# FORD MOTOR CO. DECEL THROTTLE MODULATOR

## DESCRIPTION

The decel throttle modulator system keeps the throttle valves open slightly during sudden deceleration to help reduce emissions. System consists of a speed sensor, solenoid vacuum valve, throttle modulator on throttle linkage, a ported vacuum switch, and electrical wiring and vacuum hoses. The system is electricallly connected to the "B+" terminal of the ignition switch and to the "+" terminal of ignition coil.

## OPERATION

Manifold vacuum is routed through a PVS valve and a solenoid vacuum valve, which is normally closed, to the vacuum throttle modulator. Power is available to solenoid vacuum valve through an electronic sensor, but the sensor ground circuit is open. As engine reaches 1850 RPM, ground circuit in sensor is completed, allowing solenoid vacuum valve to open. Vacuum pulls throttle modulator diaphragm which pushes throttle to high idle position during deceleration. Engine coolant must be above 125°F to allow vacuum to reach solenoid vacuum valve.

## ADJUSTMENT

NOTE – *This adjustment is to be performed when replacing components found defective during "Testing" sequence.*

1) With engine at normal operating temperature, set transmission in neutral (all transmissions).

2) Adjust carburetor to specified curb idle speed. On Auto. Trans. vehicles, this will be set to 150 RPM higher than specified curb idle speed (as with transmission in "DRIVE"), although transmission will remain in neutral. This is to keep minimum load on engine

3) Disconnect system vacuum hose from throttle modulator diaphragm and plug hose. Using a "slave" hose, connect manifold vacuum source to diaphragm.

4) Allow one minute for engine speed to stabilize. If engine speed is within specifications, the modulator is properly set. Go to step 7).

5) If RPM was not within specification, adjust throttle modulator by loosening lock nut and turning until speed is within limits. Retighten lock nut.

NOTE – *On Carter 1-barrel carburetors, avoid damage to diaphragm by holding diaphragm shaft with ¼" wrench while turning adjusting screw with ⅜" wrench.*

6) Detach manifold vacuum hose from modulator diaphragm and allow engine to return to idle condition. Repeat procedure from step 2) as required until proper function occurs.

7) Disconnect manifold vacuum hose from modulator diaphragm and allow engine to return to normal idle. Remove plug from original hose and reconnect it to throttle modulator fitting.

8) On Auto. Trans. vehicles, reset idle to specifications with transmission in "DRIVE".

9) On all vehicles, stop engine. Install air cleaner assembly.

## TESTING

### PRE-TEST SET UP

1) If vehicle is equipped with spark delay valves, test for proper operation per instructions given in "Ford Motor Co. Spark Delay Valve" article in this section.

2) Remove air cleaner and plug vacuum line. Check primary and secondary throttle linkage and choke linkage for freedom of movement. Connect tachometer to engine.

NOTE – *Perform testing in sequence given.*

### THROTTLE MODULATOR DIAPHRAGM CHECK

1) Disconnect vacuum line from diaphragm. Connect external vacuum source to diaphragm. Apply and trap 19 in. Hg.

2) If diaphragm does not respond, or will not hold vacuum, replace the diaphragm.

3) Remove external vacuum source. If the diaphragm does not return within 5 seconds, replace the diaphragm. Reconnect vacuum line.

### PORTED VACUUM SWITCH TEST

1) Disconnect hose from PVS to solenoid vacuum valve and connect external vacuum source.

2) Start engine and let it idle long enough to reach normal operating temperature. At normal temperature, there should be vacuum indicated on gauge.

3) If no vacuum is present, check vacuum hose for leaks. If hose is not leaking, replace the PVS. Reconnect vacuum line.

### SOLENOID VACUUM VALVE TEST

1) With engine at normal operating temperature, engine idling and transmission in neutral, make sure choke plate is fully open.

2) Turn off air conditioner or power take-off if equipped. Disconnect vacuum supply hose at solenoid valve and check for vacuum. If no vacuum is present, clean or replace hose as required.

3) If a vacuum delay valve is used, remove valve and install a straight connector. Disconnect wires to solenoid valve. With a jumper wire, apply battery voltage to one of the solenoid terminals. The engine speed should not increase. If it does, replace the valve.

4) Using a second jumper wire, ground the other terminal of the valve. The engine speed should increase, if not, replace the valve.

5) Remove the ground jumper wire. The engine should return to idle within 15 seconds. If not, replace the valve.

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### ELECTRONIC SPEED SENSOR TEST

**1)** Check the harness connection at the module. Start engine and run long enough to reach normal operating temperature.

**2)** While watching the vacuum diaphragm assembly, accelerate slowly. The diaphragm should extend at speeds above 1850 RPM (±100), and retract at speeds below 1600 RPM. If not, perform the harness connector checks as follows. Number the harness terminals from 1 to 6 (or 8) from the key side of the connector.

**3)** On models without electronic governor, turn key "ON" and connect one lead of voltmeter to terminal "1" and other lead to ground. Battery voltage should be indicated. Repeat test on terminals 4 and 6.

**4)** Turn ignition off. Connect one lead on an ohmmeter to terminal "3" of connector and the other lead to terminal "1". Meter should read continuity. Repeat test, connecting terminal "5" to "1".

**5)** On models with electronic governor, connect one lead of tachometer to terminal "1" and the other lead to terminal "2". Tachometer should read engine RPM.

**6)** Connect one lead of voltmeter to terminal "1" and the other lead to terminal "8". With key "ON", voltmeter should read battery voltage.

**7)** Connect one lead of ohmmeter to terminal "4" and the other lead to terminal "6". With key "OFF", ohmmeter should read continuity. Repeat test betweem terminals "5" and "7".

**8)** If any of the terminals fail any of the tests, repair the wiring as required. If harness meets all specifications, replace the speed sensor module.

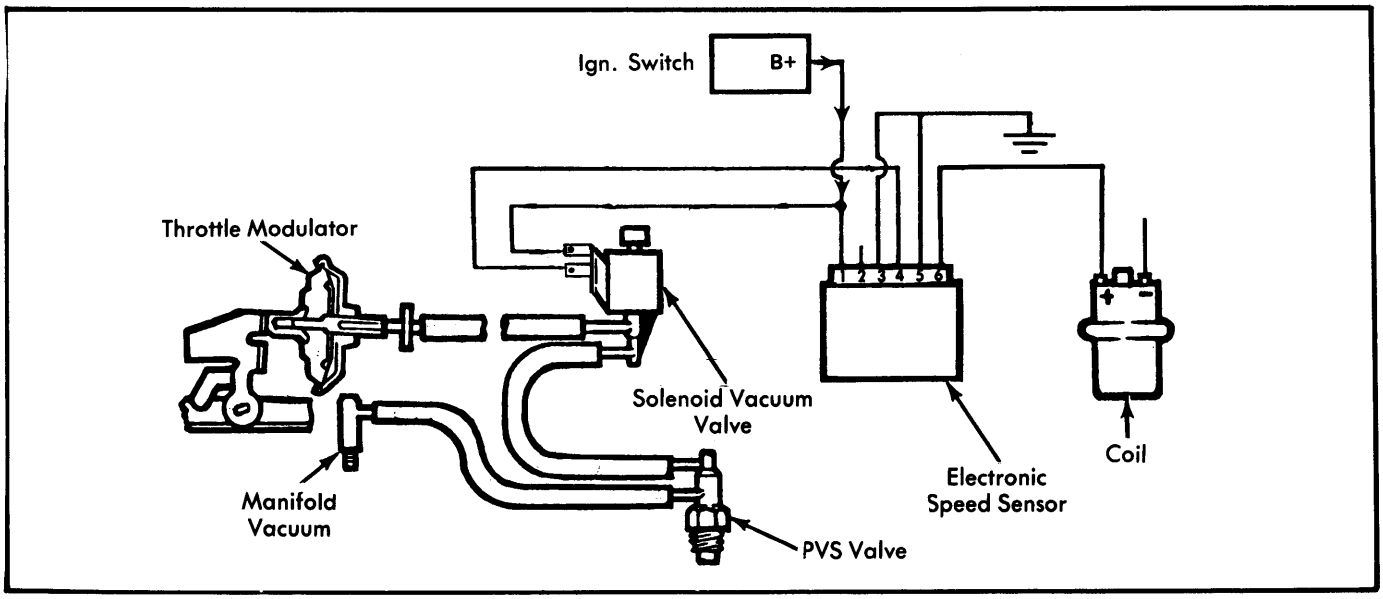


***Fig. 1 Schematic of Ford Motor Co. Decel Throttle Modulator System***