



Suburban
Manufacturing Company

a subsidiary of AIRXCEL, Inc.

SUBURBAN MANUFACTURING COMPANY
Post Office Box 399
Dayton, Tennessee 37321



SUBURBAN GAS FURNACES

INSTALLATION INSTRUCTIONS FOR MODELS

SF-20 • SF-25 • SF-30 • SF-35



The design of the furnace has been listed for installation in recreational vehicles only. In order for the furnace to operate in conformity with generally accepted safety regulations, the installation instructions must be followed. Failure to comply with the installation instructions will void the warranty on the furnace and any responsibility on the part of Suburban Manufacturing Company.

The furnace was inspected before it left the factory. If any parts are found to be damaged, do not install the furnace. Immediately contact the transportation company and file a claim.

FOR YOUR SAFETY

WHAT TO DO IF YOU SMELL GAS:

- Extinguish any open flame.
- 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.

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

WARNING! Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Refer to the installation instructions and/or owners manual provided with this appliance. Installation and service must be performed by a qualified installer, service agency or the gas supplier.

WARNING! Be sure the furnace and all ignition systems are "OFF" during any type of refueling and while vehicle is in motion or being towed.

This book contains instructions covering the operation and maintenance of your furnace. Keep with unit at all times.

Should you require further information, contact your dealer or nearest Suburban Service Center.

INSTALLATION INSTRUCTIONS

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.

These furnaces are designed and installed in such a manner as to be removable only from the exterior of the recreational vehicle.

CAUTION: If possible, do not install the furnace to 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 furnace vent and any door whenever the door is opened.

NOTE: The exhaust temperature of this furnace could discolor or warp some materials. You should verify that the material used on the coach door, panel, or cover will not discolor or warp from the exhaust temperature whenever any door, panel, or cover is in the open position.

CAUTION: 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.

CAUTION: 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. Never operate furnace with vent covered.

CAUTION: This furnace was shipped from the factory set up for the gas connection to be made at the right rear of the unit as illustrated in Figure 1. If you wish to make gas connection through the top of cabinet, you must remove furnace from cabinet and turn gas inlet fitting 90° CLOCKWISE. DO NOT TURN FITTING COUNTER-CLOCKWISE, this will loosen fitting and result in a gas leak.

WARNING! Hold manifold firmly when turning elbow to prevent any force from being inserted on the valve and to prevent any leaks from developing. Be sure to check all fittings for leaks including the inlet and outlet on the valve before reinstalling furnace into cabinet. Correct all leaks immediately. NOTE: The furnace must be in operation to properly check for leaks.

NOTE: These furnaces must be installed and vented as described in this manual so that the negative pressure created by the air circulating (return air) fan cannot affect the combustion air intake or venting of any other appliance. It is imperative that the products of combustion be properly vented to the atmosphere and that all combustion air supplied to burner be drawn from the outside atmosphere. (See Installing Vent Assembly.)

NOTE: Do not install the furnace with the vent facing toward the forward end of the coach.

IMPORTANT: If this furnace is to be connected to a common duct system also serving a cooling unit, a manual or automatic damper is required to prevent any cold conditioned air from circulating back into the furnace. Cold air passing over the furnace combustion chamber during the operation of the cooling unit can result in the formation of condensation inside the furnace combustion chamber. This condensation may promote corrosion and premature failure of the combustion chamber.



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- Evacuate all persons from the vehicle.
- Shut off the gas supply at the gas container or source.
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These furnaces are designed and installed in such a manner as to be removable only from the exterior of the recreational vehicle.

CAUTION: If possible, do not install the furnace to 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 furnace vent and any door whenever the door is opened.

NOTE: The exhaust temperature of this furnace could discolor or warp some materials. You should verify that the material used on the coach door, panel, or cover will not discolor or warp from the exhaust temperature whenever any door, panel, or cover is in the open position.

CAUTION: 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.

CAUTION: 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. Never operate furnace with vent covered.

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NOTE: These furnaces must be installed and vented as described in this manual so that the negative pressure created by the air circulating (return air) fan cannot affect the combustion air intake or venting of any other appliance. It is imperative that the products of combustion be properly vented to the atmosphere and that all combustion air supplied to burner be drawn from the outside atmosphere. (See Installing Vent Assembly.)

NOTE: Do not install the furnace with the vent facing toward the forward end of the coach.

IMPORTANT: If this furnace is to be connected to a common duct system also serving a cooling unit, a manual or automatic damper is required to prevent any cold conditioned air from circulating back into the furnace. Cold air passing over the furnace combustion chamber during the operation of the cooling unit can result in the formation of condensation inside the furnace combustion chamber. This condensation may promote corrosion and premature failure of the combustion chamber.

NOTE: These furnaces shall be installed so the electrical components are protected from water.

These furnaces are design certified for propane/LP gas only. Do not attempt to convert to natural gas.

Gas supply pressure for purposes of input adjustment:

Minimum - 11" W.C.* Maximum - 13" W.C.*
(W.C.* - Water Column).

In the U.S.A., the installation of the furnace must be in accordance with local codes and regulations. In the absence of local codes and regulations, refer to the latest edition of:

1. Standard for Recreational Vehicles ANSI A-119.2/NFPA 501C.
2. National Fuel Gas Code ANSI Z223.1.
3. Furnace must be electrically grounded in accordance with the latest edition of the National Electrical Code ANSI/NFPA No. 70.

In Canada, the furnace must be installed in accordance with:

1. Standard CAN/CSA-Z240 Recreational Vehicles.
2. CSA Standard CAN/CSA-Z240.6.2-M86 Electrical Requirements for Recreational Vehicles.
3. Standard CAN/CSA-Z240.4.2-M86 Installation Requirements for Propane Appliances and Equipment in Recreational Vehicles.
4. CAN/CGA-B149 Installation Codes.
5. Any applicable local codes and regulations.

This unit is equipped with an electric igniter device that has an energy consumption of .1 amp @ 12 volts D.C.

WARNING! Extension tubes cannot be used. If you try to extend the vent, it will result in improper installation which could cause unsafe furnace operation.

There are three (3) methods described below for installing the furnace. Regardless of the method you choose, we require an opening be provided in the exterior of the trailer or motor home for free, unobstructed removal of the furnace. This exterior, removable panel or wall section of the trailer or motor home must be a minimum of 17-3/4 x 8.

It is important that adequate return air be provided to assure normal heating and operation of the furnace. Failure to provide the minimum return air will cause erratic furnace cycling. Refer to the chart shown below for minimum return air requirements.

Return Air Requirements	
Model	Minimum Free (unobstructed) Area
SF-20/25/30/35	55 Sq. In.

TABLE 1

NOTE: Return air must be from within the living area of the coach.

A. INSTALLATION DIRECTLY AGAINST OUTER PANEL OF COACH
(See Figure 1) (Panel supplied by installer)

Maximum wall thickness for this type installation is 2".

1. Locate the furnace near lengthwise center of the coach.
2. Choose a location for installation out of the way of wires, pipes, etc., which might interfere with the installation. Adhere to the minimum clearances from the cabinet to combustible construction as listed in Table 2. Refer to Figure 3 for illustration of furnace clearances.
3. 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 extending the full width and depth of the appliance. If preferred, the carpeting, tile or combustible materials, other than wood may be cut away the full length and depth of the appliance plus the appliance minimum clearances to combustibles. (See Table 2.)
4. Cut an opening through the inner wall. This will allow the rear of the furnace to be installed against the outer panel of the coach.
5. Locate center lines for exhaust and intake, as shown in Figure 1.
6. Cut two 2-1/4" diameter holes through the outer panel of the coach. (See Figure 1.)
7. Put furnace in place, making sure that rear of the furnace cabinet is as close to outer panel of the coach as possible and still assure proper vent tube overlap. (See Installing Vent Assembly.)
8. Using the two #10 x 3/4 stainless screws provided, fasten furnace cabinet to floor of coach through the holes provided in the furnace cabinet. (See Figure 4.)
9. Be sure furnace is secured within furnace cabinet. (See Figure 4.)
10. Install vent assembly. (See instructions for installing vent.)

B. INSTALLATION FLUSH WITH INNER WALL OF COACH
(See Figure 2) (Exterior panel supplied by installer)

Maximum wall thickness for this type installation is 2".

1. Locate the furnace near lengthwise center of the coach.
2. Choose a location for installation out of the way of wires, pipes, etc, which might interfere with the installation. Adhere to the minimum clearances from cabinet to combustible construction as listed in Table 2. Refer to Figure 3 for illustration of furnace clearances.

3. 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 extending the full width and depth of the appliance. If preferred, the carpeting, tile or combustible materials, other than wood may be cut away the full length and depth of the appliance plus the appliance minimum clearances to combustible. (See Table 2.)

4. Locate center lines for exhaust and intake tubes as shown in Figure 1.
5. Cut two 2-3/4" diameter holes through the removable wall section. (See Figure 2.)
6. Put furnace in place, making sure that rear of furnace cabinet is as close to inner wall section of the coach as possible and still assure proper vent tube overlap. (See Installing Vent Assembly.)
7. Using the two #10 x 3/4 stainless screws provided, fasten furnace cabinet to floor of coach through the holes provided in the furnace cabinet. (See Figure 4.)
8. Be sure furnace is secured within furnace cabinet (See Figure 4.)
9. Install vent assembly. (See instructions for installing vent.)

C. INSTALLATION USING THE FURNACE ACCESS DOOR SUPPLIED BY SUBURBAN (See Figure 4)

Maximum wall thickness for this type installation is 2".

1. Locate the furnace near lengthwise center of coach.
 2. Choose a location for installation out of the way of wires, pipes, etc., which might interfere with the installation. Adhere to the minimum clearances from the cabinet to combustible construction as listed in Table 2. Refer to Figure 3 for illustration of furnace clearances.
 3. 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 extending the full width and depth of the appliance. If preferred, the carpeting, tile or combustible materials, other than wood may be cut away the full length and depth of the appliance plus the appliance minimum clearances to combustibles. (See Table 2.)
 4. After furnace location has been determined, cut an opening 18-7/32 x 8-9/32" through the inner coach wall and the outer wall (skin) of the coach.
 5. Caulk around opening as illustrated. Apply generously. The purpose of the caulking is to seal the back side of the door frame and the coach skin water tight.
 6. Secure frame to outer wall (skin) through the holes in the frame. Screws should be used. (See Figure 4.) NOTE: Do not place screws into the holes required for mounting the door.
 7. Slide furnace in place. The back of the furnace should be installed against or as close as possible to the flange on the door frame. (See illustration.) The furnace must maintain 1/2" overlap on the intake and 1-1/4" overlap on the exhaust.
 8. Using the two #10 x 3/4 stainless screws provided, fasten furnace cabinet to floor of coach through the holes provided in the furnace cabinet. (See Figure 4.)
 9. Be sure furnace is secured within furnace cabinet. (See Figure 4.)
 10. Position furnace access door over the frame. Secure the door to the coach skin. Be sure the coach skin is of sufficient strength to keep furnace access door in place and insure a tight seal. It may be necessary to build a wood or metal frame around the opening in order to provide adequate strength for securing door.
- CAUTION: The screws provided with the door may not be of sufficient length and size for all applications and it may be necessary for the installer to substitute screws in order to adequately secure the furnace access door.**
11. Install vent assembly. (See instructions for installing vent.)

Model	Front	Left Side	Right Side	Top	Bottom	Back	Exhaust and Intake Tube
SF-20	1"	0"	0"	0"	0"	0"	3/8"
SF-25	1"	0"	0"	0"	0"	0"	3/8"
SF-30	1"	0"	0"	0"	0"	0"	3/8"
SF-35	1"	0"	0"	0"	0"	0"	3/8"

-NOTE-
0" MEANS TO SPACER BUMPS
CLEARANCE FROM DUCTS TO
COMBUSTIBLE MATERIAL - 1/4" (See Figure 3)

TABLE 2

INSTALLING VENT ASSEMBLY

The vent outlet must be installed so it is in the same atmospheric pressure zone as the combustion air intake. The exhaust and intake tubes must be installed from the outside, pass through the RV skin and slide onto the furnace exhaust and intake.

WARNING! Do not alter the vent assembly supplied with this furnace. Any modifications will result in improper installation which could cause unsafe furnace operation.

CAUTION! Combustion air must not be drawn from the living area. All air for combustion must be drawn from the outside atmosphere. All exhaust gases must be vented to the outside atmosphere - never inside the RV. Therefore, it is essential to insure that the vent cap and tube assemblies are properly installed.

1. Apply caulking to RV skin behind vent cap as shown in Figure 1. Apply caulking generously around perimeter of vent cap and across center as shown.
2. Insert intake tube through RV skin and slide it onto the furnace intake (See Figure 2.) Minimum tube overlap of 1/2" is required.
3. Insert vent cap exhaust tube through RV skin and slide it onto the furnace exhaust (See Figure 2.) Minimum tube overlap of 1 1/4" is required.
4. Attach vent cap assembly to outer skin of RV with the six (6) screws provided. Do not install vent assembly upside down. The words "Suburban" and "Dayton, Tenn." must be right side up.

CONNECTING GAS SUPPLY

Connect the gas supply to the furnace at the manifold, following the suggestions outlined below. It will be necessary to hold the flare fitting on the furnace manifold when connecting or loosening gas line.

NOTE: The compound used on threaded joints must be resistant to liquefied petroleum (LP) gas.

NOTE: The appliance must be disconnected from the gas supply piping system during any pressure testing of that system at test pressure in excess of 1/2 PSIG.

The appliance must be isolated from the gas supply piping during any pressure testing of the gas supply piping system at test pressure equal to or less than 1/2 PSIG.

1. A 3/8" male flare connection is provided for gas line hookup. Some standards may require the use of a manual shut off valve in the gas line external to the furnace cabinet.
2. In order to maintain a check of gas supplied pressure to the furnace, Suburban advises the installer to provide the 1/8" NPT plug tap for test gauge connection immediately upstream of the gas supply connection to the furnace and that it be readily accessible.
3. After the furnace has been connected to the gas supply, all joints must be checked for leaks.

WARNING! Never check for leaks with an open flame. Turn on the gas and apply soapy water to all joints to see if bubbles are formed.

CONNECTING ELECTRICAL SUPPLY

CAUTION: This furnace is designed for negative ground 12 volt D.C. system only. Do not attempt to alter the furnace for a positive ground system or connect the furnace directly to 115 volts A.C. Damage to furnace component parts will occur.

Be sure all wiring to the furnace is of heavy enough gauge to keep the voltage drop through it to a minimum and to provide enough power for start-up surge. No. 12 gauge wire is recommended. If any of the original wire that is supplied with the appliance must be replaced, it must be replaced with type 105° C or its equivalent.

Power supply connections are to be on the right side of the furnace. The wires are color coded, red for positive (+) and yellow for negative (-). This polarity must be observed so the furnace motor will run the proper direction of rotation to insure correct air delivery. (See wiring diagram.)

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

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

CONNECTING DUCTS TO FURNACE

The following duct requirements must be followed in order to assure proper operation of the furnace:

A. The minimum open duct areas listed below must be maintained throughout entire duct system including through register:

Model	Side Ducts			Top Duct	Bottom Duct
	Min. Open Duct Area	Min. No. Ducts Used	Duct Size	Min. Open Duct Area	Min. Open Duct Area
SF-20	25 SQ. IN.	2	4"	56 SQ. IN.	56 SQ. IN.
SF-25	36 SQ. IN.	3	4"	56 SQ. IN.	56 SQ. IN.
SF-30	36 SQ. IN.	3	4"	56 SQ. IN.	56 SQ. IN.
SF-35	48 SQ. IN.	4	4"	56 SQ. IN.	56 SQ. IN.

NOTE: Ducts terminating in a dead air space (like holding tank compartments) with no means for return air recirculation should not be counted in the required duct area. Also ducts 2" in diameter or smaller should not be counted in the required duct area.

B. Make the duct connections at the furnace cabinet tight. Loose connections will result in overheating of the component parts on the furnace and a reduction of the heated air flow through the duct system.

C. Avoid making any sharp turns in the duct system. Sharp turns will increase the static pressure in the plenum area and could cause the furnace to cycle.

D. Avoid making a lot of turns in the duct system. The straighter the duct system, the better the performance of the furnace.

E. Maintain a minimum of 1/4" clearance where ducts pass through any combustible construction, such as coach cabinetry. (See Figure 3.) **NOTE:** UL listed duct materials can be 0" clearance.

F. Do not install air boosters in the duct system. Such devices will cause the furnace to cycle on limit and to have erratic sail switch operation.

NOTE: After installation of the furnace and duct system is completed, adjustments must be made to obtain a temperature rise within the range specified on the Rating Plate.

INSTALLING THERMOSTAT

Locate the room thermostat approximately 4-1/2 feet above the floor on an inside bulkhead where it is not affected by heat from any source except room air. Connect thermostat wiring to the blue wires on right side of furnace. (See wiring diagram.)

PREVENTIVE MAINTENANCE

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.

CAUTION: Label all wires before disconnecting for servicing. Proper polarity must be observed so the furnace motor will run with the proper direction of rotation to insure correct air delivery. (See wiring diagram.)

CAUTION: Label all wires prior to disconnection when servicing controls. Wiring error can cause improper and dangerous furnace operation.

Always verify proper operation of furnace after servicing.

Your furnace should be inspected by a qualified service agency yearly before turning the furnace on. Particular attention should be given to the following items.

1. Inspect furnace installation and vent termination to be sure furnace is properly secured in place (see Installation Instructions), that vent terminates to the atmosphere, and that vent tubes overlap properly (see Installing Vent Assembly.)
2. Inspect chamber and venting to assure that these components are physically sound without holes or excessive corrosion and that the installation and/or re-installation is in accordance with Suburban's installation instructions. (Reference installation manual supplied with furnace.)

WARNING! It is imperative that the products of combustion be properly vented to atmosphere and that all combustion air supplied to burner be drawn from outside atmosphere.

3. Check the base on which furnace is mounted. Be sure it is physically sound, void of any sagging, deterioration, etc.
4. Inspect furnace, the venting, ducting and gas piping to furnace for obvious signs of deterioration. Correct any defects at once.
5. Inspect combustion chamber for restrictions in exhaust or intake. It is imperative that the flow of intake combustion air and the flow of exhaust gases being expelled to the outside atmosphere not be obstructed. Any soot or loose debris should be blown out using compressed air. (See Figure 7.)
6. Inspect all gaskets. If any gaskets show signs of leakage or deterioration, replace them. Safe operation of the furnace depends on all gaskets being tight.
7. Inspect return air inlet openings to the furnace. Remove any restrictions to assure adequate air flow.

You, as the owner/user, should inspect the furnace monthly during the heating season for presence of soot on vent. Operating the furnace under this condition could lead to serious property damage, personal injury or loss of life. If soot is observed on the vent, immediately shut the furnace down and contact a qualified service agency.

Listed below are several safety related items that you should follow during the heating season to assure continued safe operation of the furnace.

1. Inspect furnace venting. Venting must be free of obstructions, void of soot, and properly terminated to the atmosphere. (See Installing Vent Assembly.)

WARNING! Do not install screens over the vent for any reason. Screens will become restricted and cause unsafe furnace operation. 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 furnace.

2. Periodically inspect the vent for obstructions or presence of soot. Soot is formed whenever combustion is incomplete. This is your visual warning that the furnace is operating in an unsafe manner. If soot is present, immediately shut furnace down and contact your dealer or a qualified service person.
3. Keep furnace clean. More frequent cleaning may be required due to excessive lint from carpeting, bedding material, etc. It is imperative that control compartments, burners and circulating air passageways of the appliance be kept clean.
4. The motor is permanently lubricated and requires no oiling.

5. Keep the furnace area clear of any combustible materials, gasoline or other flammable vapor and liquids.
6. Before operating furnace, check the location of the furnace 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 furnace with the door open.
7. Do not restrict the flow of combustion air or the warm air circulation to the furnace. To do so could cause personal injury and/or death.
8. Never operate the furnace 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.)
9. Immediately shut furnace down and call a service agency if furnace cycles erratically or delays on ignition.

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.

10. Never attempt to repair damaged parts. Always have them replaced by a qualified service agency.
11. Never attempt to repair the furnace yourself. Seek the help of a qualified service person.
12. Never restrict the ducting installed by your trailer manufacturer. To do so could cause improper furnace operation.
13. Do not install air boosters in the duct system. Such devices will cause the furnace to cycle and to have erratic sail switch operation.
14. Clothing or other flammable material should not be placed on or near the appliance.
15. Always follow the operating instructions. Do not deviate from the step-by-step procedures.
16. 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.
17. When considering add-on rooms, porch or patio, attention must be given to the venting of your furnace. For your safety, do not terminate furnace vent inside add-on rooms, screen porch or onto patios. Doing so will result in products of combustion being vented into the room or occupied areas.
18. 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. Never operate furnace with vent covered.

INSTALLATION AND REMOVAL OF UNIT INSTALLED FROM INSIDE

TO REMOVE

1. Disconnect power supply at furnace.
2. Remove vent cap assembly.
3. Disconnect gas connections.
4. Remove cabinet front (2 screws).
5. Remove tie-down screw from center of unit and remove furnace from cabinet.

TO INSTALL

1. Slide unit into cabinet. NOTE: Care must be taken in routing wiring to back of cabinet and outside of cabinet.
2. Reinstall tie-down screw.
3. Reinstall cabinet front.
4. Connect gas line.
5. Check gas connections for leaks using a soap and water solution. Correct any gas leaks immediately.
6. Reinstall vent cap assembly.
7. Reconnect power supply.

INSTALLATION AND REMOVAL OF UNIT WHEN OPTIONAL BACK IS USED

TO REMOVE

1. Break power to furnace.
2. Remove vent cap assembly.
3. Remove optional back.
4. Disconnect power supply at furnace.
5. Disconnect power supply plug from module board.
6. Disconnect electrode wire from module board.
7. Remove the two (2) screws securing module board and panel assembly to firewall and pull out assembly. EXERCISE CARE NOT TO DAMAGE BOARD.

NOTE This will allow more room for making the gas connections at the flare fitting. It will be necessary to hold the flare fitting with a wrench when tightening or loosening the gas line.

8. Remove gas line.
9. Remove tie-down screw at blower base and remove furnace from cabinet.

TO REINSTALL

1. Slide unit into cabinet and secure with screw at base of blower.
2. Connect gas line.
3. Check gas connections for leaks using a soap and water solution. Correct any gas leaks immediately.
4. Reinstall module board and panel assembly.
5. Reconnect electrode wire to board.
6. Reconnect power supply to board.
7. Reconnect power to furnace. NOTE: If this connection was made inside the cabinet, care must be exercised to prevent wires from coming in contact with the room air blower wheel.
8. Reinstall optional back.
9. Reinstall vent cap.
10. Provide power to furnace.

OPERATING INSTRUCTIONS

WARNING! Do not operate furnace while vehicle is in motion or being towed.

NOTE: During initial firing of this furnace, a burn-off of excess paint and oils remaining from manufacturing process may cause "smoking" for 5 - 10 minutes.

1. Stop! Read Users Information Manual supplied with furnace.
2. Turn the manual valve (if so equipped) or the valve at the outside LP tank to the "OFF" position. Do not force.
3. Set thermostat above room temperature to begin blower operation. A slight delay will occur before the blower comes on. Allow blower to run for 5 minutes for combustion chamber purge cycle.
4. After 5 minutes, move thermostat lever below room temperature. Blower will remain on. Wait approximately 2 minutes for blower to go off.
5. Open manual shut-off valve (if so equipped) or the valve at the outside LP tank. Correct operating characteristics depend on the valve being positioned fully open. Never attempt to operate with a valve partially closed. NOTE: This furnace is equipped with a valve shut-off switch with switch in "OFF" position. Gas will not flow to burner nor will the furnace operate.
6. Set thermostat lever to desired setting. If set above room temperature, blower will come on.
7. Allow 30 seconds for main burner to light after blower comes on. This furnace is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
8. If burner does not light, repeat Steps 1 through 8.
9. If after three (3) attempts with no ignition, go to shut down and contact your dealer or a local recreational vehicle service agency. Do not continue to cycle furnace through thermostat in an attempt to get ignition. NOTE: If furnace should lock out, the blower will go off in 5 minutes and remain off until unit is reset by reactivating thermostat.

TO SHUT DOWN

1. Set the thermostat to lowest setting, then move lever to "OFF" position.
2. Turn manual shut off valve (if so equipped) to the "OFF" position. Do not force.

ELECTRODE ADJUSTMENT

For consistent ignition of the burner, it is important that the electrode be positioned properly over the top of the burner. The electrode was set at the factory for proper ignition and should not need further adjustment; however, if you should experience inconsistent ignition, reposition electrode as follows:

Equipment needed:

flashlight, black felt-tip pen, needle-nose pliers and measuring tape

NOTE: Furnace must be removed. (See instructions for removing unit.)

1. Remove burner from combustion chamber by removing six (6) screws which attach the burner to the chamber and air baffles (plates).
2. Locate the lance in relation to the burner ports for electrode positioning by:
 - a. Shine a flashlight into the burner venturi as illustrated. (Be sure flashlight lens is against the end of the burner.)
 - b. Light will reflect off the lance in the venturi of the burner and shine through a portion of the two (2) rolls of burner ports in the top of the burner.
 - c. Using a black felt-tip pen, mark a line along top of burner 3/16" in back of the lance and parallel with lance. Make an additional mark indicating the center line of the lance. (See illustration.) Both marks will be used later as reference marks; therefore, keep lines thin.
3. Reassemble the burner.
4. Adjust electrode so the electrode probe is positioned along the marked center line of the burner lance and the tip of the electrode terminates 3/16" from the back of the lance. (At the line marked in Step 2-c.) (See Figure 5.)
5. **IMPORTANT: Be sure electrode probe maintains a 1/8" spark gap over the burner as illustrated.**
6. Reinstall the furnace into the cabinet following the instructions in the manual.

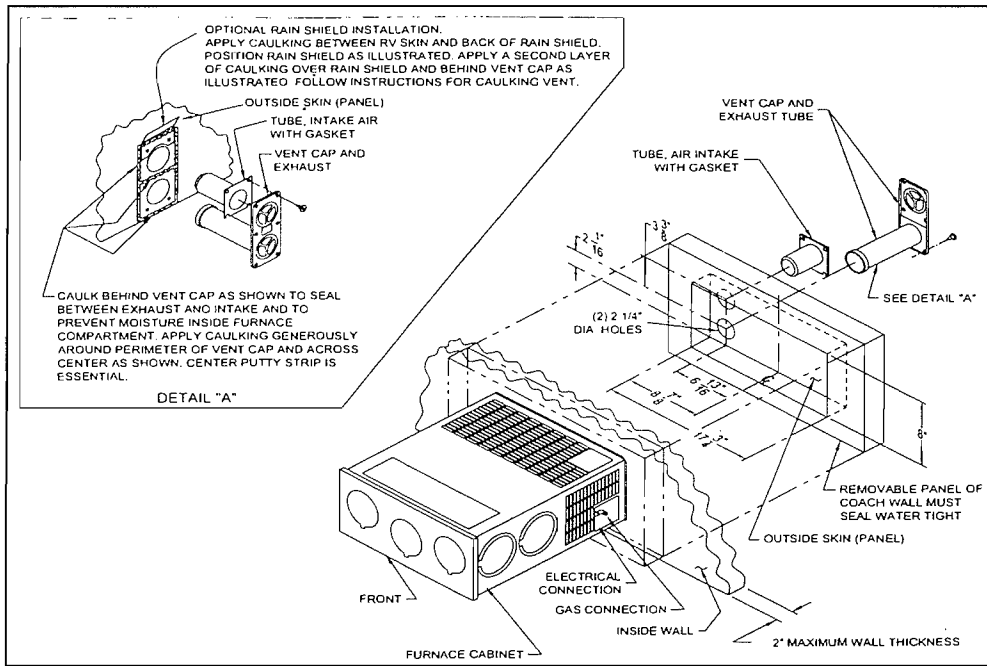


Figure 1

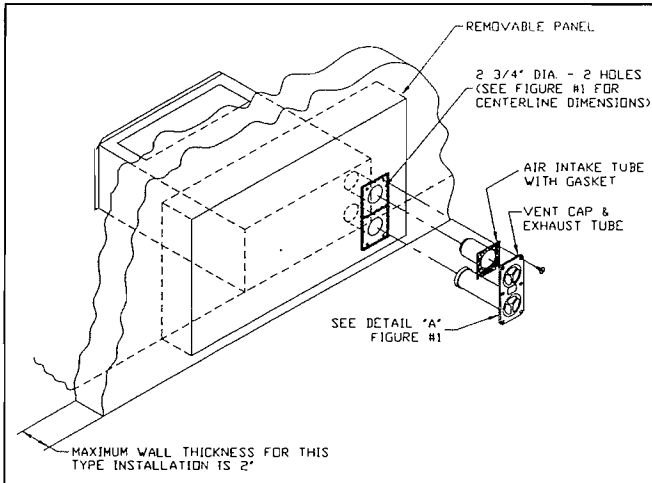


Figure 2

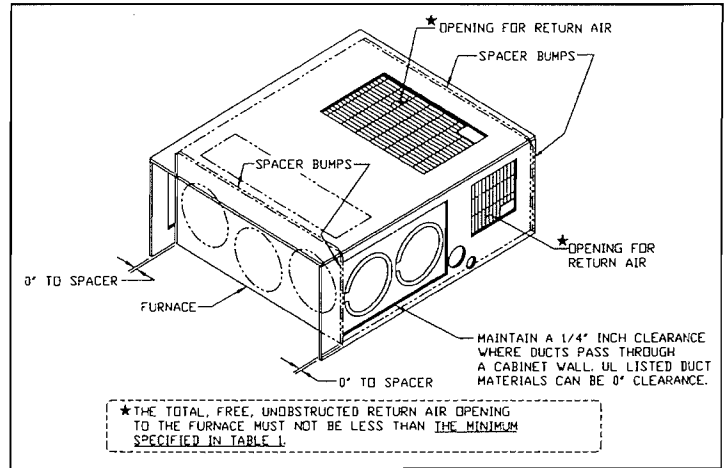


Figure 3

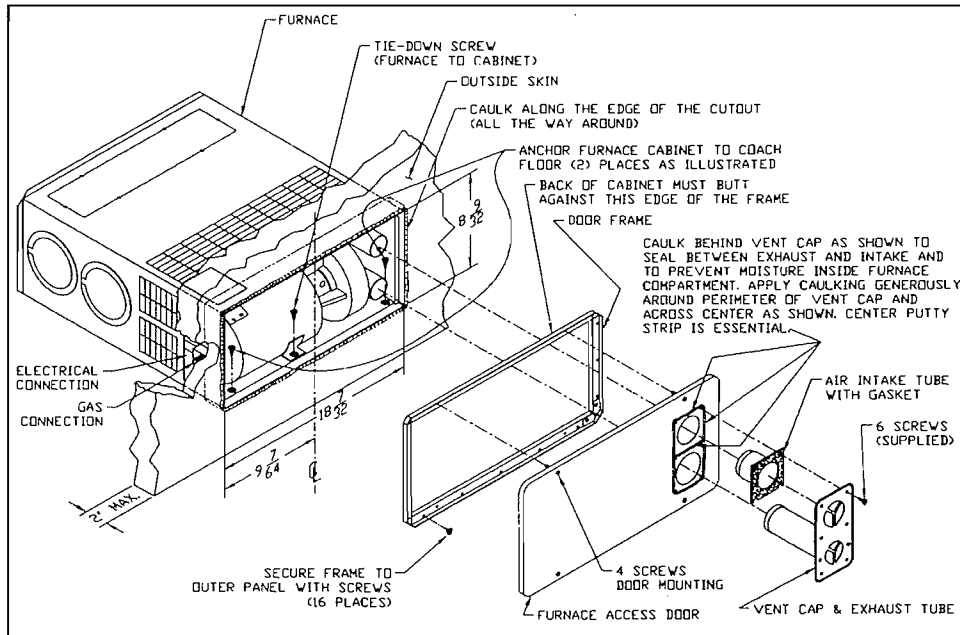


Figure 4

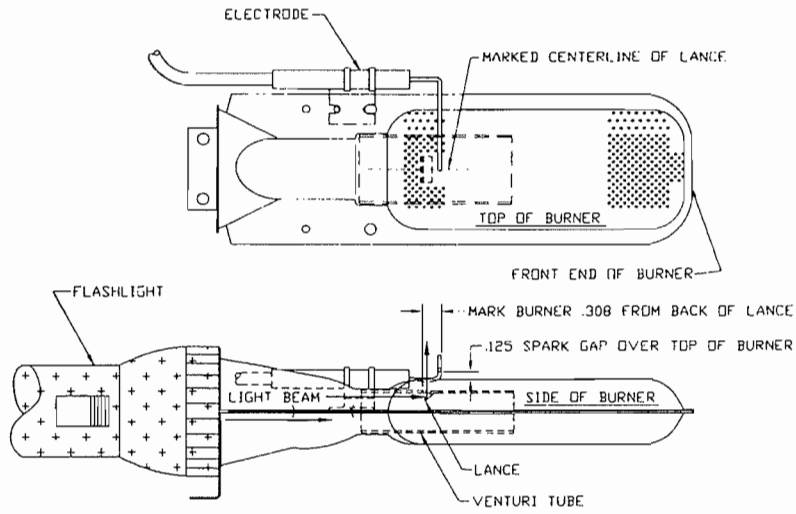


Figure 5

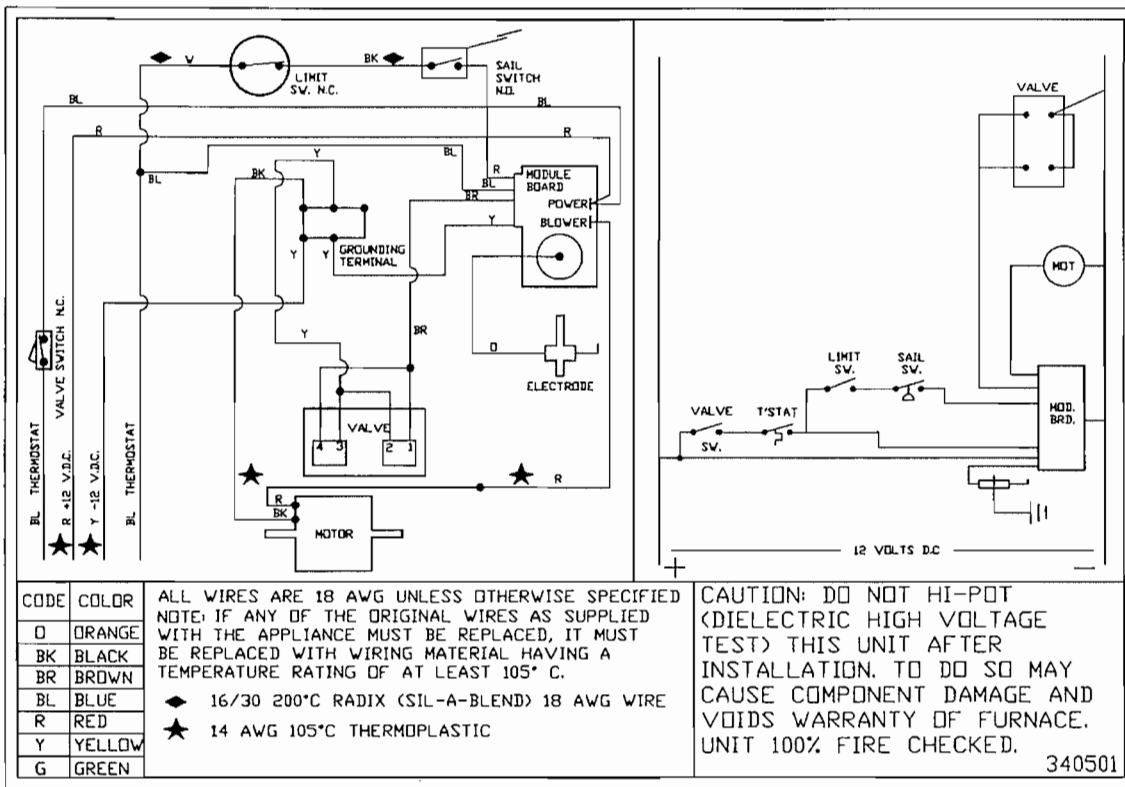


Figure 6

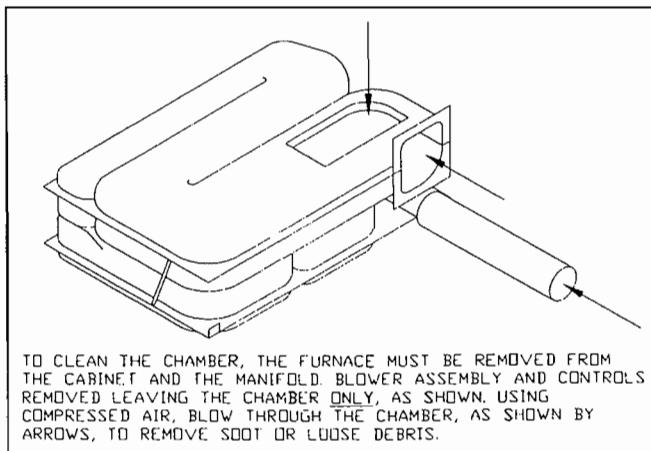


Figure 7

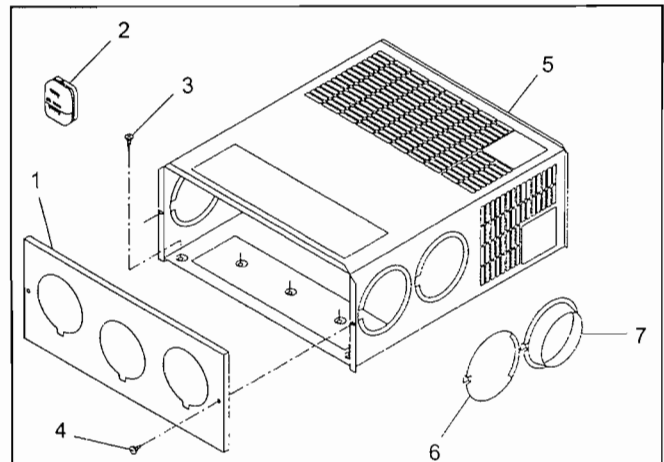


Figure 8

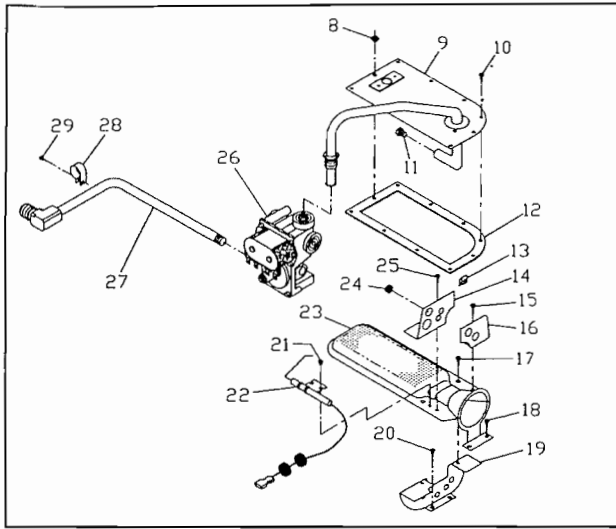


Figure 9

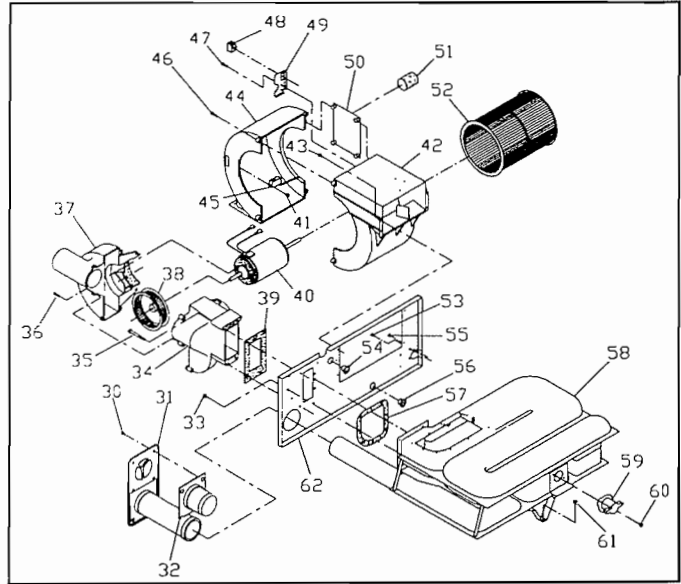


Figure 10

REPLACEMENT PARTS LIST

Only factory authorized parts are to be used. Do not attempt to repair defective parts.

When ordering repair parts from your dealer, a Suburban Service Center, or distributor, always give the following information:

1. Part Number (Not Item No.)
2. Part Description
3. Model and Serial Number of furnace
4. Number of Parts Required

Item No.	Description	Part Number	Item No.	Description	Part Number
1	Cabinet Front Assembly	101242	31	Vent Cap and Exhaust Tube Assembly	260231
2	Thermostat	161154	32	Tube Assembly Intake (Vent)	051248
3	Screw #10 x 3/4 (2 Required)	121853	33	Screw #8 x 1/2 (8 Required)	120615
4	Screw #8 x 3/8 (2 Required)	120158	34	Combustion Air Housing Assembly (Front Half)	390852
5	Cabinet Assembly (SF-20, SF-25, SF-30 only)	101889	35	Screw #8-18 x 2 1/4 (4 Required)	121929
	Cabinet Assembly (SF-35 only)	101893	36	Screw #6-19 x 1/2 (7 Required)	121928
6	Cover, Duct	050733	37	Combustion Air Housing (Rear Half) (SF-20)	390849
7	Collar, Duct	050715		Combustion Air Housing (Rear Half) (SF-25/30/35/42)	390848
8	Nut 8-32 Keps	121694	38	Wheel, Combustion Air (SF-20)	350189
9	Manifold Assembly Complete	171596		Wheel, Combustion Air (SF-25/30/35)	350184
10	Screw #8 x 3/8 (9 Required)	120158		Wheel, Combustion Air (SF-42)	350183
11	Orifice, Main Burner (SF-20)	180305	39	Gasket, Firewall (Combustion Air)	071084
	Orifice, Main Burner (SF-25)	180306	40	Motor Assembly with Gasket (SF-20/25/30)	232682
	Orifice, Main Burner (SF-30)	180307		Motor Assembly with Gasket (SF-35)	232684
	Orifice, Main Burner (SF-35)	180308		Motor Assembly with Gasket (SF-42)	232683
12	Gasket, Burner Access Cover	070811	41	Screw # 4-20 X 5/8 (2 Required)	121945
13	Tinnerman	121704	42	Blower Assembly (Room Air) Front Half (SF-20, 25, 30, 35)	390872
14	Plate, Secondary Air (Top-Back Half) (SF-20, SF-25, SF-30)	063198		Blower Assembly (Room Air) Front Half (SF-42)	390873
	Plate, Secondary Air (Top-Back Half) (SF-35)	063199	43	Screw #8-18 X 1/2 (4 Required)	121857
15	Screw #8-18 x 1/2 Stainless	121651	44	Blower Housing (Room Air) Rear Half	390851
16	Plate, Secondary Air (Top-Front Half) (SF-20, SF-25, SF-30)	062933	45	Switch, Sail	232261
	Plate, Secondary Air (Top-Front Half) (SF-35)	062936	46	Screw #6-19 X 1/2 (4 Required)	121928
17	Screw #8-18x 1/2 Stainless (2 Required)	121651	47	Screw #6-19 X 1/2 (1 Required)	121928
18	Screw #8-18x 1/2 Stainless (2 Required)	121651	48	Switch ON/OFF	232351
19	Plate, Secondary Air (Bottom) (SF-20, SF-25, SF-30)	062935	49	Bracket, ON/OFF Switch	063446
	Plate, Secondary Air (Bottom) (SF-35)	062938	50	Module Board	520820
20	Screw #8-18x 1/2 Stainless (2 Required)	121651	51	Insulator Cap, Module Board Coil	070973
21	Screw #8-18x 1/2 Stainless	121651	52	Blower Wheel Assy (Room Air)	350129
22	Electrode	232286	53	Screw #8-18 X 1/2	121857
23	Burner Assembly Complete (SF-20)	010767	54	Bushing, Universal	070362
	Burner Assembly Complete (SF-25)	010762	55	Screw #8-18 X 1/2	121857
	Burner Assembly Complete (SF-30, SF-35)	010865	56	Bushing, Strain Relief	231809
24	Grommet	070963	57	Gasket, Firewall (Chamber Side)	070808
25	Screw #8-18 x 1/2 Stainless	121651	58	Chamber Assy. Final (SF-20, 25, 30, 35)	021149BK
26	Valve	161122		Chamber Assy. Final (SF-42)	021150BK
27	Pipe Assembly, Gas Inlet	171574	59	Switch, Limit (SF-20)	232503
28	Clamp Wire	062180		Switch, Limit (SF-25, 30, 35)	232504
29	Screw #8-18 x 1/2 Self-Drilling	121857		Switch, Limit (SF-42)	232505
30	Screw #10 x 3/4 (6 Required)	121853	60	Screw #8 X 3/8 (2 Required)	120158
			61	Screw #8 X 3/8	120158
			62	Firewall	110760

TWO YEAR LIMITED WARRANTY

SUBURBAN RECREATIONAL VEHICLE FURNACE

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 record.

Suburban will replace any parts that are found defective within the first two years and will pay a warranty service allowance directly to the authorized Suburban Service Center at rates mutually agreed upon between Suburban and its authorized service centers. Replacement parts will be shipped FOB the shipping point within the Continental United States, Alaska and Canada to authorized service centers performing such repairs. Before having warranty repairs made, confirm that the service agency is an authorized service center for Suburban. DO NOT PAY THE SERVICE AGENCY FOR WARRANTY REPAIRS; SUCH PAYMENTS WILL NOT BE REIMBURSED.

For warranty service, the owner/user should contact the nearest authorized Suburban Service Center, advising them of the model and serial numbers (located on the furnace) and the nature of the defect. Transportation of the unit 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 listing of authorized Service Centers is included in the owner's packet supplied with the furnace and a current listing may be obtained from Suburban. If you cannot locate an authorized service center locally, the service agency chosen to perform warranty repairs must contact our Service Department at 423-775-2131 for authorization. Unauthorized repairs made will not be paid by Suburban.

THREE YEAR LIMITED WARRANTY ON HEAT EXCHANGER

The furnace heat exchanger is further warranted to be free from defects in material and workmanship during the third through fifth year after the date of original purchase. A replacement heat exchanger will be provided under the same conditions as stated in the two year warranty EXCEPT no labor reimbursement will be provided.

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; such as, orifices and burners.
2. Initial checkouts and subsequent checkouts which indicate the furnace 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 tanks; restriction or alteration of return air circulation; low voltage.
5. Routine adjustments that may be required to the thermostat, electrode and burner.
6. Costs incurred in gaining access to the furnace.
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, unauthorized 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 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 furnace and is still under the RV manufacturer's warranty, follow the steps described in your RV owner's manual.

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 the furnace to the selected service center.

THIRD:

For the location of the nearest service center, refer to the listing provided or contact:

Suburban Manufacturing Company
Customer Service Department
Post Office Box 399
Dayton, Tennessee 37321
(423) 775-2131, Ext. 1

For future reference, you should record the following information

MODEL NUMBER _____

SERIAL NUMBER _____

STOCK NUMBER _____

DATE OF PURCHASE _____