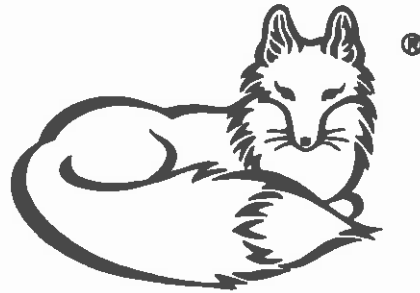
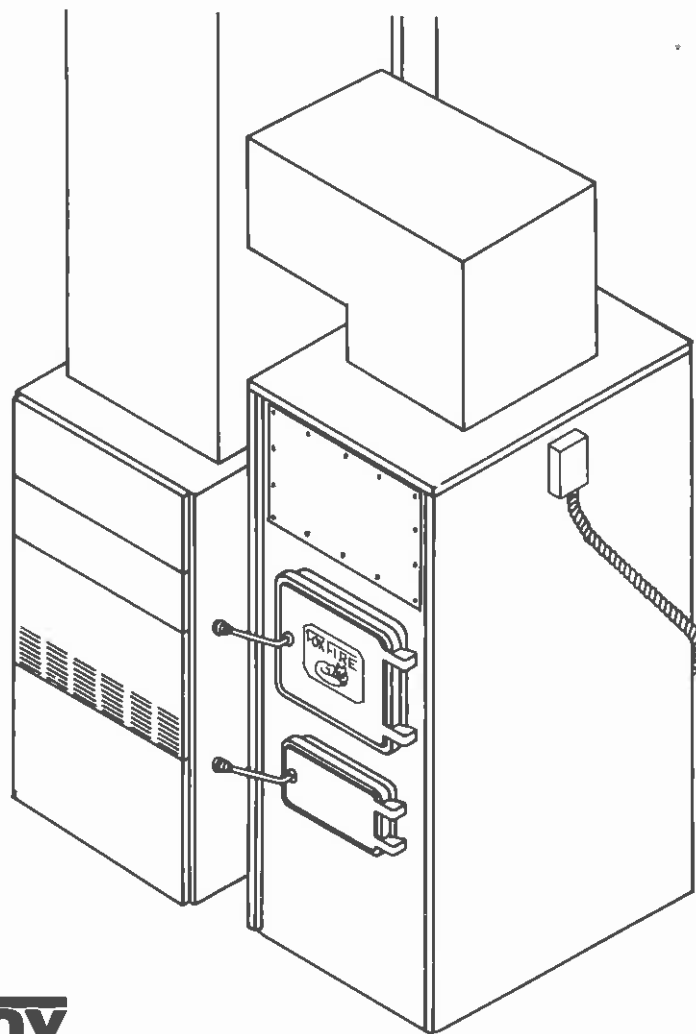


# FOX FIRE



## Owners Manual And Operating Instructions



**SUPERFOX**  
Add-On-Furnace

**Model SF-320**

## UNPACKING YOUR FOXFIRE ADD-ON-FURNACE

Fire brick, mounting hardware, blowers, controls, and wiring are packaged inside the furnace.

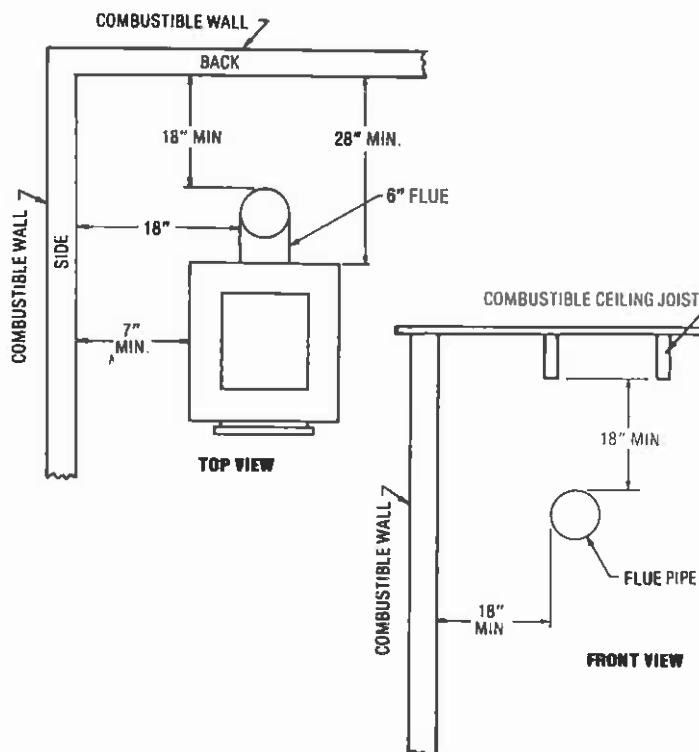
**DO NOT DISCARD THE SHIPPING CARTON AND PACKING MATERIAL UNTIL ALL OF THE ABOVE PARTS ARE REMOVED.**

**NOTE:** Because of the oil coating on the surface of the steel and the new paint, it is advisable to initially fire your unit outdoors before installation of the unit to avoid the smoke and fumes from the first burning to enter your home.

## LOCATING YOUR FOXFIRE ADD-ON-FURNACE

Your Foxfire Add-On-Furnace is a solid fuel burning device, and it will get very hot, along with the flue pipe to the chimney and the heat pipe to your present forced air furnace. It is important that there is adequate space between the Add-On-Furnace and combustible walls or other combustible materials. See drawing below for clearance distances. There should be adequate clearance in the front to allow easy access to the feed door and to remove the ashtray. There should also be adequate room between the Add-On-Furnace and your existing furnace, to pull the bottom of the side panel out a minimum of 5 inches in the event of an electrical power failure. (See special section on operating your Add-On-Furnace in the event of an electrical power failure, in this booklet.)

Nearby combustible surfaces must be cool enough so you can hold your hand on them while the furnace is in operation. The flue pipe must be at least 18 inches from any combustible surface (walls and ceiling joists). The sides of the furnace must be at least 7 inches from a combustible wall, the back must be at least 28 inches from a combustible wall and the furnace itself may be installed on a combustible floor. See minimum non-combustible top view drawing below, and to the right, below.



## INSTALLING YOUR FOXFIRE ADD-ON-FURNACE

### VERY IMPORTANT:

We highly recommend a qualified heating specialist install your add-on-furnace. Your Foxfire Add-On-Furnace is a listed solid fuel burning appliance but you should check your local codes and ordinances with your building inspector or fire marshal first.

## CONNECTING YOUR FOXFIRE ADD-ON-FURNACE TO THE CHIMNEY

### IMPORTANT:

Your Foxfire Add-On-Furnace **MUST** be connected to a listed low heat appliance chimney, (Class "A" chimney, which consists of either a masonry chimney with a tile liner, or an insulated or multiple-walled pipe chimney.) Before making any connections to your chimney, check with your local building inspector, your fire marshal, or a reliable heating engineer, for the requirements in your area.

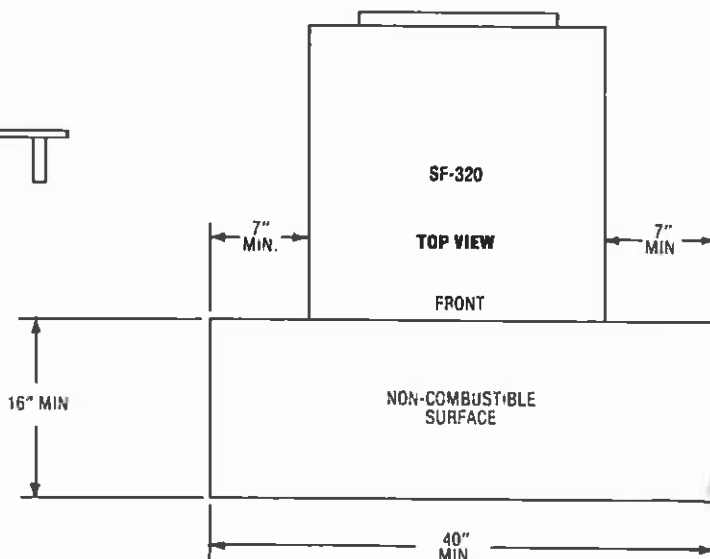
If your Foxfire Add-On-Furnace is connected to a poorly designed or defective chimney, it could hinder the proper function of the unit and cause other problems. A single brick wall chimney will chill rapidly causing creosote, plus, without a liner it is not a listed low heat appliance chimney. A single wall metal pipe should only be used to run the furnace to the chimney. NEVER use single wall metal pipe for the chimney itself.

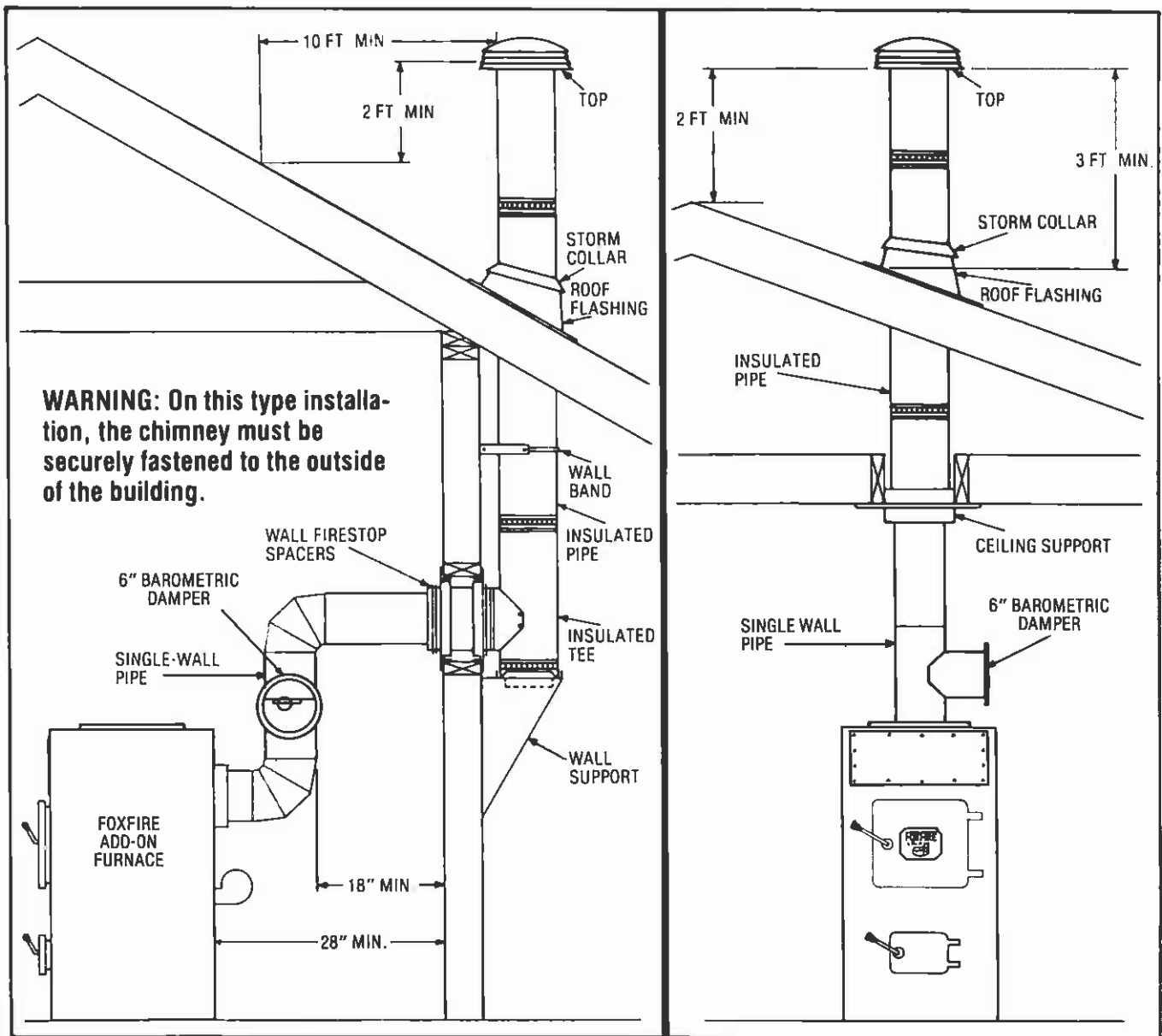
Pipe installed outside or through a cool area inside should be insulated or multiple-walled to reduce creosote build-up caused by condensation of hot gases when coming in contact with a cold pipe. Factory built stacks are ideal for this purpose, plus they are easy to install through a wall or ceiling. Metalbesto or Bellvent are two types of factory built chimneys which are U.L. listed low heat appliance chimneys.

NFPA No. 211 requires factory built chimneys be laboratory listed and installed in accordance with the conditions of the listing and the manufacturer's instructions.

NFPA No. 211 also requires that your pipe extends at least three feet above the highest point it passes through the roof, and at least two feet higher than any portion of a building within ten feet of the factory built chimney.

We strongly recommend the installation of a barometric as shown on page 3. See item #5 on page 6 for details.





**WARNING: On this type installation, the chimney must be securely fastened to the outside of the building.**

### THE SIX INCH FLUE PIPE

Your Foxfire Add-On-Furnace has a six inch flue pipe outlet. You must have a six inch hole below the flue pipe outlet chimney connection for your existing forced-air furnace. Venting two or more appliances into one chimney is not allowed.

If no hole is present in the chimney, you will need to provide one. (Combining two flue pipes into one before going into the chimney is not recommended.) Consult your local building inspector, as codes from area to area may vary. The point of entrance into the chimney for your Foxfire Add-On-Furnace should be as high as possible, taking into consideration safe distances to surrounding surfaces.

The six inch flue pipe should be 24 gauge or heavier black pipe, and should be installed with the crimped end down, to prevent any possible creosote formation from running down the outside of the pipe.

A six inch barometric damper must be installed between the chimney and your Foxfire Add-On-Furnace. Horizontal pipe should have no more than two (2) sweeping 90° elbows,

as straight and short as possible, and have at least 1/4 inch rise to the linear foot. Be sure the pipe is easily accessible for cleaning. All pipe joints must be secured with at least three (3) metal screws.

### NOTE:

#### CREOSOTE — FORMATION AND NEED FOR REMOVAL.

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire.

The chimney connector and chimney should be inspected at least twice monthly during the heating season to determine if a creosote build-up has occurred.

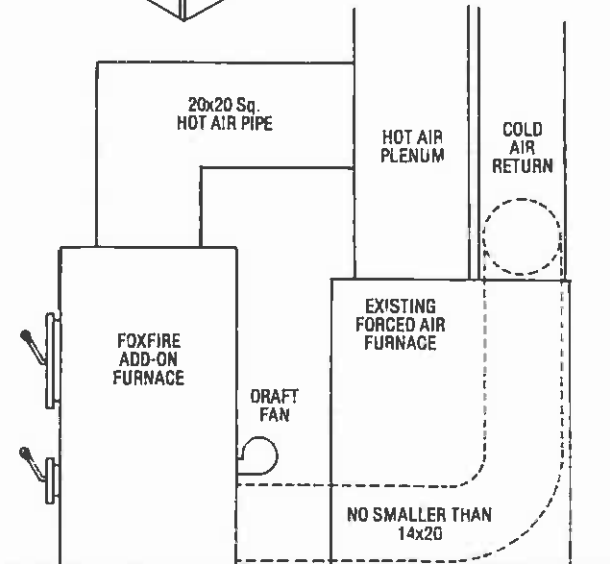
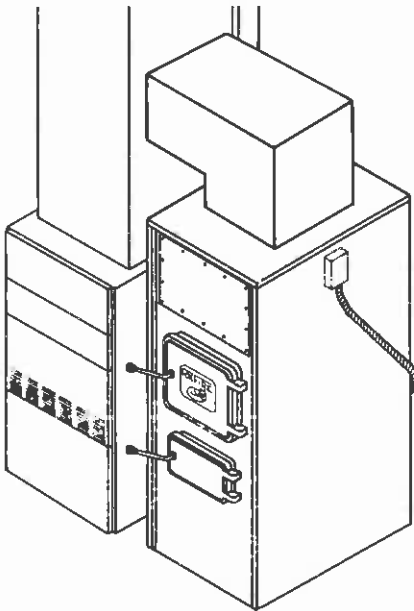
If creosote has accumulated it should be removed to reduce the risk of a chimney fire. This is extremely important and must be followed without fail.

## INSTALLING THE UNIT AS A SPACE HEATER

When your Foxfire Add-On-Furnace is used as a supplementary furnace, the unit is connected in conjunction with a gas or oil furnace to ductwork which distributes the heated air to several rooms. When used as a space heater, heated air from the unit is expelled directly into the room in which the unit is located.

If you are going to install your Foxfire Add-On-Furnace as a space heater instead of an add-on furnace the following instructions must be followed.

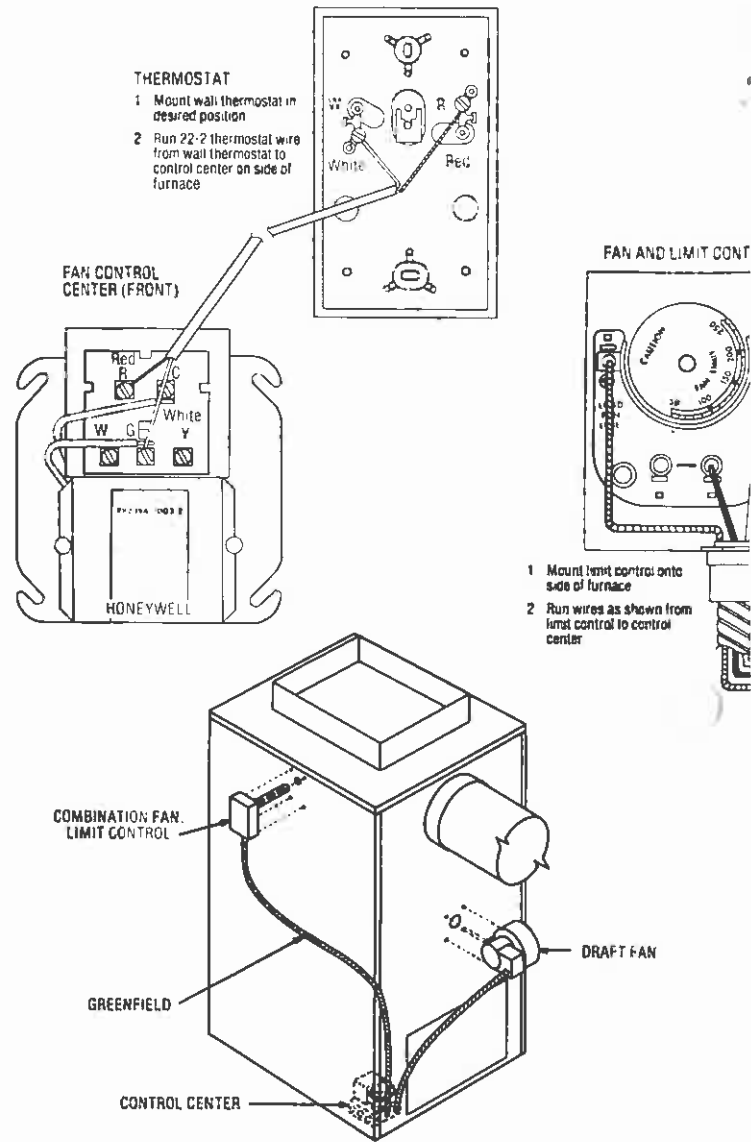
1. Locating your Foxfire Add-On-Furnace is the same as outlined earlier in this manual and must be followed.
2. Connecting your Foxfire Add-On-Furnace to the chimney is the same as before. All clearance distances are the same and must be adhered to. The National Fire Prevention Association recommends that wood-burning appliances vent into a separate chimney from gas or oil furnaces. You should check with your local building inspector to find out if a separate flue for a woodburner is required in your area.
3. The 20 x 20 inch outlet on the top of the Add-On-Furnace **MUST NOT** be reduced to a smaller size and must not be blocked.



## THE ELECTRICAL WIRING

Study the wiring diagrams and make sure all existing locations are correct.

**DANGER: RISK OF ELECTRICAL SHOCK. DISCONNECT POWER TO THE UNIT BEFORE SERVICING UNIT.**



## CONNECTING THE HOT AIR PIPE TO YOUR PRESENT DUCT WORK SYSTEM

The only acceptable furnace installation of your FOXFIRE as an add-on-furnace is parallel installation, as explained in this section. (NOTE: The unit may also be installed as a space heater as explained in another section of this booklet.)

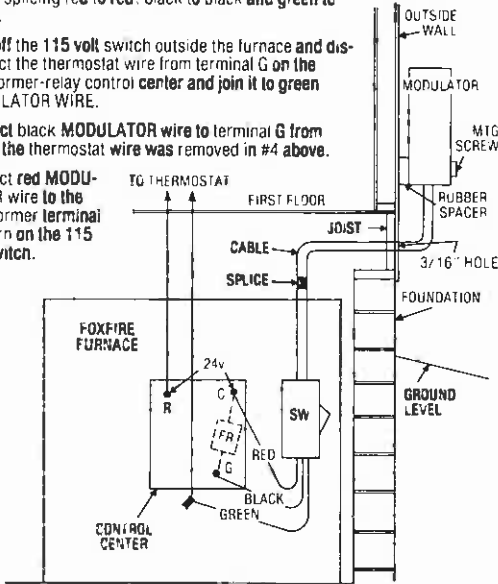
Because the force from the blower in your forced air furnace may drive hot air into your Foxfire Add-On-Furnace, it is recommended **NOT** to run the blower on your existing forced air furnace. To accomplish this turn the thermostat of your existing gas, oil, or electric furnace to a lower setting than the thermostat to your FOXFIRE add-on-furnace. (NOTE: Do

These federal codes are complied with.

## BEFORE CONNECTION OF ELECTRICAL PARTS OR

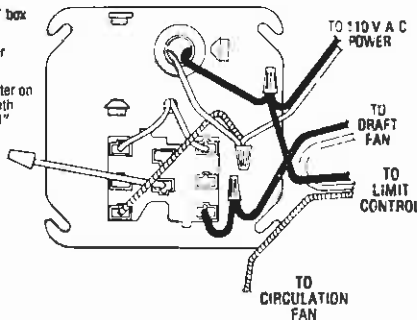
### FOXFIRE HEAT MODULATOR INSTALLATION INSTRUCTIONS

1. Mount the MODULATOR outside the house 15" or more above the ground, in a location well exposed to the wind and convenient to the furnace. A northwestern exposure is preferable. (Avoid eastern and southern exposures, particularly on dark colored walls.) DO NOT PAINT HOUSING.
2. Below the housing, drill a 3/16" hole through the floor joist about 6" above the foundation wall and 6" below the first floor level. Run the 25 ft. sensor cable through the hole to the furnace. Additional cable may be used as necessary.
3. Join the plain end of the short switch cable to the sensor cable, splicing red to red, black to black and green to green.
4. Turn off the 115 volt switch outside the furnace and disconnect the thermostat wire from terminal G on the transformer-relay control center and join it to green MODULATOR WIRE.
5. Connect black MODULATOR wire to terminal G from which the thermostat wire was removed in #4 above.
6. Connect red MODULATOR wire to the transformer terminal C. Turn on the 115 volt switch.



#### FAN CONTROL CENTER (BACK)

1. Mount 4"x4" "J" box on side of
2. Wire control center as shown
3. Mount control center on 4"x4" "J" box with wiring inside 4"x4" "J" box



not tamper with the wiring or the blower on your existing forced air furnace.)

It is important that before a hole is cut into the plenum or hot air chamber of your forced air furnace that the pipe is assembled and temporarily mounted on the hot air outlet of your Foxfire Add-On-Furnace. The pipe should be placed against the hot air plenum in a square and straight position.

When the pipe is in the proper position it should be held firmly and the plenum marked to insure straight and airtight installation. Next the hole should be carefully cut and a 20 x 20 inch pipe mounted and secured with sheet metal screws, and then the pipe fastened for an airtight fit at the joints. This can be accomplished by using duct tape.

## FOXFIRE HEAT MODULATOR

The HEAT MODULATOR is a new solid fuel furnace control which saves fuel, provides increased heating comfort (free of room temperature peaks and valleys), responds faster to heat demand, and which helps maintain the fire. The addition of the MODULATOR to the thermostat control system results in shorter but more frequent draft-on intervals to regulate the fire, and a steady flow of heat rather than the hot-cold-hot-cold heating of conventional thermostat control.

Mounted outside the house, the MODULATOR senses the weather conditions, and varies the duration and spacing of the draft-on intervals to match the weather heat demand. The draft intervals will occur more often (closer together) in cold weather to provide a greater effective draft and a higher fire burning rate. The room temperature changes are very gradual, and the space heating is stretched out to be moderate and nearly continuous. The overshoot of the room temperature above the thermostat setting is eliminated. With no overshoot, the period of cooling to thermostat reclosing is shorter and the fire is better able to quickly respond to heat demand, with less undershoot.

The MODULATOR achieves these improvements in control by modifying the thermostat signals to the draft fan with an added on-off cycle. Both the thermostat and MODULATOR contacts must be closed to increase the draft. During the MODULATOR off cycle, or when the thermostat is open or satisfied, the draft is off. When the thermostat again calls for heat, the initial draft interval will be somewhat longer than the subsequent draft-on periods to help the fire initially increase its burning rate.

Placing the cable switch temporarily in the "off" position will help start a new fire, or pick up a very low fire more quickly with uninterrupted draft. The switch should be returned to the "on" position to allow normal MODULATOR control just as soon as the fire is established.

**NOTE:** Adjust the warm air blower control if necessary for steady heat delivery.

**NOTE:** MODULATOR will not operate whenever the sensor cannot cool below 70°F due to warm air or sun.

## THE COLD AIR RETURN AND HOW TO CONNECT IT TO YOUR FOXFIRE ADD-ON-FURNACE

There may be enough cold air in your basement or furnace room for the blower to force around the hot air chamber of your Foxfire Add-On-Furnace and into the hot air plenum of your existing forced air furnace. Excellent heating results occur in most cases.

Should you discover that the performance of your Foxfire Add-On-Furnace is not satisfactory you may find it necessary to connect a cold air return to the rear of your Foxfire Add-On-Furnace and pipe it to the present cold air return on your forced air furnace as shown in the drawing.

**NOTE:** The warm air supply outlet of your Foxfire Add-On-Furnace should not be connected to the cold-air return inlet of the central furnace because a possibility exists of components of the central furnace overheating and causing the central furnace to operate other than as intended.

## PROBLEMS THAT MIGHT POSSIBLY OCCUR

1. Smoke puffs from the furnace.
  - Check the chimney draft. With a good fire burning,

the chimney should supply .06 inch water column up-draft.

- Check the flue pipe and chimney for possible creosote buildup. If so clean the chimney at once.
  - Check the ash pan and fire chamber for an overload or buildup of ash.
  - Check your chimney for down drafts. This is caused by air currents being deflected down the chimney from higher objects, such as trees, buildings, and hills. This problem can usually be corrected with an open vented chimney cap.
  - A chimney that is too cold will chill flue gases as they rise up the chimney. As this gas cools, it becomes heavy and other gases from the fire try to penetrate this heavy column of cool air. This results in back puffing, poor combustion, and may cause odors in your home.
  - Add more air to the furnace room. Your home may be so airtight that not enough air is reaching the fire.
  - Make sure the chimney clean out door is tightly closed.
  - Other fuel burning devices connected to the same chimney may be robbing the needed draft for your Foxfire Add-On-Furnace. This situation should be corrected by your heating engineer.
2. Not receiving enough heat from your Foxfire Add-On-Furnace.
- Make sure the 20 x 20 inch hot air pipe from your Foxfire Add-On-Furnace to the hot air plenum of your forced-air furnace, as well as the 20 x 20 inch hot air pipe joints are airtight.
  - Check to see if the blower and the limit control on your Foxfire Add-On-Furnace are operating properly and if the inlet opening of the blower is clean and not plugged.
  - The furnace room air may be inadequate, and it may be necessary to run a cold air return pipe to your existing furnace duct work system. See the separate section in this manual showing how this is done.
  - Check the type of wood being burned. If it is too green or is a type of wood that has a low heat value, the best designed Foxfire Add-On-Furnace cannot increase it.

## CHECKLIST FOR SAFE WOODBURNING FURNACE INSTALLATION

Before you start your first fire, check the following:

1. A minimum of 7 inches exists between the furnace side, and 28 inches exists between the furnace back and a combustible wall.
2. Stove pipe of 24 gauge black pipe is used to run from flue collar to the chimney.
3. The flue pipe diameter is not reduced between the furnace and the chimney.
4. A barometric damper is installed in the flue pipe within two (2) feet of the furnace.
5. The total length of the flue pipe is less than 10 feet.
6. There is at least 18 inches between the flue pipe and any combustible wall or ceiling.
7. The flue pipe slopes upward toward the chimney and enters the chimney higher than the outlet of the furnace.
8. The flue pipe enters the chimney horizontally through a fire clay thimble or double wall insulated pipe.
9. The flue pipe does not extend into the chimney flue lining.

10. There is an airtight connection where the flue pipe enters the chimney.
11. A UL approved all fuel chimney is used where a masonry chimney is not available.
12. The chimney is in good repair, the flue lining is not blocked, and is cleaned.
13. A metal container with a tight fitting lid is available for ash disposal.

## OPERATING YOUR FOXFIRE ADD-ON-FURNACE

Your Foxfire Add-On-Furnace is a solid fuel burning device that is installed onto your existing forced air, oil, gas or electric furnace system and must be connected to a suitable Class "A" chimney. This will enable you to burn wood in place of oil, gas or electricity to heat your home.

Once your Add-On-Furnace has been properly installed these procedures are to be followed.

1. Open the ash door and pull out the ash pan 2 to 3 inches.
2. Prepare to build your fire. Lay wadded newspapers inside the fire chamber on top of the grate, and place dry kindling on top of the paper.

### CAUTION:

NEVER USE GASOLINE, GASOLINE-TYPE LANTERN FUEL, KEROSENE, CHARCOAL LIGHTER FLUID OR SIMILAR LIQUIDS TO START OR "FRESHEN UP" A FIRE IN THIS FURNACE. KEEP ALL SUCH LIQUIDS WELL AWAY FROM THE FURNACE WHILE IT IS IN USE.

3. With the ash door open, light the paper and close the feed door tightly.
4. Once adequate ignition occurs, fill the fire chamber with a charge of wood. Always keep the feed door and ash door closed tightly when the furnace is in operation. Leaving either one or both open can result in overheating, causing permanent damage to your furnace.
5. Your Foxfire Add-On-Furnace is designed to operate with .06 inch water column updraft at the chimney connector. A qualified heating installer will be able to check your chimney draft. If your draw is too low (such as .02 inch or .03 inch w/c) you will get smoke back out of the feed door when you load the unit. If your draw is too high (such as .09 inch or .10 inch w/c) your fires will burn too hard and fast. If your draw is too low, you may have a problem with your chimney which must be corrected. This can be done in a number of ways, such as increasing your chimney height or with a power draft. See your local qualified heating installer for the best way to solve the problem. The same holds true if your chimney draft is too high. We strongly recommend the installation of a barometric. See your qualified heating installer.
6. Once your unit is in operation set the wall thermostat to the desired temperature as you would your oil, gas or electric furnace.

## MAINTAINING YOUR FOXFIRE ADD-ON-FURNACE

At least once a day take your poker and rake the ashes and coals across the grate. The finely powdered ashes will fall through the slots in the grate. Because the coals are larger than the grate slots, they will remain on the grate to continue to give off usable heat. The ash pan should be removed and emptied once a day also. Failure to clean out the ashes from the ash pan will lead to a buildup which will reduce the air supply to the fire resulting in a loss of heat out-

put from the unit. The ash pan is essentially a custom fit shovel. Leaving the pan outside of the ash pit is rewarded by a cooler handle on your shovel.

**NOTE: DISPOSAL OF ASHES**

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 pending 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.

**HOW TO USE YOUR ADD-ON-FURNACE DURING PERIODS OF ELECTRICAL POWER FAILURE**

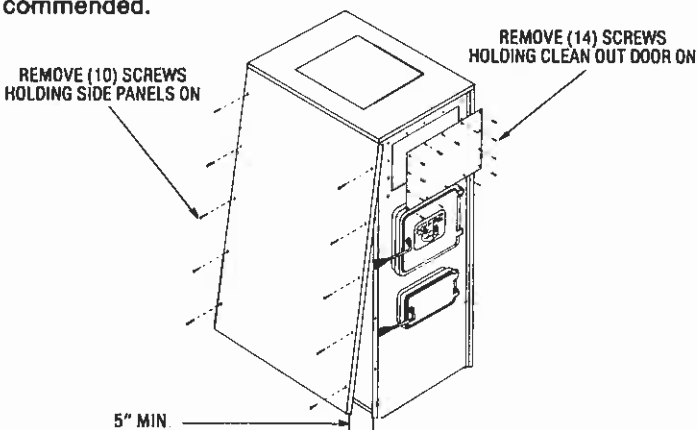
If during operation of your Add-On-Furnace you have an electrical power failure, the blowers on your Add-On-Furnace will not operate to push the heated air through your duct work system. Unlike your oil, gas or electric furnace which would shut down completely, your Foxfire would continue to deliver some heat through convection.

In the event of a very hot fire at the time of a power failure, possible damage can be avoided and heat can be obtained with the following instructions.

You should remove the screws holding the side panel that does not have the combination limit control on it. After you have removed the ten (10) screws, pull the bottom of the side panel out a minimum of five (5) inches; as shown in the drawing. You must also remove the clean out door on the front of the unit by removing the fourteen (14) screws.

By doing this you will help aid the flow of heat by gravity, to heat your home.

DO NOT operate the Add-On-Furnace with either the feed door or ash door open during electrical power failure or at any other time. Adding fuel during power failures is not recommended.



**FIT OF FEED DOOR AND ASH DOOR**

Your Foxfire is designed to be an air-tight unit. A tight fit of both the feed door and ash door on your Foxfire Add-On-Furnace is necessary to insure proper control of air intake to the fire. A loose fitting door may allow too much air to enter the fire chamber, causing an uncontrollable fire.

The usual cause of a loose fitting door is the deterioration of the 1/2 inch rope gasket in the door. To replace this 1/2 inch rope gasket, remove the old gasket and push the new gasket in the U-shaped channel on the inside of the door. Make certain the ends of the rope meet without any crack between. Most wood stove dealers stock this 1/2 inch fiber-glass rope.

**THE BLOWERS**

The blowers should be lubricated at the beginning and end of each heating season with SAE 20 oil. Frequently check the blower wheel, the housing, and the motor for lint and dust. Always keep these areas clean. To assure free air circulation, do not stack wood or other objects near the blowers.

**SUMMER MAINTENANCE OF YOUR FOXFIRE ADD-ON-FURNACE**

During the early summer, preparing your Foxfire Add-On-Furnace for the future heating season will lengthen the life of your furnace investment. Not doing so can significantly shorten the service life.

First remove all ash from the fire box, ash pan, and ash pan compartment. Allowing ashes to remain in these areas when your Add-On-Furnace is not in use will cause rust and corrosion of the fire box. This is a very important step.

Next paint the inside of the fire box and ash pan area with any type of oil, such as used motor oil, SAE 10 thru 50. This will help to prevent rust due to moisture from your chimney or natural condensation.

You should examine the outside of your Add-On-Furnace for any worn or burned off paint. If you find areas like this, lightly sand to remove any rust that may have formed and repaint with a high-temperature paint, such as paint used on charcoal grills. Your wood stove dealer and most hardware stores stock high-temperature paint.

**ABOUT FIREWOOD**

For best results and a longer lasting fire, the heavier hardwoods such as ash, beech, birch, maple and oak are recommended. These hardwood species burn less vigorously and with a shorter flame than softwoods. Oak gives the most uniform and shortest flames and produces steady, glowing coals.

Softwoods, like pine, spruce, and fir burn rapidly with a hot flame and burn up quickly requiring frequent attention and replenishment. Because softwoods are resinous, they are easy to ignite for a quick warm up fire. Softwoods, particularly pine, have a tendency to create creosote because of the tar and pitch in the wood.

**IMPORTANT WARNINGS**

"Heat savers" should not be added to the smoke pipe as they can be a source of creosote buildup.

Your Foxfire Add-On-Furnace is NOT designed to serve as an incinerator for trash and garbage, and is not to be used in this manner. Use as an incinerator will void your warranty.

Driftwood that has been in saltwater should not be used. This type of wood can cause deep corrosive pits in the fire chamber and premature burnout can occur.

Rubber tires, creosote logs or artificial fireplace logs should not be used for fuel in your Foxfire Add-On-Furnace. Some log manufacturers use coal oil, paraffin, or other flammable liquids which may prevent the steady slow efficient burning and might be the cause of a chimney fire.

**NOTE:** For further information on using your furnace safely, obtain a copy of the National Fire Prevention Association Publication "USING COAL AND WOOD STOVES SAFELY" NFPA No. HS-10-1978. The address of the NFPA is 470 Atlantic Avenue, Boston, Massachusetts 02210.

# FOXFIRE

375 East Orr • Orrville, OH • 44667

## Limited 5 Year Warranty

Date Purchased \_\_\_\_\_ Serial Number \_\_\_\_\_

The Foxfire Furnace you have purchased is warranted by the manufacturer, to the original owner, against defects in materials and/or workmanship as follows:

The metal components and workmanship of the Foxfire Furnace are warranted for one (1) year while personally owned by such purchaser, but does not include the paint on the surface of the product. Electrical components, blowers, and cast iron contained therein are warranted for one (1) year from date of purchase. Firebrick is warranted for ninety (90) days from date of purchase.

After the first year, and for an additional four (4) years from the date of purchase, Foxfire will rebuild, repair or replace the basic weldment for a flat charge of only \$49.00, no matter what year of the warranty a claim occurs. A basic weldment is the firebox, ash pit, bottom, front and back.

The warranty does not apply if damage occurs\* (because of accident, improper handling, installation, or operation, shipping damage, abuse, misuse, unauthorized repair or modification made or attempted).

This warranty means that this furnace will be replaced or repaired during the warranty period at Foxfire's option. Only furnaces that prove to be defective will be repaired or replaced. If any furnace becomes defective during the warranty period, send the furnace freight pre-paid to our address. After repairs or replacement, the furnace will be sent back freight collect.

**\*\*\* All liability for any and all consequential damages is disclaimed and excluded herefrom \*\*\***

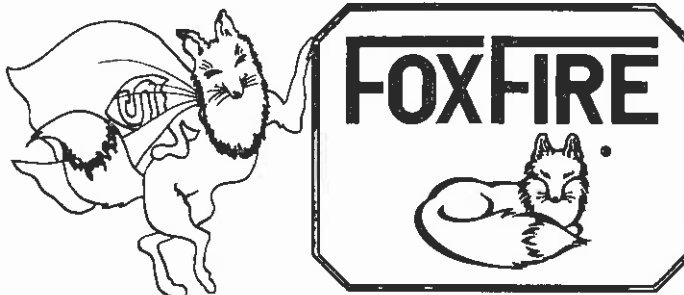
(Some states do not allow the exclusion or limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you.)

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. A warranty registration card is attached to the outside of the shipping box for your Foxfire. This warranty is void if you do not return the card completely filled out within thirty (30) days after the date of purchase.

\*A term required by federal law.

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20363



Foxfire by Orrville Products Inc., 375 East Orr, Orrville, OH 44667