



Atwood Mobile Products
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Water Heaters

- **INSTALLATION**
- **OPERATION**
- **MAINTENANCE**
- **WARRANTY**

~~500 873 4328~~

G6A-4E 800 825 4328

Effective 4-86

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Water Heaters

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Water Heaters

NOTE:

Installer: Provide these instructions to the consumer.

Consumer: Keep these instructions for future reference.

WARNING:

For Your Safety!

If You Smell Gas:

1. Open windows.
2. Don't touch electric switches.
3. Extinguish any open flame.
4. Shut gas off at L.P. gas bottle.
5. Immediately call your L.P. gas supplier or a qualified L.P. gas appliance service person.

Do not store or use gasoline or other flammable vapors and liquids near this or any other appliance.

WARNING:

Shut off all gas appliances when refueling or traveling. This includes pilot lights.

CAUTION:

Hydrogen gas may result if you have not used this heater for two weeks or more. Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions, open the hot water faucet for several minutes at the kitchen sink before you use any electrical appliance connected to the hot water system. If hydrogen is present, you probably will hear an unusual sound such as air escaping through the pipe as the water begins to flow.

Do not smoke or have any open flame near the open faucet.

NOTE: ASHRAE standard 90A-1980 does not apply to gas or electric water heaters with a storage capacity of less than 20 gallons.

WARNING:

Do not place a valve between the relief valve and the tank. Do not plug the relief valve under any circumstance.

If you use a discharge line, do not use a reducing coupling or other restriction.

Allow complete drainage of both valve and line.

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Gas Water Heaters

• INSTALLATION

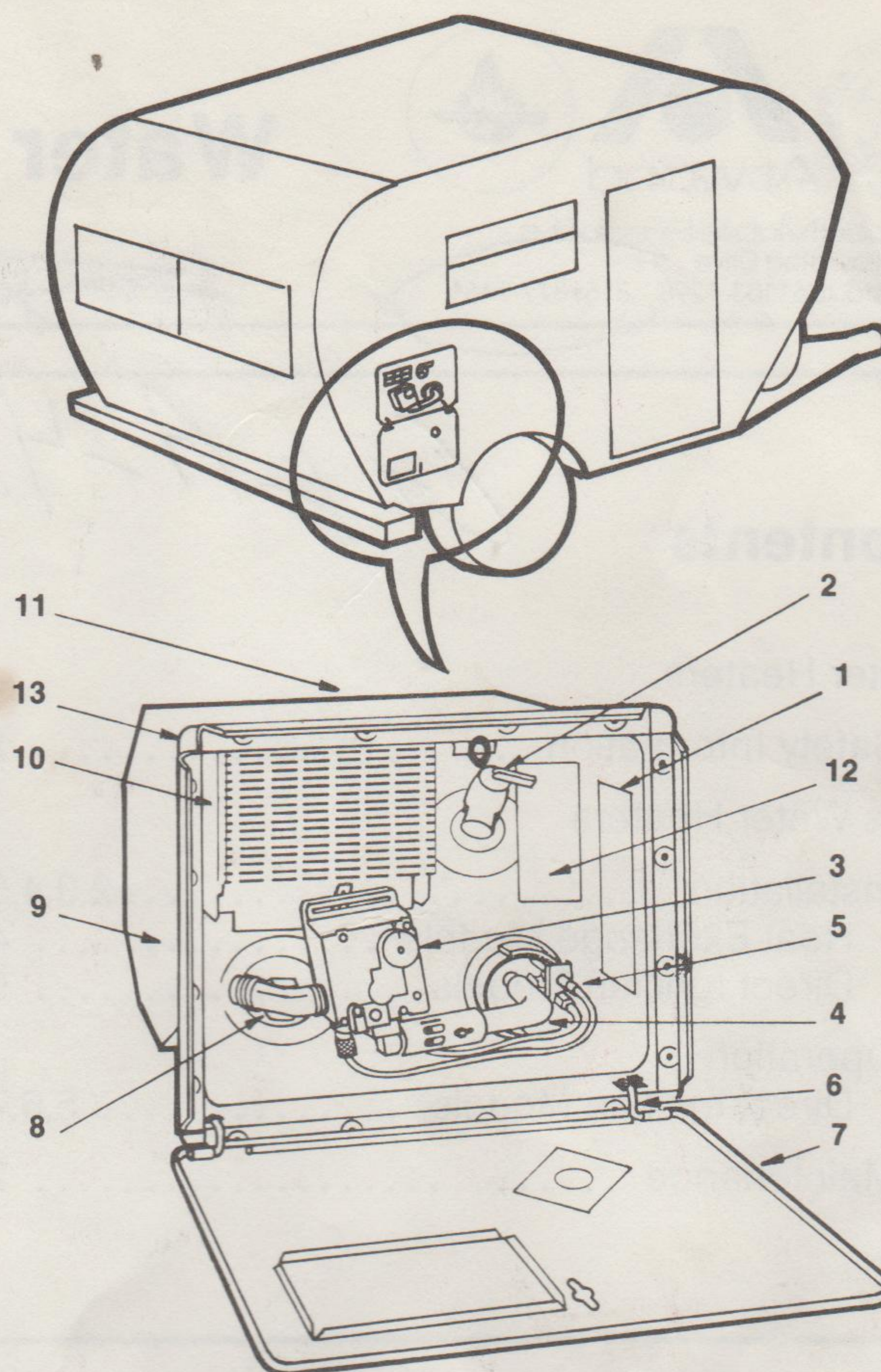
Models G6A3, GH6-3, G610-3, GC610-3, GH6-4E, G6A-4E

WARNING:

Atwood gas operated water heaters are for use with L.P. gas only, and installation in recreational vehicles (e.g. travel trailers, motor homes) only. All combustion air must be supplied from the outside and all products of combustion must be vented to the outside. The water heater must be installed on the outside of a recreational vehicle with the access door opening to the outdoors.

1. Locate water heater on floor of coach before you erect the side wall.
2. If you install the appliance directly on carpeting, you must install it on a metal or wood panel that extends beyond the full width and depth of the appliance by at least three inches in any direction.
3. If you install the water heater where leakage of the tank or connections will cause damage to the adjacent area, then you should install a suitable drain pan, adequately drained, under the water heater.
4. Connect water lines (1/2 NPT) and gas lines (3/8 inch flared).
 - a. Allow flexibility in water and gas lines so you can pull the unit forward through the wall one inch past the skin.
 - b. Seal gas line entrance opening with material capable of withstanding 120° F. To use grommet supplied, slip it over gas line, remove backing paper and press firmly to clean, dry, metal surface around opening where gas line enters control compartment.
 - c. Always use pipe lubricant on the threads when connecting the hot and cold couplings.
5. Erect side walls and cut opening for heater (12-1/2 x 16). Frame with 2 x 2 SPF lumber (minimum).
 - a. Provide adequate clearance at rear of unit for servicing and proper operation.
 - b. Minimum clearance from combustible construction for all models:

Sides:	0"
Back:	0"
Top:	0"
Bottom:	0"



Item	Part Number	Description
1		Rating Plate
2	91604	Relief Valve
3	91601 or 91602	Thermostat
	Order by Model No.	
4	92615	Main Burner
5	91603	Pilot Assembly
6	92568	Hinge
7	Order by Color	Access Door
8	91561	Drain Plug
9	Order by Model No.	Inner Tank
10	Order by Model No.	Flue Box Assembly
11	91039	Housing
12	—	Instructions
13	91928	Corner Bracket

FIGURE 1
GAS WATER HEATER

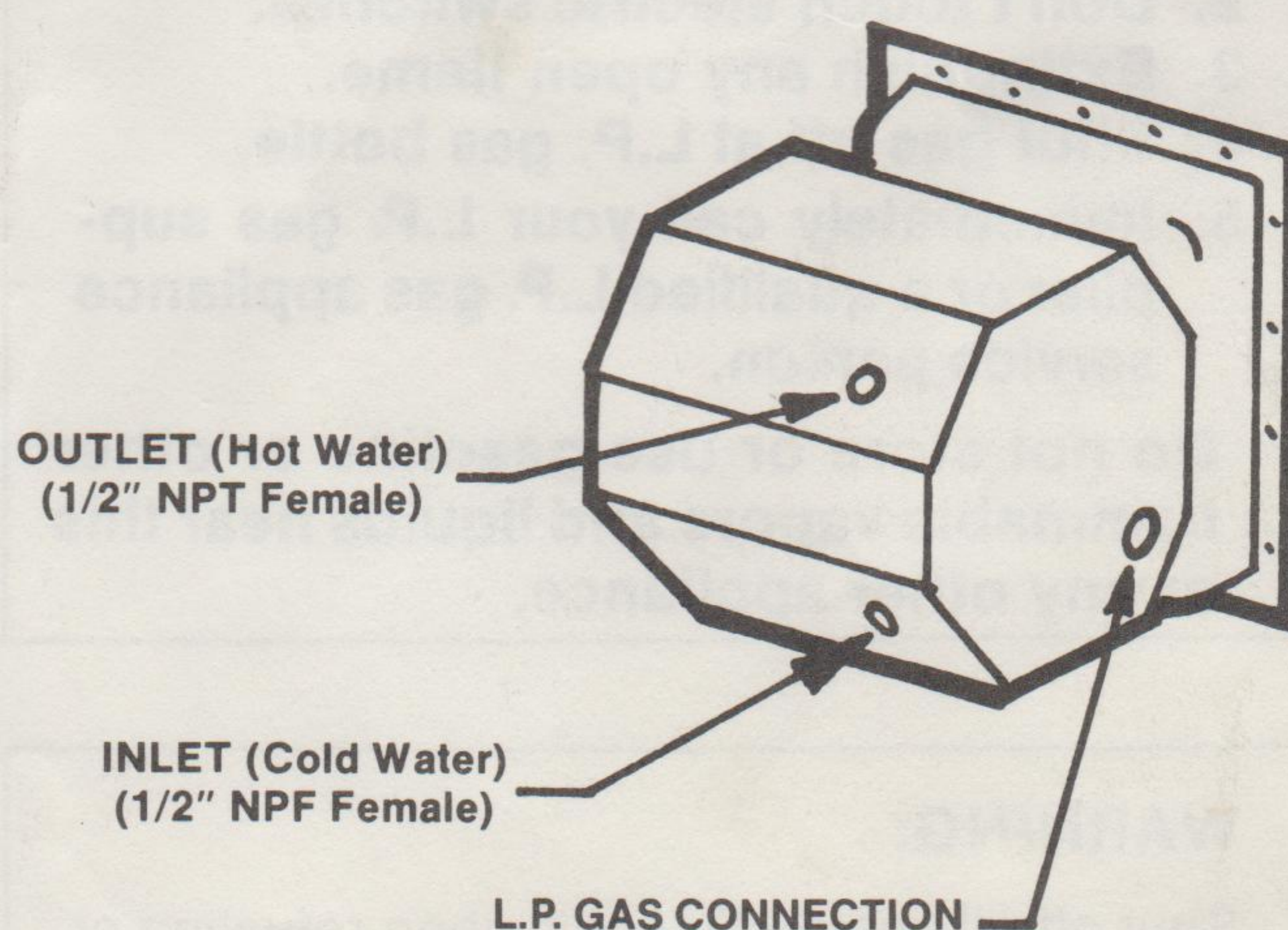


FIGURE 2
WATER AND GAS LINE CONNECTIONS

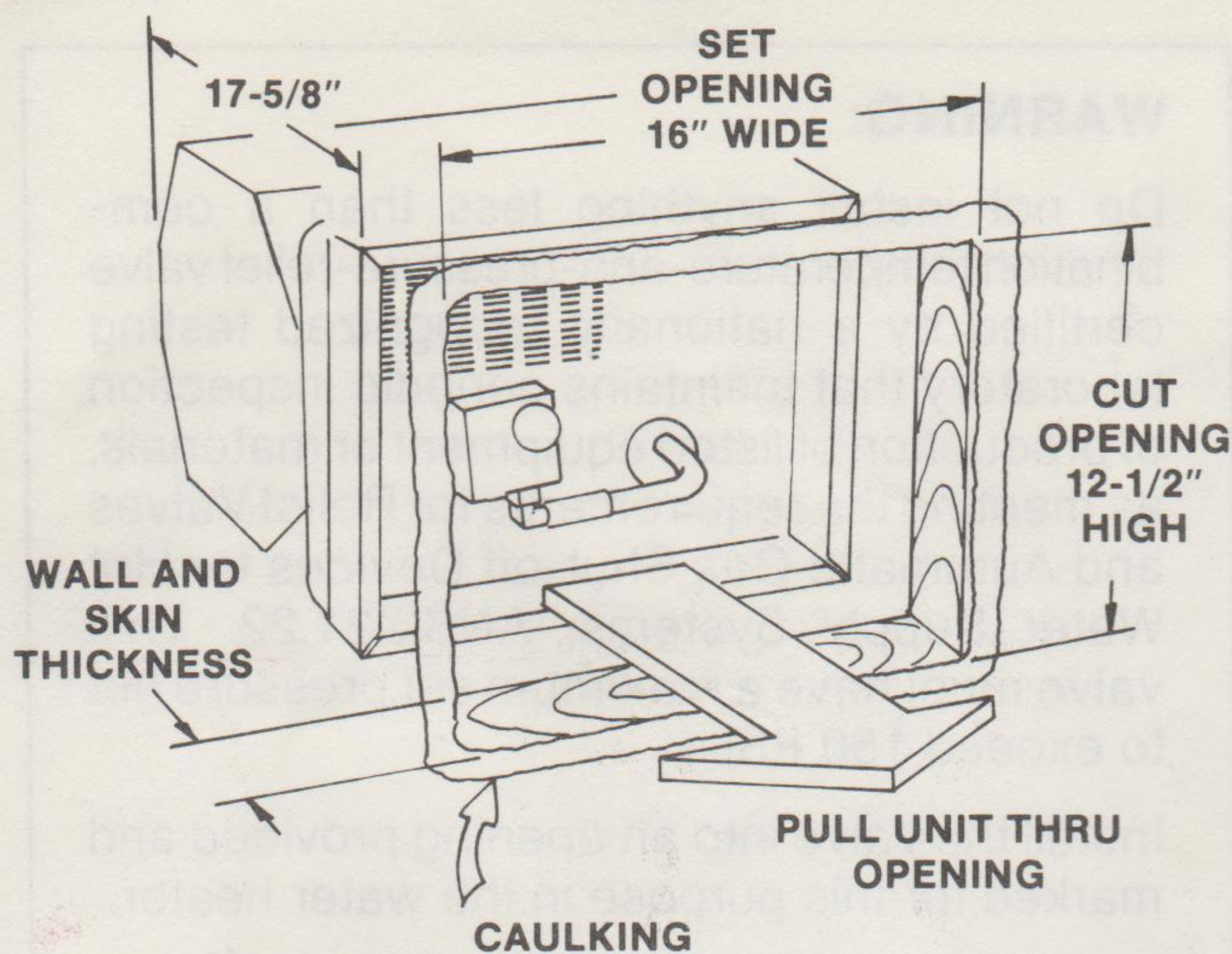


FIGURE 3
WATER HEATER INSTALLATION

FIGURE 4
CORNER BRACKET INSTALLATION

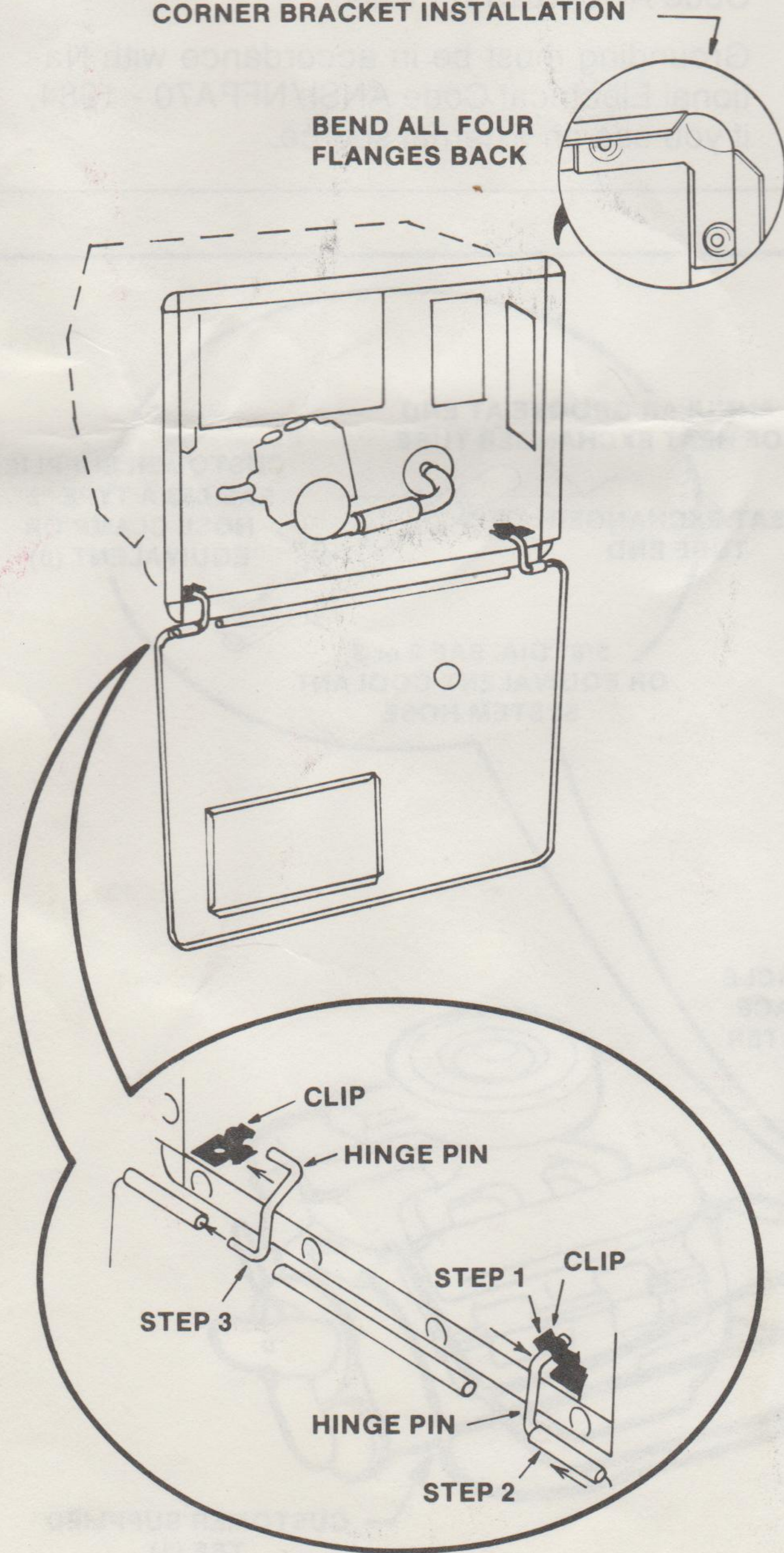


FIGURE 5
ACCESS DOOR HINGE INSTALLATION

- c. Air supply for combustion must come from outside air.
- d. Follow the installation instructions carefully to insure the proper air supply.
- e. Use pipe compound that is U.L. listed and marked for use in a L.P. gas system.
6. Caulk thoroughly around opening to prevent water leaks.
7. Pull unit through opening one inch past outside skin (Figure 3). Bend all flanges 90° along scored lines (Figure 4). Caulk at bend slots.

CAUTION:

Do not pull on the main burner tube.

8. Push unit against caulking and secure to coach with No. 8 x 3/4 inch Rd. Hd. screws (Not furnished). Use four corner brackets as shown.
9. Attach access door as shown. (Figure 5)
 - a. Snap hinge pin into clip. (Step 1)
 - b. Slide cover onto hinge pin. (Step 2)
 - c. Snap other hinge pin into clip and cover at same time. (Step 3)

NOTE:

To remove hinge pin, support access cover and apply force to corner of hinge pin as shown.

10. Turn on gas and check the appliance and all of its connections for gas leaks with soap and water.

WARNING:

Do not use matches, candles or other sources of ignition for this purpose.

11. Fill water heater tank and check connections for water leaks.

NOTE:

When draining heater, open drain valve and a hot water faucet in the water system.

12. For direct ignition units refer to Operation Instructions on page 7.
13. For heat exchange model installation, see page 4.
14. Your Atwood water heater is now ready for operation. Refer to Operations Instructions on page 6.

Gas Water Heaters

• INSTALLATION (Continued)

Models G6A3, GH6-3, G610-3, GC610-3, GH6-4E, G6A-4E

NOTE:

Disconnect this unit and its individual shut-off valve from the gas supply piping system during any pressure testing of that system in **excess** of 1/2 psig (3.7kPa, 11" water column)

Do not set inlet pressure higher than the maximum indicated on the rating plate, (13" W.C.)

This unit must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig.

NOTE:

For Canadian units, install according to:

1. CSA standard Z240.4 gas equipped recreational vehicles and mobile housing.
2. CSA standard Z240.62 electrical requirements for recreational vehicles.

WARNING:

Do not install anything less than a combination temperature-and-pressure-relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting the requirements for Relief Valves and Automatic Gas Shut-off Devices for Hot Water Supply Systems, ANSI Z21.22. This valve must have a maximum set pressure not to exceed 150 PSI.

Install the valve into an opening provided and marked for this purpose in the water heater.

Installation must conform with local codes or in the absence of local codes American National Standard for Recreational Vehicles, ANSI/A119.2 - 1982, National Fuel, Gas Code ANSI Z223.1 - 1984.

Grounding must be in accordance with National Electrical Code ANSI/NFPA 70 - 1984, if you use an external source.

• Heat Exchange Models

Models GH-3, GH6-4E

1. Follow Steps 1 through 14 page 2 and 3.
2. Push hose end (with clamp attached) onto tube end as far as possible.
3. Spread hose clamp and slide toward heat exchanger unit past annular groove and release.

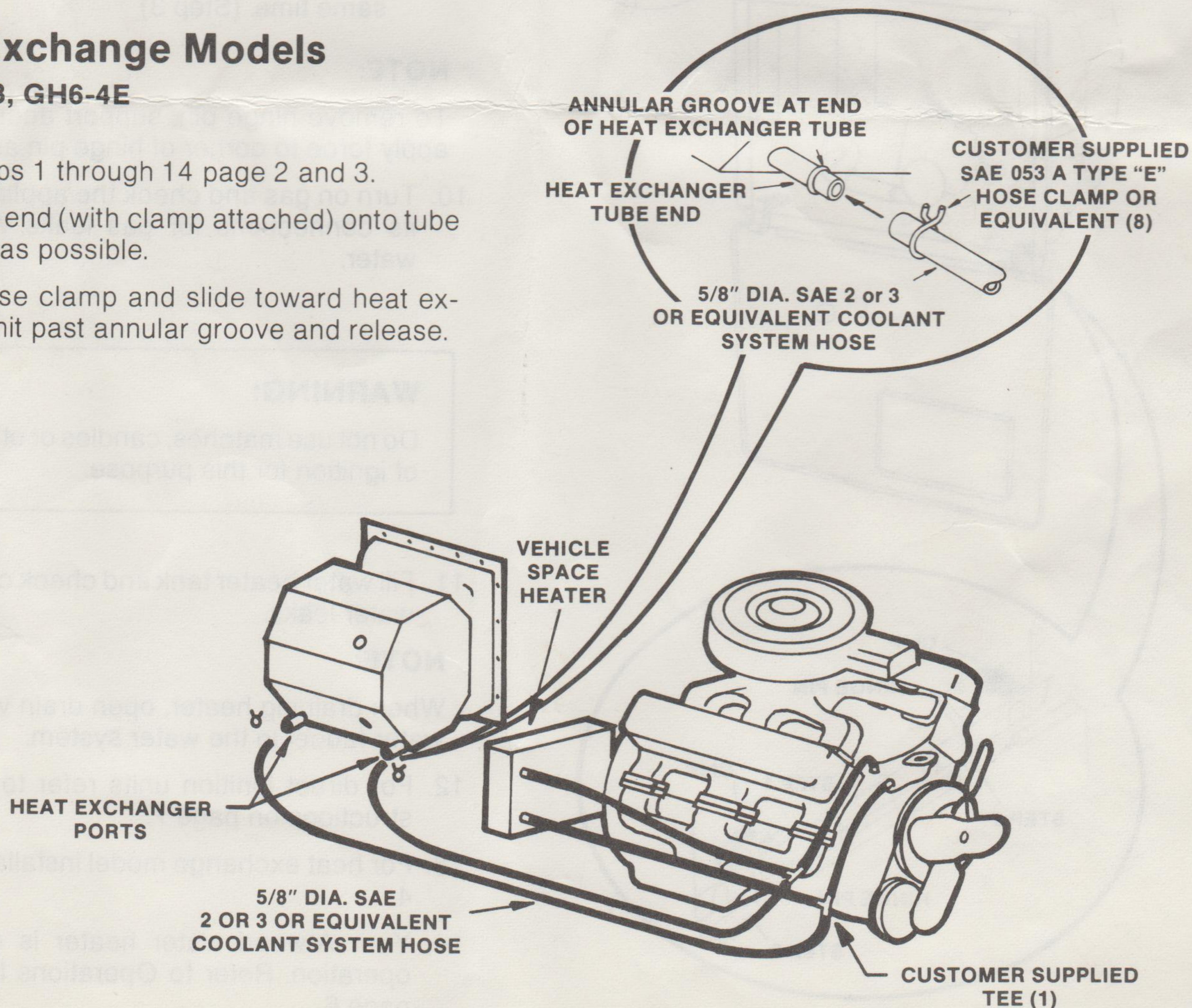


FIGURE 6
TYPICAL GH6 INSTALLATION

WIRING INSTRUCTIONS

2. Install the switch in any convenient location. Position wall plate with letters up. Place switch in the off position before making connections. The switch is "off" when the button is depressed towards No. 3 terminal.

It is recommended that the unit be connected directly to a 12V DC battery on to the filtered side of an AC/DC converter. Connections to the unfiltered side of an AC/DC converter should be avoided. Whenever possible use a minimum of 18 gage wire, U.L. and CSA listed.

- 1) blue lead to switch terminal No. 6 on the indicator light of the switch;
- 2) No. 4 terminal on the indicator light of the switch to the negative battery terminal;
- 3) green lead to the negative battery terminal.
- 4) brown lead on water heater to the No. 3 terminal on the switch;
- 5) No. 2 terminal to the positive battery terminal.

This diagram shows the internal components of a portable electronic device, likely a radio or amplifier, with the following numbered callouts:

- 1: Main chassis or housing.
- 2: Top cover or lid.
- 3: A component, possibly a speaker or transformer, mounted on the chassis.
- 4: A component, possibly a speaker or transformer, mounted on the chassis.
- 5: The bottom cover or base plate.
- 6: A component, possibly a speaker or transformer, mounted on the chassis.
- 7: A component, possibly a speaker or transformer, mounted on the chassis.
- 8: A component, possibly a speaker or transformer, mounted on the chassis.
- 9: A component, possibly a speaker or transformer, mounted on the chassis.
- 10: A component, possibly a speaker or transformer, mounted on the chassis.
- 11: A component, possibly a speaker or transformer, mounted on the chassis.
- 12: A component, possibly a speaker or transformer, mounted on the chassis.

A detailed line drawing of a wiring harness. On the left is a 'WATER HEATER' with three terminals labeled 'BLUE', 'GREEN', and 'BROWN'. In the center is a 'BATTERY' with '+' and '-' terminals. On the right is a 'LIGHT SWITCH' shown in the 'off' position, with terminals labeled 'NO. 2', 'NO. 3', 'NO. 4', and 'NO. 6'. Wires connect the water heater terminals to the battery and the light switch terminals. Specifically, the blue wire connects the blue terminal to NO. 4, the green wire connects the green terminal to NO. 6, and the brown wire connects the brown terminal to NO. 2. A common ground wire connects the negative terminal of the battery to the light switch chassis.

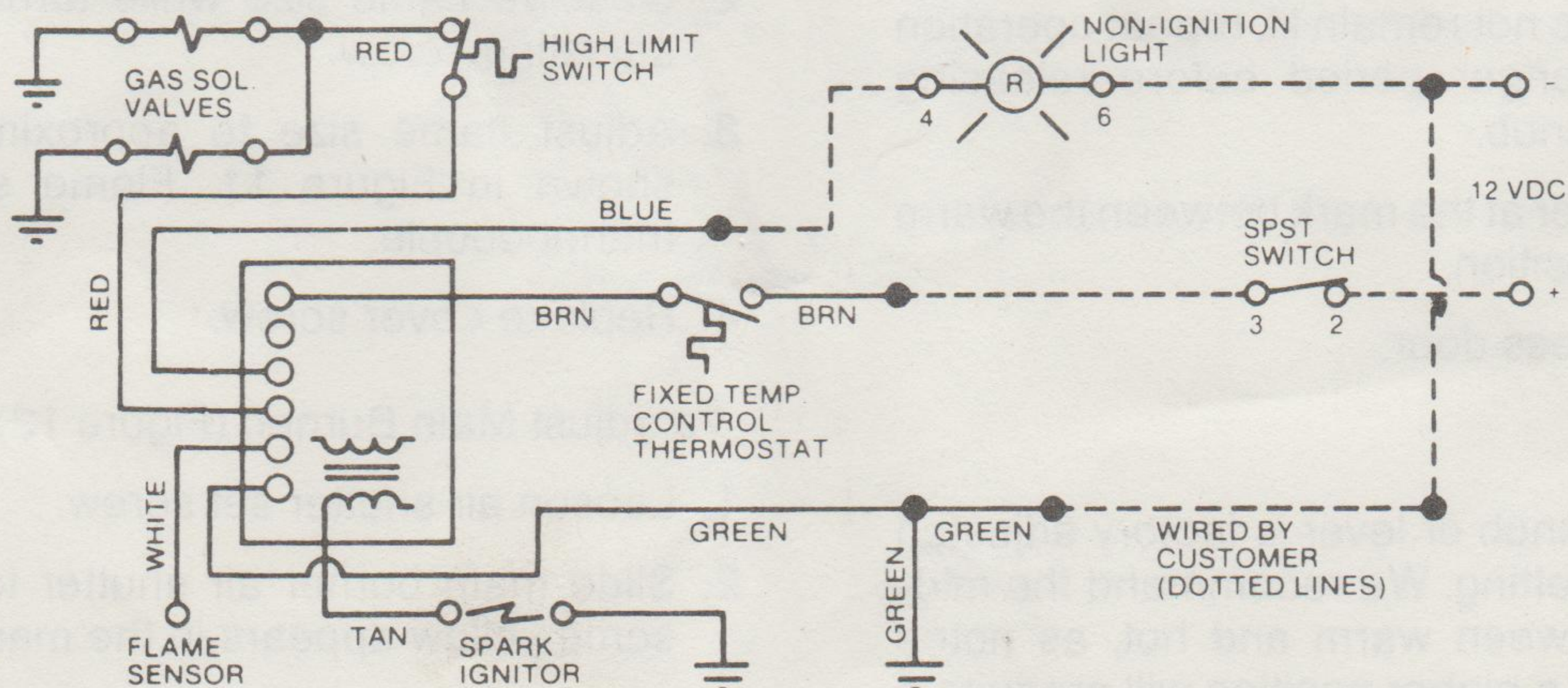


FIGURE 8
WIRING SCHEMATIC FOR DIRECT IGNITION MODELS

Gas Water Heaters

• OPERATION

All Gas Models Except Direct Ignition Models
GH6-4E, G6A-4E

CAUTION:

Do not tamper with the pilot orifice. High water temperature can result.

To Light Pilot:

1. Turn lighting control to "off" position.
2. Wait at least five minutes to allow gas which may have accumulated in burner compartment to escape.
3. Note that your water heater may have either a Robertshaw "Unitrol" or "Jade" Control.

For a Robertshaw "Unitrol": (Figure 9)

- a. Turn lighting control dial to "pilot" position.
- b. Depress and hold reset push button while lighting pilot burner.
- c. Allow pilot to burn for one half minute before releasing button.
- d. Turn control dial to "on" position.
- e. If pilot does not remain lit, repeat operation allowing longer period before releasing push button.
- f. Set the dial at the mid-point position between warm and hot.
- g. Close access door.

For "Jade" Control: (Figure 10)

- a. Turn lighting control dial to "pilot" position and hold against stop while lighting pilot burner.
- b. Allow pilot to burn approximately one half minute before releasing dial.
- c. Turn control knob to "on" position.
- d. If pilot does not remain lit, repeat operation allowing longer period before releasing button or knob.
- e. Set the lever at the mark between the warm and hot position.
- f. Close access door.

CAUTION:

The temperature knob or lever is factory adjusted to its lowest dial setting. We recommend the mid-point position between warm and hot, as noted above. Settings at a higher position will produce a higher temperature and increase the risk of being scalded.

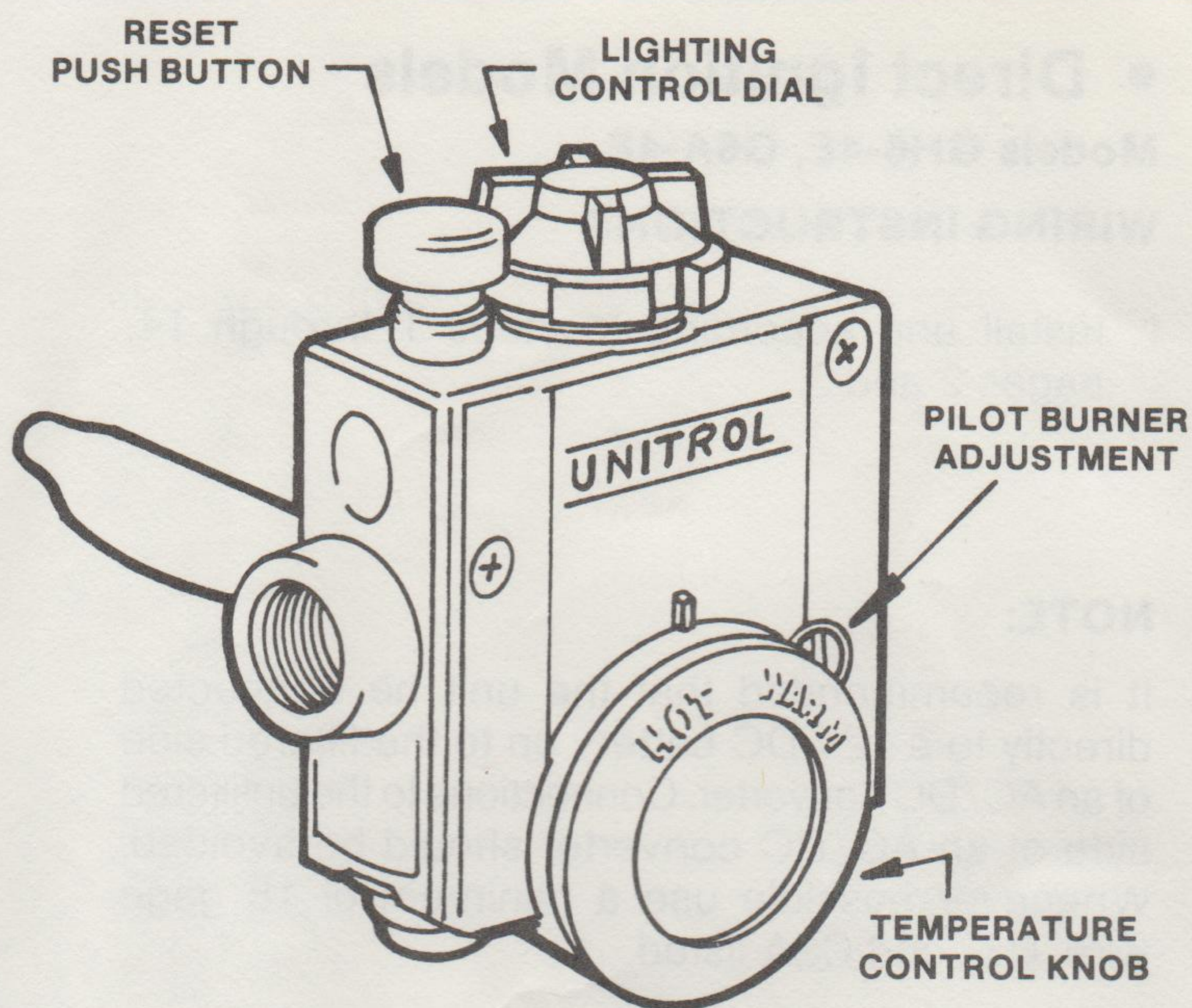


FIGURE 9
ROBERTSHAW "UNITROL"

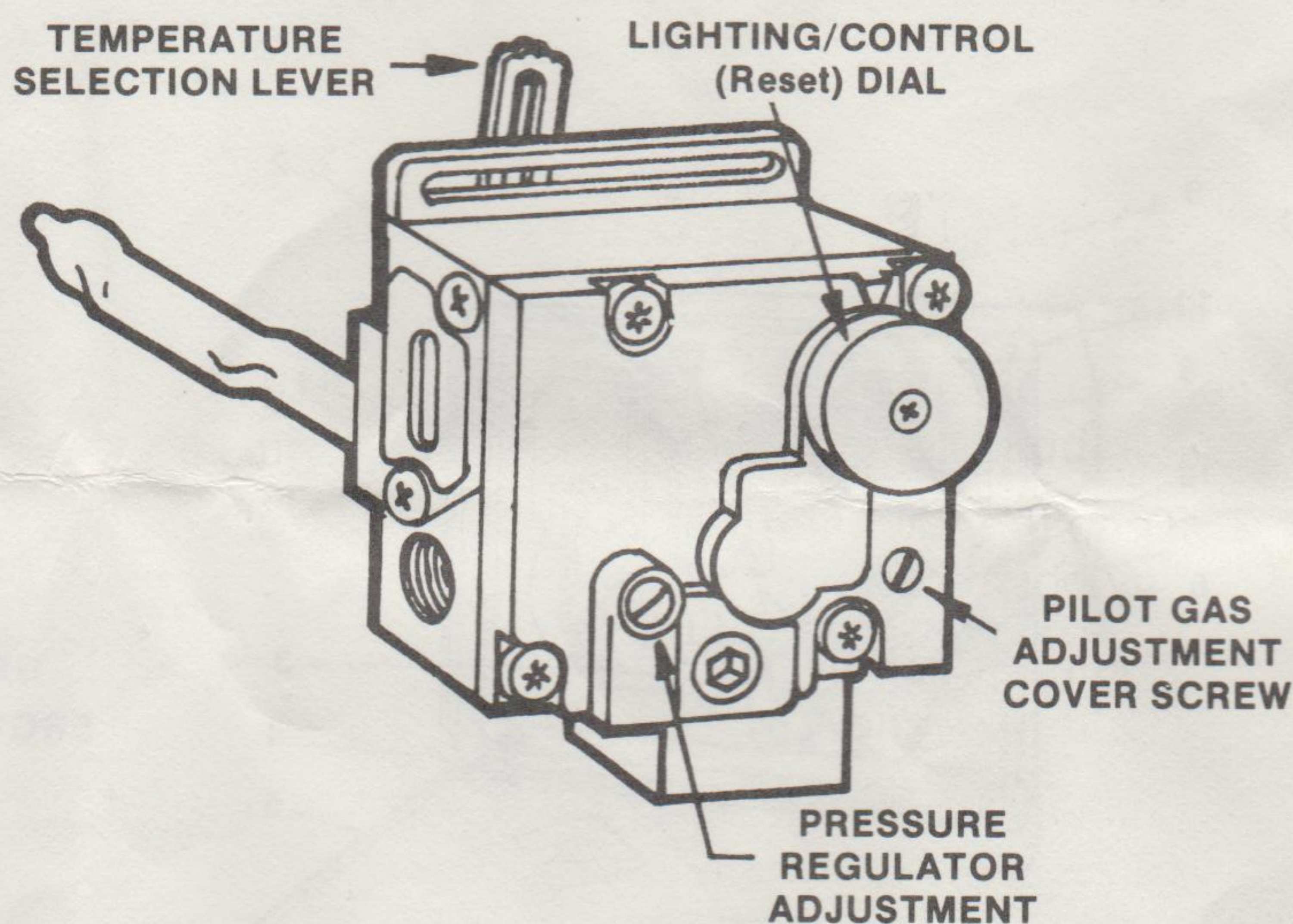


FIGURE 10
JADE CONTROL

To Adjust Pilot Burner: (Figure 11)

1. Remove cover screw.
2. Observe flame size while turning pilot burner adjusting screw.
3. Adjust flame size to approximately 1/4" as shown in Figure 11. Flame should envelop thermocouple.
4. Replace cover screw.

To adjust Main Burner: (Figure 12)

1. Loosen air shutter set screw.
2. Slide main burner air shutter to the right until some yellow appears in the main flame.
3. Move shutter to left until yellow disappears.
4. Tighten set screw.

● OPERATION (Continued)

Direct Ignition Models GH6-4E, G6A-4E

1. Place remote switch in the "on" position.
2. If switch light stays on longer than 6 seconds place switch in "off" position and wait 5 minutes.
3. Repeat step one.
4. For complete shut-down and before servicing:
 - a. Place remote switch in "off" position.
 - b. Remove red wire from left hand terminal of ECO switch. (ECO to valve)
5. If heater fails to operate due to high water temperature, the heater will go into a lockout condition (indicator light on).
6. When water cools, reset by opening switch for at least 30 seconds, then close.
7. If a lockout condition occurs again, contact your dealer, an Atwood Service Station (see pages 11 through 13) or Atwood Service Department. (Phone: 815/877-7461)

● MAINTENANCE

All Gas Models

1. Keep the control compartment clean and free of combustible material and flammable liquids.
2. Keep the vent and combustion air grill clear of any obstructions.
3. Compare flame of main and pilot burners with Figures 11 and 12 periodically.
4. Manually operate the pressure temperature relief valve at least once a year. Operate only when storage water in tank is cool.

NOTE:

The water system of a recreational vehicle is closed. The water heater may occasionally discharge at the pressure temperature relief valve due to the thermal expansion of water during the heating cycle. This condition can be relieved by following these steps:

- a. Shut off the water supply.
- b. Open a hot water faucet.
- c. Open the pressure-temperature relief valve and allow the water to run until it stops.
- d. Close the pressure-temperature relief valve.
- e. Turn on the water supply.

This procedure will re-establish the air pocket at the top of the tank. When the P & T valve discharges again, repeat the above procedure. For a permanent solution, we recommend one of the following:

- I. Install a pressure relief valve in the cold water inlet line to the water heater and attach a drain line from the valve to the outside of the coach. You could also route this line to your fresh water tank. The pressure valve should be set to relieve at 100-125 PSI.
- II. Install a diaphragm type expansion tank in the cold water inlet line. The tank should be sized to allow for the expansion of approximately 15 ounces of water and pre-charged to a pressure equal to the water supply pressure.

Either of these devices can be obtained at a plumbing service center or a plumbing contractor.

Do not plug the pressure-temperature relief valve under any circumstance.

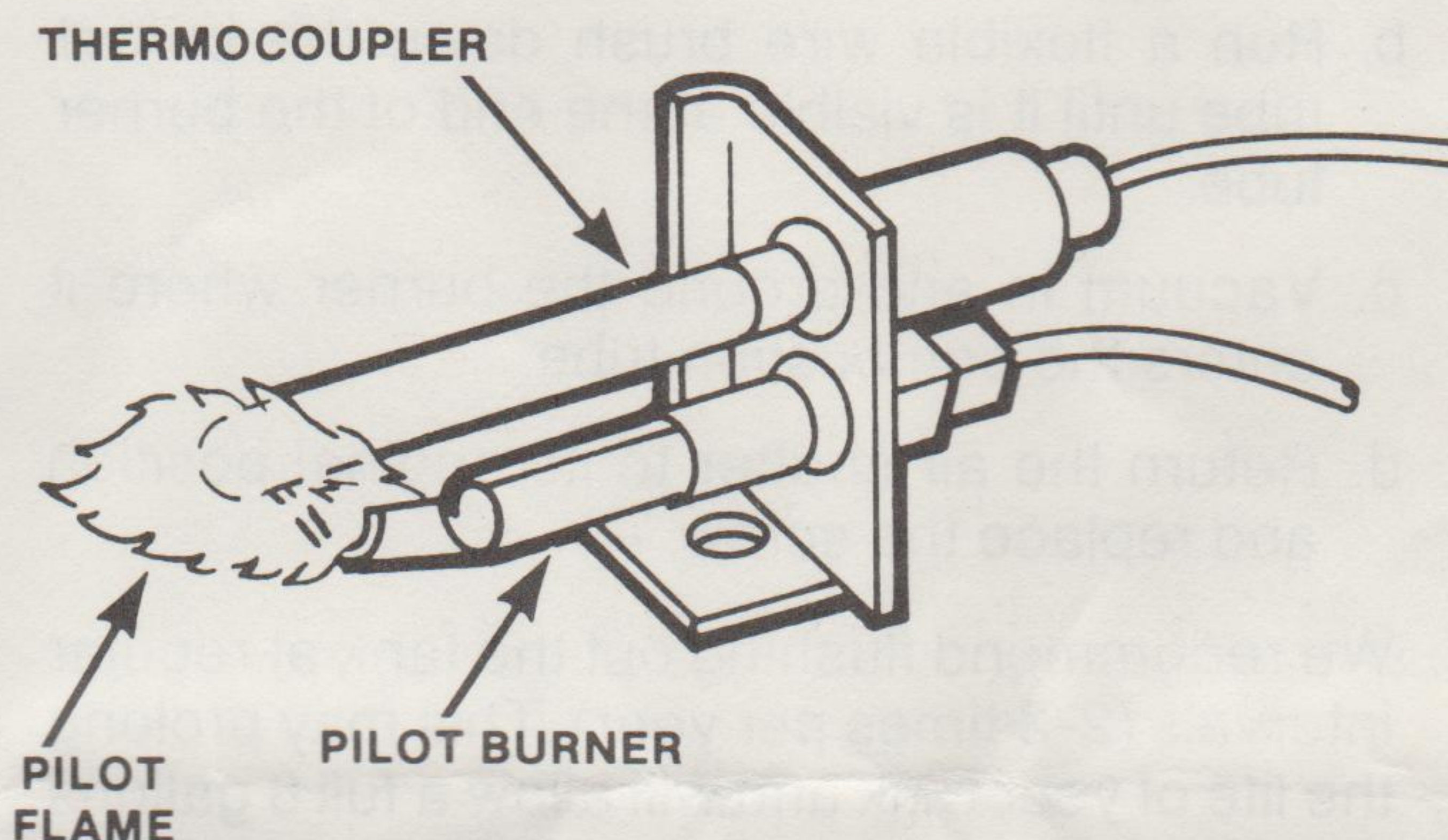


FIGURE 11
PILOT BURNER ASSEMBLY

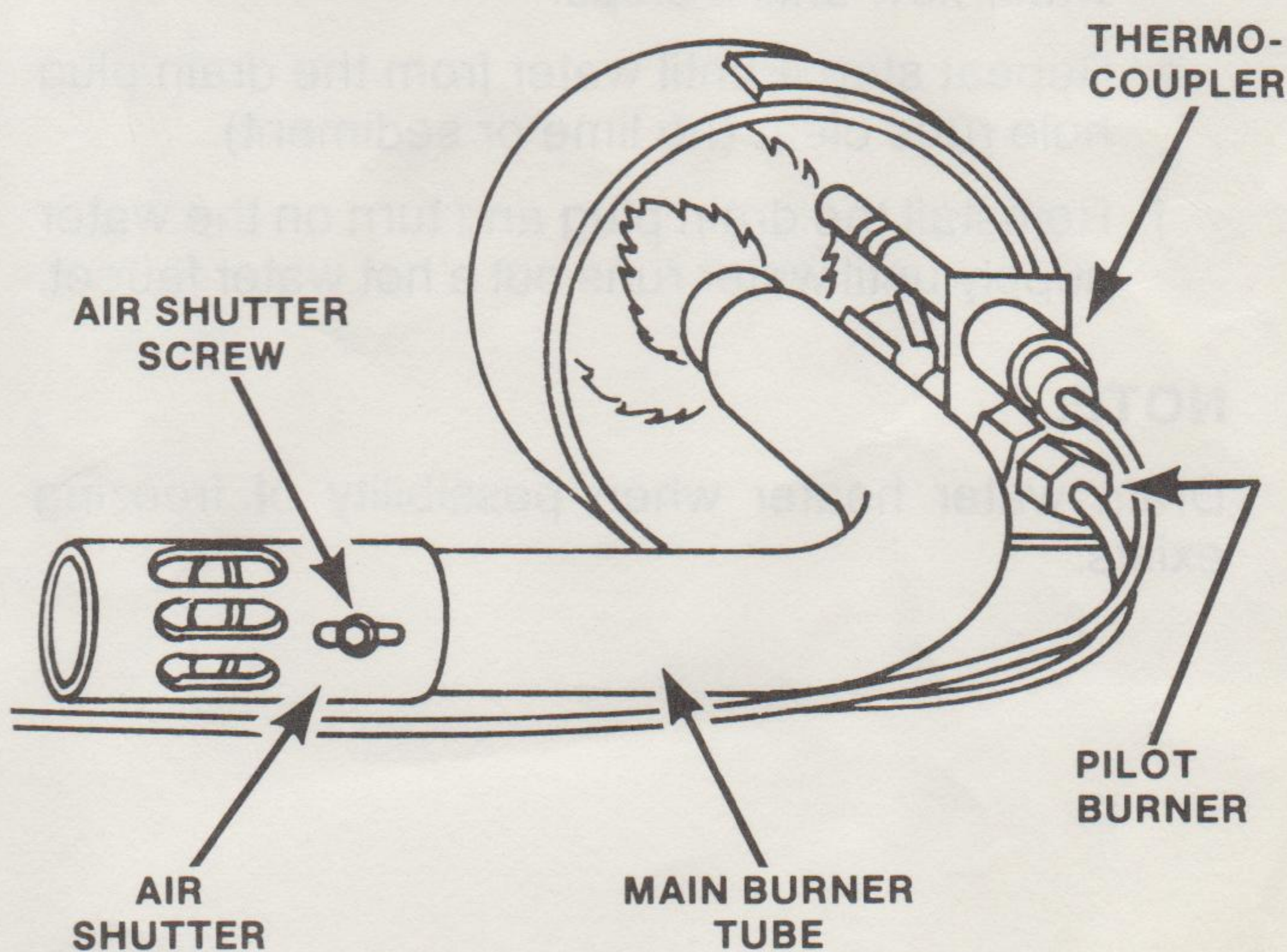


FIGURE 12
MAIN BURNER WITH PILOT BURNER

● MAINTENANCE (Continued)

Direct Ignition Models GH6-4E, G6A-4E

5. Should overheating occur, or the gas supply fail to shut off, turn off the manual gas control valve to the appliance, or close the shut-off valve at gas supply bottle. On the Direct Ignition model turn the operating switch to the "off" position and remove the red wire from the left hand terminal of the ECO switch. Contact your dealer or Atwood Service Station (see pages 11 through 13) or Atwood Service Department. (Phone: 815/877-7461).
6. Clean the burner assembly at least once a year. Shut off gas and power before cleaning.
 - a. Remove the air shutter screw and slide the air shutter down the burner tube.
 - b. Run a flexible wire brush down the burner tube until it is visible at the end of the burner tube.
 - c. Vacuum in and around the burner where it enters the combustion tube.
 - d. Return the air shutter to its original position and replace the screw.
7. We recommend flushing out the tank at regular intervals (2-3 times per year). This may prolong the life of your tank and will allow a full 6 gallons of water for your hot water needs.
 - a. Turn off the water supply.
 - b. Open a hot water faucet or P & T valve.
 - c. Remove the drain plug and allow the water to run until it stops.
 - d. Turn the water supply on for 1 to 1-1/2 minutes with the drain plug removed. Let the water flow until it stops.
 - e. Repeat step 4 until water from the drain plug hole runs clear (no lime or sediment).
 - f. Reinstall the drain plug and turn on the water supply until water runs out a hot water faucet.

NOTE:

Drain water heater when possibility of freezing exists.

Combination Gas/Electric Water Heaters

• INSTALLATION

Model GC610-3

NOTE:

This water heater is designed to operate on gas, on electricity or on a combination of gas and electricity.

1. Follow gas water heater installation instructions, steps 1 through 14, pages 2 and 3.
2. Make electrical connection as shown in wiring diagram. (Figure 15)
 - a. Use electrical metallic tubing, flexible metal conduit, metal clad cable, or nonmetallic-sheathed cable with grounding conductor. Wire use must have a capacity of 1500 watts or greater. The wiring method must conform to article 551-14 of the National Electrical Code (1984).
 - b. To ground heater, connect ground wire from electrical service to the green ground lead in the junction box. 120V AC only.
3. Place switch in "off" position.

NOTE:

All wiring must be in accordance with the applicable electrical codes.

• OPERATION

1. For gas operation see gas water heater instructions on page 6.
2. For electric operation use control at rear of water heater maximum thermostat setting is 150°.

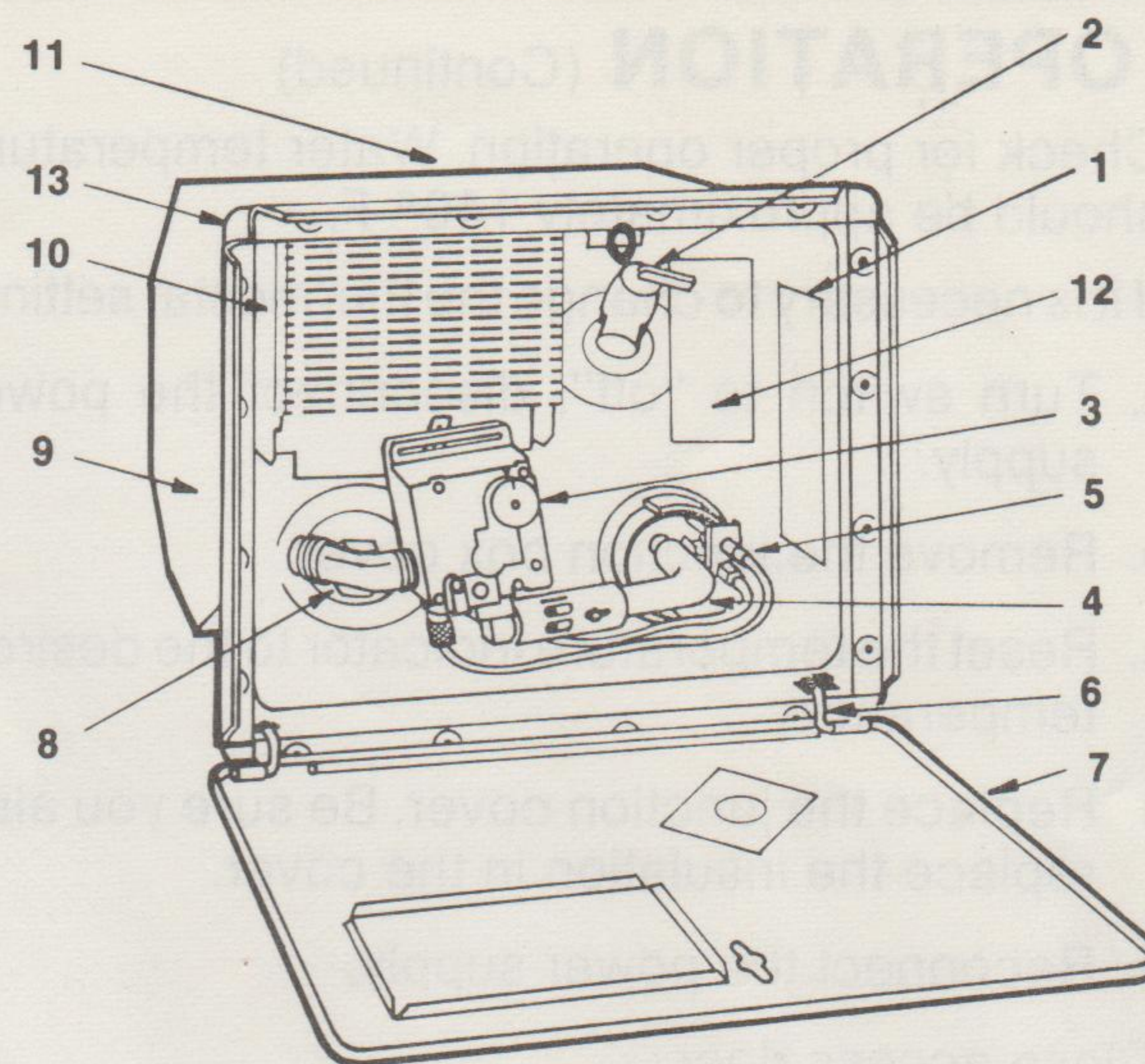
CAUTION:

The thermostat is factory set at approximately 140° F (60° C) to reduce the risk of scald injury. Higher settings will increase the scald hazard.

3. If necessary, use automatic over temperature reset button located at rear of water heater.
4. Completely fill tank with water.
5. Turn switch to "on" position.

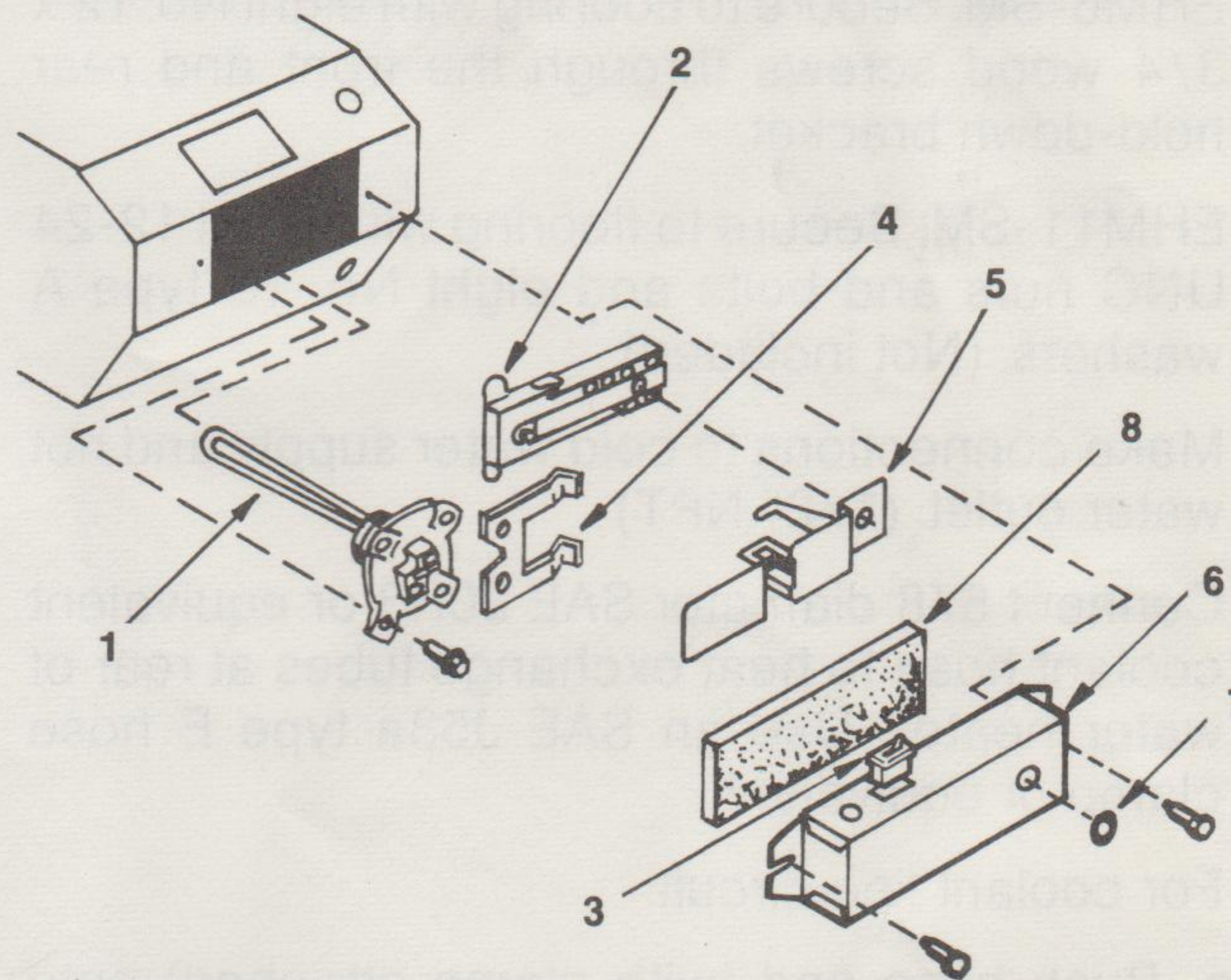
NOTE:

Do not apply voltage to heater unless water covers heating element. Failure to do so may burn out element and void warranty.



Item	Part Number	Description
1		Rating Plate
2	91604	Relief Valve
3	91601 or 91602	Thermostat
	Order by Model No.	
4	92615	Main Burner
5	91603	Pilot Assembly
6	92568	Hinge
7	Order by Color	Access Door
8	91561	Drain Plug
9	Order by Model No.	Inner Tank
10	Order by Model No.	Flue Box Assembly
11	91039	Housing
12	—	Instructions
13	91928	Corner Bracket

FIGURE 13
COMBINATION GAS/ELECTRIC WATER HEATER



Item	Description
1	Heating Element
2	Thermostat Assembly
3	On-Off Switch
4	Thermostat Clip
5	Retainer
6	Cover
7	Grommet (high temperature reset button access)
8	Insulation

FIGURE 14
HEATING ELEMENT AND THERMOSTAT ASSEMBLY

• OPERATION (Continued)

6. Check for proper operation. Water temperature should be approximately 140° F.
7. If it is necessary to change the thermostat setting:
 - a. Turn switch to "off", disconnect the power supply.
 - b. Remove the junction box cover.
 - c. Reset the temperature indicator to the desired temperature.
 - d. Replace the junction cover. Be sure you also replace the insulation in the cover.
 - e. Reconnect the power supply.
 - f. Close access door.

• MAINTENANCE

(See page 7)

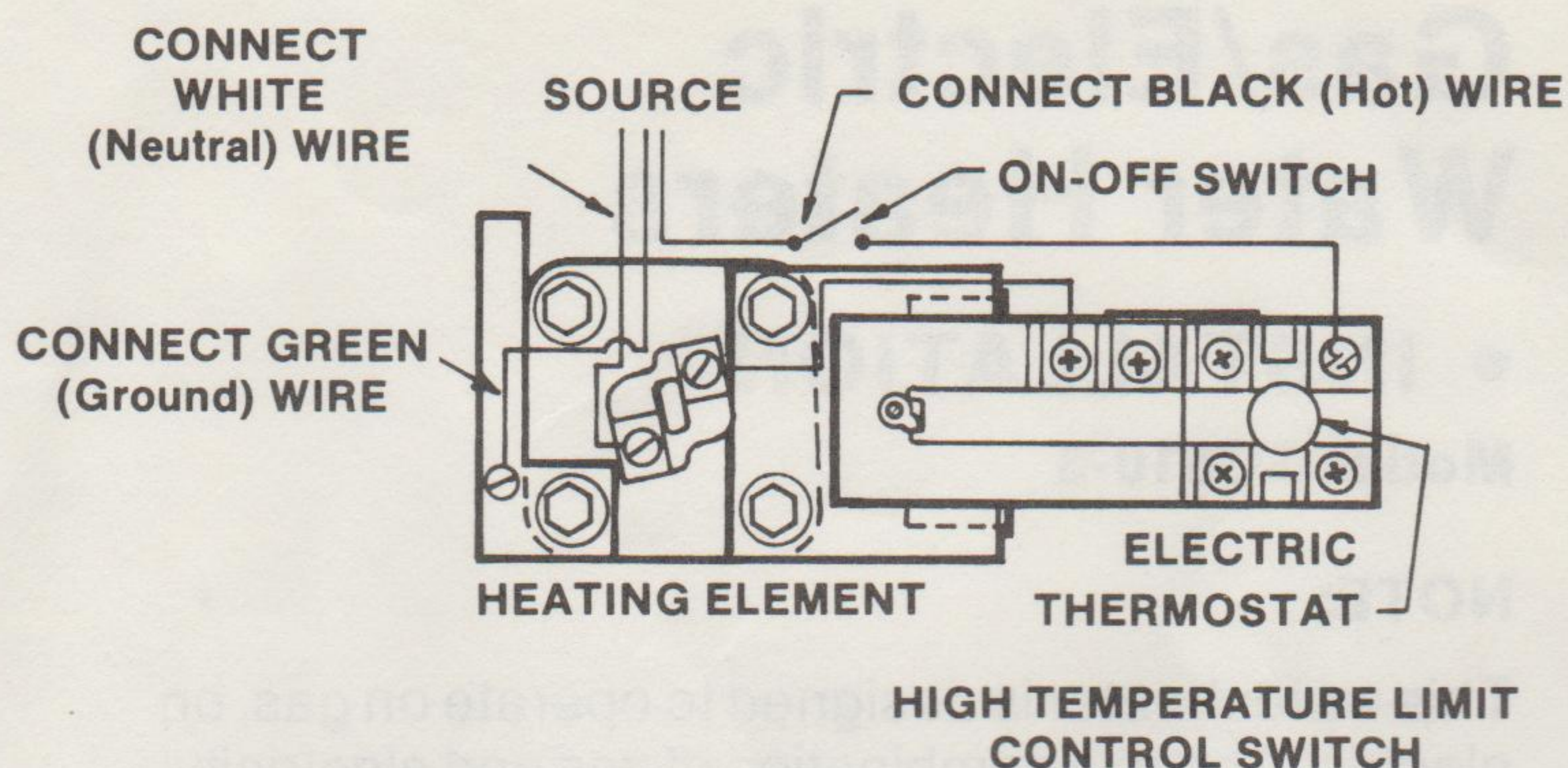


FIGURE 15
WIRING DIAGRAM
HEATING ELEMENT AND ELECTRIC THERMOSTAT

Electric Water Heaters

• INSTALLATION

Models EHM6-SM, EHM11-SM

CGA certified for installation in recreational vehicles.

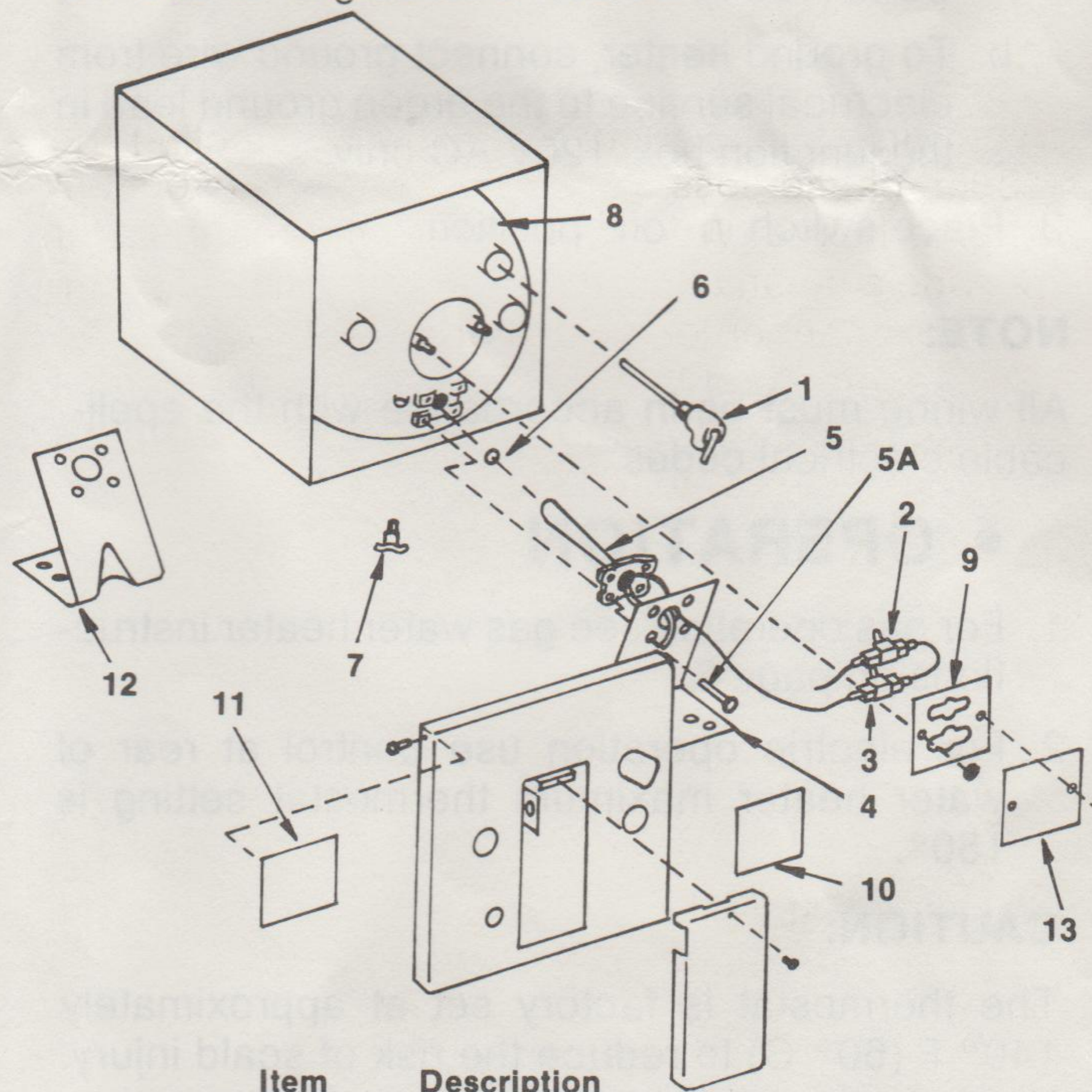
1. Position heater on plywood floor (5/8 min.). Locate at or below engine level.
2. EHM6-SM: Secure to flooring with eight No. 12 x 3/4 wood screws through the front and rear hold-down bracket.
EHM11-SM: Secure to flooring with eight 12-24 UNC nuts and bolts and eight No. 12 type A washers. (Not included)
3. Make connections to cold water supply and hot water outlet. (1/2" NPT)
4. Connect 5/8 diameter SAE 20R3 or equivalent coolant hose to heat exchange tubes at rear of water heater. Use an SAE J53a type E hose clamp or equivalent.

For coolant line circuit:

- a. Push hose end (with clamp attached) onto tube as far as possible.
 - b. Spread hose clamp and slide toward heat exchange unit, past annular groove and release.
5. Bleed air from the entire coolant system for proper operation of both engine and water heater.
 6. Connect electric supply at junction box with armoured cable or conduit with a capacity of 1500 watts or greater.

NOTE:

For marine installation, use conductors as specified by sub chapter S, part 183.425, table 5 of chapter 1 - Coast Guard Department of Transportation Code of Federal Regulations Title 33.



Item	Description
1	Relief Valve
2	Reset Hi-Limit Switch
3	Thermostat
4	Floor Anchor Plate Front
5	Heating Element
6	Gasket Heating Element
7	Drain Plug
8	Inner Tank
9	Retaining Plate
10	Rating Plate
11	Operating Instructions
12	Floor Anchor Plate Rear
13	Wire Guard

FIGURE 16
ELECTRIC WATER HEATER

● INSTALLATION (Continued)

7. To ground heater, connect grounding wire from electrical service to the green wire.
8. Use a UL listed on-off switch rated for 15 amps at 125V AC.

NOTE:

For marine installation, locate the switch in an area where ignition protection is not required.

9. Fill the heater with water. Open the hot water faucets connected to the heater until all air is gone.
10. Only connect to 110V-120V AC supply.
11. Thermostat is factory-set and is not adjustable.
12. Replace cover.
13. Turn remote switch to "on". Your water heater is now operating.

NOTE:

Do not apply power to heater unless water covers the heating element.

CAUTION:

A leak in the heat exchanger or its connecting line could cause loss of coolant and subsequent engine failure. We recommend that the installer provide a means for bypassing the engine coolant heat exchanger located on the water heater. We also recommend that the user frequently inspect the connecting lines and the heater to insure that a leak has not developed.

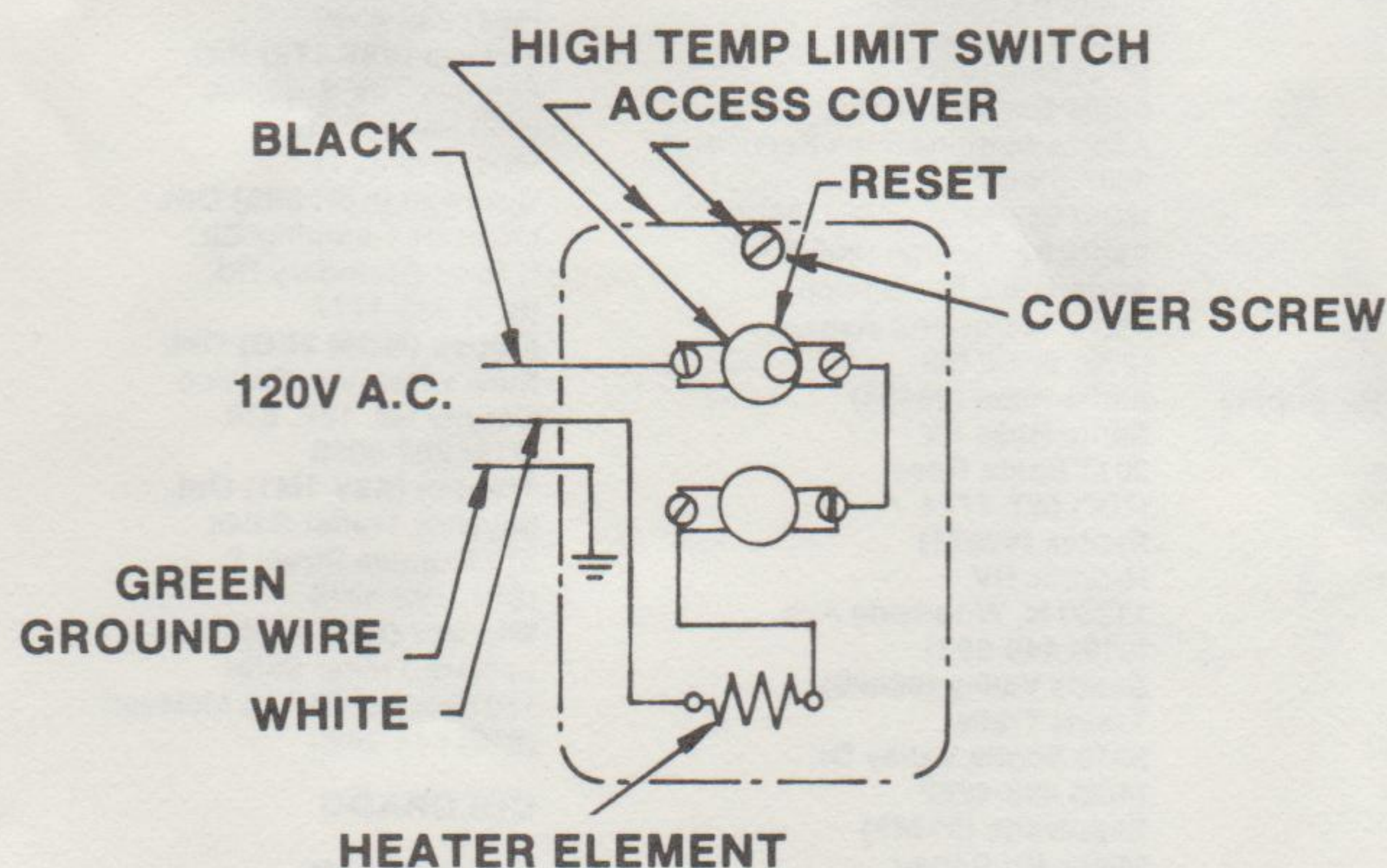


FIGURE 17
FIXED TEMPERATURE CONTROL THERMOSTAT

WARNING:

For protection against excessive pressures and temperatures in this water heater, install temperature-and-pressure equipment required by local codes.

Do not install anything less than a combination temperature-and-pressure-relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting and requirements for Relief Valves and Automatic Gas Shut-off Devices for Hot Water Supply Systems, ANSI Z21.22. This valve must have a maximum set pressure not to exceed the marked hydrostatic test pressure of the water heater. (150 psi)

Install the valve into the opening provided and marked for this purpose in the water heater.

Orient the valve or provide tubing so that any discharge from the valve will exit only within 6 inches above, or at any distance below the structural floor and cannot contact any live electrical part.

Do not block the discharge opening or reduce it in size under any circumstances.

● OPERATION

All Electric Models

1. Check to be sure water completely fills the water heater tank.
2. Locate remote water heater operation switch. (See vehicle owners manual for location of switch.)
3. Turn remote switch to "on".

● MAINTENANCE

1. Inspect all lines to and from the heat exchanger at regular intervals.
2. Manually operate the pressure temperature relief valve at least once a year. Operate only when storage water in tank is cool.
3. Flush out the tank at least once a year.

NOTE:

Drain water heater when possibility of freezing exists.