

INSTALLATION AND OPERATING INSTRUCTIONS

The gasket seal located between the main body casting and the lid casting is a cork-rubber composition, which is subject to a slight creep for a short period after the application of the initial clamping load. All gaskets are properly clamped before shipment, however during shipping and storage, the gasket may compress; allowing the body-lid clamp bolts to become slightly loose. Tighten these bolts before assembling the flow switch in-system. No further creep of gasket will occur after the second tightening. The Q-4E fluid flow switch is supplied with tapped holes for standard 1 inch pipe. Insert in-line with the arrow on the side of the casting pointed in the direction of flow.

NOTE: Care should be exercised to prevent pipe thread sealant (putty, Teflon tape, etc.) from entering the flow switch and restricting flow through the calibrated orifice. (Model Q-4E/1 only.)

ELECTRICAL WIRING

FIGURE 1: Wiring schematic for power applied to load when flow is GREATER than the set point (power to load interrupted when flow is LESS than set point).

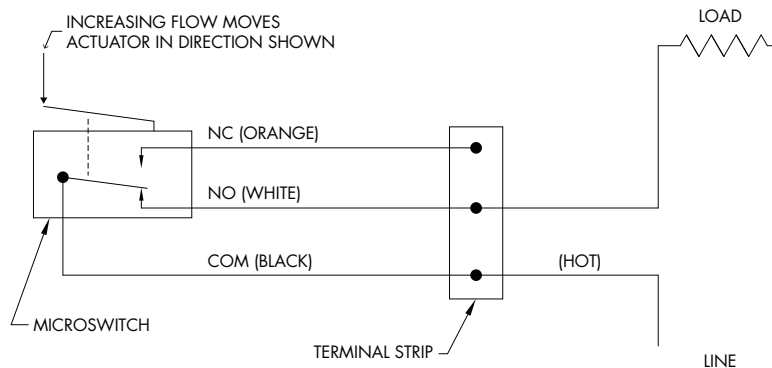
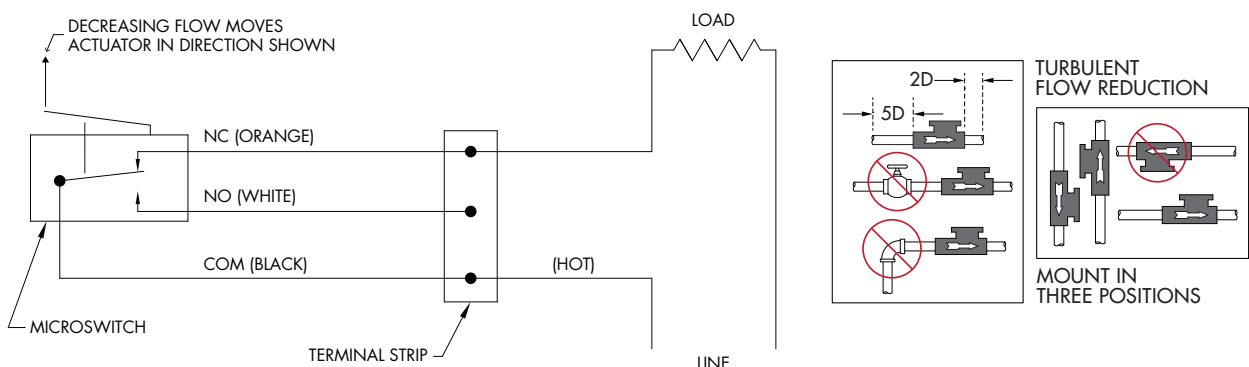
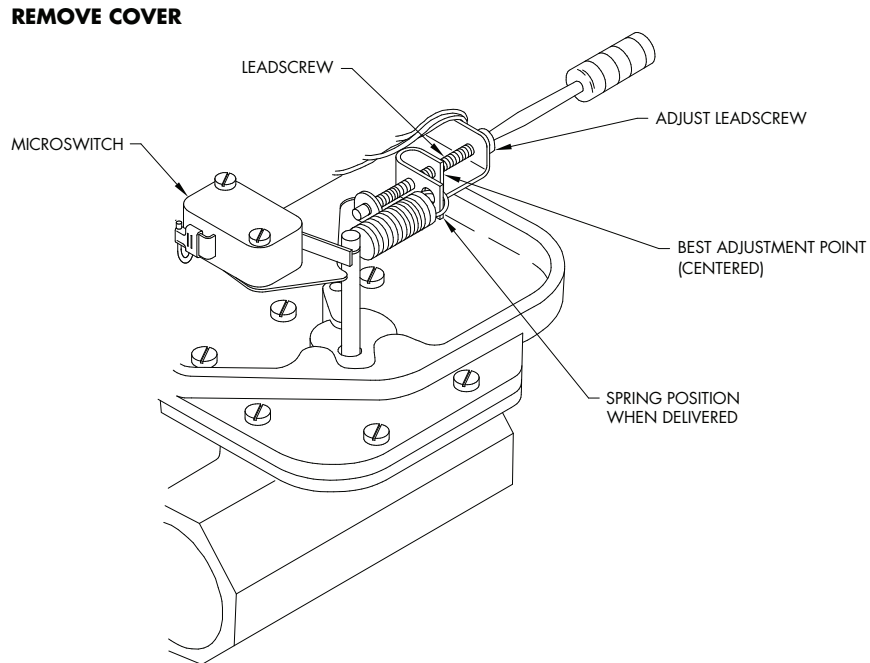


FIGURE 2: Wiring schematic for power applied to load when flow is LESS than the set point (power to load interrupted when flow is GREATER than set point).



Q-4 FLOW SWITCH OPERATIONAL ADJUSTMENT



SWITCH POINT ADJUSTMENT

1. Remove cover.
2. Adjust fluid flow in system to desired rate **WITHOUT** regard to Q-4E switch point setting.
3. The switch point adjusting mechanism consists of an adjusting screw, a "U" shaped lead screw nut, and a helical spring.

CLOCKWISE rotation of the adjusting screw changes the microswitch actuation point toward **HIGHER** flow rates.

NOTES: All Q-4E units are factory set at the lower end of the flow range, e.g. the adjusting screw is set at the low flow counter-clockwise position.

The lead screw nut locks the adjusting screw in position, maintaining the flow switch set point under all environmental conditions.

4. Turn the adjusting screw in a clockwise direction until the microswitch is actuated, while maintaining the desired fluid flow rate in the system. Turn the adjusting screw **TWO (2)** additional turns in the clockwise direction and then slowly back off in a counter-clockwise direction, until the microswitch is again actuated. The Q-4E flow switch is now set for maximum sensitivity for detecting small flow changes.
5. When set for maximum sensitivity (100% point) as described above, flow turbulence may cause rapid on/off switching (dithering) of the microswitch contacts, resulting in reduced switch contact life

MODEL Q-4

Q-4E, QD-4E

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and "noise" in the electrical circuit. This is eliminated by turning the adjusting screw in a counter-clockwise direction.

6. Microswitch actuation point may be monitored during the adjustment procedure detailed in steps 4 and 5 by an audible click or with an ohmmeter before connecting line power to the terminal strip, or by monitoring the voltage supplied to the load through the microswitch.
7. If the system flow rate is changed, the Q-4E can be adjusted to monitor the new flow rate by turning the adjusting screw in a counter-clockwise direction to the minimum flow position and then proceeding as in 4 and 5 above.

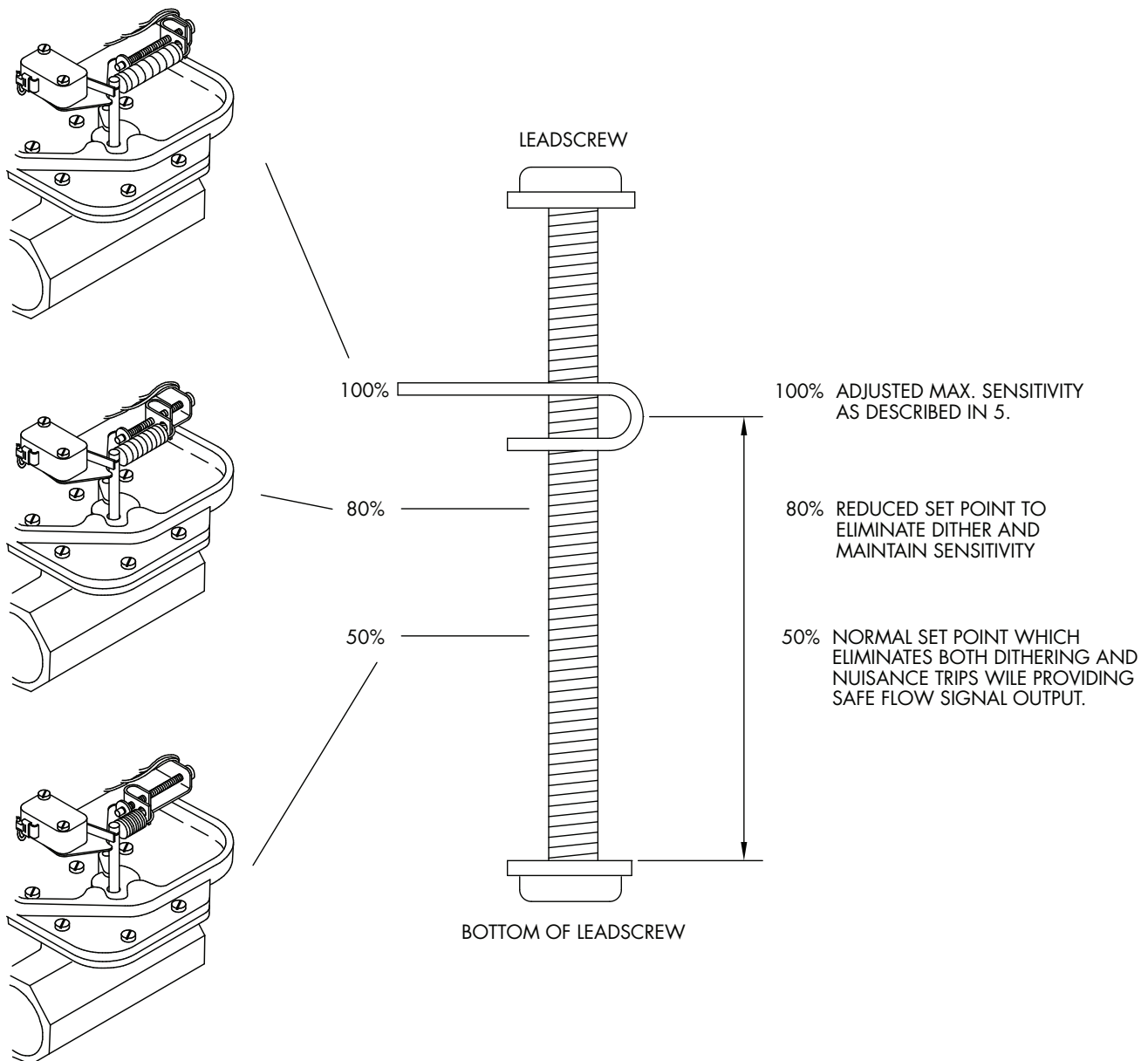


FIG. 4

RANGE CHANGE

If the system flow rate is changed to a rate that is within the orifice or drag disk range presently installed in the unit, then the unit may be adjusted to monitor the new flow rate. Turn the adjusting lead screw in a counter-clockwise direction until the spring is fully relaxed to the minimum flow position and proceed as in step 4.

SWITCH POINT ADJUSTMENT

MODEL Q-4E/1 (ORIFICE TYPE 4-8 GPM)

If procedure 4 has been followed and the micro-switch has not been actuated (even though the spring is completely relaxed), then the flow rate is too low and another model series must be used. If the adjusting lead screw has been turned clockwise until the lead screw nut is at the extreme end of the bracket with the spring fully extended and the microswitch still has not been actuated, then the flow rate is greater than 8 GPM and the orifice and the #1 drag disk must be discarded. Models without orifices have a different dash number (2, 3, or 4). Proceed as follows:

TO REMOVE ORIFICE, CHANGE DRAG DISK AND CONVERT TO MODELS Q-4E/2, 3, OR 4 OR QD-4/2, 3, OR 4:

NOTE: It is not necessary to remove the main body of the switch from the line to remove the orifice or change the drag disk.

- a. Remove the cover.
- b. Remove the lid casting from the main body casting.
- c. Remove the orifice pin and discard it.
- d. Insert a small screw driver blade in the groove located in the exposed end of the orifice and pry the orifice toward the body cavity. Discard the orifice and attach drag disk #2.
- e. Reassemble and proceed as below:

SWITCH POINT ADJUSTMENT, MODELS Q-4E/2, 3, OR 4 OR QD-4/2, 3, OR 4

Proceed as in 4 through 6 on pages 3 and 4. If microswitch action is not obtainable even though

the adjusting spring is fully extended, then the flow is too great for the drag disk size and the next smallest must be substituted.

NOTE: If the flow switch is to be converted from a Model Q-4E/2, 3, or 4 to a lower flow range unit (e.g. Q-4E/1 or QD-4/1) :

- a. Remove the cover.
- b. Remove the lid casting from the main body casting.
- c. Remove the drag-disk from the end of the feed thru shaft and replace it with drag disk #1 (1 1/4" diameter).
- d. Insert the orifice in the body casting with the O-ring toward the upstream hole and press into place.
- e. Insert the orifice retaining pin. Be sure to check that the pin is properly inserted in the groove in the orifice.
- f. Reassemble and proceed as in step 4.

TERMINAL STRIP WIRING

1. Loosen the round gland nut located on the electrical cable fitting.
2. Insert the cable through the grommet in the electrical cable fitting and tighten the gland nut sufficiently to seal the cable in place.
3. Strip the conductor ends approximately 3/16"
4. Loosen the appropriate terminal strip screw and remove the empty terminal. Insert bare wire in the terminal barrel and crimp it. Place the terminal on the strip in the SAME orientation as it was received. This is IMPORTANT, since terminals and wires may interfere with the cover if the orientation is changed.