1982 Exhaust Emission Systems

DATSUN AUTOMATIC TEMP. CONTROL AIR CLEANER

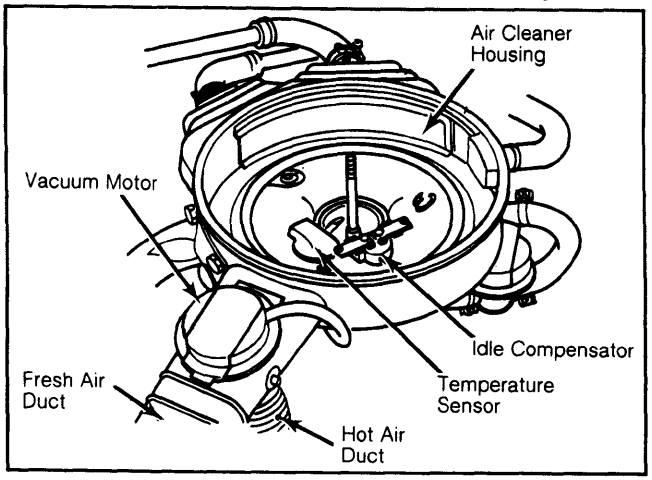
Pickup, Sentra, Stanza, 210, 310

DESCRIPTION

All carbureted models are equipped with an Automatic Temperature Control (ATC) Air Cleaner assembly. This device maintains temperature of air entering carburetor within a constant range. This provides leaner air/fuel mixture to reduce harmful exhaust emissions.

In addition, the ATC air cleaner improves engine warm-up characteristics and helps prevent carburetor icing. The ATC air cleaner assembly consists of an air cleaner housing, vacuum motor, temperature sensor, idle compensator, hot air duct, fresh air duct and various connecting hoses.

Fig. 1: Typical Datsun ATC Air Cleaner Assembly



OPERATION

The ATC air cleaner is controlled by inlet air temperature and load condition of engine. The inlet air temperature is detected by temperature sensor, and vacuum motor is activated by intake manifold vacuum.

COLD ENGINE OPERATION

When engine intake air temperature is below 100°F (38°C), sensor air bleed valve is closed. This allows intake manifold vacuum to vacuum motor. With vacuum applied to vacuum motor, air control valve, attached to vacuum motor diaphragm, is opened. This allows hot air into air cleaner through hot air duct on exhaust manifold.

HOT ENGINE OPERATION

When engine vacuum is low, or when engine is under a heavy load, the air control valve opens (regardless of temperature) to allow cold air induction for increased engine power.

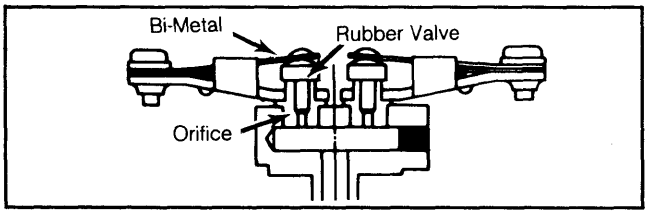
IDLE COMPENSATOR

The idle compensator is a thermostatic valve which opens to allow air directly to the intake manifold. This compensates for the overly rich air/fuel ratio present during high idle temperature. Two idle compensators, having different opening temperatures, are used on 210 and 310 models. On Pickup and Stanza models, only one idle compensator is used.

On Pickup and Stanza models, idle compensator opens at 127°F (53°C). On Sentra, 210 and 310 models, first compensator opens at 140-158°F (60-70°C) and second compensator opens at 158-176°F (70-80°C).

NOTE: On Pickup and Stanza models, idle compensator is mounted on carburetor, not in air cleaner housing as on Sentra, 210 and 310.

Fig. 2: Datsun Idle Compensator Assembly (Sentra, 210 & 310 Models Only)



TESTING

SYSTEM CHECK

1) Check all vacuum lines for connection, cracks or loose fitting and proper routing. Replace or reroute as necessary

2) To check vacuum motor, stop engine and unhook fresh air duct. Using a mirror, check position of air control valve inside duct. With engine warm, fresh air inlet should be open and hot air duct closed. Check control valve linkage.

3) Disconnect vacuum motor inlet vacuum hose. Install another length of hose to inlet and apply vacuum through this hose to vacuum motor.

4) With vacuum applied, again use mirror to check air control valve position. Fresh air inlet should now be closed and hot air inlet open.

5) With hot air inlet open (vacuum still applied), pinch vacuum hose to cut off air to vacuum motor. Air control valve should hold position for more than 30 seconds.

6) If force of diaphragm spring overcomes vacuum and opens fresh air inlet in less than 30 seconds, replace vacuum motor assembly.

7) To check temperature sensor, start and idle engine. As engine warms up, air control valve should slowly open to admit fresh underhood air.

IDLE COMPENSATOR

1) Disconnect vacuum hose at idle compensator. Connect vacuum pump to hose and apply vacuum. If leakage is excessive, replace idle compensator assembly.

NOTE: One of the 2 compensator ports must be plugged while checking the other.

2) Remove idle compensator. Place idle compensator and thermometer in water. Heat water while watching temperature.

3) On Pickup and Stanza models, valve should fully open at 127°F (53°C). On Sentra, 210 and 310 models, one valve should start opening at 140-158°F (60-70°C). The other valve should start opening at 158-176°F (70-80°C). If valve does not operate within specifications, replace idle compensator as an assembly.