OPERATIONS MANUAL

CERAMIC RADIANT HEAT

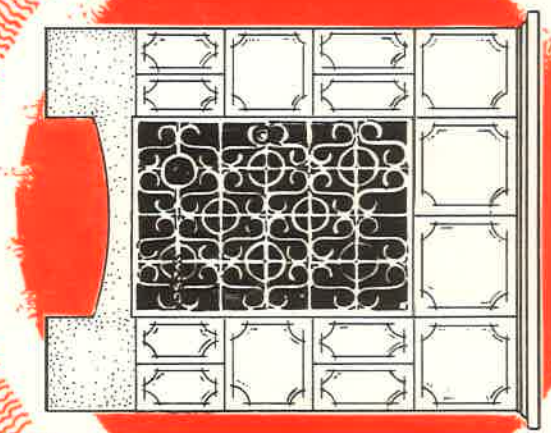
Pleas

Sole Impor

TKM
P. O. Box 96
Gilmanton-IW, NH 03837 USA

N.H. 03252

oves in U.S.A./Canada



MODEL 125
MODEL OSK-150
MODEL OSK-120
MODEL 225
MODEL 225-A
MODEL 225-B
MODEL 425

For parts:

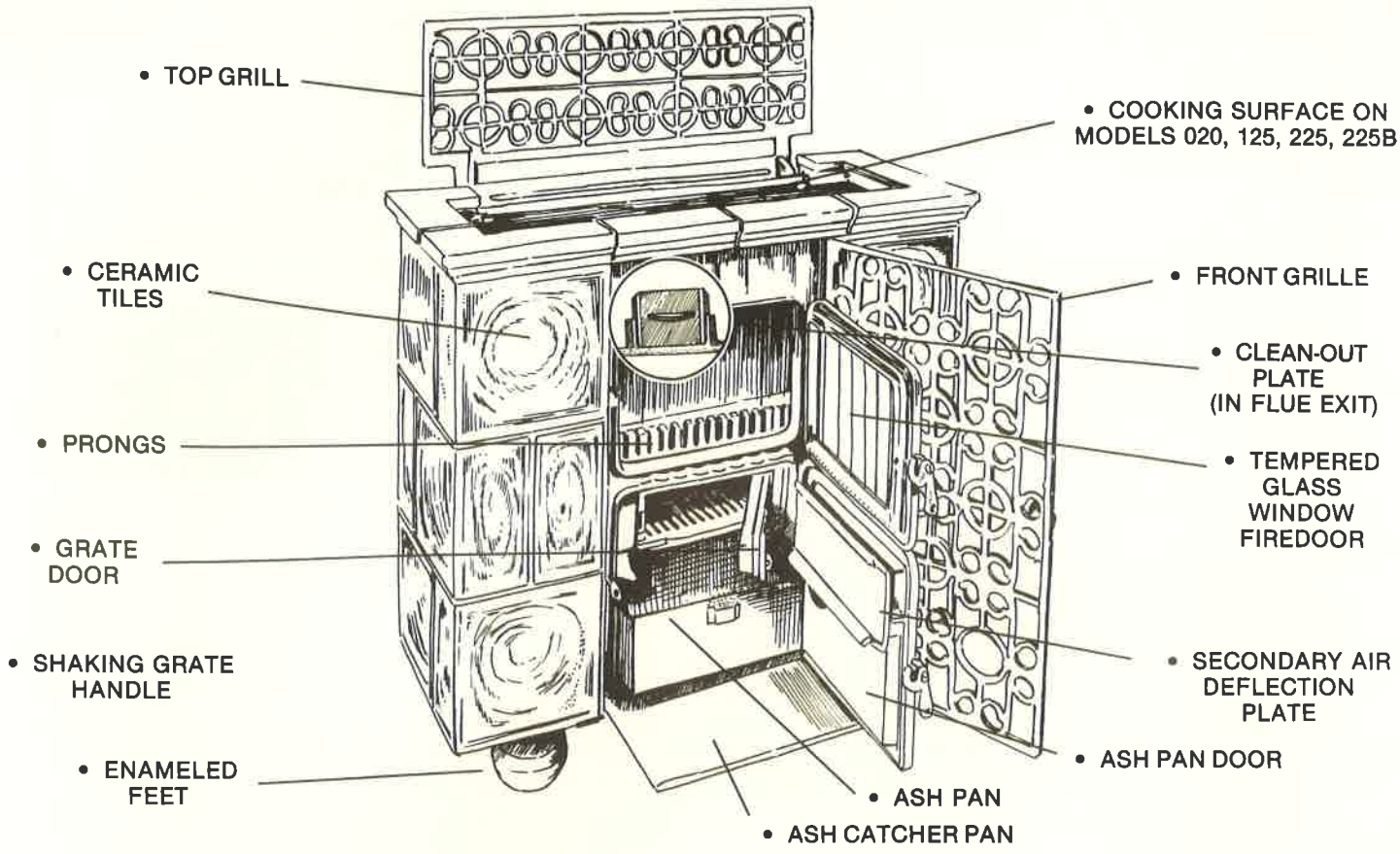
603 364 6776

the Weso stove OPERATIONS MANUAL

Thank you for your confidence in the WESO Ceramic Tile Stove. Your purchase represents a lifetime investment. With proper care and maintenance, your WESO stove will perform at maximum efficiency and retain its attractive appearance for many years.

Please examine your WESO stove immediately for any damage that might have occurred in transit. Your stove was carefully inspected and securely crated by our shipping department to withstand the normal rigors of trucking. If you find that it has been damaged in transit, you should file a claim with the carrier and notify us at once in accordance with your advanced shipping notice.

Your WESO stove is protected by the limited warranty appearing in your installation manual. We want to assure you that we will continue to be available to answer your questions regarding installation, operation or any other pertinent matters relating to your WESO stove. Feel free to contact Ceramic Radiant Heat or your local WESO Dealer.



How the WESO Ceramic Tile Stove Heats Your Home

The WESO stove is a sophisticated fuel heater, designed to achieve an efficiency level far greater than a simple box stove or fireplace. Your understanding of the principles upon which it functions will help you operate this stove successfully, allowing it to provide you with steady, even heat for long periods with minimal attention from you.

When you burn wood or coal in the WESO's firechamber, combustion actually takes place in two forms.

Provided with oxygen and a sufficiently high ignition temperature, the solid fuel matter will burn to ash. (Water, inherent in these fuels, must be driven off in the form of steam before this burning process produces significant heat. This is one reason for burning properly seasoned wood.)

The burning process also produces combustible gases which can account for up to 60% of the total heat source. The flames you may see escaping through the secondary air ducts are actually some of these volatile gases igniting. However, in the absence of sufficient oxygen heated to a sufficient degree, most of the gases escape unburned.

The WESO stove is designed to maximize the combustion of volatile gases, for maximum heat production. With the firechamber door shut, an airtight seal is formed (except at primary and secondary air controls), which creates a controlled burning environment. Into this environment, pre-heated (secondary) air is introduced for ignition of volatile gases as the solid fuel burns.

Basically, primary air introduced from below the fire is used to burn wood or coal. Secondary air, entering from above and flowing over the fire, is used to burn combustible gases.

Tempering Your Stove

Whether you burn wood or coal, your new WESO stove must first be tempered to "cure" the castings. This is accomplished by setting a small fire and gradually heating the stove over an extended period of time. Before starting your initial fire, be certain that the chimney is clean and free of creosote.

Because combustion takes place in a suspended cast iron burning basket inside the WESO stove, the potential of cracking is greatly reduced.

Never build a hot fire in a cold stove, especially when the stove is new. If it is cold outside when the WESO is first brought into the house and installed, it should be allowed to warm to room temperature before starting a fire.

CAUTION: **NEVER USE FLAMMABLE LIQUIDS TO START, MAINTAIN OR REKINDLE A FIRE IN YOUR STOVE. THIS INCLUDES GASOLINE, KEROSENE, CHARCOAL LIGHTER, ALCOHOL, LANTERN FUEL OR ANY OTHER VOLATILE LIQUIDS. KEEP ALL FLAMMABLE LIQUIDS AWAY FROM THE STOVE.**

(If you intend to use your WESO as a coal stove, insert the coal panels into the fire chamber. See section on coal burning. If you will be burning only wood, this is not necessary.)

Turn the secondary air inlet to the widest open position and turn the primary air control to #5. Start a small fire with paper and kindling. The fire may be conveniently ignited through the grate door which is located behind the ash door. When the fire is burning add two small pieces of firewood.

As soon as the logs catch fire close down the manual vent about 50% and set the primary air control at a low setting, #1 or #2.

Maintain a small but steady fire. Do not let it get too hot and never "roaring". Burn only small fires for at least forty-eight hours to properly "cure" the castings. Increase the intensity of your fires gradually. Even modest fires at a low setting will give sufficient heat once the tiles warm up.

If you plan to use your WESO as a coal stove, *do not* burn coal for the first few days until consistent wood fires have properly tempered the cast iron.

Always keep the firechamber and ash pan door closed when the fire is burning except when loading the stove.

Do not be alarmed by the appearance of steam and a "hot smell" from the stove during its initial operation. The cast iron surface has been treated with a protective coating which evaporates as the stove becomes hot. It is *not* hazardous but it is smelly. The odor may persist for several hours. Open windows or doors to ventilate the room. After the initial fire, the odor should not reoccur.

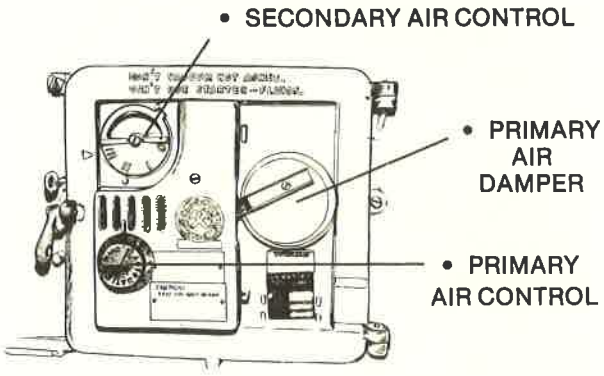
Heating With Wood . . .

After your WESO stove is "broken in" you will be able to operate it at full capacity. The level of combustion is controlled by the primary air control. To use the primary air control in its thermostatic mode, select one of the five settings on the automatic side of the dial; #1 or #2 for low fires, #3 for medium fires and #4 if a hot fire is desired. When burning wood, #1 should be avoided. Setting #5 may be used, briefly (20 minutes), once a day to burn off accumulated creosote when burning wood. This should preferably be done in the morning when rebuilding the fire after an all-night burn and only if the chimney flue is free of creosote.

Keep the secondary air control wide open (#3) except when the primary air control is kept at a low setting, during which the secondary air control should be at setting #1.

Before reloading the stove, open the primary air control to #5 for a few seconds to clear excess smoke from the firechamber.

You can "override" the automatic function of the primary air control by setting the lever on one of the three settings on the manual side of the dial. (Manual control settings are in red #1 through #3). The manual settings can be used as a back-up system should the automatic controls ever malfunction. It will keep your stove operating efficiently and under control until a replacement is sent to you.



A Word On Wood:

Your WESO woodstove will accept split logs up to 16 inches long and 4 by 5 inches in diameter. The firechamber will hold four or five logs and can be filled to the upper edge of the fire door. A full chamber of new wood should burn 6-8 hours with the primary air control on a low to medium setting and the secondary air control 1/4 open (setting #1).

The burn time and the intensity of heat produced will depend, in a large part, upon the quality of the wood used to fuel the stove. Seasoned hardwood burns hottest and longest and is therefore preferable. Seasoned wood is wood

that has been cut to length, split and stored under cover in a well-ventilated area for at least six months to a year or longer. Whether you are buying your wood or cutting your own it is advisable to do some long-range planning, if possible, and try to stay a year or two ahead on your wood supply.

Unseasoned or wet wood will not produce as much heat as dry wood because the fire must first evaporate the moisture in the logs. This "cools" the fire. Wet wood also encourages creosote development. You may not have a choice about burning green wood and it can be done, if necessary, but it will probably require higher thermostat settings to produce an equivalent amount of heat and your chimney will have to be inspected more often for creosote build-up (at least once a week).

Hardwood is denser than soft wood. This greater concentration of mass allows hardwoods to develop higher temperatures when they burn. They also burn longer. Hardwoods are primarily from deciduous trees, trees that lose their leaves in winter. Some recommended types are: apple, hickory, white or red oak, ash, sugar or red maple, beech and elm.

Soft woods, which are not the preferred choice for burning, are: balsam, pine, cedar, hemlock and other conifers.

Few people have extensive woodlots. Picking and choosing your wood for maximum burning potential is not possible for most of us. When you order wood from your dealer, he usually will bring you a load of whatever he happens to be cutting at the time. He understands that you would like to have hickory that has been seasoning for two years, but that is seldom possible. Buy your wood from a reliable dealer. Ask for references from other people you know who also heat with wood. Expect to get a mixed load with as much "preferred hardwood" as your dealer can fairly afford to give you.

Store your wood carefully, covered but with good ventilation. **Do not use water-logged, snow or ice covered wood. It may cause the castings to crack due to thermal shock!**

Almost all woods can be burned in your woodstove. They will all produce heat. Burn what is available. The seasoned hardwoods produce better results and are much more convenient to use. If you have to burn some softer woods you will have to tend the fire with greater frequency and be more aware of potential side effects such as possible creosote build-up.

Woodfire Clean-Up

Shake the grate two or three times a day and empty the ashes when the pan is 2/3 full. Empty ashes into a safe and fireproof container. Never use a vacuum cleaner in your stove.

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, 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.

Creosote

Creosote is a complex chemical compound produced by incomplete combustion. All wood, hard, soft, wet or dry has the potential to produce creosote. It is driven off the burning wood in the form of a gas. If temperatures are not maintained, and the smoke cools, creosote will condense in the stove, the connector, and in the chimney itself. It is highly volatile and is the primary culprit in the creation of chimney fires.

Your most important tool in combating creosote, in addition to the type of wood you use, is your primary and secondary air control. Keep a healthy flow of air into your firechamber. Keep the fire burning hot. If there is a good draft through the air intake of your woodstove your fire will burn hot, smoke will move out of the stove and up the chimney, the flue gases will maintain their temperature (at least 300°) and creosote will not condense quickly in the chimney flue. Do not allow slow, smoldering, sluggish fires that produce a lot of smoke for an extended period of time.

To minimize the formation of creosote:

1) **Give your stove plenty of air through the primary and secondary air controls.**
2) **Maintain a high flue temperature the full length of the chimney.**
3) **Induce a hot burn to reduce the creosote for a brief time at least once a day, but not if a thick layer of creosote has already developed. If there is more than a 1/4 inch of creosote in the chimney, have it cleaned.**
4) **If you are using a stack damper, be sure the smoke is continually flowing up and out of the chimney.**

Fire Door Glass

If the glass in the firechamber door develops a brown or black creosote coating on its interior, it is a sign that you are not introducing enough secondary air through the manual air vent. The coating is produced by unburned volatiles. Don't be afraid to open up the secondary vent. The fire intensity will still be controlled by the thermostat regulating the primary air intake. Smoldering fires will also turn the glass brown or black. A strong fire will burn this off in a short time. If creosote has been allowed to build up on the window over several days, you may have to use a stove glass cleaner (available at stove stores and hardware stores). Initially, the glass itself may have to season before a hot fire will burn off the creosote. This process may take as long as 2 months.

After one or two weeks of constant operation a fine level of ash will probably coat the inside of the window, making it appear milky or opaque. Do not attempt to rub it clear. Instead, let the stove cool down. Wet a tissue or cloth and squeeze out the excess water. Using vertical motions, wipe the inside of the glass clean.

The firedoor window consists of individual strips of tempered glass which are touching, yet free to expand individually. They will allow a tiny bit of secondary air to reach the fire, but a negligible amount compared to the amount entering through the manual vent. If the spaces become too large to heat, let the fire cool down, unhinge the door, lay it down with the inside of the glass facing up. Loosen 6 bolts with a standard screw driver, holding the glass strips in place. This will allow you to re-position the glass strips. Then re-tighten the bolts and re-hinge the door by pushing them together.

Uses For Wood Ashes

Wood ashes are an excellent fertilizer. Spread them around your vegetable or flower beds, especially in the spring. They will keep away snails, caterpillars and those little black sucking bugs that attack your radishes and tomato plants.

Sprinkle ashes over your lawn, mix them into your compost pile or put a few on your houseplants. Wood ashes are loaded with valuable minerals and potash, a highly nutritious substance for growing things.

In the Event of A Chimney Fire

The best assurance of safe operation of your WESO stove is to keep your chimney free of creosote. When burning wood, open the draft all the way for a few minutes per day. Have your chimney cleaned regularly by your local chimney sweep and keep an eye out for creosote build-up.

If you should have a chimney fire, **SHUT DOWN THE STOVE, BOTH THE PRIMARY AND SECONDARY AIR INTAKES.** This will shut off oxygen to the flames. **CALL THE FIRE DEPARTMENT.** Have someone patrol outdoors to extinguish sparks from the chimney. Never pour water into the stove.

Heating With Coal

Before starting your first coal fire, be sure that you have properly installed the coal inserts into the fire chamber and that you have first tempered your stove with a series of modest wood fires.

A Word on Coal

The type of coal available to you for burning will depend upon where you live. In the East, coal dealers will have primarily anthracite coal for sale. It may be offered in different sizes such as pea, nut, stove, and so forth.

This type of coal, unfortunately, varies greatly in quality. It is of utmost importance that you obtain low ash, high BTU anthracite which is free of shale. Moreover, the anthracite should be well selected, i.e., nut coal should all be nut size, without any small pieces among it. We recommend the nut size anthracite with a maximum 7-8% ash content. Some customers use pea size and are satisfied with its performance. Please be aware that you will get 25% less BTU's with anthracite than with wood.

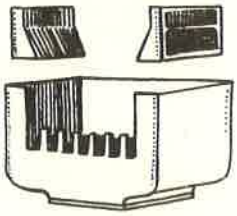
We also recommend that you do not purchase several tons at once. First buy one 50 pound bag of your stove dealer's best coal and try it out. If the coal has too much ash and shale, it will clog the grate even if you shake the grate frequently. The result is that your fire will die out.

If you use coal with low ash and no shale it will burn very well.

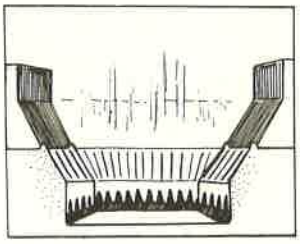
Softer coals, bituminous and lignite may also be used as well as peat. If you burn these fuels, the above criteria does not apply since they burn more "wood-like".

You *cannot* use cannel coal or coke. These substances burn too hot for use in your stove and will damage the grate.

COAL PANELS
(for use with anthracite coal)



PLACEMENT OF COAL PANELS INTO FIRE CHAMBER



COAL PANELS PLACED IN BURN CHAMBER

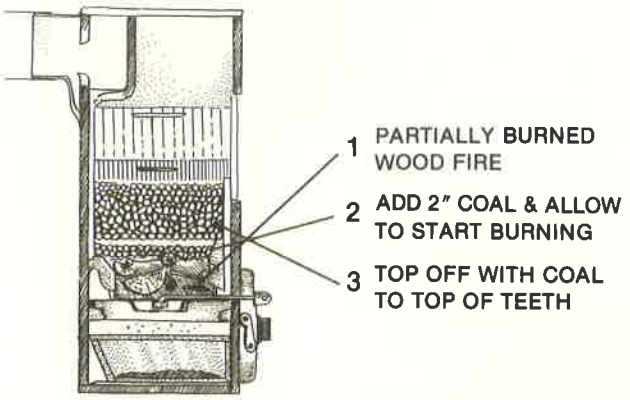
A coal fire will have to be started from a wood fire. Turn the secondary air inlet to the widest open position and turn the primary air control to #5. Start a small fire with paper and kindling. The fire may be conveniently ignited through the grate door which is located behind the ash door. When the fire is burning add two small pieces of wood.

Keep your primary air control at the widest open position to create a strong, hot fire and continue to add wood gradually. Allow the fire to burn down until the logs can

be broken up with a poker into a generous bed of hot embers.

Do not let the wood burn down too far or the coal will crush the embers and extinguish the fire.

STARTING A
COAL FIRE
WITH ANTHRACITE



Coal requires a strong draft through the grate. Set the primary air control at #5 (automatic side—red numbers) and open the secondary air to its widest setting.

Add about two inches of nut size coal on top of the hot burning wood embers. When the coal is glowing and has a blue flame, add more coal in the same fashion until the uppermost level reaches the top of the prongs on the front burning basket panel. When the coal is glowing set the thermostat on #2 or lower for the first 24 hours. Also keep the secondary air control on #II.

Shake the ashes three or four times a day. If you shake the ashes too frequently, clinkers may develop.

Before refilling, open the thermostat for a few minutes. If the fire has burned down substantially, add a thin layer of coal and build the fire back up as you did initially. Do not dump a large load of coal onto a small fire, as it will crush the remaining embers and extinguish the flame.

The temperatures of a coal fire will vary at a much slower rate than they do with a wood fire. Move your primary air control gradually, one setting at a time, allowing approximately ten minutes between each number.

Coal Fire Clean-Up

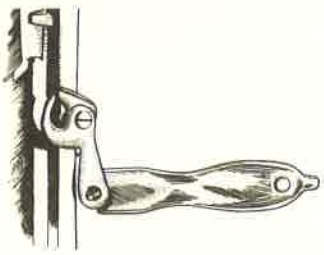
Impure coal may build up ashes and clinkers very quickly. These inhibit the air intake through the grate and smother the fire. Shake the grate vigorously, then open the grate door and break up the clinkers with a poker or pull the ashpan out part of the way and scrape the clinkers into the ashpan.

Remove the coal ashes from the pan daily and put them into a heat-and fireproof container on a heat- and fireproof surface. Common sense will tell you never to put hot ashes into any kind of plastic or wood container. We recommend a metal container with a cover.

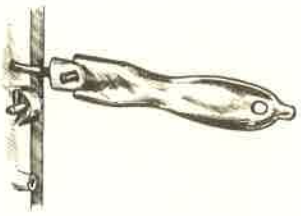
Dispose of your ashes safely. Coal ash should not be used for fertilizer on plants or in gardens.

If you have a metal flue, especially with insulated piping such as metal asbestos stacks, it is of utmost importance that the chimney be cleaned very well immediately after your last coal burn in the spring. Anthracite and especially bituminous coal and lignite coal leave a residue of sulfur inside the flue. The combination of this sulfur and humid weather will turn into acid which may rust and corrode the pipe. The advantage of coal is that there is no creosote build-up; however, it is not mentioned often enough that with metal piping the damage can be much worse. Today metal piping is available especially for coal-burning and we recommend it.

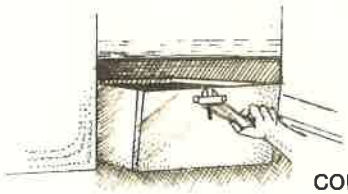
The Kalte Hand



COLD HAND USED ON
FIRE DOOR & ASH DOOR



COLD HAND USED
TO SHAKE GRATE



COLD HAND
PULLING OUT
ASH PAN.

The Kalte hand, literally 'cold hand', has been designed for operating the firechamber door, the ashpan door, shaking the grate, opening the grate or "klinker" door, removing the ashpan and raising the top grate for cooking. Keep it near but not on top of your WESO and you will be able to operate your stove comfortably at all times.

Cooking With Your WESO

While the WESO stove is designed primarily for heating, models 020, 125, 225 and 225B do offer a stove-top cooking capability; very convenient during a power outage and good fun at other times.

By raising the cast-iron top grille with the 'cold hand' you can place cooking pots directly on top of the fire-

chamber. Some trial-and-error experimenting is needed before you develop the skill of woodstove cookery, but once you get the knack of it you will have no trouble.

Models 225A and 425 offer an oven for baking or warming food.

Additional Safety Precautions

It is strongly advised that you take every precaution to guarantee the safety of your home and family when using a wood or coal stove. Install smoke detectors. Smoke will precede a woodstove related fire. Smoke detectors are excellent early warning devices.

Keep a Class ABC dry chemical fire extinguisher readily accessible. Never use water on a woodstove fire; it could cause the hot metal to warp and distort and even come apart.

Frequently inspect your entire system, the stove, the chimney connector (can be cleaned through the clean-out opening in the fire chamber) and the chimney itself. Check the chimney by holding a mirror inside the clean-out door and directing it up the chimney. You should be able to see all the way to the top. If you cannot see the top, seek professional assistance.

We recommend that you clean your WESO stove thoroughly at least once a year; usually this is done at the end of your heating season.

The National Fire Protection Association offers a bulletin on woodstove safety entitled, "Using Coal and Woodstoves Safely". It is pamphlet number HS-10-1978 and is available from the NFPA office, 470 Atlantic Avenue, Boston, MA 02210. The County Extension Service, U.S. Department of Agriculture, also has safety information available.

Problems That May Arise

1. **The stove smokes if:**
   a. the flue draft is insufficient
   b. the stove pipe is not of the correct size
   c. the stove pipe reaches too far into the chimney flue
   d. the stove pipe runs horizontally for too long a distance
   e. the flue stack leaks air (missing or untight clean-out door)
   f. the chimney cap is not of the correct size or dimension
   g. there is a back-draft due to winds entering the chimney
2. **The stove does not heat properly if:**
   a. it is too small for the area size that the consumer wants to have heated—the type of construction (insulation, windows, etc.) also has a large influence on the stove's heating capacity
   b. the ash pan has not been emptied when 2/3 full
   c. the stove or the pipe has a large accumulation of soot or creosote
   d. the pipe connection to the chimney is not sealed tightly
   e. the wrong type of fuel is used (unseasoned wood, high ash anthracite, trash, etc.)
   f. the clinkers have not been removed from the top of the grate (with anthracite)
3. **The stove will overheat if its doors are not kept closed (except while loading it).**
   The result:
   a. damage to the stove castings (warpage, tears)
   b. the stove may not be airtight anymore, which results in a lower heating capacity
4. **The grate will become damaged if the ash pan is not emptied when 2/3 full. Under these conditions the ash may reach the grate which prevents the cooling primary air to enter through the grate. It will, therefore, overheat and become damaged.**

Ceramic Radiant Heat

Pleasant Drive, Lochmere, N.H. 03252
Sole Importer and Distributor of WESO Ceramic Tile Stoves in U.S.A./Canada