

# INSTALLATION MANUAL

## For Furnace Models

### NT-12SE • NT-16SE • NT-20SE

### NT-12SEC • NT-16SEC

### NT-12SEP • NT-16SEP



The design of these furnaces has been certified by the American Gas Association for installation in recreational vehicles only. In order for these furnaces to operate in conformity with generally accepted safety regulations, the installation instructions outlined in this book must be followed. Failure to comply with the installation instructions will void any responsibility of Suburban Manufacturing Company. Your furnace was inspected before it left the factory. If any parts are found to be damaged, do not install the furnace. Any damages should be reported to the transportation company immediately and the appropriate claims filed.

## INSTALLATION INSTRUCTIONS

**WARNING!** 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.

**WARNING!** These furnaces are not designed nor are they to be used in conjunction with cooling units. To do so will damage the furnace and will void the warranty.

These furnaces will accommodate an installation depth from 21" to 27 3/4", depending on the intake vent tube length you select. (See Figure 1.)

Please adhere strictly to the following instructions to insure proper installation and safe operation as well as adequate clearances for accessibility.

These furnaces are certified for use with liquefied petroleum (LP) gas only and are to be operated at the following gas inlet supply pressures:

Gas	Minimum	Maximum
LP	11" W.C.	13" W.C.
*Water Column		

In the USA, the installation must conform with local building codes. In the absence of local building codes, refer to:

1. Standard for Recreational Vehicles, ANSI A-119.2 - 1982
2. National Fuel Code, ANSI Z223.1-1980.
3. The furnace must be electrically grounded in accordance with the National Electrical Code ANSI/NFPA No. 70-1984
4. The installation of the furnace shall be in accordance with any applicable local codes and regulations.

The furnace cabinet must extend through the coach cabinetry 1 3/8" as shown in Figure 1. The 1 3/8" extension must be held in order to assure that the front grille will properly attach to the furnace cabinet. Adequate clearances must be maintained around furnace cabinet so that the unit will be accessible for servicing.

### TO INSTALL THE FURNACE

1. Locate the furnace near lengthwise center of the coach.
2. Select a location for installation out of the way of wires, pipes, etc. that might interfere with installation. Adhere to the following minimum clearances from the furnace cabinet to combustible construction:

Back - 0" Top - 5/8"  
Floor - 0" Sides - 5/8"

**NOTE:** Side and top clearances of furnace cabinet may be 0" for through the wall installations up to a maximum of 2 1/2" wall thickness. (See Figure 2.)

The following minimum clearances from the warm air discharge grille to combustible materials must be maintained:

Front - 24" Top - 1"  
Sides - 1" Floor - 1/4"  
Left Side - 1"/Right Side - 8" or Left Side - 8"/Right Side - 1"  
(See Figure 9.)

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.
4. Cut, or frame, an opening in the coach cabinetry 10 9/16" x 10 3/16", as shown in Figure 2 or Figure 3.
5. Slide the front of the furnace through the opening and extend it beyond the coach cabinetry 1 3/8", as shown in Figure 2 or Figure 3.
6. Determine "X" dimension as shown in Figure 1.
7. Determine "Y" dimension as shown in Figure 1.
8. If X - Y is less than 21", then an opening 9 5/8" x 9 3/8" must be cut through the inner wall only. **DO NOT CUT THROUGH COACH SKIN.** (See Figure 2.) Next, locate the center line of the exhaust and intake tube. Cut two 2 1/4" diameter holes through the outer skin as shown in Figure 4.

**NOTE:** Whenever the furnace cabinet is installed through the outside wall, the return air louvers on the furnace cabinet must not be blocked. The maximum projection of the furnace cabinet into the wall is 2 1/2". (See Figure 2.)

**NOTE:** Furnace cabinet approved for 0" clearance to combustible materials rear 2 1/2" of furnace cabinet.

9. If X - Y is 21" or greater, two methods may be used to install the furnace. They are:  
A. Cut a 4" x 7 1/2" opening through combustible wall as shown in Figure 3. **DO NOT CUT THROUGH TRAILER SKIN.** Next, locate the center line of the exhaust and intake tube. Cut two 2 1/4" diameter holes through trailer skin. (See Figure 4.)  
B. If you do not wish to cut the 4" x 7 1/2" opening, locate the center line of the exhaust and intake tube as shown in Figure 4. Next, cut two 2 3/4" diameter holes through trailer skin and also the combustible wall of the trailer as illustrated in Figure 6. Care must be taken when locating the center line of the exhaust and intake tube as well as when cutting the holes in order to assure a 3/8" clearance around the exhaust and intake tube to combustible materials.

10. Refer to the chart in Figure 1 and select the range for which the "X" dimension falls. The intake tube length directly to the left of the selected range is the length required. **NOTE:** The 7 3/4" length exhaust tube assembly will accommodate all approved installation depths - only the intake tube must be ordered when needed. Under no circumstances should the standard 5" intake tube be cut or altered to adapt to the 21" - 23 1/4" range.

11. Secure furnace to the floor using the two holes provided in the front area of the furnace cabinet. (See Figure 2 or Figure 3.)

## CONNECTING GAS SUPPLY

1. The gas line is to be connected to the furnace at the manifold provided on the right side of the furnace.
2. Codes require the installer to install an in-line shut-off valve external to the furnace.
3. An access door to this manual shut-off valve must be provided.
4. Suburban recommends that the installer provide a ground joint union between the furnace and this shut-off valve.

**WARNING!** Be sure all male joints have been treated with a sealing compound resistant to the action of liquefied petroleum (LP) gas.

In order to maintain a check on gas supply pressure to the furnace, Suburban advises the installer to provide a 1/8" NPT plug tap for test gauge connection immediately upstream of the gas supply connection to the furnace. A drip leg should be installed upstream of the manual shut-off valve exterior to the furnace cabinet.

**WARNING!** All joints must be checked for leaks. Do not use open flame to check for leaks! Use a soap and water solution.

## CONNECTING ELECTRICAL SUPPLY

**WARNING!** These furnaces are designed for a 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. 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.

Connect the power supply to the red and yellow wires 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 with 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.

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NOTE: This furnace is not furnished with a built-in 115 volt A.C. power supply. If the optional power pack supplied by Suburban is used, it must be wired to the furnace as shown in Figure 5.

**WARNING!** Under no circumstances should any other appliance or switching be connected to this power pack. To do so could result in damage to the power pack.

NOTE: Furnace models NT-12SE, NT-16SE and NT20SE are equipped with an electric ignitor device that has an energy consumption of .1 amps at 12 volts D.C.

## CONNECTING 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 the thermostat wires to the blue wires on the right side of the furnace. (See wiring diagram.)

## INSTALLING VENT

**WARNING!** The vent outlet must be installed so it is in the same atmospheric pressure zone as the combustion air intake.

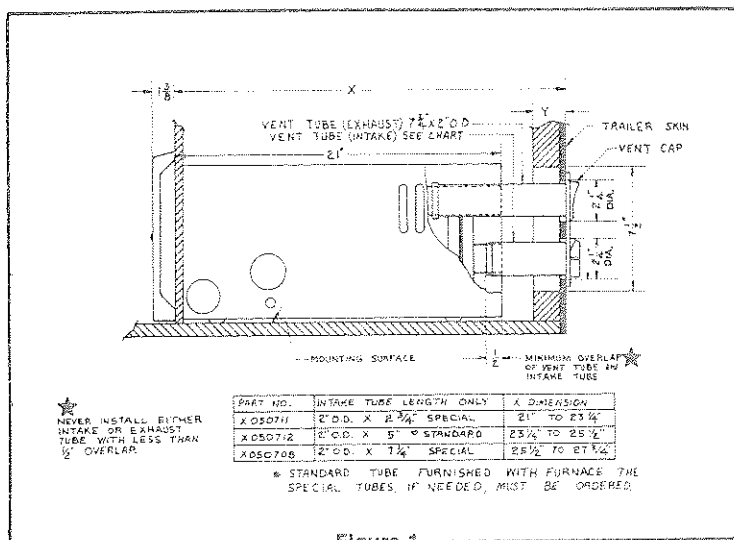


Figure 1

1. Caulk around vent cap as shown in Figure 6.
2. Insert vent cap assembly over furnace exhaust and intake tubes.

**WARNING!** The exhaust and intake tubes must overlap a minimum of 1/2" to insure safe operation (see Figure 1). All air for combustion must be drawn from the outside atmosphere. Combustion air must not be drawn from the living area. All exhaust gases must be vented to the outside atmosphere; therefore, insure that the vent cap and tube assemblies have been properly installed.

3. Attach vent cap assembly to outer skin of coach using the (4) screws provided. Do not install the vent cap upside down. The words 'Suburban' and 'Dayton, Tenn.' must be installed right side up.

## !!! WARNINGS !!!

Clothing or other flammable material should not be placed on or near the appliance.

The appliance and its individual shut-off valve 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 by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressure equal to or less than 1/2" PSIG.

Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.

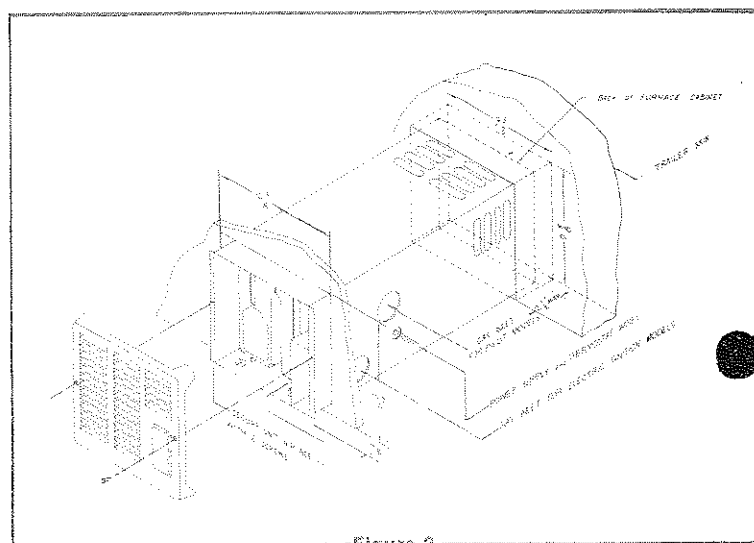


Figure 2

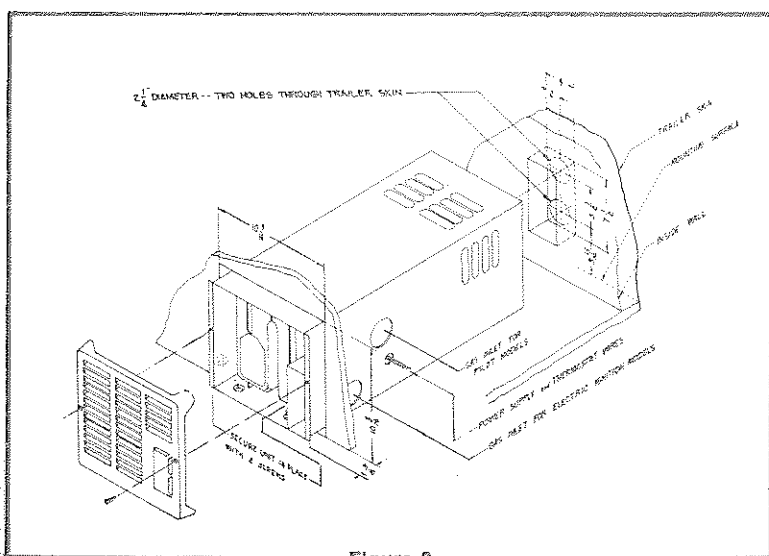


Figure 3

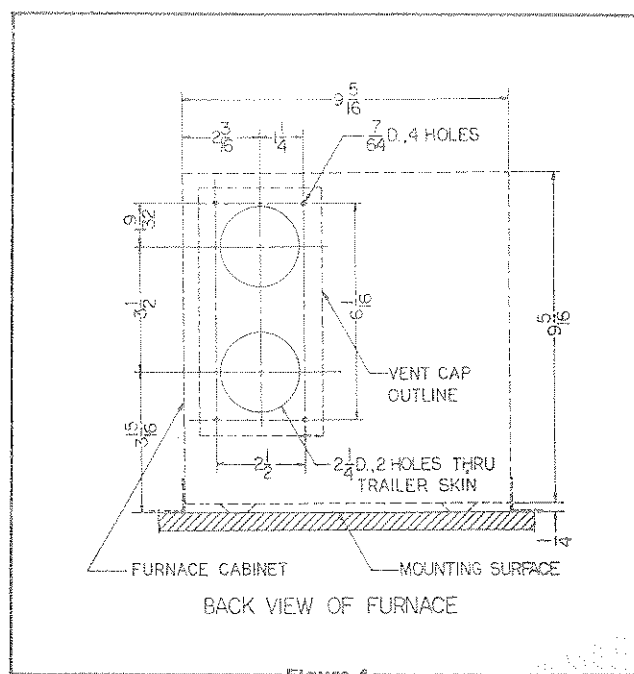


Figure 4

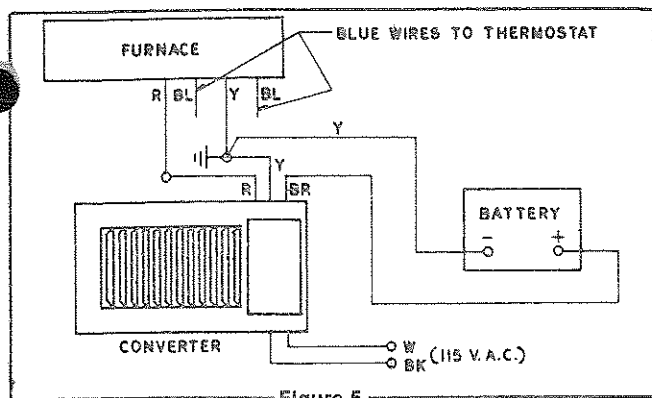


Figure 5

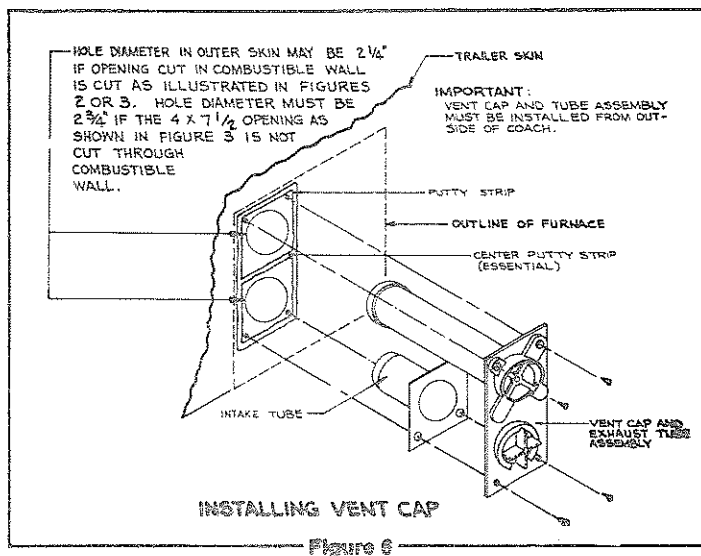


Figure 6

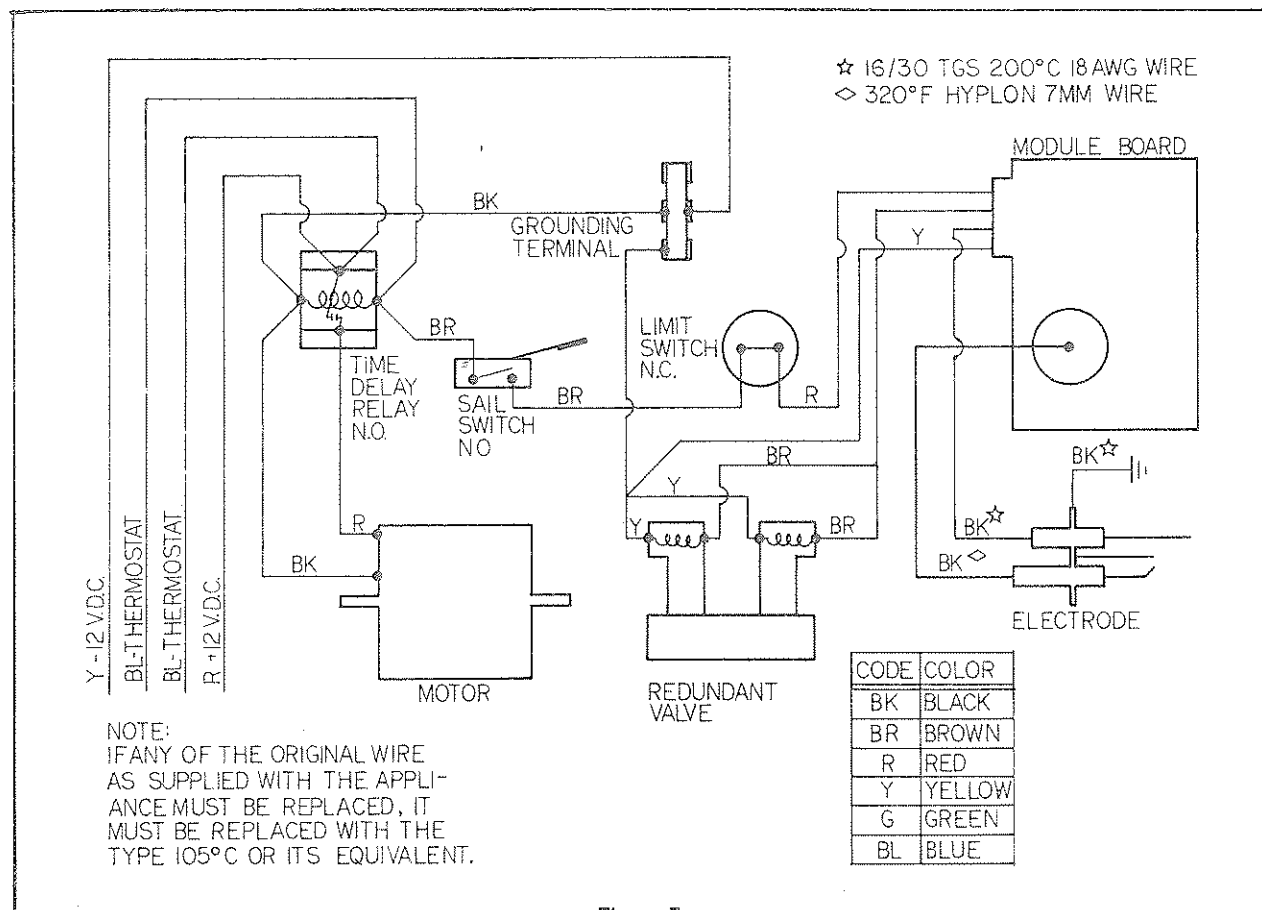


Figure 7

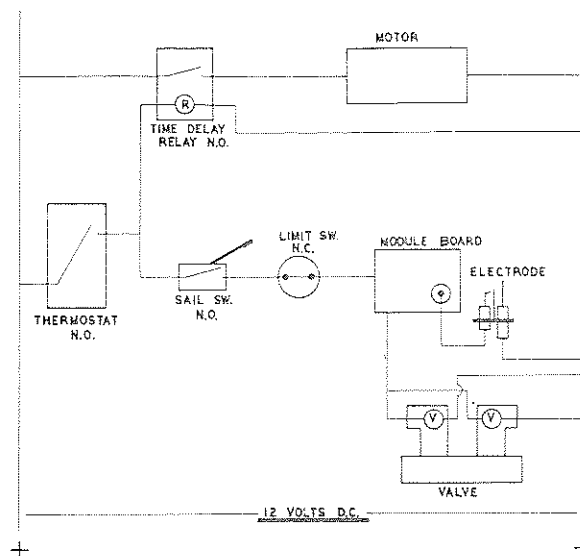


Figure 8

ILLUSTRATION OF MINIMUM SIDE CLEARANCES—FRONT GRILL TO NEAREST OBSTRUCTION

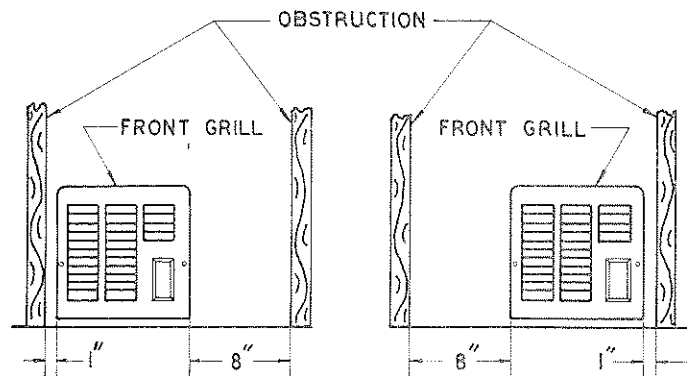


Figure 9

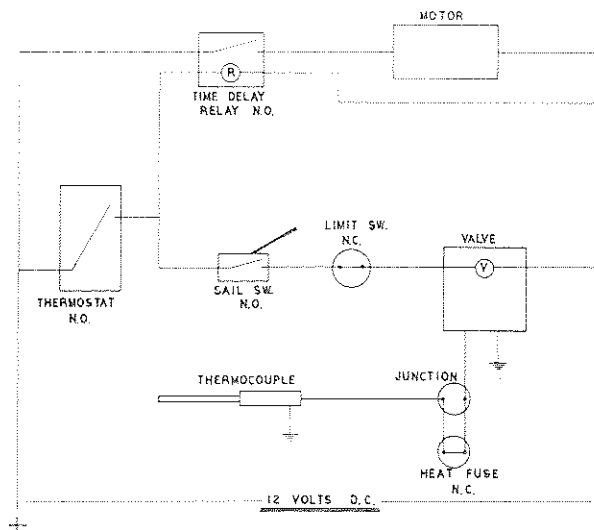


Figure 10