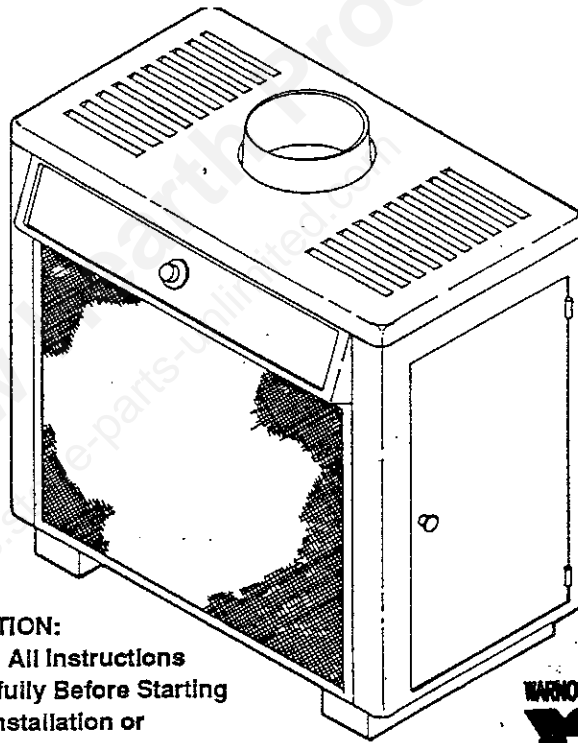


Model 2821
owners manual
**AUTOMATIC
CATALYTIC
CIRCULATOR HEATER**



CAUTION:
Read All Instructions
Carefully Before Starting
the Installation or
Operating the Heater.



*Save This Manual
For Future Reference*

**DO NOT USE THIS HEATER
IN MOBILE HOMES OR TRAILERS**



UNITED STATES STOVE COMPANY
South Pittsburg, Tennessee 37380

85665B 9/91

CONGRATULATIONS!

You've purchased one of America's Finest Woodburning Heaters.

By heating with wood you're helping CONSERVE AMERICA'S ENERGY!

Wood is our Renewable Energy Resource. Please do your part to preserve our wood supply.

Plant at least one tree each year. Future generations will thank you.

tools and materials needed

TOOLS

Pencil
6 Foot Folding Rule or Tape
Tin Snips
Drill, Hand or Electric
Drill Bit (For Sheet Metal Screws) 1/8" Dia.
Screwdriver (Blade-Type)
Gloves
5/16" Nut Driver or 5/16" Socket w / Ratchet

MATERIALS

Chimney Connector-6" dia. Black or Blued Steel
(24 ga. minimum): Straight or Elbow (as required)
Sheet metal screws (#10A x 1/2")
6" Inside diameter Underwriters Laboratories (UL) Listed Residential Type Solid Fuel Factory-Built Triplewall Chimney or existing masonry chimney.
Floor Protector Material 3'-0" x 4'-6" as specified on Page 8.
Furnace Cement (Manufacturer Recommends: Rutland Black-Code 78 or equivalent).

Congratulations on your purchase of a United States Stove Company Catalytic Model Circulator and / or Fireplace insert. Not only do you have a more efficient wood burner, you are also contributing to a cleaner environment by using this catalyst equipped appliance, which is EPA certified to the 1990 Phase II standard.

When properly operated, the catalytic combustor will substantially reduce emissions and creosote formation, as well as increase the heater efficiencies. The catalyst we use, either Corning or Panasonic, is constructed of a ceramic honeycomb, similar to the type used in your automobile. It is coated with a mixture of platinum, palladium, and/or rhodium, which is bonded to the ceramic substrate and enclosed in stainless steel. The proper function of the catalytic combustor is to substantially lower the ignition temperature of otherwise unused flue gases from approximately 600° Fahrenheit, allowing easier ignition of the unburned combustibles, which would normally escape as visible smoke or other particulates, including, of course, creosote.

The catalytic combustor must be "lit off" by bringing it up to the operating temperature (600° Fahrenheit) prior to closing the bypass damper. Under normal conditions, "light off" will be required after each refueling, after every long burn, or if the firebox and flue gas temperatures have become too low to sustain burn-off.

Proper draft (.06 water column) is necessary for the proper functioning of your catalytic combustor. For this reason, the recommended mode of installation is with a factory-built, all fuel, UL listed Type 103-HT chimney, and, preferably, in a straight up installation mode. If it is necessary to use an elbow, then only one should be used. Avoid installations requiring two elbows. Remember that each elbow decreases your draft substantially.

All stove pipe connections, adapters, and elbows (if necessary) must be at least 24-gauge, must be secured at each joint by at least 3 sheet-metal screws, and should be caulked with furnace cement or stove putty to provide an air-tight seal. Though less desirable, if a horizontal run is necessary, remember to incline the stovepipe upward toward the chimney connection at least 1/4" per linear foot of run.

rules for safe installation and operation

SAFETY NOTICE: If this heater is not properly installed, a house fire may result. For your safety, follow the installation directions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.

Read these rules and the instructions carefully.

1. Check your local codes. The installation must comply with their rulings.
2. Do not install this heater in a mobile home or trailer.
3. Always connect this heater to a chimney and vent to the outside. Never vent to another room or inside a building.

4. Do not connect a wood burning heater to an aluminum Type B gas vent. This is not safe and is prohibited by the National Fire Protection Association Code. This heater requires a masonry or a UL Listed Residential Type and Building Heating Appliance Chimney. Use a 6" diameter Chimney or larger, that is high enough to give a good draft.
5. Be sure that your Chimney is safely constructed and in good repair. Have the chimney inspected by the Fire Department or a qualified inspector. Your insurance company may be able to recommend a qualified inspector.

6. Inspect chimney connector and chimney twice monthly during the heating season for any deposit of creosote or soot which must be removed (see Chimney Maintenance, page 19).

7. Provide air for combustion from outside the house into the room where the heater is located. If the intake is not in the same room, air must have free access to the room.

8. **CAST IRON PARTS MUST BE "SEASONED" TO AVOID CRACKING. BUILD ONLY SMALL FIRES ON FIRST USE.**

9. To prevent injury, do not allow anyone to use this heater who is unfamiliar with the correct operation of the heater.

10. For further information on using your heater safely, obtain a copy of the National Fire Protection Association (NFPA) publication "Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances" NFPA No. 211. The address of the NFPA is Batterymarch Park, Quincy, MA 02269.

11. Keep the ashpit section free of excess ashes. Do not allow ashes to stack higher than the sides of the ash pan.

12. **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 noncombustible material, pending final disposal. If the ashes are

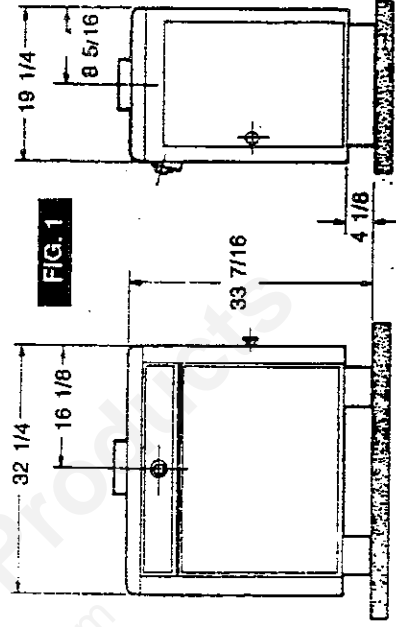
disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

13. **CAUTION** – the special paints used on your heater may give off some smoke and/or odors while they are curing during first few fires. Build small fires at first. The metal used in construction of the heater has a light coating of oil. This could give off smoke and / or odors when heater is used for the first couple of times. This should disappear after a short period of time. Once this burn-off has occurred, it should not reoccur.

14. **CARING FOR PAINTED PARTS** – this heater has a painted outside jacket, which is durable but it will not stand rough handling or abuse. When installing your heater, use care in handling. Clean with soap and warm water when heater is not hot. **DO NOT** use any acids or scouring soap, as these wear and dull the finish. **PAINT DISCOLORATION WILL OCCUR IF THE HEATER IS OVERFIRED. FOLLOW OPERATING INSTRUCTIONS CAREFULLY.**

15. Keep the feed door, ash door, cabinet door closed at all times except while tending the heater.

Circulator Dimensions



Locating the heater

AS A LOCATION IS SELECTED, KEEP THE FOLLOWING IN MIND :

1. The chimney connection should be as short as possible. The heater must have its own chimney. Do not connect this unit to a chimney flue serving another appliance.
If there is no chimney near where you wish to place the heater, you can use a UL Listed Residential Type and Building Heating Appliance Chimney (Fig. 6).
2. Place the heater on solid masonry or solid concrete. When the heater is used on a combustible floor, use a non-combustible floor protector 3/8" millboard having a thermal conductivity of $K=0.84$ BTU in/ft.² hr. deg. F with 28 gauge sheet metal or a U.L. listed floor protector. Have the floor protector extend 16" beyond the door side of the heater and under the connector pipe in the back (Fig. 5, and 6).
3. Check Figures 2, 3, and 4. Be sure you have the clearances shown from the heater and the connector pipe to combustible surfaces. If you have a solid brick or stone wall behind your heater, you can place the heater as close as you wish to the wall. If the wall is only faced with brick or stone, treat it as a combustible wall.

MINIMUM CLEARANCE TO COMBUSTIBLE WALLS

FIG. 2

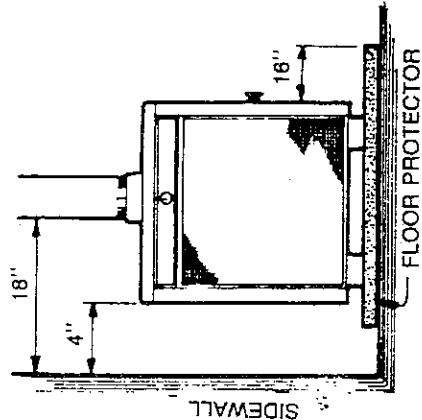
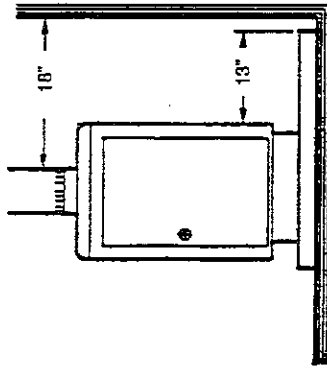


FIG. 3



CAUTION

Keep furnishings and other combustible materials away from the appliance.

NOTE: BEFORE FIRING HEATER

1. Remove plastic knob from inside of cabinet door and install on outside. (See Page 14).
2. Slide firebricks toward the rear so no gaps remain between them.

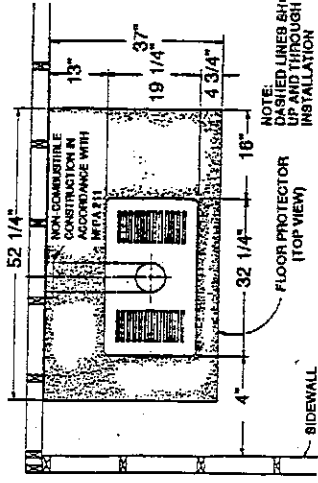


FIG. 4

chimney connection MASONRY CHIMNEY

Before using an existing masonry chimney, clean the chimney and inspect the flue liner to be sure it is safe to use. Make repairs before attaching the heater. Look at Fig. 6-1. The connector pipe and fittings you will need to connect directly to a masonry chimney are shown.

If the connector pipe must go through a combustible wall before entering the masonry chimney, consult a qualified mason or chimney dealer. The installation must conform to local fire codes.

Do not connect this heater into the same chimney flue as the fireplace or flue from another heater.

The chimney used for a heater must not be used to ventilate the cellar or basement. If there is a cleanout opening at the base of the chimney, close it tightly.

UL LISTED CHIMNEY

Carefully follow chimney manufacturer's instructions. Use only a UL Listed Residential Type and Building Heating Appliance Chimney. If your chimney starts at the ceiling (Fig. 5), you will need a 6" elbow and enough 6" pipe to reach the ceiling. The top of the chimney must be at least 3 feet above the roof and be at least 2 feet higher than any point of the roof within 10 feet (Fig. 5).

Two basic types of chimneys are approved for use with solid fuel. Factory-built and masonry. Do not expect your stove or furnace to create draft. Draft is not a function of the appliance. Draft is purely a function of the chimney. Modern stoves and furnaces are much more air-tight and efficient than those of the past, and, therefore, require greater draft. A minimum of .06 measured in water column (gauges to measure chimney draft are readily available at stove shops and are economical to purchase or rent) is required for proper drafting to prevent back-puffing, smoke spillage, and to maximize performance.

Chimneys perform two functions - one of which is apparent: The chimney provides a means for exhausting smoke and flue gases resulting from combustion of the fuel. Secondly, though, the chimney provides "Draft" which allows oxygen to be continuously introduced into the appliance, so that proper combustion is possible. As of April 1, 1987, all wood heaters and furnaces manufactured by United States Stove Company should be installed using a factory built chimney that meets the "Type HT" requirement of UL 103 (when a factory-built chimney is used). For standard ceiling installation, see Fig. 5. For cathedral ceiling installation, see Fig. 6. For exterior wall type installation, see Fig. 6-1.

BAROMETRIC DRAFT REGULATOR (Optional)

In some installations it may be desirable to install a barometric draft regulator in the chimney connector. A barometric draft regulator should be located in the same room (Pressure zone) as the heater. When installing a barometric draft regulator, follow the manufacturer's instructions.

HOW TO DETERMINE IF ALTERNATE FLOOR PROTECTION MATERIALS ARE ACCEPTABLE

1. First and foremost, floor protection materials must be non-combustible. In general metals, brick, stone, mineral fiber boards, etc. are non-combustible. Any organic materials (i.e. plastics, wood, paper products, etc.) are combustible and must not be used.
 2. The floor protector specified may include some form of thermal resistance such as R-value or K-factor or C-factor. These terms are often confusing and may make it difficult to readily determine if an alternate floor protection system meets the specification.
- Definitions:
 K-value or K-factor: This is a measure of the rate of heat transfer through a 1 foot by 1 foot area of material one inch thick.
 C-value or Thermal Conductance: This is the rate of heat transfer through a 1 foot by 1 foot area of material at whatever thickness the material is.

R-value: This is the thermal resistance and is equal to $1 / C$ and is given for the material thickness.
 R / inch: This is the inverse of the K-value and is the thermal resistance of a 1 inch thickness of material.
 (Other values used commonly include U, Ru, Hm, Hc, Rh, and Rc: These generally are values for built-up sections such as walls or roofs and airfilm properties. These values are not used for floor protector analysis.)

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

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

EXAMPLE 1:

The specified floor protector should be 3/4 inch thick material with a K-value of .84. The proposed alternate is 4" brick with a C-value of 1.25 over 1/8" mineral board with a K-value of .29.

Step (a): Use formula (1) to convert specification to R-value.

$$R = 1 / K \cdot T = 1 / .84 \times 3 / 4 = 1 / .84 \times .75 = .893$$

Step (b): Calculate R of proposed system. 4" brick of C = 1.25
 R brick = $1 / C = 1 / 1.25 = .80$

$$1/8" \text{ mineral board of } K = .29$$

$$R \text{ mineral} = 1 / .29 \times 1 / 8 = 1 / .29 \times .125 = .431$$

$$\text{Total } R = R \text{ brick} + R \text{ mineral board} = .8 + .431 = 1.231$$

Step (c): Compare proposed system R of 1.231 to specified R of .893. Since proposed system R is greater than required, the system is acceptable.

EXAMPLE 2:

The specified floor protector must have a R-value of 3 or more. The proposed floor protector is a metal box filled with vermiculite (K=.47) 1 - 1/4" deep.



(Note: R values for sheet metal are negligible and therefore not counted)

$$R \text{ vermiculite} = 1 / K \times 1 - 1 / 4 = 1 / .47 \times 1.25 = 2.66$$

Since 2.66 is less than the R-3 required, the proposed floor protector is not adequate. The minimum thickness of vermiculite necessary can be calculated as follows:

$$R = 3 = 1 / .47 \times T$$

$$T = 3 \times .47 = 1.41 \text{ inches}$$

Therefore the proposed construction would be acceptable if the thickness is increased to at least 1.41 inches of vermiculite.

Thermal values for most materials can usually be provided by the supplier of manufacturer. For common building materials and more complete description of thermal properties, see ASHRAE Handbook Fundamentals published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1791 Tullie Circle N.E., Atlanta, GA 30329.

venting into a fireplace

Many people may wish to convert an existing fireplace to wood heater use. Usually, safe connection of stovepipe to a masonry chimney requires more effort than connection to a prefabricated chimney. The fireplace must be tightly closed and sealed at the damper in the flue. Good sealants are high-temperature caulking, ceramic wool, and furnace cement. Always remember to inspect the masonry chimney and fireplace. If necessary, clean the flue and smoke shelf before beginning your installation. Install the wood heater into the fireplace so that the system can be dismantled for cleaning and inspection.

Before deciding to convert your fireplace, keep in mind that some fireplaces and existing chimneys are unsafe. They must be structurally sound, and the flue liner must be in good condition. Clearances to combustibles are explained in the previous section on masonry chimneys. If you have any question regarding the condition of the chimney, consult a qualified engineer, competent mason, or knowledgeable inspector.

Many prefabricated fireplaces fall into the "zero-clearance fireplace" category. This is a factory-built metal fireplace with multilayered construction. It is designed to provide enough insulation and/or air cooling so that the base, back and sides can be safely placed in direct contact with combustible floors and walls. Although many prefabricated fireplaces have been tested by nationally recognized organizations for use as fireplaces, they have not been tested to accept airtight wood heaters. In fact, their use as such may void the manufacturer's warranty.

Steel-lined fireplaces, on the other hand, can be used with airtight wood heaters. These units use a 1/4-inch fire box liner and an air chamber in connection with 8 inches of masonry to meet code. They contain all the essential parts of a fireplace, firebox, damper, throat, smoke shelf, and smoke chamber. Many of them look exactly like a masonry fireplace and must be checked closely for above requirements before installing a wood heater into them.

Another method frequently used by some people is to vent the wood heater directly into the fireplace. This does not meet code since the heater is being vented into another appliance - the fireplace. This method should not be attempted because combustion products will deposit and build up in the firebox or fireplace. Be certain not to install a hazard in your house.

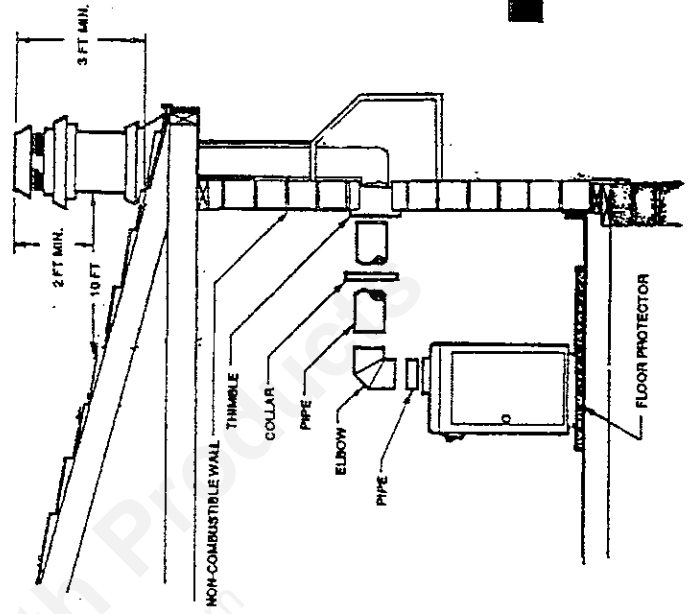
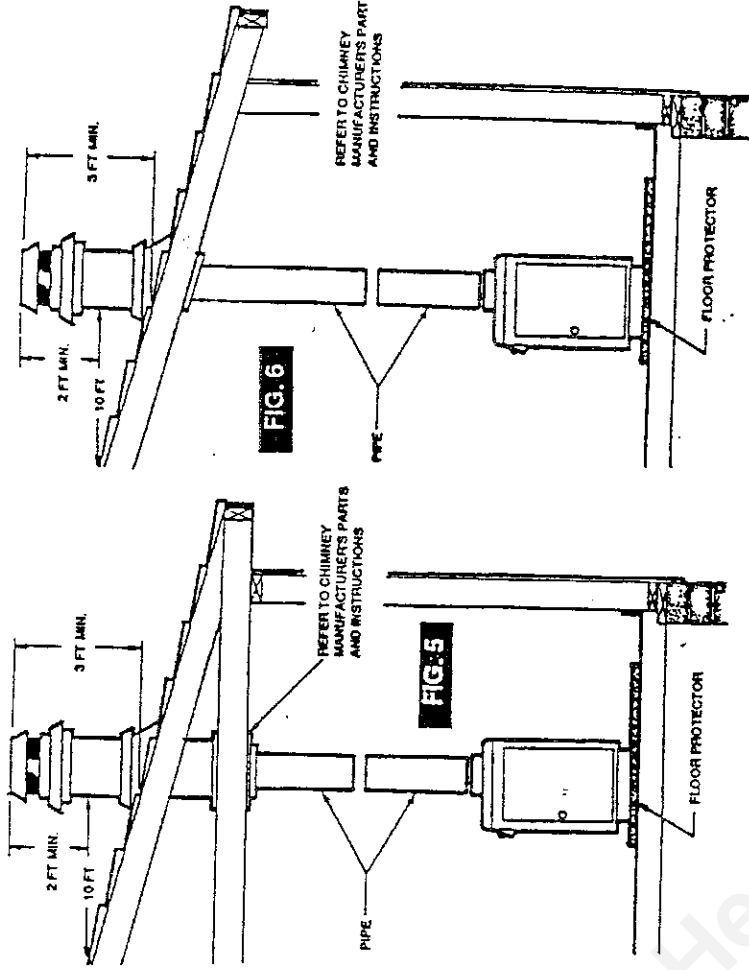


FIG. 6-1

Masonry Installation

Connection of the stovepipe directly into the existing masonry chimney over the fireplace opening is the most desirable method. This installation performs better, yielding more heat and better draft; it is also easy to clean and inspect for creosote. Before beginning this type of installation plan carefully; a high degree of skill is required to insure safety.

An entry port for the stovepipe must be cut through the chimney with minimum damage to the fireclay liner. Some involved measurements may be required to locate the flue liner exactly. Before cutting, take time to mark the size and position of the entry port. Position the entry port so that at least 8 inches of the flue liner remains below the port.

Keep in mind that wood mantels and combustible trim around the fireplace must have adequate clearances from the heater and stovepipe or must be protected in an approved manner. Also, be sure to leave at least an 18-inch clearance between the top of the stovepipe and the combustible ceiling or other combustibles. Placing the center of the entry port 2 feet below the ceiling will insure proper clearance for 6-inch, 8-inch, and 10-inch stovepipes. Next, install a fireclay (at least 5/8 inch thick) or metal thimble, being sure that the thimble is flush with the inner flue lining, secure the thimble in place with refractory mortar. The thimble should be surrounded on all sides with 8 inches of brickwork (solid masonry units) or 24 inches of stone.

Install the stovepipe as far as possible into the thimble, but not past the inside of the flue lining. There should be a small airspace (approximately 1/2 inch) between the stovepipe and thimble, allowing for expansion of the stovepipe. Seal this airspace with high-temperature caulking or ceramic wool. Finally, be sure to wire the damper closed and apply the same sealant you used at the stovepipe and thimble junction.

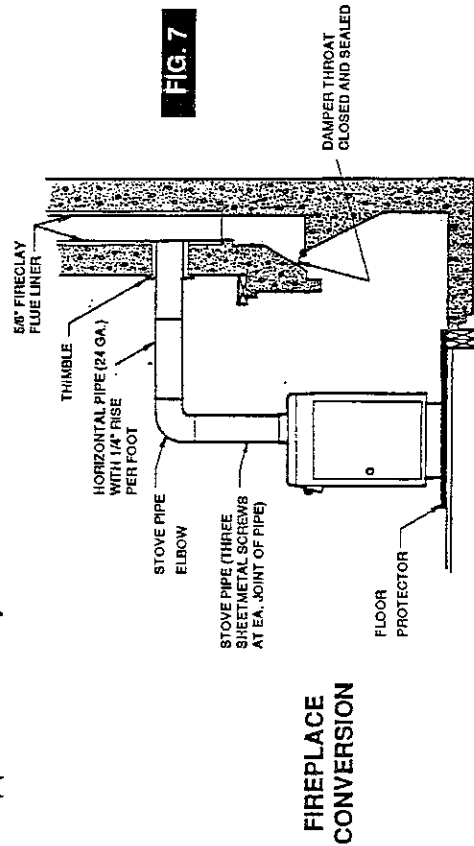


FIG. 7

FIREPLACE
CONVERSION

Do not use the Type B installation (not illustrated in this manual), that is, venting up through the fireplace opening, regardless of whether the fireplace opening is closed.

Masonry chimneys have several positive attributes: If properly built, they are quite durable, and most homeowners consider them more attractive perhaps than an unenclosed factory built chimney. And, if the chimney is located within the confines of the house (that is, not attached to an exterior wall), its mass alone will store heat longer and continue to release the heat long after the fire has died. Masonry chimneys have many disadvantages though. Masonry chimneys constructed on an exterior wall are exposed to cold outdoor temperatures, promoting greater heat loss, higher accumulations of creosote, and reduced draft which leads to poorer heater or furnace performance.

When considering a masonry chimney, round titles are preferable to square or rectangular, as round tiles have much better airflow characteristics and are far easier to clean. Unfortunately, most North American chimneys use square or rectangular tile liners that are really designed for open fireplaces, not stoves or furnaces. Of most importance, second only to overall chimney height, is the diameter of the flue liner itself. In most instances, it should be sized to the appliance; i.e., 6" flue outlet on the appliance requires a 6" chimney. The inner diameter should never be less than the flue-outlet diameter and should never be greater than 50% of the appliance flue outlet. For example, do not expect a wood or coal burning stove or furnace to function properly if installed into a chimney with a flue liner greater than 50% more than the appliance outlet -- such as a 6" flue outlet requires a 6" diameter for optimum drafting, but can function well with an 8", but becomes border - line beyond an 8" diameter.

Masonry chimneys built of concrete blocks without flue liners of at least 5/8" fireclay do not meet modern building codes. A solid fuel appliance must not be joined to a chimney flue which is connected to another appliance burning other fuels.

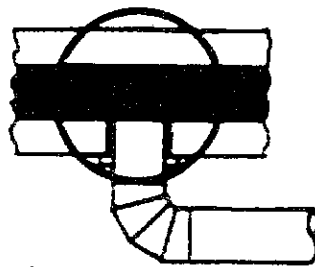
If your chimney has a typically oversized flueliner of, say 8x12 inches, or greater, or if it is unlined, it will be necessary for you to re-line the chimney, using many of the modern approved and economical methods such as stainless steel, castable refractory, or properly sized fireclay linings.

If you have any questions regarding venting your appliance, feel free to contact the factory at the address and phone number on this Owner's Manual. You may also contact NFPA (National Fire Protection Association) and request NFPA Standard 211 (1984 Edition). Their address is Battery March Park, Quincy, Massachusetts 02269. Another helpful publication is NFPA Standard 908, available at the same address. Specify 1984 Edition of either of the above publications.

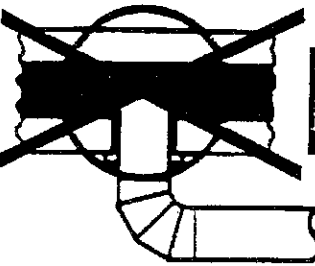
Rules For Connector Pipe Installation

1. The crimped end of the stovepipe fits inside the heater flue collar. Install additional pipe and elbow with the **CRIMPED END TOWARD THE HEATER**. This will allow any condensation in the flue to run back into the heater.
2. Slope any horizontal pipe upward toward the chimney to least 1/3 inch for each foot of horizontal run.
3. You must have at least 18 inches of clearance between any horizontal piping and the ceiling.
4. The pipe cannot extend into the chimney flue (Fig. 8).
5. Seal each connector pipe joint with furnace cement. Also seal the pipe at the chimney.
6. Use 3 sheet metal screws at each joint to make the piping rigid.
7. Do not put a damper in a connector pipe.

RIGHT



WRONG



WRONG

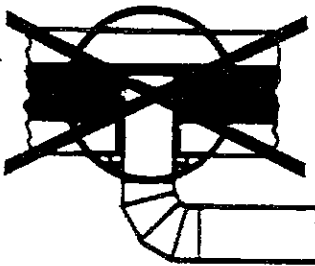


FIG. 8

Cabinet Door Catch Assembly

The door knob is mounted inside of the cabinet door to facilitate shipping and must be reversed for proper usage. To get cabinet door open, place hand under cabinet frame (right hand side - cabinet door side) and push door out.

INSTALL THE CABINET DOOR KNOB USING THE STEPS BELOW:

1. Remove the machine screw and door knob (Fig. 9)
2. Place door knob on outside of cabinet door. Then place machine screw through hole and into door knob and tighten (Fig. 10)

1/3

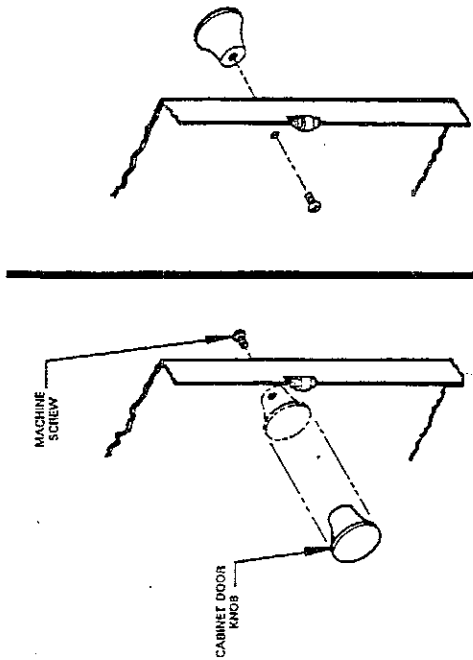


FIG. 9

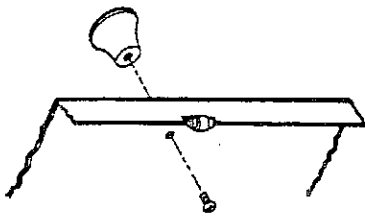


FIG. 10

Optional FEED/ASH DOOR WOOD HANDLE, 67567

Read and Complete Before Firing Unit

1. Remove wooden handle from inside of the ash pan.
2. Place the metal hook of the wooden handle through the hole in the end of the cast iron door handle.
3. Using pliers, close the metal hook so the wooden handle cannot be removed.

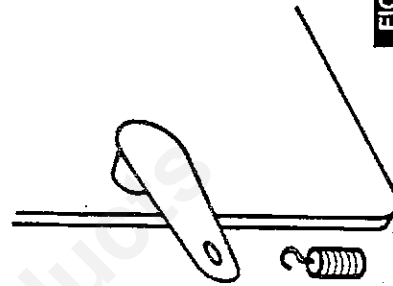


FIG. 11

operating instructions

FUEL

Hardwood, 20" to 24" should be split and air dried (seasoned) for 6 months to obtain maximum burning efficiency.

Use wood or wood-like materials only.

Do not use coal. Coal or charcoal will damage the catalytic combustor.

LIGHTING THE FIRE

1. Set the Thermostat on "High" setting to provide maximum draft and turn the bypass lever to "open" position. (Page 17)
2. Open the feed door and place paper and kindling on the grate for starting the fire.
3. Light paper and kindling and close feed door securely.
4. Add fuel after fire is burning briskly. Use care not to smother the kindling fire.
5. After fire is established, wait five minutes and turn bypass lever to "close" position. (See Page 17)
6. The Catalyst Temperatures should exceed 800°F within thirty minutes after closing bypass. This is the catalytic combustor temperature, "not the flue gas temperature. If temperature fails to rise above 800°F after fire has been established for a minimum of 30-45 minutes with the bypass closed, this may indicate a non-functional or weak combustor, at which time replacement is necessary to maintain proper operation of your stove. (See Page 17 for Re-placement Instructions.)
7. Set thermostat to maintain desired temperature. "Medium" setting is normally satisfactory. Set higher or lower for your comfort.

CAUTION

OVERFIRING THE APPLIANCE MAY CAUSE A HOUSE FIRE. IF A UNIT OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING.

CAUTION

DO NOT OPERATE WITH FEED OR ASH DOOR OPEN. THIS HEATER IS DESIGNED FOR THERMOSTATIC OPERATION. OPERATION WITH EITHER DOOR OPEN WILL OVERHEAT AND DAMAGE THIS HEATER.

ADDING FUEL

When possible add small amounts of fuel each hour or so instead of adding large quantities of fresh fuel every eight to ten hours. This will give more complete combustion and keep the catalytic combustor at a higher and more efficient operating temperature.

1. Turn bypass lever to "open" position before opening feed door to add fuel.
2. Empty ash pan regularly. Do not allow ashes to build up to the grate level, as grate will warp and burnout will occur. Dispose of hot ashes properly. (See Note 12 on Page 3.)

*A temperature monitoring port has been provided on the top of your heater. For access with commercially available temperature probes, remove screws on the rear of the top panel, lift the top and remove 1/4" plug from the top of the combustion chamber. Replace the top panel with screws and insert the probe to monitor catalyst temperature 1" downstream from catalytic combustor.

CAUTION

NEVER USE GASOLINE, GASOLINE - TYPE LANTERN FUEL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS TO START OR "FRESHEN UP" A FIRE IN THE HEATER.

CAUTION

KEEP ALL FLAMMABLE LIQUIDS, ESPECIALLY GASOLINE, FROM THE VICINITY OF THE HEATER WHETHER IN USE OR IN STORAGE.

CAUTION

BUILD A FIRE ON INTEGRAL GRATE THAT IS PROVIDED WITH THE HEATER.

service hints

Do not expect a heater to draw. It is the chimney that creates the draft. Smoke spillage into the house or excessive build-up of water or creosote in the chimney are warnings that the chimney is not functioning properly. Correct the problem before using heater. Possible causes are:

1. The connector pipe may be pushed into the chimney too far, stopping the draft (Fig 8).
2. Do not connect two heaters into the same chimney flue.
3. The chimney used for a heater must not be used to ventilate the cellar or basement. If there is a cleanout opening at the base of the chimney, it must be closed tightly.
4. If the chimney is too cool, water will condense in the chimney and run back into the stove. Creosote formation will be rapid and may block the chimney. Operate the heater at a high enough fire to keep the chimney warm preventing this condensation.
5. If the fire burns well but sometimes smokes or burns slowly, it may be caused by the chimney top being lower than another part of the house or a nearby tree. The wind blowing over a house or a tree falls on top of the chimney like water over a dam, beating down the smoke. The top of the chimney should be at least 3 feet above the roof and be at least 2 feet higher than any point of the roof within 10 feet (Fig. 6)

NOTE:

A draft reading of .05 to .06 W.C. is suggested for proper burning of this unit.

chimney maintenance

Creosote – Formation and Need for Removal

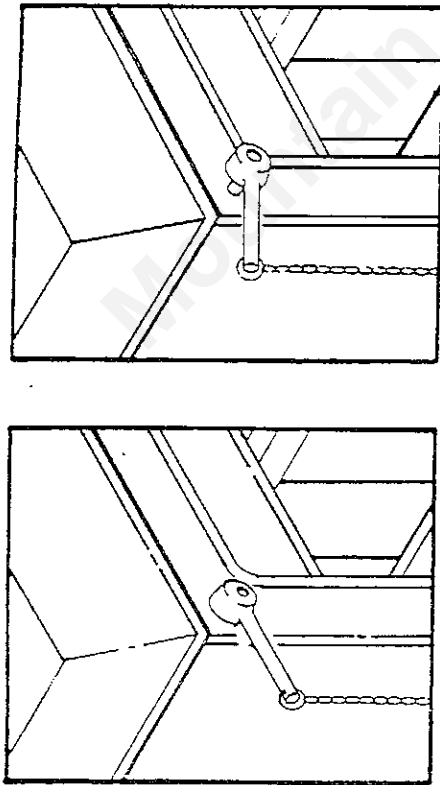
Even though reduction of creosote formation is one of the primary advantages of a catalytic combustor equipped heater, some creosote forming gases will escape unburned during normal operation. In the event the combustor ceases to function, creosote can be expected to accumulate. Consequently, flues and chimneys should be inspected regularly (every two to three months of operation) and any creosote build up removed. Failure to do this could result in a chimney fire.

Creosote may be removed by using a chimney brush or other commonly available materials.

Chimney fires burn very hot. If the chimney connector should glow red, immediately call the fire department, then reduce the fire by closing the inlet air control.

CAUTION

A chimney fire may cause ignition of wall studs or rafters which you thought were a safe distance from the chimney. If you have a chimney fire, have your chimney inspected by a qualified person before using again.



BYPASS OPEN

BYPASS CLOSED

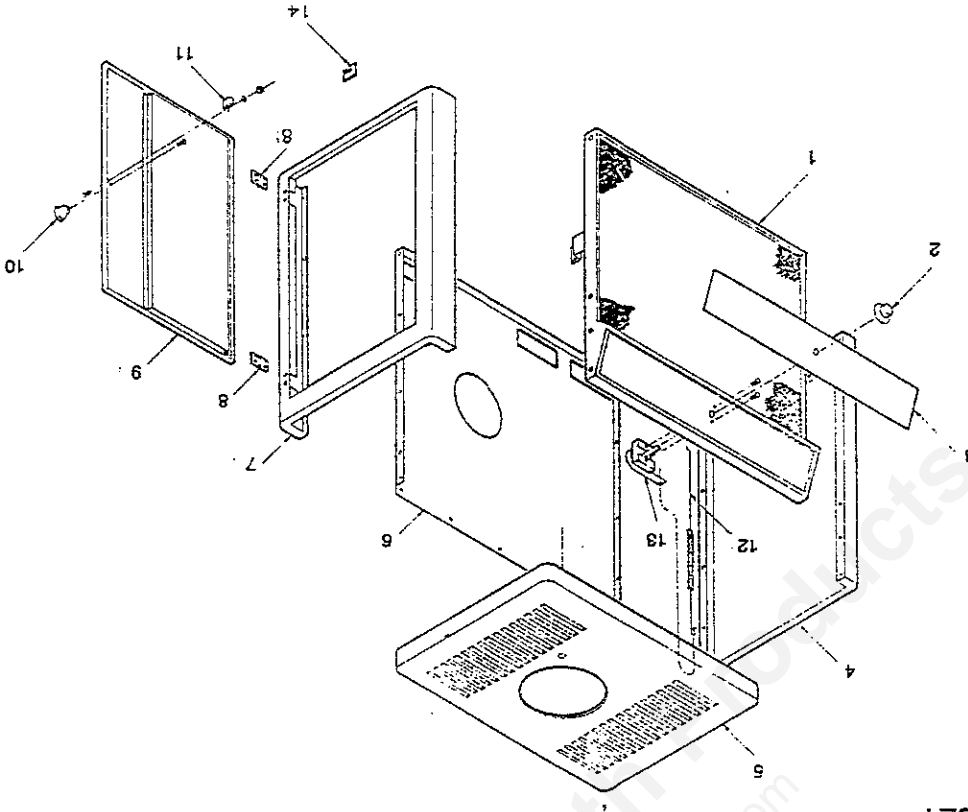
CATALYTIC INSPECTION OR REPLACEMENT (Refer to Repair Parts Drawing)

1. Remove the two stainless steel coupler nuts, Part No. 83378 and the air mixer box, Part No. 68211. The catalytic combustor assembly can now be removed by dropping straight down and removing through the feed door. (A Note of Importance: If the catalytic assembly is removed for any reason, the combustor gasket, Part No. 88058 must be replaced.)
2. To replace catalytic combustor assembly: place gasket over flange on combustor assembly, align holes in gasket with holes in combustor assembly flange, place assembly in stove with stainless steel screws through gasket and flange of combustor assembly. Hold in place and install mixer box on same screws. Replace and tighten stainless steel coupler nuts. Be certain perforated screen is pointed into the heater as shown in Repair Parts Drawing.

repair parts

AUTOMATIC CATALYTIC CIRCULATOR HEATER
 MODEL NO. — 2821

Key No.	Part No.	Qty.	Description
1	68058	1	Cabinet Front Panel
2	89142	1	Thermostat Knob
3	85546	1	Control Panel Label
4	68351	1	Cabinet, Left End
5	68350	1	Cabinet, Top Panel
6	68505	1	Cabinet, Back Panel
7	67968	1	Cabinet, Right End
8	89065	2	Door Hinge
9	67969	1	Cabinet Door
10	89062	1	Cabinet Door Knob
11	83093	1	Spring Latch
12	89516	1	Thermostat Linkage
13	67743	1	Thermostat
14	23396	1	Pull Chain Bracket

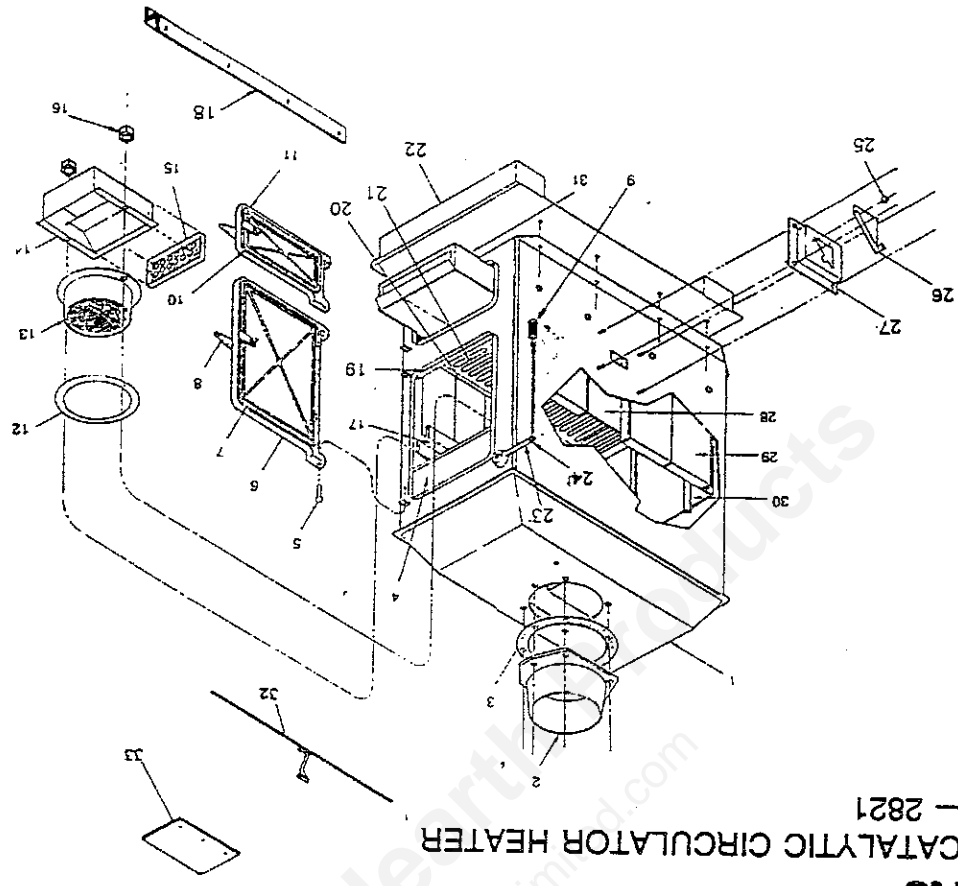


repair parts
 AUTOMATIC CATALYTIC CIRCULATOR HEATER
 MODEL NO. — 2821

repair parts

AUTOMATIC CATALYTIC CIRCULATOR HEATER
MODEL NO. — 2821

Key No.	Part No.	Qty.	Description
1	68187	1	Firebox
2	40246	1	Flue Collar
3	88032	1	Flue Collar Gasket
4	22090	1	Smoke Curtain
5	83114	2	Door Pin
6	40186	1	Feed Door
7	88033	44*	3/8" Rope Gasket
8	40091	1	Door Handle
9	67567	1	Wood Handle
10	88033	29*	3/8" Rope Gasket
11	40187	1	Ash Door
12	88058	1	Combustor Gasket
13	89355	1	Catalytic Combustor
14	68211	1	Air Mixer Box
15	22607	1	Air Mixer Box Screen
16	83250	2	(1/4-20) Nut (kep)
17	17350	1	Brick Retainer, Rear
18	68210	1	Brick Retainer, Front
19	22247	1	Front Liner
20	68080	2	Grate Retainer
21	40076	2	Fire Grate
22	67598	1	Base
23	68590	1	Bypass Handle Weldment
24	86318	1	Chain (11 Links)
25	83244	1	(10-24) Nut (Kep)
26	22539	1	Air Intake Door
27	22538	1	Air Intake Box
28	22612	1	Primary Air Deflector
29	89066	9	Firebrick
30	17130	1	Rear Liner
31	67444	1	Ash Pan
32	68212	1	Bypass Rod Weld. (Optional)
33	40265	1	Bypass Door (Optional)
*	68591	1	Bypass Handle Assembly



repair parts
AUTOMATIC CATALYTIC CIRCULATOR HEATER
MODEL NO. — 2821

owners manual

HOW TO ORDER REPAIR PARTS

THIS MANUAL WILL HELP YOU TO OBTAIN EFFICIENT, DEPENDABLE SERVICE FROM THE HEATER, AND ENABLE YOU TO ORDER REPAIR PARTS CORRECTLY.

KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

WHEN WRITING, ALWAYS GIVE THE FULL MODEL NUMBER WHICH IS ON THE NAMEPLATE ATTACHED TO THE BACK OF THE HEATER.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION AS SHOWN IN THIS LIST:

1. The PART NUMBER
2. The PART DESCRIPTION
3. The MODEL NUMBER 2821
4. The SERIAL NUMBER: _____

BEFORE INSTALLING YOUR HEATER FILL IN THE SERIAL NUMBER OF YOUR HEATER IN THE SPACE PROVIDED ABOVE.

United States Stove Company

111 Industrial Dr.

P.O. Box 151

South Pittsburg, TN 37380