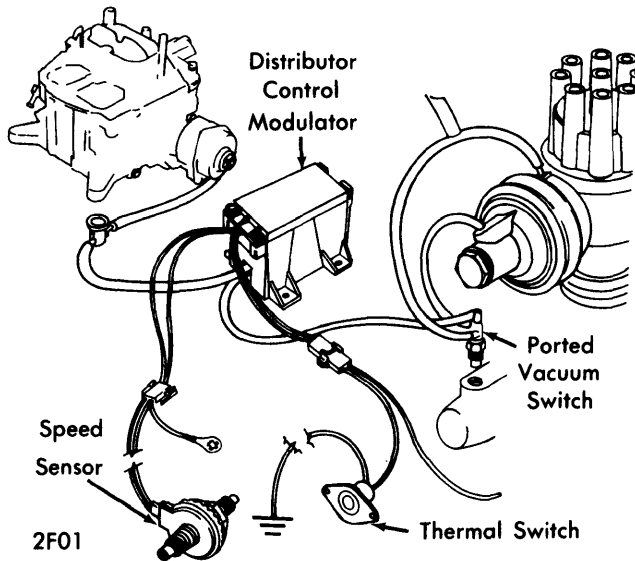


Exhaust Emission Systems

FORD MOTOR CO. DISTRIBUTOR MODULATOR

DESCRIPTION

The electronic distributor modulator system controls emissions by eliminating vacuum advance below 23 miles per hour on acceleration, and below 18 miles per hour on deceleration. It is used on Econoline window vans, and F-100 2-wheel drive trucks. The four major components of this system are the speed sensor, the thermal switch, the electronic control module, and the distributor vacuum control valve, also known as a ported vacuum switch (PVS). The thermal switch is located in the right or left door pillar, the speed sensor is in line with the speedometer cable, and the control module is mounted under the dash panel. The ported vacuum switch is threaded into the coolant outlet elbow.



DISTRIBUTOR MODULATOR SYSTEM

OPERATION

Current is supplied to the control module when the ignition is turned on. The current then triggers the solenoid valve inside the control module to shut off carburetor vacuum to the distributor vacuum advance unit. As vehicle speed increases, the speed sensor, in line with the speedometer cable, builds up a voltage frequency proportional to vehicle speed. This voltage

is sent to the amplifier inside the control module. The solenoid valve is then triggered and it opens, allowing vacuum advance at about 23 miles per hour. As the vehicle decelerates and the speed drops to about 18 miles per hour, the reduced voltage from the speed sensor causes the solenoid to close. Now no vacuum is applied to the distributor vacuum advance unit.

TESTING

System should be checked when loss of engine performance and excessive fuel consumption are reported. Road test symptoms will be those of retarded ignition timing. To check the system:

- 1) Start engine, run at 1500 RPM and check for vacuum at carburetor. Note vacuum reading and reconnect vacuum hose.
- 2) By-pass distributor modulator hoses at rear of engine and connect vacuum gauge to distributor primary, observe vacuum reading. If vacuum is not apparent or is considerably less than in step 1, check for pinched and/or leaking hoses (or lines) on engine.
- 3) If vacuum in step 2 is approximately the same as in step 1, remove by-pass and connect vacuum hoses from firewall to rear of engine. Run engine until warm and at normal idle. **NOTE** — Make sure thermal switch is above 65°F. Raise rear wheels, slowly accelerate to 34 MPH. If vacuum occurs between 23-30 MPH, system is functioning properly.
- 4) If vacuum occurs before 20 MPH or at start of acceleration, check electrical connections inside vehicle leading to modulator box. Disconnect thermal switch and recheck vacuum. If vacuum is present, replace modulator assembly. If no vacuum, replace thermal switch.
- 5) If there was no vacuum in step 3, check electrical and hose connections inside vehicle leading to modulator box. If connections are unsatisfactory, repair as required. If connections are satisfactory, replace distributor modulator assembly and recheck vacuum. If still no vacuum, replace sensor.

SPECIFICATIONS

Thermal Switch

Open	58-68°F (Max.)
Closed	58-50°F (Min.)

Speed Sensor

Resistance	40-60 Ohms
Coil Resistance to Case	Open Circuit