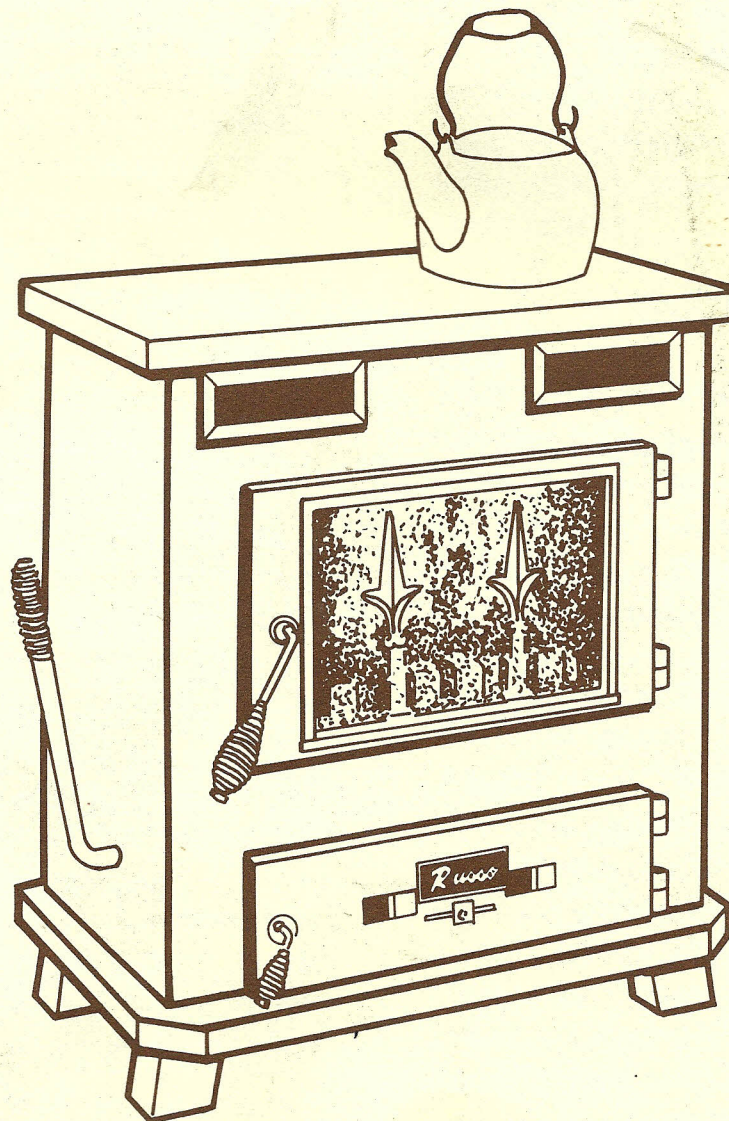


Russo
**COAL - WOOD
COMBINATION
STOVE**

(MODELS #1 C/W and #2 C/W)



Russo
**MANUFACTURING CORP.
RANDOLPH, MA.**

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INTRODUCTION

Congratulations! You have made a wise choice in stoves. With proper installation and care, your Russo Coal-Wood Combination stove will give you long and faithful service. Many people are not acquainted with the use of coal or wood stoves, so great care has been taken to provide detailed information about proper installation and operation procedures in this manual.

The use of coal and wood as alternate sources of energy for home heating has become more and more popular during the 1970's and into the 1980's. A quality stove like the Coal-Wood Combination would have been technologically impossible only a few years ago. Your Russo is an "air tight stove" that offers efficient burning of either coal or wood, a large Corning-Hearthwindow® viewing glass, tough steel construction and smooth, graceful appearance.

The Russo Coal-Wood Combination is not a converted wood stove. It is a newly designed stove specifically engineered to provide the versatility of burning either coal or wood. With the optional Russo cast iron coal basket for the #1 coal/wood, and the grate for the #2 coal/wood, it provides the direct draft, shaker system and ash drawer required for coal burning and for airtight overnight wood burning. Both stoves feature gasketed doors, welded seams and controlled air intake.

We welcome your comments and response to your stove. Yours is the finest coal-wood combination on the market and we are always eager to hear from satisfied Russo Stove owners.

IMPORTANT FACTS ON COAL AND WOOD

Your Russo combination stove is designed to give you a choice of the solid fuel that you burn — either coal or wood. You should realize that these two fuels burn differently and that your stove will perform effectively only if you follow the instructions in this manual.

COAL FACTS

Your Russo will burn either anthracite (hard coal) or bituminous (soft coal). Anthracite is *recommended* for home heaters because it burns freely and uniformly, with very little odor or smoke. "Nut" size coal is recommended for your stove, but "pea" anthracite, which is smaller in size, and "stove" anthracite, which is larger, can be burned with no problems.

Bituminous coal is more commonly available from Ohio into the Western parts of the United States. There are various types and grades of bituminous coal. Generally soft coal burns with more smoke, soot, and odor than hard coal.

Cannel coal should *never be burned* in your stove. Cannel coal contains volatile material that is released as the coal is heated. In a closed heater burning cannel coal can become explosive.

COAL COMBUSTION

Solid fuels burn when a kindling temperature is attained that allows the fuel to change from a solid to a combustible gas form. For wood this process begins to happen at about 550°F, for coal at 660°F. More heat is needed to sustain a coal fire, but little heat is used to evaporate moisture like in a wood fire.

In your Russo, primary air for your coal fire enters through the draft control on the ashpan door. This air is drawn up through the shaker grate and the coal bed. All oxygen from this air is used by the fire. Additional (secondary) air enters above the fire bed from a space around the glass frame and through two channels in the front corners of the firebox. This secondary air provides oxygen for combustion of unburned volatile gases. This combustion can be seen in the blue flames above the fire bed of your coal fire.

A coal fire produces no creosote like wood. An unburned product of a coal fire is soot, which, like creosote, will build up in a flue and chimney, and for safety must be removed at least twice during a heating season.

WOOD FACTS

When dry, most woods, regardless of the type, have essentially the same energy content: 8600 btu/lb. A pound of dry oak contains the same energy as one pound of pine. But oak has a much higher density, so that a cubic foot of oak is heavier and contains significantly more energy than a cubic foot of pine. Hardwoods have a higher energy content per volume and should be used for long sustained heating.

Wood that is green has a much higher moisture content than wood that is dry. Wood that has been cut for six months to two years is said to be "dry". Burning exclusively green wood is not recommended because much of the heat of the fire is used to evaporate the moisture in the wood. Green wood creates much more creosote than dry wood.

WOOD COMBUSTION

The gases in a wood fire can be seen burning in long yellow flames. 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 lining. When ignited, this creosote makes an extremely hot fire.

The accumulation of creosote is greater with green wood, pine, and slower burning, cooler fires. Your chimney connector and chimney should be inspected at least twice monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated, it should be removed to help reduce the risk of a chimney fire.

UNPACKAGING AND ASSEMBLY

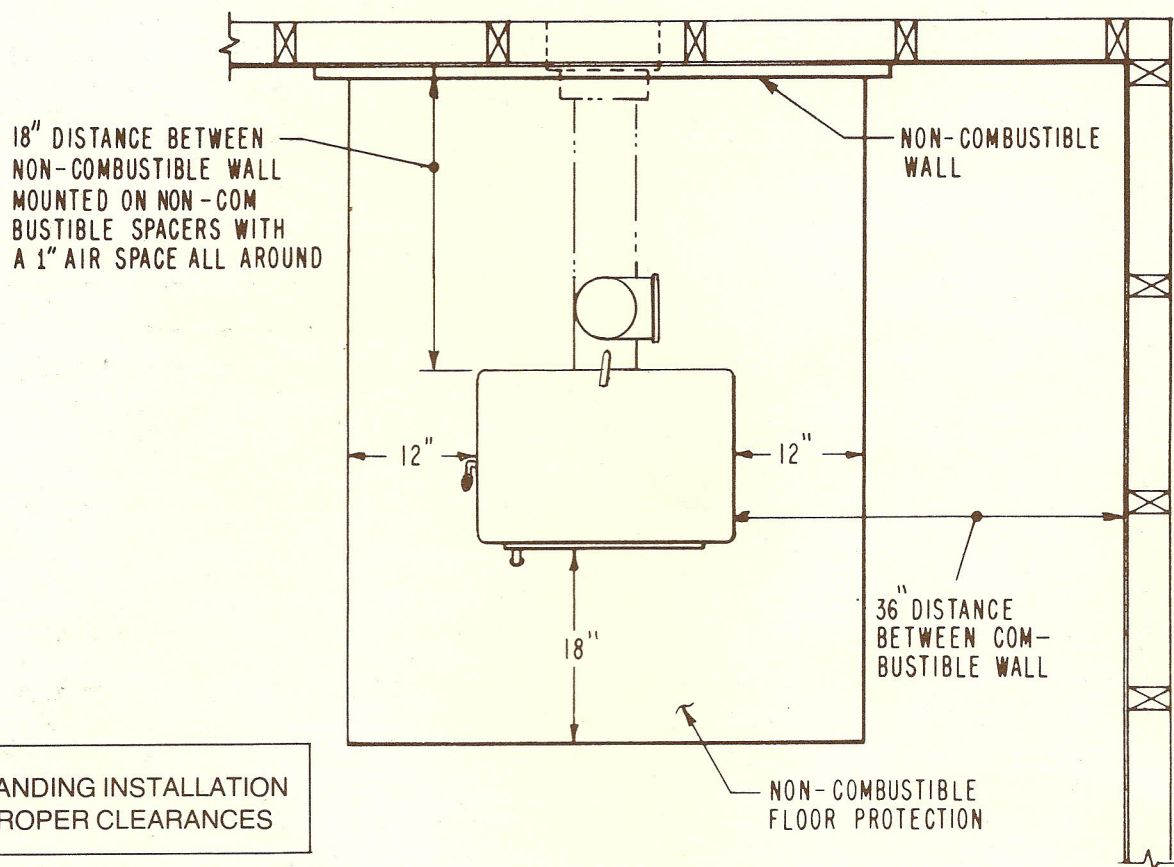
Remove all external poly wrappings. The loading door should be removed from its protective foam, mounted on hinges and checked for proper opening and closing operation. The two pickets should be installed into the inside frame of the loading door. The pickets protect the glass from falling logs.

Both the Russo #1 C/W and #2 C/W have fire-bricks lining the combustion chamber of the stove. The bricks, and in the #1 C/W, the pans holding the bricks, should be checked for proper positioning. The ash pan should be checked for proper position and, if purchased, the optional 265 cfm blower mounted according to instructions included with the blower. The Handy Tool should be removed from inside the stove. The baffle, which is packed inside the #2 C/W, should be positioned in the stove. (see diagram)

Before installation, your stove and stove pipe should be burned outdoors to cure the paint and steel. If this is not possible, and the stove must be cured indoors, proper ventilation should be provided to minimize possible smoke and odor.

CLEARANCES FOR INSTALLATION

The clearances required for the installation of your stove are shown in graphic form below. These



clearances are — 36" from combustibles on each side and to the rear of the stove. The stovepipe must be a minimum of 18" from combustibles. Combustible materials such as furniture, clothing, and draperies must be kept a minimum of 36" from the stove.

The stove can be placed directly on a fireplace hearth, cement floor, or an approved non-combustible surface. A clearance of 18" is required on the load door side, and 12" on other sides of the stove. The area directly under the chimney pipe and 2" to either side of that pipe must also be protected. The material used for floor protection must provide insulation at least equal to $\frac{3}{8}$ " asbestos millboard.

For further information on using your heater safely, write for a copy of the publication "Using Coal and Wood Stoves Safely" from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269

NOTE: This stove is not approved or recommended for use in mobile homes.

INSTALLATION GUIDELINES

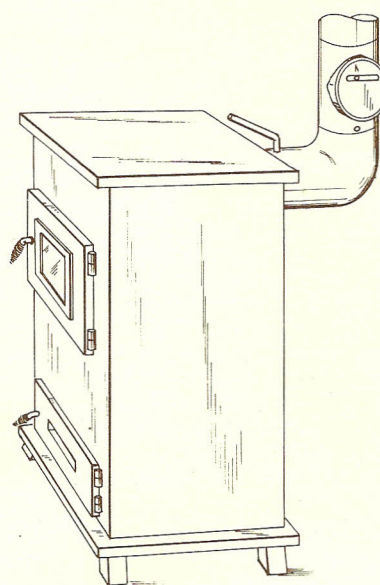
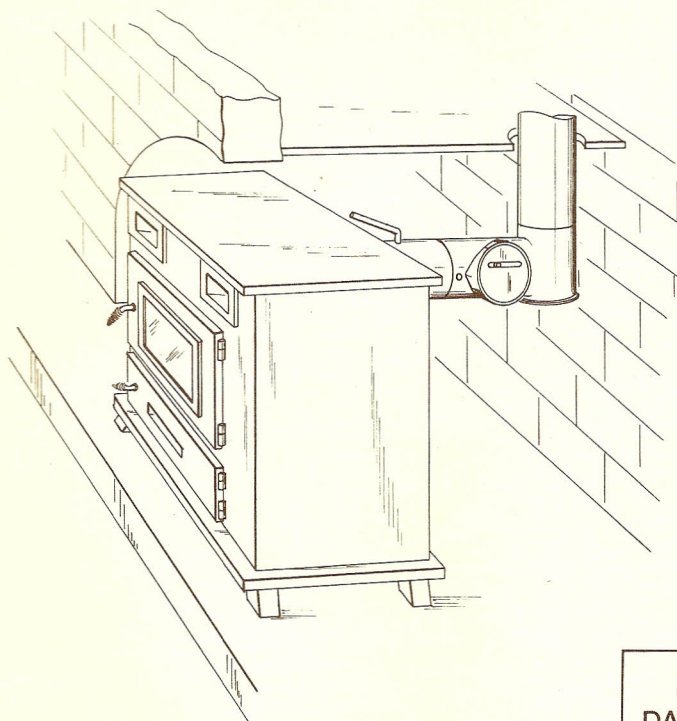
WARNING: The installation of this stove must comply with state and local requirements and be inspected by the state or local building inspector, if required.

CHIMNEY

The chimney system your stove is connected to plays some key roles in the performance of your stove.

1. The top of the chimney should be at least three (3) feet higher than the roof at the point of exit. With pitched roofs, the top of the chimney must be at least two (2) feet higher than any point on the roof within ten (10) feet of the chimney. Check with your local building Inspector for local building code compliances.

2. Only one stove should be connected to a flue. This will help assure proper drafts and the airtightness of the flue system.



INSTALLATIONS WITH BAROMETRIC
DAMPER REQUIRED FOR COAL BURNING

3. The chimney must provide the proper draft for your stove to operate. For your Russo to burn coal properly, a draft of between .04 w.c. and .06 w.c. is needed.

NOTE: The diameter of the chimney must not be less than 6".

Your Russo Coal/Wood Stove can safely and effectively be connected to either pre-fabricated/factory-built or a Class A masonry chimney. Only (UL) Underwriters Laboratories listed and approved factory-built chimneys should be used. Installations of these chimneys should be made exactly to the manufacturer's specifications.

NOTE: A stove pipe should never be used for a chimney.

Masonry chimneys must be lined for safety. A masonry chimney should be inspected and cleaned before installation and burning of your stove.

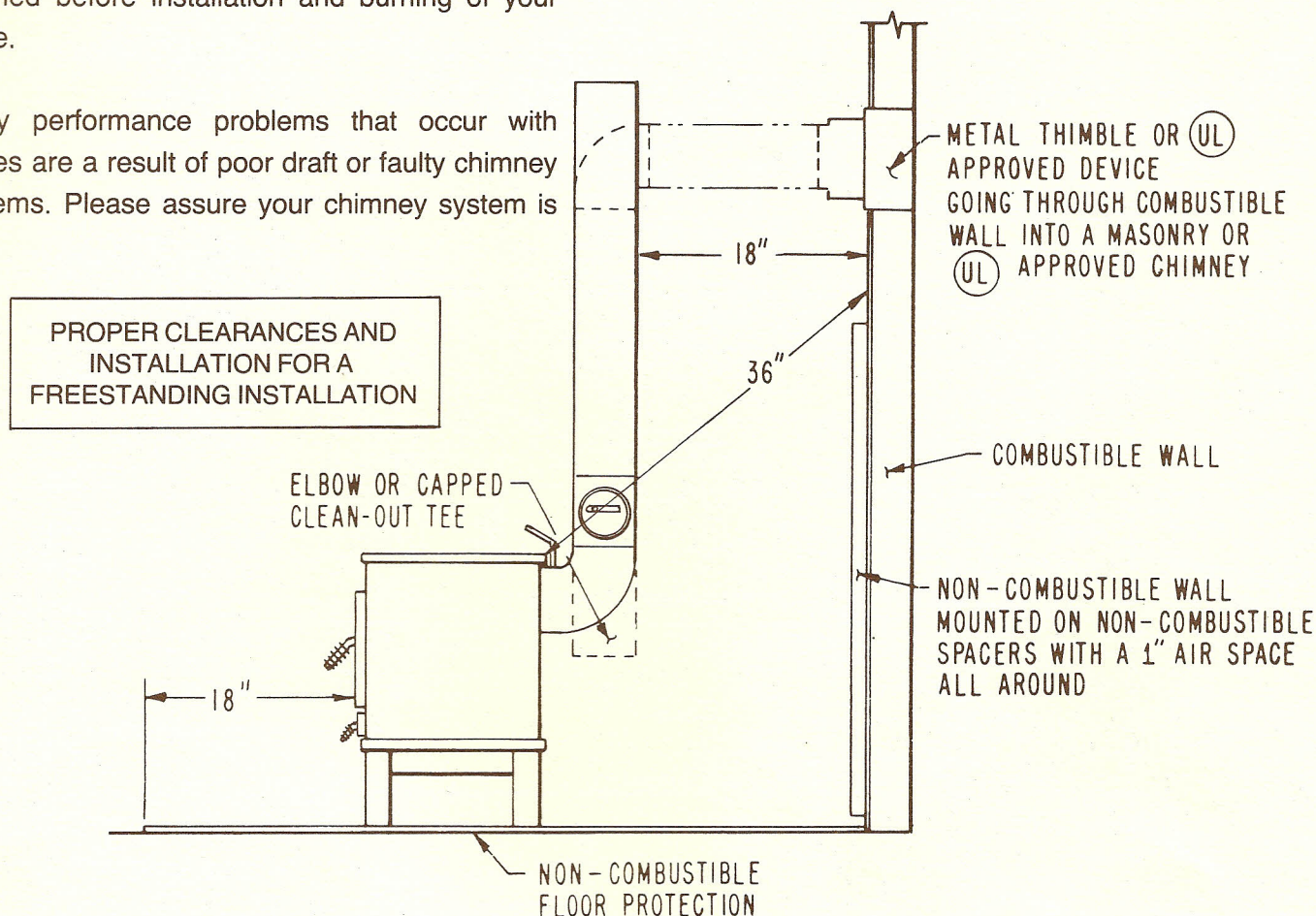
Many performance problems that occur with stoves are a result of poor draft or faulty chimney systems. Please assure your chimney system is

both safe and sound before proceeding with your installation.

TOOLS AND ACCESSORIES NEEDED

After obtaining all necessary permits for installation, you will need to assemble the following tools and accessories for proper installation:

- Barometric damper
- Stovepipe (6" minimum 22 gauge)
- Sheet metal screws
- Furnace Cement
- Tape measure
- Hammer
- Screwdriver
- Electric drill
- Crimpers
- Tin-snips
- Draft gauge



CONNECTING THE STOVE

A barometric damper is required for the installation of your Russo Coal/Wood Combination stove. The warranty on your stove is voided if a barometric damper is not used. The barometric damper must be set when the fire is adequate to heat the chimney. The draft on your barometric damper should be set between .04 w.c. to .06 w.c. The barometric should be located between the first and second lengths of pipe coming from your stove.

NOTE: No other damper should be used between the barometric and the flue.

Your barometric can be set by your Russo dealer or a furnace service person.

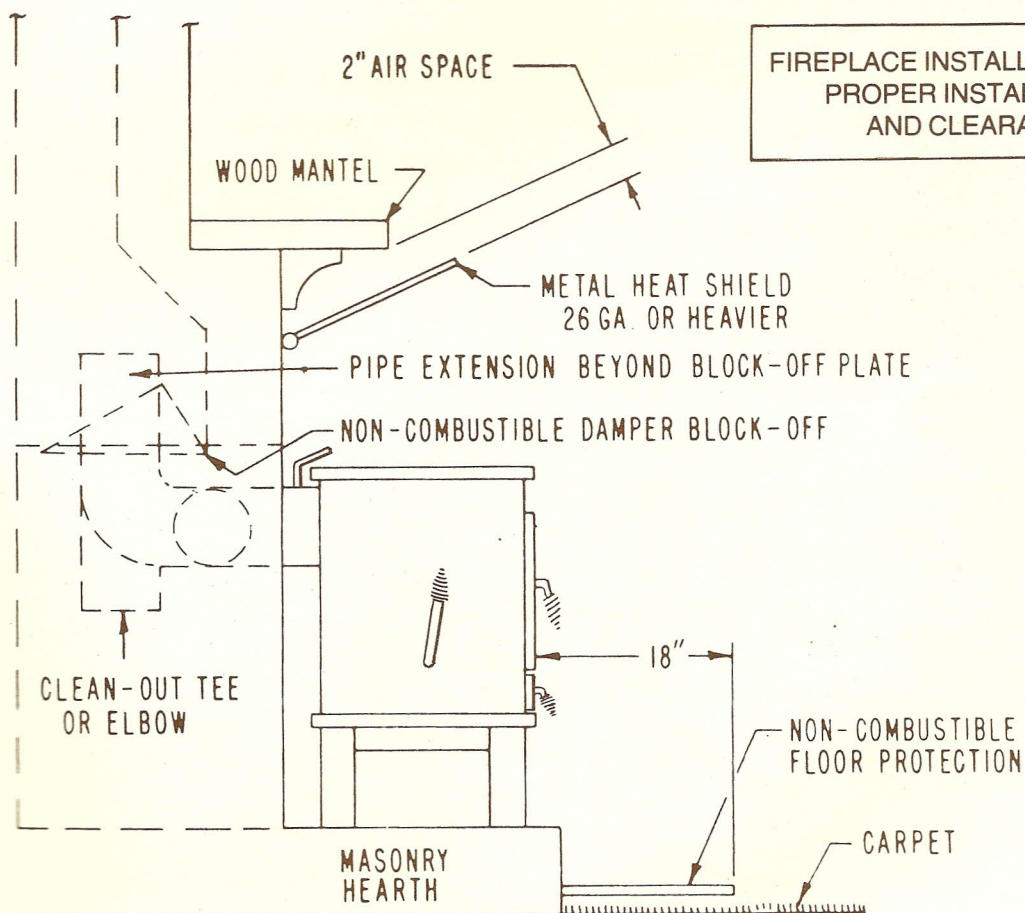
Your stove can be connected to the chimney flue using high quality, non-corrosive, 6-inch pipe of at

least 22 gauge. Install smoke pipe segments with the crimped end down. Any horizontal pipe should have the seam up to prevent creosote from dripping out of the seam.

WARNING: Use of aluminum type B gas vent for solid fuels is unsafe and prohibited by the National Fire Protection Association code.

Not more than one elbow should be used in the stovepipe. Any horizontal pipe should have an upward pitch toward the chimney of at least $\frac{1}{4}$ " for each foot of horizontal run. There must be at least an 18" clearance between any horizontal pipe and combustible ceiling.

The chimney connection pipe should extend at least 2" into the chimney, but not so far that it blocks air flow. Where a pipe passes through a wall or ceiling, this penetration should always be made with insulated pipe and the proper accessories.



Lengthy runs of pipe should be avoided as they can create dangerous creosote or ash build-up. Each stovepipe joint should be secured with three (3) sheet metal screws to avoid possible separation during use.

For fireplace installations, first remove the fireplace damper. It is usually held in place by its own weight, and is controlled by the damper actuating mechanism. Center the stove in the fireplace opening and install 6" stovepipe just beyond the damper. Make templates to close the remaining opening of the flue. They should fit snugly around the stove pipe and should extend about 1/2" beyond the edge of the damper opening. Convert the template to 24 gauge or heavier sheet metal. Discard the template; install the sheet metal, securing it to existing masonry or damper opening. Inspect for a snug fit, using stove cement to fill all cracks, seams or holes.

WARNING: Only a blower labeled "Russo Approved" may be used with your #1 C/W or #2 C/W. Use of other non-approved blowers will void the safety label required in most states and may void the stove warranty.

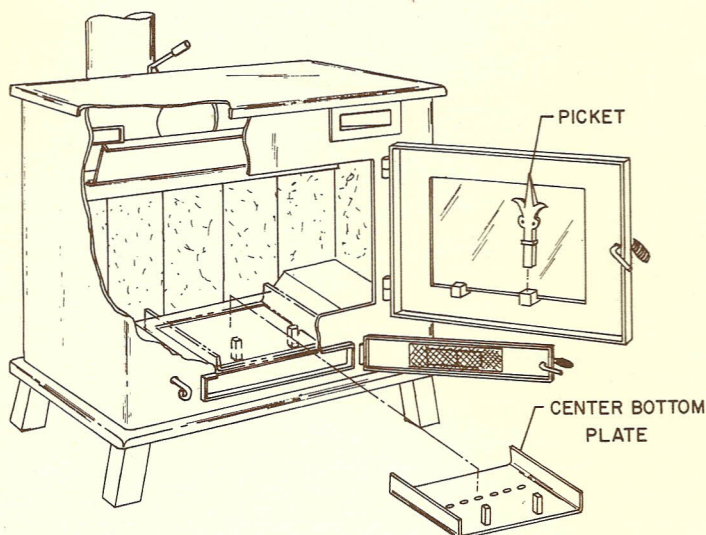
HOW TO USE YOUR STOVE

WARNING: Never use gasoline, gasoline type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or "freshen-up" a fire in this heater. Keep all such liquids well away from the heater while it is in use.

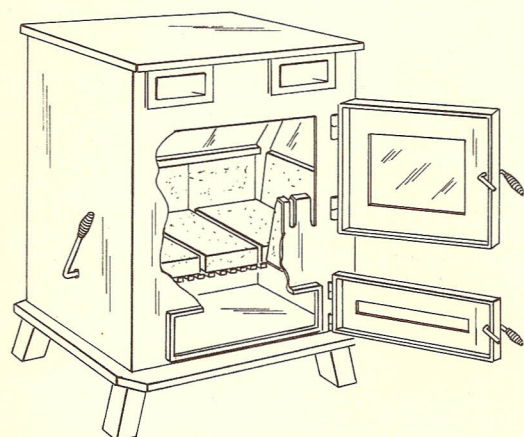
BURNING WOOD

Wood is burned on the center steel plate supplied with the #1 C/W. Wood should be burned on top of the three firebricks packed with the #2 C/W. These bricks should be placed on the grate with air spaces allowed between each brick.

Only paper and kindling should be used to start a fire. The air inlet located on the ash drawer door and the damper should be fully opened. During normal use this draft control and the flue damper should be toward the closed position. The loading door and ash drawer door should *always* be shut when the stove is in operation. Resinous woods and manufactured logs should not be used in your stove as they create undesirable by-products which could damage the stove or chimney system.



FOR WOOD BURNING — #1 C/W



FOR WOOD BURNING — #2 C/W

A Handy Tool is supplied with the stove. It is a valuable part of the stove and serves several functions. It can be used to open and close the draft regulator and flue damper, to clear the ashes from the corners of the #1 C/W coal basket, and to pull the ash pan from the stove.

The flue damper should always be open before the loading door is opened. When refueling, unlatch and open the loading door slowly.

NOTE: 1. When in use, do not touch the stove. Severe burns may result. Never burn your stove so that any part of the stove or pipe become red hot.

2. Do not fire your stove too hot on the first few fires. A series of small wood fires should be built to allow the cast iron parts of your stove to temper before using your stove for coal fires or extended burns.

BURNING COAL

To burn coal in a Russo #1 C/W, an optional *coal basket* is required. In the Russo #2 C/W coal is burned directly on the cast iron grates; the bricks used for wood burning must not be on top of the integral grate system. Your stove should be

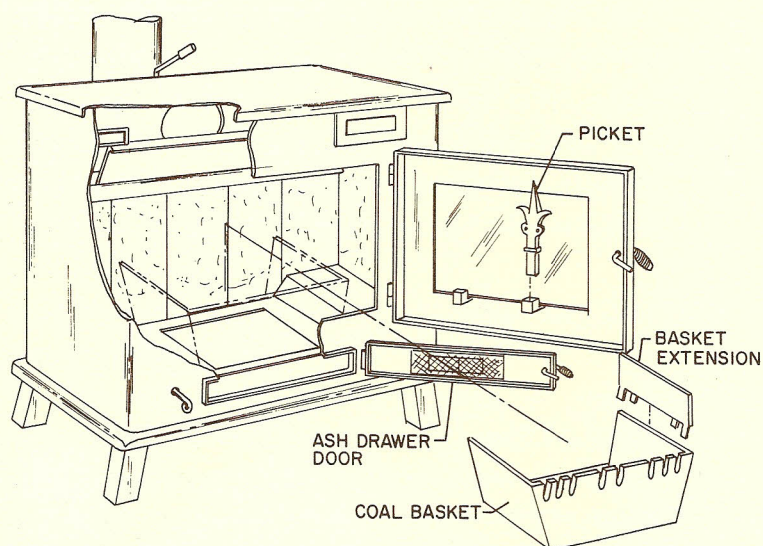
thoroughly cooled before converting it from one fuel burning mode to another.

To burn coal in the Russo #1 C/W the following instructions apply:

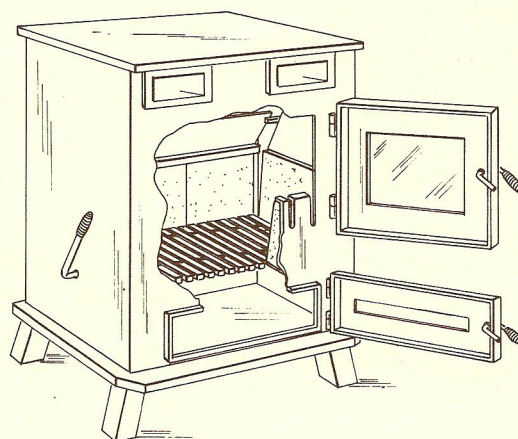
Remove the center bottom plate and clean out all ashes. Install the coal basket in the opening provided, with the *open side of the basket facing the rear of the stove*. (see diagram) The fire bricks which line the rear of the stove act as the fourth side of the basket. With the basket in place, the shaker rod can be connected to the tab of the slotted shaker disc, and by moving the rod in and out, the disc will be rotated and the ashes will fall into the ash drawer. Before starting a fire in the basket, check the shaker mechanism for free operation and the basket for proper positioning. Install the extenders onto the sides of the coal basket; they are keyed to fit in only one position.

STARTING A COAL FIRE

Fully open the draft regulator on the ash drawer door with the tool provided. Set flue damper in the fully open position. Place a few pieces of crumpled



FOR COAL BURNING — #1 C/W



FOR COAL BURNING — #2 C/W

newspaper and a generous amount of kindling into the basket (#1 C/W) or on the grate (#2 C/W) and light. When the kindling is burning vigorously, add two or three shovels full of coal, spreading it out to assure proper ignition. Wait for several minutes until the coal is ignited and add two or three more shovels of coal. Repeat this process until $\frac{1}{2}$ of the coal capacity of your stove is reached. If too much coal is added too quickly, the fire could be lost. With the fire established, fill the coal holding area to capacity. Care should be taken to keep all coal in the #1 C/W basket and within the refractory area of the #2 C/W.

The entire coal bed does not need to be ignited; this will only shorten burn time. The coal bed will burn from the bottom up. For maximum heat output and longest burn times, the coal holding area should be filled.

When the coal is glowing brightly, the draft regulator (located on the ash pan door) should be repositioned to meet your needs for heating and burn time.

After four or more hours, depending on the rate of combustion, it will be necessary to refuel and shake down the ashes. Shaking the ashes is important because coal burns from the bottom up and if ashes are allowed to accumulate in the bottom of the coal bed, the flow of air to the fire will be restricted and complete combustion will be hindered. The key to coal stove operation is to maintain an effective draft through the coal bed by shaking down the ashes, permitting a direct flow of air to the fire.

The first step in the refueling and shake down process is to fully open the draft regulator on the ash drawer door *and the flue damper*. After several minutes, when the fire is burning vigorously, add two or three shovels of coal. Wait five or ten minutes to insure proper ignition and shake the

coals down. It is not necessary to shake all the ashes out of the basket. Shake until glowing embers begin to fall into the ash drawer. Use the tool provided to reset the draft regulator to the desired setting. It will be necessary to refuel and shake ashes at least two or three times daily. Another method of improving the draft is by poking the coals around the sides of the basket with the Handy Tool.

If the fire dies out, it is not necessary to remove the unburned coal. Thoroughly shake down all ashes and poke the corners with the Handy Tool to insure removal of dead clinkers and ashes. Start a fire as described previously on top of the unburned coal.

NOTE:

1. Do not over-shake; leave some ash on the grates to protect them from heat.
2. Shake only until a few hot coals drop.
3. *NEVER* operate your stove with the ash door open, except for the time needed for ash removal.
4. Do not allow an ash accumulation under the grates. Remove ashes promptly after shaking.
5. The ash door must latch firmly. Do not operate your stove with a loose ash door or worn gaskets.
6. Coal fires should not be poked or broken up. Clinkers may result from ashes coming to the surface of the fire bed.

MAINTAINING A COAL FIRE

When burning coal, the stove flue damper can be left open during most operating conditions. The required barometric damper will compensate for changes in draft conditions except during severe weather conditions.

It will be necessary to periodically empty the fire bed area of any non-combustible material. This should be done with the fire out and the stove cool.

The Russo Coal-Wood Combination Stoves are designed to burn anthracite nut coal — but will operate effectively with stove or pea anthracite. The #1 C/W has a coal capacity of 20-25 pounds, and will heat up to 9000 cubic feet of living space when burning coal. The #2 C/W has a coal capacity of 40-45 pounds, and will heat up to 15,000 cubic feet of living space when burning coal.

NOTE: For proper burning there must be a continuous supply of fresh air. Ventilation is needed not just for proper combustion, but for the occupants of a home. In most homes there is an air leakage sufficient to support stove combustion. In well-insulated "tight" homes, proper draft for stove burning cannot be achieved without ventilation. It is advisable under all conditions to leave a window slightly open to allow a constant source of air when your stove is burning.

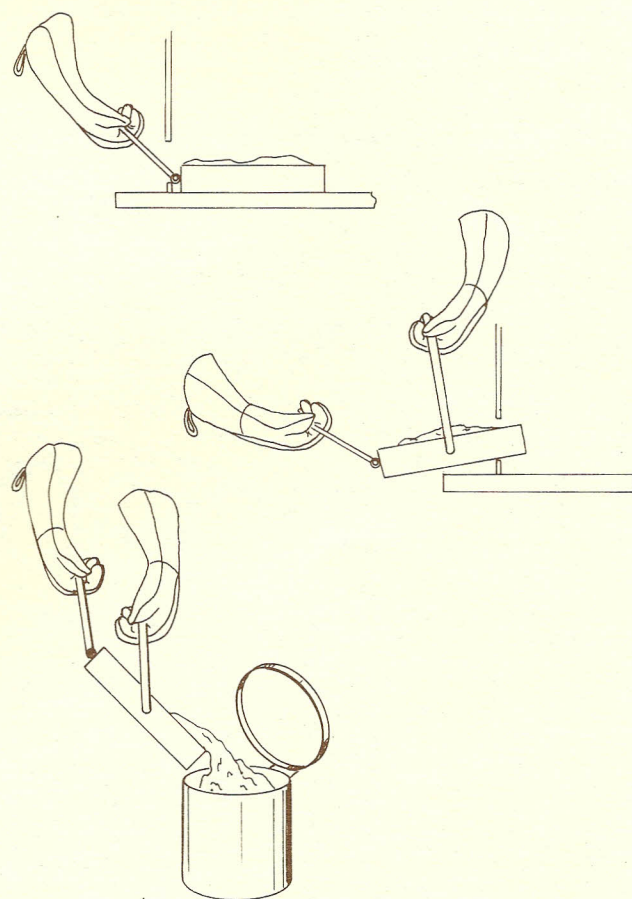
REMOVAL AND DISPOSAL OF ASHES

The Russo Coal-Wood Combination Stove is equipped with a removable ash drawer which simplifies the ash removal process. If you are burning wood, the ashes can be removed by pushing them over the center bottom plate or the bricks and allowing them to drop through the holes and into the ash drawer. If coal is being burned, the ashes will drop through the shaker.

It will be necessary to remove the ashes daily during the heating season. Use the tool provided to slide the ash drawer toward the front. Be sure to use protective gloves when removing the drawer. The ash drawer door must not be left open while the ashes are being dumped.

Care should be taken to fully open the ash drawer door before attempting to remove the ash drawer. If the ash drawer door gasket is damaged, reduced control and shorter burn times could result. When removing the ash drawer, turn off the blower, if operating, or it could blow hot ashes onto you.

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



ASH REMOVAL
AND
DISPOSAL

MAINTENANCE

The chimney should be checked for creosote buildup. It can be cleaned with a chimney brush and can be done professionally or by the homeowner. The chimney should be cleaned at least once a year. Chimney cleaning following coal usage should be done with plastic or brass brushes to avoid possible soot explosions.

At least once every year, preferably at the end of the heating season, the inside of the stove should be thoroughly cleaned. A wire brush should be used to remove soot and creosote. This will minimize rust, maximize the heat output and extend the life of the stove. You may choose to re-paint part or all of the stove. Use only high quality high temperature paint. Check all gaskets for proper adhesion and wear. Gasket replacement kits are available from your Russo dealer.

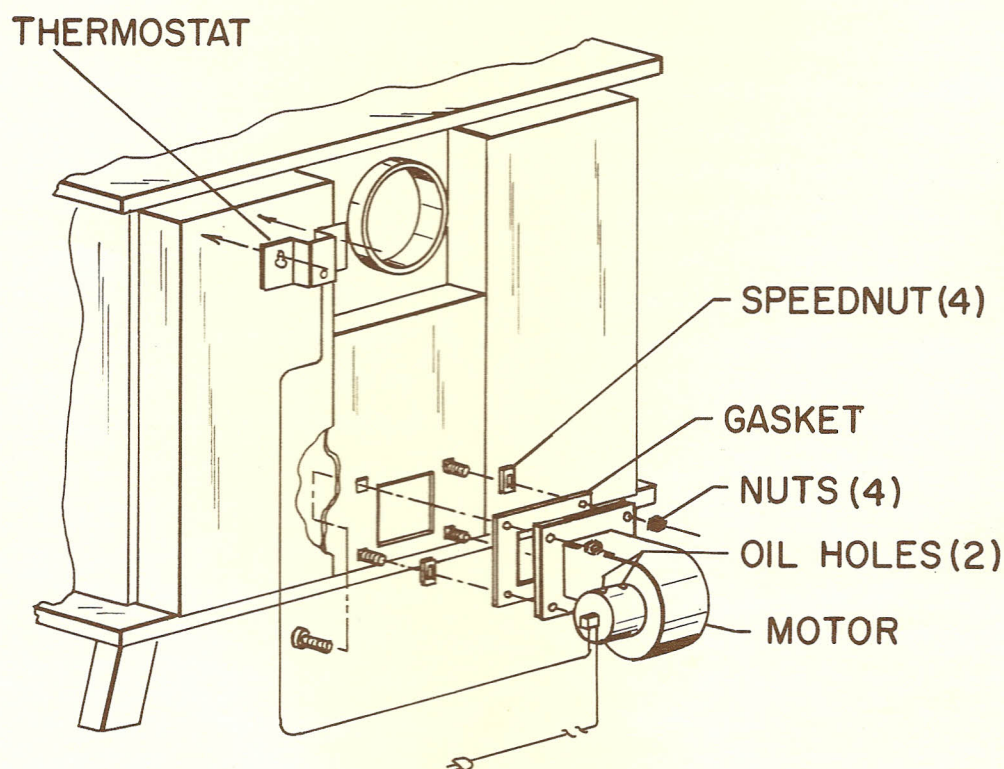
If your stove is equipped with a blower, it should be removed and cleaned at least every six months.

Dust will accumulate on the inlet screen and impeller wheel of the blower. These parts should be thoroughly cleaned to insure adequate flow of air and minimize strain on the motor.

If your blower motor is equipped with oil holes, it should be lubricated every six months only with SAE 20 NON DETERGENT OIL. When reinstalling blower, it is essential that all wires be kept as far away from the stove as possible.

The glass should be cleaned periodically with a fireplace and glass cleaner. Exceptionally heavy tar deposits can be removed with oven cleaner. Do not use steel wool, abrasives, or scrapers as the glass may become scratched. Allow the stove to cool before attempting to clean the glass. All residue of cleaning agents must be removed before refiring your stove.

The viewing window is Corning-Hearthwindow® glass and should be replaced only with Corning-Hearthwindow® glass, available through your



Russo dealer. Hearthwindow glass is able to withstand extremely high temperatures, but it is not designed to absorb shocks. It can be broken fairly easily if struck by a blunt instrument. If the glass cracks, the stove must not be used until the glass is replaced. Under normal operating conditions, the glass will not break. The glass is not guaranteed. The stove should not be operated with cracked or broken glass.

If you remove the glass from your load door, when replacing the glass, the washers found between the glass frame and the stove must be replaced in position. The nut holding the glass should be tightened with hand pressure to prevent breakage.

ACCESSORIES

POKER HOE. Our own design, this longer-handled heavy duty wrought iron tool is really two tools in one. Its unique design is perfectly suited for use in wood stoves.

HEAT SHIELD. Specially designed to protect wooden mantels. Kit comes complete with clips, hardware, and instructions.

STOVE PAINT. High quality, high temperature paint available in black and colors: metallic maroon, midnight green, metallic green, metallic blue, metallic brown.

GASKET REPAIR KITS. Includes gasket material, adhesive, instruction sheet. Specify model stove.

265 CFM BLOWER. Greatly improves air circulation, this thermostatically controlled unit mounts on lower rear section of stove.

REPLACEMENT GLASS. Do not use ordinary or tempered glass in a Russo Coal-Wood Combination. Use only Corning-Hearthwindow® glass, available through your Russo dealer.

COAL BASKET. Must be used to burn coal in the Russo #1 Coal-Wood Combination.

LEG EXTENDERS. For use in hearth installations where the stove extends beyond the hearth.

RUSSO COAL STORE®. Stores up to a week's supply of coal (approx. 175 lbs.). Hinged top, gravity fed for easy filling and shoveling. For use beside your stove.

COAL SHOVEL. A heavy steel shovel to make stove loading an easy, clean operation.

YOUR RUSSO DEALER

Your Authorized Russo Dealer will be more than willing to assist you with any questions or problems you might have with your stove.

If you have any unanswered questions or unresolved problems, please write or call us at the Russo Manufacturing Corporation.

We welcome your comments, questions, and suggestions.