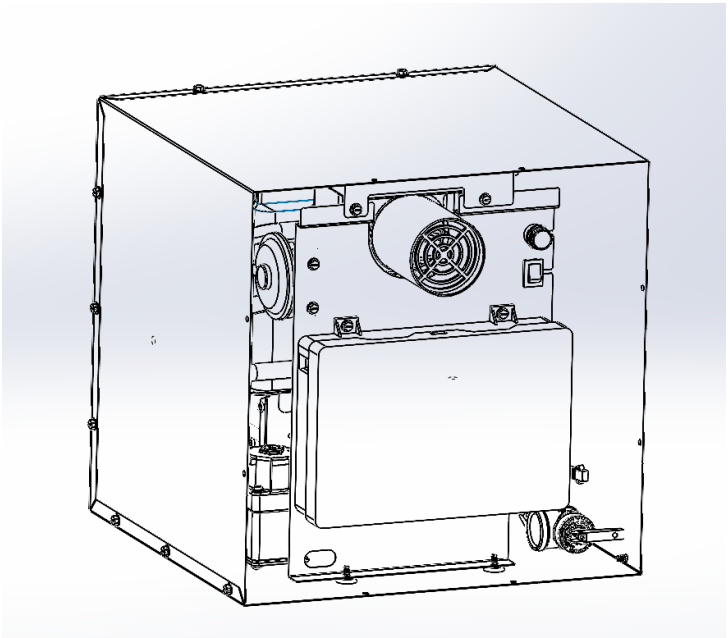
SERVICE *and* TRAINING MANUAL

SUBURBAN TANKLESS

ON DEMAND RV WATER HEATER

MODELS:
ST42
ST60,ST65,ST65RL
FOR RECREATIONAL VEHICLE USE ONLY



Suburban

AIRXCEL, INC. - SUBURBAN DIVISION

676 Broadway Street | Dayton, TN 37321 | USA | (574)247-9235 | www.Airxcel.com

Information published in this manual is subject to change without notice.

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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

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 113°F (45°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.

INTRODUCTION

This Service and Training Manual provided by the Suburban Products Factory Service Department is intended to be used by qualified service technicians only as a valuable tool in terms of product identification, troubleshooting and diagnosis of service issues, and as an outline for information concerning proper

procedures for filing warranty service claims.

Included in this manual are product installation instructions, sequence of operation information, maintenance and service recommendations. In addition to the information available in this manual, other resources for servicing Suburban Products RV appliances include our website at www.AIRXCEL.com, our **Factory Service Department Support Line** at **(574)-247-9235**, and our **Customer Service Department Office** at **423-775-2131 EXT. 7101**.

Having an understanding of the appliance's sequence of operation and access to or knowledge of the wiring diagram are the cornerstones of proper diagnosis and troubleshooting. Other points of emphasis encompass the adherence to proper installation methods, voltage and gas pressure, and compliance to the physical installation tolerances and clearances. This manual is designed to assist service technicians in making the correct diagnosis efficiently.

Proper maintenance and service of an appliance is of the upmost importance. Failure to keep the appliance clean and well maintained is a significant contributing factor in the component breakdown and premature failure of the appliance.

ST42/ST60 SPECIFICATIONS

BTU/HR	8,000 MIN to 60,000 MAX (42,000)
FUEL	LP Gas (Propane)
INLET PRESSURE	MINIMUM 10.5 INCHES W.C. MAXIMUM 14 INCHES W.C.
MANIFOLD PRESSURE	10.5 INCHES W.C.
WATER OPERATING PRESSURE	MINIMUM: 30 LBS PSI MAXIMUM: 150 LBS PSI
VOLTAGE	12 VDC NOMINAL; 10.5 VDC MINIMUM TO 14 VDC MAXIMUM
WATER FLOW REQUIREMENT	MINIMUM: 0.7 GPM MAXIMUM: 3.0 GPM
MINIMUM WIRING GAUGE	MINIMUM WIRING GAUGE 20 AWG 600V 105°F (Degrees Fahrenheit)
AMP DRAW	3 AMPS
RECOMMENDED FUSE SIZE	2 FUSES with 7 AMPS per FUSE

SUBURBAN TANKLESS ST42/ST60 ON DEMAND WATER HEATER DIMENSIONS

12.5" H x 12.5" W x 20.0" D

ST42/ST60 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" 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" 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 installation must conform with the requirements of the authority having jurisdiction or in the absence of such requirements with the latest edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54 and/or CSA B149.1; and the latest edition of the American National Standard for Recreational Vehicles NFPA 1192.

In Canada, the installation should conform with the following standards:

- For installation in Recreational Vehicle

Gas - CSA standard CSA Z240.4.2-08 Installation Requirements for Propane Appliances and Equipment in Recreations Vehicles.

Electrical - CSA standard C22.2 No. 148/Z240.6.2-08/C22.2 No. 148-08 Electrical Requirements for Recreational Vehicles.

Plumbing - CSA standard CSA Z240.3.2 Plumbing Requirements for Recreational Vehicles.

- 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. 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.

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.

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 National Electrical Code NFPA 70. **In Canada**, the electrical installation should conform with CSA standard Z240.6.2-08/C22.2 No. 148-08 Electrical Requirements for Recreational Vehicles.
- 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. 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 (131°F maximum / 55°C).

MAKING WATER CONNECTIONS

- 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

If you use air pressure to check for leaks, the pressure must not exceed the pressure specified in accordance with NFPA 1192.

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.

Maximum Capacity of Pipe in Cubic Feet of Gas per Hour for Gas Pressures of 0.7 PSIG or Less and a Pressure Drop of 0.3 Inch Water Column

INTENDED USE:
Tubing sizing between single or second-stage (low pressure) regulator and appliance.

Nominal:	K & L:	1/4	3/8	1/2	5/8
Nominal:	AvCR:	3/8	1/2	5/8	3/4
Outside Diameter:		0.375	0.500	0.625	0.750
Inside Diameter:*		0.305	0.402	0.527	0.652
Length (feet)		**Capacity in Thousands of BTU per Hour**			
10		45	93	188	329
20		31	64	129	226
30		25	51	104	182
40		21	44	89	155
50		19	39	79	138

*Table capacities are based on TYPE K copper tubing I.D.

⚠ WARNING

Do not use an open flame to check for leaks.

ST42/ST60 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.

- 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.

ST42/ST60 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 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 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 131°F/55°C. See Figure 7.

NOTE: A child lock prevents outlet water temperature set point from exceeding 113°F/45°C. To remove the child lock, hold the up arrow on the User Control Panel for five (5) seconds. This will allow the maximum outlet temperature to reach 131°F/55°C.

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 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.”)

ST42/ST60 OPERATIONAL TROUBLESHOOTING

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

NO WATER FLOWS FROM FAUCET WHEN TURNED ON:

1. Be sure water supply is turned ON and there are no water restrictions.
2. Ensure BYPASS SYSTEM (if installed) is properly aligned for operation.

BURNER TURNS ON, TEMPERATURE FLUCTUATES ERRATICALLY:

1. This issue can be caused by restriction in the shower heads, faucet aerators or water strainers.
2. Clean as required and remove any flow restrictions.

ON DEMAND HEATER COMES ON AND RAPIDLY CYCLES ON AND OFF:

1. Water flow is too low. Increase flow at faucet.
2. Clean all shower heads, faucet aerators or water strainers as required and remove any flow restrictions to ensure the minimum 0.7 GPM of water flow.
3. Verify the water pump is functioning properly.
4. Bleed air out of plumbing lines by opening all water faucets.
5. 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.
6. Water source pressure fluctuates too low causing loss of flow. Check the incoming water source for a minimum of 30 psi.

WATER TEMPERATURE IS TOO LOW WITH LOWER WATER FLOW:

Water flow is too low. Increase flow at faucet to ensure the minimum 0.7 GPM of water flow.

WATER TEMPERATURE IS TOO HIGH OR NO TEMPERATURE CONTROL:

Press the UP or DOWN arrows on the On Demand Control Center to increase the SET water temperature in single increments.

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 0.5 GPM), it is possible that you have COLD water bleeding into the HOT water side of your water system.

1. 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.
2. 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

If the burner will not come on, the following items should also be checked before calling a service technician:

- Switch turned off.
- 12 VDC power is ON.
- Gas supply to heater is empty or turned off.
- Water turned on and faucet open.
- Check manual reset on ECO switch. Refer to ST ECO Reset in IOM Figure

If burner fails to light, call a Suburban service center or a local RV service agency.

ST42/ST60 MAINTENANCE

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

1. Check for an obstruction in vent cap.
2. Check vent to see that no foreign material has accumulated to prevent flow of combustion and ventilating air.
3. 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”).

WINTERIZING

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

FREEZE PROTECTION

The Suburban Tankless ST42/60 On Demand water heater has two built-in FREEZE PROTECTION features.

- Powered: will intermittently cycle the burner when the water temperature has fallen below 40°F(4.4°C). This intermittent cycling will continue until the water temperature has risen above 50°F(10.0°C). To provide this freeze protection, gas and electrical must be turned on.

The water system must be drained when not in use to avoid damage caused by ice expanding in water lines if the water heater is now powered.

DESCALING INFORMATION

Each year, drain the water from the system and flush the heat exchanger using Suburban’s authorized decalcification kit. To order this decalcification kit, please contact your preferred distributor and order Kit Number 521163.

PRESSURE RELIEF VALVE

The pressure relief valve is designed to open if water pressure in the heater reaches 125 psi.

Suburban recommends that a check valve not be installed directly at the inlet to the water heating unit.

Figure 1

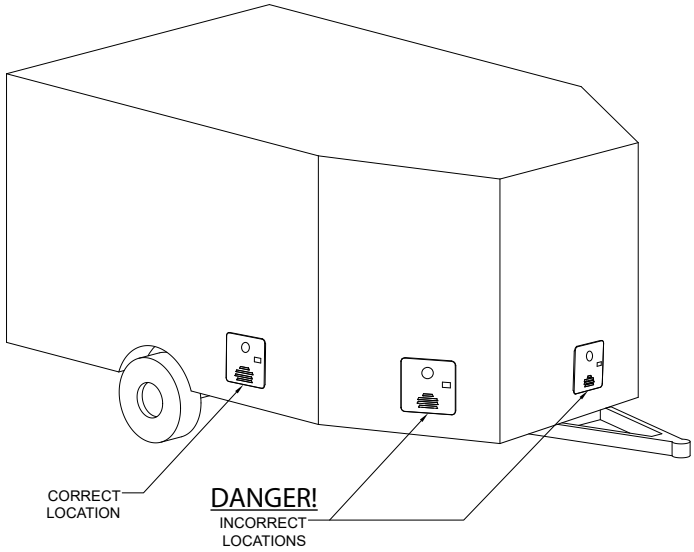
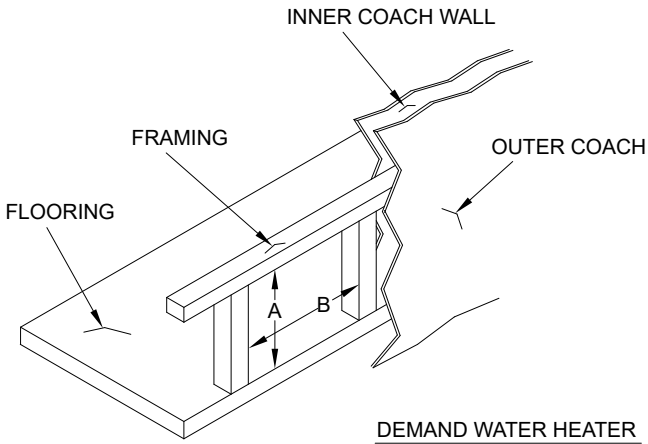


Figure 2



DEMAND WATER HEATER
A=13"+1/8"-0"
B=13"+1/8"-0"

Figure 3

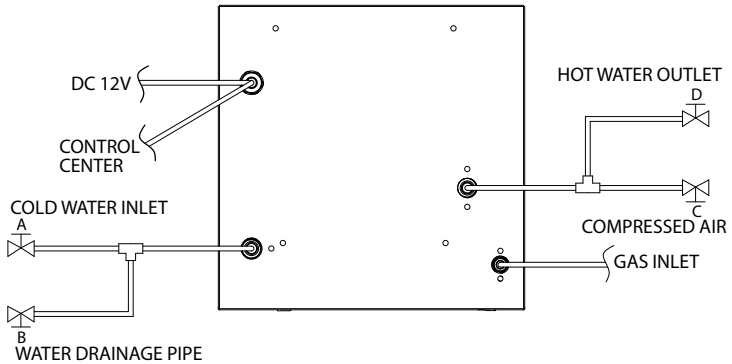
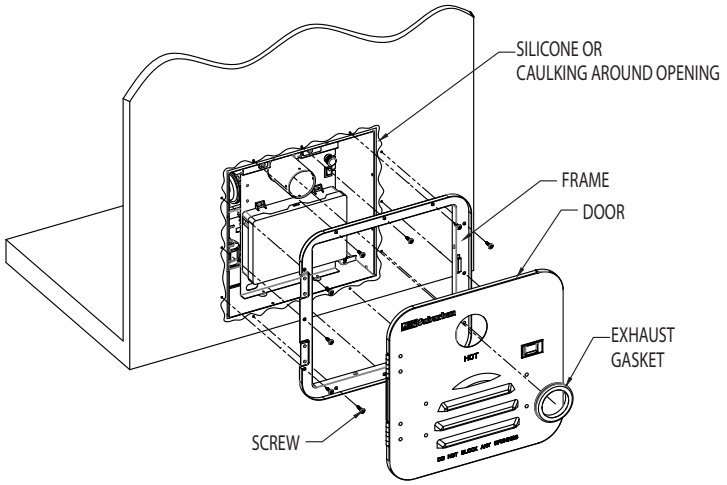
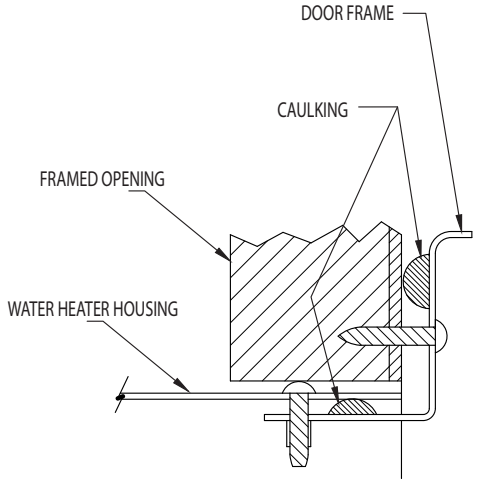


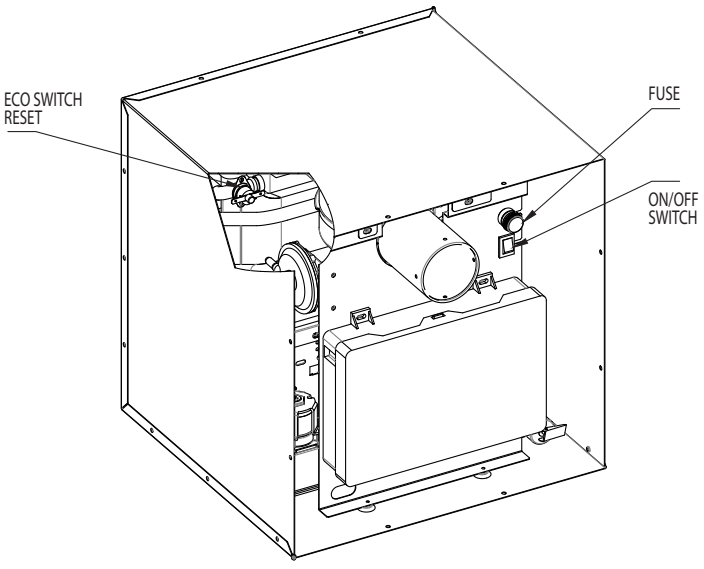
Figure 4

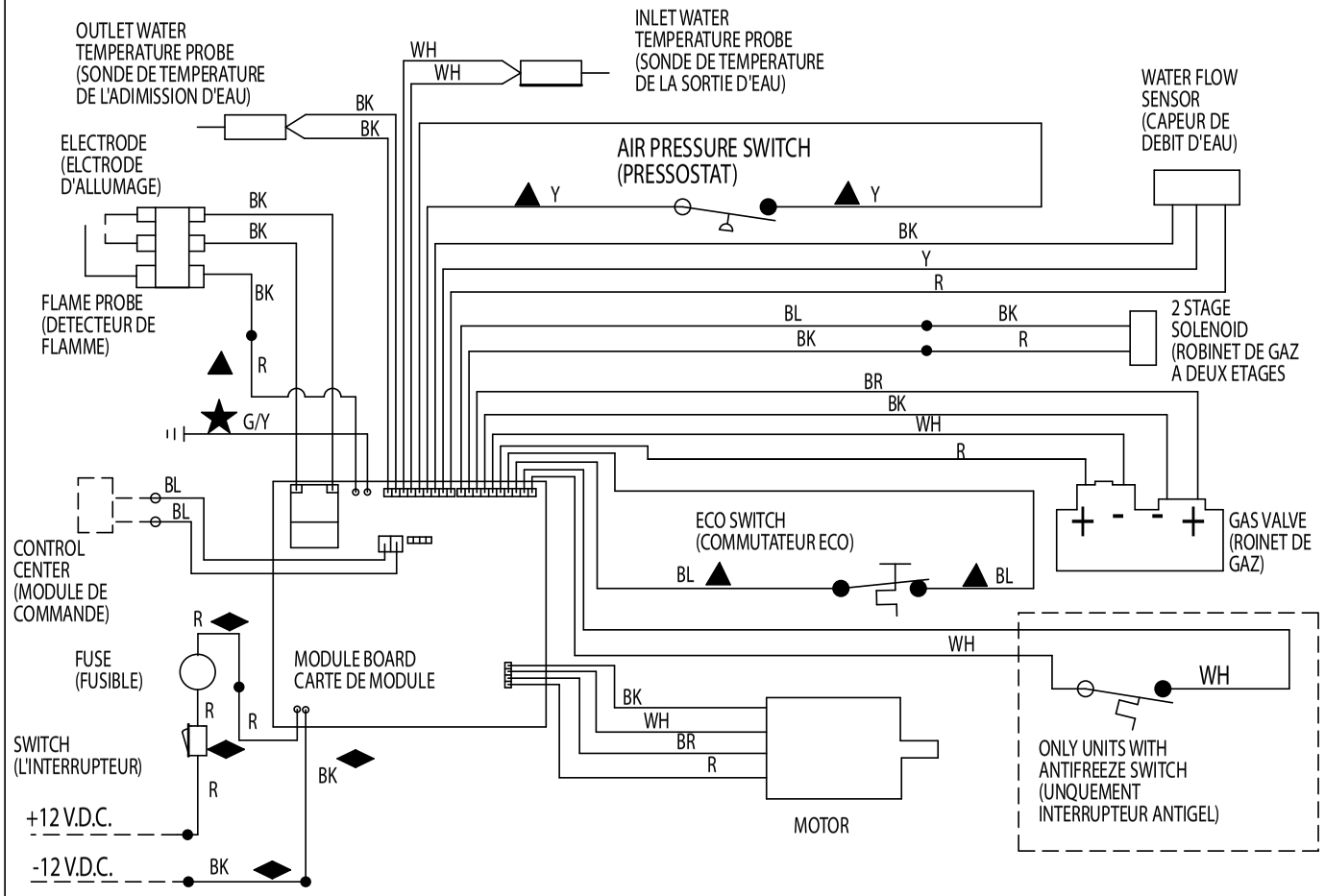




DETAIL A

Figure 5





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 SAUFINDICATION CONTRAIRE. REMARQUE, SI L'UN DES FILS D'ORIGINE FOURNI AVEC L'APPAREIL DOIT ETRE REMPLACE, LE REPLACER PAR UN MATERIAU DE CABLAGE AYANT UNE TEMPERATURE MINIMALE D'AU MOINS 105 ° C.)

★ 18 AWG 600V 105 ° C

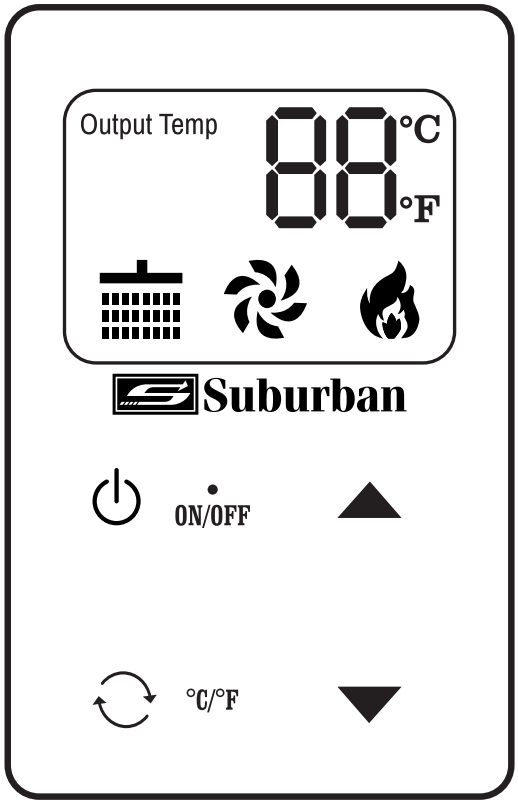
◆ 20 AWG 600V 105 ° C

▲ 22 AWG HIGH TEMP BRAIDED (22 AWG TRESSÉ HAUTE TEMPÉRATURE)

CAUTION: DO NOT HI-POT (DIELECTRIC HIGH VOLTAGE TEST) THIS UNIT AFTER INSTALLATION. TO DO SO MAY CAUSE COMPONENT DAMAGE AND VOIDS WARRANTY OF WATER HEATER. UNIT 100% FIRE CHECKED. (MISE EN GARDE: NE PAS SOUMETTRE CET APPAEIL A UN TEST SOUS HAUTE TENSION. CECI PROVOQUERAIT DES DOMMAGES ET RENDRAIT INVALIDE LA GARANTIE DE L'APPAREIL. L'APPAREIL A DEJA ETE TESTE AU FEU-100%.)

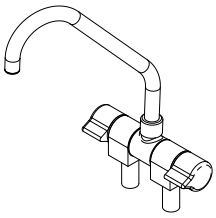
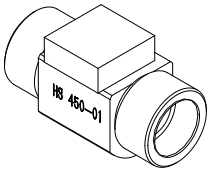
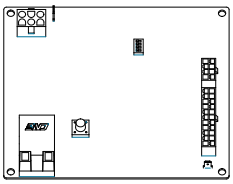
340618

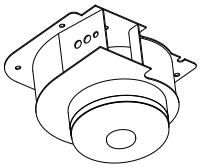
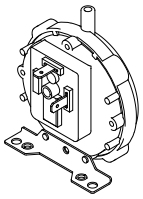
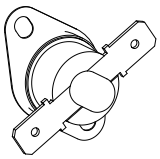
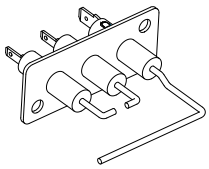
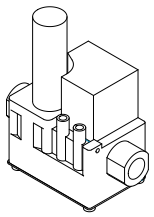
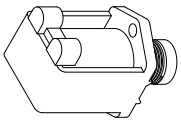
Figure 7



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.
88 °C °F	OUTLET WATER TEMP SETTING	This icon displays the outlet water temperature set point.
BUTTON	**FUNCTION**	**DESCRIPTION**
ON/OFF	ON/OFF	Power Button. Switch from turning unit ON or turning unit OFF.
°C/°F	UNITS	Press to switch between degrees (°) Celsius or degrees (°) Fahrenheit.
▲	UP	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 131°F/ 55°C.
▼	DOWN	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 131°F/ 55°C.

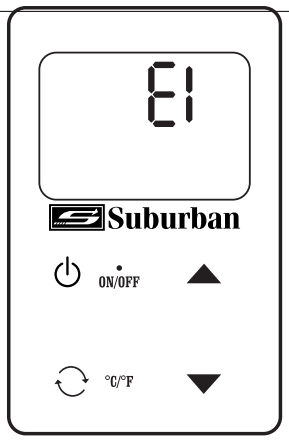
ST42/ST60 SEQUENCE OF OPERATION

COMPONENT		ACTION
	**FAUCET**	Turning on a hot water faucet activates the DEMAND Water Heater.
	**FLOW SENSOR**	The water heater flow sensor senses the flow of water.
	**MODULE BOARD**	The water heater module board receives voltage signal from sensor and provides power to the Fan control module board. (time line 2-3 seconds).

COMPONENT		ACTION
	**BLOWER ASSEMBLY**	The combustion air blower motor starts and completes the circuit to the Pressure switch. (2-3 seconds).
	**PRESSURE SWITCH**	
	**LIMIT SWITCH**	Voltage is completed through the Limit and over-heat sensor switches.
	**ELECTRODE / FLAME PROBE ASSEMBLY**	Module board receives voltage and ignition circuit begins (approximately seven (7) seconds from faucet being turned ON). Spark and gas valve are energized (ignition cycle approximately seven (7) seconds). Flame sense is confirmed during trial for ignition (TFI) time frame
	**GAS VALVE**	
	**REGULATOR TWO STAGE**	Burners will remain ON until the water flow is turned OFF. NOTE: Depending on demand the Proportional valve will energize two (2) orifices or five (5) during cycle. Blower motor will operate approximately 20 seconds after the hot water faucet is turned OFF.

NOTE: If ignition fails on first TFI there is prepurge time of three (3) seconds and ignition begins with a seven (7) second TFI if flame is not detected in second TFI it goes into a third TFI if flame is not detected the module board goes into LOCKOUT and requires reset of Power or turn faucet OFF then back ON to start cycle.

If ON DEMAND CONTROL CENTER (161252, 161253) is connected an E1 code will be displayed.



ST65/ST65RL SPECIFICATIONS

BTU/HR	8,000 MIN to 65,000 MAX
FUEL	LP Gas (Propane)
INLET PRESSURE	MINIMUM 10.5 INCHES W.C. MAXIMUM 14 INCHES W.C.
MANIFOLD PRESSURE	10.5 INCHES W.C.
WATER OPERATING PRESSURE	MINIMUM: 30 LBS PSI MAXIMUM: 150 LBS PSI
VOLTAGE	12 VDC NOMINAL; 10.5 VDC MINIMUM TO 14 VDC MAXIMUM
WATER FLOW REQUIREMENT	MINIMUM: 0.4 GPM MAXIMUM: 3.0 GPM
MINIMUM WIRING GAUGE	MINIMUM WIRING GAUGE 20 AWG 600V 105°F (Degrees Fahrenheit)
AMP DRAW	<7 AMPS
RECOMMENDED FUSE SIZE	2 FUSES with 7 AMPS per FUSE

SUBURBAN TANKLESS ST42/ST60 ON DEMAND WATER HEATER DIMENSIONS

12.60” H x 12.44” W x 15.45” D

ST65/ST65RL 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

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” 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 installation must conform with the requirements of the authority having jurisdiction or in the absence of such requirements with the latest edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54 and/or CSA B149.1; and the latest edition of the American National Standard for Recreational Vehicles NFPA 1192.

In Canada, the installation should conform with the following standards:

- For installation in Recreational Vehicle

Gas - CSA standard CSA Z240.4.2-08 Installation Requirements for Propane Appliances and Equipment in Recreations Vehicles.

Electrical - CSA standard C22.2 No. 148/Z240.6.2-08/C22.2 No. 148-08 Electrical Requirements for Recreational Vehicles.

Plumbing - CSA standard CSA Z240.3.2 Plumbing Requirements for Recreational Vehicles.

- 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. 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.

INSTALLATION
MINIMUM CLEARANCE TO COMBUSTIBLES

MODEL	SIDES	TOP	BACK	FLOOR
ST-65/65RL	0 in.	0 in.	0 in.	0 in.

INSTALLATION WITHOUT REPLACEMENT PANEL

1. Locate area for installation of the unit. The unit should be installed as close to wall as possible. Mark wall as shown in Figure 2 and cut a 3.750" Diameter hole for vent installation. On mesa or yoder type side walls, it may be required to flatten area where vent is to be installed to assure seal around vent assembly.
2. Place unit on floor (verify vent cap lines up with exhaust tube and combustion air opening in unit). a Drain lines must be connected to the system and condensation drains on the On Demand water heater and ran to the outside of the RV. Drain Lines should be as short as possible and must maintain a drop of ¼" per foot from unit. See Figure 3.
3. Install vent assembly. See Figure 4
   a. Vent cap must be ordered separately. See TABLE 1 for vent sizes and part numbers. A minimum overlap of 1.25" is required on exhaust.
   b. Apply a bead of silicone around the vent cap as shown in Figure 4
   c. Install vent cap as shown in Figure 4 with screws. Insure assembly is sealed to outside wall to prevent leaks.
4. Screw the front of the unit to the floor using the two brackets as shown in Figure 3. If necessary, the brackets can be moved to the rear of the unit as shown in Figure 5B.
5. Make gas, water and electrical connections following instructions contained in this manual.

INSTALLATION USING REPLACEMENT PANEL

A replacement panel is used when replacing Suburban 6 gallon tank units.

1. On mesa or yoder type sidewalls, flatten the wall area around the opening.
2. Apply a continuous line of suitable caulk on the RV wall around all four sides of the opening and around back side of replacement panel frame as shown in Figure 6. Required to create water tight seal of the frame to the RV wall.
3. Center and insert caulked replacement panel frame into opening. Push frame firmly against RV wall over caulking previously applied in step 2. Secure frame with the eight (8) supplied screws into RV wall as shown in Figure 6.
4. Locate the water heater cabinet approximately even with the inside RV wall. See Figure 5B. If securing the unit to the floor using the FRONT mounting brackets, proceed to STEP 5. To mount the water heater using the REAR mounting method, remove the two mounting brackets from the front of the unit and secure them to the threaded holes at the rear of the unit. Screw the rear of the unit to the floor using the two brackets. See Figure 5B.
5. Using the gasket supplied with the kit, apply the gasket beginning at the center bottom of the replacement panel frame. Adhere the adhesive side of the gasket to the replacement panel frame and install the gasket all the way around the frame. Insure the ends of the gasket meet at the center bottom of the access panel frame.
6. Attach the replacement panel to the frame as shown in Figure 6 using the five (5) screws provided.
7. Vent cap must be ordered separately. See Table 1 for vent sizes and part numbers. There must be a minimum of 1.25" (31.8mm) overlap of vent assembly tube over exhaust tube on the water heater and the replacement panel must compress the replacement panel gasket. See Figure 5A.
   a. Apply a bead of silicone around the vent cap as shown in Figure 6.
   b. Install vent cap as shown in Figure 6 with three (3) screws. Insure assembly is sealed to outside wall to prevent leaks.
8. Screw the front of the unit to the floor using the two brackets as shown in Figure 3.
9. Apply silicone caulk around the beveled edges of the replacement panel as shown in Figure 6. Do not caulk the bottom of the replacement panel.
10. Make gas, water and electrical connections following instructions contained in this manual supplied with the water heater.
11. Drain lines must be connected to the freeze protection and condensation drains on the On Demand Water Heater and ran to the outside of the RV. Drain Lines should be as short as possible and must maintain a minimum drop of ¼" per foot. (6.4mm per 305mm) from unit. See Figure 3.

VENT CAP PART NUMBER	VENT CAP LENGTH	"X" MAX DIMENSION
260726	0 - 1 inches	0.985 inch
260727	1 - 2 inches	1.985 inch
260728	2 - 3 inches	2.985 inch
260732	5 - 6 inches	5.985 inch

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 National Electrical Code NFPA 70. **In Canada,** the electrical installation should conform with CSA standard Z240.6.2-08/C22.2 No. 148-08 Electrical Requirements for Recreational Vehicles.
- Make the 12 Volt D.C. electrical connections following the wiring diagram illustrated in Figure 9.

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 9.
4. Locate the User Control Panel on a wall surface near the appliance. Wire length between Control Panel and appliance is 150 ft. 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 9.
9. The Control Panel displays the water temperature setting and allows outlet water temperature to be adjusted (131°F maximum / 55°C).

MAKING DRAIN CONNECTIONS

1. Drain connections are made at the front of the water heater. Refer to Figure 3. Connect 1/2" ID hose to freeze protection drain fitting provided on front of unit. Connect ½" ID hose to condensation drain fitting provided on front of unit. Connect appropriate plumbing drain to pressure relief valve. DO NOT RESTRICT.
2. Drain lines must run to the outside of the RV. Drain lines should be as short as possible and must maintain a minimum drop of ¼" per foot. (6.4mm per 305mm). See Figure 3.
3. Drain lines must not have any valve, reducing coupling or other restriction present.

MAKING WATER CONNECTIONS

- 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", "COLD", and "RECIRCULATION" (if equipped). 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.
- All hot water lines should be on a single loop, with the return of the loop terminating into the "RECIRCULATION" connection on the ST-65RL. Individual faucets, showers, etc should be no further than 18" from the hot water loop for best performance. See Figure 7 for recommended recirculation loop example.

⚠ CAUTION

If you use air pressure to check for leaks, the pressure must not exceed the pressure specified in accordance with NFPA 1192.

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-65/65RL, 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.

Maximum Capacity of Pipe in Cubic Feet of Gas per Hour for Gas Pressures of 0.7 PSIG or Less and a Pressure Drop of 0.3 Inch Water Column

INTENDED USE:
Tubing sizing between single or second-stage (low pressure) regulator and appliance.

Nominal:	K & L:	1/4	1/4	1/2	5/8
Nominal:	AvCR	3/8	1/2	5/8	3/4
Outside Diameter:		0.375	0.500	0.625	0.750
Inside Diameter:*		0.305	0.402	0.527	0.652
Length (feet)		**Capacity in Thousands of BTU per Hour**			
10		45	93	188	329
20		31	64	129	226
30		25	51	104	182
40		21	44	89	155
50		19	39	79	138

***Table capacities are based on TYPE K copper tubing I.D.**

⚠ WARNING

Do not use an open flame to check for leaks.

ST65/ST65RL 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.

- 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.

ST60/ST65RL OPERATING INSTRUCTIONS

This water heater is equipped with a recirculation feature to keep hot water at the faucets at all times. To enable/disable the recirculation feature, press the RECIRCULATION button on the On Demand Control Center or RV control system interface.

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 10. 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 0.4 GPM 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 131°F/55°C. See Figure 10.

NOTE: A child lock prevents outlet water temperature set point from exceeding 122°F/50°C. To remove the child lock, hold the up arrow on the User Control Panel for five (5) seconds. This will allow the maximum outlet temperature to reach 131°F/55°C.

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 recirculation mode is enabled, the water heater will occasionally start up and shut down to keep the hot water lines at the set point temperature.
9. If the User Control Panel is left ON, no further action is required by the user.
10. 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 0.4 gallons 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.”)

ST65/ST65RL OPERATIONAL TROUBLESHOOTING

NOTE: There must be a demand of at least 0.4 GPM for the burner to operate and heat water flow. This will continue until the water flow is turned OFF and the system goes dormant.

NO WATER FLOWS FROM FAUCET WHEN TURNED ON:

1. Be sure water supply is turned ON and there are no water restrictions.
2. Ensure BYPASS SYSTEM (if installed) is properly aligned for operation.

BURNER TURNS ON, TEMPERATURE FLUCTUATES ERRATICALLY:

1. This issue can be caused by restriction in the shower heads, faucet aerators or water strainers.
2. Clean as required and remove any flow restrictions.

ON DEMAND HEATER COMES ON AND RAPIDLY CYCLES ON AND OFF:

1. Water flow is too low. Increase flow at faucet.
2. Clean all shower heads, faucet aerators or water strainers as required and remove any flow restrictions to ensure the minimum 0.4 GPM of water flow.
3. Verify the water pump is functioning properly.
4. Bleed air out of plumbing lines by opening all water faucets.
5. 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.
6. Water source pressure fluctuates too low causing loss of flow. Check the incoming water source for a minimum of 30 psi.

WATER TEMPERATURE IS TOO LOW WITH LOWER WATER FLOW:

Water flow is too low. Increase flow at faucet to ensure the minimum 0.4 GPM of water flow.

WATER TEMPERATURE IS TOO HIGH OR NO TEMPERATURE CONTROL:

Press the UP or DOWN arrows on the On Demand Control Center to increase the SET water temperature in single increments.

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 0.1 GPM), it is possible that you have COLD water bleeding into the HOT water side of your water system.

1. 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.
2. 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

If the burner will not come on, the following items should also be checked before calling a service technician:

- Switch turned off.
- 12 VDC power is ON.
- Gas supply to heater is empty or turned off.
- Water turned on and faucet open.
- Check manual reset on ECO switch. Refer to ST ECO Reset in IOM Figure

If burner fails to light, call a Suburban service center or a local RV service agency.

ST65/ST65RL MAINTENANCE

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, cold, and recirculation (if equipped) connections to isolate the appliance from the plumbing system. With the bypass valves open, compressed air of pressure no greater than 40 PSI 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 8.

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.

If the On Demand Water Heater is dripping water into the drain line, in cold weather, when the water supply temperature is below 38°F and does not stop when the water temperature rises above 38°F, call your local service center.

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 150 PSI / 1034 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.

Figure 1

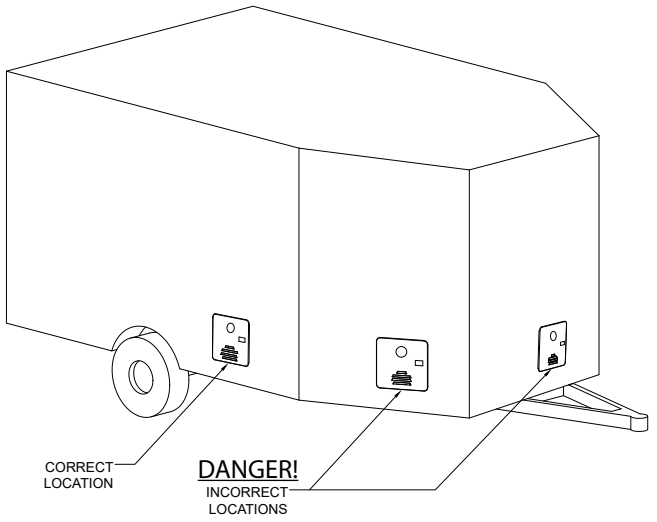


Figure 2

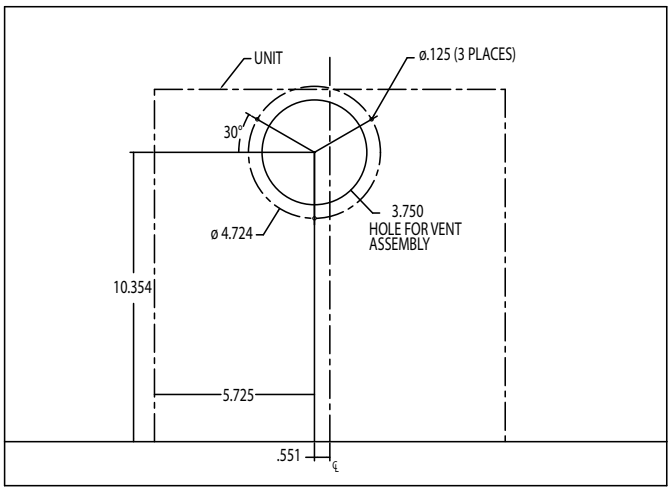
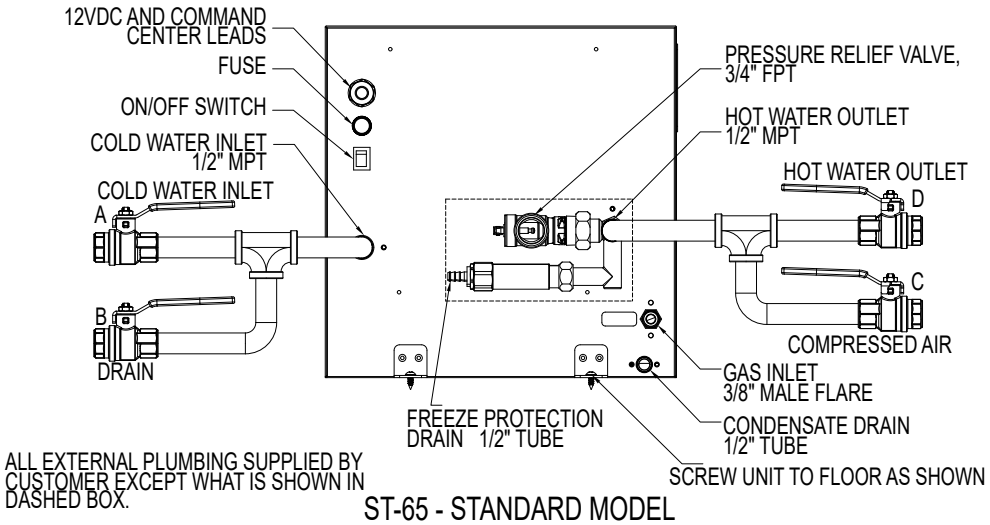
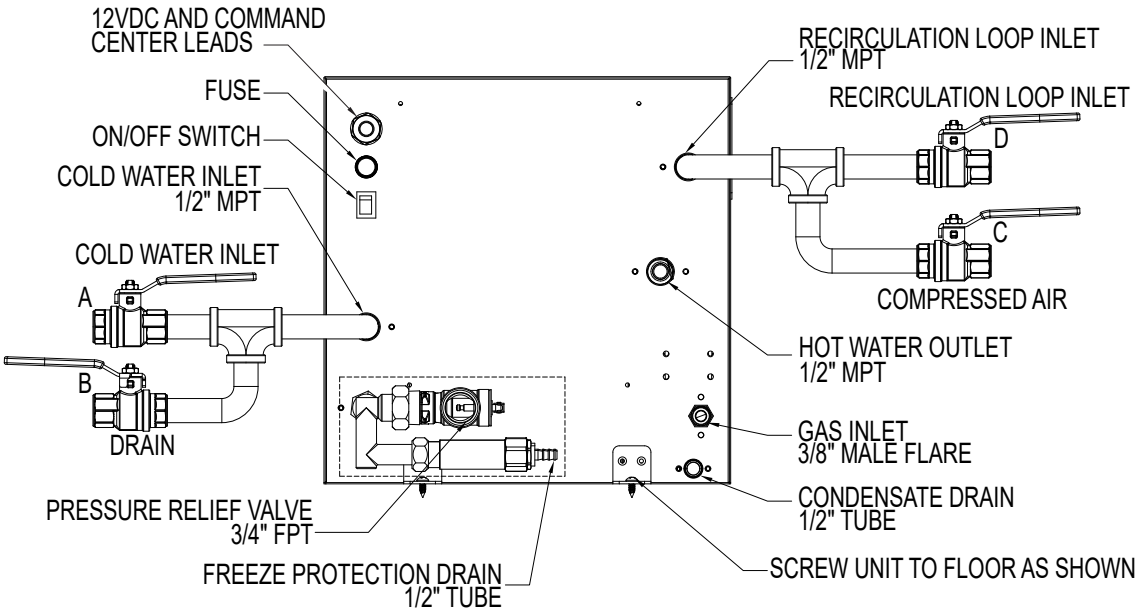


Figure 3



ALL EXTERNAL PLUMBING SUPPLIED BY CUSTOMER EXCEPT WHAT IS SHOWN IN DASHED BOX.

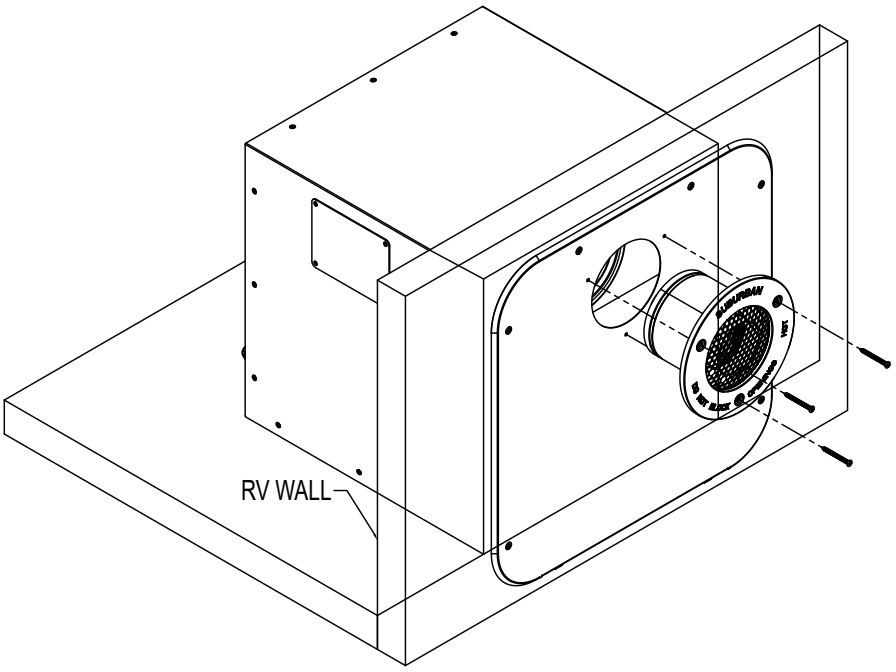
ST-65 - STANDARD MODEL



ALL EXTERNAL PLUMBING SUPPLIED BY CUSTOMER EXCEPT WHAT IS SHOWN IN DASHED BOX.

ST-65RL - RECIRCULATION MODEL

Figure 4



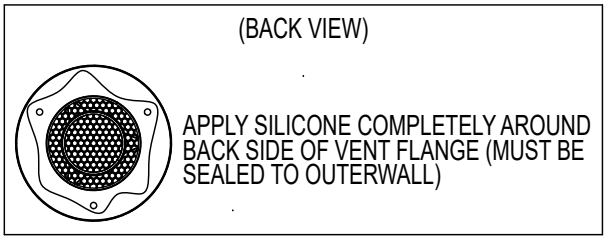
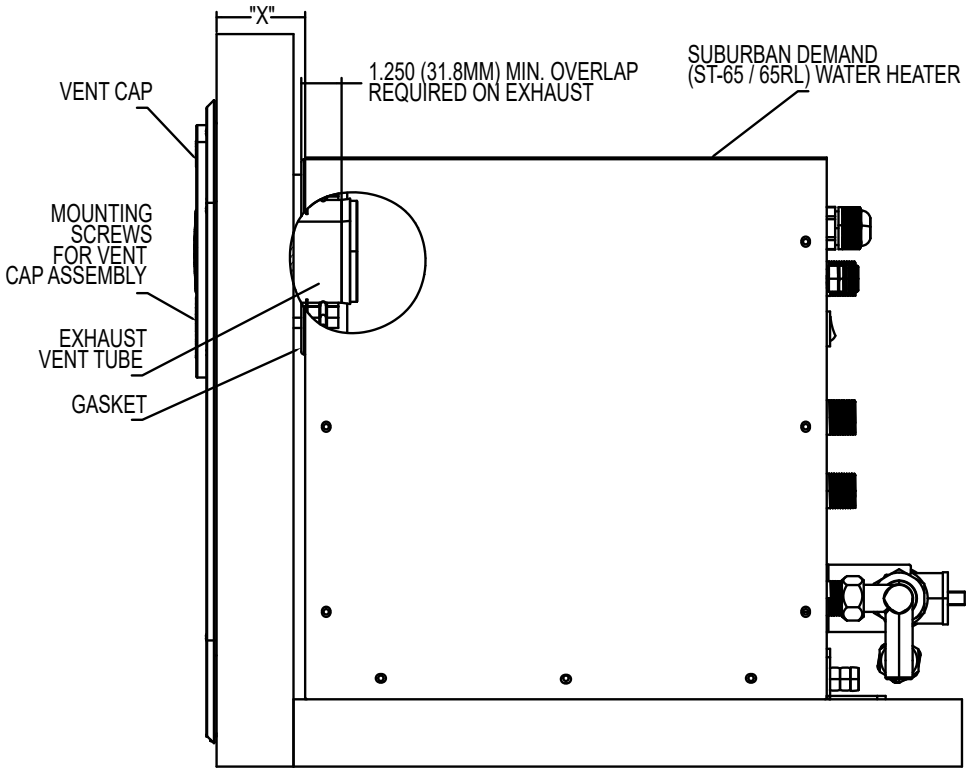
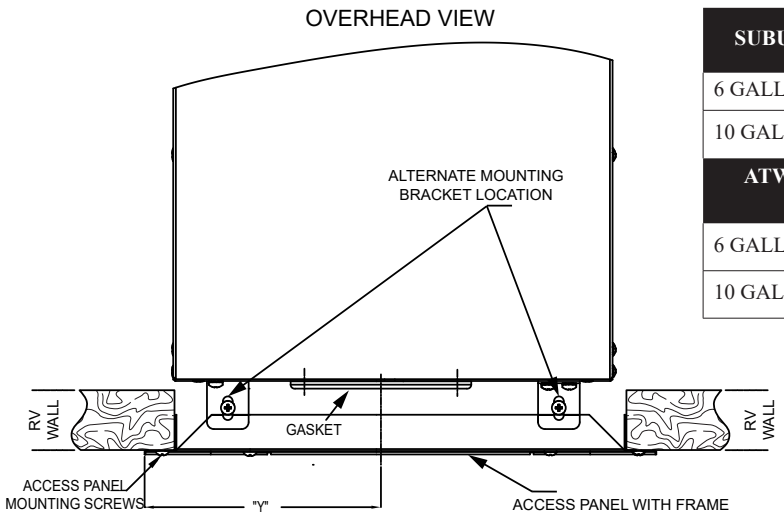


Figure 5a



VENT CAP PART NO. 260724 SHOWN FOR INSTALLATION WITHOUT ACCESS PANEL.
MAX "X" DIMENSION OF 2.00" (50.8MM)

Figure 5b



SUBURBAN REPLACEMENT PANEL	"Y" DIMENSION
6 GALLON	6.890"
10 GALLON	8.629"
ATWOOD STYLE REPLACEMENT PANEL	**"Y" DIMENSION**
6 GALLON	8.497"
10 GALLON	8.629"

Figure 6

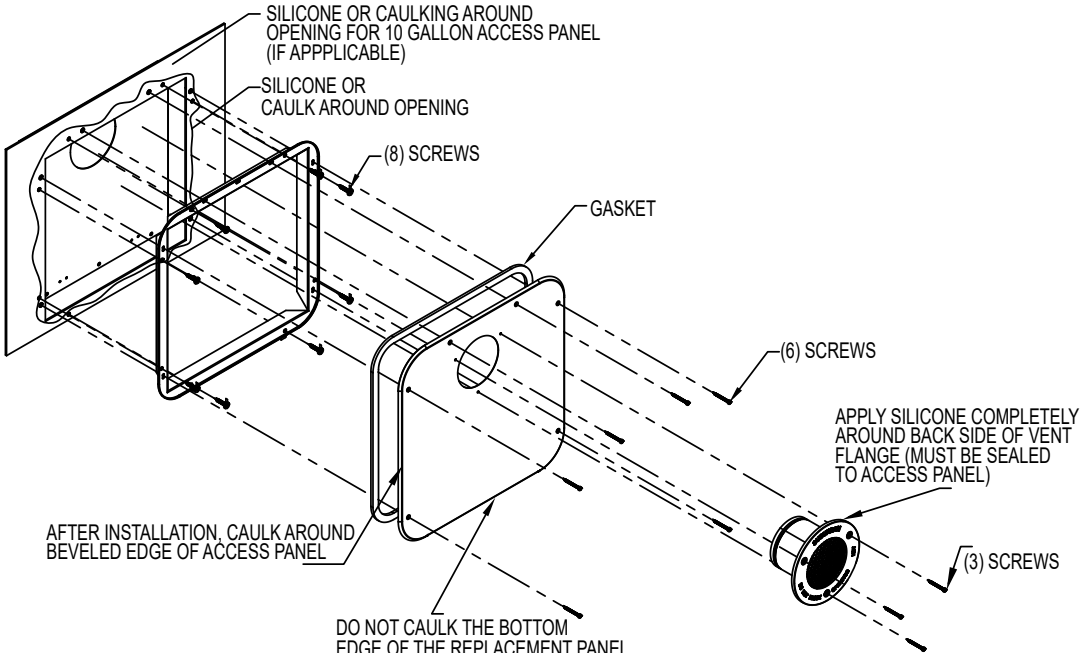


Figure 7

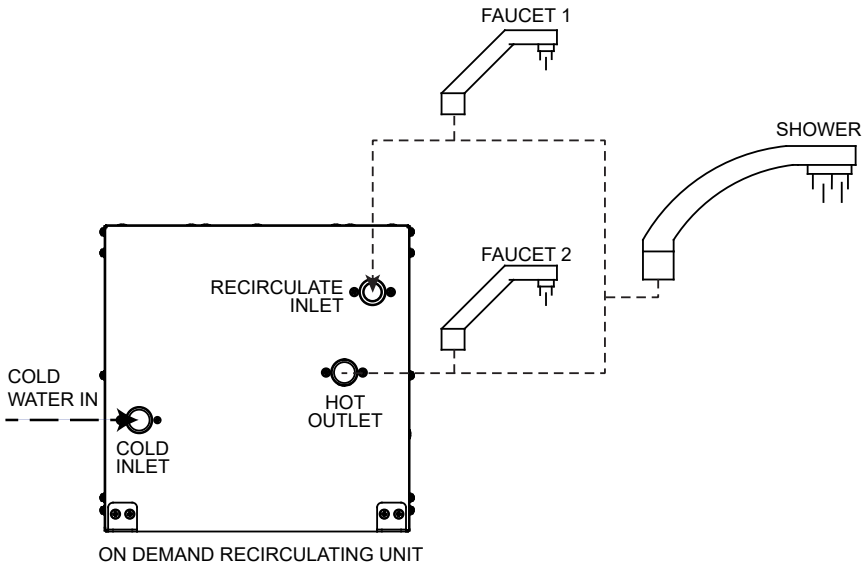


Figure 8

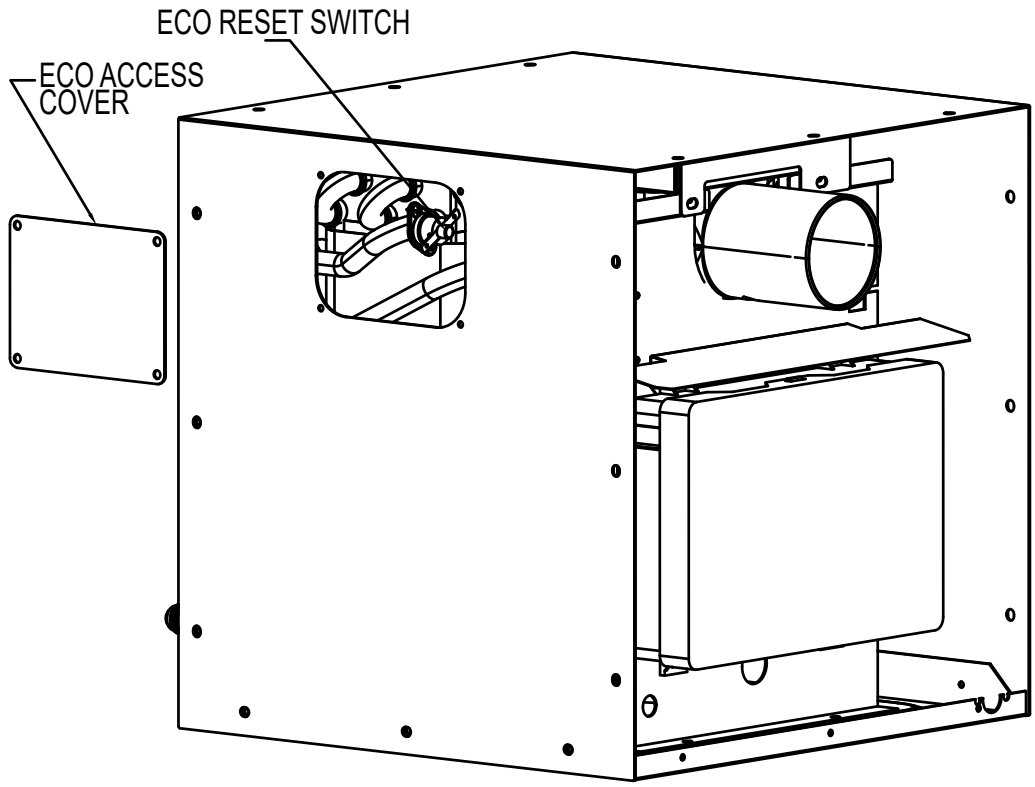
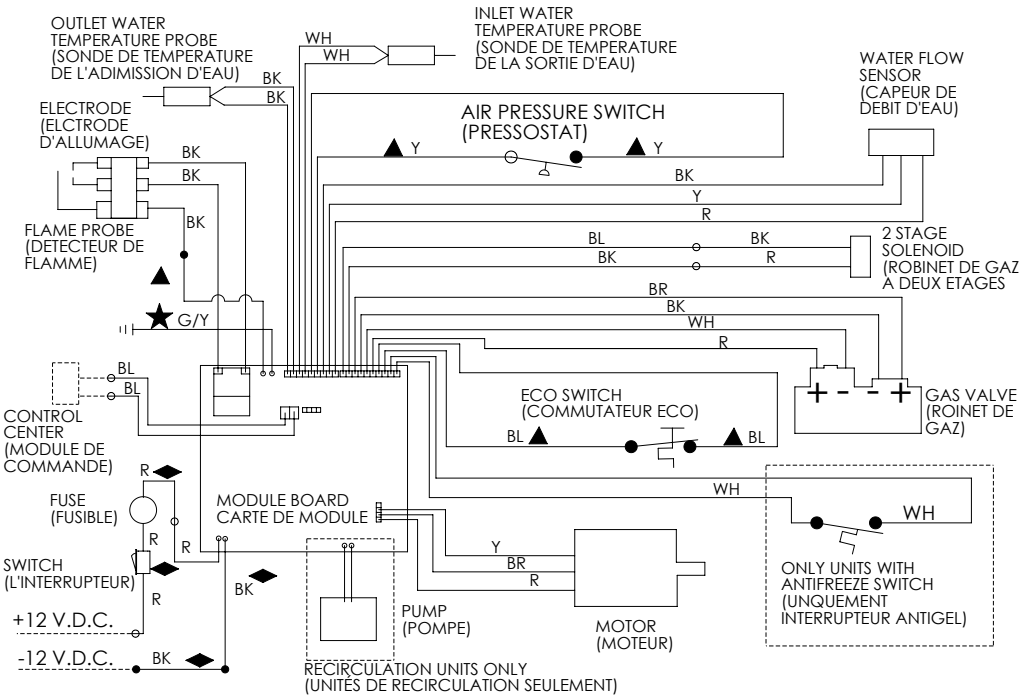


Figure 9



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

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 105°C. (TOUS LES FILS SONT DE CALIBRE 22 SAUFINDICATION CONTRAIRE. REMARQUE, SI L'UN DES FILS D'ORIGINE FOURNI AVEC L'APPAREIL DOIT ETRE REMPLACE, LE REPLACER PAR UN MATERIAU DE CABLAGE AYANT UNE TEMPERATURE MINIMALE D'AU MOINS 105°C.)

★ 18 AWG 600V 105°C

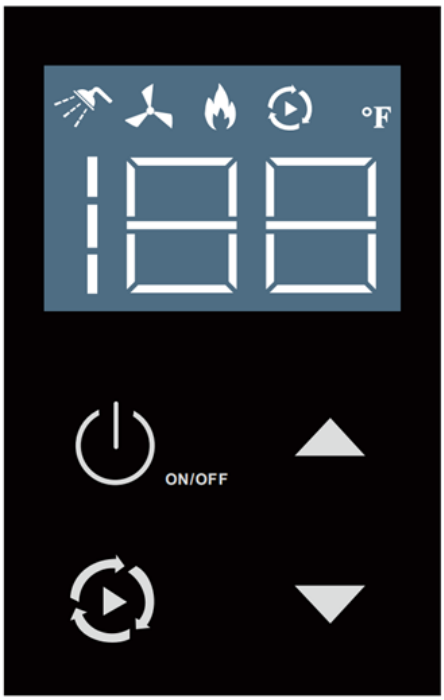
◆ 20 AWG 600V 105°C

▲ 22 AWG HIGH TEMP BRAIDED (22 AWG TRESSÉ HAUTE TEMPÉRATURE)

CAUTION: DO NOT HI-POT (DIELECTRIC HIGH VOLTAGE TEST) THIS UNIT AFTER INSTALLATION. TO DO SO MAY CAUSE COMPONENT DAMAGE AND VOIDS WARRANTY OF WATER HEATER. UNIT 100% FIRE CHECKED. (MISE EN GARDE: NE PAS SOUMETTRE CET APPAEIL A UN TEST SOUS HAUTE TENSION. CECI PROVOQUERAIT DES DOMMAGES ET RENDRAIT INVALIDE LA GARANTIE DE L'APPAREIL. L'APPAREIL A DEJA ETE TESTE AU FEU-100%.)

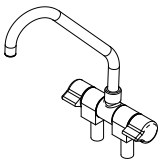
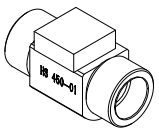
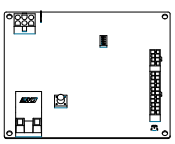
340623

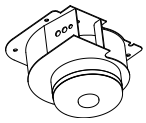
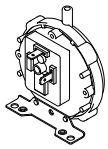
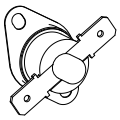
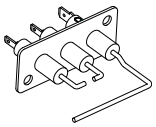
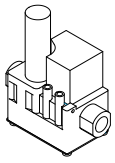
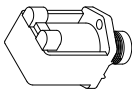
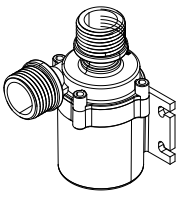
Figure 10



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.
	RECIRCULATION	This icon displays when the recirculation feature is turned 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.
	RECIRCULATION /UNITS	Press once to turn the recirculation feature on or off. Press repeatedly to toggle units between degrees (°) Celsius or degrees (°) Fahrenheit.
	UP	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 131°F/ 55°C.
	DOWN	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 131°F/ 55°C.

ST65/ST65RL SEQUENCE OF OPERATION

COMPONENT		ACTION
	**FAUCET**	Turning on a hot water faucet activates the DEMAND Water Heater.
	**FLOW SENSOR**	The water heater flow sensor senses the flow of water.
	**MODULE BOARD**	The water heater module board receives voltage signal from sensor and provides power to the Fan control module board. (time line 2-3 seconds).

COMPONENT		ACTION
	**BLOWER ASSEMBLY**	The combustion air blower motor starts and completes the circuit to the Pressure switch. (2-3 seconds).
	**PRESSURE SWITCH**	
	**LIMIT SWITCH**	Voltage is completed through the Limit and over-heat sensor switches.
	**ELECTRODE / FLAME PROBE ASSEMBLY**	Module board receives voltage and ignition circuit begins (approximately seven (7) seconds from faucet being turned ON). Spark and gas valve are energized (ignition cycle approximately seven (7) seconds). Flame sense is confirmed during trial for ignition (TFI) time frame
	**GAS VALVE**	
	**REGULATOR TWO STAGE**	Burners will remain ON until the water flow is turned OFF. NOTE: Depending on demand the Proportional valve will energize two (2) orifices or five (5) during cycle. Blower motor will operate approximately 20 seconds after the hot water faucet is turned OFF.
	**RECIRCULATION LOOP PUMP**	The recirculation loop pump circulates water in the plumbing loop as needed to maintain the desired temperature.

NOTE: If ignition fails on first TFI there is prepurge time of three (3) seconds and ignition begins with a seven (7) second TFI if flame is not detected in second TFI it goes into a third TFI if flame is not detected the module board goes into LOCKOUT and requires reset of Power or turn faucet OFF then back ON to start cycle.

If ON DEMAND CONTROL CENTER (161410) is connected an E1 code will be displayed.

ERROR CODES

FAULT INDICATION	CODE MEANING	FAULT CAUSE	FAULT CONDITION
E0	Outlet Temperature Probe Fault	Outlet temperature probe is open or shorted.	**LOCKED**
E1	Ignition Failure, No Ignition.	Flame signals undetectable after igniting three times.	**LOCKED**
E2	“False Fire Fault” “Residential Fire Fault”	Flame signals detected before start.	**LOCKED**
E3	High Limit Fault Detected	Limit switch off.	**LOCKED**
E4	Inlet Temperature Sensor Fault	Inlet temperature probe is open or shorted.	**LOCKED**
E5	Fan Failure	No fan speed signal detected.	**LOCKED**
E6	Over temperature Fault	Outlet water too hot.	**LOCKED**
E7	Gas Valve Wire Fault	Main Gas valve wire opens or shorts unexpectedly	**LOCKED**
E8	Pressure Switch Failure	Pressure switch abnormally closed or disconnected	**LOCKED**
E9	Recirculation Failure	Pump will not prime due to air in recirculation line	**LOCKED**
En	Water Heater Timeout	Water heater used for longer than 20 minutes	**LOCKED**
EC	Communication Failure	Line controller communication failure	**LOCKED**

TROUBLESHOOTING GUIDE

SUBURBAN TANKLESS

ON DEMAND RV WATER HEATER

MODELS:
ST42, ST60, ST65, ST565RL

FOR RECREATIONAL VEHICLE USE ONLY

To use this guide, look up the symptom in the FAULT column. Test each possible cause in the order listed using the steps provided to determine what corrective action to take.

If an ERROR code is present, look up the ERROR CODE using the column provided. Test each possible cause in the order listed using the steps provided to determine what corrective action to take.

SUBURBAN ST TROUBLESHOOTING

FAULT	STEP	POSSIBLE CAUSE	TEST	CORRECTIVE ACTION	IN COACH REPAIR?	ERROR CODE
Water heater will not start	1	Blown fuse (either)	Verify fuse is properly seated in both terminals	Remove fuse and insert properly into terminal	YES	N/A
	2		Check polarity of supply voltage - Black (-12 VDC), Red (+12 VDC)	Correct polarity if incorrect, replace fuse	YES	N/A
	3		Verify blue/black wires are not connected to supply voltage.	Verify they cannot make contact with any possible ground or supply voltage	YES	N/A
	4	Supply voltage	Check incoming voltage - should be 10.5-14 VDC	Troubleshoot RV power supply	YES	N/A
	5	Module Board	Unit keeps blowing fuses during fuse replacement	Verify polarity is correct and blue wires are not connected to supply voltage or ground, verify black wire is not connected to supply voltage or ground. If all this is still corrected, replace Module Board.	YES	N/A
	6	Water flow sensor	Turn one faucet to a very slow trickle of water, then measure voltage between pin #7 and pin #8. The voltage should be fluctuating, if not, try altering the water flow slightly and rechecking voltage.	If voltage remains constant regardless of the flow rate, replace flow sensor	YES	N/A
	7	Blower not operating	Check terminals in all wiring harnesses accessible from control panel to verify each terminal is fully seated in harness and no debris is blocking connection between terminals	Reseat terminals in harness if loose, clean terminals if debris is found	YES	E5
	8		Check voltage between pin #4 (red) and pin #1 (black) on fan input plug on control module board plug - should be 10.0-24.2 VDC	If all voltage parameters are correct, replace Blower Assembly 391127. If unit fails any of these parameters, replace Module Board 233680 (ST60) or 233696 (ST42)	YES	E5
			Check voltage between pin #3(brown) and pin #1 (black) on input plug on fan control board input block - should be 1.5-3.5 VDC			
			Check voltage between pin #2(white) and pin #1 (black) on input plug on fan control board input block - should be 0.8 VDC			
	9	Communication Error	User Control Panel will only Display EC	Replace Module Board	YES	EC
				Replace User Control Panel (UCP)	YES	EC

SUBURBAN ST TROUBLESHOOTING

FAULT	STEP	POSSIBLE CAUSE	TEST	CORRECTIVE ACTION	IN COACH REPAIR?	ERROR CODE
Fan comes on, no spark occurs, fan shuts down after a few seconds	1	Pressure Switch Adapter	Debris/blockage inside pressure tap port located inside exhaust port	Remove blockage from unit	YES	E5
	2	Pressure Switch Hose	Ensure hose connected on both ends, not damaged	Replace pressure switch hose	NO	E5
	3	Pressure switch won't close	Remove wire harness, and check continuity across pressure switch, pin #5(yellow) and pin #6(yellow)	Replace pressure switch	NO	E5
	4	Blower Assembly	Very low RPM (less than 200) is observed, can be tested by placing a small piece of paper approx. 4" from exhaust vent, if paper does not move, or moves very little, replace motor.	Replace blower assembly	NO	E5
	5	No spark	Check spark electrode gap. Should be 1/8" gap. Also search for cracks on electrode	Replace electrode	NO	E1
Fan comes on, spark occurs, unit fires but goes out, and then repeats	1	Gas Valve	Check brown and red wires going to valve from board. Verify no debris is impeding terminal connection and verify terminals are full seated and secured to spade on valve. Verify terminals on board are fully seated inside harness. Gas Valve resistance should be 80-85 Ohms for the large valve and 120-125 Ohms for the small valve	Correct terminal seating and clear terminal if needed	YES	E1
Fan comes on, spark occurs, unit shuts down after a few seconds	1	RV Gas Supply	Verify unit has sufficient LP supply 11-14" W.C.	Troubleshoot RV fuel system.	YES	E1
	2	Gas Valve	Check voltage at pin #5(red) and pin #6(white) of the gas valve plug on the control module board 233680 (ST60) or 233696 (ST42). Should modulate between 7 and 12 VDC considering demand, if 0 VDC is observed, then replace module board. Verify no debris is in terminals blocking connection and that all terminals are fully seated inside the wiring harness. If proper voltage is found, replace Gas Valve 16124	Replace Gas Valve 161248 or Modula Board 233680 (ST60) or 233696 (ST42)	Gas Valve No Module Board Yes	E1
	4	Flame sense	Verify wire plugged in and not damaged	Inspect Terminal and verify it is properly seated	NO	N/A
			Verify flame impingement of electrode via viewing window	Clean with nonabrasive pad, make minor position adjustments to cross two flame paths in a perpendicular fashion. If sensor can't be adjusted to proper position, may have to replace flame sense probe	NO	
			Use multimeter on µA setting, depending on flow, it should read between 14-16 µA while unit is in operation	Replace flame sense probe	NO	

SUBURBAN ST TROUBLESHOOTING

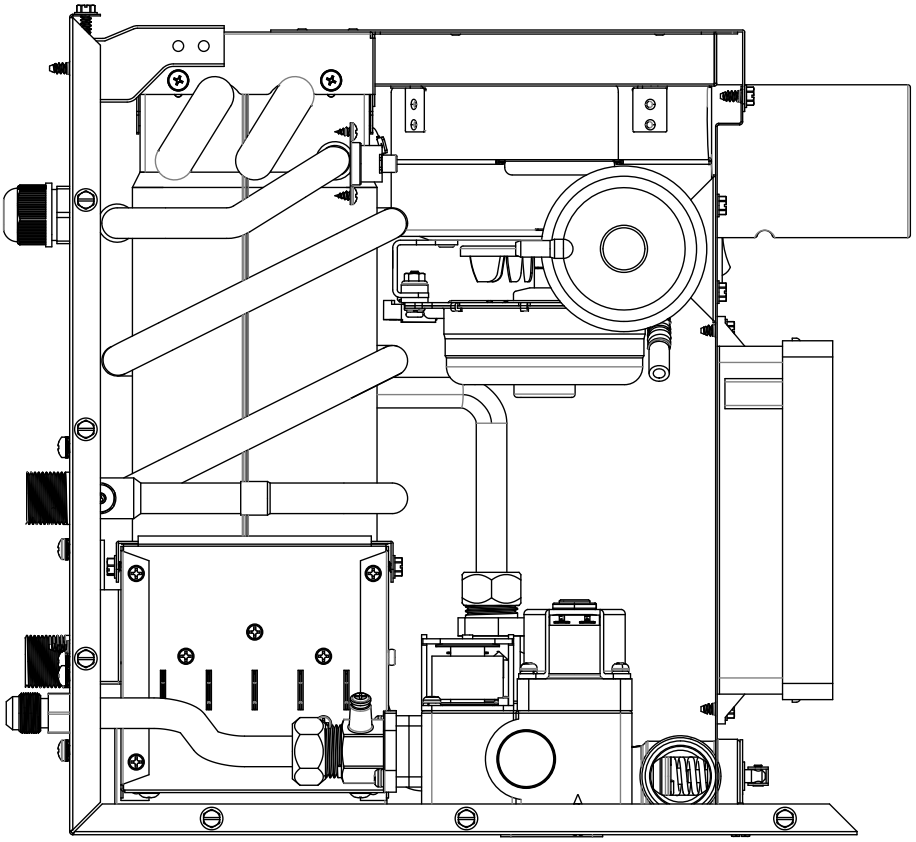
FAULT	STEP	POSSIBLE CAUSE	TEST	CORRECTIVE ACTION	IN COACH REPAIR?	ERROR CODE
Fan is in continuous operation regardless of demand	1	Module Board	Fan stays on	Replace Module Board	YES	E6
Water too hot	1	On demand control center	Check set point	Adjust set point	YES	N/A
	3	Outlet water temperature probe (NTC)	Inspect seating of NTC probe	Correct seating of NTC probe	NO	E9
			Verify switch continuity. Resistance should be between 4kΩ and 5kΩ	Replace NTC probe		
	4	Limit switch	Check continuity across pin #&(blue) and #8(blue). If not continuous, trace wiring to verify all connections are secure, and measure continuity across each individual limit switch. If the left one does not have continuity, replace it. If the right one has continuity, replace it.	Replace limit switch	NO	E6
Water too cold	1	Water flow	Verify water flowrate (gallons per minute) at faucet using bucket and stopwatch. Must be greater than 0.7 gpm to function. Very high flowrates or very cold inlet water can also cause cold outlet water.	-	YES	N/A
	2	On demand control center	Check set point	Adjust set point	YES	N/A
	4	Gas supply	Verify gas supply is turned on, with a pressure of 11 - 14 " WC	Troubleshoot RV gas supply	YES	E1
	5	Modulating gas valve	Check voltage at pin #5(red) and pin #6(white) of the gas valve plug on the control module board. Should modulate between 7 and 12 VDC considering demand	Replace gas valve	NO	N/A
	6	Manifold Solenoid valve	Open two devices (ex: faucet + shower) to full hot, check voltage at pin #1(black) and pin #2(blue) of the gas valve plug on the control module board. If voltage is present, replace valve, if no voltage is present, replace control module board	"Replace gas valve or Replace module board"	NO	N/A
	7	Flame sense	Verify wire plugged in and not damaged	Replace flame sensor	NO	E1
			Verify flame impingement of electrode			
			Use multimeter on µA setting, depending on flow, it should read between 14-16 µA while unit is in operation.			
	8	Clogged gas orifice	Check gas orifice for clogs	Clear gas orifice of clogs	NO	E1

SUBURBAN ST TROUBLESHOOTING

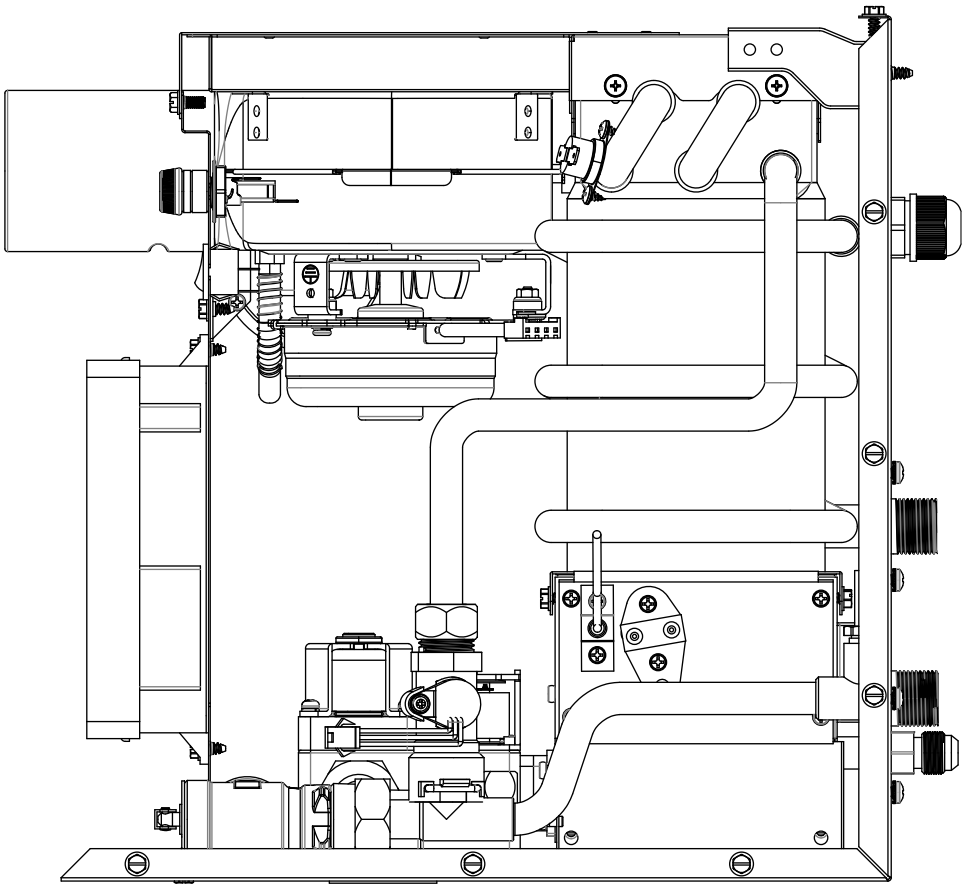
FAULT	STEP	POSSIBLE CAUSE	TEST	CORRECTIVE ACTION	IN COACH REPAIR?	ERROR CODE
Water temperature repeats going from hot to cold	1	Module Board	Check voltage at pin #5(red) and pin #6(white) of the gas valve plus on the control module board. Voltage should not exceed 12 VDC	Replace module board	YES	N/A
	2	Gas Valve	Gas valve is fully engaged not modulating down	Replace gas valve	NO	N/A
Water inside cabinet	2	Leaking water line	Pinpoint leak location	Tighten components if leak occurs at threaded connection. Replace unit if not	YES	N/A
Combustion/ soot present of vent cap	1	Vent blocked	Check for blockage in vent	Remove blockage	YES	E5
	2	Debris inside combustion chamber	Verify all drains are opened, not clogged. Remove side panel of unit and verify it is clean of any foreign contaminants.	Clean unit and drain lines	NO	N/A
	3	RV Regulator/Supply Hose	Verify regulator has sufficient output and supply hose has sufficient inside diameter with no kinks or obstructions	Replace regulator or supply house	YES	N/A
Low gas pressure	1	RV regulator	Check gas pressure	Replace RV regulator	YES	N/A
Excessive soot in exhaust	1	Erratic burner	Check sight glass: all or most of flame should be blue. If flame is mostly yellow, remove unit and clean the area around combustion chamber	Clean area surrounding combustion chamber	-	N/A
Residual burner flame	1	Gas valve not sealing properly	Check voltage at pin #1(red) and pin #2(white) of the gas valve plug on the control module board while unit is in shutdown mode.	If voltage is 0 VDC - Replace gas valve	NO	E2
				If voltage is between 2-7 VDC - Replace control module board	YES	
Connection error fault	1	Bad User Control Panel	Water heater not functioning	Replace User Control Panel (UCO)	YES	EC
No instant hot water at faucet	1	Recirculation option not turned on at the User Control Panel (UCP)	Check that the recirculation feature is turned on at the UCP	Turn on the recirculation feature	YES	N/A
	2	Air in recirculation line	Check for E9 error	Bleed air from lines via faucets	YES	E9
	3	Pump failure	Check for E9 error	Replace pump	NO	

Using this table:
Look up symptom in “Fault” column, then test each possible cause in order to determine what corrective action to take
If error code is present, look it up in the “Error Code” column at right, then test each possible cause in order to determine what corrective action to take.

INTERIOR VIEWS

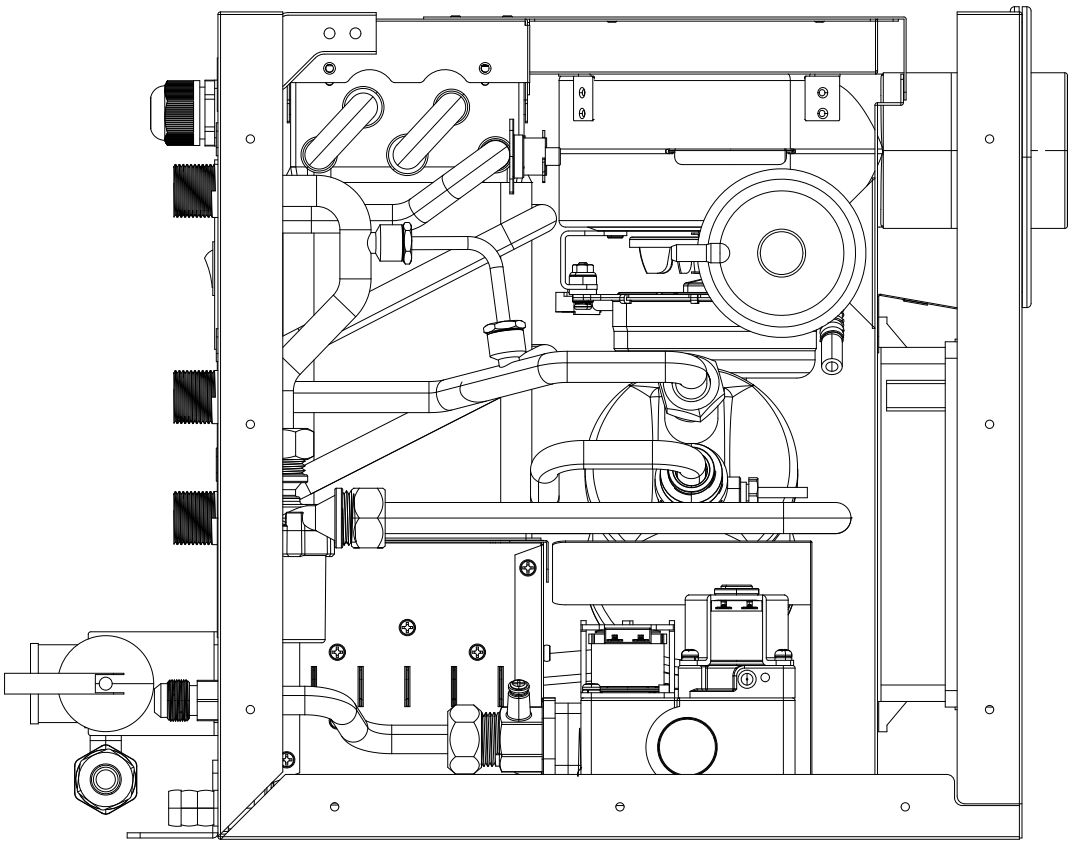


DOMESTIC SUBURBAN TANKLESS ST42/ST60 ON DEMAND WATER HEATER LEFT VIEW

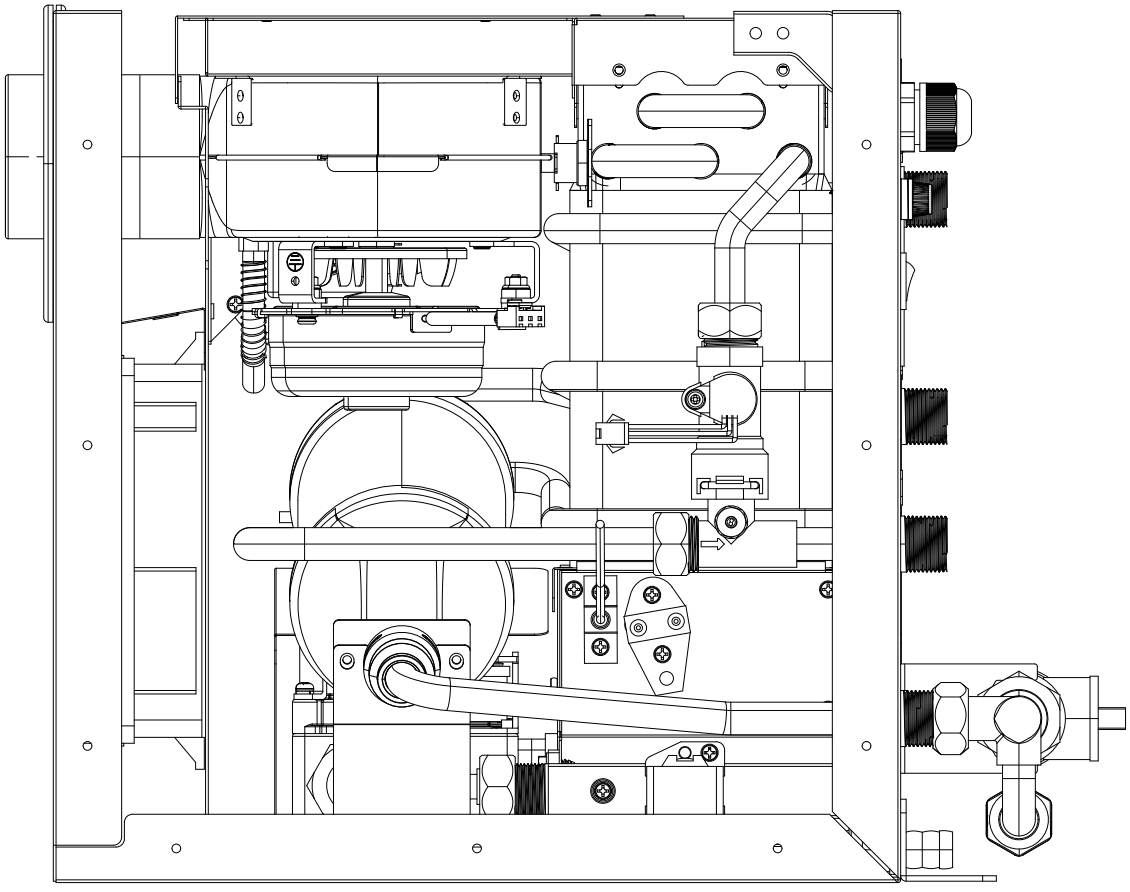


DOMESTIC SUBURBAN TANKLESS ST42/ST60 ON DEMAND WATER HEATER RIGHT VIEW

INTERIOR VIEWS



DOMESTIC SUBURBAN TANKLESS ST65/ST65TL ON DEMAND WATER HEATER
LEFT VIEW



DOMESTIC SUBURBAN TANKLESS ST65/ST65RL ON DEMAND WATER HEATER
RIGHT VIEW

TWO YEAR LIMITED WARRANTY
SUBURBAN RECREATIONAL VEHICLE WATER HEATER

TWO YEAR LIMITED WARRANTY
This Suburban product is warranted to the original purchaser to be free from defects in material and workmanship under normal use and maintenance for a period of two years from date of purchase whether or not actual use begins on that date. It is the responsibility of the consumer/owner to establish the warranty period. Suburban does not use warranty registration cards for its standard warranty. You are required to furnish proof of purchase date through a Bill of Sale or other payment records.

Suburban will replace any parts that are found defective within the first two years and will pay a warranty service allowance directly to the recommended Suburban Service Center at rates mutually agreed upon between Suburban and its recommended service centers. Replacement parts will be shipped FOB the shipping point within the Continental United States, Alaska and Canada to the recommended service center performing such repairs. All freight, shipping and delivery costs shall be the responsibility of the owner. The exchanged part or unit will be warranted for only the unexpired portion of the original warranty. Before having warranty repairs made, confirm that the service agency is a recommended service center for Suburban. **DO NOT PAY THE SERVICE AGENCY FOR WARRANTY REPAIRS; SUCH PAYMENTS WILL NOT BE REIMBURSED.**

Suburban reserves the right to examine the alleged defect in the water heater or component parts, and it is the owner's obligation to return the water heater and/or component parts to Suburban or its representative. When returning a water heater, it must include all component parts and the serial number plate. Returned component parts must be individually tagged and identified with the water heater's model number, serial number and date of installation.

For warranty service, the owner/user should contact the nearest recommended Suburban Service Center, advising them of the model and serial numbers (located on the water heater) and the nature of the defect. Transportation of the RV to and from the Service Center and/or travel expenses of the Service Center to your location is the responsibility of the owner/user. A current listing of recommended service center may be obtained from Suburban's website: www.Airxcel.com. If you cannot locate a recommended service center locally, the service agency chosen to perform warranty repairs must contact our Service Department at 423-775-2131 for authorization before making repairs. Unauthorized repairs made will not be paid by Suburban.

LIMITATION OF WARRANTIES
ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH EACH LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER OR OTHER PERSON WHOMSOEVER.

SUBURBAN WILL NOT BE RESPONSIBLE FOR:
1. Normal maintenance as outlined in the installation, operating and service instructions owner's manual including cleaning of component parts and cleaning or replacement of the burner orifice. Any water damage arising, directly or indirectly, from any defect in the water heater or component parts or from its use.
2. Initial checkouts and subsequent checkouts which indicate the water heater is operating properly, or diagnosis without repair.
3. Damage or repairs required as a consequence of faulty or incorrect installation or application not in conformance with Suburban instructions.
4. Failure to start and/or operate due to loose or disconnected wires; water or dirt in controls, fuel lines and gas units; improper gas pressure; low voltage.
5. Cleaning or adjustment of components; electrode, burner tube, pilot and thermocouple.
6. Costs incurred in gaining access to the water heater.
7. Parts or accessories not supplied by Suburban.
8. Freight charges incurred from parts replacements.
9. Damage or repairs needed as a consequence of any misapplication, abuse, unreasonable use, uv horized alteration, improper service, improper operation or failure to provide reasonable and necessary maintenance.
10. Suburban products whose serial number has been altered, defaced or removed.
11. Suburban products installed or warranty claims originating outside the Continental U.S.A., Alaska, Hawaii and Canada.
12. Damage as a result of floods, winds, lightning, accidents, corrosive atmosphere or other conditions beyond the control of Suburban.
13. ANY SPECIAL, INDIRECT OR CONSEQUENTIAL PROPERTY, ECONOMIC OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER

Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you.

NO REPRESENTATIVE, DEALER, RECOMMENDED SERVICE CENTERS OR OTHER PERSON IS AUTHORIZED TO ASSUME FOR SUBURBAN MANUFACTURING COMPANY ANY ADDITIONAL, DIFFERENT OR OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS SUBURBAN PRODUCT.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

IF YOU HAVE A PRODUCT PROBLEM
FIRST: If your RV has its original water heater and is still under the RV manufacturer's warranty, follow the steps suggested by your dealer or manufacturer of the RV.

SECOND: Contact a conveniently located recommended Suburban Service Center. Describe to them the nature of your problem, make an appointment, if necessary, and provide for delivery of your RV to the selected service center.

THIRD: For the location of the nearest Service Center, refer to the listing provided or contact:

AIRXCEL, INC. - SUBURBAN DIVISION
Customer Service Department
676 Broadway Street
Dayton, Tennessee 37321
(423) 775-2131, Ext. 7101
www.Airxcel.com

FOR FUTURE REFERENCE, YOU SHOULD RECORD THE FOLLOWING INFORMATION:	
MODEL NUMBER:	
SERIAL NUMBER:	
STOCK NUMBER:	
DATE OF PURCHASE:	

AIRXCEL®

Suburban

NOTES

AIRXCEL, INC. - SUBURBAN DIVISION

676 Broadway Street | Dayton, Tennessee 37321 | (574)247-9235 | Fax: 423-775-7015 | www.Airxcel.com

Email: SMCSales@SuburbanMfg.com