



OWNER'S MANUAL

CATALYTIC WOODBURNING FIREPLACE INSERT APPLIANCE

MODEL KI3

FOR USE ONLY IN MASONRY FIREPLACES

EPA-CERTIFIED TO PHASE II EMISSIONS STANDARDS: This appliance meets the U.S. Environmental Protection Agency's emission limits for wood heaters built on or after July 1, 1990.

Under specific test conditions this appliance has been shown to deliver heat at rates ranging from 10,300 to 34,600 Btu's per hour.

SAFETY PRECAUTIONS

PLEASE READ THIS ENTIRE MANUAL BEFORE YOU INSTALL AND USE YOUR NEW HEATING APPLIANCE. FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY, OR EVEN DEATH.

IF THIS HEATING APPLIANCE IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT. TO REDUCE THE RISK OF FIRE, FOLLOW THE INSTALLATION INSTRUCTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.

INSTALL A SMOKE DETECTOR ON EACH FLOOR OF YOUR HOME. EACH DETECTOR SHOULD BE INSPECTED REGULARLY AND KEPT IN GOOD WORKING CONDITION.

SAVE THESE INSTRUCTIONS. THESE INSTRUCTIONS SHOULD BE REVIEWED BY ALL FUTURE USERS OF THIS HEATING APPLIANCE TO ENCOURAGE ITS PROPER OPERATION AND MAINTENANCE.

SAFETY STANDARDS AND BUILDING CODES

This appliance has been safety tested by Warnock Hersey International, Incorporated, in accordance with UL safety standard 1482. The Warnock Hersey listing mark on this appliance indicates that the design and manufacturing of this appliance comply with Warnock Hersey's safety standards. There may be additional requirements to be met in order to comply with local building codes or regulations. Before installing this appliance, check with local building or fire officials to assure compliance with local regulations and codes.

TAMPER WARNING

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

TABLE OF CONTENTS

SAFETY PRECAUTIONS	1
SAFETY STANDARDS AND BUILDING CODES	1
TAMPER WARNING	1
DRAFT	2
FIREPLACE AND CHIMNEY REQUIREMENTS	3
HEARTH REQUIREMENTS AND MINIMUM CLEARANCES BETWEEN APPLIANCE AND COMBUSTIBLES	4
FUEL	4
HOW THIS APPLIANCE OPERATES	5
CATALYTIC COMBUSTORS EXPLAINED	6
BYPASS DAMPER EXPLAINED	6
APPLIANCE INSPECTION	6
APPLIANCE INSTALLATION	7
TOOLS NEEDED	7
TO SAFELY AND PROPERLY INSTALL THIS APPLIANCE	7
INSPECTION AFTER INSTALLATION	8
OPTIONAL ACCESSORIES	8
OPERATING INSTRUCTIONS	8
SAFETY REMINDERS	8
FIRING THE APPLIANCE	8
CONVECTION BLOWER OPERATION	9
FIRE TENDING	9
OVERFIRING	9
ASHES - REMOVAL AND DISPOSAL	10
MAINTENANCE	10
CREOSOTE - FORMATION AND NEED FOR REMOVAL	10
APPLIANCE MAINTENANCE	10
WHEN AND HOW TO REPLACE THE CATALYTIC COMBUSTOR(S)	11
TROUBLESHOOTING	12
SMOKE SPILLAGE AND POOR DRAFT	12
APPLIANCE BURNS TOO RAPIDLY OR PUTS OUT TOO MUCH HEAT	12
CATALYTIC COMBUSTOR TROUBLESHOOTING	13
BLOWER TROUBLESHOOTING	14
WARRANTIES AND REPAIR PARTS	14
FIGURES	14
A FINAL WORD	24

DRAFT

Draft, as referenced throughout this manual, is the force which moves air from the appliance up through the chimney. The amount of draft in the chimney depends on such factors as the height of the chimney, the size of the chimney flue, local geography, location of the fireplace and chimney, and nearby obstructions.

Too much draft may cause excessive temperatures in the appliance and may damage the catalytic combustors. An uncontrollable burn or a glowing red appliance part (other than a catalytic combustor) are indications of excessive draft.

Inadequate draft may cause the appliance to smoke, burn poorly, and not put out much heat; inadequate draft may result in a faster accumulation of creosote on the chimney flue liner; inadequate chimney draft may also cause creosote to plug catalytic combustor cells.

If doubts arise about the adequacy of a chimney's draft, a draft pressure reading may be taken with a draft meter or manometer. Your appliance dealer may perform this task for you or recommend someone who can. The common unit used to measure draft is "INCHES OF WATER". For this appliance, the recommended chimney draft range is .04 to .07 inches of water.

FIREPLACE AND CHIMNEY REQUIREMENTS

DO NOT INSTALL THIS FIREPLACE INSERT IN A METAL ("PREFABRICATED," "ZERO-CLEARANCE," "MANUFACTURED," OR "FACTORY-BUILT") FIREPLACE. Those type fireplaces may be faced with brick, but their insides are not made of brick; and, their chimneys are not normally suitable for the high exhaust temperatures associated with wood-burning appliances such as this fireplace insert. Metal fireplaces are designed to be kept cool by air flowing through their firebox. A fireplace insert could interrupt that flow of cooling air and the metal fireplace or its chimney could overheat and cause a house fire.

THIS FIREPLACE INSERT IS NOT DESIGNED FOR USE IN MOBILE HOMES.

THIS FIREPLACE INSERT HAS BEEN DESIGNED FOR, TESTED FOR, AND SHOULD ONLY BE INSTALLED IN, A MASONRY FIREPLACE AND CHIMNEY SYSTEM BUILT TO NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 211. The fireplace and chimney system must be free from cracks, loose mortar, creosote deposits, or other blockage, or other signs of deterioration. **DO NOT INSTALL THIS INSERT IN A FIREPLACE WITH AN UNLINED CHIMNEY.** As specified by NFPA 211, the chimney must be lined with fire clay flue lining at least 5/8-inch thick or an equivalent listed chimney liner system installed in accordance with its listing. The chimney must be constructed of solid masonry not less than 4 inches thick or rubble stone masonry not less than 12 inches thick.

To be sure the masonry fireplace and chimney system meets the NFPA 211 standard and is free from cracks, loose mortar, creosote deposits or other blockage, or other signs of deterioration, the entire system should be examined (before installation of the insert) by someone familiar with NFPA 211 and local codes, and knowledgeable about problems that may develop in a fireplace and chimney system and how those problems may be corrected. If needed, a copy of NFPA 211 standard Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances may be purchased from National Fire Protection Association, Inc., Batterymarch Park, Quincy, MA 02269. If evidence of deterioration is noted during the examination, make the necessary repairs before installing the insert.

The fireplace in which this insert is to be installed must be adequately sized to receive this insert and a surround kit. See figure 1 for minimum and maximum dimensions of the fireplace in which this insert may be installed; also see figure 1 for the available surround kits, one of which will be needed to seal the insert into the fireplace opening.

The internal shape of the fireplace must not cause the fireplace lintel or smoke shelf to extend over the smoke outlet of the insert. Excessive obstruction of the insert's smoke outlet by portions of the fireplace will cause restrictions of the smoke flowing from the insert and can have detrimental effects on the insert's performance. See figure 2.

NFPA 211 requires fireplace inserts to be installed with a connector extending from the insert's smoke outlet to the first flue liner of the chimney. The purpose of the connector is to deliver the insert's smoke directly to the chimney flue liner to help alleviate creosote buildup in the firebox, smoke shelf, and smoke chamber of the fireplace. Where local codes require, or a connector is desired, the Model DC1 Direct Connect kit or its equivalent may be purchased from your insert dealer and installed to create the connection. See figure 2.

The size of the chimney flue liner's cross-sectional area is important to the proper operation of this insert. If the cross-sectional area of the chimney flue liner is less than 37.2 square inches, it may be too restrictive to the flow of smoke from the insert.

On the other hand, flue liners larger than 112 square inches may be too large for this insert and result in excess capacity, which means less draft and more creosote. See figure 2. To determine the cross-sectional area of a flue liner, use one of the two appropriate formulas shown below.

Square or Rectangular Flue Liner:

Width in inches (x) length in inches = Cross-Sectional Area.

Cylindrical (Round) Flue Liner:

$\frac{\text{Diameter (distance across)}}{2} \times \frac{\text{Diameter (distance across)}}{2} \times 3.1416 = \text{Cross-Sectional Area.}$

If a chimney flue liner is too large, it may be possible to install a smaller flue liner.

NOTE: Round flue liners draw better than square or rectangular ones.

The top of the chimney must be at least 3 feet above the point where it comes through the roof of your house, and at least 2 feet higher than any part of the roof or house within a 10-foot radius as shown by figure 3. These chimney height requirements (known as the 3-foot, 2-foot, 10-foot rule) are required by codes for safety purposes to allow sparks exiting the chimney time to cool before they land on the roof. Additional height will generally increase draft, improve appliance operating characteristics and reduce back-drafting and puffing problems due to wind. If a chimney cap and/or bird screen are installed on top of the chimney, keep them cleared of leaves, creosote, or other matter which could impede the flow of smoke exiting the chimney. See figure 3.

CAUTION: DO NOT INSTALL THIS FIREPLACE INSERT IN A FIREPLACE IF THE FIREPLACE'S CHIMNEY FLUE IS SERVING ANOTHER APPLIANCE. TO DO SO COULD CAUSE OPERATING OR DRAFTING PROBLEMS.

HEARTH REQUIREMENTS AND MINIMUM CLEARANCES BETWEEN APPLIANCE AND COMBUSTIBLES

To protect combustible floors from sparks and hot coals which could cause a house fire, a masonry fireplace should have a hearth and hearth extension made of brick, concrete, stone, tile or other approved noncombustible material properly supported and with no combustible material against the underside of the hearth.

The fireplace's hearth extension should be at least 52 inches wide and should extend at least 16 inches beyond the front face of the appliance as shown by figure 4. If the existing hearth extension does not provide this minimum protection, a listed floor protector or a floor protector made of noncombustible inorganic material equal to 3/8-inch thick millboard having a thermal conductivity "K" factor number equal to or less than .084 BTU-INCH/(HR) (°F) (FT²) may be used to complete the hearth extension requirements shown by figure 4.

Also to help prevent a house fire, minimum clearances between the appliance (the insert) and combustible walls, combustible mantels, and combustible trim as shown by figure 4 must be maintained UNLESS PRECAUTIONS ARE TAKEN AS DESCRIBED BELOW. Drapes, curtains, and other combustible items must be kept much farther away from the appliance to avoid a fire.

If the clearance between the appliance and a combustible wall, combustible mantel, or combustible trim which extends out into the room more than 1/2 inch beyond the fireplace face is less than specified by figure 4, there are some ways to remedy the problem: one way is to move or remove the wall, mantel or trim; another solution is to install a clearance reduction system to protect the combustible wall, mantel, or trim which is too close to the appliance.

A variety of prefabricated clearance reduction systems which have been safety tested are available through appliance dealers. Always look for a safety listing label on the product when selecting a clearance reduction system through an appliance dealer and make sure it is designed for use with a solid fuel appliances. The manufacturers of these tested systems provide specific installation instructions that must be followed exactly for a safe installation.

If you choose to make your own clearance reduction system, contact local building or fire officials for specific requirements regarding home-constructed clearance reduction system in your area. If they are not properly installed, a house fire could occur.

Examples of home-constructed clearance reduction systems are:

1. To protect walls, one commonly used home-constructed clearance reduction system is made of 24-gauge sheet metal with noncombustible spacers used to create a 1-inch air space between the sheet metal and the combustible surface. The 1-inch air space provides free air circulation, and it is essential that there be openings at the top and bottom of these clearances reducers so cool air can enter at the bottom and hot air can exit at the top. It is this "chimney effect" that makes the wall clearance reduction system will allow the wall clearance to be reduced to no less than 12 inches. The system may be painted.
2. To protect a mantel, a commonly used home-constructed clearance reduction system consisting of a piece of 24-gauge sheet metal sized and shaped to protect the mantel and secured 1 inch below the mantel will allow the mantel clearance to be reduced to no less than 15 inches. The system may be painted.

Again, contact local building or fire officials for specific requirements regarding home-constructed clearance reduction systems in your area. If they are not properly installed, a house fire could occur.

FUEL

This heating appliance is not designed to burn artificial logs, processed fuels, coal, charcoal, plywood, trash, garbage, wrapping paper, preformed wood, or treated wood. These prohibited fuels may cause the appliance and chimney to dangerously overheat or release poisonous gases into the dwelling. These prohibited fuels also contain elements such as lead, zinc and sulfur that will "poison" or deactivate the catalytic combustor. A poisoned catalytic combustor will not operate effectively and must be replaced.

This heating appliance is designed to burn only natural wood.

The amount of heat you receive from the appliance, the degree of control you have over its heat output, how safely you operate the appliance, and how often you have to clean its catalytic combustor system and its venting system (which consists of the direct connect system and the fireplace chimney) are all somewhat dependent on how much you know about wood and burning wood.

Freshly cut natural wood contains a lot of water, as much as 50 percent water by weight. Before wood can burn, the water trapped in the wood must be boiled away. As anyone who has ever boiled water knows, it takes a considerable amount of heat to boil even a cup of water until it is all boiled away. Because freshly cut green wood or wet wood may be 50 percent water by weight, a considerable amount of the heat produced by burning green or wet wood is consumed by boiling the water out of the wood before it will burn. For this reason, green or wet wood is likely to produce a smoldering, smokey fire and chimney temperatures that are cool enough to cause rapid accumulation of creosote. (NOTE: The hazards of creosote are described elsewhere in this manual.) Burning green or wet wood can also waste up to 50 percent of the heat you should be getting in your home and maintaining catalytic combustion will be much more difficult due to the water vapor coming off the wood and cooling the combustor temperature too much.

To prepare wood for the most economical and troublefree burning, it should be cut, split and stacked out of the rain with its ends exposed for at least 6 months before it is burned. Wood that has been "seasoned" in this fashion will normally dry naturally until it is approximately 20 percent water by weight.

There are two types of natural wood: (1) Hardwoods, which generally come from deciduous, broad-leaved trees, are dense and slow to catch fire but will burn evenly for a long time once they do start burning. (2) Softwoods, which generally come from evergreen trees, are less dense than hardwoods and are easier to ignite because they are resinous.

Softwoods burn fast, so a fire built entirely of softwood will burn out quicker than one built entirely of hardwood.

By mixing softwoods and hardwoods, an easily ignited and long-lasting fire can be achieved.

To get an idea of how wood is described and sold, you should first know that the most common measure is the cord. A cord is a tightly stacked pile of logs 8 feet long, 4 feet high, and 4 feet deep. The logs are usually cut 2 feet long, but you can have them cut into shorter lengths. A partial cord, called a face cord or a rick, is the same length and height as a cord, but its depth can be anywhere from 1 to 3 feet.

Wood is also sold by the ton. A ton of air-dried, dense hardwood (oak, hickory, maple, etc.) is equal to approximately one-half cord.

If you buy wood by weight, look for seasoned (air-dried) wood. Don't pay for extra water.

NOTE: Seasoned wood will look withered and have cracked ends. The wood should be generally sound, but don't be concerned about small pockets of rot you may find.

The following chart shows the heat values (per cord) of some various species of natural woods after they have been seasoned:

<u>Order of Most Heat Per Cord</u>	<u>Species</u>	<u>Type</u>	<u>Average Weight Per Cord</u>	<u>Btu Heat Value of Seasoned Cord</u>
1st	Hickory	Hardwood	3,595 lbs	30,600,000
2nd	Maple	Hardwood	3,075 lbs	29,000,000
3rd	Beech	Hardwood	3,240 lbs	27,800,000
4th	Oak (White)	Hardwood	3,750 lbs	27,700,000
5th	Oak (Red)	Hardwood	3,240 lbs	26,300,000
6th	Birch (Yellow)	Hardwood	3,000 lbs	26,200,000
7th	Elm	Hardwood	2,750 lbs	24,500,000
8th	Tamarach	Softwood	2,500 lbs	24,010,000
9th	Cherry	Hardwood	2,550 lbs	23,500,000
10th	Ash	Hardwood	2,950 lbs	22,600,000
11th	Spruce	Softwood	2,100 lbs	18,100,000
12th	Hemlock	Softwood	2,100 lbs	17,910,000
13th	Pine (White)	Softwood	1,800 lbs	17,900,000
14th	Aspen	Hardwood	1,900 lbs	17,700,000
15th	Basswood	Hardwood	1,900 lbs	17,001,000

The small amount of wood used in daily fire tending should be kept in a noncombustible container at least 36 inches away from the insert.

HOW THIS APPLIANCE OPERATES

The chimney draft draws combustion air (oxygen) into the appliance through openings located just above the appliance's ash door. The amount of oxygen entering the appliance through these openings is controlled by an inlet air damper which may be manually manipulated with a control lever located at the lower left-hand front corner of the appliance as shown by figure 5. The oxygen flows through and across the bed of fuel (natural wood), causing any fire present to progress through the fuel bed. The gases (smoke) produced by the burning wood are either (1) consumed by the fire and burned if there is sufficient heat and oxygen present, or (2) drawn through the appliance's catalytic combustor system and burned there on its way to the appliance's chimney, or (3) drawn out of the appliance into the chimney through a bypass damper which bypasses the appliance's catalytic combustor system.

Heat from the fire is transferred to your home by radiation and by the appliance's convection blower system located below the appliance's ash lip as shown by figure 5.

The appliance's convection blower system includes two blowers which are turned on and off by a manually operated OFF/ON variable speed control. The variable speed control also allows the speed of the blowers to be manually adjusted to provide the airflow desired. Figure 5 shows the location of the knob which operates the variable speed control. Figure 6 shows the wiring diagram of the blower system. The blower system's power cord is equipped with a three-prong grounding plug. **DO NOT REMOVE THE GROUNDING PRONG FROM THE PLUG.** The power cord should be plugged into a 120-volt, 60-Hz, 15-amp, properly fused and grounded receptacle. **ALWAYS ROUTE THE POWER CORD AWAY FROM THE FIREPLACE** to avoid damage to the cord from heat or dropped objects. The cord may be disconnected from the right side of the appliance and attached to the left side if this will allow better routing of the cord. The procedure for relocating the cord is described in the **APPLIANCE INSTALLATION** section of this manual. See the **CONVECTION BLOWER OPERATION** section of this manual for the blower operating instructions.

CATALYTIC COMBUSTORS EXPLAINED

Under normal conditions, hydrocarbons and other potentially flammable products in wood smoke have a wide range of ignition temperatures. Many won't burn below about 1200°F or even higher. In most wood burning appliances, the average temperature in the firebox is only 700°F to 800°F during a burn cycle. Thus, much of the wood smoke passes through the appliance unburned, wasting a good bit of the potential heat in the wood. Worst, some of the unburned smoke products condense and accumulate as dangerous creosote in the appliance venting system while other smoke products are expelled out the chimney to pollute our environmental air. However, when wood is correctly burned in a appliance properly equipped with a catalytic combustor system, the majority of the smoke generated by the burning wood is burned as it passes through the catalytic combustors.

A catalytic combustor is a ceramic honeycomb-type structure (the combustor) which is chemically coated with a compound known as noble metal (the catalyst). The catalyst, metals like platinum and palladium, have chemical properties that, when heated to as little as 500°F, enable the combustor to "light-off" (ignite) and burn (oxidize) the majority of the hydrocarbons and other flammable products present in the unburned smoke of a wood fire as the smoke passes through the combustor on its way to the appliance venting system. In other words, a catalyst is an element which will cause something to happen under conditions by which they would not normally happen, without being consumed or used up by that reaction. In a woodburning appliances equipped with catalytic combustors, this simply means that the catalyst is allowing the hydrocarbons and other flammable products in wood smoke to be burned at temperatures as low as 500°F rather than at the 1100° to 1500°F temperatures normally required to burn the same smoke products.

This appliance is furnished with a thermometer probe for monitoring catalytic combustor temperatures. See the APPLIANCE INSTALLATION section of this manual for installation instructions regarding the thermometer probe.

It is normal for combustors to become extremely hot during catalytic burning, but temperatures above 1800°F should be avoided because those extreme temperatures can damage a combustor's catalyst. Combustor temperatures between 1400°F to 1600°F are common, but operating temperatures between 700°F to 1400°F are recommended. If combustor temperatures above 1800°F are observed, open the bypass damper to prevent damage to the catalyst and reduce the inlet air supply to rapidly lower the temperature. As inlet air damper settings become more familiar, undesirable settings can be avoided. See Figure 5.

NOTE: It is normal for catalytic combustors to glow cherry red when their temperature is above 1000°F. However, do not equate nonglowing combustors with nonfunctioning combustors because most catalytic burning occurs below 1000°F. As combustors age, less glowing will occur, but as long as combustor temperatures above 700°F are reached, the combustors are functioning.

Proper usage of this appliance's catalytic combustors will improve the appliance's combustion efficiency, and there will be less dangerous creosote to accumulate in the appliance's chimney system, and there will be less air pollutants released into our environmental air.

The achievement of higher combustion efficiency during catalytic burning results in greater amounts of water vapor production. As a matter of fact, most of what is seen coming from the chimney of a properly operating catalytic-burning appliance is water vapor.

BYPASS DAMPER EXPLAINED

The smoke generated by the fire in the appliance's firebox must bypass the appliance's catalytic combustor system during certain phases of appliance operation. To accomplish this, the appliance is equipped with a bypass damper.

As a general rule, the bypass damper must be either in the closed position or the open position during the appliance's operation. In the closed position, the smoke generated by the fire in the appliance's firebox is drawn through the catalytic combustor system as it flows its way to the chimney system; when the bypass damper is in the open position, the smoke bypasses the catalytic combustor system and goes directly into the chimney system.

The bypass damper should be in the open position any time the appliance's fuel feed door is opened for loading, firetending or inspection of fire. Because the catalytic combustor system offers some resistance to the flow of smoke, opening the fuel feed door of an operating appliance with its bypass damper in the closed position would allow smoke and possibly flames to spill from the appliance; the open bypass damper offers a path of least resistance to the smoke. **ALWAYS OPEN THE BYPASS DAMPER BEFORE OPENING THE APPLIANCE'S FUEL FEED DOOR AND KEEP IT OPEN WHILE LOADING, FIRETENDING OR INSPECTING THE FIRE.**

The bypass damper should be opened anytime the appliance's thermometer probe indicates that the catalytic combustor temperature is less than 500°F.

APPLIANCE INSPECTION

Before beginning the appliance installation, inspect it; if any parts are found to be damaged or if any parts appear to be missing, report the discrepancy to your appliance dealer for corrective action. Using a heating appliance with damaged or missing parts can be hazardous.

APPLIANCE INSTALLATION

TOOLS NEEDED: Adjustable Wrench
Screwdriver (Straight blade, medium size)
Screwdriver (Phillips, medium size)
Rule or Measuring Tape
Scissors or Knife (To cut fiberglass insulation)

TO SAFELY AND PROPERLY INSTALL THIS APPLIANCE:

1. Clean the fireplace and chimney of soot and creosote.
2. Inspect the fireplace and chimney for proper construction and condition. Make any necessary repairs before installing the appliance.
3. Remove the fireplace damper plate OR lock it in the open position to prevent it from being accidentally closed.
4. Check the height of the fireplace bed and hearth. If the bed and hearth are not level, build the lower surface up as shown by figure 7.
5. If the fireplace is equipped with an ash dump, seal it closed with furnace cement to prevent air leakage.
6. If this appliance is to be installed with a DC1 Direct Connect Kit or its equivalent, refer to the instructions packaged with the direct connect kit.
7. Carefully set the appliance on the fireplace hearth.
8. Remove the factory-installed screws and washers from the left side of the appliance. Use these screws and washers to fasten the surround kit's left surround panel to the left side of the appliance as shown by figure 8. NOTE: If your fireplace opening is no more than 43 inches wide and no more than 29 inches high, the surround kit furnished with the appliance may be used to seal the appliance into the fireplace opening; however, if the fireplace opening width is in excess of 43 inches or if the fireplace opening height is in excess of 29 inches, another surround kit will have to be used to seal the appliance into the fireplace opening. See figure 1 for the available surround kits.
9. Remove the factory-installed screws and washers from the right side of the appliance. Use these screws and washers to fasten the surround kit's right surround panel to the right side of the appliance as shown by figure 8.
10. Carefully maneuver the appliance into the fireplace so that the left and right surround panels fastened to the appliance will fit snugly against the face of the fireplace.
11. Use the screws provided in the screw packet of the surround kit to attach the top surround panel to the left and right surround panels as shown by figure 8.
12. Ensure that the hearth requirements and minimum clearances between the appliance and combustibles are adequate as specified earlier. If not, take appropriate action to remedy as described earlier.
13. Route the appliance's power cord away from the fireplace and plug it into a properly grounded and fused receptacle as described earlier. NOTE: If more appropriate routing of the power cord could be achieved if the power cord was attached to the left side of the appliance, attach the power cord to the left side of the appliance as follows:
 - (13.1). Make sure the power cord is not plugged into a receptacle.
 - (13.2). Remove the two screws and the power cord cover plate from the right side of the appliance's right blower shroud (see figure 5), and then disconnect the power cord from the right connector cap inside the right blower shroud. The disconnection is made by pressing the catch releases on top and bottom of the power cord connector plug as you pull the power cord connector plug from the right connector cap. See figure 6.
 - (13.3). Remove the two screws and the cover plate from the left side of the appliance's left blower shroud. See figure 5.
 - (13.4). Connect the power cord to the left connector cap inside the appliance's left blower shroud by pressing the catch releases on top and bottom of the power cord connector plug as you push the power cord connector plug into the left connector cap (see figure 6). Then attach the power cord cover plate to the left blower shroud by using two of the screws previously removed.
 - (13.5). Attach the remaining cover plate to the right side of the right blower shroud by using the remaining two screws.
 - (13.6). Route the power cord away from the appliance and plug it into a properly grounded and fused receptacle as described earlier.
14. Install the factory-furnished thermometer probe as shown by figure 9 and as described below:
 - (14.1). Insert the stainless steel ferrule into the factory-drilled hole located in the top of the appliance.
 - (14.2). Insert the thermometer probe through the stainless steel ferrule. The head of the thermometer probe should rest freely on top of the appliance.
15. Build a fire in the appliance. After the fire is burning and the chimney draft is established, pass a lighted match or candle along the joints between the appliance and the face of the fireplace and fireplace hearth. If the flame is drawn into any of the joints, room air is being drawn through the joints. If a significant amount of room air is being drawn through the joints, pieces of fiberglass insulation can be pushed into the leaking joints with a screwdriver or similar tool to stop the leaking as much as possible. A roll of fiberglass insulation has been furnished expressly for the purpose of cutting pieces of insulation from it to push into the leaking joints. Proper installation of the appliance is complete when an airtight seal between the entire appliance perimeter (including its surround panels) achieved. See figure 2. The airtight seal is very important because it helps ensure that all the draft developed by the chimney is drawn only through the appliance. Since oxygen is necessary for any fire to burn, this solitary draft route through the appliance will help ensure that the fire in the appliance has access to all the oxygen in the air drawn up the chimney.

INSPECTION AFTER INSTALLATION

Have the entire installation inspected by local building or fire officials to be sure the appliance is installed safely. Have this manual on hand as reference if needed. Keep this manual in a safe place where it can be found when needed.

OPTIONAL ACCESSORIES

To further enhance the appearance of the appliance, a decorative brass trim kit may be purchased from your appliance dealer and installed around the perimeter of the surround kit as shown by figure 10.

OPERATING INSTRUCTIONS

SAFETY REMINDERS

A correctly installed appliance can still pose a fire hazard if it is not operated properly. Follow the instructions provided by this manual.

The surface of this appliance gets very hot while the appliance is operating. Keep children, clothing, furniture, and other combustible items a safe distance from the appliance. Use insulated fireproof gloves while tending the appliance.

FIRING THE APPLIANCE

WARNING! THE PAINT ON THE EXTERIOR OF THE APPLIANCE WILL GO THROUGH A CURING PROCESS DURING THE FIRST FIRING OF THE APPLIANCE AND WILL EMIT SOME SMOKE AND ODOR. BE PREPARED FOR THIS BY RAISING A WINDOW OR OPENING A HOUSE DOOR TO PROVIDE VENTILATION. THIS SMOKING IS NOT DANGEROUS AND USUALLY LASTS NO LONGER THAN ONE HOUR.

THE FIRST TIME THE APPLIANCE IS FIRED, THE FIRE SHOULD BE ONE OF MODERATE INTENSITY TO ALLOW THE PAINT TO CURE SLOWLY AND ALSO TO ALLOW OTHER APPLIANCE COMPONENTS TO ADJUST TO THEIR EXPANDED SIZE.

To fire the appliance:

1. Fully open the appliance's inlet air damper and bypass damper. See figure 5.
2. Open the appliance's fuel feed door and place several grapefruit-size wads of crushed newspaper in the appliance's firebox. Be sure the appliance's ash removal door is securely closed. (CAUTION: DO NOT OPERATE APPLIANCE WITH ITS GRATE REMOVED. THE GRATE HOLDS THE FUEL IN THE PROPER POSITION FOR BEST BURNING.)
3. Lay small dry sticks of kindling on top of the newspaper wads. Place the sticks close enough to one another to allow flames to move easily from one stick to the other when ignited. If the sticks are packed too tightly, the flames will suffocate and die out. (NOTE: Softwoods make better kindling than hardwoods because softwoods ignite easier than hardwoods.)
4. Light the wads of newspaper. The appliance's fuel feed door may be left ajar (approximately 1 to 2 inches) to allow plenty of oxygen to reach the fire, but DO NOT LEAVE THE APPLIANCE UNATTENDED.

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

5. Once the kindling is burning briskly, add at least three full-length split logs of up to three to four inches across. Be careful not to smother the fire. Stack the pieces of wood carefully, near enough to keep each other hot, but far enough away to allow adequate airflow between them. CAUTION: NEVER LEAVE THE APPLIANCE UNATTENDED WHILE ANY OF ITS DOORS ARE NOT SECURELY CLOSED. OPERATING THE APPLIANCE WITH ITS FUEL FEED DOOR OR ASH REMOVAL DOOR OPEN CAN CREATE AN ABNORMAL FIRING CONDITION WHICH CAN OVERHEAT THE APPLIANCE, CHIMNEY, AND ADJACENT COMBUSTIBLE MATERIALS.
6. Allow the logs to start burning briskly so as to establish a good fire base. Probably the least understood requirement in maintaining a good fire is that of establishing a good fire base. A good fire base will maintain a more even temperature as well as get a new load of wood burning easily.
7. Once a good fire base has been established, begin adding small quantities of wood until the desired fuel load is achieved. Be careful not to add the wood too fast; to do so could smother the fire. Do not overfill the appliance. Securely close the appliance's fuel feed door once the fuel load is burning well.
8. During the start-up of a cold appliance, a medium to high firing rate must be maintained with the bypass damper and the inlet air damper open for about 20 minutes or until the appliance, catalytic combustors and wood are all stabilized at proper operating temperatures. (NOTE: WITH NEW CATALYTIC COMBUSTORS, CATALYTIC COMBUSTOR TEMPERATURES OF 500°F TO 600°F WILL INITIATE CATALYTIC BURNING; BUT AS A COMBUSTOR AGES, ITS CATALYTIC ACTIVITY DECREASES, SO OLDER COMBUSTORS NEED MORE HEAT DURING START-UP TO SUSTAIN CATALYTIC ACTION. DURING THE CATALYTIC COMBUSTOR'S NORMAL RANGE OF LIFE, CATALYTIC COMBUSTOR TEMPERATURES BETWEEN 500°F AND 700°F WILL BE SUFFICIENT FOR LIGHT-OFF.) Even though it is possible to have the heater's internal temperature reach 600°F within two to three minutes after a fire is started, if the bypass damper is closed and the inlet air damper adjusted too soon, the appliance's fire may go out or the catalytic combustor may not maintain "light-off." Therefore, wait until the appliance, catalytic combustors and wood are stabilized at proper operating temperatures before closing the bypass damper and adjusting the inlet air damper in the following sequence:

First - Close the bypass damper. See figure 5.

Second - After closing the bypass damper, adjust the appliance's inlet air damper for the desired heat and burn rate by manipulating the appliance's inlet air control lever as shown by figure 5. Remember, the more closed the inlet air damper is, the lower and slower the fire will burn; the more open the inlet air damper is, the hotter and faster the fire will burn. It is best to familiarize yourself with the operating characteristics of your particular installation by building small fires initially and experimenting with the various inlet air damper settings.

9. Let each load of wood burn down to a good coal bed. How long a load of wood burns will vary with variables such as type of wood, how well the wood is seasoned, and the appliance's inlet air control lever setting.

CONVECTION BLOWER OPERATION

The appliance's variable speed convection blower system may be operated at any time to help achieve a desired comfort level. See figure 5 for the location of the OFF/ON VARIABLE SPEED CONTROL KNOB.

If the blower system is used while the appliance is being operated at a low to medium-low burn rate, the blower system's OFF/ON VARIABLE SPEED BLOWER CONTROL KNOB should be set to low because excess blower air could cause cooling of the catalytic combustors and a loss in heating efficiency.

If the blower system is used while the appliance is being operated at a medium-high to high burn rate, the blower system's OFF/ON VARIABLE SPEED BLOWER CONTROL KNOB may be set to any position desired.

FIRE TENDING

Fire tending is the occasional poking or stirring of the burning fuel bed to ensure airflow through the fire, the adding of new fuel as needed, and the adjusting of the appliance's dampers to establish the heat output and rate of burn. With experience, you will determine the frequency and degree of fire tending required for this appliance. The frequency and degree of fire tending depend upon such factors as the appliance installation, and condition of the fireplace and chimney, the condition and amount of fuel being burned, the setting of the appliance's dampers, and your home's heating requirements. To ensure safe and satisfactory performance of this appliance, the following fire tending rules should be observed:

1. Keep the ash removal door and fuel feed door closed except when tending the fire or removing ashes. Operating the appliance with either of these doors open could cause the appliance to overfire and also increase the possibility of smoke, fire, ash, or sparks escaping the appliance to damage your home or its contents.
2. To help prevent smoke or even possible flames from spilling out of the appliance, the following sequence should always be followed when opening an operating appliance's fuel feed door or ash removal door:
 - a. Fully open the appliance's dampers.
 - b. Wait about one minute, then slowly open the appliance door.
3. When refueling, do not add a lot of wood at one time. Adding large amounts of wood all at once will cause a rapid cooling of the chimney and the release of excessive amounts of water vapor up the chimney. This can cause excessive creosote accumulation in the chimney.
4. Do not overfill the appliance with wood. To do so could result in dangerous overfiring.
5. After refueling an appliance that has a catalytic combustor temperature above 500°F, the appliance's bypass damper may be closed right away and the appliance's inlet air control lever set to the desired setting because catalytic combustor temperatures above 500°F will be hot enough to support catalytic burning.
6. After refueling an appliance that has a catalytic combustor temperature below 500°F, the appliance should be operated at a medium to high firing rate with the bypass damper open for about 10 minutes, or until the gauge on the appliance's thermometer probe indicates a stabilized catalytic combustor temperature of between 500°F and 700°F. This helps to ensure that the appliance's catalytic combustors reach the proper operating temperature to maintain "light-off". When the catalytic combustor temperature is stabilized at between 500°F and 700°F, close the bypass damper and set the appliance's inlet air control lever to the desired setting.
7. After refueling, do not leave the appliance unattended for long periods of time until the new load of wood is burning well and the appliance's dampers has been adjusted to establish the heat output and burn rate desired.
8. Do not add paper and kindling or trash to an established fire. This could result in dangerous overfiring.

OVERFIRING

DO NOT OVERFIRE THE APPLIANCE. Adding paper and kindling or trash to an established fire could result in dangerous overfiring; using flammable liquids or too much wood in the appliance could also result in overfiring. Overfiring may ignite creosote in the chimney, possibly causing a house fire. Attempts to achieve heat output rates that exceed appliance design specifications can result in permanent damage to the appliance and to the catalytic combustors in the appliance.

If any part of the appliance (other than the catalytic combustors) glows red or, even worse, white, the appliance is overfiring. If the appliance overfires, immediately set the appliance's inlet air control lever to its most closed position and close any appliance door which might be open; these actions will reduce the air supply to the fire, decrease the fire's intensity, and allow the appliance to cool down.

ASHES - REMOVAL AND DISPOSAL

Ashes should not be allowed to accumulate to the point that they obstruct the airflow through the burning wood. If ashes obstruct the airflow, poor burning of the wood is likely and the appliance's grate will be damaged from overheating.

When removing ashes from the appliance, wear insulated fireproof gloves to protect your hands from glowing embers and hot surfaces. **ASHES SHOULD BE PLACED IN A METAL CONTAINER WITH A TIGHT-FITTING LID. THE CLOSED CONTAINER OF ASHES SHOULD BE PLACED ON A NONCOMBUSTIBLE 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.**

MAINTENANCE

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. Use of a catalytic appliance **DOES NOT** eliminate the need for periodic chimney inspections and cleaning to reduce creosote. Failure to remove creosote buildup can result in chimney fires.

Chimney fires are most likely to occur when an appliance is burned very hot while there is a buildup of creosote in the chimney. A chimney fire is usually indicated by a roaring noise within the chimney. Well developed chimney fires will emit ash and sparks from the top of the chimney.

Should a chimney fire occur, immediately set the appliance's inlet air control lever to its most closed position, close any appliance door which might be open, get everyone out of the house, and call the fire department. As an added precaution, the roof of your home may be protected by wetting it with a garden hose.

A chimney fire may cause structural damage to the chimney. Do not use the appliance again until the entire chimney system has been inspected and any damaged parts have been repaired or replaced. A chimney sweep can perform the inspection.

To reduce the risk of a chimney fire, the chimney and the direct connect system should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred; if creosote has accumulated, it should be removed. Chimney fires do not start in clean chimneys.

When performing periodic chimney maintenance and cleaning, it is best to always remove the appliance from the fireplace so creosote that may have formed in the chimney and direct connect system does not fall back into the appliance where it could clog the appliance's catalytic combustor and bypass system.

There are special brushes available for cleaning chimneys and direct connect systems. Many areas have professional chimney cleaning services. Most fire departments will make chimney inspections and can provide help in locating chimney and direct connect system cleaning services.

YOU SHOULD ALWAYS CLEAN AND INSPECT YOUR CHIMNEY AND DIRECT CONNECT SYSTEM BEFORE EACH HEATING SEASON.

The appliance should be removed from the fireplace to allow thorough cleaning of the fireplace, direct connect system and the chimney. We recommend that the fireplace, direct connect system and the chimney be inspected and cleaned before each heating season by an experienced professional who works with chimneys and direct connect systems on a regular basis.

For further information pertaining to direct connect systems, see the installation and maintenance instructions which came with the direct connect kit when it was purchased.

APPLIANCE MAINTENANCE

The painted surfaces of the appliance and its surround panels may be wiped free of dust with a soft cloth. The use of any other cleaning method may damage or remove the paint. A high-temperature paint is available which may be used to touch up the painted surfaces of the appliance and its surround panels.

The appliance's brass-finished trim is coated with a clear baked-on enamel to prevent tarnishing. **DO NOT** polish the brass-finished trim. When cleaning is necessary, use mild soapsuds and a soft cloth. After washing, dry the trim with a clean, dry, soft cloth.

The fuel feed door of this appliance is equipped with a high-temperature resistant glass panel. The glass may be cleaned with a household glass cleaner when the glass is not hot. Take care to avoid chipping or scratching the glass. Chipped or scratched glass can break suddenly when heated. Do not use the appliance with a broken glass panel.

The appliance's power cord should be inspected frequently and replaced if evidence of wear or damage is observed. Replace the cord only with the power cord specified by the appliance's repair parts pamphlet.

The electrical power to the appliance's blower system should be disconnected and then the appliance's blowers and blower shroud louvers should be vacuumed or blown free of lint, dust and ashes frequently to prevent excessive buildups. The blower motors are permanently lubricated and do not require oiling.

Check the operation of the inlet air damper regularly during the heating season to ensure proper operation.

Also check the following items regularly during the heating season to ensure proper operation:

1. Condition and operation of fuel feed door and ash door gaskets: Repair or replace if air leakage is observed and replace if excessive wear is observed.

2. Condition and operation of latching pawls and handles: Ensure that operation will securely close the door(s). Adjust as necessary and replace if necessary.
3. Condition and operation of bypass damper: As necessary, brush or vacuum the bypass damper free of ashes to eliminate bypass damper jamming or misalignment caused by a buildup of ashes in the bypass damper mechanism.
4. Condition and operation of catalytic combustors: It is important to periodically monitor the operation of the catalytic combustors to ensure that they are functioning properly and to determine when they need to be replaced. Non-functioning combustors will result in a loss of heating efficiency, and an increase in creosote and emissions. There are two simple ways to determine if the catalytic combustor system is functioning properly. They are:
 - a. Take note of the smoke exiting the chimney with a well established fire burning in the appliance and the bypass damper open. Then close the bypass damper to achieve catalytic light-off. Wait a few minutes, then observe the smoke exiting the chimney. If the catalytic combustor system is functioning properly there should be a significant decrease in the amount of smoke exiting the chimney after the bypass damper is closed. Be careful not to confuse smoke with steam.
 - b. With a well established fire burning in the appliance and the bypass damper open, take note of the temperature registered by the thermometer probe's gauge. Then close the bypass damper to achieve catalytic light-off. The thermometer probe's gauge should indicate a rapid temperature rise if the catalytic combustor system is functioning properly.

The catalytic combustors should be visually inspected at least three times during the heating season to determine if physical degradation has occurred. Actual removal of the combustors is not recommended unless more detailed inspection or cleaning is warranted because of decreased performance which cannot be remedied by one of the following procedures, or as outlined by the TROUBLESHOOTING section of this manual.

- If fly ash accumulation is evident on the combustors, brush the fly ash off the front faces of the combustors when the appliance does not have a fire in it and is not hot. Use a soft bristle brush - a clean, dry paint brush will do fine.
- If creosote is evident on the combustors, operate the appliance at a high fire rate with the bypass damper partly open. Reinspect the combustors after the fire in the appliance has burned out and appliance is not hot. IF some creosote still remains, repeat the firing procedure. CAUTION: CARE SHOULD BE TAKEN NOT TO OVERFIRE THE APPLIANCE.
- At least once per heating season, remove the catalytic combustors from the heater and clean the rear faces of the combustors with plain water is also good - after soaking the combustors in warm or hot (NOT BOILING) water for about 20 minutes, allow the combustors to cool at room temperature and then rinse them under medium water faucet pressure, then allow the combustor to dry thoroughly. For information on how to remove and reinstall the combustors, see the "WHEN AND HOW TO REPLACE THE CATALYTIC COMBUSTOR(S)" of this manual.

CAUTIONS:

- Never try to clean the cells of catalytic combustor by inserting an instrument of any type. This may dislodge the catalyst coating from the combustor, rendering the combustor useless.
- The use of compressed air to clean combustor cells is not recommended. Experience has shown that the catalyst coating can be blasted off the combustor if high-pressure compressed air is used to clean the combustor cells.
- It is normal for small amounts of the ceramic to break off the combustor face during the life of the combustor. This loss of material has little effect on the performance of the catalytic combustor. Only when large pieces - golf ball size or larger - are missing should replacement be considered because of ceramic material loss.

At the end of each heating season, the appliance should be thoroughly cleaned of all ashes. Ashes remaining in the appliance in combination with moisture in the air can cause severe corrosion of the appliance. All rust spots on the appliance should be wire brushed and covered with a coat of high-temperature paint. If the appliance is to be stored until the next heating season, be sure the storage area is dry.

The appliance should never be used with damage or missing parts. Replace all damaged or worn parts before using the appliance.

WHEN AND HOW TO REPLACE THE CATALYTIC COMBUSTOR(S)

Tests conducted by a leading catalytic combustor manufacturer indicate that the average expected operational life of a catalytic combustors should be about 6,000 operating hours. Remember, this is an average test figure; actual operational life of your appliance's combustors may be more or less, depending on operation procedures and normal care.

Whenever a catalytic combustor is no longer functional, it should be replaced as soon as possible. The TROUBLESHOOTING section of this manual outlines possible problems which might cause a catalytic combustor to stop functioning. Follow the solutions offered by the TROUBLESHOOTING section for the most trouble-free and efficient operation of this appliance.

When you do have to replace one or both of the catalytic combustors or just remove them for cleaning, here's how it is done:

1. Allow any fire in the appliance to burn out and the appliance to cool.
2. Open the appliance's fuel feed door, look inside the appliance and locate the two catalytic combustors; they are located in the combustor housing which is located in the upper portion of the firebox just in front of the bypass damper. A flame impingement shield, which protects the combustors from direct fire contact, is mounted directly below the catalytic combustors.
3. To gain access to the catalytic combustors, reach through the fuel feed door opening and remove the flame impingement shield from its support rods.

4. Now pull both catalytic combustors out of the combustor housing. Removal is best accomplished by first pushing up slightly on one of the catalytic combustors in order to get hold of the other catalytic combustor. Care should be taken not to drop a combustor because they are made of ceramic material which can break. The combustors are tightly wrapped with insulating material which should also be removed from the combustor housing.
5. Once the combustors and insulating material are out of the combustor housing, inspect for residue inside the combustor housing. Wipe this area clean with a dry cloth; **DO NOT USE DETERGENTS, STEEL OR METALLIC BRUSHES, OR SOLVENTS.**
6. Clean the front and rear faces of the combustors by brushing them with a soft bristled brush, or by vacuuming them lightly, or by soaking them in plain water as described earlier or, if necessary, obtain new replacement combustors. The catalytic combustors. The catalytic combustor warranty furnished with each new appliance gives specific details regarding the purchase of new catalytic combustors.
7. Prepare the combustors for installation by tightly wrapping them with **NEW** insulating material as shown by Figure 11. The combustors **MUST** be wrapped with **NEW** insulating material **EVERYTIME** they are installed in the combustor housing. The new insulating material may be purchased from your appliance dealer; see the **WARRANTIES AND REPAIR PARTS** section of this manual for ordering information.
8. Install the wrapped combustors in the clean combustor housing just like the combustors were installed prior to removal. The combustor housing is sized to create a snug fit between the wrapped combustors and combustor housing; after installation, the insulating material which the combustors are wrapped will expand and form an even tighter seal when heated by the next fire built in the appliance.
9. Reinstall the flame impingement shield.

TROUBLESHOOTING

Problems can arise during the operation of any heating appliance. However, correct installation, good operating practices, routine maintenance, and a good sound chimney will eliminate most of the problems mentioned by this section of the manual. Nevertheless, heating appliance operators should make themselves aware of the nature, cause, and solution to possible heating problems so as to help themselves obtain the best possible service from their heating appliance.

SMOKE SPILLAGE AND POOR DRAFT

If your home is sealed tightly, there may not be enough natural leakage into it to provide adequate air for the appliance. This air shortage will weaken the draft and create the potential for problems such as smoking and poor performance. If the appliance spills smoke or burns poorly, open a nearby window slightly to see if the conditions improve. If opening the window improves the performance of the appliance or stops the smoke spillage, the problem is being caused by a vacuum in the room created by the tightness of the home. Either leave the window ajar or provide other means for sufficient air to enter the room. The vacuum problem will be greater if air is also being drawn from a tight home operating an exhaust fan or other type of vented appliance.

If the appliance only spills smoke when a fire is first started, the smoking is due to a slow-starting draft caused by the heavy, cool air in the chimney pushing down. An upward draft may be induced by holding a lighted newspaper as near as possible to the damper opening inside the appliance's firebox. Occasionally, this must be done two or three times to establish a draft. It may also help to open a house door or window slightly. Once the draft is established, a fire may be started in the appliance without it spilling smoke into the room.

If the appliance smokes only during windy weather, install a chimney cap if one is not already installed. If one is already installed, consider increasing the height of the chimney. Remove all obstructing tree limbs within 10 feet of the top of the chimney.

If smoke spillage or poor draft is a chronic problem, occurring even in calm weather, do the following:

1. Check the entire chimney system for obstructions and clean as necessary. Bird nests, animals, and creosote are possible causes of blockage.
2. Overhanging trees may also cause downdraft; remove limbs within 10 feet of the top of the chimney.
3. Check that all openings into the chimney, such as cleanout doors, are tightly sealed.
4. Weatherstrip and seal upper floor windows and attic doors.
5. Consider increasing the height of the chimney. Additional height will generally increase draft, improve appliance's operating characteristics and reduce smoking problems.
6. Consider relining the chimney to reduce the size of the flue opening. Overly large flues in chimneys do cause smoking and poor operation of fireplace inserts.

APPLIANCE BURNS TOO RAPIDLY OR PUTS OUT TOO MUCH HEAT

If the appliance burns too rapidly or puts out too much heat, the reason may be because air is leaking into the appliance by way of a leaky gasket or loose latching. Check thoroughly for leaks where air could be entering the appliance.

Excessive draft can also cause the appliance to burn rapidly or put out too much heat.

CATALYTIC COMBUSTOR TROUBLESHOOTING

POSSIBLE PROBLEM

POSSIBLE CAUSE/SOLUTION

1. Combustor Plugging (Also see Catalyst Masking)
 - (1) Burning materials that produce a lot of char and fly ash can plug combustor cells and cause a smoke spillage problem and prevent catalytic burning/Do not burn materials such as garbage, gift wrap or cardboard. Burn dry, seasoned wood.
 - (2) Burning wet, pithy woods or burning large loads of small-diameter wood with the bypass damper closed without light-off taking place can plug combustor cells with creosote and cause smoke spillage problems and prevent catalytic burning. Don't close the appliance's bypass damper until temperature is high enough and stabilized to maintain catalytic burning. Follow proper firing procedure described by owner's manual. It may be possible to burn the accumulated creosote off combustor by putting the bypass damper in a partially open-partially closed position after a "hot" fire has been started
 - (3) Not maintaining light-off/Same solution as (2) above.
 - (4) Inadequate chimney draft can cause creosote to plug combustor cells/Chimney draft should measure .04 to .07 inches of water.
 - (5) Combustor not functioning. If proper burning procedures have been followed to no avail, the combustor is not functioning/Replace combustor or combustors.
2. Catalyst Masking (Also see Combustor Plugging)
 - (1) Closing the appliance's bypass damper before temperature is high enough or stabilized enough to maintain catalytic burning can cause the catalyst to become masked or coated with a layer of fly ash which will prevent catalytic burning/Brush cooled combustors with a soft bristled brush or vacuum lightly.

NOTE: The difference between masking and plugging is that plugging actually plugs up the combustor cells whereas masking does not. Masking is more likely than plugging, both are easily preventable by proper insert operation and maintenance.
3. Catalyst Deactivation
 - (1) Burning trash, pressure-treated lumber or painted wood will deactivate the catalyst to the point that combustors are no longer functional/Burn quality woods available in your area. If the catalyst has been deactivated, replace the combustors.
 - (2) The catalyst can also be deactivated when it is coated with excessive creosote or fly ash. This buildup reduces the amount of catalyst available to react with the smoke/See "Combustor Plugging" and "Catalyst Masking" above for solutions.
4. Catalyst Peeling
 - (1) Extreme temperatures (above 1800°F or 1000°C) at combustor surface may cause the catalyst to peel. Over firing and flame impingement are primary causes. Minor peeling is normal and will not affect function of catalyst. Severe peeling will close all openings and cause a plugging problem/If peeling is severe, remove and replace combustor or combustors. Avoid extreme temperatures and flame impingement.

NOTE: Flame contact with combustors is known as flame impingement.
5. Thermal Cracking of Combustor
 - (1) The cyclical heating and cooling of the combustors and the varying conditions of wood burning create temperature differentials within a combustor's ceramic material. These temperature differences cause the material to expand and contract at differing rates, resulting in internal stresses that can crack the ceramic material./This is normal. As long as the combustor remains intact, no burning problems should result. If cracking causes large pieces of the ceramic material to fall out, replace the combustor.

6. Mechanical Cracking of Combustor

- (1) An older combustor is susceptible to handling damage. Stress-relief cracks may develop in service, but will not affect the performance of the combustor if it is not mishandled or abused. However, mishandling or abusing a combustor which has stress-relief cracks could result in the combustor completely breaking apart or loss of some of the catalyst coating. Do not mishandle or abuse. Replace combustor if breakage affects catalytic operation.

7. Combustor Crumbling

- (1) Extreme thermal shock due to flame impingement caused by high-fire mode may cause the face of a combustor to crumble. Bypass combustors when appliance is operated in high-fire mode. If combustor crumbling occurs, replace combustor if the crumbling affects catalytic operation.

8. Catalyst Abrasion

- (1) High draft can cause fly ash to grit-blast the surface of a combustor. If more than 1/2" of catalyst (as measured along length of cell) is abraded, replace the combustor. To control catalyst abrasion, keep chimney draft at .04 to .07 inches of water.

9. Combustor Color Variation

- (1) Variation in color from combustor to combustor or within a combustor can occur. These color variations are normal and do not affect combustor performance.

BLOWER TROUBLESHOOTING

If the appliance's blower system fails to operate or if it operates poorly, refer to figure 6 of this manual and check for the following:

1. Power cord unplugged.
2. Blown fuse or open circuit breaker.
3. Defective power cord.
4. Excessive buildup of lint, dust, or ashes on blower or blower shroud louvers.
5. Defective motor.
6. Defective speed control.
7. Short in wiring.

Should assistance with service or operational problems be needed, please contact your appliance dealer.

WARRANTIES AND REPAIR PARTS

An appliance warranty and a catalytic combustor warranty are packed with this manual. For warranty claims, follow the instructions provided by each warranty.

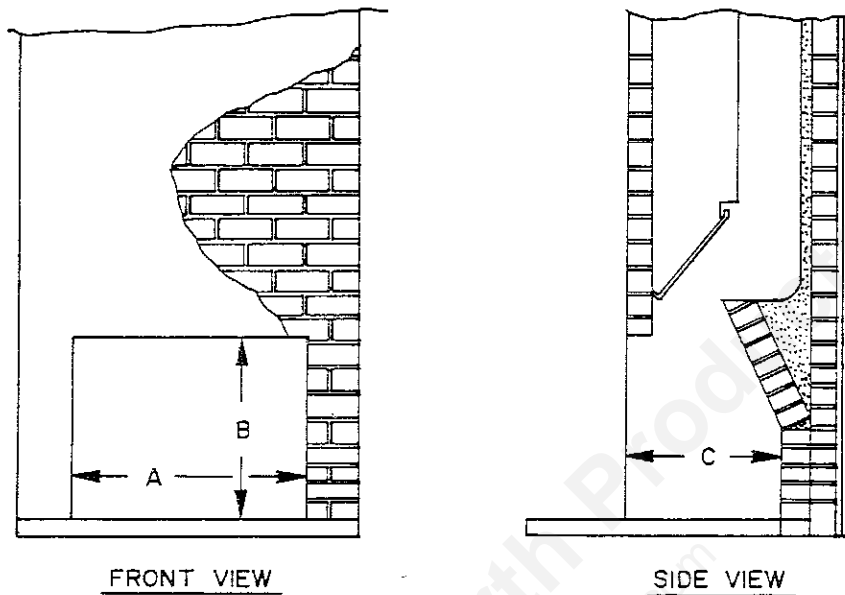
A repair parts pamphlet is packed with this manual. If repair parts are ever needed for this appliance, refer to the repair parts pamphlet for ordering information.

FIGURES

The following figures are referenced throughout this manual. Study these figures carefully before beginning the installation of this appliance.

FIGURE 1

MINIMUM AND MAXIMUM FIREPLACE DIMENSIONS, AND AVAILABLE SURROUND KITS



DIMENSION	MINIMUM	MAXIMUM
A	28"	46"*
B	23"	32"*
C	12"	---

* Installation of a properly sized surround kit is required to prevent leakage of air or smoke between the fireplace insert and the face of the fireplace. Two different sizes of surround kits are available for use with the K13 fireplace insert. The surround kits are described below.

The surround kit furnished with the K13 fireplace insert will adapt the K13 fireplace insert to a fireplace which has an opening width of up to 43 inches and an opening height of up to 29 inches.

An SK24B surround kit will adapt the K13 fireplace insert to a fireplace which has an opening width of up to 46 inches and an opening height of up to 32 inches. The SK24B surround kit may be obtained from your appliance dealer if the surround kit furnished with the K13 fireplace insert is too small for your fireplace opening.

See figure 8 of this manual for typical surround kit components and installation.

FIGURE 2

GOOD INSTALLATION

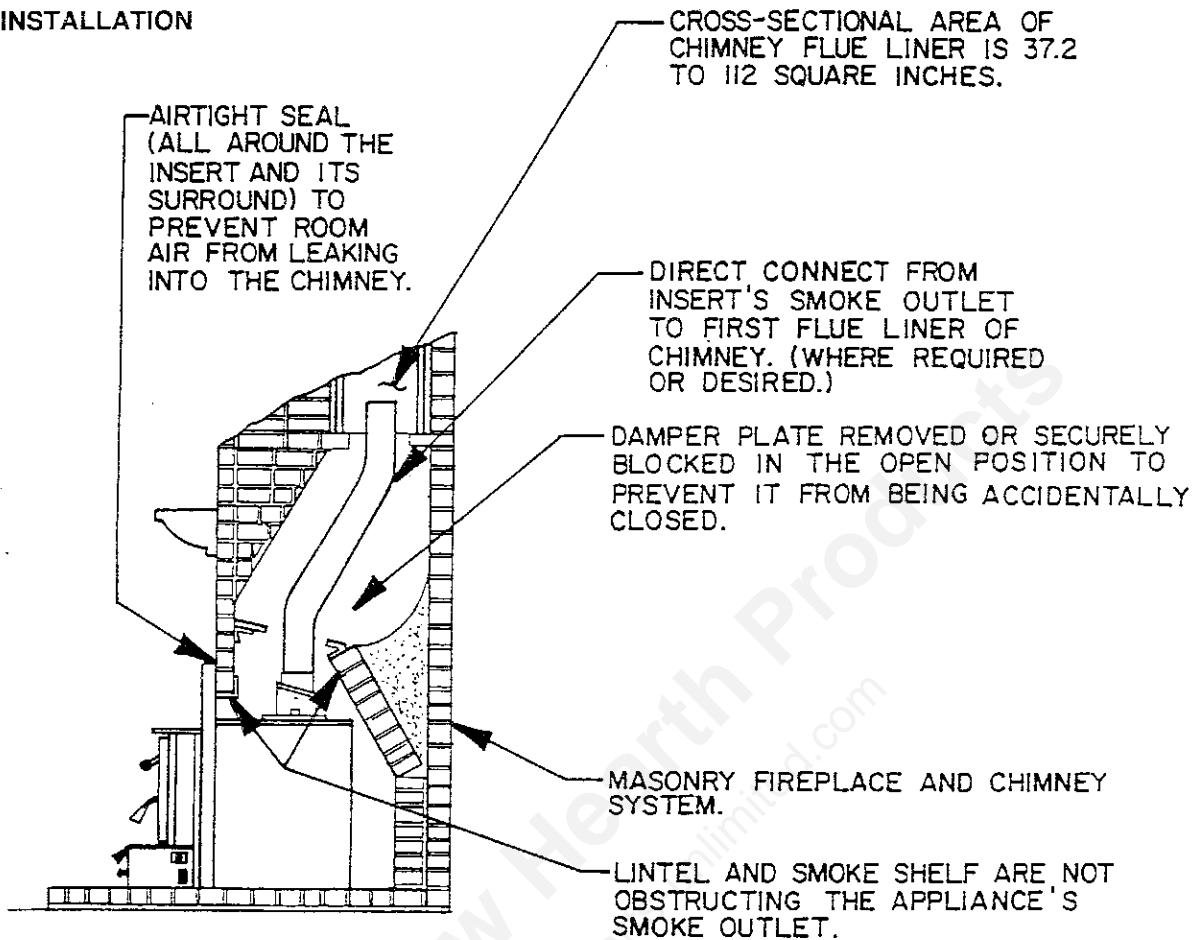
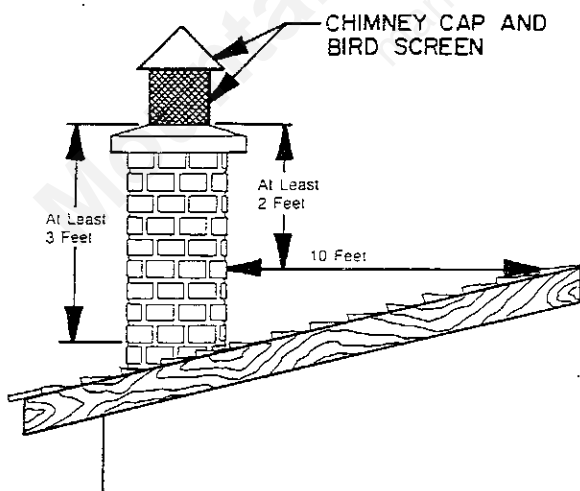


FIGURE 3

CHIMNEY HEIGHT REQUIREMENTS



A CHIMNEY MUST BE AT LEAST 3 FEET HIGHER THAN THE HIGHEST POINT WHERE IT PASSES THROUGH THE ROOF AND AT LEAST 2 FEET HIGHER THAN THE HIGHEST PART OF THE ROOF OR STRUCTURE THAT IS WITHIN 10 FEET OF THE CHIMNEY, MEASURED HORIZONTALLY.

IF A CHIMNEY CAP AND BIRD SCREEN ARE INSTALLED ON TOP OF THE CHIMNEY, KEEP THEM CLEARED OF LEAVES, CRESOTE, OR OTHER MATTER WHICH COULD IMPEDE THE FLOW OF SMOKE EXITING THE CHIMNEY.

FIGURE 4

HEARTH REQUIREMENTS AND MINIMUM CLEARANCES TO COMBUSTIBLES

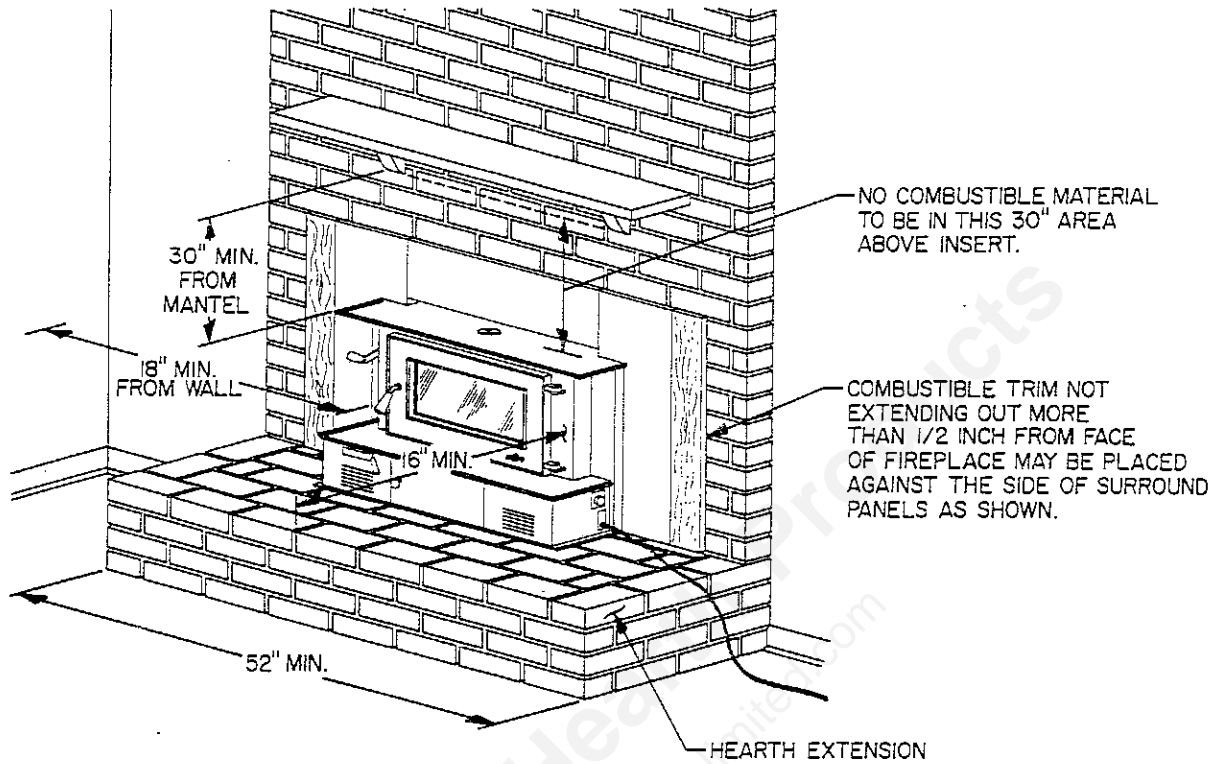


FIGURE 5

APPLIANCE FEATURES

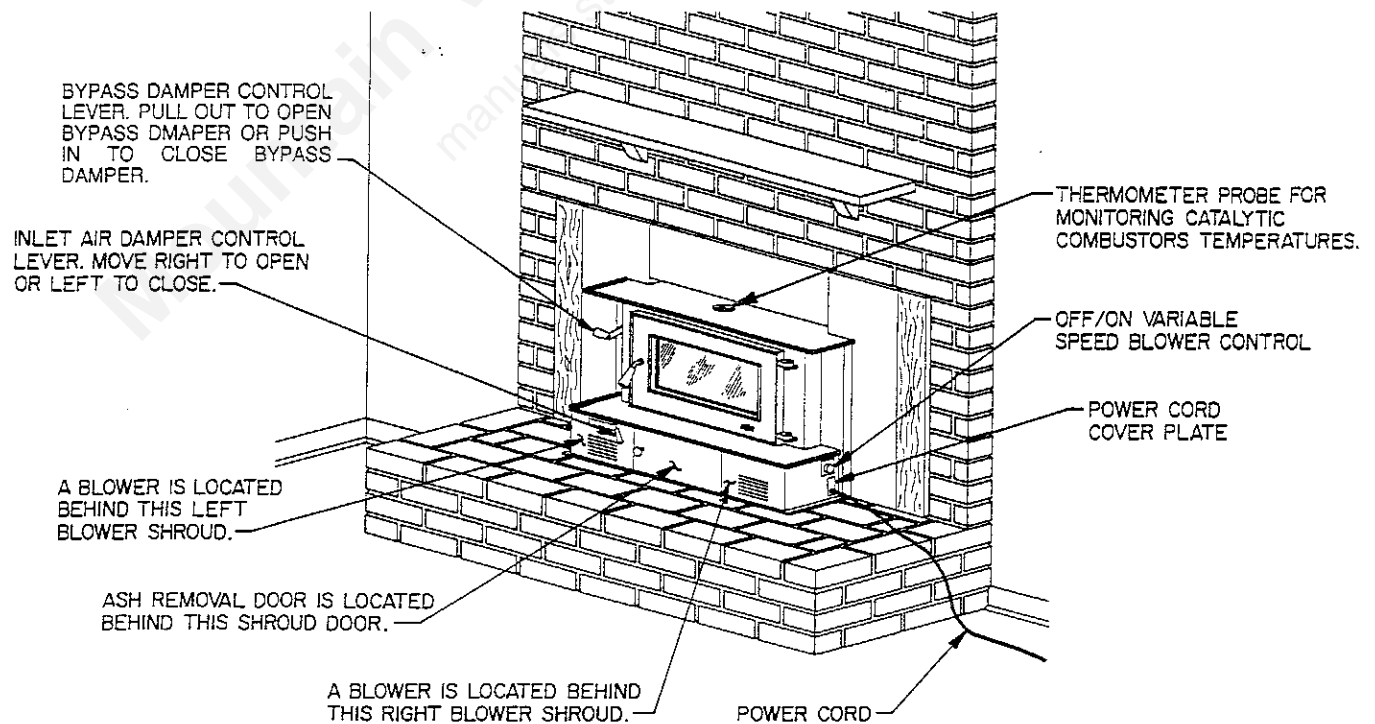
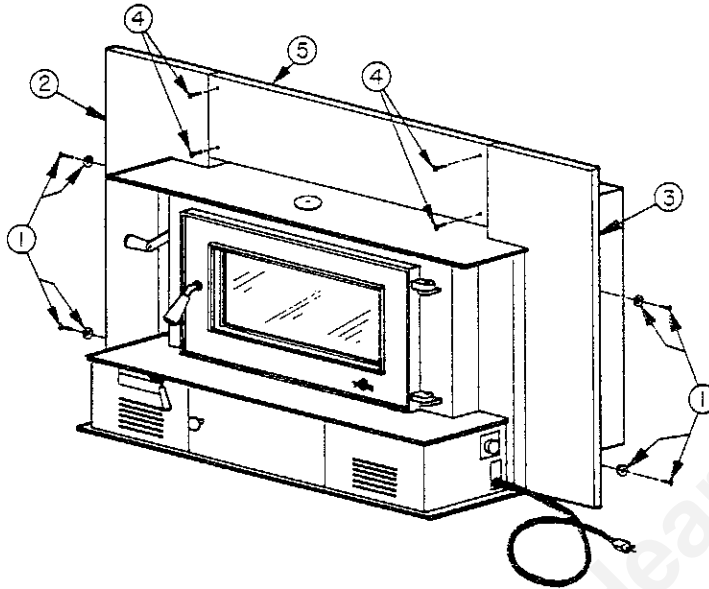


FIGURE 8

TYPICAL SURROUND KIT COMPONENTS AND INSTALLATION

See figure 1 of this manual to determine which of the available surround kits is best for your particular installation. Both surround kits described by figure 1 are designed to be installed in the manner shown below and as described by the APPLIANCE INSTALLATION section this manual.

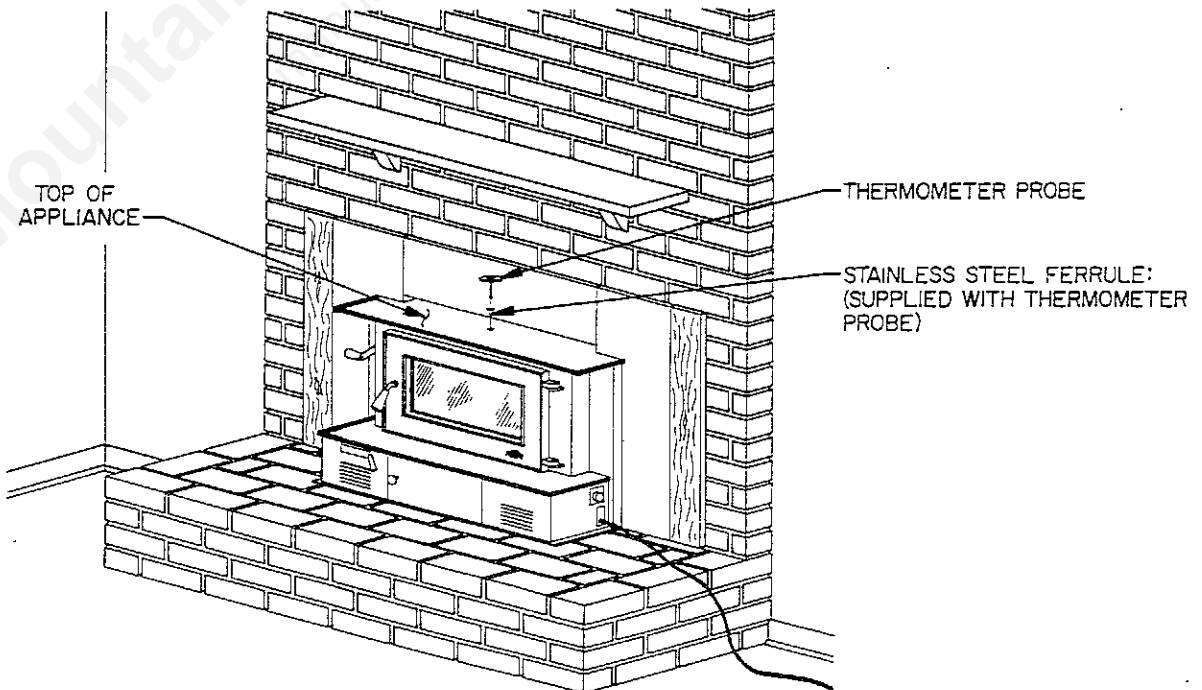


KEY NO.	DESCRIPTION OF PART	QTY. PER INSTALLATION
1	Appliance's Factory-Installed Screws & Washers	4 Each
2	Left Surround Panel	1 Each
3	Right Surround Panel	1 Each
4	Screws Provided with Kit	4 Each
5	Top Surround Panel	1 Each

Installation of the available kits consist of the parts listed to the right and shown above:

FIGURE 9

INSTALLATION OF THERMOMETER PROBE



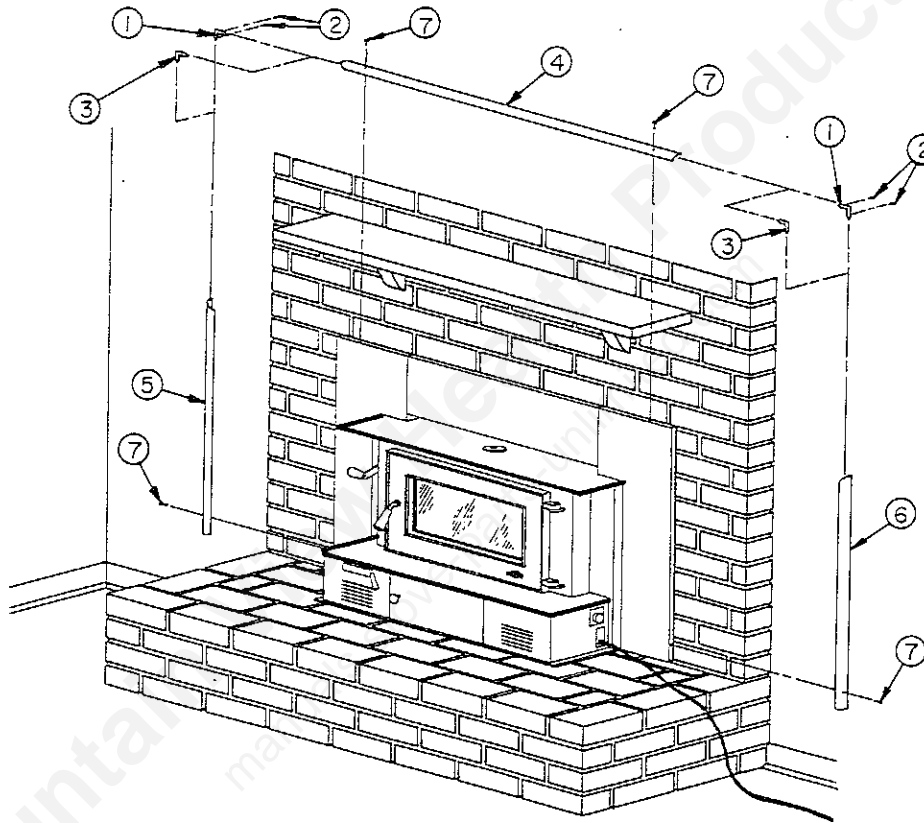
**FIGURE 10
INSTALLATION OF OPTIONAL BRASS TRIM KIT**

To further enhance the appearance of your new appliance, optional decorative accessories are available from your appliance dealer as described below.

The BK7A Brass Trim Kit is an optional decorative accessory sized to fit around the perimeter of the surround kit furnished with your new appliance.

The BK8A Brass Trim Kit is an optional decorative accessory sized to fit around the perimeter of the SK24B Surround Kit.

The BK7 and BK8 Brass Trim Kits are both designed to be easily installed as shown below.



The BK7A and BK8A Kits consist of the parts listed below and shown above.

KEY NO.	PART NAME	QTY. PER KIT
1	Corner Key (w/2 Holes)	2
2	Setscrew (No. 10-32 x .160)	4
3	Corner Key (Holeless)	2
4	Trim, Top	1
5	Trim, Left Side	1
6	Trim, Right Side	1
7	Screw (No. 10 x 1/2 Type A)	4

FIGURE 11

PREPARATION OF CATALYTIC COMBUSTORS FOR INSTALLATION

