

AIR CLEANER - THERMOSTATIC

1988 Jeep Cherokee

1988 Exhaust Emission Systems
JEEP THERMOSTATIC AIR CLEANER

DESCRIPTION

On models equipped with carburetor, a system for pre-heating air entering carburetor is used. This system is part of the air cleaner and maintains air temperature at a point where carburetor can be calibrated at leaner setting to reduce hydrocarbon emissions and improve driveability during warm-up.

These systems are vacuum-operated and consist of heat shroud on exhaust manifold, hot air duct, thermal sensor switch, vacuum motor, air valve assembly and reverse delay valve.

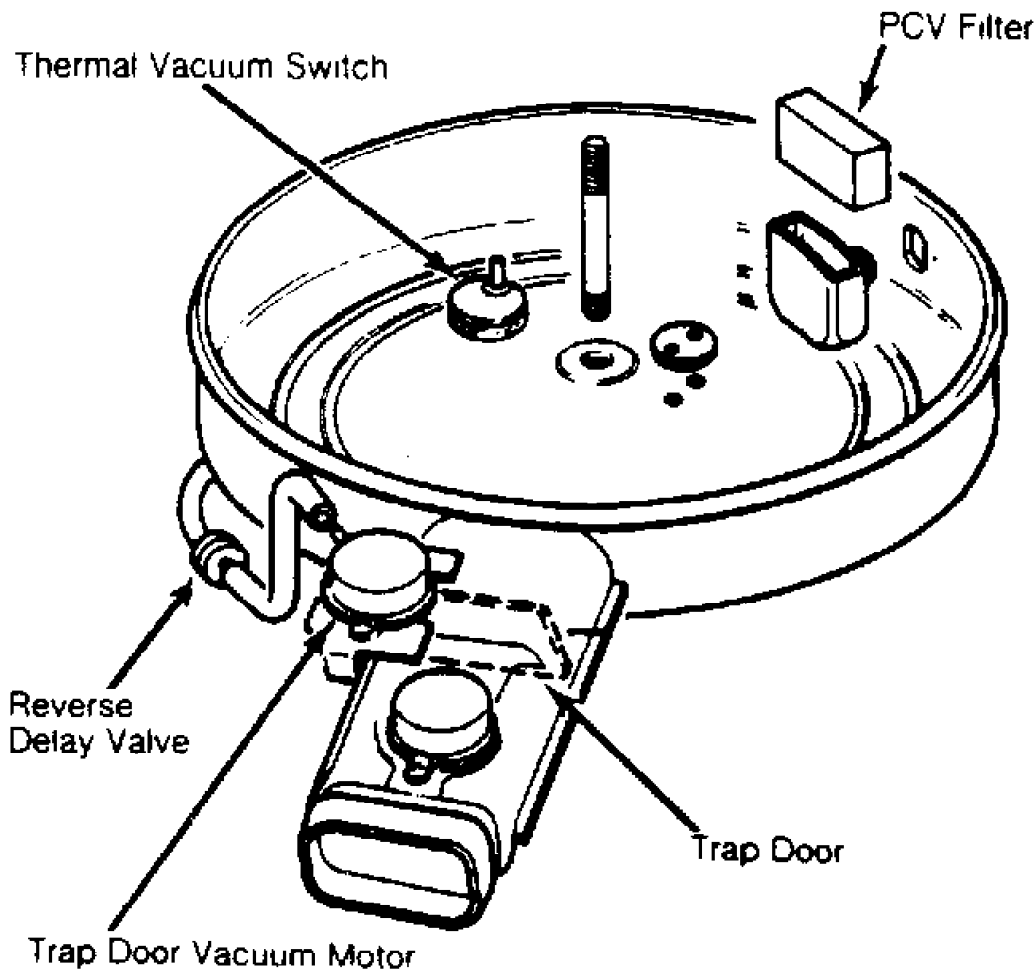


Fig. 1: Thermostatic Air Cleaner (TAC) Assembly
Courtesy of Chrysler Motors.

OPERATION

During engine warm-up, temperature sensor switch applies vacuum to vacuum motor. Air diverter valve is held to "ON" position. Exhaust manifold heated air flows to air cleaner. As temperature of incoming air increases to 90°F (32°C), temperature sensor opens vacuum line to atmosphere allowing spring pressure to push valve to "OFF" position. Air now flows from outside, through air cleaner duct to carburetor.

AIR CLEANER TRAP DOOR

On California vehicles, spring-loaded trap door is built into air cleaner to close off air cleaner when engine is shut off. Door is vacuum operated.

REVERSE DELAY VALVE

Reverse delay valve is installed in vacuum line in some vehicles to prevent trap door from closing during low engine vacuum periods. Valve provides about 9 seconds delay before allowing trap door to close.

OPEN TO OUTSIDE AIR

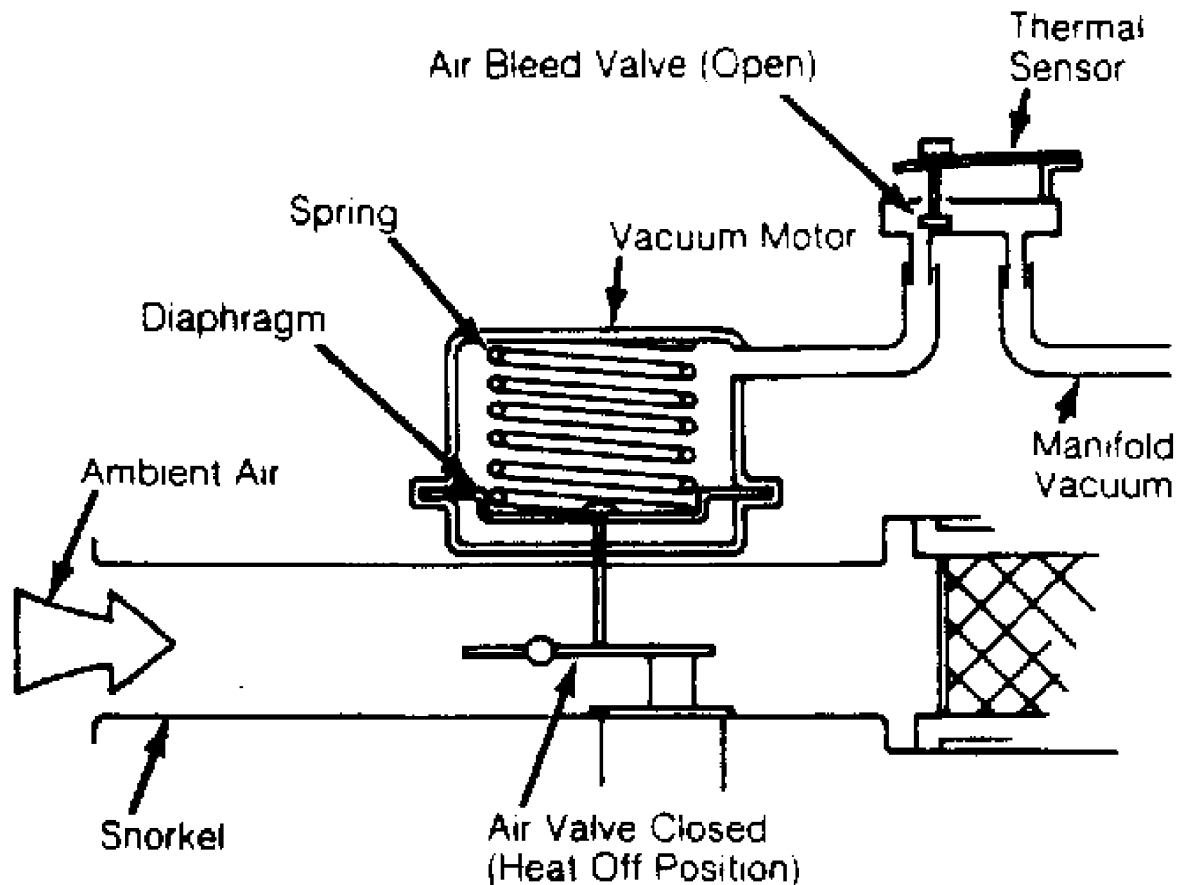


Fig. 2: Cutaway View of Thermostatic Air Cleaner Assembly
 Courtesy of Chrysler Motors.

TESTING

VACUUM MOTOR & TEMPERATURE SENSOR

1) Remove air cleaner assembly from vehicle and allow to cool to room temperature. Look through air cleaner duct and observe position of air diverter valve. It should be fully open to outside air.

2) Reinstall assembly on carburetor and connect hot air duct and manifold vacuum hose. Start engine and observe position of air valve in snorkel. It should be fully closed to outside air.

3) Move throttle lever rapidly to 1/2 to 3/4 opening and release. Air diverter valve should open and then close again. Allow engine to warm to operating temperature and observe position of air valve in snorkel. It should be fully open to outside air.

4) If valve does not move to fully close off outside air at 83°F (28°C) or less with vacuum applied, check for binding of duct, vacuum leaks in hose connections or disconnected vacuum motor. If valve mechanism operates freely and no vacuum leaks are detected, connect hose from intake manifold vacuum source directly to vacuum motor.

5) If air valve now moves to close off outside air, replace thermal sensor switch. If valve still does not move to close off outside air, replace air cleaner assembly and vacuum motor assembly.

TRAP DOOR

1) With engine off, remove air cleaner and check position of trap door. It should be closed.

2) Remove vacuum hose from intake manifold vacuum source and apply an external vacuum source of approximately 2-4 in. Hg vacuum. Trap door should open.

3) If door does not open, apply vacuum directly to vacuum motor. If door does not open, check for binding and adjust as necessary. If door swings freely, replace vacuum motor.

4) If door opens during step 3), check vacuum hose for blockage, cracks or leaks. Correct as necessary and retest as specified in step 2).

5) If hoses are not defective, remove reverse delay valve, join vacuum hose and retest from step 2). If door opens, replace reverse delay valve.

REVERSE DELAY VALVE

1) Connect external vacuum source to port on White side of delay valve. Connect one end of 24" (610 mm) section of rubber hose to vacuum gauge and other end to port on colored side of valve.

2) With a constant 10 in. Hg vacuum applied, note time required for vacuum gauge pointer to move from 0-8 in. Hg.