



# Tankless Gas Water Heater

Instruction For Installation And Use

Model: RH13K-NG / RH13K-LPG

RH19K-NG / RH19K-LPG



 ranein.net

 service@ranein.net

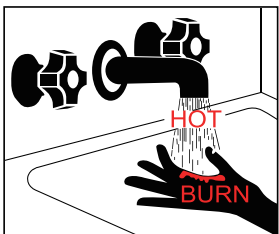
 business@ranein.net

## ⚠ DANGER

### CARBON MONOXIDE HAZARD

This appliance can produce carbon monoxide, which is colorless and odorless. Using it in an enclosed space can be fatal. Never use this appliance in confined areas such as a camper, tent, car, or home.

## ⚠ DANGER



Water temperatures over 125°F (52°C) can cause severe burns or death from scalding instantly. Children, the disabled, and the elderly are at the highest risk of being scalded. Consult the instruction manual before setting the temperature on your water heater. Always feel the water before bathing or showering.

## ⚠ DANGER

If you smell gas:

1. Shut off the gas to the appliance.
2. Extinguish any open flames.
3. If the odor continues, keep away from the appliance and immediately call your fire department. Failure to follow these instructions could result in a fire or explosion, which could cause property damage, personal injury, or death.

## ⚠ DANGER

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Keep this appliance away from all combustible materials. Minimum clearances: rear at 20 inches, two sides at 40 inches, top at 40 inches. Turn off the gas at the cylinder valve after use. Disconnect and remove the cylinder before storing this appliance indoors.

\*Please retain the instruction manual for future reference.

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## You're All Set!

Thanks for purchasing your new Ranein RH13K/RH19K residential tankless water heater. This convenient, safe, and high-efficiency product will open the doors to enjoying endless hot water.

We highly suggest you take the time to read through all of the safety and installation procedures in this manual before attempting to install your new residential water heater.

Always remember, we're here for you via our online helpdesk located at

**[www.ranein.net](http://www.ranein.net)**

### Read This Manual

Inside, you will find many helpful hints on how to use and maintain your water heater properly. A little preventive care on your part can save you time and money over the life of your water heater. You'll find answers to common problems in the Troubleshooting Guide. If you review the chart of Troubleshooting Tips first, you may not need to call for service.

### Read the Safety Information

To ensure your safety and the safety of others, we have included important safety warnings throughout this manual. All safety messages will follow the safety symbol and the words:

**"CAUTION", "DANGER", "WARNING", or "NOTICE".**

### These words mean:

#### ⚠ CAUTION

A potentially hazardous situation that may result in minor or moderate injury.

#### ⚠ DANGER

An imminently hazardous situation that will result in death or serious injury.

#### ⚠ WARNING

A potentially hazardous situation that could result in death or serious injury and/or damage to property.

#### ⚠ NOTICE

Attention is called to observe a specified procedure or maintain a specific condition.

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### Important Safety Information: Read All Instructions Before Using

Be sure to read and understand the entire Use and Care Manual before attempting to install or operate this water heater. Doing so may save you time and money. Pay particular attention to the Safety Instructions, as failure to follow these warnings could result in serious injury or death. If you have trouble understanding any part of this manual, or have any questions, STOP and seek assistance from a qualified service technician or your local gas utility.



### ⚠ DANGER

#### Properly install the water heater:

Failure to install the water heater indoors as outlined in the Installation Instructions in this manual may result in unsafe operation. To avoid the risk of fire, explosion, or carbon monoxide poisoning, never operate the water heater unless it is installed correctly and has an adequate air supply. Be sure to inspect the flue terminal for proper installation during initial start-up and at least annually thereafter. For more details on flue terminal inspection, refer to the Care and Cleaning section of this manual.

### ⚠ WARNING

Gasoline, along with other flammable materials and liquids (such as adhesives, solvents, paint thinners, etc.), and the vapors they produce, are extremely hazardous. Do NOT handle, use, or store gasoline or other flammable or combustible materials near a water heater or any other appliance. Always read and follow the labels on the water heater, as well as the warnings in this manual. Failure to do so could result in property damage, injury, or death.

### Vapors from flammable liquids can explode and cause fires, resulting in death or severe burns.

Do not use or store flammable products, such as gasoline, solvents, or adhesives, in the same room or near the water heater.

#### Keep flammable products:

1. Far away from the heater
2. In approved containers
3. Tightly closed
4. Out of children's reach

The water heater has a main burner flame. The main burner flame:

1. Can come on at any time and any where
2. Will ignite flammable vapors

#### Vapors:

1. Cannot be seen
2. Are heavier than air
3. Go a long way on the floor
4. Can be carried from other rooms to the main burner flame by air currents

#### Installation:

Do not install the water heater where flammable products are stored or used unless the main burner flame is at least 18" above the floor. This will reduce, but not eliminate, the risk of vapors being ignited by the main burner flame.

Read and follow the water heater warnings and instructions. If the owner's manual is missing, contact the retailer or manufacturer.

## ⚠ WARNING

### California Proposition 65

This appliance contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Failure to follow the instructions exactly could result in fire or explosion, causing property damage, personal injury, or death.

Do not discard this manual. Please read it carefully and keep it in a safe place for future reference.

## ⚠ WARNING

- This water heater is not approved for use in manufactured (mobile) homes. Please check local code restrictions regarding permanent/fixed installations in manufactured homes in your area.
- Improper installation, adjustment, alteration, service, or maintenance can result in death, personal injury, or property damage. Refer to this manual for guidance. Installation and service must be performed by a qualified installer, service agency, or gas supplier.

### Read All Instructions Before Using

Be sure to read and understand the entire Use and Care Manual before attempting to install or operate this water heater. Doing so may save you time and money. Pay particular attention to the Safety Instructions, as failure to follow these warnings could result in death or serious injury.

If you have trouble understanding any part of this manual, or have any questions, STOP and seek help from a qualified service technician or your local gas utility.

## ⚠ DANGER

### Properly install the water heater:

Failure to properly install the water heater indoor as outlined in the installation instructions in this manual can result in unsafe operation of the water heater. To avoid the risk of fire, explosion, or asphyxiation from carbon monoxide, never operate this water heater unless it is installed properly and has an adequate air supply for proper operation. Be sure to inspect the flue terminal for proper installation at initial start-up and at least annually thereafter.

- Combustible construction refers to adjacent walls and ceilings and should not be confused with combustible or flammable products and materials. Combustible materials, such as clothing, cleaning materials, or flammable liquids, should never be stored in the vicinity of this water heater or any gas appliances. Fire or explosion can occur, causing death, personal injury, and/or property damage.

## ⚠ NOTICE

When this water heater is supplying general-purpose hot water for use by individuals, a thermostatically controlled mixing valve is recommended to reduce the point-of-use water temperature and minimize the risk of scalding injuries. For further information, contact a licensed plumber or your local plumbing authority.

## ⚠ CAUTION

This water heater must only be used under the following water supply system conditions:

- Clean, potable water free from corrosive chemicals, sand, dirt, or other contaminants.
- Inlet water temperature above 32°F (0°C), but not exceeding 118°F (48°C).
- DO NOT reverse the hot and cold water connections, as the water heater will not operate.

## ⚠ DANGER

### SAFETY INFORMATION FOR NATURAL GAS AND LIQUEFIED PETROLEUM MODELS

Both propane and natural gas have odorants added to help detect gas leaks. Some people may not be able to smell or recognize these odorants. If you are unsure or unfamiliar with the smell of propane or natural gas, consult your gas supplier.

Other conditions, such as 'odorant fade,' can cause the odorant to diminish in intensity, potentially masking a gas leak. Always check for leaks using commercial leak detectors or soapy water.

- Gas detectors are recommended for propane and natural gas applications, and their installation should be in accordance with the manufacturer's recommendations and/or local laws, rules, regulations, or customs.
- Water heaters that use propane gas are different from natural gas models. A natural gas water heater will not function safely on propane, and vice versa.
- Never attempt to convert the water heater from natural gas to propane gas. To avoid possible equipment damage, personal injury, or fire, do not connect the water heater to a fuel type that is not listed on the unit's data plate—propane for propane units and natural gas for natural gas units. These units are not certified for any other fuel type.
- Propane water heaters should not be installed below grade (for example, in a basement) if such an installation is prohibited by federal, state, and/or local laws,



rules, regulations, or customs.

- Propane or propane gas must be used with great caution. It is heavier than air and will accumulate in lower areas, making it difficult to detect at nose level. Before attempting to light the water heater, check for gas leaks by both sight and smell. Use a soapy solution to check all gas fittings and connections. Bubbling at a connection indicates a leak that must be corrected. When smelling for a gas leak, be sure to check near the floor as well.
- It is recommended to use more than one method, such as a soapy solution, gas detectors, etc., to detect leaks in gas applications.

**NOTICE :** If a gas leak is present or suspected:

- DO NOT attempt to find the cause yourself.
- DO NOT try to light any appliance or touch any electrical switch.
- DO NOT use any phone in the building.
- Leave the house immediately and ensure your family and pets leave as well.
- Leave the doors open for ventilation and contact the gas supplier, a qualified service agency, or the fire department.
- Stay away from the house (or building) until the service call has been made, the leak is corrected, and a qualified agency has deemed the area safe.
- Follow the steps listed under "WHAT TO DO IF YOU SMELL GAS" on Page 8 of this manual.

### **⚠ WARNING**

- The installation of gas piping must comply with local utility company requirements and, in the absence of local codes, with the latest edition of the National Fuel Gas Code (NFGC), ANSI Z223.1/NFPA 54.
- If the inlet gas pressure is outside the allowable range (8.0" w.c. [2.0 kPa] - 13.0" w.c. [3.2 kPa] for propane gas), a gas pressure regulator must be installed to maintain the allowable inlet gas pressure.
- If overheating occurs or the gas supply fails to shut off, turn off the manual gas control valve to the water heater.

### **⚠ CAUTION**

- Do not attempt repair of electrical wiring, gas piping, burners, vent connectors, or other safety devices. Refer repairs to qualified service personnel.

- Turn off the manual gas shut-off valve if the water heater has been subjected to overheating, fire, flood, physical damage, or if the gas supply fails to shut off.
- Do not turn on the water heater unless the water and gas supplies are completely open.

## **For Your Safety, Read Before Operating**

### **⚠ WARNING**

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

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. Before operating, smell all around the appliance 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 switches, and 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.
- Do not return to your home until authorized by the gas supplier or fire department.

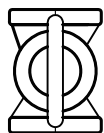
C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob does not push in or turn by hand, do not attempt to repair it; call a qualified service technician. Forcing or attempting to repair it may result in a fire or explosion.

D. Do not use this appliance if any part has been submerged in water. Immediately call a qualified service technician to inspect the appliance and replace any part of the control system or gas control that has been underwater.

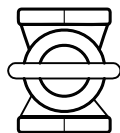
## **Operating Instructions**

1. STOP! Read the safety information above in this manual.
2. Turn off all electrical power to the appliance.
3. Do not attempt to light the burner by hand.
4. Turn the gas shut-off valve located on the outside of the unit clockwise to the "OFF"

Gas Shut-Off  
Valve



Open



Close

position.

5. Turn off all electrical power to the appliance.
6. Wait five (5) minutes to clear out any gas. If you smell gas, STOP! Follow "B" in the safety information above in this manual. If you don't smell gas, go to the next step.
7. Turn the gas shut-off valve located on the outside of the unit counterclockwise to the "ON" position.
8. Turn on all electrical power to the appliance.
9. Set the thermostat to the desired setting.
10. If the appliance does not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

### To turn off gas to the appliance:

1. Turn off all electrical power to the appliance if service is to be performed.
2. Turn the gas shut-off valve located on the outside of the unit clockwise to the "OFF" position.

## Electrical safety

### ⚠ DANGER

**Shock hazard:** Make sure the electrical power to the water heater is off to avoid electric shock, which could result in death or serious personal injury.

### ⚠ WARNING

- For your safety, the information in this manual must be followed to minimize the risk of fire, explosion, or electric shock that can result in death, personal injury, and/or property damage.
- Field wiring connections and electrical grounding must comply with local codes or, in the absence of local codes, with the latest edition of the National Electrical Code, ANSI/NFPA 70.

### ⚠ CAUTION

- Label all wires prior to disconnecting for service. Wiring errors can cause dangerous and improper operation. Verify correct operation after servicing.
- For your safety, burner inspection and cleaning should only be performed by qualified service personnel.
- Make sure the power to the water heater is OFF before removing the unit cover panel. Exposing electrical components and moving parts can cause personal injury.
- For your safety, DO NOT attempt to repair electrical wiring, gas piping, burners, vent connectors, or other safety devices. Refer repairs to qualified service personnel.

### For installations in the state of California

California law requires that residential water heaters be braced, anchored, or strapped to resist falling or horizontal displacement due to earthquake motions for water heaters up to 52 gallons in capacity.

However, applicable local codes shall govern installation. For residential water heaters with a capacity greater than 52 gallons or for tankless models, consult the local building jurisdiction code for acceptable bracing procedures.

### Safety Precautions

Have the installer show you the location of the gas shutoff valve and explain how to turn it off if necessary. Turn off the manual shutoff valve if the water heater has been subjected to overheating, fire, flooding, physical damage, or if the gas supply fails to shut off.

- Read this manual thoroughly before installing or operating the water heater.
- Use this appliance only for its intended purpose as described in this Use and Care Manual.
- Ensure your appliance is properly installed in accordance with local codes and the provided installation instructions.
- Do not attempt to service your water heater unless it is specifically recommended in this manual.
- All other servicing should be performed by a qualified technician.

## Installing the Water Heater

### Indoor location

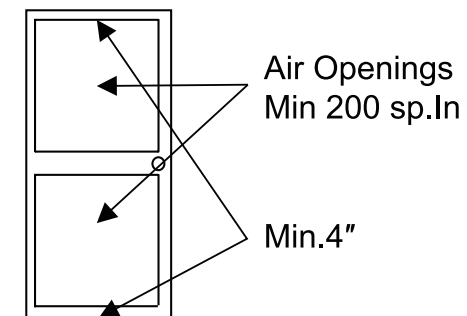
- Installation distances may vary by local code. It is the installer's responsibility to verify the installation requirements.
- Before installation, make sure the gas type you will use matches the type listed on the data plate.

- The water heater should be installed by professionals. Improper installation may lead to failure or dangerous conditions, such as gas leaks or explosions.
- The water heater cannot be installed in an UNVENTED bathroom, bedroom, basement, living room, closet, outdoor area, stairway, or exit area. If installed in an exit area, it must be at least 16.5 feet away from the exit.
- The vent pipe should extend at least 2 inches from the wall. The terminal must be at least 1.64 feet away from any obstruction and must be well-ventilated.
- The vent pipe should slope 3° downward to prevent condensation and protect against rain entering.
- The vent pipe should be positioned to avoid direct, strong winds, as downdrafts can cause malfunction.
- The unit should be installed away from any obstructions, with sufficient space for installation and maintenance. Adequate clearances for servicing must be provided.
- The unit should not be installed in the same room as a gas stove.
- When determining floor clearance, a minimum of 6" must be maintained between the vent pipe and combustible materials. A side wall clearance of 6" and a top clearance of 12" must also be maintained.
- The vent pipe can be up to 32 feet in length with one elbow.
- The vent pipe should be installed with a flame-retardant wall thimble. The owner must refer to the vent manufacturer's instructions and specifications.
- The power socket connecting the water heater should be properly grounded and equipped with a GFCI circuit protector.
- The water heater should not be located in an area where leakage from the heat exchanger or connections could result in damage to adjacent areas or lower floors of the structure. If such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed under the water heater.
- The pan must not restrict combustion airflow. The water heater should be installed as close as possible to the vent termination to minimize vent length and the number of elbows required for venting.
- A gas-fired water heater or any other appliance should not be installed in a space where liquids that give off flammable vapors are used or stored. Such liquids include gasoline, propane (butane or propane), paint, adhesives, and their thinners, solvents, or removers.
- The unit should be installed away from heat sources, flammable materials, and other dangerous substances. Due to natural air movement in a room or enclosed space, flammable vapors can be carried some distance from where the liquids are being used or stored. The open flame of the water heater's main burner can ignite these vapors, causing an explosion or fire that may result in severe burns, death, or property damage.
- Raising the water heater will reduce, BUT NOT eliminate, the possibility of igniting the vapors of any flammable liquids that may be improperly stored or accidentally spilled.

- If the water heater is installed in a garage, it should be positioned so that the direct ignition system and main burner are at least 18 inches above the garage floor.
- Hot and cold water lines should be insulated to conserve water and energy.
- The water heater must be located in an area where it is not subject to physical damage, such as from moving vehicles, flooding, etc.
- The water heater should be installed with proper venting materials and a termination suitable for Category III venting. Failure to install and properly vent the water heater to the outdoors, as outlined in the Venting Section of this manual, can result in unsafe operation. The owner must refer to the vent manufacturer's instructions and specifications.
- For appliances other than direct vent models, the unit must be located as close as practicable to a chimney or gas vent.
- DO NOT install the water heater where it is subject to vibrations or for road use.
- DO NOT install the water heater in recreational vehicles, mobile homes, boats, or other watercraft.
- DO NOT install the water heater near vents for heating or cooling. A minimum of 4 feet should be maintained.
- If the clearances stated on the instruction/warning label located on the front panel of the heater differ, install the water heater according to the clearances specified in the manual.

### ⚠ WARNING

Combustible construction refers to adjacent walls and ceilings and should not be confused with combustible or flammable products and materials. Combustible and/or flammable products and materials should never be stored in the vicinity of this or any gas appliance.



Proper operation of the water heater requires air for combustion and ventilation. Provisions for combustion and ventilation air must comply with the referenced codes.

#### Combustion and Ventilation Air:

A confined space is defined as one having a volume of less than 50 cubic feet per 1,000 BTU/hr of the aggregate input of all appliances within that space.

The air must be supplied through two permanent openings of equal area. One opening should be located within 12 inches above the floor, and the other within 12 inches below the ceiling. The minimum net free area of each opening must not be less than one square inch per 1,000 BTU/hr of the total input rating of all appliances in the enclosure (but not less than 100 square inches), if each opening communicates with other unconfined areas inside the building.

Buildings with unusually tight construction should have combustion and ventilation air supplied from outdoors or from a freely ventilated attic or crawl space. If air is supplied from outdoors, either directly or through vertical ducts, there must be two openings located as specified above, each with a minimum net free area of not less than one square inch per 4,000 BTU/hr of the total input rating of all appliances in the enclosure.

If horizontal ducts are used to communicate with the outdoors, each opening must have a minimum net free area of not less than one square inch per 2,000 BTU/hr of the total input rating of all appliances in the enclosure. If ducts are used, the minimum dimensions of rectangular air ducts shall not be less than 4 inches.

#### ⚠ NOTICE

If the water heater is installed in an unconfined space within a building of conventional frame, masonry, or metal construction, infiltration air is typically adequate for proper combustion and ventilation. If the water heater is installed in a confined space, provisions for combustion and ventilation air must be provided.

#### ⚠ NOTICE

If the duct openings supplying combustion and ventilation air are to be covered with a protective screen or grill, the net free area (openings in the material) of the covering must be used to determine the size of the openings. Protective screening for the openings MUST NOT have openings smaller than 1/4" to prevent clogging by lint or other debris.

### Corrosive Atmospheres

The air in beauty shops, dry cleaning establishments, photo processing labs, and storage areas for liquid and powdered bleaches or swimming pool chemicals often contains halogenated hydrocarbons.

An air supply containing halogenated hydrocarbons may be safe to breathe, but when it passes through a gas flame, corrosive elements are released that can shorten the life of any gas-burning appliance.

Propellants from common spray cans or gas leaks from A/C and refrigeration equipment are highly corrosive after passing through a flame.

The water heater warranty is voided if the heater fails due to operation in a corrosive atmosphere.

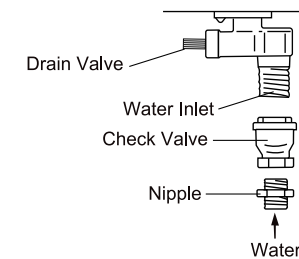
#### ⚠ NOTICE

The water heater should not be installed near any air supply containing halogenated hydrocarbons.

### Water Supply Connections

Plumbing should be performed by a qualified plumber in accordance with local codes. Only approved plumbing materials and tools should be used.

Install a check valve between the water heater and the water shut-off valve.



To conserve energy and prevent freezing, insulate both the cold and hot water supply lines. DO NOT cover the drain valves. Install a shut-off valve near the inlet of the water heater for service and draining purposes. Before connecting the water supply pipe to the water heater, open the shut-off valve and clean out any sand, debris, air, caulking material, etc., inside the pipe. Once cleaned, connect the pipe to the water inlet and check the water flow. Afterward, close the shut-off valve and clean the water filter.

If the water heater is installed in a closed water supply system (such as one with a backflow preventer in the cold water supply line), provisions must be made to control thermal expansion. Contact the water supplier or local plumbing inspector for guidance on how to manage this issue.

To ensure the proper operation of the water heater, the following water pressure guidelines should be followed:

- The operation of the water heater requires a minimum water pressure of 14 PSI and a minimum water flow rate of 0.75 GPM.

- Additional water pressure is required for long pipe runs and outlet fittings due to water pressure drops.
- To maintain proper performance, ensure sufficient water supply pressure. Required Water Pressure = Min. Operating Water Pressure (14 PSI) + Pipe Pressure Loss + Faucet and Shower Pressure Loss + Safety Margin (more than 5 PSI).
- For supplying hot water to upper floors, ensure additional water pressure of 0.44 PSI/FT.
- The measurement should be calculated from the water inlet of the heater (ground level) to the hot water faucet (upper floor level).
- Well water systems should be set at a pressure range of 50-60 PSI.
- When water is supplied from a water supply tank, the height of the tank, pipe diameter, and their relationship to water pressure should be taken into consideration. Gravity water pressure is not recommended.

**IMPORTANT:** Do not apply heat to the HOT or COLD water connections. Any heat applied to the water supply fittings will permanently damage the internal components of the water heater.

#### In regards to the hot water outlet:

- Connections between the water heater and point(s) of use should be as short and direct as possible.
- DO NOT use lead or non-approved plastic piping.
- To conserve energy and minimize heat loss, insulation of hot water piping is recommended.

#### ⚠ NOTICE

If using mixing valves on the outlet, choose one that prevents cold water pressure from overcoming hot water line pressure.

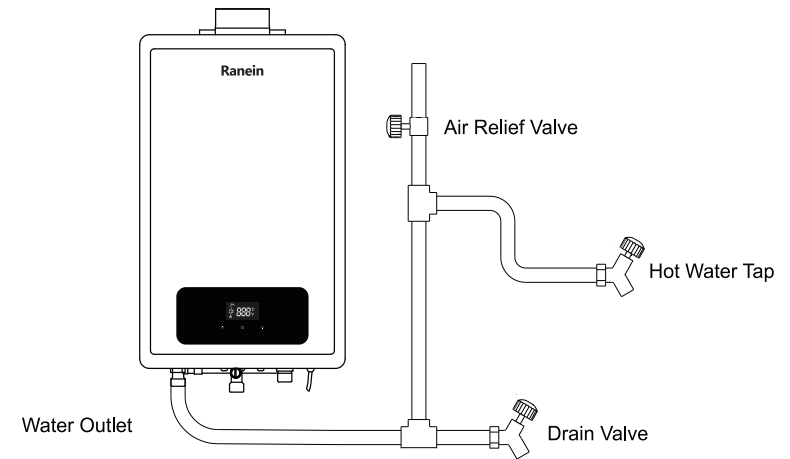
DO NOT use pipes with smaller diameters than the water supply connection of the water heater.

Be sure to connect the water inlet and the hot water outlet as shown on the water heater. If reversed, the water heater will not function.

Installation of unions or flexible copper connections is recommended on the HOT and COLD water lines, so that the water heater can be easily disconnected for servicing if necessary.

#### ⚠ NOTICE

If the water flow resistance of a showerhead is too high, the burner in the water heater will fail to ignite. Keep the showerhead clean of debris that could cause additional pressure drops.



#### ⚠ NOTICE

The flow rate of hot water may vary when more than two faucets (appliances, fixtures, etc.) are being used simultaneously.

NOTICE: The pipes MUST be completely drainable. If the hot water faucets are located at a point higher than the water heater, place a drain valve at the lowest point (see diagram to the left).

#### Relief Valve

A new pressure relief valve, complying with the Standard for Relief Valves and Automatic Gas Shut-off Devices for Hot Water Supply Systems, ANSI Z21.22, must be installed at the hot water outlet connection of the water heater at the time of installation. Local codes shall govern the installation of relief valves.

#### For Safe Operation of the Water Heater, Ensure That:

- The pressure rating of the relief valve must not exceed 150 PSI, the maximum working pressure of the water heater as marked on the rating plate.
- The BTU/Hr rating of the relief valve must equal or exceed the BTU/Hr input of the water heater as marked on its rating plate.



- No valve of any type should be installed between the relief valve and the water heater.
- Discharge from the relief valve should be piped to a suitable drain to prevent potential water heater damage. Piping used should be of a type approved for the distribution of hot water.
- Hot and cold water lines should be insulated up to the water heater.
- The discharge line must be NO SMALLER than the outlet of the valve and must pitch downward to allow complete drainage (by gravity) of the relief valve and discharge line.
- The end of the discharge line should not be threaded.

### ⚠ NOTICE

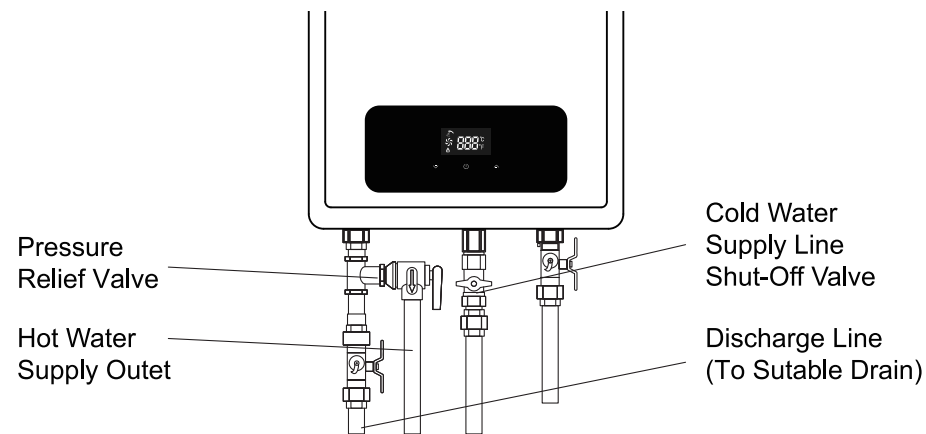
The diagram below illustrates a pressure-only relief valve. If local codes require a combination temperature and pressure relief valve to be installed, an extension piece may be needed.

### ⚠ NOTICE

Manual operation of the relief valve should be performed at least once a year. Turn off the electrical power and gas shut-off valve. Lift and release the lever on the relief valve and check its manual operation. Take precautions to avoid contact with the hot water coming out of the relief valve and to prevent water damage.

### ⚠ NOTICE

If the relief valve on the system discharges periodically, it may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector for guidance on how to correct this situation. Do not plug the relief valve.



## Gas Supply

### ⚠ WARNING

Do not attempt to convert this water heater for use with any gas type other than the one specified on the rating plate. Such a conversion could result in hazardous operating conditions. Please have a professional connect the gas pipe.

The manual gas appliance shut-off valve must be installed at the gas connection of the water heater at the time of installation.

The branch gas supply line to the water heater should be made of clean black steel pipe or other approved gas piping material. A ground joint union or ANSI-design certified semi-rigid or flexible gas appliance connector should be installed in the gas line near the water heater.

The National Fuel Gas Code (NFGC) mandates a manual gas shut-off valve; refer to the NFGC for complete instructions.

DO NOT use excessive force (over 31.5 ft-lbs) when tightening the pipe, particularly if pipe compound is used, as this may damage the unit.

The compound used on the threaded joints of the gas piping must be resistant to propane gas. Apply compound sparingly and only to male threads.

A sediment trap should be installed at the bottom of the gas line.

The inlet gas pressure to the water heater must not exceed 14" w.c. for propane gas. For input adjustment, the minimum inlet gas pressure (with the main burner on) is specified on the water heater's rating plate. If the gas pressure is too high or too low, contact your gas supplier for correction.

The appliance and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures exceeding 1/2 PSI (3.5 kPa).

The appliance must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 PSI (3.5 kPa).

Water Heater Installation Checklist

- Unbox and check whether the water heater, installation manual, owner’s guide, and parts and accessories bag are included in the box.
- Check to ensure there are no corrosive chemicals in the air intake.
- The water supply should be free of chemicals, and water hardness higher than the allowed level may damage the water heater.
- Ensure there is enough space for installation.
- Ensure there is sufficient distance between the exhaust vent and the air inlet of the house.
- Ensure you are using the correct exhaust vent products and follow the installation manual provided by the supplier.
- For indoor water heater models, ensure the number of elbows used does not exceed the maximum quantity allowed, and the total length of the exhaust vent pipe (including the elbows, with each elbow equivalent to 6 feet) does not exceed the maximum length allowed for the water heater.
- For indoor water heater models, ensure the exhaust vent pipe slopes outward and downward at a 3-degree angle.
- Turn off the hot water switch, turn on the cold water switch, and open the drain screw to flush out debris and air from the water pipes. Debris inside the water pipes may damage the water heater. Please use buckets or additional water pipes if necessary.
- Ensure there are no water leaks.
- Turn off both the cold and hot water switches before cleaning the water inlet filter. Place a bucket under the water heater’s filter to catch any water that may come out. Unscrew the water inlet filter, wash off any debris and dust, and then hand-tighten the filter back in. Once done, turn on both the cold and hot water switches.
- Ensure the pressure relief valve's relieving capacity exceeds the BTU input rating of the water heater. Please refer to the specifications on the side of the machine for the BTU input ratings.

- Install a manual gas shut-off valve between the water heater and the gas supply line.
- Check to confirm that there is no gas leakage in the piping and fittings.
- Confirm that the gas inlet pressure is within the required minimum and maximum range.
- Confirm that you are using the gas type required by the water heater.
- Confirm that the power supply is 120 V/60 Hz and is properly grounded.
- Confirm that the thermostat is functioning properly.
- Connect a gas manometer to the pressure port to verify the system's operation. Turn on appliances that require a high flow rate of hot water and set the water heater to its maximum capacity. The inlet gas pressure must be higher than the minimum pressure specified on the label.
- Do not introduce poisonous chemicals into the drinking water, such as those used to process boiler water.
- Drain the water from the water heater if it will not be used for an extended period.

Product Parameters

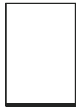
Model No.		RH13K	RH19K
Voltage		120 Volts	120 Volts
Frequency		60 Hz	60 Hz
Amps		Less than 12 Amperes	Less than 12 Amperes
Maximum Input Rating (Btu per hour)		136,500	191,100
Minimum Input Rating (Btu per hour)		16,400	15,400
Rated heat load		40kW	56kW
Rated hot water production capacity		20kg/min	28kg/min
Gas Supply Pressure	NaturalGas	6.0"-8 W.C	
	NaturalGas	9.8-12.4" W.C	
Maximum Working Pressure		150 PSI	150 PSI
Water pressure		0.025~0.8MPa	0.025~0.8MPa
Rated electric power		40W	40W
Body size		23.2"×14.2"×6"	24.3"×15"×8.3"

## Prepare for Installation

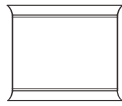
### Parts included



Ranein Tankless  
Water Heater



User's Manual



Assembly Kit

### Tools needed (Not included)



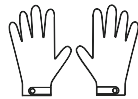
Screw Driver



Pipe Wrench



Wrench



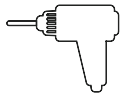
Gloves



Safety Glasses



Levelling  
Instrument



Hammer Drill  
With Concrete Bits



Soapy Water

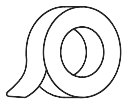


Gas Leak Detector

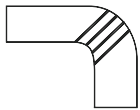


Ruler

### Materials needed (Not included)



Teflon Tape



Approved Venting

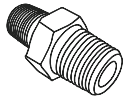


Pressure Relief Valve

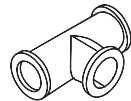
### Materials that may be needed (Not included)



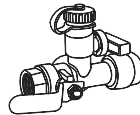
NPT3/4-in x 1/2-in dia  
Threaded Male Adapter



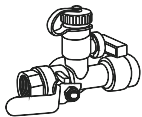
1/2" Hex Nipple



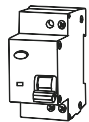
Threaded Tee Fitting  
(Middle 3/4")



Hot Water  
Isolation Valve



Cold Water  
Isolation Valve



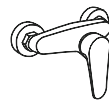
Single gang  
electrical box



Electrical  
Adhesive Tape

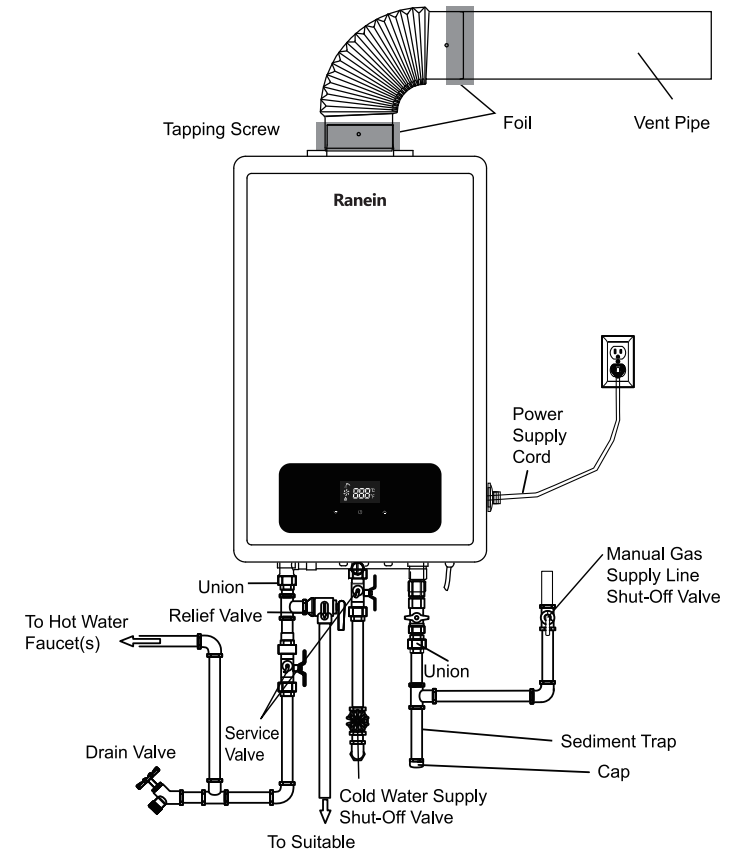


Pipe Wrap  
Insulation



Thermostatic  
Mixing Valve

## Installing the Water Heater



### ⚠ NOTICE

The National Fuel Gas Code (NFGC) mandates the installation of a manual gas shut-off valve: For complete instructions, refer to the NFGC. Local codes or plumbing authority requirements may differ from the instructions or diagrams provided and take precedence over these instructions.

### For Use at High Altitudes:

The gas appliance ratings are based on sea-level operation and do not need adjustment for installations up to 2,000 feet (600 meters) in elevation. The unit is not recommended for elevations exceeding 2,000 feet (600 meters).

## Pressure Testing the Gas Supply System

### ⚠ WARNING

Install a gas pressure regulator in the gas supply line to ensure the pressure does not exceed the maximum supply pressure. DO NOT use an industrial-type gas regulator. The water heater must be isolated from the gas piping system by closing the manual gas shut-off valve during any pressure testing of the gas supply piping at pressures equal to or less than 1/2 PSI (14" w.c.).

## Leak Testing

### ⚠ WARNING

Never use an open flame to test for gas leaks, as it could result in property damage, personal injury, or death.

Before the water heater is put into operation, the water heater and its gas connections must be leak tested at normal operating pressures.

Turn on the gas shut-off valve(s) to the water heater.

Use a commercial leak detector or a soapy water solution to check for leaks at all connections and fittings. Bubbles will indicate a gas leak, which must be corrected immediately.

After the water heater is operational, recheck all connections to ensure there are no leaks.

## Mounting the Water Heater:

Ensure the location of the water heater allows for easy access and proper operation. For installation on drywall or concrete walls, use appropriate anchors or lag bolts.

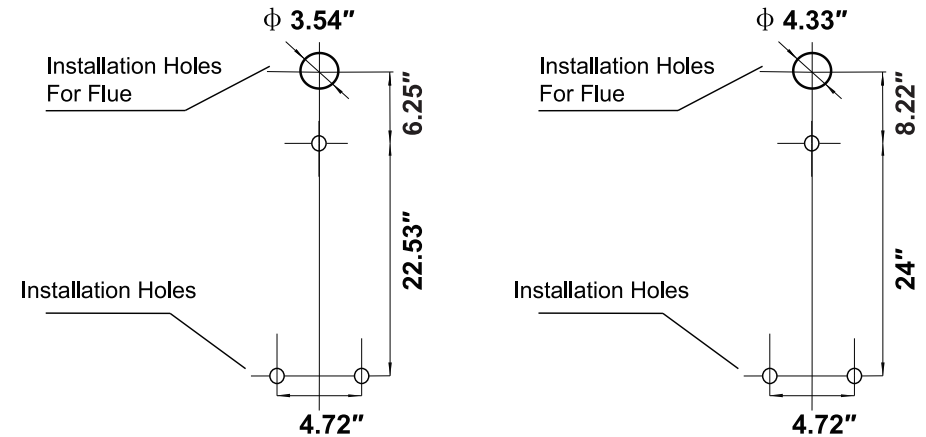
The water heater requires a 120VAC/60Hz power supply. Ensure a grounded receptacle is located near the water heater. The length of the power supply cord is 5 feet.

Drill holes according to the dimensions provided in the diagram. Insert 2 expansion screws into the top holes and 2 rubber screws into the bottom holes.

### ⚠ CAUTION

If the wall is not strong enough to support the appliance, reinforcement is required to ensure a secure installation.

For indoor units, install a Category III vent pipe as per the vent supplier's instructions and in compliance with local codes.



RH13K-NG / RH13K-LPG

RH19K-NG / RH19K-LPG

### A. Back Installation

1. Insert the vent pipe through the installation holes in the wall, ensuring that the terminal extends outward.
2. Connect the elbow to both the vent pipe and the water heater, pushing it straight back until the expansion screws align with the holes on the water heater. Secure the screws by tightening the nuts (ensure the correct orientation of the elbow).

### B. Side Installation

1. Align the holes in the water heater with the expansion screws, hang the unit, and tighten the nuts securely.
2. Insert the vent pipe through the wall holes, then connect the elbow to both the water heater and the vent pipe.

### C. Vertical Installation

- Please consult a local installation professional or the venting manufacturer for further guidance: The installation hole in the wall must be sealed with fire-retardant materials or a wall thimble to ensure the water heater is securely fastened and does not become loose.

## Installing the Water Heater

### ⚠ DANGER

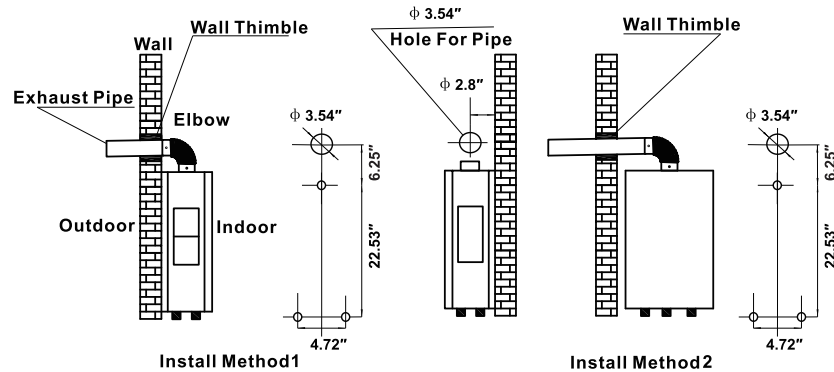
Failure to install the vent adapter and properly vent the water heater to the outdoors, as outlined in the venting section of this manual, will result in unsafe operation, leading to the risk of death, serious injury, explosion, or fire. To prevent the risk of fire, explosion, or asphyxiation from carbon monoxide, NEVER operate the water heater unless it is properly vented and has an adequate air supply for safe operation, as detailed in the venting section of this manual.

### ⚠ WARNING

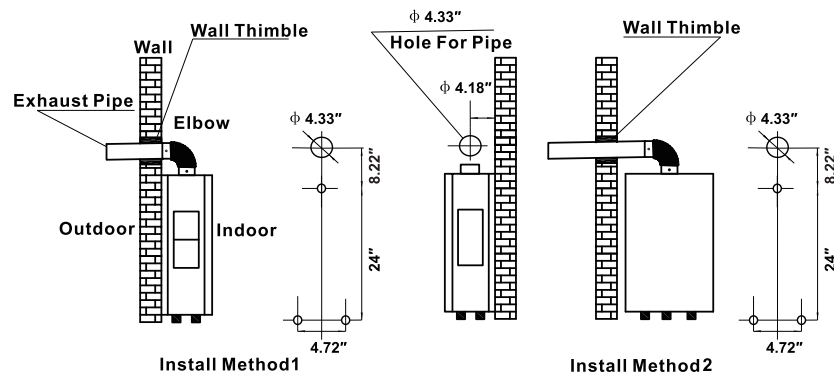
Only UL-approved Category III stainless steel vent material should be used. No other vent materials are permitted.

## Venting

- Venting installation must comply with national and local codes, as well as the vent manufacturer's instructions.
- The water heater must be vented to the outdoors as outlined in these instructions.
- DO NOT connect the water heater to an existing vent or chimney; it must be vented separately from all other appliances.
- All vent components (adapters, pipes, elbows, terminals, etc.) must be UL 1738 Certified stainless steel venting materials (e.g., AL29-4C).
- Only the specified vent termination should be used, and it should be a 90° elbow type with a screen.
- Use a vent pipe with an anti-disconnection structure.
- High-temperature silicone (500°F/260°C) may be required to seal vent connections. Apply a 1/4" wide bead approximately 1/4" from the end of the pipe, and another bead on the joint side of the stop bead to prevent accidental gas exhaust leakage.
- Always follow the vent manufacturer's installation instructions
- The unit can be vented either horizontally or vertically.
- Vent pipe runs must be properly supported, both horizontally and vertically.
- The maximum recommended unsupported span is no more than 5 feet. Use isolation hanging bands for support—DO NOT use wire (see diagram below).

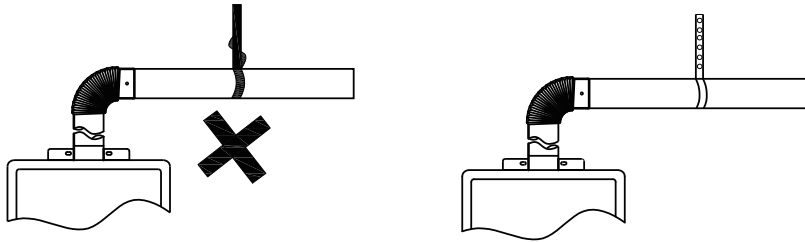


RH13K-NG / RH13K-LPG



RH19K-NG / RH19K-LPG





## Venting Through Closed Spaces

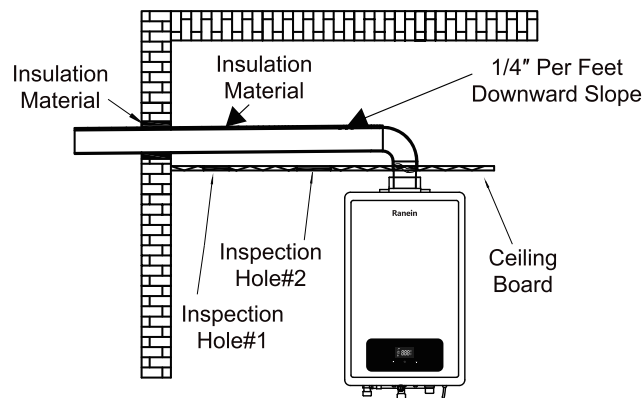
If the vent piping passes through a closed space, wrap the vent pipe with non-flammable insulation material that is at least 3/4" thick. DO NOT allow the insulation material to make contact with flammable materials. Maintain a minimum clearance of 6" between the vent pipe and the ceiling. Always follow local codes. For maintenance and inspection purposes, the following openings are required:

TWO (2) inspection openings should be installed, providing access to the venting system. One opening should be located near where the vent pipe enters the ceiling, and the other near the vent termination.

A ventilation hole with a minimum of 16 square inches of opening must be installed at least every 10 feet along the vent pipe run.

### ▲ NOTICE

Vent pipes must be fully insulated with non-flammable material when installed in alcoves, closets, or garages. The vent pipe must not make contact with any flammable materials.



## Venting Lengths

### Maximum vent length

Owner must refer to vent manufacturer's instructions and specifications.

Number of 90° elbows(Bends)	Maximum length of straight pipe
1	32"
2	27"
2	22"
One(1)90° elbow is equivalent to 5 feet of straight pipe	

The system will not function properly if there is excessive restriction (pressure drop) in the venting system. A maximum of 32 feet of vent pipe is allowed with one 90° elbow. If additional elbows are required:

Two elbows can be used with 27 feet of vent pipe.

Three elbows can be used with 22 feet of vent pipe.

A 90° elbow is equivalent to 5 feet of straight pipe.

A 45° elbow is equivalent to 2 feet 6" of straight pipe.

The termination elbow does not count as an elbow when calculating the total vent length.

The vent should be installed with a slight downward slope of 1/4" per foot toward the vent terminal (see diagram). This ensures proper evacuation of any condensate formed during the operation of the unit.

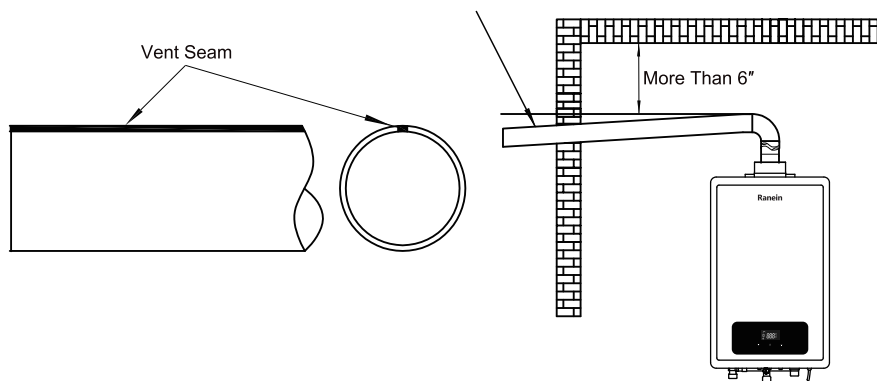
If venting with a downward slope is not possible, a 1/4" per foot upward slope is acceptable, but a UL-approved Category III stainless steel condensate trap must be installed at the beginning of the horizontal run.

### Minimum Vent Length

The venting may be as short as 12", provided that one vent termination is installed outdoors through a sidewall, one 90° elbow is included in the installation, and the wall thimble is installed.

### ▲ NOTICE

Ensure that the seam of the vent pipe in horizontal runs is positioned toward the top of the installation (see illustration below).

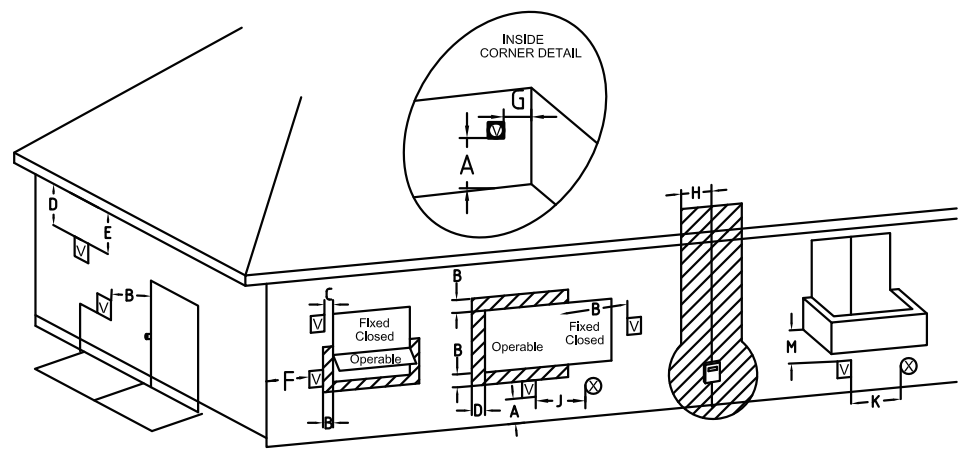


### Draining the Condensate

Under certain conditions, installations in unconditioned spaces or those with long horizontal or vertical runs may accumulate condensate. Condensate is known to be acidic; refer to local, state (provincial), or federal codes for proper handling methods. To prevent condensate from draining back into the water heater, we recommend installing a condensate trap and drain in a horizontal vent section as close as practical to the water heater vent connection. Failure to follow proper condensate procedures will void the warranty.

### Vent Termination Clearances Drawing

For Non-Direct Vent Installations in the US and Canada:



		US Installation 1	Canadian Installation 2
A=	Clearance above grade, veranda, porch, deck, on balcony	12 in (30 cm)	12 in (30 cm)
B=	Clearance to window or door that may be opened	4ft (1.2m) below or to side of opening: 1ft (300mm) above opening	6 in (15cm) for appliances ≤10,000 Btu/Hr (3kW). 12 in (30cm) for appliances >10,000 Btu/Hr (3kW) and ≤ 10,000 Btu/ Hr (30kW), 36 in (91cm) for appliance >10,000 Btu/Hr (30kW)
C=	Clearance to permanently closed window	*	
D=	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (61cm) from the center line in terminal	*	
E=	Clearance to unventilated soffit	*	
F=	Clearance to outside corner	*	
G=	Clearance to inside corner	*	
H=	Clearance to each side of center line extended above meter/regulator assembly	*	3ft (91cm) within a height 15ft above the meter /regulator assembly
I=	Clearance to service regulator vent outlet	*	3 ft (91 cm)
J=	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance	4ft (1.2m) below or to side of opening: 1ft (300mm) above opening	6 in (15cm) for appliances ≤10,000 Btu/Hr (3kW), 12 in (30cm) for appliances >10,000 Btu/Hr (3kW) and ≤ 10,000 Btu/ Hr (30kW), 36 in (91cm) for appliance >10,000 Btu/Hr (30kW)
K=	Clearance to mechanical air supply inlet	3ft (91cm) above if within 10ft (3m) horizontally	6 ft (1.83 m)
L=	Clearance above paved sidewalk or paved driveway located on public property	*	7 ft (2.13 m)
M=	Clearance under veranda, porch, deck or balcony	*	12 in (30 cm)

For clearances not specified in ANSI Z223.1/NFPA 54 or CSA-B149.1, one of the following shall be indicated:  
 A) A minimum clearance value determined by testing in accordance with Clause 5.20, or  
 B) A reference to the following footnote:  
 Clearance in accordance with local installation codes and the requirements of the gas supplier.

- A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.
- Permitted only if veranda, porch, deck or balcony is fully open on a minimum of two sides beneath the floor.

## ⚠ NOTICE

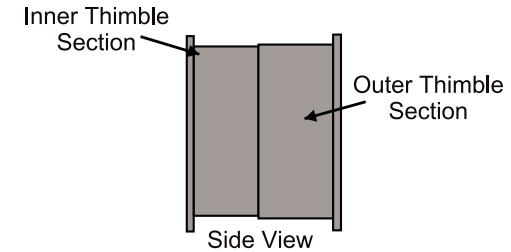
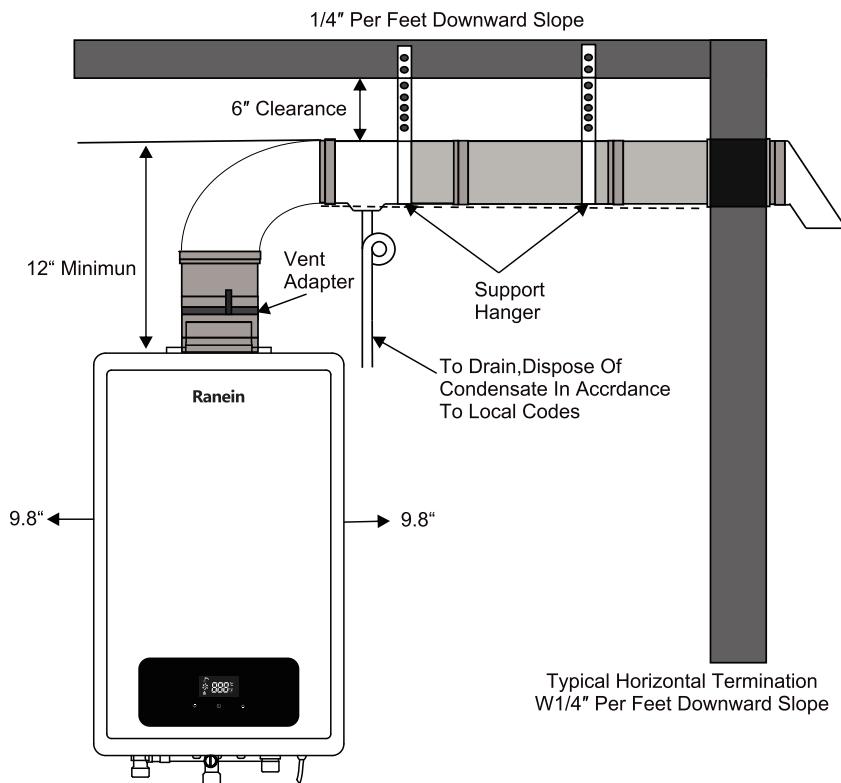
1. In alignment with the current CSA B129.1 propane installation code.
2. In accordance with the current ANSI Z223.1/NFPA 54 National Fuel Gas Code.

## Installing the Water Heater, Continued

### Pipe Installation

#### Inlet Pipe and Outlet Pipe Installation

Use pressure-resistant pipe to connect the inlet and outlet water pipes of the water heater to the local water supply. Ensure the rubber ring is properly placed during the connection. Before connecting the inlet water pipe, flush the inside of the pipe to remove any debris or contaminants.



## ⚠ CAUTION

Follow the vent manufacturer's installation instructions, as the design may vary from manufacturer to manufacturer.

## ⚠ WARNING

Field wiring connections and electrical grounding must comply with local codes, or, in the absence of local codes, with the latest edition of the National Electrical Code ANSI/NFPA 70, or, in Canada, the Canadian Electrical Code, CSA C22.1 Part 1. Use only UL-approved Category III vent material. No other vent material is permitted. The owner must refer to the vent manufacturer's instructions and specifications.

## Hardwiring the Electrical Connections

- Wiring should be carried out by a qualified electrician in accordance with local codes.
- The water heater requires 120VAC/60Hz and should be properly grounded.
- DO NOT connect the grounding wire to water pipes, gas pipes, telephone cables, lightning conductor circuits, or the grounding circuit of other equipment that carry a ground-fault interrupter.
- An ON/OFF switch must be provided and installed for the incoming 120VAC power.
- Wire the water heater exactly as shown below. A wiring diagram is also provided inside the cover panel.
- A green screw is provided in the junction box for the grounding connection.
- Connect the live wire to the black leg wire and the neutral wire to the white neutral wire.

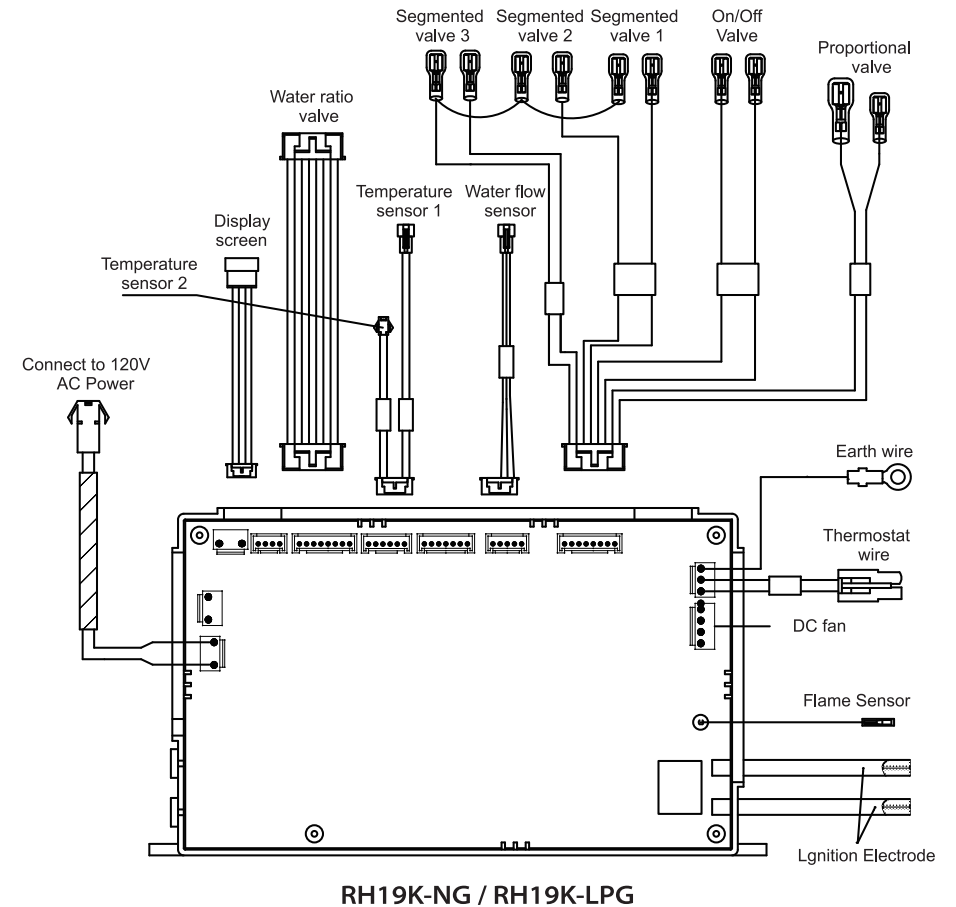
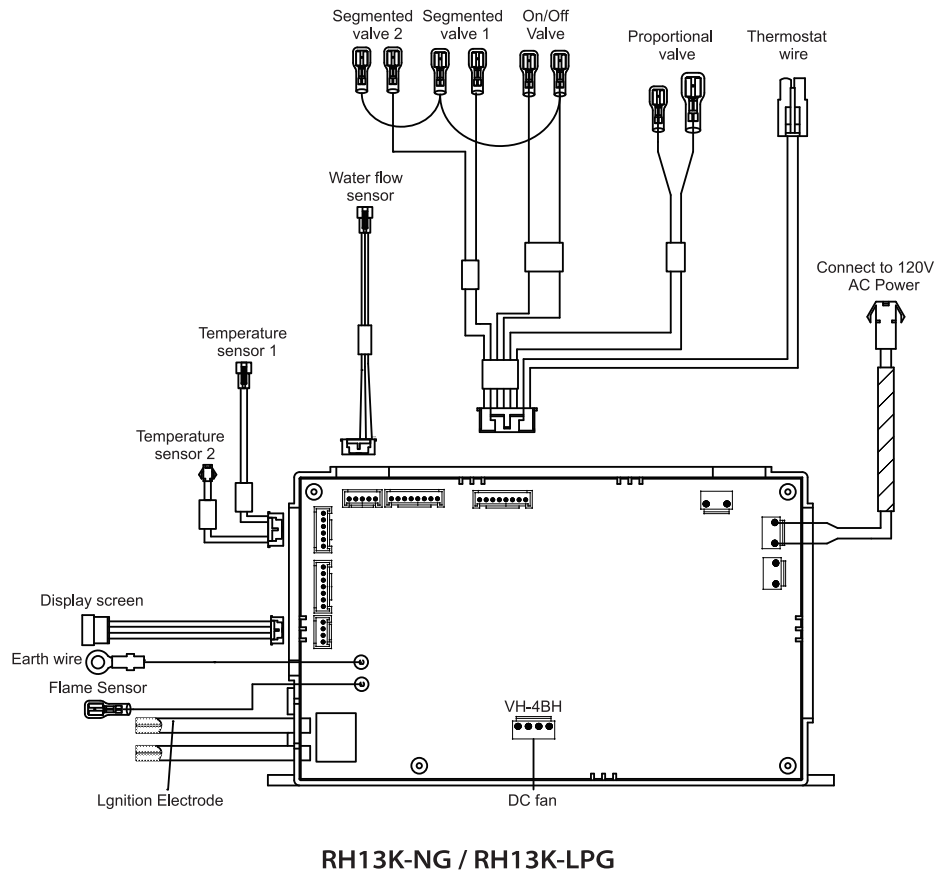
## ⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify correct operation after servicing.

## Electrical Connection

### Power Cord

- The electric power supply requirement for this water heater is 120VAC/60Hz, 2 Amps.
- The water heater comes with a three (3) pin power supply cord. Use only a power outlet with a ground terminal.
- The installation of an electric leakage breaker (GFCI) is recommended.
- Keep any excess power supply cord on the outside of the water heater.
- If local codes require hardwiring, refer to the instructions for "Hardwiring the Electrical Connections."

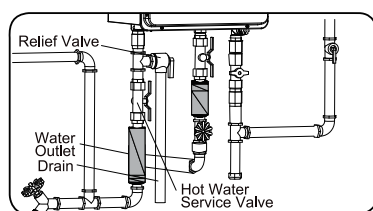
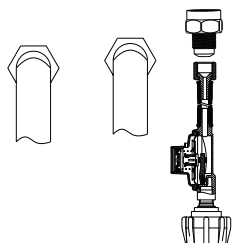
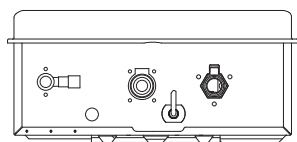


### Hot and Cold Pipe Insulation Installation

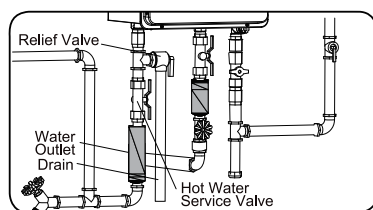
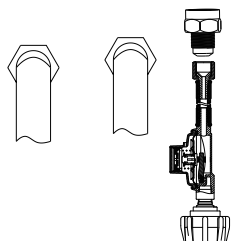
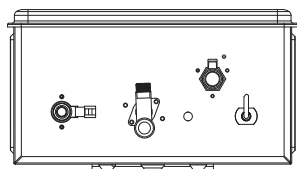
For increased energy efficiency, use pipe insulation. Install the insulation according to the illustrations above, ensuring that it covers the pipes all the way to the top. Do not cover any drain or pressure valve(s) with the insulation.

### ⚠ WARNING

Shock Hazard - Line voltage is present. Prior to performing any maintenance on the water heater, ensure that the electrical power supply to the unit is disconnected at the main disconnect switch or circuit breaker. Neglecting this precaution may result in severe injury or fatality.



**RH13K-NG / RH13K-LPG**



**RH19K-NG / RH19K-LPG**

## During Installation of This Water Heater

### MUST DO

- DO check inlet gas pressure to ensure that it is within the range specified on the rating plate.
- DO provide adequate air for combustion and ventilation as discussed in the Use and Care Manual and the National Gas Code (CAN/CGA B149 in Canada).
- DO maintain proper clearances to combustibles as specified by the applicable code.
- DO ensure the flue terminal location complies with the guidelines found in the Use and Care Manual and the National Gas Code (CAN/CGA B149 in Canada).

### DO NOT

- DO NOT block or restrict the air intake opening located on the back side of the water

heater.

- DO NOT remove the front cover unless absolutely necessary. This should only be done after being examined by a qualified service technician.
- DO NOT install this product where standing water may occur.

## Installation Checklist

### A. Water Heater Location

- Installed INDOORS.
- Installed close to the area of most-used outlet.
- Protected from freezing temperatures.
- Proper clearance from combustible surfaces observed.
- Sufficient fresh air supply for proper operation of the water heater.
- Air supply free of corrosive elements and flammable vapors.
- Provisions made to protect the area from water damage.
- Sufficient room to service the heater.
- Combustible materials (clothing, cleaning materials, rags, etc.) cleared from the heater and vent piping.
- Water heater is properly attached to the wall.

### B. Water Supply

- Water supply has sufficient pressure.
- Air purged from the water heater and piping.
- Water connections are tight and free of leaks.
- Water filter is clean and in place.
- Materials used are as instructed in this manual.
- Water pipes are insulated.

### C. Gas Supply

- Gas type matches the rating plate.
- Gas supply pressure is sufficient for the water heater.
- Gas line equipped with a shut-off valve, union, and sediment trap.
- Approved pipe joint compound used.
- Commercial leak detector or soap and water solution used to check all connections and fittings for possible gas leaks.
- Gas company inspected the installation (if required).

### D. Relief Valve

- Pressure relief valve properly installed and discharge line run to open drain.
- Discharge line protected from freezing.



- E. Electrical Wiring
- Voltage matches the rating plate.
  - Water heater is properly grounded.
  - Wiring meets all local codes.
  - GFCI protection where required.

## Product Features

**Automatic Temperature Control:** The water temperature can be set within the range of 95°F to 158°F, and it automatically adjusts to provide convenient and comfortable use.

**LED Screen Display:** The LED screen displays the water temperature and operating status, offering clear and visual information.

**Enhanced Combustion:** The product utilizes efficient, high-energy combustion, ensuring optimal efficiency in water heating.

**Safe Exhaust:** The exhaust is directed outdoors, ensuring safer usage and preventing indoor air pollution.

**Fault Code Display and Alarm Function:** The product is equipped with a fault code display function, enabling quick identification of issues and providing alarms for prompt resolution.

**Leakage Protection Plug:** Some models of the water heater come with a leakage protection plug, offering additional safety and reliability.

**Multiple Protection Functions:** The water heater includes features such as overheat protection, pressure relief protection, excessive wind pressure protection, exhaust pipe blockage protection, 40-minute timing protection, dry burn protection, freeze protection, and low water pressure startup, ensuring safe operation under normal conditions.

## Lighting The Water Heater

Before operating this water heater, be sure to read and follow the instructions on the label pictured below, along with all other labels on the water heater, as well as the warnings printed in this manual. Failure to do so can result in unsafe operation of the water heater, leading to property damage, personal injury, or death. If you encounter any issues reading or following the instructions in this manual, STOP! Seek assistance from Ranein at [www.ranein.net](http://www.ranein.net).

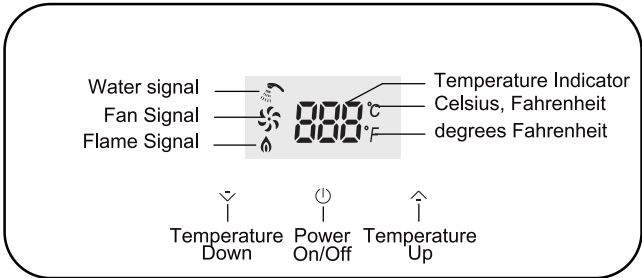
## Operating The Water Heater

Turning on the water heater



1. Ensure the gas type you will use matches the type specified on the data plate.
2. Turn on the main gas valve, plug in the power cord (ensure the socket is properly grounded), and press the "ON/OFF" button on the control panel. Set the temperature to 120°F (49°C).
3. Turn on the faucet, and the fan will start working. After a few seconds, you will hear the ignition sound. The burner will ignite, and hot water will begin to flow. If the burner does not ignite successfully, the ignition sound will continue for a few seconds. If the burner still fails to ignite, turn off the faucet, wait for 10–20 seconds, and repeat the procedure.

For the first use, or if the water heater has not been used for an extended period, it may be necessary to repeat the above procedures due to accumulated air in the gas pipe.

## Operating Instructions



	Fan icon, the icon is always on when the fan is running	<b>High-temperature lock function:</b> 1. To prevent high-temperature water scalding, the machine is equipped with a high-temperature lock function, the machine running state when the need to set the water temperature above 122°F(50 °C), you need to long press the temperature key for 3 seconds to unlock, 5s after the completion of the adjustment automatically lock, lock the temperature can not rise after the setting, only down. If you need to continue to rise the temperature, you need to long press 3S to unlock, before you can rise to set. The whole process of setting down is not restricted. 2. No high temperature lock function in standby mode.
	Water flow icon, the icon is always on when water flow is detected	
	Flame icon, always on when a flame is sensed	
°F	Fahrenheit icon, always on when Fahrenheit is displayed	
°C	Celsius icon, always on when Celsius is displayed	
	Power key: switch the power button and the rest of the function confirmation keys	

	Temperature increase key: Temperature increase key and other function increase keys	<b>Automatic timing function:</b> System default continuous operation 40min off heating, turn off the water after the water can be restarted, professionals can enter the program to adjust the timing time or timing off.
	Temperature down key: temperature down key and the rest of the function down key	
°C/°F	Temperature conversion key: short press to convert Fahrenheit, Celsius display	

## Safety Precautions

If there is any difficulty in understanding or following the operating instructions or the Care and Cleaning section, it is recommended that a qualified person or serviceman perform the work.

- DO turn off the manual gas shut-off valve if the water heater has been subjected to overheating, fire, flood, physical damage, or if the gas supply fails to shut off.
- DO NOT turn on the water heater unless both the water and gas supplies are fully opened.
- DO NOT turn on the water heater if the cold water supply shut-off valve is closed.
- DO NOT allow combustible materials, such as newspaper, rags, or mops, to accumulate near the water heater.
- DO NOT store or use gasoline or other flammable vapors and liquids, such as adhesives or paint thinner, in the vicinity of this or any other appliance. If such flammables must be used, open doors and windows for ventilation, and ensure all gas-burning appliances in the vicinity, including their pilot lights, are shut off to avoid the risk of vapors igniting.

### ⚠ NOTICE

Flammable vapors can be drawn by air currents from surrounding areas to the water heater.

## Water Temperature Setting

### ⚠ DANGER

### Water Temperature Setting

Safety and energy conservation should be considered when selecting the water temperature setting. Water temperatures above 125°F (52°C) can cause severe burns or death from scalding. The thermostat is adjusted to its lowest temperature position when shipped from the factory. Be sure to read and follow the warnings outlined on the label pictured below to ensure safe operation.

### ⚠ DANGER

There is a hot water scalding potential if the temperature is set too high. Households with small children, disabled, or elderly persons may require a temperature setting of 120°F (49°C) or lower to prevent contact with HOT water.

Be sure to read and follow the warnings outlined in this manual and on the label located on the water heater. Mixing valves are available to reduce the point-of-use water temperature by mixing hot and cold water in branch water lines.

Before manually operating the relief valve, ensure no one will be exposed to the danger of hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be directed into a suitable drain to prevent injury or property damage.

Follow the procedures for adjusting the thermostat to ensure energy-efficient operation at the minimum water temperature setting, consistent with the consumer's needs. For further information, contact a licensed plumber or the local plumbing authority.

Time/Temperature Relationship in Scalds		
Water Temperature		Time To Produce a Serious Burn
120°F	49°C	More than 5 minutes
122°F	50°C	1 1/2 to 2 minutes
130°F	54°C	About 30 seconds
135°F	57°C	About 10 seconds
140°F	60°C	Less than 5 seconds
145°F	63°C	Less than 3 seconds
150°F	66°C	About 1 1/2 seconds
155°F	68°C	About 1 second

Table courtesy of the Shriners Burns Institute

The chart above can be used as a guide to determine the appropriate water temperature for your home.

### Set Temperature Memory

- This water heater contains an electronically controlled thermostat. From the factory, the temperature range is between 95°F (35°C) and 158°F (70°C).
- When the unit is in use, press the up button on the control panel to increase the temperature by 1.8°F (1°C) each time. Press the down button to decrease it by 1.8°F (1°C).
- The display will show the set temperature when the water heater is not in use or there is no water flow. If water is in use or there is water flow, the display will show the actual temperature. To view the set temperature in this condition, press UP or DOWN, and the set temperature will flash for 3 seconds.
- The hottest temperature water will be at the hot water faucet closest to the water

heater.

- Always supervise young children or others who are incapacitated when using hot water.
- If the water heater has been subjected to fire, flood, or physical damage, turn off the manual gas shut-off valve(s), and do not operate the water heater again until it has been checked by qualified personnel.

#### **⚠ WARNING**

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

## **Care And Cleaning Of The Water Heater**

### **Routine Preventative Maintenance**

#### **⚠ DANGER**

Before manually operating the relief valve, ensure that no one will be exposed to the danger of hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be directed into a suitable drain to prevent injury or property damage.

#### **⚠ DANGER**

Hotter water increases the potential for hot water scalds.

#### **⚠ DANGER**

Failure to perform the recommended routine preventative maintenance can impair the proper operation of this water heater, potentially leading to carbon monoxide hazards, excessive hot water temperatures, and other dangerous conditions.

Properly maintained, your water heater will provide years of dependable, trouble-free service. It is recommended that a periodic inspection of the burner, relief valve, water filter, and venting system be conducted by service personnel qualified in gas appliance repair. It is suggested that a routine preventive maintenance program be established and followed by the user.

At least once a year, lift and release the lever handle on the pressure relief valve, located in the hot outlet piping of the water heater, to ensure the valve operates freely. Allow several gallons of water to flush through the discharge line to an open drain.

Rapid closing of faucets or solenoid valves in automatic water-using appliances can cause a banging noise in the water pipes. Strategically located risers or water hammer arresting devices can help minimize the problem. Inspect the area around the water heater to

ensure a safe operating environment.

Keep the appliance area clear of combustible materials, gasoline, and other flammable vapors and liquids. Ensure the unit has not been damaged. If damage or denting is present, contact service personnel to verify proper operation.

Check for any abnormal sounds during normal operation of the water heater. All piping should be checked for gas and/or water leaks.

The air intake and cold water supply filters should be cleaned monthly.

DO NOT operate the water heater if you suspect something is wrong with the unit.

DO NOT allow children to operate or otherwise handle the unit.

#### **⚠ NOTICE**

If the pressure relief valve on the hot water heater discharges periodically, it may be due to a problem in the water system. Contact the water supplier or your plumbing contractor for guidance on how to correct this.

DO NOT plug the relief valve outlet.

#### **⚠ NOTICE**

After inspection, maintenance, and/or cleaning, ensure proper operation by turning on a hot water faucet.

### **Maintenance**

Before performing any maintenance tasks on this water heater, be sure to turn the unit off and disconnect the power supply.

Vacuum around the water heater regularly to remove dust, dirt, and lint. Clean the water heater and remote control by using a damp soft cloth with a few drops of mild detergent and gently wiping the surfaces of the unit. Wipe away any remaining moisture with a dry soft cloth.

To ensure sufficient ventilation and combustion air supply, proper clearances must be maintained. The water filters should be cleaned on a monthly basis.

#### **⚠ DANGER**

Shock Hazard: Make sure the electrical power to the water heater is off to avoid potential serious injury or damage to components.

#### **⚠ DANGER**

Combustible materials, such as clothing, cleaning materials, or flammable liquids, must not be placed against or next to the water heater.

## How to Clean the Water Heater

1. Make sure the unit is OFF and the electrical power supply has been disconnected.
2. Turn the water supply OFF to the heater.
3. Unscrew the water filter and slide the filter out.
4. DO NOT tap the filter, as it may deform and/or damage the filter.
5. To remove severe dust, use a soft brush and wash with running water.
6. Return the filter to the water heater and screw in the filter.
7. Turn the electrical power supply and cold water supply ON to the water heater.
8. Use only mild soapy water; other cleaners may damage the surface of the water heater.
9. DO NOT remove any labels, including the rating plate, while cleaning or servicing.

### ⚠ NOTICE

DO NOT block or obstruct the air intake opening located at the lower left corner of the water heater. A minimum of 12" is required between this combustion air inlet opening and any obstruction.

## Venting System Inspection

The venting system should be inspected annually to ensure all vent sections are secure and airtight.

It is recommended that qualified service personnel familiar with Category III venting inspect the venting system.

Check vent connection joints with a solution of soapy water to ensure airtightness while the unit is operating. Bubbles around a joint connection indicate a seal leak.

DO NOT operate the unit if the vent system shows signs of leaking exhaust. Make sure the air intake and vent terminal are not blocked or contain debris.

## Vacation and Extended Shut-Down

If the water heater is to remain idle for an extended period of time, the power and water supply to the appliance should be turned off.

The water heater and piping should be drained if they might be subjected to freezing temperatures.

After a long shut-down period, the water heater's operation and controls should be checked by qualified service personnel.

## Not Equipped With Anti-freezing Protection

### Draining Procedure

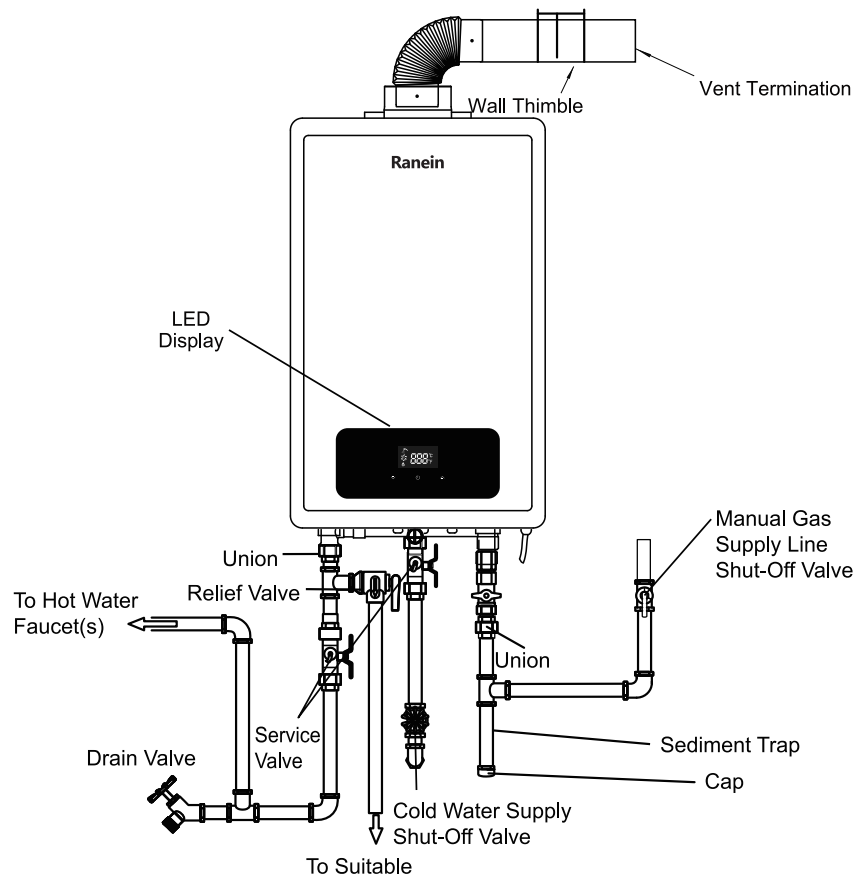
When the temperature falls below 32°F (0°C), water in your plumbing system or water heater can freeze and expand, potentially causing damage to the water heater. This damage is not covered under your manufacturer's warranty. If these conditions are anticipated, please drain the water heater as follows to help, but not guarantee, protection from freezing:

1. Shut off the main gas valve and power.
2. Shut off the inlet water valve.
3. Open all faucets.
4. Remove the drain valve and allow water to drain for 3 minutes or until the unit is empty.
5. Ensure all water is drained out, then replace the drain valve and shut off the faucets.

## Care And Cleaning Of The Water Heater

### Instructions for Draining Water from the Water Heater

1. Close the gas shut-off valve(s).
2. Close the water shut-off valve.
3. Turn the ON/OFF switch to the OFF position and disconnect the breaker. Wait at least 10 seconds after step #1.
4. Open the drain valve.
5. Open all hot water faucets. Before proceeding to the next step, make sure that COLD water is coming out of all hot water faucets.
6. To put the water heater back into operation after draining, follow the steps below.
7. Reinstall the water filter. Close the hot water outlet drain valve.
8. Open the water shut-off valve, then close it again after ensuring that water flows from the hot water faucets. (This step is to remove air from the water lines.)
9. Reconnect the breaker and turn the ON/OFF switch to the ON position. Fully open the gas shut-off valve and the water shut-off valve.



### ▲ NOTICE

The water heater may not operate properly unless the above procedure is followed correctly.

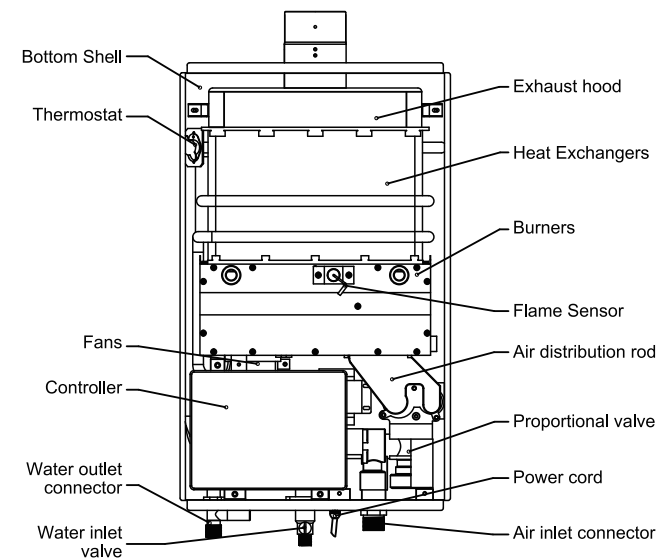
## Replacement Parts And Drawing

### Before You Call for Service

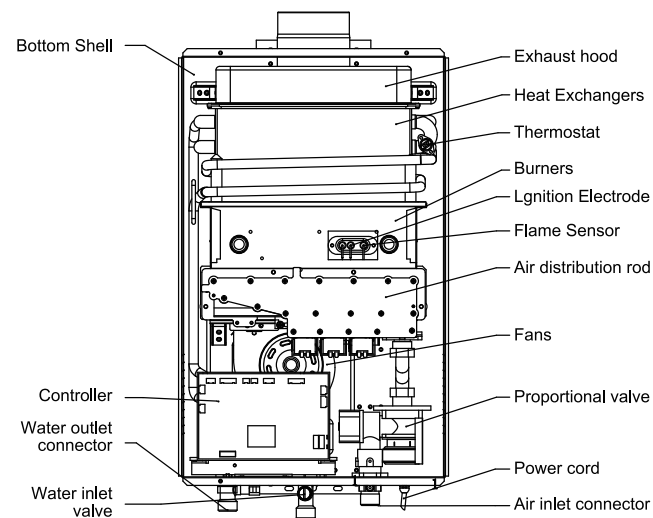
#### Troubleshooting Tips

Save time and money! Review the charts on the following pages first, and you may not need to call for service.

This water heater incorporates a variety of shut-off devices that prevent the operation of the water heater if undesirable combustion conditions occur.



RH13K-NG / RH13K-LPG



RH19K-NG / RH19K-LPG



Phenomenon	Cause	Handling method
Power indicator light does not light up	Whether there is a power failure	Use after the power comes on
	Whether the power plug is loose	Plug in the power supply
	Power indicator is bad	Replace the power indicator
No hot water comes out even after the hot water tap is opened	Is the gas valve and water inlet valve open	Open the gas valve and air inlet valve
	Is there a water cut-off	Use after the water comes in
	Is the hot water faucet open too small	Turn up the hot water tap
	Whether it is frozen	Drain the freeze before use
	Is the gas meter (microcomputer-controlled gas meter) safe to operate	Troubleshoot before use
	Is the liquefied gas used up	Replace the gas cylinder
Can not produce hot water with high temperature	Is the gas valve fully open, is the air pressure too low, is the water volume adjustment too large	Open the gas valve fully or check the air pressure and turn down the water valve
No hot water at lower temperature	Is the gas pressure too high, is the water volume too small	Check the air pressure, turn up the water flow or open the inlet valve and reset the temperature to the right level
The hot water faucet is closed too small and becomes cold water	The hot water faucet is closed too small, and becomes cold water when the water flowing out of the hot water faucet is below 3kg/min, it will automatically turn off the fire	Turn on the water volume of the hot water faucet, the temperature of hot water will stabilize
Hot water does not flow out immediately after opening the hot water faucet	Since there is a certain distance between the water heater and the hot water faucet, it takes a certain amount of time for the hot water to flow out	Wait a little longer, hot water will flow automatically
The hot water that comes out is white and cloudy	This is due to the dissolved air in the water after the heat, the rapid decompression to atmospheric pressure when the phenomenon of small bubbles. It is harmless	Normal phenomenon
White smoke is discharged from the exhaust port in the cold season	In winter, the exhaust gas contains a certain amount of water vapor, so you can see white smoke.	Normal phenomenon
Hot water becomes cold water after about 40min of continuous use	Timer protection function is in effect, the water heater automatically turns off the fire	Normal phenomenon, restart the machine
There is water flowing out of the safety valve	The tap water pressure exceeds the safe water pressure of the machine and the pressure is automatically released, not abnormal	Normal phenomenon, please close the water inlet valve
The fan will rotate for a period of time after the machine is turned off	The fan needs to work for a period of time to exhaust the exhaust gas in the machine to reduce the temperature inside the machine	Normal phenomenon
The hot water temperature will change when the power is off or unplugged	When the power is off or unplugged, the hot water set temperature will be restored to the factory set temperature when the power is turned on again.	Reset and use again

## Error Code Guide

When an error code is displayed:

1. Close the hot water faucet and turn off the switch on the remote control.
2. Wait for about 5 minutes before turning the switch on again.
3. Open the hot water faucet.

If the error code remains:

1. Close the hot water faucet and turn off the switch on the remote control.
2. Take the appropriate action shown below and attempt to operate the appliance again.

Error Code	Fault Names	Possible Causes of Malfunctions	Troubleshooting Steps
E0	Outlet Water Temperature Sensor is Faulty	Poor contact between the terminal connectors of the temperature sensor and flow sensor and the controller.	Connect the terminal connectors to the controller properly.
		Malfunctioning temperature sensor or flow sensor.	Replace the temperature sensor or flow sensor.
E1	Ignition Failure	Gas valve not opened.	Open the gas valve.
		Low gas pressure.	Adjust the gas pressure to the appropriate range.
		Gas type used is not compatible with the water heater.	Use gas compatible with the water heater.
		Ground wire on the controller not properly connected.	Properly connect the ground wire to the water heater casing.
		Positive and negative terminals of the controller and proportional valve connectors reversed.	Connect the red wire to the "+" and the black wire to the "-" as instructed.
E2	Accidental Flameout	Poor or faulty connection between the flame feedback wire on the controller and the flame feedback pin.	Ensure tight contact between the flame feedback wire on the controller and the flame feedback pin.
E3	Overtemperature Fault	Water temperature detected by the temperature sensor is $\geq 167^{\circ}\text{F}$ .	Restart the water heater.
E4	Inlet Water Temperature Sensor is Faulty	Poor contact between the terminal connectors of the temperature sensor and flow sensor and the controller.	Connect the terminal connectors to the controller properly.
		Malfunctioning temperature sensor or flow sensor.	Replace the temperature sensor or flow sensor.
E5	DC Fan Malfunction	Poor contact between the controller and the solenoid valve.	Connect the terminal connectors to the controller properly.
		Malfunctioning solenoid valve.	Replace the fan.
E7	Solenoid Valve Malfunction	Poor contact between the controller and the solenoid valve.	Properly connect the controller and the solenoid valve.
		Malfunctioning solenoid valve.	Replace the valve body assembly.
E8	Fan Speed Exceeds The Limit	Smoke pipe is blocked.	Remove foreign matter from smoke pipe.
		Excessive outdoor wind speed.	Restart water heater.

Eb	Residual Flame Fault	Flame still present after water or power is turned off, and the solenoid valve does not release after closing.	Replace the valve body assembly.
Ec	Signal Communication Failure	Poor contact of the display screen cable.	Properly connect the display screen cable.
		Damaged controller or display screen.	Replace the controller or display screen.
En	Timer Timeout	Automatic shutdown of the main unit when the set time is reached.	Power off and then restart.

If the error code still appears:

1. Turn off the hot water faucet and turn off the switch on the remote control.
2. Address the error code displayed and contact customer service at **service@ranein.net** for further assistance.

## Ranein, Enjoy Life!

### Limited Warranty Information

Ranein warrants this product to be free from material defects in materials and workmanship, provided it is installed and operated in accordance with Ranein's installation and operating instructions. This Limited Warranty applies to the original purchaser and subsequent owners, but only if the product remains at the original installation site. This warranty will terminate if the product is moved or reinstalled at a new location. No warranties, express or implied, are made other than those stated in this Limited Warranty. No agent, employee, or representative of Ranein has the authority to bind the company to any representation or warranty concerning the product that is not expressly contained herein.

As expressly set forth herein, THERE ARE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ANY GOODS SOLD HEREUNDER. THE BUYER'S EXCLUSIVE REMEDY IS LIMITED TO REPAIR OR REPLACEMENT OF THE GOODS SOLD, AT RANEIN'S DISCRETION. RANEIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Item Period of Coverage:

Heat Exchanger: 1 year

All other parts: 1 year

Free Accessories (showerhead, hose, regulator, etc.): 30 days

Coverage is void if the unit is used in a hot water circulation loop, in series with a circulation system, or where an on-demand recirculation system is not incorporated. The owner is responsible for all other costs incidental to repair, such as labor, shipping, delivery, and permits. Proof of purchase is required. Products that are repaired will be covered under this Limited Warranty for the remainder of the term of the original purchase.

This Limited Warranty becomes null and void if any of the following are determined to have contributed to the failure of the product:

1. Abuse, misuse, alteration, neglect, or misapplication.
2. Improper or inadequate maintenance.
3. Inadequate water quality.
4. Installation in a corrosive or otherwise destructive environment.
5. Freeze damage.
6. Scale buildup.
7. Incorrect gas or water pressure.
8. Acts of force majeure.

This Product is not to be used as a pool or spa heater.

Within the first 30 days of purchase, Ranein will cover all ground shipping costs for warranty related issues, excluding AK, HI, Canada, and any location outside of the continental US. After the first 30 days of purchase, Ranein will cover all shipping costs to the customer for warranty related issues, excluding AK, HI, Canada, and any location outside of the continental US. After the first 30 days of purchase, the customer is responsible for all shipping to Ranein, regardless of reason or circumstance. The method for warranty related shipping will be Ground equivalent with the provider of Ranein's choosing.

AK, HI, Canada, and any location outside of the continental US, will be responsible for all shipping costs, regardless of reason or circumstance.

All shipments of any type of product coming to Ranein for any reason must have an RGA for any repairs to be made. Please contact Ranein to obtain an RGA number prior to shipping anything to Ranein. Failure to do so could result in loss of product.

will not be responsible for replacement due to loss or damage if these steps are not properly followed.

### ⚠ CAUTION

DO NOT attempt to repair gas piping, remote controls, burners, vent connectors, or other safety devices. Please refer any repairs to qualified service personnel.

### ⚠ CAUTION

Ensure that power to the water heater is turned "OFF" before removing the protective cover, FOR ANY REASON.

### ⚠ CAUTION

Label all wires before disconnecting them when servicing the controls. Wiring errors can result in improper and dangerous operation. VERIFY PROPER OPERATION AFTER SERVICING.