GENERAL MOTORS EXHAUST GAS RECIRCULATION (Cont.)

vacuum is present, check for plugged or leaking hose or carburetor port.

5) If diaphragm moves with no change in engine RPM, check manifold EGR passages for blockage.

FUNCTIONAL TESTS

EGR Valve Installed (Ported and Negative Back Pressure Types) – 1) Check for proper hose routing, according to appropriate diagram. *See "General Motors Vacuum Diagrams" in this section.* Check EGR signal tube orifice for obstructions.

2) Hook vacuum gauge between EGR valve and carburetor and check vacuum with engine running at normal operating temperature. With engine at 3,000 RPM, there should be at least 5 in. Hg.

3) Check operation of Thermal Vacuum Switch by installing a vacuum gauge inline between TVS and its sources and noting presence of vacuum with engine operating warm. Valve can also be removed and checked by placing in pails of warm and cold water (with vacuum source and gauge attached on either side) to check for valve open while warm and closed while cold.

4) With engine off and valve on or off the vehicle, manually depress valve diaphragm. While depressed, hold finger over source tube and release diaphragm.

5) Check for diaphragm and seat movement. Valve is okay if it takes over 20 seconds for diaphragm to move to seated position. If less, replace EGR valve.

EGR Valve Removed (Back Pressure Type Valve Only) – 1) Apply external vacuum (10 in. Hg or more) to EGR valve signal tube.

NOTE – *A constant vacuum supply must be used.*

2) Valve should not open. If it does, control valve is stuck closed and EGR valve must be replaced.

3) With vacuum still applied, apply a stream of air from a low pressure source into the EGR valve exhaust gas intake passage. Valve should open completely. If it does not open at all, control valve is stuck open or exhaust passages are plugged. Replace EGR valve.

4) If EGR valve and control valve are both functioning properly, clean the mounting surfaces, then using a new gasket, install valve on engine. Reconnect vacuum hose.

MAINTENANCE

EGR PASSAGE CLEANING

If inspection of EGR passages in intake manifold indicates excessive build up of exhaust deposits, the passages should be cleaned. Care should be taken to ensure that all loose particles are completely removed to prevent them from clogging the EGR valve or from being ingested into the engine.

GENERAL MOTORS VACUUM ADVANCE SPARK CONTROL

DESCRIPTION

TRAPPED VACUUM SPARK

Trapped vacuum spark is used on all models. A thermal vacuum switch (TVS) is mounted in cylinder head and used to sense engine coolant temperature. A vacuum check valve is mounted between manifold vacuum, distributor and thermal vacuum switch. The system maintains high vacuum levels to the distributor during cold engine operation and cold engine acceleration.

SPARK VACUUM DELAY

The spark vacuum delay is used on 350" and 400" V8 engines with Heavy Duty Emissions. It is installed between the TVS check valve and the distributor.

OPERATION

TRAPPED VACUUM SPARK

When engine temperature is below a pre-set specified value, the manifold vacuum signal is routed through the check valve to the distributor. Ports on TVS are blocked. The check valve will keep distributor vacuums at levels higher than manifold depression during vehicle acceleration. A small sintered iron bleed orifice is provided in the check valve to allow for a leakdown to enable engine to be restarted if it stalls. (This applies to all models except: Light Duty California and Altitude Emissions; 350" and 400" V8 with Heavy Duty Emissions; all 454" V8 engines.)

When engine temperature is above pre-set value, TVS ports will be open to allow manifold vacuum to the distributor. During this mode of operation, the check valve will act as a connector.

SPARK VACUUM DELAY

As manifold vacuum increases, the check valve opens and allows distributor vacuum to increase to same level. When vacuum decreases during vehicle acceleration, the check valve closes and distributor vacuum will decrease at a rate controlled by the internal bleed.