FORD THERMOSTATIC AIR CLEANER

All Models

DESCRIPTION

Fresh air or heated air is made available to the engine by a system of ducting which directs air into the air cleaner assembly. Air temperature is controlled by a temperature sensitive vacuum system that operates the duct valve. The vacuum-operated duct can select cool air from the outside through a pickup tube, or warm air from a shroud around the exhaust manifold. The system consists of a shroud around the exhaust manifold, an air cleaner assembly with a vacuum motor, a duct and valve assembly, a temperature sensor and on some models a cold-weather modulator.

OPERATION

When the engine is cold, air is selected from the exhaust manifold shroud because the heat sensor in the air cleaner is cold. Vacuum is applied to the vacuum motor that operates the duct valve, and the duct valve is opened to allow heated air to enter the air cleaner. As the engine warms up, the sensor operates, preventing vacuum from being applied to the vacuum motor. The duct valve then opens and allows air from the outside to flow through the pickup tube into the air cleaner. A cold-weather modulator, on some models, controls operation of the duct valve under certain air temperature conditions for improved emission control.

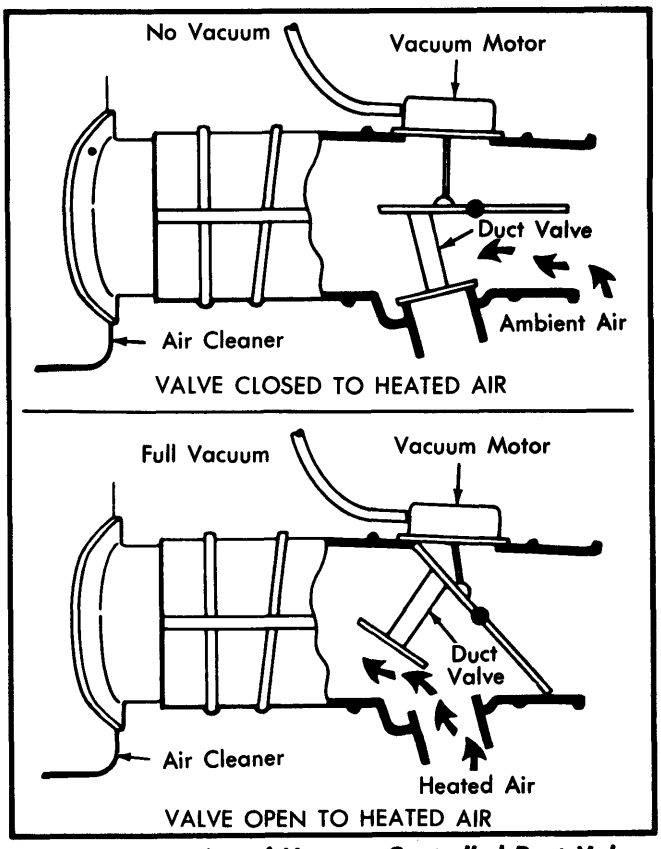

Fig. 2 Operation of Vacuum Controlled Duct Valve

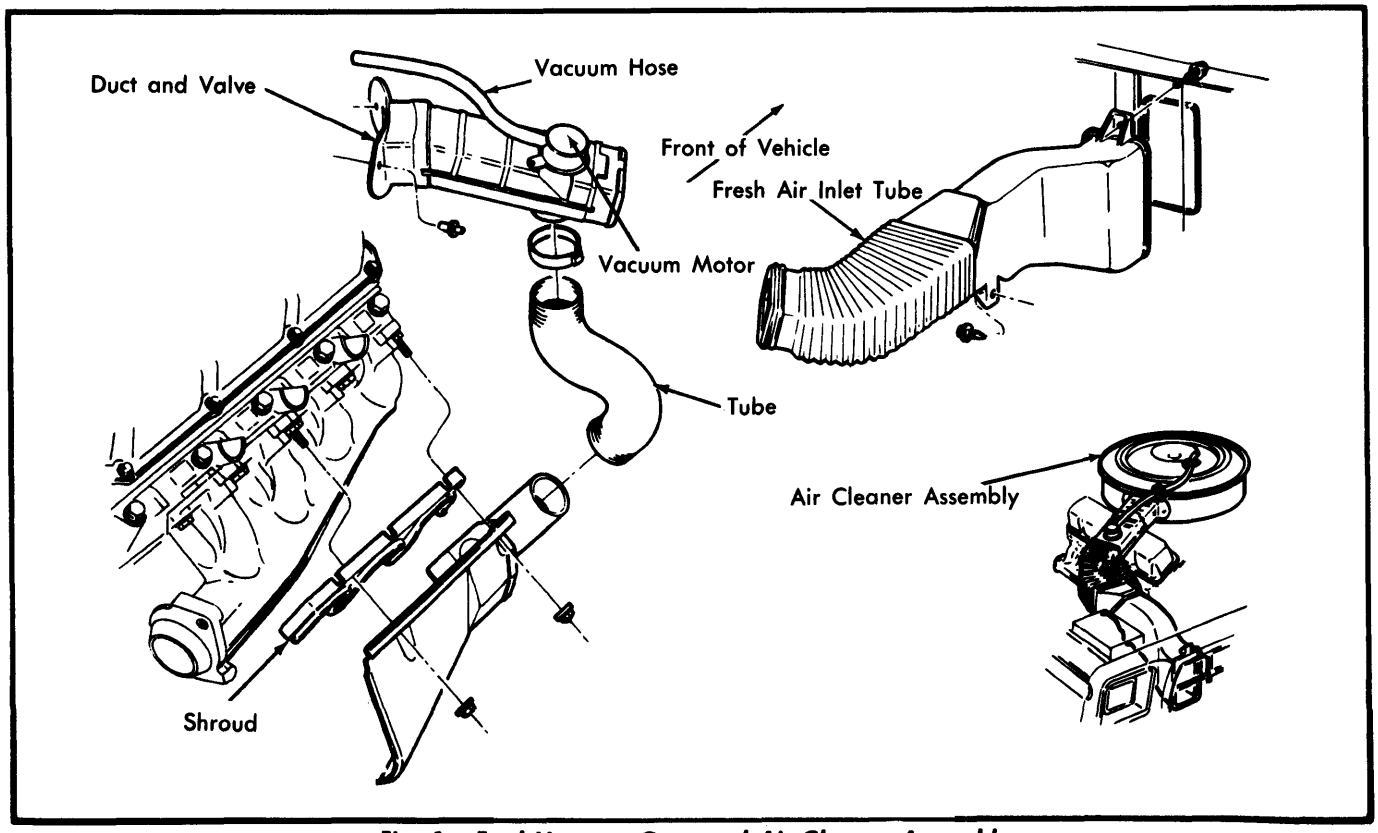

Fig. 1 Ford Vacuum Operated Air Cleaner Assembly (Typical V8 Assembly Shown - Others Similar)

FORD THERMOSTATIC AIR CLEANER (Cont.)

TESTING

DUCT & VALVE ASSEMBLY WITHOUT VACUUM OVERRIDE

NOTE – *This check must be performed with outside temperature at least 60°F. If vehicle is equipped with a cold-weather modulator or vacuum delay valve, by-pass these systems by connecting the 2 vacuum lines together.*

1) Check to see that the duct door is open with the engine not running. If door is closed, check for binding. Place a magnetic thermometer as close as possible to the temperature sensor on the air inlet side.

2) Start engine. If duct door is closed, proceed to *step 3.* If duct door is open, turn off engine and cool the temperature sensor by spraying it with R-12 refrigerant.

CAUTION – *Do not spray R-12 on sensor with engine running. Heated R-12 vapors produce poisonous phosgene gas. Always perform this step in a well ventilated area.*

3) Start engine. Observe how long it takes the duct door to open. It should open within 5 minutes. If not, check thermometer temperature. If greater than 110°F, replace sensor. If less than 110°F, warm engine again to correct temperature. If door still fails to open, replace sensor.

DUCT & VALVE ASSEMBLY WITH VACUUM OVERRIDE

1) Disconnect duct and valve assembly from air cleaner. Check door for free operation. With outside temperature less than 73°F, connect an external vacuum source to vacuum motor.

2) At zero vacuum on vacuum motor, the door must be within .060" or less of heat-off position. If door does not close to this position within 10 minutes, replace duct and valve assembly.

3) Apply 1-5 in. Hg of vacuum to the vacuum motor. The duct door should start to move to the heat-on position. If not, replace or repair as required.

4) Apply 7-12 in. Hg of vacuum to vacuum motor. The duct door should be in the heat-on position. If door does not move to this position within 1 minute, repair or replace as necessary.

VACUUM MOTOR

Disconnect vacuum hose from vacuum motor connector tube. Apply 16 in. Hg of vacuum and trap. Vacuum motor should remain closed for 60 seconds. If not, replace duct and valve assembly.