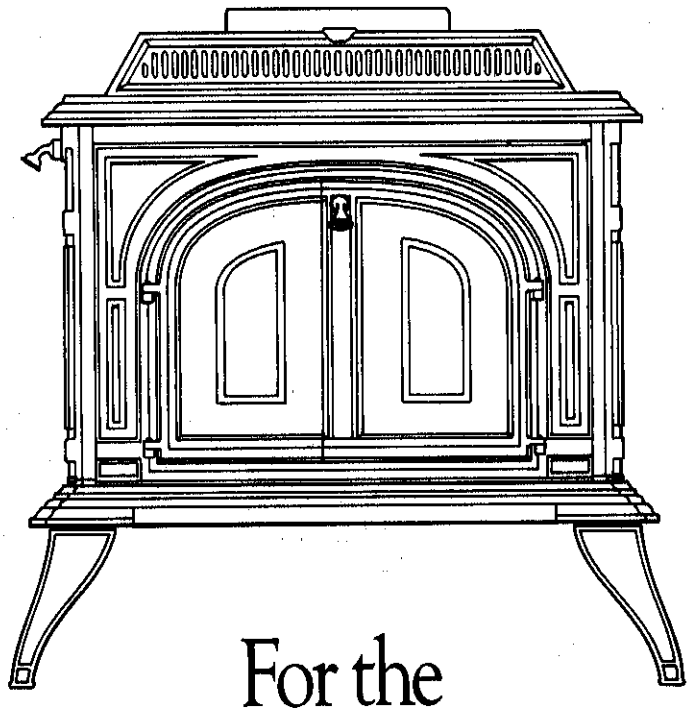
Vermont Castings OPERATION MANUAL



For the Defiant® Vigilant® Resolute® & Intrepid® Wood & Coal Parlor Stoves

A Philosophy...A Commitment

We build wood stoves because we believe there are sensible ways to heat our homes without exhausting our precious oil supplies. Vermont Castings was founded on this philosophy and it continues to guide us today.

When we began making stoves, wood was our first choice as an alternative to heating with oil. The chemical reaction that occurs within the leaf is the only known natural exchange that can store the sun's energy. In every sense, wood heat is a loan from the sun. If we fail to use it to warm ourselves, wood heat will eventually be consumed by rot, and decay into the atmosphere. The loan is brief, not much longer than the span of a human life. We encourage you, through the ownership of our stoves, to take this loan and use it wisely for your benefit and pleasure. If we are careful in the harvesting of wood, our forests will supply us with a lasting supply of fuel.

While wood is our only renewable fuel source, coal is one of America's most abundant resources. For many persons, especially our urban friends, it is difficult to find a ready supply of wood. Recognizing this, we recently introduced a coal burning stove, and a coal conversion unit for existing wood stoves.

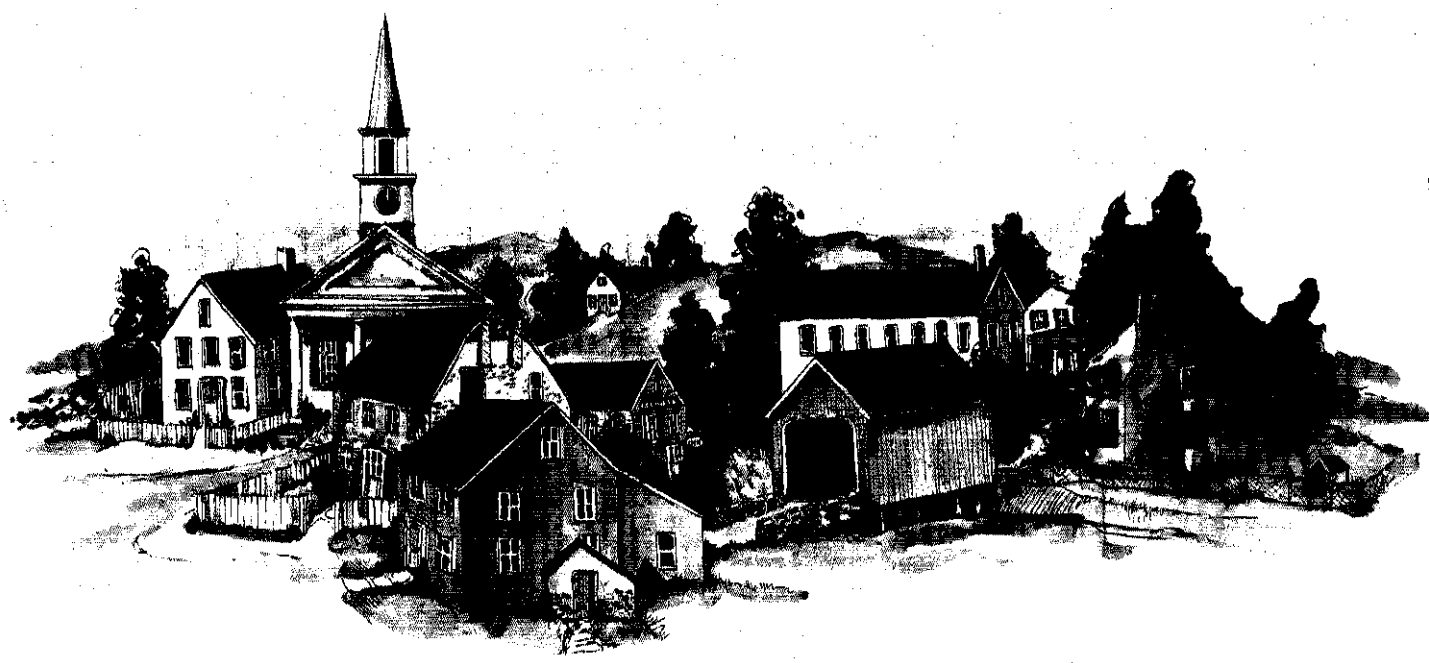
Known coal reserves can meet our heating needs for years to come. But, as stewards of the earth we must abide by an ethic that mandates we burn coal as sparingly and efficiently as possible. By doing so, we ensure that there will be ample supplies of coal to warm the homes of future generations.

As responsible users of one of the earth's natural resources, we cannot ignore pollution problems related to the burning of coal. We made our stoves to be as efficient as possible and designed them to burn premium grade anthracite, the least polluting of any of the coal types. We suggest you check the availability of this coal in your area before making a decision to burn with coal.

Buying a wood or coal stove, especially a highly sophisticated one like ours, is a commitment. As the owner of one of the finest stoves made, you have made a commitment toward a lifestyle founded on the notion that one technology does not replace another, but allows us to become reconnected to the natural systems which support us. In doing so you acquire a new vocabulary. This operation manual summarizes our knowledge. Combined with your effort, it will provide the information you need to reach your goals. We at Vermont Castings feel that your commitment to your new stove, in some cases a very new experience, will be amply awarded.

How To Use This Manual

This manual contains a great deal of information and is not easily digested in one sitting. Before you light your first fire, read it thoroughly, especially the Operations instructions. Otherwise you might damage your stove. Read it again after the stove has been in service for a while. Many of the difficult to understand points will become clear. If you have specific questions about the installation of your stove and the clearances necessary for safe operation, please contact your Authorized Dealer or our Customer Service Department. We have an installation guide and other technical information available to help answer your questions. We will be happy to discuss your particular problems.



WELCOME

As a Vermont Castings' stove owner, you join a unique community of persons dedicated to using alternate energy sources. Whether or not this is your first experience with wood or coal, you are assured of our continued support and guidance to help you gain the maximum benefit and enjoyment from your new stove.

This special relationship is extended to you through our Vermont Castings Authorized Dealers, our Customer Service Department and the Owners' News. Vermont Castings people are well versed in every aspect of heating with wood and coal. Periodically you will receive copies of our Owners' News. Your first copy was packed in your stove. In it we provide helpful hints which will give you the benefit, not only of our experiences, but those of other customers as well. Please take advantage of the Owners' News to share secrets you discover with other stove owners.

Most of the information in this manual applies to all four of our stoves. The Intrepid has some design features which are different from the other stoves. The Intrepid Wood Stove Assembly and Operation Instructions (packed with the stove), and the Intrepid Coal Conversion Manual (packed with the coal conversion components) provide special information for Intrepid owners.

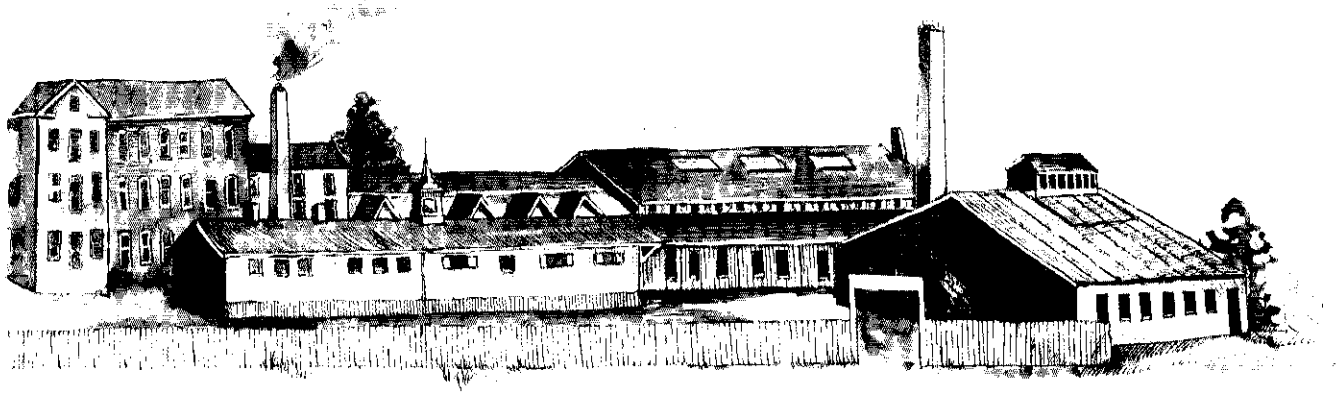
It has always been the philosophy of Vermont Castings to maintain direct contact with our customers. We hope to learn as much from you as you learn from us. If problems do occur, we can draw on the experience of thousands of stove owners to help you. Very few manufacturers have this advantage, an advantage which becomes yours when you purchase your Vermont Castings stove.

We have tried to make this manual as easy to read as possible. We urge you to familiarize yourself with it before setting up your stove. Familiarize yourself with the parts of the stove and their functions so that it will be easier to understand the information in the manual. The clear chapter headings should facilitate your task. Read the chapters in order. If you have already completed your plans and the work necessary for installation, you might like to move ahead to the chapter on setting up the stove. Once again we caution you to please read through the material at least once before you make the final installation connection and build your first fire.

INDEX

SAFETY NOTICE:

IF YOUR DEFIANT, VIGILANT, RESOLUTE OR INTREPID IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW THE INSTALLATION DIRECTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.



THE INSIDE STORY

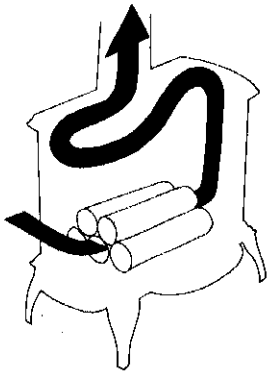
Economics & Efficient Combustion The How & Why

It has been our experience that if you understand the inner workings of your stove you will be better equipped to use your stove wisely and to gain maximum savings and pleasure from its daily use. That is why this section on the efficiency and combustion principles of the stoves is included before you reach the installation information. Where the principles for wood and coal-burning differ, the fuel and its particularities are identified. Although all three stoves are different in features, sizes and heat outputs, their combustion systems are similar.

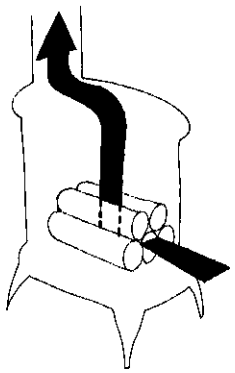
Let us start your tour of the inner workings of the stoves with a discussion of *horizontal combustion*, a fundamental concept behind the operation of our wood stoves. In horizontal combustion, the flames move horizontally as they leave the primary combustion zone. Many stoves employ *updraft combustion*, in which flames rise up through the fuel load. All wood loaded into an updraft stove becomes part of the fire mass unless oxygen is restricted to a low level. Our horizontal flamepath allows only the bottom of the wood load to burn. The logs on top are dried by heat and fall into the flame area as those below are consumed. Thus, a full wood load can provide heat all night long.

The use of horizontal combustion allows us to place the fuel in a *magazine* where the fueling of the fire is automatically accomplished by gravity. All of our stoves, both wood and coal, are magazine burners providing maximum efficiency with minimum tending.

The horizontal combustion mode will be used by most wood burners under normal conditions as it will ordinarily produce more usable heat in the room per pound of wood loaded into the stove than the updraft mode. However, where there are special conditions to be met, low draft, a need for extra heat in extreme weather, or an unseasoned wood supply, for example, the updraft mode may serve you better. Our stoves are combustion controlled (sometimes called "air-tight") in either mode. Burn rate and heat output may be controlled by adjusting the thermostat lever.



Horizontal combustion



Updraft combustion

Fuel Limiting:

There are two ways to control the volume of power output in a combustion device: fuel limiting and oxygen limiting. An automobile is fuel-limited. If you need more power, you supply the engine with more fuel. If you make an uncontrolled amount of gasoline available to the spark plugs at once, the engine becomes an inefficient source of power.

An updraft stove places the entire fuel supply in the combustion zone at once. If the fire is partially smothered to control the rate of burn, thick smoke and low efficiencies may result. Our magazine system uses no more than the amount of fuel necessary in the combustion zone at any one time in order to produce the maximum amount of heat for which the stove was designed. In order to slow the fire below these points, we use oxygen limiting with an *automotic thermostat* which provides the fire with an appropriate level of oxygen.

Air Control Systems

Primary Air Systems

In both our wood and coal stoves, oxygen enters at the thermostatically controlled *Inlet Air Shutter* and travels through passages where it is heated before being fed to the fire mass through the *Primary Air Ports*.

When a fuel is heated and burns, the volatile combustible gases naturally locked in it are driven off. In an updraft combustion stove or fireplace, these volatiles may be left unburned for two reasons. First, by the time the gases have left the fuel, they are too cool to ignite. Second, the oxygen that enters the stove is usually consumed by the glowing coals at the base of the fire mass, so the gases rise through an atmosphere too deficient in oxygen to allow combustion to take place. The loss of volatile gases is serious in the case of wood, for it represents approximately half the total heat value.

Secondary Air Systems

Our stoves facilitate the burning of these volatiles in several ways. By using horizontal combustion, the gases are forced to pass close to hot coals which maintain a sufficiently high temperature (as high as 1200° Fahrenheit) for ignition.

Our stoves also employ a sophisticated system which introduces another source of preheated air (secondary air) to encourage combustion of these volatile gases. The *secondary combustion* of gases that, because of an insufficient oxygen supply, were unable to ignite within the primary combustion zone, are encouraged to release their heat. Secondary air treatment of the coal stoves is different because of the individual characteristics of coal and wood.

The inner workings of the Defiant

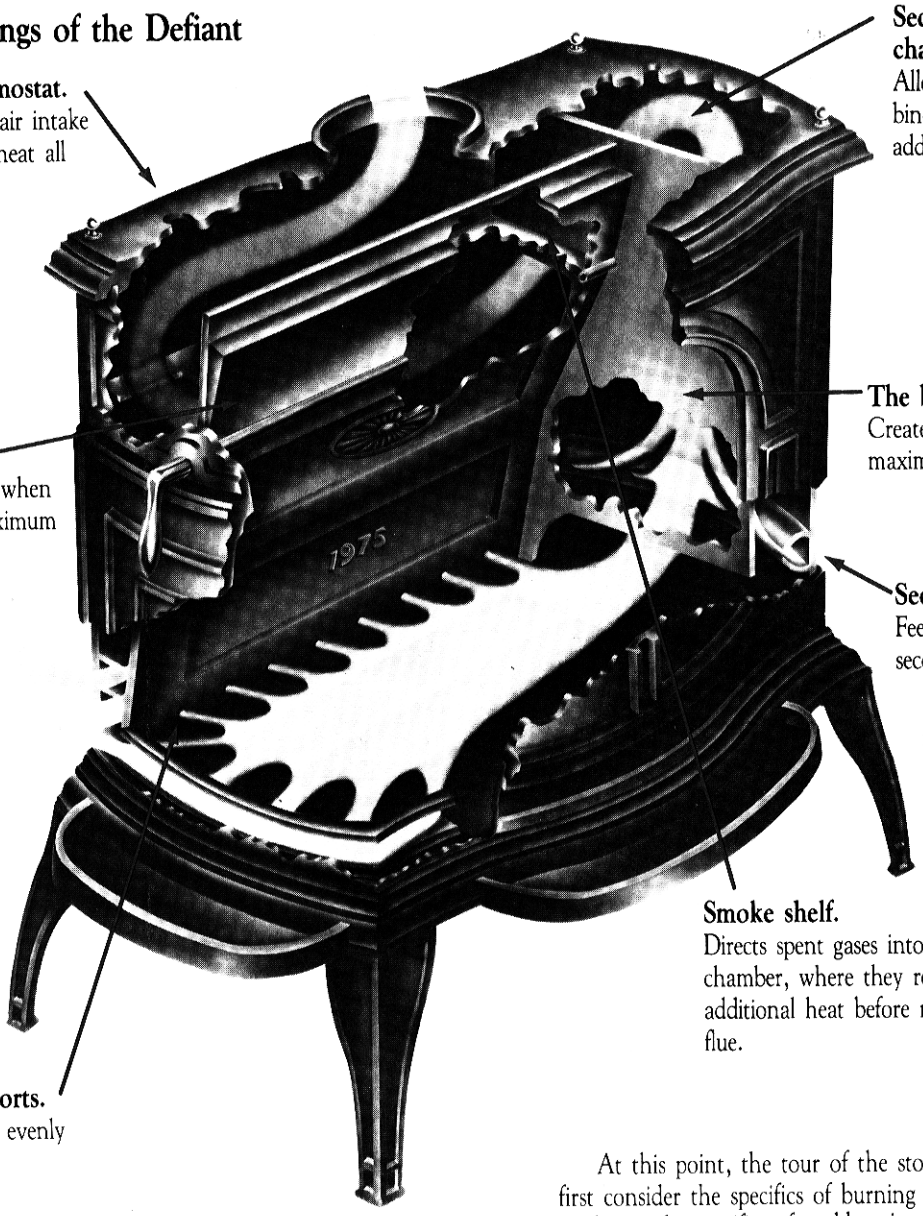
Heat-regulating thermostat.
Automatically controls air intake to assure steady, even heat all day, all night long.

Secondary combustion chamber.
Allows unburned gases to combine with oxygen, providing additional heat.

The baffle.
Creates a longer flamepath for maximum heat transfer.

Two-position damper.
Permits use as fireplace; or when adjusted, helps provide maximum heating efficiency.

Secondary air tube.
Feeds preheated oxygen to secondary combustion chamber.



Smoke shelf.
Directs spent gases into upper chamber, where they release additional heat before rising up flue.

Primary air entry ports.
Disperse preheated air evenly into combustion zone.

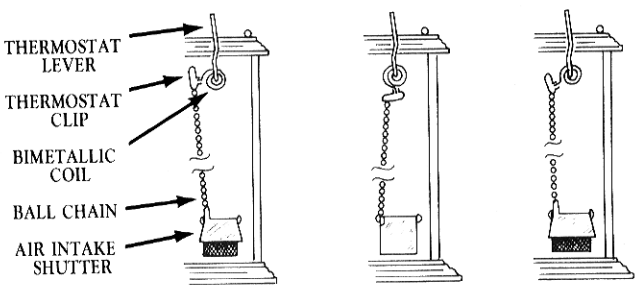
Thermostat Control

The thermostat lever at the back of the stove controls the Inlet Air Shutter, and thus the amount of air entering the stove for combustion. Attached to this lever is a bimetallic coil which contracts or expands to the heat given off from the stove. A ball chain connects the lever to the air inlet shutter, thus regulating the flow of incoming combustion air. As a result the stove's heat output intensifies and the air supply is decreased. The combustion rate slows, heat output drops, and the air supply is again allowed to increase as the bimetallic coil reopens the air intake shutter.

The thermostat lever can be set to accommodate your individual heating requirements. The overall heat output throughout the burn period is determined by the lever setting. The length of burn is similarly related to the lever setting as a high heat output will necessarily allow faster fuel consumption than will a lower heat output setting. The most efficient use of the stove and fuel can be made by setting the thermostat to allow a moderately hot fire. Long, smoldering burn periods should be avoided.

At this point, the tour of the stoves must diverge. We will first consider the specifics of burning wood, and then move on to discuss the specifics of coal-burning.

THERMOSTAT OPERATION
- View of thermostat for Defiant and Vigilant is with thermostat cover removed
- Resolute bimetallic coil is reversed



a. After fire is well established, set thermostat to desired heat output.
AIR INTAKE SHUTTER
HALF OPEN

b. As heat output intensifies air intake is decreased.
AIR INTAKE SHUTTER
CLOSED

c. As heat output lowers, air intake increases.
AIR INTAKE SHUTTER
HALF OPEN

YOUR WOOD STOVE
The Internal Parts & How They Contribute To Efficient Operation

Secondary Combustion Chamber

Secondary air enters our wood stoves at the lower left end of the stove through the circular Secondary Air Entrance Port. Under normal conditions, this remains open all the way at all times. This air passes down the Secondary Air Tube where it is preheated. The air supply is then directed into the Secondary Combustion Chamber through numerous air ports, so that it can mix with and ignite the combustible gases. A *Secondary Combustion Chamber* allows the gases to expand as they are further heated by their own combustion. A large portion of the stove's exterior surface encloses this chamber, thus allowing for transfer of the maximum possible amount of heat to the room.

Behind the *Fireback* are the smoke passages. These passages consist of a series of *Baffles* that conduct the flue gases in a serpentine manner back and forth across the length of the stove. The gases are channeled close to the thermostat coil in order to give it maximum sensitivity to the changing fire conditions within the stove. The back of the Vigilant and the back and sides of the Resolute have been deeply convoluted, like old Victorian steam radiators, to provide a large surface of cast iron exposed to the room, ensuring a good radiating surface.

The Flamepath

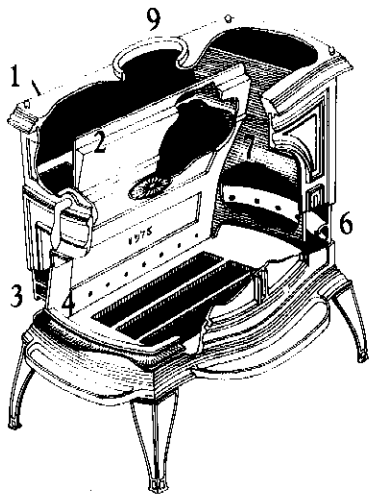
The *Secondary Combustion Chamber*, taken together with the smoke passages, make up the flamepath.

The Defiant's sixty inch flamepath is one of the longest of any cast iron stove currently on the market. The Vigilant flamepath measures fifty-five inches; the Resolute fifty inches. A long flamepath is important to the heating capability for two reasons. The considerable heat of the flue gases is transferred to the surface of the stove, where in turn it is given off to the room, rather than being lost up the chimney. Secondly, because the passages are adjacent to the combustion chamber, higher temperatures are maintained within the fire mass itself, which aids in the burning of the volatiles. It can easily be seen that unless the flamepath is concentrated tightly within the stove, the heat of the flue gases will not contribute to the temperature of the primary fire mass, nor will the gases maintain their necessary high temperatures in order to ensure combustion of the volatiles.

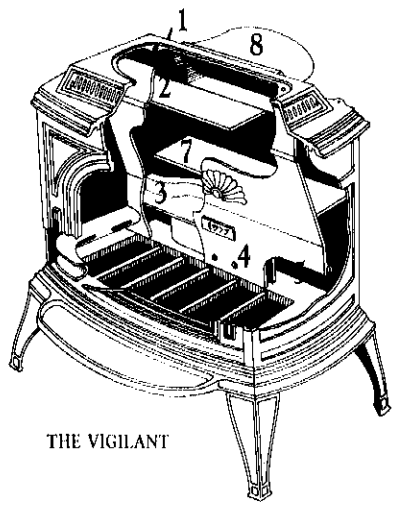
The Damper

The damper is the last of the important internal parts. In its vertical or up position, the damper is closed and flames exit from the stove by way of the long flamepath described, allowing the horizontal combustion mode. When lowered flat, the damper is open and the stove is converted to an updraft combustion device, allowing flue gases to escape directly from the magazine into the chimney connector. (The various requirements of the two functions are explained in the section titled "Operation.") It is important to note the relation of the handle to the damper. On the Defiant and Vigilant, when the damper is closed, both it and the handle are vertical. On the Resolute, the spirally wound wire handle is down when the damper is closed and up when it is open.

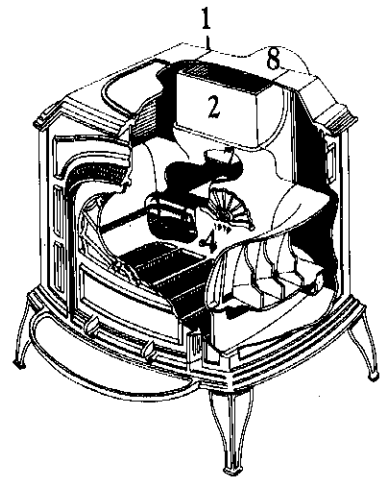
Smoke will come out of any opened loading door if the damper is closed. The interlock with the damper handle and the loading door on the Defiant is designed to prevent opening the door while the damper is closed. The griddle of the Vigilant will not open all the way should you forget to lower the damper first. These serve as reminders that you can only load wood smokelessly when your stove is in an updraft configuration and the damper is in the open position. The section on Operation will explain the proper steps to take before closing the damper when you use the horizontal burning mode.



THE DEFIANT



THE VIGILANT



THE RESOLUTE

1. Thermostat
2. Damper
3. Secondary Air Entrance Port
4. Primary Air Ports
5. Secondary Combustion Chamber
6. Secondary Air Tube
7. The Baffles
8. Reversible Flue Collar
9. Top or Rear Exit Model

INSTALLATION

SAFETY NOTICE:

IF YOUR DEFIANT, VIGILANT, RESOLUTE OR INTREPID IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW THE INSTALLATION DIRECTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.

A separate bulletin, "The Vermont Castings Installation Planning Guide", contains detailed information to help you plan your installation. Read this manual and the Installation Planning Guide before installing your stove.

Building and safety codes vary in different localities. Check your installation plans with local officials before you install your stove.

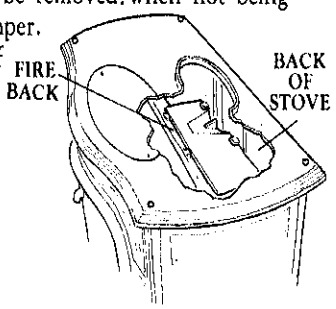
The Resolute and Intrepid have been tested for use in mobile homes. Special mobile home chimney, clearance, and installation requirements are detailed in the Mobile Home Components Installation Instructions.

When either the Vigilant or Resolute is equipped with a Vermont Castings Energy Extender, clearance requirements may change. The Energy Extender Installation Instructions give special clearance information.

The set screw in the lower left front of the Vigilant and Resolute will be removed if the stove is converted to coal burning. It should always be in place when burning wood.

So that it will stay cool, the "Fall-Away Insert Handle", packed inside your stove, should be removed when not being used to operate the doors or damper.

Install the Defiant smoke shelf before you connect the chimney connector. Close the damper. Place the smoke shelf in position between the fireback and the back of the stove.



Set Up

Our stoves are heavy and require at least two people to move and set them up. To make the job a bit easier, you may lift off the loading doors and remove the griddle. (The Defiant griddle is held in place with two latches.) DO NOT TRY TO MOVE THE STOVE ALONE AS THE STOVE CAN BE DAMAGED BY MISHANDLING.

Place the stove close to its final position before installing the stove legs. You will find stove leg assembly instructions in the leg bolt package.

The griddle has not been painted in order to allow cooking directly on its surface. In order to protect the surface from rust during shipping, a coating of grease has been applied. Be sure to wash the griddle thoroughly with soap and water. As the stove is used, the griddle will gradually darken to match the color of the stove.

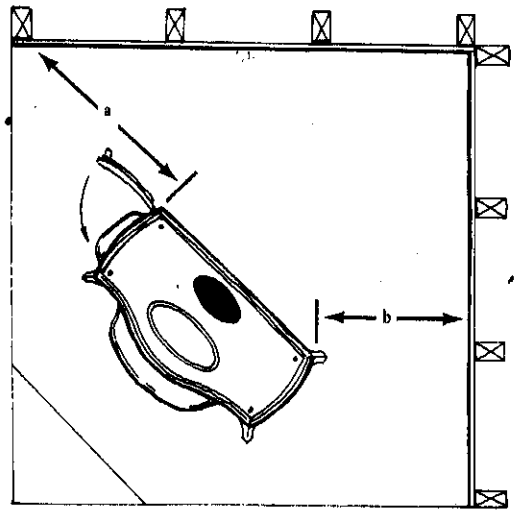


FIG.1
CORNER INSTALLATION
NO SHIELDING
COMBUSTIBLE WALL
a) Load door end requires min. 36" to wall
b) Min. 36" clearance to wall from rear and side

So that you can easily secure the first section of stove pipe to the stove, three holes have been drilled in the flue collar and three sheet metal screws are included in the leg bolt package.

If you have ordered any accessories such as andirons or heat shields, they will come with their own installation instructions. Generally speaking, nothing more complicated than a screwdriver is involved in the installation of accessories.

Clearances

It is important for proper installation that the stove is located with adequate clearance (empty space) to combustible walls and room furnishings. The recommended minimum clearance for untested and unlisted stoves is usually 36".

Vermont Castings stoves have been tested by independent laboratories for installation with reduced clearances when specific clearance reduction systems are used. Clearance reductions may vary depending on the stove and type of installation.

Consult the *Vermont Castings Installation Planning Guide* for specific clearance reductions for Vermont Castings stoves.

Chimneys

Many homes are already equipped with a sound freestanding masonry chimney or a fireplace chimney. Either of these can provide an excellent flue through which to vent a wood or coal stove, provided they are built according to local building codes. We recommend that prior to installing a stove into an existing flue, you have the chimney inspected by a qualified professional. Your local building inspector will know who is qualified to assess the condition of your chimney. If your masonry chimney is not constructed with a clay tile liner, we cannot recommend that you use it in its existing state with any wood or coal burning device. An unlined chimney may have unseen loose mortar which could allow chimney gases to escape into the house, or, a chimney fire could ignite nearby wooden members.

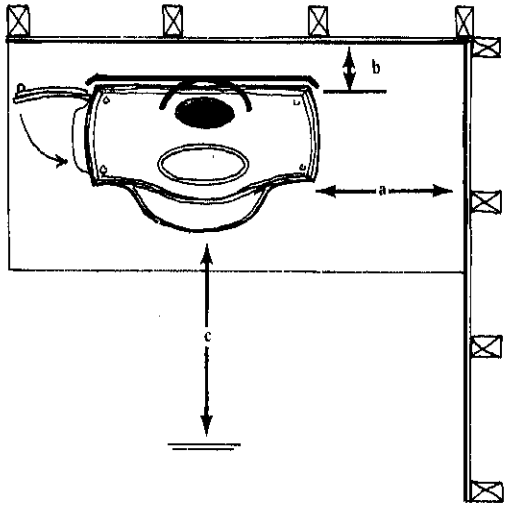


FIG. 2
SIDE INSTALLATION
REAR PIPE AND STOVE SHIELDS
COMBUSTIBLE WALL

a) Min. 36" clearance to wall from side
b) Min. 10" clearance to wall with use of stove and pipe heat shields
c) Min. 36" clearance from loading door to any combustible room furnishings

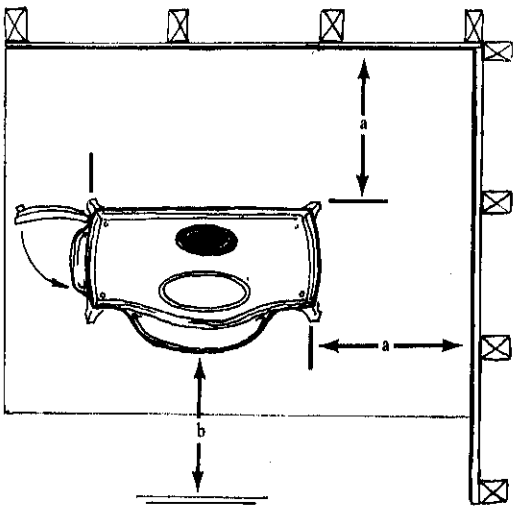


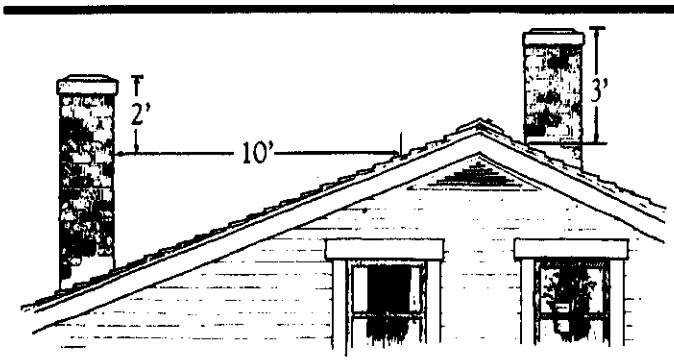
FIG. 3
TOP EXIT DEFIANT
SIDE INSTALLATION
NO PROTECTION
COMBUSTIBLE WALL

a) Min. 36" clearance to wall from side and rear
b) Min. 36" clearance from load or front doors to any combustible materials, i.e., furniture

If you are building a chimney from scratch, we cannot stress strongly enough the importance of an interior chimney. When properly built, it is the best chimney of all, and will more than repay you for the space that it requires. Besides minimizing condensation of creosote, the draft produced in an interior masonry chimney will be stronger, helping the stove burn more efficiently. In new masonry construction, allow for the use of a minimum of eight by eight inch clay flue tile. The chimney must be constructed in accordance with your local building code.

You may prefer to install a factory built metal chimney. Prefabricated chimney systems require no foundation and are relatively quick and easy to install. Other advantages of prefabricated chimneys are that they generally require less space and are less expensive than their masonry counterpart. Make sure that such a chimney is approved for solid fuel and is listed by a nationally recognized testing laboratory such as the Underwriters Laboratory (UL). It must be installed in accordance with the manufacturer's instructions. CLASS B type chimneys may not be used with wood or coal stoves. These flues are designed to vent gas appliances only. There are several prefabricated chimney designs available; we recommend those which will help maintain high flue gas temperatures, such as the double wall or static air insulated type. Ask your local dealer about specific manufacturers.

Do not connect the stove to a chimney flue serving another appliance.



FLUE HEIGHT REQUIREMENTS

The chimney must extend 3 feet above the level of roof penetration and a minimum of 2 feet higher than any roof surface within 10 feet. Check your local codes for additional regional guidelines. While a minimum chimney height of 16 feet is generally recommended, factors affecting stove performance such as local terrain, prevailing winds, and adjacent structures may necessitate use of a taller flue.

IDEAL FLUE SIZES

Vermont Castings stoves are designed to perform most efficiently when vented through flues having the following dimensions:

	Liner Size	Round Liner Diameter
Defiant/Vigilant	8"x8" or 8"x12"	8" interior diameter
Resolute/Intrepid	8"x8" or 8"x12"	6"x8" interior dia.

Larger flues (12"x12", 12"x20"), although generally effective, can lessen chimney draft and promote cool flue gas temperatures. Vermont Castings stoves are not listed for installation into flues smaller than the sizes recommended above.

If you are planning to vent a small stove into a large flue, particularly an exterior masonry one, you may find it necessary to insulate the chimney, reline the chimney, or operate the stove to maintain high flue temperatures.

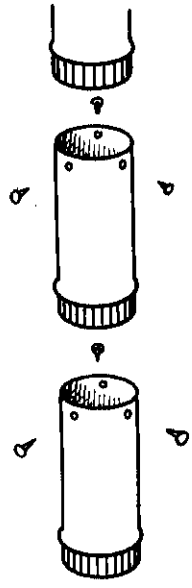
Stovepipe/Chimney Connector

We recommend that stoves be placed close to their chimneys so that the stovepipe can be as direct and short as possible, with a minimum of elbows and angles. Exhaust gases from the stove will flow unrestricted into the chimney flue. Long horizontal runs of stovepipe should be avoided since they tend to build up ash and soot more quickly and, therefore, require more frequent cleaning.

The size of a stovepipe and chimney thimble should never be smaller than the flue collar area of the stove. A minimum 8 inch diameter stovepipe and chimney thimble are required for the Defiant and Vigilant, and 6 inch minimum diameter for the Resolute.

The stovepipe must be constructed of 24 gauge or thicker sheetmetal. All stovepipe sections should be fastened together with three sheetmetal screws, spaced equidistant around the perimeter of the pipe to prevent separation during use. In addition, the first section of stovepipe should be fastened to the flue collar of the stove.

Stovepipe systems should be designed if possible with the crimped end of the stovepipes pointing downward so that any soot or creosote which is formed will run down back into the stove and be consumed.

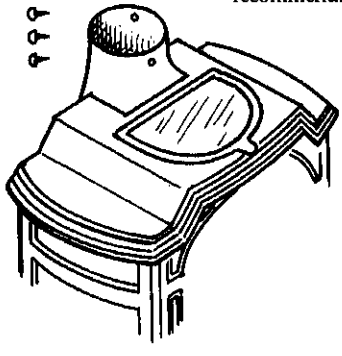


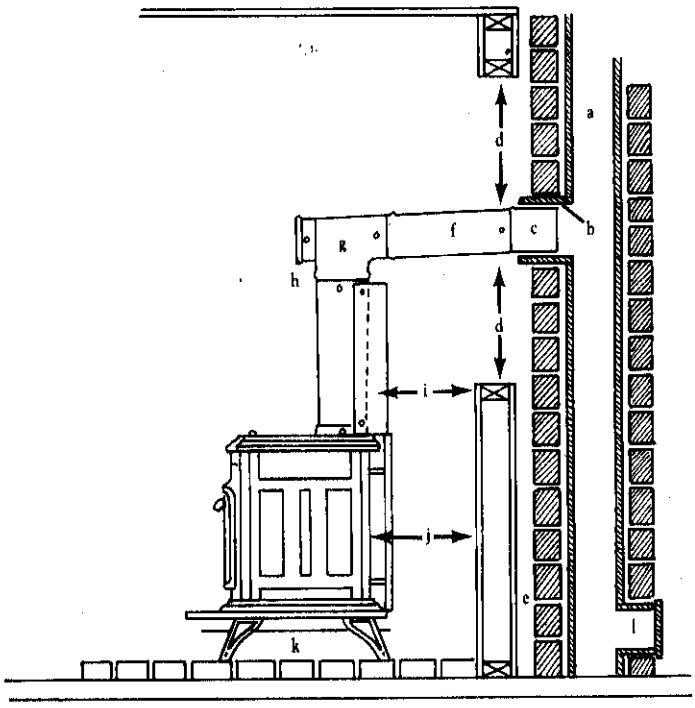
Horizontal or vertical runs of stovepipe must be installed to maintain the following clearances to unprotected combustible materials.

Defiant Installation - 22"
Vigilant Installation - 22"
Resolute Installation - 23"
Intrepid Installation - 25"

Stovepipe heat shields and/or wall protection can be used to reduce these clearances. See the *Vermont Castings Installation Planning Guide* for detailed information concerning your specific installation requirements.

All chimney connections should be carefully made in accordance with all local building codes and manufacturers' recommendations.





TOP-EXIT STOVE INSTALLED IN THIMBLE THROUGH COMBUSTIBLE WALL

a) Tile liner
b) Thimble
c) Stovepipe must not extend into chimney liner
d) Proper clearance between pipe and unprotected combustible materials.
e) 2" min. between chimney and combustible materials
f) ¼" rise per foor of horizontal run
g) Clean-out tee
h) All pipe joints secured with 3 sheet metal screws
i) Stovepipe heat shield allows 10" clearance to combustible materials
j) Stove heat shield allows 10" clearance to combustible materials
k) Bottom heat shield
l) Clean-out access with tight door

Stovepipe Dampers

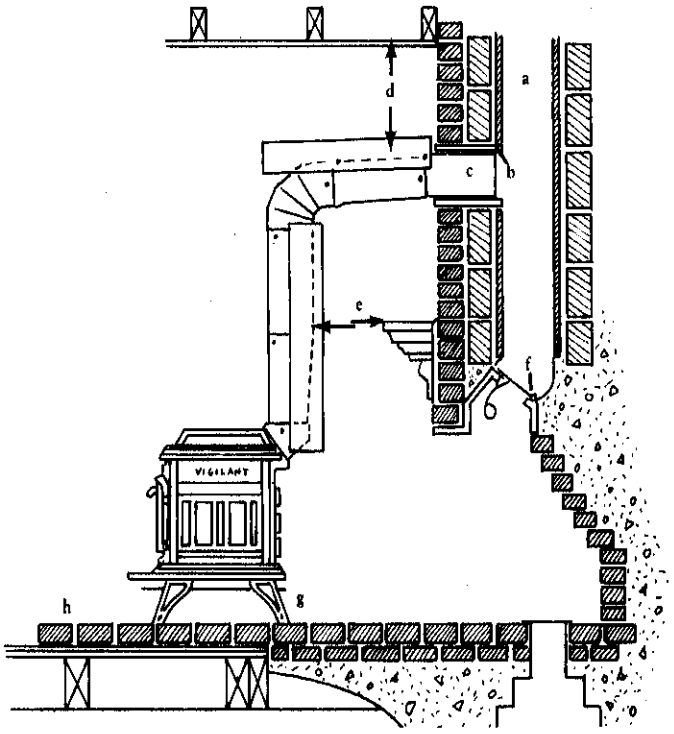
Because of the draft requirements of our stoves, we do not recommend the use of an in-flue damper. Not only is this an unnecessary restriction in the flue, but it is an additional surface directly in the path of flue gases upon which deposits can form, creating a potential hazard. Combustion air entering Vermont Castings stoves is controlled effectively by the thermostat, so no flue damper is required.

Floor Protection

Even though temperatures under our stoves are significantly lower than those to the sides of the stoves, no stove should ever be installed on a combustible surface because of the possibility of falling embers. Our stoves have generous ashlips, but some coals may escape from time to time. For this reason, and to provide heat protection to your floor, we recommend you install a hearth consisting of two sheets of ¼-inch asbestos cementboard or millboard covered by one sheet of 24 gauge galvanized sheet metal.

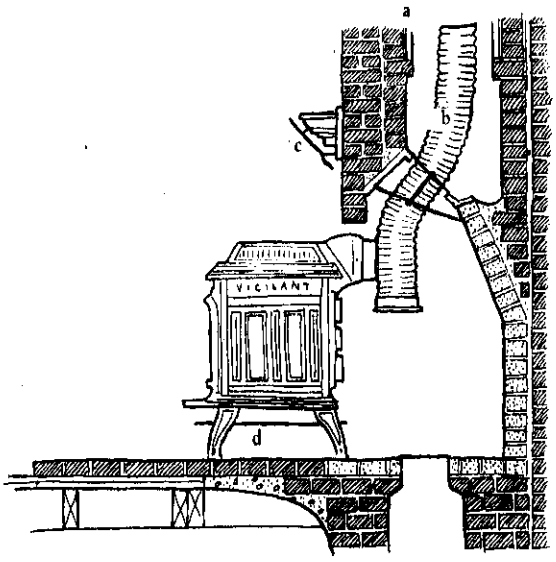
If you prefer a more decorative hearth cover than the above recommendations, the installation of an optional Vermont Castings' bottom heat shield will allow use of a variety of materials. Details concerning those options are printed in Vermont Castings' Installation Planning Guide.

We recommend that your hearth or stove pad extend a minimum of twelve inches beyond the back and sides of the stove



FIREPLACE INSTALLATION–ABOVE DAMPER

a) Tile-lined masonry chimney
b) Thimble
c) Stovepipe should not project into flue
d) Horizontal pipe heat shield allows min. 7" clearance to combustible ceiling
e) Vertical pipe heat shield allows min. 7" clearance to combustible mantle
f) Damper closed and sealed
g) Bottom heat shield protects combustibles beneath hearth
h) Hearth extension provides floor protection min. 18" from stove front, load door & 12" from stove sides



VERMONT CASTINGS STOVE-TO-FIREPLACE FLEX CONNECTOR SYSTEM

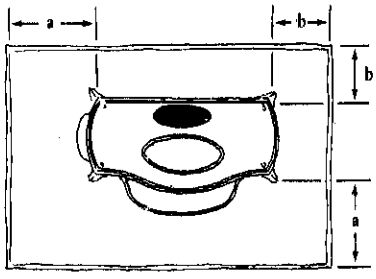
a) Tile-lined masonry chimney built to or in compliance of National Building Code standards
b) Vermont Castings Stove-to-FirePlace Flex Connector System
c) Combustible mantle protected by custom fabricated heat shield–allows 18" (460 mm) clearance to stove top
d) Bottom heat shield.
e) Hearth extension to provide min. 18" (460 mm) floor protection from stove front load door and 12" from side of stove

and eighteen inches beyond the front and loading door end. This means that the minimum hearth pad dimensions for the three stoves are as follows:

Defiant: 64 inches wide x 48 inches deep
Vigilant: 53 inches wide x 48 inches deep
Resolute: 52 inches wide x 46 inches deep

The hearth pad must also cover the floor directly under the stovepipe and extend two inches on either side of the pipe.

With the legs installed, the hearth in place, the flue connections made, and the stovepipe connections secured the only additional preparation that needs to be done is the addition of about 1½ inches of ashes or sand to the bottom of the stove as an insulating, protective layer. This should be spread evenly across the bottom of the stove to protect the bottom of the stove as well as the floor beneath from excessive heat. Ashes taken from another stove or fireplace are preferable, but sand may be used as well.



DEFIANT FLOOR PROTECTION
a = 18"
b = 12"

Wall Protection

Clearances to combustible walls can be further reduced with the use of Vermont Castings stove and stovepipe heat shields and a properly sized and constructed wall shield. Wall shields should be spaced at least one inch from the wall on noncombustible spacers. Noncombustible materials applied directly to sheet rock or wood studs are not adequate protection for a combustible wall. Even noncombustible materials will transfer heat to the combustible wall or framing members behind them. The ventilated shield should be supported one inch off the floor and, if extended to the ceiling, should stop one inch below the ceiling to allow for adequate air circulation.

A screen applied to the top and bottom of the shield will prevent any materials from lodging behind the shield and reducing its effectiveness. This screen must have a mesh large enough to allow at least 50% of the air to pass through it. The wall shield itself should consist of one sheet of one-quarter inch asbestos cementboard or millboard or any noncombustible material you prefer over a one-quarter inch sheet of asbestos cementboard or millboard.

For further information regarding wall shield sizing and construction refer to the Vermont Castings Installation Guide.

OPERATION

Please read this section carefully. Improper stove operation can create hazardous conditions and may result in damage to your stove.

Cast iron expands as it is heated and contracts as it is cooled. Like an old Model A, your wood stove requires a break-in period to allow the cast iron plates to settle in. If allowed to gradually adjust to these changes, the metal will withstand a great deal of thermal stress with no damage. Extreme, rapid temperature changes, however, may cause the castings to fracture or fatigue.

Before kindling your first fire, the bottom of the stove must be insulated with 1½" of sand or ashes. Never start a fire in the stove without this insulating layer.

Be sure to wash the oil coating off of the griddle with warm, soapy water and then towel it dry. The griddle will gradually darken as it is heated.

Wood and coal are very different fuels and require not only different types of equipment, as we have seen earlier, but also very different techniques of operation. We have separated the Operation chapter into distinct sections for each fuel. It is recommended, however, that you read both sections, as some of the information pertains to both fuels.

WOOD

The First Fire

The break-in procedure consists simply of a series of eight to twelve small to moderate fires burned in the updraft mode. Set the damper in the open (updraft) position and move the thermostat lever to open the air intake shutter. The secondary air inlet, on the left side of the Defiant, Vigilant, and Resolute, should also be left open. Build a small paper and kindling fire. After the kindling has caught well and a good draft has been established, add two or three small diameter logs to the kindling charge. Let this fire burn out and allow the stove to cool down before lighting the next fire.

DO NOT USE CHARCOAL LIGHTER FLUID, GASOLINE, GASOLINE-TYPE LANTERN FUEL, KEROSENE, OR OTHER FLAMMABLE LIQUID TO START OR 'FRESHEN' UP A FIRE IN YOUR STOVE. KEEP ALL FLAMMABLE LIQUIDS WELL AWAY FROM THE HEATER WHILE IT IS IN USE. ALSO, NEVER USE SELF-STARTING CHARCOAL BRIQUETTES.

We suggest that the damper be left open during the break-in period. The temperature generated by these small fires may not be high enough to sustain draft strength if the damper is closed. Maintain a small, lively fire. Avoid the extremes of a slow, smokey fire or a very rapid burn rate.

Daily Use

Preheat the System

Kindle every fire in the same manner as you did during the break-in period. When a moderately hot fire has been established, (500 degree stovetop temperature), you may fully load the firebox. Since a new charge of wood may slow the fire, leave the damper open until the fire has recovered sufficiently to bring the surface temperature back to at least 500 degrees. *Do this each time you add wood.* Preheating the stove and flue system before adjusting your stove for a long burn will promote efficient wood combustion and minimize creosote development.

Your stove is now ready to be set for a long burn in either the horizontal (damper closed) mode or the updraft (damper open) mode.

The Long Burn

For a long burn in the Horizontal Mode, close the damper and after 5 to 10 minutes adjust the thermostat lever to maintain the desired burn rate and heat output during the burn period. Leave the secondary cover open.

For a long burn in the Updraft Mode, leave the damper open and adjust the thermostat lever for the desired heat output. Close the secondary air cover so all incoming air will be regulated by the automatic thermostat coil. Consumption of wood may be greater, and more frequent loadings may be required when burning updraft.

Surface Temperatures

Monitor griddle temperatures with a surface thermometer. The usual operating range is 350-600 degrees, although slightly higher temperatures are all right when extra heat is needed.

Surface temperatures higher than 700 degrees are considered excessive. If any part of your stove or chimney connector glows you are overfiring. Should overfiring occur, close the air inlet shutter enough to reduce the intensity of the fire.

Daily Maintenance

Good performance depends on air flow through the stove. Every day, clear ash accumulations from the air ports in the fireback and at the left side of the stove.

Develop the habit of burning moderately hot fires twice daily for 30 to 40 minutes in the updraft mode. This will help prevent a build-up of creosote in the flue.

Loading/Fireplace Use

When the stove has been burning in the horizontal mode (damper closed), and you wish to open the doors for loading or viewing, first open the damper and air inlet. This will re-establish a fast, direct air flow through the stove into the flue and prevent smoking when the doors are opened. Check through the side or griddle door and move any wood or

coals leaning against the front doors before opening them.

When using the stove as a fireplace, always keep the spark screen in place to reduce the hazard of flying sparks or embers.

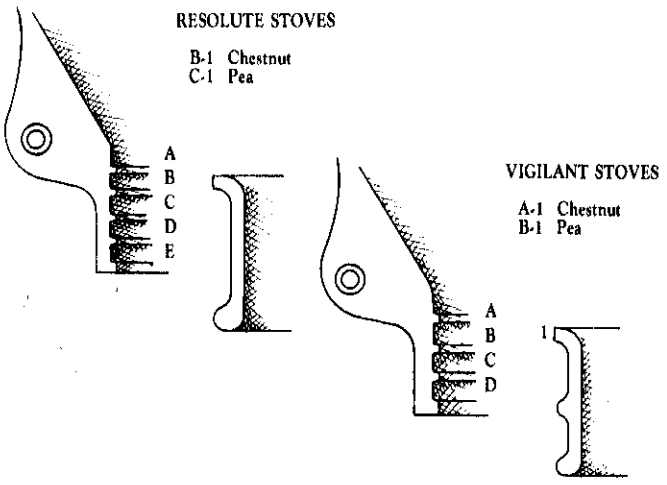
COAL OPERATION

A Precaution

Coal burning components do not require a formal break-in period. Take care, however, especially while the coal parts are new, to allow a bed of ashes to build on the grates before shaking them down. Over-shaking can result in damage to the grates. The proper shakedown procedures are detailed in the "Daily Tending" section of this manual.

Setting Up the Coal Stove

The throat of the magazine must be set at the proper position to maintain the fuel bed depth for the particular size coal you are burning. While the throat can be raised or lowered to accommodate a variety of sizes of anthracite coal, we recommend use of "nut" or "pea" sizes. The appropriate throat settings for each are illustrated below.



Since any load of coal contains a variety of sizes, some experimentation with throat settings may be helpful. Experience indicates that a throat setting as high as possible, without having coal spill over the front grate, improves heat output.

Intrepid owners, refer to your Intrepid Coal Conversion Manual for installing, starting, operating and maintaining your coal-burning stove.

Building A Fire

Anthracite coal has a higher kindling point than wood and, therefore, takes a bit longer to light. The procedure is simple but the first time around will probably take you a half hour or so to get the fire going. If you get over anxious and inadvertently put the fire out, let the stove cool, remove the front grate, shovel the coal out and start again.

WE RECOMMEND USE OF ANTHRACITE PEA AND NUT COAL FOR YOUR STOVE

Rice	**3/16"-5/16"**
Buckwheat	**5/16"-9/16"**
Pea	**9/16"-13/16"**
Nut	**13/16"-1-5/8"**
Stove	**1-5/8"-2-7/16"**
Egg	**2-7/16"-3-1/4"**
Lump	**3-1/4"-4-5/8"**

DO NOT USE CHARCOAL LIGHTER OR ANY FLAMMABLE LIQUID TO KINDLE OR RE-ESTABLISH A FIRE IN YOUR WOOD OR COAL BURNING STOVE. ALSO, NEVER USE SELF-STARTING CHARCOAL BRIQUETTES.

Crinkle up 7 or 8 pages of newspapers and stuff them over the bottom grates. Cover the paper with 5 or 6 handfuls of kindling. Short (4"-5" and thin 1" in diameter) hardwood kindling pieces work best.

Open the stove damper, light the paper, close the front doors and griddle, and set the thermostat in the wide open position.

After the kindling has caught on, add more wood until a hot fire is established. (Charcoal may be used in place of this second load of wood). Open the griddle loading door and dump a shovel full or two of coal into the magazine. The coal will snap and pop as it begins to burn.

When the coal is burning brightly add another shovel full or two. Keep adding coal a bit at a time until the whole fire bed below the magazine is filled with burning coal.

At this point you may fill the magazine to within an inch of the loading door. *Do not* poke the coal down into the magazine as doing so will prevent the coal from feeding properly.

When all the coal across the entire grate system is burning brightly, you may close the damper. This will direct the exhaust through the baffle system and encourage increased heat transfer to the iron. However, in some cases it may be helpful to leave the damper open and send more heat to the flue to promote stronger draft and increased heat output.

Adjust the thermostat lever down to a lower setting. Keep in mind that a coal fire will respond slowly to changes in the thermostat lever position. To avoid over-shooting the heat output you desire, make small changes in the setting and wait 10 or 15 minutes for the temperature to stabilize, then readjust the lever.

In the Vigilant coal stove, secondary air cannot reach the fire. Keep the secondary air port cover closed.

In the Resolute coal stove, secondary air can reach the fire and can contribute to the combustion process. The secondary air port cover may be left open or closed.

Daily Tending

Ash Handling

Since the ash content of coal is five to twenty times higher than wood (by weight), and coal is more dense than wood, you will find that ash handling is a major concern. American anthracite produces a heavy, granular ash which clings to each lump of coal. This accumulation must be removed periodically in order to sustain an efficient fire. Left undisturbed, the ash will block air flow through the fuel bed with the eventual result that the fire will die.

Your stove incorporates a double system of ash handling which will remove the heaviest build-up with ease. First, the bottom grates (or shaker grates), can be rocked to agitate the burning coal, thus loosening the ash and allowing it to drop into the ash pan. Second, a slicer/poker is provided with the stove for insertion between the front and bottom grates. Any ash or clinkers blocking the gaps between the grate teeth may be removed by sliding and jabbing the poker back and forth over the grates. Together, these two methods allow for simple, effective maintenance of an efficient coal fire.

Proper Shakedown Procedures

Generally, at a low heat setting, the ash will have to be shaken down once in the morning and once in the evening. For the higher heat outputs, 3 to 5 tendings per day may be necessary.

The shakedown should start vigorously and use the full range of the shaker handle motion. This vigorous motion should continue until most of the ash has fallen through the grates. When the incandescent coal reaches the grates, the operator will feel the resistance of the hard coal against the shaker mechanism and should reduce shaking to one-quarter of the full range motion. This shorter stroke should be continued until red coal starts to drop into the ash pan. This procedure removes the bulk of the ash before it has a chance to mix with the coal.

Before each shakedown, open the damper. If the magazine requires refueling do it after the ashes have been removed from the fuel bed. You will find that it is much easier to liven up the fire if the stove is refilled before the coal level drops below the bottom of the magazine.

To prevent any possibility of coal gases escaping into the room, open the loading door slowly. This will allow any gas in the magazine to be drawn out into the combustion zone.

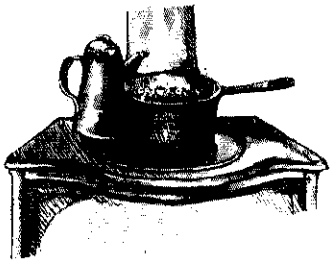
In most instances there is no need to readjust the thermostat when you refill the stove or shake down the ashes. The fire will recover to its original heat output in a few minutes, once air movement is restored through the fuel bed. If, however, the fire is very low due to ash buildup around the perimeter of the fuel bed, it's a good idea to adjust the thermostat to a higher setting, let the fire become more established, *then set the thermostat back to its original position before shaking the ashes.* Also, leave the damper in the open position. In this way you will avoid drawing fly ash into the smoke passageways and flue.

CAUTION: Over-shaking or slicing the ashes can damage coal grates. ¼" to ¾" of ash on the grates acts as an insulator to protect the iron from overheating. Stop shaking or slicing when you see incandescent coal drop into the ash pan. With a little practice, you will be able to "feel" when sufficient ash has been shaken from the coal.

ALWAYS OPEN THE STOVE DAMPER DURING THE ASH REMOVAL PROCESS. After the fire is re-established (in 15 or 20 minutes), close the damper.

Empty the ash pan at least once each day. Use the hooked end of the shaker handle to draw the ash pan out from under the grates, then lift the pan out by its bail. Be sure to wear stove gloves whenever you are doing this. To avoid having to deal with hot ash, empty the pan *before* you shake or slice down the ashes.

Ash buildup under the grates prevents air cooling of the bottom grates and will overheat and damage the grates. It is important to set up a schedule for emptying the ashes at least once a day then stick to it.



COOKING

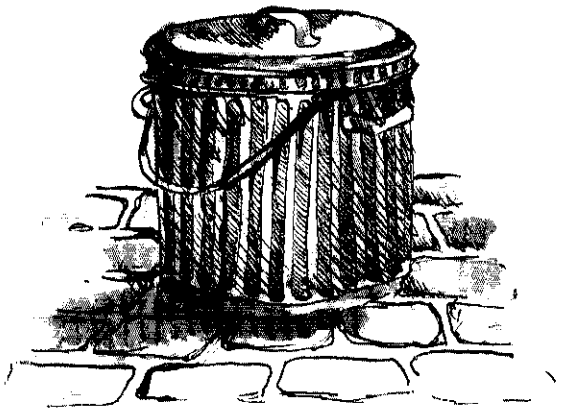
The polished cast iron griddle on our stoves is made of the same material as a good frying pan.

If you want to cook directly on the griddle surface (pancakes, etc.), curing should be completed before first use. Wash with soap and water and dry completely. Then coat the griddle with unsalted fat (preferably suet) and heat it on the stove or in a moderate oven (300°) for two hours. Wipe off the excess fat with a paper towel. The griddle should be cleaned with a rag or paper towel after each use, and from time to time with salt. If you use soap and water, make sure to dry your griddle completely.

The Defiant griddle plate is held in place by two latches on either end. Remove this griddle for cleaning only when the fire is completely out. The Vigilant and Resolute, however, are designed for top loading and their griddles can easily be removed for cleaning. Simply open the griddles fully and lift straight up. These griddles should not be removed if there is more than a small load of wood in the stove, however, as large amounts of oxygen will be drawn down into the fireplace, eliminating your control of burn rate.

Temperature control of the griddles is easily accomplished by adjusting the thermostat and the damper handle. If more heat is required, the damper can be opened, causing flames to rise upwards in the magazine and quickly ignite the preheated wood. Response to adjustment of the damper control is very rapid, approximating the response of an electric range. In the case of the Defiant, the temperature of the top is not uniform, which is an advantage. In general, the griddle plate will be the hottest part of the stove, for it is directly over the fire, and since it is ground it will transfer more heat than the other parts of the top.

MAINTENANCE



ASH REMOVAL

Wood and coal ashes must be disposed of carefully. 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, 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.

Wood

During constant use ashes should be removed every few days, or when they have built up around the air distribution ports to noticeably affect operation. This is easily done when the stove has died down with only a log or so left, as in the morning.

The lack of grates and an ash drawer was not an omission. In order to achieve the high efficiencies horizontal combustion offers, it is necessary to burn the primary fire mass in as compact and hot a manner as possible. Burning logs lying directly on a good bed of hot coals, which in turn are insulated from the cooling iron of the bottom, is the best way to do this. Grates with relatively cool air circulating underneath, tend to disperse the high temperatures required by allowing coals to fall from the fire zone. Grates make it more difficult to control oxygen flow to the fire mass.

To empty the ashes, a few shovel scoops is all that is required. They may be taken from any door which allows good access, even with a log or two still left within the firebox. Of course, one inch or so of ashes should always be left to protect the bottom of the stove from excessive heat.

Coal

Ashes should not be allowed to get so high in the ash pan that they touch the underside of the grates. When this happens, the ability of the incoming air to pass over and cool the hot metal is lost. Ash level that is in constant contact with the grates would significantly shorten their lives. Of course, it is not always possible to avoid the situation entirely, but try to minimize it.

Ash removal in the coal units simply consists of lifting out the ash pan, transferring the hot ashes to a metal container, and replacing the pan.

CHIMNEY CLEANING

Soot and creosote can ignite and burn at very high temperatures. In the event that a chimney fire should ever occur, close the damper and air inlets. Then call your local fire department.

Wood

Creosote Formation and Need for Removal

When wood is burned slowly, it produces tars and other vapors, which combine with moisture to form creosote. Creosote vapors condense in the relatively cool chimney flue, and creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire.

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

If creosote has accumulated, it should be removed to reduce the chance of a chimney fire.

Regular chimney cleaning is best accomplished using chimney brushes sized for your particular flue liner. A full line of chimney cleaning components is available directly from Vermont Castings or your local dealer. If you do not wish to clean the chimney yourself, contact a certified professional chimney sweep.

Coal

The major problem with chimneys when burning anthracite coal will be fly ash, which will form only a light coating on the sides of the lower portion of the flue. Some types of coal from certain parts of the country have been known to attack the mortar or chimney liner, because of sulphur and chlorides which can form acids. It is a good idea to thoroughly inspect your chimney on an annual basis regardless of the fuel burned.

STOVE CLEANING

Wood

Some creosote production is inevitable in airtight, slow-burning stoves like the Defiant, Vigilant, and Resolute precisely because they are such efficient heat transfer devices. You have to learn to watch for creosote, to control it, and to get rid of it.

Improperly seasoned wood and excessive operation with low, smoldering fires are two major causes of creosote production. Choosing the proper size stove for the space to be heated is your best defense against creosote.

If the stove is oversized for its heating area, it will not have the opportunity to burn at a sufficiently high combustion rate. As mentioned earlier, the lower end burning rates are less efficient, therefore more chimney deposits will be formed. A smaller stove operating at a higher burn rate will give better heat distribution, control, and efficiencies than a larger stove burning at too low a setting.

Some creosote deposits in the magazine of a horizontal combustion burner are normal and require no attention as they burn off when the stove is used as a fireplace or in updraft configuration. During each heating season it is a good idea to remove the chimney connector periodically and inspect the stovepipe and chimney for abnormal build-up. At this time it is also a good idea to touch the vacuum cleaner nozzle to each distribution port and to the air inlets.

With a normal draft—unless the ashes in the magazine have been allowed to build up too high around the ports—these will be self-cleaning and require only an annual check.

Coal

Although coal does not form creosote, soot and fly ash does form and must be removed periodically from exhaust and passageways. The end of the heating season or the beginning of the next is a good time to remove any deposits. The baffle system of both the Vigilant and Resolute is accessible with removal of the flue collar.

For Vigilant Stoves:

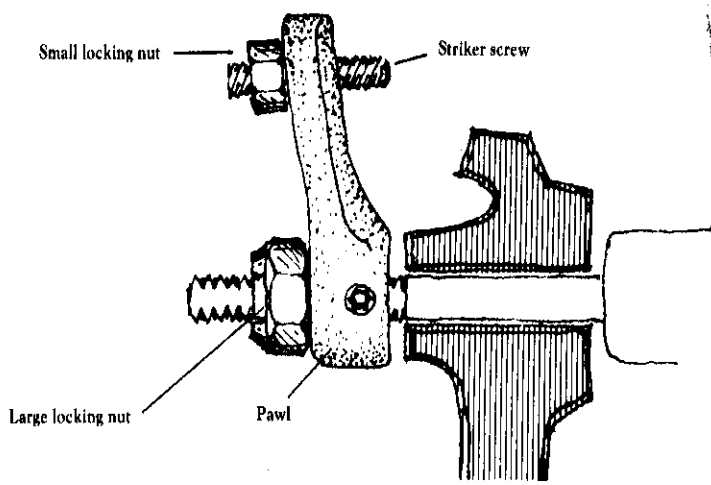
To clean behind the exhaust manifold remove the exhaust cover. Follow the instructions found in the Vermont Castings Coal Stove manual which came with your coal kit or coal stove. You will need to remove only the front, left, right and bottom grates in order to have access to the exhaust cover.

For Resolute Stoves:

To clean behind the exhaust manifold remove the front grate, the right grate and the upper exhaust manifold as shown in the Vermont Castings Coal Stove Manual. Also, at this time the ash pan should be removed and the bottom of the stove cleaned. Inspection of the wear parts should also be made. These are the bottom and vertical grates which contain the coal within the fuel bed, and the throat which is the lower adjustable portion of the magazine. All of these parts are easily removable and after several seasons, should they show degradation or failure, they are available for purchase from us. These parts have a special metallurgy to resist attack by the high temperatures and corrosive effects of the burning coal.

Gaskets

Gaskets in good condition provide a seal around the doors and griddle opening of the stove. If over a period of time you notice that the gaskets have become worn or frayed they should be replaced with Vermont Castings brand gaskets.



Handles & Latches

The door latches were carefully designed to permit easy adjustment, ensuring an airtight fit over the years. We have included a 1/8-inch Allen wrench to help you. After a period of time the gasketing may compress and you will want to tighten the latch mechanism. Loosen the small locking nut on the striker screw. Tighten the screw a turn or two with the small Allen wrench, and retighten the locking nut. The large locking nut holds the pawl on the shaft and should not require any adjustment.

A large Allen wrench (5/32 inches) is included in the Defiant and Vigilant to allow you to tighten the damper handle should it work loose after extended use.

Glass Doors

Depending upon the mode of burning and rate of burn, carbon deposits may form on the **inside** of the glass. Hot, updraft fires help keep glass clean, while slow side draft fires are likely to cause soot to form. It is important that the glass be completely cooled as any cleaning agent applied to hot glass may permanently etch it. Once the glass is cool, any common glass cleaner will do the job. Remove all traces of cleaner and dry the glass before firing the stove. If the glass is ever damaged, replace it immediately with Vermont Castings high temperature glass which is specially designed for safe stove operation.

Some glass cleaning agents may discolor porcelain enamel surfaces, so wipe any spills immediately.

FUEL STORAGE

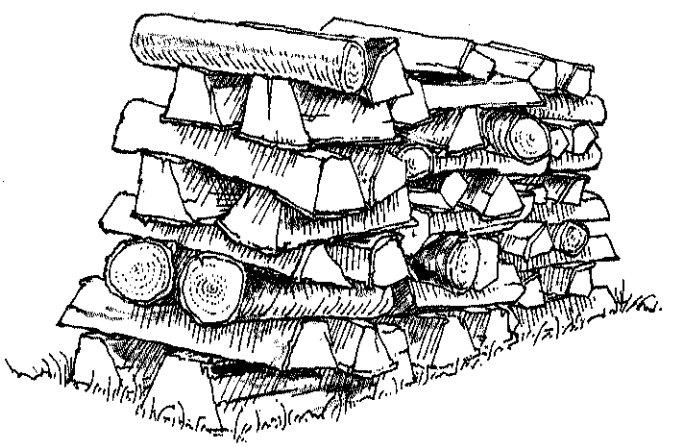
Your Wood Pile

Wood which is excessively wet will reduce the heat output of your stove. It takes approximately 1000 BTU's just to evaporate one pound of water out of the wood. This means roughly that a cord of wood dried only to a 50% moisture content can have over 120 gallons of water in it which will need to be evaporated before there is heat available to your home.

Split lengths of dense hardwood should be dried under cover for at least eight months, though a year is preferable. This air drying of wood will usually allow the moisture content to drop as low as 15-20%, an ideal moisture range for efficient combustion.

Although this is seldom a problem, wood which is excessively dried is also undesirable for the volatiles are released so rapidly that they cannot be adequately mixed with oxygen and will escape unburned up the flue where they will condense and cause deposits of creosote.

Wood grows outward from the center in a series of concentric cylinders or rings. When wood dries, water moves in the spaces between the cylinders ten times faster than it does across or through the cylinder walls. This means that unsplit wood dries only through the ends of the logs. Large and long logs should be split to expose the spaces between the rings in order to aid the drying process. It really does not help too much to cut the wood and let it dry for a summer and then split it just before use.



Wood should not be cut too small, as this speeds up the gasification process and causes it to burn too quickly. If you are having trouble getting the stove to hold a fire for as long as you would like, perhaps your wood is too small. Anything over twelve inches long and four inches measured across the end of the log will do. The stoves work well with as large a piece of wood as can be fit in. Irregular shapes with stubs of branches that hold the logs apart are not good, and rotten wood is the worst. Burning and rotting are similar chemically; so, in effect, rotten wood is partially consumed and has already given up some, if not most, of its heat value.

Under no circumstances should a piece of wood with ice or snow on it ever be put into any stove. The sudden thermal shock can crack the iron. Leaning an ice-covered piece against the stove to melt the ice is also likely to cause damage. This abuse that causes damage to the stoves is not covered by our limited warranty.

Storing Your Coal

Coal can be easily stored in bags, boxes, loose in an outdoor covered shed, or in your garage or basement. A ton of anthracite coal requires only about a 3 x 3 x 4 foot high bin for storage. Space should be left around the bin, however, for easy access and handling of the coal.

Store the coal any place where it will remain cool and dry. Although coal has an inherent moisture content of only about 2% and does not "take on" moisture when wetted, if allowed to sit exposed to the rain and snow it will become difficult to handle and kindle. If the coal were to freeze this moisture would make it almost impossible to shovel. For this reason we recommend that your storage bin provides a floor or bottom and is under cover.

Keep your coal bin free of combustible materials such as old papers or scrap wood used for kindling.

Purchase your anthracite coal in the summer or order in the summer for a fall delivery. Your local coal dealer will appreciate the advance order and you will be assured of supply during the early months of the heating season when coal dealers are the busiest.

TROUBLE-SHOOTING

The stove does not hold a fire as long as you would like it to:

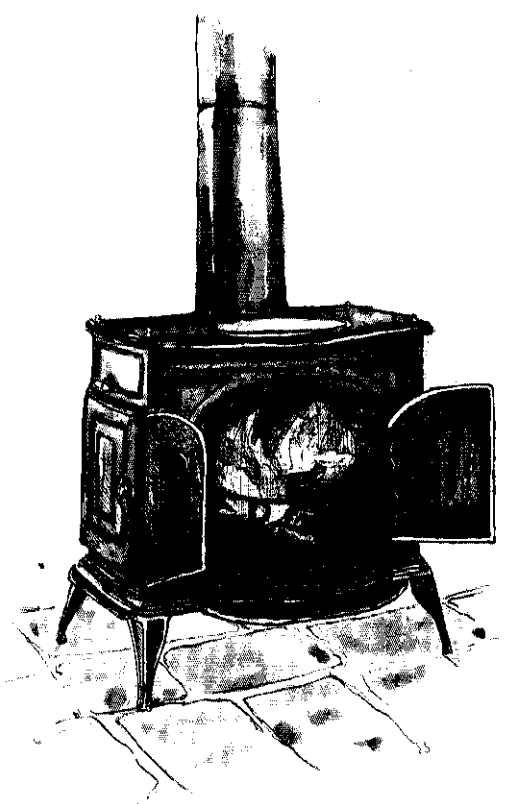
Check the thermostat adjustment. When the stove is warm (too hot to touch, but not overly hot) move the thermostat lever to its lowest setting. Does the inlet air damper close? If not, then adjust the ball chain at the bottom down a ball or two and try again.

Perhaps your wood is too small in diameter or too short, as was mentioned earlier, and the charge is just burning too quickly. Burning soft woods such as pine will significantly reduce the burn time because they will combust at a more rapid rate than hardwood. Maximum burn time is achieved by burning hard wood cut to proper length.

Did you remember to close the damper and adjust the thermostat? It is very easy to forget these two things.

Check the gasketing. Perhaps a piece of charcoal has dislodged or compressed the gasketing so that the door has lost its seal. In time the door latches will need to be tightened, a procedure which is explained under "Maintenance."

It is possible (though it happens rarely) that you have excessive draft. This usually occurs with a tall interior masonry chimney that is located so that prevailing breezes constantly blow across the top, as in the case of a house located high on a hill or near the shore. Should this prove to be the case, first experiment with closing down the secondary air control slightly. Easy does it here. A 30 percent closing is probably all that it will require. In extreme cases, try installing a flue damper to partially restrict the draft.



The stove smokes as a fireplace:

Chimney deposits may have built up in the stovepipe or chimney and are restricting the draft. Remove the pipe and clean. Is there another stove or heating device on the same flue?

How tight is your house? Sometimes new homes are constructed and insulated so effectively that a sufficient volume of oxygen is not available for the burning process. Try opening a window a crack. If this solves your problem, then you know your house is too tight and outside air will have to be introduced.

In moderate weather establish a strong fire with the front doors closed, then open the front doors to the fireplace mode. This will prime the installation to maximize the draft.

Back Puffing:

In the spring you will notice your draft is less strong. If you experience back puffing during unusual weather conditions, you may have temporarily lost the chimney draft. To regain a positive draft open the damper and adjust the thermostat to the open position. This condition can be prevented by closing the secondary air control and leaving the stove on updraft. Cold weather back puffing usually is a result of gusts of wind and can be partially avoided by the use of a chimney cap.

Reduced Heat Output

A reduction in the heat output of your coal stove is usually due to an insufficient oxygen supply. Combustion air is not being evenly distributed through the fuel bed. Commonly, improper or infrequent shaking has allowed ash accumulation to inhibit air flow through the fire mass. The air supply, however, may also be restricted by blockage of the air port. Be sure to clear ash out from between the ash pan and fireback when you empty the pan.

Occasionally, a difference in heat output will be noted between different coal types. Depending on the ash content, one type of coal may require more frequent shaking than another. If you or your supplier changes the type or brand of coal during the heating season, be prepared to adjust your stove tending habits according to the properties of that coal.

The coal fire burns up into the magazine:

Normally, the magazine fuel supply system will automatically supply the proper amount of coal to keep the combustion zone at the proper level. From time to time you might notice that the fire tends to burn up into the magazine. This will happen if:

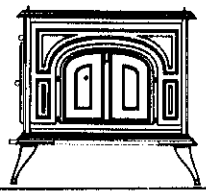
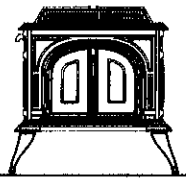
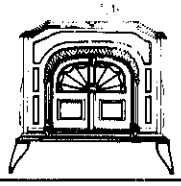
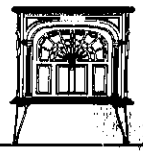
A) You let the level of fuel in the magazine get to low.

B) Air is leaking in through the loading doors.

C) Your coal is too large for the magazine throat position you have chosen. Raise the height of the throat by one position.

Fill the magazine each time you shake or slice the ashes down. Be sure there are no loose chips of coal holding the inner loading door open.

Which stove is right for you?

SPECIFICATION	DEFIANT	VIGILANT	RESOLUTE	INTREPID
Maximum heat* output	60,000 BTU/hr.	50,000 BTU/hr.	40,000 BTU/hr.	25,000 BTU/hr.
Space Heated**	Up to 10,000 cubic feet	Up to 8,500 cubic feet	Up to 7,000 cubic feet	Up to 4,500 cubic feet
Fuel Capacity	80 lbs.	60 lbs.	50 lbs.	22 lbs.
Size & Type of Fuel	24" wood logs	18" wood logs	16" wood logs	16" wood logs
Loading	side & front	top or front	top or front	top or front
Flue collar size	8"	8"	6"	6"
Flue Exit Positions	top or rear	adjustable top & rear	adjustable top, rear & 45°	adjustable top & rear
Primary Air Control	thermostat	thermostat	thermostat	thermostat
Stove Weight	354 lbs.	295 lbs.	253 lbs.	200 lbs.
Porcelain-Enamel Finish	-	optional	optional	optional
Glass Door Panels	-	optional	optional	standard
Water-Heating Capability	yes	yes	yes	no
Rear & Bottom Heat Shields	optional	optional	optional	optional
Mitten Racks	optional	standard	optional	optional
Height				
Top Exit	33 5/8"	31 3/4"	28 1/4"	25"
Rear Exit	31 1/2"	31 3/4"	25 1/2"	23 3/4"
Width	34 1/2"	28 1/4"	25 1/4"	21 1/4"
Depth	18"	19 1/2"	17"	18"
Coal Conversion	-	yes	yes	yes
Maximum Heat Output*	-	45,000 BTU's/ hour	35,000 BTU's/ hour	20,000 BTU's/ hour
Space Heated**	-	Up to 7,500 cubic feet	Up to 6,000 cubic feet	Up to 3,500 cubic feet
Fuel Capacity	-	38 lbs.	32 lbs.	22lbs.
Loading	-	top	top	top
Size & type fuel	-	Anthracite pea, nut	Anthracite pea, nut	Anthracite pea, nut
Stove weight with kit installed	-	393 lbs.	306 lbs.	225 lbs.

All other specifications same as wood-burning models.

* These values can vary depending on how the stove is operated, the type and moisture content of fuel used, as well as the design, construction, and climatic location of your home. Figures are based on maximum fuel consumption obtained under laboratory conditions and on average wood and coal stove efficiencies.

** These values are based on operation in building-code conforming homes under typical winter climate conditions in New England. If your home is of non-standard construction (e.g., unusually well-insulated, not insulated, built underground, etc.) or if you live in a more severe or more temperate climate, these figures may not apply. Since so many variables affect stove sizing, consult your Vermont Castings representative to determine which model is right for your home.

The Defiant, Vigilant, Resolute and Intrepid have been tested to Underwriters Laboratories standard ANSI-UL 737 and UL 1482 by independent laboratories. The Defiant, Vigilant and Resolute are listed with the following building official organization: Building Officials & Code Administrators, Inc. (BOCA), Southern Building Code Congress International, Inc. (SBCCI) and The International Conference of Building Officials (ICBO).

The DEFIANT® Parlor Stove, Can. 1058465, 1076441, 1076442, 1076443, 1150577, GB 1590772, Taiwan 14789 U.S. & For. Mech. Pats. Pend. Des. Reg. G.B. 983450, Ire. 4155, Switz. 109721, France 81.11942. The distinctive appearance of the DEFIANT® is a registered trademark of Vermont Castings, Inc., U.S. TM Reg. No. 1,195,615.

The VIGILANT® Parlor Stove, U.S. Des. Pat. 250203 & Mech. Pat. 4,221,207 Mech. Pat. Bel. 865139, Can. 1088831, 1092921, 1092922, 1092923, 1092924, GB 1590771, Switz. 621,618. Des. Reg. G.B. 983077, Can. 43465, Ire. 4694, Switz. 109750, Benelux 03873-00, France 76433, Austria 373373, France 78.08186, Sweden 7802505-3. Mech. Pat. Pend. G.B., Can., W.Ger., Ire., Den., Norway, Holl., U.S. & For. Mech. Pats. Pend. on Coal Burning Vigilant® Taiwan 14432, Can. 1150575, Bel. 889519. The distinctive appearance of the VIGILANT® is a registered trademark of Vermont Castings, Inc., U.S. TM Reg. No. 1,195,615.

The RESOLUTE® Parlor Stove, Mech. Pat. U.S. 4279238, Taiwan 13436, Des. Pat. U.S. D262398, D260032, D260033, D260034, D260284, D260285, D260286, Taiwan 3223. Des. Reg. Austria 519,738, France 801308, G.B. 994437, W. Germany MR 16,643, Ire. 4956, Denmark, 222-1981, Norway 81,1881, Sweden 27731, India RD 149424, Benelux R.D. 7039-01-02, Korea RD 31,507, Can. RD No. 47730 (1980), U.S. & For. Mech. Pats. Pend. on Coal Burning Resolute®, Taiwan 14505. For. Mech. & Des. Pats. Pend. Des. 1979 Vermont Castings, Inc.

The INTREPID® Parlor Stove, U.S. & For. Des. & Mech. Pats. Pend., Mech. Pat. Taiwan 19011. Des. Reg. GB 1007039, NZ 18001, Can. 51291, France 824151, W.Ger. MR 20331, Ire. 5778, Switz. 112795. The distinctive appearance of the front of the Intrepid® is a registered trademark of Vermont Castings, Inc. U.S. TM Reg. No. 1,195,615. Denmark 746-1983

Vermont Castings®, Prince Street, Randolph, Vermont 05060 (802) 728-3111

© Copyright 1984 Vermont Castings, Inc.

We are proud of our stoves and proud of the heritage of cast iron stoves which have warmed so many Vermont farm houses over so many generations. We have tried to maintain that tradition while furthering the art of home heating. The design of our stoves, inspired by the architectural history that surrounds us in these small northern communities, depicts the Federal period of the early 19th century, the same period which contributed so many of the graceful churches that overlook our town greens.

Should you have any questions on the use and maintenance of your stove, please contact us. Our Customer Relations Department will continue to provide assistance and advice to you for as long as you own your Vermont Castings stove.

Finally we would like to hear your thoughts and suggestions. We recognize that the purchase of a wood or coal burning stove is a serious investment, one that warrants careful consideration and the comparison of other stoves with ours. We hope in your search you found, as we did, the need for stoves like the Defiant, the Vigilant, and the Resolute long overdue.

SBCCI 8347
BOCAI 82-76
ICBO 3797

CERTIFICATION AND WARRANTY.

All Vermont Castings' products have been thoroughly tested for safety in our testing laboratory and by nationally recognized, independent safety testing laboratories.

The DEFIANT® has been tested and listed to Underwriters' Laboratories Standard 1482 by Arnold Greene Testing Laboratories, Inc., Natick, MA 01760.

The VIGILANT®, RESOLUTE®, AND INTREPID® have been tested and listed to UL 1482 by R. F. Geisser and Associates, Inc., Consulting Engineers Laboratories, East Providence, RI 02914.

The Defiant, Vigilant, Resolute and Intrepid stoves are listed with Building Officials and Code Administrators International, Inc. (BOCA Report #82-76), Southern Building Code Congress International, Inc. (SBCCI Report #8347), and International Conference of Building Officials (IBCO Report #3797).

The FirePlace Insert™ has been tested to UL 1482 and to ULC S628M-1982 and listed by Underwriters' Laboratories of Canada, 7 Crouse Rd., Scarborough, Ontario, Canada M1R 3A9. The Vermont Castings FirePlace Insert™ is listed with Building Officials and Code Administrators International, Inc. (BOCA Report #82-76).

Other municipal listings that apply to Vermont Castings' products are available by request.

All building code group listing reports are subject to re-examination, revisions and possible cancellations.

The above information, a well as other important items such as the serial number, are located on a metal plate affixed to the back of the stove. Read this label; should you install a heatshield, remember the label's location.

VERMONT CASTINGS, INC.®
Prince Street, Randolph, Vermont 05060
802/728-3111

© 1984, Vermont Castings, Inc. 10/84 #20912
Printed in U.S.A.