC; 24, 120 VAC WITH PC BOARD & NO SOLENOID
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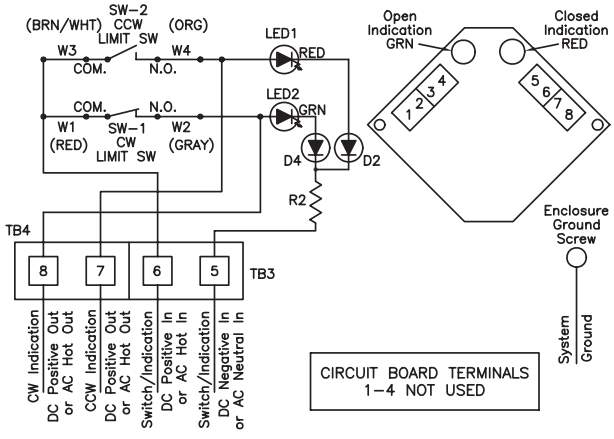
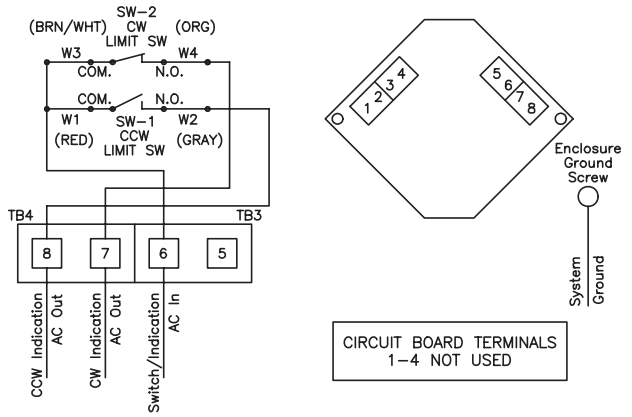
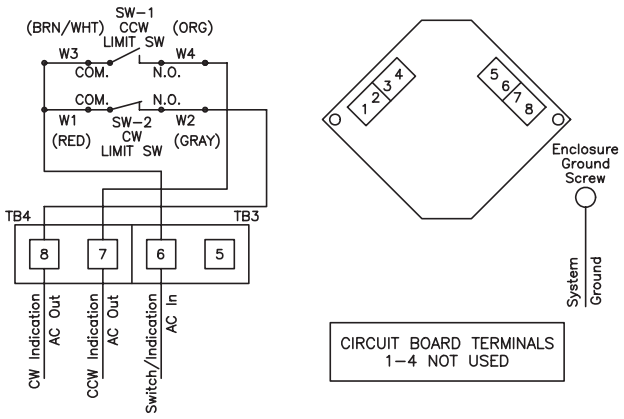


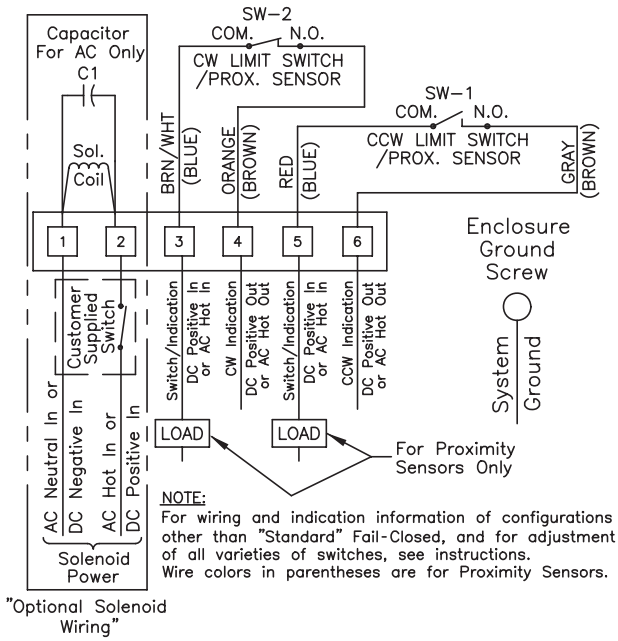

24 VDC; 24, 120 VAC WITH PC BOARD & NO SOLENOID
(FAIL-OPEN)



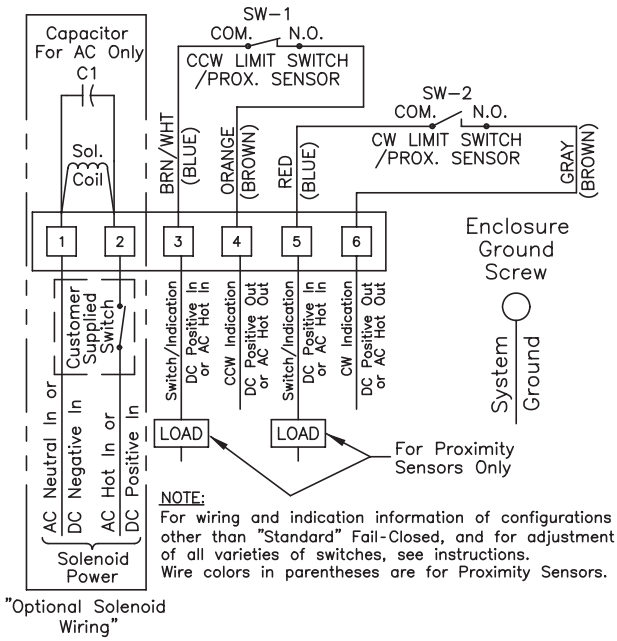

240 VAC WITH P.C. BOARD & NO SOLENOID
(FAIL- CLOSED)




240 VAC WITH P.C. BOARD & NO SOLENOID
(FAIL- OPEN)




NO P.C. BOARD
(FAIL- CLOSED)




NO P.C. BOARD
(FAIL- OPEN)

**Circuit Board Color-Coded Part Number Label Identification**

| Color | Voltage |
|---|---|
| Black | 120 VAC |
| Yellow | 240 VAC |
| Green | 24 VAC / 24 VDC |
| Blue | 120 VAC (Dual Voltage) |
| Red | 240 VAC (Dual Voltage) |

The actuator is electrically fail-safe. That is, it will return to its de-energized position upon electrical failure.

The unit has two independently adjustable speed control screws which can be used to adjust the speed of operation for the opening and/or closing stroke (see Figure 2 on page 9). If the speed control screws are too tight, the unit will fail to operate.

***NOTE:*** *Speed control screws are shipped from the factory in the full-open position.*

B. Spring-Return with Control Block - Air is supplied to the ¼" NPT port on the block. When the solenoid is energized, the spring-loaded plunger is withdrawn, allowing the supply air to shift the spring-loaded spool within the block, which opens the supply path to the center chamber of the actuator. Air from the end chambers of the actuator is allowed to pass through the block and exhaust to atmosphere.

When the solenoid is de-energized, the spring-loaded plunger blocks the flow of air to the spool within the block and the spring-loaded spool returns to a position which allows air from the center chamber of the actuator to pass through the block and exhaust to atmosphere as the actuator is cycled by the springs in the end chambers of the actuator. The end chambers are exhausted to atmosphere at all times.

The actuator is fail-safe. That is, it will return to its de-energized position upon electrical or pneumatic failure.

The unit has one speed control screw, which can be used to adjust the speed of operation for the closing stroke (on a fail-closed unit) or opening stroke on a fail-open unit, and one port plugged with a red plastic plug (see Figure 2 on page 9). If the speed control screw is too tight, the unit will fail to operate.

***NOTE:*** *Speed control screws are shipped from factory in the full-open position.*

**CAUTIONS: If converting a double-acting actuator to a spring-return actuator or vice-versa, be sure the correct control block gasket is used (see Figure 1 on page 9 and Access exploded view).**

**Be sure red plastic plug is installed in plugged port (Figure 2 on page 9) for spring-return actuators.**

C. Double-Acting with No Solenoid and No Control Block - Air is supplied to the ¼" NPT port on the air connection block to the center chamber of the actuator through a remotely mounted four-way solenoid (or similar supply system). The other ¼" NPT port on the air connection block to the end chambers is exhausted through solenoid (or similar supply system). When solenoid is de-energized (energized) supply air is now supplied to end chambers and center chamber is simultaneously exhausted through solenoid.

D. Spring-Return with No Solenoid and No Control Block - Air is supplied to the ¼" NPT port on the air connection block to the center chamber of the actuator through a remotely mounted solenoid (or similar supply system). The other ¼" NPT port on the air connection block is the exhaust port for the end chambers and may be exhausted to atmosphere or through customer's system.

When the remotely mounted solenoid (or similar supply system) blocks the supply air to the center chamber of the actuator, a means must be supplied to exhaust this chamber and the actuator is cycled by the springs in the end chambers.

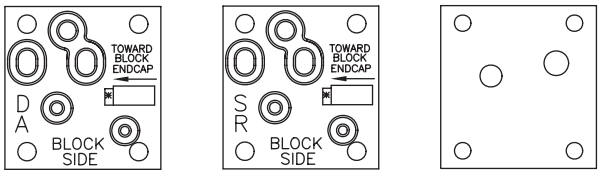
E. Manual Operation

In the event of air failure, the Series 39 actuator with Access unit can be cycled manually. This is accomplished by applying a wrench to the exposed top shaft of the actuator and turning it in the desired direction.

**WARNING: Care must be taken to ensure that the actuator is not operated automatically while manual operation is being performed.**

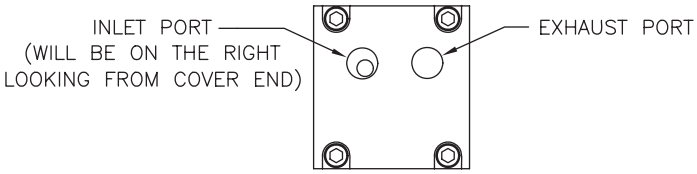
If a routine cycle check is to be performed on an actuator with a control block, the actuator can be cycled manually by shifting the spool valve within the control block. This can be done by pushing the override button in the control block (See Figure 2 on page 9 for location of button). Care must be taken to hold the spool valve in the desired position until the actuator has cycled. Provided the air supply is still on, the actuator will cycle to its original position as soon as the manually applied pressure on the override button is released.

F. If the actuator does not function, see troubleshooting section in actuator Instruction Manual and if necessary, check circuit board for a blown fuse (F1) (120 VAC units only). Using an ohmmeter, the fuse should read about 6 ohms if it is good. Remove the fuse from the circuit board in order to check it. If it is good, reinstall the fuse. If the fuse is bad, replace it with a Littlefuse PICO II very fast-acting fuse rated at 62 mA (Newark part number 94F2146) or the spare fuse, which may be found on some circuit boards and located below capacitor C1. Try to determine what caused the fuse to blow before turning power back on. The most likely cause is a bad solenoid coil.

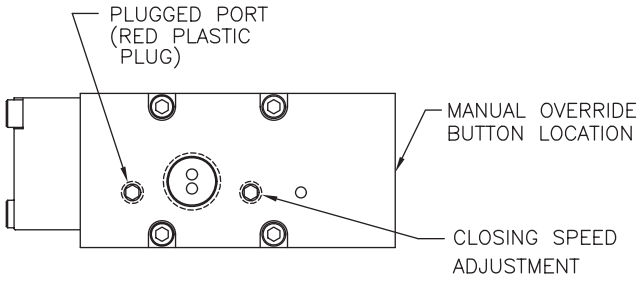



GASKET 29A GASKET 29B GASKET 29C

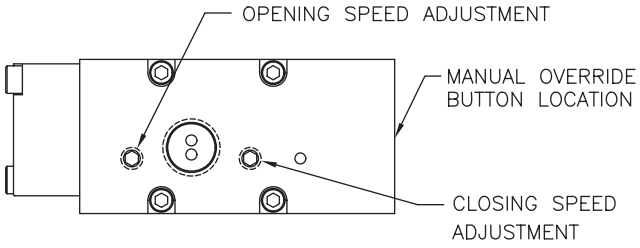
FIGURE 1




"NO SOLENOID" AIR CONNECTION BLOCK




SPRING-RETURN

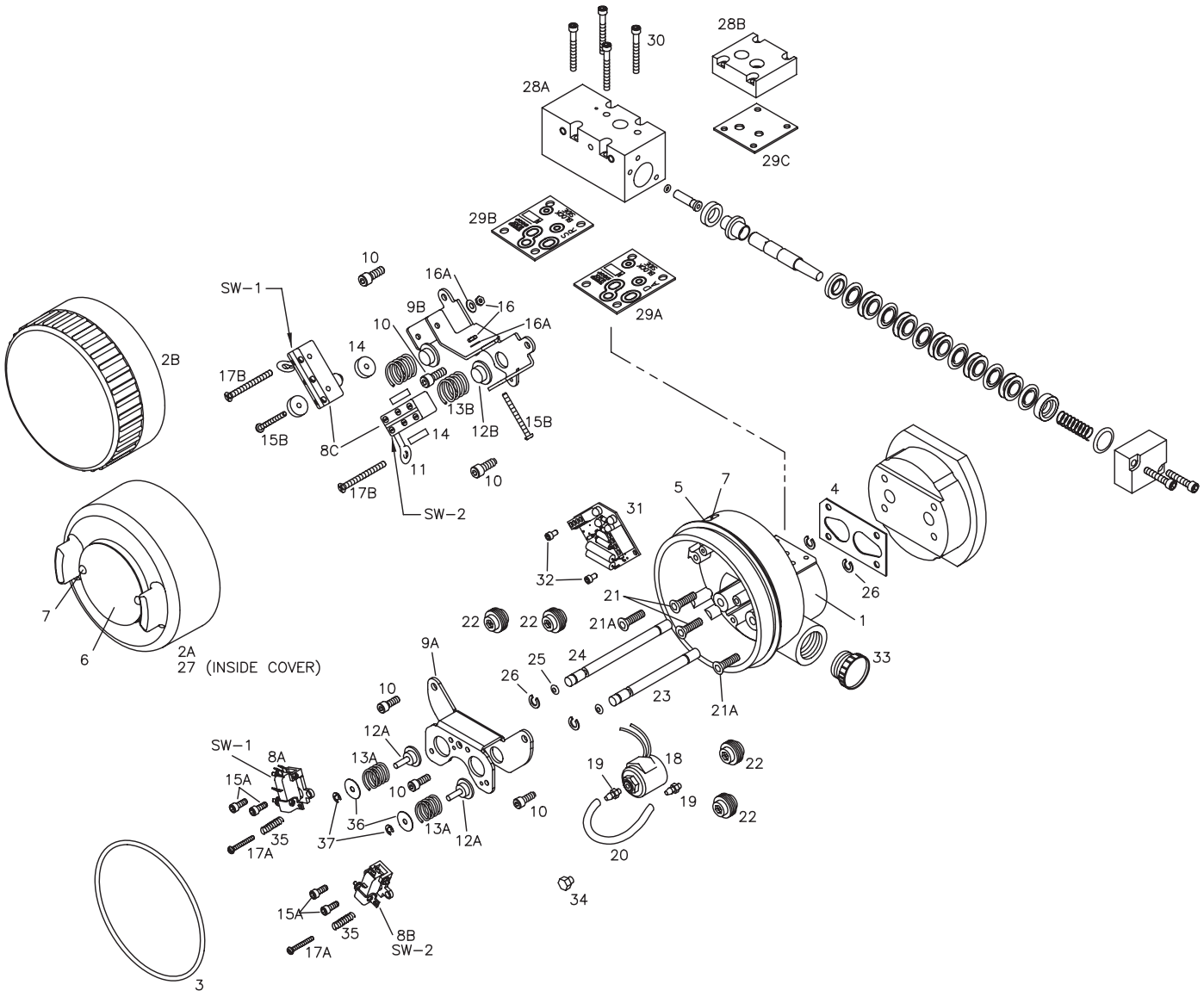



DOUBLE-ACTING

FIGURE 2

## Parts Listing

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 1 | ENCLOSURE |
| 2A | 1 | COVER “Z” |
| 2B | 1 | COVER “W” |
| 3 | 1 | O-RING - COVER |
| 4 | 1 | GASKET |
| 5 | 1 | NAMEPLATE |
| 6 | 1 | CAUTION LABEL “Z” |
| 7 | 4 | DRIVE SCREW |
| 8A | 1 | LIMIT SWITCH (SPDT) OR PROXIMITY SENSOR ASSEMBLY - LEFT |
| 8B | 1 | LIMIT SWITCH (SPDT) OR PROXIMITY SENSOR ASSEMBLY - RIGHT |
| 8C | 2 | LIMIT SWITCH (DPDT) |
| 9A | 1 | BRACKET - SPDT SWITCH (PROXIMITY SENSOR) |
| 9B | 1 | BRACKET - DPDT SWITCH |
| 10 | 3 | MOUNTING SCREWS - SWITCH/SENSOR BRACKET |
| 11 | 2 | PIVOT HOOK - DPDT SWITCH |
| 12A | 2 | BUTTON - SPDT SWITCH (PROXIMITY SENSOR) |
| 12B | 2 | BUTTON - DPDT SWITCH |
| 13A | 2 | SPRING - SPDT SWITCH (PROXIMITY SENSOR) |
| 13B | 2 | SPRING - DPDT SWITCH |
| 14 | 4 | SPACER - DPDT SWITCH |
| 15A | 4 | MOUNTING SCREW - SPDT SWITCH (PROXIMITY SENSOR) |
| 15B | 2 | MOUNTING SCREW - DPDT SWITCH |
| 16 | 2 | NUT - DPDT SWITCH |
| 16A | 2 | LOCKWASHER - DPDT SWITCH |
| 17A | 2 | SCREW - SPDT SWITCH (PROXIMITY SENSOR) ADJUSTING |
| 17B | 2 | SCREW - DPDT SWITCH ADJUSTING |
| 18 | 1 | SOLENOID ASSEMBLY |
| 19 | 2 | SOLENOID EXHAUST PORT FITTINGS |
| 20 | 1 | SOLENOID EXHAUST TUBING |
| 21 | 2 | UPPER MOUNTING SCREW - ENCLOSURE (1⅛" LONG) |
| 21A | 2 | LOWER MOUNTING SCREW - ENCLOSURE (1" LONG) |
| 22 | 4 | THREADED TAMPER PROOF PLUG |
| 23 | 1 | ROD PROBE |
| 24 | 1 | PISTON PROBE |
| 25 | 2 | O-RING - PROBE |
| 26 | 4 | RETAINING RING - PROBE |
| 27 | 1 | WIRING DIAGRAM - NOT SHOWN |
| 28A | 1 | CONTROL BLOCK ASSEMBLY |
| 28B | 1 | AIR CONNECTION BLOCK (NO SOLENOID) |
| 29A | 1 | GASKET - CONTROL BLOCK (DOUBLE ACTING) (SEE FIG. 1 ON PAGE 9) |
| 29B | 1 | GASKET - CONTROL BLOCK (SPRING RETURN) (SEE FIG. 1 ON PAGE 9) |
| 29C | 1 | GASKET - AIR CONNECTION BLOCK (NO SOLENOID) (SEE FIG. 1 ON PAGE 9) |
| 30 | 4 | BLOCK BOLTS |
| 31 | 1 | PRINTED CIRCUIT BOARD OR TERMINAL STRIP (CIRCUIT BOARD SHOWN) |
| 32 | 2 | MOUNTING SCREW - PCB/TERMINAL STRIP |
| 33 | 1 | CONDUIT PLUG |
| 34 | 1 | EXHAUST PORT PLUG [IF NO SOLENOID] |
| 35 | 2 | ADJUSTMENT SPRING - SPDT SWITCH (PROXIMITY SENSOR) |
| 36 | 2 | FLAT WASHER - SPDT SWITCH (PROXIMITY SENSOR) |
| 37 | 2 | RETAINING RING - SPDT SWITCH (PROXIMITY SENSOR) |


30
28B
28A
29C
29B
29A
10
16A
SW–1
9B
16
10
16A
14
2B
17B
13B
15B
12B
15B
8C
14
11
10
17B
SW–2
31
5
7
4
32
26
21
1
22
22
21A
33
7
9A
25
24
6
2A
27 (INSIDE COVER)
26
23
21A
10
12A
SW–1
8A
13A
19
18
22
15A
10
19
22
36
13A
10
37
12A
35
17A
20
34
15A
35
8B
SW–2
17A
3

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