



# Ambassador 4700TEC Catalytic Wood Heater Insert Manual Installation & Operating Instructions

**Please read this entire manual before installation. Save these instructions.**



## **GENERAL INFORMATION**

We wish to welcome you as a new owner of a SIERRA Woodstove. You join many thousands of happy owners who have been heating with SIERRA stoves since 1972. SIERRA stoves have changed a great deal during that time, and all of our knowledge and experience have culminated in this stove, the SIERRA AMBASSADOR. Please read all of this manual before using your stove, especially if you have owned another woodstove in the past.

Failure to follow instructions may result in property damage, bodily injury, or even death. We at SIERRA wish you many happy years of warmth and comfort.

### **SAFETY NOTICE**

- ▶ **CAUTION: HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS.**
- ▶ **IF THIS HEATER IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT.**
- ▶ **CONTACT LOCAL BUILDING OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.**
- ▶ **FAILURE TO COMPLY WITH OWNERS' MANUAL INSTRUCTIONS WILL VOID YOUR WARRANTY!**

**NOT APPROVED FOR MOBILE HOMES**

**DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS.**

This manual describes the installation, operation and maintenance of the SIERRA Ambassador Model Number 4700TEC catalytic wood heater.

Please read this entire manual before you install and use your new room heater. Failure to follow instructions may result in property damage, bodily injury, or even death. Save these instructions for future reference.

### **SAFETY NOTICE**

If this appliance is not properly installed, a house fire may result. For your safety, follow the installation instructions. Check with local building or fire officials about restrictions and installation inspection requirements in your area.

It is best to have a professional install your Sierra Stove. If you prefer to install it yourself (see Installation Instructions), be

**DO NOT USE CHEMICALS OR FLUIDS TO START OR "FRESHEN UP" THE FIRE!**

sure to obtain the proper permits. Have the local building officials inspect the stove and chimney pipe for safety and code compliance after the installation is complete.

Your SIERRA insert generates a lot of heat, so treat it with care. Read this manual thoroughly before installing and operating your stove.

**FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY,**

**THIS STOVE CAN ONLY BE USED WITH A MASONRY FIREPLACE. IT IS NOT APPROVED FOR OR SAFE TO USE IN A FACTORY-BUILD "ZERO CLEARANCE" FIREPLACE.**

**DO NOT CONNECT TO ANY AIR DISTRIBUTION DUCT OR SYSTEM**

**YOUR SIERRA AMBASSADOR HAS BEEN TESTED BY WARNOCK-HERSEY LABORATORIES TO ANSI/UL STANDARD 737, ICBO NO. TL-116, NER-QA-219**

**DO NOT CONNECT THIS APPLIANCE TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**

**PLEASE LEAVE THIS MANUAL WITH THE OWNER !!**

Listed by Warnock Hersey



# INSTALLATION INSTRUCTIONS

## Catalytic Notice

This heater is certified to comply with July 1990 Particulate Emissions Standards. Under specific test conditions, this heater has been shown to deliver the heat at the following rates:

4700TEC from 10,790 to 42,596 BTU/hr.

**DO NOT OVERFIRE THIS HEATER.** Attempts to achieve heat output that exceeds the heater design can result in permanent damage to the heater and to the catalytic combustor. Do not exceed surface temperatures of 800 degrees F. Do not burn with the ash pan open. Overfiring can also void the manufacturer's warranty.

The combustor supplied with this heater is a long life combustor. Consult the catalytic combustor warranty also supplied with this wood heater. Warranty claims should be addressed to the combustor manufacturer. See combustor warranty for address.

## Catalytic Tampering

This wood heater contains a catalytic combustor, which needs periodic inspection and replacement for proper operation. It is against the law to operate this wood heater in a manner inconsistent with operating instructions in this manual, or if the catalytic element is deactivated or removed.

## Fuel Selection

This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.

### DO NOT BURN:

- treated woodcardboard
- coalsolvents
- garbagecolored paper
- trash

Burning treated wood, garbage, solvents, colored paper, or trash may result in the release of toxic fumes and may poison or render ineffective the catalytic combustor. Burning coal, cardboard, or loose paper can produce soot, large flakes of char or fly ash that can coat the combustors, causing smoke spillage into the room, and rendering the combustors ineffective.

## Read This First

- ◆ Your SIERRA insert generates a lot of heat, so treat it with care. Read this manual thoroughly before installing and operating your stove.
- ◆ Your SIERRA AMBASSADOR has been tested by Warnock-Hersey Laboratories to ANSI/UL Standard 737, ICBO NO. TL-116, NER-QA
- ◆ Install and operate this SIERRA unit according to instructions provided in this manual. Local building codes may apply; therefore, contact your local building inspector or fire marshal for necessary installation requirements and permits which may go beyond these instructions.
- ◆ Have any existing chimney inspected before attaching the Ambassador to it. Some chimneys must be relined or replaced before they are safe to use.
- ◆ DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

- ◆ A factory-build, prefabricated fireplace or chimney may NOT be used for this SIERRA insert. This unit must be connected to (1) a chimney complying with the requirements for type HT chimneys in the standard for chimneys, Factory-Built, Residential Type and Building Heating Appliance, UL103, or (2) a code-approved masonry chimney with a flue liner.
- ◆ Your chimney must be correctly sized. A chimney that is too small or too large in diameter, or too short, can cause your stove to spill smoke when the door is opened.
- ◆ Never place your stove closer to unprotected combustible walls or furnishings than the recommended clearance.
- ◆ Never use gasoline, kerosene, lighter fluid, lantern fuel, charcoal starter, or any such product to start or "freshen up" a fire in the woodstove. Keep all such materials well away from the stove while it is in use.
- ◆ Before opening the door, open the primary air controls and the bypass lever. After a minute, open the door only 72 inches for 15-20 seconds to allow the smoke in the firebox to be flushed up the chimney.
- ◆ In the event of a chimney fire: (1) stop loading fuel, (2) close the stove doors, (3) shut off all air to the stove, (4) alert everyone in the house, and (5) call the fire department.
- ◆ For further information on using your heater safely, obtain the latest edition of the National Fir Protection Association publication, "Using Coal and Wood Safely." Order No. HS-8-1974 from N.F.P.A., 470 Atlantic Ave., Boston, MA 02210

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## General Information

The following items are shipped inside the Ambassador:

- This manual
- Sierra Warranty
- Combustor Warranty
- Ash Pan

1. Install Ash Pan — Your heater is now ready for installation. Read instructions carefully.

### I. BASIC FIREPLACE AND CHIMNEY REQUIREMENTS

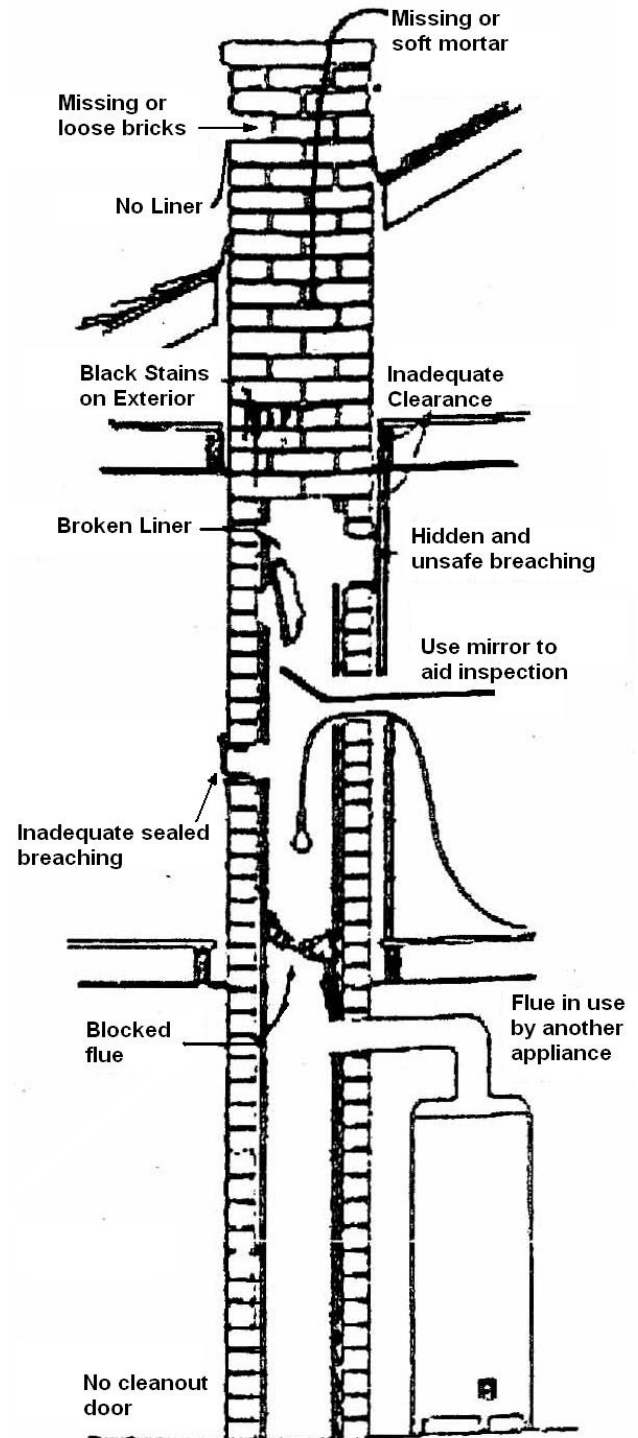
A Sierra woodstove may be installed using an all masonry fireplace build in accordance with the Uniform Building Code. The first step in this type of installation is to determine the acceptability of the fireplace and chimney for use with a woodstove. Both the construction and condition of the fireplace are important considerations when installing a wood stove. Do not install this stove in a poorly constructed fireplace or chimney.

The following are general guidelines for a safe installation and are based on recommendations of the National Fire Protection Association (NFPA). Contact your local building code agency or fire safety inspector for specific details. Local codes may vary by area.

1. The chimney should have a fire clay liner in good condition. Loose or cracked liner sections can be hazardous. If the chimney does not have a liner, one can be installed by a qualified professional. Some metal liners are acceptable to use check with your stove dealer or local building code agency for acceptability of these liners.
2. No part of the chimney should have any leaks, missing masonry, cracks, loose mortar or soft mortar.
3. There should be no mortar or parts of the chimney blocking the chimney flue.
4. The fireplace and chimney should be built on a solid concrete footing supported by the ground and not attached to the house. Older chimneys are sometimes supported by the framework of the building itself. These can be structurally unsound due to settling and shifting of the building and possible cracking of the chimney itself.
5. The chimney must have a good natural draft and should be self-starting. A chimney that has poor draft and is subject to draft reversal should be repaired or replaced before using.
6. The chimney should be the proper size. Some fireplace chimneys are quite large and will cause poor stove performance and excessive creosote. The rule of thumb is that the chimney flue should be roughly no more than three times the flue opening on the stove. A 6 inch stove flue will work in an 8 inch by 12 inch fireplace flue. It may be necessary to install another liner in an oversized chimney.. Use a 24 gauge flue, and chimney connector. Use at least 3 screws.
7. The chimney should extend at least 3 feet above the roof and at least 2 feet above any point on the roof within 10 feet.

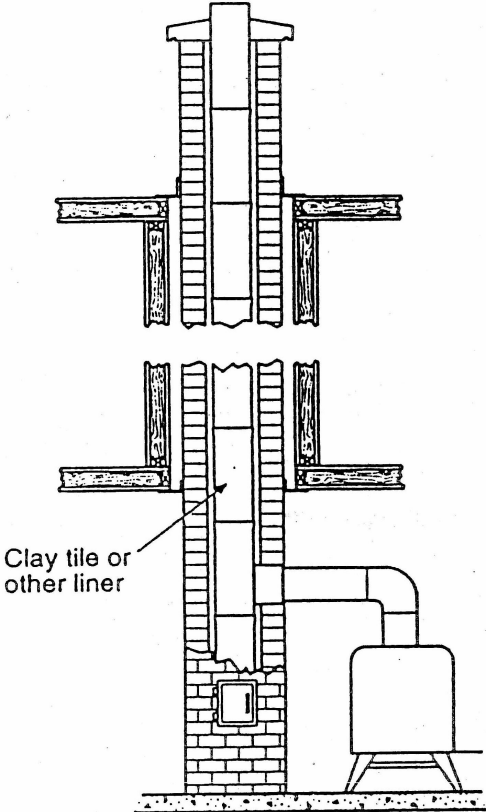
8. This stove must be used alone in the chimney. Any unused opening must be permanently sealed with masonry by a skilled brick mason. A clip-in type flue liner is not acceptable for this use because of the possibility of it coming loose during a chimney fire and possibly causing the fire to spread.

## Chimney Requirements

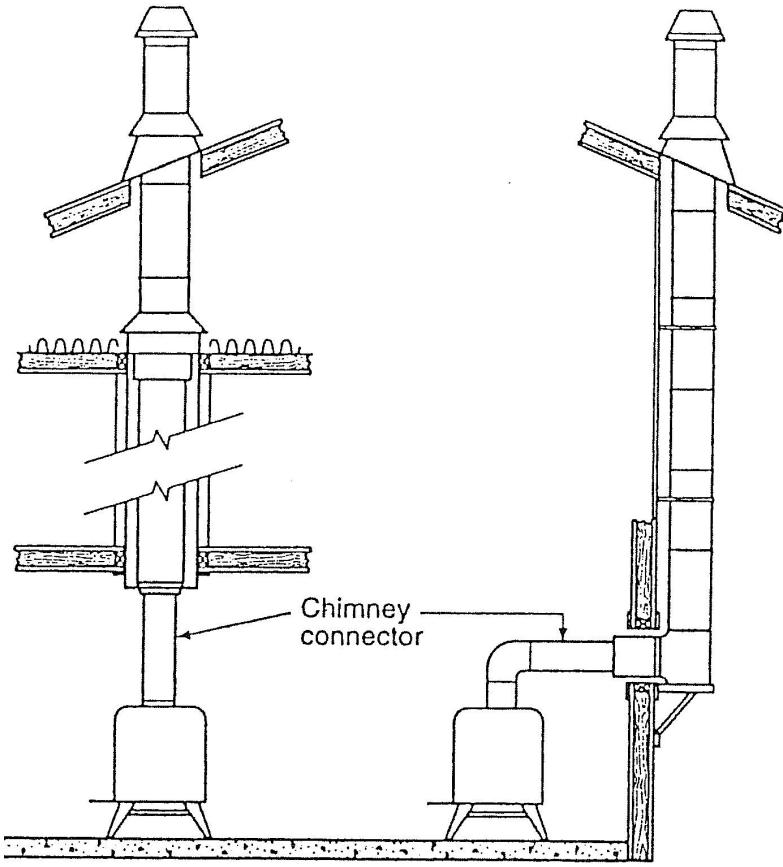


Your local building code agency or fire safety inspector can refer you to a qualified professional who can inspect the chimney for you.

**Typical Factory Built or Masonry Chimney Installations**



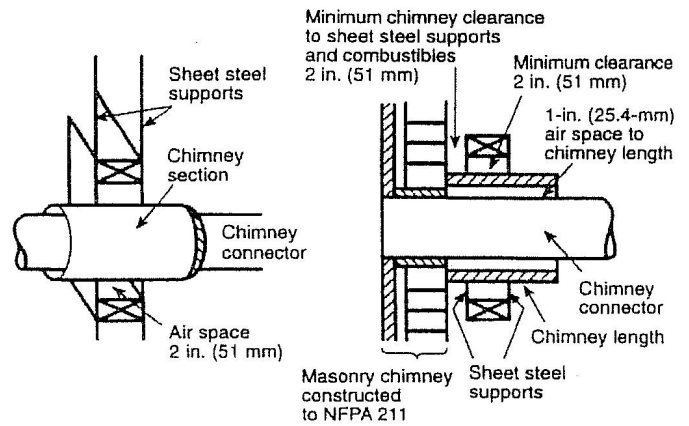
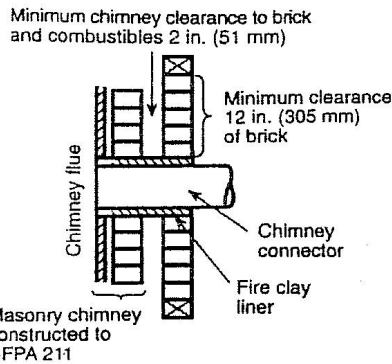
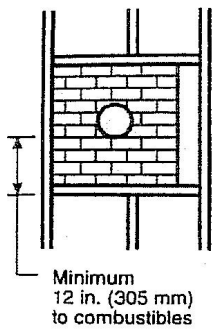
Masonry chimney



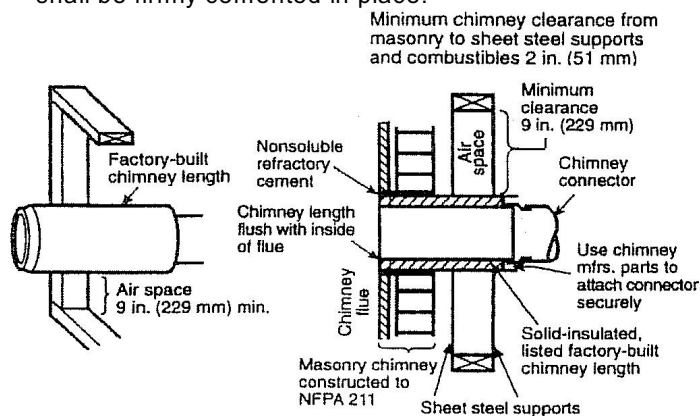
(Interior)  
Ceiling supported

(Exterior)  
Wall supported

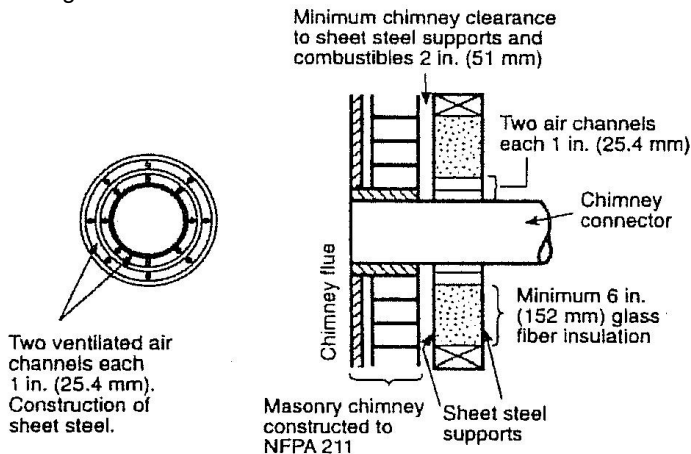
# CHIMNEY CONNECTOR SYSTEMS AND CLEARANCES FROM COMBUSTIBLE WALLS FOR RESIDENTIAL HEATING APPLIANCES



A. Minimum 3.5 inch thick brick masonry all framed into combustible wall with a minimum of 12 inch brick separation from clay liner to combustibles. The fireclay liner shall run from the outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place.



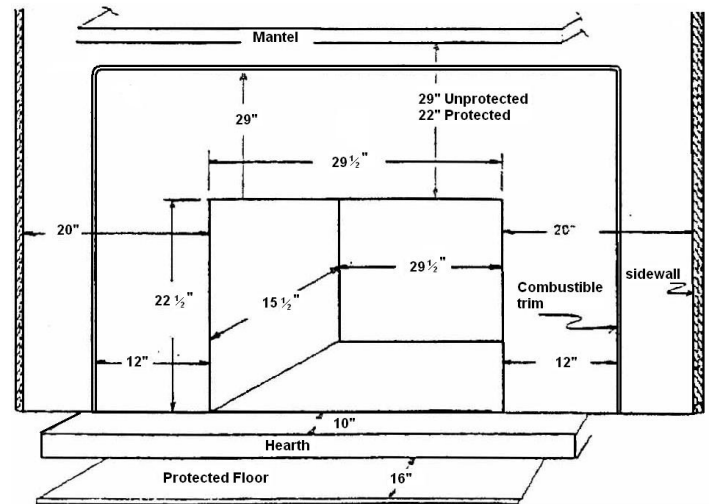
B. Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1 inch or more of insulation with a minimum 9 inch air space between the outer wall of the chimney length and combustibles.



C. Sheet steel chimney connector, minimum 24 gauge thickness, with a ventilated thimble, minimum 24 gauge in thickness, having two 1 inch air channels, separated from combustibles by a minimum of 6 inch of glass fiber insulation. Opening shall be covered, and thimble supported with a sheet steel support, minimum 24 gauge in thickness.

D. Solid insulated, listed factory-build chimney length with an inside diameter 2 inch larger than the chimney connector and having 1 inch or more of insulation, serving as a pass-thru for a single wall sheet steel chimney connector of minimum 24 gauge thickness, with a minimum 2 inch air space between the outer wall of chimney section and combustibles. Minimum length of chimney section shall be 12 inch chimney section spaced 1 inch away from connector using sheet steel support plates on both ends of chimney section. Opening shall be covered, and chimney section supported on both sides with sheet steel supports securely fastened to wall surfaces of minimum 24 gauge thickness. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

## II. MINIMUM MASONRY FIREPLACE OPENING AND MINIMUM CLEARANCES TO COMBUSTIBLES



## III. FLOOR PROTECTION

In accordance with NFPA 211 guidelines, any combustible floor in front of your 4700TEC must be protected with a non-combustible floor protector equivalent to one layer of 3/8" asbestos millboard.

### NOTE: ASBESTOS CANNOT BE USED

Reference to asbestos is used as a standard only, 3/8" asbestos millboard has a "K" factor of .84. The newer substitute CERAFORM BOARD has a "K" factor of .21. Contact your local dealer for off the shelf approved floor protectors.

The k, C or R factor that correlates with the floor protector material used during the test if the room heater is not provided with a floor protector. The units of measure for k, C and R factors shall use the same applicable units. Directions and examples on how to use alternate materials and how to calculate equivalent thickness shall be shown.

An easy means of determining if a proposed alternate floor protector meets requirements listed in the appliance manual is to follow this procedure:

1. Convert specifications to R-value
  - a. R-value is given - no conversion is needed.
  - b. K-factor is given with a required thickness (T) in inches:  $R=1/k+T$
  - c. C-factor is given:  $R=1/C$
2. Determine the R-value of the proposed alternate floor protector.
  - a. Use the formula in step 1 to convert values not expressed as "R".
  - b. For multiple layers, add R-values of each layer to determine the overall R-value.
3. If the overall R-value of the system is greater than the R-value of the specified floor protector, the alternate is acceptable.

**EXAMPLE:**

The specified floor protector should be 3/4 inch thick material with a k-factor of .84.

The proposed alternate is 4" brick with a C-factor of 1.25 over 1/8" mineral board with a k-factor of .29.

Step 1: Use formula above to convert specification to R-value.  $R=1/kT = 1/0.84 \times .75 = .893$

Step 2: Calculate R of proposed system.  
 4" brick of C - 1.25, therefore  
 $R \text{ brick} = 1/C = 1/1.25 = 0.80$   
 1/8" mineral board of k+ 0.29, therefore  
 $R \text{ min.bd.} = 1/0.29 \times 0.125 = 0.431$   
 Total R = R brick + R brick + R mineral Board  
 $= 0.8 + 0.431 = 1.231$

Step 3: Compare the proposed system R of 1.231 to specified R of 0.893. Since proposed system is greater than required, this is acceptable.

Definitions:

$$\text{Thermal conductance} = C = \frac{\text{Btu}}{(\text{hr})(\text{ft}^2)(^\circ\text{F})} = \frac{W}{(\text{m}^2)(^\circ\text{K})}$$

$$\text{Thermal conductivity} = k = \frac{(\text{Btu})(\text{inch})}{(\text{hr})(\text{ft}^2)(^\circ\text{F})} = \frac{W}{(\text{m})(^\circ\text{K})} = \frac{\text{Btu}}{(\text{hr})(\text{ft})(^\circ\text{F})}$$

$$\text{Thermal resistance} = R = \frac{(\text{ft}^2)(\text{hr})(^\circ\text{F})}{\text{Btu}} = \frac{(\text{m}^2)(^\circ\text{K})}{W}$$

**IV. INSTALLATION INSTRUCTIONS**

Your Sierra 4700TEC must be direct connected using Method I or Method II

Chimney Sizing – Have your chimney cleaned and inspected by a certified chimney sweep. Chimney MUST have some type of lining. If your chimney is not lined, you MUST have your chimney relined. Relining can be done by either of two methods. Some dealers reline with a poured masonry mix. Others use stainless steep pipe wrapped with ceramic insulation. Both systems produce excellent results when installed by competent professionals.

If your chimney is lined and clean, it must still be measured to insure that the liner is not oversized.

For best performance and efficiency, we highly recommend the following minimums:

- Chimney Size: 6" x 6" or 36 sq. in.
- Chimney Height: 15 feet and at least 2 feet above the highest point of your roof.
- Draft: .06 w.c.

Measure your fireplace. Your fireplace must be: 29 1/2" wide, 22 1/2" high, 15" deep.

Your lintel must be 8" or less. Your hearth must be 9" or more. You must be able to provide 16" of non-combustible hearth extension in front of this 9 1/2".

Clean out your fireplace and remove screen and glass doors if present.

Remember to have your chimney inspected for leaks and blockage before you install your stove.

**Draft Requirements**

Draft is the force which moves air from the appliance up through the chimney. The amount of draft in your chimney depends on the size, height and general condition of your chimney, local geography, nearby obstructions, and other factors. Inadequate draft will cause the appliance to leak smoke into the room when starting a fire or adding fuel to the existing fire. Too much draft may cause the stove to burn too hot and damage the unit.

Minimum Chimney Requirements  
 Size – 6x6 Height – 15 ft. Draft – .06WC

NOTE: Nine out of ten times, dirty glass, lack of "heating", or failure to continue burning after the doors are shut is evidence of inadequate draft.

**V. METHOD I**

Method I – This installation uses a direct connection (direct connect adapter kit) or a section of flexible or rigid pipe. This connects the stove flue outlet to the first section of tile liner at the bottom of the chimney. The width of the damper opening or the throat of the chimney will determine which type of pipe, rigid, round flexible, or oval flexible, should be used. Some openings are large enough (6 inches or more) to allow the use of the standard connector pipe. If the damper or throat area is narrow, oval flexible pipe or sheet metal adapter must be used

**Installation – Method**

1. ~~R~~ move the existing damper in the fireplace or lock it in the open position.
2. Determine the type of pipe required for your installation.
3. Cut the pipe to the proper length. 22 inches (approx. height of flue collar) above the bottom of the fireplace to at least half way into the first chimney liner.
4. Slide the pipe up through the damper area into the first chimney liner
5. Measure from the bottom of the fireplace 22 inches. This should be the bottom of the pipe.
6. Completely pack the damper area or bottom of the first chimney liner with ceramic wool or other non-combustible material in a way which no air can go up the chimney except through the pipe. This is very important, as it directly affects the chimney draft.
7. Slide the 4700 into the fireplace until the shroud flanges are approximately 2 inches in front of the face of the fireplace.

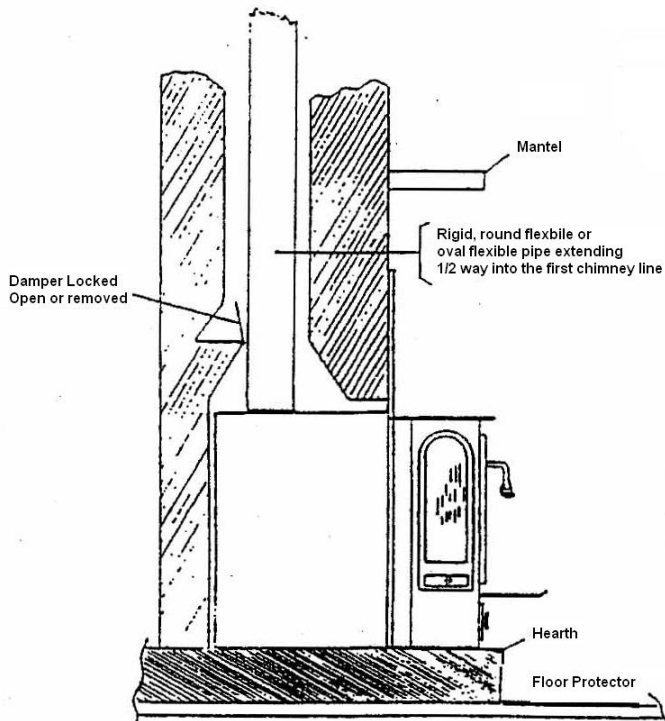
8. Install the pipe into the flue collar, making sure the pipe is seated all the way down in the collar.

**NOTE: YOU MAY NEED TO REACH UP THROUGH THE BYPASS MECHANISM TO INSURE PROPER SEATING.**

Be extremely careful to make this connection air tight with furnace cement, high temperature silicon, or other high temperature sealant.

9. Install the shroud and brass trim.
10. Gently slide the 4700TEC the rest of the way into the fireplace.
11. Level the unit.
12. Double check the seal of the connecting pipe by reaching through the by-pass opening.

## METHOD II



### VI. METHOD II

The Method II installation is similar to Method I except that the connector pipe extends the full length of the chimney and terminates at the top of the chimney. Either rigid round sections or a continuous length of flexible pipe may be used. This pipe must be constructed of stainless steel 6" diameter minimum. All joints must be secured by at least 1/8" self-threading sheet metal screws. Because this method is usually more difficult and involved, we recommend that you have a qualified professional installer do the job for you.

### VII. OTHER OPTIONS AND CONSIDERATIONS.

Method I - Depending on the size, shape, or location of the throat of your fireplace, the ceramic wool installation cannot be used or will not be acceptable. For those installations, you may need a sheet metal adapter kit. These kits consist of a piece of sheet metal cut to size to totally block off the upper portion of the fireplace with a hole for the pipe to pass through. Consult your local dealer for more details.

Method I and II – The flue collar of the 4700TEC is an industry standard 8 inch oval. Most 8 inch oval pipe will fit into it nicely. Depending on the location, angle, etc., of the throat or damper of the fireplace, it may be necessary to use an adapter. These adapters will allow the pipe to be connected to the unit at many different angles and be bolted to the unit in place of being cemented.

### VIII. SHROUD INSTALLATION

1. Install the left side by sliding the shroud over the bracket on the unit and between the front of the side and the cleat. Align the bottom of the side with the bottom of the stove.
2. Install right side in the same manner.
3. Install top in the same manner aligning the top shroud bracket on the stove and tops of both sides.
4. Using a rubber hammer, continue to slide both sides equal and top on to the brackets until completely seated and each side is straight with the ends on the top.
5. Install brass trim.

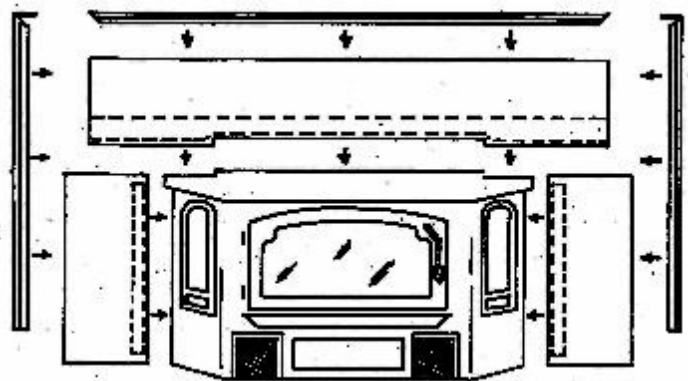


Figure 5

### IX. LEVELING THE UNIT

The Sierra 4700TEC is equipped with three leveling bolts, one behind the ash pan and one on each side behind the fan covers. The unit should be leveled for proper door operation and to insure the shroud is aligned with the face of the fireplace.

---Access the back leveling bolt by removing the ash pan and ash grate.

---Access the front leveling bolts by removing the fan covers.

### X. FAN COVER REMOVAL

The fan covers of the 4700TEC are held in place with two spring clips (1 each side). The clips have small dimples on their outer surface that hold them behind the metal body of the unit. (See Figure 6)



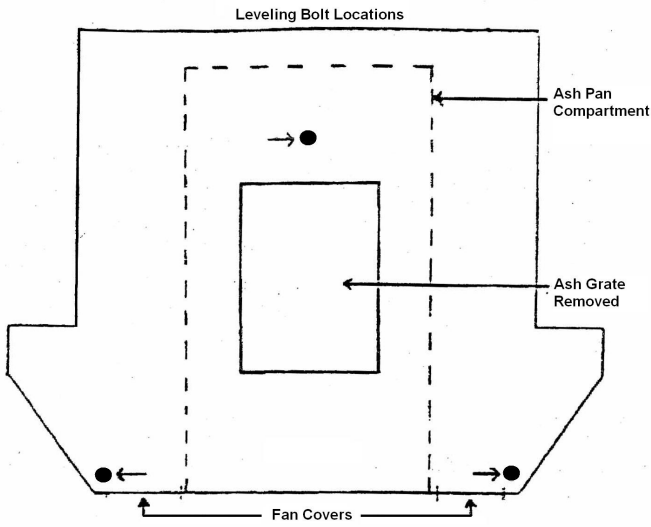


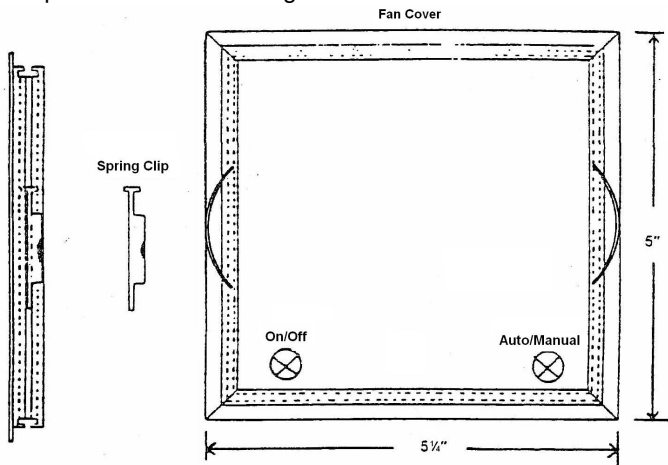
Figure 6

### REMOVAL:

1. Gently pull the edge of the fan cover away from the body of the unit approx. 1/8"
2. Locate the center of the spring clip.
3. Using a flat screw driver, compress the spring clip.
4. Pull the fan cover out of its opening.

### INSTALLATION:

1. Make sure the spring clips are installed in the edge of the fan cover properly.
2. Center the fan cover over the opening.
3. With a flat screw driver, compress the spring while pushing the fan cover into place.
4. Repeat for the other edge.



## XI. ELECTRICAL

Your Sierra 4700TEC is equipped with a 6 ft. power cord, on/off variable speed control, thermostat and automatic/manual switch.

### On/Off Variable Speed Control

- extreme left                             –off
- right past click                         –high
- continuing to the right               –high to low

**Thermostat** – Automatically turns the blowers on when the unit reaches normal operating temperature and off when the unit cools below normal operating temperature.

**Automatic/Manual Switch** – Allows manual operation of the blowers before and after thermostat is activated.

**NOTE:** On low burns (less than .8 Kg/hr.) and medium burns (.80 to 1.25 Kg/hr.) the room air fan should be operated on the lowest setting. On high burns (1.90 Kg/hr. or greater) and medium high burns (1.25 to 1.90 Kg/hr.) the blower fans must be operating to avoid excessive heat build up and possible damage to the fan blades and electrical components.

## Wiring Information

### WIRING DIAGRAM

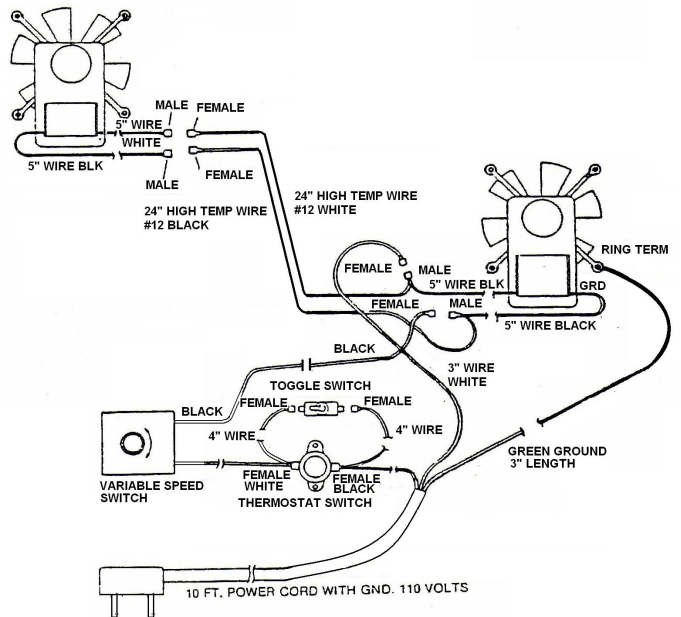
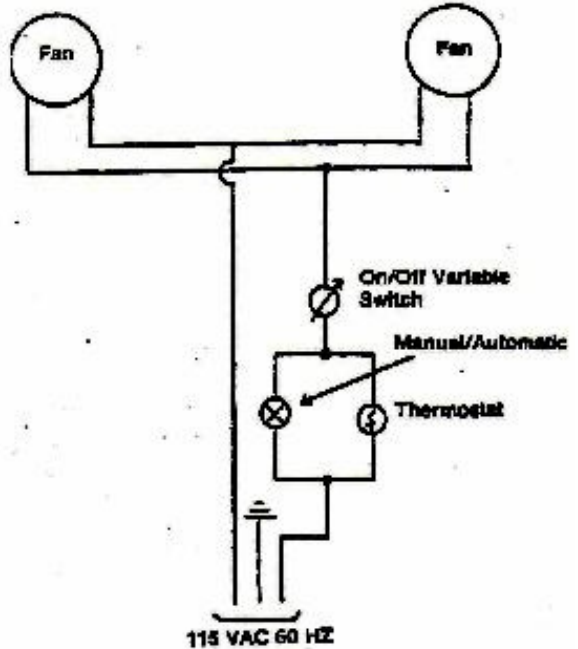


Figure 8



## XII. OPERATING INSTRUCTIONS

For the first few days, the stove will give off an odor and a small amount of smoke. This happens when the high temperature paint is bonding to the metal. This is normal and will stop when the paint is cured, and will reoccur every time you repaint or touch up your stove.

1. Starting a fire. Crumble three or four full sheets of newspaper and place them on the flow of your SIERRA stove.
2. Crisscross two layers of dry kindling on the paper. Add a few large splits of dry wood on top of the kindling.
3. Make sure the primary air controls are fully open. Also be sure that the bypass lever is open.
4. Light the paper under the kindling with a match or lighter. Do not use gasoline, lighter fluid, charcoal starter, kerosene, or any other such fuel to start a fire in a woodstove.
5. At higher altitudes, or when starting a fire on a very cold chimney, it may be necessary to leave the door cracked open for a few minutes, no longer than 5 minutes, to encourage a hot fire.

### NEVER LEAVE YOUR STOVE UNATTENDED WHEN THE DOOR IS UNLATCHED.

6. When the kindling has been consumed and larger splits are burning well, load the stove to the level you desire, using well-seasoned, dry wood. (Wet wood does not heat well.)

### DO NOT BURN COAL IN THIS UNIT!

Close the doors and continue to burn the stove on high and with the bypass open until the wood becomes fully involved. It is not necessary to use additional grates or irons to support the fuel.

7. Once your chimney and stove are warmed up and drawing well, close the air inlets to the desired heat output. Close the bypass before slowing down the air. Reload when convenient, but always while you still have a good bed of glowing embers. Always open the bypass 3 minutes before opening the door to reload. Never close the bypass immediately after adding fresh wood to the fire.

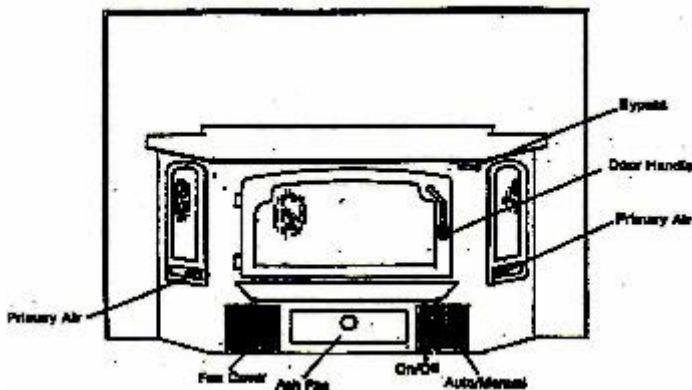


Figure 9

8. When opening the door to reload or to poke the fire, open the bypass first. Crack the door and hesitate just a few seconds before swinging it open. All this is to

prevent flashbacks which occur when a very smoky fire suddenly is given a lot of oxygen.

Every stove chimney combination functions a little differently. Be patient, and expect the stove to be different in January when it is very cold outside, than it was in September when the weather was warmer. Once a chimney is warmed up, its draft is a function of how much warmer it is than the air around it. On mild fall evenings, a stove can appear to be finicky and difficult. However, the very next night, in the midst of a fall storm, it might act like a completely different stove.

9. As you burn your stove and wood is consumed, ashes will fall through the grate and into the ash pan. Also, as you rearrange your ashes you should work them toward the ash pan. When the ash pan becomes full (this should be checked daily), pull the ash pan 3/4 of the way out of the stove. Remove the ashes with a shovel and place them in a metal container with a tight-fitting lid. Assume that there are still hot coals mixed in the. There usually are for as long as three days.

### DO NOT PLACE ASHES WITH THE GARBAGE OR NEAR ANYTHING COMBUSTIBLE. THE BEST IDEA IS TO LEAVE THEM OUTSIDE, THREE FEET AWAY FROM THE HOUSE IN A METAL CONTAINER FOR THREE DAYS.

Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, ending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled. Ash removal doors must be closed when in operation.

### DEFINITION AND PURPOSE OF A CATALYTIC COMBUSTOR

Catalytic combustors for woodstoves (cats) are similar in principle to catalytic converters on automobiles. The big difference is that the heat generated by your woodstove combustor is put to use heating your home instead of being dumped out the tailpipe of your car. Catalytic combustors cause wood smoke to burn at very low temperatures, releasing energy that would otherwise be lost in the form of smoke.

As smoke passes through the combustor, a rare metal coating on the ceramic base of the combustor changes fuel molecules in the smoke so that they burn at 500 to 600 degrees Fahrenheit, instead of the more normal 1000 to 1200 degrees Fahrenheit. In addition to making stoves burn cleaner, combustors improve their heating efficiency. On the average, you will receive 30 to 50% more heat from each piece of wood, up to 90% less creosote and because the cat burns most of the smoke, 90% less air pollution than you would from burning a comparable stove. Of course, results may be higher or lower depending on the operation, chimney draft, and combustor age.

### OPERATION

Achieving catalytic light off. During each burning cycle, the temperature within the stove should be raised high enough to cause the catalyst to become active or "light off." The most convenient way to do this is during fuel loading while warming up the wood and the chimney. With a new combustor, smoke temperatures between 500 and 600 degrees (F) will begin catalytic burning. (Since the combustors sit right above a roaring fire, this is not hard to

achieve if you follow the instructions in Starting a Fire and Operating Your Stove.) As a combustor ages, its catalytic activity decreases, so an older cat (beyond three years old) needs more heat during the start-up. 700 degrees will generally be sufficient for light off even on an old combustor.

Your SIERRA Ambassador Insert has an option from your dealer, a catalytic indicator which will take the guesswork out of knowing when you have light-off.

**MAINTAINING CATALYTIC CONDITIONS:**

During the start-up of a cold stove, a medium to high air setting must be maintained for about 20 minutes to ensure that the stove, catalyst, fuel, and chimney are all at proper operating temperatures. Even though it is possible to have smoke temperatures reach 600 degrees within two or three minutes after a fire is started, the combustor and the chimney are not yet warm enough.

At the end of the burn cycle, it's possible that the amount of burning charcoal might not provide sufficient temperatures for the catalyst. During the refueling, we recommend that the stove be fired hard for at least 10 minutes to ensure the catalyst and chimney are properly warmed up. If you have an extra long or large diameter chimney, or if it is very cold outside, run the stove on high for a longer period.

Whenever the stove is being loaded, **KEEP THE BYPASS OPEN.**

Once or twice a season, remove the mixer plates and lightly brush the face of the combustors to remove any fly ash which may have been sucked in by the chimney draft. Remember, the combustors and mixers can stay hot for a long time after the last fire. Always use gloves. NEVER remove the combustors to clean them. You will break the seal around the combustor which will allow smoke leakage and reduce the efficiency of the catalyst.

**BURN UNTREATED WOOD ONLY, OTHER MATERIALS SUCH AS WOOD PRESERVATIVES, METAL FOILS, COAL, PLASTIC, GARBAGE, SULPHUR OR OIL MAY DAMAGE THE CATALYST.**

**WARNING – OPERATE ONLY WITH DOORS FULLY OPEN OR FULLY CLOSED. IF DOORS ARE LEFT PARTLY OPEN, GAS AND FLAME MAY BE DRAWN OUT OF THE OPENING CREATING RISKS FROM BOTH FIRE AND SMOKE.**

**XIII. COMBUSTOR LIFE AND REPLACEMENT**

SIERRA uses only “12,000 hour long-life combustors.” The combustor will still be functioning at 70% of its effectiveness after 12,000 hours of use. Depending on the frequency of stove use, it will last for four to twelve years before needing replacement. If you find your combustor is not igniting, finish the burn cycle you have begun. You may order replacement catalytic combustors from your SIERRA dealer.

**CATALYTIC WARRANTY**

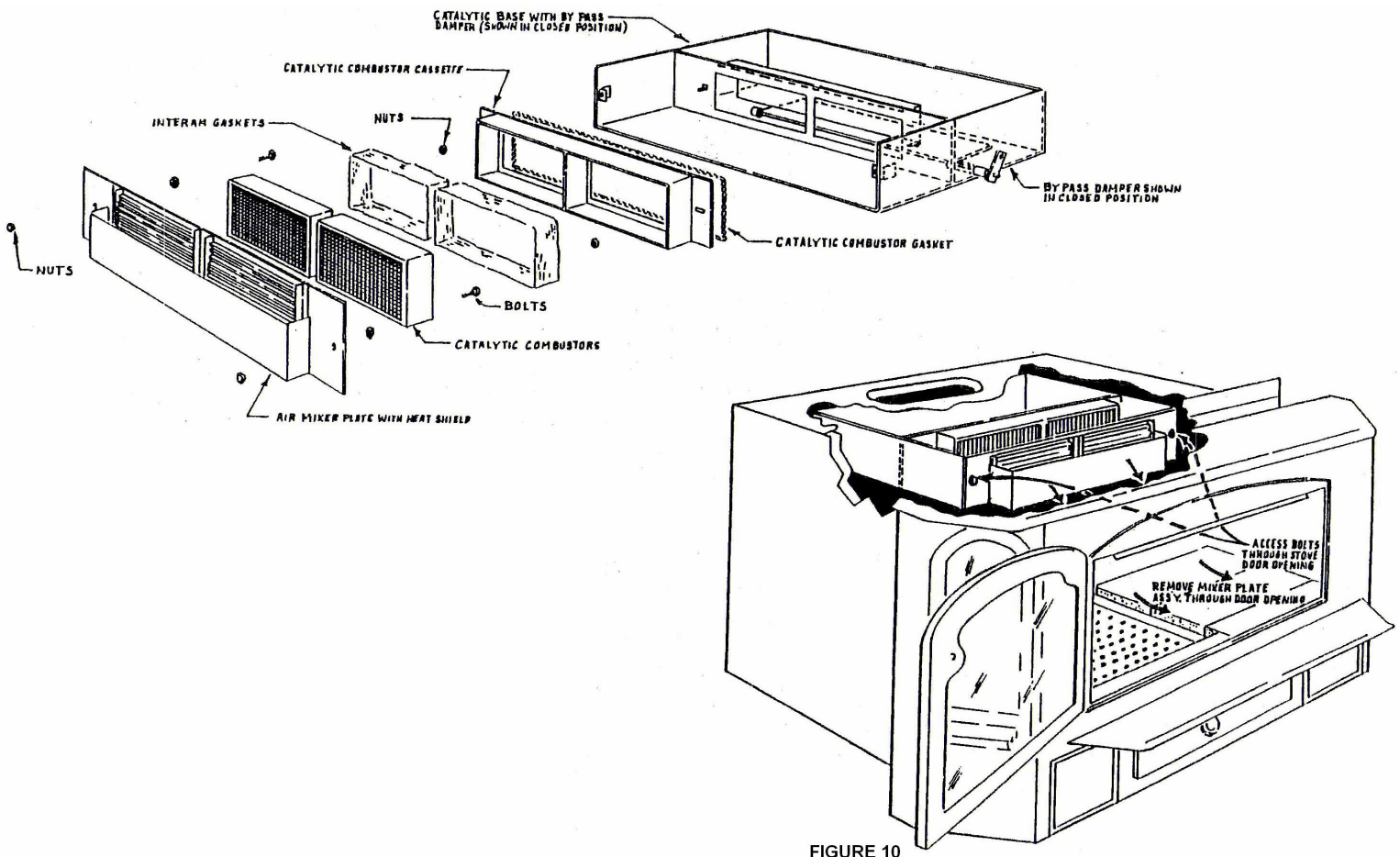


FIGURE 10

Refer to the catalytic combustor manufacturer's warranty card which is packaged with the combustor.

### REMOVAL FOR INSPECTION OR REPLACEMENT OF CATALYTIC COMBUSTORS

1. Combustor assembly is accessed through stove door opening. Using 3/8" socket, remove the two nuts (one on each side) that holds heat shield and mixer plates. Remove assembly through stove door. (See figure 10)
2. After removing mixer plate, use an extended socket to loosen nuts on catalytic assembly base (one on either side). Remove nuts and slide catalytic base assembly out through front of unit and through stove door opening.
3. Catalytic combustors can no be inspected. If combustors are removed from the holders, check condition of inter rim gasket material around the combustors and replace if necessary.
4. To reassemble, ensure combustors are properly seated in combustor holder and that the inter rim gasket is in good condition. To complete assembly, reverse steps 1 and 2.

### TO INSPECT OR REPLACE BYPASS DAMPER GASKET

For top efficiency and low emissions the bypass must be sealed. Bypass gasket may be checked by putting a light inside of stove (inside of fire box), looking in through flue opening on top of stove, check for light leakage.

Should gasket need replacing, it can be accessed through stove door. Lift old gasket up out of channel, clean channel, re-glue, and press new gasket into place. This is done with damper in open position.

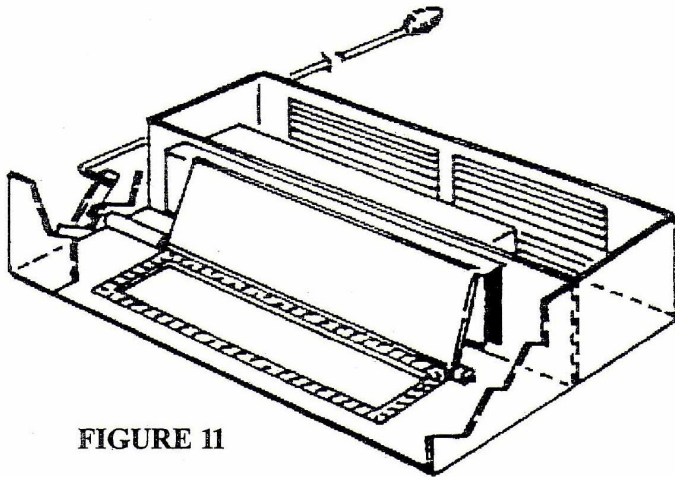


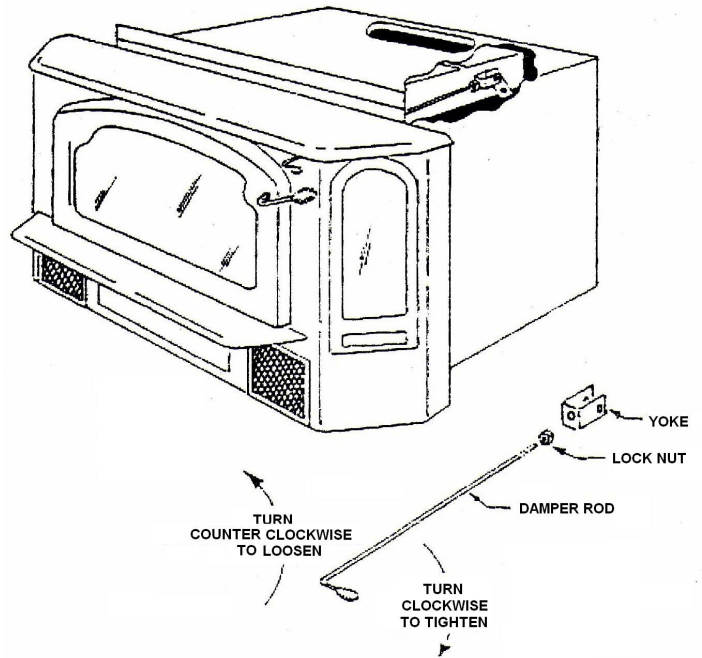
FIGURE 11

### TO REPLACE DAMPER ROD (See Fig. 12)

Reaching in through stove door, use a 5/16" open end wrench to loosen lock nut at end of rod (against yoke).

After backing lock nut away from yoke, rod may be unscrewed by turning counter clockwise from front of stove. After rod is loose from yoke, remove lock nut from rod and pull rod out.

Insert new rod through opening in front of stove, screw lock nut onto rod, align with weld nut in yoke and turn clockwise to tighten. When tight, run lock nut against yoke and tighten securely.



## XIV. STOVE AND CHIMNEY MAINTENANCE

### CHIMNEY AND CREOSOTE

Creosote is one of the facts of life for wood burners. When wood is burned slowly, it produces tar and other organic vapor which combines with expelled moisture (even "dry" wood contains approximately 20% moisture) to form creosote. The creosote vapors condense in the relatively cool chimney connectors and flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. Large amounts of this tough, gummy, tar-like substance can pile up quickly and virtually choke a stove pipe. When ignited, this creosote makes an extremely hot and dangerous fire.

Be sure to examine the chimney connector pipe and the chimney above it every few weeks so you can determine the rate of creosote build up. Any excessive build up of creosote (more than 1/4") will then be apparent and must be removed for continued safe operation.

The chimney must be inspected from the top of the chimney. For a thorough cleaning and inspection, your SIERRA woodstove should be removed from the hearth.

If creosote has accumulated, it should be removed to reduce the risk of a chimney fire. Creosote formations can be chipped away from flue openings with a sturdy metal blade such as a heavy duty scraper. CAUTION: The acid content can cause burns to skin and eyes, so wear protective glasses and gloves. The chimney itself is normally cleaned from the roof. Most stove dealers carry stiff metal brushes in sized and shapes to fit standard flue liners. These are usually attached to rods which can be extended for the length of the chimney. It is recommended that you call a professional chimney cleaner to do the job for you.

If any deterioration or damaged areas are found during routine cleaning and inspection, consult a skilled chimney sweep or brick mason for advice. Any repairs needed should be completed before operating unit.



## STOVE MAINTENANCE

At the end of each season, thoroughly clean the inside of the firebox area including the area under the grate and ash drawer. Vacuum all air passageways and the fan cover screens. Check the door and window gaskets and replace if necessary. Replace any broken bricks on the firebox bottom. The external surface may be lightly sanded and repainted with SIERRA high temperature stove paint, available from your local dealer, whenever necessary. (Make sure stove is cool.)

## CLEANING THE GLASS

Your SIERRA woodstove is designed so that the glass stays clean from normal usage. The hotter the fire and the closer the fire is to the glass, the cleaner the glass will stay. If your glass does become dirty, you can clean it with a damp cloth, after the stove has cooled down. For particularly hard to remove buildup you may use a razor blade. Be very careful not to scratch the glass.

The glass may become dirty on your 4700 during the start-up period. If this occurs, simply open the bypass damper; then, after a minute or so, slowly open the loading door. Gently scrape the glass clean of build-up and reclose the door. At this point the glass will stay clean if a high temperature level is maintained.

Inspect the glass regularly for cracks or breaks. If you find a crack or break, replace your glass immediately, as air can enter the firebox through the crack and you will not be able to control your fire. See your SIERRA dealer for replacement glass.

Always use the fiberglass window gasket supplied with the replacement glass.

Replace the door gaskets on your SIERRA stove every two to three seasons. Replace the window gaskets only if you need to replace the glass. See your SIERRA dealer for SIERRA replacement parts.

## BLOWER MAINTENANCE

Regularly check the fan covers for dust buildup and remove any present. Also be sure to check the power cord for any signs of wear or damage. Have the cord replaced by a qualified electrician if necessary.

By following the manufacturer's recommendations your Sierra Stove will give you years of service

## CONSUMER PROTECTION WARRANTY

Your Sierra Stove has a Limited Five-Year Warranty. Please read it carefully, fill out the short registration form and return it, within 30 days of purchase, to Sierra Products, Inc., 5061 Brooks St. Ste. B Montclair, CA 91763.



Sierra Products, Inc.  
5061 Brooks St., Ste B  
Montclair, CA 91763  
(909) 399-3355

## CARE AND CLEANING OF WOODSTOVE GLASS

The window glass on your SIERRA woodstove is designed for high temperature performance and will withstand normal woodstove temperatures. However, like most glass, it will break if struck with sufficient force. So be careful when loading wood. You may break your glass by jamming a lot of wood against it, or by attempting to push a log into the fire with the stove door. Never load your SIERRA stove with materials which could ignite explosively; even small explosions in a small airtight stove may blow out the glass.

WARNICK-HERSEY  
NER-0A-219  
I.C.B.D. TL-116  
  
TESTED TO: UL 737  
AUGUST 1987

LISTED SOLID FUEL BURNING  
FIREPLACE STOVE  
MODEL 4700 TE

WHI-

DO NOT REMOVE OR COVER THIS LABEL

### MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS:

A. SIDEWALL TO UNIT	23"
B. SIDETRIM TO UNIT	12"
C. TOP TRIM TO UNIT	23"
D. PROTECTED MANTLE TO UNIT	22"
E. UNPROTECTED MANTLE TO UNIT	29"

UNIT MUST BE INSTALLED ON A NON-COMBUSTIBLE FLOOR.

INSTALL & USE ONLY IN MASONRY FIREPLACES. USE CLASS "A" CHIMNEY AND CLASS "A" CHIMNEY CONNECTOR OR EQUIVALENT, 6" DIA. CONNECTOR.

REFER TO LOCAL BUILDING CODE & MANUFACTURER'S INSTRUCTIONS FOR PRECAUTIONS REQUIRED FOR PASSING A CHIMNEY OR CHIMNEY CONNECTOR THROUGH A COMBUSTIBLE WALL OR CEILING.

PREVENT HOUSE FIRES.

INSTALL AND USE ONLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS & LOCAL BUILDING CODES. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS & INSTALLATION IN YOUR AREA.

FUEL: WOOD.

ELECTRICAL: 1.3 AMPS, 60 HZ., 115 VOLTS.

KEEP DOORS CLOSED WHILE IN OPERATION.

### DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

DO NOT USE GRATE OR ELEVATE FIRE — BUILD WOOD FIRE DIRECTLY ON HEARTH.

DO NOT OVERFIRE — IF FIREPLACE STOVE, OR CHIMNEY, GLOWS, YOU ARE OVERFIRING.

PREVENT CREOSOTE FIRE: INSPECT CHIMNEY CONNECTOR AND CHIMNEY TWICE MONTHLY AND CLEAN IF NECESSARY. UNDER CERTAIN CONDITIONS OF USE CREOSOTE BUILD-UP MAY OCCUR RAPIDLY.

U.S. ENVIRONMENTAL PROTECTION AGENCY, CERTIFIED TO COMPLY WITH JULY, 1990 PARTICULATE EMISSIONS STANDARDS.

THIS WOOD HEATER CONTAINS A CATALYTIC COMBUSTOR, WHICH NEEDS PERIODIC INSPECTION AND REPLACEMENT FOR PROPER OPERATION. CONSULT MANUAL FOR FURTHER INFORMATION. IT IS ILLEGAL TO OPERATE THIS WOOD HEATER IN A MANNER INCONSISTENT WITH OPERATING INSTRUCTIONS IN THE OWNER'S MANUAL, OR IF THE CATALYTIC ELEMENT IS DEACTIVATED OR REMOVED.

## U.S. ENVIRONMENTAL PROTECTION AGENCY

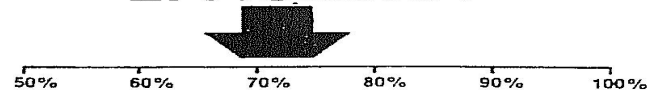
## CATALYST EQUIPPED

MEETS EPA PARTICULATE MATTER (SMOKE) CONTROL REQUIREMENTS FOR CATALYTIC WOOD HEATERS BUILT ON OR AFTER JULY 1, 1990. SEE CATALYST WARRANTY. ILLEGAL TO OPERATE WHEN CATALYST IS NOT WORKING. SEE OWNER'S MANUAL FOR OPERATION AND MAINTENANCE

## SMOKE



## EFFICIENCY\*



Wood heaters with higher efficiencies cost less to operate.

\*NOT TESTED FOR EFFICIENCY. THE VALUE INDICATED IS FOR SIMILAR CATALYST-EQUIPPED WOOD HEATERS.

## HEAT OUTPUT

10,800 to 42,600 Btu/Hr.

Use this to choose the right size appliance for your needs.

ASK YOUR DEALER FOR HELP

This wood heater will achieve low smoke output and high efficiency only if properly operated and maintained. See owner's manual.

# Sierra Ambassador Model 4700TEC Parts List

1	407030	SINGLE DOOR-ARCHED	27	4047127	ARCH WINDOW GASKET - FLAT MAT
2	408484	DOOR GASKET	28	404745	AIR MIXER SUN-ASSEMBLY
3	—	SCREWS FOR WINDOW 13-24X1 1/8"	29	408458	CATALYTIC COMBUSTERS
4	400064	WINDOW - ARCHED DOOR	30	408475	INTER RAM GASKETS
5	408485	WINDOW-GASKET-DOOR	31	404762	SUB-ASSEMBLY CATYLYTIC HOLDER
6	—	ARCHED DOOR OVERLAY	32	4047128	CATALYTIC COMBUSTION GASKET
7	401220	ARCHED DOOR HANDLE	33	—	BOLT 1 1/8X16X1 1/2 CARRIAGE
8	401221	ARCHED DOOR SPING HANDLE	34	—	NUT 2 1/8-16 X 1 1/2" CARRIAGE
9	—	HINGE PINS	35	404787	BYPASS DAMPER ROD
10	407054	GRATE	36	402021	SPRING HANDLE BYPASS ROD
11	404750	ASH PAN ASSEMBLY	37	4047129	BYPASS DAMPER GASKET
12	408487	ASH PAN KNOB	38	404747	BACK SURROUND FOR 4700 (3 PC)
13	404744	FRAME LOWER FAMS	39	404742	INSERT BACK PLATE TRIM
13a	404754	FAN GUARD & SCREEN	40	404786	FIRE BRICK (FOR REFERENCE)
14	4097120	SPRING CLIPS - FAN SCREEN PRIME	40A	—	FIRE BRICK 1 1/8 X 4 1/8 X 7
15	4097121	ON-OFF SWITCH	40B	—	FIRE BRICK 1 1/4 X 4 1/2 X 9 CORNER CUT
16	4097121	VARIABLE SPEED REASTAT	40C	—	FIRE BRICK 1 1/4 X 4 1/4 X 4 1/8 ANGLED
17	4047123	THERMO DISC	40D	—	FIRE BRICK 1 1/4 X 1 1/8 X 3 1/8 RADIUS CUT
18	403254	FANS- BOMAX	40E	—	FIRE BRICK 1 1/4 X 2 1/8 X 8 1/2
19	4047124	WIRING HARNESS	40F	—	FIRE BRICK 1 1/4 X 2 1/4 X 8 1/2
20	4047125	POWER CORD	40G	—	FIRE BRICK 1 1/4 X 2 1/2 X 4 1/2
21	4047126	LEVELING BOLTS	40H	—	FIRE BRICK 1 1/8 X 4 1/8 X 8 1/2
22	4047111	PRIMARY AIRSLIDE	41	404717	SUB-ASSEMBLY DAMPER ROD YOKE
23	404523	PRIMARY AIRSLIDE SPRING HANDLE	42	4047130	PIN DAMPER ROD
24	—	ARCH WINDOW - CAST	43	404749	FRONT AIRWAY TRIM
25	—	ARCH WINDOW GLASS			
26	404754	ARCH WINDOW GLASS GASKET			

