1982 Exhaust Emission Systems

FORD DECEL THROTTLE CONTROL SYSTEM

DESCRIPTION

The decel throttle control (modulator) system keeps the throttle valves open slightly during sudden deceleration to help reduce hydrocarbon and carbon monoxide emissions.

System consists of a governor module or speed sensor, a ported vacuum switch (some models), solenoid vacuum valve, throttle positioner (modulator) on throttle linkage, and electrical wiring and vacuum hoses. *See Fig. 1.*

Some systems also utilize a vacuum switch that notifies the module or speed sensor when manifold vacuum is at a predetermined level. The system is electrically connected to the ignition switch and to the "TACH" terminal of ignition coil.

OPERATION

Manifold vacuum is routed through a solenoid vacuum valve, which is normally closed, to the vacuum throttle positioner (modulator).

Power is available to solenoid vacuum valve through an electronic sensor, but the sensor ground circuit is open. When engine speed is higher than a predetermined RPM setting, a signal is sent to the solenoid, which allows manifold vacuum to activate the throttle positioner.

NOTE: On some models a vacuum switch notifies the sensor when manifold vacuum reaches a predetermined value. The sensor then signals the solenoid to activate the throttle positioner (modulator).

Vacuum pulls the throttle positioner diaphragm, which pushes the throttle to high idle position during deceleration.

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 (which is set 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 positioner diaphragm, and plug hose. Using a "slave" hose, connect manifold vacuum source to diaphragm.

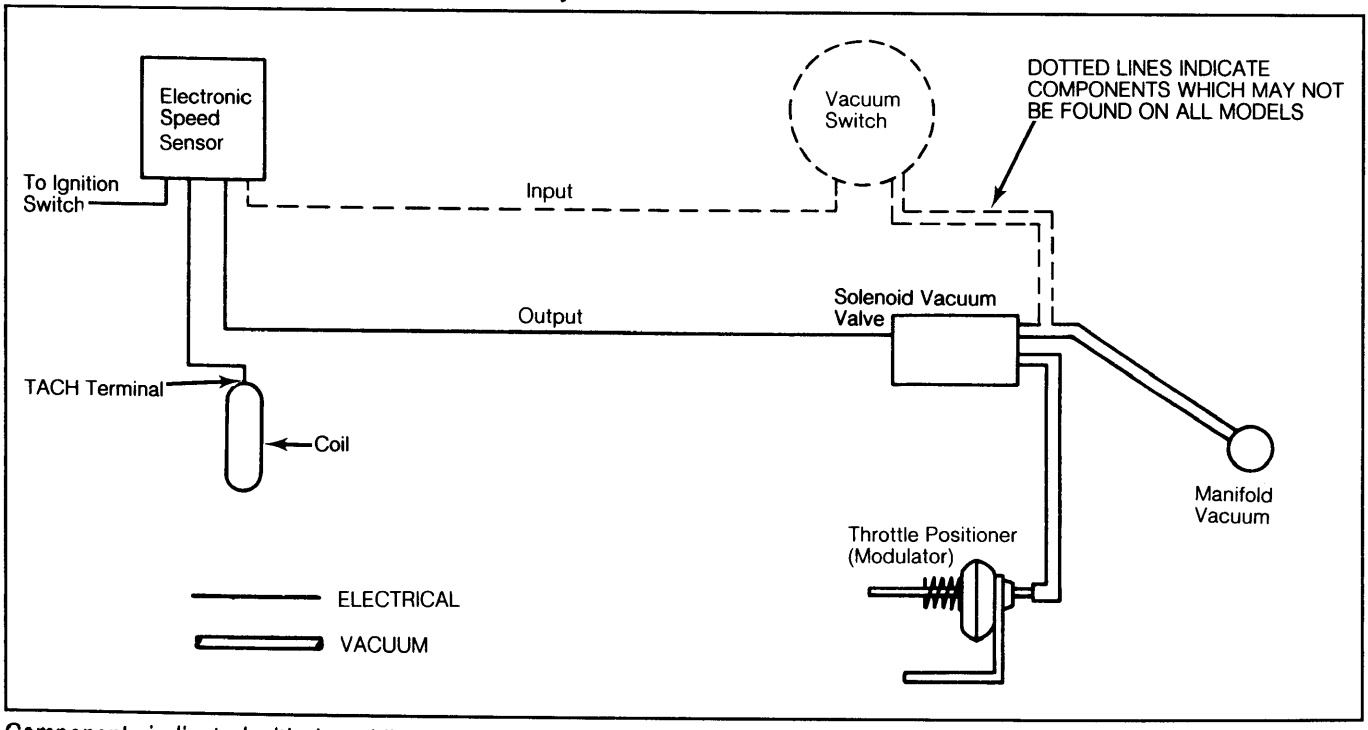
4) Allow one minute for engine speed to stabilize. If engine speed is within specifications, the modulator is properly set. Go to step **7)**.

5) If RPM was not within specification, adjust throttle positioner by loosening lock nut and turning it 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 positioner diaphragm, and allow engine to return to idle

Fig. 1 Schematic of Ford Decel Throttle Control System



Components indicated with dotted lines may not be found on all models.

FORD DECEL THROTTLE CONTROL SYSTEM (Cont.)

condition. Repeat procedure from step **2)** as required until proper function occurs.

7) Disconnect manifold vacuum hose from positioner diaphragm and allow engine to return to normal idle. Remove plug from original hose and reconnect it to throttle positioner 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 vacuum delay valves, test for proper operation as instructed in *Ford Vacuum Delay Valve article in this section.*

2) All tests should be made with engine at operating temperature and all accessories off. Remove air cleaner and plug vacuum line. Check primary and secondary throttle linkage and choke linkage for freedom of movement. Connect tachometer to engine.

SYSTEM QUICK CHECK

1) With engine at idle, accelerate to 2000 RPM or more, and then let it return to idle. Manifold vacuum should exceed 20.6 in. Hg since the system includes a vacuum solenoid valve.

2) If vacuum diaphragm plunger extends and retracts, system is functioning properly. If not, continue with tests in sequence given.

THROTTLE POSITIONER (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. If diaphragm responds and holds vacuum, proceed with testing.

3) Remove external vacuum source. If the diaphragm does not return within 5 seconds, replace the defective diaphragm. Reconnect vacuum line. If diaphragm returns in 5 seconds, it is not at fault.

PORTED VACUUM SWITCH TEST

NOTE: This switch may not be found on all models.

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.

VACUUM SOLENOID 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, power take-off (if equipped), and all accessories. 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 solenoid valve.

4) With battery voltage on one terminal, use a second jumper wire to 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 solenoid valve.

VACUUM SENSING SWITCH TEST

1) On models with vacuum sensing switch, check continuity between terminals while applying vacuum less than 19.4 in. Hg.

2) If switch shows continuity (switch closed), replace switch. If not, apply more than 20.6 in. Hg to switch, and recheck continuity. If no continuity now exists, replace switch.

NOTE: Between 19.4 and 20.6 in. Hg, switch may be either open or closed.

ELECTRONIC SPEED SENSOR MODULE TEST

1) Number harness terminals from 1 to 6 (or 8), starting with terminal 1 nearest the locator key. With ignition switch "ON", connect negative voltmeter lead to ground and touch positive lead, in turn, to terminals 1, 4, and 6. Battery voltage should be indicated in each test.

2) If less than 12 volts is indicated, service harness as necessary. If all tests are satisfactory, and problem still remains, replace electronic speed sensor module.

ELECTRONIC GOVERNOR MODULE CHECK

1) Check the harness as follows: Number the harness terminals from 1 to 8, with No. 1 being nearest the locator key.

2) With engine running, connect tachometer to terminals 1 and 2. Engine RPM should be indicated. Next, turn ignition switch "ON", and connect positive lead of voltmeter to terminal 1 and negative lead to terminal 8. Battery voltage should be indicated.

3) Turn ignition switch "OFF". Connect one lead of ohmmeter to terminal "4" and the other lead to terminal"6". Ohmmeter should read continuity. Repeat same test between terminals "5" and "7". Continuity should again be indicated.

4) If any of the terminals fail any of the tests, repair the wiring harness as required. If harness meets all specifications, replace the electronic governor module.