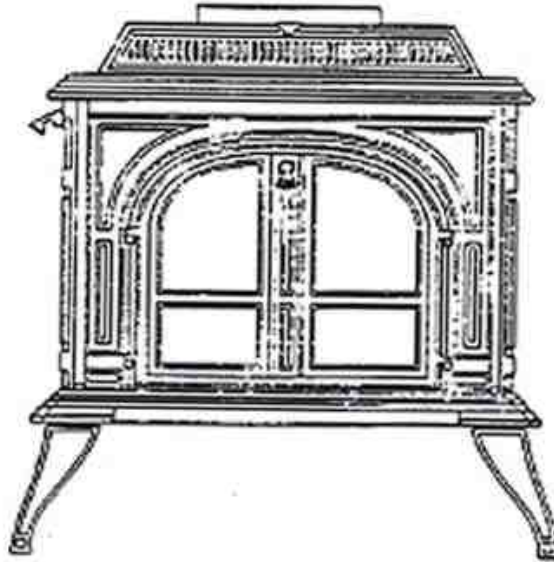


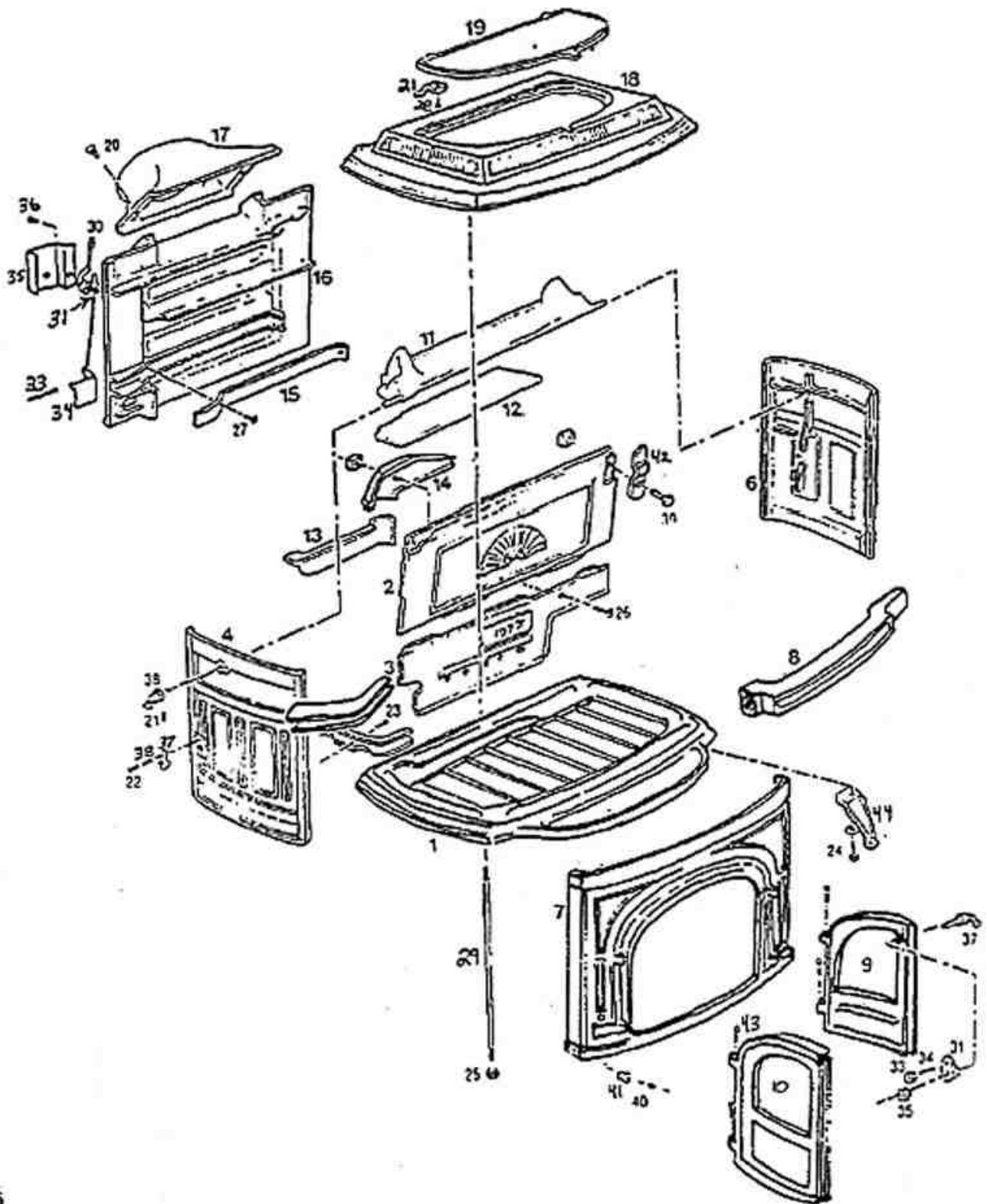
VIGILANT II WOODSTOVE



This section deals with Vigilants manufactured after September, 1984. There have been only a few modifications made to the Vigilant II after its inception. The parts shown in the exploded view and parts list in this section are for current production models. For an explanation of the changes made to this model refer to the History of the Vigilant section of this manual. To obtain ordering information for outdated replacement parts, refer to the Parts and Price List located at the beginning of this manual.

1. Exploded View Stove Part Diagram and Tap Guide
2. Exploded View Stove Key
3. Directions for Entire Interior Plate Disassembly and Assembly
4. Directions for Complete Refurbishment
5. Individual Part Replacement Instructions:
 - A. Top Plate
 - B. Bottom Plate

VIGILANT II EXPLODED VIEW DIAGRAM

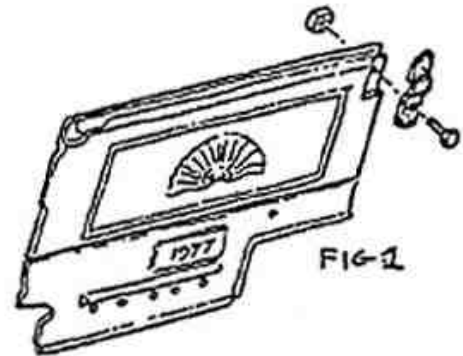


DISASSEMBLING THE VIGILANT II - INTERIOR CASTINGS

All instructions given are looking at the front of the stove. Be sure to wear protective eye glasses and a particle mask for safety.

Step 1 - Preparation

- Remove griddle, flue collar, doors. Close the damper (handle pointing down, damper vertical). Using vise grips, hold the 1/4-20 nut behind the upper fireback and unscrew the cap screw to remove the damper retainer. (Fig. 1).



Step 2 - Remove the Damper & Smokeshelf

- Unscrew the allen screw with 5/32" allen wrench and remove the damper handle.

- Slide the damper to the right, angle it up and back to clear a small ridge in the back plate. Disengage the damper shaft from the left end then swing it in front of the upper fireback and angle the damper out through the front door opening. (Fig. 2).

- Lift the Smokeshelf.

Step 3 - Remove Upper & Lower Firebacks

- Remove the primary air tube from the left end. You may need to use penetrating oil, or tap the screwdriver with a hammer to loosen the screw.

- Lift the upper fireback to disengage it from the tabs on the lower fireback, and guide it out of the support ridges in the right and left ends. Direct it out through the front door opening or griddle.

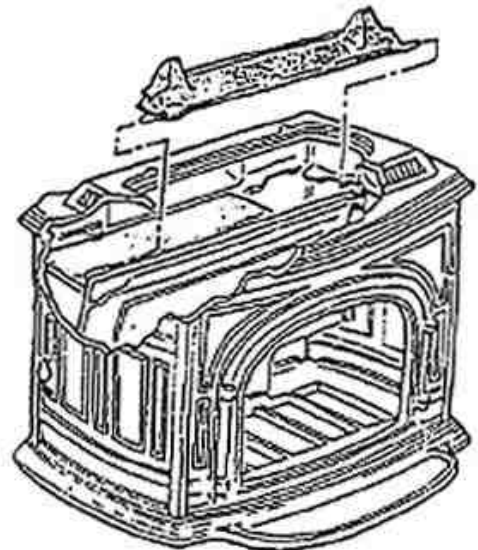


FIG. 2. REMOVE DAMPER and SMOKESHELF

- Tap the lower fireback with the rubber mallet to break the cement seal holding it in place. Lift first the right then the left sides of the lower fireback up and over the support ridges in the right and left Ends. Angle it out the front door opening or griddle. (Fig. 3.).

- Remove Coverplate "A"

YOU HAVE NOW COMPLETED THE DISASSEMBLY
OF THE INTERIOR CASTINGS.

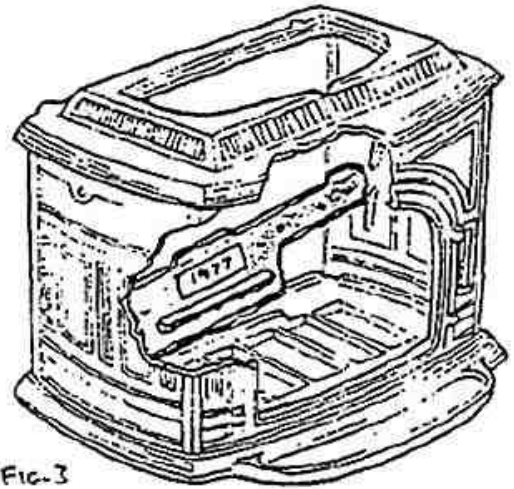


Fig-3

ASSEMBLING THE VIGILANT II INTERIOR CASTINGS

Step 1 - Interior Casting Assembly

- Cement coverplate A in the channel surrounding the air inlet (Fig. 10).
- Replace coverplate A in its channel in the bottom plate (Fig. 11).
- Cement the coverplate ridge on the back of the lower fireback. Attach coverplate B (Fig. 12). Leave the screw loose so that when the lower fireback is replaced, coverplate B will overlap coverplate A.
- Replace the lower fireback by angling the left side in through the front door opening. Place that side onto the guides in the left end plate. Then lift the right side of the fireback to slip it back over a single ridge running approximately half way up the inside of the right end (Fig. 13). Since you are also pressing the coverplate into position, this step is the most difficult and may take several tries. Set the lower fireback down into the bottom plate with a few taps from the rubber mallet. When coverplate B and the lower fireback are in place, tighten the screw and nut holding coverplate B.
- Guide the upper fireback through the griddle opening, left side first. Hold the fireback in its normal position and lift it up and over the tabs in the lower fireback while guiding it into the support ridges on first the left, then the right end. Again, set the upper fireback with the rubber mallet. Replace the smokesheff.



FIG. 10 CEMENT COVERPLATE A

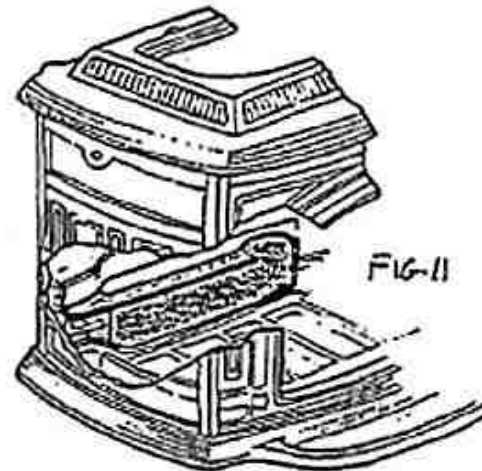


FIG. 11 REPLACE COVERPLATE A



FIG. 12 CEMENT COVERPLATE RIDGE ON BACK OF LOWER FIREBACK

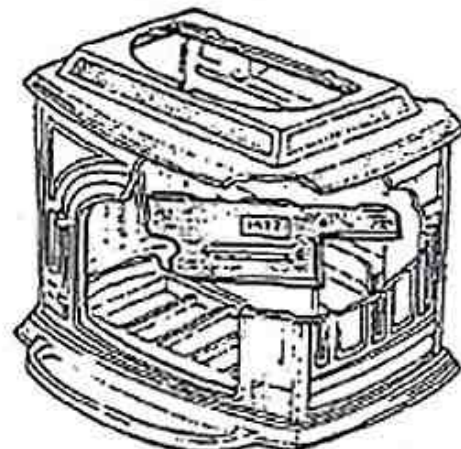


FIG. 13 REPLACE LOWER FIREBACK

Step 2 - Replace the Damper

- Holding the damper at a 45 degree angle, put the right end of the damper up and as far back into the upper right corner of the stove as possible. This will allow space to swing the damper shaft up over the upper fireback: Now you will be able to pass the damper shaft through the hole in the left end.

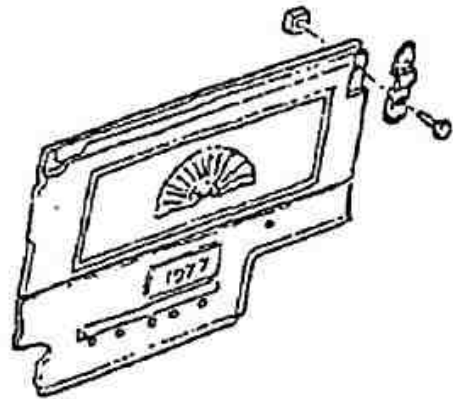


FIG. 14 INSTALL DAMPER RETAINER

Step 3 - Install Damper Retainer Clip

- Replace the damper handle. Close the damper (handle pointing down, damper vertical). Hold the 1/4-20 nut behind the upper fireback while securing the damper retainer into place (Fig. 14).

Step 4- Install the Primary Air Tube

- Replace the primary air tube on the left end. (Fig. 15).

- Replace the damper handle and you have completed the assembly of the interior castings.

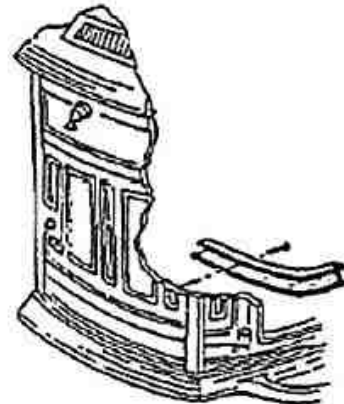


FIG. 15 REPLACE PRIMARY AIR TUBE

DIRECTIONS FOR COMPLETE REFURBISHMENT OF VIGILANT II

All instructions given are looking at the front of the stove. Be sure to wear protective eye glasses and a particle mask for safety.

Step 1 - Preparation

Lift the Vigilant off the floor onto a stand.

Remove the legs with a 9/16" socket wrench. Remove the griddle, front and loading doors, damper handle, thermostat assembly, and all accessories from the stove.

Use a winch strap or rope to securely hold the front, rear and side plates together.

Step 2 - Replace Door Gaskets, Door Pins, and Clean the Handle Mechanism

Regasket the front doors following the instructions given in basic repair section of this manual.

Replace the door pins if necessary. BE CAREFUL when knocking door pins out not to fracture the cast door bosses.

Check the movement of the door handles. If the handles are stiff, remove and clean the handle shaft and handle hole. The door handle hole can be cleaned with a 3/8" drill bit. Wire brush the door latch mechanism.

Step 3 - Remove the Top Plate

- NOTE: When removing plates that are cemented together, always use a rubber mallet or hammer and block of wood. Do not hammer on any casting with a metal hammer.

- Using a 7/16" Deep Socket wrench, unscrew and remove all four Tie Rod Nuts. The nut may come off, or the Tie Rod may become unscrewed from the Top Plate. Either case is all right.

- Tap upward around the edges of the Top Plate with the rubber mallet (Fig. 4). Lift the Top Plate off with any Tie Rods attached. Set aside the Top Plate for cleaning.

- Unscrew the Tie Rods with vise grips held as closely as possible to the Top Plate; you want to avoid any possibility of the Tie Rods breaking off inside the Top Plate. Soaking the Tie Rod threads with penetrating oil is helpful.

-In the event the Tie Rod breaks off, follow the heli-coil instructions given in the basic repair instructions.

Step 4 - Remove the Interior Castings

- Follow the instructions given in the Disassembly of the Vigilant II Interior Castings section of this manual.

Step 5- Remove the Remaining Exterior Castings

- Loosen the cemented seams by tapping outward along the upper edges of the four side plates.

- When the seal is broken, lift out the exterior castings in this order: Front - Left End - Right End - Back.

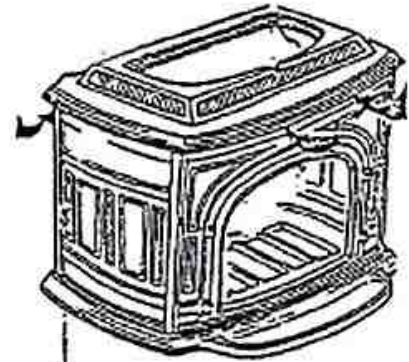


FIG. 4 HAMMER UPWARD TO LOOSEN TOP PLATE

Step 6 - Cleaning

- The cement channels in each cast iron plate will have to be cleaned of furnace cement and soot. A hammer and narrow chisel or screwdriver usually performs this operation very easily. Also, concentrate on any edges that will fit back into a cemented channel as you find excess dried cement there as well.

- Any plates caked with excessive creosote should be brushed clean.

Step 7 - Cement Exterior Castings

- Tape the Leg Bolt holes with masking tape to prevent them from filling with furnace cement.

- Cement the five channels on the Bottom Plate for placement of the Front, Back, Right End, Left End, and Coverplate A (Fig. 5).

- Cement the side channels on the Right End and the Left End.

Step 8 - Install the Exterior Castings

- Replace the outer castings in the following order: Back Plate, Right End overlapping the edge of the Back Plate, Left End overlapping the edge of the Back Plate, and Front Plate overlapping the edges of the Right and Left Ends.

- Hammer along all the edges and particularly upper corners of the outside castings to set them securely in place.

- Use a winch strap or rope to securely hold the front, back and side plates together.



FIG. 5 CEMENT CHANNELS IN BOTTOM

Step 9 - Install the Interior Castings

- Follow the instructions given in the Assembling the Vigilant II Castings section of this manual.

- NOTE: Before installing the Top Plate, check to see that the damper opens and closes smoothly and easily. If you find interference, check to make sure the firebacks are seated properly. Also, you may have to grind the recessed area in the upper fireback, which allows for the rotation of the damper. Most binding dampers are caused by friction at this point.

Step 10 - Install the Top Plate

- Set the four Tie Rods in place through the holes in the Bottom Plate with the longer threaded ends pointed down. The Tie Rods can rest on the floor while the Top is being replaced.

- Cement the four channels in the Top Plate (Fig. 8).

- Set the Top Plate in place; hammer the top edge of all the side plates and the Top Plate to make sure that all are set securely into the channels.

Step 11 - Install the Tie Rods

- Thread the Tie Rods into the Top Plate and hand tighten. Thread the nuts a few turns onto the bottom of the Tie Rods. (Fig. 9).

- With vise grips, hold the bottom of the Tie Rod and tighten further into the Top Plate. Tighten the nuts with a 7/16" deep socket. Repeat this alternate tightening with each nut. When the Tie Rod feels secure, wrench the protruding end back and forth with the vise grips to break it off just below the nut. (This step is necessary to allow the replacement of the legs). Repeat for the other three Tie Rods.

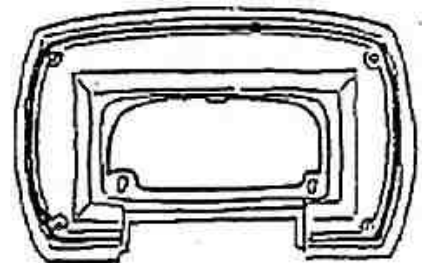


FIG. 8 CEMENT CHANNELS IN TOP PLATE



FIG. 9 REPLACE TIE RODS

Step 12 - Finishing

- Remove excess furnace cement that has squeezed from the seams onto the outside of the stove with a putty knife. Smooth furnace cement remaining in the seam with a wet cloth, achieving a uniform finish.
- Repaint the stove
- Re-gasket the doors
- Wire brush & oil the griddle
- Reattach the hardware: Damper handle, secondary air tube cover, thermostat assembly.
- Reattach the front doors.
- Adjust the striker bolts on the door latches for a snug fit. Do not over-tighten the door latch as this tends to pull the bottom of the doors outward.
- Check the door fit with a drop light inside the stove. Use shim gasketing techniques to seal any irregularities. (For shim gasketing techniques, refer to the basic repair section of this manual).

VIGILANT II TOP PLATE REPLACEMENT

Step 1 - Preparation

- Raise or lift the stove onto blocks or a stand so that the legs are off the floor.
- Remove the legs using a 9/16" socket or open end wrench.
- Clean the stove bottom of all insulating sand or ash.
- Remove the flue collar, griddle, and front doors.
- Remove the primary air tube on the left end.
- Tie a rope securely around the stove to prevent breakage of the end seals when the top plate is removed.

Step 2 - Top Plate Removal

NOTE: When removing plates that are cemented together, always use a rubber mallet or hammer and block of wood. DO NOT hammer on any casting with a metal hammer.

- Using a 7/16" deep socket, unscrew and remove all four tie rod nuts underneath the bottom of the stove. The nut may come off, or the tie rod may become unscrewed from the top plate. Either case is all right.

Tap upward around the edges of the top plate with a rubber mallet. (Fig. 1)

- Lift the top plate off with the tie rods attached.

Step 3 - Top Plate Installation

- Cement the perimeter of the new top plate in the appropriate channels. (Fig. 2).

- Set the four tie rods in place through the appropriate holes in the bottom plate with the longer threaded ends pointing down. The tie rods can rest on the floor while the top plate is being replaced. If the stove is higher off the floor than the length of the tie rods, install the top plate and then feed the tie rods up through the holes in the bottom plate.

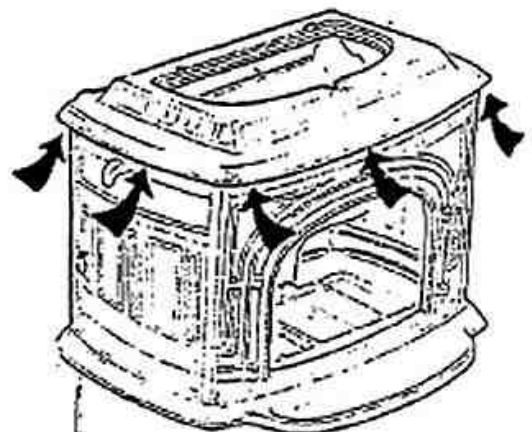


FIG. 1

⑨ HAMMER UPWARD TO LOOSEN TOP PLATE

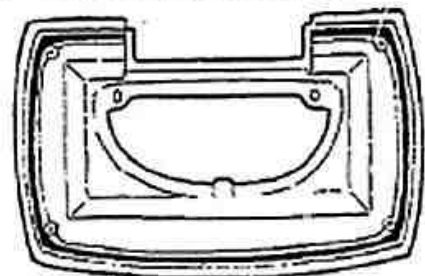


FIG. 2 CEMENT TOP PLATE

Step 3 - Continued

- Set the top plate in place; hammer the top edge of both the side plates inward and the top plate down to make sure that all are set securely into the channels.

Step 4 - Install the tie rods

- Push the tie rods up into the top plate and hand tighten into the appropriate threaded holes.

- Screw the hex nuts a few turns onto the bottom of the tie rods.

- With vise grips, grip the bottom of the tie rod and tighten further into the top plate.

- Tighten the hex nuts with the 7/16" deep socket. DO NOT OVERTIGHTEN as the tie rods may strip out of the top plate which will require removal of the top and use of a heli-coil. When the tie rod nut feels secure, wrench the protruding end below the nut back and forth with the vise grips to break it off. This step is necessary to allow replacement of the legs. Repeat for the other three tie rods.

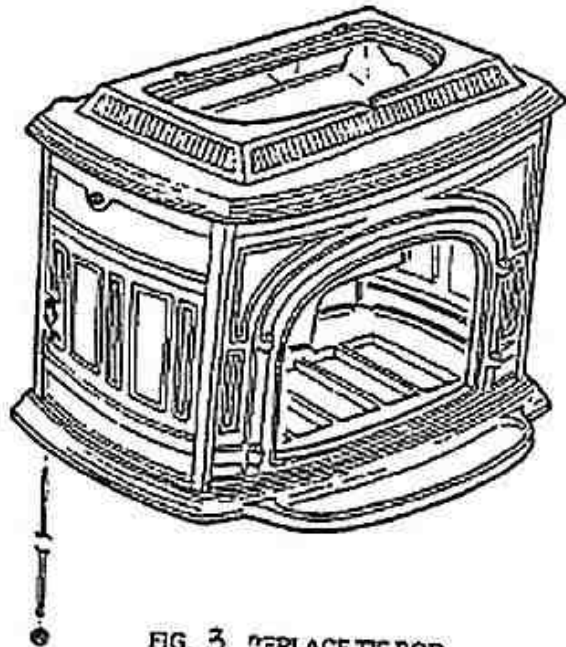


FIG. 3 REPLACE TIE ROD

Step 5 - Finishing

- The furnace cement sets up fairly quickly. It is necessary to clean the underneath seam of the top plate with a wet rag. Wipe the seam with a dry rag before repainting.

- Replace the flue collar gasket using 5/16" fiberglass gasket and gasket adhesive.

- Screw the flue collar on.

- Replace the primary air tube onto the left end.

- Paint the new top plate and touch-up the remainder of the stove where necessary.

- Replace the front doors and griddle.

VIGILANT BOTTOM PLATE REPLACEMENT

Step 1 - Preparation

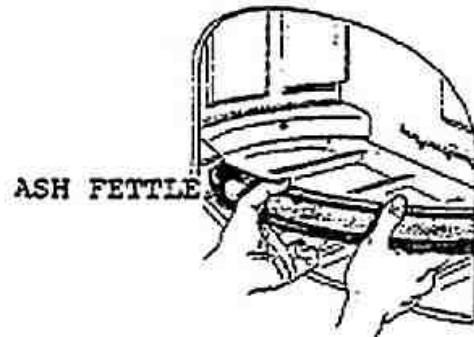
Clean the stove bottom of all insulating sand or ash.

Remove the flue collar, griddle, and front doors.

The smoke shelf rests on a ridge on the back of the fireback and under a tab on the back of the stove. With the damper in the closed position (handle pointed down) reach in through the flue collar opening and check to see if the smoke shelf is loose. If it is loose, slide it to the left (viewed from the back of the stove) and lift the left end, and remove it from the stove. If it is stuck firmly in place and will not fall out when the stove is tipped over, it may be left in position.



Remove the ash fettle if your stove has one.



With assistance, gently roll the stove onto its top plate. Place heavy padding on the floor where the stove will rest.

Remove the leg bolts using a 9/16" socket or open end wrench. Remove the legs.

Secure the strap clamp around the stove or tie a rope tightly around the stove to prevent breakage of the end seals when the bottom plate is removed.

Step 2 - Bottom Plate Removal

NOTE: When removing plates that are cemented together, always use a rubber mallet or hammer and block of wood. DO NOT hammer on any casting with a metal hammer. Remember safety equipment.

Using a 7/16" deep socket or open end wrench, unscrew and remove all four tie rod nuts. The nut may come off, or the tie rod may become unscrewed from the bottom plate. Either case is all right.

Tap upward around the edges of the bottom plate with a rubber mallet or a hammer and a block of wood.

Lift the bottom plate off.

Using vise grips, unscrew the tie rods from the top plate and pull them out. If you have trouble turning the rods with the vise grips, rap the ends of the rods hard with the hammer to shake the threaded ends loose from the top. Avoid breaking a rod with the end left in the top. Discard the old tie rods as new ones will be used.

Step 3 - Bottom Plate Installation

Clean old furnace cement from the exposed edges of the sides and front and back. Remember to wear gloves, safety goggles and a particle mask. Old cement may prevent the new bottom from seating properly. Be sure the new bottom fits properly before using any furnace cement. Some filing or grinding may be necessary.

Place masking tap over the four leg bolt holes in the corners of the new bottom plate. This will prevent cement from getting into the threaded holes.

Cement the channels in the new bottom plate which will receive the front, back, ends, and the cover plate which fits behind the fireback. Clean cement from enamel surfaces immediately.

Turn the bottom plate upside down and onto the stove.

With the rubber mallet, tap the bottom plate down to set the edges of the front, back and end plates into the channels in the bottom plate. Clean excess cement from porcelain surfaces immediately.

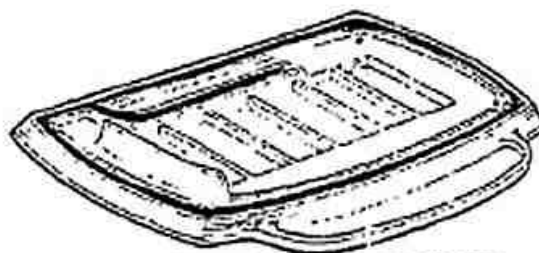


FIG.1. CEMENT CHANNELS IN BOTTOM PLATE

Step 4 - Install the Tie Rods

Place the new tie rods, shorter threaded end down, down through the holes in the bottom plate and onto the appropriate threaded holes in the top plate.

Hand tighten the tie rods in the top plate.

Thread the hex nuts a few turns onto the tie rods.

Attach the vise grips to the end of a tie rod and firmly tighten the tie rod into the top plate. Repeat for the other three tie rods.

Using a 7/16" deep socket or open end wrench, alternately tighten the hex nuts down. DO NOT OVERTIGHTEN the hex nuts as the tie rod may strip out of the top plate.

Check the seam all the way around making sure the bottom is completely down.

When a tie rod nut feels secure, wrench the protruding end of the tie rod back and forth with the vise grips until it breaks off. The rod must be broken off flush with the hex nut so the leg will seat properly when it is installed. After breaking off the excess rod, check the hex nut. If it is loose, tighten it with the 7/16" wrench. Repeat for the other three tie rods.

Step 5 - Finishing

Clean all excess furnace cement with a putty knife and wet rag to achieve a uniform finish along each seam.

Repaint the stove.

Replace the remaining cast pieces.

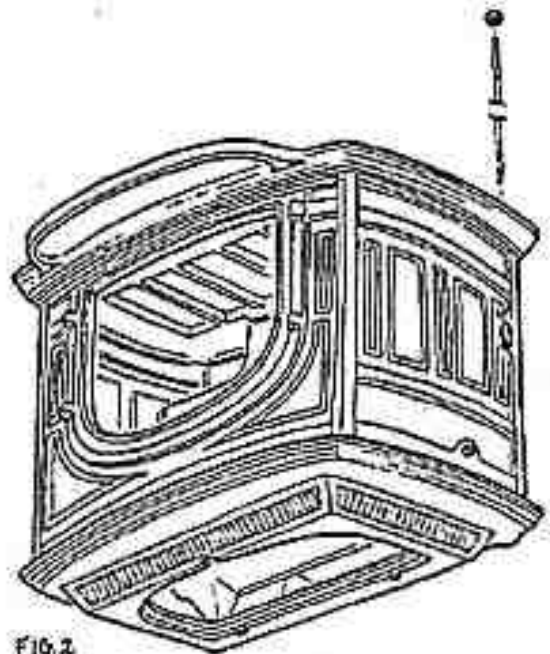
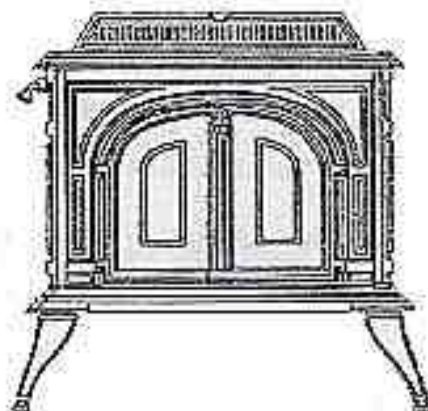


Fig. 2

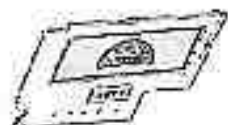
VIGILANT®

THE INSIDE STORY



Rebuilding a Vigilant can be accomplished successfully by most stoveowners. Average household skills will be required.

Your Vigilant will have either a 1 piece fireback or a 2 piece fireback. Different repair procedures are used for the two models. See special instructions below.



ONE PIECE FIREBACK



TWO PIECE FIREBACK

This manual gives instructions for repairing and replacing parts in all Vigilants with three exceptions. To replace top or bottom casings of either model, or the damper of a Vigilant with a 1 piece fireback, check with an authorized Vermont Castings dealer.

VIGILANT WITH 1 PIECE FIREBACK: To replace the fireback it is necessary to completely disassemble the stove. Follow directions on page 5, "Disassembly of Stove". You will remove the 1 piece fireback as you disassemble the stove.

VIGILANT WITH 2 PIECE FIREBACK: To replace the fireback it is not necessary to completely disassemble the stove. To replace the 2 piece fireback, follow directions on page 4, "Disassembly of Interior Castings". For complete disassembly, first remove interior castings (page 4) and then disassemble exterior castings (page 3).

The design of some parts has changed since the first Vigilants were built. The parts in your stove may be different than the ones shown in the Exploded View Diagram. The function of the parts is the same. For questions about replacement parts or repairs, check with your local authorized dealer.

Remove coal components, except the Shaker Handle Support, from coal stoves. Refer to the Vigilant Coal Stove Manual.

Test fit all parts before final assembly with furnace cement.

Work quickly when using furnace cement. Cement dries quickly when exposed to the air.

Cast iron is heavy. Have someone assist you when moving the stove and performing the repairs. Directions are given as you face the front of the stove.

* **CAUTION:** It may be necessary to remove old furnace cement from iron castings, and to grind or file new cast iron parts to assure proper fit. **WEAR GLOVES, SAFETY GOGGLES AND A PARTICLE MASK WHEN WORKING ON YOUR STOVE.**

CONTENTS:

Disassembly of Stove	Page 3
Disassembly of Interior Castings	Page 4
Assembly of Exterior Castings	Page 5
Assembly of Interior Castings	Page 7

DISASSEMBLY of STOVE

Note: If your Vigilant has a 2 piece fireback, see page 4 for instructions for removing interior castings.

STEP 1 PREPARATION

With assistance, lift the Vigilant up onto wooden or cement blocks so that you can remove the legs.

Remove the Legs, Flue Collar, Griddle, Doors and the Damper Handle.

Remove the Primary Air Tube. If the screw is too tight, tap the screwdriver with a hammer to loosen it.

STEP 2 REMOVE TOP

NOTE: When removing plates that are cemented together, always use a rubber mallet or hammer and block of wood. **DO NOT** hammer on any casting with a metal hammer.

Using a 7/16" Deep Socket, unscrew and remove all four Tie Rod Nuts. The nut may come off, or the Tie Rod may become unscrewed from the Top Plate. Either case is alright. Strike the end of the tie rods with a hammer to shock the threads loose.

Tap upward around the edges of the Top Plate with the hammer and block of wood, or with a rubber mallet (FIG. 1). Lift the Top Plate off with the Tie Rods attached. Set aside the Top Plate for cleaning.

Unscrew the Tie Rods with vise grips held as closely as possible to the Top Plate; you want to avoid any possibility of the Tie Rods breaking off inside the Top Plate.

STEP 3 REMOVE THE LEFT END

Tie a rope loosely around the stove to prevent the castings from falling as you begin to remove them.

Note: If your Vigilant has a "wrap-around" front as shown in the Exploded View, remove the Front first before removing the Left End.

Tap the upper edge of the Left End outward to loosen. As the Left End leans outward, it will slip over the Damper Pin. Lift up on the Left End and remove.

Lift out the Damper. Lift out the Smokeshelf (FIG. 2).

STEP 4 REMOVE REMAINING INTERIOR AND EXTERIOR CASTINGS

Tap the upper edge of the Right End to loosen. Push the Right End outward to release the Fireback. While keeping the Right End temporarily in place, pull the fireback upward and toward the Left End to remove.

Remove Coverplate A by prying and lifting it out.

With the rope still in place, lift out the Right End.

Holding the Back Plate in place, lift out the Front Plate. Lift out the Back Plate.

YOU HAVE NOW COMPLETED THE DISASSEMBLY OF YOUR VIGILANT.

STEP 5 CLEANING

At this time, cast plates must be thoroughly cleaned of all furnace cement and ash. Pay particular attention to the channels using hammer and chisel or screwdriver. It is helpful to use a vacuum cleaner to remove dust and soot particles from the castings and stove bottom.

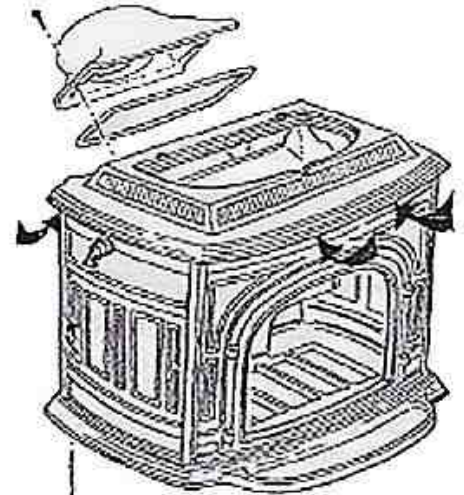


FIG. 1 HAMMER UPWARD TO LOOSEN TOP PLATE

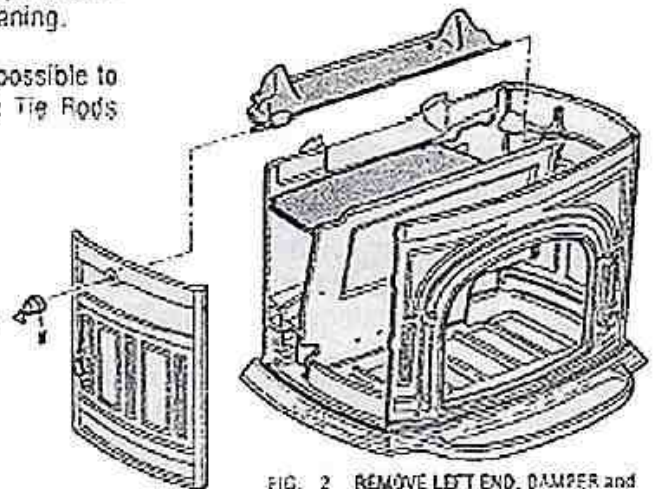


FIG. 2 REMOVE LEFT END, DAMPER and SMOKESHelf

ASSEMBLY of EXTERIOR CASTINGS

Note: The instructions on pages 5-8 are for reassembling your Vigilant with a 2 piece fireback. If you wish to rebuild your Vigilant with the original 1 piece fireback, call the Customer Service Department in Randolph, VT for instructions. (802-728-9561)

Lay all the parts out on the floor in sequence. We recommend that you reassemble the stove once without cement to make sure all parts fit. New parts may have to be filed or ground.

All instructions in italics concern cementing or steps for the permanent assembly. Follow the non-italicized instructions for the dry assembly.

STEP 1 CEMENT EXTERIOR CASTINGS

Set the Bottom Plate on wooden or cement blocks, high enough to replace the legs.

Tape the Leg Bolt holes with masking tape to prevent them from filling with furnace cement.

Cement the five channels on the Bottom Plate for placement of the Front, Back, Right End, Left End, and Coverplate A (FIG. 5).

Cement the side channels on the Right End and the Left End.



FIG. 5 CEMENT CHANNELS IN BOTTOM

STEP 2 INSTALL THE EXTERIOR CASTINGS

Set the Back in place in the rear channel. Lean the Back forward and support it with a block (FIG. 6).

Set the Right End in the right side channel. Move the Back Plate into an upright position fitting it into the correct channel in the Right End. (Remove the support block).

Note: If your stove has a "wrap-around" front, install the Left End first and then the Front.

Set the Front into place fitting the edge into the correct channel in the Right End.

Set the Left End into the appropriate channel in the Bottom. Move it to an upright position fitting the channels over the Front and Back Plates (FIG. 7).

Tie a rope tightly around the body of the stove.

With a rubber mallet or hammer and block of wood, tap all edges and corners to set the exterior castings in place. Tighten the rope.

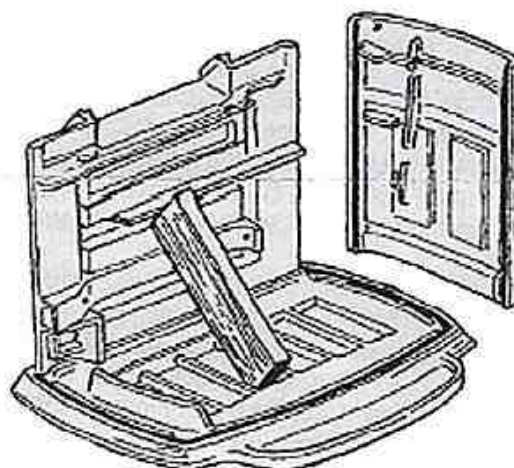


FIG. 6 SUPPORT BACK WITH A BLOCK OF WOOD. INSTALL RIGHT END

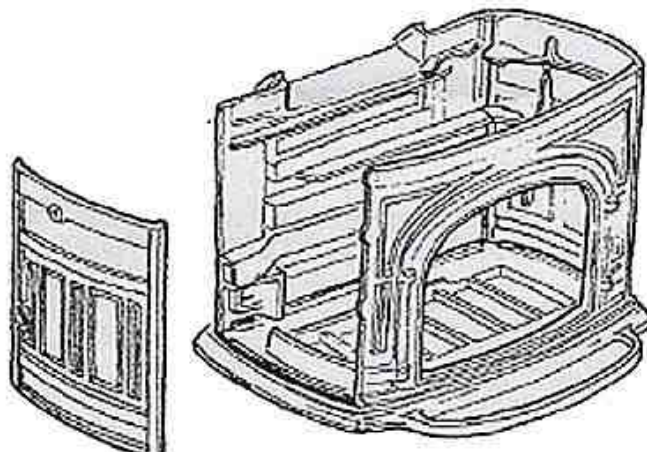


FIG. 7 INSTALL LEFT END

ASSEMBLY of INTERIOR CASTINGS

STEP 1 REPLACE LOWER AND UPPER FIREBACKS

Cement Coverplate A in the channel surrounding the air inlet (see Fig. 10).

Replace Coverplate A in its channel in the Bottom Plate (FIG. 11).

Cement the Coverplate ridge on the back of the Lower Fireback. Attach Coverplate B (FIG. 12). Leave the screw loose so that when the Lower Fireback is replaced, Coverplate B will overlap Coverplate A.

Replace the Lower Fireback by angling the left side in through the front door opening. Place that side into the guides in the Left End Plate. Then lift the right side of the Fireback to slip it back and over a single ridge running approximately half way up the inside of the Right End (FIG. 13). Since you are also pressing the Coverplate into position, this step is the most difficult and may take several tries. Set the Lower Fireback down into the Bottom Plate with a few taps from the rubber mallet. When Coverplate B and the Lower Fireback are in place, tighten the screw and nut holding Coverplate B.

Guide the Upper Fireback through the griddle opening, left side first. Hold the Fireback in its normal position and lift it up and over the tabs in the Lower Fireback while guiding it into the support ridges on first the Left, then the Right End. Again, set the Upper Fireback with the rubber mallet.

Replace the Smokesheif.



FIG. 10 CEMENT COVERPLATE A

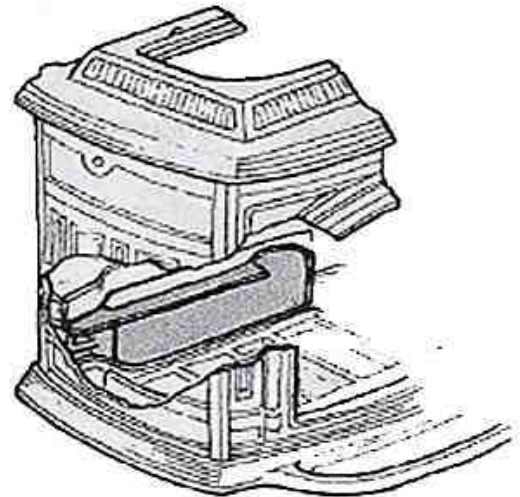


FIG. 11 REPLACE COVERPLATE A

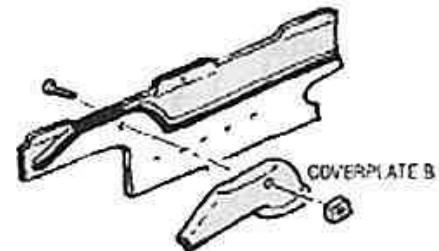


FIG. 12 CEMENT COVERPLATE RIDGE ON BACK OF LOWER FIREBACK

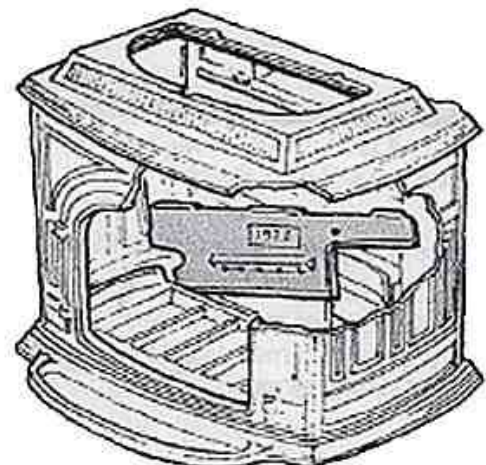


FIG. 13 REPLACE LOWER FIREBACK