

# M AINTENANCE I NSTRUCTION

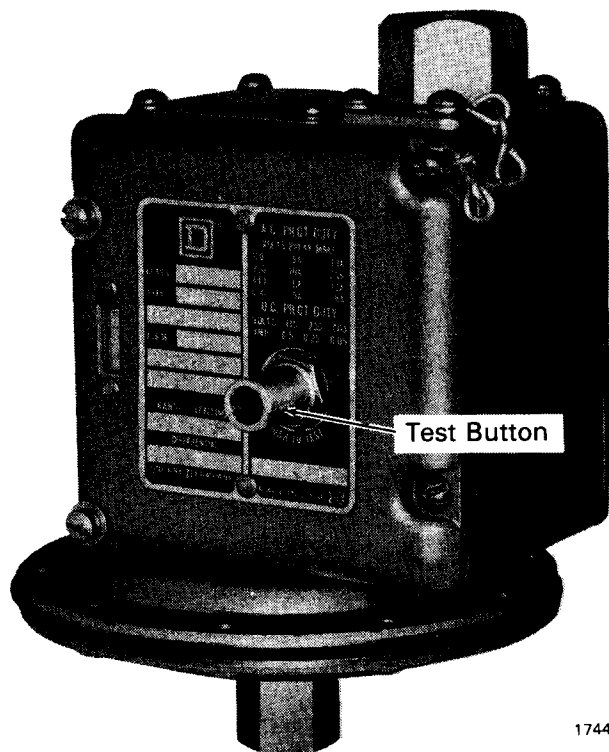
## VACUUM SWITCHES — TYPE 9016

### DESCRIPTION

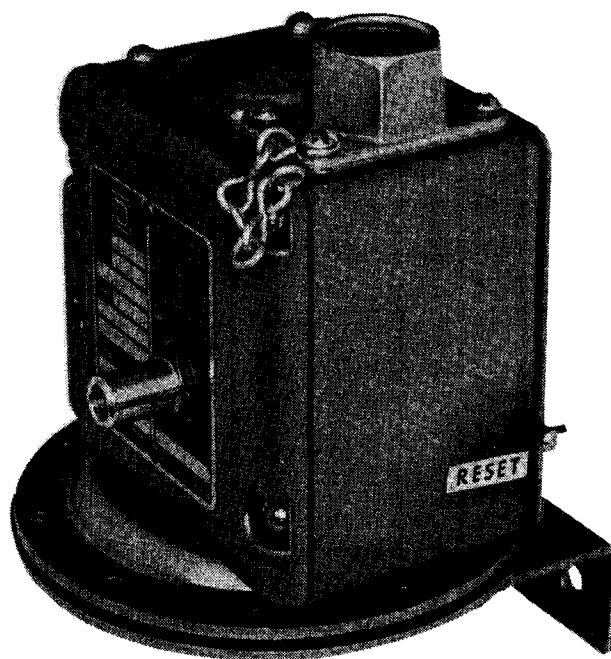
Two different styles of vacuum switches are shown in Fig. 1. Both units contain a diaphragm which moves with changes in vacuum and activates a switch. One application for this type of switch is detection of clogged air filters, Fig. 2. A vacuum switch in the engine air filter assembly senses the pressure differential between ambient and pressure at the engine inlet. When the switch trips, the alarm system activates to indicate a clogged filter condition.

### ADJUSTMENTS

Adjustments are made by removing the front cover. Earlier model switches, Fig. 3, had a differential adjustment screw and a range adjustment nut. The differential adjustment controlled the differential vacuum between the trip and reset points of the switch. Any change in this adjustment caused the trip point to move to an increased or decreased level of vacuum with the reset point remaining fixed. The range adjustment controlled both the trip point and the reset point at the differential adjustment.



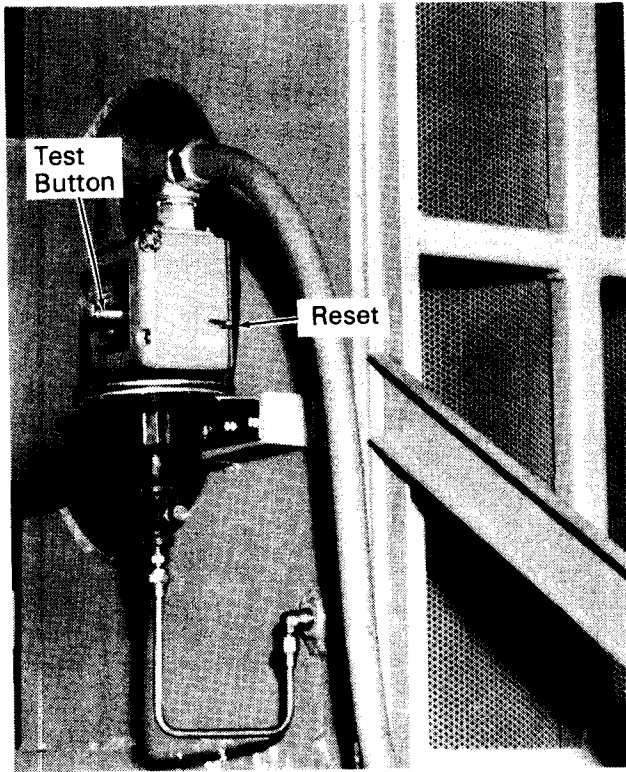
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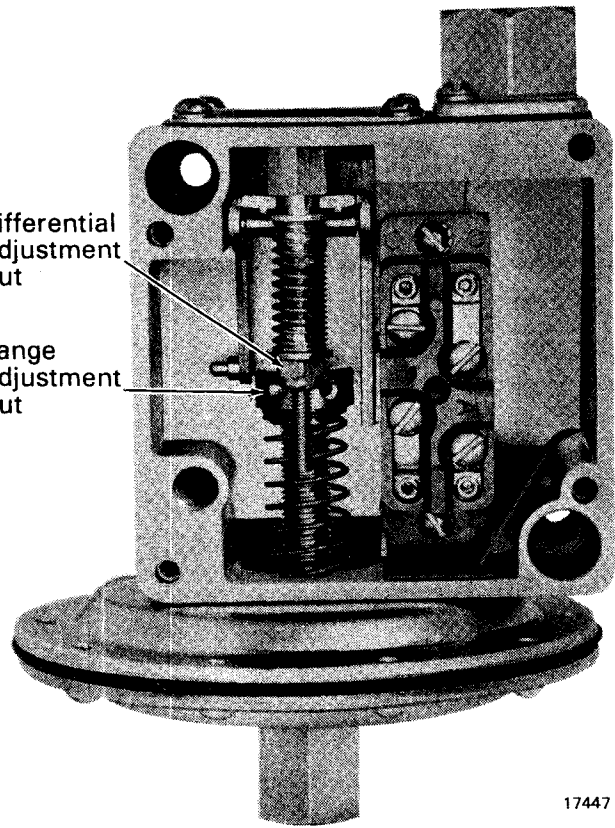
Fig.1 - Typical Vacuum Switches

\*Information contained herein is applicable to equipment used in current production.



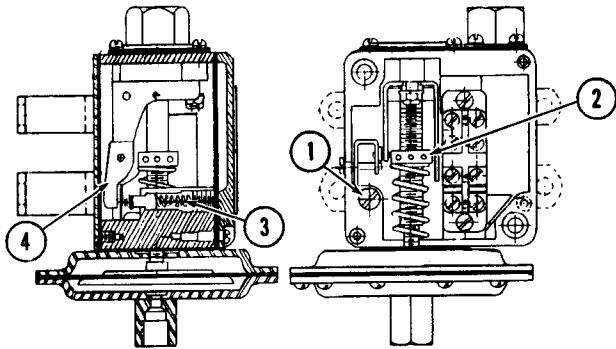
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Fig.2 - Typical Application Of Vacuum Switch



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Fig.4 - Later Model Vacuum Switch

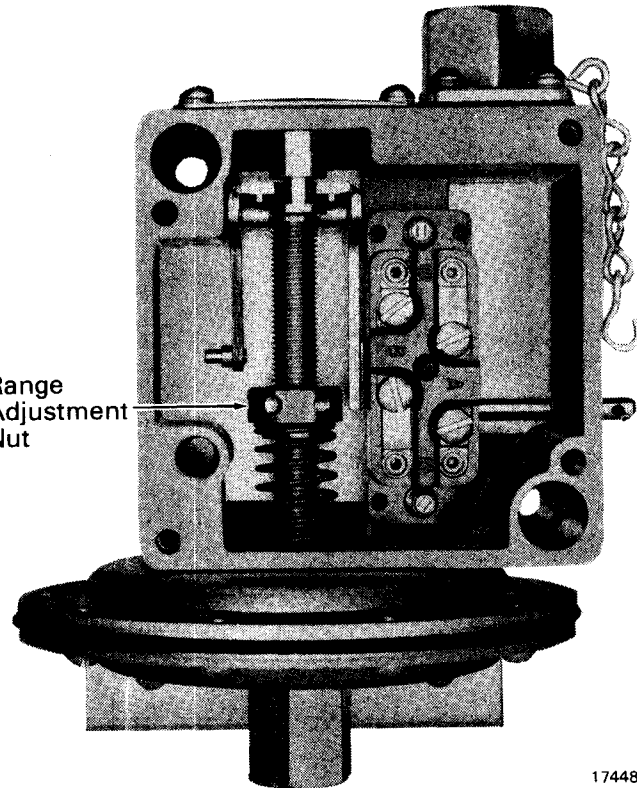


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1. Differential Adjustment Screw
2. Range Adjustment Screw
3. Spring
4. Striker

Fig.3 - Earliest Model Vacuum Switch

Moving the nut moved both points an equal amount. Later model switches, Fig. 4, had the differential adjustment nut on a stud extending downward from the top of the case. The most recent model switches, Fig. 5, have only the range adjusting nut.



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Fig.5 - Current Model Vacuum Switch

The following procedures should be used to make adjustments.

1. On switches with differential adjustment as shown in Fig. 3, remove and discard the differential adjustment screw (1) along with spring (3) and striker (4).
  - a. To set the trip point, loosen the setscrew in the range adjustment nut (2) and turn clockwise (left) to raise trip point, or counterclockwise (right) to lower trip point.
2. On switches with the differential adjustment nut on stud extending downward from the top of the case, Fig. 4, raise the trip point by tightening the differential adjustment nut.
3. On switches that have no differential adjustment nut, set the trip point as indicated in Step 1a above.

## MAINTENANCE

During periodic inspections as prescribed in the applicable Scheduled Maintenance Program, or when faulty operation is suspected, the switch should be tested. Fig. 6 shows a schematic diagram for a recommended set-up for testing this switch using the following procedure.

1. Remove tube connecting the vacuum switch with the air filter assembly. Connect the testing device to the vacuum switch as shown in Fig. 6.
2. Remove cover from air filter switch, attach a lead to a live negative terminal through a test lamp. Attach other lead to switch terminal that does not light test lamp.

### NOTE

If switch being tested is manual reset type, ascertain that switch reset lever is pushed down to reset position. Reset position approximately 9 o'clock, tripped position 10 o'clock.

3. Slowly operate the vacuum pump observing manometer and test lamp. Note manometer reading. Lamp should light when manometer reading coincides with setting on switch plate. Ignore first trip value.
4. Reset switch (if manual reset) and repeat. Record inches of water required to trip switch.
5. Should switch setting be out of tolerance, recalibrate according to instructions found in this Maintenance Instruction.
6. Restore tubing, fittings, and switch cover. Reset any relays or annunciator if so equipped.

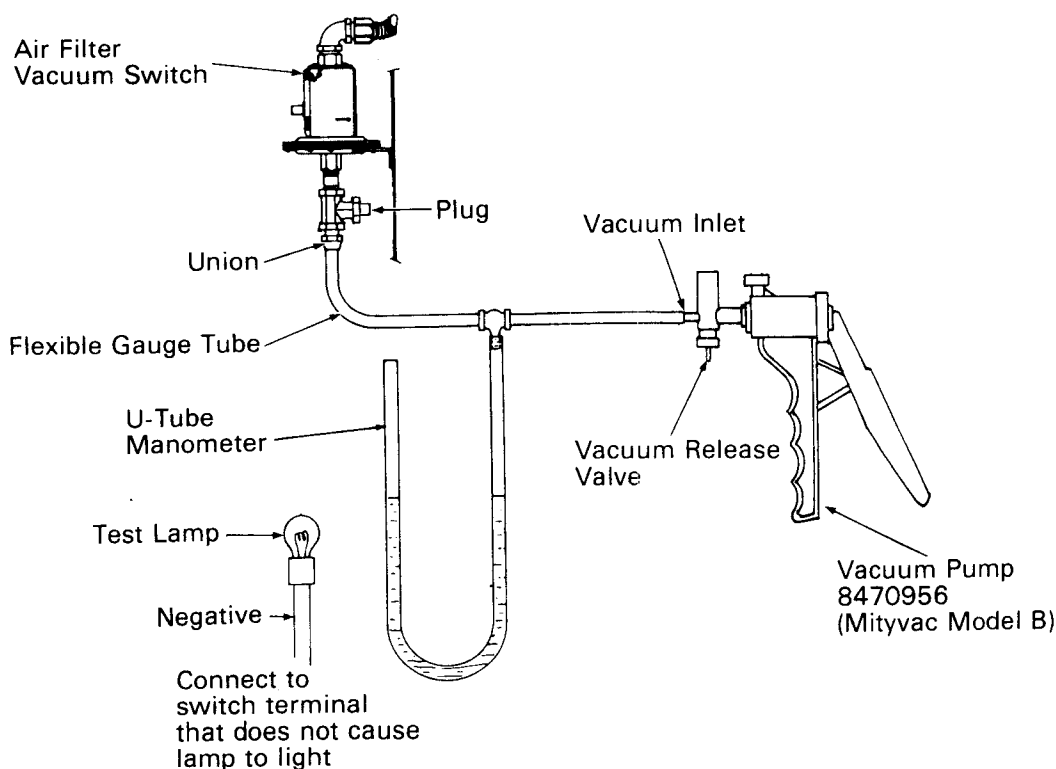


Fig.6 - Test Set-Up For Vacuum Switches

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## MAINTENANCE DATA

Vacuum switch settings can be found on the switch nameplate. Local operating conditions may require that other settings be used. In such case, refer to the

applicable wiring diagram or specific instructions for the particular product.

Any switch which cannot be adjusted, or which fails to function due to mechanical difficulties should be replaced.