

# Basic Operation and Troubleshooting of BAC Electronic Vibration Cutout Switches (VCOS)

## A. Checking the Installation

The electronic VCOS is the standard switch used by BAC. This switch is rated for **5 amps continuous duty and for in-rush of 25 amps for 1 sec or 50 amps for 16 msec.** This is ideal when wiring the switch to a motor starter system, since the bigger the motor, the higher the current on the starter.

A computerized Building Management System (BMS) works on a very low current draw. Therefore, some additional measures must be taken when wiring the VCOS to a BMS. For the VCOS to turn on and stay on, it needs to be connected to a load that draws a minimum of 50mA. Without this current draw, the switch may not stay closed or “pulled in”. In this case, a 2000-ohm, 10-watt resistor can be wired in parallel with the BMS input. An interposing relay (SPDT, class C) can also be installed to draw the 50mA.

## B. Reset and Lockout Circuits

BAC supplies the switch prewired with 7' of 20 Ga., UV resistant shielded cable. When this cable is removed and other wiring supplied to the switch by the customer, make sure that the reset and lockout terminals (terminals 5, 6, and 7) are shielded from the rest of the wires.

The switch comes from the factory with terminals 5 and 6 connected together with a wire nut, which enables the local reset circuit. This means that when the switch trips, the pushbutton on the side of the switch must be used to reset it. If this wire nut is removed, and nothing is connected to terminals 5 and 6, the switch is not latched. This means that when the switch trips due to excessive vibration, the switch will automatically reset itself once the vibration level drops. This will cause the fans to restart automatically.

When a remote reset is desired, terminals 5 and 6 are wired to a pushbutton at the desired remote location. Be sure to use shielded cable.

## C. Mounting

The vibration switch must be mounted rigidly to the unit, ensuring that the mounting brackets are stiffened to avoid any resonant builds that could cause nuisance trips. Contact your local BAC Representative with any questions regarding the installation of the VCOS for your specific equipment model.

## D. Testing Basic Operation

The switch can be bench-tested or tested after it is mounted on the unit. For safety reasons, the cooling system must be off during testing. Follow these easy steps to test the proper operation of the vibration switch.

### Testing time delay

The time delay is field adjustable from 1 to 15 seconds. It is set at the factory to approximately 3 seconds.

- a. Connect 110 or 220 volts to terminals 1 and 2 as per the appropriate wiring diagram. Contact your local BAC Representative if you do not have this diagram.
- b. Jumper terminals 1 and 3 together.
- c. Connect a 25-watt light bulb to terminals 2 and 4.
- d. Since the switch comes from the factory with the slide switch in the N/C position (see wiring diagram for the slide switch location), the light bulb should turn on immediately. Set slide switch to the N/O position. The light bulb should turn off. This assures that the triac relay is operating properly.
- e. Return the slide switch to the N/C position.
- f. Turn the set point control knob counterclockwise to the test position. The LED above the knob should turn on immediately. After approximately 3 seconds, the triac changes state and the light bulb should turn off.
- g. Return the set point control knob to the normal setting (0.45 in/sec).
- h. If the switch is wired for local reset (5 and 6 wired together), depress the pushbutton on the side of the vibration switch to return it to the non-alarm condition.
- i. If there is no connection across terminals 5 and 6, the switch will automatically reset to the non-alarm condition.
- j. To increase or decrease the time delay, turn the adjustment screw that is located directly below the set point control knob. One full clockwise turn increases the time delay by approximately 1/2 a second. One full counterclockwise turn decreases the time delay by approximately 1/2 a second.

If the vibration switch fails in any of the above steps, the switch should be returned to the factory for repair or replacement. Contact the local BAC Representative for more information.