



# SECTION 24L HOLDING TANK AND DRAINAGE SYSTEM

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## GENERAL DESCRIPTION

The drainage system (figure 1) consists of ABS plastic pipes and fittings. A holding tank with a capacity of approximately 32 gallons provides a place for storage of waste water from the sinks, shower and toilet.

mounted vents (2 vents on Model 230; 3 vents on Model 260).

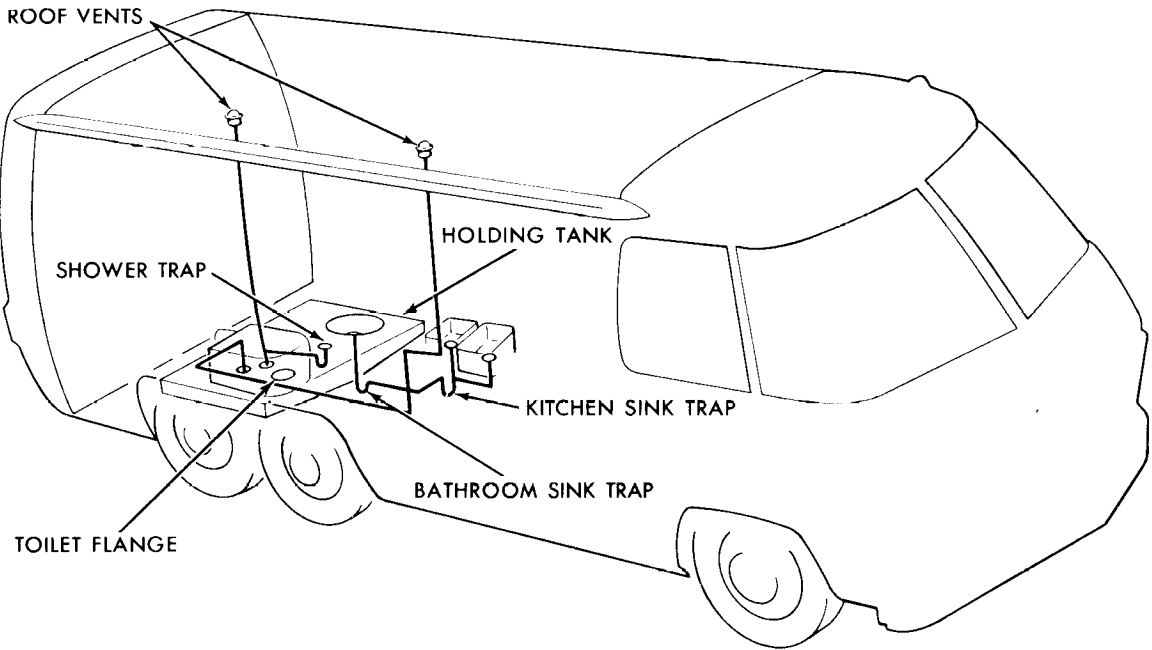
A permanently attached hose or tube assembly to the holding tank along with a detachable sewer hose is provided for dumping the contents of the holding tank.

The tank is vented through standpipes with roof-

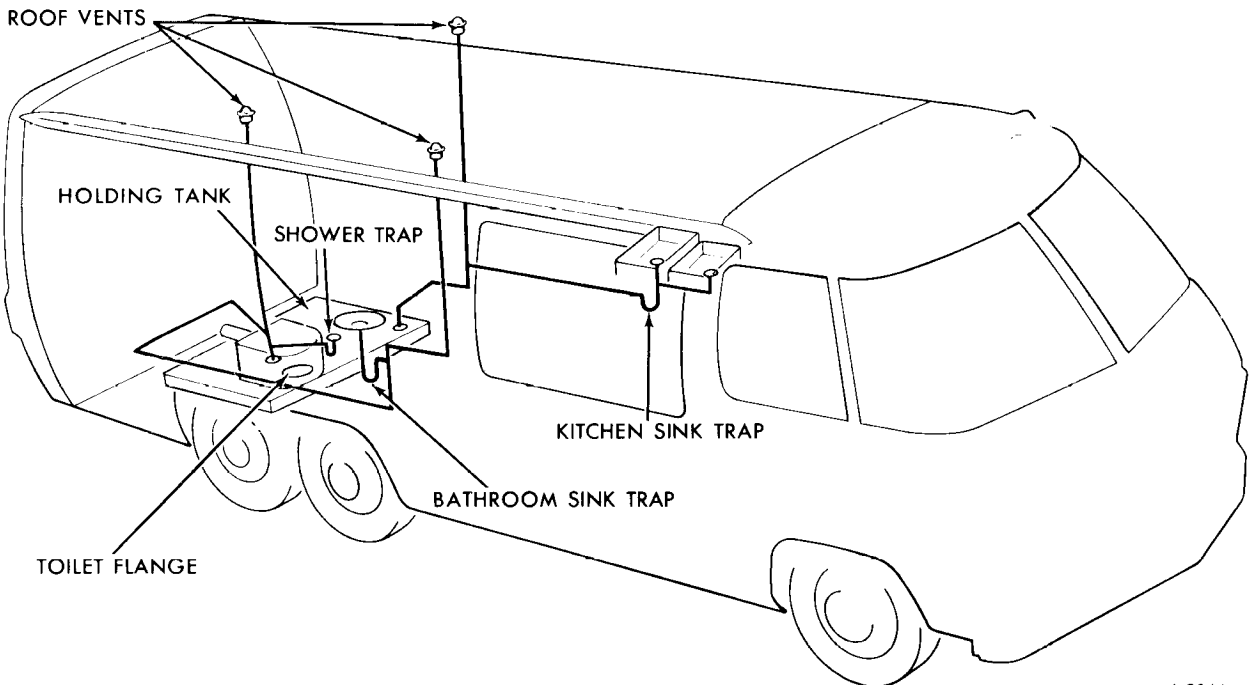
## TROUBLE DIAGNOSIS

Problem	Possible Cause	Correction
Monitor panel gauge in-operative.	1. Refer to "Monitor Panel-Trouble Diagnosis" in Section 24B.	1. Refer to "Monitor Panel-Trouble Diagnosis" in Section 24B.
Holding tank leaks.	1. Seal may be damaged or misaligned at the tank sending unit (if equipped), thermasan pick-up in tank (if equipped) or fullway dump valve. 2. Loose or misaligned fittings on top of tank. 3. Tank has been punctured.	1. Refer to "Holding Tank" later in this section.  2. Remove tank and correct. Refer to "Holding Tank-Removal", and "Fittings" later in this section. 3. Refer to "Holding Tank-Repair" later in this section.
Holding tank plugged up and won't empty.	1. Determine if anything was dropped into tank to cause the situation.  2. Sediment has accumulated enough to block fullway valve opening.	1. Flush tank adequately, add a tank chemical to eliminate odor during final flush. Remove fullway valve. refer to "Holding Tank" later in this section. Try fishing object out through opening. 2. Use a probe such as a broomstick handle to clear sediment away from opening. <b>NOTE:</b> Once unplugged the contents will quickly drain so be prepared and have dump hose aimed in the desired direction.

MODEL 230



MODEL 260



A-2044

Figure 1-Drainage System

Problem	Possible Cause	Correction
Holding tank contents backs up through shower trap and onto bathroom floor, this situation may be more common on vehicles not equipped with a monitor panel.	1. The shower trap is the lowest point of the drainage system and an over full holding tank will back up contents at this point.	1. Caution owner to dump holding tank more frequently.
Clogged drain.	1. Accumulation of grease, hair, etc.	1. Remove "P" trap and clean. Refer to "Drain Pipes and Fitting".
Drain pipe or fitting leaks.	1. Vehicle vibration may have loosened fitting or a pipe may have a hole rubbed in it by being in contact with a piece of metal. 2. Broken pipe from freezing.	1. Replace pipe or fitting. Refer to "Drain Pipes and Fittings" later in this section.  2. Replace pipe or fittings.

## HOLDING TANK

### HOLDING TANK REMOVAL

1. Drain holding tank completely and close drain valve.
2. Remove toilet assembly. Refer to the section 24K for removal procedures.
3. Remove toilet mounting flange by removing six flange to floor mounting screws. Unscrew flange from holding tank.
4. Either remove flexible discharge hose at valve by loosening hose clamp and sliding hose from valve, or remove rigid dump tube by referring to "Fullway Valve-Removal" later in this section.
5. Remove cotter pin from valve rod and remove control rod (See figure 2).
6. Remove two electrical leads from holding tank sending unit, if so equipped.
7. Remove electrical leads and hose from thermasun pick-up unit in holding tank, if so equipped.
8. On Model 260, remove the drain pipe access cover inside the storage compartment below the Living Area Electrical Compartment then use a basin wrench as shown in Figure 3 to loosen pipe fitting from tank.
9. Remove two retaining nuts from each of the two mounting brackets (See figure 2).

10. Holding tank can now be lowered to floor.

### HOLDING TANK REPAIR

Except for small, clean punctures the holding tank is not repairable. Polypropylene plastic is used to manufacture the tank. This material resists all common adhesives that may be used in plugging or patching the tank. The very corrosive contents of the tank will quickly corrode any sheet metal, pop-rivets or screws used to plug or patch the tank.

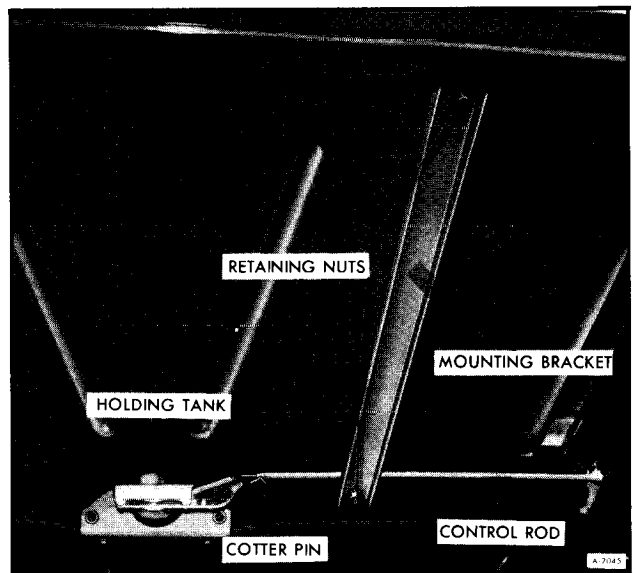


Figure 2—Holding Tank Mounting

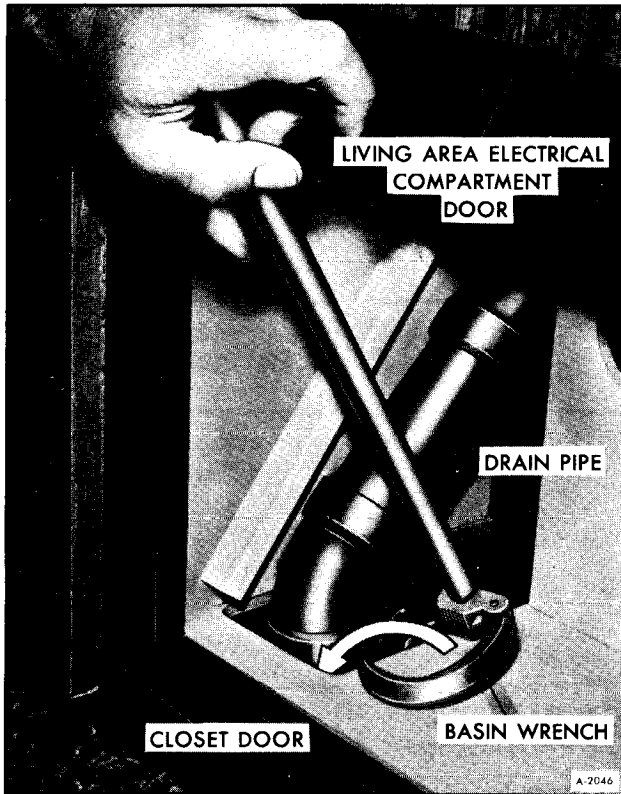


Figure 3—Loosening Pipe Fitting-Model 260

A small puncture may be repaired with the use of a well-nut. Enlarge puncture hole with a drill enough to insert well-nut. Tighten securely.

## HOLDING TANK INSTALLATION

1. Position holding tank and secure with two mounting brackets. On Model 230 torque nuts to 95-145 in.-lbs. On Model 260 install nuts and tighten with fingers. Tighten pipe connector into tank, using a basin wrench as shown in Figure 3. Install and secure drain pipe cover with three (3) screws. Torque holding tank bracket nuts to 95-145 in. lbs.

2. Connect electrical leads and hose to thermasan pick up unit in holding tank, if so equipped.

3. Connect two electrical leads to holding tank gauge sending unit, if so equipped.

4. Install valve rod on drain valve and secure with cotter pin.

5. Either connect flexible discharge hose to drain valve and secure with hose clamp or install rigid dump tube refer to "Fullway Valve-Installation" later in this section.

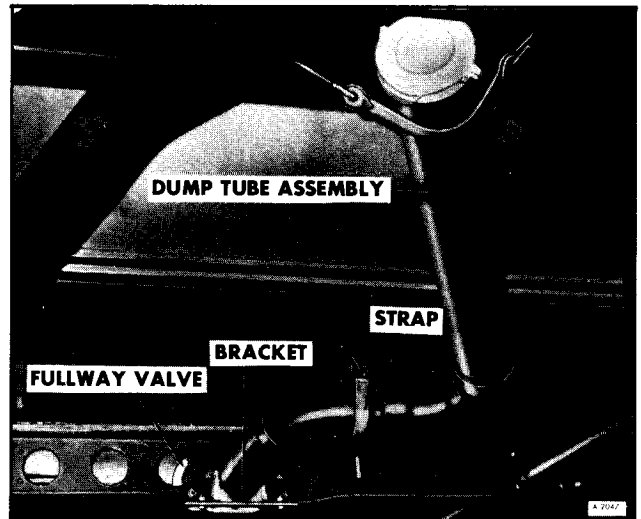


Figure 4—Dump Tube and Valve Assembly

6. Screw toilet mounting flange into holding tank and secure with six screws to floor.

7. Install toilet as described in SECTION 24K.

## FULLWAY VALVE

### REMOVAL

1. Drain holding tank completely and close full-way valve.

2. On vehicles equipped with a rigid dump tube assembly remove the four (4) screws securing valve to the tank. Remove cotter pin from control rod, then remove the bracket and strap as shown in Figure 4. Remove the fullway valve and tube assembly.

3. On vehicles equipped with a flexible hose at the holding tank, remove the hose from the valve by loosening the hose clamp and sliding the hose off the valve. Remove the cotter pin from the control rod. Remove the four (4) screws securing the valve to the tank. Remove the valve.

### INSTALLATION

1. On vehicles equipped with a rigid dump tube assembly, apply a film of grease to valve where "O" ring seats against valve. This will hold the new "O" ring in position while installing valve.

a. Position valve at holding tank and assemble enough to loosely install the strap (figure 4). Tighten fullway valve to tank screws.

b. Install bracket and torque to 15 ft. lbs. Tighten nuts securing strap.

c. Install valve rod and secure with cotter pin.

d. Check tank and valve for leaks.

2. On vehicles equipped with a flexible dump hose apply a film of grease to valve where "O" ring seats against valve. This will hold the new "O" ring in position while installing valve.

a. Position valve on holding tank and secure with four (4) screws.

b. Position discharge hose on valve and secure with hose clamp.

c. Install valve rod and secure with cotter pin.

d. Check tank and valve for leaks.

## HOLDING TANK SENDING UNIT (OPTIONAL)

### REMOVAL

1. Disconnect two electrical leads to unit as shown in Figure 5.

2. Remove five screws retaining sending unit to holding tank, and remove sending unit.

### INSTALLATION (FIGURE 5)

1. Position sending unit and new gasket at holding tank with lead wire in the three o'clock position.

2. Install five retaining screws and hook up electrical leads.

## DISCHARGE HOSE

### REMOVAL

On vehicles equipped with a flexible dump hose:

1. Remove hose at drain valve by loosening hose clamp and sliding hose off valve.

2. Loosen hose clamp at center bracket enough to allow it to slide off center support.

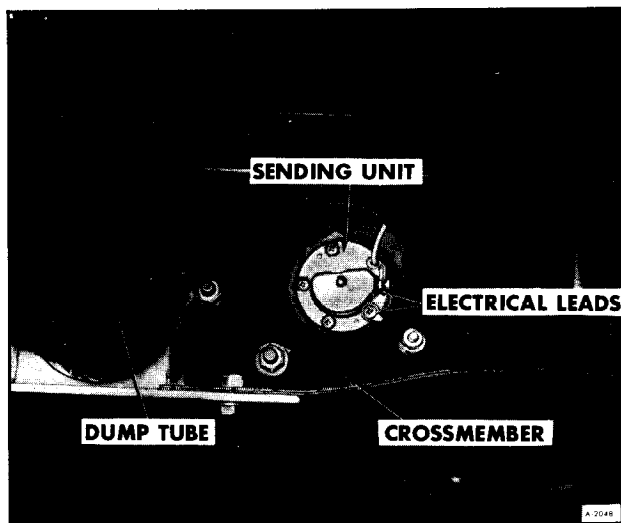


Figure 5—Holding Tank Sending Unit

3. Remove hose.

**NOTE:** On vehicles equipped with a rigid dump tube assembly refer to "Fullway Valve-Removal" earlier in this section.

### INSTALLATION

On vehicles equipped with a flexible dump hose:

1. Position hose through hole in frame crossmember, and support bracket.

2. Slide end of hose over drain valve and secure with hose clamp.

3. Secure with hose clamp at center support bracket.

**NOTE:** On vehicles equipped with a rigid dump tube assembly refer to "Fullway Valve-Installation" earlier in this section.

## SEWER HOSE ASSEMBLY

### REMOVAL

1. Remove sewer hose from its storage tube.

2. Remove bumper bolts attaching storage tube to bumper.

3. Remove end mounting bracket by removing inside energy absorber mounting bolts.

## INSTALLATION

1. Install end mounting bracket and retain with inside energy absorber bolts.

2. Fasten storage tube to bumper with bumper bolts.

3. Install sewer hose in storage tube and fasten to end mounting bracket.

## DRAIN PIPES AND FITTINGS

All drain pipes and fittings are made from ABS plastic. Repair is easily made using a hacksaw to cut out damaged portion of pipe and replace the pipe and connect it into the system with unions. Fittings (elbows, unions, "T's", etc.) may be more difficult to replace and some rerouting may be necessary. Follow the adhesive manufacturers recommendation for preparing the pipe and fittings for assembly.

"P" traps are easily removed for cleaning if they become clogged. To remove a "P" trap loosen compression fitting on either end of the trap as shown in Figure 6. Clean trap as required and position in vehicle and tighten compression fitting by hand.

## VENT LINE ROOF CAPS

Model 230 has two (2) vent lines serving the drainage system (See figure 1). Model 260 has three (3) vent lines. Each vent line has a roof mounted cap to help prevent anything from entering the system from the roof which may plug the vent line.

## REMOVAL

1. Drill off heads of rivets.

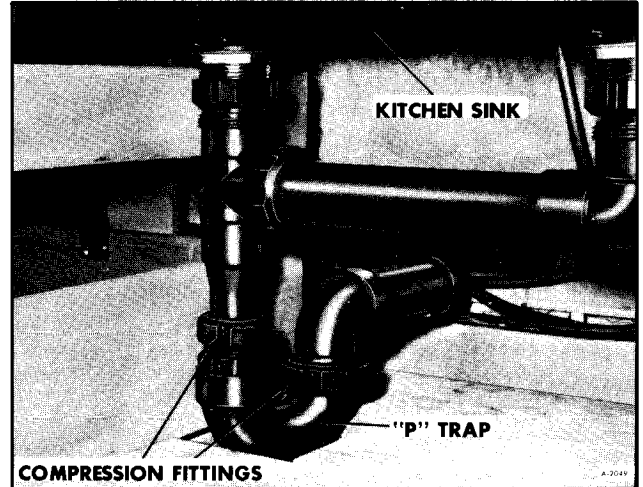


Figure 6--"P" Trap (Typical)

2. Remove vent cap and gasket.

## INSTALLATION

1. Replace gasket and vent cap. Check for proper fit, add sealer to gasket (both sides) if required.

2. Pop-rivet vent cap to roof.