

## Group 34 Water System

**GENERAL:** This group contains information on the fresh water system. Coverage is from the fill spout and storage tanks, through the sinks, shower, and toilet, to the drain points.

**SPECIFICS:** As applicable

- ...Fill Spout
- ...Kitchen Sink Faucet
- ...Shower Head and Fixtures
- ...Storage Tanks
- ...Toilet and Fixtures
- ...Vanity Sink Faucet
- ...Water Accumulator
- ...Water Connections
- ...Water Heater
- ...Water Pipes, Hoses, Tees, and Fittings
- ~~...Water Pump~~
- ...Water Purifier

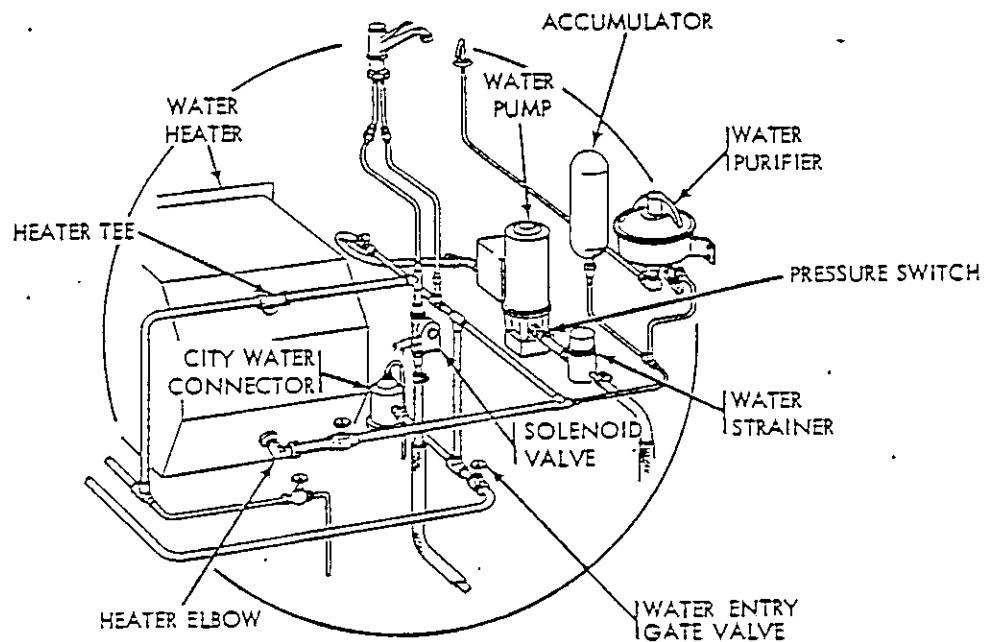
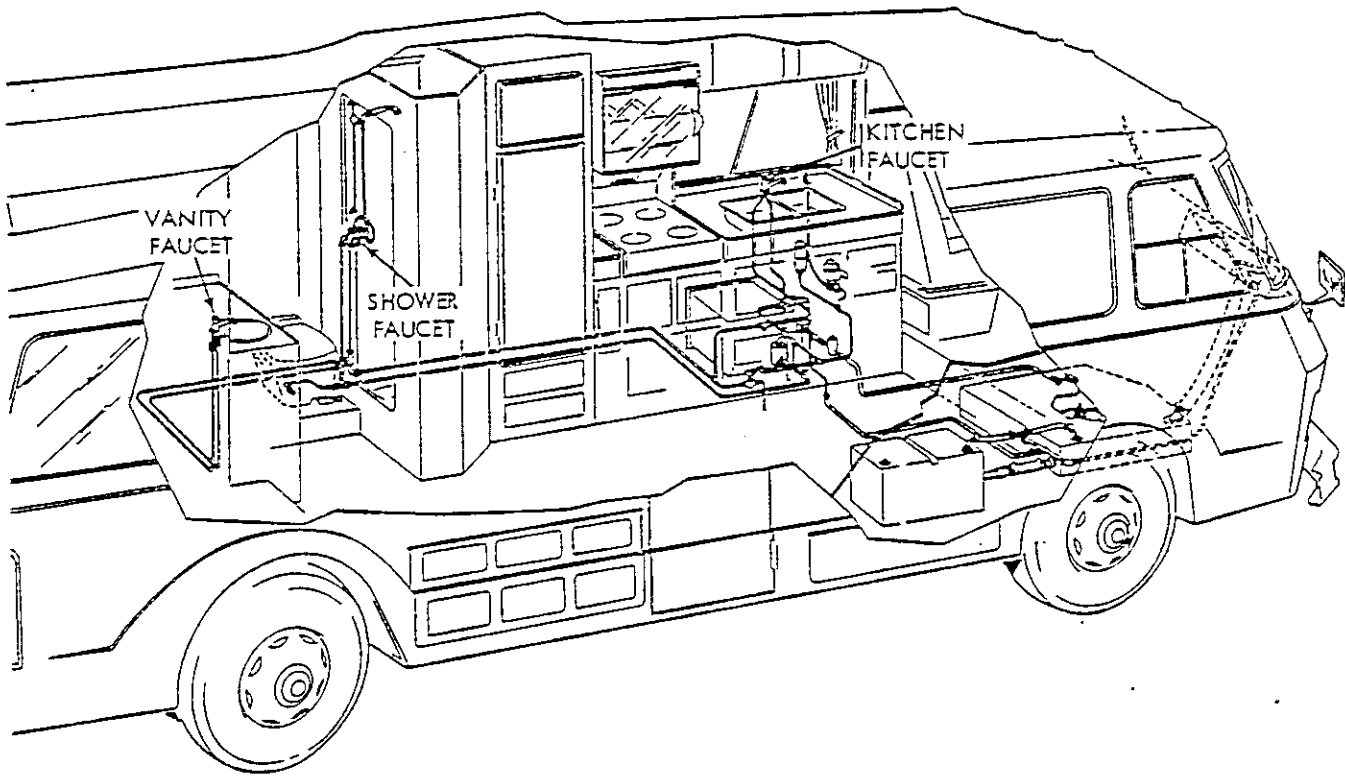


GROUP 34

WATER SYSTEM

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Figure 34-1. Water System

GROUP 34

WATER SYSTEM

34-1. DESCRIPTION

a. General. The 2900R is equipped with a self-contained water system (fig. 34-1), which includes: Storage tanks, pump, strainer, accumulator, water heater, built-in freeze protection, and an optionally available water purifier. Sturdy polyethylene water tanks store fresh water for both kitchen and bathroom facilities.

Water level can be determined by glancing at the indicators located on the domestic panel. The water fill is located behind the access door on the front cowling. With water in the tanks, and the "WATER PUMP" switch "ON," the system is ready for operation.

For service information on interconnecting equipment such as the drainage system, refer to Group 35; for parts information, refer to the Parts Catalog.

b. Water System Components. The 60-gallon fresh water supply is stored in two tandem tanks in the forward coach area. The water storage units consist of a 38-gallon tank mounted on the underside of the coach between the front wheels, and a 22-gallon tank stored under the forward seat of the dinette. Copper and plastic tubing is used throughout to carry water from the tanks to the outlets.

When city water is not used, water pressure is maintained by a 12-volt water pump. This pump places water at constant pressure at all faucets.

A strainer is located between the storage tanks and the pump to prevent clogging of the pump and other parts of the system.

An accumulator tank acts as a buffer between the pump and water faucets to smooth out the flow of water and assure an extra reserve of water under pressure when needed, such as flushing the toilet. This unit also reduces the rapid on/off pump cycling which would place a high drain on the domestic battery.

A continual supply of hot water is maintained by a fast recovery water heater operating on liquid petroleum gas (LPG). The heater contains a 100% shutoff valve which automatically interrupts the gas supply if the pilot light should go out or the water temperature become excessive.

An antifreeze unit is built into the system, so that the coach can be operated in freezing weather without losing the use of fresh water system.

The water purifier is a compact stainless steel appliance which filters, purifies, and disinfects water - all in one operation. The purifier, with built-in flow control, supplies drinking water free of rust, algae, sulphur, cloudiness, chlorine taste, and other unpleasant residue.

34-2. TROUBLESHOOTING

Instructions for troubleshooting the water system are contained in table 34-1. When corrective remedies are referenced, they should be accomplished in accordance with the step-by-step procedures provided.

Table 34-1. Troubleshooting

Malfunction (symptoms)	Probable causes	Corrective action (remedies)
Water does not run at all through a particular faucet.	Faucet aerator clogged with foreign particles	Clean and/or replace aerator as required
Water does not run freely through any faucet.	Water system strainer clogged with foreign material	Flush and rinse all internal surfaces of strainer with fresh water
Water flow from purifier very slow	Filter cartridge coated with foreign material	Replace cartridge

Table 34-1. Troubleshooting (Continued)

Malfunction (symptoms)	Probable causes	Corrective action (remedies)
Water pump recycles quickly; pump responds immediately to on and off action of kitchen faucet	Air cushion in accumulator	Drain water lines through city water connection; remove plug at top of accumulator to drain
Water pump operates but faucet water flow is irregular or sputters	Low water tank level	Refill tanks
	Faucet aerator clogged	Clean aerator
	Air leak in water inlet side	Locate leak and repair
Water pump does not operate	Low domestic battery supply	Recharge battery or check for additional loading in electrical system
	Blown fuse	Check for short circuit, or improper regulation
	Loose or broken wire	Check and repair wiring
	Malfunctioning pump	Repair or replace as required.
Water pump operates intermittently, with all faucets closed	Leaking faucet	Check for worn washers on hot and cold faucets; locate leak and repair
	Small leak in outlet lines	
Water pump runs continuously with all faucets closed.	Empty water tank	Refill water tank
	Large leak in outlet lines	Locate leak and repair
	Defective pressure switch on damaged pump impeller	Replace water pump
	Freeze protection solenoid open	Short in solenoid wiring (solenoid normally stays open below 38° to 40°F)
Water level indicator on domestic panel is inoperative	Panel bulb burned out	Replace bulb
	Broken lead to sensor	Check wiring and connection to sensor on tank.
No hot water	Pilot light extinguished	Relight pilot light
	LPG gas supply depleted	Refill LPG tanks
	Malfunctioning heater	Replace water heater
	Leak in hot water lines	Locate leak and repair
Water does not run freely from shower head	Foreign material has collected behind shower head disc and gasket	Clean shower head, and replace gasket if required.

Table 34-1. Troubleshooting (Continued)

Malfunction (symptoms)	Probable causes	Corrective action (remedies)
Water keeps running into toilet bowl	Sliding blade in bottom of toilet does not close completely. Groove for sliding blade filled with waste or or foreign material.	Remove foreign material by inserting end of wire coat hanger or similar object into groove  CAUTION: Avoid damaging rubber seal.
Water appears around toilet base	Defective vacuum breaker; noticeable around rear of bowl when flushing toilet.  Leaking water control valve; emitting water at rear of toilet continuously  Leaking mechanism seal; noticeable because water bowl will not fill when flushed	Replace breaker  Replace control valve  Replace mechanism seal
Sliding toilet blade sticks, or pedal is hard to operate	Accumulation of foreign material around blade and seal	Clean blade and seal, and apply light film of silicone spray to blade

34-3. REMOVAL/INSTALLATION

a. General. The major components in the fresh water system require the use of standard tools only. However, the replacement of any component connected directly to a copper line may require a soldering torch.

*Caution*

To prevent unnecessary wear and/or pump overheating, set the pump switch (on the domestic panel) to "OFF" when the tank is empty, the system is being drained, or maintenance is to be performed.

b. Water Heater Removal (fig. 34-2).

(1) Remove the left lower panel on the kitchen sink cabinet and disconnect heater input and output water lines.

(2) Open plumbing and heating service access door on left forward side of coach, behind left front wheel.

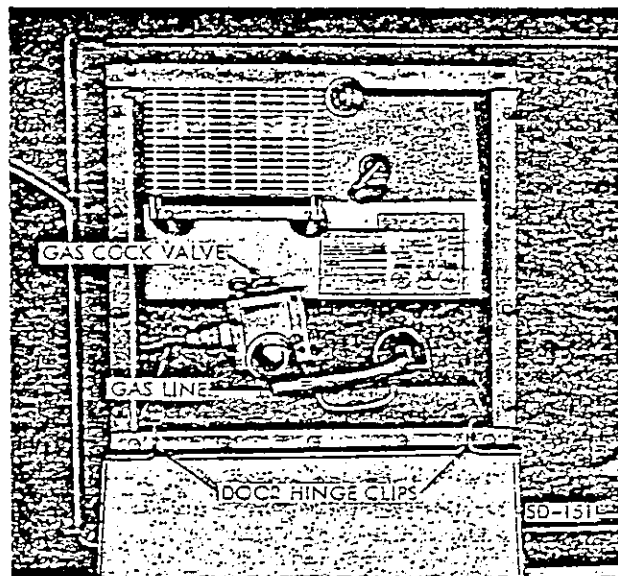


Figure 34-2. Water Heater

(3) Open door on water heater, then remove door by pressing hinged clips inward.

(4) Remove phillips-head screws (18) around perimeter of water heater.

(5) Disconnect flexible gas line at the gas control valve.

(6) Slide water heater from left side of coach.

(7) Remove tee-connection and elbow from water heater.

c. Water Heater Installation. To install water heater, proceed as follows:

(1) Install tee at top and elbow at bottom connections of a new heater.

**NOTE**

Tee-connection is placed at the top of the water heater which is the output or hot water connection. Elbow connection is placed at the bottom connector which is the input or cold water connection.

(2) Tie string around flexible gas line, route other end of string through opening of left wall in heater.

(3) Slide water heater into position.

(4) Pull heater gas line through wall opening and connect to the gas control valve.

(5) Install phillips-head screws (18) around perimeter of heater.

(6) Position water heater door and press hinged clips into lower end of heater opening.

(7) From inside of coach connect water tubing to heater.

(8) Close heater and plumbing heating service access doors.

d. Toilet Removal (fig. 34-3). To remove toilet, proceed as follows:

(1) Turn off water entry gate valve (fig. 34-1), and completely drain the water line to the toilet.

(2) To gain access to rear mounting bolt, lift toilet seat and remove plug at top left rear of hopper assembly. (Plug can be tilted for easy removal by pressing down on the plug's edge, closest to the bowl.)

(3) Using a 12-inch extension with a universal and 1/2-inch socket, remove rear flange seal attaching nut.

**NOTE**

The flange nut may be held in the socket by placing a small quantity of sealer in the socket.

(4) To gain access to front mounting bolt, depress main flush pedal and insert a round object (e.g., soft drink bottle) into the chamber opening, then slowly release the pedal. The object will hold the pedal down providing access to front flange bolt.

(5) Using 1/2-inch open end or box wrench, reach in behind the main pedal and remove the forward flange seal attaching nut.

(6) Lift toilet up and slightly forward. Then reach in behind and remove the water line connection.

e. Toilet Installation. To install toilet, proceed as follows:

(1) Place toilet in position and connect water line.

**NOTE**

The water line connections are 3/8 inch 18 pipe thread.

(2) Using a 12-inch extension with universal and 1/2 inch socket through hopper plug (see step 2 above), install rear flange seal attaching nut.

(3) Tighten nut until the toilet base contacts floor. Using an extension rod and socket only (no drive), turn nut to finger tightness.

(4) Refer to step d above to gain access to front mounting bolt.

(5) Tighten both flange nuts 1 to 1-1/2 turns beyond finger tightness.

*Caution*

Do not overtighten flange nuts. Do not solder copper tube joints while they are connected to the plastic control valve; high temperatures can damage the valve.

(6) Insert hopper plug.

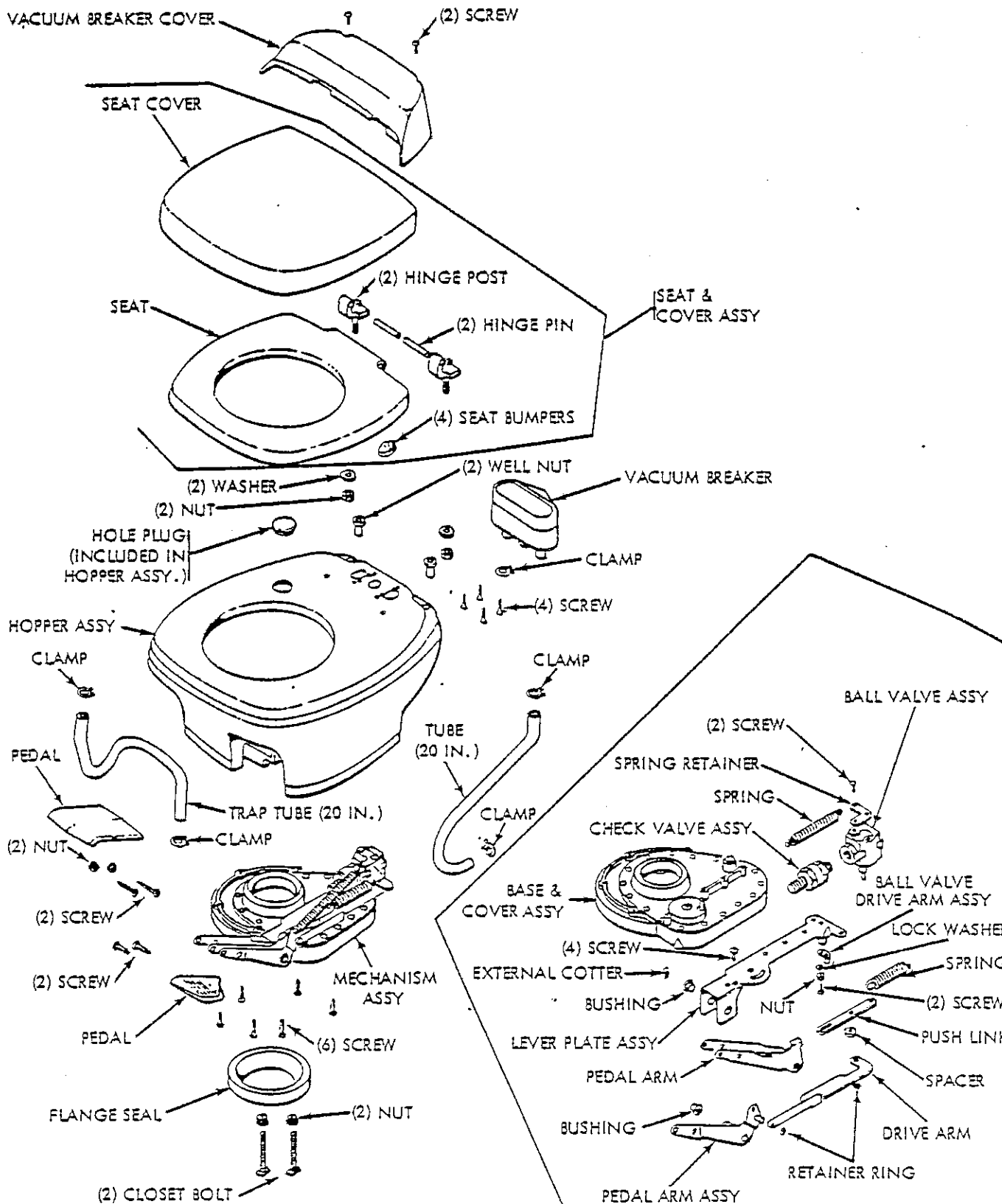


Figure 34-3. Toilet (detail)

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f. Water Pump Removal (fig. 34-1). The water pump and pressure switch are an integral component and must be removed as a unit. Before performing any maintenance, be certain all power has been disconnected. When removing or installing a new component, observe correct wiring connections; incorrect polarity will damage motor. To remove water pump proceed as follows:

(1) Turn off water entry tee gate valve (fig. 34-1). Loosen hose clamp on outlet side of pressure switch. Using a small container to catch trapped water, remove hose to pressure switch.

(2) Disconnect battery source and all electrical wiring to pump and pressure switch (fig. 34-4). When removing pump observe and mark wiring for easier installation during replacement component.

(3) Loosen hose clamps on inlet side of pump and remove hose.

(4) Unscrew mounting bolts and remove pump and pressure switch.

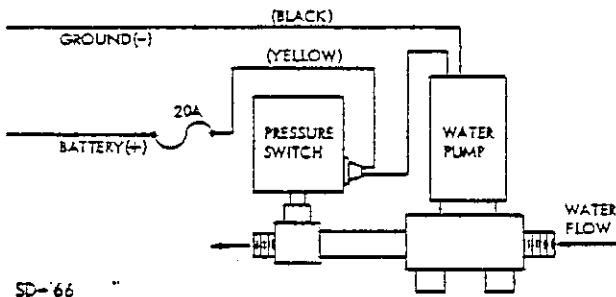


Figure 34-4. Water Pump Wiring

g. Water Pump Installation. To install water pump, proceed as follows:

(1) Position pump and pressure switch assembly and secure with mounting bolts.

(2) Connect hoses with hose clamps on each end of assembly.

(3) Connect assembly as shown in figure 34-4. The yellow wire is connected between the pressure switch and the pump fuse on the positive side of the domestic battery source. The black motor wire is connected directly to the negative, or grounded, side of the source.

### Caution

Be sure all power is off when making any electrical connections. Observe correct wiring connections - incorrect polarity will damage motor. DO NOT REMOVE SWITCH COVER OR TAMPER WITH THE POSITIVE LEAD OF MOTOR.

h. Purifier Removal (fig. 34-9). To remove water purifier, proceed as follows:

(1) Close needle valve at base of purifier cartridge. Turn off water entry tee gate valve.

(2) Open purifier outlet faucet on kitchen counter.

(3) Using a cup to catch any water trapped in the line, disconnect plastic water line connected to needle valve.

(4) With a cup under the needle valve, open the valve and drain the water in the line.

(5) Disconnect outlet line at purifier.

(6) Unscrew mounting bolts and remove purifier.

i. Purifier Installation. To install water purifier, proceed as follows:

(1) Position purifier (less cartridge) and secure with mounting bolts.

(2) Connect plastic hose line to faucet on kitchen counter.

(3) Connect inlet elbow to copper tubing from water inlet line.

(4) Close needle valve at base of purifier cartridge.

(5) Open water entry tee gate valve (fig. 34-1) gradually, checking for leakage.

(6) If no leakage, place cover on purifier and secure with wingnut.

### NOTE

Cartridge should not have been installed up to this point.

(7) Open needle valve, then open and close purifier faucet on kitchen counter.

(8) If no leakage occurs at any connection, close needle valve and open purifier faucet to drain the purifier.

(9) Remove wingnut and cover, install cartridge, then replace cover and wingnut.

*Caution*

Tighten wingnut fingertight; never use a wrench.

(10) Gradually open needle valve to allow water to wet cartridge and to check for leaks.

(11) With water running, adjust needle valve for approximately 1-1/2 quarts per minute flow rate.

j. Accumulator Removal (fig. 34-1). To remove accumulator, proceed as follows:

(1) Turn off water pump (at domestic panel) and drain water lines by pressing upward on center portion of city water entry connector (behind left front wheel).

(2) Loosen plug at top of accumulator while system is draining.

(3) After draining system, disconnect copper tubing from bottom of accumulator.

(4) Unscrew mounting bolts and remove accumulator.

k. Accumulator Installation (fig. 34-1). To install accumulator, proceed as follows:

(1) Position accumulator and secure with mounting bolts. Be sure top plug has been installed and tightened.

(2) Connect copper tubing to bottom of accumulator.

(3) Fill water system, turn on pump.

l. Strainer Removal (figure 34-5). To remove strainer, proceed as follows:

(1) Turn off water pump (at domestic panel) and drain system.

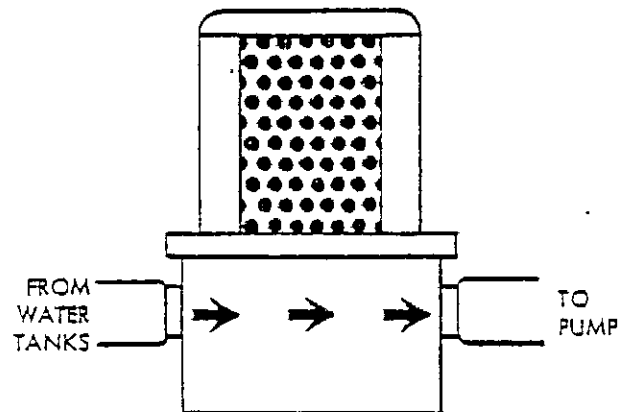
(2) Loosen hose clamps on each end of strainer.

(3) Remove strainer from hoses.

m. Strainer Installation (fig. 34-5). To install strainer, proceed as follows:

(1) Position strainer and attach to appropriate hoses; water flow to follow direction of arrow "→" marking. Connect fitting at tail of arrow to hose from water supply line and fitting at head of arrow to hose going to water pump.

(2) Fill water system, turn on pump.



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Figure 34-5. Strainer

n. City Water Entry Connector Removal (fig. 34-1). To remove the city water entry connector, proceed as follows:

(1) Unscrew copper tubing from output connector (side outlet) and high pressure relief output connector (top outlet).

(2) Remove the four mounting screws from bottom of coach.

(3) Remove entry connector from underside of coach.

o. City Water Entry Connector Installation (fig. 34-1). To install city water entry connector, proceed as follows:

(1) Position entry connector from underside of coach and secure with four mounting screws.

(2) Connect copper input line to side outlet of entry connector.

(3) Connect copper tubing to high pressure relief valve at top of entry connector.

p. Freeze Protection Components Removal.

(1) Solenoid valve (fig. 34-1). To remove solenoid valve from the freeze protection system, proceed as follows:

(a) Disconnect +12-volt domestic battery cable (under driver's floorboard).

(b) Disconnect/cut solenoid valve wiring at point of wiring splice.

(c) Unscrew copper tubing adapter from top of solenoid valve.

(d) Remove valve from lower adapter.

(2) Thermostat (fig. 34-7). To remove the thermostat of the protection system from the large 38-gallon water storage tank, proceed as follows:

(a) Disconnect +12-volt domestic battery cable (under driver's floor board).

(b) Under coach, disconnect/cut thermostat wiring at point of wiring splice.

(c) Using a bucket to catch spilling water, quickly remove thermostat from water tank and immediately install a clean 1/2-inch-14 NPT bolt.

q. Freeze Protection Components Installation.

(1) Solenoid valve. To install solenoid valve, proceed as follows:

(a) Turn off water pump and disconnect +12-volt domestic battery cable (under driver's floor board).

(b) Connect "IN" orifice to copper tubing adapter attached to main hot water lines of system.

(c) Connect outlet orifice to copper tubing adapter which is attached to the rubber tubing return line for water tank.

(d) Connect solenoid wiring: one lead to +12-volt, other lead to water tank thermostat.

(e) Reconnect battery cable.

(2) Thermostat (fig. 34-7). To install thermostat proceed as follows:

(a) Remove temporary plug, if installed, and screw thermostat into the orifice of the large water tank.

(b) Connect thermostat wiring: one lead to solenoid valve, other lead to ground (or -12 volt).

(c) Connect battery cable and refill water tanks as required.

r. Faucet Removal. Before starting removal procedures on a coach faucet, the water pump should be turned off, the water lines drained through the city water entry connection (for at least 3 minutes), and the needle valve in the hot water line.

(1) Kitchen (fig. 34-1). To remove kitchen faucet assembly, proceed as follows:

(a) Gain access through top cabinet panel under sink, unscrew adapters on both hot and cold water lines.

(b) Remove mounting locknuts on under side of faucet base.

(c) Remove faucet assembly.

(2) Shower (fig. 34-1). To remove shower faucet assembly, proceed as follows:

(a) Unscrew four phillips-head wood screws, then pull plastic backing plate and hardware forward.

(b) Reaching in behind plastic plate with an open-end wrench (3/4 inch), remove flared nuts below elbow on the hot and cold water lines.

(c) After removing shower faucet assembly, unscrew locknuts on back of plastic plate, and remove assembly from plate.

(3) Vanity (fig. 34-6).

(a) Gain access through bathroom storage under vanity sink, and remove flared nuts on each hot and cold water line.

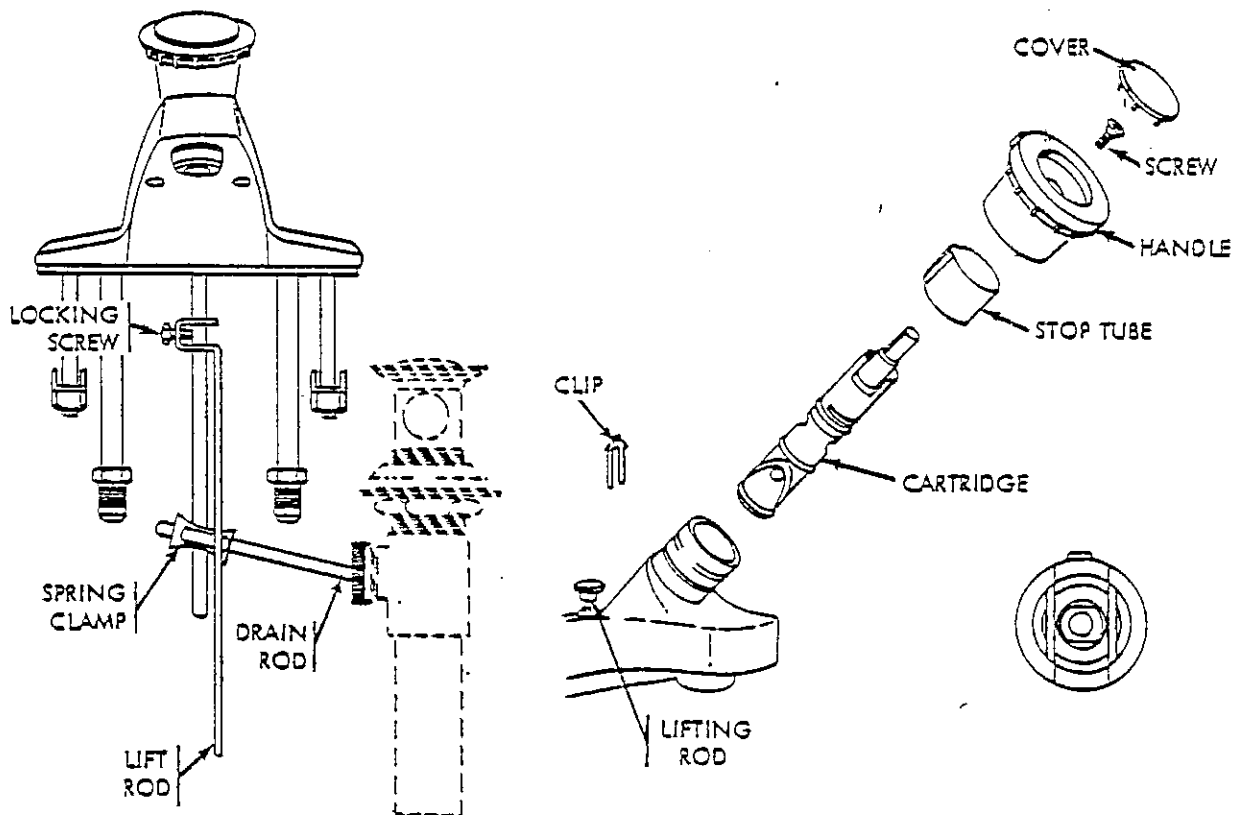
(b) Remove holding brackets under faucet assembly, then lift assembly from counter.

s. Faucet Installation (fig. 34-6).

(1) Kitchen. To install kitchen faucet assembly, proceed as follows:

(a) Clean counter ledge and insert faucet fittings into hole provided.

(b) Secure assembly with locknut attached to underside of counter.



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Figure 34-6. Vanity Faucet

(c) Position hot and cold water lines as required, and secure each with flared nut.

(2) Shower (fig. 34-1). To install shower faucet assembly, proceed as follows:

(a) Place plastic backing at rear of assembly, secure with locknuts around hot and cold inlets.

(b) Screw elbow adapter into each inlet, using plumbers putty around threads.

(c) Insert assembly into shower cut-out.

(d) Connect hot and cold water lines to elbows.

(e) Press backing plate with assembly flush with shower wall and secure corners with four phillips-head screws.

(3) Vanity (fig. 34-6). To install vanity faucet assembly, proceed as follows:

(a) With gasket in place, insert faucet assembly and secure with holding brackets.

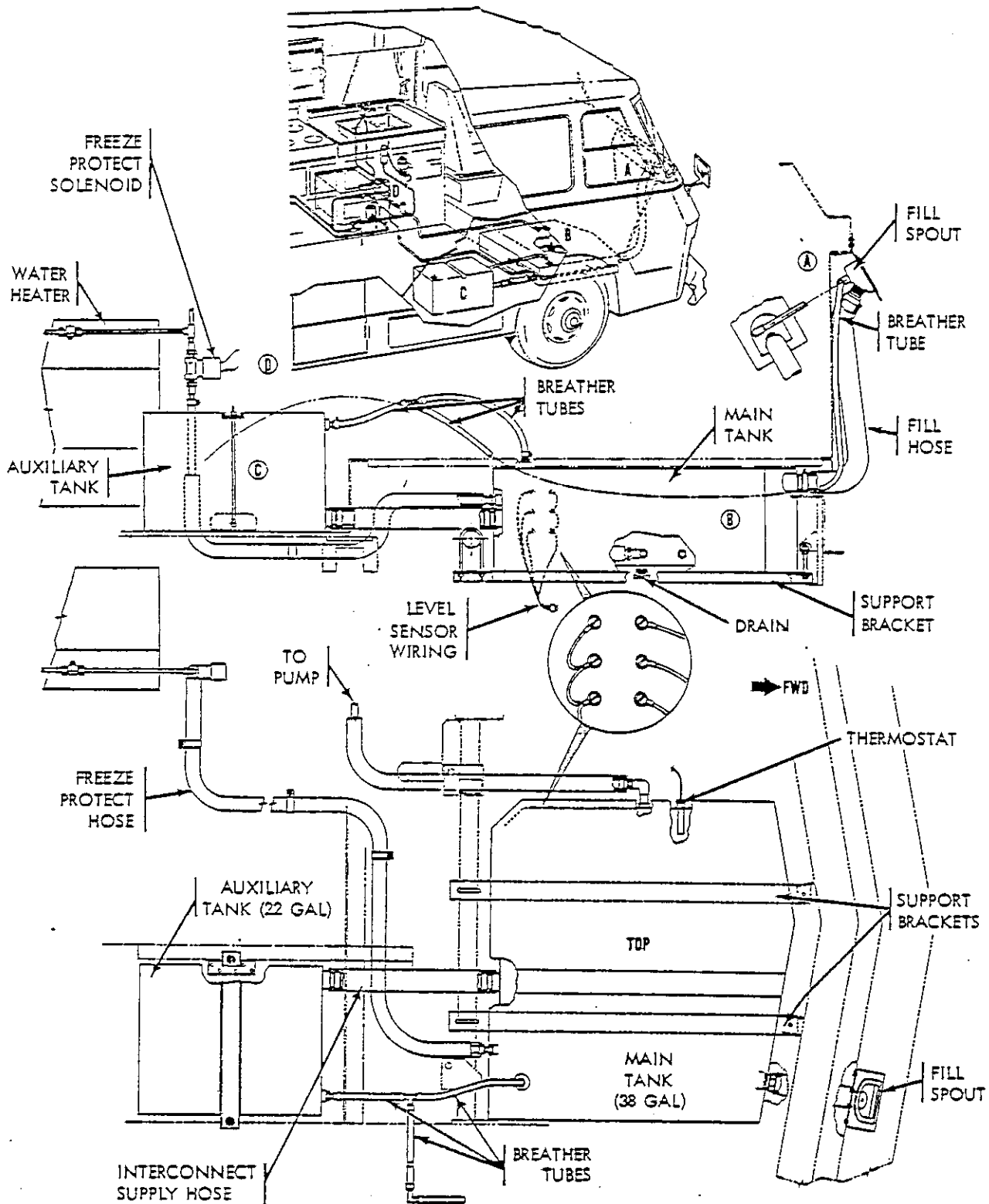
(b) Connect hot and cold water lines with flared nuts.

(c) Assemble lifting rod for pop-up waste assembly as shown in figure 34-6. Insert one side of spring clamp on drain rod, insert drain rod in cross link (second hole from bottom), then follow with other edge of spring clamp. Raise and lower lift rod, securing locking screw at a point on the rod which permits the pop-up stopper to open and close. (See Group 36 for cleaning of pop-up drain.)

t. Storage Tank Removal (fig. 34-7).

(1) 22-gallon tank. To remove the 22-gallon auxiliary water tank, proceed as follows:

(a) Drain water tank through main tank by removing plug at bottom center of main tank.



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Figure 34-7. Water Tanks

(b) Remove forward dinette cushion and access panel.

**NOTE**

The full 60-gallon tank capacity need not be drained. Open cap of auxiliary tank and when the water has completely drained from this tank, the plug on the main tank may be closed.

(c) Remove nine phillips-head wood and/or metal screws around perimeter of seat top and bracket (right forward corner of seat top).

(d) Remove seat top by lifting it up and sliding it toward the rear of coach.

(e) Unscrew nuts for tank retaining bar, and remove bar.

(f) Remove breather hose and supply hose to main tank from front side of tank.

(g) Remove auxiliary tank.

(2) 38-gallon tank. To remove the main water tank from underside of coach, proceed as follows:

(a) Drain water by removing plug at bottom center of tank.

(b) Remove six screws from fill hose spout bracket.

(c) Pull hose spout outward and tie one end of a 3-foot piece of twine around hose. Tie remaining end to spout bracket.

(d) Remove fill spout from hose, then, using the twine, lower hose into the hose well.

(e) Disconnect electrical connections from left side of tank (i.e., level sensors and thermostat).

(f) Disconnect hoses at rear of tank; water inlet hose, connected to second tank (22-gallon); and inlet hose from freeze protection solenoid valve.

(g) Remove two U-bolts from rear support bracket, and loosen front bracket bolts.

(h) By lowering rear end of water tank to gain access, disconnect breather tube from top right rear corner.

(i) Remove front bracket bolts, then lower tank (rear end first) to gain access to fill hose.

(j) Remove fill hose from tank.

*Caution*

Do not pull fill hose loose from front of coach or break the twine and allow the hose to fall into the fill hose well.

(k) Remove storage tank.

u. Storage Tank Installation (fig. 34-7).

(1) 22-gallon tank. To install the 22-gallon auxiliary water tank, proceed as follows:

(a) Position auxiliary tank within the forward dinette seat frame.

(b) Connect main tank hose and breather hose to front side of tank.

(c) Place tank retainer bar across tank and secure to the installed J-bar with mating washer and nut.

(d) Slide seat top into position, aligning it with old position, and secure with nine phillips-head wood and/or metal screws around perimeter and bracket at right forward corner of seat top.

(f) Replace access panel and seat cushion.

(g) Refill tanks and check for leaks, as required.

(2) 38-gallon tank. To install the main water tank, proceed as follows:

(a) Place tank under coach and connect fill hose on front end of tank.

(b) Move front end of tank up into position, then connect breather hose at top of tank.

(c) Move rear end of tank into position and secure with front and rear mounting brackets.

(d) Connect inlet hoses from auxiliary tank (22-gallon) and freeze protection solenoid valve.

(e) Connect wiring for level sensors and thermostat.

(f) Using twine attached to fill hose, pull hose into position at front of coach and secure with six screws on spout bracket.

v. Water Fill Spout and Hose Removal (fig. 34-7). To remove water fill spout, proceed as follows:

- (1) Remove six screws from spout bracket.
- (2) Pull hose outward and tie one end of a short length of twine firmly around end of hose. Tie remaining end on spout bracket.
- (3) Remove spout bracket from fill hose.

w. Water Fill Spout and Hose Installation (fig. 34-7).

(1) Fill spout. To install water fill spout, proceed as follows:

- (a) Place hose clamp loosely on spout end of fill hose.
- (b) Position spout, then slide end of fill hose over spout and secure with hose clamp.
- (c) Using six phillips-head screws, secure fill spout onto bracket.

(2) Fill spout hose. To install water fill spout hose, proceed as follows:

- (a) Attach twine at lower end of the filler spout well to spout end of hose.
- (b) At front of coach, carefully pull hose through fill spout well so as not to break twine.
- (c) Attach lower end of hose to main water tank.
- (d) Raise main tank into position and secure with mounting bolts (front end) and U-bolts (rear end).
- (e) Install water fill spout as detailed above.

#### 34-4. DISASSEMBLY

a. General. In general, the assembly of any water system component cannot be accomplished merely by performing the disassembly procedure in the opposite sequence. Therefore, before disassembly or assembly of any water system component, read the instructions, then follow each step as described.

b. Toilet (fig. 34-3). The toilet disassembles into four main subassemblies: mechanism, seat and cover, vacuum breaker, and bowl.

(1) Mechanism. To disassemble mechanism from the bowl, proceed as follows:

- (a) Turn toilet upside down.
- (b) Remove six phillips screws and lift mechanism away from bowl base.
- (c) Pinch hose clamps on trap tube and check valve tube, then slide clamps about 2 inches away from each connector on mechanism.
- (d) Pull tubes from mechanism.

(2) Seat and cover. To disassemble seat and cover from bowl, proceed as follows:

- (a) Remove cover for vacuum breaker by unscrewing two screws at rear of bowl.
- (b) Turning bowl upsidedown, remove standard hinge and bolt assembly.
- (c) After removing nuts from the hinge bolts, lift cover and seat from bowl.

(3) Vacuum breaker. To disassemble vacuum breaker subassembly from rear of bowl, proceed as follows:

- (a) Remove vacuum breaker cover by unscrewing two screws at rear of bowl.
- (b) Turn bowl upsidedown, then remove polyethylene tubings from breaker base by pinching and sliding hose clamps about two inches away from each connector.
- (c) Pull tubes from breaker subassembly.

(d) Unscrew mounting screws at each corner to remove vacuum breaker from bowl.

(4) Bowl. To disassemble bowl from toilet assembly, remove other three subassemblies.

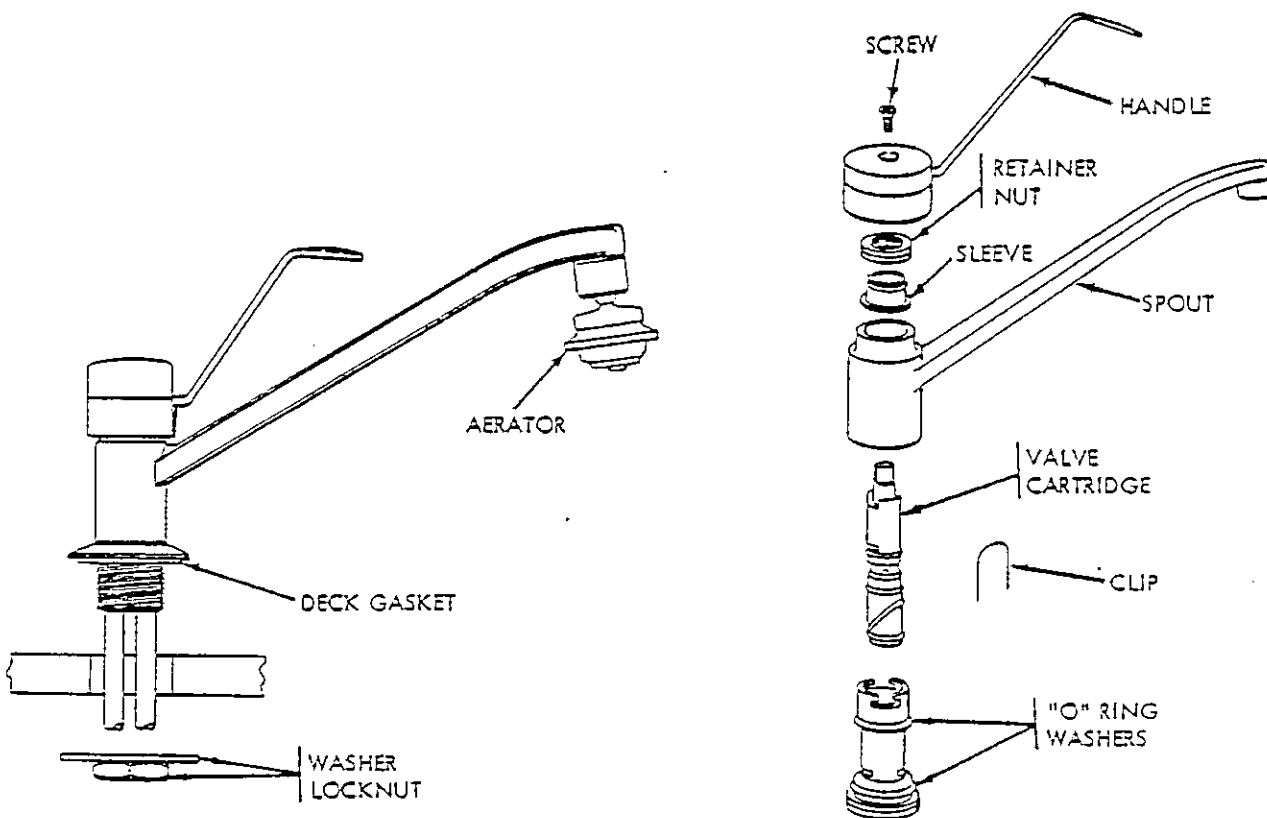
#### c. Faucets

(1) Vanity faucet (fig. 34-6). To disassemble the vanity faucet after removal, proceed as follows:

- (a) Remove handle cover and handle screw.
- (b) Lift handle from faucet, then pull off stop tube.

- (c) Slip out retainer ring.
  - (d) Remove valve cartridge (replace "O-ring" washers as required).
- (2) Kitchen faucet (fig. 34-3). To disassemble the kitchen faucet after removal, proceed as follows:
- (a) Remove handle cover and handle screw.

- (b) With stem of cartridge press inward, lift and tilt handle off.
- (c) Unscrew retainer nut and lift off sleeve.
- (d) Twist spout upwards, and off.
- (e) Slip out retainer clip.
- (f) Remove valve cartridge (replace "O-ring" washers as required).



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Figure 34-8. Kitchen Faucet



34-5. INSPECTION/CLEANING

a. Inspection of System Components. Inspect water system components as outlined in table 34-2.

(f) Repeat the above steps, but, in addition to opening plug on main tank, turn on water pump and open all faucets.

(g) Repeat flushing procedure with fresh water (without the soda), two additional times.

Table 34-2. Inspection of Components

Component	Inspect for	Method	Corrective action
Faucet washers	Faucet leaks	Visual	Change washers using dis-assembly and assembly procedures (par 34-4 and 34-7)
Aerators	Slow rate of water flow at particular faucet	Visual	Remove and clean
Screen	Slow rate of water flow for all faucets in system	Visual	Remove and clean screen
Purifier filter	Slow rate of water flow at purifier faucet	Visual, observe water flow	Replace purifier cartridge.
Connections	Water leaks and dampness under connections	Visual and touch	Repair tubing or fittings as required

b. Cleaning of System Components. The following procedures will keep the water system fresh, clean, and odor free.

(1) Flushing. If the water supply should become musty and bad tasting, a procedure for using baking soda solution follows:

(a) Turn off water pump, then drain water system by opening plug on main (38-gallon) tank, under coach.

(b) Close drain plug after draining system.

(c) Add 1 cup of baking soda to 1 gallon of water, shake well and pour into the water fill/spout.

(d) Fill tank at least halfway with water, and allow it to set for several hours.

(e) Drive coach for a few miles to agitate solution in tank and immediately drain by opening plug on main tank.

(b) Taste test the water in the system for palatability, then repeat any steps above as needed.

(1) After flushing, drain holding tanks by following procedures outlined in Group 35.

(2) Sanitizing. The following procedure is performed before using the water system for the first time, after prolonged storage, or if the system has become contaminated. To assure that the system will maintain a potable water supply proceed as follows:

(a) Turn off water pump, then drain water system through plug of the main water tank.

(b) After system has completely drained, close drain plug.

(c) Add 4 cups of ordinary household bleach (5% sodium hypochlorite) to 4 gallons of water, shake well and pour into water-fill spout.

(d) Add fresh water to completely fill water system, then allow it to set for 3 to 4 hours.

(e) Drive coach for a few miles to agitate solution in system.

(f) Connect 3-inch diameter flexible hose between main drain outlet and proper disposal facilities (see Group 35).

(g) Open drain control gate valves.

(h) Turn on water pump and open all faucets to sanitize entire system.

**NOTE**

Repeat above steps until the odor of the chlorine is detected at the hot and cold faucets in the bathroom.

(i) As the water tanks empty, add more water through the water-fill spout.

(j) Continue this operation for about 1/2 hour, then close drain plug, turn off water pump, and close all faucets.

(k) Disconnect drain hose, repeat step (e), then (f) and (g).

(l) Repeat step (j) and refill water system.

**NOTE**

To remove any excessive chlorine taste or odor, prepare a solution of 1 quart vinegar to 5 gallons of water and add to water system. Allow a few days for the solution to agitate in the system then flush the system as described in paragraph 34-5 b (1).

*Caution*

The vinegar solution can soften the fiberglass surfaces if left on for a prolonged period. Wash off any spilled solution immediately.

(3) Water Purification. The chemical content of water sources varies in different parts of the country. To avoid the possibility of minute impurities multiplying and creating an unhealthy water supply, the following recommended method is used for water purification:

(a) Turn off water pump, then drain water system.

(b) Flush and/or sanitize system as required.

(c) Add 1 ounce of ordinary household bleach (2 tbsp. or 1/8 cup) and refill system with fresh water.

**NOTE**

A convenient method for adding bleach is to place the 1-ounce solution into the garden hose before connecting it to a water source, then fill system.

(d) After 10 days drain water not used and refill system.

**NOTE**

Water purified in the above manner remains potable for 10 days.

34-6. REPAIRS

Whenever any repairs have been made in the system, faucets and supply lines should be flushed under pressure to remove pipe chips or other foreign material that could affect water flow during operation. To properly do this, the following procedure is suggested:

a. Connect coach water system to the city water supply.

b. Remove filter elements, screens, aerators and spray nozzles from all water system components.

c. Starting at the faucet nearest the repair, gradually turn on the water and allow it to run for approximately 30 seconds or until water is running clear.

34-7. ASSEMBLY

a. General. These procedures apply to those water system components which usually are disassembled for repair, and/or are now ready to be assembled.

b. Toilet. The toilet assembly consists of four main subassemblies (see figure 34-3): bowl, vacuum breaker, seat and cover, and mechanism.

(1) Bowl. The bowl (hopper) is a basic subassembly and all of the other subassemblies are assembled on to this component.

(2) Vacuum breaker. To re-assemble the vacuum breaker proceed as follows:

(a) Place breaker in position at rear of bowl (hopper) and secure with four mounting screws at each corner.

(b) Install polyethylene tube between left water connector of breaker and left side of bowl.

(c) Install 20-inch polyethylene tube on right water connector of breaker.

(d) Using hose clamps, secure tube connections.

(e) Install vacuum breaker cover and secure with two screws at rear of bowl.

(3) Seat and cover. To reassemble the seat and cover, proceed as follows:

(a) Position cover and seat and secure with hinge bolts and nuts.

(b) Install vacuum breaker cover and secure with two screws at rear of bowl.

(4) Mechanism.

(a) Turning bowl over, install polyethylene tube between left side of bowl and trap tube connector.

(b) Use hose clamps to secure tube connections.

(c) Turn bowl rightsideup.

c. Faucets. After repair or inspection, the four faucet subassemblies should be reassembled as described below.

*Caution*

Before installing aerators on faucets, flush the newly installed system components.

(1) Vanity. To reassemble vanity faucet, proceed as follows:

(a) Place cartridge into body with stem pointing outward.

(b) Align ears of cartridge front to back of faucet.

*Caution*

Insert cartridge by pushing it all the way into the body until the front of the ears on the cartridge shell are flush with the body.

(c) Slide retainer clip into place.

*Caution*

When replacing the retainer clip, DO NOT USE FORCE. Place retainer clip so that the legs straddle the cartridge ears and freely slide down into the bottom slot in the body.

(d) Install stop tube and handle (handle pointer should be up).

(e) Secure handle to cartridge stem, with handle screw, then snap cover into handle.

**NOTE**

If the hot and cold water control is reversed, remove handle and rotate red-marked flat on stem 180 degrees, then re-install handle with water indicator point upward.

(2) Kitchen. To re-assemble kitchen faucet prior to installation in kitchen sink counter, proceed as follows:

(a) Place cartridge into body with stem pointing outward.

*Caution*

Install cartridge by pressing it into the body until the front of the cartridge shell ears are flush with the body.

(b) Align cartridge ears front to back and set red flat of cartridge stem toward front of unit (which will be front of sink).

**NOTE**

If the hot and cold water control is reversed, remove handle and rotate "red" flat on stem 180 degrees.

(c) Install clip, spout, sleeve and retainer nut.

(d) Install handle by holding lever up and hooking handle ring into grooved sleeve.

**NOTE**

In order for the handle to operate properly, the handle ring must be hooked into the sleeve groove.

(e) Replace and tighten handle screw.

**34-3. PURIFIER-ACCUMULATOR-TANK SERVICE**

**a. Purifier-Cartridge Replacement.** For complete purifier service, change filter cartridge annually.

(1) Turn off water pump.

(2) Close inlet needle valve and open outlet faucet.

(3) Remove wingnut, cover and old cartridge from purifier.

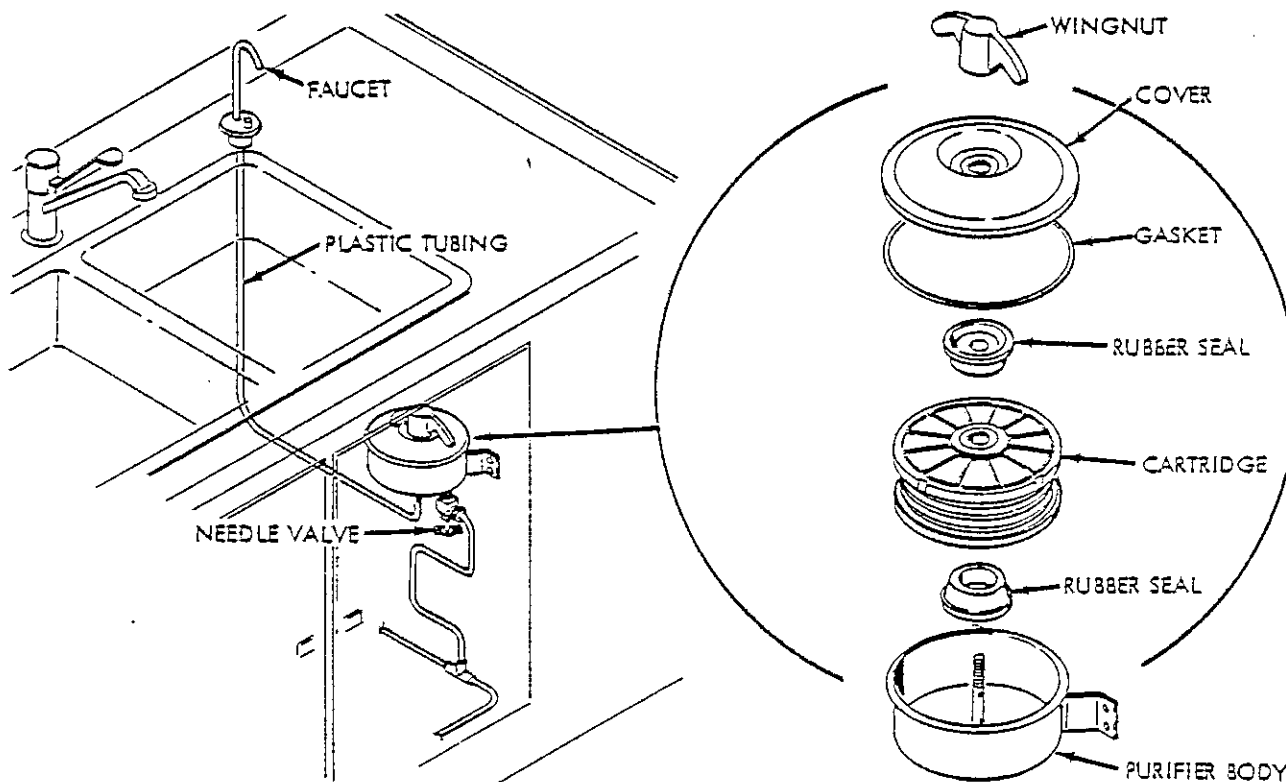
(4) Clean inside of purifier and cover with stiff brush, and rinse thoroughly.

(5) Replace rubber gaskets and seals if deformed or broken.

**NOTE**

It is recommended that all rubber parts be changed at least once a year.

(6) Insert new cartridge.



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Figure 34-9. Water Purifier

- (7) Replace cover and wingnut.
- (8) Gradually turn on needle valve and allow water to enter purifier and "wet" new cartridge.
- (9) Tighten wingnut finger tight.

*Caution*

Never use a wrench on wingnut.

(10) Turn outlet faucet on and off a few times. If no leakage occurs, allow water to flow for about 5 minutes to activate the cartridge.

(11) While the water is running, adjust the needle valve for approximately 1-1/2 quarts per minute flow rate.

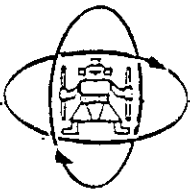
b. Replenishing Accumulator Air-Cushion. To reactivate the "air-cushion" provided in the accumulator, proceed as follows:

(1) Turn off water pump, then drain water lines by pressing up on center portion of the city water connection.

(2) Loosen plug at top of accumulator while system is draining to allow air to enter top of unit.

(3) When system has completely drained, replace accumulator plug and turn on water pump.

c. Water Tanks. To completely fill the water tanks, the coach should be level. Also, adjust rate of flow to allow enough time for ingoing water to displace any trapped air in the system. Use a lightweight plastic garden hose for filling the system to avoid adding a foreign taste to the water.



## TANK REPAIR PROCEDURES

Inca polyethylene water and waste holding tanks can be repaired by following the procedures outlined herein.

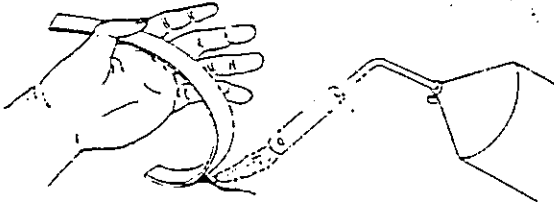
There are no solvents, glues, epoxies, caulking or cements that will make a permanent repair on polyethylene. The only satisfactory repair is performed with heat.

**STEP I** Drain tank and allow it to dry inside.

**STEP II** Pass an electric soldering iron or similar hot instrument lightly over the hole working molten plastic into the hole.

**STEP III** Allow the patch to cool and test the tank with water. If the tank still leaks, allow it to dry again and REPEAT STEP II.

**STEP IV** For larger holes, use a strip of polyethylene repair plastic as shown. Slightly heat the tank at the point to be repaired with a propane torch on low heat. Do not melt the plastic as melted plastic loses its physical properties.



Extreme caution must be used to avoid overheating.

When the tank repair area and under side of the repair plastic are both tacky, stick them together. Hold a slight pressure on them until they cool.

**STEP V** Cracks in Inca tanks are unlikely. If your tank is cracked it is normally due to a stress on the tank.

Look for the point of stress where the tank is mounted. Common causes of stress are an uneven floor, a strap too tight or pressure from a structure too near the tank when it is full.

Eliminate this problem before re-installing the tank.

To repair a stress crack, drill a small hole at each end of the end of the crack and follow STEP IV. Start at one end of the crack and continue heating and sticking the plastic together along the crack. Overlap each end about 1" if possible.

Major changes such as fitting locations or stripped threads should be returned to an Inca location for repair.



**FMC CORPORATION**  
 RECREATIONAL VEHICLE DIVISION  
 BOX 664, SANTA CLARA, CALIFORNIA 95062

URGENT  
 MANDATORY

ROUTINE  
 INFORMATIONAL

# Service Bulletin

DATE March 15, 1973

NUMBER 2934 20001

ATTENTION: SERVICE MANAGER AND COACH OWNERS	GROUP 34
	Water System
This Service Bulletin serves to inform you of a possible incorrect installation of the Ogden Water Purifier.	SUBJECT
Figure 5-22 on page 5-16 dated 12/72, of the owners manual, shows the <u>improper</u> installation of the water purifier. For correct installation, the copper (cold water) supply line should be connected to the inlet with the needle valve located off-center on the bottom of the purifier. The outlet located directly in the center of the purifier should be connected to the plastic tube leading to the purifier spigot.	Water Purifier
When switching the lines, care should be taken not to pinch the copper tubing and to avoid breaking the copper "T" joint on the cold water supply line.	MODEL (S) AFFECTED
CAUTION:	2900R
To avoid water spillage into the coach, make sure the water pump is turned off at the domestic panel and the water has been drained out of the cold water lines prior to disconnecting the lines. (See page 5-19 of the owners manual.)	(Factory Use Only) Information added to:
NOTE:	OWNER MANUAL (S)
A revision to the owners manual showing correct installation of the water purifier is in process and will be forwarded to manual holders in the near future.	SERVICE MANUAL (S)
	PARTS MANUAL (S)
	WARRANTY MANUAL (S)
	OTHER



FMC Corporation  
 Motor Coach Division  
 333 Brokaw Road Box 664 Santa Clara California 95052

URGENT

ROUTINE

MANDATORY

INFORMATIONAL

# Service Bulletin

DATE 3 September 1974

NUMBER 2934 40001

ATTENTION: SERVICE MANAGERS AND OWNERS			GROUP 34
<u>DESCRIPTION</u> It has been brought to our attention that some coach owners have experienced a frozen potable water tank. To correct this problem, our Service Kit 5106716 is now available which will relocate the fresh water tank thermostat outside the tank insulation.			SUBJECT FRESH WATER SYSTEM
<u>KIT CONTENTS (5106716)</u>			MODEL (S) AFFECTED
<u>RVD NUMBER</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	2900R MOTOR HOME 00001 TO 00550
M24203	Nipple, At tank 1/2 x 2	1	(Factory Use Only) Information added to:  OWNER MANUAL (S)  SERVICE MANUAL (S)  PARTS MANUAL (S)  WARRANTY MANUAL (S)  OTHER:
M24494	Tee, On nipple 1/2	1	
5106715	Sleeve, On nipple	2	
M24496	Adapter, On sleeve	2	
M24135	Connector, Hose barbed 3/8 to 3/8	1	
M24522	Bushing, Connector 1/2-3/8	1	
M24289	Plug, In tank (plastic)	1	
M22083	Insulation, Hose connection	18"	
<u>INSTRUCTIONS</u>			
1. Drain water from tank. 2. Remove thermostat from tank.			
<p style="text-align: center;">NOTE</p> <p>Carefully cut insulation around tank opening if it is too small to reach thermostat and elbow.</p>			
3. Disconnect existing hot water line and remove elbow, located just to rear of thermostat, from water tank. 4. Insert plastic plug (M24289) in tank opening from which thermostat was removed. Coat plug with "Pro-Dope" or equal before inserting in tank.			





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# Service Bulletin

DATE 3 September 1974

NUMBER 2934 40001

<p>ATTENTION: SERVICE MANAGERS AND OWNERS</p>	<p>GROUP</p>
	<p>34</p>
<p>POTABLE WATER TANK REF.</p>	<p>SUBJECT</p>
<p>The diagram illustrates the assembly of a fresh water system. It shows a nipple being inserted into a potable water tank. A tee is attached to the nipple. Two sleeves are placed on either side of the tee. Adapters are installed on the ends of the sleeves. A barbed hose connector and a bushing are attached to the water line that connects to the potable water pump. The entire assembly is wrapped in insulation, which is slit and taped around the assembly. A thermostat is also shown.</p>	<p>FRESH WATER SYSTEM</p>
	<p>MODEL (S) AFFECTED</p> <p>2900R MOTOR HOME 00001 TO 00550</p>
<p>SD-554</p>	<p>(Factory Use Only) Information added to:</p> <p>OWNER MANUAL (S)</p>
<p>FIGURE 1. KIT INSTALLATION</p>	<p>SERVICE MANUAL (S)</p>
<p>5. Insert nipple (M24203) in tank from which elbow was removed. Coat nipple with "Pro-Dope" or equal before inserting in tank.</p>	<p>PARTS MANUAL (S)</p>
<p>6. Install tee (M24494) on nipple.</p>	<p>WARRANTY MANUAL (S)</p>
<p>7. Install sleeves (5106715) at each end of tee.</p>	<p>OTHER</p>
<p>8. Install female adapters (M24496) on each sleeve.</p>	
<p>9. Install barbed hose connector (M24135) and bushing (M24522) to water line that connects to potable water pump.</p>	



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DATE 3 September 1974

NUMBER 2934 40001

ATTENTION: SERVICE MANAGERS AND OWNERS	GROUP
10. Wrap barbed hose connection and water line with insulation (M22083).	34
11. Install thermostat in adapter toward front of coach. Make sure wire connections are clean and tight.	SUBJECT
12. Refill water tank with potable water, turn on pump and check for leaks.	FRESH WATER SYSTEM
<u>WARRANTY REIMBURSEMENT</u>	
FMC Motor Coach Division will allow a maximum of one labor hour and reimbursement for parts on a properly submitted Warranty Claim (Form RVD 69) for this modification. Authorization for dealers to proceed must be obtained from the Motor Coach Division Service Department prior to performing the work.	MODEL (S) AFFECTED  2900R MOTOR HOME  00001 TO 00550
<i>Max L. Snavely</i> MAX L. SNAVELY Service Manager	(Factory Use Only) Information added to:
	OWNER MANUAL (S)
	SERVICE MANUAL (S)
	PARTS MANUAL (S)
	WARRANTY MANUAL (S)
	OTHER



# Service Bulletin

DATE April 28, 1975

NUMBER 2934 30001

ATTENTION: SERVICE MANAGER AND OWNERS	GROUP 34
<p><u>DESCRIPTION</u></p> <p>This bulletin provides instructions for installation of rubber hot water heater hose in place of the clear plastic hose installed on coaches as listed. The plastic hose does not adhere well to copper tubing and may slip off, therefore, rubber heater hose has now replaced plastic at this point.</p> <p><u>COMPLIANCE</u></p> <p>Dealers must comply with this bulletin prior to delivery of coach to owner. Owners please check with your dealer to see if he has parts in stock and make an appointment to have hoses changed at your earliest opportunity.</p> <p><u>MANPOWER</u></p> <p>Estimated accomplishment time for one mechanic is approximately one and one-half hours (1-1/2).</p> <p><u>WARRANTY REIMBURSEMENT</u></p> <p>We will allow reimbursement for cost of heater hose and a maximum of 1-1/2 labor hours for this change. We will not reimburse for any loss of coolant.</p> <p><u>PARTS REQUIRED</u></p> <p>Six feet of heater hose (5/8) 5101334.</p> <p><u>ACCOMPLISHMENT INSTRUCTIONS</u></p> <p>Drain radiator so that water level is below hot water tank.</p> <p>NOTE: Save coolant for reuse.</p> <p>Locate inlet and outlet heater hoses on hot water tank through access doors under kitchen sink.</p> <p>Remove clear plastic hoses, Discard plastic hose and replace with rubber hose #5101334. Secure new hose to tank and make certain hose clamps are behind the rolled bead on the tank fittings.</p>	<p><u>SUBJECT</u></p> <p>HOT WATER TANK WATER LINES</p> <p><u>MODEL (S) AFFECTED</u></p> <p>00646 TO 00745 APPROXIMATELY</p>



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 333 Brokaw Road Box 664 Santa Clara California 95052

URGENT

ROUTINE

MANDATORY

INFORMATIONAL

# Service Bulletin

DATE April 28, 1975

NUMBER 2934 30001

ATTENTION: SERVICE MANAGER AND OWNERS

GROUP  
34

SUBJECT  
HOT WATER TANK  
WATER LINES

MODEL (S)  
AFFECTED  
00646 TO 00745  
APPROXIMATELY

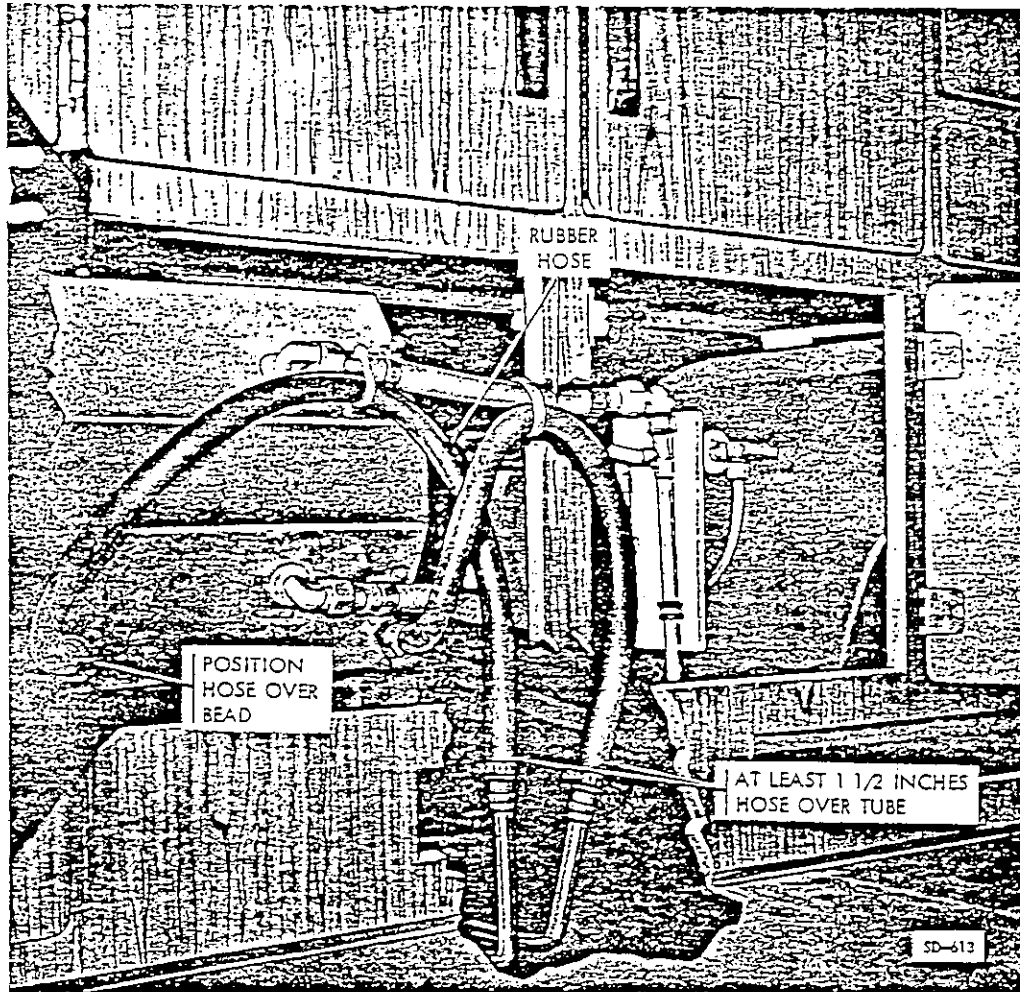


FIGURE 1. REPLACEMENT OF HOSES ON PRE-HEAT HOT WATER TANK



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# Service Bulletin

DATE April 28, 1975

NUMBER 2934 30001

ATTENTION: SERVICE MANAGER AND OWNERS	GROUP 34
<p><u>ACCOMPLISHMENT INSTRUCTIONS (CON'T)</u></p> <p>Secure new hose to heater line connections in floor and make certain hose is clamped with at least 1-1/2 inches of hose over fittings.</p> <p>Refill radiator with engine coolant.</p> <p>Start engine and warm up to normal operating temperature (180°F), run engine at fast idle speed for 15 minutes.</p> <p>Add coolant as required to maintain a visible level in filler neck.</p> <p>Check all heaters for heat.</p> <p>Check hot water heater hoses for leaks.</p> <p>When coolant flows out of the bleed valve (located in front left cowl access door) with no air bubbles, close valve.</p> <p>Decrease engine speed to normal idle.</p> <p>Refill radiator with coolant to bring up to bottom of filler neck.</p> <p>Install and tighten radiator cap.</p> <p style="text-align: right;"><i>Wayne Biondi</i>          WAYNE BIONDI          SERVICE MANAGER</p>	<p>SUBJECT</p> <p>HOT WATER TANK          WATER LINES</p> <p>MODEL (S)          AFFECTED</p> <p>00646 TO 00745          APPROXIMATELY</p>