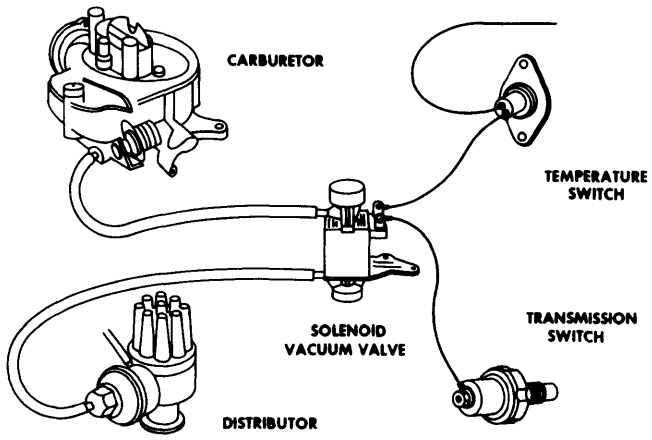
FORD MOTOR CO. TRANSMISSION REGULATED SPARK

DESCRIPTION & OPERATION

The transmission Regulated Spark Control System (TRS) reduces engine emissions by retarding distributor vacuum advance while vehicle is in first and second gear. System consists of a distributor modulator valve, ambient temperature switch and transmission switch. In some applications a spark delay valve is also used. Vacuum is controlled by distributor modulator valve located in vacuum line between carburetor and distributor. This valve is normally open and closes off vacuum supply to distributor when energized. An ambient temperature switch in either right or left front door post senses outside air temperature. A temperature below 49°F will cause switch to open and allow normal vacuum advance in all gears. A temperature of 65°F will close switch and allow normal operation of TRS system. On manual transmissions a switch is mounted on left side of the case. When gear lever is moved to high gear position, switch plunger enters a detent on shift rail to open switch. On automatic transmissions, switch is operated by transmission fluid pressure in high range or reverse gear circuits. When transmission switch contacts are opened (manual or automatic), the modulator valve is de-energized, restoring normal vacuum advance.



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FORD TRANSMISSION REGULATED SPARK CONTROL SYSTEM

SYSTEM TEST

With a vacuum gauge connected between distributor and distributor modulator valve and temperature switch known to be above 65°F, proceed as follows:

Manual Transmission – Start engine with transmission in neutral, no vacuum should be indicated. Disengage clutch and increase engine speed to 1000-1500 RPM. Vacuum should read zero. Disengage clutch and place transmission in high gear. With engine running between 1000 and 1500 RPM, a reading of at least 6 in. Hg should occur.

Automatic Transmission – Start engine with transmission in Park or Neutral, no vacuum should be indicated. With foot brake applied firmly, shift into Reverse. At low RPM, the gauge may or may not register a vacuum reading. If no reading is obtained, proceed as follows: Disconnect one wire from distributor modulator valve, shift in Neutral and increase engine speed to 1000-1500 RPM. Vacuum should be indicated. If no vacuum is indicated, disconnect both hoses at valve and connect hoses together with a nipple. Increase engine speed to 1000-1500 RPM, a vacuum reading indicates that vacuum supply is operational.

Test Conclusions – Should system fail to function in above test a fault is indicated and each component should be tested individually.

TRANSMISSION SWITCH TEST

Disconnect transmission switch lead from distributor modulator valve and connect a test lamp between switch lead and battery positive terminal, the proceed as follows:

Manual Transmission – With engine and ignition off, move gear lever through all positions. Light should stay on until high gear is selected. If light stays on, circuit is grounded or switch is inoperative. If it does not go on at all, circuit is open or switch has failed. Repair or replace switch as necessary and reconnect switch lead to valve.

Automatic Transmission – Start engine, apply foot brake and move shift lever through all positions. The light should only go out in Reverse position. If light stays on in all positions, circuit is grounded or switch is faulty. If light does not go on at all, circuit is open or switch is faulty. Repair or replace switch as necessary and reconnect switch lead to valve.

TEMPERATURE SWITCH TEST

Disconnect temperature switch lead from distributor modulator valve and connect it to a test lamp with a good ground. Turn on ignition switch and warm temperature switch with hand or sponge saturated with hot water. Light should go on when switch temperature exceeds 65°F. If light does not go on, circuit is open or grounded or switch is faulty. Cool switch until it is below 49°F (an aerosol spray such as starting fluid should provide sufficient cooling), light should go out. If light does not go out, either it isn't cooled enough or switch is faulty.

DISTRIBUTOR MODULATOR VALVE TEST

With transmission switch and temperature switch known to be good, repeat system test. If system still fails to function correctly, either valve is faulty; hoses are pinched, plugged, or improperly connected; or there is not venturi vacuum from carburetor.

FORD MOTOR CO. TRANSMISSION REGULATED SPARK (Cont.)