

INSTALLATION, OPERATION *and* MAINTENANCE MANUAL

**ON DEMAND WATER HEATER DIRECT
VENT GAS WITH DIRECT SPARK IGNITION**



**MODELS:
ST-42A, ST-60A**



Suburban

An AIRXCEL Brand

676 Broadway Street | Dayton, TN 37321 USA
423.775.2131 | www.Airxcel.com/Suburban

**FOR INSTALLATION IN
RECREATIONAL VEHICLES**



▲ WARNING

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

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
 - Evacuate all persons from the vehicle.
 - Shut off the gas supply at the gas container or source.
 - Do not touch any electrical switch, or use any phone or radio in the vehicle.
 - Do not start the vehicle's engine or 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.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

▲ FREEZE WARNING

Drain or fill with RV approved antifreeze if subject to freezing temperatures when storing for winter.

▲ WARNING

Installation of this appliance must be made in accordance with the written instruction provided in this manual. No agent, representative or employee of Suburban or other person has the authority to change, modify or waive any provision of the instructions contained in this manual.

Improper adjustment, alteration, service, maintenance or installation can cause serious injury or death.

Read and follow all instructions and precautions in this manual. Installation and service must be performed by a qualified service agency or the gas supplier.

- AN ODORANT IS ADDED TO THE GAS USED BY THIS WATER HEATER.
- DO NOT SPRAY AEROSOLS IN THE VICINITY OF THIS APPLIANCE WHILE IT IS IN OPERATION.
- DO NOT USE OR STORE FLAMMABLE MATERIALS IN OR NEAR THIS APPLIANCE.
- DO NOT PLACE ARTICLES ON OR AGAINST THIS APPLIANCE.
- DO NOT MODIFY THIS APPLIANCE
- THIS APPLIANCE IS NOT INTENDED FOR USE BY YOUNG CHILDREN OR INFIRM PERSONS WITHOUT SUPERVISION. YOUNG CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE.
- INSTALLER: AFFIX THESE INSTRUCTIONS TO OR ADJACENT TO WATER HEATER. OWNER: RETAIN THESE INSTRUCTIONS AND WARRANTY FOR FUTURE REFERENCE.
- OWNER: RETAIN THESE INSTRUCTIONS AND WARRANTY FOR FUTURE REFERENCE.
- ALL TECHNICAL AND WARRANTY QUESTIONS SHOULD BE DIRECTED TO THE COMPANY LISTED ON THE WARRANTY OR RATING PLATE WHICH CAME WITH YOUR WATER HEATER. GAS APPLIANCE REPAIR IS NOT A DO IT YOURSELF TYPE OF REPAIR. ALL REPAIRS SHOULD BE PERFORMED BY A QUALIFIED SERVICE AGENCY.

TABLE OF CONTENTS



IMPORTANT SAFETY INFORMATION	2
PRODUCT OVERVIEW	3
INSTALLATION REQUIREMENTS	3
OPERATING SAFETY INFORMATION	5
OPERATING INSTRUCTIONS	6
MAINTENANCE	7
TROUBLESHOOTING	8
PARTS ILLUSTRATION AND PARTS LIST	12

IMPORTANT SAFETY INFORMATION

Review this information prior to use.



⚠ SAFETY WARNING

Should overheating occur, or the gas supply fail to shut off, shut off the manual gas valve to the appliance before shutting off the electrical supply.

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

Do not alter the operation of your water heater nor change the design/construction of your water heater. Accessories are being marketed for RV products which we do not recommend. For your safety, only factory authorized parts are to be used on your water heater.

Periodically inspect the vent for obstructions or presence of soot. Soot is formed whenever combustion is incomplete. This is your visual warning that the water heater is operating in an unsafe manner. If soot is present, immediately shut the water heater down and contact your dealer or a qualified service person.

When considering add-on rooms, porch or patio, attention must be given to the venting of your water heater. For your safety, do not terminate the vent on your water heater inside add-on rooms, screen porch or onto patios. Doing so will result in products of combustion being vented into the rooms or occupied areas.

Never operate the appliance if you smell gas. Do not assume that the smell of gas in your RV is normal. Any time you detect the odor of gas, it is to be considered life threatening and corrected immediately. Extinguish any open flames including cigarettes and evacuate all persons from the vehicle. Shut off gas supply at LP gas bottle. (See Safety notice on front cover of this manual.)

⚠ WARNING

Hydrogen gas may result if you have not used this heater for two weeks or more. HYDROGEN GAS IS EXTREMELY FLAMMABLE. To reduce the risk of injury under these conditions, open the hot water faucet for several minutes at the kitchen sink before you use any electrical appliance connected to the hot water system. If hydrogen is present, you probably will hear an unusual sound such as air escaping through the pipe as the water begins to flow.

Pressure relief valve to be operated at least once every 6 months to remove line deposits and verify it is not blocked. Failure to do so may result in heater exploding. Continuous leakage from valve may indicate a problem with unit.

⚠ WARNING

Do not store or use combustible materials or liquids near or adjacent to this heater. The appliance shall not be installed in any location where flammable liquids or vapors are likely to be present.

⚠ WARNING

Be sure the power is "OFF" to the water heater ignition system during any type of refueling and while vehicle is in motion or being towed.

The thermostat on your water heater is adjustable. It is a temperature sensing limit designed to maintain a water temperature of 122°F (50°C) from the factory. (See Operating Instructions) Water temperatures over 125°F (52°C) can cause severe burns instantly or death from scalds; therefore, be careful when using hot water. Children, disabled and elderly are at highest risk of being scalded. Always feel water before bathing or showering.

Do not install an auxiliary water heater upstream of this appliance. Under no circumstances shall this appliance be supplied with high temperature (over 100°F / 38°C) water.

This product may contain sharp features. Wear appropriate protection when accessing any internal parts of this appliance.

The thermostat on your water heater is adjustable. It is a temperature sensing limit designed to maintain a water temperature from 95°F (35°C) to 122°F (50°C) (See Operating Instructions.) Water temperatures over 125°F (52°C) can cause severe burns instantly or death from scalds; therefore, be careful when using hot water. Children, disabled and elderly are at highest risk of being scalded. Always feel water before bathing or showering.

Servicing shall be carried out only by authorized personnel. Ensure any transit protection is removed prior to installation. The appliance is unsuitable for use as a pool heater.

▲ WARNING

For continued safety of this appliance, it must be installed, operated and maintained in accordance with the manufacturer's instructions.

PRODUCT OVERVIEW



The ST-42A/ST-60A On Demand Water Heater provides an endless supply of controlled outlet water temperature when hot water is requested by the user. This occurs when the user opens a hot water faucet or other plumbing fixture.

The water heater senses the flow of water and initiates start up. The combustion air fan turns on and proper flow of air is detected by the control unit. The combustion chamber purged and the burner will ignite. Successful burner ignition is proven by the flame sense electrode. The time required for proper burner ignition is approximately 7 seconds after the user turns on a faucet or other plumbing fixture. Several attempts for ignition may be required to purge air from the gas line. After ignition the water heater will begin to control outlet water temperature but may take several seconds to reach the user due to cold water in the hot water line. Burners will modulate to accurately control the outlet water temperature.

Under low flow conditions, a high BTU stage will disengage and operate at a very low BTU, saving the user unnecessary propane usage and further improving temperature control characteristics.

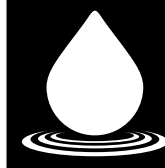
The ST-42A/ST-60A On Demand Water Heater has several safety features as follows.

- Flame Out Protection - Should the flame be extinguished inadvertently due to low propane gas pressure, or burner malfunction, the gas supply immediately turns off.
- Low Voltage / High Voltage Protection - If the voltage supplied to the water heater drops below 10VDC or rises above 17VDC the appliance will not operate.
- Overcurrent Protection - If there is a short circuit in the appliance (>10A), an internal fuse is activated and the appliance turns off. If this occurs the fuse will need replaced.
- Flue Fan Monitoring - If there is a malfunction in the air flow of the combustion air fan, the gas supplied to the burner immediately turns off.
- Hot Water Temperature Protection - A water high temperature switch prevents excessively hot water in case of a malfunction.
- Active Freeze Protection - Protects the unit from freezing temperatures so long as power and gas are provided to

the unit.

- High Pressure Protection - A built-in pressure relief valve protects the unit from surges of high water pressure.

INSTALLATION REQUIREMENTS



▲ WARNING

Installation of this appliance must be made in accordance with the written instructions provided in this manual. No agent, representative or employee of Suburban or other person has the authority to change, modify or waive any provision of the instructions contained in this manual.

▲ CAUTION

A Suburban door must be installed on the unit for proper water heater operation.

If possible, do not install the water heater where the vent can be covered or obstructed when any door on the trailer is opened. If this is not possible, then the travel of the door must be restricted in order to provide a 6" (15.25 cm) minimum clearance between the water heater vent and any door whenever the door is opened.

Due to the differences in vinyl siding, this appliance should not be installed on vinyl siding without first consulting with the manufacturer of the siding or cutting the siding away from the area around the appliance vent.

In any installation in which the vent of this appliance can be covered due to the construction of the RV or some special feature of the RV such as slide out, pop-up etc., always insure that the appliance cannot be operated by setting the thermostat to the positive "OFF" position and shutting off all electrical and gas supply to the appliance.

If installed under a slide-out, there must be at least 36 inches clearance above the exhaust vent.

Do not install the water heater with the vent facing toward the forward end of the coach. See Figure 1.

This appliance shall be installed only by authorized persons and in accordance with the manufacturer's installation instructions, local gas fitting regulations, electrical wiring regulations, local water supply regulations, AS/NZS 5601, AS/NZS 3500.4, Plumbing Code of Australia (PCA) and any other statutory regulations. Refer to AS/NZS 5601 for gas pipe sizing and flueing details.

- The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during

any pressure testing of that system at test pressures in excess of 1/2 PSI (3.5 kPa).

- The appliance must be isolated from the gas supply piping system by closing its individual manual shut off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 PSI (3.5 kPa).
- The appliance and its gas connections shall be leak tested before placing the appliance in operation.
- All air for combustion must be supplied from outside the structure. Air for combustion must not be supplied from occupied spaces.
- Minimum clearance from combustible construction on sides and top - 0 inches/cm. Provide room for access to rear of heater for servicing.
- Choose a location for installation out of the way of wires, pipes, etc. that might interfere with the installation.
- When an appliance is installed directly on carpeting, tile or other combustible material, other than wood flooring, the appliance shall be installed on a metal or wood panel the full depth of the appliance. If preferred the carpeting, tile or combustible materials, other than wood may be cut away the full length of the appliance plus the appliance minimum clearances to combustibles.
- There must be access for removing unit for service.
- The appliance should be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations can not be avoided it is recommended that a suitable drain pan, adequately drained, be installed under the appliance.

TECHNICAL DETAILS			
		ST42A	ST60A
1.	Injectors:	0.94mm x5	1.18mm x5
	Nominal Gas Consumption:	44 MJ/h	64 MJ/h
	Test Point Pressure:	1.54 kPa	1.54 kPa
	Type of Gas:	Universal LPG	
	Nominal Water Flow Rate	2.6 - 7.36 L/min	
2.	Width:	12.75" (323.9 mm)	
	Height:	12.68" (322 mm)	
	Depth:	13.97" (354.8 mm)	
3.	Location of hot water outlet is 1.34" (34mm) from top dead center.		
	Location of cold water inlet is 5.07" (128.7mm) from bottom dead center.		
	Location of flue outlet is 3.98" (101mm) from RH top edge of unit.		
	Location of gas inlet connection point is 2.40" (61mm) in from the left hand edge of the unit.		
4.	Gas Inlet: 3/8" Flare SAE Water Inlet/Outlet: 1/2" BSPT		

INSTALLATION

MINIMUM CLEARANCE TO COMBUSTIBLES

MODEL	SIDES	TOP	BACK	FLOOR
ST-42	0 in	0 in	0 in	0 in
ST-60	0 in	0 in	0 in	0 in

1. Apply a bead of silicone caulking (or suitable caulking) around the inner edge of the water heater casing (top, bottom and sides).
2. Fit the door frame into water heater casing (over the caulk already applied) and pull frame tight to water heater casing using the (8) screws provided.
3. Position water heater into framed opening as illustrated in Figures 2 and 4.
4. Caulk around framed opening (trailer skin) as illustrated

in Figure 4. On Mesa or Yoder type sidewalls, flatten the wall area around the opening to ensure a proper seal.

5. Push water heater into framed opening until back side of door frame (now attached to water heater casing) is firmly against the side of the coach.
6. Screw door frame to coach wall. (Screws not provided).
7. Slowly close the door, pushing rubber vent grommet as necessary to ensure alignment of vent tube.
8. Make gas, water and electrical connections following instructions contained in this manual.
9. Installer MUST ensure unit is adequately sealed in all locations, including around the door frame, water connections and gas connection.

MAKING ELECTRICAL CONNECTIONS

12 VOLTS D.C.

- The electrical connections must be made in accordance with local codes and regulations. In the absence of local codes and regulations, refer to the latest edition of the Australian electrical code.
- Make the 12 Volt D.C. electrical connections following the wiring diagram illustrated in Figure 6.

If the power supply is to be from a convertor, we recommend that the converter system be wired in parallel with the battery. This will serve two purposes:

1. Provide a constant voltage supply.
2. Filter any A.C. spikes or volt surges.

We recommend insulated terminals be used for all electrical connections.

INSTALLATION OF USER CONTROL PANEL

⚠ WARNING

Do not use on circuits exceeding specified voltage. Higher voltage will damage control center and could cause shock or fire hazard. Do not short out terminals on gas valve or primary control to test. Short or incorrect wiring will damage thermostat and could cause personal injury and/or property damage.

3. User Control Panel is wired as shown in wiring diagram. See Figure 6.
4. Locate the User Control Panel on a wall surface near the appliance. Wire length between Control Panel and appliance is 150 ft (45.7 m) maximum.
5. Remove back cover from Control Panel by depressing latch at bottom.
6. Mount back cover to the wall. Cover screw heads with electrical tape or other electrical insulation.
7. Route wiring through back cover and hole into wall.
8. Connect the two blue wires from the User Control Panel to the two blue wires from the appliance. See Figure 6.
9. The Control Panel displays the water temperature setting and allows outlet water temperature to be adjusted (122°F maximum / 50°C).

MAKING WATER CONNECTIONS

⚠ WARNING

This appliance may deliver water at high temperature. Refer to the plumbing code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.

- Water connections are made at the rear of the water heater. Refer to Figure 3. Connect the hot and cold water lines. These fittings are marked "HOT" and "COLD". It is important to ensure these lines are not reversed. **IMPORTANT:** Use a pipe thread compound suitable for potable water and/or pipe thread tape on all connections to assure they will not leak.
- For ease of removal, it is suggested that a pipe union be installed in each water line.
- Fill system with water. Open both hot and cold water faucets to expel air from system. When system is filled and water flows from faucets, close both faucets and check all connections for leaks.

⚠ CAUTION

This appliance is tested and approved for high altitudes up to 4500 ft / 1372 meters above sea level. If your altitude is higher than 4500 ft / 1372 meters, please contact Suburban Customer Service.

NOTE: After leak testing, drain water from system. Please refer to the DRAINING AND STORAGE INSTRUCTIONS under MAINTENANCE in this manual for draining water from the system.

MAKING GAS CONNECTIONS

- Connect a 3/8" gas supply line to the 3/8" flare fitting at the rear of the appliance. When making the gas connection, hold the gas fitting with a wrench when tightening the flare nut. Failure to hold fitting securely could result in a gas leak due to fitting being damaged.
- Turn on gas and check all fittings and connections for leaks using a soap and water solution. Correct even the slightest leak immediately.

NOTE: When replacing a water heater with an ST-42/60, review your gas regulator and supply plumbing to ensure it can maintain a proper gas flow during the operation of the new water heater and other gas burning appliances.

NOTE: Regulator switch-over pressure may be lower than main operating pressure. Refer to AS5601 for gas pipe size.

⚠ WARNING

Before leaving - Check all connections for gas leaks with soap and water. DO NOT use a naked flame for detecting leaks. Ignite the burner at high and low setting to ensure correct operation of controls, burners and ignition. Set to low flame position and observe stability of the flame for each burner individually and concurrently. When satisfied with the installation, please instruct the user on the correct method of operation. In case the appliance fails to operate correctly after all checks have been carried out, refer to the authorized service provider in your area.

⚠ WARNING

Do not use an open flame to check for leaks.

OPERATING SAFETY INFORMATION

For Your Safety Read Before Lighting



⚠ WARNING

If the user of this appliance fails to maintain it in the condition in which it was shipped from the factory or if the appliance is not used solely for its intended purpose or if appliance is not maintained in accordance with the instructions in this manual, then the risk of a fire and/or the production of carbon monoxide exists which can cause personal injury, property damage or loss of life.

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

Inlet water must not be above 25 C. Elevated inlet water may lead to inconsistent performance and potentially hazardous outlet water temperatures.

- This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- **BEFORE OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Evacuate all persons from the vehicle.
- Shut off the gas supply at the gas container or source.
- Do not touch any electrical switch, or use any phone or radio in the vehicle.
- Do not start the vehicle's engine or 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.

- This unit has an automatic gas valve, no adjustments are necessary. Do not attempt to repair the gas valve. This may result in a fire or explosion.
- Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- Before operating water heater, check the location of the vent to make sure it will not be blocked by the opening of any door on the trailer. If it can be blocked, do not operate the water heater with the door open.
- Before operating water heater, check vent for ice and snow blockage.

OPERATING INSTRUCTIONS



1. **STOP!** Read the safety information above.
2. Turn off all electric power to the appliance.
3. Turn ON gas supply.
4. Wait five minutes for gas to clear the area. If you smell gas then **STOP!** Follow instructions in the **OPERATING SAFETY INFORMATION** section of this manual. If you do not smell gas, go to next step.
5. Turn ON gas supply.
6. Turn ON electrical power to the appliance.
7. Press the ON button. The User Control Panel is illustrated in Figure 7. Your User Control Panel is located somewhere inside the RV. The water heater operates based off of hot water demand. There must be a hot water faucet open to a minimum of 0.7 GPM (2.65 LPM) for the unit to operate. If the burner does not light, the system will automatically attempt two more tries for ignition before lock-out. For best results, open hot water faucet fully until hot water arrives, then reduce flow and mix cold water as needed to achieve desired temperature.
8. If the water heater is running for more than 20 minutes, the water heater will go into lockout to prevent wasted propane.
9. If lockout occurs, the unit must be re-cycled by turning the faucet OFF or by pressing the OFF button on the User Control Panel and then back ON. The first start-up of the heater may require several ignition cycles before all air is purged from the gas lines.

IMPORTANT: This On Demand Water Heater is factory set at 113°F/45°C. To change the water temperature settings. Press the UP or DOWN arrows on the User Control Panel to increase or decrease the set water temperature in single degree increments. The water temperature set range is 95°F/35°C to 122°F/50°C. See Figure 7.

SEQUENCE OF OPERATION

1. Turning ON a hot water faucet activates the appliance.
2. The water heater measures the flow of water, inlet water, and outlet water temperatures.
3. The water heater proves that the combustion air fan is working.
4. The combustion chamber is then purged of any remaining raw gas.
5. The burner will ignite and prove the flame.
 - a. The approximate time from turning ON the faucet to ignition is 7 seconds. After the initial lighting sequence and the water heater is maintaining

temperature, the ignition cycle is reduced to approximately 5 seconds.

- b. Burners will stay ON until the water flow is shut OFF.
6. The flow of hot water begins approximately 3 seconds after ignition but will not reach the faucet until the hot water lines leading to the faucet are cleared of any remaining water. This time is determined by the length of the hot water line.
 7. When the hot water faucet is turned OFF, the water heater shuts down and will remain in a ready state until hot water is called for again.
- NOTE:** Blower motor will operate for approximately 20 seconds after the hot water faucet is turned OFF.
8. If the User Control Panel is left ON, no further action is required by the user.
 9. If the water heater fails to light for any reason, a second Trial For Ignition (TFI) will automatically begin. If the second TFI fails, the water heater will automatically begin a third TFI. If the third TFI fails, the water heater will go into a lock out mode and will not try to light the burner again. To reset, on the User Control Panel, turn ON/OFF button OFF, then back ON.

NOTE: Air in the gas line after changing propane tanks is the main reason for not lighting the burner. A simple method to purge air from the gas line is to ignite a burner on the installed cooking appliance inside your RV.

OPERATING FAUCETS AND SHOWER WITH THE ON DEMAND WATER HEATER

- All faucets must be operated the same as you would in your home.
- The User Control Panel is set at 113° F / 45° C at the factory. Cold water must be added to achieve the desired hot water temperature.
 - If this is the first use of the unit for the season, turn water supply on and open each faucet and allow all air to be purged from the water lines.
 - Turn ON power supply.
 - Turn ON propane supply. Hot water faucet may have to be cycled several times to purge gas supply.
- The water heater only heats when there is a call for water (open hot water faucet or shower head).
- A minimum of 0.7 gallons per minute (2.65 liters per minute) is required for water heater to operate.
- Faucet should be turned ON and adjusted to desired temperature and flow before entering shower.
- Shower head button should NOT be used. Using the shower head button will create a drop in temperature by reducing or stopping the flow of water through the water heater causing the water heater to shut down.
- Flow restrictors in faucets and shower heads should be removed for best performance.

TO TURN OFF THE ON DEMAND WATER HEATER

1. On the User Control Panel, press the power button once.
2. Turn OFF electrical power to the appliance.
3. Turn OFF gas supply.
4. If vehicle is to be stored or heater is going to be turned off while subject to freezing temperature, drain water heater. (See "Draining and Storage Instructions.")

MAINTENANCE



⚠ CAUTION

For your safety, ALL repairs and/or maintenance of unit should be performed by your dealer or a qualified service technician.

⚠ WARNING

If the user of this appliance fails to maintain it in the condition in which it was shipped from the factory or if the appliance is not used solely for its intended purpose or if appliance is not maintained in accordance with the instructions in this manual, then the risk of a fire and/or the production of carbon monoxide exists which can cause personal injury, property damage or loss of life.

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

No cleaning or adjustment of the burners is permitted. If burner operation is suspected to be faulty shut off appliance immediately and contact a qualified service center.

Periodically inspect unit for soot. If soot is present anywhere on water heater, immediately shut unit down and contact your dealer or a qualified service person. Soot is a sign of incomplete combustion and must be corrected before operating water heater. Areas to check would include:

- Check for an obstruction in vent.
- Check vent to see that no foreign material has accumulated to prevent flow of combustion and ventilating air.
- Check to be sure there is no flame present at burner orifice or burner whenever main gas valve is closed. This can be checked by turning the ON/OFF switch to the OFF position.
- Periodically check wiring and wire connections to be sure wiring is not damaged/frayed and that all terminals and connections are tight and in compliance with codes (See "Making Electrical Connections").

DRAINING AND STORAGE INSTRUCTIONS

If RV is to be stored during winter months, the water heater system must be drained to prevent damage from freezing.

1. Turn OFF electrical power to water heater either by flipping the circuit breaker, removing fuse, or powering off User Control Panel.
2. Shut OFF gas supply to water heater.
3. Turn OFF pressure pump on water system.
4. Open both hot and cold water faucets.
5. Compressed air is the preferred method of purging the water heater. This method requires bypass tees and shut-off valves to be installed at the appliance's

hot and cold connections to isolate the appliance from the plumbing system. With the bypass valves open, compressed air of pressure no greater than 40 PSI (276 kPa) can be used to force water out of the appliance and through a drain line. This method requires the installer to provide bypass valve plumbing. See Figure 3.

NOTE: System will have to be refilled with water and all air removed from lines before unit will re-light.

WINTERIZING

- Follow RV manufacturer's instructions for draining entire water system.
- Once drained, RV NON-TOXIC antifreeze can be added if recommended by your coach manufacturer.

FREEZE PROTECTION

The On Demand Water Heater has built-in Freeze Protection and will cycle the burner for 5 seconds when the water temperature has fallen below 41°F(5°C). To provide this freeze protection, the gas supply must be ON, gas must be available and electrical power must be ON.

DESCALING INFORMATION

Each year, drain the water from the system and flush the heat exchanger with an approved descaling solution.

PRESSURE RELIEF VALVE

The pressure relief valve installed in the appliance is designed to open if the water pressure in the heater reaches 123 PSI / 850 kPa.

If the relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation. Do not install any plumbing on the discharge port of the relief valve.

⚠ WARNING

Do not place a valve between the relief valve and the unit. Do not plug the relief valve under any circumstances.

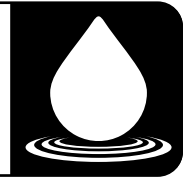
REMOVING ON DEMAND WATER HEATER

1. Shut OFF gas supply and disconnect gas supply line from water heater.
2. Disconnect 12 V.D.C. power supply to heater.
3. Disconnect User Control Panel signal wires.
4. Shut OFF water supply. Drain water from system.
5. Disconnect HOT and COLD water lines from water heater.
6. Remove screws securing door frame to RV wall.
7. Remove water heater. To reinstall, see "Installation Instructions" in this manual.

⚠ WARNING

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

TROUBLESHOOTING



NOTE: There must be a demand of at least 0.7 GPM (2.65 LPM) for the burner to operate and allow water flow. This will continue until the water flow is turned OFF and the system goes dormant.

PROBLEM	SOLUTION
NO WATER FLOWS FROM FAUCET WHEN TURNED ON	Be sure water supply is turned ON and there are no water restrictions.
BURNER TURNS ON, TEMPERATURE FLUCTUATES ERRATICALLY	This issue can be caused by restriction in the shower heads, faucet aerators or water strainers. Clean as required and remove any flow restrictions.
ON DEMAND HEATER COMES ON AND RAPIDLY CYCLES ON AND OFF	Water flow is too low. Increase flow at faucet.
	Clean all shower heads, faucet aerators or water strainers as required and remove any flow restrictions to assure the minimum 0.7 GPM (2.65 LPM) of water flow.
	Verify the water pump is functioning properly.
	Bleed air out of plumbing lines by opening all water faucets.
	If the On Demand water heater cycles as the pump cycles, an accumulator tank is needed in the water system. If accumulator tank is already installed, check for water inside the tank and drain tank until only air is present.
	Water source pressure fluctuates too low causing loss of flow. Check the incoming water source for a minimum of 30 psi (207 kPa).
WATER TEMPERATURE IS TOO LOW WITH LOWER WATER FLOW	Water flow is too low. Increase flow at faucet to assure the minimum 0.7 GPM (2.65 LPM) of water flow.
WATER TEMPERATURE IS TOO HIGH OR NO TEMPERATURE CONTROL	Press the UP or DOWN arrows on the User Control Panel to increase the SET water temperature in single increments. Refer to OPERATING INSTRUCTIONS and see Figure 7.
LOW TEMPERATURE RISE AND EXCESSIVE WATER FLOW REQUIRED TO TRIGGER THE ON DEMAND WATER HEATER	NOTE: If you find that your water heater requires excessive flow to activate it (over 0.7 GPM / 2.65 LPM), it is possible that you have COLD water bleeding into the HOT water side of your water system
	Verify that valves and faucets are closed when not in use. Check the shower head for an ON/OFF button/lever and ensure it is in the OFF position to prevent cold water from bleeding into the hot water system. This can keep the On Demand water heater from functioning correctly.
	If your RV is equipped with a bypass valve at the water plumbing connection, make sure it is in the OFF position. An open valve can allow water to bypass water heater causing a failure to ignite.
NO IGNITION	ON/OFF switch turned OFF.
	12 VDC power is OFF.
	Gas supply to heater is empty or turned OFF.
	Water turned ON and faucet open.
	Check manual reset on ECO switch. Refer to Figure 5.
	If burner fails to light, call a local RV service agency.
LEAKING PRESSURE RELIEF VALVE	If the pressure relief valve is leaking from discharge tube, scale may be built up in the relief valve. Actuate the pressure release lever several times to clear scale. If leakage is not resolved contact a qualified service center.

Figure 1

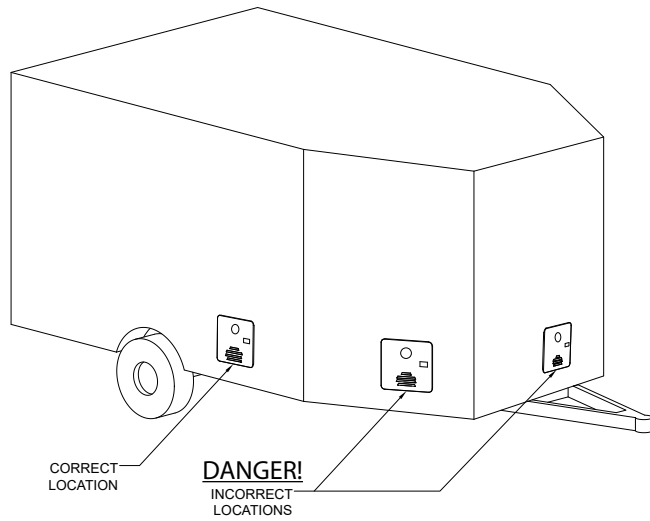


Figure 2

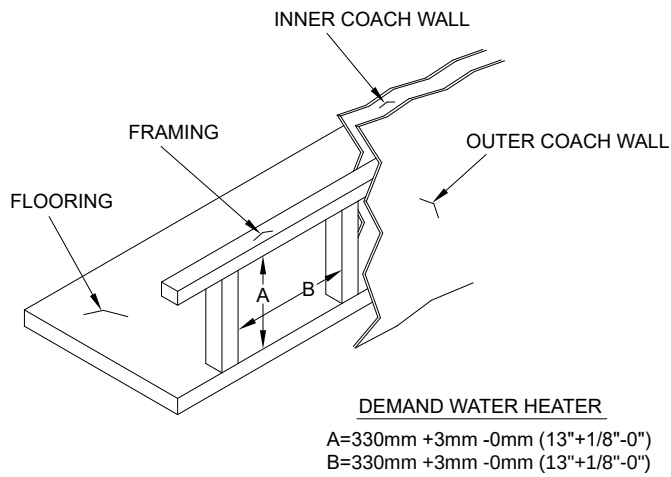


Figure 3

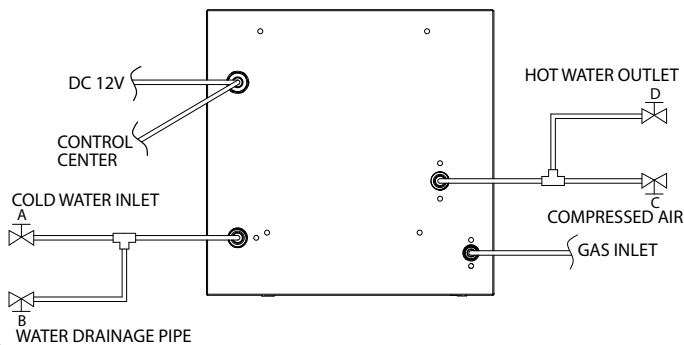


Figure 4

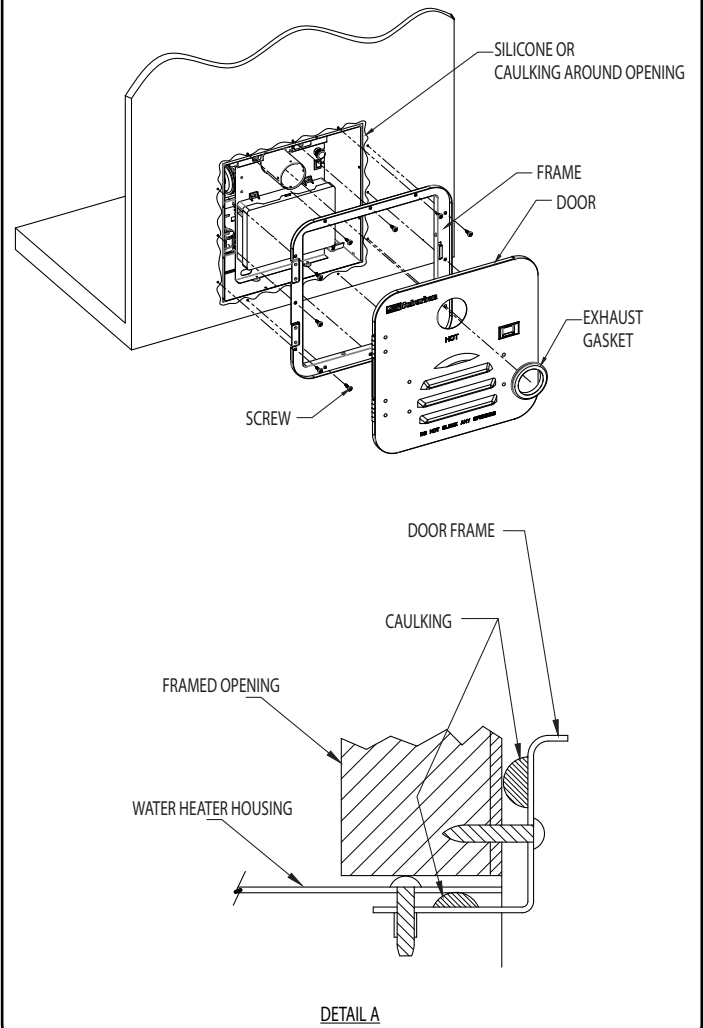


Figure 5

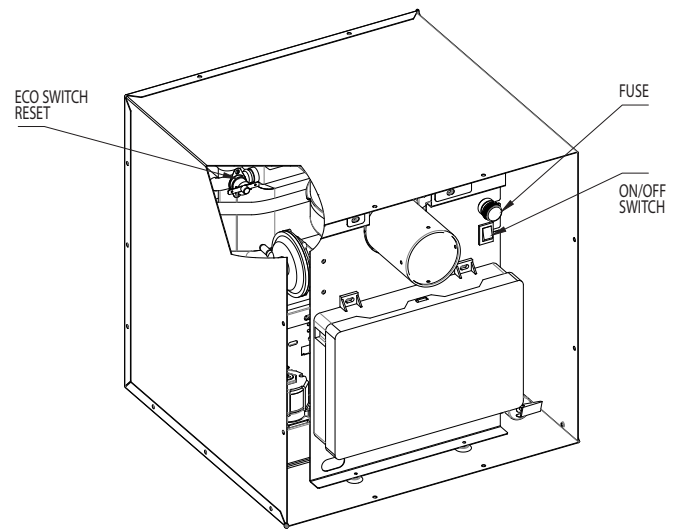
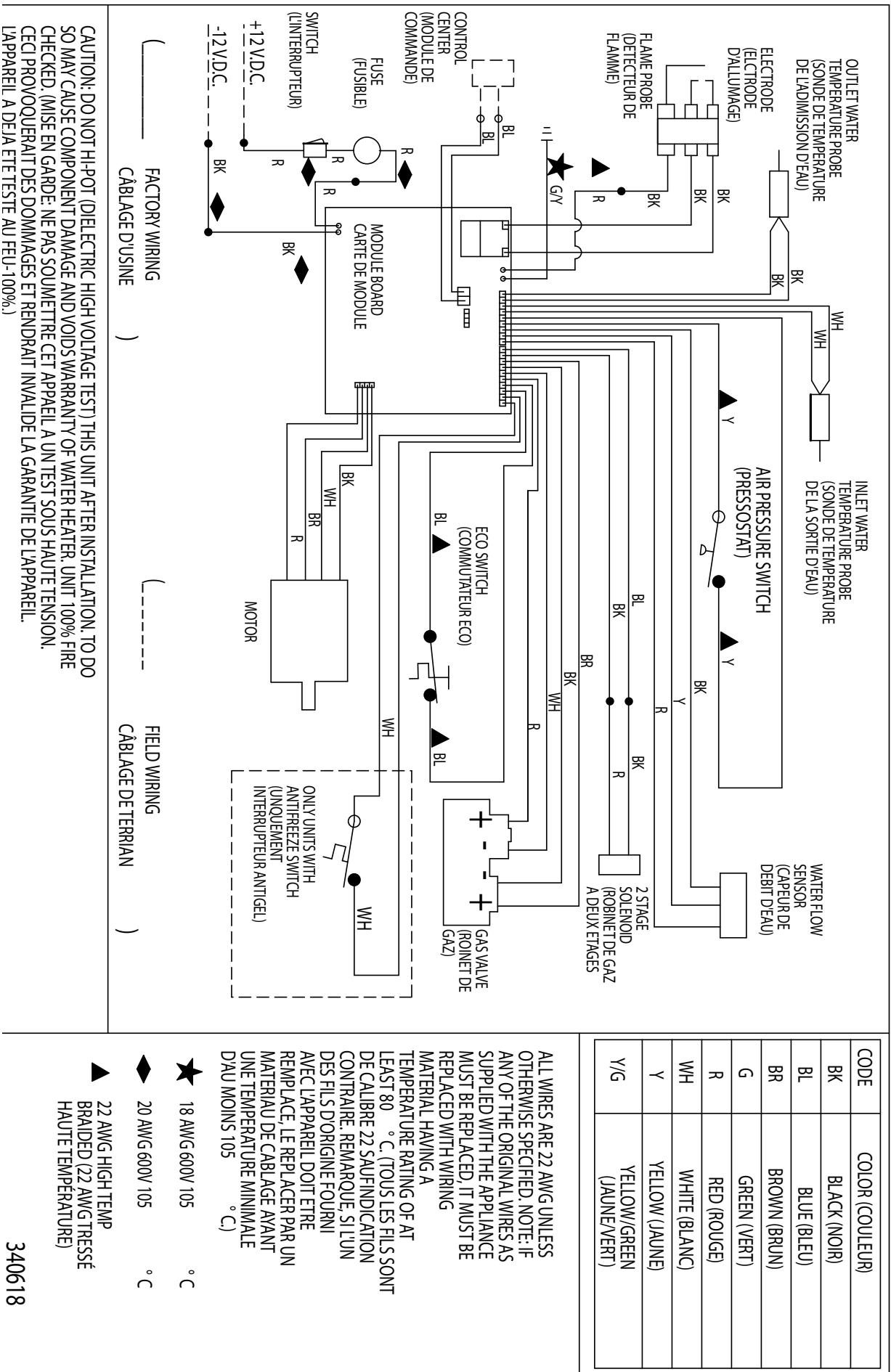


Figure 6

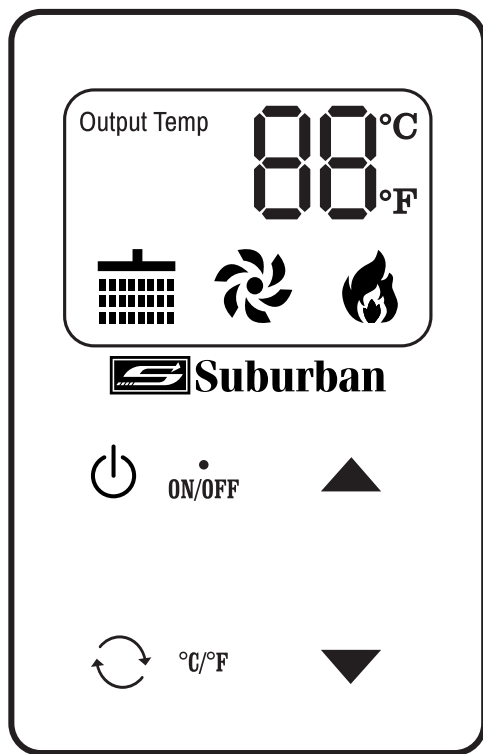


CODE	COLOR (COULEUR)
BK	BLACK (NOIR)
BL	BLUE (BLEU)
BR	BROWN (BRUN)
G	GREEN (VERT)
R	RED (ROUGE)
WH	WHITE (BLANC)
Y	YELLOW (JAUNE)
Y/G	YELLOW/GREEN (JAUNE/VERT)

ALL WIRES ARE 22 AWG UNLESS OTHERWISE SPECIFIED. NOTE: IF ANY OF THE ORIGINAL WIRES AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 80 °C. (TOUS LES FILS SONT DE CALIBRE 22 SAUF INDICATION CONTRAIRE. REMARQUE, SI L'UN DES FILS D'ORIGINE FOURNI AVEC L'APPAREIL DOIT ÊTRE REMPLACÉ, LE REMPLACER PAR UN MATÉRIAU DE CÂBLAGE AVANT UNE TEMPÉRATURE MINIMALE D'AU MOINS 105 °C.)

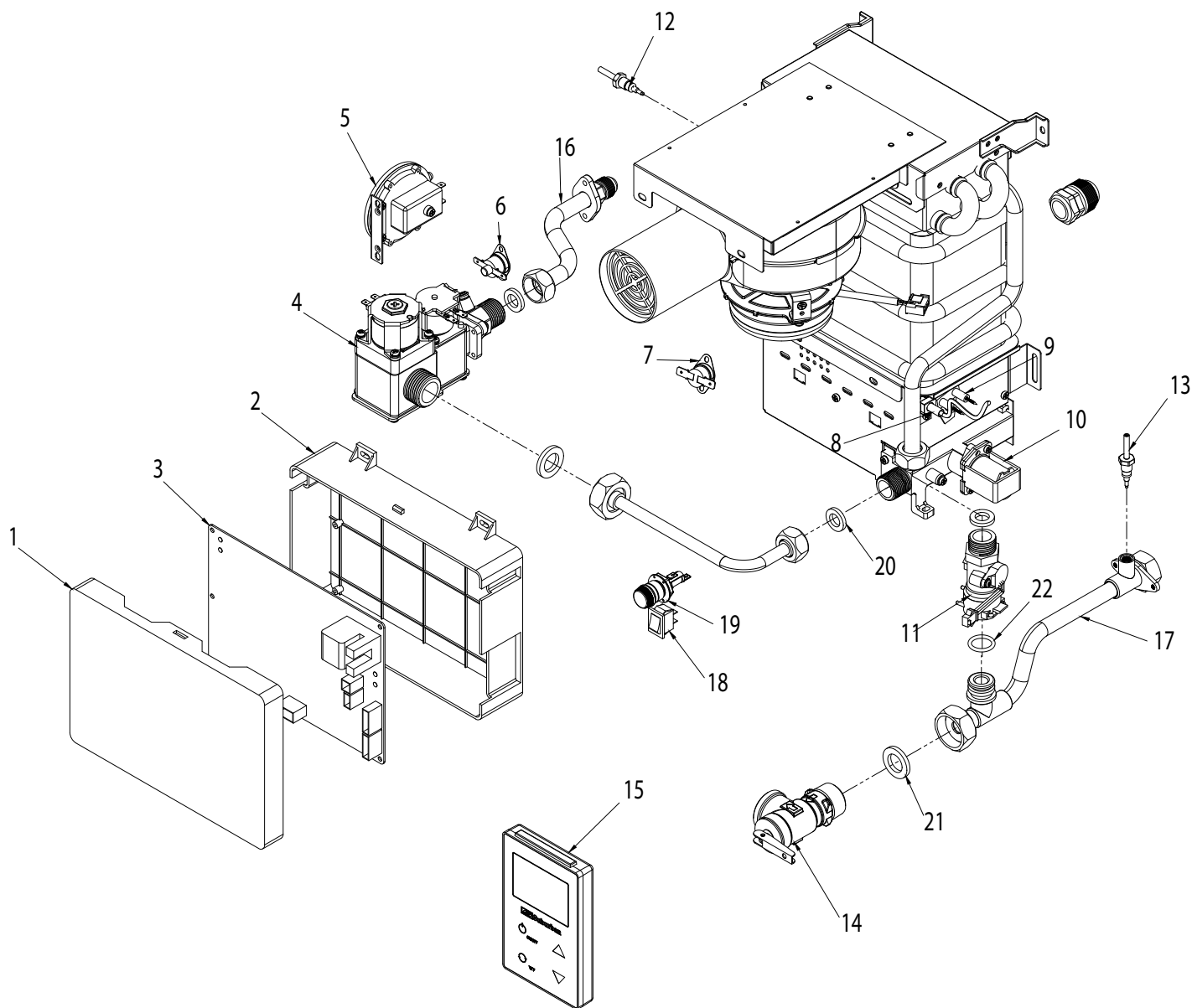
340618

Figure 7



SYMBOL	FUNCTION	DESCRIPTION
	WATER FLOW	This icon is displayed when water is flowing through the unit (i.e. hot water demand).
	BLOWER	This icon is displayed when the blower is running.
	FLAME	This icon is displayed when the burners are on.
	OUTLET WATER TEMP SETTING	This icon displays the outlet water temperature set point.
BUTTON	FUNCTION	DESCRIPTION
	ON/OFF	Power Button. Switch from turning unit ON or turning unit OFF.
	UNITS	Press to switch between degrees (°) Celcius or degrees (°) Fahrenheit.
	UP	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 122°F/ 50°C.
	DOWN	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 122°F/ 50°C.

PARTS ILLUSTRATION AND PARTS LIST



ITEM NO.	DESCRIPTION	MODEL NO.	PART NUMBER
1	MODULE BOARD LID	ALL	090722
2	MODULE BOARD HOUSING	ALL	090721
3	MODULE BOARD ST-42 AUSTRALIA	ST-42	521453
	MODULE BOARD ST-60 AUSTRALIA	ST-60	521454
4	VALVE, GAS	ALL	161357
5	AIRFLOW SENSOR	ALL	233658
6	LIMIT SWITCH (MANUAL RESET)	ALL	233676
7	SENSOR, ANTIFREEZE THERMOSTAT	ALL	233675
8	FLAME SENSOR	ALL	233681
9	ELECTRODE	ALL	233667
10	REGULATOR 2 STAGE	ALL	233687
11	WATER FLOW SENSOR	ALL	233665
12	PROBE, TEMPERATURE MALE	ALL	233684
13	PROBE, TEMPERATURE FEMALE	ALL	233683
14	VALVE, PRESSURE RELIEF	ALL	161391
15	CONTROL CENTER (WIRED)	ALL	233678
16	GAS INLET	ALL	172305
17	WATER INLET PIPE, ST-AUSTRALIA	ALL	172403
18	SWITCH, ON/OFF	ALL	233700
19	CERAMIC FUSE HOLDER TUBE	ALL	233682
20	GASKET, RUBBER	ALL	072149
21	GASKET, RUBBER	ALL	072150
22	GASKET, RUBBER SEALING RING	ALL	072148



Coast RV Pty Ltd
trading as Coast to Coast RV Services
ABN 49 097 104 492 - ACN 101 461 330
PO Box 6287, Silverwater NSW 1811
AUSTRALIA
Ph (02) 9645 7600 - Fax (02) 9645 7699
Email: warranty@coastrv.com.au
Web: www.coastrv.com.au

Coast to Coast RV Services
PO Box 58-054, Botany AUCKLAND 2163
NEW ZEALAND
Ph (09) 274 8700
Email: enquiry@coastrv.co.nz
Web: www.coastrv.co.nz

Warranty Against Defects

1 WHAT THIS WARRANTY RELATES TO

- 1.1 This warranty covers goods supplied by Coast RV Pty Ltd T/A Coast to Coast RV Services ("Supplier") to the Client ("Goods") and relates to any defects in materials and workmanship under normal use and maintenance ("Defect").

2 WHAT THE SUPPLIER WILL DO TO HONOUR THE WARRANTY

- 2.1 The Supplier will:
- (i) replace or repair the Goods or the defective part of the Goods free of charge;
 - (ii) arrange for the Goods or the defective part of the Goods to be repaired or replaced by a qualified repairer free of charge.
- 2.2 The Supplier reserves the right to replace defective parts of the Goods with parts and components of similar quality, grade or composition where an identical part or component is not available.
- 2.3 Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair the goods.

3 WHAT THE CLIENT MUST DO TO CLAIM THE WARRANTY

- 3.1 To claim the benefit of the warranty, the Client will need to (sequentially):
- (i) first contact the Supplier; and
 - (ii) present the defective Goods to the Supplier for inspection, including inspection for defective workmanship, or otherwise provide evidence of the claimed Defect, accompanied by evidence of proof of purchase and date of delivery, and if applicable, evidence of maintenance performed in accordance with the relevant maintenance schedules.
- 3.2 The claim listed in clause 3.1 may be made in person, or the claim may be sent to the address listed on this form, including the particulars required under clauses 3.1(i) and 3.1(ii).
- 3.3 The appropriate form for making a claim for warranty is as attached.

4 DURATION OF WARRANTY

- 4.1 This warranty will cease:
- (i) where the Goods are purchased already fitted in or as a component of a vehicle or RV: from the date that is 2 Years (24) months after the Client takes delivery of the vehicle or RV; and
 - (ii) where the Goods are purchased separately or as an after-market item: from the date that is 2 Years (24) months from the date of purchase.
- 4.2 If a Defect does not materialise in the Goods prior to the date provided in clause 4.1, the Supplier will have no liability to the Client under this warranty.

5 RESPONSIBILITY FOR COSTS OF CLAIM UNDER THIS WARRANTY

- 5.1 The Supplier is responsible for the costs directly associated with repairing or replacing the Goods in accordance with clause 2.1 only.
- 5.2 Any works required to be completed in addition to fixing the Defect are the responsibility of the Client. Additional works includes any costs associated with any testing or repair of the Goods or any goods to which they are fitted, undertaken by a third party in relation to any defect without prior authorisation from the Supplier.
- 5.3 Where it is determined that the Goods do not have a Defect, the Client will be charged a GST exclusive inspection fee of forty-five dollars (\$45.00AUD in Australia or \$45.00NZD in New Zealand) plus freight costs for the return of the Goods, this is subject to change without notice.
- 5.4 The cost of delivery and insurance of the Goods to and from the Supplier, travel costs to and from the Supplier, and the cost of inspecting and testing the Goods are the sole responsibility of the Client.

6 WARRANTY LIMITATIONS

- 6.1 The Supplier makes no warranties or representations other than those set out in this warranty document except as is required by law.
- 6.2 The Supplier will not be liable under this warranty:-
- (i) to the Client or any other person for any consequential, direct or indirect loss, damage or costs incurred or suffered by the Client or any other person, including but not limited to damage to persons, other property, loss of turnover, loss of profits, loss of business or goodwill;
 - (ii) to the Client for transportation or travel costs which are the Client's responsibility;
 - (iii) for damage or defects in any Goods caused by improper transportation, storage or any other misuse, neglect or accident.
 - (iv) for the installation of the Goods. Any fault or defect due to installation should be referred to the installer. The Goods must be installed in accordance with the Manufacturer's instructions and any relevant legislation or code.
- 6.3 This warranty covers the Client only and it is not transferrable if the Goods are sold by the Client during the warranty period.

7 WARRANTY EXCLUSIONS

- 7.1 This warranty will not apply where:
- (i) the Goods have been improperly modified or repaired or the Good's defect has arisen due to the Client's failure to properly install, fit, maintain, service or use the Goods in accordance with the specifications and instructions provided by the Manufacturer, including a failure to comply with the relevant maintenance schedule (where applicable);
 - (ii) the Supplier cannot establish any Defect in the Goods after testing;
 - (iii) the Goods have been used other than for the purpose for which they were designed;
 - (iv) the Goods have been subject to abnormal conditions, including but not limited to temperature, pressure, stress, load or similar;
 - (v) the Client or installer have used or fitted non-genuine or non-approved parts and accessories to the Goods or have failed to use recommended parts and accessories;
 - (vi) the Good's defect has arisen due to abuse, misuse, neglect or accident;
 - (vii) the Goods have not been installed in accordance with the relevant instructions;
 - (viii) the Good's defect is caused by use or fair wear and tear of the Goods (or expendable parts).

8 RIGHTS AT LAW

- 8.1 The benefits given to the Client under this warranty are in addition to other rights and remedies of the Client at law in relation to the Goods.
- 8.2 In Australia our Goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the Goods repaired or replaced if the Goods fail to be of acceptable quality and the failure does not amount to a major failure.

WARRANTY CLAIM FORM

Warranty Providers Name:

Warranty Providers Address:

Client:

Contact No.

Description of Goods provided:

ABN 49 097 104 492 - ACN 101 461 330

PO Box 6287, Silverwater NSW 1811 Australia OR;

Client:

Description of Goods provided:**Receipt No:**

Date of purchase/services provided:

Signed:.....

Dated:

[Please note, the issue or completion of this form by the Client does not constitute an admission of liability by the Supplier]