CLIMATEMASTER®

A NIBE GROUP MEMBER

RESIDENTIAL

iGATE® 2 SMART TANK

INSTALLATION, OPERATION & MAINTENANCE MANUAL

Part#: 97B0115N01 | Created: April 30, 2025

Sizes: 50, 85, 105 Gallon

Most Efficient 2025
ENERGY STAR
www.energystar.gov

Sizes:
50/85/105
Gallon

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Model Nomenclature

Sizes:
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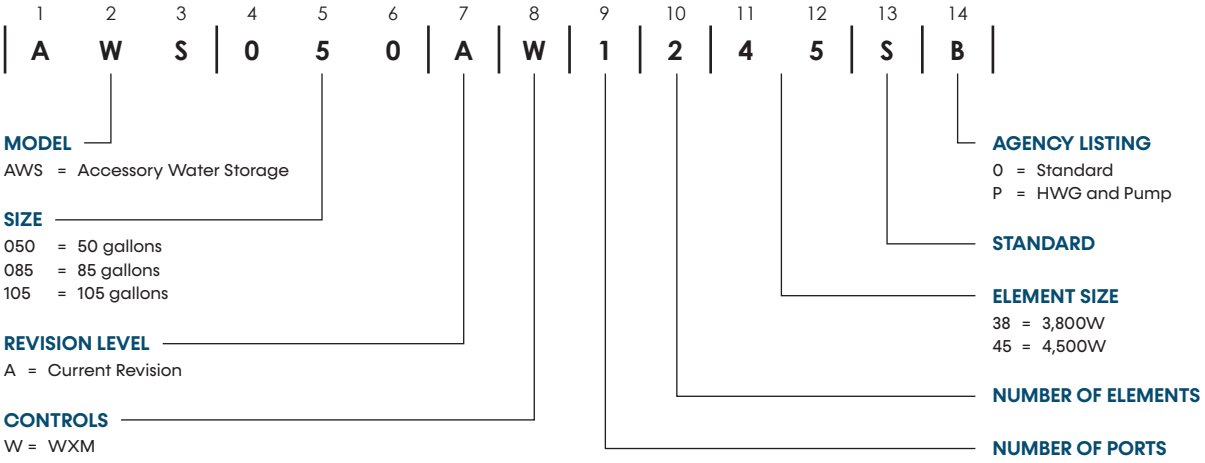
Gallon



Sizes:
50/85/105
Gallon

Introduction

PREFACE

The purpose of this manual is to provide installers with the basic directions and recommendations for the proper installation and adjustment of the iGate 2 Smart Tank; and for the owner-operator to explain the features, operation, safety precautions, maintenance, and troubleshooting. It is imperative that all persons who are expected to install, operate, or adjust this storage tank read the instructions carefully so they may understand how to perform these operations. If you do not understand these instructions or any terms within it, seek professional advice.

Direct any questions regarding the operation, maintenance, service, or warranty of this storage tank to the seller from whom it was purchased. If additional information is required, refer to the warranty.

INSPECTION

Upon receipt of the equipment, carefully check the shipment against the bill of lading. Ensure all units have been received. Inspect the packaging of each unit, and inspect each unit for damage. Ensure that the carrier makes proper notation of any shortages or damage on all copies of the freight bill and completes a common carrier inspection report. Concealed damage not discovered during unloading must be reported to the carrier within 15 days of receipt of shipment. If not filed within 15 days, the freight company can deny the claim without recourse. **NOTE**: **It is the responsibility of the purchaser to file all necessary claims with the carrier. Notify your equipment supplier of all damage within 15 days of shipment.**

STORAGE

Equipment should be stored in its original packaging in a clean, dry area. Store units in an upright position at all times. Units can only be stacked one high.

UNIT PROTECTION

Cover units on the job site with either the original packaging or an equivalent protective covering. Cap the open ends of pipes stored on the job site. In areas where painting, plastering, and/or spraying has not been completed, all due precautions must be taken to avoid physical damage to the units and contamination by foreign material. Physical damage and contamination may prevent proper startup and may result in costly equipment cleanup. Examine all pipes, fittings, and valves before installing any of the system components. Remove any dirt or debris found in or on these components.

READ THIS MANUAL

Find guidelines on how to use and maintain your storage tank properly inside this IOM. Preventive care can save a great deal of time and money over the life of your storage tank. Before calling for support, see the Before You Call for Service section and Troubleshooting Tips chart to find many answers to common problems.

READ THE SAFETY SECTION

Your safety and the safety of others are very important. There are many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

Attentions, Cautions, and Warnings

Sizes: 50/85/105 Gallon

SAFETY

Warnings, cautions, and notices appear throughout this manual. Read these items carefully before attempting any installation, service, or troubleshooting of the equipment.

DANGER: Indicates an immediate hazardous situation, which if not avoided will result in death or serious injury. DANGER labels on unit access panels must be observed.

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

CAUTION: Indicates a potentially hazardous situation or an unsafe practice, which if not avoided could result in minor or moderate injury or product or property damage.

NOTICE: Notification of installation, operation, or maintenance information, which is important, but which is not hazard-related.

⚠ DANGER

- 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. Refer to the manual for more information.

⚠ WARNING

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. This unit is intended for use with auxiliary heating equipment. A suitable mixing valve is recommended if lower temperatures are desired.

⚠ WARNING

Hotter water increases the potential for hot-water SCALDS.

⚠ 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 Use and Care Manual before attempting to install or operate this storage tank. 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.

⚠ NOTICE

FOR INSTALLATIONS IN THE STATE OF CALIFORNIA

California Law requires that residential storage tanks must be braced, anchored, or strapped to resist falling or horizontal displacement due to earthquake motions. For residential storage tanks up to 52-gallon capacity, a brochure with generic earthquake bracing instructions can be obtained from: Office of the State Architect, 1102 Q Street, Suite 5100, Sacramento, CA 95811 or you may call 916-445-8100 or ask a storage tank dealer.

However, applicable local codes shall govern installation. For residential storage tanks of a capacity greater than 52 gallons, consult the local building jurisdiction for acceptable bracing procedures.

⚠ NOTICE

Mixing valves are recommended for reducing point-of-use water temperature by mixing hot and cold water in branch water lines. Contact a licensed plumber or the local plumbing authority for further information. See page 13 for mixing valve installation requirements.

⚠ NOTICE

SAFETY PRECAUTIONS

Ask the installer to show you the location of the circuit breaker and how to shut it off, if necessary. Turn off the circuit breaker if the storage tank is subjected to overheating, fire, flood, physical damage or if the ECO (Emergency Cut Off) on the thermostat fails to shut off.

- Read this manual entirely before installing or operating the storage tank.
- Use this appliance only for its intended purpose as described in this IOM.
- Ensure your appliance is properly installed in accordance with local codes and the provided installation instructions.
- **Do not** attempt to repair or replace any part of your storage tank unless it is specifically recommended in this manual. Refer all other servicing to a qualified technician.
- All replacement parts used on this product must be manufacturer-authorized components.

Sizes: 50/85/105 Gallon

Installation

LOCAL INSTALLATION REGULATIONS

This storage tank 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 Protection Association, Batterymarch Park, Quincy, MA 02269 as booklet ANSI/NFPA 70.

If the storage tank is to be installed in a location where NSF International listing is required, it must be weather sealed to the floor, a raised base, or on a shelf so that seepage cannot accumulate under it; or elevated to provide at least 6-inches of clearance from the floor.

In order to meet NSF International requirements for Standard 5, the base of the storage tank must be sealed to the floor to prevent seepage underneath. Apply a ⅜-inch bead of RTV silicone completely around the floor edge of the base of the tank.

THERMAL STORAGE TANK REQUIREMENTS

This storage tank is equipped with backup heating elements, thermostats, and high-limit mitigation intended for installation with geothermal heat pump systems. Refer to the geothermal heat pump system's IOM for system installation and operation requirements.

IMPORTANT

- Water piping and components connected to the water heater shall be suitable for use with potable water.
- Toxic chemicals such as those used for boiler treatment **MUST NOT** be introduced into the potable water.
- The water heater must not be connected to any system or component(s) previously used with a non-potable water heating appliance.

LOCATION

The location chosen for the storage tank must take into consideration the following:

- Locate the storage tank in a clean dry area as near as practical to the area of greatest heated water demand. Long, non-insulated hot water lines can waste energy and water.
- Place the storage tank in such a manner that the thermostat, controls, and element access panels can be removed to permit inspection and servicing, such as removal of the element or checking controls.
- Protect the storage tank and water lines from freezing temperatures. Do not install the storage tank in outdoor, unprotected areas or near any other appliances where high temperatures are present, such as wood burning stoves, boilers, or furnaces. High temperatures can warp or otherwise damage the non-metallic construction of this storage tank.
- Ensure the floor underneath the storage tank is strong enough to sufficiently support the weight of the storage tank once it is filled with water.

⚠ NOTICE

DO NOT use fittings on top of the unit as handles or lift points.

⚠ NOTICE

DO NOT step or stand on water connection fittings.

Table 1: Capacity, Dimensions, and Weight

Unit Capacity (gallons)	Unit Capacity (Imperial gallons)	Dimensions (inches)		Shipping Weight (lbs)	Approximate Full weight (lbs)
		Height	Diameter		
50	42	66-3/4	23-1/2	100	517
85	71	70-1/4	28-1/4	134	843
105	88	70-3/4	30-1/4	152	1,028

- Height includes factory-installed temperature and pressure relief valve.

Installation

Sizes: 50/85/105 Gallon

THERMAL EXPANSION

Determine if a check valve exists in the inlet water line. Check with your local water utility. It may have been installed in the cold water line as a separate back-flow preventer, or it may be part of a pressure-reducing valve, water meter, or water softener. A check valve located in the cold water inlet line can cause what is referred to as a closed water system. A cold water inlet line with no check valve or back flow prevention device is referred to as an open water system.

As water is heated, it expands in volume and creates an increase in the pressure within the water system. This action is referred to as thermal expansion. In an open-water system, expanding water that exceeds the capacity of the storage tank flows back into the city main where the pressure is easily dissipated.

A closed-water system prevents the expanding water from flowing back into the main supply line, and the result of thermal expansion can create a rapid and dangerous pressure increase in the storage tank and system piping. This rapid pressure increase can quickly reach the safety setting of the relief valve, causing it to operate during each heating cycle. Thermal expansion and the resulting rapid and repeated expansion and contraction of components in the storage tank and piping system can cause premature failure of the relief valve, and possibly the heater. Replacing the relief valve does not correct the problem.

The suggested method of controlling thermal expansion is to install an expansion tank in the cold water line between the storage tank and the check valve (see Figure 3). The expansion tank is designed with an air cushion built in that compresses as the system pressure increases, thereby relieving the over-pressure condition and eliminating the repeated operation of the relief valve. Other methods of controlling thermal expansion are also available. Contact your installing contractor, water supplier, or plumbing inspector for additional information regarding this subject.

INSPECT THE STORAGE TANK

Inspect the storage tank for possible damage. Check the markings on the rating plate of the storage tank to ensure the power supply corresponds to the storage tank requirements.

TEMPERATURE AND PRESSURE RELIEF VALVE

⚠ NOTICE

The pressure rating of the relief valve must not exceed 150 PSI (1,034 KPA), the maximum working pressure of the storage tank 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 be installed in the opening provided and marked for the purpose on the storage tank. 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 Btuh rating of the relief valve must not be less than the input rating of the storage tank as indicated on the rating label located on the front of the unit (1 watt=3.412 Btuh), OR the Btuh capacity of the connected heat pump, whichever is greater.

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.

Use a type of piping 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. Do not install a valve of any type, restriction, or reducer coupling in the discharge line.

Sizes:
50/85/105
Gallon

Installation

VACCUM RELIEF VALVE

⚠ NOTICE

DO NOT operate the unit without the vacuum relief valve for any reason. Doing so will void the manufacturer's warranty.

The factory-installed vacuum relief valve is required when installing the storage tank.

The cold water inlet has a vacuum relief valve connected to it. Certain conditions in the field may produce a vacuum or negative pressure condition inside the storage tank. This negative pressure can cause the tank to fail. The vacuum relief valve provides a means to eliminate the negative pressure or vacuum by admitting air into the tank to equalize the pressure. It is not recommended to pull a vacuum on the unit.

DRAIN PAN

⚠ NOTICE

The auxiliary catch pan MUST conform to local codes.

⚠ NOTICE

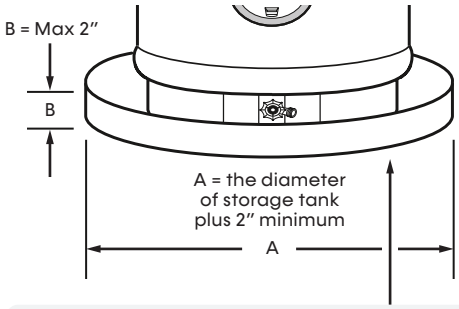
The storage tank must be centered in the drain pan.

Do not locate the storage tank in an area where leakage of the tank or connections results 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 with adequate drainage be installed under the storage tank.

Under no circumstance will the manufacturer be held liable for any water damage in connection with this storage tank.

Catch pan kits are available from any storage tank of water heater distributor.

Figure 1: Drain Pan Example



To open drain, this line should be at least 3/4" ID and pitched for proper drainage.

SIDE WATER PORT CONNECTIONS

⚠ NOTICE

DO NOT step or stand on water connection fittings.

A 1¼-inch NPT water connection is located on the sidewall of the tank. Water thread-sealant tape or "dope" are recommended for these connections. Fittings must be held securely (and not turn) during tightening, installation, and removal. Failure to do so can result in catastrophic damage to the storage tank.

It is recommended that threaded unions be installed near the water connection ports.

The maximum flow rate through the 1¼-inch port is 20 gpm.

TOP WATER SUPPLY CONNECTIONS

⚠ WARNING

Failure to follow the instructions provided in this manual may permanently damage the unit and void the manufacturer's warranty.

⚠ NOTICE

DO NOT attempt to turn any fitting connected to the storage tank union hex nuts that are tightened.

⚠ NOTICE

The union hex nut connections on the unit use rubber seal rings to provide the water tight seal.

- DO NOT use pipe sealant on this joint.
- DO NOT torque the union hex nuts to over 35 ft-lbs when reinstalling the components.

⚠ NOTICE

SOLDER WITH CARE! If sweat connections are used, DO NOT apply heat directly to any component directly connected to the unit. Build assemblies to a minimum length of 12 inches before attaching to any connection on the unit to avoid damaging the unit.

Refer to Figure 1 for suggested typical installation. The installation of unions or flexible copper connectors is recommended on the hot and cold water connections so that the unit may be easily disconnected for servicing if necessary. The hot and cold water connections are clearly marked on the top of the unit. Install a shutoff valve in the cold water line near the unit.

Installation

Sizes: 50/85/105 Gallon

The following are specific installation instructions for units equipped with the iGate 2 Smart Tank. For additional information on hot water generator operation, see the geothermal unit IOM.

The hot water connection is provided with a ¾-inch or 1-inch NPT connection depending on the size of the storage tank. Use a metal fitting for the connection to the unit at this location. The hot water connection contains a plastic cap to hold a rubber seal ring that is used to form a water-tight connection. Take care when removing the plastic cap so the rubber seal ring is not lost. Ensure the rubber seal ring is seated inside the union hex nut before making the final connection.

DO NOT use pipe sealant on this joint. DO NOT torque the union hex nuts to over 35 ft-lbs when reinstalling the components.

Hot and cold water lines may be temporarily disconnected from the unit to ease installation by loosening the union hex nuts connecting the fittings to the unit. The connection of these parts to the unit use rubber seal rings to form a water-tight connection. Reuse the rubber seal rings that are provided with the unit when reinstalling these components. Follow the instructions listed for the hot water connection to reconnect the union hex nuts.

Figure 2: Typical Hot Water Piping

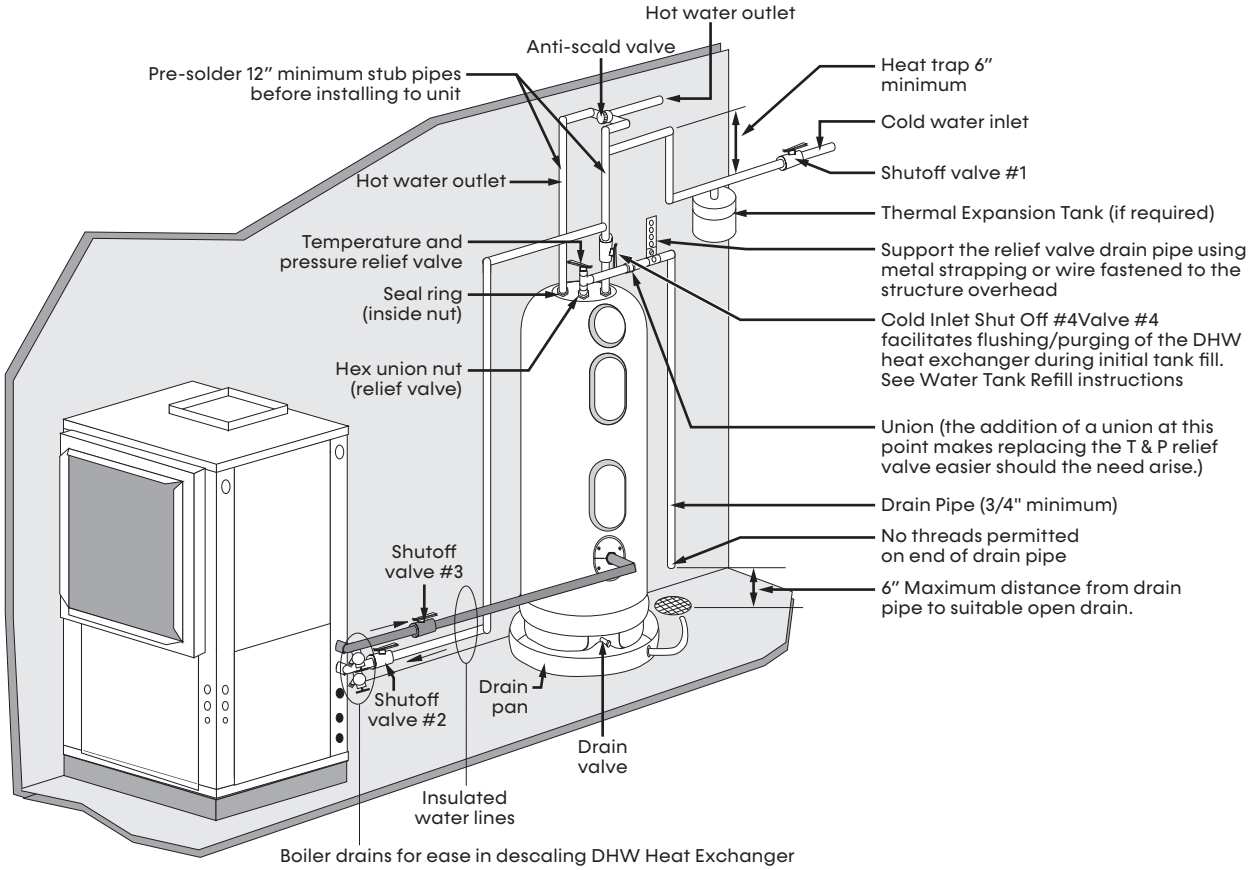


Figure 2 illustrates a typical example of potable-water piping connections.

Always use water-softening equipment on domestic water systems to reduce the scaling potential and lengthen equipment life.

In extreme water conditions, it may be necessary to avoid using the heat pump's water-heating mode since the potential cost of frequent maintenance may offset or exceed the heat pump savings. See Table 3 for scaling potential.

Sizes: 50/85/105 Gallon

Installation

The iGate Smart Tank utilizes two tank sensors (one at the upper element and one at the lower element), the tank microprocessor control (WXM), and the unit controller (DXM2.5). During normal operation, the WXM communicates the tank temperatures to the DXM2.5 and the DXM2.5 determines when to operate the heat pump and disables the tank electric heating elements. During abnormal conditions, the WXM may enable the electric elements to supplement or supplant the heat pump operation.

⚠ WARNING

Under no circumstances should the sensors be disconnected or removed. Full load conditions can drive hot water tank temperatures far above safe temperature levels if sensors are disconnected or removed.

Space conditioning always takes takes precedent over hot water heating in most circumstances. The WXM may enable operation of the electric heating elements while the heat pump is satisfying the space load.

The WXM controller relays tank water temperature to the heat pump. It includes a fault and status LED. The green status LED is illuminated continuously unless the WXM is placed in the test mode by pressing the test button and the WXM is enabling the operation of the electric elements. In the test mode, the green LED shows a slow steady flash if the control is enabling the operation of the electric elements. Once placed in the test mode, the WXM controller remains in the test mode for 20 minutes before reverting to normal operation.

Table 2: Flash Codes and Definitions

Fault	Flash Code
No fault	1 flash
Defective upper element sensor	2 flashes
Defective lower element sensor	3 flashes

Notes:
- Rapid flash = 2 flashes every 1 second
- Slow flash = 1 flash every 2 seconds
- Very slow flash = 1 flash every 5 seconds

The hot water generator is controlled by two sensors and the DXM2.5. One sensor is located on the compressor discharge line to sense the discharge refrigerant temperature. The other sensor is located on the HWG heat exchanger's "Water In" line to sense the potable water temperature.

DXM2.5 Advanced Communicating Controls monitors the refrigerant and water temperatures to determine when to operate the HWG. The HWG operates any time the refrigerant temperature is sufficiently above the water temperature. Once the HWG has satisfied the water heating demand during a heat pump run cycle, the controller cycles the pump at regular Intervals to determine if an additional HWG cycle can be utilized.

When the control is powered and the HWG pump output is active for water temperature sampling or HWG operation, the DXM2.5 status LED slowly flashes (On 1 second, Off 1 second).

If the control detects a HWG fault, the DXM2.5 status LED flashes a numeric fault code as follows:

- High Water Temperature (> 160°F) (five flashes)
- Hot Water Sensor Fault (six flashes)
- Compressor Discharge Sensor Fault (six flashes)

Fault code flashes have a duration of 0.3 seconds with a 10-second pause between fault codes. For example, a Compressor Discharge Sensor Fault is six flashes 0.3 seconds long, then a 10 second pause, then six flashes again, etc.

Hot Water Generator settings are determined by DIP switches 3-2, 3-3, and 3-4.

- DIP 3-2 controls the HWG Test Mode and provides for forced operation of the HWG output, activating the HWG pump for up to five minutes.
- ON = HWG test mode, OFF = normal HWG operation.
- The control reverts to standard operation after five minutes regardless of switch position.
- DIP 3-3 determines HWG setpoint temperature and provides for selection of the HWG operating setpoint.
- ON = 150°F (66°C), OFF = 125°F (52°C)
- DIP 3-4 is for the HWG status and provides HWG operation control
- ON = HWG mode enabled, OFF = HWG mode disabled
- Units are shipped from the factory with this switch in the OFF position.

Locate the heat pump, water piping, and hot water tank where the ambient temperature does not fall below 50°F (10°C). Keep water piping lengths at a minimum. DO NOT use a one-way length greater than 100 ft. (15 m). See Table 3 for recommended piping sizes and maximum lengths.

Installation

Sizes: 50/85/105 Gallon

All installations must be in accordance with local codes. The installer is responsible for knowing the local requirements, and for performing the installation accordingly. DO NOT turn the hot water mode "ON" until the Initial Startup section is complete. Engaging the hot water mode before all installation steps are complete damages the unit.

DHW WATER PIPING

1. Using at least ¾-inch (12.7 mm) I.D. copper, route and install the water piping and valves as shown in Figure 3. Install an approved anti-scald valve if the the hot water set point is set above 125°F (51°C). An appropriate method must be employed to purge air from the DHW piping. This may be accomplished by flushing water through the heat pump or by installing an air vent at the high point of the DHW piping system.
2. Insulate all DHW water piping with no less than ⅜-inch (10 mm) wall closed-cell insulation.
3. Ensure the tank drain valve is closed.
4. Check the union connections on the DHW pump to ensure they are tight before filling system.

STORAGE TANK REFILL

1. Close valve #4. Ensure that the DHW valves (valves #2 and #3) are open. Open the cold water supply (valve #1) to fill the tank through the DHW piping. This forces water flow through the DHW heat exchanger and purges air from the DHW piping.
2. Open a hot water faucet to vent air from the system until water flows from faucet, then turn off the faucet. Open valve #4.
3. Depress the hot water tank pressure relief valve handle to ensure that there is no air remaining in the tank.
4. Inspect all work for leaks.
5. Replace tank access covers and apply power to the storage tank.

⚠ WARNING

The tank must be full of water before unit is turned on. The storage tank warranty does not cover damage or failure resulting from operation with an empty or partially empty tank.

INITIAL STARTUP

1. Ensure all valves in the DHW water circuit are fully open.
2. Turn on the heat pump hot water mode by enabling operation in the user menu. Ensure the hot water set point is above the hot water temperature. The heat pump should begin to operate in the hot water mode. Alternatively, you can enable heat pump hot water mode through manual operation in the myUplink Pro app or Wireless Service Tool.
3. Allow the unit to run a few minutes to stabilize. The temperature difference between the entering potable water and leaving potable water should match the temperature differential set for the DHW Pump Configuration.

Table 3: DHW Water Piping Sizes and Length

Model	¾" Copper (max length[1])	1" Copper (max length[1])
0930	30	100
1860	30	100

1. The maximum length is equivalent length (in feet) one way of type L copper.

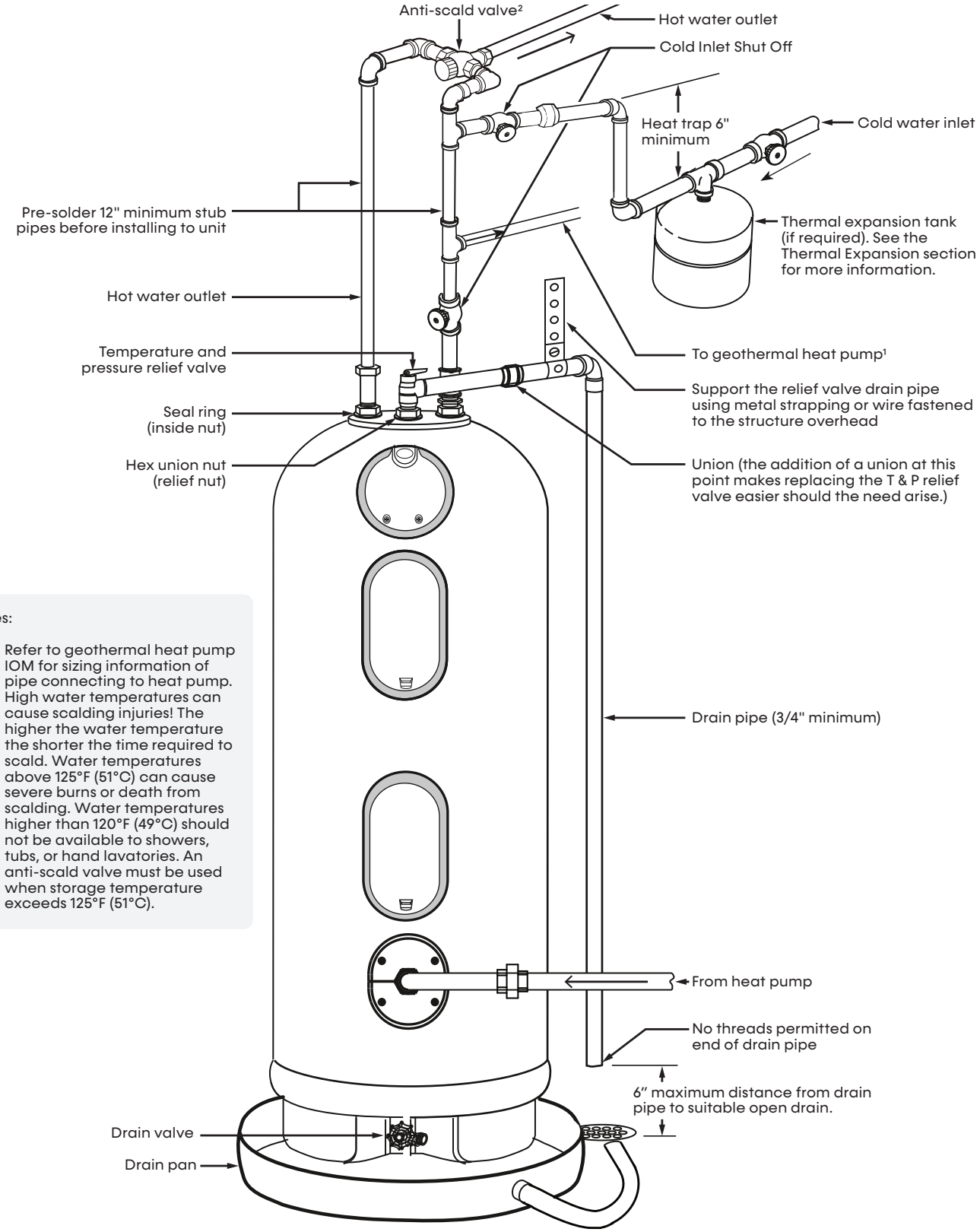
⚠ CAUTION

Use only copper piping for DHW piping due to the potential of high water temperatures for water that has been in the DHW heat exchanger during periods of no-flow conditions (DHW pump not energized). Piping other than copper may rupture due to high water temperature and potable water pressure.

Sizes:
50/85/105
Gallon

Installation

Figure 3: Typical Installation



Notes:

1. Refer to geothermal heat pump IOM for sizing information of pipe connecting to heat pump.
2. High water temperatures can cause scalding injuries! The higher the water temperature the shorter the time required to scald. Water temperatures above 125°F (51°C) can cause severe burns or death from scalding. Water temperatures higher than 120°F (49°C) should not be available to showers, tubs, or hand lavatories. An anti-scald valve must be used when storage temperature exceeds 125°F (51°C).

ELECTRICAL CONNECTIONS

⚠ CAUTION

The presence of water in the piping and storage tank does not provide sufficient conduction for a ground. Non-metallic piping, dielectric unions, flexible connectors etc. can cause the storage tank to be electrically isolated.

A qualified electrician must provide a separate branch circuit with copper conductors, an over current protective device, and suitable disconnecting means. All wiring must conform to local codes or latest edition of National Electrical Code ANSI/NFPA 70.

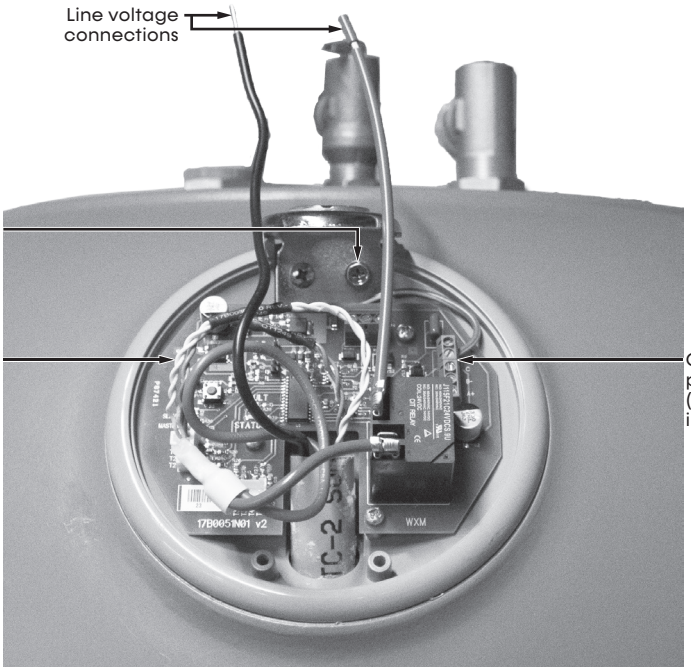
The storage tank is completely wired to the junction box inside jacket at the top front of the storage tank. An opening for ½-inch or ¾-inch electrical fitting is provided for field-wiring connections. Find voltage requirements and wattage load on the rating plate on the front of the storage tank.

Route the low-voltage control wires from the heat pump through the cutout in the junction box cover to the Communicating Heat Pump connection.

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. Non-metallic sheathed cable, metallic conduit, or metallic-sheathed cable not approved for use as a ground conductor shall include a separate conductor for grounding. Attach the cable to the ground terminals of the storage tank and the electrical distribution box.

Figure 4: Smart Tank Junction Box (top of unit)



Refer to the heat pump installation manual for Communicating Heat Pump connection details.

⚠ NOTICE

The thermistor wire assembly (not shown) is employed when a goethermal heat pump system is connected to the Certified Household Electric Water Heater. If an auxiliary control is installed, connect RED supply to RED connection on control board. The auxiliary control shall be certified as a water heater control per UL 873 and/or UL 60730-1, as applicable.

Sizes:
50/85/105
Gallon

Installation

INSULATION BLANKETS

⚠ WARNING

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

Insulation blankets available to the general public for external use on electric storage tanks are not necessary. The purpose of an insulation blanket is to reduce the standby heat loss encountered with storage tank heaters.

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 into, onto, or in conjunction with the storage tank. The use of unauthorized energy-saving devices may shorten the life of the storage tank and may endanger life and property.

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

⚠ CAUTION

If local codes require the application of an external insulation blanket to this storage tank, pay careful attention to the following so as not to restrict the proper function and operation of the storage tank:

- Do not cover the operating or warning labels attached to the storage tank or attempt to relocate them on the exterior of insulation blanket.
- Do not apply insulation to the top of the storage tank. This could interfere with the safe operation of the electrical junction box.
- Do not cover the jacket access panel to the thermostat and heating element, vacuum valve, or pressure and temperature relief valve.
- Inspect the insulation blanket frequently.

INSTALLATION CHECKLIST

Storage Tank Location

- ☐ Close to area of heated water demand
- ☐ Indoors and protected from freezing temperatures
- ☐ Area free of flammable vapors
- ☐ Provisions made to protect area from water damage
- ☐ Sufficient room to service unit

Water Supply/Water Connection Ports

- ☐ Storage tank completely filled with water
- ☐ Air purged from storage tank and piping
- ☐ Water connections tight and free of leaks
- ☐ Air purged from auxiliary heat source water lines

Relief Valve

- ☐ Temperature and pressure relief valve properly installed and discharge line run to open drain
- ☐ Discharge line protected from freezing

Wiring

- ☐ Power supply voltage matches the storage tank rating plate
- ☐ Branch circuit wire and fusing or circuit breaker of proper size
- ☐ Electrical connections tight and unit properly grounded
- ☐ Communication wiring to heat pump properly connected

SINGLE PHASE WIRING - 240V

Table 4: Branch Circuit Sizing

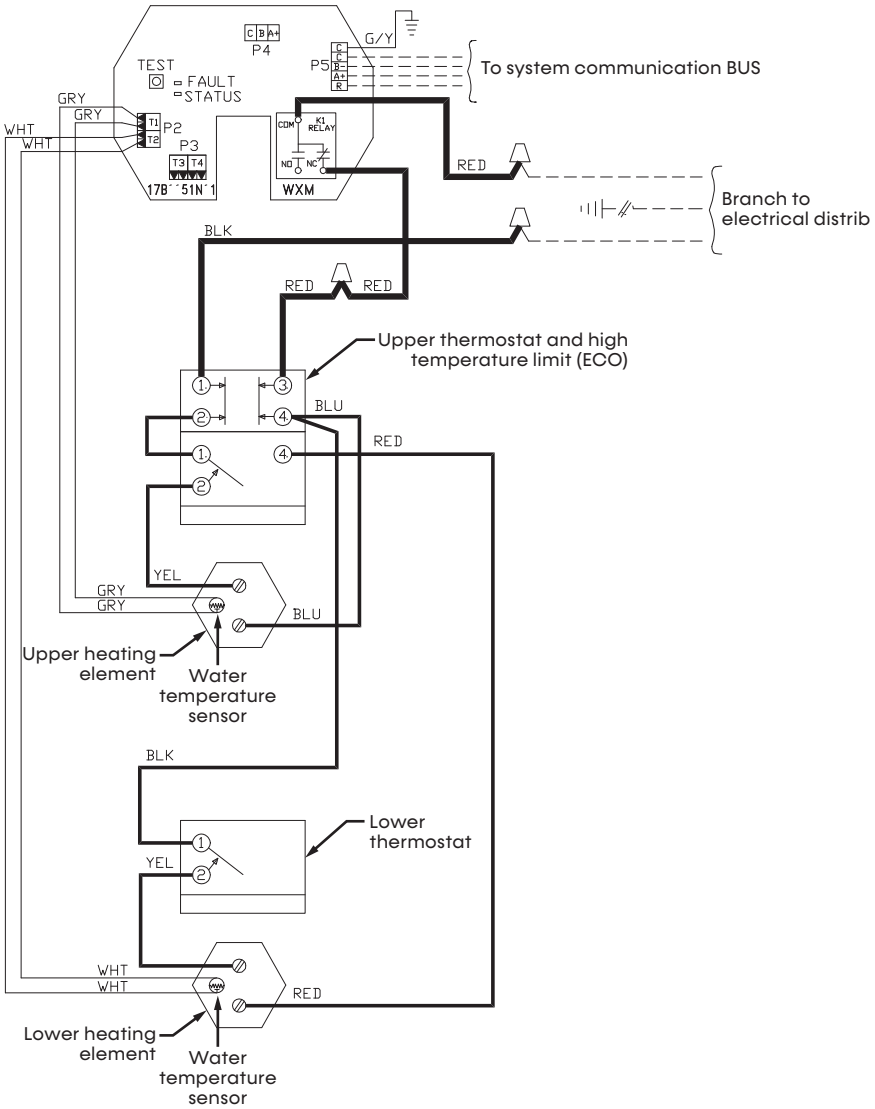
Total Storage Tank Wattage	Minimum Circuit Ampacity (amps)	Minimum Breaker Size (amps)
4,500	25	30

⚠ DANGER

the element should only be replaced with an element of the same power rating that was factory installed, and corresponds to the rating label on the unit.

WIRING DIAGRAM

Figure 5: 240V Single Phase Double Element



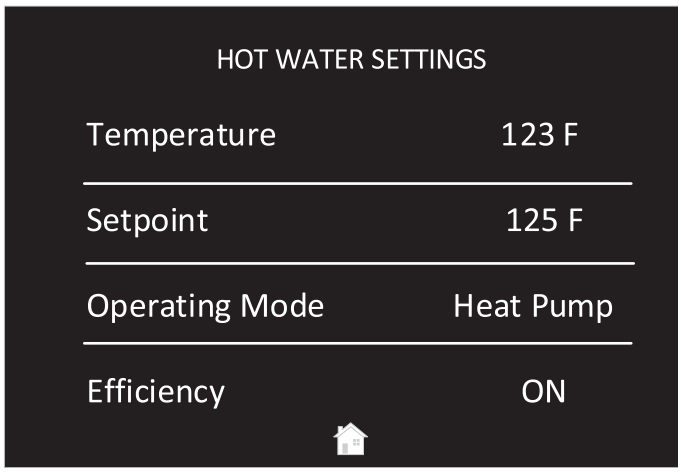
Sizes: 50/85/105 Gallon

Manage Your Smart Tank with the iGate® 2 Communicating (AWC) Thermostat

HOT WATER SETTINGS

The **HOT WATER SETTINGS** screen displays a menu of the possible options as detailed below:

Figure 6: HOT WATER SETTINGS screen



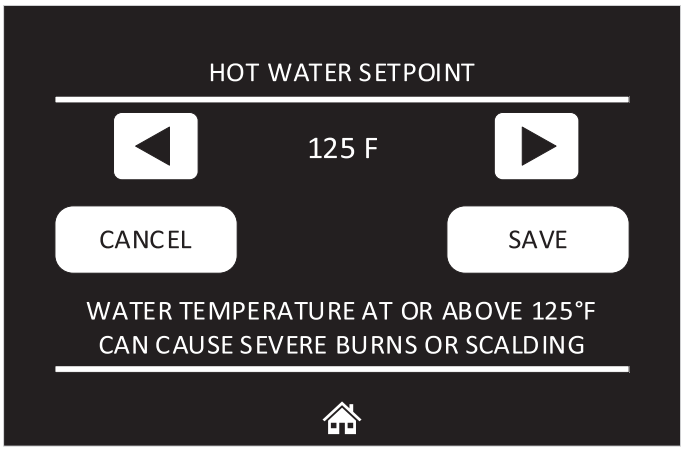
Swipe left or right to change the active display to the **SETTINGS** screen.

Press **HOME** to return to the **HOME** screen.

HOT WATER SETPOINT

Set or adjust the current hot water setpoint on the **HOT WATER SETPOINT** screen.

Figure 7: HOT WATER SETPOINT screen



Press the **Left** or **Right** arrows to scroll through the available setpoint options (50°F - 135°F in 1°F increments).

After making a selection, press **SAVE** to store the selection in non-volatile memory.

Press **CANCEL** to return to the **HOT WATER SETTINGS** screen or **HOME** to return to the **HOME** screen.

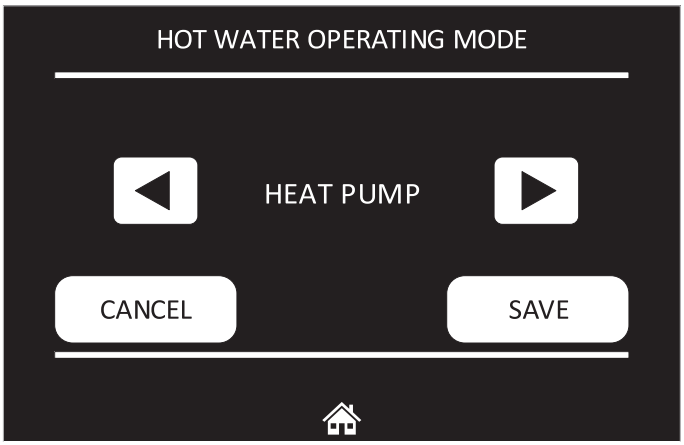
Manage Your Smart Tank with the iGate 2 Communicating (AWC) Thermostat

Sizes: 50/85/105 Gallon

HOT WATER OPERATING MODE

The Hot Water Operating mode option provides access to adjust the current hot water operating mode.

Figure 8: HOT WATER OPERATING MODE screen



Press the **Left** or **Right** arrows to scroll through the available setpoint options (OFF, HEAT PUMP, EMERG HEAT).

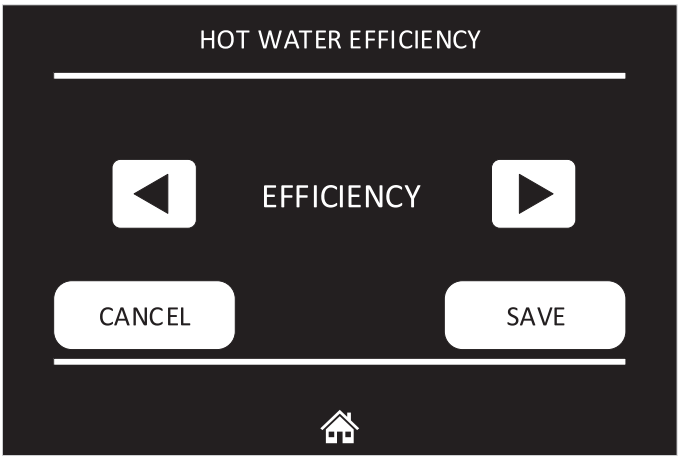
After making a selection, press **SAVE** to store the selection in non-volatile memory.

Press **CANCEL** to return to the **HOT WATER SETTINGS** screen or **HOME** to return to the **HOME** screen.

HOT WATER EFFICIENCY

The Hot Water Efficiency option provides access to enable or disable efficiency operating mode.

Figure 9: HOT WATER EFFICIENCY screen



Press the **Left** or **Right** arrows to scroll through the available setpoint options (EFFICIENCY, COMFORT).

After making a selection, press **SAVE** to store the selection in non-volatile memory.

Press **CANCEL** to return to the **HOT WATER SETTINGS** screen or **HOME** to return to the **HOME** screen.

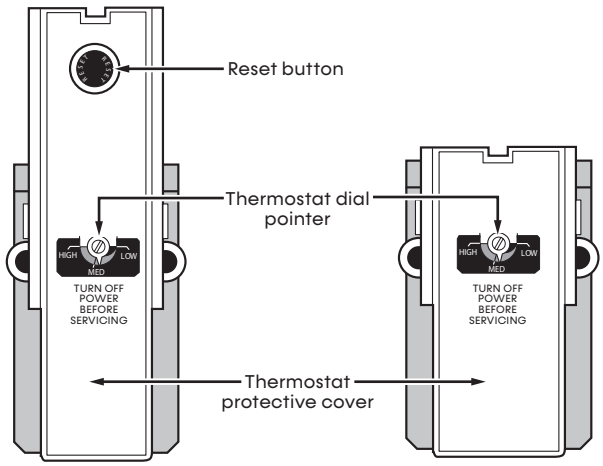
Sizes:
50/85/105
Gallon

Water Temperature Setting

Safety and energy conservation are factors to be considered when selecting the water temperature setting of storage tank. Water temperatures above 125°F (51°C) can cause severe burns or death from scalding. Read and follow the warnings outlined on the label pictured below. The same label is located on the storage tank near the thermostat access panel.

When connected to the geothermal heat pump system, the temperature of the water in the storage tank is regulated and adjusted by the iGate 2 user interface of the geothermal heat pump system. Refer to the geothermal heat pump manufacturer's IOM on how to set the water temperature. The backup electric heating elements of the thermal storage tank operate only when the geothermal heat pump system alone cannot produce the desired hot water temperature, or if the tank controller loses communication to the heat pump. The water temperature in the storage tank is regulated by the adjustable surface-mounted thermostat(s) located behind the jacket access panel(s). To comply with safety regulations, the thermostats are set at 120°F (49°C) before the storage tank is shipped from the factory.

Figure 10: Thermostat Temperature Adjustment



- LOW ≈ 90°F (32°C) water temperature
- MED ≈ 120°F (49°C) water temperature
- HIGH ≈ 150°F (66°C) water temperature

It is important to replace the fiberglass insulation to maintain storage tank's performance and safety.

To adjust the storage tank's water temperature:

1. Turn off the power to the storage tank.

⚠ DANGER

Ensure power to the storage tank is OFF before removing any jacket access panel for any reason. Failure to do so could result in property damage, bodily injury, or death.

2. Remove the snap-in access panel cover. Insert finger into latch hole on the bottom of the cover and push up to release the latch. Pull forward and remove the cover and insulation.
3. Remove the four screws that secure the jacket access panel to the unit. Remove the jacket access panel and insulation exposing the thermostats. Use care when removing insulation pads.
4. Do not remove the thermostat's protective cover.
5. Using a small screwdriver, set the thermostat dial pointer to the desired temperature by turning the screw. Do not pry or move the white plastic pointer.
6. Replace the rectangular insulation and thermostat access panel. Secure the panel to the unit using the four screws provided. Tighten the screws until only snug.
7. Replace the access panel cover and insulation and snap in position.
8. Turn on the power to the storage tank.

ADJUST WATER TEMPERATURE

To increase the water temperature, it is recommended to adjust the bottom thermostat only.

To decrease water temperature, you must adjust all thermostats on the unit to the lower setting.

Table 5: Time/Temperature Relationship in Scalds

Temperature	Time to Product a Serious Burn
120°F (49°C)	More than 5 minutes
125°F (51°C)	1.5 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 1.5 seconds
155°F (68°C)	About 1 second

- Table provided courtesy of Shriners Burn Institute

Operation

Sizes: 50/85/105 Gallon

SAFETY PRECAUTIONS

- Do turn off power to storage tank if it is subjected to overheating, fire, flood, or physical damage.
- Do not turn on storage tank unless it is filled.
- Do not turn on storage tank if cold water supply shutoff valve is closed.
- If there is any difficulty in understanding or following the Operation or the Care and Cleaning section, it is recommended that a qualified technician perform the work.
- The unit must be completely filled with water before turning on the power.
- Do not turn on storage tank unless external heat-source water supply lines are purged.
- Control the temperature of this storage tank by the onboard electric-element thermostat(s) or heat may be added to the tank from an external heat source.

NOTES:

- **Maximum operating temperature of water in the tank = 170°F (76.7°C).**
- **Temperature and Pressure Safety Relief valve opens at: 210°F (98.9°C) and/or 150 PSI.**

SAFETY CONTROLS

⚠ WARNING

If the storage tank is subjected to flood, fire, or physical damage, turn off power and water to the storage tank.

DO NOT operate the storage tank again until it has been thoroughly checked by qualified technician.

⚠ NOTICE

It is important that the fiberglass insulation is replaced to maintain storage tank's performance.

The storage tank is equipped with a combination thermostat and temperature-limiting control (ECO) that is located above the heating element in the upper control box. If for any reason the water temperature becomes excessively high, the temperature-limiting control (ECO) breaks the power circuit to the heating element. After the control opens, it must be reset manually.

⚠ CAUTION

The cause of the high temperature condition must be investigated by qualified service technician and corrective action must be taken before placing the storage tank in service again.

To reset the temperature-limiting control:

1. Turn off the power to the storage tank.
2. Remove the jacket access panel and insulation from the top control box.

   Do not remove the thermostat protective cover.
3. Press the red RESET button.
4. Replace the insulation and jacket access panel before turning on the power to the storage tank.

WATER TEMPERATURE SETTING

⚠ DANGER

There is a hot-water scald potential if the 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.

If this storage tank is being used with a geothermal water-source heat pump, refer to the heat pump's IOM for directions for setting the storage tank temperature.

The water temperature in the storage tank can be assisted and/or regulated by setting the temperature of the dial of the adjustable surface-mounted thermostat located behind the jacket access panel.

Consider both safety and energy conservation when selecting the storage tank's water temperature setting. The lower the temperature setting, the greater the savings in energy and operating costs.

To comply with safety regulations the thermostat is factory set at 120°F or less, where local codes require. These are the recommended starting points.

Water temperatures above 125°F (51°C) can cause severe burns or death from scalding. Be sure to read and follow the warnings outlined in this manual and on the label on the storage tank. This label is located on the storage tank near the thermostat access panel.

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

Use the chart on the next page as a guide to determine the proper water temperature for your home.

Sizes:
50/85/105
Gallon

Care and Cleaning

DRAIN THE STORAGE TANK

⚠ NOTICE

Additional instructions for draining the unit are located on the storage tank.

1. Shut off power to the storage tank.
2. Open a hot water faucet nearest the storage tank. Run the water until it is cold.
3. Turn off the cold water supply to the storage tank.
4. Leave the hot water faucet open.
5. Attach a garden hose to the drain valve on the bottom of the storage tank and direct the hose to a drain.
6. Lift open the handle on the relief valve and leave it open (top center fitting on storage tank). Some water may be released in this process.
7. Open the drain valve.
8. Drain the storage tank completely.
9. Close the drain valve.
10. Close the relief valve.

For instructions concerning refilling the storage tank after draining, see the Storage Tank Refill section on page 22 of this manual.

ROUTINE PREVENTATIVE MAINTENANCE

⚠ DANGER

Before manually operating the relief valve, ensure no one is 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. release the water into a suitable drain to prevent injury or property damage.

⚠ NOTICE

If the temperature and pressure relief valve on the storage tank 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 storage tanks provide years of dependable trouble-free service. It is recommended that a routine preventive maintenance program be established and followed by the user.

It is further recommended that a qualified service technician periodically inspect operating controls, heating elements, and wiring.

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 service technician or plumbing contractor to inspect the storage tank.

At least once a year, lift and release the lever handle on the temperature pressure relief valve, located near the top of the storage tank, to ensure the valve operates freely. Allow several gallons to flush through the discharge line to an open drain.

A storage 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. It is recommended that a few quarts/liters of water be drained from the storage tank every month to clean the tank of these deposits.

Rapidly closing faucets or solenoid valves in automatic water-using appliances can cause a banging noise heard in a water pipe. Strategically located risers in the water-pipe system or water-hammer arresting devices can be used to minimize the problem.

Water conditions can cause mineral deposits to build up inside pipes. This buildup can reduce the effectiveness of the vacuum relief valve. Replace the vacuum relief valve every six years.

VACATION AND EXTENDED SHUTDOWN

If the storage tank is to remain idle for an extended period of time, turn off the power and water to the appliance to conserve energy.

If the storage tank is installed in a location where it could freeze when not operational, you must drain all water from the unit and piping. If the tank is full of water and freezes, the tank will break. See the Draining the Storage tank section for details on draining the unit. Freeze damage is not covered under the manufacturer's warranty.

After a long shutdown period, a qualified service technician should check the storage tank's operation and controls. Ensure the storage tank is completely filled again before placing it in operation.

Before You Call for Service

Sizes: 50/85/105 Gallon

TROUBLESHOOTING TIPS

Save time and money by reviewing the chart below before calling for service.

⚠ CAUTION

For your safety DO NOT attempt to repair electrical wiring, thermostats, heating elements, or other safety devices. Refer repairs to a qualified service technician.

Problem	Possible Causes	What to Do
Rumbling noise	Water conditions in your home caused a build up of scale or mineral deposits on the heating element.	• Remove and clean the heating elements. Contact a qualified service technician.
Relief valve producing popping noise or draining	Pressure build up caused by thermal expansion in a closed system.	• This is an unacceptable condition and must be corrected. Contact the water supplier or plumbing contractor on how to correct this. Do not plug the relief valve outlet.
Not enough or no hot water	Geothermal/water-source heat pump is not operating properly	• Consult Troubleshooting section of Heat Pump Installation Manual
	Water usage may have exceeded the capacity of the storage tank.	• Wait for the storage tank to recover after an abnormal demand.
	A fuse is blown or a circuit breaker tripped.	• Replace fuse or reset circuit breaker.
	Electric supply may be off.	• Make sure electric supply to storage tank and disconnect switch, if used, are in the ON position.
	The thermostat may be set too low.	• See the Temperature regulation of the storage tank section of this manual.
	Leaking or open hot water faucets.	• Make sure all faucets are closed.
	Electric service to your home may be interrupted.	• Contact the local electric utility.
	Improper wiring.	• See the Installing the storage tank section of this manual.
	Manual reset limit (ECO).	• See the Temperature regulation of the storage tank section of this manual.
	Cold water inlet temperature may be colder during the winter months.	• This is normal. The colder inlet water takes longer to heat.
	Upper element defective (no hot water)	• Replace upper element.
	Lower element defective (not enough water)	• Replace lower element.
Water is too hot	The thermostat is set too high.	• See the Temperature regulation of the storage tank section of this manual.
	Covers and/or insulation missing.	• Reinstall covers and insulation.

Sizes:
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Gallon

Replace the Element

1. Turn off power to the unit.

⚠ DANGER

Ensure power to the storage tank is "OFF" before removing any jacket access panel for any reason. Failure to do so could result in property damage, bodily injury, or death.

2. Disable hot water heat pump (if applicable).
3. Open a hot water faucet and allow water to flow until the water is cold.
4. Drain water from of the unit by following the instructions given in the Drain the Storage Tank section on page 22 of this manual.
5. Remove the snap-in access panel cover. Insert finger into latch hole on the bottom of the cover and push up to release the latch. Pull forward and remove the cover and insulation.
6. Remove the four screws that secure the jacket access panel to the unit. Remove the jacket access panel and insulation exposing the thermostat and element. Use care when removing the insulation pads.
7. Flip up the bottom of the plastic protector up to expose the head of the heating element.
8. Loosen the terminal screws on the element to disconnect the two wires and slightly bend them away from the element.
9. Remove temperature sensor (thermistor) from the element.
10. Using a wrench or socket to fit the 1⅞-inch hex nut, remove the old element.

⚠ NOTICE

Ensure the threads on the unit are clean. Brush debris off of threads with a toothbrush if needed.

⚠ NOTICE

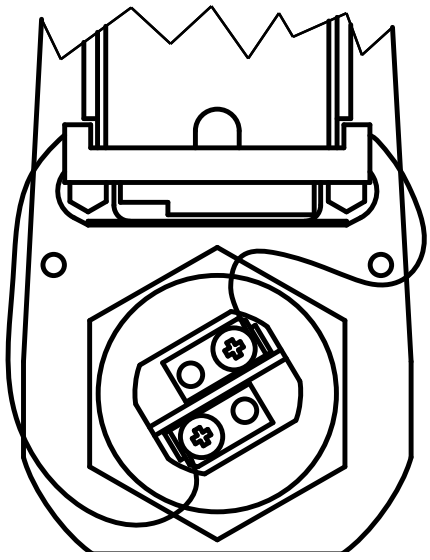
The elements are unique to the upper and lower port. Make certain the replacement element is correct for the port into which you are installing it.

11. On the new element make certain the element gasket is in place and not twisted.
12. Thread the new element into the tank and tighten with a wrench or socket to 13 – 15 ft-lbs.

⚠ NOTICE

Do not over tighten the element. Do not apply torque over 18 ft-lbs.

13. Replace temperature sensor to the new element. Torque to 11 in-lbs. Do not over tighten the sensor.
14. Reconnect the two wires to the element and tighten the terminal screws.
15. Reference the Storage Tank Refill section on page 22 of this manual for instructions on refilling the unit.
16. After the unit is completely filled with water and under pressure, verify the element is properly installed with no water leakage.
17. Lower the protector to cover the head of the heating element.
18. Replace the rectangular insulation and thermostat access panel. Secure the panel to the unit using the four screws provided. Tighten the screws until only snug.
19. Replace the access panel cover and insulation and snap in position.
20. Turn on power to the storage tank.



Notes

Sizes:
50/85/105
Gallon

Revision History

Date	Section	Description
04/30/25	All	Updated document design

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