GENERAL MOTORS THERMOSTATIC AIR CLEANERS

All Models

DESCRIPTION

All light trucks use a system for preheating the air entering the carburetor. This device is part of the air cleaner and maintains the air temperature at a point where the carburetor can be calibrated much leaner to reduce hydrocarbon (HC) emissions and also improve warm-up operations and reduce carburetor icing.

System consists of an air cleaner assembly, intregal air control door, vacuum control temperature sensor, vacuum motor, heat shroud (on exhaust manifold) with connecting pipe and vacuum hoses. Some models use additional controls, such as vacuum traps and cold weather modulators.

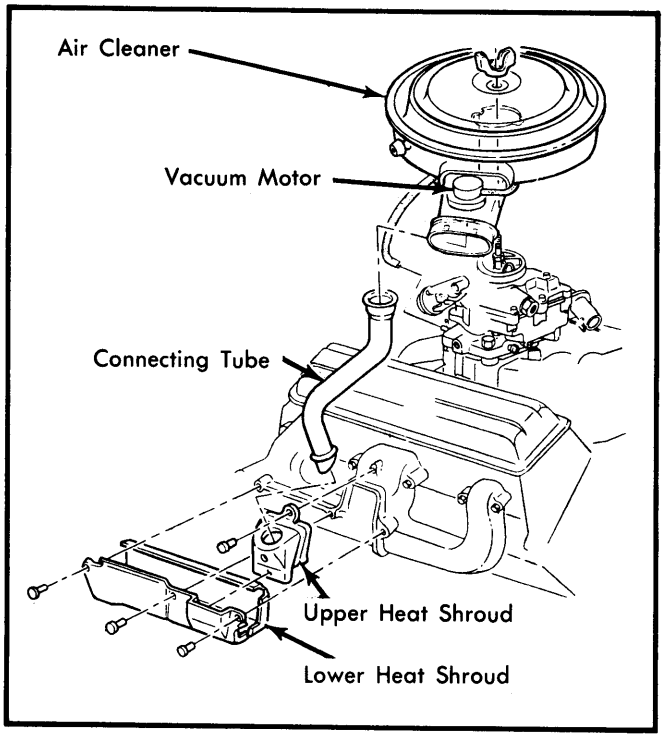

Fig. 1 Typical V8 Engine Air Cleaner Assembly

OPERATION

When temperature of air entering air cleaner is less than the setting of temperature sensor, sensor closes to allow engine vacuum to operate vacuum motor which closes damper assembly to outside air. Air is then drawn from around exhaust manifold, through heat shroud and into air cleaner as heated air. As air inside air cleaner warms, sensor valve begins to open. This bleeds off vacuum to vacuum motor. As vacuum to vacuum motor drops, air control door begins to open, allowing outside air to enter air cleaner. When air entering air cleaner reaches a specified temperature, air control door opens completely, thus closing off heated air from around exhaust manifold.

TESTING

VACUUM CONTROL TEMPERATURE SENSOR TEST

1) With engine cold, check damper door. It should be in the open snorkel position. Place thermometer inside air cleaner, close to sensor.

2) With engine temperature below 80°F, start engine and idle. Damper door should be in the closed snorkel position. When door starts to open, read thermometer in air cleaner. Temperature should be 80-120°F. If door does not begin to open at this temperature, replace sensor.

VACUUM MOTOR TEST

1) Check all hoses and connections for proper hook-up. With engine off, observe damper door through snorkel opening. The door should be open to outside air.

2) With an external vacuum unit, apply 7 in. Hg of vacuum to diaphragm assembly through hose disconnected at sensor. Damper door should close when vacuum is applied. If not, check for vacuum leak, or binding linkage.

3) With vacuum applied, bend hose to trap vacuum in diaphragm assembly. Damper door should remain closed. If not, replace diaphragm assembly.