

Section 7 FUEL SYSTEMS

L. P. GAS SUPPLY SYSTEM

WARNING: THIS GAS PIPING SYSTEM IS DESIGNED FOR USE OF LIQUIFIED PETROLEUM GAS ONLY. DO NOT CONNECT NATURAL GAS TO THIS SYSTEM. Securely cap inlet(s) when not connected for use. After turning on gas, except after normal container replacement, test gas piping and connections to appliances for leakage with soapy water or bubbly solution. Do not use products that contain ammonia or chlorine.

COPPER TUBING

Type L copper tubing is used for the L.P. gas supply systems except for necessary sections of black pipe. To assure a leak free system the copper lines should be repaired or replaced according to the directions in this section. Only flare type fittings are recommended.

FLARE TYPE FITTING ASSEMBLY

Refer to Figure 7-1.

When replacing or repairing copper tubing, use the same type of replacement fittings that were originally installed in the system. In some cases unions can be added to a line to facilitate easier removal and replacement. Use only flare type fittings.

WARNING: Do not use compression fitting connections as these can result in leakage if the line is exposed to vibration or impact conditions.

1. Cut copper tubing to proper length.

2. Install flare nut over copper tubing.
3. Ream out end of copper tube.
4. Flare end of copper tube using proper flaring tool.

WARNING: Before lighting appliances, pressurize line and check fitting for leaks with a mild soap solution.

L. P. GAS TANK — FRAME MOUNT

Refer to Figure 7-2.

Replacement

1. Turn off gas supply.
2. Remove gas supply line connection at tank.

NOTE: Fitting has a left hand thread.

3. For maximum safety, place support under gas tank before unbolting tank from frame.
4. Remove bolts that hold tank brackets to frame.
5. Remove tank.
6. Replace tank, reversing steps 5 through 1.

WARNING: Fill tank with L.P. Gas and test for leaks with soapy water solution.

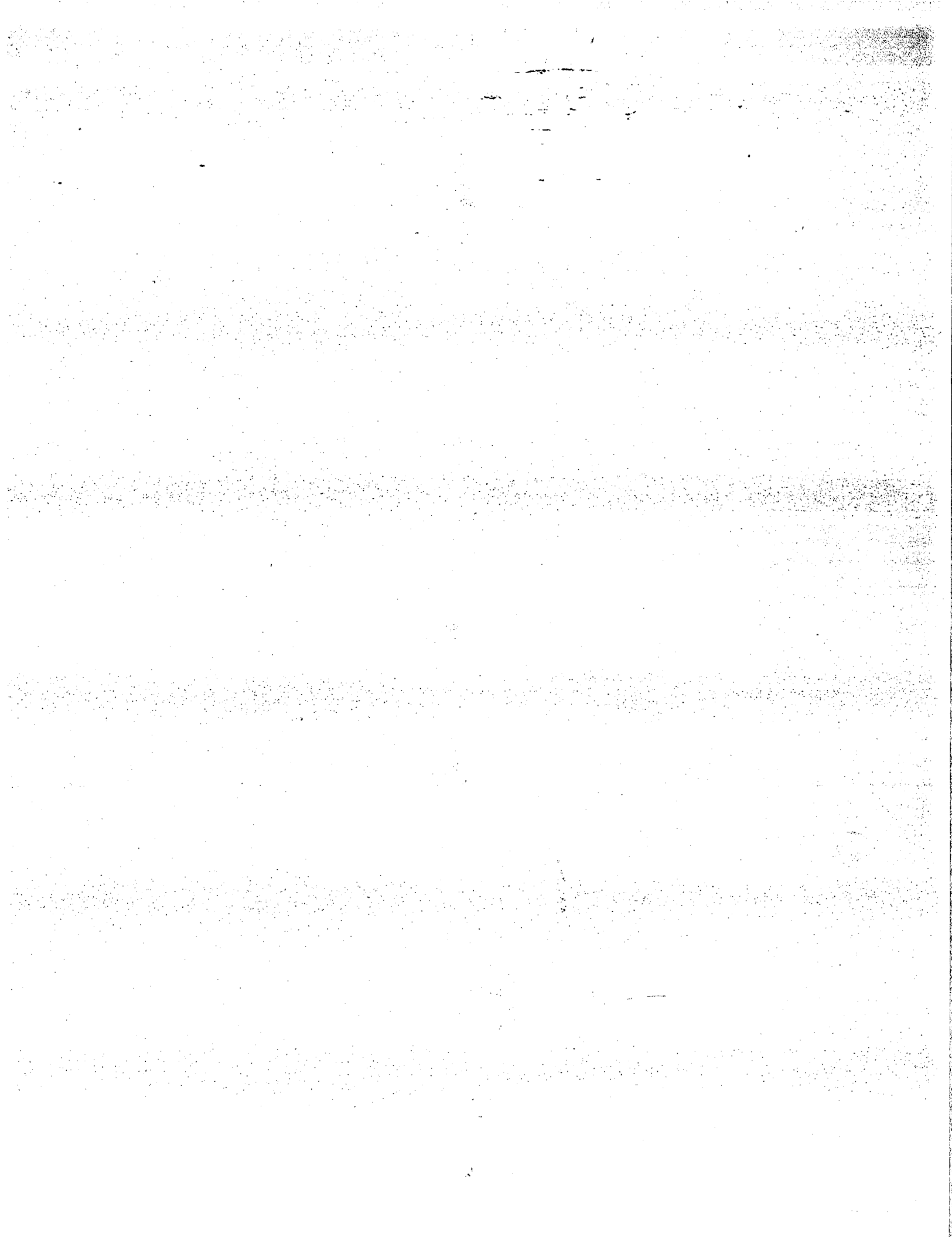
NOTE: Purge new tank and add de-icing solution before putting in use. See propane dealer or supplier.

L. P. GAS REGULATOR

1. Shut off gas supply.
2. Remove copper line from regulator by removing flare fitting. Unscrew tank adapter hex fitting from tank.

NOTE: This fitting has left hand thread.

3. Remove regulator from tank and remove adapter fitting from regulator.



4. Install new regulator by reversing steps 3 through 1.

WARNING: Turn on gas. Check for gas leaks. Apply soapy water to connections of line and watch for bubbles. Recheck fittings if bubbles occur.

NOTE: After installing gas containers and/or regulator, purge gas line by turning on gas range burner until gas can be ignited and burns with an even flame.

WARNING: No gas lines shall be concealed inside walls, floors or partitions. When gas line runs through metal bulkhead or steel frame the line should be protected with a rubber grommet.

L. P. GAS REGULATOR ADJUSTMENT

NOTE: Adjustment procedure requires 2 people, one on outside of motor home and the other inside.

NOTE: Dealer or service center is equipped to make all regulator adjustments and to completely check the system.

1. Remove adjusting cap on regulator (Outside).
2. (Inside) Hook up L. P. gas pressure tester according to tester instructions.
3. Adjust pressure at regulator by turning regulator adjusting screw to achieve 11 to 12-in. water column pressure on tester.
4. Replace regulator adjusting screw cap.

GASOLINE SYSTEM

WARNING: Dodge gas tanks. Do not overfill tank as excess gas may flow out of vent.

FILL PIPE

Refer to Figure 7-3.

1. Remove gasoline fill from outside of motor home. See Section 2, Figure 2-23.
2. Remove extension from fill to gas tank by removing appropriate attachments and clamps.
3. Reverse order for installation.

GASOLINE TANK – AUTOMOTIVE CHASSIS MOTOR HOME

Refer to manufacturer's chassis manual for original equipment tank mounting information.

GASOLINE TANK – CLASS "A" MOTOR HOMES

Refer to Figure 7-3.

If gas tank gauge is inoperative, check for shorts in wire which leads from gas gauge to sending unit or check for a short in the sending unit located in the top of the gas tank. See Electrical Section for schematic drawing.

If gas splashes back while filling tank, check to make sure tank is vented properly.

Removal

1. Turn off ignition switch.
2. Insulation foam around tank may require removal to remove tank.
3. Drain tank.
4. Disconnect gas tank fill spout and fill pipe extension by removing adjustable clamp and appropriate attachments.
5. Remove straps or unbolt tank from frame.
6. With a hydraulic jack, drop tank down until the leads from the sending unit, pollution control lines and the gas line are visible. Disconnect fuel lines. Note positions for reinstallation. Disconnect electrical leads. Note connections.
7. Remove tank.
8. Install new tank by reversing steps 5 through 1.

NOTE: Before installing new tank, plug filler spout with a cloth or seal with tape to prevent dirt from entering tank during installation.

WARNING: Some Dodge chassis have plastic gas tanks. These tanks are installed by the chassis manufacturer. Refer to chassis manufacturer's service manual when servicing these tanks. Improper installation can cause the tank to rupture when the vehicle is in motion.

GASOLINE TANK – AUXILIARY

Refer to Figure 7-4.

Installation

1. Turn off ignition switch.
2. Check for good tank location with adequate room for installation.

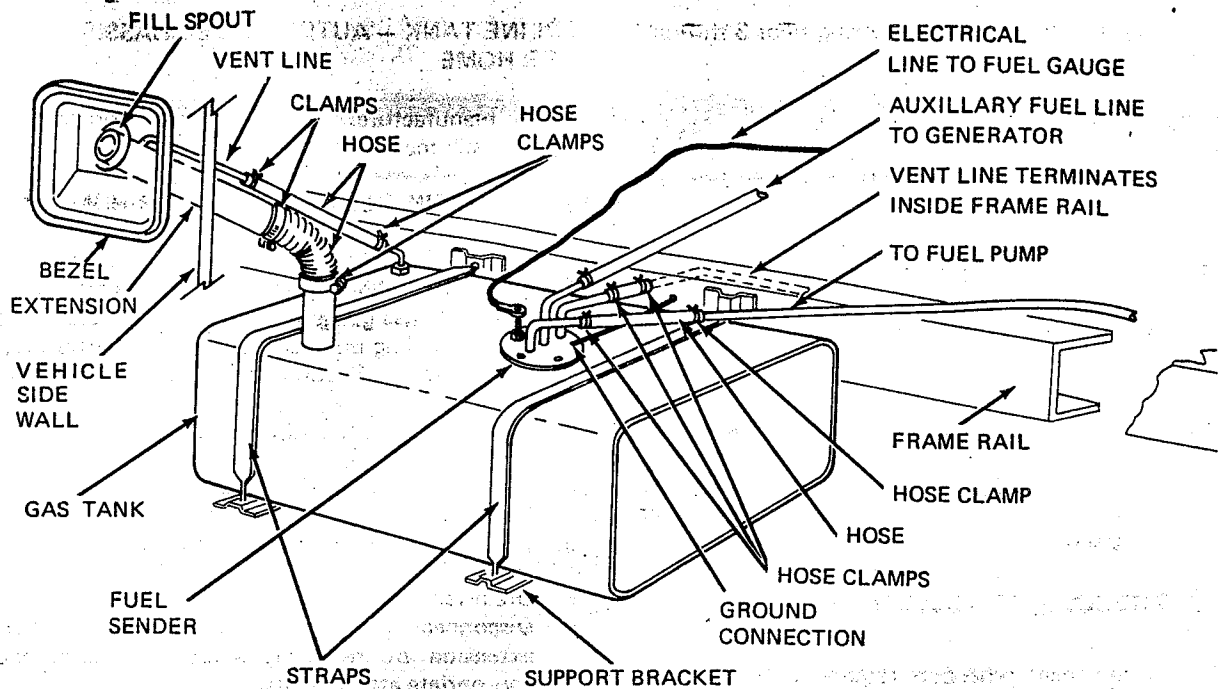


FIGURE 7-3 Typical gasoline tank assembly

3. Select tank size to fit location.
4. Select proper resistance tank sending unit for connecting to fuel gage:
 Dodge, Ford & Int'l = 78 ohm
 Chevrolet & G.M.C. = 90 ohm
5. Install sending unit into tank. See fuel level sender unit installation in this section.
6. Install manual 3-way valve at a position convenient to driver. See 3-way valve installation in this section. If electric solenoid system is to be used, mount solenoid valve (1 required for Dodge, 2 for Chevrolet) or valves on frame adjacent to existing fuel lines.
7. Repipe fuel lines using rubber hose, hose clamps, steel tubing and barbed connector as required.
8. For California vehicles, install appropriate emission control equipment as required. Refer to emission controls in this section.
9. Raise tank into approximate position with hydraulic jack.
10. When lines are connected, finish positioning tank into location and secure with straps or bolts.
10. From tank fill pipe opening, use connecting hose and determine fill opening location on side of vehicle.
11. Cut opening and install fuel fill bezel or locking compartment door. Refer to Figure 7-3
12. Install fill hose and secure with hose clamps.
13. Tank venting — refer to Figure 7-3. When fill spout is provided with vent line attachment, run rubber hose from fill to tank vent or sender vent. When tank is not equipped with separate vent, run vent hose from sender vent to frame and into inside of frame rail. Secure with mounting clamp.
14. Electrical solenoid systems — Install tank selector switch in dash and wire to valves using 18 gauge wire. See Figures 7-6 and 7-9.
15. Fill with gasoline and check visually for leaks.

NOTE: Before installing auxiliary tank, plug filler spout or tape opening to prevent dirt from entering tank during installation.

Connect fuel lines and electrical leads to sender.

EVAPORATION CONTROL SYSTEM

GENERAL INFORMATION

Motor Home Chassis designed for sale and use in the State of California are equipped with an evaporation control system (ECS).

The function of the evaporation control system is to prevent the emissions of gasoline vapors from the fuel tank and carburetor into the atmosphere. When fuel evaporates in the carburetor float chamber or fuel tank, the vapors pass through vent hoses or tubes to a charcoal canister where they are temporarily held until they can be drawn into the intake manifold when the engine is running. A tube from a dome assembly on top of the fuel tank leads to a charcoal canister. Evaporated fuel vapor from the fuel tank, flows through this tube to the canister.

The Evaporation Control System should not require any maintenance other than the charcoal canister filter replacement.

EMISSION CONTROL – AUXILIARY FUEL TANKS – CALIFORNIA

Refer to Figure 7-4.

Auxiliary fuel tanks for motor homes operating in California require that vent lines be connected to a charcoal canister system. Refer to Figure F-6. Canisters must be provided on the basis of one canister per 50 gallons of fuel. When two tanks are used and the combined capacity exceeds 50 gallons but not 100 gallons, two canisters are required. Fuel caps for these systems must contain both vacuum and pressure reliefs. Caps are referred to as ECS type fill cap.

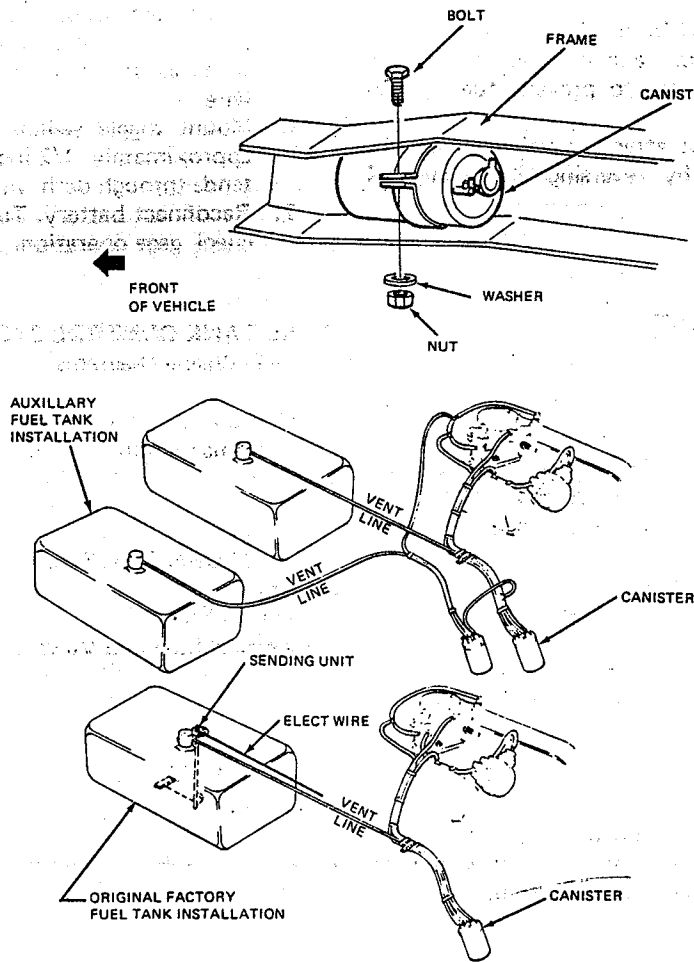


FIGURE 7-4 Typical gasoline tank California emission control system (ECS)

FUEL VALVES

MANUAL VALVES

Refer to Figures 7-5, 7-6.

Replacement

1. From inside vehicle remove screw attaching handle to valve and remove handle.
2. From under vehicle loosen hose clamps and remove hose from barbed fittings. Plug tank hoses to prevent fuel loss as they are removed.
3. Remove two screws attaching valve to vehicle.
4. Remove barbed fittings from valve and install into replacement valve.
5. To install, reverse procedures 3 through 1.

SOLENOID VALVES

Refer to Figures 7-7, 7-8

1. Turn off ignition.
2. Remove electric lead from valve.
3. Loosen hose clamps and remove hose from valve. Plug tank hoses to prevent fuel loss as they are removed.
4. Remove two screws attaching valve to vehicle.
5. Install new valve by reversing above steps 4 through 1.

FUEL LEVEL SENDER UNIT

Refer to Figure 7-9

Replacement

Sensing unit must be matched to the fuel gage and have the proper resistance to avoid damage to the gage unit in the instrument cluster. G.M.C. and Chevrolet require units having 90 ohm resistance. Ford, Dodge or International units require senders with a 78 ohm resistance.

1. Turn off ignition switch.
2. Remove fuel tank. Refer to tank removal in this section.
3. Remove screws attaching sender to tank.
4. Remove defective sender and replace gasket.
5. Install replacement sender and attach with screws.
6. Reinstall tank.

NOTE: Senders must be grounded. Ground wire must run from frame to screw securing sender to tank or to ground connector on sender.

Auxiliary tank senders are provided with three outlets. Check and mark outlets before disconnecting so that hoses can be connected to proper sender outlet. Tube extending deepest into tank is gasoline supply for vehicle engine. Tube ending at top mounting plate is for vent or return line. Remaining tube extending to approximately 3/4 of tank depth is supply for auxiliary generator.

FUEL GAGE TANK SELECTOR SWITCH (2-WAY)

Installation

Refer to Figure 7-5.

1. Disconnect positive battery terminal.
2. Determine location on dash for mounting switch and label. Be sure there is adequate room behind dash for switch and wires.
3. Drill 1/8" pilot hole.
4. Drill 1/2" hole for switch.
5. Locate wire leading from main tank to fuel gage. Cut this wire at a location under dash. Connect wires as shown in Figure 7-6. Use number 18 wire.
6. Mount toggle switch into hole. Adjust so that approximately 1/2-inch of thread position extends through dash. Install label and nut.
7. Reconnect battery. Turn on ignition switch and check gage operation.

DUAL TANK CONTROL SYSTEMS

Piping & Wiring Diagrams

Installation of components are covered as individual items in this section.

NON-RETURN SYSTEMS

- Manual
Refer to Figure 7-5
- Electrical Solenoid Valve
Refer to Figure 7-7

RETURN SYSTEMS

- Manual
Refer to Figure 7-6
- Electrical Solenoid Valves
Refer to Figure 7-8

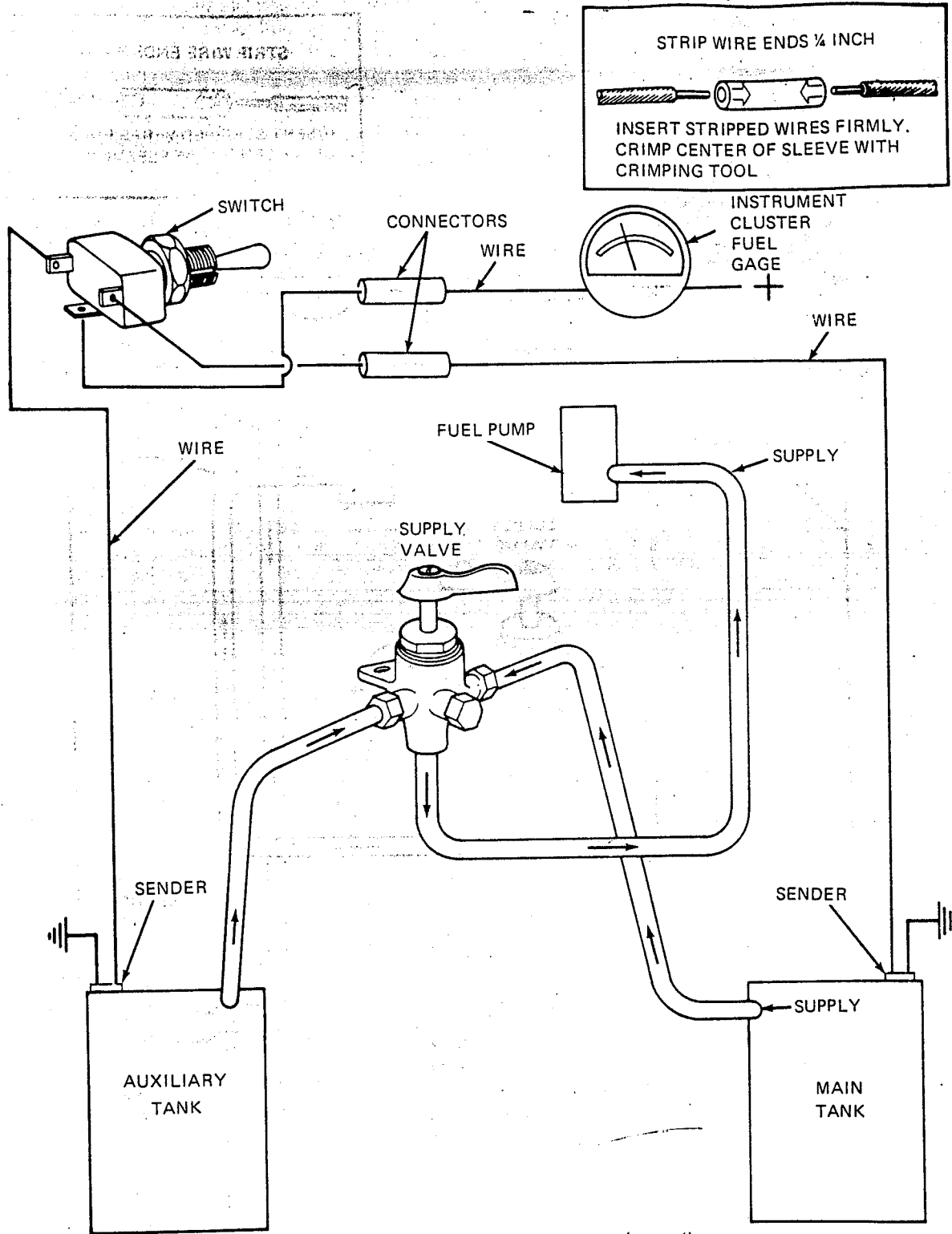


FIGURE 7-5 Typical non-return system (manual)

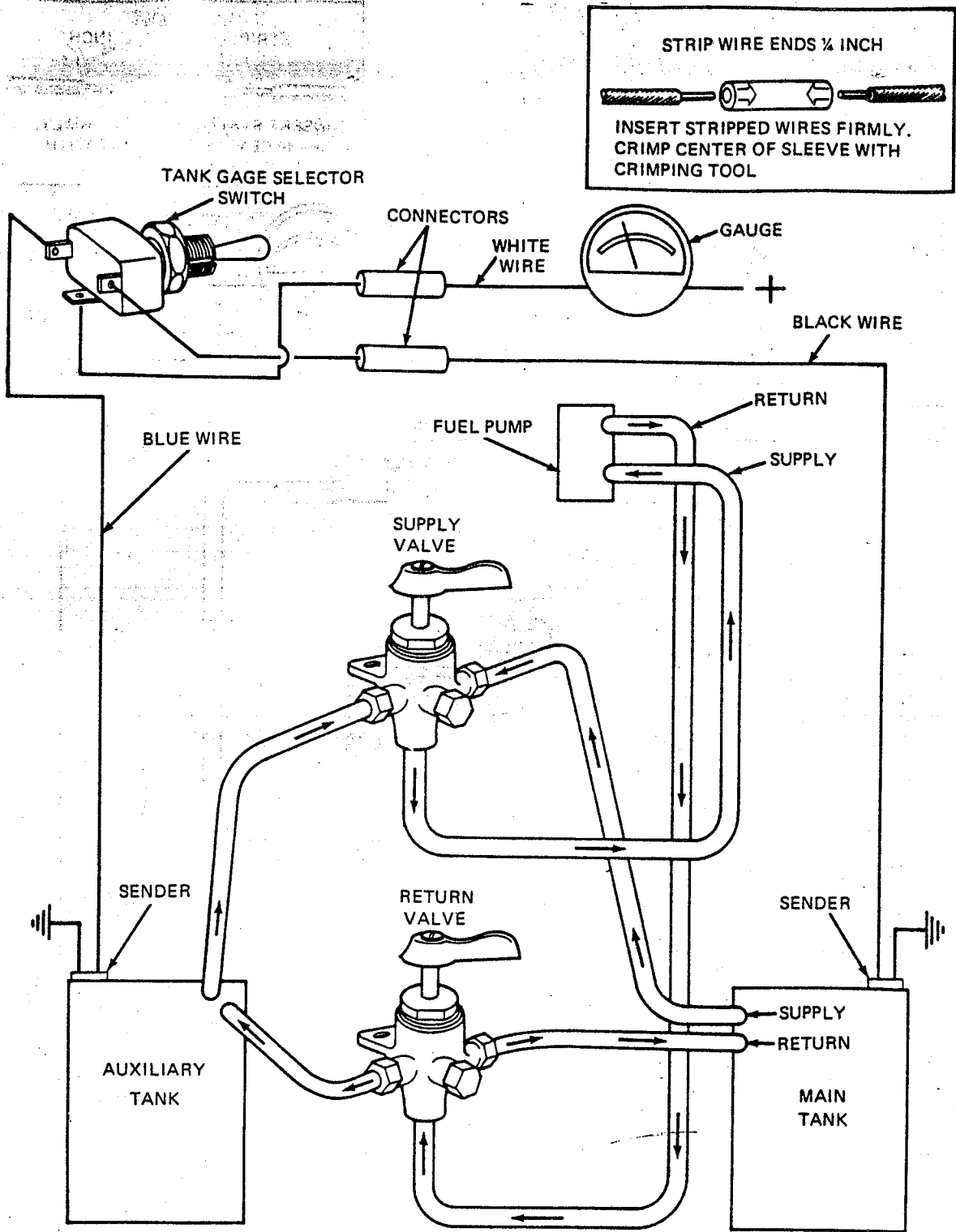


FIGURE 7-6 Typical return system (manual)

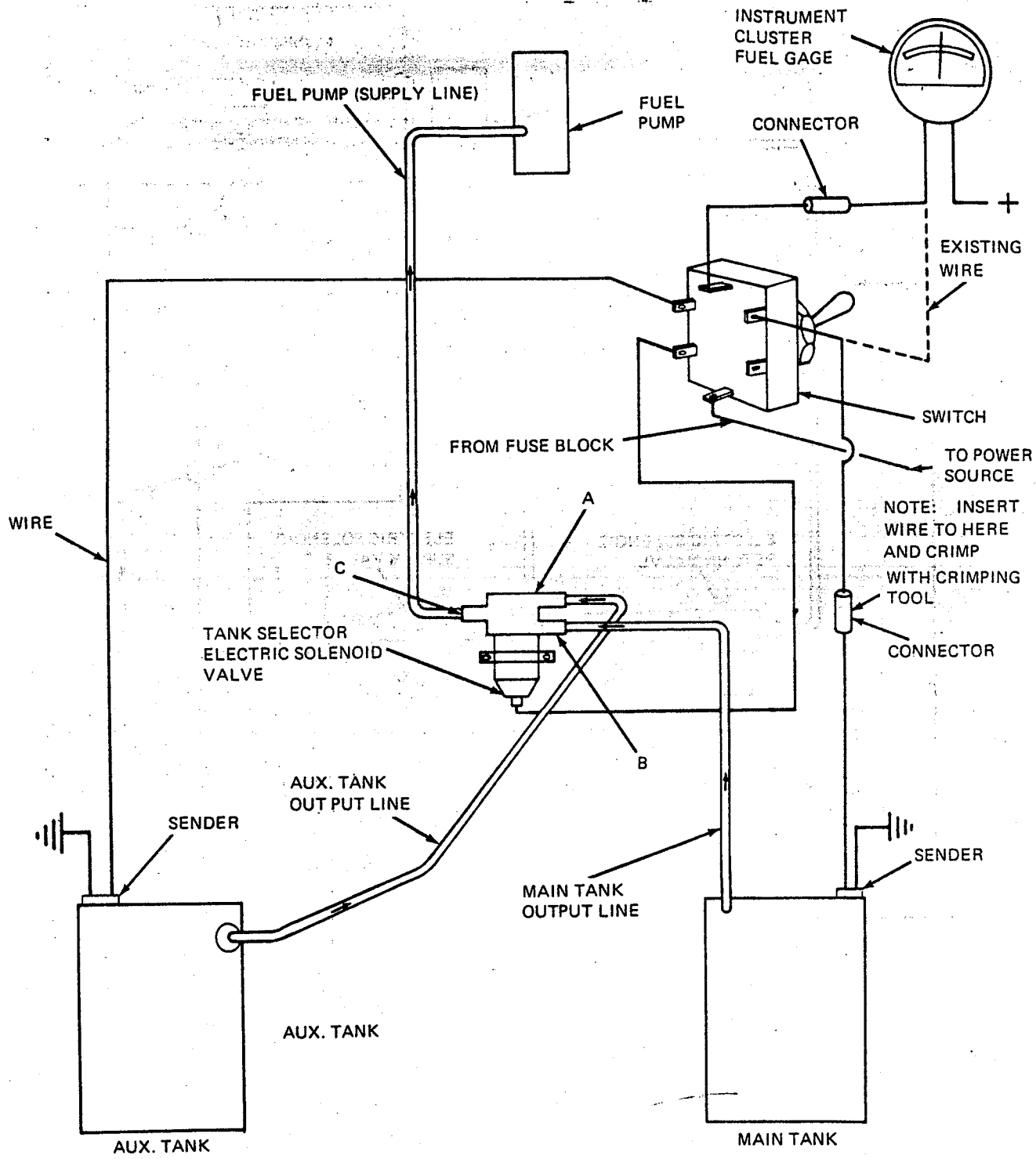


FIGURE 7-7 Typical non-return system (electrical solenoid valve)

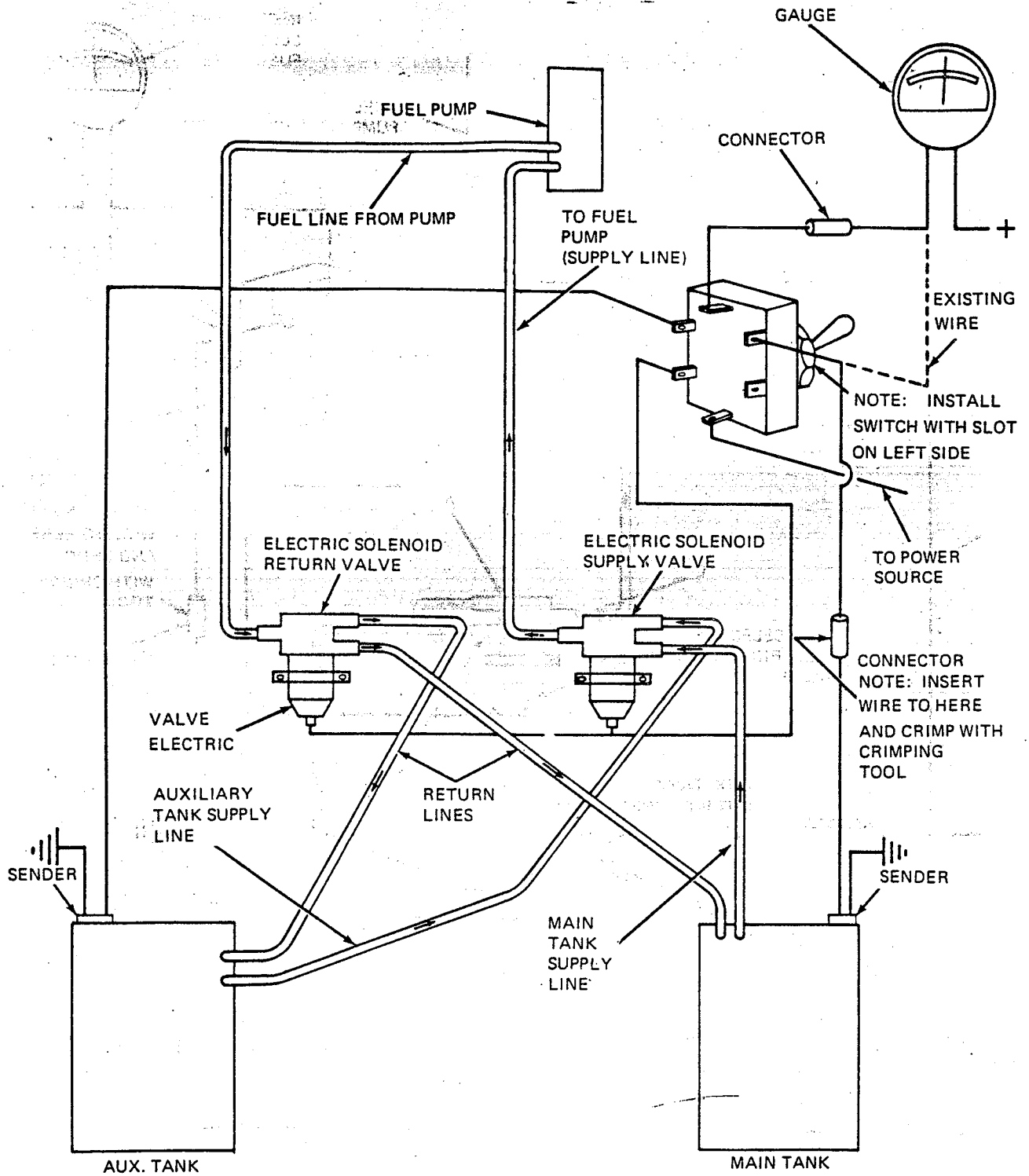


FIGURE 7-8 Typical return system (electrical solenoid valves)

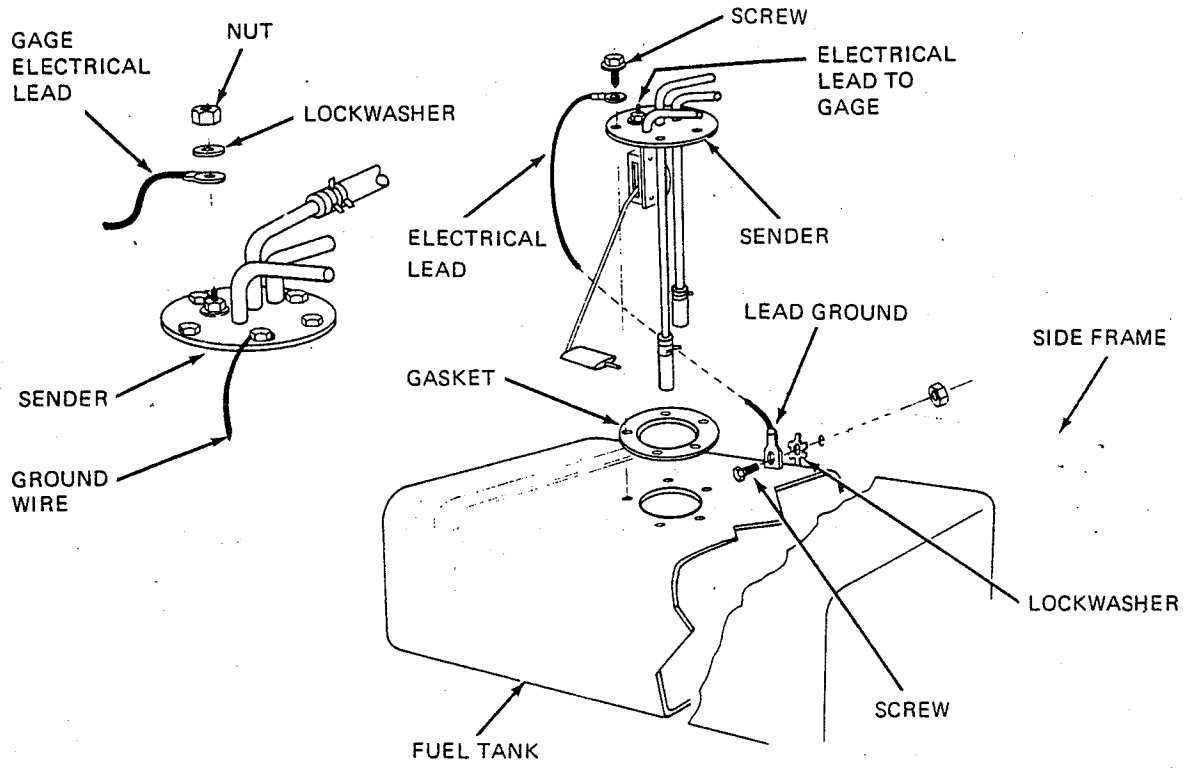


FIGURE 7-9 Sending unit installation

