

# Owner's Manual



## POWER MISER™ 9 ULTRA LOW NOx GAS WATER HEATER

FOR POTABLE WATER HEATING ONLY.  
NOT SUITABLE FOR SPACE HEATING.  
NOT FOR USE IN MOBILE HOMES.



### MODEL NO.

153.330960

40 Gallon

153.330970

50 Gallon



- Safety Instructions
- Installation
- Operation
- Care and Maintenance
- Troubleshooting
- Parts List



### For Your Safety

AN ODORANT IS ADDED TO THE GAS USED BY THIS WATER HEATER.

This water heater meets the new ANSI Z21.10.1 standard that deals with the accidental or unintended ignition of flammable vapors, such as those emitted by gasoline.



### ⚠ WARNING

Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.

Failure to follow instructions and safety messages could result in death or serious injury.

Instruction manual must remain with water heater.

### ADVERTENCIA

Si no puede leer o entender el inglés y necesita el manual de instrucciones en español, puede solicitarlo al 1-800-821-2017. NO TRATE DE INSTALAR U OPERAR ESTE CALENTADOR DE AGUA SI NO ENTIENDE LAS INSTRUCCIONES. No hacer caso de esta advertencia podría originar lesiones graves o mortales.

**WARNING:** If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS:**
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Sears, Roebuck and Co., Hoffman Estates, IL 60179 U.S.A

# SAFE INSTALLATION, USE AND SERVICE

Your safety and the safety of others is extremely important in the installation, use and servicing of this water heater.

Many safety-related messages and instructions have been provided in this manual and on your own water heater to warn you and others of a potential hazard. Read and obey all safety messages and instructions throughout this manual. It is very important that the meaning of each safety message is understood by you and others who install, use or service this water heater.

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
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	<b>DANGER</b> indicates an imminently hazardous situation which, if not avoided, could result in death or injury.
	<b>WARNING</b> indicates a potentially hazardous situation which, if not avoided, could result in death or injury.
	<b>CAUTION</b> indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	<b>CAUTION</b> used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in property damage.

All safety messages will generally tell you about the type of hazard, what can happen if you do not follow the safety message and how to avoid the risk of injury.

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects, or other reproductive harm, and requires businesses to warn of potential exposure to such substances.

**WARNING:** This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

This appliance can cause low-level exposure to some of the substances included in the Act.

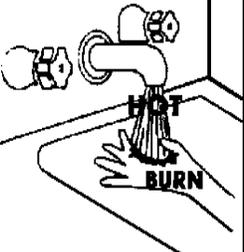
## IMPORTANT DEFINITIONS

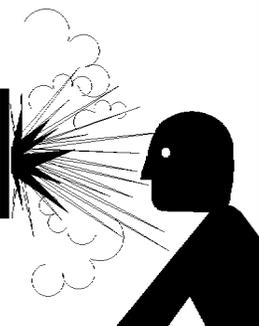
- **Gas Supplier:** The natural gas or propane utility or service who supplies gas for utilization by the gas burning appliances within this application. The gas supplier typically has responsibility for the inspection and code approval of gas piping up to and including the natural gas meter or propane storage tank of a building. Many gas suppliers also offer service and inspection of appliances within the building.

# SAFETY PRECAUTIONS

	<h2>⚠ WARNING</h2>
	<p>Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.</p> <p>Failure to follow instructions and safety messages could result in death or serious injury.</p> <p>Instruction manual must remain with water heater.</p>

	<h2>⚠ WARNING</h2>
	<p style="text-align: center;"><b>Fire Hazard</b></p> <p>For continued protection against risk of fire:</p> <ul style="list-style-type: none"> <li>• Do not install water heater on carpeted floor.</li> <li>• Do not operate water heater if flood damaged.</li> </ul>

<h2>⚠ DANGER</h2>	<p>Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.</p> <p>Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.</p> <p>Feel water before bathing or showering.</p> <p>Temperature limiting valves are available.</p> <p>Read instruction manual for safe temperature setting.</p>
	

	<h2>⚠ WARNING</h2>
	<p style="text-align: center;"><b>Explosion Hazard</b></p> <ul style="list-style-type: none"> <li>• Overheated water can cause watertank explosion.</li> <li>• Properly sized temperature and pressure relief valve must be installed in opening provided.</li> </ul>

<h2>⚠ WARNING</h2>	
<h3>Fire or Explosion Hazard</h3>	
<ul style="list-style-type: none"> <li>• Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.</li> <li>• Avoid all ignition sources if you smell LP gas.</li> <li>• Do not expose water heater control to excessive gas pressure.</li> <li>• Use only gas shown on rating plate.</li> <li>• Maintain required clearances to combustibles.</li> <li>• Keep ignition sources away from faucets after extended period of non-use.</li> </ul>	
	<p>Read instruction manual before installing, using or servicing water heater.</p>
	

<h2>⚠ WARNING</h2>	
<h3>Breathing Hazard - Carbon Monoxide Gas</h3>	
	<ul style="list-style-type: none"> <li>• Install vent system in accordance with codes.</li> <li>• Do not operate water heater if flood damaged.</li> <li>• High altitude orifice must be installed for operation above 2,000 feet (610 m).</li> <li>• Do not operate if soot buildup.</li> <li>• Do not obstruct water heater air intake with insulating jacket.</li> <li>• Do not place chemical vapor emitting products near water heater.</li> <li>• Gas and carbon monoxide detectors are available.</li> </ul>
	<p>Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.</p>

<h2>CAUTION</h2>
<p><b>Improper installation and use may result in property damage.</b></p>
<ul style="list-style-type: none"> <li>• Do not operate water heater if flood damaged.</li> <li>• Inspect and replace anode.</li> <li>• Install in location with drainage.</li> <li>• Fill tank with water before operation.</li> <li>• Be alert for thermal expansion.</li> </ul> <p>Refer to instruction manual for installation and service.</p>

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## CUSTOMER RESPONSIBILITIES

**Thank You** for purchasing a Kenmore water heater. Properly installed and maintained, it should give you years of trouble free service. If you should decide that you want the new water heater professionally installed by Sears, call 1-800-4-MY-HOME®. They will arrange for prompt, quality installation by Sears authorized contractors.

### Abbreviations Found In This Instruction Manual:

- CSA - Canadian Standards Association
- ANSI - American National Standards Institute
- NFPA - National Fire Protection Association
- ASME - American Society of Mechanical Engineers
- GAMA - Gas Appliance Manufacturers Association
- This gas-fired water heater is design certified by CSA INTERNATIONAL under American National Standard/CSA Standard for Gas Water Heaters ANSI Z21.10.1 • CSA 4.1 (current edition).
- Read the "Safety Precautions" section, page 3 of this manual first and then the entire manual carefully. If you don't follow the safety rules, the water heater will not operate properly. It could cause DEATH, SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE.

This manual contains instructions for the installation, operation, and maintenance of the gas-fired water heater. It also contains warnings throughout the manual that you must read and be aware of. All warnings and all instructions are essential to the proper operation of the water heater and your safety. Since we cannot put everything on the first few pages, **READ THE**

### ENTIRE MANUAL BEFORE ATTEMPTING TO INSTALL OR OPERATE THE WATER HEATER.

- The installation must conform with these instructions and the local code authority having jurisdiction. In the absence of local codes, installations shall comply with the current edition of The National Fuel Gas Code ANSI Z223.1/NFPA 54. This publication is available from the Canadian Standards Association, 8501 East Pleasant Valley Rd, Cleveland Ohio 44131, or The National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269.
- If after reading this manual you have any questions or do not understand any portion of the instructions, call the Sears Service Center.
- Carefully plan the place where you are going to put the water heater. Correct combustion, vent action, and vent pipe installation are very important in preventing death from possible carbon monoxide poisoning and fires. See figure 1.  
Examine the location to ensure the water heater complies with the *Facts to Consider About the Location* section in this manual.
- For California installation this water heater must be braced, anchored, or strapped to avoid falling or moving during an earthquake. See instructions for correct installation procedures. Instructions may be obtained from the California Office of the State Architect, 400 P Street, Sacramento, CA 95814.
- Complies with 10 ng/J SCAQMD rule #1121 and districts having equivalent NOx requirements.

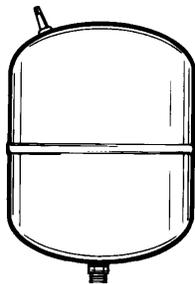
## PRODUCT SPECIFICATIONS

MODEL NUMBER	TANK CAPACITY IN GALS (LTRS)	TYPE OF GAS	INPUT RATE (Btu/hr)	RECOVERY RATE GALS. PER HOUR @ 90°F RISE	MINIMUM VENT PIPE INCHES (mm)	DIAMETER INCHES (mm)	DIMENSIONS IN INCHES (mm) HEIGHT TO JACKET TOP
153.330960	40 (151)	NATURAL	40,000	41.0	3 (76) OR 4 (102)	20 (508)	58 3/8 (1,483)
153.330970	50 (189)	NATURAL	40,000	41.0	3 (76) OR 4 (102)	22 (559)	57 3/8 (1,457)

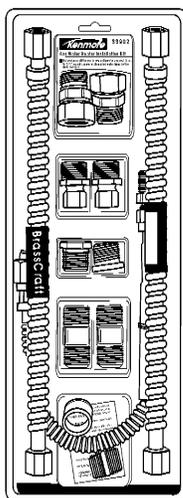
# MATERIALS AND BASIC TOOLS NEEDED

## Materials Needed

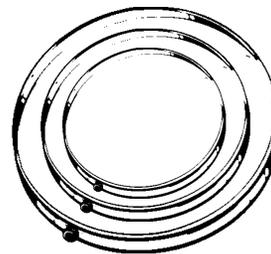
To simplify the installation, Sears has available the installation parts shown below. You may or may not need all of these materials, depending on your type of installation.



EXPANSION TANKS FOR THERMAL EXPANSION CONDITIONS AVAILABLE IN 2 GALLONS (7.6 LITERS) AND 5 GALLONS (18.9 LITERS) CAPACITY THROUGH LOCAL SEARS STORE OR SERVICE CENTER.



WATER HEATER INSTALLATION KIT WITH FLEXIBLE CONNECTORS FOR 3/4" (19.05 mm) OR 1/2" (12.7 mm) THREADED OR COPPER PLUMBING AND FLEXIBLE WATER HEATER GAS CONNECTOR WITH FITTINGS.



DRAIN PANS AVAILABLE IN 20" (508 mm) DIAMETER FOR WATER HEATERS HAVING A DIAMETER 18" (457 mm) OR LESS, 24" (610mm) DIAMETER FOR WATER HEATERS HAVING A DIAMETER 22" (559 mm) OR LESS AND AVAILABLE IN 28" (711 mm) DIAMETER FOR WATER HEATERS HAVING A DIAMETER 26" (660 mm) OR LESS.

## Basic Tools

You may or may not need all these tools, depending on your type of installation. These tools can be purchased at your local Sears Store.

- Pipe Wrenches (2) 14" (356 mm)
- Screwdriver
- Tin Snips
- 6' (1.82 m) Tape or Folding Ruler
- Garden Hose
- Drill
- Pipe Dope or Teflon Tape



SLOT-HEAD SCREWDRIVER



PHILLIPS SCREWDRIVER



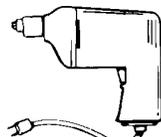
ROLL OF TEFLON TAPE (USE ONLY ON WATER CONNECTIONS)



GARDEN HOSE



6 FOOT TAPE



DRILL



TIN SNIPS



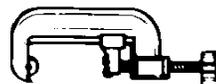
PIPE DOPE (SQUEEZE TUBE) USE FOR WATER AND GAS CONNECTIONS



PIPE WRENCH

## Additional Tools Needed When Sweat Soldering

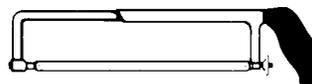
- Tubing Cutters or Hacksaw
- Propane Tank
- Soft Solder
- Solder Flux
- Emery Cloth
- Wire Brushes



TUBING CUTTER



PROPANE TORCH



HACKSAW



ROLL OF EMERY CLOTH



3/4" (19 mm) WIRE BRUSH



1/2" (13 mm) WIRE BRUSH



ROLL OF LEAD-FREE SOFT SOLDER



SOLDER FLUX

# TYPICAL INSTALLATION

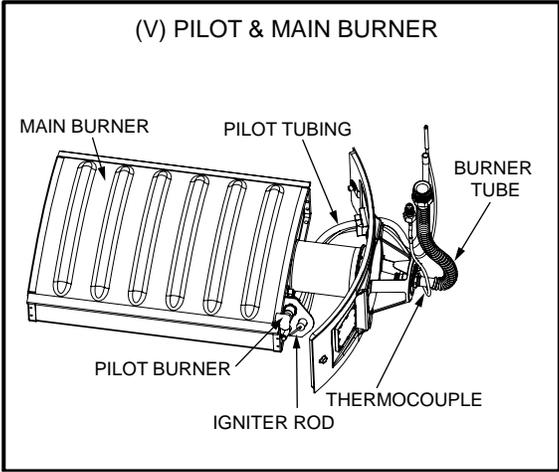
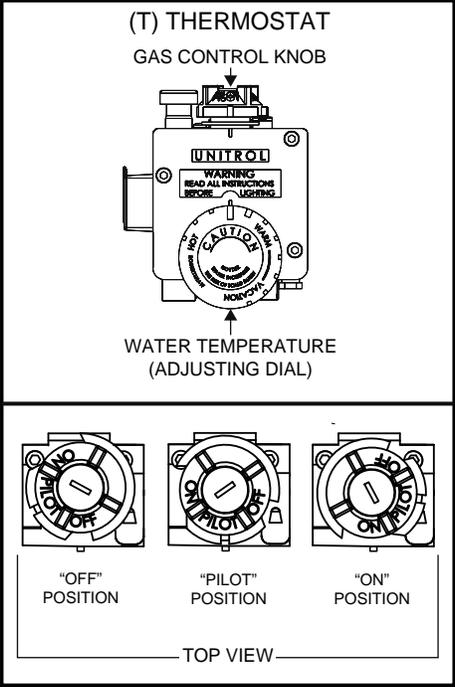
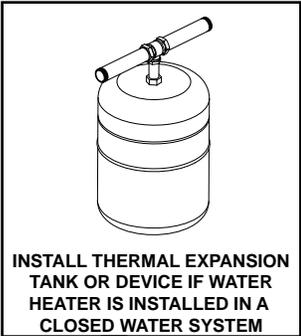
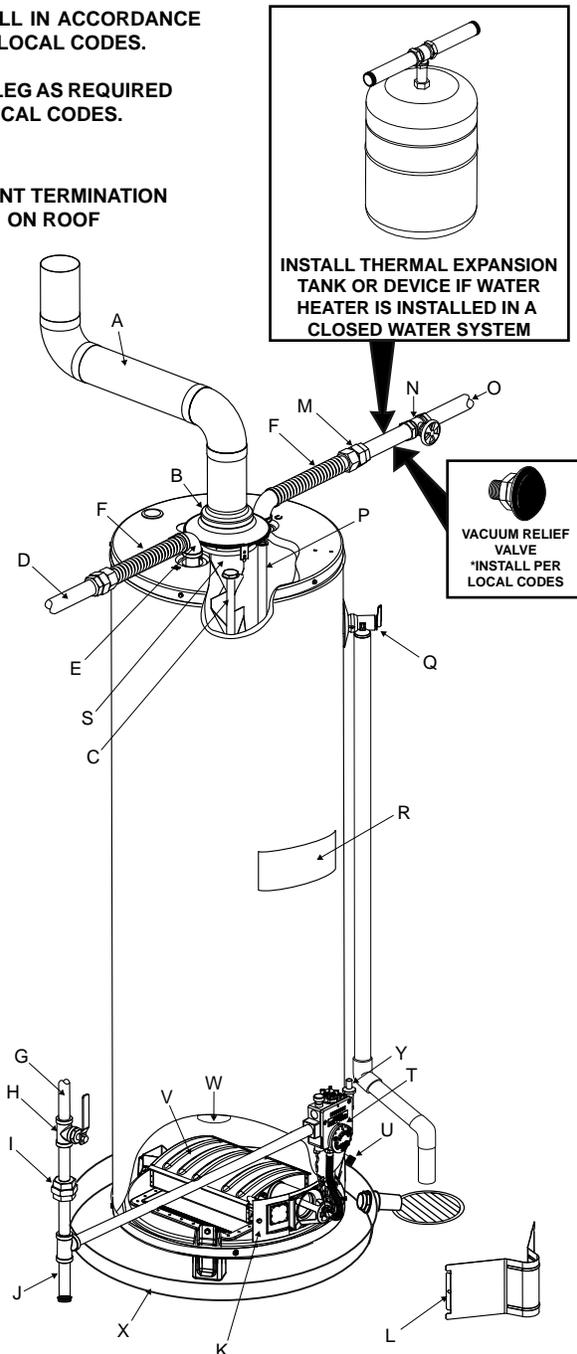
## GET TO KNOW YOUR WATER HEATER - GAS MODELS

- |                              |                                     |                         |
|------------------------------|-------------------------------------|-------------------------|
| A Vent Pipe                  | J Drip Leg (Sediment Trap)          | S Flue Baffle           |
| B Drafthood                  | K Inner Door                        | T Thermostat            |
| C Anode                      | L Outer door                        | U Drain Valve           |
| D Hot Water Outlet           | M Union                             | V Pilot and Main Burner |
| E Outlet                     | N Inlet Water Shut-off Valve        | W Flue                  |
| F Flexible Water Connections | O Cold Water Inlet                  | X Drain Pan             |
| G Gas Supply                 | P Inlet Dip Tube                    | Y Piezo Igniter         |
| H Manual Gas Shut-off Valve  | Q Temperature-Pressure Relief Valve |                         |
| I Ground Joint Union         | R Rating Plate                      |                         |

\* INSTALL IN ACCORDANCE WITH LOCAL CODES.

\* DRIP LEG AS REQUIRED BY LOCAL CODES.

TO VENT TERMINATION ON ROOF



\* ALL PIPING MATERIALS TO BE SUPPLIED BY CUSTOMERS.

FIGURE 1.

# INSTALLATION INSTRUCTIONS

## Removing the Old Water Heater

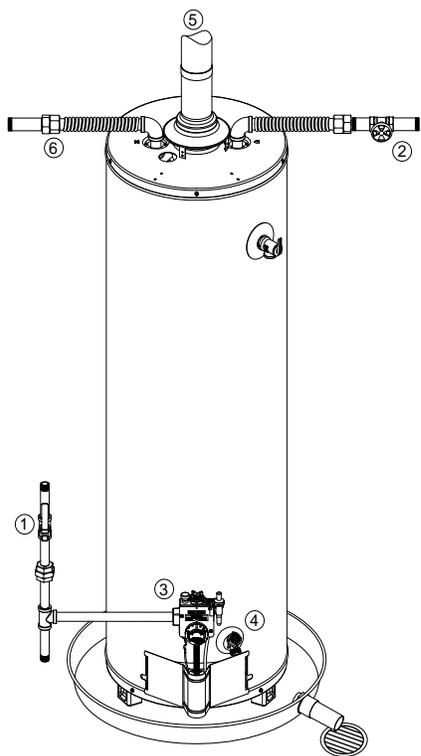


FIGURE 2.

- ① Turn "OFF" the gas supply to the water heater.

If the main gas line shutoff valve serving all gas appliances is used, also shut "OFF" the gas at each appliance. Leave all gas appliances shut "OFF" until the water heater installation is completed, see Figures 2 and 3.

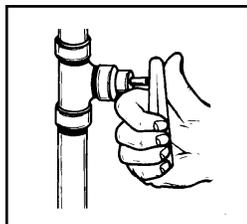


FIGURE 3.

- ② Turn "OFF" the water supply to the water heater at the water shut off valve or water meter. Some installations require that the water be turned off to the entire house, see Figures 2 and 4.

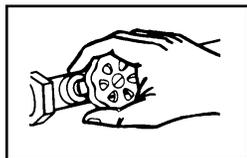


FIGURE 4.

- ③ Check again to make sure the gas supply is "OFF" to the water heater. Then disconnect the gas supply connection from the gas control valve.

**▲ DANGER**

- Burn hazard
- Hot water discharge.
- Keep hands clear of drain valve discharge.

- ④ Attach a hose to the water heater drain valve and put the other end in a floor drain or outdoors. Open the water heater drain valve. Open a nearby hot water faucet which will relieve pressure in the water heater and speed draining. The water passing out of the drain valve may be extremely hot. To avoid being scalded, make sure all connections are tight and that the water flow is directed away from any person, see Figures 2 and 5.

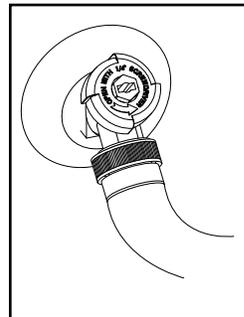


FIGURE 5.

- ⑤ Disconnect the vent pipe from the draft hood where it connects to the water heater. In most installations the vent pipe can be lifted off after any screw or other attached devices are removed. Dispose of the draft hood. The new water heater has a draft hood which must be used for proper operation.
- ⑥ If you have copper piping to the water heater, the two copper water pipes can be cut with a hacksaw approximately four inches away from where they connect to the water heater, see Figure 6. This will avoid cutting off pipes too short. Additional cuts can be made later if necessary. Disconnect the temperature-pressure relief valve drain line. When the water heater is drained, disconnect the hose from the drain valve. Close the drain valve. The water heater is now completely disconnected and ready to be removed.

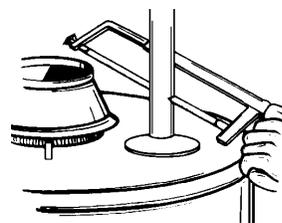


FIGURE 6.

If you have galvanized pipes to the water heater, loosen the two galvanized pipes with a pipe wrench at the union in each line. Also disconnect the piping remaining to the water heater, see Figure 7. These pieces should be saved since they may be needed when reconnecting the new water heater. Disconnect the temperature-pressure relief valve drain line. When the water heater is drained, disconnect the hose from the drain valve. Close the drain valve. The water heater is now completely disconnected and ready to be removed. Mineral buildup or sediment may have accumulated in the old water heater. This causes the water heater to be much heavier than normal and this residue, if spilled out, could cause staining.

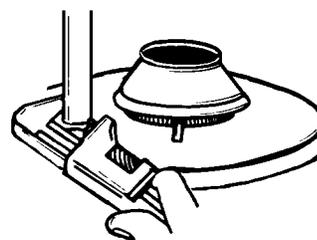


FIGURE 7.

## Facts to Consider About the Location

Carefully choose an indoor location for the new water heater. The placement is a very important consideration for the safety of the occupants in the building and for the most economical use of the appliance. This water heater is not for use in manufactured (mobile) homes or outdoor installation.

Whether replacing an old water heater or putting the water heater in a new location, the following critical points must be observed:

- Select a location indoors as close as practical to the gas vent or chimney to which the water heater vent is going to be connected, and as centralized with the water piping system as possible.
- Selected location must provide adequate clearances for servicing and proper operation of the water heater.

<b>CAUTION</b>
<b>Property Damage Hazard</b>
<ul style="list-style-type: none"> <li>• All water heaters eventually leak</li> <li>• Do not install without adequate drainage.</li> </ul>

Installation of the water heater must be accomplished in such a manner that if the tank or any connections should leak, the flow will not cause damage to the structure. For this reason, it is not advisable to install the water heater in an attic or upper floor. When such locations cannot be avoided, a suitable drain pan should be installed under the water heater. Drain pans are available at your local Sears or hardware store. Such a drain pan must have a minimum length and width of at least 2 inches (51 mm) greater than the water heater dimensions and must be piped to an adequate drain. The pan must not restrict combustion air flow.

Water heater life depends upon water quality, water pressure and the environment in which the water heater is installed. Water heaters are sometimes installed in locations where leakage may result in property damage, even with the use of a drain pan piped to a drain. Unanticipated damage can be reduced or prevented by a leak detector or water shut-off device used in conjunction with a piped drain pan. These devices are available from some plumbing supply wholesalers and retailers, and detect and react to leakage in various ways:

- Sensors mounted in the drain pan that trigger an alarm or turn off the incoming water to the water heater when leakage is detected.
- Sensors mounted in the drain pan that turn off the water supply to the entire home when water is detected in the drain pan.
- Water supply shut-off devices that activate based on the water pressure differential between the cold water and hot water pipes connected to the water heater.

- Devices that will turn off the gas supply to a gas water heater while at the same time shutting off its water supply.

<b>⚠ WARNING</b>	
<b>Fire or Explosion Hazard</b>	
<ul style="list-style-type: none"> <li>• Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.</li> <li>• Avoid all ignition sources if you smell LP gas.</li> <li>• Do not expose water heater control to excessive gas pressure.</li> <li>• Use only gas shown on rating plate.</li> <li>• Maintain required clearances to combustibles.</li> <li>• Keep ignition sources away from faucets after extended period of non-use.</li> </ul>	
	<p>Read instruction manual before installing, using or servicing water heater.</p>
	

INSTALLATIONS IN AREAS WHERE FLAMMABLE LIQUIDS (VAPORS) ARE LIKELY TO BE PRESENT OR STORED (GARAGES, STORAGE AND UTILITY AREAS, ETC.): Flammable liquids (such as gasoline, solvents, propane [LP or butane, etc.] and other substances such as adhesives, etc.) emit flammable vapors which can be ignited by a gas water heater's pilot light or main burner. The resulting flashback and fire can cause death or serious burns to anyone in the area. Even though this water heater is a flammable vapor ignition resistant water heater and is designed to reduce the chances of flammable vapors being ignited, gasoline and other flammable substances should never be stored or used in the same vicinity or area containing a gas water heater or other open flame or spark producing appliance.

Also, the water heater must be located and/or protected so it is not subject to physical damage by a moving vehicle.

	<b>⚠ WARNING</b>
	<b>Fire Hazard</b>
	<p>For continued protection against risk of fire:</p> <ul style="list-style-type: none"> <li>• Do not install water heater on carpeted floor.</li> <li>• Do not operate water heater if flood damaged.</li> </ul>

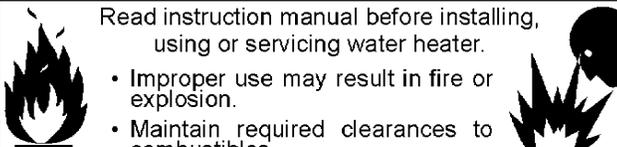
This water heater must not be installed directly on carpeting. Carpeting must be protected by metal or wood panel beneath the appliance extending beyond the full width and depth of the appliance by at least 3 inches (76.2mm) in any direction, or if the appliance is installed in an alcove or closet, the entire floor must be covered by the panel. Failure to heed this warning may result in a fire hazard.

**⚠ WARNING**

**Fire or Explosion Hazard**

Read instruction manual before installing, using or servicing water heater.

- Improper use may result in fire or explosion.
- Maintain required clearances to combustibles.



Minimum clearances between the water heater and combustible construction are 0 inch at the sides and rear, 4 inches (102 mm) at the front, and 6 inches (153 mm) from the vent pipe, see Figure 8. Clearance from the top of the jacket is 8 inches (203 mm) on most models. Note that a lesser dimension may be allowed on some models, refer to the label attached adjacent to the gas control valve on the water heater.

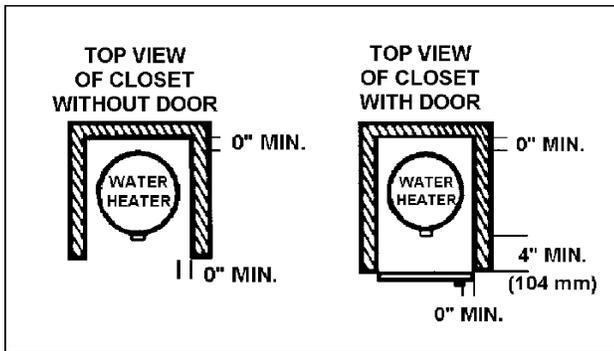
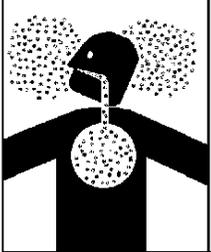


FIGURE 8.

**⚠ WARNING**

**Breathing Hazard - Carbon Monoxide Gas**



- Install water heater in accordance with the instruction manual and NFPA 54.
- To avoid injury, combustion and ventilation air must be taken from outdoors.
- Do not place chemical vapor emitting products near water heater.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

A gas water heater cannot operate properly without the correct amount of air for combustion, see Figure 9. Do not install in a confined area such as a closet, unless you provide air as shown in the *Locating The New Water Heater* section. Never obstruct the flow of ventilation air. If you have any doubts or questions at all, call your gas supplier. Failure to provide the proper amount of combustion air can result in a fire or explosion and cause death, serious bodily injury, or property damage.

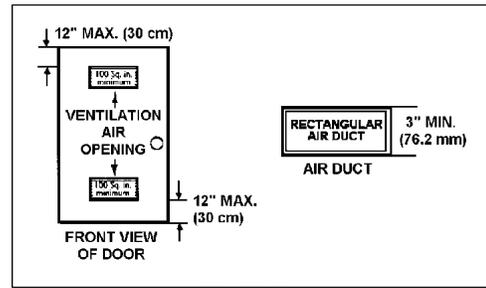


FIGURE 9.

If this water heater will be used in beauty shops, barber shops, cleaning establishments, or self-service laundries with dry cleaning equipment, it is imperative that the water heater or water heaters be installed so that combustion and ventilation air be taken directly from outdoors (direct vent).

Propellants of aerosol sprays and volatile compounds, (cleaners, chlorine based chemicals, refrigerants, etc.) in addition to being highly flammable in many cases, will also change to corrosive hydrochloric acid when exposed to the combustion products of the water heater. The results can be hazardous, and also cause product failure.

### Insulation Blankets

Insulation blankets available to the general public for external use on gas water heaters are not necessary with Kenmore products. The purpose of an insulation blanket is to reduce the standby heat loss encountered with storage tank heaters. Your Kenmore water heater meets or exceeds the National Appliance Energy Conservation Act standards with respect to insulation and standby loss requirements, making an insulation blanket unnecessary.

**⚠ WARNING**

**Breathing Hazard - Carbon Monoxide Gas**



- Do not obstruct water heater air intake with insulating blanket.
- Gas and carbon monoxide detectors are available.
- Install water heater in accordance with the instruction manual.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

**⚠ WARNING**

Should you choose to apply an insulation blanket to this heater, you should follow these instructions (See Figure 1 for identification of components mentioned below). Failure to follow these instructions can restrict the air flow required for proper combustion, potentially resulting in fire, asphyxiation, serious personal injury or death.

- **Do not** apply insulation to the top of the water heater, as this will interfere with safe operation of the draft hood.
- **Do not** cover the outer door, thermostat or temperature & pressure relief valve.
- **Do not** allow insulation to come within 2" (50.8 mm) of the floor to prevent blockage of combustion air flow to the burner.
- **Do not** cover the instruction manual. Keep it on the side of the water heater or nearby for future reference.

- Do obtain new warning and instruction labels from Sears for placement on the blanket directly over the existing labels.
- Do inspect the insulation blanket frequently to make certain it does not sag, thereby obstructing combustion air flow.

## Combustion Air and Ventilation for Appliances Located in Unconfined Spaces

**UNCONFINED SPACE** is space whose volume is not less than 50 cubic feet per 1,000 Btu per hour (4.8 m<sup>3</sup> per kW) of the aggregate input rating of all appliances installed in that space. Rooms communicating directly with the space in which the appliances are installed, through openings not furnished with doors, are considered a part of the unconfined space.

In unconfined spaces in buildings, infiltration may be adequate to provide air for combustion, ventilation and dilution of flue gases. However, in buildings of tight construction (for example, weather stripping, heavily insulated, caulked, vapor barrier, etc.), additional air may need to be provided using the methods described in *Combustion Air and Ventilation for Appliances Located in Confined Spaces*.

## Combustion Air and Ventilation for Appliances Located in Confined Spaces

**CONFINED SPACE** is a space whose volume is less than 50 cubic feet per 1,000 Btu per hour (4.8 m<sup>3</sup> per kW) of the aggregate input rating of all appliances installed in that space.

### A. ALL AIR FROM INSIDE BUILDINGS:

(See Figure 9 on page 10 and Figure 10 below)

The confined space shall be provided with two permanent openings communicating directly with an additional room(s) of sufficient volume so that the combined volume of all spaces meets the criteria for an unconfined space. The total input of all gas utilization equipment installed in the combined space shall be considered in making this determination. Each opening shall have a minimum free area of one square inch per 1,000 Btu per hour (22 cm<sup>2</sup>/kW) of the total input rating of all gas utilization equipment in the confined space, but not less than 100 square inches (645 cm<sup>2</sup>). One opening shall commence within 12 inches (30 cm) of the top and one commencing within 12 inches (30 cm) of the bottom of the enclosures.

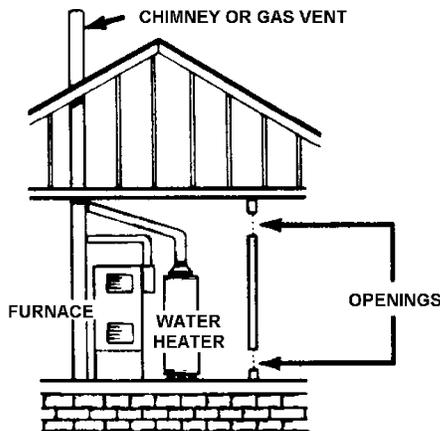


FIGURE 10.

### B. ALL AIR FROM OUTDOORS: (See Figures 9, 11, 12, 13 and 13A)

The confined space shall be provided with two permanent openings, one commencing within 12 inches (30 cm) of the top and one commencing within 12 inches (30 cm) from the bottom of the enclosure. The openings shall communicate directly, or by ducts, with the outdoors or spaces (crawl or attic) that freely communicate with the outdoors.

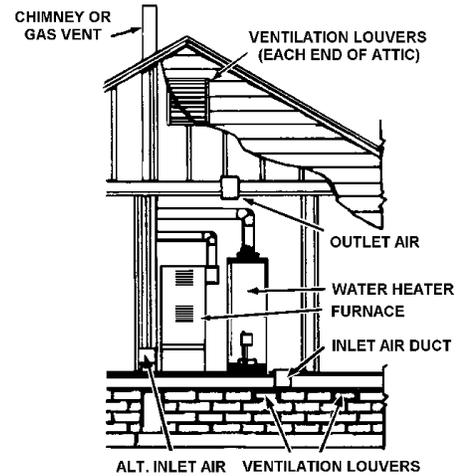


FIGURE 11.

- When directly communicating with the outdoors, each opening shall have a minimum free area of 1 square inch per 4,000 Btu per hour (5.5 cm<sup>2</sup>/kW) of total input rating of all equipment in the enclosure. See Figure 11.
- When communicating with the outdoors through vertical ducts, each opening shall have a minimum free area of 1 square inch per 4,000 BTU per hour (5.5 cm<sup>2</sup>/kW) of total input rating of all equipment in the enclosure. See Figure 12.

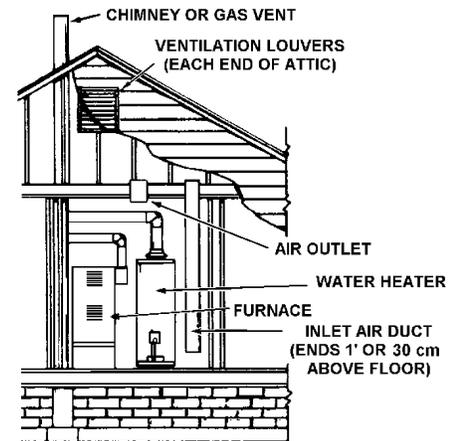


FIGURE 12.

- When communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of 1 square inch per 2,000 BTU per hour (11 cm<sup>2</sup>/kW) of total input rating of all equipment in the enclosure. See Figure 13.
- When ducts are used, they shall be of the same cross-sectional area as the free area of the openings to which they connect. The minimum short side dimension of rectangular air ducts shall not be less than 3 inches (76.2 mm). See Figure 13.

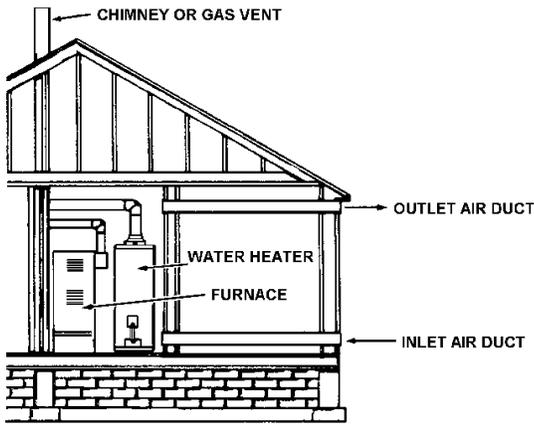


FIGURE 13.

- Alternatively a single permanent opening may be used when communicating directly with the outdoors, or with spaces that freely communicate with the outdoors. The opening shall have a minimum free area of 1 square inch per 3,000 BTU per hour (8.3 cm<sup>2</sup>/kW) of total input rating of all equipment in the enclosure. See Figure 13A.

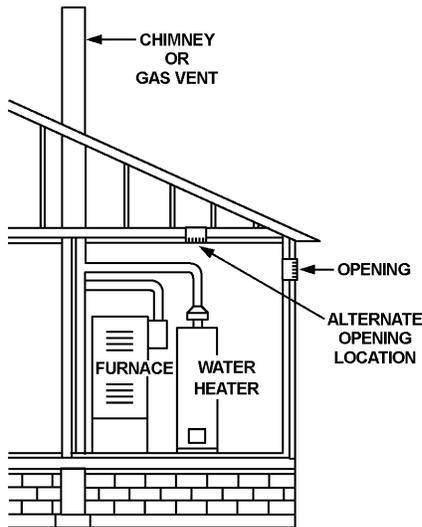


FIGURE 13A.

- Louvers and Grilles: In calculating free area, consideration shall be given to the blocking effect of louvers, grilles or screens protecting openings. Screens used shall not be smaller than 1/4 inch (6.4 mm) mesh. If the free area through a design of louver or grille is known, it should be used in calculating the size opening required to provide the free area specified. If the design and free area is not known, it may be assumed that wood louvers will be 20-25 percent free area and metal louvers and grilles will have 60-75 percent free area. Louvers and grilles shall be fixed in the open position or interlocked with the equipment so that they are opened automatically during equipment operation.
- Special Conditions Created by Mechanical Exhausting or Fireplaces: operation of exhaust fans, ventilation systems, clothes dryers or fireplaces may create conditions requiring special attention to avoid unsatisfactory operation of installed gas utilization equipment.

## Water Piping

⚠ DANGER

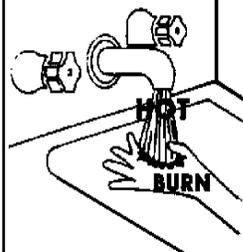
Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.

Children, elderly, and the physically or mentally disabled are at highest risk for scald injury.

Feel water before bathing or showering.

Temperature limiting valves are available.

Read instruction manual for safe temperature setting.



### HOTTER WATER CAN SCALD:

Water heaters are intended to produce hot water. Water heated to a temperature which will satisfy space heating, clothes washing, dish washing, cleaning and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally handicapped. If anyone using hot water in your home fits into one of these groups or if there is a local code or state law requiring a certain temperature water at the hot water tap, then you must take special precautions. In addition to using the lowest possible temperature setting that satisfies your hot water needs, a means such as a \*mixing valve should be used at the hot water taps used by these people or at the water heater. Mixing valves are available at plumbing supply or hardware stores. See Figure 14. Valves for reducing point of use temperature by mixing cold and hot water are also available. Follow manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat, read the *Temperature Regulation* section in this manual.

FIGURE 14.

⚠ WARNING

Toxic Chemical Hazard

- Do not connect to non-potable water system.

12

This water heater shall not be connected to any heating systems or component(s) used with a non-potable water heating appliance.

All piping components connected to this unit for space heating applications shall be suitable for use with potable water.

Toxic chemicals, such as those used for boiler treatment shall not be introduced into this system.

Water supply systems may, because of such events as high line pressure, frequent cut-offs or the effects of water hammer, have installed devices such as pressure reducing valves, check valves, back flow preventers, etc. to control these types of problems. When these devices are not equipped with an internal by-pass, and no other measures are taken, the devices cause the water system to be closed. As water is heated, it expands (thermal expansion) and closed systems do not allow for the expansion of heated water.

The water within the water heater tank expands as it is heated and increases the pressure of the water system. If the relieving point of the water heater's temperature-pressure relief valve is reached, the valve will relieve the excess pressure. **The temperature-pressure relief valve is not intended for the constant relief of thermal expansion.** This is an unacceptable condition and must be corrected. It is recommended that any devices installed which could create a closed system have a by-pass and/or the system have an expansion tank to relieve the pressure built by thermal expansion in the water system. Refer to the *Thermal Expansion* section under *Troubleshooting Guide* or contact local plumbing authority or local Sears Service Center on how to control this situation.

**NOTE: To protect against untimely corrosion of hot and cold water fittings, it is strongly recommended that di-electric unions or couplings be installed on this water heater when connected to copper pipe.**

<b>CAUTION</b>
<b>Property Damage Hazard</b>
<ul style="list-style-type: none"> <li>• Avoid water heater damage.</li> <li>• Install thermal expansion tank if necessary.</li> <li>• Do not apply heat to cold water inlet.</li> <li>• Contact qualified installer or Sears Service Center.</li> </ul>

Figure 15 shows the typical attachment of the water piping to the water heater. The water heater is equipped with 3/4" NPT water connections.

**NOTE: If using copper tubing, solder tubing to an adapter before attaching the adapter to the cold water inlet connection. Do not solder the cold water supply line directly to the cold water inlet. It will harm the dip tube and damage the tank.**

- Look at the top cover of the water heater. The water outlet is marked "HOT". Put two or three turns of Teflon tape around the threaded end of the threaded-to-sweat coupling and around both ends of the 3/4" NPT threaded nipple. Using flexible connectors, connect the hot water pipe to the hot water outlet on the water heater.

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- Look at the top of the water heater. The cold water inlet is marked "COLD". Put two or three turns of Teflon tape around the threaded end of the threaded-to-sweat coupling and around both ends of the 3/4" NPT threaded nipple. Using flexible connectors, connect the cold water pipe to the cold water inlet of the water heater.

**NOTE: This water heater is super insulated to minimize heat loss from the tank. Further reduction in heat loss can be accomplished by insulating the hot water lines from the water heater.**

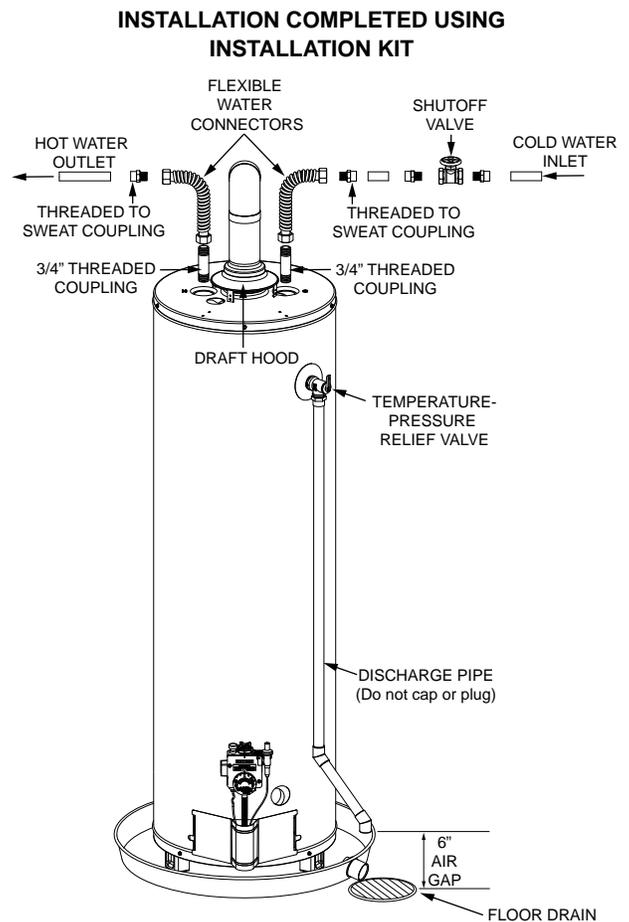


FIGURE 15.

### T & P Valve and Pipe Insulation

Remove insulation for T & P valve and pipe connections from carton.

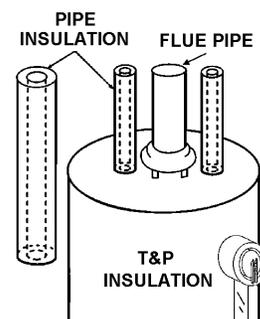


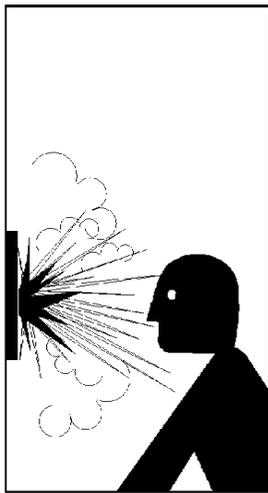
FIGURE 15A.

Fit pipe insulation over the incoming cold water line and the hot water line. Make sure that the insulation is against the top cover of the heater.

Fit T & P valve insulation over valve. Make sure that the insulation does not interfere with the lever of the T & P valve.

Secure all insulation using tape.

## Temperature-Pressure Relief Valve

	<h3>⚠ WARNING</h3> <h4>Explosion Hazard</h4>
	<ul style="list-style-type: none"> <li>• Temperature-pressure relief valve must comply with ANSI Z21.22 and ASME code.</li> <li>• Properly sized temperature-pressure relief valve must be installed in opening provided.</li> <li>• Can result in overheating and excessive tank pressure.</li> <li>• Can cause serious injury or death.</li> </ul>

This heater is provided with a properly certified combination temperature - pressure relief valve by the manufacturer.

The valve is certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment as meeting the requirements for Relief Valves for Hot Water Supply Systems, ANSI Z21.22 and the code requirements of ASME.

If replaced, the valve must meet the requirements of local codes, but not less than a combination temperature and pressure relief valve certified as indicated in the above paragraph.

The valve must be marked with a maximum set pressure not to exceed the marked hydrostatic working pressure of the water heater (150 psi = 1,035kPa) and a discharge capacity not less than the water heater input rate as shown on the model rating plate.

For safe operation of the water heater, the relief valve must not be removed from its designated opening nor plugged.

The temperature-pressure relief valve must be installed directly into the fitting of the water heater designed for the relief valve. Position the valve downward and provide tubing so that any discharge will exit only within 6 inches (153 mm) above, or at any distance below the structural floor, see Figure 16. Be certain that no contact is made with any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances. Excessive length, over 30 feet (9.14 m), or use of more than four elbows can cause restriction and reduce the discharge capacity of the valve.

No valve or other obstruction is to be placed between the relief valve and the tank. Do not connect tubing directly to discharge drain unless a 6 inch air gap is provided. To prevent bodily injury, hazard to life, or property damage, the relief valve must be allowed to discharge water in quantities should circumstances demand. If the discharge pipe is not connected to a drain or other suitable means, the water flow may cause property damage.

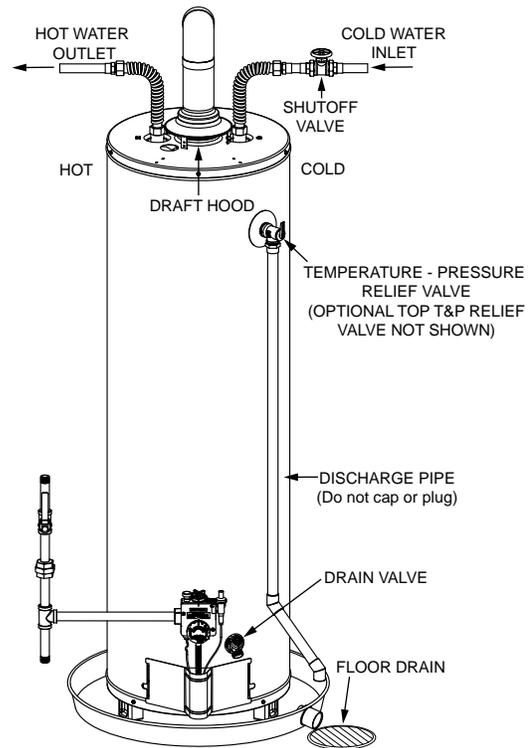
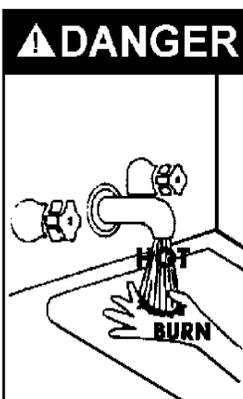


FIGURE 16.

<h3>CAUTION</h3> <h4>Water Damage Hazard</h4>
<ul style="list-style-type: none"> <li>• Temperature-pressure relief valve discharge pipe must terminate at adequate drain.</li> </ul>

The Discharge Pipe:

- Shall not be smaller in size than the outlet pipe size of the valve, or have any reducing couplings or other restrictions.
- Shall not be plugged or blocked.
- Shall be of material listed for hot water distribution.
- Shall be installed so as to allow complete drainage of both the temperature-pressure relief valve, and the discharge pipe.
- Shall terminate at an adequate drain.
- Shall not have any valve between the relief valve and tank.

	<h3>⚠ DANGER</h3> <p>Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.</p> <p>Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.</p> <p>Feel water before bathing or showering.</p> <p>Temperature limiting valves are available.</p> <p>Read instruction manual for safe temperature setting.</p>
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The temperature-pressure relief valve must be manually operated at least once a year. Caution should be taken to ensure that (1) no one is in front of or around the outlet of the temperature-pressure relief valve discharge line, and (2) the water manually discharged will not cause any bodily injury or property damage because the water may be extremely hot.

If after manually operating the valve, it fails to completely reset and continues to release water, immediately close the cold water inlet to the water heater, follow the draining instructions, and replace the temperature-pressure relief valve with a new one.

## Filling the Water Heater

<b>CAUTION</b>
<b>Property Damage Hazard</b>
<ul style="list-style-type: none"><li>• Avoid water heater damage.</li><li>• Fill tank with water before operating.</li></ul>

Never use this water heater unless it is completely full of water. To prevent damage to the tank, the tank must be filled with water. Water must flow from the hot water faucet before turning "ON" gas to the water heater.

To fill the water heater with water:

- Close the water heater drain valve by inserting a flat head screwdriver in the slot on the stem and turn to the right (clockwise). The drain valve is on the lower front of the water heater.
- Open the cold water supply valve to the water heater.  
**NOTE: The cold water supply valve must be left open when the water heater is in use.**
- To insure complete filling of the tank, allow air to exit by opening the nearest hot water faucet. Allow water to run until a constant flow is obtained. This will let air out of the water heater and the piping.
- Check all water piping and connections for leaks. Repair as needed.

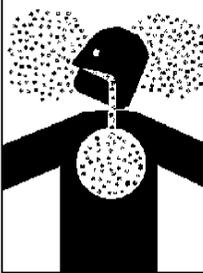
## Venting

**VENT DAMPERS** - Any vent damper, whether it is operated thermally or otherwise must be removed if its use inhibits proper drafting of the water heater.

**Thermally Operated Vent Dampers:** Gas-fired water heaters having thermal efficiency in excess of 80% may produce a relatively low flue gas temperature. Such temperatures may not be high enough to properly open thermally operated vent dampers. This would cause spillage of the flue gases and may cause carbon monoxide poisoning.

Vent dampers must bear evidence of certification as complying with the current edition of the American National Standard

ANSI Z21.68 (ANSI Z21.66 & 67, respectively, cover electrically and mechanically actuated vent dampers). Before installation of any vent damper, consult your local Sears Service Center or

<b>⚠ WARNING</b>	
<b>Breathing Hazard - Carbon Monoxide Gas</b>	
	<ul style="list-style-type: none"><li>• Vent dampers must be certified in accordance with ANSI Z21.68.</li><li>• Vent damper must permit proper drafting of water heater.</li><li>• Install properly sized venting.</li><li>• Do not install without venting outdoors.</li><li>• Do not install without draft hood.</li><li>• If common vented install in accordance with NFPA 54.</li><li>• Be alert for obstructed or deteriorated vent system to avoid serious injury or death.</li></ul>
Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.	

the local gas supplier for further information.

To insure proper venting of this gas-fired water heater, the correct vent pipe diameter must be utilized. Any additions or deletions of other gas appliances on a common vent with this water heater may adversely affect the operation of the water heater. Consult your gas supplier if any such changes are planned. For replacement heater installations where pre-existing venting is used, the venting must be inspected for obstructions and if deterioration is present, it must be replaced.

For proper venting in certain installations, a larger diameter vent pipe may be necessary. Consult your local Sears Service Center or gas supplier to aid you in determining the proper venting for your water heater from the vent tables in the current edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54.

Periodically check the venting system for signs of obstruction or deterioration and replace if needed.

The combustion and ventilation air flow must not be obstructed.

The water heater with draft hood installed must be connected to a chimney or listed vent pipe system, which terminates to the outdoors. Never operate the water heater unless it is vented to the outdoors and has adequate air supply to avoid risks of improper operation, explosion or asphyxiation.

- For proper draft hood attachment, the draft hood legs may be angled slightly inward.
- Place the draft hood legs in the receiving holes on the top of the water heater. The legs will snap in the holes to give a tight fit. Secure the legs to top with sheet metal screws. See Figure 17.
- Place the vent pipe over the draft hood. With the vent pipe in position, drill a small hole through both the vent pipe and draft hood. Secure them together with a sheet metal screw.

Obstructed or deteriorated vent systems may present serious health risk or asphyxiation.

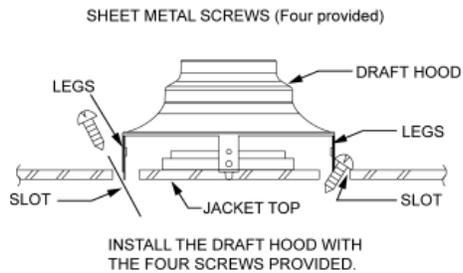


FIGURE 17.

The vent pipe from the water heater must be no less than the diameter of the draft hood outlet on the water heater and must slope upward at least 1/4 inch per linear foot (21 mm per meter). See Figure 18.

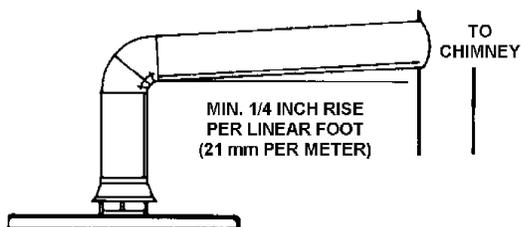


FIGURE 18.

All vent gases must be completely vented to the outdoors of the structure (dwelling). Install only the draft hood provided with the new water heater and no other draft hood.

Vent pipes must be secured at each joint with sheet metal screws.

There must be a minimum of 6 inches (153 mm) clearance between single wall vent pipe and any combustible material. Fill and seal any clearance between single wall vent pipe and combustible material with mortar mix, cement, or other noncombustible substance. For other than single wall, follow vent pipe manufacturer's clearance specifications. To insure a tight fit of the vent pipe in a brick chimney, seal around the vent pipe with mortar mix cement.

<b>⚠ WARNING</b>	
<b>Breathing Hazard - Carbon Monoxide Gas</b>	
	<ul style="list-style-type: none"> <li>• Flue gases may escape if vent pipe is not connected.</li> <li>• Do not store corrosive chemicals in vicinity of water heater.</li> <li>• Chemical corrosion of flue and vent system can cause serious injury or death.</li> <li>• Contact a qualified installer or service agency.</li> </ul>
<p>Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.</p>	

Failure to have required clearances between vent piping and combustible material will result in a fire hazard.

Be sure vent pipe is properly connected to prevent escape of dangerous flue gases which could cause deadly asphyxiation.

Chemical vapor corrosion of the flue and vent system may occur if air for combustion contains certain chemical vapors. Spray can propellants, cleaning solvents, refrigerator and air conditioner refrigerants, swimming pool chemicals, calcium and sodium chloride, waxes, bleach and process chemicals are typical compounds which are potentially corrosive.

## Gas Piping

	<b>⚠ WARNING</b>
	<b>Fire and Explosion Hazard</b>
	<ul style="list-style-type: none"> <li>• Do not use water heater with any gas other than the gas shown on the rating plate.</li> <li>• Excessive pressure to gas control valve can cause serious injury or death.</li> <li>• Turn off gas lines during installation.</li> <li>• Contact qualified installer or service agency.</li> </ul>

Make sure the gas supplied is the same type listed on the model rating plate. The inlet gas pressure must not exceed 14 inch water column (3.5kPa) for natural and propane gas (L.P.) gas. The minimum inlet gas pressure listed on the rating plate is for the purpose of input adjustment. If the gas control valve is subjected to pressures exceeding 1/2 pound per square inch (3.5kPa), the damage to the gas control valve could result in a fire or explosion from leaking gas.

If the main gas line shutoff serving all gas appliances is used, also turn "OFF" the gas at each appliance. Leave all gas appliances shut "OFF" until the water heater installation is complete.

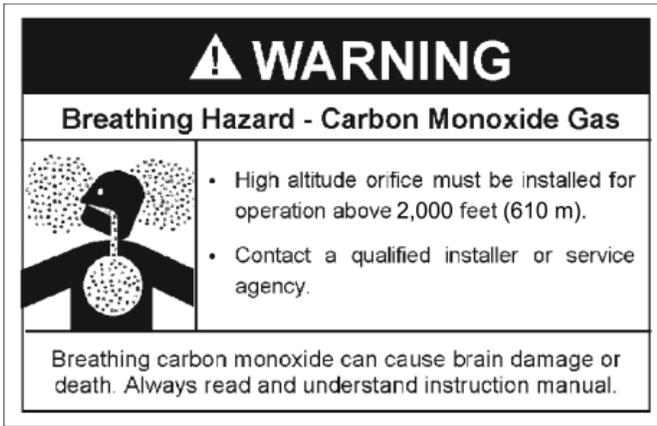
A gas line of sufficient size must be run to the water heater. Consult the current edition of National Fuel Gas Code ANSI Z223.1/NFPA 54 and your gas supplier concerning pipe size.

There must be:

- A readily accessible manual shut off valve in the gas supply line serving the water heater.
- A drip leg (sediment trap) ahead of the gas control valve to help prevent dirt and foreign materials from entering the gas control valve.
- A flexible gas connector or a ground joint union between the shut off valve and control valve to permit servicing of the unit.

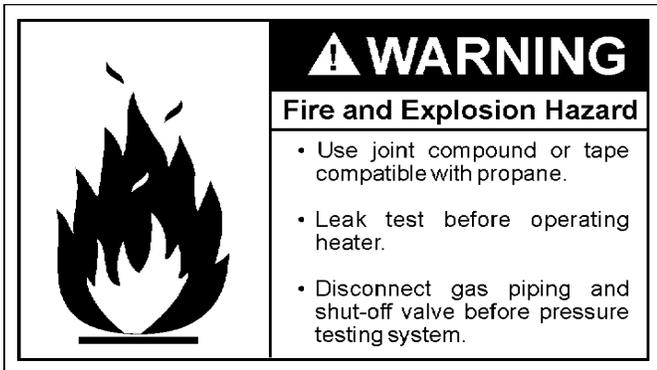
Be sure to check all the gas piping for leaks before lighting the water heater. Use a soapy water solution, not a match or open flame. Rinse off soapy solution and wipe dry.

The minimum inlet gas pressure shown on the rating plate is that which will permit firing at the rated input.



Water heaters covered in this manual have been tested and approved for installation at elevations up to 2,000 feet (610 m) above sea level. For installation above 2,000 feet (610 m), the water heater's Btu input should be reduced at the rate of 4 percent for each 1,000 feet (305 m) above sea level which requires replacement of the burner orifice in accordance with the National Fuel Gas Code ANSI Z223.1/NFPA 54. Contact your local gas supplier for further information.

Failure to replace the standard orifice with the proper high altitude orifice when installed at elevations above 2,000 feet (610 m) could result in improper and inefficient operation of the appliance, producing carbon monoxide gas in excess of the safe limits. This could result in serious injury or death. Contact your local gas supplier for any specific changes that may be required in your area.



Use pipe joint compound or Teflon tape marked as being resistant to the action of petroleum (Propane [L.P.]) gases.

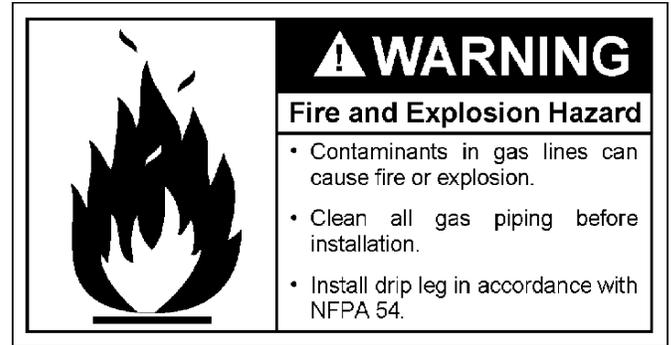
The appliance and its gas connection must be leak tested before placing the appliance in operation.

The appliance and its individual shutoff valve shall be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 pound per square inch (3.5 kPa). It shall 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 pound per square inch (3.5 kPa).

Connecting the gas piping to the gas control valve of the water heater can be accomplished by either of the two methods shown in Figures 19 and 20.

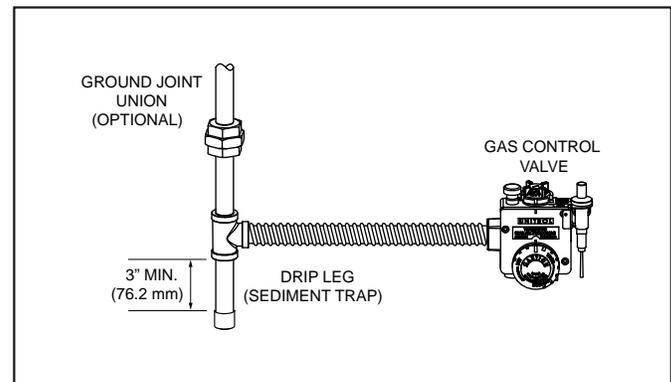
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## Sediment Traps

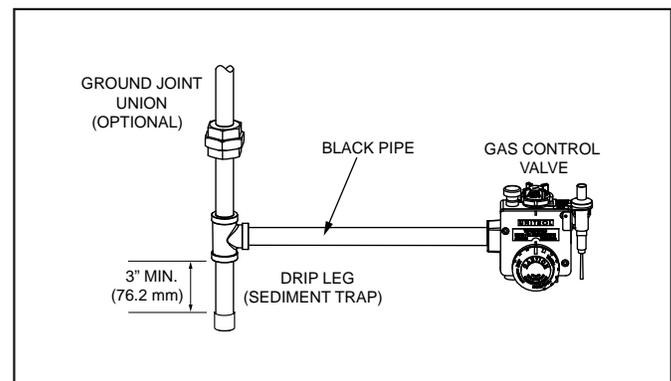


Contaminants in the gas lines may cause improper operation of the gas control valve that may result in fire or explosion. Before attaching the gas line be sure that all gas pipe is clean on the inside. To trap any dirt or foreign material in the gas supply line, a drip leg (sometimes called a sediment trap) must be incorporated in the piping. The drip leg must be readily accessible. Install in accordance with the *Gas Piping* section. Refer to the current edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54.

A sediment trap shall be installed as close to the inlet of the water heater as practical at the time of water heater installation. The sediment trap shall be either a tee fitting with a capped nipple in the bottom outlet or other device recognized as an effective sediment trap. If a tee fitting is used, it shall be installed in conformance with one of the methods of installation, shown in Figures 19 and 20.



**FIGURE 19. GAS PIPING WITH FLEXIBLE CONNECTOR.**



**FIGURE 20. GAS PIPING WITH ALL BLACK IRON PIPE TO GAS CONTROL.**

# OPERATING INSTRUCTIONS

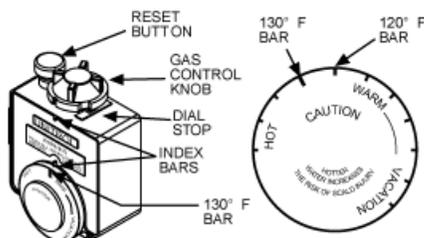
## FOR YOUR SAFETY READ BEFORE LIGHTING

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- This appliance has a pilot which is lighted by a piezoelectric igniter. When lighting the pilot, follow these instructions exactly.
- BEFORE LIGHTING** smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.  
**WHAT TO DO IF YOU SMELL GAS:**
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance. Water heaters subjected to flood conditions or anytime the gas controls, main burner or pilot have been submerged in water require replacement of the entire water heater.
- DO NOT USE THIS APPLIANCE IF THERE HAS BEEN AN IGNITION OF VAPORS.** Immediately call a qualified service technician to inspect the appliance. Water heaters subjected to a flammable vapors ignition will show a discoloration on the air intake grid and require replacement of the entire water heater.

## LIGHTING INSTRUCTIONS

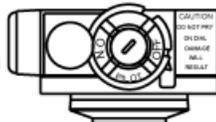
- STOP!** It is imperative that you read all the safety warnings before lighting the pilot.
- Remove the outer door.
- Turn the temperature dial counterclockwise  to its lowest setting.



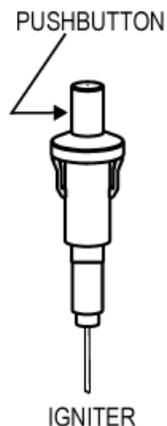
- Depress the dial stop and turn  gas control knob clockwise to the "OFF" position.
- To clear any gas that may have accumulated wait ten (10) minutes. If you then smell gas, STOP! Follow "B" in the safety warning above. If you do not smell gas go to the next step.



- Turn the gas control knob  counterclockwise to "PILOT".



- Depress the reset button all the way in and IMMEDIATELY depress the igniter button until you hear a loud click. Observe the pilot through the view port. Do not release the reset button. Repeat immediately if pilot does not light on the first try. If the pilot does not light by the fourth attempt with the igniter, repeat steps 4 - 7. Continue to hold the button for about (1) minute after the pilot is lit. Release the reset button and it will pop back up. Pilot should remain lit. If the pilot light goes out, repeat steps 3 - 7.



**IMPORTANT:** If the pilot will not stay lit after several tries, depress the dial stop and turn gas control knob to "OFF", then call your service technician or gas supplier.

**IMPORTANT:** If the reset button (see graphic at step 3) does not pop up when released, stop and immediately shut off the gas at the line valve or tank. Call your service technician or gas supplier.

- Turn the gas control knob counterclockwise  to "ON".
- Set the temperature dial to the desired setting.
- Replace the outer door.

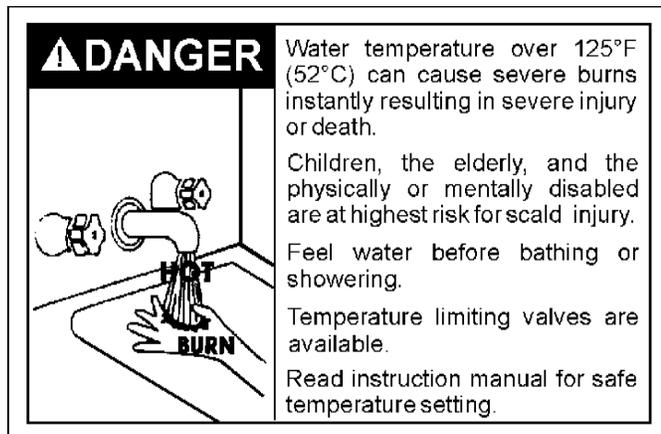


## TO TURN OFF GAS TO APPLIANCE

- Turn the temperature dial counterclockwise  to its lowest setting.
- Turn the gas control knob clockwise  to the "OFF" position.

## Temperature Regulation

Due to the nature of the typical gas water heater, the water temperature in certain situations may vary up to 30°F (16.7 C°) higher or lower at the point of use such as, bathtubs, showers, sink, etc.



**HOTTER WATER CAN SCALD:** Water heaters are intended to produce hot water. Water heated to a temperature which will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally handicapped. If anyone using hot water in your home fits into one of these groups or if there is a local code or state law requiring a certain temperature water at the hot water tap, then you must take special precautions. In addition to using the lowest possible temperature setting that satisfies your hot water needs, a means such as a mixing valve should be used at the hot water taps used by these people or at the water heater. Mixing valves are available at plumbing supply or hardware stores. Follow manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat See Figures 21 and 22.

Never allow small children to use a hot water tap, or to draw their own bath water. Never leave a child or handicapped person unattended in a bathtub or shower.

**NOTE:** A water temperature range of 120°F-140°F (49°C-60°C) is recommended by most dishwasher manufacturers.

The thermostat of this water heater has been factory set at its lowest position. It is adjustable and must be reset to the desired temperature setting for energy efficient operation at the minimum water temperature setting that meets your hot water needs. To reduce the risk of scald injury, 120°F (49°C) is preferred starting point. Some states have a requirement for a lower setting.

Align the index bar on the thermostat with the desired water temperature as shown in Figure 21.

Turn the water temperature dial clockwise (↻) to increase the temperature, or counterclockwise (↺) to decrease the temperature.

Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.

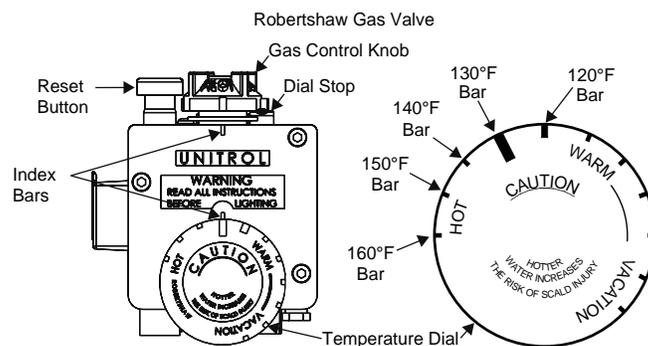


FIGURE 21.

Temperature Settings	Time to Produce 2nd & 3rd Degree Burns on Adult Skin
160°F (71°C)	About 1/2 second
150°F (66°C)	About 1-1/2 seconds
140°F (60°C)	Less than 5 seconds
130°F (54°C)	About 30 seconds
120°F (49°C)	More than 5 minutes
80°F (27°C)	-----

FIGURE 22.

## SERVICE AND ADJUSTMENT

### Tank (Sediment) Cleaning

Sediment build-up on the tank bottom may create varying amount of noise and if left in the tank will cause permanent tank failure. In some water areas, you may not be able to drain all sediment deposits by simply draining the tank. In these cases Mag-Erad (part no. 23600) can be used to help remove the sediment deposits. This may be ordered from the Sears Service Center. For ordering, refer to the *Parts Order List* section.

### Vent System Inspection

<b>⚠ WARNING</b>	
<b>Carbon Monoxide and Fire Hazard</b>	
	<ul style="list-style-type: none"><li>• Flue gases may escape if vent pipe is not connected.</li><li>• Be alert for obstructed, sooted or deteriorated vent system to avoid serious injury or death.</li><li>• Do not store corrosive chemicals in the vicinity of water heater.</li><li>• Chemical corrosion of flue and vent system can cause serious injury or death.</li></ul>
Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.	

At least once a year a visual inspection should be made of the venting system. You should look for:

- Obstructions which could cause improper venting. The combustion and ventilation air flow must not be obstructed.
- Damage or deterioration which could cause improper venting or leakage of combustion products.
- Rusted flakes around top of water heater.

Be sure the vent piping is properly connected to prevent escape of dangerous flue gasses which could cause deadly asphyxiation.

Obstructions and deteriorated vent systems may present serious health risk or asphyxiation.

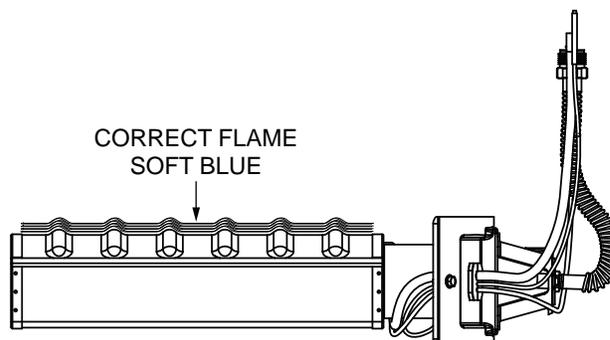
Chemical vapor corrosion of the flue and vent system may occur if air for combustion contains certain chemical vapors. Spray can propellants, cleaning solvents, refrigerator and air conditioner refrigerants, swimming pool chemicals, calcium and sodium chloride, waxes, bleach and process chemicals are typical compounds which are potentially corrosive.

If when inspecting the vent system you find sooting or deterioration, something is wrong. Call the local gas supplier to correct the problem and clean or replace the flue and venting before resuming operation of the water heater.

### Burner Inspection

Flood damage to a water heater may not be readily visible or immediately detectable. However, over a period of time a flooded water heater will create dangerous conditions which can cause **DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE**. Contact a Sears Service Center to replace a flooded water heater. Do not attempt to repair the unit! It must be replaced!

At least once a year a visual inspection should be made of the main burner. See Figure 23.



**FIGURE 23.**

Inspect burner flames through viewport. Flames should be very small with a blue haze and small amounts of yellow or orange at the edges. After several minutes of operation the burner screen may glow red. If large flames are observed at anytime shut-off unit and contact a Sears Service Center.

## Removing the Burner Door Assembly

1. Turn off the gas to the water heater at the manual gas shut-off valve (Figure 3).
2. Turn the gas control knob on the combination gas control valve/thermostat clockwise to the "OFF" position (Figure 1). NOTE: Depress the dial stop on Robertshaw valve before turning the gas control knob. See Lighting Instructions on the water heater.
3. Remove the outer door.
4. Remove the two screws securing the burner door assembly to the combustion chamber. (Figure 24).

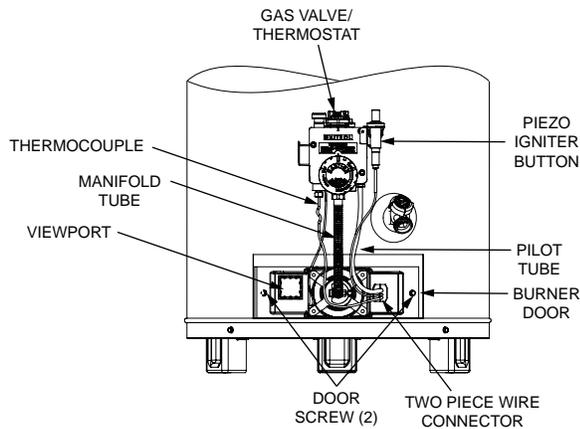


FIGURE 24.

5. Disconnect the thermocouple (right-hand thread), pilot tube, the igniter wire from the igniter button, and manifold tube at the thermostat. (Figure 25).
6. Grasp the manifold tube and push down slightly to free the manifold tube, pilot tube, and thermocouple.
7. Carefully remove the burner door assembly from the combustion chamber. Be sure not to damage internal parts.

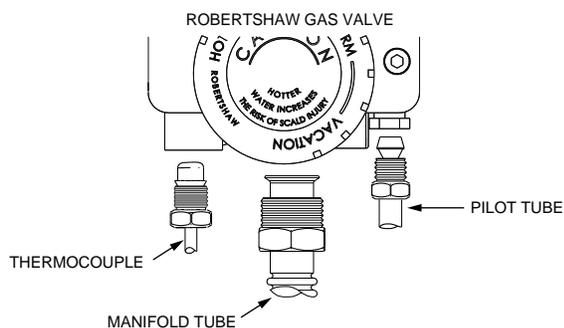


FIGURE 25.

## Ultra Low NOx Natural Gas Burner

Check the burner to see if it is dirty or clogged. The burner may be cleaned with soft paint brush (Figure 26). Do not use a wire brush or any tool that may damage the burner screen. Important: Do not use the burner if the burner screen is damaged. NOTE: Damage may be rips or holes in the burner screen. Discoloration is normal.

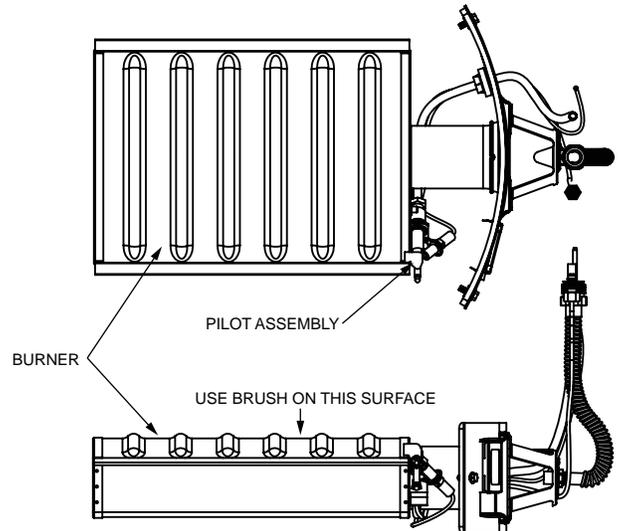


FIGURE 26.

## Replacing the Pilot Assembly

1. Follow the instructions in "Removing the Burner Door Assembly" section to remove the assembly.
2. Remove the retainer clip securing the two piece wire connector to the burner door assembly. (Note the orientation of the retainer clip). Insert the tip of a large flat head screwdriver between the clip and the top of the two piece wire connector. Carefully rotate the screwdriver to raise the clip. It may be necessary to remove the connector one side at a time. (See Figure 27.)
3. Locate where the thermocouple connects to the rear of the pilot assembly, and pull the thermocouple tip from the rear of the pilot assembly.
4. Remove the nut securing the pilot assembly to the burner and keep it for reuse later.
5. Use a 1/2" open end wrench, to loosen the nut securing the pilot tube to the pilot. To prevent any bending use a pair of pliers to steady the pilot bracket.
6. Remove the old pilot assembly (including the igniter wire) from the burner door assembly.
7. Insert the pilot tube into the new pilot assembly. Important: The new pilot assembly comes with an orifice. This orifice must be installed when replacing the pilot assembly. IMPORTANT: Do not operate this water heater without the orifice in place.
8. Use a 1/2" open end wrench, to tighten the nut securing the pilot tube to the pilot. To prevent any bending use a pair of pliers to steady the pilot bracket.
9. Use the nut removed in a previous step to secure the new pilot assembly to the burner.
10. Insert the igniter wire through the burner door and reconnect the thermocouple to the pilot assembly. See "Replacing the Thermocouple" section.
11. Reinstall the two piece wire connector. NOTE: The pilot tube must be at the top followed by the igniter wire then the thermocouple.
12. Follow the instructions in "Replacing the Burner Door Assembly" section to reinstall the assembly.

## Replacing the Thermocouple

1. Remove the Burner Door Assembly as directed previously.
2. Remove the retainer clip from the back of the two piece wire connector and remove the two piece wire connector from the assembly (Figure 27).
3. Pull the thermocouple from the pilot assembly (Figure 31).

**IMPORTANT:** Be careful not to bend or alter the position of the pilot assembly components.

4. Push the new thermocouple through the holes in the pilot bracket. Insert the thermocouple tube into the holes provided in the pilot assembly until it clicks into place. Leave a small straight section entering and leaving the two piece wire connector section for easier removal/ service.
5. Position the new thermocouple through the opening of the two piece wire connector (Figure 27). **NOTE:** The pilot tube should be located at the top followed by the igniter wire then the thermocouple.
6. See "Replacing the Burner Door Assembly" section.

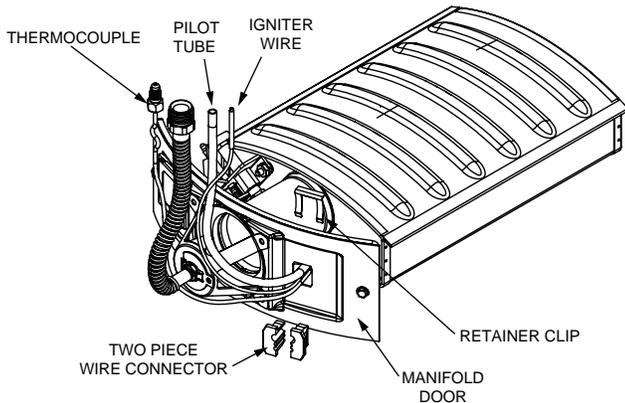


FIGURE 27.

## Cleaning the Pilot Assembly

1. Follow the procedure outlined in "Removing the Burner Door Assembly".
2. Use a soft bristle brush to remove any debris that may have collected on the pilot. **Note:** Clean any debris found in the air slots at the base of the pilot. See Figure 28.
3. Follow the steps in "Replacing the Burner Door Assembly" section to reassemble.

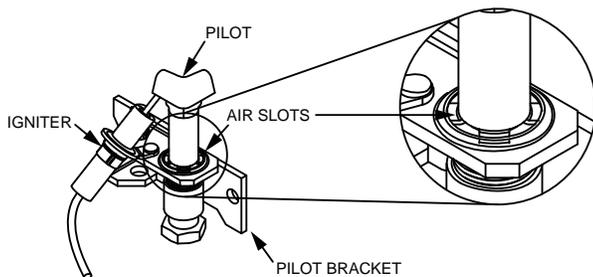


FIGURE 28.

## External Inspection & Cleaning of the Flame Arrestor

Although not likely to occur, if debris collects on the flame arrestor, use a vacuum, compressed air, or a soft bristle brush to remove it. **NOTE:** If unable to inspect or clean the flame arrestor from underneath, follow the "Cleaning the Combustion Chamber and Flame Arrestor" section instructions.

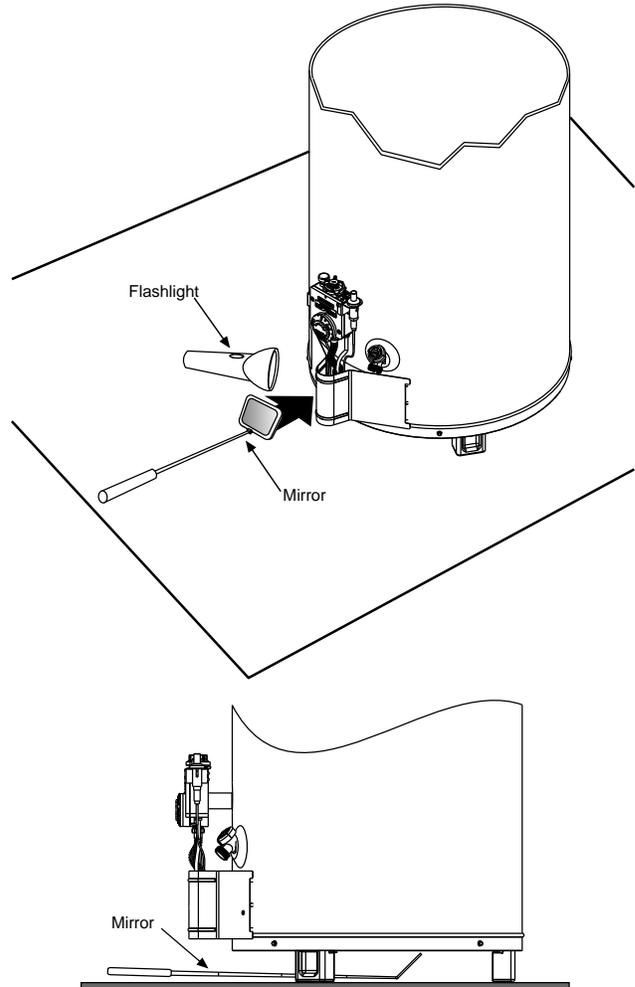


FIGURE 29

## Cleaning the Combustion Chamber and Flame Arrestor

1. Follow procedure outlined in "Removing the Burner Door Assembly" section.
2. Use a vacuum cleaner/shop vac to remove all loose debris in the combustion chamber (Figure 30). Use compressed air to clear any dust or debris that may have accumulated in the flame arrestor.
3. Reassemble following the procedure under the "Replacing the Burner Door Assembly" section.

## Replacing the Burner Door Assembly

### ⚠ WARNING

#### Fire or Explosion Hazard

- Tighten both manifold door screws securely.
- Remove any fiberglass between gasket and combustion chamber.
- Replace viewport if glass is missing or damaged.
- Replace two piece wire connector if missing or removed.
- Replace door gasket if damaged.
- Failure to follow these instructions can result in death, explosion, or fire.

Read instruction manual before installing, using or servicing water heater.

1. Check the door gasket for damage or imbedded debris prior to installation.

### ⚠ WARNING

#### Explosion Hazard

- Replace viewport if glass is missing or damaged.
- Failure to do so can result in death, explosion, or fire.

2. Inspect the viewport for damage and replace as required.
3. Insert the burner door assembly into the combustion chamber and slide it completely forward. Note: When inserting the burner door assembly, tip the burner end up slightly to ensure it engages with the burner bracket.
4. Inspect the door gasket and make sure there is no fiberglass insulation between the door gasket and the combustion chamber (See Figure 30).
5. Replace the two screws, which secure the burner door assembly to the combustion chamber and tighten securely. Once the burner door assembly is tightened, visually inspect the door gasket between the burner door assembly and the combustion chamber for spaces or gaps that would prevent a seal. **IMPORTANT:** Do not operate the water heater if the door gasket does not create a seal between the burner door assembly and the combustion chamber.
6. Reconnect the manifold tubing, pilot tubing, and thermocouple to the thermostat. Do not cross-thread or apply any thread sealant to these fittings. The thermocouple nut should be started and turned all the way in by hand. An additional 1/2 - 3/4 turn with a 7/16" open end wrench will then be sufficient to seat the lockwasher.
7. Reconnect the igniter wire.
8. Turn gas supply on and refer to the "Operating Instructions".

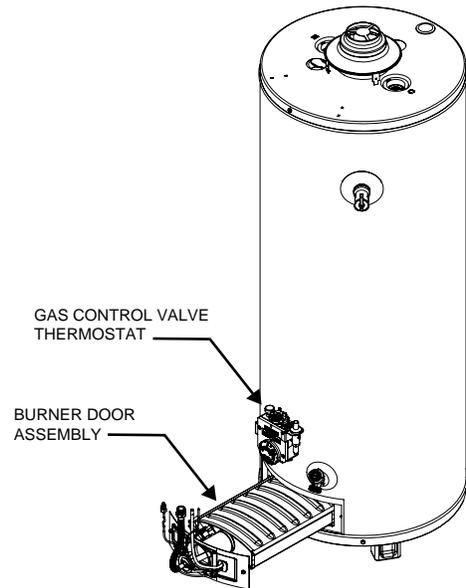


FIGURE 30.

9. Check for leaks by brushing on an approved noncorrosive leak detection solution. Bubbles will show a leak. Correct any leak found.
10. Replace the outer door.

## Piezoelectric Igniter System

The piezoelectric igniter system consists of the igniter button, electrode, and wire. The pilot is ignited by an electric spark generated when the igniter button is pressed. The electrode should be centered between the pilot and thermocouple. (See Figure 31). Use only factory authorized piezoelectric igniter parts for replacement.

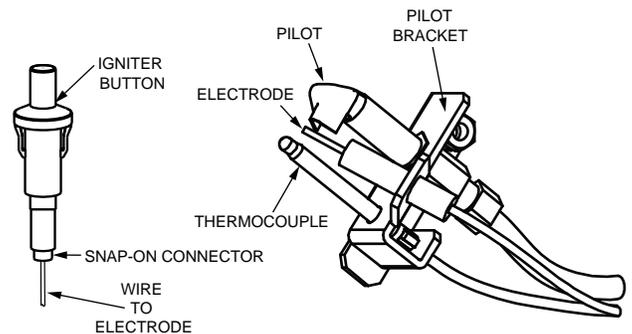


FIGURE 31.

## Testing the Igniter System

Turn off the gas to the water heater at the manual gas shut-off valve. Watch the electrode tip while activating the igniter. A visible spark should jump from the electrode. To avoid shock, do not touch the burner or any metal part on the pilot or pilot assembly. If no spark is visible, check the wire connections and make sure the electrode is not broken. Replace the electrode if defective. **NOTE:** The electrode is part of the pilot assembly and cannot be replaced separately. Dirt and rust on the pilot or electrode tip can prevent the igniter spark. Wipe clean with a damp cloth and dry completely. Rust can be removed from the electrode tip and metal surfaces by lightly sanding with an emery cloth or fine grit sandpaper.

## Removing and Replacing the Gas Control Valve/Thermostat

**IMPORTANT:** The gas control valve/thermostat is a standard valve with a right-hand thread thermocouple. Use only factory authorized replacement parts.

Removing the Gas Valve:

1. Turn the gas control knob on the combination gas control valve/thermostat clockwise to the "OFF" position. **NOTE:** Depress the dial stop on Robertshaw valves before turning the gas control knob. See Lighting Instructions on the water heater.
2. Turn off the gas at the manual shut-off valve on the gas supply pipe (Figure 3).
3. Drain the water heater. Refer to "Draining" section and follow the procedure.
4. Disconnect the igniter wire from the igniter. **NOTE:** First remove the igniter from the bracket by depressing front and rear holding tabs and lift. Next remove igniter bracket from the gas valve. Disconnect the thermocouple (right-hand threads), pilot tube, and manifold tube at the gas control valve/thermostat (Figure 25).
5. Refer to "Gas Piping" section and disconnect the ground joint union in the gas piping. Disconnect the remaining pipe from the gas control valve/thermostat.
6. To remove the gas valve, thread a correctly sized pipe into the inlet and use it to turn the gas valve (counterclockwise.) Do not use pipe wrench or equivalent to grip body. Damage may result, causing leaks. Do not insert any sharp objects into the inlet or outlet connections. Damage to the gas valve may result.

Replacing the Gas Valve:

To replace the gas control valve/thermostat, reassemble in reverse order. When replacing the gas valve, thread a correctly sized pipe into the inlet and use it to turn the gas valve (clockwise.) **DO NOT OVER TIGHTEN**, damage may result.

- Be sure to use approved Teflon® tape or pipe joint compound on the gas piping connections and fitting on the back of the gas control valve that screws into tank.
- Be sure to remove the pilot ferrule nut from the new gas control valve/thermostat.
- Turn the gas supply on and check for leaks. Test all connections by brushing on an approved noncorrosive leak-detection solution. Bubbles will show a leak. Correct any leak found.
- Be sure tank is completely filled with water before lighting and activating the water heater. Follow the "Operating Instructions"
- If additional information is required, contact Sears Service at: 1-800-4-MY-HOME® (1-800-469-4663).

TEFLON® is a registered trademark of E.I. Du Pont De Nemours and Company.

## Housekeeping

Vacuum around base of water heater for dust, dirt, and lint on a regular basis.

	<b>⚠ DANGER</b>
	<b>Fire and Explosion Hazard</b> <ul style="list-style-type: none"><li>• Do not obstruct combustion air openings at the bottom of the water heater.</li><li>• Do not use or store flammable vapor products such as gasoline, solvents or adhesives in the same room or area near water heater or other appliance.</li><li>• Visibly inspect flame arrestor at least once every six months and clean if accumulated lint.</li><li>• Can cause serious injury or death.</li></ul>

AT LEAST ONCE EVERY SIX MONTHS A VISUAL INSPECTION SHOULD BE MADE OF THE FLAME ARRESTOR. CLEAN IF LINT ACCUMULATIONS ARE NOTICED.

**INSTALLED IN SUITABLE AREA:** To insure sufficient ventilation and combustion air supply, proper clearances from the water heater must be maintained. See *Facts to Consider About the Location* section. Combustible materials such as clothing, cleaning materials, or flammable liquids, etc. must not be placed against or adjacent to the water heater because they could catch on fire.

## Anode Rod Inspection

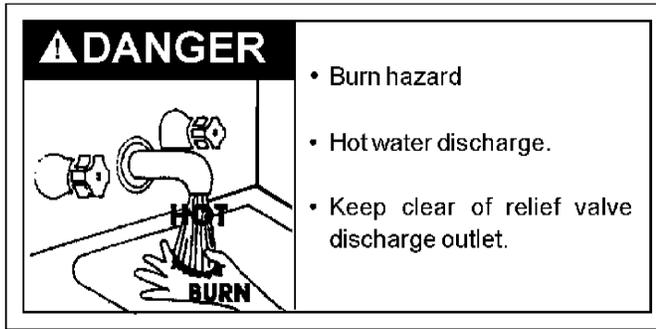
<b>CAUTION</b>
<b>Property Damage Hazard</b>
<ul style="list-style-type: none"><li>• Avoid water heater damage.</li><li>• Inspection and replacement of anode rod required.</li></ul>

The anode rod is used to protect the tank from corrosion. Most hot water tanks are equipped with an anode rod. The submerged rod deteriorates to protect the tank. Instead of corroding the tank, water ions attack and eat away the anode rod. This does not affect the water's taste or color. The rod must be maintained to keep the tank in operating condition.

Anode deterioration depends on water conductivity, not necessarily water condition. A corroded or pitted anode rod indicates high water conductivity and should be checked and/or replaced more often than an anode rod that appears to be intact. Replacement of a depleted anode rod can extend the life of your water heater. Inspection should be conducted by calling the Sears Service Center for an authorized contractor. At a minimum, the anode(s) should be checked annually after the warranty period.

## Temperature-Pressure Relief Valve Operation

The temperature-pressure relief valve must be manually operated at least once a year.



When checking the temperature-pressure relief valve operation, make sure that (1) no one is in front of or around the outlet of the temperature-pressure relief valve discharge line, and (2) that the water discharge will not cause any property damage, as the water may be extremely hot, see Figure 32.

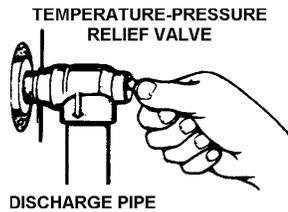
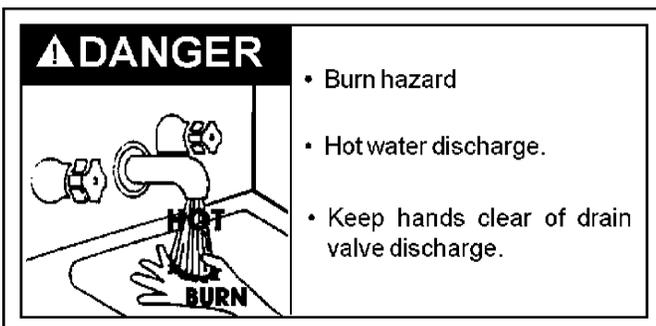


FIGURE 32.

If after manually operating the valve, it fails to completely reset and continues to release water, immediately close the cold water inlet to the water heater, follow the draining instructions, and replace the temperature-pressure relief valve with a new one.

If the temperature-pressure relief valve on the appliance weeps or discharges periodically, this may be due to thermal expansion. You may have a check valve installed in the water line or a water meter with a check valve. Consult the Sears Service Center for further information. Do not plug the temperature-pressure relief valve.

## Draining



The water heater should be drained if being shut down during freezing temperatures. Also periodic draining and cleaning of sediment from the tank may be necessary.

1. Turn the gas control knob to the "OFF" position.

2. CLOSE the cold water inlet valve to the water heater.
3. OPEN a nearby hot water faucet and leave open to allow for draining.
4. Connect a hose to the drain valve and terminate to an adequate drain.
5. OPEN the water heater drain valve to allow for tank draining.

**NOTE:** If the water heater is going to be shut down and drained for an extended period, the drain valve should be left open with hose connected allowing water to terminate to an adequate drain.

6. Close the drain valve.
7. Follow the lighting instructions in the *Lighting* section to restart the water heater.

## Drain Valve Washer Replacement

(See Figure 33)

1. Turn "OFF" gas supply to water heater.
2. Follow "Draining" instructions.
3. Turning counter clockwise (↺), remove the cap.
4. Unscrew the stem by turning it counter clockwise (↺), and remove it from the drain valve body.
5. Remove the bottom washer and put the new one in place.
6. Re-insert the stem into the drain valve body and retighten the cap to the body using a wrench. DO NOT OVER TIGHTEN.
7. Follow instructions in the *Filling The Water Heater* section.
8. Check for leaks.
9. Follow the lighting instructions in the *Lighting* section to restart the water heater.

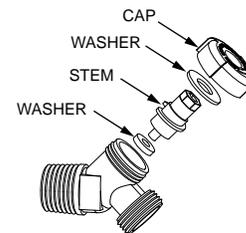


FIGURE 33.

## Service

Before calling for repair service, read the *Start Up Conditions* and *Operational Conditions* found in the *Troubleshooting Guide* of this manual.

If a condition persists or you are uncertain about the operation of the water heater, let the Sears Service Center check it out.

Contact Sears Service Center at:

1-800-4-MY-HOME® (1-800-469-4663).

# TROUBLESHOOTING GUIDE

## Start Up Conditions

### Thermal Expansion

## CAUTION

### Property Damage Hazard

- Avoid water heater damage.
- Install thermal expansion tank or device if necessary.
- Contact qualified installer or service agency.

Water supply system may, because of such events as high line pressure, frequent cut-offs and the effects of water hammer have installed devices such as pressure reducing valves, check valves, back flow preventers, etc., to control these types of problems. When these devices are not equipped with an internal by-pass, and no other measures are taken, the devices cause the water system to be closed. As water is heated, it expands (thermal expansion) and closed systems do not allow for the expansion of heated water.

The water within the water heater tank expands as it is heated and increases the pressure of the water system. If the relieving point of water heater's temperature-pressure relief valve is reached, the valve will relieve the excess pressure. **The temperature-pressure relief valve is not intended for the constant relief of thermal expansion.** This is an unacceptable condition and must be corrected.

It is recommended that any devices installed which could create a closed system have a by-pass and/or the system have an expansion tank or device to relieve the pressure built by thermal expansion. Thermal expansion tanks are available from Sears stores and through the Sears Service Centers. Contact the local plumbing inspector, water supplier and/or the Sears Service Center for assistance in controlling these situations, see Figure 34.

### Thermal Expansion Tank Specifications

Model Number	Tank Capacity In Gallons	Dimensions in Inches		Pipe Fitting On Tank
		Diameter	Length	
153.331020	2	8 (203 mm)	12-3/4 (323 mm)	3/4" Male
153.331050	5	11 (279 mm)	14-3/4 (375 mm)	3/4" Male

### Expansion Tank Sizing Chart

Expansion Tank Capacity Needed	Inlet* Water Pressure	Water Heater Capacity (Gallons)				
		30	40	50	66	82
	40 psi	2	2	2	5	5
50 psi	2	2	2	5	5	
60 psi	2	2	2	5	5	
70 psi	2	2	5	5	5	
80 psi	2	5	5	5	5	

\*Highest recorded inlet water pressure in a 24 hour period or regulated water pressure.

**NOTE:** Expansion tanks are pre-charged with a 40 psi air charge. If the inlet water pressure is higher than 40 psi, the expansion tank's air pressure must be adjusted to match that pressure, but must not be higher than 80 psi.

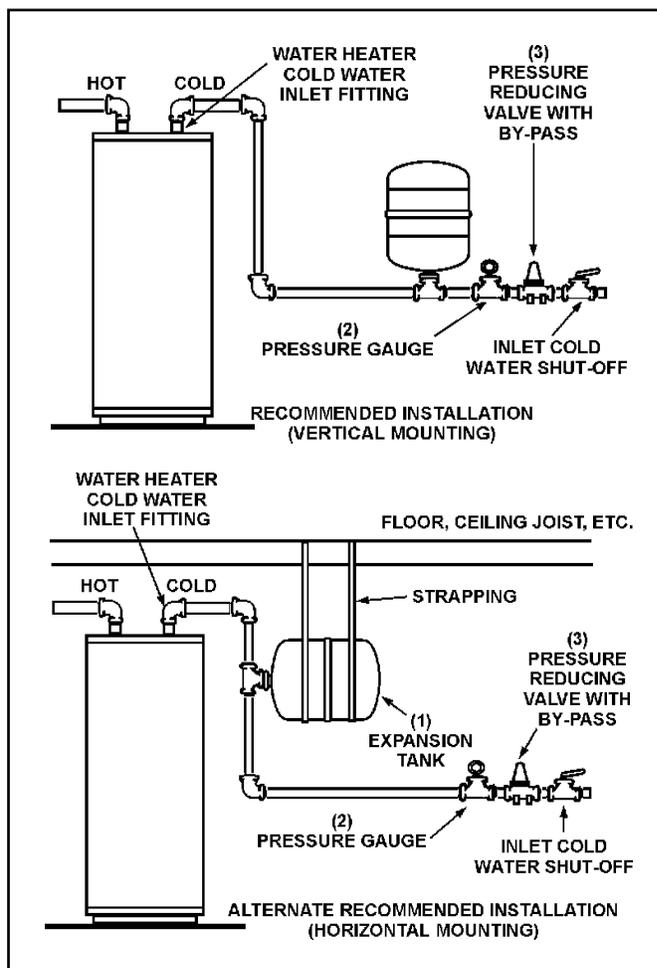


FIGURE 34.

### Strange Sounds

Possible noises due to expansion and contraction of some metal parts during periods of heat-up and cool-down do not represent harmful or dangerous conditions.

Condensation causes sizzling and popping within the burner area during heating and cooling periods and should be considered normal. See *Condensation* section.

### Draft Hood Operation

Check draft hood operation by performing a worst case depressurization of the building. With all doors and windows closed, and with all air handling equipment and exhaust fans operating such as furnaces, clothes dryers, range hoods and bathroom fans, a match flame should still be drawn into the draft hood of the water heater with its burner firing. If the flame is not drawn toward the draft hood after 15 minutes of burner operation, shut off water heater and make necessary air supply changes to correct.

## Condensation

Whenever the water heater is filled with cold water, some condensate will form while the burner is on. A water heater may appear to be leaking when in fact the water is condensation. This usually happens when:

- A new water heater is filled with cold water for the first time.
- Burning gas produces water vapor. In water heaters, particularly high efficiency models where flue temperatures are lower.
- Large amounts of hot water are used in a short time and the refill water in the tank is very cold.

Moisture from the products of combustion condense on the cooler tank surfaces and form drops of water which may fall onto the burner or other hot surfaces to produce a “sizzling” or “frying” noise.

Excessive condensation can cause pilot outage due to water running down the flue tube onto the main burner and putting out the pilot.

Because of the suddenness and amount of water, condensation water may be diagnosed as a “tank leak”. After the water in the tank warms up (about 1-2 hours), the condition should disappear.

Do not assume the water heater is leaking until there has been enough time for the water in the tank to warm up.

An undersized water heater will cause more condensation. The water heater must be sized properly to meet the family's demands for hot water including dishwashers, washing machines and shower heads.

Excessive condensation may be noticed during the winter and early spring months when incoming water temperatures are at their lowest.

Good venting is essential for a gas fired water heater to operate properly as well as to carry away products of combustion and water vapor.

## Smoke Odor

It is not uncommon to experience a small amount of smoke and odor during the initial start-up. This is due to burning off of oil from metal parts, and will disappear in a short while.

## Operational Conditions

### Smelly Odor

In each water heater there is installed at least one anode rod (see parts section) for corrosion protection of the tank. Certain water conditions will cause a reaction between this rod and the water. The most common complaint associated with the anode rod is one of a “rotten egg smell”. This odor is derived from hydrogen sulfide gas dissolved in the water. The smell is the result of four factors which must all be present for the odor to develop:

- a concentration of sulfate in the supply water.
- little or no dissolved oxygen in the water.
- a sulfate reducing bacteria within the water heater. (This harmless bacteria is non-toxic to humans.)
- an excess of active hydrogen in the tank. This is caused by the corrosion protective action of the anode.

Smelly water may be eliminated or reduced in some water heater models by replacing the anode(s) with one of less active material, and then chlorinating the water heater tank and all hot water lines. Contact Sears Service for further information concerning an Anode Replacement Kit #9001453 and this Chlorination Treatment. Anode replacement and chlorination of the tank are not covered by the water heater's limited warranty.

If the smelly water persists after the anode replacement and chlorination treatment, it may be necessary to chlorinate or aerate your water supply to eliminate the problem.

**Do not remove the anode leaving the tank unprotected. By doing so, all warranty on the water heater tank is voided.**

### “AIR” In Hot Water Faucets



**HYDROGEN GAS:** Hydrogen gas can be produced in a hot water system that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable and explosive. To prevent the possibility of injury under these conditions, we recommend the hot water faucet, located farthest away, be opened for several minutes before any electrical appliances which are connected to the hot water system are used (such as a dishwasher or washing machine). If hydrogen gas is present, there will probably be an unusual sound similar to air escaping through the pipe as the hot water faucet is opened. There must be no smoking or open flame near the faucet at the time it is open.

### High Temperature Shut Off System

This water heater is equipped with an automatic gas shutoff system. This system works when high water temperatures are present. The high temperature shutoff is built into the gas control valve. It is non-resettable. If the high temperature shutoff activates, the gas control valve must be replaced. Turn “OFF” the entire gas supply to the water heater and contact your gas supplier.

## TROUBLESHOOTING GUIDE

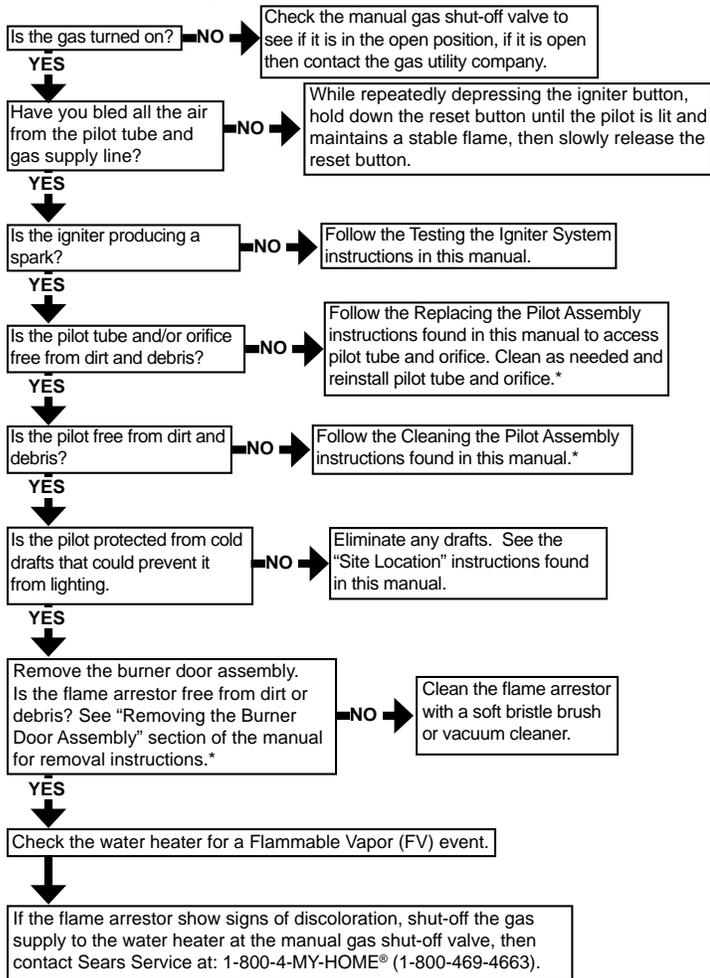
PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
BURNER WILL NOT IGNITE	<ol style="list-style-type: none"> <li>1. Pilot not lit</li> <li>2. Thermostat set too low</li> <li>3. No gas</li> <li>4. Dirt in the gas lines</li> <li>5. Pilot line clogged</li> <li>6. Main burner line clogged</li> <li>7. Non-functioning thermocouple</li> <li>8. Non-functioning thermostat</li> <li>9. Heater installed in a confined area</li> </ol>	<ol style="list-style-type: none"> <li>1. Light pilot</li> <li>2. Turn temp. dial to desired temperature</li> <li>3. Check with gas utility company</li> <li>4. Notify utility-install trap in gas line</li> <li>5. Clean, locate source and correct</li> <li>6. Clean, locate source and correct</li> <li>7. Replace thermocouple</li> <li>8. Replace thermostat</li> <li>9. Provide fresh air ventilation</li> </ol>
SMELLY WATER	<ol style="list-style-type: none"> <li>1. Sulfides in the water</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the anode with a special anode</li> </ol>
PILOT WILL NOT LIGHT	<ol style="list-style-type: none"> <li>1. Air in gas line</li> <li>2. No gas</li> <li>3. Dirt in gas lines</li> <li>4. Pilot line or orifice clogged</li> <li>5. Cold drafts</li> <li>6. Thermostat ECO switch open</li> <li>7. Non-functioning igniter</li> <li>8. Flammable vapor incident</li> <li>9. Low gas pressure</li> <li>10. Air for combustion obstructed</li> <li>11. Pilot dirty</li> </ol>	<ol style="list-style-type: none"> <li>1. Bleed the air from the gas line</li> <li>2. Check with gas utility company</li> <li>3. Notify utility-install dirt trap in gas line</li> <li>4. Clean, locate source and correct</li> <li>5. Locate source and correct</li> <li>6. Replace thermostat</li> <li>7. Replace igniter pilot assembly</li> <li>8. Eliminate flammable vapor source(s) Call 1-800-4-MY-HOME® (1-800-469-4663)</li> <li>9. Check with gas utility company</li> <li>10. See service and adjustment section for inspection and cleaning of flame arrestor &amp; burner</li> <li>11. Clean pilot</li> </ol>
PILOT WILL NOT REMAIN LIT	<ol style="list-style-type: none"> <li>1. Air in gas line</li> <li>2. Dirt in gas lines</li> <li>3. Pilot line or orifice clogged</li> <li>4. Thermocouple connection loose</li> <li>5. Non-functioning thermocouple</li> <li>6. Cold drafts</li> <li>7. Flammable vapor incident</li> <li>8. Low gas pressure</li> <li>9. Air for combustion obstructed</li> <li>10. Pilot dirty</li> </ol>	<ol style="list-style-type: none"> <li>1. Bleed the air from the gas line</li> <li>2. Notify utility-install dirt trap in gas line</li> <li>3. Clean, locate source and correct</li> <li>4. Finger tighten; then 1/2 turn with wrench</li> <li>5. Replace thermocouple</li> <li>6. Locate source and correct</li> <li>7. Eliminate flammable vapor source(s) Call 1-800-4-MY-HOME® (1-800-469-4663)</li> <li>8. Check with gas utility company</li> <li>9. See service and adjustment section for inspection and cleaning of flame arrestor &amp; burner</li> <li>10. Clean pilot</li> </ol>
HIGH OPERATION COSTS	<ol style="list-style-type: none"> <li>1. Thermostat set too high</li> <li>2. Sediment or lime in tank</li> <li>3. Water heater too small for job</li> <li>4. Wrong piping connections</li> <li>5. Leaking faucets</li> <li>6. Gas leaks</li> <li>7. Wasted hot water</li> <li>8. Long runs of exposed piping</li> <li>9. Hot water piping in exposed wall</li> </ol>	<ol style="list-style-type: none"> <li>1. Set temperature dial to lower setting</li> <li>2. Drain/flush-provide water treatment if needed</li> <li>3. Install adequate heater</li> <li>4. Correct piping-dip tube must be in cold inlet</li> <li>5. Repair faucets</li> <li>6. Check with utility-repair at once</li> <li>7. Advise customer</li> <li>8. Insulate piping</li> <li>9. Insulate piping</li> </ol>
INSUFFICIENT HOT WATER	<ol style="list-style-type: none"> <li>1. Thermostat set too low</li> <li>2. Sediment or lime in tank</li> <li>3. Water heater too small</li> <li>4. Wrong piping connections</li> <li>5. Leaking faucets</li> <li>6. Wasted hot water</li> <li>7. Long runs of exposed piping</li> <li>8. Hot water piping in outside wall</li> <li>9. Low gas pressure</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn temperature dial to desired setting</li> <li>2. Drain/flush-provide water treatment if needed</li> <li>3. Install adequate heater</li> <li>4. Correct piping-dip tube must be in cold inlet</li> <li>5. Repair faucets</li> <li>6. Advise customer</li> <li>7. Insulate piping</li> <li>8. Insulate piping</li> <li>9. Check with gas utility company</li> </ol>
SLOW HOT WATER RECOVERY	<ol style="list-style-type: none"> <li>1. Insufficient air</li> <li>2. Flue clogged</li> <li>3. Low gas pressure</li> <li>4. Improper calibration</li> <li>5. Thermostat set too low</li> <li>6. Water heater too small</li> <li>7. Wrong piping connections</li> <li>8. Wasted hot water</li> </ol>	<ol style="list-style-type: none"> <li>1. Provide ventilation to water heater. Check flue way, flue baffle, and burner</li> <li>2. Clean flue, locate source and correct</li> <li>3. Check with gas utility company</li> <li>4. Replace thermostat</li> <li>5. Turn temperature dial to desired setting</li> <li>6. Install adequate heater</li> <li>7. Correct piping-dip tube must be in cold inlet</li> <li>8. Advise customer</li> </ol>

## TROUBLESHOOTING GUIDE (Continued)

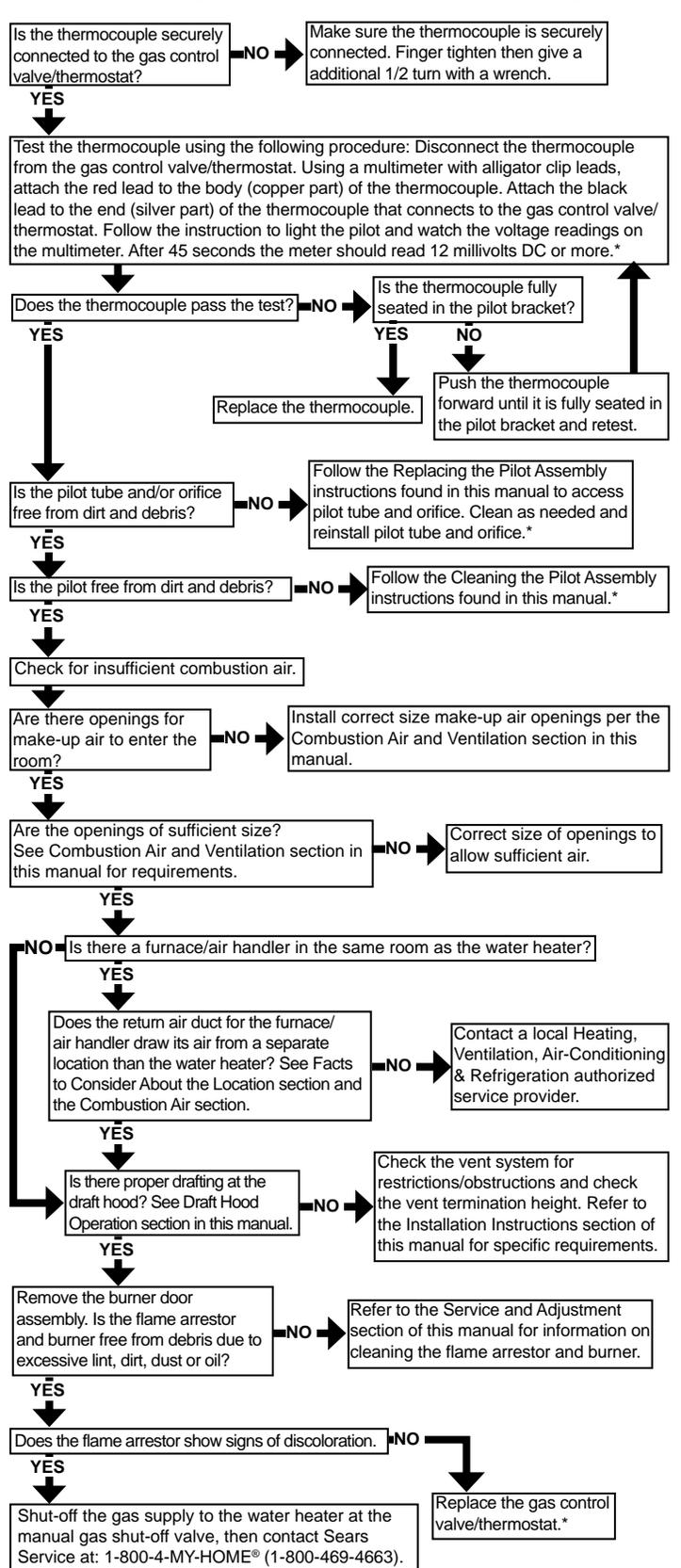
PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
DRIP FROM RELIEF VALVE	<ol style="list-style-type: none"> <li>1. Excessive water pressure</li> <li>2. Closed water system</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a pressure reducing valve and relief valve</li> <li>2. See "Thermal Expansion"</li> </ol>
THERMOSTAT FAILS TO SHUT OFF	<ol style="list-style-type: none"> <li>1. Non-functioning thermostat</li> <li>2. Improper calibration</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace thermostat</li> <li>2. Replace thermostat</li> </ol>
COMBUSTION ODORS	<ol style="list-style-type: none"> <li>1. Insufficient air</li> <li>2. Water heater flue or vent system blocked.</li> <li>3. Heater installed in a confined area</li> </ol>	<ol style="list-style-type: none"> <li>1. Provide ventilation to water heater. Check flue way, flue baffle, and burner</li> <li>2. Clean, locate source and correct</li> <li>3. Provide fresh air ventilation</li> </ol>
SMOKING AND CARBON FORMATION (SOOTING)	<ol style="list-style-type: none"> <li>1. Flammable vapor incident</li> </ol>	<ol style="list-style-type: none"> <li>1. Call 1-800-4-MY-HOME® (1-800-469-4663)</li> </ol>
CONDENSATION	<ol style="list-style-type: none"> <li>1. Temperature setting too low</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the temperature setting</li> </ol>
BURNER FLAME FLOATS AND LIFTS OFF PORTS	<ol style="list-style-type: none"> <li>1. Orifice too large</li> <li>2. High gas pressure</li> <li>3. Water heater flue or vent system blocked.</li> <li>4. Cold drafts</li> <li>5. Dirty burner screen</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with correct orifice</li> <li>2. Check with gas utility company</li> <li>3. Clean flue and burner-locate source and correct</li> <li>4. Locate source and correct</li> <li>5. Clean burner screen. See "Ultra Low NOx Natural Gas Burner" section of this manual.</li> </ol>
FLAME BURNS AT ORIFICE	<ol style="list-style-type: none"> <li>1. Non-functioning thermostat</li> <li>2. Low gas pressure</li> <li>3. Non-functioning burner</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace thermostat</li> <li>2. Check with gas utility company</li> <li>3. Replace burner assembly</li> </ol>
PILOT FLAME TOO SMALL	<ol style="list-style-type: none"> <li>1. Pilot line or orifice clogged</li> <li>2. Low gas pressure</li> <li>3. Dirty pilot</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean, locate source and correct</li> <li>2. Check with gas utility company</li> <li>3. Clean pilot</li> </ol>

# PILOT LIGHT TROUBLESHOOTING CHART

## Section A: Pilot light will not light.



## Section B: Pilot light will not remain lit or repeatedly goes out.

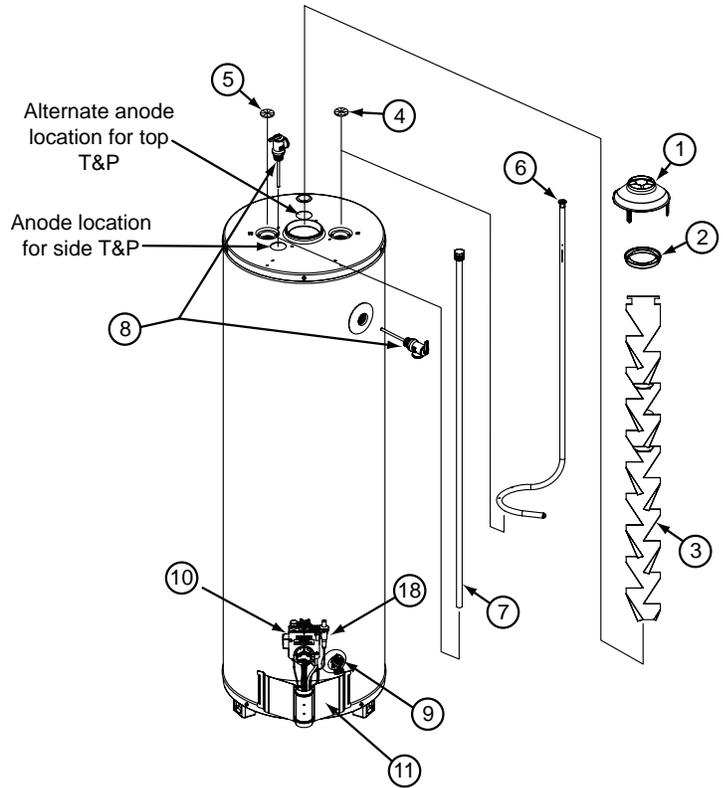
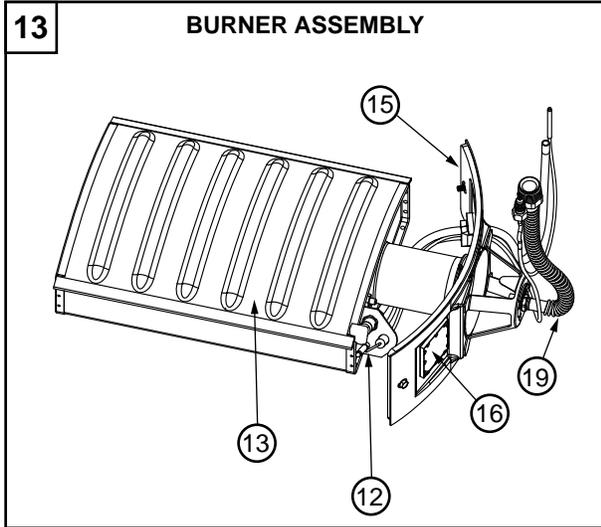


\* This procedure requires the removal of water heater components.

# PARTS ORDER LIST

## POWER MISER™ 9 GAS WATER HEATER

MODEL NO'S	
153.330960	40 Gallon
153.330970	50 Gallon



Key No.	Part Description	Model Numbers	
		153.330960	153.330970
1	Draft Hood	700795-020	700795-020
2	Reducer Ring - Some Models	700795-021	700795-021
3	Flue Baffle	9006436	9006437
4	Heat Trap (Cold) - Some Models	9003915	9003915
5	Heat Trap (Hot) - Some Models	9003915	9003915
6	Cold Water Dip Tube	9006798	9006802
7	Anode Rod	9003892	9003892
8	T & P Relief Valve (Located Top Or Side)	9000728	9000728
9	Drain Valve	9000058	9000058
10	Gas Control Valve/Thermostat	9006439	9006439
11	Outer Door	700795-018	700795-018
12	Pilot Assembly (Natural Gas)	9006441	9006441
13	Burner Door Assembly (Natural Gas/Low Nox)**	9006443	9006443
14*	Two Piece Wire Connector With Retainer Clip	9006449	9006449
15	Burner Door Gasket	9006141	9006141
16	Viewport Assembly	9006142	9006142
17*	Thermocouple	9000056	9000056
18	Piezoelectric Igniter Button	9006143	9006143
19	Flexible Manifold Tube	9006445	9006445
20*	Instruction Manual	315429-000	315429-000

\* Not Shown. \*\* Includes Inner Door Gasket

Now that you have purchased your gas water heater, should a need ever exist for repair parts or service, simply contact any Sears Service Center or call 1-800-4-MY-HOME® (1-800-469-4663). Be sure to provide all pertinent facts when you call or visit.

- MODEL NUMBER
- SERIAL NUMBER
- TYPE GAS - NATURAL
- PART DESCRIPTION

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:

**THIS IS A REPAIR PARTS LIST, NOT A PACKING LIST.**

## 9 - YEAR LIMITED WARRANTY ON WATER HEATER

For nine years from the date of purchase, if this water heater is installed and operated in a single-family home in accordance with the owner's manual instructions and all local applicable plumbing codes, Sears will:

- Supply free water heater parts for those that are defective in material or workmanship.
- Supply a free water heater for one that develops a leak.

For the second through the ninth year from purchase date, you must pay the labor cost for installation of parts or water heater.

For commercial, institutional, industrial, or residential use by two or more families, the above limited warranty is only for two years. During the second year you must pay the labor cost for parts or water heater installation.

## 1 - YEAR EXCLUSIVE KENMORE LABOR WARRANTY

For the first year from the date of purchase, Sears will, free of charge, supply and install new water heater parts for defective ones or a new water heater for one that develops a leak.

## WARRANTY SERVICE

To obtain warranty service, call 1-800-4-MY-HOME® (1-800-469-4663).

This warranty applies only while this product is in use in the United States.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sears, Roebuck and Co., Dept. 817WA, Hoffman Estates, IL 60179

**The price of your water heater does not include a free checkup service call.** On water heater installations arranged by Sears, Sears warrants the installation.

A charge will be made on service calls due to poor or incomplete installation. These include:

- a. Adjusting thermostat
- b. Lighting pilot
- c. Leaks in pipes or fittings
- d. Improper venting
- e. Condensation

## MASTER PROTECTION AGREEMENTS

*Congratulations* on making a smart purchase. Your new Kenmore® product is designed and manufactured for years of dependable operation. But like all products, it may require preventive maintenance or repair from time to time. That's when having a Master Protection Agreement can save you money and aggravation.

Purchase a Master Protection Agreement now and protect yourself from unexpected hassle and expense.

The Master Protection Agreement also helps extend the life of your new product. Here's what's included in the Agreement:

- **Expert Service** by our 12,000 professional repair specialist.
- **Unlimited service and no charge** for parts and labor on all covered repairs.
- **"No-lemon" guarantee** - replacement of your covered product if four or more product failures occur within twelve months.
- **Product replacement** if your covered product can't be fixed.
- **Annual Preventive Maintenance Check** at your request - no extra charge.
- **Fast help by phone** - phone support from a Sears technician

on products requiring in-home repair, plus convenient repair scheduling.

- **Power surge protection** against electrical damage due to power fluctuations.
- **Rental reimbursement** if repair of your covered product takes longer than promised.

Once you purchase the Agreement, a simple phone call is all that it takes for you to schedule service. You can call anytime day or night, or schedule a service appointment online.

Sears has over 12,000 professional repair specialists, who have access to over 4.5 million quality parts and accessories. That's the kind of professionalism you can count on to help prolong the life of your new purchase for years to come. Purchase your Master Protection Agreement today!

**Some limitations and exclusions apply. For prices and additional information call 1-800-827-6655.**

## SEARS INSTALLATION SERVICE

*For Sears professional Installation* of home appliances, garage door openers, water heaters, and other major home items, in the U.S.A., call **1-800-4-MY-HOME®**.

For in-home major brand repair service  
Call 24 hours a day, 7 days a week (U.S.A. and Canada)

1-800-4-MY-HOME®  
(1-800-469-4663)  
www.sears.com

The model number of your water heater is found on the model rating plate on the front of the water heater.

**Sears, Roebuck and Co., Hoffman Estates, IL 60179 U.S.A**