EMISSION CONTROL SYSTEMS

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GENERAL INFORMATION

Throughout this group, references may be made to a particular vehicle by letter designation. The Introduction Section at the front of this manual contains a chart showing the breakdown of the designations.

EVAPORATIVE EMISSION CONTROLS

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VEHICLE EMISSION CONTROL INFORMATION LABEL

All models have a Vehicle Control Information (VECI) Label. Chrysler permanently attaches the label to the middle of the hood (Fig. 1, 2, or 3). It cannot be removed without defacing information and destroying the label.

The label contains the vehicle's emission specifications and vacuum hose routings. Route all hoses according to the diagram on the VECI label.

If any difference exists between the label and the Service Manual, refer to the label. **The labels shown are examples.**

VACUUM SCHEMATICS

If any difference exists between the label and the schematics in the Service Manual, refer to the label.

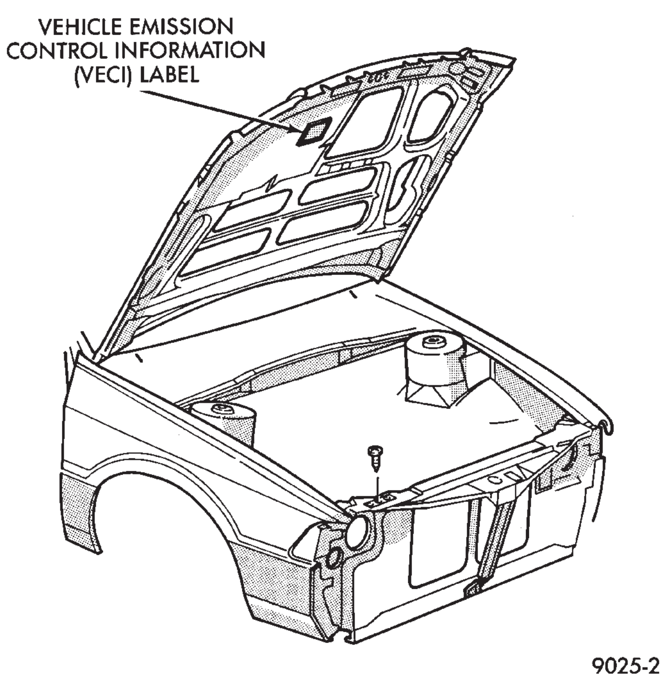


Fig. 1 Underhood Label Location—AA Body

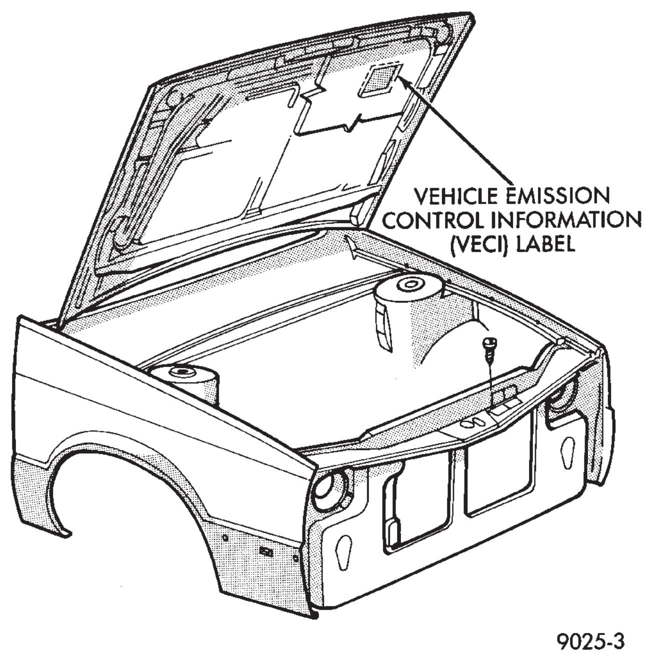


Fig. 2 Underhood Label Location—AC, AP and AY Bodies

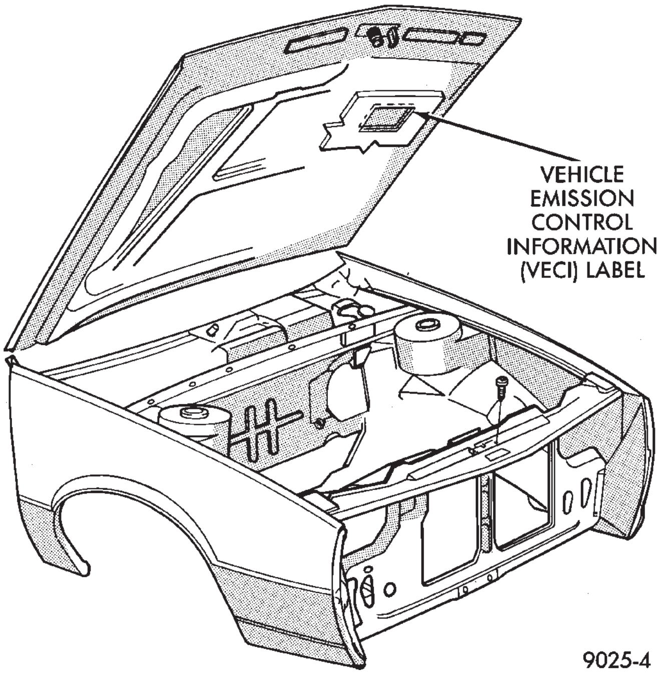
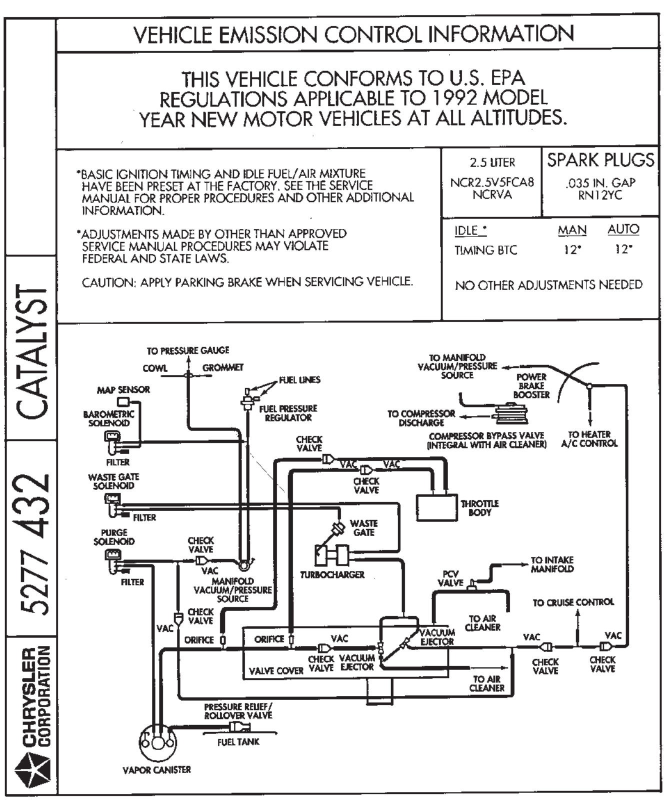
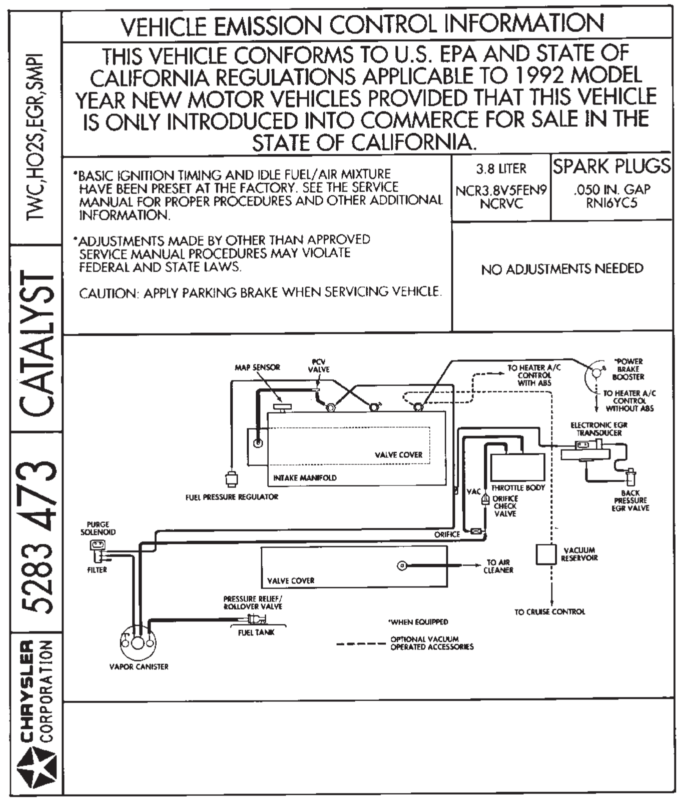


Fig. 3 Underhood Label Location—AG and AJ Bodies

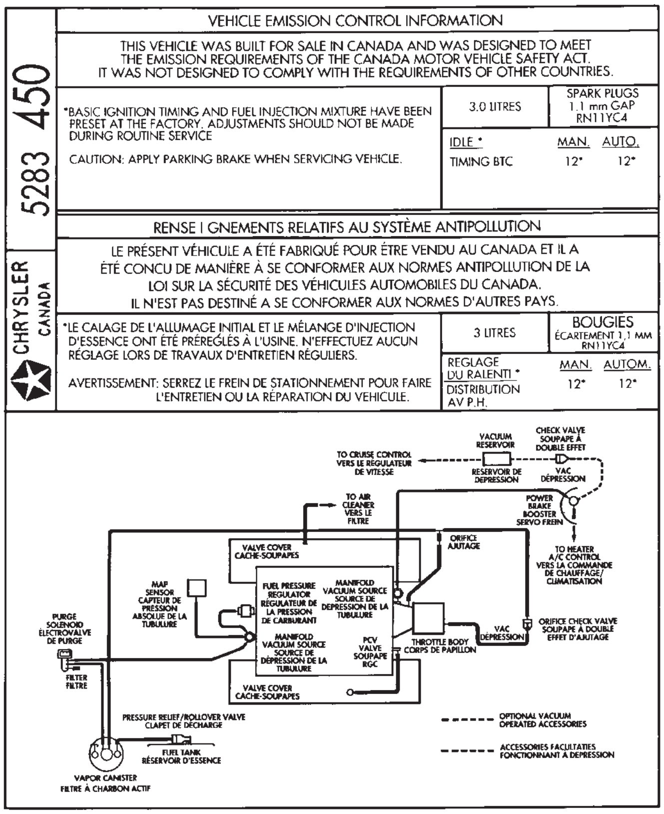
FEDERAL EMISSION CONTROL INFORMATION LABEL—TYPICAL



CALIFORNIA VEHICLE CONTROL INFORMATION LABEL—TYPICAL



CANADA VEHICLE EMISSION CONTROL INFORMATION LABEL—TYPICAL



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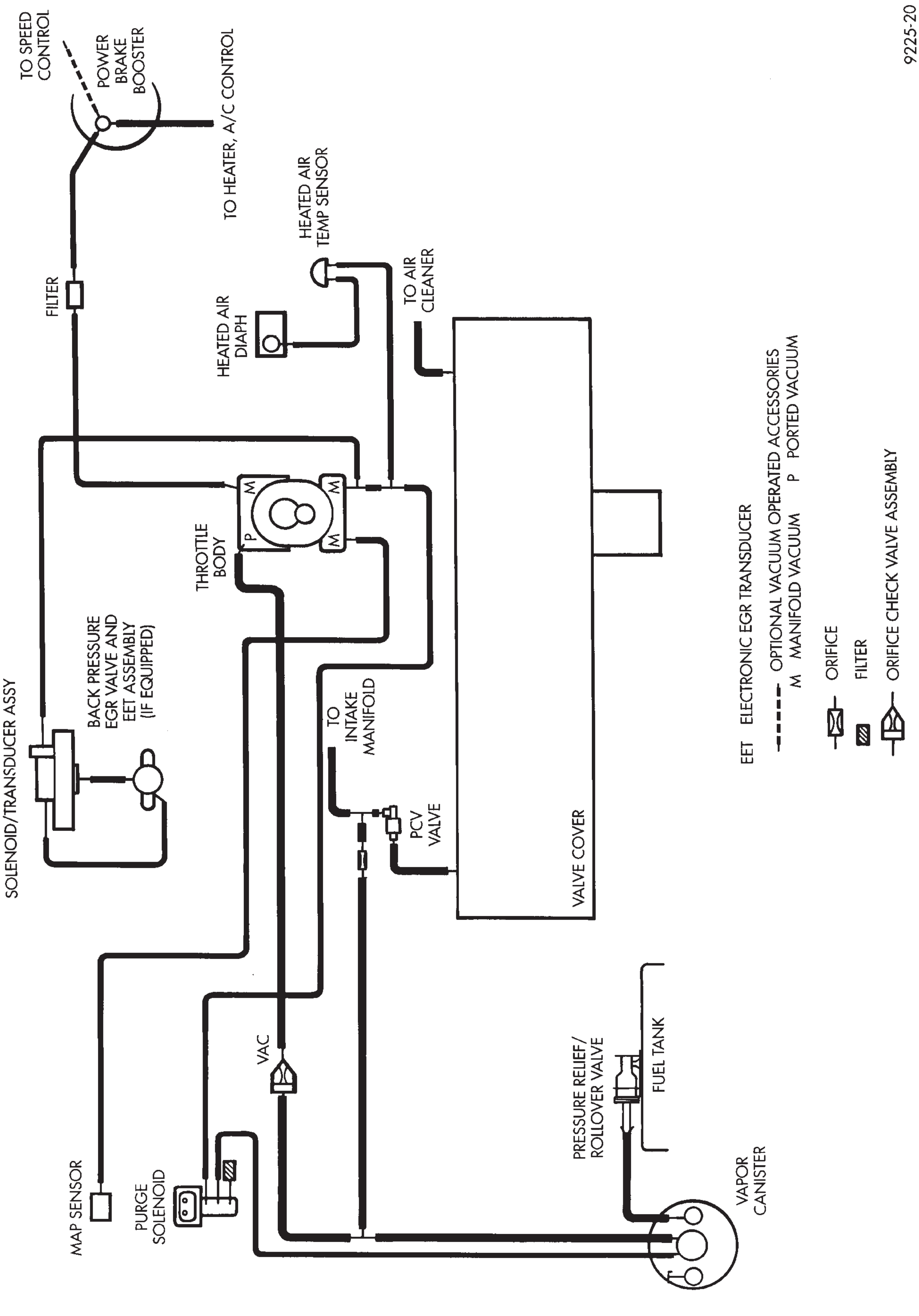
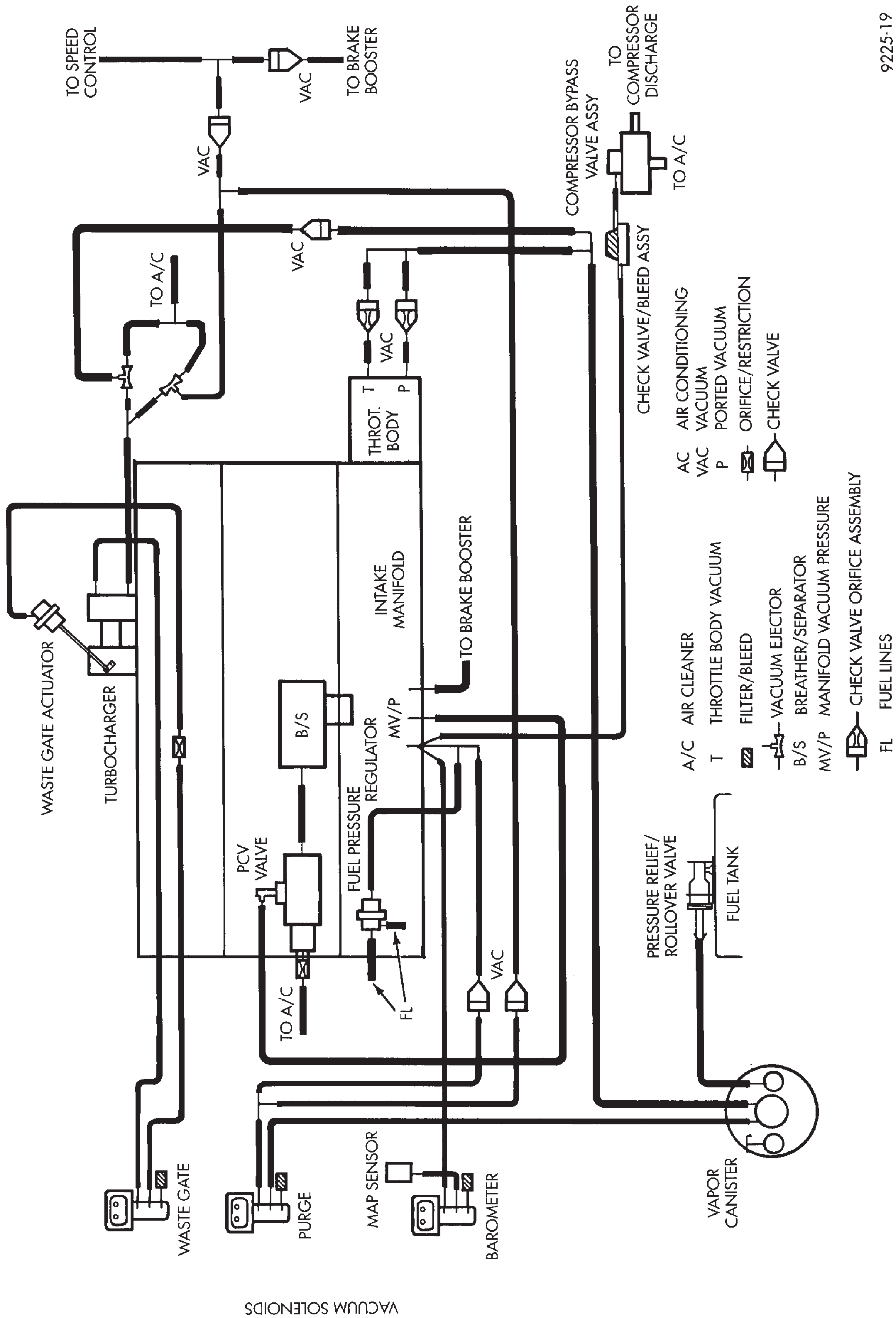
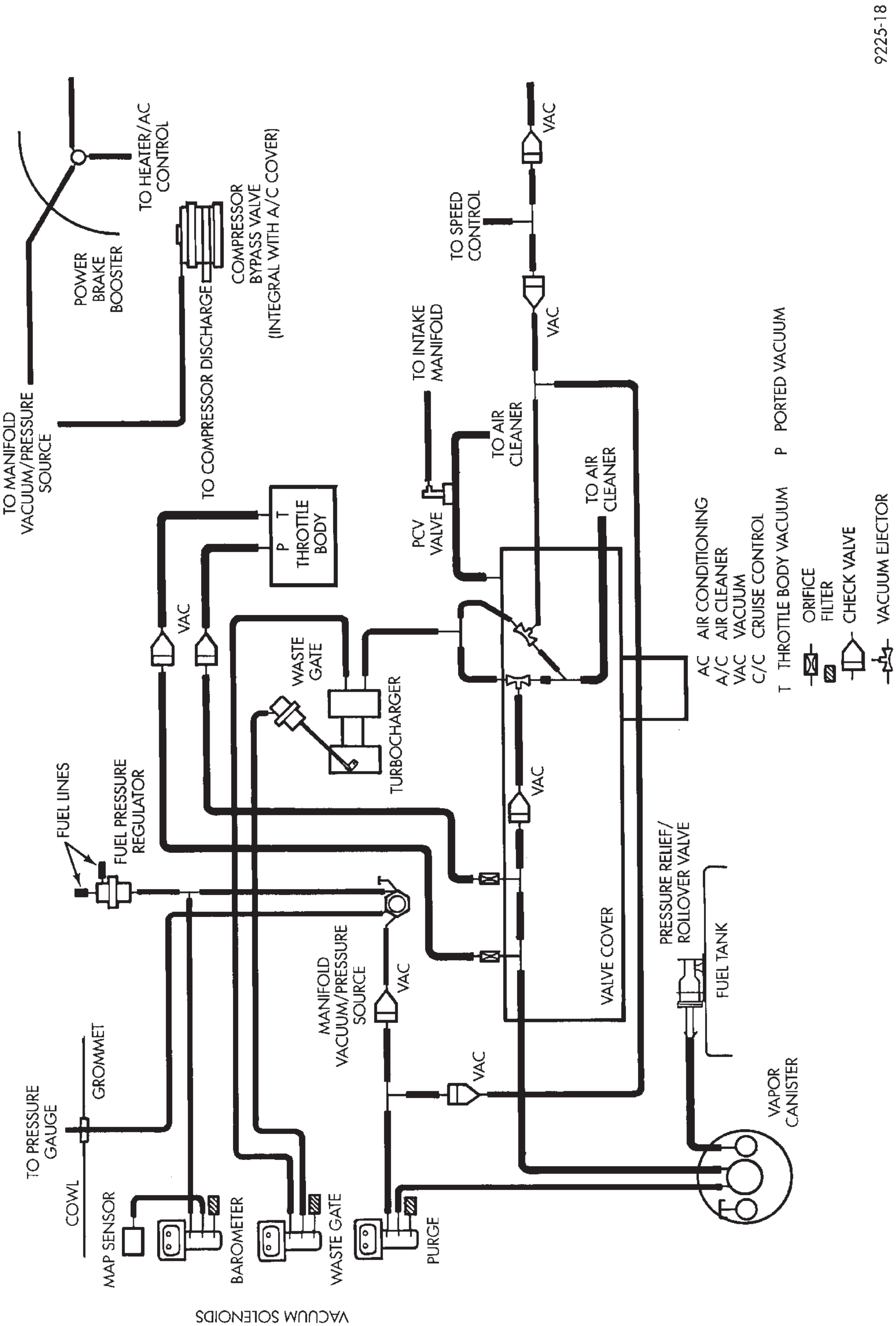


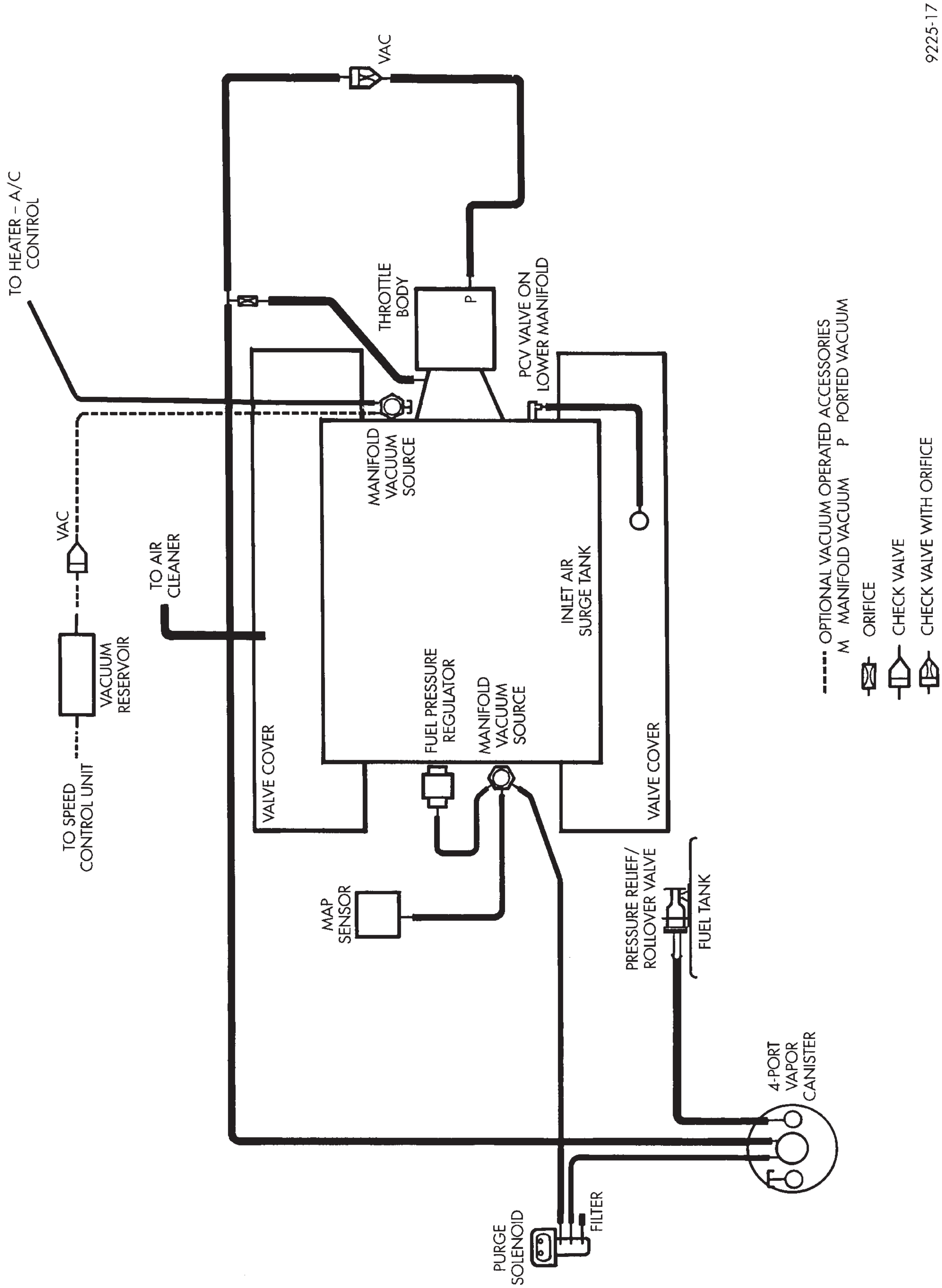
ENGINE VACUUM SCHEMATIC—2.2L/2.5L TBI



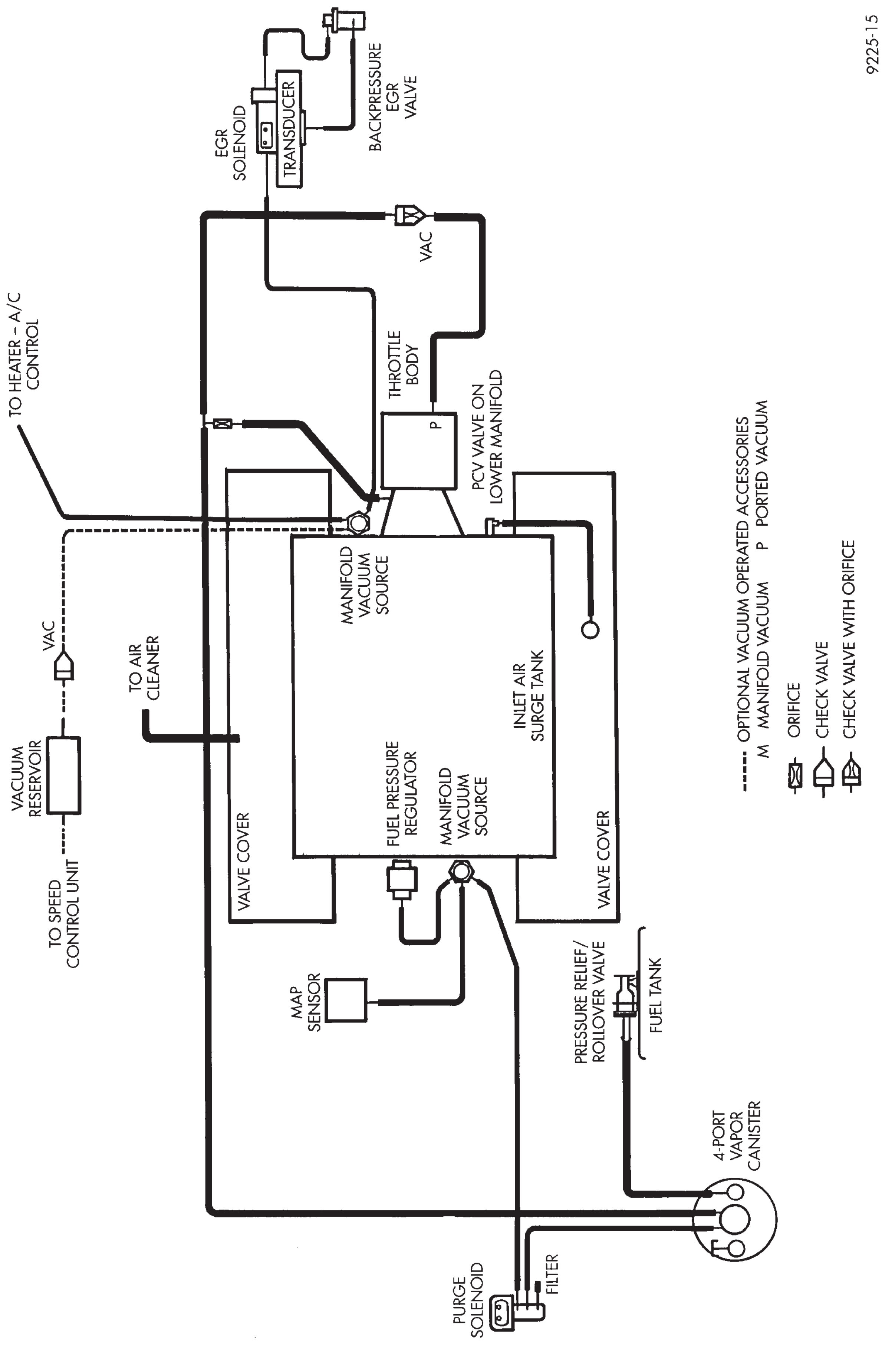
ENGINE VACUUM SCHEMATIC—2.2L TURBO III



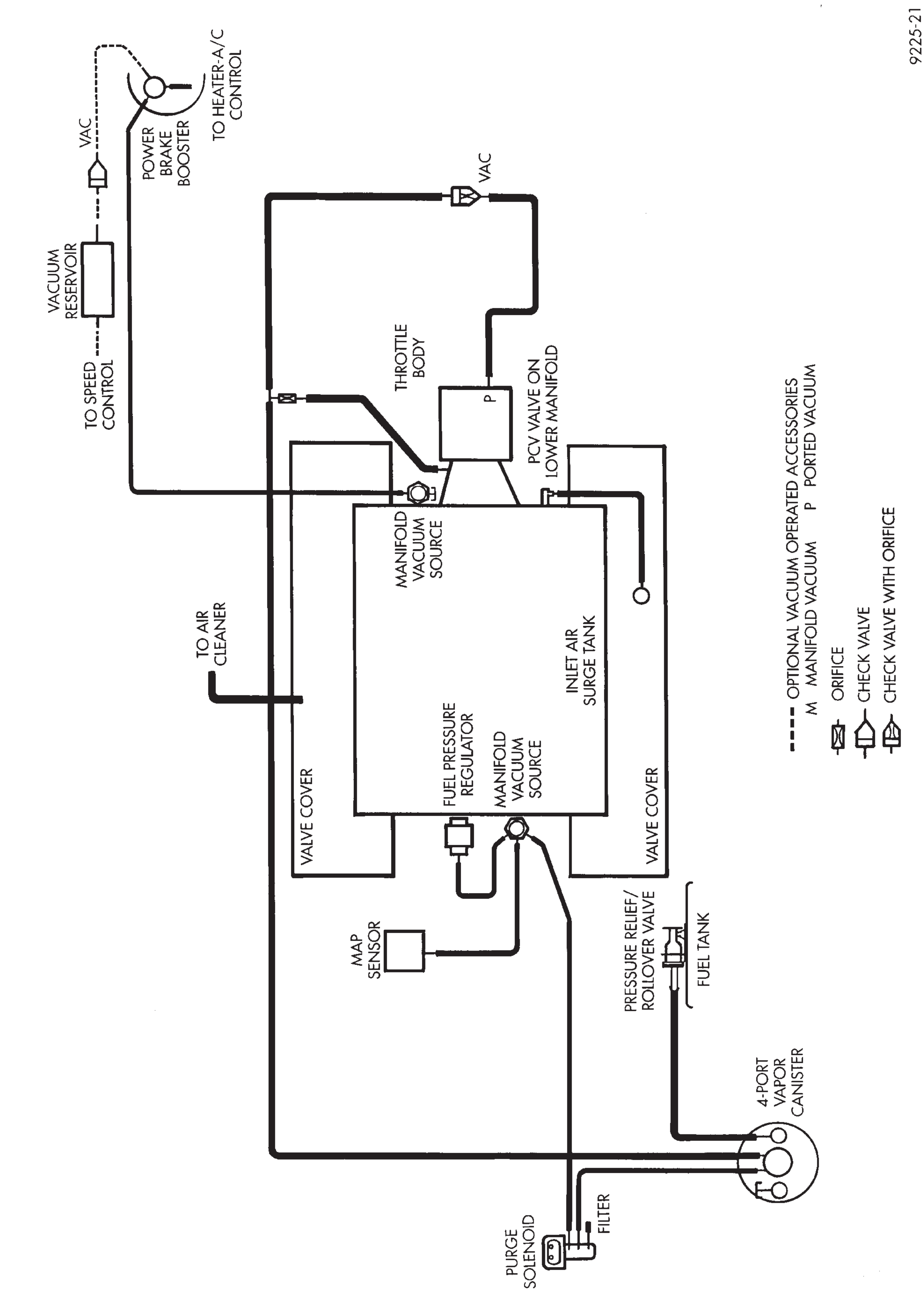
ENGINE VACUUM SCHEMATIC—2.5L TURBO I



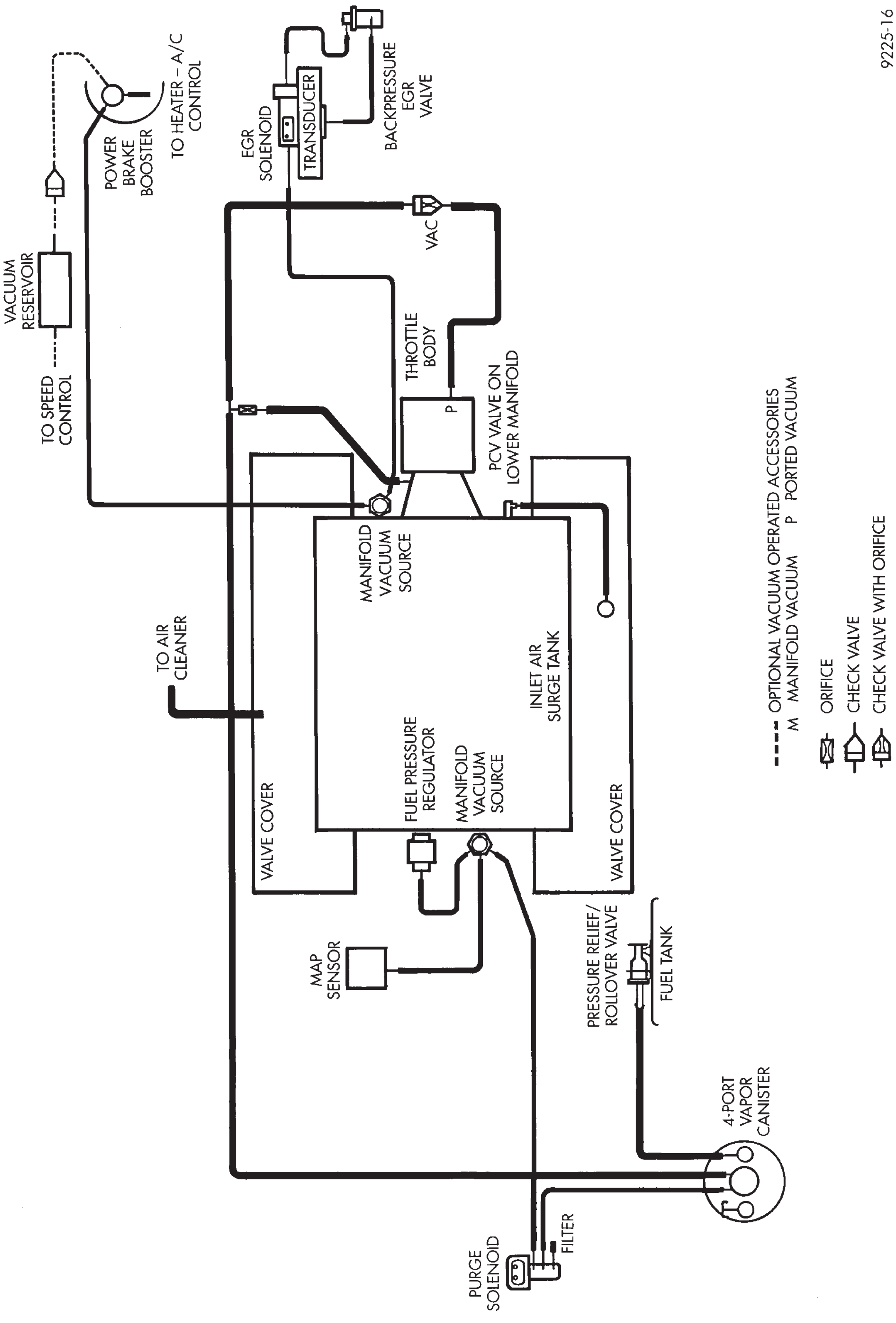
ENGINE VACUUM SCHEMATIC—3.0L AC BODY, FEDERAL AND CANADA WITH ABS



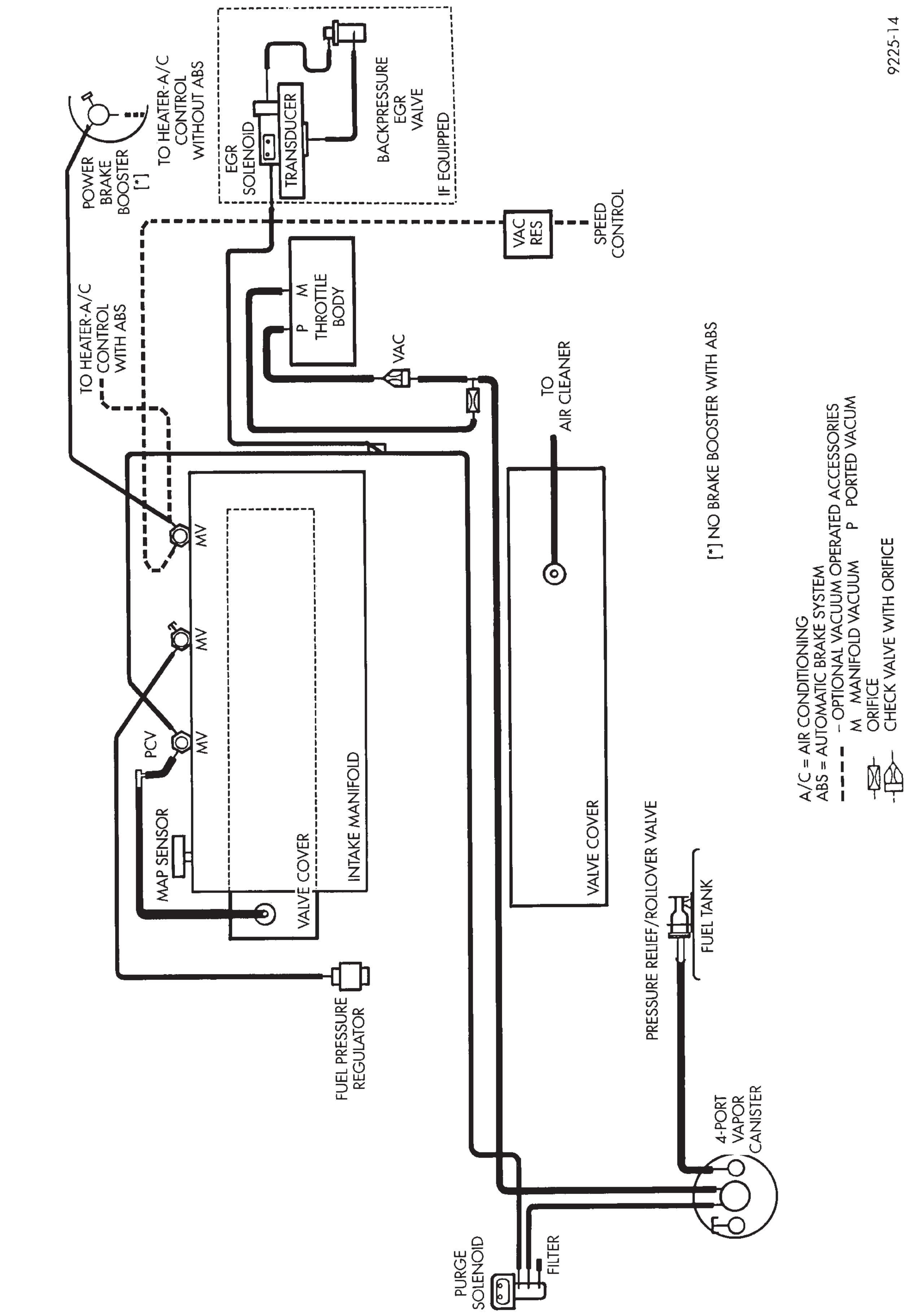
ENGINE VACUUM SCHEMATIC—3.0L AC BODY, CALIFORNIA WITH ABS



ENGINE VACUUM SCHEMATIC—ALL FEDERAL AND CANADA 3.0L AA, AG, AJ BODY AND AC BODY W/O ABS



ENGINE VACUUM SCHEMATIC—ALL CALIFORNIA 3.0L AA, AG, AJ BODY AND AC BODY W/O ABS



ENGINE VACUUM SCHEMATIC—3.3L/3.8L AC AND AY BODY, FEDERAL AND CALIFORNIA

EVAPORATION CONTROL SYSTEM

The evaporation control system prevents the emission of fuel tank vapors into the atmosphere. When fuel evaporates in the fuel tank, the vapors pass through vent hoses or tubes to a charcoal canister. The canister temporarily holds the vapors. The engine controller allows intake manifold vacuum to draw vapors into the combustion chambers during certain operating conditions. The controller uses the canister purge solenoid to regulate vapor flow.

On 2.2L and 2.5L TBI, 3.0L, 3.3L, and 3.8L engines, manifold vacuum purges the vapors at idle as well as off idle. These engines use a bi-level purge system. The system uses 2 sources of vacuum remove fuel vapors from the canister.

Turbo I and Turbo III engines use a tri-level canister purge system. In this system, fuel vapors are drawn into the engine through the throttle body and air cleaner. Fuel vapors are drawn in at closed throttle, part throttle, and wide open throttle (in boost).

The evaporative system uses specially manufactured hoses. If they need replacement, only use fuel resistant hose.

PRESSURE RELIEF/ROLLOVER VALVE

All vehicles have a combination pressure relief and rollover valve. The dual function valve relieves fuel tank pressure. The valve also prevents fuel flow through the fuel tank vent valve hoses if the vehicle accidentally rolls over. All vehicles pass a 360° rollover without fuel leakage.

The pressure relief valve opens at a certain pressure. When fuel tank pressure increases above the calibrated pressure, the valve opens to release fuel tank vapors pressure. The evaporative (charcoal) canister stores the vapors. For pressure relief/rollover valve service, refer to the Fuel Tank section of Group 14.

EVAPORATIVE CANISTER

All vehicles use a sealed, maintenance free, evaporative (charcoal) canister. The canister mounts to the inner wheel well area of the engine compartment (Fig. 4).

Fuel tank pressure vents into the canister. The canister temporarily holds the fuel vapors until intake manifold vacuum draws them into the combustion chamber. The canister purge solenoid purges vapors from the canister at predetermined intervals and engine conditions.

CANISTER PURGE SOLENOID

The engine controller operates the canister purge solenoid (Fig. 5). During warm-up and for a specified period after hot starts, the engine controller grounds the purge solenoid causing it to energize. When the controller grounds the solenoid, vacuum does not reach the charcoal canister valve.

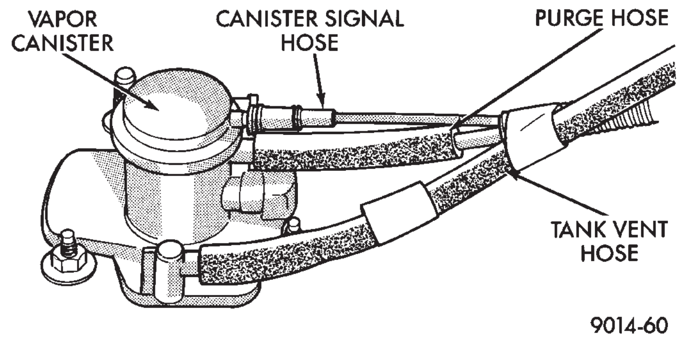


Fig. 4 Evaporative Canister

When the engine reaches a specified operating temperature and the time delay interval has occurred, the controller de-energizes the solenoid by turning off the ground. When the engine controller de-energizes the solenoid, vacuum flows to the canister purge valve. Intake manifold vacuum purges fuel vapors through the throttle body. The engine controller also energizes the purge solenoid during certain idle conditions to update the fuel delivery calibration.

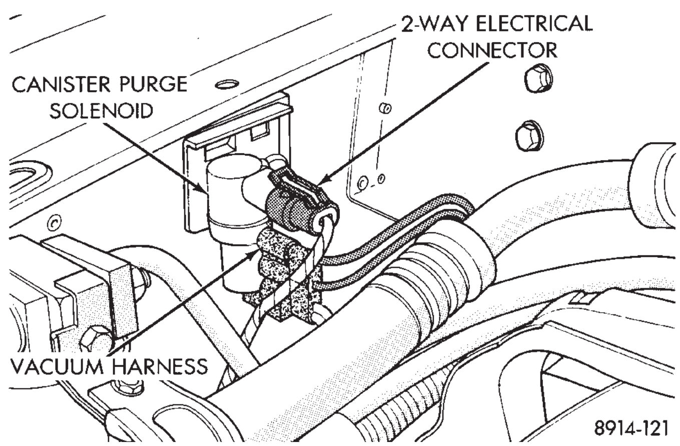


Fig. 5 Canister Purge Solenoid—Typical

PRESSURE-VACUUM FILLER CAP

CAUTION: Remove the fuel filler cap to relieve fuel tank pressure. Remove the cap before disconnecting fuel system components or servicing the fuel tank.

A pressure-vacuum relief cap seals the fuel tank (Fig. 6). Tightening the cap on the fuel filler tube forms a seal between them. The relief valves in the cap are a safety feature. They prevent possible excessive pressure or vacuum in the tank. Excessive fuel tank pressure could be caused by a malfunction in the system or damage to the vent lines.

The seal between the cap and filler tube breaks when the cap is removed. Removing the cap breaks the seal and relieves fuel tank pressure.

If the filler cap needs replacement, only use a similar unit.

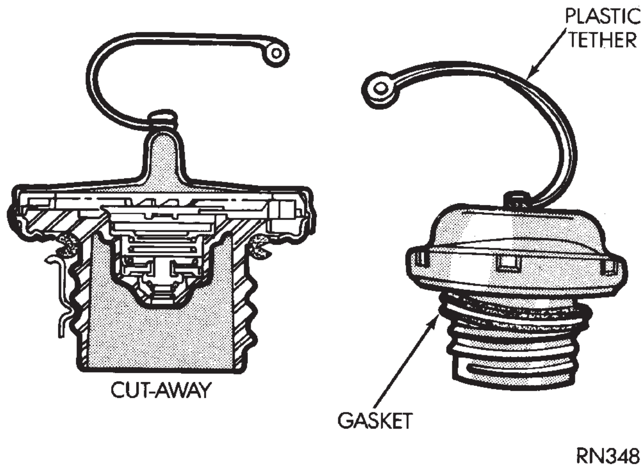


Fig. 6 Pressure Vacuum Filler Cap

POSITIVE CRANKCASE VENTILATION (PCV) SYSTEMS

Intake manifold vacuum removes crankcase vapors and piston blow-by from the engine. The emissions pass through the PCV valve into the intake manifold where they become part of the calibrated air-fuel mixture. They are burned and expelled with the exhaust gases. The air cleaner supplies make up air when the engine does not have enough vapor or blow-by gases. In this system, fresh air does not enter the crankcase (Figs. 7, 8, 9, 10, 11, 12, and 13).

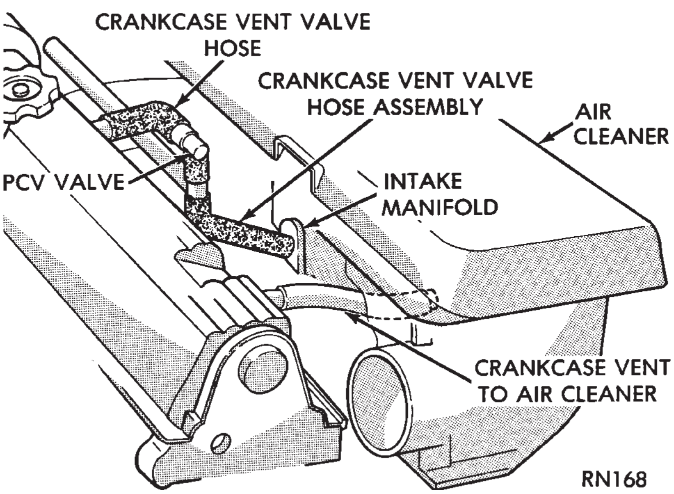


Fig. 7 PCV Valve—2.5L Engine

PCV VALVE TEST

WARNING: APPLY PARKING BRAKE AND/OR BLOCK WHEELS BEFORE PERFORMING ANY TEST OR ADJUSTMENT WITH THE ENGINE OPERATING.

With the engine idling, remove the PCV valve from its attaching point. If the valve is operating properly, a hissing noise will be heard and a strong vacuum felt when placing a finger over the valve inlet (Fig. 14).

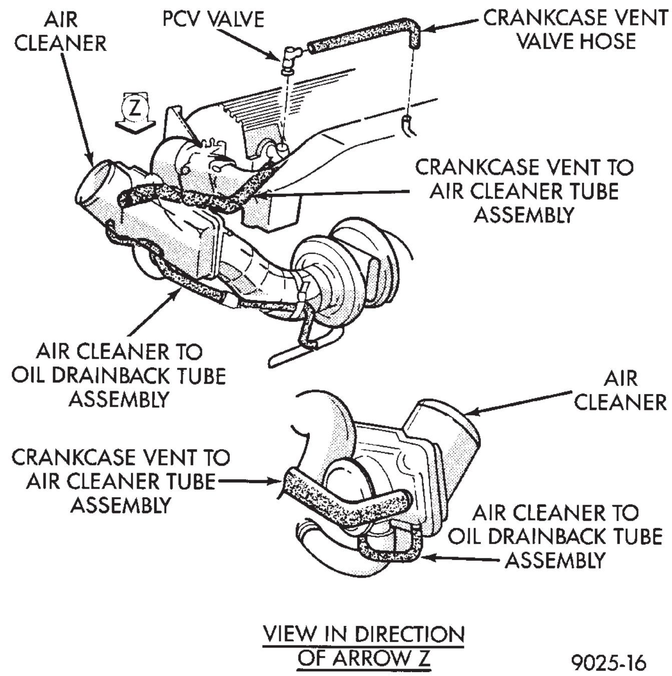


Fig. 8 PCV System—Turbo I Engine

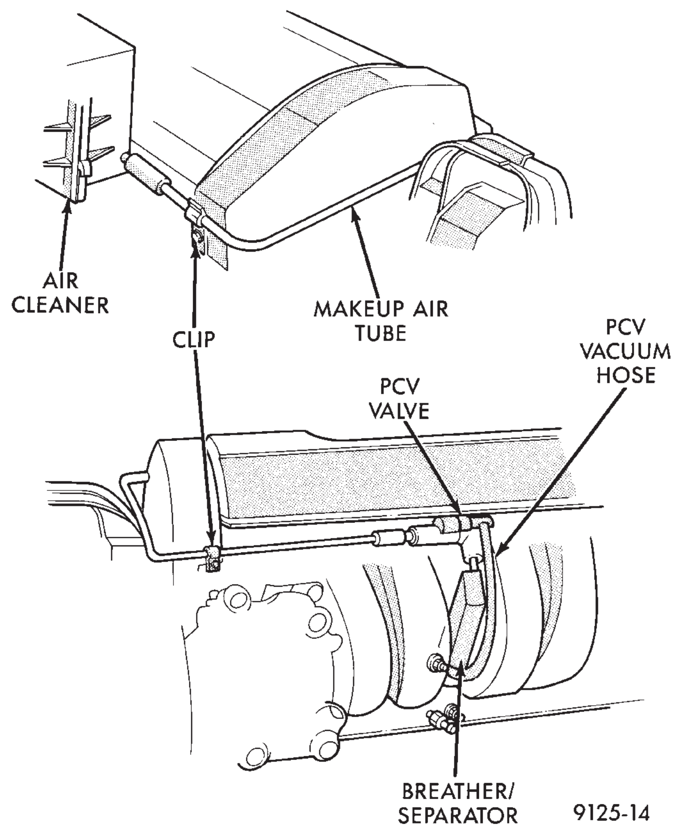


Fig. 9 PCV System—Turbo III Engine

With the engine off, the shake the valve. The valve should rattle when shaken. Replace the valve if it does not operate properly. **Do not attempt to clean the PCV valve.**

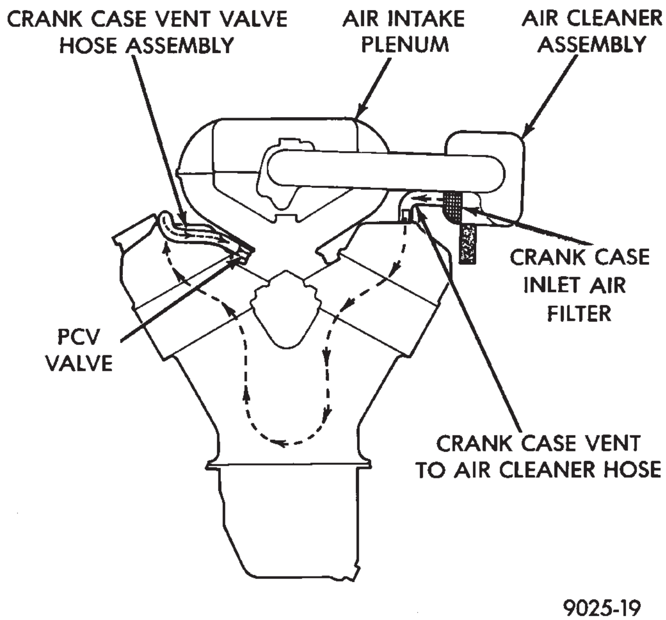


Fig. 10 PCV System—3.0L Engine

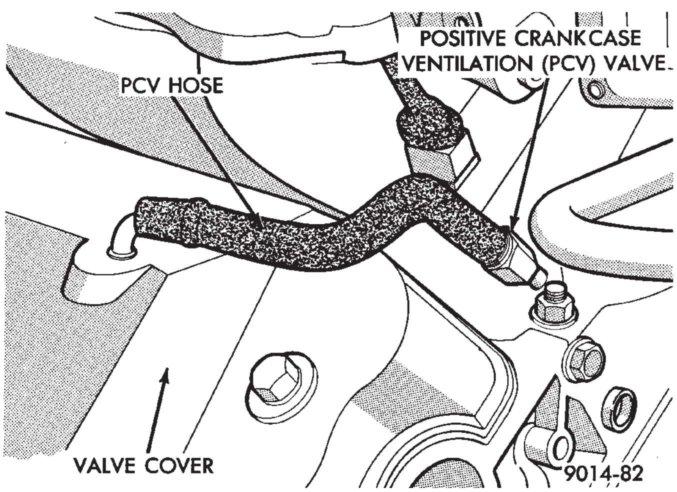


Fig. 11 PCV Valve—3.0L Engine

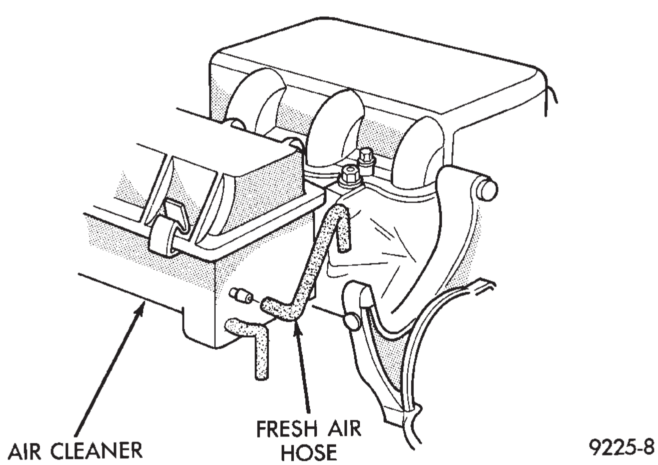


Fig. 12 PCV System Fresh Air Hose—3.0L Engine

CRANKCASE VENT FILTER

All engines have a crankcase vent filter. The filter cleans outside air before it enters the PCV system. On 2.5L engines, the filter mounts to the upper shell assembly of the air cleaner. On Turbo I and Turbo III engines, the filter attaches to the inside of the filter element box, next to the filter element. On 3.0L engines, it attaches to the inside of the filter element box under the filter element. On the 3.3L engines, the filter mounts to the bottom of the filter element box. Refer to Group 0 for mileage intervals and service procedures.

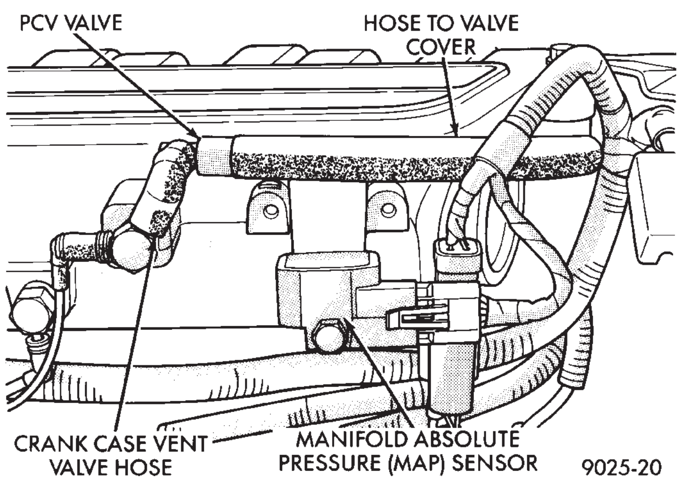


Fig. 13 PCV System—3.3L/3.8L Engines

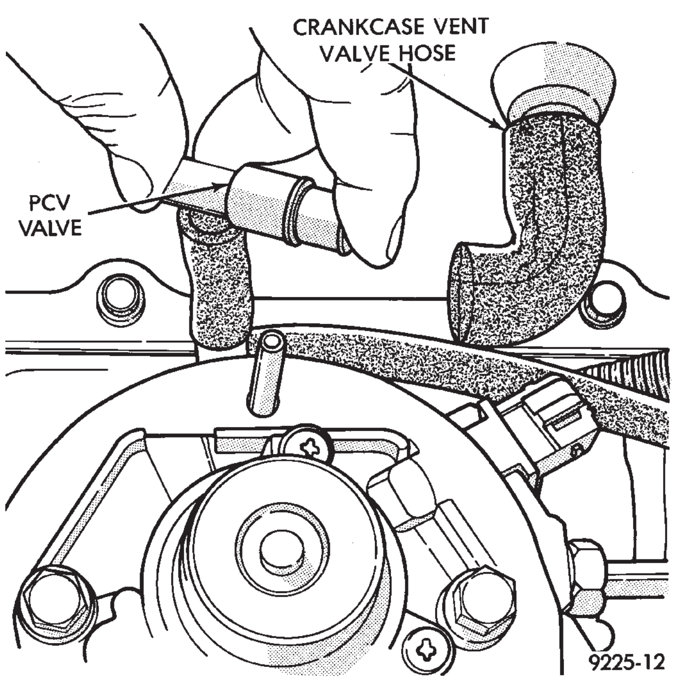


Fig. 14 Typical PCV Test

EXHAUST EMISSION CONTROLS

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HEATED INLET AIR SYSTEM

Turbo I, Turbo III, 3.0L, 3.3L and 3.8L engines do not use a heated inlet air system.

2.2L and 2.5L TBI air cleaners have a heated air assembly (Fig. 1). When ambient temperatures are low, the assembly warms the air before it enters the throttle body. The heated air assembly reduces hydrocarbon emissions, improves engine warm-up characteristics and minimizes icing.

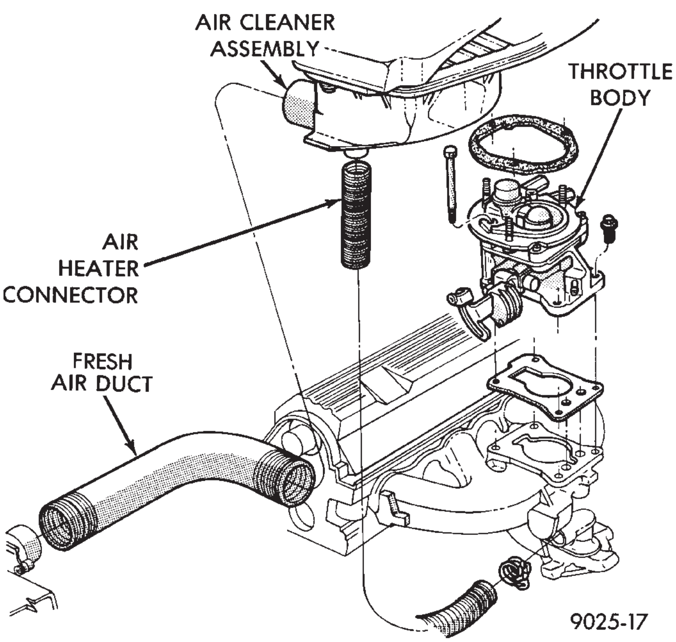

Fig. 1 Heated Air Inlet System

The heated air assembly contains a vacuum operated blend door. The blend door opens to either heated air from a stove on the exhaust manifold or ambient air (outside air). A vacuum diaphragm operates the door. A spring opposes the vacuum diaphragm. A temperature sensor controls the vacuum diaphragm (Fig. 2). Adjustment of inlet air temperature occurs only at road load throttle positions or when the intake manifold vacuum exceeds the vacuum diaphragm spring rate.

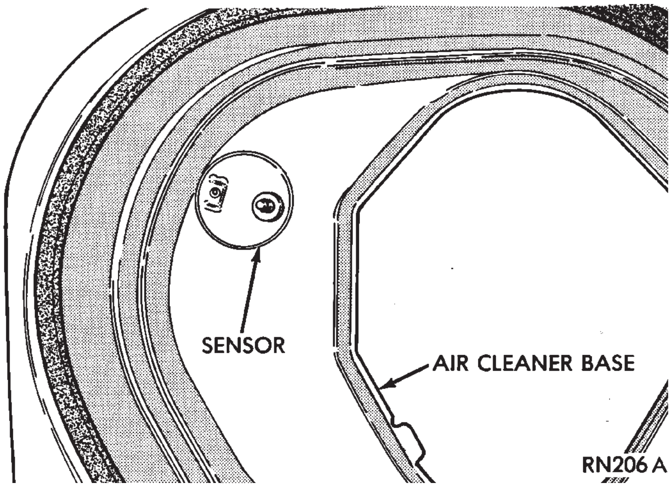

Fig. 2 Heated Air Temperature Sensor

Air flows through the outside air inlet when ambient air temperature is 8°C (15°F) or more above the air temperature sensor control temperature.

When ambient air temperature falls below the control temperature, air flows through both the ambient and heated circuits. This occurs after the engine has been started and the exhaust manifold starts to give off heat. Colder ambient air cause greater air flow through the heat stove on the exhaust manifold. Warmer ambient air results in greater ambient air flow through the air cleaner snorkel.

HEATED INLET AIR SYSTEM SERVICE

Heated air inlet system malfunctions may affect driveability and vehicle exhaust emissions.

Use the following procedure to determine if the system functions properly.

(1) Inspect the condition of the heat stove to air cleaner flexible connector and all vacuum hoses. Inspect them for proper attachment. Replace as necessary.

(2) With a cold engine and ambient temperature less than 46°C (115°F.), the heat control door (valve plate) should be in the **up (heat on position)**.

(3) With the engine warmed up and running, check the temperature of the air entering the snorkel or passing the sensor. When the temperature of the air entering the outer end of snorkel is 60°C (140°F.) or higher, the door should be in the **down (heat off) position.**

(4) Remove the air cleaner from the engine and allow it to cool down to 46°C (115°F). With 20 inches of vacuum applied to the sensor, the door should be in the **up (heat on position).** If the door does not rise to the **heat on** position, check the vacuum diaphragm for proper operation.

(5) To test the diaphragm, apply 20 inches of vacuum to it with vacuum pump tool number C-4207 or equivalent (Fig. 3). The diaphragm should not bleed down more than 10 inches of vacuum in 5 minutes. The door should not lift off the bottom of the snorkel at less than 2 inches of vacuum. The door should be in the full **up** position with no more than 4 inches of vacuum.

(6) If the vacuum diaphragm does not perform adequately, replace the heated air assembly.

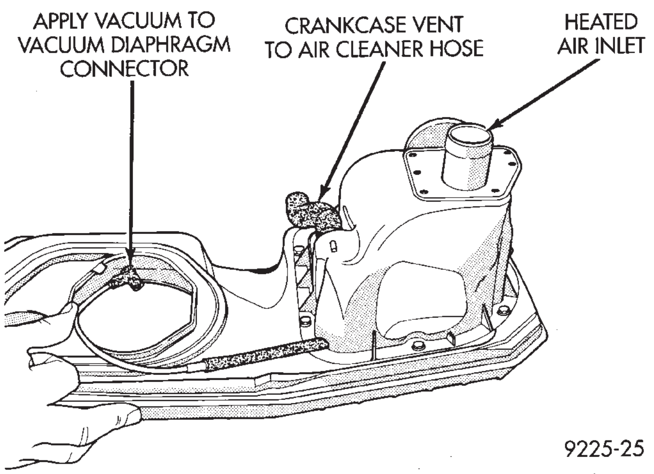

Fig. 3 Testing Vacuum Diaphragm on Heated Air Inlet Systems

(7) If the vacuum diaphragm performs adequately but proper temperature is not maintained, replace the sensor and repeat the temperature checks in steps 2 and 3.

HEATED AIR TEMPERATURE SENSOR SERVICE

REMOVAL

(1) Remove air cleaner housing from vehicle.

(2) Disconnect vacuum hoses from air temperature sensor. Remove and discard retainer clips, new clips are supplied with a new sensor (Fig. 4).

(3) Remove and discard sensor and gasket.

INSTALLATION

(1) Position gasket on the sensor. Install sensor (Fig. 5).

(2) While supporting the sensor on outer diameter, install new retainer clips securely. Ensure the gasket compresses to form an air seal. **Do not attempt to adjust the sensor.**

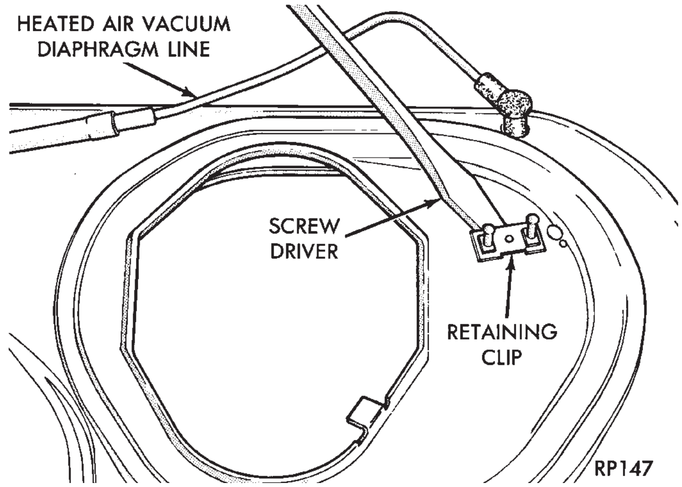

Fig. 4 Removing Sensor Clips

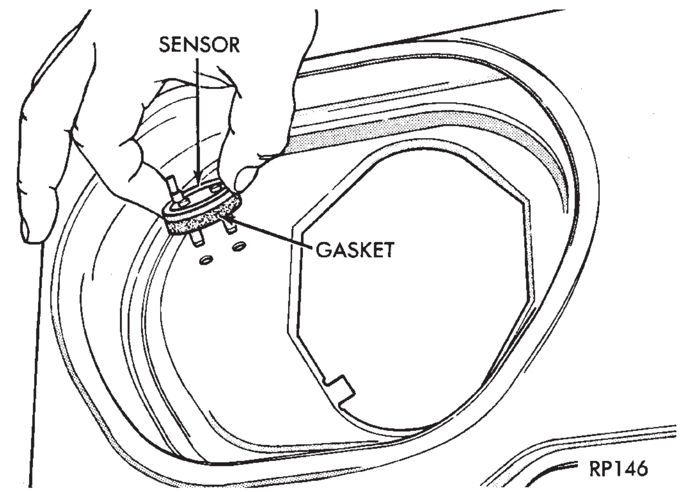

Fig. 5 Air Temperature Sensor Installation

HEATED OXYGEN SENSOR (O_2 SENSOR)

The O_2 sensor threads into the exhaust manifold. It provides an input v oltage to the engine controller. The input tells the engine controller the oxygen content of the exhaust gas (Fig. 6, 7, 8, 9, or 10). The engine controller uses this information to fine tune the air-fuel ratio by adjusting injector pulse width.

The O_2 sensor produces voltages from 0 to 1 volt, depending upon the oxygen content of the exhaust gas in the exhaust manifold. When a large amount of oxygen is present (caused by a lean air-fuel mixture), the sensor produces a low voltage. When there is a lesser amount of oxygen present (rich air-fuel mixture), the sensor produces a higher voltage. By monitoring the oxygen content and converting it to electrical voltage, the sensor acts as a rich-lean switch.

The oxygen sensor contains a heating element that keeps it at proper temperature during all operating modes. Maintaining correct sensor temperature at all times allows the system to enter into closed loop operation sooner and remain in closed loop during periods of extended idle.

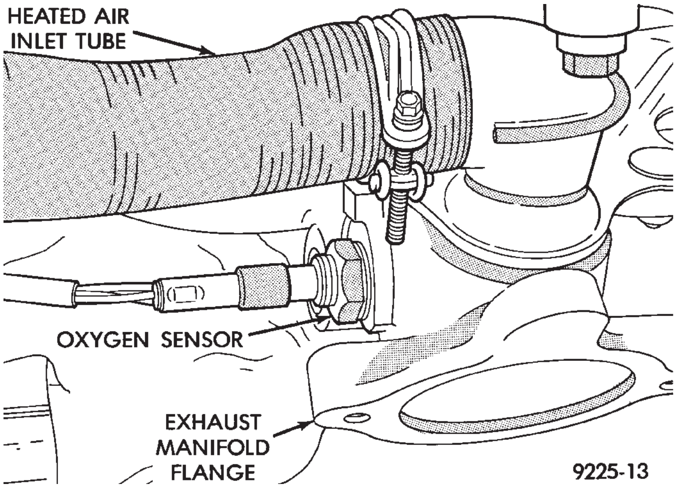

Fig. 6 Oxygen Sensor—2.5L Engine

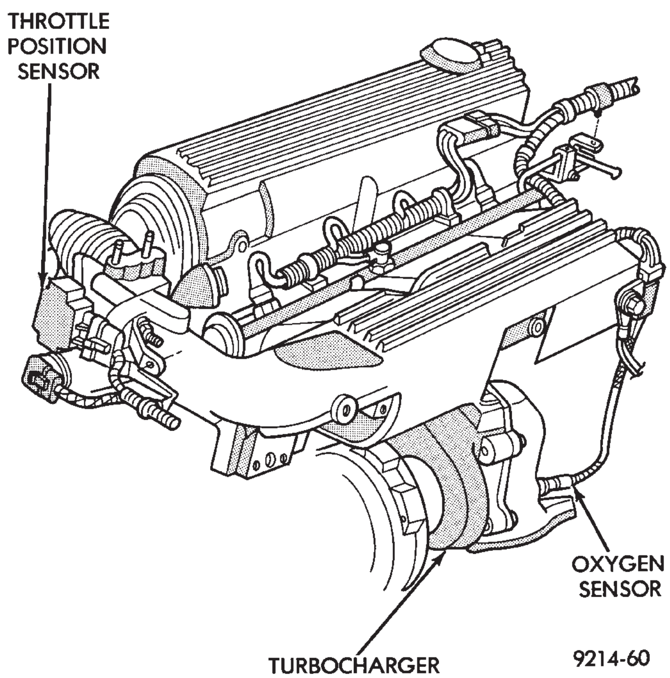

Fig. 7 Oxygen Sensor—Turbo I Engine

In Closed Loop operation the engine controller monitors the O_2 sensor input (along with other inputs) and adjusts the injector pulse width accordingly. During Open Loop operation the engine controller ignores the O_2 sensor input. The controller adjusts injector pulse width based on preprogrammed (fixed) oxygen sensor input values and the current inputs from other sensors.

REMOVAL

CAUTION: Do not pull on the oxygen sensor wire when disconnecting the electrical connector.

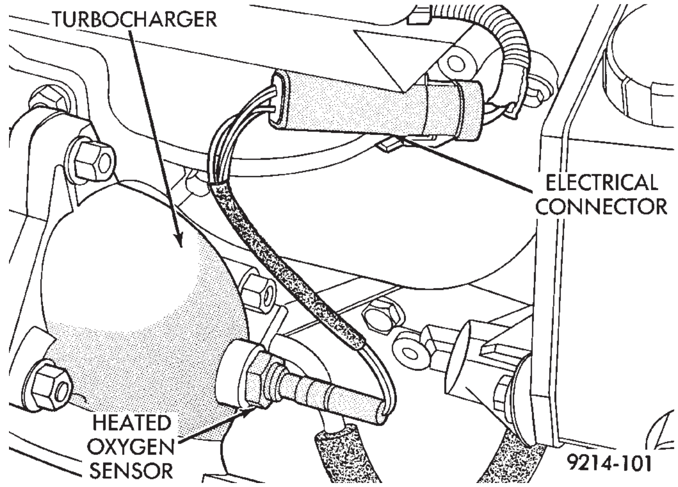

Fig. 8 Oxygen Sensor—Turbo III Engine

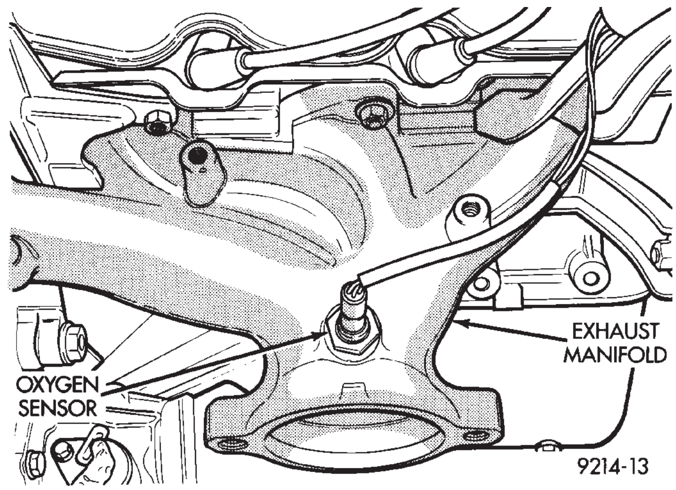

Fig. 9 Oxygen Sensor—3.0L Engine

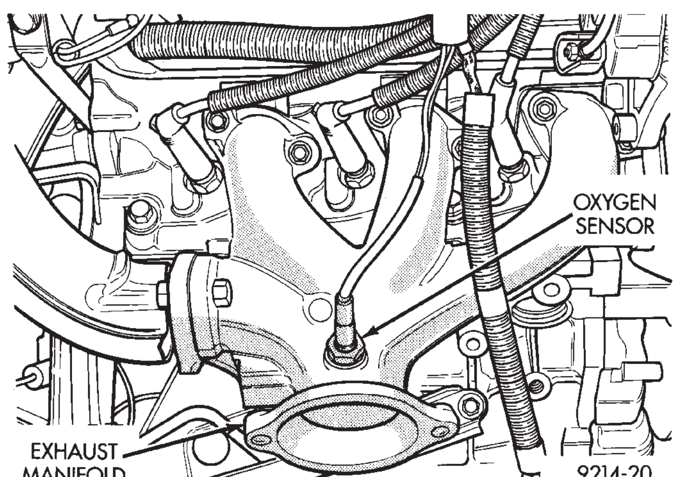

Fig. 10 Oxygen Sensor—3.3L/3.8L Engine

WARNING: THE EXHAUST MANIFOLD MAY BE EXTREMELY HOT. USE CARE WHEN SERVICING THE OXYGEN SENSOR.

(1) Disconnect oxygen sensor electrical connector.

(2) Remove sensor using Tool C-4907 (Fig. 11).

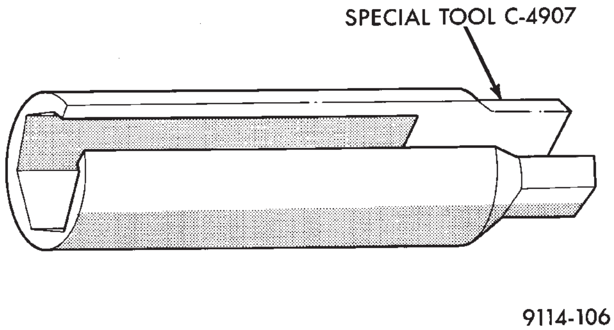

Fig. 11 Oxygen Sensor Socket

After removing the sensor, the exhaust manifold threads must be cleaned with an 18 mm X 1.5 + 6E tap. If reusing the original sensor, coat the sensor threads with an anti-seize compound such as Loctite 771-64 or equivalent. New sensors have compound on the threads and do not require additional compound. Tighten the sensor to 27 N●m (20 ft. lbs.) torque.

EXHAUST GAS RECIRCULATION (EGR) SYSTEM

Certain vehicles equipped with either a 2.2L, 2.5L, 3.0L, 3.3L or 3.8L engines may use a backpressure type Exhaust Gas Recirculation (EGR) system (Fig. 12, 13, or 14). Turbo I and Turbo III engines do not use an EGR system.

The EGR system reduces oxides of nitrogen (NOx) in engine exhaust and helps prevent spark knock. The system allows a predetermined amount of hot exhaust gas to recirculate and dilute the incoming air/fuel mixture. The diluted air/fuel mixture reduces peak flame temperature during combustion.

The EGR system consists of:

- EGR tube (connects a passage in the intake manifold to the exhaust manifold)
- EGR valve
- Electronic EGR Transducer (EET)
- Connecting hoses

The electronic EGR transducer (EET) contains an electrically operated solenoid and a back-pressure transducer (Fig. 15). The engine controller operates the solenoid. The controller determines when to energize the solenoid. Exhaust system back-pressure controls the transducer.

When the controller energizes the solenoid, vacuum does not reach the transducer. Vacuum flows to the transducer when the controller de-energizes the solenoid.

When exhaust system back-pressure becomes high enough, it fully closes a bleed valve in the transducer. When the controller de-energizes the solenoid and back-pressure closes the transducer bleed valve, vacuum flows through the transducer to operate the EGR valve.

De-energizing the solenoid, but not fully closing the transducer bleed hole (because of by low back-

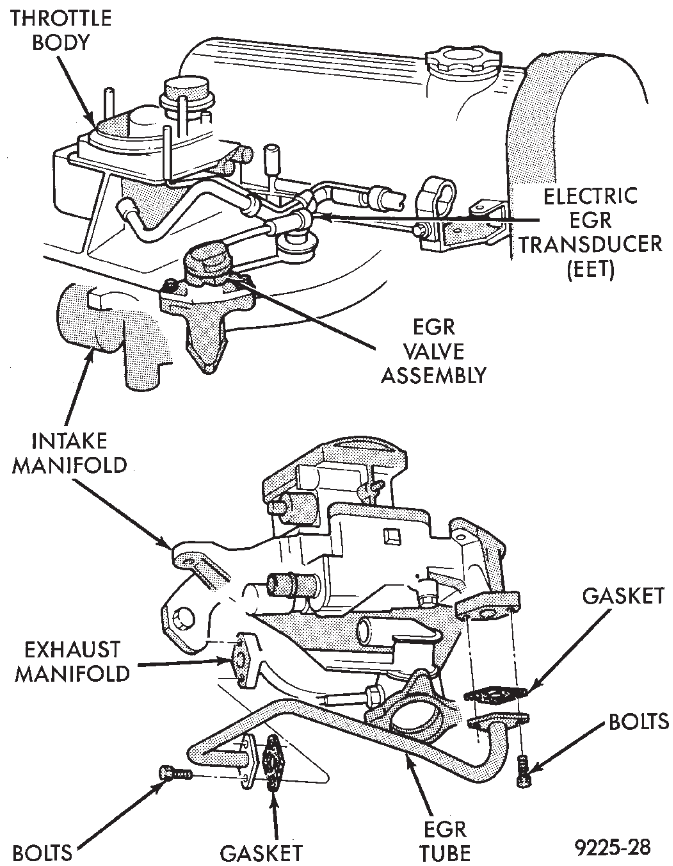

Fig. 12 EGR System—2.2L and 2.5L TBI Engines

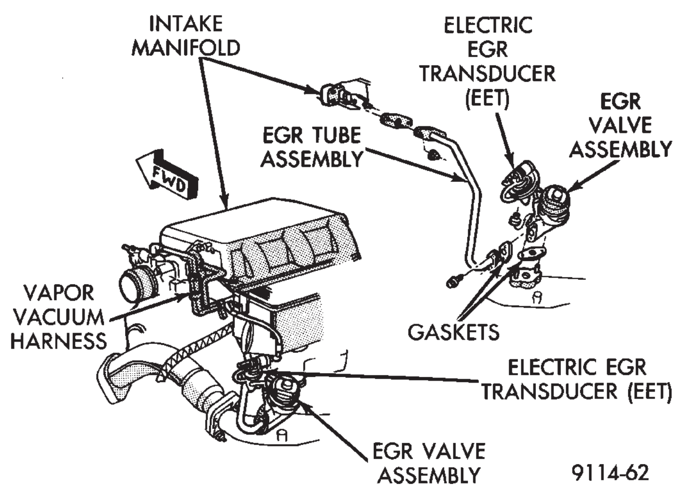

Fig. 13 EGR System—3.0L Engines

pressure), varies the strength of vacuum applied to the EGR valve. Varying the strength of the vacuum changes the amount of EGR supplied to the engine. This provides the correct amount of exhaust gas recirculation for different operating conditions.

These systems do not allow EGR at idle. The 2.2L/2.5L EGR systems operate at all temperatures. The 3.0L, 3.3L and 3.8L EGR systems do not operate when coolant temperature is below 4.5°C (40°)F at start-up. These systems activate when coolant temperature reaches 77°C (170°F).

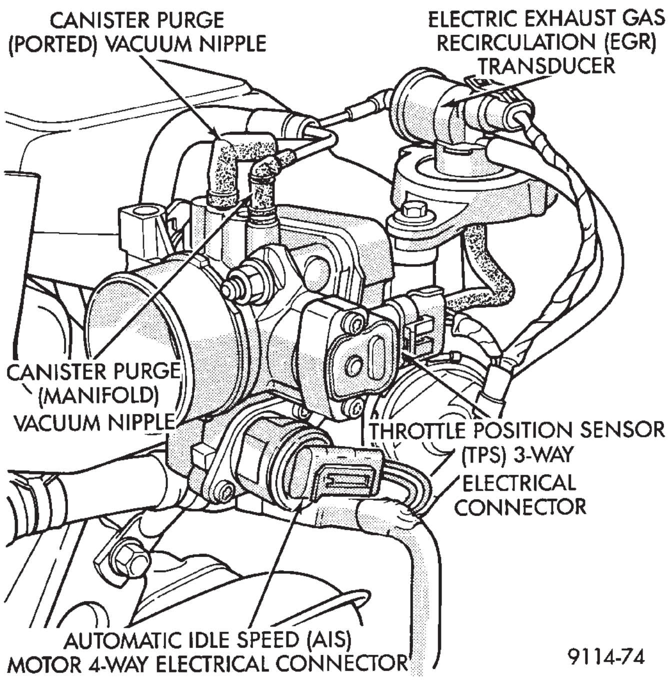

Fig. 14 EGR Mounting—3.3L and 3.8L Engines

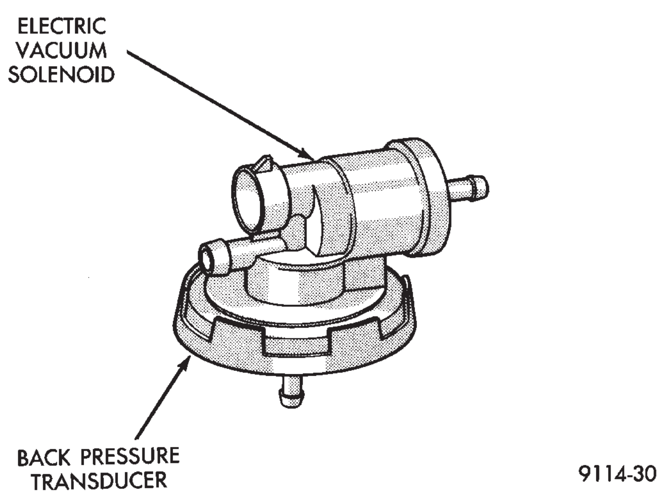

Fig. 15 Electric EGR Transducer (EET) Assembly

EGR SYSTEM ON-BOARD DIAGNOSTICS (CALIFORNIA VEHICLES)

The engine controller performs an on-board diagnostic check of the EGR system on all California vehicles with EGR systems. The diagnostic system uses the Electric EGR Transducer (EET) for the system tests.

The diagnostic check activates only during selected engine/driving conditions. When the conditions are met, the engine controller energizes the transducer solenoid to disable the EGR. The controller checks for a change in the oxygen sensor signal. If the air-fuel mixture goes lean, the engine controller will attempt to enrichen the mixture. The engine controller registers a fault if the EGR system has failed or degraded. After registering a fault, the engine controller turns the Check Engine light on. The Check Engine light indicates the need for immediate service.

If a malfunction is indicated by the Check Engine light and a fault code for the EGR system, check for proper operation of the EGR system. Use the System Test, EGR Gas Flow Test and EGR Diagnosis Chart. If the EGR system tests properly, check the system using the DRB II tester. Refer to On-Board Diagnosis in the General Diagnosis sections of Group 14. Also, refer to the DRB II and the appropriate Powertrain Diagnostics Procedure manual.

EXHAUST GAS RECIRCULATION (EGR) SYSTEM TEST

WARNING: APPLY PARKING BRAKE AND/OR BLOCK WHEELS BEFORE PERFORMING EGR SYSTEM TEST.

A failed or malfunctioning EGR system can cause engine spark knock, sags or hesitation, rough idle, and/or engine stalling. To ensure proper operation of the EGR system, all passages and moving parts must be free of deposits that could cause plugging or sticking. Ensure system hoses do not leak. Replace leaking components.

Inspect hose connections between the throttle body, intake manifold, EGR solenoid and transducer, and EGR valve. Replace hardened, cracked, or melted hoses. Repair or replace faulty connectors.

Check the EGR control system and EGR valve with the engine fully warmed up and running (engine coolant temperature over 150°F). With the transmission in neutral and the throttle closed, allow the engine to idle for 70 seconds. Abruptly accelerate the engine to approximately 2000 rpm, but not over 3000 rpm. The EGR valve stem should move when accelerating the engine (the relative position of the groove on the EGR valve stem should change). Repeat the test several times to confirm movement. If the EGR valve stem moves, the control system is operating normally. If the control system is not operating normally, refer to the EGR Diagnosis Chart to determine the cause.

EGR GAS FLOW TEST

The following procedure should be used to determine if exhaust gas is flowing through the EGR system.

Connect a hand vacuum pump to the EGR valve vacuum motor. With engine running at idle speed, slowly apply vacuum. Engine speed should begin to drop when applied vacuum reaches 2.0 to 3.5 inches. Engine speed may drop quickly or engine may even stall. This indicates that EGR gas is flowing through the system.

If both the EGR Gas Flow Check, System Check and Diagnosis Chart are completed satisfactorily, then the EGR system functions normally.

If engine speed does not drop off when performing the test, remove both the EGR valve and EGR tube and check for plugged passages. Also, check the intake manifold inlet passage. Clean or replace these components for restoration of proper flow.

EGR VALVE SERVICE—2.2L AND 2.5L TBI ENGINES

REMOVAL

(1) Disconnect electrical connector and vacuum line from the electric EGR transducer (Fig. 12).

(2) Remove EGR valve bolts from intake manifold.

(3) Remove EGR valve from intake manifold.

(4) Clean gasket surface and discard old gasket. Check for any signs of leakage or cracked surfaces.

INSTALLATION

(1) Assemble EGR valve with new gasket onto the intake manifold.

(2) Install EGR valve mounting bolts. Tighten to 22 N●m (200 in. lbs.) torque.

(3) Reconnect vacuum line and electrical connector to Electric EGR Transducer.

EGR TUBE SERVICE—2.2L AND 2.5L TBI ENGINES

REMOVAL

(1) Remove EGR tube attaching bolts from intake and exhaust manifolds.

(2) Remove EGR tube.

(3) Clean intake and exhaust manifold gasket surfaces and EGR tube flange gasket surfaces. Discard old gaskets.

(4) Check for signs of leakage or cracked surfaces on either manifolds or tube. Replace as necessary.

INSTALLATION

(1) Loosely position EGR tube and new gaskets in place on intake and exhaust manifolds. Install mounting bolts.

(2) Tighten attaching bolts to 22 N●m (200 in. lbs.) torque.

EGR SYSTEM SERVICE—3.0L ENGINES

REMOVAL

(1) Disconnect the electric and vacuum connectors from the electric EGR transducer (EET) (Fig. 16).

(2) Remove EGR valve nuts to exhaust manifold.

(3) Remove EGR flange bolts from valve.

(4) Remove EGR valve tube flange nuts from intake manifold.

(5) Clean all gasket surfaces and discard old gaskets. Check for any signs of leakage or cracked surfaces. Repair or replace as necessary.

INSTALLATION

(1) Loosely assemble the EGR tube to EGR valve with new gasket in place.

(2) Install new gaskets on both intake and exhaust manifolds.

(3) Position EGR valve and tube loosely on engine.

(4) Tighten EGR tube flange nuts (on the intake manifold) to 22 N●m (200 in. lbs.) torque.

(5) Tighten EGR tube to valve screws (2) to 11 N●m (95 in. lbs.) torque.

(6) Tighten EGR valve to exhaust manifold nuts to 22 N●m (200 in. lbs.) torque.

(7) Connect the electrical and vacuum connectors to the electric EGR transducer.

EGR VALVE SERVICE—3.3L AND 3.8L ENGINES

REMOVAL

(1) Disconnect vacuum tube from electric EGR transducer (EET). Inspect vacuum tube for damage (Fig. 17).

(2) Remove electrical connector from EET.

(3) Remove EGR valve bolts from intake manifold.

(4) Open EGR transducer clip and remove electric EGR transducer.

(5) Remove EGR valve from intake manifold.

(6) Clean gasket surface and discard old gasket. Check for any signs of leakage or cracked surfaces. Repair or replace as necessary.

INSTALLATION

(1) Assemble EGR valve with new gasket onto the intake manifold.

(2) Install mounting bolts. Tighten bolts to 22 N●m (200 in. lbs.) torque.

(3) Install electric EGR transducer in clip with orientation tab in slot and snap closed.

(4) Reconnect vacuum hose and electrical connector to EET.

EGR TUBE SERVICE—3.3L AND 3.8L ENGINES

REMOVAL

(1) Remove EGR tube attaching bolts from intake and exhaust manifolds.

(2) Clean intake and exhaust manifold gasket surfaces. Discard old gasket.

(3) Check for signs of leakage or cracked surfaces on either manifolds or tube. Repair or replace as necessary.

INSTALLATION

(1) Loosely assemble EGR tube and new gaskets into place on intake and exhaust manifolds.

(2) Tighten mounting bolts to 22 N●m (200 in. lbs.) torque.

EGR DIAGNOSIS CHART

NOTE: ALL TESTS MUST BE MADE WITH FULLY WARM ENGINE RUNNING CONTINUOUSLY FOR AT LEAST TWO MINUTES

WARNING: BE SURE TO APPLY PARKING BRAKE AND/OR BLOCK WHEELS BEFORE PERFORMING IDLE CHECK OR ADJUSTMENT, OR ANY ENGINE RUNNING TESTS OR ADJUSTMENTS.

Condition	Possible Cause	Correction
EGR VALVE STEM DOES NOT MOVE ON SYSTEM TEST.	(a) Cracked, leaking, disconnected or plugged hoses.	(a) Verify correct hose connections and leak check and confirm that all hoses are open. If defective hoses are found, replace hose harness. (b) Disconnect hose harness from EGR vacuum transducer and connect auxiliary vacuum supply. Raise engine rpm to 2000 rpm and hold. Apply 10" Hg vacuum while checking valve movement. If no valve movement occurs, replace valve/transducer assy. If valve opens (approx. 3mm or 1/8" travel), hold supply vacuum to check for diaphragm leakage. Valve should remain open 30 seconds or longer. If leakage occurs, replace valve/transducer assy. If valve is satisfactory, check control system.
EGR VALVE STEM DOES NOT MOVE ON SYSTEM TEST. OPERATES NORMALLY ON EXTERNAL VACUUM SOURCE.	(a) Defective control system—Plugged passages.	(a) Remove throttle body and inspect port (slot type) in throttle bore and associated passage in throttle body. Use suitable solvent to remove deposits and check for flow with light air pressure. Normal operation should be restored to EGR system.
	(b) Defective control system—solenoid or solenoid control circuit.	(b) Refer to Group 14. General Diagnosis "On Board Diagnostics" to check solenoid.
ENGINE WILL NOT IDLE. DIES OUT ON RETURN TO IDLE OR IDLE IS VERY ROUGH OR SLOW.	(a) High EGR valve leakage in closed position.	(a) If removal of vacuum hose from EGR valve does not correct rough idle, (a1) Turn engine off. Remove the air cleaner exposing the inlet to the throttle body. (a2) Disconnect the backpressure hose from the EGR valve. (a3) Using a nozzle with a rubber grommet connection, direct compressed air (50 to 60 psi) down through the steel backpressure tube on the EGR valve while opening and closing the throttle blade. (a4) If the sound from the compressed air changes distinctly in step a3, the poppet is leaking and air is entering the intake manifold. Replace the EGR valve.
	(b) EGR tube to intake manifold leak.	(b) Remove tube and visually inspect tube seal on gasket. Tube end should be uniformally indented on gasket with no signs of leak. If signs of exhaust gas leakage are present, replace gaskets and tighten flange nuts to 23 N·m (200 in. lbs.). If an intake plenum leak persists, replace EGR tube and gaskets, following installation instructions.
	(c) Solenoid or control signal to solenoid failure.	(c) Verify correct hose connections and leak check and confirm that all hoses are open. If defective hoses are found, replace hose harness. (c1) Refer to Group 14, General Diagnosis "On Board Diagnostics" to check solenoid.

NOTE: DO NOT ATTEMPT TO CLEAN BACK-PRESSURE EGR VALVE, REPLACE ENTIRE VALVE/TRANSDUCER ASSEMBLY IF NECESSARY.

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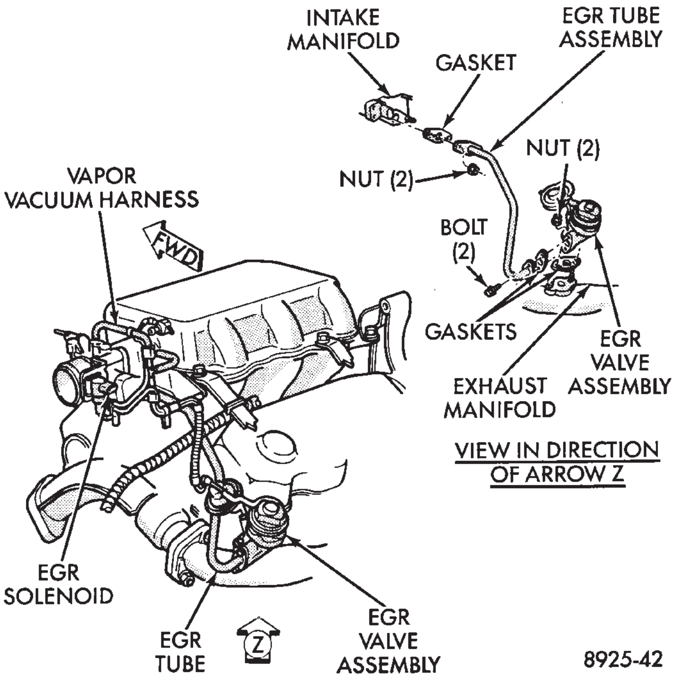

Fig. 16 EGR Service—3.0L Engines

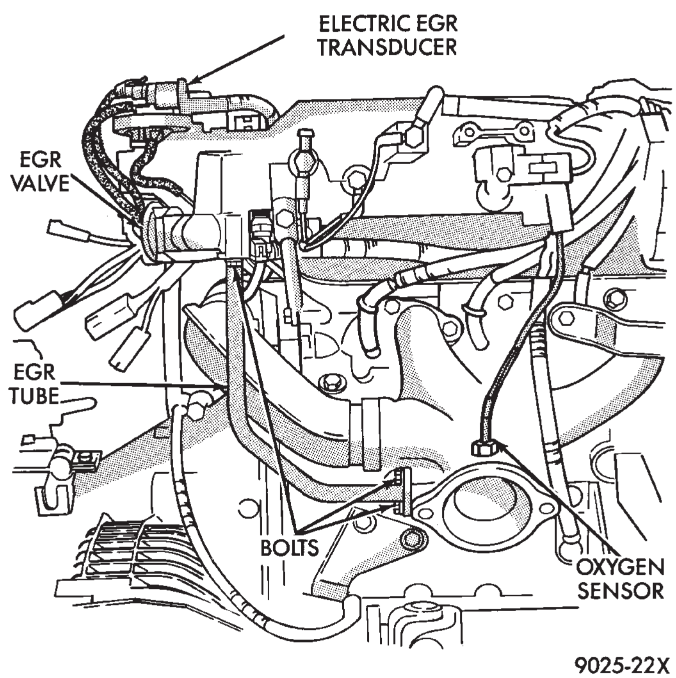

Fig. 17 EGR System—3.3L and 3.8L Engines

AIR ASPIRATION SYSTEM

Certain vehicles equipped with the 2.2L or 2.5L TBI engines have an aspirator valve (Fig. 18). The valve uses exhaust pressure pulsation to draw fresh air from the air cleaner into the exhaust system. This reduces carbon monoxide (CO) and hydrocarbon (HC) emissions. The aspirator valve works most efficiently at idle and slightly off-idle, where the negative pulses are strongest. The aspirator valve remains closed at higher engine speeds.

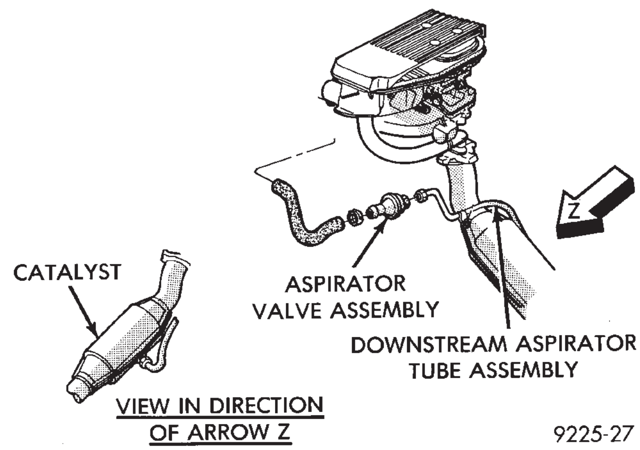

Fig. 18 Air Aspirator System

DIAGNOSIS

The aspirator valve is not repairable. Replace the valve if it operates incorrectly. Valve failure results in excessive underhood exhaust system noise at idle and hardening of the rubber hose from the valve to the air cleaner. Check for leakage at the aspirator tube/catalyst assembly joint. Also, inspect the hose connections at the aspirator valve and air cleaner for leakage. If the aspirator tube/ catalyst assembly joint is leaking, tighten the aspirator tube nut to 54 N•m (40 ft. lbs) torque. If either hose connection leaks, and the hose has not hardened, install hose clamps.

To determine if the aspirator valve has failed, disconnect the hose from the aspirator inlet. With the engine at idle in neutral, the negative (vacuum) exhaust pulses can be felt at the aspirator inlet. If hot exhaust gas is escaping from the aspirator inlet, the valve has failed. Replace the valve.

REMOVAL

(1) Disconnect the air hose from the aspirator valve inlet.

(2) Remove aspirator tube assembly from catalyst.

INSTALLATION

(1) Install aspirator tube. Tighten the nut to 54 N•m (40 ft. lbs) torque.

(2) Install aspirator tube bracket screw. Tighten screw to 11 N•m (95 in. lbs) torque.

(3) Connect air hose to aspirator valve inlet and air cleaner nipple.