

SECTION 8

Inlet Air Temperature Systems

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Inlet Air Temperature Systems

DESCRIPTION

All passenger vehicles and light truck engines are equipped with dry-type air cleaners incorporating a replaceable air filter element and all except 2.3L, 2.5L, 2.9L, 3.0L, 3.8L, 4.9L, 5.0L have a replaceable crankcase ventilation system filter element in the air cleaner. The 2.5L CFI, 2.9L EFI, 3.0L EFI, 5.0L SEFI, and 5.0L EFI do not have a crankcase ventilation system filter element. The 2.3L OHC and HSC, 3.8L and 4.9L have a replaceable oil fill cap that contains the crankcase breather filter. The air cleaner assembly is attached to the top of the carburetor, and it uses various sensors, switches, and vacuum motors to control intake air temperature. In addition, there are different sensors for other engine control systems, mounted either in or on the air cleaner assembly.

The air cleaner assembly intake duct is attached to a cold air intake on most calibrations, as well as a heat shroud that surrounds the exhaust manifold. Air flow through these two sources is controlled by a door in the duct that is operated by a vacuum motor. Operation of the motor is controlled by delay valves, temperature sensors, and other vacuum control systems—all vary with each application and engine calibration.

Diagnostic Check

Vacuum Operated Duct Systems

The primary purpose of the duct system is to provide maximum warm air available from the heat shroud to the intake system, and then after vehicle is warm, maintain a temperature in the 70°F to 105°F range by proportioning the warm and fresh air mixture. The functional check of this system should be performed on the vehicle in an ambient temperature of not less than 60°F (15.3°C):

1. Apply parking brake and block wheels.
2. Remove air cleaner cover and element. Inspect the heat riser tube for proper installation and/or damage. Service as required.
3. Remove components as necessary to ensure that the duct door is in the open to fresh air position. If door is in the closed to fresh air position, check for binding and sticking. Service or replace as required.
4. Check vacuum source and integrity of vacuum hoses to bimetal sensor, CWM and vacuum motor.
5. Start the engine. If the duct door has moved to the "heat on" position (closed to fresh air) go to Step 7. If door stays in "heat off" position (closed to warm air), place a finger over bleed of bimetal sensor. Duct door must move rapidly to the "heat on" position. If the door does not fully move to "heat on" position, stop engine and replace vacuum motor. Repeat this Step with new vacuum motor.
6. With engine off, cool bimetal sensor and cold weather modulator (CWM) by spraying with liquid from a small can of refrigerant R-12 with an adapter ZRE-6271 or equivalent, for 20 seconds after liquid contacts sensor and CWM.

CAUTION: Do not cool bimetal sensor while the engine is running. If refrigerant R-12 is drawn into the intake system while the engine is running, poisonous phosgene gas will be exhausted into the test area. Perform this test only in a well-ventilated area.

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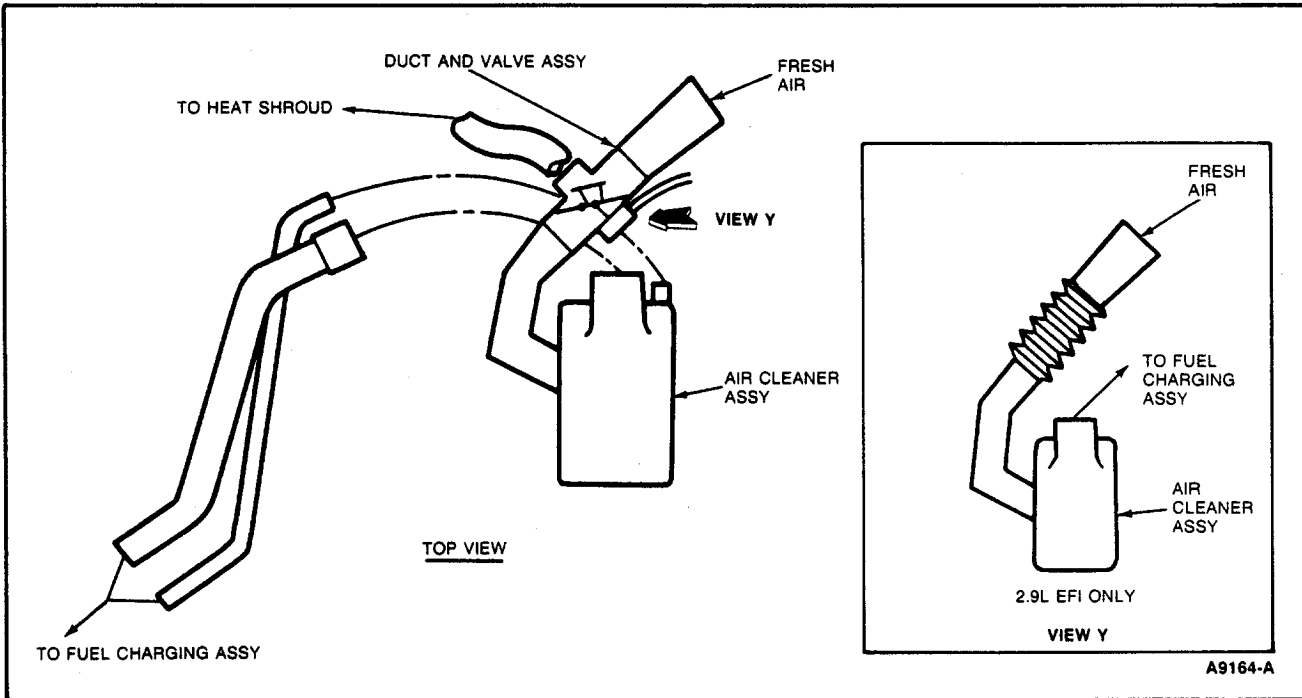


Figure 4 Typical Air Cleaner and Duct System—2.3L EFI, 2.9L (Light Duty Truck)

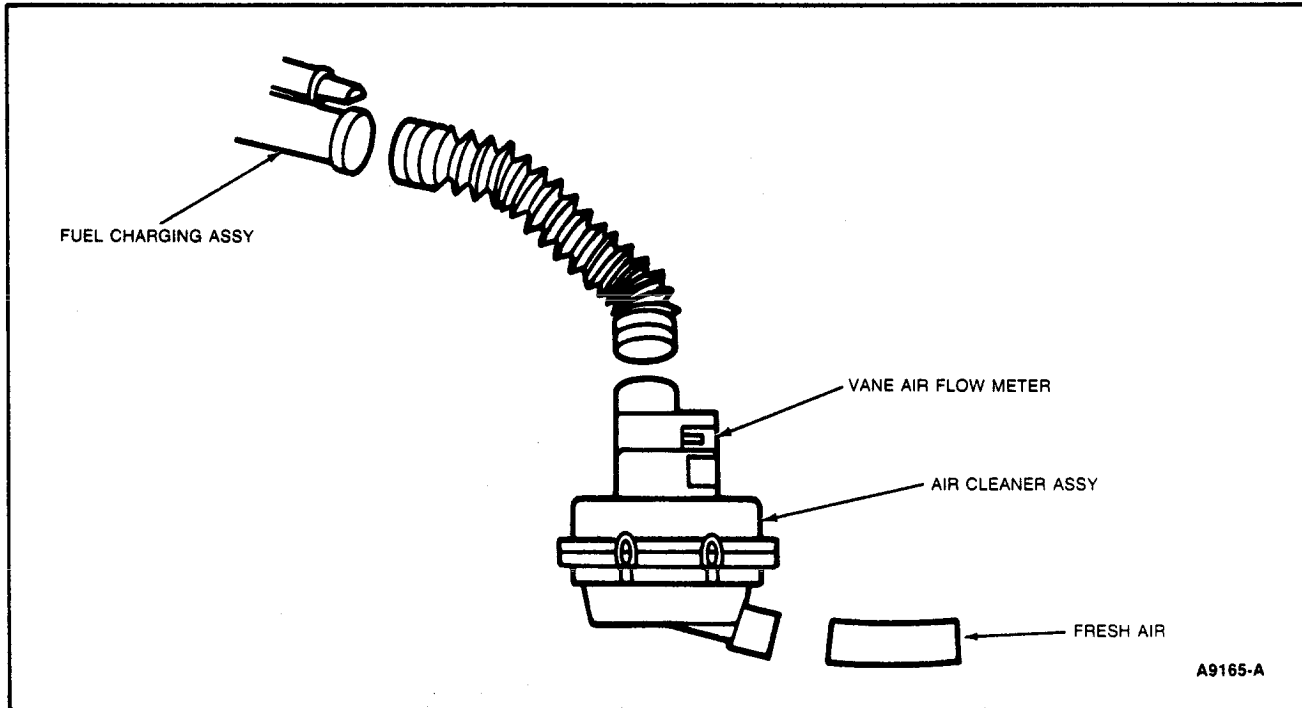


Figure 5 Typical Air Cleaner and Duct System—1.9L EFI (Passenger Car)