

# SECTION A

## FUEL TANK AND FUEL SYSTEM

### ALL SERIES

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## DIVISION II

### DESCRIPTION AND OPERATION

#### 80-1 DESCRIPTION OF FUEL TANK AND FUEL SYSTEM

In all models, except station wagons, the fuel tank is attached under the trunk pan by two (2) straps. On "A", "B" and "C" models the filler neck extends from the rear upper center of the tank to a point just forward of the rear bumper. On the "E" model, the filler neck exist from the left rear corner of the tank. See Figures 80-3, 4, and 5. To fill the tank, pull down the spring-loaded license plate bracket and remove the filler cap.

All station wagons have the fuel tank mounted in the left rear quarter panel area. See Figure 80-3. To fill the tank, lift the spring-loaded filler door and remove the filler cap.

Filler necks are soldered into the tank in all series cars. See Figures 80-3 thru 80-5.

In all models except station wagons, the tank is vented during filling by an internal baffle inside the filler.

In station wagons, the tank is vented during filling by the filler neck. See Figure 80-3.

In all models the tank outlet consists of a combination fuel pickup, filter and fuel gage tank unit. The tank unit can be removed by removing a cam ring which retains the unit.

The fuel line is coated, welded steel tubing. Connections from the tank unit to the line and from the line to the fuel pump are made with synthetic rubber hose attached with spring clamps.

All engines have a replaceable pleated paper filter located in the carburetor inlet.

All air conditioned cars have a vapor return system. These cars have a special fuel pump which has a metering outlet. Any vapor which forms is bled off and returned to the fuel tank, along with continuously circulating fuel, through a separate line. This system keeps cool fuel recirculating to the pump, thereby greatly reducing any possibility of vapor lock. All 455 cubic inch engine cars have the vapor return system, regardless of whether or not they are equipped with an air conditioner.

## **80-2 DISRIPTION OF EVAPORATIVE EMISSION CONTROL SYSTEM**

All 1972 Buicks will be equipped with a system designed to prevent escape of fuel vapor to the atmosphere. Vapor generated by evaporation of fuel in the tank, previously exhausted to atmosphere, will be transferred by a emission line to the engine compartment. During periods of operation, vapors are fed directly to the engine for consumption. During periods of inoperation, an activated charcoal canister located in the emission line stores any vapor generated for consumption during the next period of operation.

The emission hose that runs from the stand pipe to the evaporator pipe is a specific hose in that it has an orifice in it. It is important that if this hose has to be replaced, it be replaced by a hose of the same part number to make sure the orifice is in place. See Figure 80-12 for hose and orifice location.

The amount of vapor drawn into the engine at any time is too small to have any effect on fuel economy or engine operation.

With this closed system it is extremely important that only vapors be transferred to the engine. To avoid the possibility of liquid fuel being drawn into the system, these following features are included as part of the total system:

1. A fuel tank overflow protector is provided on all models to assure adequate room for expansion of liquid fuel volume with temperature changes.
2. A three (3) point fuel tank venting system is provided on all models except station wagons, which have one (1) point, to assure that the tank will be vented under any conceivable car attitude.
3. On all models, except station wagons, a liquid vapor standpipe, located in back of the rear seat back rest, transfers the multiple tank vents to the single vapor transfer line, and assures that no liquid fuel will pass that point.
4. To protect the tank from mechanical damage in the event of excessive internal or external pressures resulting from the operation of this closed system, a

pressure-vacuum relief valve, located in the gas cap, will control the tank internal pressure.

### **Gas Cap**

1. The fuel tank filler cap has a new two-step removal and installation procedure, plus a pressure- vacuum safety relief valve.
2. It is equipped with a double set of locking tangs. To remove:
  - a. Rotate cap one-half turn counterclockwise to clear the first set of tangs from the slots inside the filler neck.
  - b. This will allow any residual pressure to escape.
  - c. Pull the cap outward and rotate one-quarter turn counterclockwise to clear second set of tangs, and remove the cap.
  - d. To install, reverse this procedure.

If this cap requires a replacement, only a cap with these same features should be used. Failure to use the correct cap can result in a serious malfunction of the system. Correct replacement caps may be obtained from your Buick or General Motors dealer.

### **Liquid Vapor Standpipe Removal**

1. Remove rear seat and back cushion assembly.
2. Disconnect hoses at standpipe.
3. Remove four (4) sheet metal bolts securing standpipe.
4. To install standpipe, reverse above steps.

Make sure hoses are properly and fully seated to standpipe and gasket is in place.

Maintenance requirements demand only that the accumulator purge air filter, an oiled fiber-glass filter assembled in the bottom of the canister, be replaced every 12,000 miles or 12 months. Under extremely dusty conditions, more frequent attention may be required.

## **DIVISION IV**

### **REMOVAL AND INSTALLATION**

**80-3 REMOVAL OF FUEL TANK OR FUEL GAUGE TANK UNIT**

*All Series (Except Station Wagons)*

The fuel gauge tank unit is combined with the pickup pipe and the tank filter. All series require lowering the fuel tank to replace the tank unit.

To lower a fuel tank, proceed as follows:

1. Disconnect battery.
2. Syphon all fuel from tank into a clean container.
3. Disconnect fuel hose and vapor return hose from gauge tank unit.
4. Remove ground (black) wire screw.
5. Unplug tan wire from gauge unit.
6. Disconnect vent hoses.
7. Disconnect support straps and lower tank.
8. To install fuel tank, reverse above procedures.

To remove fuel gauge tank unit, proceed as follows:

1. Disconnect battery.
2. Unscrew cam ring using Wrench J-21518 for 4D-4F-4G-4H Series; or use Wrench J-22554 for 4L-4N-4R-4U- 4V-4Y Series.
3. Remove fuel gauge tank unit. Install new tank unit, being careful not to bend or damage it.
4. Complete gauge unit installation by reversing above steps. Make sure tan wire and black wire connections are clean and tight.

*4F-4R Series Wagons*

1. Disconnect battery.
2. Drain gas from tank into suitable container and disconnect fuel gauge tank wire.
3. Raise car on hoist.
4. Remove left rear tire and wheel assembly.
5. Remove left quarter panel to wheelhouse filler panel (mud deflector) and bend lower attaching tab out of way.
6. Disconnect gas tank to wheelhouse ground wire.
7. Disconnect tail pipe hanger.

8. Disconnect fuel lines from gas tank.
9. Remove the end and bottom tank support straps.
10. Work tank forward and remove.
11. For installation reverse previous steps.

**80-4 CLEANING FUEL SYSTEMS - ALL SERIES**

If trouble is due to contaminated fuel or foreign material that has been put into the tank, it can usually be cleaned. If tank is rusted internally, it should be replaced.

1. Disconnect battery and ignition coil primary wire (plus wire on ignition coil).
2. Drain fuel tank.
3. Remove fuel tank (see "Removal of Tank").
4. Remove fuel inlet filter at carburetor and inspect for contamination. If filter is plugged, replace (leave fuel line disconnected).
5. Locate tank away from heat, flame, or other source of ignition. Remove fuel gauge tank unit and inspect condition of filter. If filter is contaminated, a new filter should be installed upon reassembly.
6. Complete draining of tank by rocking it and allowing fuel to run out of tank unit hole.
7. Purge fuel tank with steam or running hot water for at least five minutes. Pour water out of tank unit hole (rock tank to assure complete removal of water).

**WARNING:** This procedure will not remove fuel vapor. Do not attempt any repair on tank or filler neck where heat or flame is required.

8. Disconnect inlet fuel line at pump and use air pressure to clean fuel line and fuel return line (if equipped). Apply air pressure in the direction fuel normally flows through line.
9. Use low air pressure to clean pipes on tank unit.
10. Install new filter on fuel tank unit, if required. Install fuel tank unit with new gasket into tank and install tank. Connect tank unit wires and all fuel lines, except pump to carburetor line (see "Removal of Tank" for proper procedure).
11. Connect a hose to fuel line at carburetor; insert other end of hose into a one gallon fuel can.
12. Connect battery cable. *Make sure ignition coil primary wire is disconnected.*
13. Put six gallons of clean fuel in tank and operate

starter to pump two quarts of fuel into fuel can. This will purge fuel pump.

14. Remove hose and connect fuel line to carburetor.

15. Connect coil primary wire.

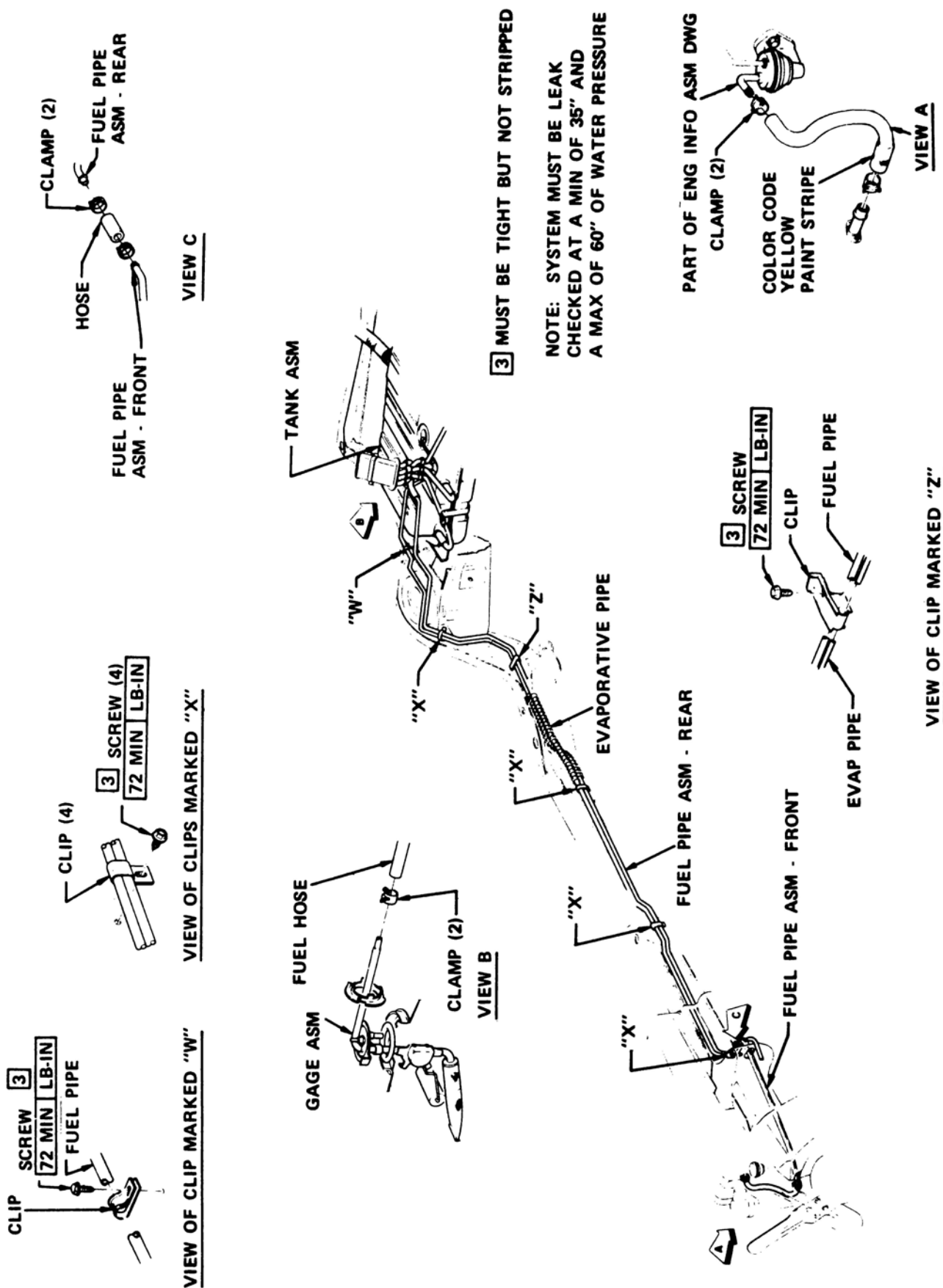


Figure 80-3 Fuel System - (V-8) Skylark, Skylark Custom and G.S.

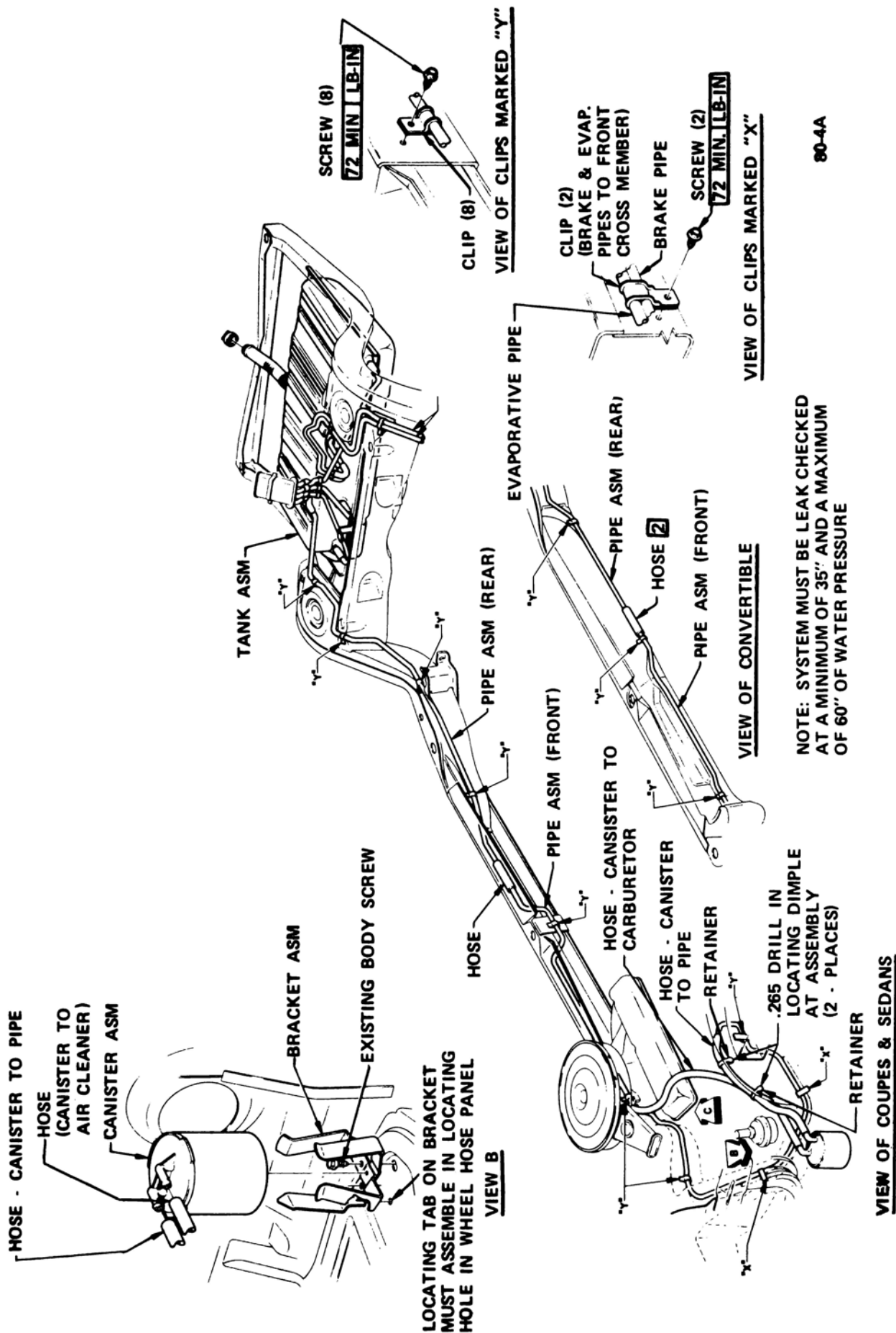


Figure 80-4 Evaporative Emission Control System (V-8) Skylark, Skylark Custom and G.S.

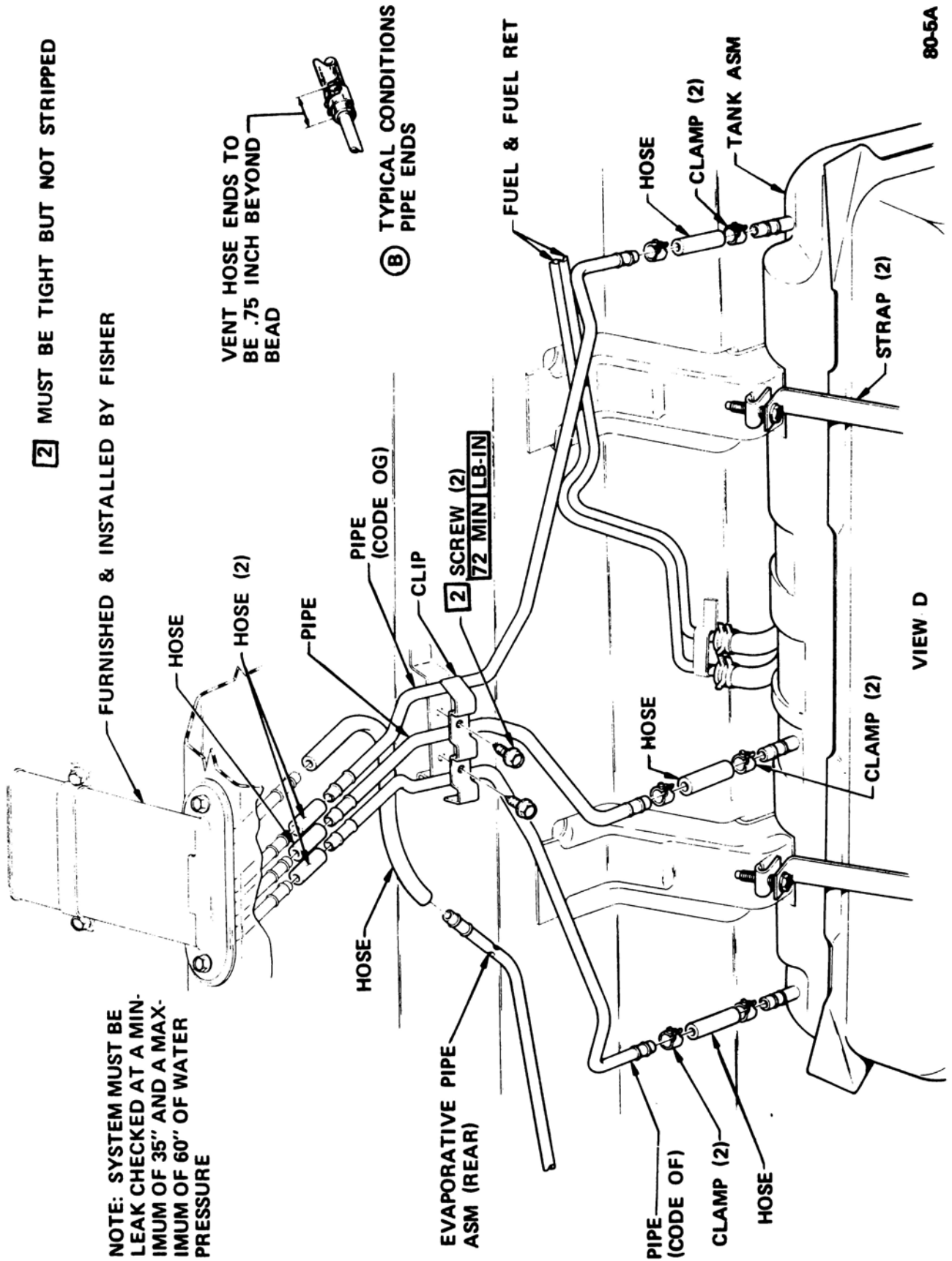
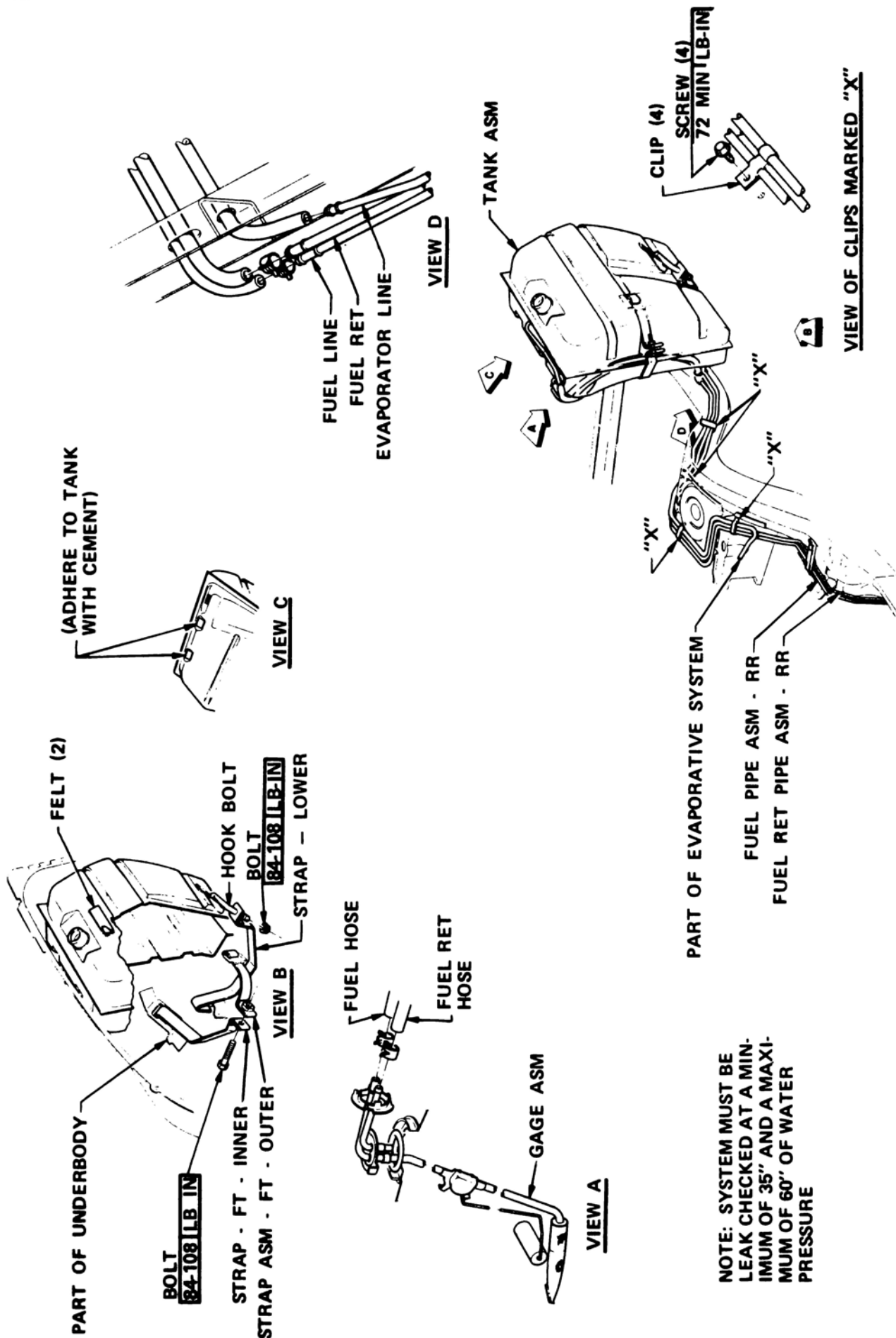


Figure 80-5 Fuel and Evaporative Emission Control Vent Pipes and Hoses - Skylark, Skylark Custom and G.S.



80-6A

Figure 80-6 Fuel System - Sportwagon



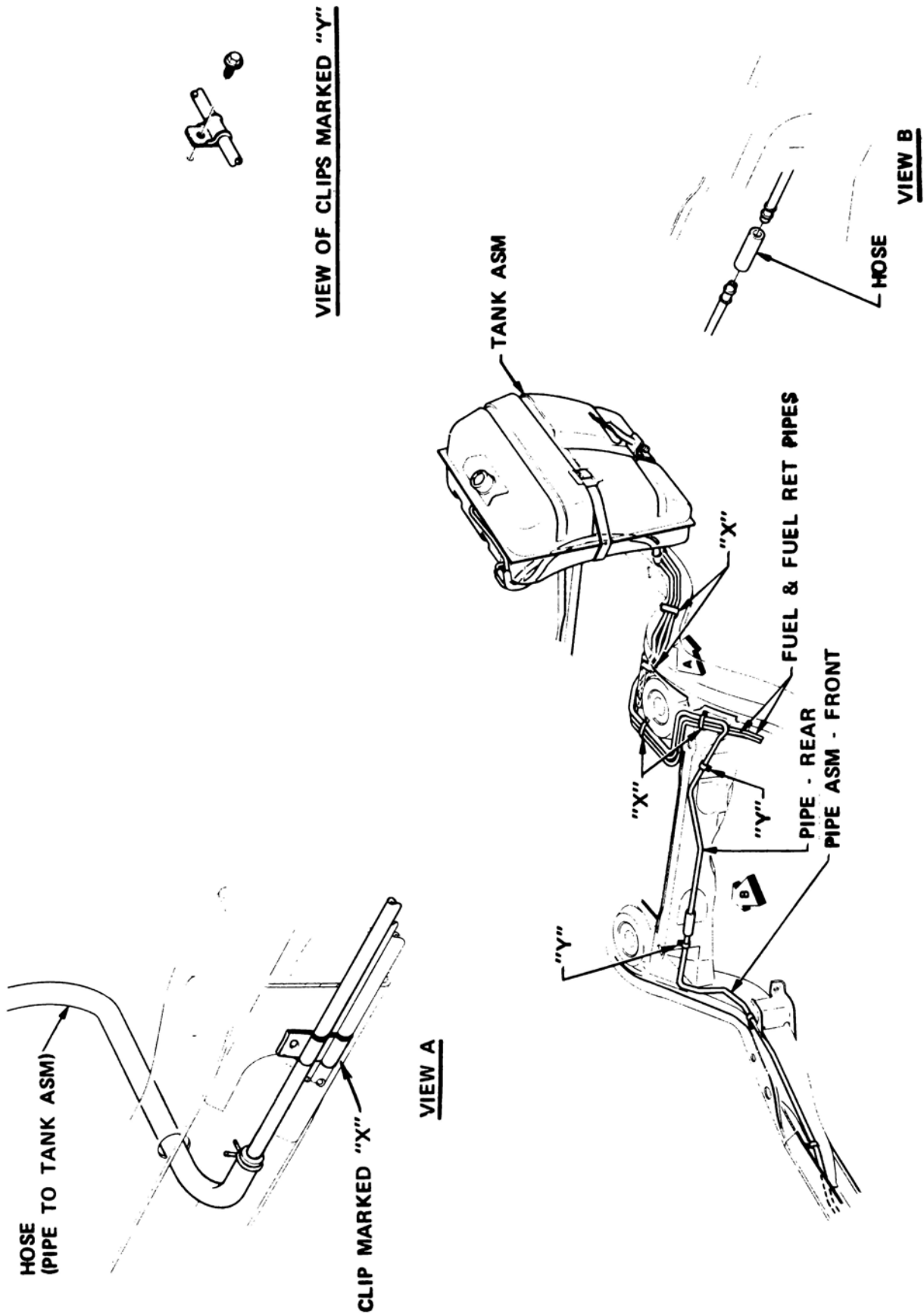


Figure 80-7 Evaporative Emission Control System - Sportwagon

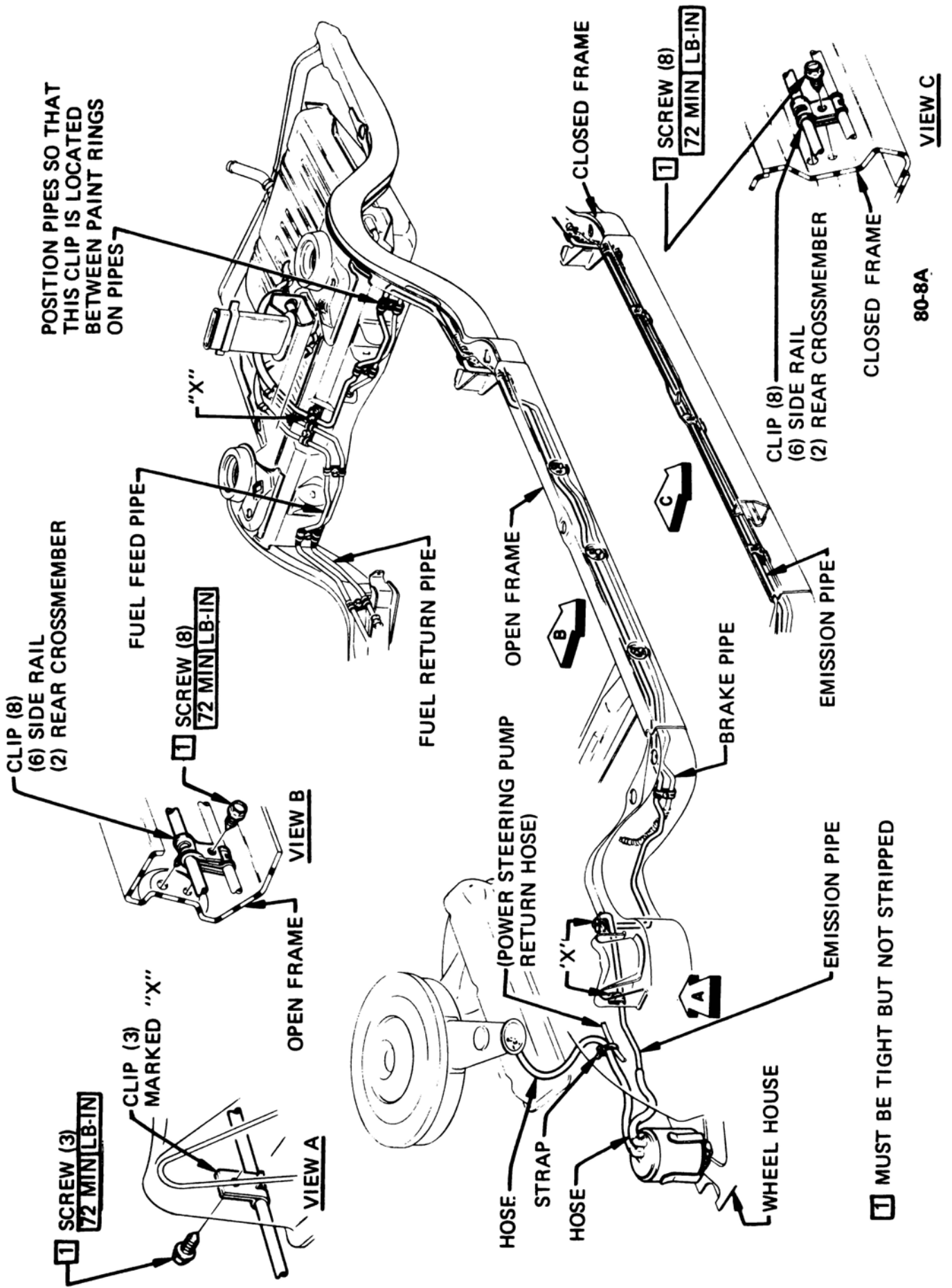


Figure 80-8 Fuel System - 4L-4N-4P-4U-4V-4Y Series, Except Estate Wagon

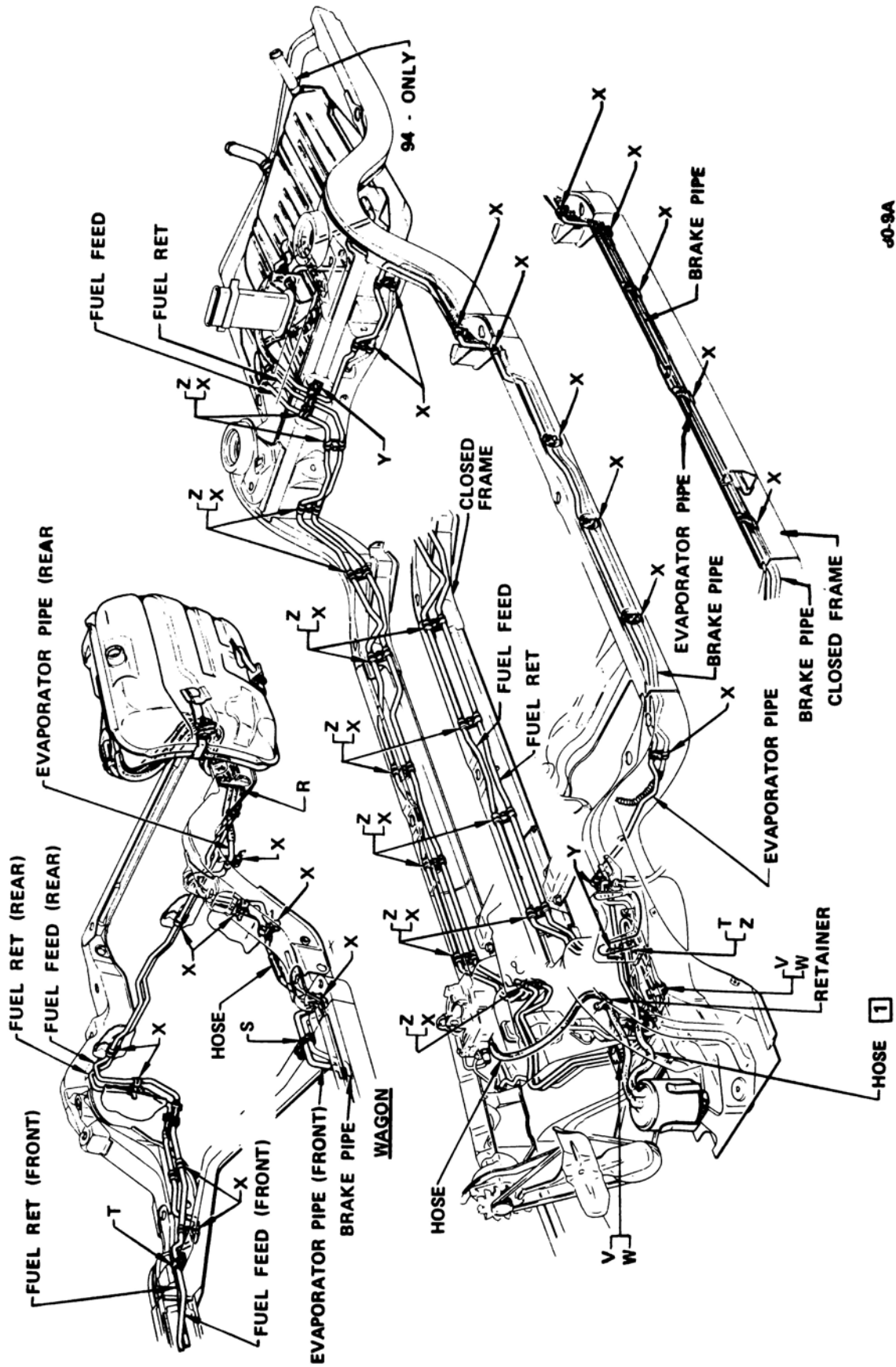
**[1]** MUST BE TIGHT BUT NOT STRIPPED

80-8A

VIEW C

VIEW B

VIEW A



60-9A

Figure 80-9 Fuel System - Clip Installation

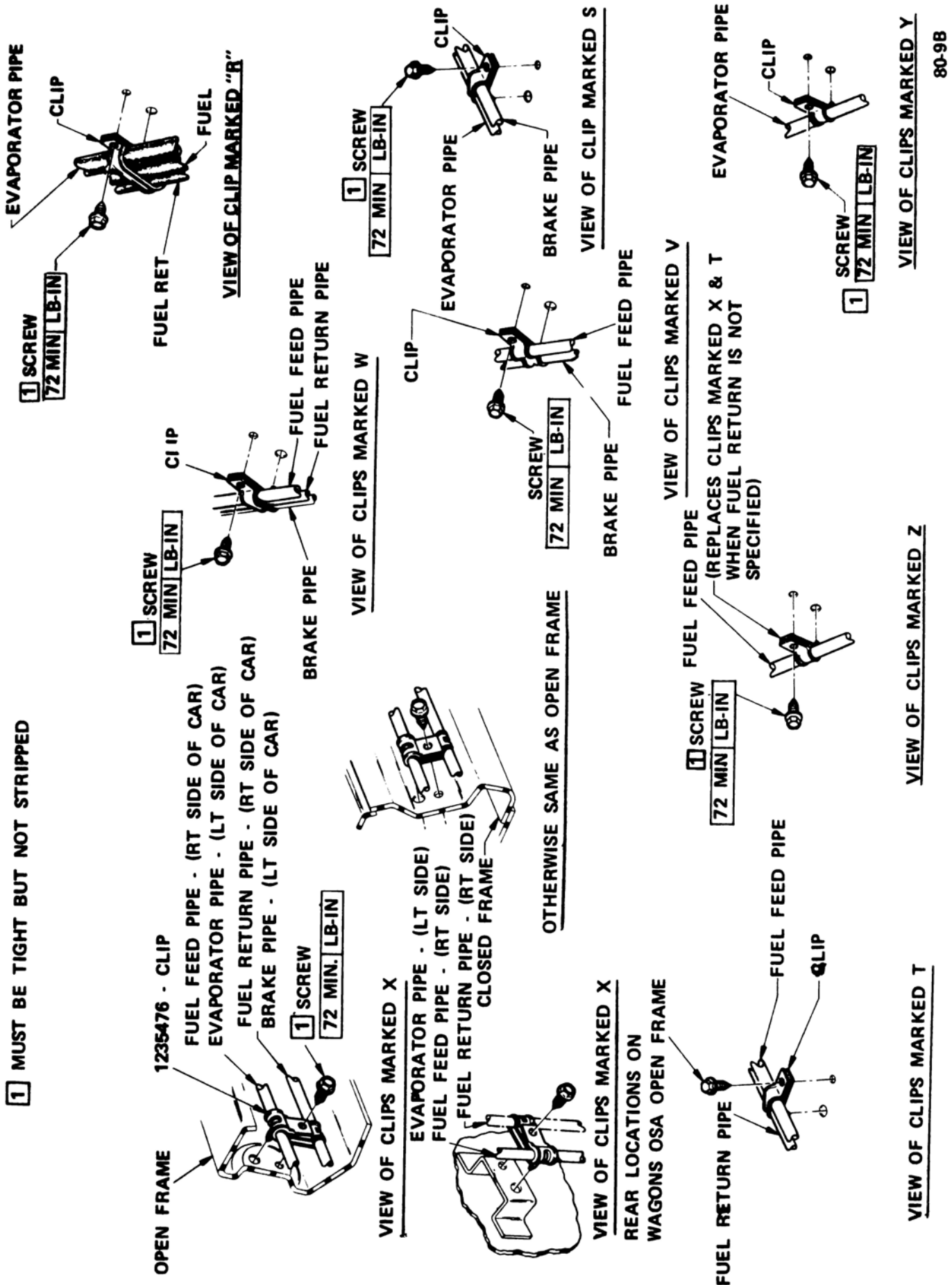
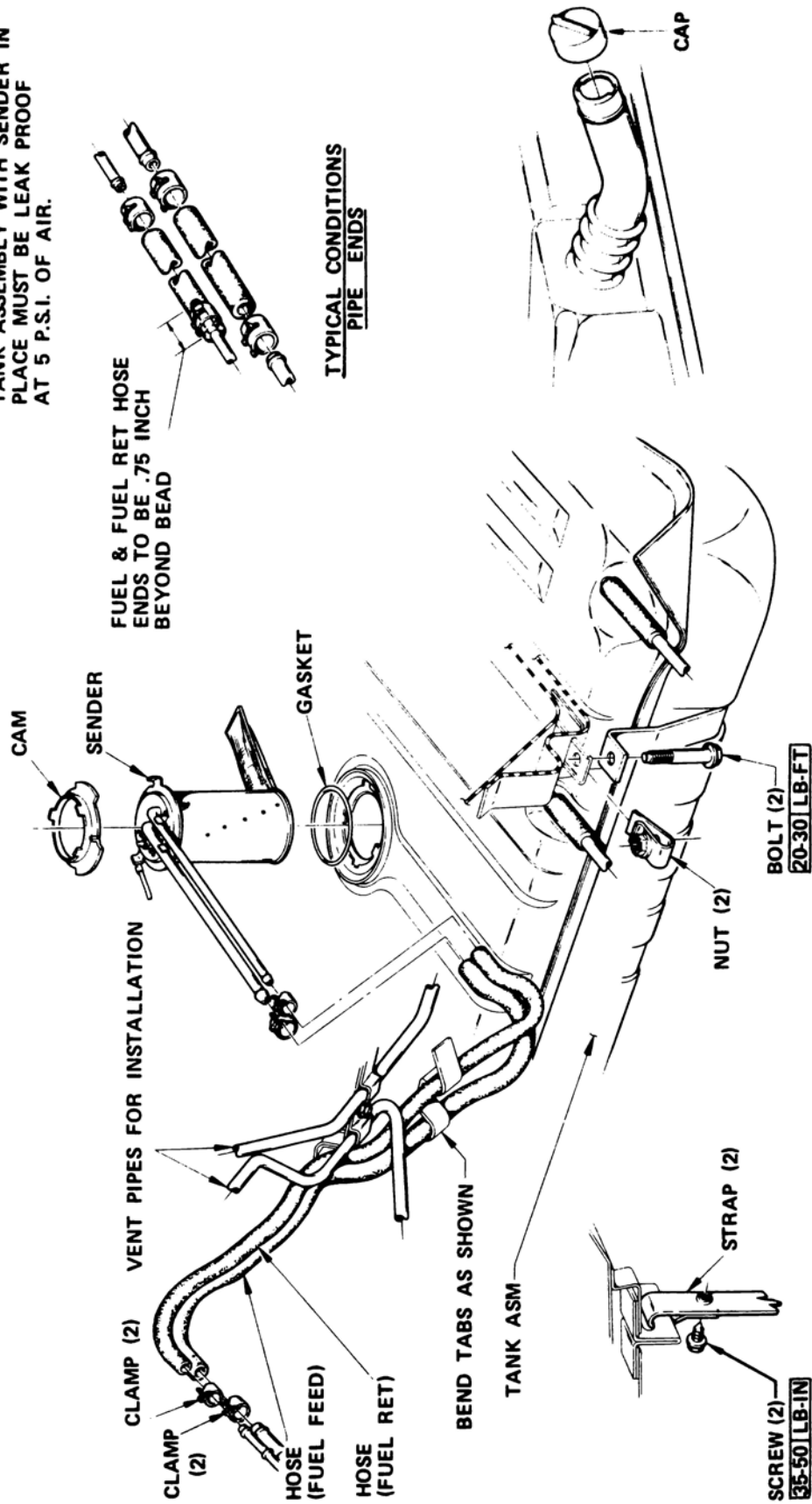


Figure 80-9B Clip Identification

ALL LINES AND CONNECTIONS MUST BE FREE OF LEAKS UNDER OPERATING CONDITIONS.  
 NOTE: ORIENT CLAMP TANGS SO THAT THEY CANNOT CONTACT ADJACENT HOSES.  
 TANK ASSEMBLY WITH SENDER IN PLACE MUST BE LEAK PROOF AT 5 P.S.I. OF AIR.

NOTE: SYSTEM MUST BE LEAK CHECKED AT A MINIMUM OF 35" AND A MAXIMUM OF 60" OF WATER PRESSURE



REAR VIEW OF TANK STRAP

VIEW OF FILLER PIPE (52-66-82 SHOWN)

Figure 80-10 Fuel Tank and Gauge Sender Unit - 4L-4N-4P-4U-4V-4Y, Except Estate Wagon

ALL LINES AND CONNECTIONS MUST BE FREE OF LEAKS UNDER OPERATING CONDITIONS

NOTE: ORIENT CLAMP TANGS SO THAT THEY CANNOT CONTACT ADJACENT HOSES.

TANK ASSEMBLY WITH SENDER IN PLACE MUST BE LEAK PROOF AT 5 PSI OF AIR.

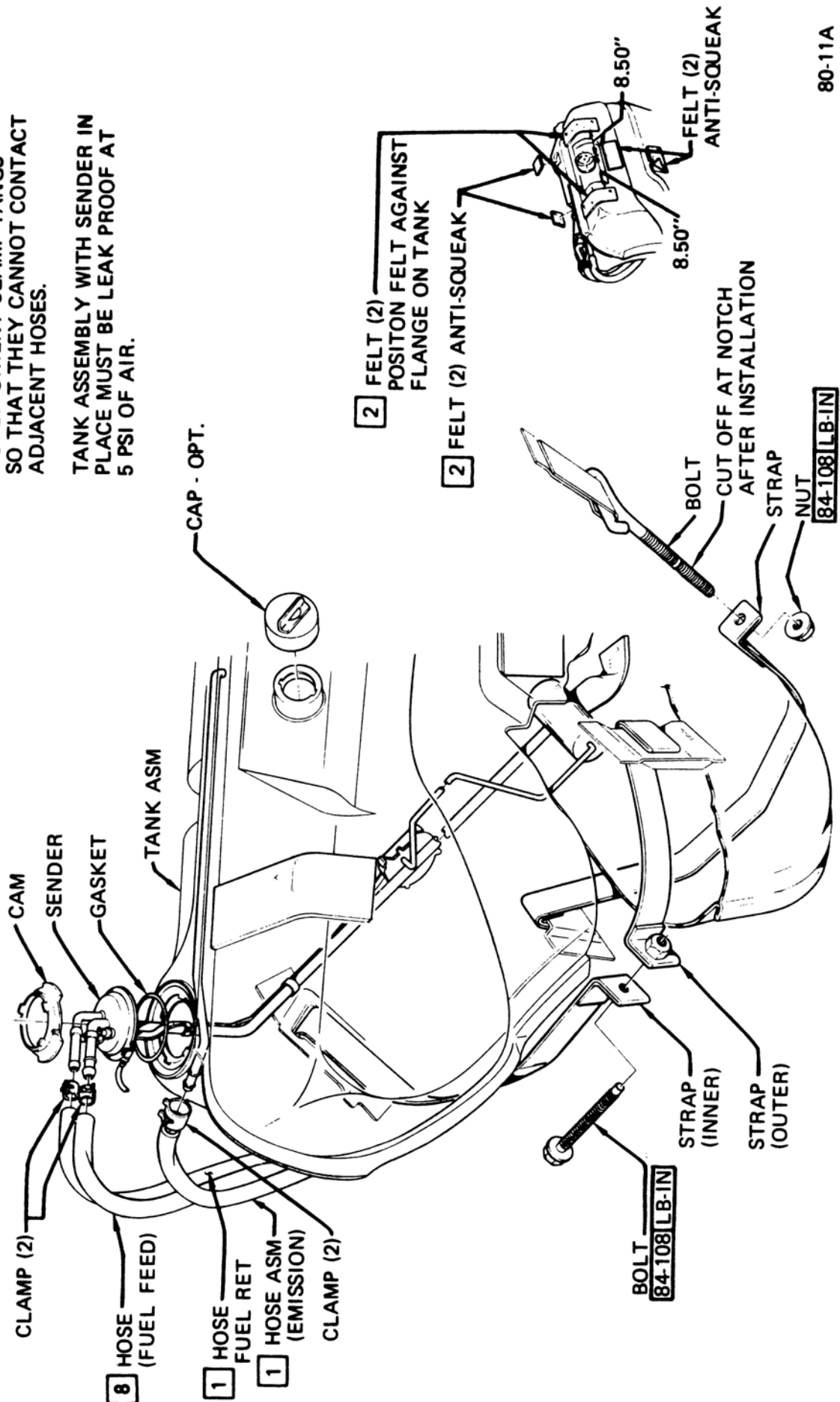


Figure 80-11 Fuel Tank and Gauge Sender Unit - Estate Wagon

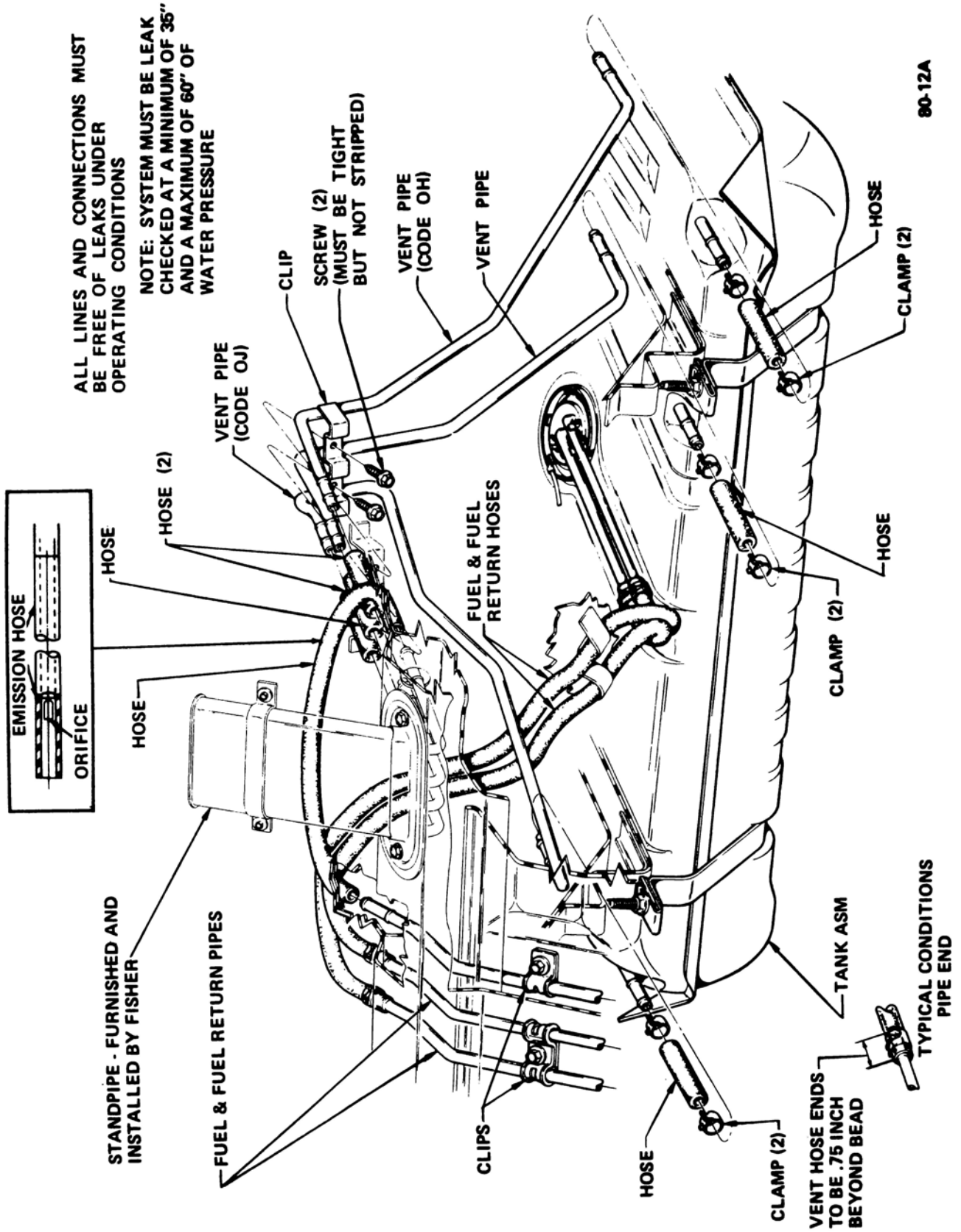


Figure 80-12 Fuel System Vent Pipes and Hoses - 4L-4N-4P-4U-4V-4Y Series, Except Estate Wagon

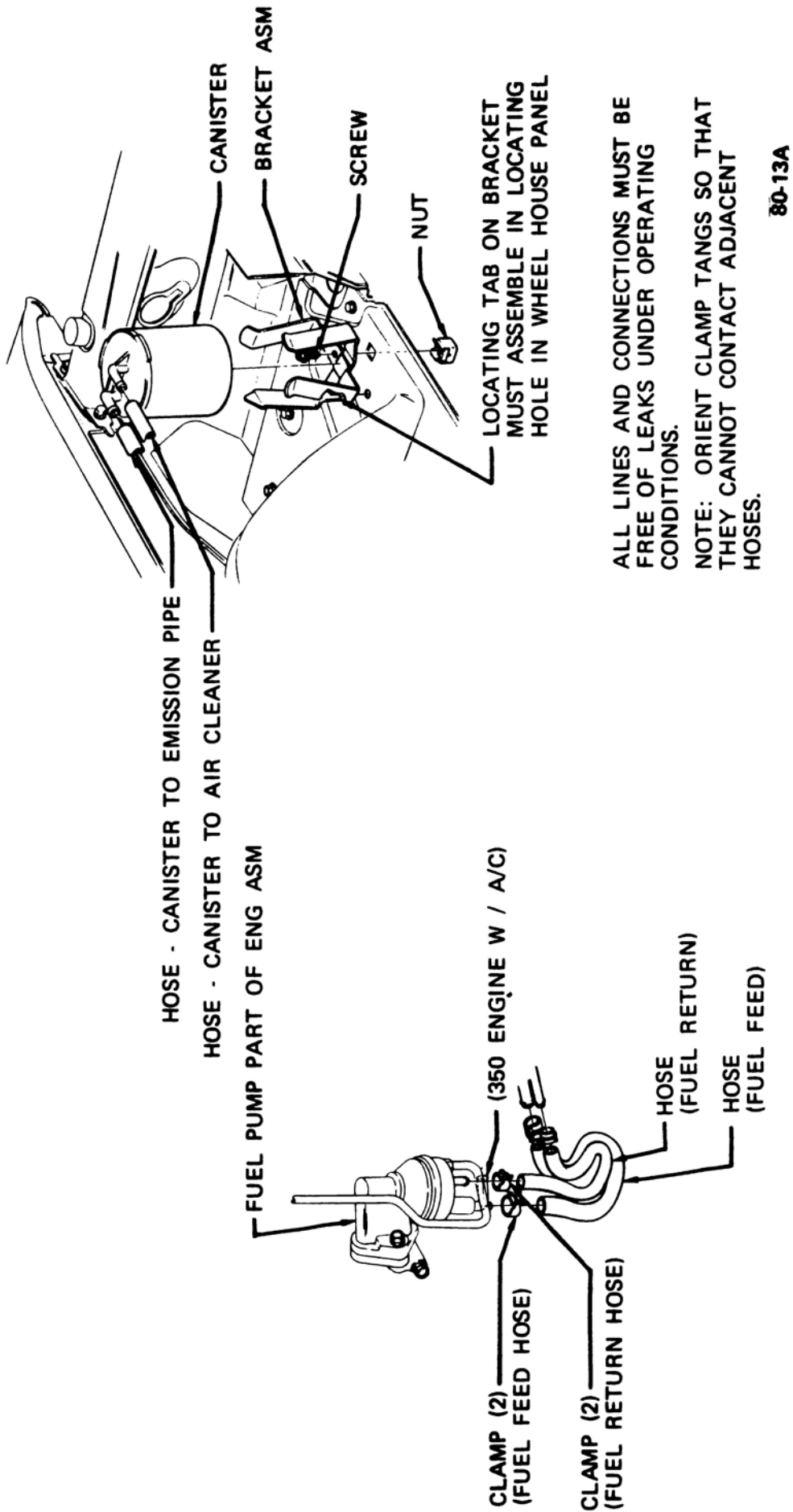
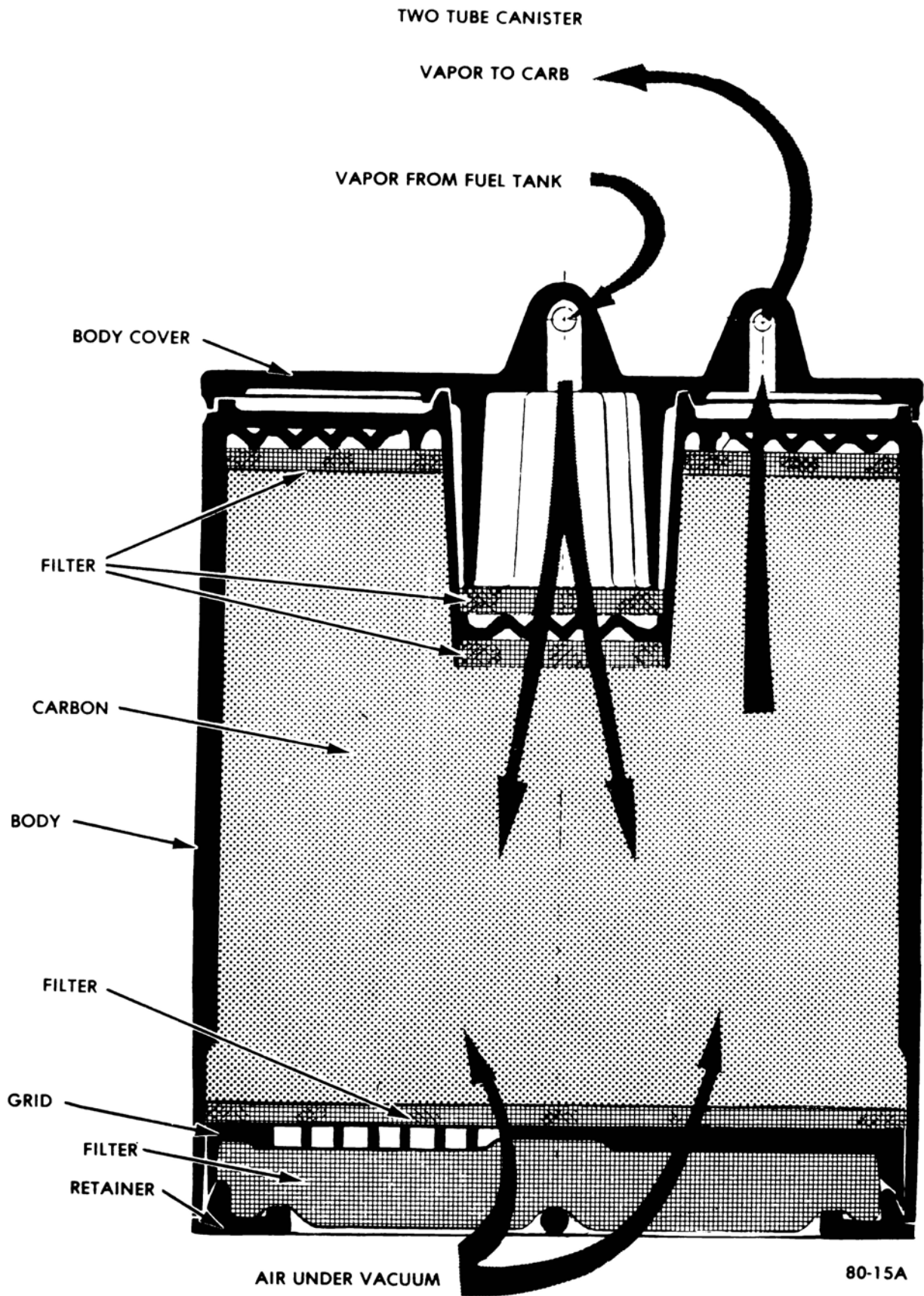


Figure 80-13 Fuel System Hose Connections - Carburetor, Fuel Pump and Cannister





AIR UNDER VACUUM

80-15A

Figure 80-15 Evaporative Emission Control Cannister (V-8)