1982 Exhaust Emission Systems

GENERAL MOTORS THERMOSTATIC AIR CLEANER

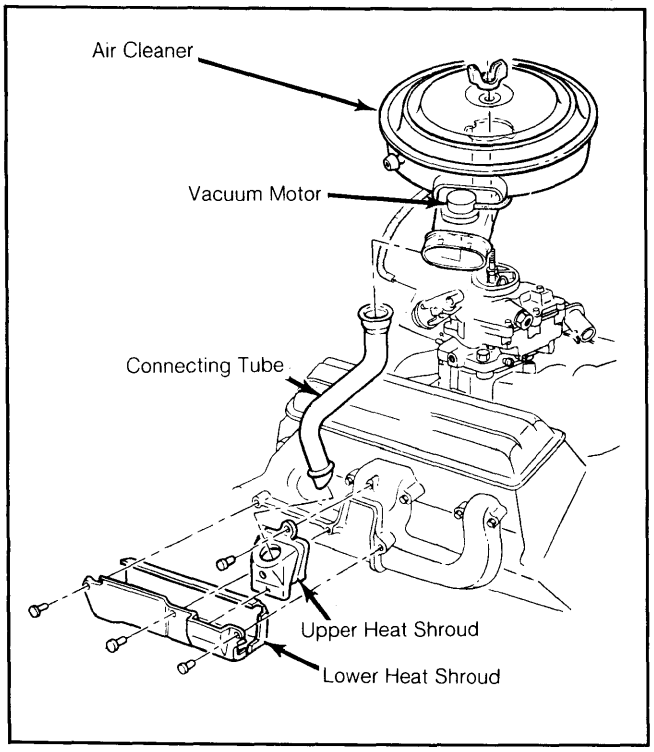
All Models

DESCRIPTION

All models use a system for preheating air entering carburetor. A vacuum motor, part of the air cleaner, maintains the air temperature at a point where the carburetor can be calibrated much leaner to reduce hydrocarbon (HC) emissions while also improving warm-up operations and reducing carburetor icing.

System consists of an air cleaner assembly, integral 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: General Motors V8 Engine Air Cleaner Assembly



All Light Duty Emission vehicles use preheated air to warm carburetor.

OPERATION

When temperature of air entering air cleaner is less than setting of temperature sensor, sensor closes. This allows engine vacuum to operate vacuum motor, which closes damper assembly to outside air. Heated air is then drawn from around exhaust manifold, through heat shroud and into air cleaner.

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. This allows outside air to enter air cleaner. When air entering air cleaner reaches a specified temperature, air control door opens completely, thus closing off the supply of heated air from around exhaust manifold.

TESTING

VACUUM CONTROL TEMPERATURE SENSOR TEST

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

2) With engine temperature below 80°F (27°C), start engine and run at idle. Damper door should be in closed snorkel position. When door starts to open, read thermometer in air cleaner. Temperature should be 100°F (38°C). 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. Door should be open to outside air.

2) With an external vacuum unit, apply 7 in. Hg 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.

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