MIZUDO
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MODEL:

ES060A
ES100A
ES180A

Electric Residential Water Heater
Chauffe-eau Électrique Résidentiel

Installation and Operation Manual
Manuel d'Installation et d'Utilisation

c UL us

⚠ WARNING

Please read all instructions before using this water heater and keep it for future reference. Failure to follow the information in these instructions may result in fire, electric shock, property damage, injury or death.

CONTENTS

"SAVE THESE INSTRUCTIONS"

1 Safety Information

Read all instructions before using the water heater

1.1 Safety Definitions

DANGER
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING
Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION
Indicates a hazardous situation which, if not avoided, could result in property damage and minor or moderate injury.

NOTICE
This symbol indicates important information where there is no risk to people or property.

1.2 Safety Information

WARNING
For your safety, the information in this manual must be followed to minimize the risk of fire or explosion, electric shock, or to prevent property damage, personal injury, or loss of life.

Be sure to read and understand the entire Owner's Manual before attempting to install or operate this water heater. It may save you time and cost. Pay particular attention to the Safety Instructions. Failure to follow these warnings could result in serious bodily injury or death. Should you have problems understanding the instructions in this manual, or have any questions, STOP and get help from a qualified service technician or the local electric utility.

WARNING: Risk of Fire
DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Keep rags and other combustibles away.

WARNING: Risk of Fire
If the water heater has been subjected to flood, fire, or physical damage, tum off power and water to the water heater.
Do not operate the water heater again until it has been thoroughly checked by qualified service personnel. Safety Precautions

A. Do turn off power to water heater if it has been subjected to overheating, fire, flood or physical damage.
B. Do Not turn on water heater unless it is filled with water.
C. Do Not turn on water heater if cold water supply shut-off valve is closed.
NOTE: Flammable vapors may be drawn by air currents from surrounding areas to the water heater.
D. 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.

CAUTION
Risk of Fire- Hydrogen gas can be produced in a hot water system served by this water heater that has not been used for a long period of time (generally two weeks or more). HYDROGEN GAS IS EXTREMELY FLAMMABLE! To dissipate such gas and to reduce risk of injury, it is recommended that the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. If hydrogen is present, there will be an unusual sound such as air escaping through the pipe as the water begins to flow. Do not smoke or use an open flame near the faucet at the time it is open.

WARNING
This product can expose you to lead, which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65warnings.ca.gov.

Important Safety Information

WARNING

1. READ ALL INSTRUCTIONS BEFORE USING THIS WATER HEATER.
2. This water heater must be grounded. Connect only to properly grounded outlet. See "3.6 Electrical Connections" found on (specific page or section to be included)
3. Install or locate this water heater only in accordance with the provided installation instructions.
4. Use this water heater only for its intended use as described in this manual.
5. Do not use an extension cord set with this water heater. If no receptacle is available adjacent to the water heater, contact a qualified electrician to have one properly installed (See "3.6 Electrical Connections").
6. As with any appliance, close supervision is necessary when used by children.
7. Do not operate this water heater if it has a damaged cord or plug, if it is not working properly, or if it has been damaged or dropped.
8. This water heater should be serviced only by qualified service personnel. Contact nearest authorized service facility for examination, repair, or adjustment.
9. Do not use surge protectors or multi-outlet adaptors with this water heater.

⚠ For installations in the state of california

California Law requires that residential water heaters must be braced, anchored or strapped to resist falling or horizontal displacement due to earthquake motions. For residential water heaters up to 52 gallon (236.4 L) capacity, a brochure with generic earthquake bracing instructions can be obtained from: Office of the State Architect, 400 P Street, Sacramento, CA 95814 or you may call 916.324.5315 or ask a water heater dealer. Applicable local codes shall always govern installation.

For residential water heaters of a capacity greater than 52 gallons (236.4 L)consult the local building jurisdiction for acceptable bracing procedures.

1.3 Water Temperature Adjustment

Safety, energy conservation, and hot water capacity are factors to be considered when selecting the water temperature setting of the water heater. Water temperatures above 125 °F can cause severe burns or death from scalding. Be sure to read and follow the warnings outlined on the label pictured to the left. This label is also located on the water heater near the top of the tank.

Time/Temperature Relationship in Scalds

Temperature	Time to Produce a Serious Burn
120 °F (49 °C)	More than 5 minutes
125 °F (52 °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 Shriners Burn Institute

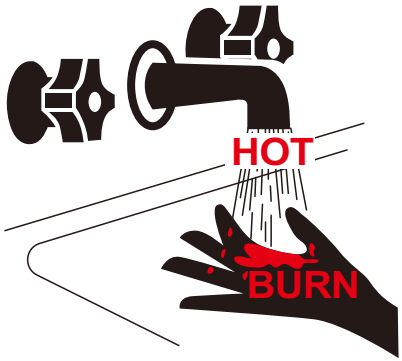
The chart shown above may be used as a guide in determining the proper water temperature for your home.

DANGER

There is a Hot Water SCALD Potential if the water temperature thermostat is set too high. Households with small children, disabled or elderly persons may require a 120 °F (49 °C) or lower thermostat setting to prevent contact with "HOT" water.

Thermostat has been set at the factory to set to 125 °F (52 °C) lower, or at the lowest point to reduce the risk of scald injury. This is the recommended starting temperature setting, but it can be adjusted to any temperature between 90 °F and 150 °F (32 °C and 66 °C).

⚠ DANGER



Water temperature over 125 °F can cause severe burns instantly or death from scalds.

Temperature control settings usually approximate tap water temperature. However, factors could cause water temperature to reach 160 °F regardless of the control settings.

Children, disabled and elderly are at highest risk of being scalded.

See instruction manual before setting temperature at water heater.

Feel water before bathing or showering.

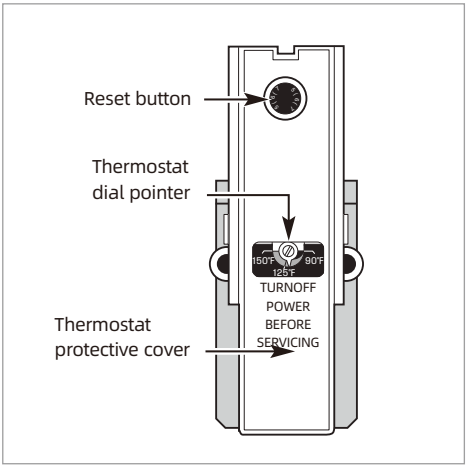
Temperature limiting valves are available; see manual.

Water Temperature Setting

The temperature of the water in the water heater can be regulated by setting the temperature dial of the adjustable surface mounted thermostat(s) located behind the jacket access panel(s).

The illustration shows the temperature adjustment dial used for setting the water temperature.

Refer to the Operating Instructions in this manual for detailed instructions how to adjust the thermostat(s).



DANGER
Hotter water increases the Potential for Hot Water SCALDS.

1.4 Safety Controls

The water heater is equipped with a combination thermostat and high limit Energy-Cut-Off control (ECO) that is located above the heating element in contact with the tank surface. If for any reason the water temperature becomes excessively high, the high limit control (ECO)breaks the power circuit to the heating element. Once the control opens, it must be reset manually. Resetting of the high limit control should be done by a qualified service technician.

CAUTION
The cause of the high temperature condition must be investigated by a qualified service technician and corrective action must be taken before placing the water heater in service again.

To reset the temperature-limiting control:

1. Turn off the power to the water heater.
2. Remove the jacket access panel(s). The thermostat protective cover should not be removed.
3. Press the red RESET button.
4. Replace the jacket access panel(s)before turning on the power to the water heater.
5. Ensure water heater is operating properly after resetting the ECO.

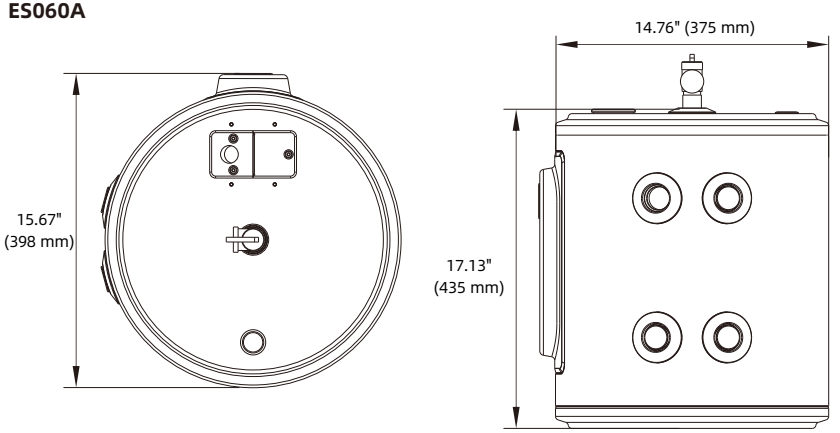
2 Information about the product

2.1 Technical data

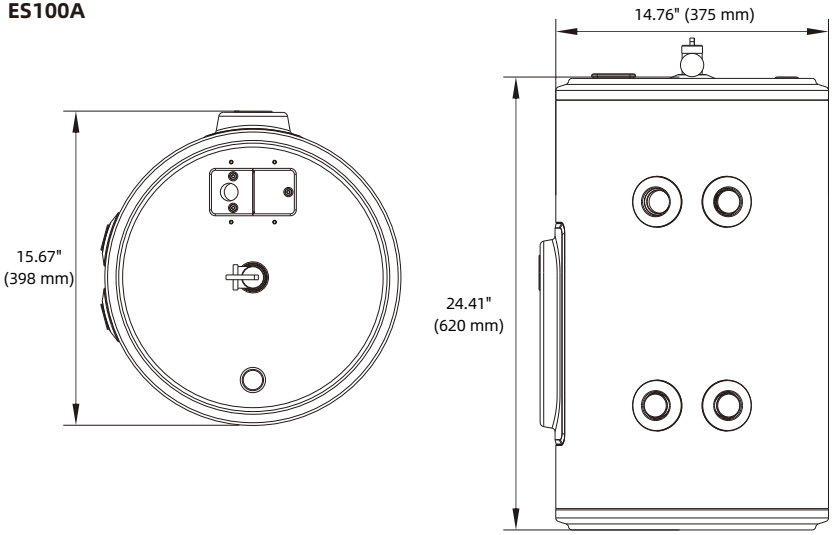
Model	ES060A	ES100A	ES180A
Capacity (gallons)	6	10	18
Voltage (VAC)	120	120	120
Power 120VAC (Watts)	1500	1500	1500
Maximum Water Pressure (PSI)	150	150	150
Amperage (Amps)	12.5	12.5	12.5
Phases	1	1	1
Temperature Range (°F)	90-150	90-150	90-150

2.2 Dimensions

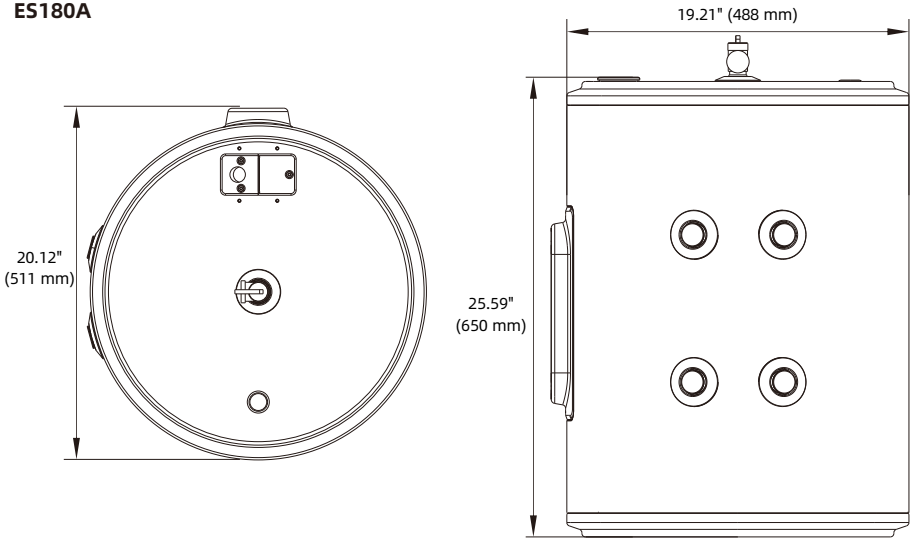
ES060A



ES100A



ES180A



3 Installation

3.1 Installation Instructions

The location chosen for the water heater must take into consideration the following:

Local Installation Regulations

This water heater must be installed in accordance with these instructions, local codes, utility codes, utility company requirements or, in the absence of local codes, the latest edition of the National Electrical Code. It is available from some local libraries or can be purchased from the National Fire Prevention Association, Batterymarch park, Quincy, MA 02169 as booklet ANSI/NFPA 70.

Power Requirements

Check the markings on the rating plate of the water heater to be certain the power supply corresponds to the water heater requirements.

Location

The water heater and water lines should be protected from freezing temperatures and high-corrosive atmospheres. Do not install the water heater in outdoor, unprotected areas.

Locate the water heater in a clean dry area as near as practical to the area of greatest heated water demand. Long uninsulated hot water lines can waste energy and water. Unit must be installed in a level location. If required, add shims under base of unit to level for proper operation.

NOTICE
This unit is designed for any common indoor installation.

Servicing the water heater requires proper installation such that front panels can be removed to permit inspection and servicing. Reference installation instructions found in this manual.

Moving the water heater or other appliances to provide service to the water heater is not covered under warranty.

CAUTION
Risk of Property Damage The water heater should not be located in an area where leakage of the tank or connections will result in damage to the area adjacent to it or to lower floors of the structure. Where such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed under the water heater.

Required clearances:

There must be sufficient clearance between any object and the top, rear and sides of the water heater in the event service is needed. The controls and drain at front of unit must have clear access for operation and service. Installations that require minimal clearance on the sides or rear of the water heater for earthquake straps are also acceptable. In these cases, additional clearance should be provided on the opposite side of the unit to allow for service access.

3.2 Component Installation

Locate the temperature and pressure relief valve, drain valve, and inlet/outlet fittings in the packaging of your water heater.

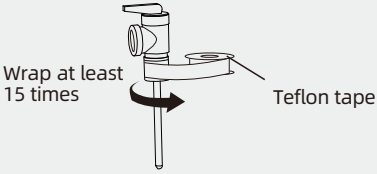
Remove and discard all gray colored plugs that were placed in the fitting openings of the water heater for shipping.

Refer to illustrations below for installing each component to the water heater.

After completing installation of all components, make sure to check all connection points for water leaks and correct if required.

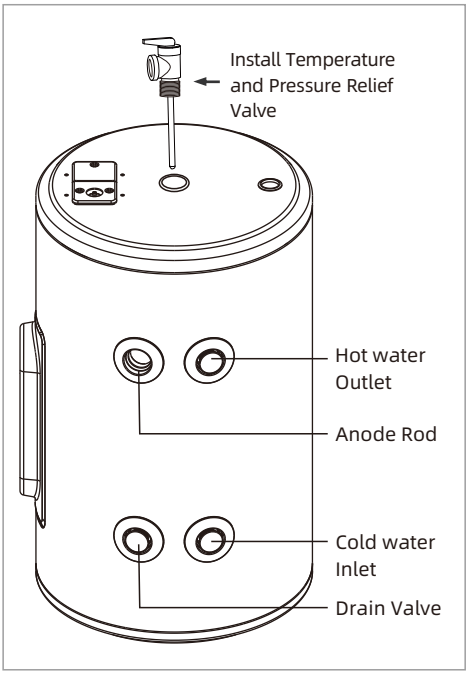
NOTICE

Wrap the Teflon tape around the threaded opening of the pressure relief valve at least 15 times (approximately 47.2" (120 cm) in length) in order to prevent water leakage.



Tools needed

- Pipe wrench
- Adjustable wrench
- Pipe Joint Compound or Pipe Thread Sealant Tape

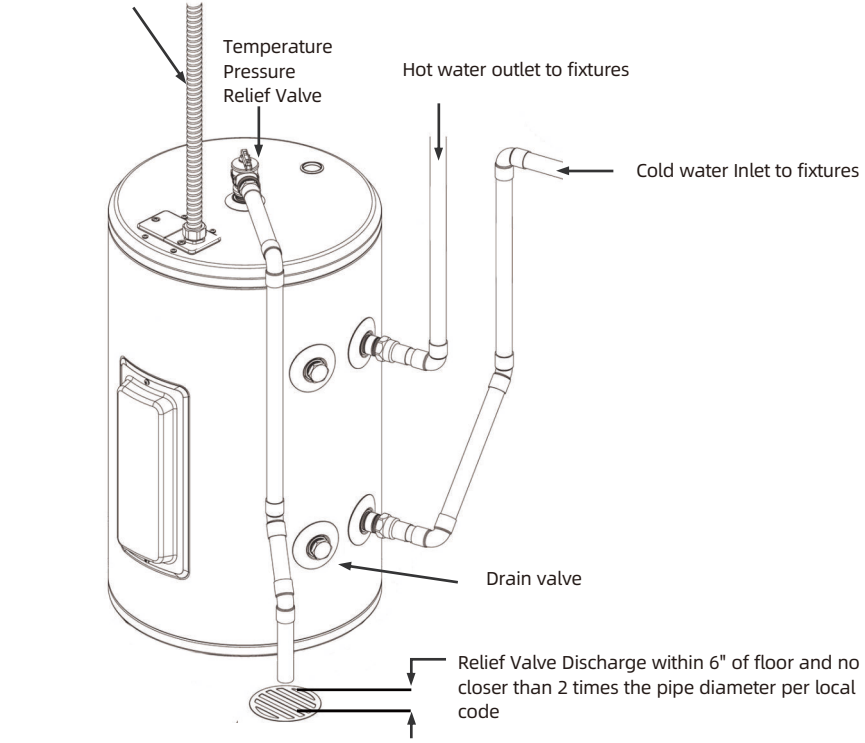


3.3 Water Supply Connections

Refer to the illustration below for recommended installation. The HOT and COLD water connections are clearly marked and are 4" NPT on all models. When connecting to the inlet/outlet ports, the use of 3/4" female NPT tapered thread fittings with use of thread sealant is recommended. The installation of unions is recommended on the hot and cold water connections so that the water heater may be easily disconnected for servicing if necessary. Piping should be routed to allow anode rod removal.

NOTICE
Install a shut-off valve in the cold water line near the water heater. This will enable easier service or maintenance of the unit later.

WARNING
Do not apply heat to the HOT or COLD water connections. If sweat connections are used, sweat tubing to adapter before fitting the adapter to the cold water connections on heater. Any heat applied to the hot or cold water connection will permanently damage the internal plastic lining in these ports.



(Model appearance may vary)

3.4 Relief Valve

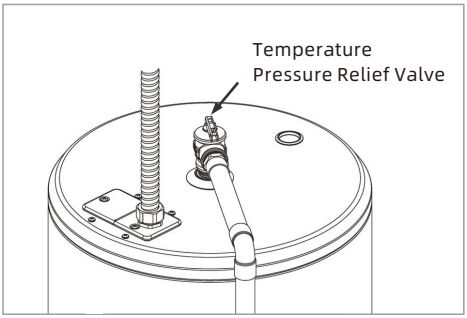
WARNING
Risk of Unit Damage -The pressure rating of the relief valve must not exceed 150 PSI (1.03 MPa), the maximum working pressure of the water heater as marked on the rating plate.

A new combination temperature and pressure-relief valve, complying with the Standard for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, ANSI Z21.22, is supplied and must remain installed in the opening provided and marked for this purpose on the water heater. No valve of any type should be installed between the relief valve and the tank. Local codes shall govern the installation of relief valves.

The BTU/H rating of the relief valve must not be less than the input rating of the water heater as indicated on the rating label located on the front of the heater (1 watt = 3.412 BTU/H).

Connect the outlet of the relief valve to a suitable open drain so that the discharge water cannot contact live electrical parts or persons and to eliminate potential water damage.

Piping used should be of a type approved for hot water distribution. The discharge line must be no smaller than the outlet of the valve and must pitch downward from the valve to allow complete drainage (by gravity)of the relief valve and discharge line. The end of the discharge line should not be threaded or concealed and should be protected from freezing. No valve of any type, restriction or reducer coupling should be installed in the discharge line.



CAUTION
To reduce the risk of excessive pressures and temperatures in this water heater, install temperature and pressure protective equipment required by local codes and no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting the requirements for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22. This valve must be marked with a maximum set pressure not to exceed the marked maximum working pressure of the water heater. Install the valve into an opening provided and marked for this purpose in the water heater, and orient it or provide tubing so that any discharge from the valve exits only within 6 inches above, or at any distance below, the structural floor, and does not contact any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances.

3.5 To Fill The Water Heater

WARNING
Risk of Unit Damage-The tank must be full of water before heater is turned on. The water heater warranty does not cover damage or failure resulting from operation with an empty or partially empty tank.

- Make certain the drain valve is completely closed. Open the shut-off valve in the cold water supply line. Open each hot water faucet slowly to allow the air to vent from the water heater and piping.
- A steady flow of water from the hot water faucet(s) indicates a full water heater.
- Condensation can form on the tank and fittings when it is first filled with water. Condensation may also occur with a heavy water draw and very cold inlet water temperature.

- This condition is not unusual and will disappear once water is heated. If condition persists, examine fittings for potential leaks and repair, as required.

NOTICE
Do not mis-wire electrical connections. 120VAC must be applied to the water heater as shown in 'Water heater junction box' illustration.

3.6 Electrical Connections

A separate branch circuit with copper conductors, overcurrent protective device and suitable

disconnecting means must be provided by a qualified electrician.

All wiring must conform to local codes or latest edition of National Electrical Code ANSI/NFPA 70.

The water heater is completely wired to the junction box at the top of the water heater. An opening for 1/2" electrical fitting is provided for field wiring connections. The voltage requirements and wattage load for the water heater are specified on the rating label on the front of the water heater.

The branch circuit wiring should include either:

1. Metallic conduit or metallic sheathed cable approved for use as a grounding conductor and installed with fittings approved for the purpose.
2. Nonmetallic sheathed cable, metallic conduit or metallic sheathed cable not approved for use as a ground conductor shall include a separate conductor for grounding. It should be attached to the ground terminals of the water heater and the electrical distribution box.
3. Factory provided power cord included in the packaging with this water heater.

To connect power to the water heater:

1. Turn the power off at circuit breaker.
2. Remove the screw/screws holding the junction box top cover.
3. Route the electrical wiring through provided strain relief and opening in the junction box cover.
4. Install Line to Line, Neutral to Neutral and Ground to Ground, per illustration on this page.
5. Reconnect all screws attaching the junction box covers.

WARNING
Risk of fire or electrical shock. Ensure both junction box covers and ground screws are securely fastened for proper grounding.

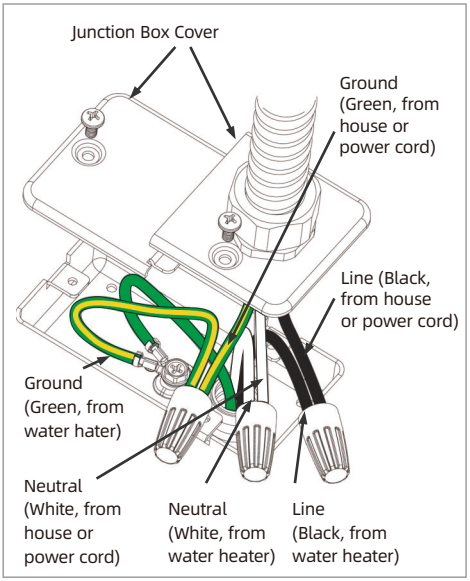
NOTICE
Install electric connections according to local codes or latest edition of National Electrical Code ANSI NFPA 70.

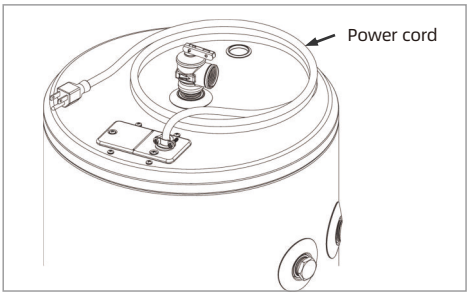
WARNING
Proper ground connection is essential. The presence of water in the piping and water heater does not provide sufficient conduction for a ground. Nonmetallic piping, dielectric unions, flexible connectors, etc., can cause the water heater to be electrically isolated. Do not disconnect factory ground.

This water heater can be installed is two ways:

1. Using a hard wired connection provided by a qualified electrician
2. Using the factory provided power cord and plugging into an outlet that has been installed by a qualified electrician (see below illustration for reference).

Water Heater Junctlon Box Illustration





The manufacturer's warranty does not cover any damage or defect caused by installation, attachment or use of any type of energy-saving or other unapproved devices (other than those authorized by the manufacturer) into, onto or in conjunction with the water heater. The use of unauthorized energy-saving devices may shorten the life of the water heater and may endanger life and property.

The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

If local codes require external application of insulation blanket kits, the manufacturer's instructions included with the kit must be carefully followed.

Application of any external insulation, blankets or water pipe insulation to this water heater will require careful attention to the following:

- Do not cover the temperature and pressure-relief valve.
- Do not cover access panels to the heating elements.
- Do not cover the electrical junction box of the water heater.
- Do not cover the operating or warning labels attached to the water heater or attempt to relocate them on the exterior of the insulation blanket.

4 Operating Instructions

This manual has safety information and instructions to help you eliminate or reduce the risk of accidents and injuries.

4.1 Water Heater Capacity and Increasing Temperature Setpoint

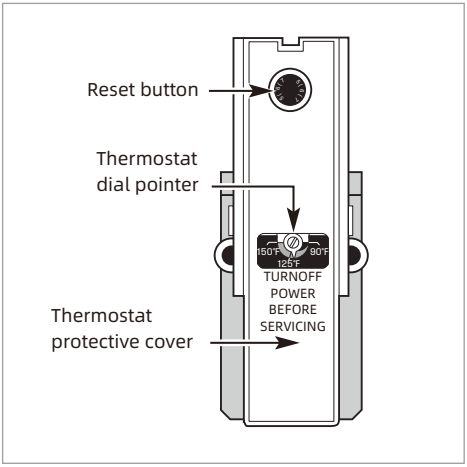
The water heater temperature setting strongly impacts the amount of usable hot water available for showers and baths.

- Safety regulations require a factory setting no greater than 125 °F (52 °C) for all new water heaters. Therefore, if your old water heater was set to a hotter temperature than your new water heater with a factory set setpoint of 125 °F (52 °C), the new water heater may seem to provide lower capacity than your old water heater. This can be corrected by increasing the temperature setpoint.
- If more hot water capacity is desired, increasing the temperature from 125 °F to 135 °F (52 °C to 57 °C) will enable the same tank of hot water to last about 25% longer because less hot water is mixed in at the shower or faucet.
- Increasing the water temperature setpoint may improve the cleaning performance of dishwashers and washing machines.
- The user can adjust the temperature setting to meet their needs. Always read and understand the safety instructions contained in the owner's manual before adjusting the temperature setpoint.

If adjustment is necessary...

1. Turn off the power to the water heater.
2. Remove the jacket access panel exposing the thermostat.

   The thermostat protective cover should not be removed.
3. Using a small screwdriver, set the thermostat dial pointer to the desired temperature.
4. Replace the jacket access panel. Turn on the power to the water heater.



4.2 Mixing Valves

- Mixing valves for reducing point-of-use water temperature by mixing hot and cold water in branch water lines are commercially available. Contact a licensed plumber or the local plumbing authority for further information.

4.3 Extended Shutdown Periods

If the water heater is to remain idle for an extended period of time, the power and water to the appliance should be turned off and the water heater drained to conserve energy and prevent a buildup of dangerous hydrogen gas. This unit has no power button, power can only be shut off at the circuit breaker or disconnect switch.

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

After a long shutdown period, the water heater's operation and controls should be checked by qualified service personnel. Make certain the water heater is completely filled again before placing it in operation.

NOTICE
Refer to the Hydrogen Gas Caution in the Operating Instructions (see Important safety information).

5 Maintenance

5.1 Care and Cleaning

Routine Preventive Maintenance

DANGER
Risk of Scald- Before manually operating the relief valve, make certain no one will be exposed to the danger of coming in contact with the hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be released into a suitable drain to prevent injury or property damage.

NOTICE
If the temperature and pressure-relief valve on the hot water heater discharges periodically, this may be due to thermal expansion in a closed water system. Contact the water supplier or your plumbing contractor on how to correct this. Do not plug the relief valve outlet.

Properly maintained, your water heater will provide years of dependable trouble-free service. It is suggested that the following annual preventive maintenance program be established.

1. Inspect Temperature Pressure Relief Valve.
2. Inspect heating elements, ECO, and wiring to each.
3. Drain and Flush the water heater tank.
4. Anode rod must be removed and inspected.

Temperature and Pressure-Relief Valve

Once a year, it is recommended to lift and release the lever handle on the temperature and pressure-relief valve, located on the front-right side of the water heater, to make certain the valve operates freely. Allow several gallons to flush through the discharge line to an open drain.

Heating Elements and ECO

Once a year, it is recommended to inspect the heating elements, ECO, and wiring to each. Inspection should be completed by service personnel qualified in electrical appliance repair.

Most electrical appliances, even when new, make some sound when in operation. If the hissing or singing sound level increases excessively, the electric heating element may require cleaning. Contact a qualified installer or plumber for inspection.

Heating Element Replacement Procedure

WARNING
If the heating element needs replacement, it is very important to use the same voltage, wattage, and construction. DO NOT replace the heating element with a generic heating element. Only heating elements are approved for use with this water heater. Failure to follow this warning will result in premature product failure and VOID the warranty, and could result in severe personal injury or death.

STEP 1: Turn off power to the water heater. Use a Phillips Head screwdriver to remove the wires from the element.

DANGER
Failure to disconnect the power from the water heater before attempting heating element replacement will result in property damage, severe personal injury, or death due to electric shock.

STEP 2: Run hot water at a faucet in the system. When it runs cold, shut off the faucet. Then shut off water at the main cold water inlet or, if possible, valve off the water heater from the system. Drain the water from the system, or just the water heater if it can be isolated from the system.

WARNING
Completely drain the water heater before removing and replacing a heating element. Failure to do so will result in a leakage of water and property damage, and could possibly result in moderate to severe personal injury or death.

WARNING
Water drained from the water heater may be scalding hot. Take care to avoid scalding. Wear gloves and safety glasses, and direct water to a safe drainage location. Failure to comply with this warning could result in property damage, severe personal injury, or death.

Step 3: Remove the element with a 1-1/2" socket wrench or element tool.

Step 4: Ensure thread and opening are completely free of debris. Use a nylon brush to clear away any debris.

Step 5: Put a small amount of NSF approved lubricant and sealant on the appropriate gasket and/or washer for the installation. Put the gasket and/or washer on the element.

Step 6: Screw the element clockwise into the tank, and tighten with the 1-1/2" socket wrench or element tool. Be sure O-ring seats properly.

Step 7: Open the main cold water inlet. If the water heater has been isolated from the system, open the valves. Refill the tank with cold water. Open a hot water faucet high in the system to bleed any air pressure from the system. Water will flow freely when air is completely bled.

WARNING
When filling the water heater, open a hot water tap to release air in the tank and piping. The tank must be full of water before the heater is turned on. Failure to ensure the water heater is full before turning it on will result in damage to the water heater, and could result in property damage, serious personal injury, or death. Such damages ARE NOT covered by water heater warranty.

Step 8: Pressure check the tank for leaks around element. If no leaks are found, use a Phillips Head screwdriver to connect the wires to the element.

Step 9: Turn power back on to the water heater.

CAUTION
Failure to refill the tank before restoring power to the water heater will result in damage to the heating element and property damage. Such damages ARE NOT covered by warranty.

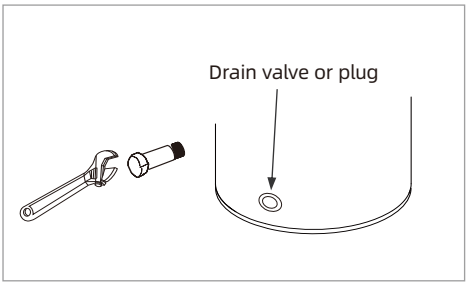
Draining and Flushing the Water Heater

CAUTION
Risk of Shock- Shut off power to the water heater before draining water.

DANGER
Risk of Scald - Before manually operating the relief valve, make certain no one will be exposed to the hot water released by the valve. The water drained from the tank may be hot enough to present a scald hazard and should be directed to a suitable drain to prevent injury or damage.

A water heater's tank can act as a settling basin for solids suspended in the water. It is therefore not uncommon for hard water deposits to accumulate in the bottom of the tank. To clean the tank of these deposits, it is recommended to drain and flush the water heater tank once a year. To drain the water heater, follow these steps:

1. Turn off power to the unit. The electric heating elements will become damaged if operated without water.
2. Attach a garden hose to the drain valve located at the bottom of the unit and direct that hose to a drain. 3. Turn off the cold water supply.
4. Admit air to the tank by opening a hot water faucet or lifting the handle on the relief valve.
5. Open the drain valve or plug.



Flushing the Tank

1. Follow steps above to drain the water heater.
2. Once the water heater is empty, turn on the cold water supply.
3. Allow several gallons to flush through the drain valve and hose to an open drain.
4. Turn off the water supply and allow any water remaining in the tank to drain.
5. Repeat steps 3 and 4 until water runs clear.
6. Close the drain valve and fill the tank before returning power to the unit. The tank is full when water runs out of a nearby open hot water faucet.

Flushing should be done with an empty tank to promote additional removal of sediment.

NOTICE
See page 12 for product schematic.

5.2 Anode Rod Maintenance

This water heater is equipped with a magnesium anode rod. Anode rods are sacrificial components that counteract water chemistry to

minimize or eliminate tank corrosion.

The anode rod should be inspected annually and replaced as necessary to prolong tank life. Have the supply water quality professionally analyzed, as local water conditions will influence the duration for inspection and replacement of the anode rod.

The use of a water softener may increase the speed of anode consumption. More frequent inspection of the anode is needed when using softened or treated water.

Water with high sulfate and/or mineral content can produce a rotten egg odor in heated water. Chlorinating the water supply may minimize this problem.

NOTICE
Do not remove the anode rod from an operating water heater. Operating the water heater without the anode rod will shorten the life of the tank and VOID the warranty.

Routine Preventative Maintenance Anode Rod

Anode rods are designed and installed to protect and extend the life of residential water storage tanks.

The anode rod must be removed from the water heater's tank and inspected annually, and replaced when more than 6" (15.2 cm) of core wire is exposed at either end of the rod.*

NOTICE
Artificially softened water will cause the anode rod to consume more rapidly.

Due to shock hazard and to prevent accidental water leaks, this inspection should be done by a qualified servicer or plumber, and requires that the electric power and cold water supply be turned off before servicing the anode rod.

NOTICE
Do not remove the anode rod from the water heater's tank except for inspection and/or replacement, as operation with the anode rod removed will shorten the life of the glass-lined tank and will void warranty coverage.

NOTICE
Failure to replace the anode rod when consumed voids the warranty for the tank. Warranty coverage for all other components remains intact, and is unaffected by this maintenance requirement. The replacement anode rod, and the inspection for consumption are not covered by warranty.

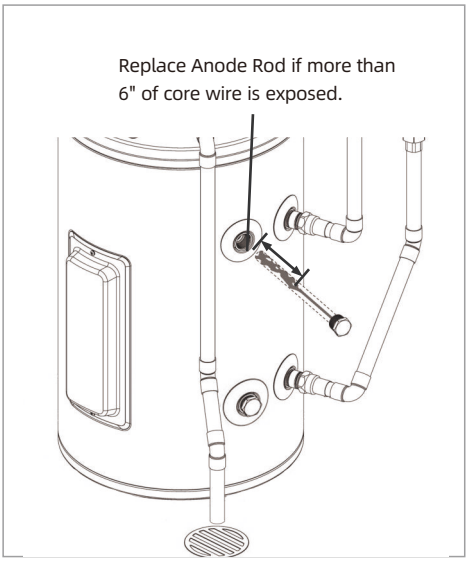
Tools needed:

- Socket/Torque Wrench 1-1/16" Socket
- Pipe Joint Compound or Pipe Thread Sealant Tape
- Anode Rod, if needed

To service the Anode Rod

1. Disconnect power, shut off the water supply, drain the water lines of the home. Drain the water heater through the lower drain valve.
2. Using a 1-1/16"socket, unscrew the anode rod, then lift out to inspect.
3. Inspect and replace if necessary.
4. To install the anode rod, seal the threads with pipe joint compound or pipe thread sealant tape, thread into the port tighten.
5. Turn water supply on, open a tap to remove any air in plumbing system, fill water heater with water, inspect for leaks, then turn the power on.

NOTICE
Do not turn on power until water heater is completely filled.



5.3 Leakage Checkpoints

A. * Condensation may be seen on pipes in humid weather or pipe connections may be leaking.

B. The primary anode rod may be leaking.

C. Small amounts of water from the temperature / pressure relief valve may be due to thermal expansion or high water pressure in your area.

D. * The temperature / pressure relief valve may be leaking at the tank fitting.

E. The element may be leaking at the tank fitting. Turn electrical power "OFF", remove the access panels, insulation block, and pad.

If leaking is visible around the element, follow proper draining instructions and remove the element. Reposition or replace gasket on element. Place element into opening and tighten securely. Then follow "Filling the Heater" instructions, this manual.

F. Water from drain valve or plug may be due to the valve being opened slightly.

G. * The drain valve or plug may be leaking from the tank fitting.

H. * Water in the water heater bottom or on the floor may be from condensation, loose connections, or the temperature / pressure relief valve. DO NOT replace the water heater until full inspections of all possible water sources are determined and necessary corrective steps have been taken.

NOTICE
*To check the fitting threads, insert a cotton swab between the jacket opening and fitting. If the cotton is wet, follow the draining instructions in the Maintenance section of this manual. Then remove the fitting. Put pipe dope or Teflon tape on the threads and reinstall the fitting. Then follow "Filling the Heater" instructions, this manual.

6 Troubleshooting

Before you call for service....
Save time and money! Review the chart below first and you may not need to call for service.

CAUTION
For your safety, DO NOT attempt repair of electrical wiring, controls, heating elements or other safety devices. Refer repairs to qualified service personnel.

Problem	Possible Causes	What To do
Operation and Performance		
Not enough or no hot water	Water temperature may be set too low	• See the Water Temperature Adjustment and Water Heater Capacity sections. (Pages 4 and 6)
	Cold water inlet temperature may be colder during the winter months	• This is normal. The colder inlet water takes longer to heat. • Consider increasing the set temperature as described in the Water Temperature Adjustment section.
	Leaking or open hot water faucets	• Make sure all faucets are closed.
	Long runs of exposed pipe, or hot water piping on outside wall	• Insulate piping.
	Dip tube damaged	• Contact your local installer, plumbing contractor, or previously agreed upon service agency.
	A fuse is blown, circuit breaker tripped, or electric service to your home may be interrupted	• Replace fuse or reset circuit breaker. • Contact the 'local electric utility.
	Inadequate wiring	• See the Installation Instructions.
	Manual reset high limit (ECO)	• See the Installation Instructions.
	Water Connections to unit reversed	• Correct piping connections.
Water is too hot	Water temperature is set too high	• See the Water Temperature Adjustment section.
	Thermostat has failed	• Contact your local installer, plumbing contractor, or previously agreed upon service agency.

Problem	Possible Causes	What To do
Other		
Rumbling noise	Water conditions in your home caused a buildup of scale or mineral deposits on the heating elements	• Remove and clean the heating elements. This should only be done by a qualified service person or plumbing contractor.
Water dripping down the outside of the heater	Hot/Cold water connections or other parts have loosened	• Tighten the loose connections. This should only be done by a qualified service person or plumbing contractor.
Relief valve producing popping sound or draining	Pressure buildup caused by thermal expansion to a closed system	• This is an unacceptable condition and must be corrected. See Thermal Expansion section on page 12. Do not plug the relief valve outlet. Contact a plumbing contractor to correct this.
Hot water has a rotten egg or sulfur smell	Certain water supplies with high sulfate content will react with the anode rod that is present in all water heaters for corrosion protection of the tank	• In certain cases, increasing the tank temperature to 140°F (60 °C) can reduce this odor issue. Reference the Water Temperature Adjustment section of the Important Safety Information of this manual for procedure and dangers of scalding water. Installation of temperature limiting valves can be used to reduce risk of scalding.

WARNING

- The risk of scald injury increases as you increase water temperature. Use a water tempering or mixing valve and extreme caution when using hot water to avoid scald injury. Consult codes for conformance. Failure to follow the instructions in this warning statement could result in serious personal injury or death from scalds.
- Be sure to disconnect electrical power before performing service. Failure to do so could result in electrical shock, property damage, serious personal injury, or death.

CAUTION

If draining of the water heater is necessary, open the T&P valve or a hot water tap to prevent vacuum buildup in the tank and piping.

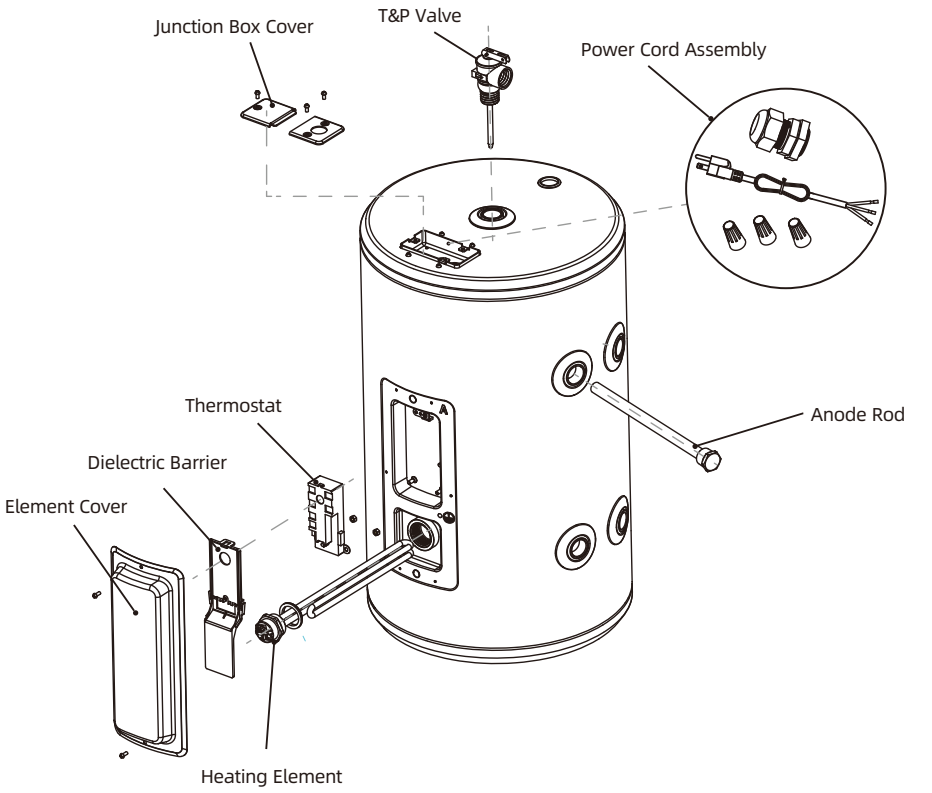
7 Replacement Parts

For Mizudo Branded Thermostat Control Point of Use Electric Water Heater Models.

All parts orders should include:

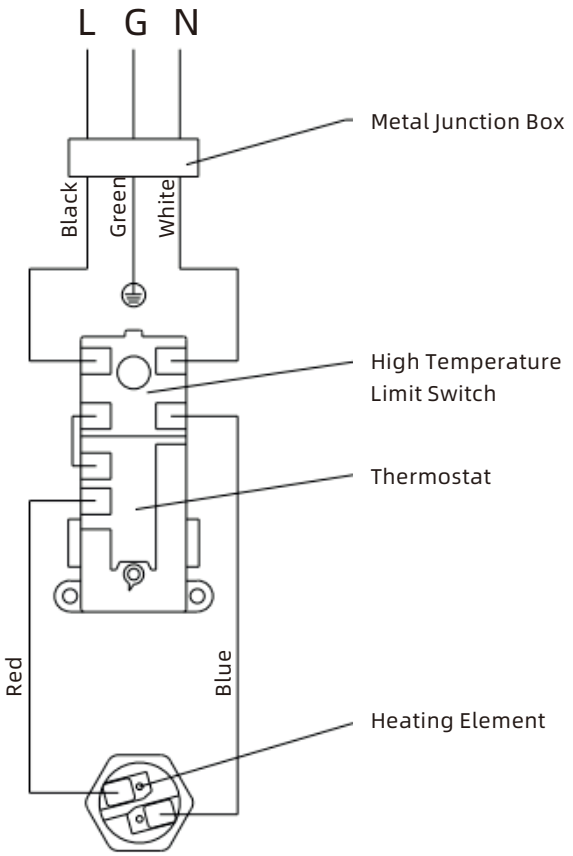
1. The model and serial number of the water heater from the rating plate.
2. Specify voltage and wattage as marked on the rating plate.
3. Part description (as noted below) and number of parts desired.

CAUTION
For your safety, DO NOT attempt repair of electrical wiring, thermostat(s), heating elements or other operating controls. Refer repairs to qualified service personnel.



(Model appearance may vary)

8 Wiring Diagram



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