SECTION C3

EVAPORATIVE EMISSION CONTROL SYSTEM (EECS)

CONTENTS

GENERAL DESCRIPTION

PURPOSE

The basic Evaporative Emission Control System (EECS) used on all vehicles is the charcoal canister storage method (see Figure C3-1). This method transfers fuel vapor from the fuel tank to an activated carbon (charcoal) storage device (canister) to hold the vapors when the vehicle is not operating. When the engine is running, the fuel vapor is purged from the carbon element by intake air flow and consumed in the normal combustion process.

VAPOR CANISTER

The basic Two Tube Canister operates as follows:

Gasoline vapors from the fuel tank flow into the tube labeled "Fuel Tank", and are absorbed by the carbon. The canister is purged when the engine is running above idle speed. A controlled vacuum source is applied to the tube labeled "Canister Purge" to draw fresh air through the bottom of the canister. The air mixes with the vapor and the mixture is drawn into the intake manifold to be burned.

CANISTER CONTROL VALVE (TYPE 3)

The canister control valve (Figure C3-2) is located in the canister purge line between the purge solenoid valve and the intake manifold and connected to ported vacuum. This valve is opened by vacuum to allow purge.

When the engine is off the Canister Control Valve prevents vapors from the Bowl Vent Valve from venting to atmosphere.

EVAPORATIVE EMISSION SYSTEM 5.0L

This system (Figure C3-5) uses a remote purge solenoid and two controlling valves:

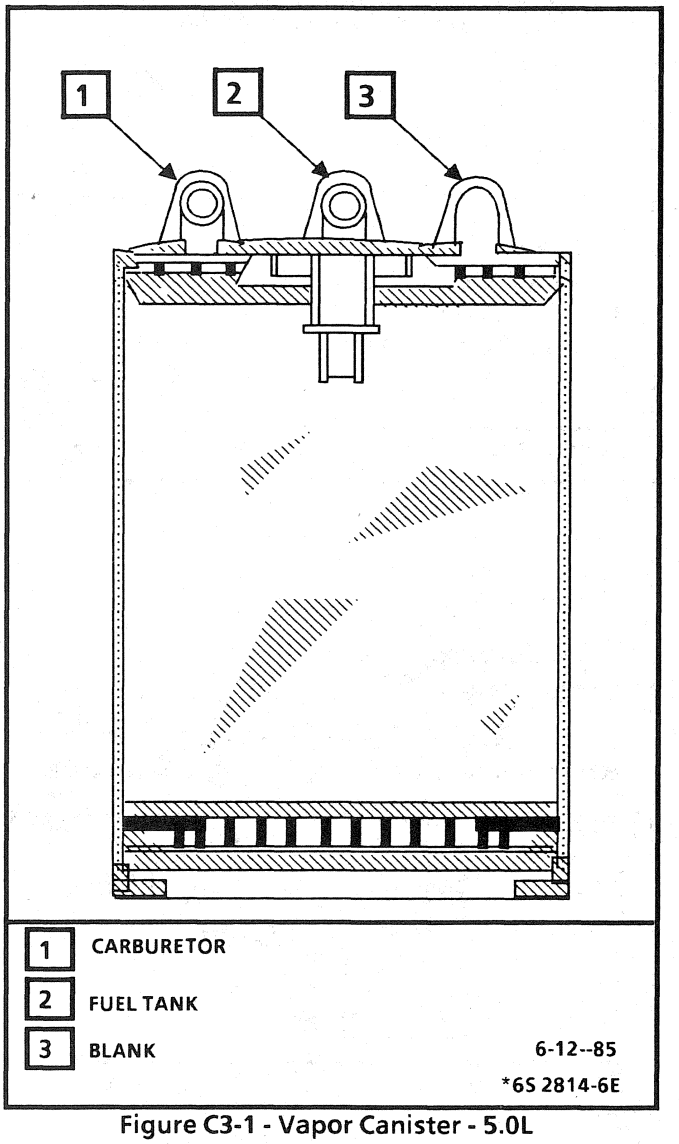
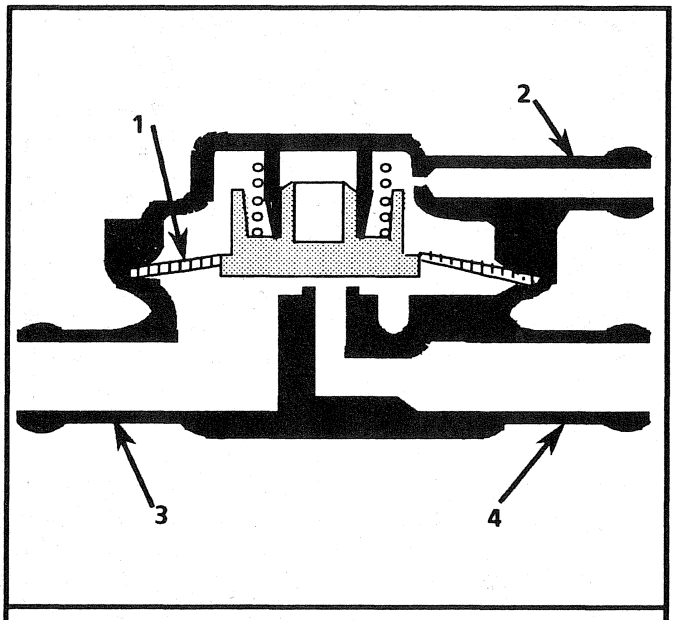


Figure C3-1 - Vapor Canister - 5.0L

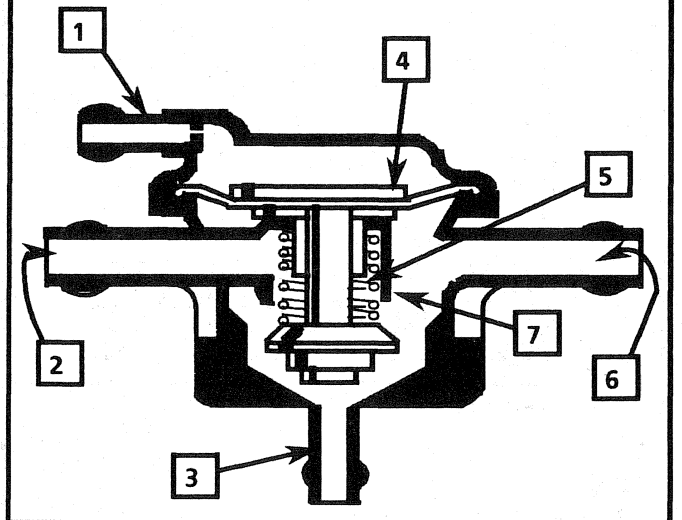
- A Bowl Vent Valve which vents vapors from the carburetor float bowl area to the canister when the engine is off.
- A Tank pressure control valve to allow vapors from the gas tank to enter the canister or to be purged directly into the engine.



1 DIAPHRAGM
2 CONTROL VACUUM TUBE
3 PURGE TUBE
4 TUBE TO CANISTER

2-28-86
*7S 3160-6E

Figure C3-2 Canister Control Valve Type 3



1 Manifold Vacuum
2 Carburetor Bowl
3 Purge Vacuum
4 Diaphragm Assembly
5 Spring
6 Canister
7 Valve Seat

*6S 2981-6E
10-3-85

Figure C3-3 Bowl Vent Valve

There is a remote mounted normally open purge solenoid located in the canister purge line. This is an ECM controlled solenoid that monitors the air fuel ratio of the mixture from the canister. The solenoid will reduce purge when there is a low air fuel ratio (rich mixture).

The bowl vent valve vents vapors from the carburetor bowl area to the canister when the engine is off. When the engine is running manifold vacuum is applied to the bowl vent valve and the valve seats preventing vapors from venting from the carb bowl. The vapors from the canister may still be purged.

The thermal bowl vent valve (TBVV) is located in the section of hose that connects the carburetor bowl vent fitting to the bowl vent valve.

The TBVV will close and prevent vapor movement at 32° C (90° F) and below. The TBVV will open at 49° C (120° F) to permit vapor flow to the bowl vent valve

FUEL TANK PRESSURE CONTROL VALVE

The Fuel Tank Pressure Control Valve (Figure C3-4) is located near the canister and is connected to the fuel tank vapor line. When the tank pressure exceeds the spring relief pressure (6.0 kPa) the valve opens. Fuel vapors from the fuel tank are now free to vent to the canister or intake manifold. When the engine is shut off, vapors pass into the canister only. when fuel pressure in the tank drops below the spring relief pressure the valve will close and vapors will be held in the tank.

RESULTS OF INCORRECT OPERATION

- Poor idle, stalling and poor driveability can be caused by:
  - Inoperative bowl vent valve
  - Damaged canister
  - Hoses split, cracked and or, not connected to the proper tubes.
- Evidence of fuel loss or fuel vapor odor can be caused by:
  - Liquid fuel leaking from fuel lines, fuel pump or carburetor
  - Inoperative Canister Control valve
  - Cracked or damaged canister
  - Disconnected, misrouted, kinked, deteriorated or damaged vapor hoses, or control hoses
  - Bowl vent hose misrouted
  - Air cleaner or air cleaner gasket improperly seated

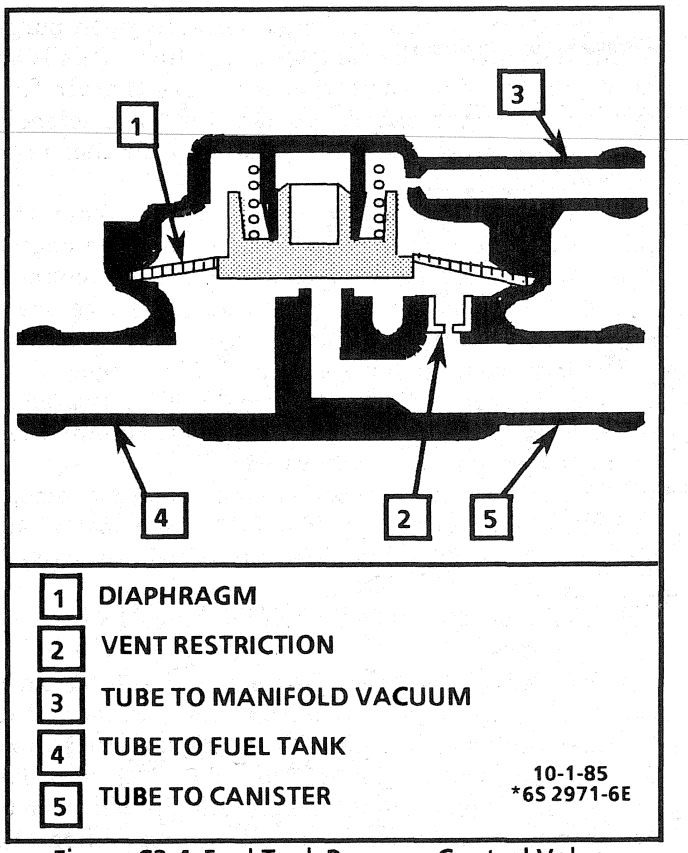


Figure C3-4 Fuel Tank Pressure Control Valve

DIAGNOSIS

VISUAL CHECK OF CANISTER

- Visual check of two tube charcoal canister
  - Cracked or damaged, replace canister.
  - Fuel leaking from bottom of canister. Replace canister and check operation of total system.
  - Check filter at bottom of canister. If dirty, plugged, or damaged, replace filter.

Functional Test - Canister Control Valve (Type 3)

Testing of this Canister Control Valve is different from other CCVs. Apply a short hose to the valve's manifold tube, blow into the tube. Air should not pass through, indicating that the valve seals properly. If air passes through the valve, it must be replaced.

With a hand vacuum pump apply vacuum (15" or 51 kPa) to the control vacuum tube. The diaphragm should hold vacuum for at least 20 seconds. If it does not hold vacuum the diaphragm is leaking and the valve must be replaced.

With vacuum still applied to the control vacuum tube again attempt to blow into the canister tube. Air should pass through valve indicating proper operation. If not, valve must be replaced.

Functional Test - Tank Pressure Control Valve

With a hand vacuum pump apply vacuum (15" or 51 kPa) to the control vacuum tube. The diaphragm should hold vacuum for at least 20 seconds. If it does not hold vacuum the diaphragm is leaking and the valve must be replaced.

Apply a short hose to the valve's tank tube side, blow into the tube. You should feel the diaphragm pop open and air should pass through the valve. If the valve does not open it should be replaced.

Functional Test - Bowl Vent Valve

Testing of this valve (Figure C3-3) is similar to testing of a canister with a vapor vent valve. Apply a short length of hose to the carburetor bowl tube of the canister control valve and blow into it. Air should pass out through the canister tube and the purge valve tube. If it does not, valve must be replaced.

Using a hand vacuum pump, apply vacuum (15" or 51 kPa) to the manifold vacuum tube. The diaphragm should hold vacuum for at least 20 seconds. (If it does not, replace the valve.) With vacuum still applied, again try to blow through the hose into the carburetor bowl tube. No air should flow from the canister tube or the purge vacuum tube. If it does, the diaphragm assembly is not sealing correctly, and the valve must be replaced.

CANISTER PURGE SOLENOID

The canister purge solenoid operation is covered in CHART C-3 at the end of this section.

ON-CAR SERVICE

FUEL VAPOR CANISTER

Remove or Disconnect

1. Hoses from canister. Mark hoses to install on new canister.
2. Canister.

Install or Connect

1. Canister.
2. Hoses. Make sure connections are correct.

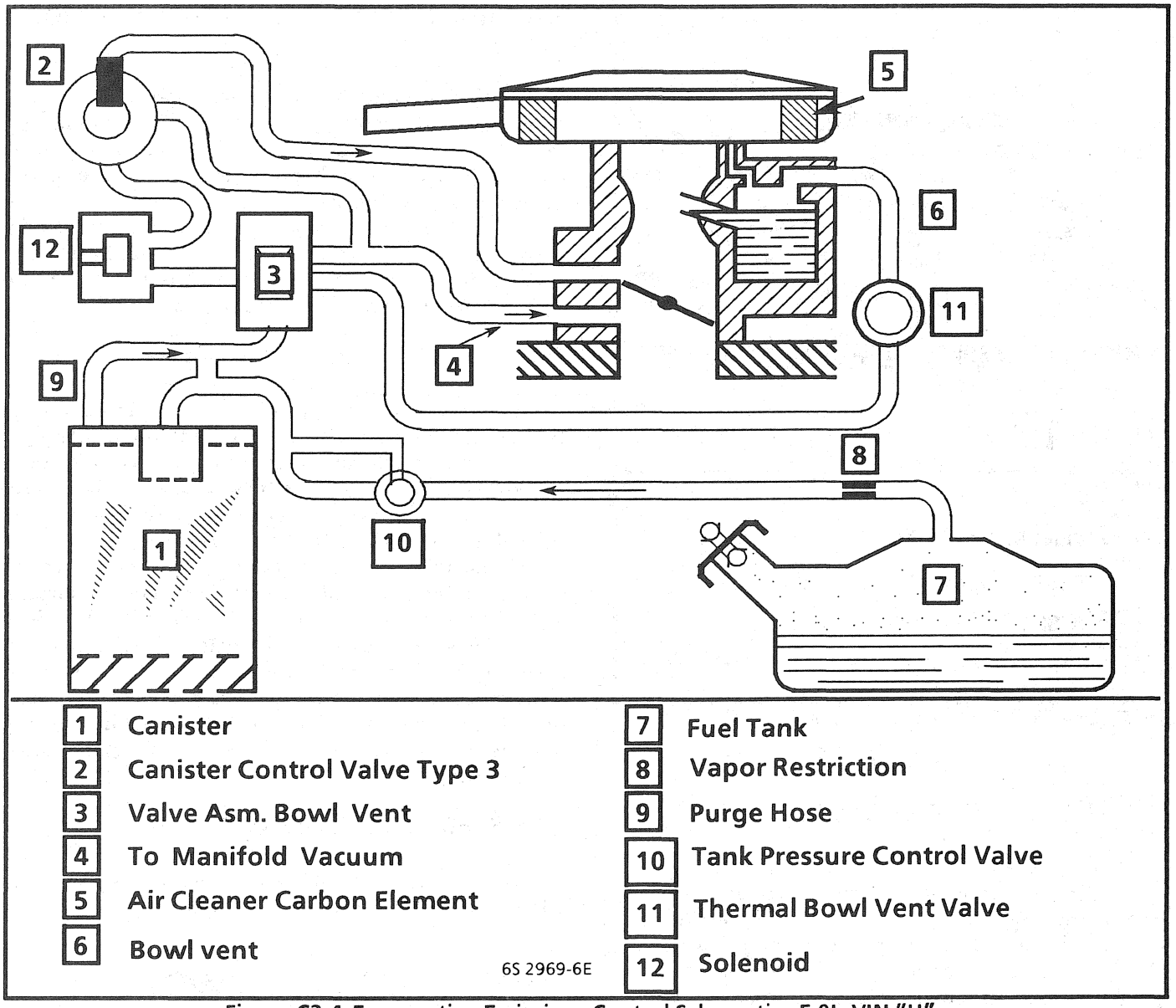


Figure C3-4 Evaporative Emissions Control Schematic - 5.0L VIN "H"

CONTROL VALVES

Remove or Disconnect

1. Hoses from canister control valve. Mark hoses to install on new valve.
2. Canister control valve.

Install or Connect

1. Canister control valve.
2. Hoses. Make sure connections are correct.

CANISTER HOSES

Refer to Vehicle Emission Control Information Label for routing of canister hoses. When replacing hoses, use 6148M or its equivalent.

PARTS INFORMATION

PART NAME	GROUP
Canister, Fuel Vapor	3.130
Solenoid, Fuel Vapor Canister purge	3.140
Valve, Bowl Vent	3.140
Valve, Canister Control	3.140
Valve, Tank Pressure Control	3.140