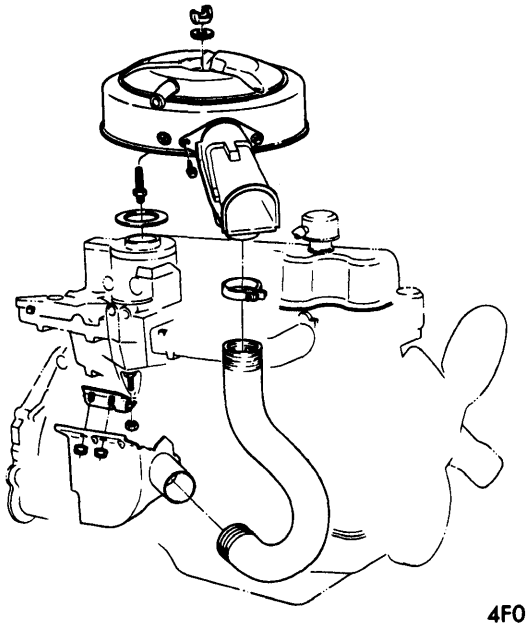
FORD MOTOR CO. THERMOSTATIC AIR CLEANER

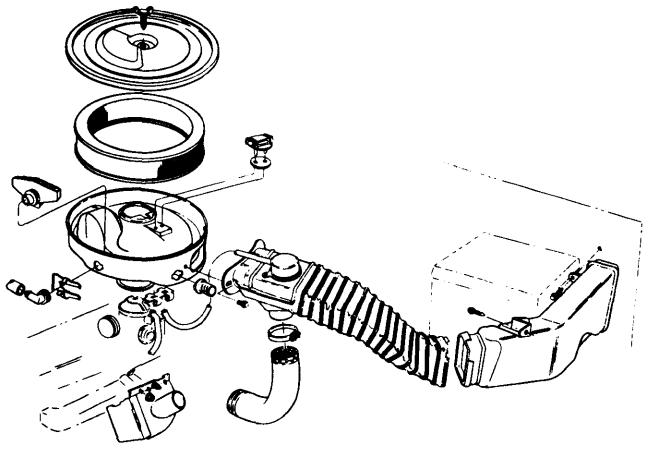
DESCRIPTION

Ford trucks use two basic types of thermostatic air cleaners: the temperature operated (wax pellet) duct type, and the vacuum operated (air valve) duct type. The purpose of both types is to maintain a desirable inlet air temperature. A valve or motor located within the air duct assembly, controls the temperature of the air entering the carburetor, by either allowing heated air from a shroud around the exhaust manifold or cooler air from the engine compartment to enter the carburetor. The valve plate is controlled by either a thermostatic bulb or a vacuum operated motor.



4F01

TYPICAL TEMPERATURE OPERATED DUCT TYPE AIR CLEANER

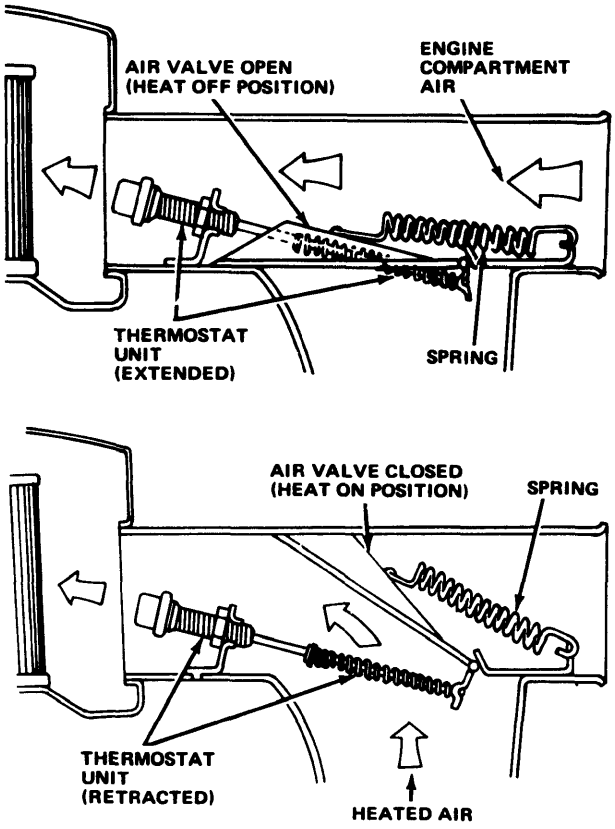


4F02

TYPICAL VACUUM OPERATED DUCT TYPE AIR CLEANER

OPERATION

Temperature Operated Duct – In this type, a thermostatic bulb is exposed to incoming air. A spring loaded valve plate is connected to the thermostatic bulb through linkage. The valve plate spring holds the valve in the closed position (heat on) until the wax pellet expands and the thermostatic bulb overcomes the spring tension and opens the valve plate (heat off). When the temperature reaches about 100°F the valve plate will be in the heat off position.

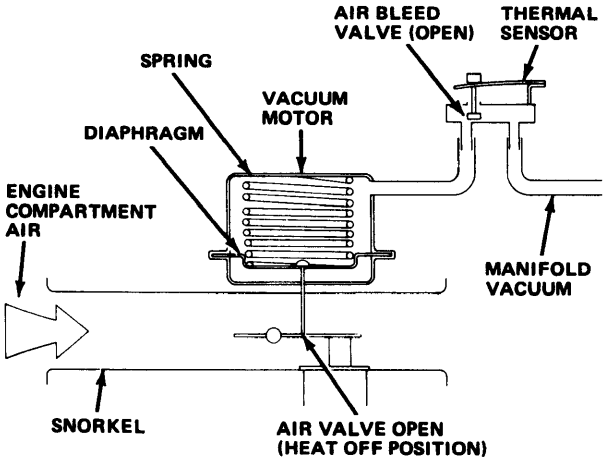


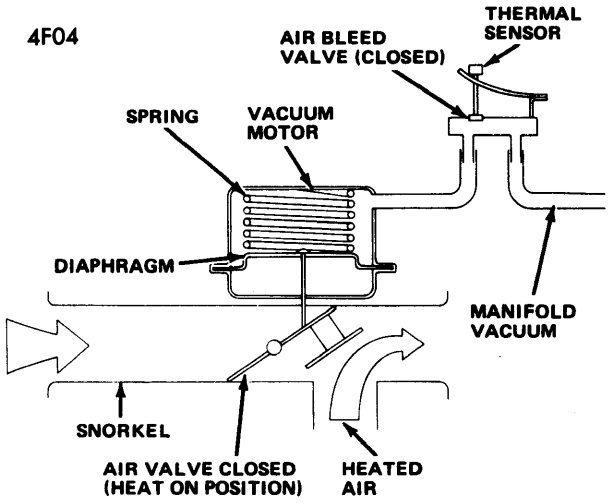
4F03

TEMPERATURE OPERATED DUCT TYPE

Vacuum Operated Duct – In this type, the valve plate is controlled by a vacuum motor. The vacuum to the motor is controlled by a bi-metal switch located in the air cleaner body. When the engine compartment temperature is below 80°F, the bi-metal switch is closed, allowing vacuum to pass through the switch and close the valve plate door. Warm air is then drawn from the exhaust manifold shroud. When the air cleaner temperature reaches about 80°F the bi-metal switch starts to open and bleeds off vacuum to the motor. Without full vacuum, the door begins to open, spring tension overcomes the decreased vacuum. At about 100°F the vacuum bleed valve bleeds off all vacuum to the motor and the door is fully open to cooler underhood air.

FORD MOTOR CO. THERMOSTATIC AIR CLEANER (Cont.)





VACUUM OPERATED DUCT TYPE

TESTING

Thermostatic Bulb Test – Place duct assembly in water, be sure it is completely covered. Valve should be closed (heat on) position. Heat water to 100°F, allow 5 minutes to stabilize temperature. Valve should be in the heat on position. Increase temperature to 135°F, allow time to stabilize, valve should be in heat off position. If valve operation is unsatisfactory, and there is no plate and duct intereference, then duct and valve assembly should be replaced.

Vacuum Operated Duct Test – Duct valve should be open when engine is off. Start engine, valve should close during engine idle unless engine has reached normal operating temperature. If engine is cold and valve does not close during idle, check for disconnected vacuum lines to vacuum motor and bi-metal switch. Check bi-metal switch to see that bleed valve is closed. Open and close throttle rapidly. Valve should open during throttle opening. If valve does not function properly, check for a binding condition.

Bi-Metal Switch Test – Switch can be checked by subjecting switch to heated air or removing and immersing switch in water heated to 80°F. Only slight movement of the bi-metal is necessary to unseat the bleed valve.