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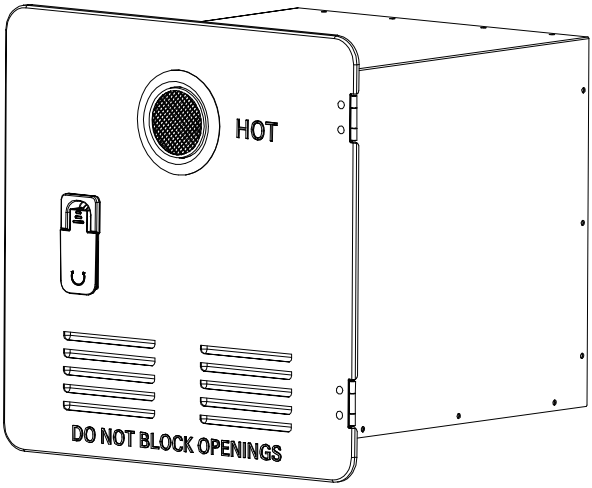


USER MANUAL

RV Tankless Water Heater

Brand: amzchef
Model: 10RVAMB
DC 12V

AMZCHEF

Welcome to the Amzchef Family!

Cheers to you for owning a new Amzchef product!

We are devoted to making high-quality kitchen, home, and personal care products for all our customers. As a respected manufacturer, all our products adhere to rigorous standard, safety, and functionality.

We are dedicated to offering exceptional customer service, which is why we provide a 1-year warranty on this product to guarantee your satisfaction for years to come.

If you have questions or need assistance, please get in touch with us via our website: **www.iamzchef.com**, or email: **info@iamzchef.com**. Problem + order number + a photo or a video attached in the email would help us solve the problem better and faster.

Your thoughts and suggestions matter to us, so please don't hesitate to email them at **info@iamzchef.com**.

The Amzchef Team

PLEASE READ INSTRUCTIONS CAREFULLY BEFORE ASSEMBLY
RETAIN THIS MANUAL FOR FUTURE REFERENCE

Table of contents

⚠Safety Precautions

Thank you for purchasing this RV tankless water heater. Before operating your new product, please read these instructions carefully.
This will ensure safe use and reduce the risk of injury. This instruction manual contains information for installation, operation, maintenance of the product and safe use.

WATER HEATERS FOR RECREATIONAL VEHICLE INSTALLATION ONLY

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

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

WHAT TO DO IF YOU SMELL GAS

- Evacuate all persons from the vehicle.
- Shut off the gas supply at the gas container or source.
- Do not touch an electrical switch, or use any phone or radio in the vehicle.
- Do not start the vehicle's engine of electric generator.
- Contact the nearest gas supplier or qualified service technician for repairs.
- If you cannot reach a gas supplier or qualified service technician, contact the nearest fire department.
- Do not turn on the gas supply until the gas leak(s) has been repaired.

2. Installation and service must be performed by a qualified installer, service agency or the gas supplier.
3. Never use this appliance in enclosed spaces or tents.

SUFFOCATION OR FIRE HAZARD

Exhaust gases are hot and contain carbon monoxide, do not breath or obstruct the exhaust gases.

4. Always turn the appliance off, and shut off the fuel supply while parking the RV in an enclosed space, such as a garage or repair shop.
5. Never place seating or picnic tables in the direct path of the exhaust outlet.

6. ALWAYS clear any blockages from the air inlet and exhaust outlet to promote efficient combustion.
7. DO NOT place objects on or against the appliance.
8. AVOID propping items against the water heater's access panel or inserting any foreign objects.
9. DO NOT spray aerosols near the appliance while it is in operation.

CALIFORNIA PROPOSITION 65

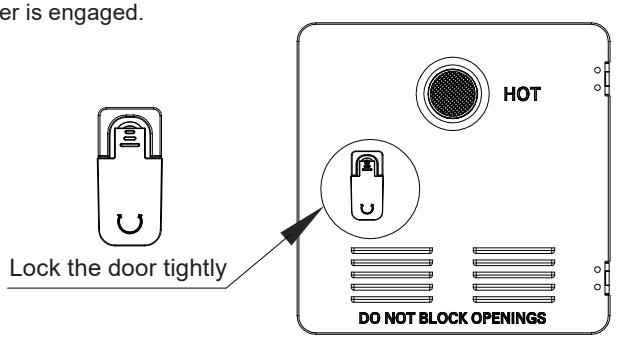
Lists of chemical substances are known to the state to cause cancer, congenital disabilities, death, serious illness, or other reproductive harm.
This product may contain such substances or such substances may be formed from combustion of fuel (gas) or be components of the product itself.

Responsibilities of the Operator

1. The operator is responsible for their health and safety; persons with pacemakers should discuss with their doctor before opening the access door or performing service repairs.
2. The operator is responsible for the water quality used in the appliance.
3. The operator is responsible for all routine inspections in this manual's Cleaning and Maintenance section.
4. The operator is responsible for using and maintaining gas cylinders as specified by the RV manufacturer.
5. The operator is responsible for ensuring that no spray water enters the appliance when cleaning the RV.
6. The operator is responsible for using the appliance for potable water only. In addition, they are responsible for ensuring that non-potable water sources, components, or heating systems, new or old, are not connected by any means to the appliance.

While Driving

1. The operator ensures all components are seated and locked before moving the RV.
   - The access door is flush with the mounting plate.
   - Door locker is engaged.



2. The operator is responsible for ensuring the gas system is turned off at the gas cylinders before transit. Turn off all necessary valves as indicated by the RV manufacturer.
3. The operator is responsible for ensuring the appliance is off when refueling, traveling through tunnels, parking in garages or carports, or ferries.

Prohibited Use

Any use other than the intended use (see above) is prohibited:
- Use in food trucks or roadside food vending vehicles.
- Use in construction trailers.
- Use in a marine environment.
- Use as a pool heater.
- Use in mobile homes.

Technical Specification

Model	10RVAMB
Rating voltage	DC 12V, less than 5A
Max. gas input	65,000 Btu/h
Min. gas input	17,000 Btu/h
Fuel type	Propane (LP Gas)
Manifold pressure	(1.0in.WC)(0.25KPa) - (6.34in.WC)(1.58KPa)
Max. inlet gas pressure	(13.0in.WC)(3.23KPa)
Min. inlet gas pressure	(8.0in.WC)(1.99KPa)
Orifice	Ø1.2x5 mm
Temperature range	95-124°F (35-51°C)
Water heating capacity	10L/min (Δt = 25K)
Operating altitude range	0-5,000 feet (0-1,524 m)

Installation

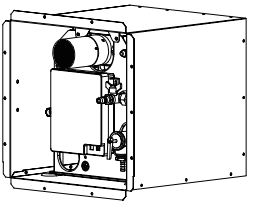
Accessories

Remove the product from the packaging and make sure you have the following list of items included. If any item is damaged or missing, contact us or the dealer.

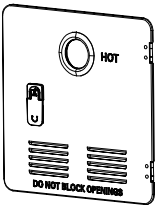
SUFFOCATION HAZARD

Dispose of packaging material or keep it from the reach of children.
Failure to follow instructions could lead to serious injury or death.

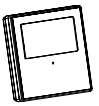
WARNING



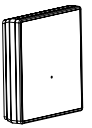
Main unit x 1



Door assembly x 1



Wall controller x 1



Wall controller stand x 1

ST4.2x30 screws (door fixing) x 14

ST4.2x20 screws (controller fixing) x 2

User Manual x 1

Wire connectors x 6

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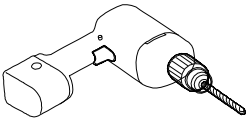
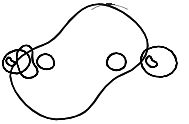
Tools Required (Not Provided)

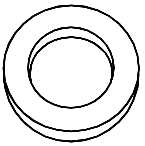


Electric drill
Bit size: 1/16” (3 mm)
Note: It is use for holes drilling of exterior sheet metal of RV.

Gloves

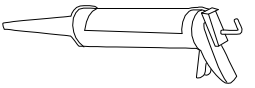


Soapy water

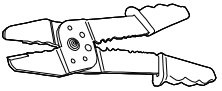


Washers

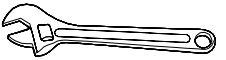
Butyl tape



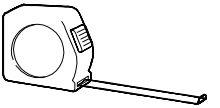
Sealant gun



Wire stripper pliers

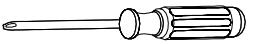


Adjustable wrench

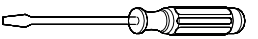


Tape measure

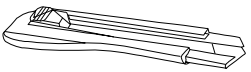
Pencil



Phillips screwdriver



Flathead screwdriver



Cutting knife

Eye protection

ELECTRICAL SHOCK AND/OR FIRE HAZARD

- Disconnect power before installation.
- Turn off all gas to the supply system.

SHARP EDGES CAN CAUSE CUTS AND INJURY!

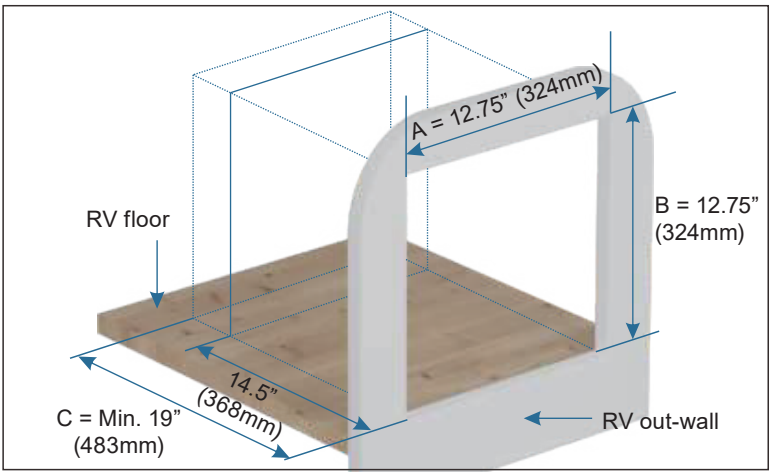
Always wear protective gear such as gloves, eyewear and clothing to avoid injuries during installation and servicing of the product.

1. Make sure that the appliance is in contact with the vehicle or a platform with adequate weight-bearing capacity when install.
2. To install on a carpeted area, install a metal or wood panel under the appliance that extends at least 3” (76 mm) beyond the width and depth of the appliance.
3. If escaping water may damage components or the vehicle, install a collection of the pan below the appliance, direct the flow of water from the pan to outside the vehicle.

Prepare Cutout Opening

Make sure that the front edge of the opening is surrounded by a solid frame to firmly anchor the appliance. If needed, build an appropriate frame with the following dimensions:

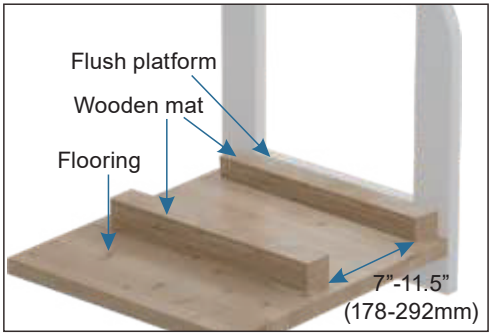
Width A = 12.75” (324 mm)
Height B = 12.75” (324 mm)
Depth C > 19” (483 mm)



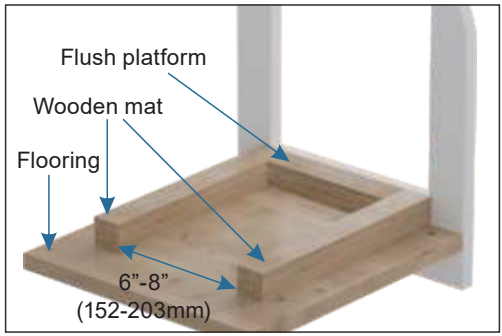
1. The required depth “C” depends on how the water hoses, electrical connection cable, and gas line are installed. The depth “C” must be determined for the particular situation before installation.
2. The corners of the rough opening must be at right angles. The exterior wall opening must be the same dimensions with no rounded corners.
3. If necessary, create a platform to support the water heater. Below pictures are some common solutions. Ensure the platform is level front to back, and side to side after securing to the RV.

Prepare a Platform

Ensure a solid floor or platform with adequate weight-bearing capacity supports the appliance.



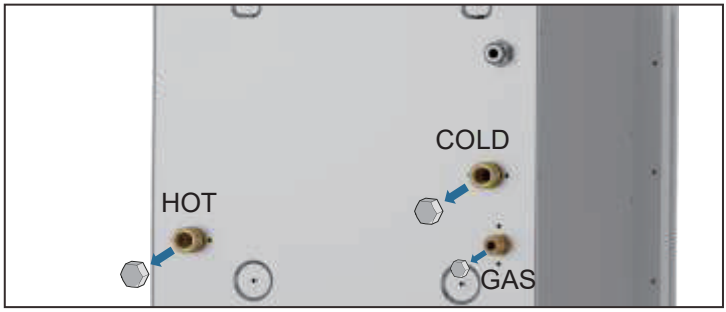
Option 1



Option 2

Water-Resistant Treatment

1. Take the water heater out of its packaging by grasping the metal sides of the housing and lifting upward until entirely removed from the box.
2. Remove protective caps for COLD, HOT water connector, and GAS connector from the back side.

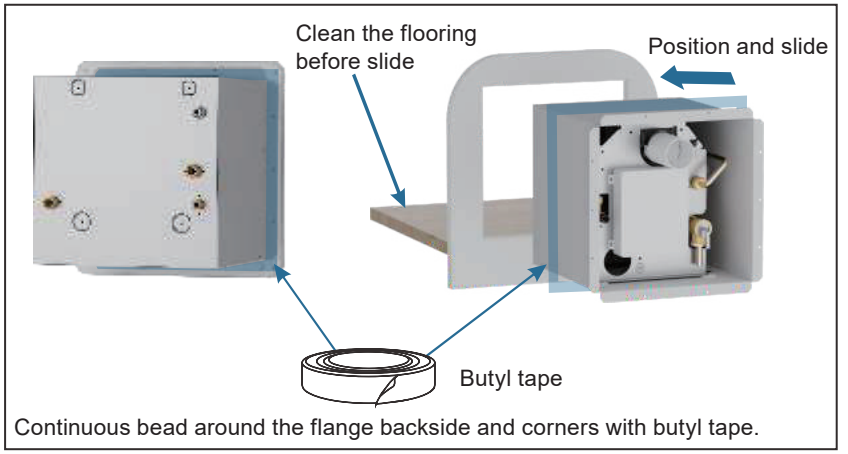


3. Apply adequate water sealing material, e.g. butyl tape (recommended width: 1” (25 mm), not provided), around the entire backside flange area and holes.
4. Position the water heater carefully into the frame opening, and evenly space the flange to the exterior wall of the RV.
5. Check the opening size if suitable for the appliance after finished.
6. Place the appliance in the designated cutout; if it doesn’t fit, confirm the measurements and ensure the corners are square, not rounded.

NOTE:

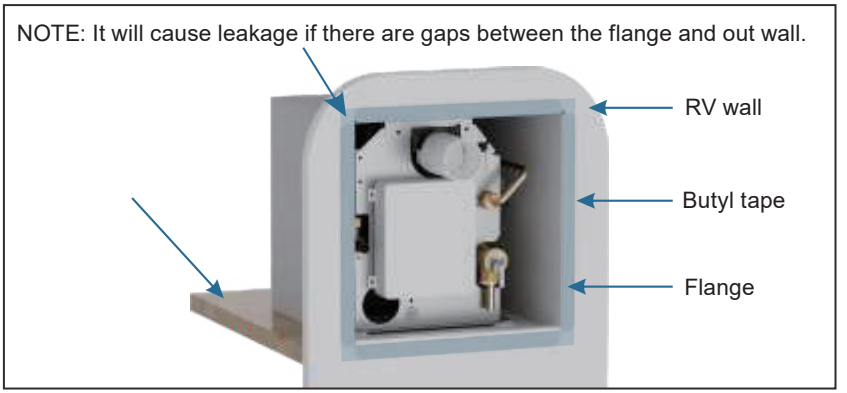
1. Do not use adhesive sealing material, e.g., silicone, for the watertight seal.
2. Ensure the area beneath and behind the appliance is clean without debris and obstruction. Carefully slide the device across the floor to prevent linoleum damage.

NOTE



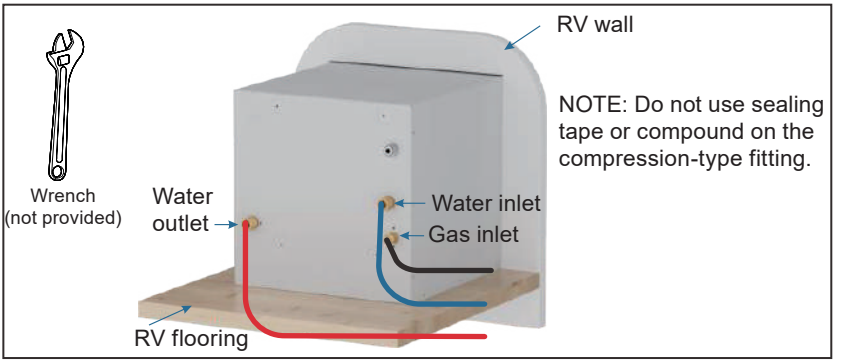
Continuous bead around the flange backside and corners with butyl tape.

7. Check the sealing between the backside flange and the out wall. Make sure the flange touches the RV's out wall.



Water Pipe / Gas Connection

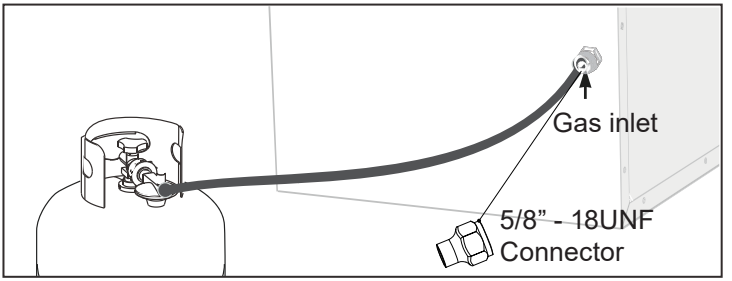
Connect the Water pipe\gas service line to the Water pipe\gas-flared fitting on the back of the appliance. Use a wrench to tighten the compression fitting. Avoid damaging the unit by overtightening.



Prepare Utilities

1. Prepare the gas connection

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



5/8” = 16 mm

2. Gas plumbing

FIRE OR EXPLOSION HAZARD

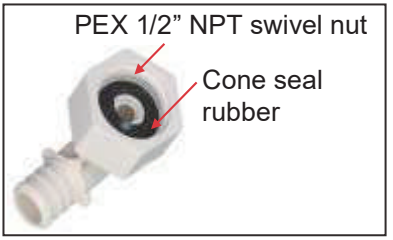
Follow all applicable codes, regulations, and instruction material when performing service work. Failure to follow instructions will result in product damage, serious injury, or death.

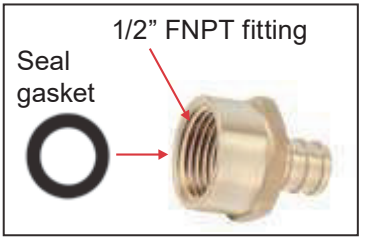
DANGER!

• Make sure that the operating pressure of the gas supply corresponds to the operating pressure of the appliance 11~14 in.WC (2740 ~3490 Pa).
• Fuel entering the appliance must be in the gas phase; the liquid phase must not be used, and will result in damage to the product.
• Use with LP gas (propane) only. Butane or any mixtures containing more than 10% butane must not be used.
• The gas line must terminate with a 3/8” (9 mm) flared female compression fitting to connect with the rear gas connector of the appliance.
• A non-metallic flexible gas hose must be rated for 149°F (65°C). Anchor appropriately to prevent fatigue and failure from worn edges.
(a) Locate the entry point for the plumbing to service the rear of the appliance. Ensure the entry point is not in the footprint space of the appliance.
(b) Feed gas line into proximity, leaving enough length to flex into position so that when connected no kinks are created.
NOTE: An approved semi-flexible metallic pipe is acceptable to connect as an extension from the gas line to the appliance.
(c) Terminate gas line with fittings to connect to the appliance.

3. Water plumbing

• The water plumbing system must be rated to supply between 35-70 PSI nominal.
• Connections can be made using PEX swivel nut adapters with NPT straight threads and a cone seal or standard 1/2” (13 mm) FNPT fittings.
• This water heater requires a minimum water flow of 0.32 Gallons per Minute (GPM) for proper operation.





1/2” = 13 mm

4. Preparing the 12V DC electrical connection

ELECTRICAL SHOCK HAZARD

- Disconnect all power before performing any work.
- Always use a certified and proven 12V isolated power supply, that is properly grounded to the RV.
- Follow all applicable codes, regulations and instruction material when performing service work.
- Failure to follow instructions could result in serious injury or death.
- Wiring connected to or in proximity of the appliance must be rated for 140°F (60°C) minimum.
- Use only insulated terminals for all electrical connections.
- Select a distribution branch greater than 3A, preferably 15A, to provide nominal 12V to the appliance from the distribution panel.

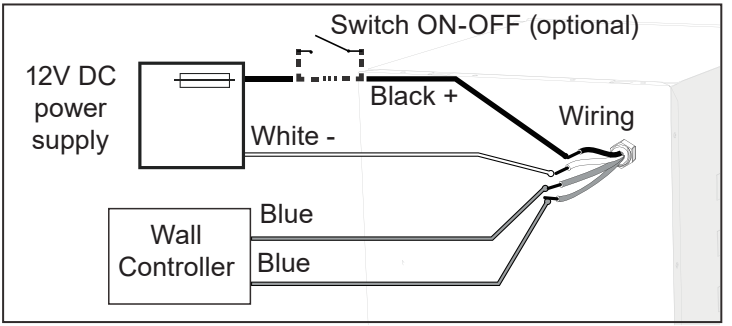
NOTE: The appliance has a built in 10A fuse, serviceable from the front of the product. The appliance can be on a dedicated or shared branch circuit with the same or higher rating.

DANGER!

Optional:

(a) Power switch can be placed in the living quarters for convenience, but not required as a switch is located externally on the appliance. If the switch is fused, make sure it is rated for at least 3A.

(b) Locate entry point for the wiring to service the rear of the appliance. Ensure entry point is not in the footprint space of the appliance Make sure any edges are protected to prevent wire abrasion from occurring.



NOTE:
When finished, follow the instructions in section “Maintenance” to check water and gas leak.

NOTE

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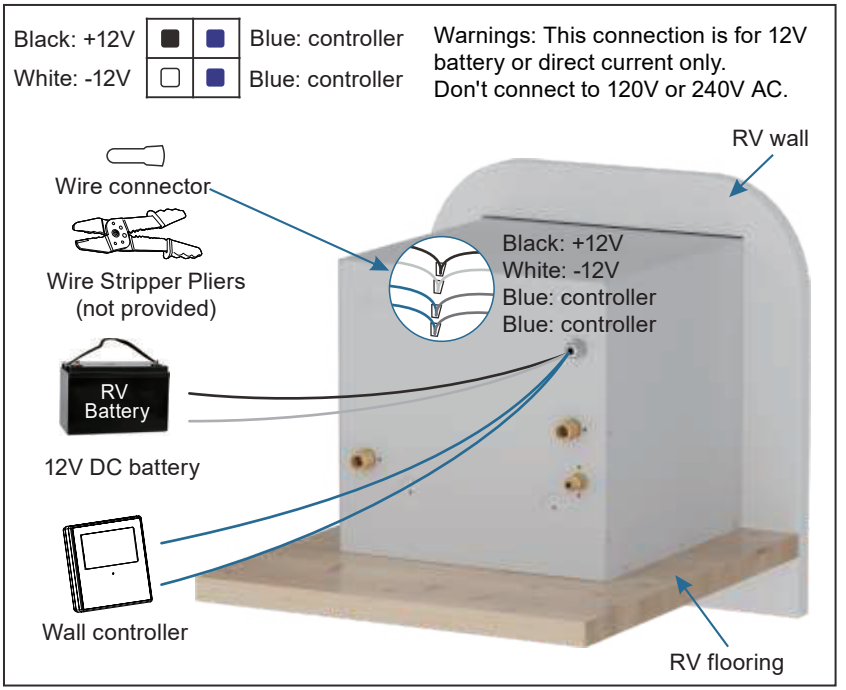
Electrical Connection

1. Set the power switch in the front of water heater to the “OFF” position.
2. Connect the power supply wires (on the rear of the water heater - white and black wire) to the appropriate nominal 12V DC power source connection.
3. Connect the wall controller wires (2 blue wires on the appliance).

ELECTRICAL CONNECTION CAUTION

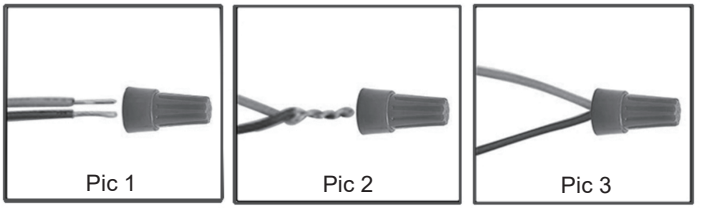
1. For DC power connection, the black wire is positive (+), and the white wire is negative (-).
2. For controller connection, polarity does not matter. The wires can be connected to either blue cables.
3. Do not connect the controller to a 12V DC power source. It will damage the controller.

CAUTION!



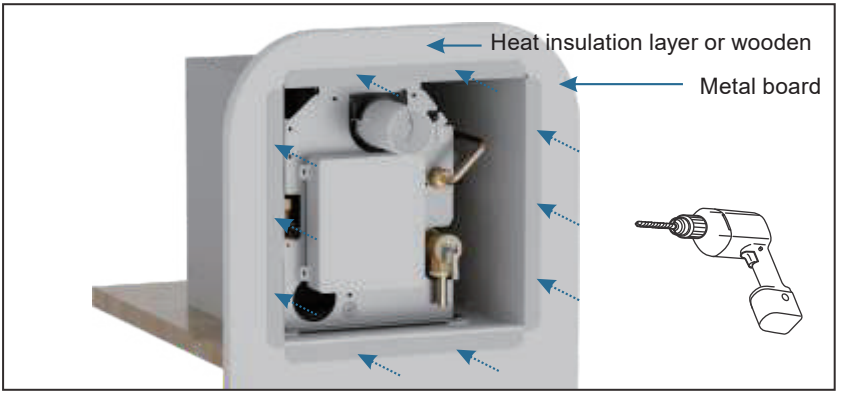
Wire Connector Usage

1. Strip the ends of 2 wires (Pic 1).
2. Manually twist them until they bind together (Pic 2).
3. Twist the connector clockwise while inserting the wires to fix them (Pic 3).



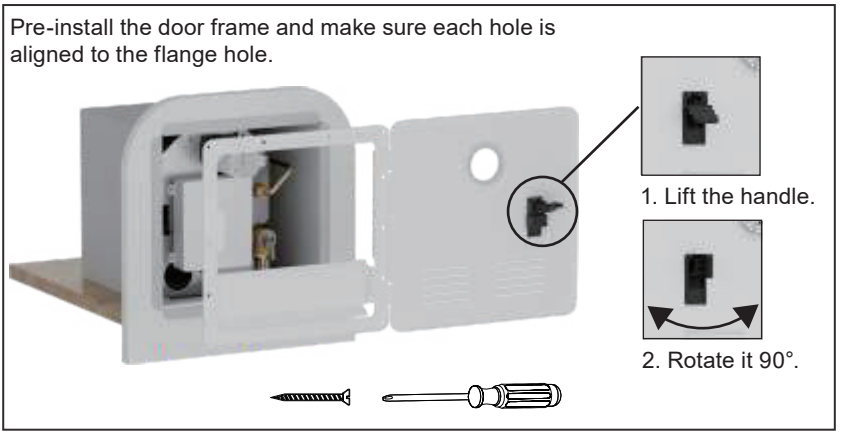
Drill Holes for the Appliance

Drill holes on the metal board of the RV out the wall with a 1/8” (3mm) bit.
NOTE: Drill the metal board only—no needy to drill the inner wooden or heat insulation layer.



Secure the Appliance and the Door frame

1. Insert the door flange into the water heater housing and press the flange firmly against the sidewall.



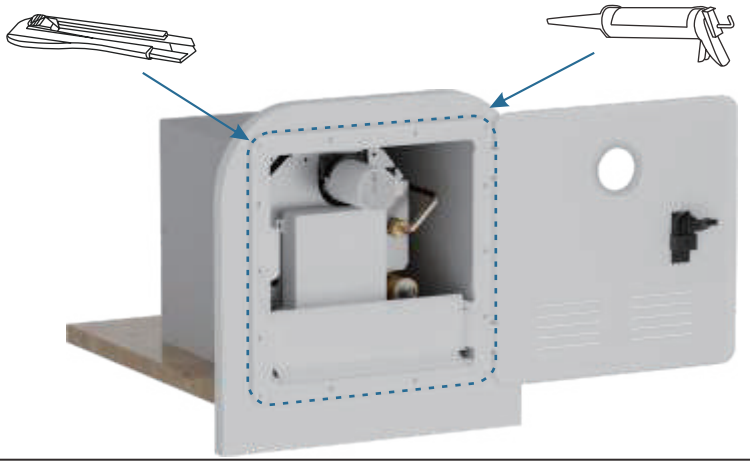
2. Fix door frame with ST4.2*30 mm screws (14 pcs). Verify that a tight seal exists between the side wall and the flange.

NOTE:
Ensure the butyl tape completes a tight seal between the RV siding and appliance flange. If gaps exist, remove the appliance and apply a double layer of butyl tape.

NOTE

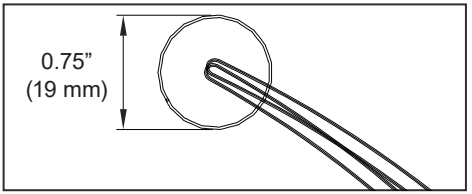
3. Apply a liberal amount of sealant around the door frame to fill any gaps in the RV wall. Wipe any excess adhesive.

Apply sealing material at the adage of the door frame (for better waterproofing). Remove excess sealing material after sealing.



Prepare for the Wall Controller

1. Determine a location to install the wall controller inside the RV.
2. Drill a 0.75” (19 mm) hole and clean edges.
3. If necessary, run two electrical wires that extend the wall control connections (blue wires) to the appliance. Connections (blue wires) using the appropriate wire size 16AWG max. 65ft.

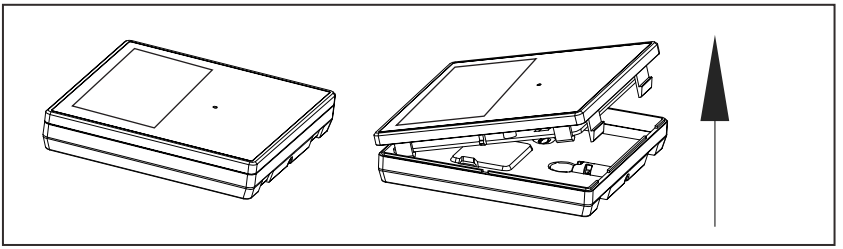


Wall Controller Installation

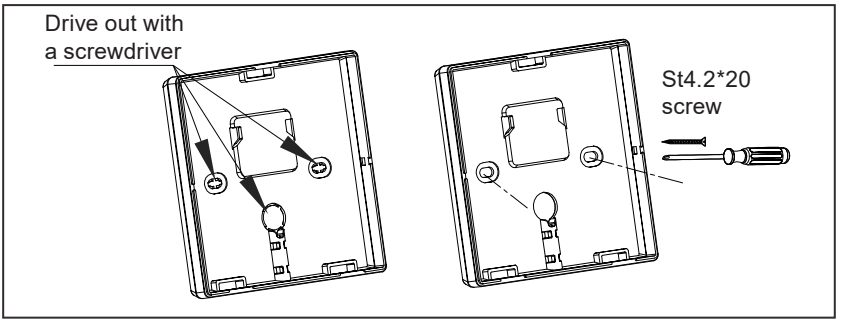
1. Disassemble the wall controller.

a) Press and push up the buckle of the wall controller.

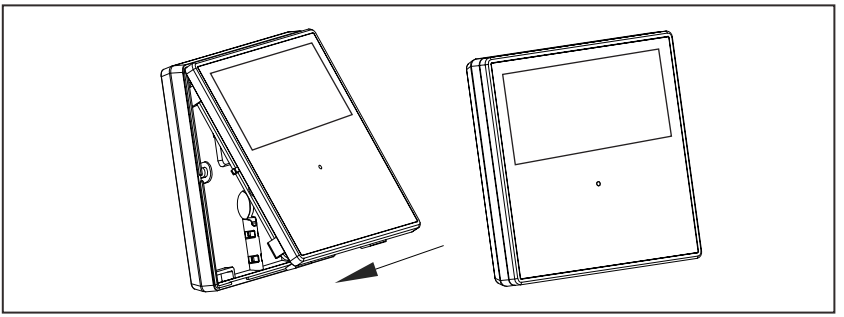
b) Open the cover with a finger or with a flat blade (not provided).



2. Install the back cover of the wall controller.
(a) Install the back cover of the wall controller over the 0.75” (19 mm) hole.
(b) Fix the back cover on the wall with 2 st4.2*20 screws.



3. Assemble the controller.
(a) Assemble the controller again after fixing the back cover.



Functional Check

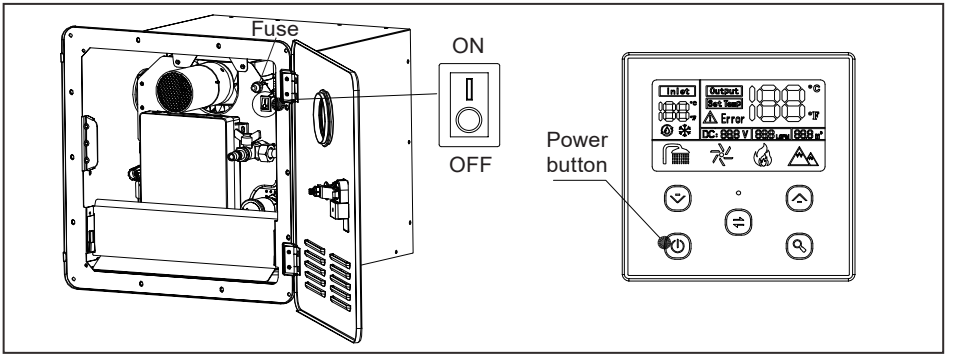
FIRE AND EXPLOSION HAZARD

Ensure all necessary system leak tests are complete before operating any functional test.

WARNING

1. Prepare
(a) Verify the power switch is in the “OFF” position.
(b) Confirm that there is a “steady” water flow (not pulsating) and no air in the system. If pulsating have the water pump settings adjusted.
(c) Make certain all valves that can mix cold and hot water are all shut.
NOTE: Outside faucets with detachable spigots and shower heads with flow interrupters can bleed hot water into the cold side if the valves are not closed properly. This will hinder the performance of the water heater.
2. Start to work
(a) Turn the power switch to the “ON” position on the appliance and verify that the wall controller is illuminated. If the wall controller is not illuminated, press the button on the wall controller to describe it. The controller display will show the hot water temperature.
NOTE: The default setting is 108°F (42°C).
(b) Turn on the gas supply.

(c) Open a hot water faucet and verify that the unit ignites and supplies hot water at the tap.
(d) The wall controller display will show the current temperature settings.
NOTE: If any error codes or performance concerns, refer to the section Error Codes of this manual.



Introduction

Production Introduction

1. The appliance was developed exclusively for use in recreational vehicles (RVs).
2. The appliance is connected between the vehicle's fresh water supply and its hot water system.
3. It is powered by propane and a DC 12V power supply. The ventilation grid on the access door allows combustion air to flow into the appliance and exhaust gas to flow out.
4. When the appliance is switched on, the tap water will be heated on demand:

(a) When the hot water tap is turned on and the volume flow surpasses about 1.6 L/min, the burner will be activated by the volume-flow sensor in the appliance.

(b) The heater's burner control regulates the heat output by monitoring the flow rate and the temperature of the incoming water to maintain a hot water outlet temperature of around 123.8°F (51°C). A temperature stabilizer is also installed in the appliance to minimize fluctuations of the outlet temperature.

(c) After some time the maximum temperature at the tap or in the shower is reached. The length of time will depend on the model and variations in the water system (length of pipes, insulation, circulation line, etc.). Like in a home shower, a comfortable water temperature at the shower head is reached by mixing in cold water.

(d) When the volume flow is less than approximately 1.0 L/min or the tap is closed, the burner is automatically switched off.

This heater features a thermostatic water tank that helps maintain a constant temperature for the water it produced. This prevents the water from becoming too hot or too cold, ensuring a comfortable and enjoyable showering experience.

Production Safety Features

The appliance is equipped with the following safety devices:

1. Flame monitoring device:

The device will cut off the gas flow to the burner if the flame extinguishes.

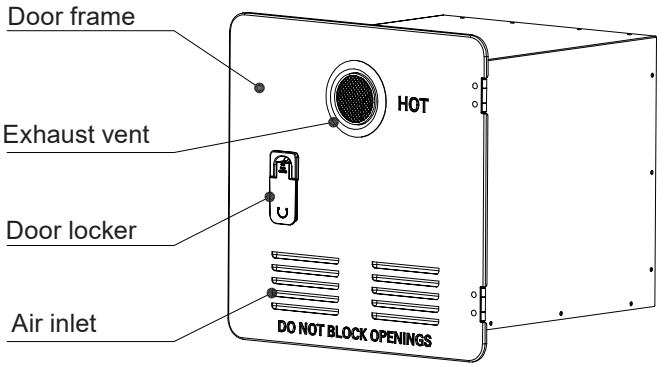
2. Antifreeze function:

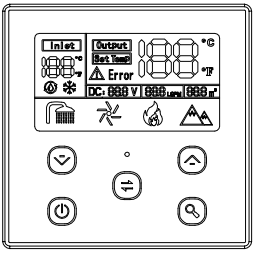
The device has a built-in antifreeze feature that activates when the temperature outside falls below freezing, warming the water system to 48°F (9°C) before shutting off. Remember to activate the electricity and gas flow while the anti-freeze period is in effect.

3. Power positive and negative wires reverse protection:
In case the positive and negative wires are reversed, the device will shut down to safeguard the circuit board. (However, the fuse will be damaged)
4. Low-voltage/over-voltage shutdown:
If the voltage drops below 10V DC (or rises above 17V DC), the appliance shuts off.

Set the Appliance

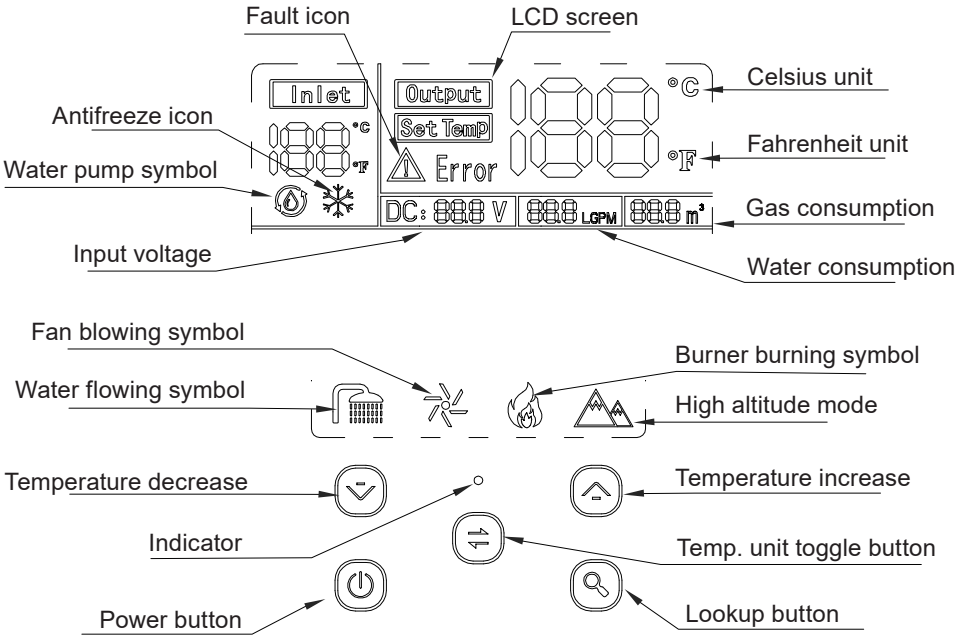
Product Overview





Wall Controller

Wall Controller



Operation

Before normal operation of the appliance, perform a basic functional test each time the RV and water system is setup for use. Make sure electric, water, and gas supply are standard.

SCALD HAZARD

Never let infants, children, elderly adjust the water temperature or be left unsupervised when using hot water.

1. Touch power button to turn ON/OFF the water heater. The panel will be illuminated and will display the current temperature setting.
2. Touch the temp. unit toggle button to toggle between Celsius and Fahrenheit display.
3. Use ⌄ and ⌃ to set your desired temperature. Temperature range: 95-124°F (35-51°C).
4. Remember to turn off the appliance using the front switch when it's not in use for an extended period, as the power button only puts it into sleep mode.
5. Follow below to use the lookup functton:

(a) During normal operation, the heater displays current input voltage, water and gas consumption.

(b) Press the 🔍 lookup button to see a quick overview of the accumulated water and gas consumption, which will only be displayed for 5 seconds before switching back to the current data.

(c) While showing the accumulated water and gas consumption, hold down the lookup button for 3 seconds to reset them to zero.

Safe Operation

There may be a variation between the temperature delivered from the appliance and the temperature at the faucet due to water conditions between seasons, like hot summer or the length of pipe from the appliance.

Always check the water temperature, about the chart below, by the display and hand touch before bathing or with other hot water uses.

Temperature °F (°C)	Time before skin becomes scalded
155 (68)	1 second
148 (64)	2 seconds
140 (60)	5 seconds
133 (56)	15 seconds
127 (52)	1 minute
124 (51)	3 minutes
120 (48)	5 minutes
100 (37)	Safe bathing temperature

Source: Moritz, A.R. / Herriques, F.C.: Studies of thermal injuries: the relative importance of time and surface temperature in causation of cutaneous burns A. J. Pathol 1947; 23: 695 - 720.

For High Altitude Use

This appliance can be used at high altitude and has been tested up 4500 ft.

Press the ⌃ and 🔍 lookup button for 3 seconds, to enable the High Altitude Mode.

The ⛰ icon will be lit.

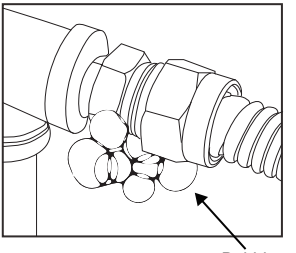
Maintenance

Checking for Gas Leak

FIRE OR EXPLOSION HAZARD

• DO NOT use matches, candles, or other ignition sources when checking for gas leaks.
• After the gas supply is connected, check for gas leaks at all gas connections. Use a gas leak detection liquid or equivalent. Ensure test pressure is below 40 in.WC (100kPa).
• Make sure to re-test all fittings after making adjustments to loose connections.

1. Turn on the gas supply or alternative pressure supply.
2. Check the appliance and all gas connections for gas leaks with leak detection liquid (not provided) or an equivalent gas leak detection method. Bubbles indicate a gas leak that must be repaired.
3. Repair gas leaks as needed by a qualified technician.
4. Repeat the gas leak check after any adjustments to loose connections.
5. After leak checking, ensure the gas supply pressure corresponds to the operating pressure of the appliance 10.5~14 in.WC (2620~3490 Pa).



Checking for Water Leak

1. Verify that the power switch on the water heater is in the “OFF” position.
2. Turn on the water supply to the appliance.
3. Open water faucets to fill the system with water. Close the taps when the water flows smoothly and all air is removed from the lines.
4. Check all connections for water leaks by eye and touch.
5. Repair water leaks as needed.
6. Repeat the water leak check after any adjustments or loose connections.

Storage and transit

Anytime the RV is not intended to be used, it is considered in storage or transit.
To prepare the water heater, follow the below steps:
1. Turn off the gas supply.
2. Turn off the water heater main switch.
3. Drain the water out of the system and water heater by removing the filter cover and drain plug. If freezing conditions could occur, then winterize according to the "Winterizing Water Heater" (Refer to the above operation).

For Next Season Using

Thoroughly flush the water heater and system with clean drinking water through the hot and cold sides before using. Drain water several times out of the water heater drain plug. Sanitize the water system per the recommendations of your coach manufacturer.

Routine Inspection

Routine inspection is critical for maintaining the proper operation of your appliance. Unless specified, review the following items yearly or before each season:

1. Inspect the gas system, water system, and installation every two years or otherwise restricted by your RV coach manufacturer by a qualified person.
2. Inspect for cracks, separation, and peeling of seals to the RV wall. Remove and reseal as necessary (caulking or tape) between the side wall and the water heater door and ensure that the unit is solidly mounted to the vehicle.
3. Before actively using your vehicle, pre-inspect that the air intake openings (louvers) are completely open and clear of any debris, including mud, leaves, twigs, insects, etc... Remove all obstructions to allow total air flow.
4. Before actively using the vehicle, open the door and verify that no debris or extraneous combustible materials are present anywhere (especially in the area of the burner and the gas controls). Remove any item present and wipe clean the bottom of the housing.
5. Before actively using the vehicle, verify that the exhaust tube and screen are completely clear of obstructions, including mud, leaves, twigs, insects, nests, etc. Clean by gently breaking it up and using a vacuum to clear it. Use only water and apply gently from a spray bottle. Never spray directly with high-pressure water. Next, run the appliance to dry any moisture and blow out loose debris. Using any aftermarket protective screen is prohibited and will void the warranty.
6. Inspect the interior surface of the housing for any cracks or corroded areas that could allow the penetration of gases into or out of the vehicle's interior. Check especially around the hot water, cold water, gas, and electrical connections.

NOTE:
If damages are found, please get in touch with a technician to repair or contact after-sales service.

7. Check that all wire connections are firmly in place and that there are no signs of chafing or cracks on the insulation. Verify that the spark ignition cable between the Control Board and the igniter is securely in place and not shorted to any metal component.
8. Inspect the pressure safety valve to ensure it has not been leaking (no water residue). See "Pressure Safety Valve Maintenance" for further inspection.
9. Inspect/clean/replace the water inlet filter as necessary. Use a brush to clean the filter.

1. Unscrew the filter.

2. Pull out the filter.

3. Use a brush to clean the filter.

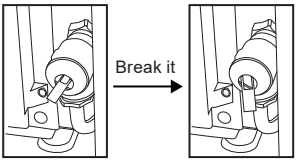
Pressure Safety Valve maintenance

BURN OF SCALD HAZARD

- Never actuate the pressure relief valve while the appliance is in operation.
- Never tamper with the pressure relief valve.

WARNING

1. The unit is equipped with a water pressure safety valve, which must operate once yearly to ensure this safety device is effective.
2. The valve is a safety component and must not be removed for any reason other than replacement.
3. Tampering with the pressure safety valve will void the warranty.
4. Lift the pressure safety valve handle upward. Water will drip out of the pressure safety valve if it is operating correctly.



Hard Water and Decalcification

When exposed to higher water hardness concentrations for prolonged usage, it is advised to provide a proper water treatment device for the incoming water to the coach. Hard water may lead to performance reduction of your appliance overtime.
It is advisable to maintain an annual schedule for decalcification.

Recommended decalcification frequency per year

Water hardness mg/l CaCo3	Very hard: > 180	1	2	4
	Hard: 121-180	1	1	3
	Moderately hard: 61-120	1	1	2
	Soft: 0-60	1	1	1
	Frequency of use	low	normal	high

❄ Winterizing Water Heater

PRODUCT DAMAGE DUE TO FROST CONDITION

In frost conditions, ambient temperatures are below 39°F (4°C).
There is a risk that water in pipes, faucets and appliance could freeze. This can cause considerable damage.

CAUTION!

Automatic Winterizing:

The device comes with an automatic antifreeze feature. It activates when the water temperature falls to 43°F (6°C) and deactivates when the water temperature rises to 90°F (32°C). This process repeats in a continuous cycle.

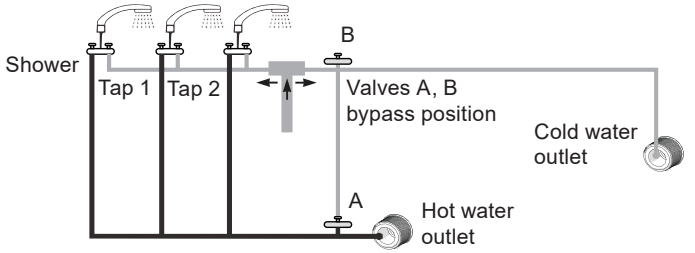
NOTE:
Ensure the appliance has its electric and gas supply activated, while the controller can be switched off (put on standby). If there is no electric and gas supply, the automatic winterizing feature will not function.

NOTE

Manual Winterizing Operation:

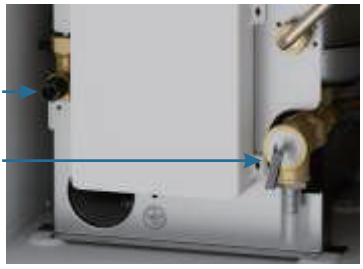
To winterize the appliance for a long time or for storage, you must drain all water from the appliance. To do this we advise the following steps:

1. Close valves A and B, and open the pressure safety valve.

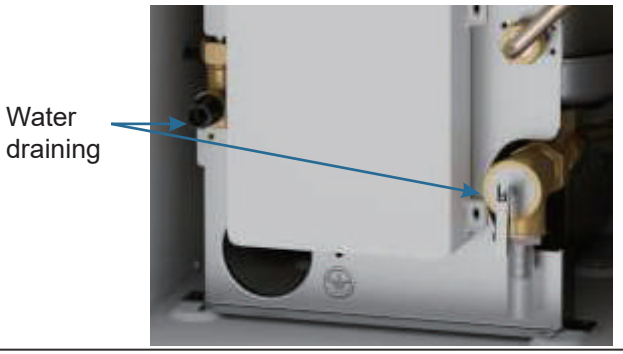


2. Open the door and pull out the baffle from the door frame.

3. Open the safety valve by hand and allow the water to drain completely from the unit. Unscrew the water inlet filter to clean the filter.



4. Make sure the water in the appliance has totally drained. Then screw the drain plug and the filter again.



5. Flush the RV's water system with a suitable winterizing fluid according to the supplier's or RV manufacturer's guidelines.

NOTE:
The appliance is protected against freezing conditions once the water has been drained.

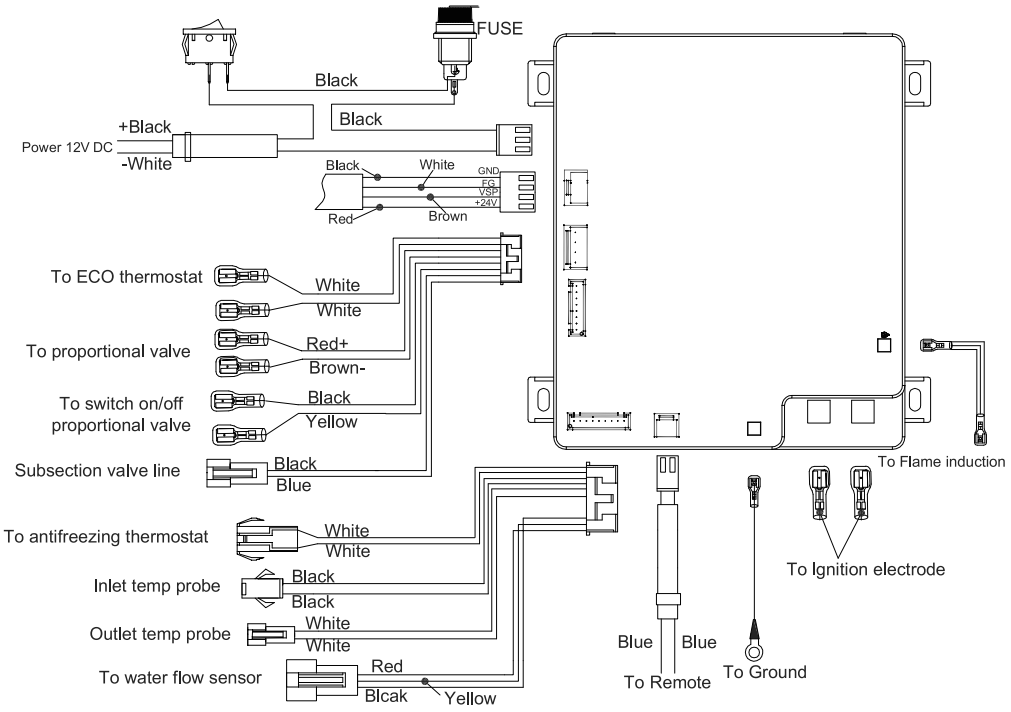
NOTE

Winterizing the RV with a Winterizing fluid:

Winterizing the RV with a winterizing fluid is only possible with an installed bypass kit (not provided).
Follow the instructions provided by the RV coach manufacturer for winterizing water system. Supplement the following important water heater instructions when completing any winterizing steps:

1. Compressed air pressure for blowing water heater:
(a) DO NOT exceed 30 PSI when air pressure is in the water heater.
(b) While completing the blowout process for the entire water system, take time to isolate the water heater by closing all drain plugs and faucets and only open the water heater drain plug and filter cover. This ensures maximum pressure and flow are isolated through the water heater for complete evacuation.
2. Anti-freeze:
(a) Use a non-toxic antifreeze recommended by the RV coach manufacturer.
(b) Antifreeze can be used directly in the water heater. Plan for an additional 1L to fill the system.
3. Optional:
(a) A bypass valve can be installed or used to bypass filling the water heater with antifreeze. Before bypassing, the water heater must be evacuated with compressed air (see steps above).

Electrical Connection Diagram



Troubleshooting

Problem	Potential cause	Solution
No hot water	Gas supply is turned off or interrupted.	Check and/or turn on the gas supply.
	Gas tank is empty.	Refill/replace the gas tank.
	The appliance is switched off.	Switch on the appliance according to the instructions.
	Water supply is turned off.	Open the water supply.
	The power supply to the appliance is switched off.	Switch on the power supply to the appliance.

Hot water takes too long to reach temperature	1. Cold water mixing into the hot water side. 2. Higher elevation.	1. Check all valves, inside and outside, to ensure they are closed. Check the shower head valve to make sure it is not partially closed. 2. This is normal due to less oxygen levels.
Water is not hot enough	Gas flow to the appliance is too low (gas inlet pressure 11in. WC).	1. Consult vehicle documentation to determine if gas supply is capable of providing the necessary the volume of gas for the appliance. 2. Contact a service technician to verify a suitable gas installation.
	The volume flow of hot water is too high / incoming water temperature is too low.	1. Turn down the hot water at the tap or shower to reduce volume flow. 2. Potentially retrofit a volume flow throttle into the water system. This must be performed only by a certified service technician.
	Too much lime scale in the appliance.	Decalcify your water heater. See “Maintenance” section.
	Cold water mixing into Hot water side.	Check all valves, inside and outside, to ensure they are closed. Check the shower head valve to make sure it is not partially closed.
Water escaping at pressure safety valve	Water pressure in water system too high.	1. Adjust the water pump pressure to a maximum of 65 PSI. 2. A water pressure reducer must be used if the water system is connected to a central water supply higher than 65 PSI (rural or urban connection). 3. Install a water pressure regulator at the freshwater supply.
Water leakage at the water inlet filter	Lime or dirt under the O-ring seats.	Clean the O-rings and their corresponding sealing surfaces with clean water.
Water heater stops working often and water is found on the drainage tray	The unit is over heating, and the pressure relief valve discharged periodically.	Contact a qualified technician.
The power status LED is off although an operating the mode was selected.	Power supply to the appliance is switched off.	Switch on the power supply to the appliance.
	Blown fuse.	Switch the standard 125V/10A fuse. Contact a qualified technician.

Error Codes

Error Code	Possible cause	Solution
Eu: Under-voltage and over-voltage protection	Under-voltage: voltage drops to 9.5+0.1V and then rises to 10+0.1V. Over-voltage: voltage rises to 17.3+0.1V and then falls to 16.7+0.1V.	Check the vehicle voltage and exclude unstable voltage.
En: Set time is up	Set the end of a device runtime.	Rebooting the device.
E0: Water outlet temperature sensor fault	Temperature sensor or system failure.	Check the water outlet temperature wires connection, If it loosens, tighten it, If not, the outlet temperature sensor may fails. Replace it.
E1: Flame sense fault	Insufficient fuel supply to start operation.	Confirm all gas valves are open and restart the appliance 4-5 times (first time for using).
		Confirm adequate fuel in tanks.
	Low gas inlet pressure.	Check regulator for operation, replace if needed.
	Flame sensor or system failure.	If the flame sensor induction or PCB board is broken, it need to be replaced by one of them.
E2: Detected fake flame signal	Flame sensor or system failure.	PCB primary control board failure or program faulty. Replace the main control board.
E3: Over temperature mechanical sensor fault	Thermostat system fault.	PCB primary control board failure or program faulty. Replace the main control board.
E4: Water inlet temperature sensor fault	Temperature sensor or system failure.	Check the water outlet temperature wires connection: if loosened, tighten it. If not, maybe the outlet temperature sensor fails. Replace it.
E5: Air pressure fault	Exhaust Blockage.	Remove obstruction, then restart the appliance.
	Strong winds blowing on exhaust.	Move or re-orient the coach exhaust is not facing strong winds. Then restart the appliance.

E6: Temperature surge alarm	Cold water surge in system.	Reduce toilet flushes and the number of cold water faucets opened during operation.
	Cold water mix ratio.	Reduce temperature setting to reduce cold water mix ratio. Check for shower head and outdoor faucet valves leaking cold water to the hot side.
	Insufficient water supply.	Confirm water tank is full or city water valve is fully open.
		Air in the water lines-continue to run all faucets, hot and cold. Open until the air purged.
	Insufficient water flow	Filter plugged- review "Cleaning and Maintenance" section of this manual.
		Low flow faucets - check that the minimum flow is 0.32 gpm.
	Temperature sensor or system fault.	Replace the outlet temperature or main PCB control board.
E7: Solenoid valve fault	Solenoid valve or system fault.	Check the solenoid valve wires connection to see if it loosens or is broken.
E8:Wind speed over limit fault	During normal combustion, the fan speed exceeds the current load speed limit for five consecutive seconds.	Check the fan air inlet.
EC: Circuit fault	Wrong controller or damaged parts	Use the correct wire controller. If the problem persists, consult the customer services.

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