

Installation & Operating Manual

HARMAN™

BUILT TO A STANDARD. NOT A PRICE

The Harman Magnum Stoker



We suggest that our hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute (NFI) as NFI Specialists.

DO NOT BURN WET COAL.



R18

SAFETY NOTICE

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

NOT SUITABLE FOR INSTALLATION IN MOBILE HOMES.

IF THIS HARMAN STOVE IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW INSTALLATION DIRECTIONS.

CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.

CONTACT YOUR LOCAL AUTHORITY (SUCH AS MUNICIPAL BUILDING DEPARTMENT, FIRE DEPARTMENT, FIRE PREVENTION BUREAU, ETC.) TO DETERMINE THE NEED FOR A PERMIT.

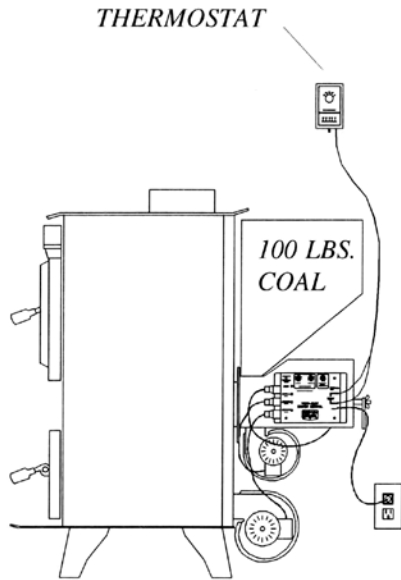
CETTE GUIDE D'UTILISATION EST DISPONIBLE EN FRANCAIS. CHEZ VOTRE CONCESSIONNAIRE DE HARMAN.

SAVE THESE INSTRUCTIONS.

INDEX

Introduction	3
Warnings	3
Packing List	5
Assembly	6
Installation	10
Verti-Flow Stoker Control	14
Operation	15
Maintenance	18
Trouble-Shooting	21
Wiring Diagram	23
Feeder Parts	24
Domestic Hot Water Coil	25
Hot Air Duct Option	26
Warranty	27

INTRODUCTION



This proven design by Harman features the Verti-Flow Stoker System.

This unique system provides a very wide range of heat output. The Verti-Flow Stoker can operate from 5000 to over 85,000 btu's automatically.

This unit has a 100 pound coal capacity and can provide 85,000 btu's continuous for 17 hours or stretch out to over 100 hours when less heat is required.

A thermostat is used to regulate the heat output of the stove. When no heat is needed, the stoker stops and only runs to maintain the fire. If heat is needed, the thermostat can turn on the stoker at any time.

The pilot or maintenance mode is controlled by a timer box. The "on" and "off" time can be changed to provide more or less heat during the maintenance cycle, and to adjust for different coal quality.

WARNINGS

Never sleep in the same room with any coal burning stove.

This unit must be connected to a chimney capable of providing a .04 minimum draft reading. **WARNING!!** If the chimney has no draft, coal gases may escape from the unit and stovepipe. **These gases are toxic and can be fatal.** It is recommended that a carbon monoxide detector be installed to warn of this condition.

TESTING INFORMATION

Listed By Overton Oregon USA
 OMNI-Test Laboratories, Inc.
 Report #136-09-4
 Tested To:
 UL 1462, September 1997

MODEL: MAGNUM STOKER
 Serial Number [REDACTED]
 LISTED SOLID FUEL (COAL) ROOM HEATER



This unit has been tested and approved by OMNI-TEST Laboratories in accordance to the listed codes. This appliance is also approved for installation into a shop.

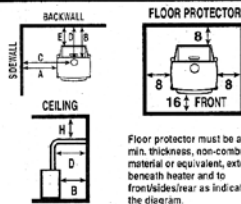
CONTACT YOUR LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA.

PREVENT HOUSE FIRES:
 Install and use only in accordance with manufacturer's installation and operation instructions and local codes. In absence of any local codes, installation must meet minimum requirements of NFPA 211 in USA. Refer to manufacturer's instructions and local codes for precautions required for passing chimney through a combustible wall or ceiling. Inspect and clean chimney system frequently in accordance with manufacturer's instructions.

FOR USE WITH COAL ONLY.
 Don't connect this stove to a chimney serving another appliance.
 Flue connector pipe must be 8" diameter, minimum 24 MSG black or 26 MSG blue steel.
 6" barometric damper required for installation. Do not operate if draft exceeds 0.10.
 Chimney must be factory built 103HT or masonry.
 NOTE: Replace glass only with 5mm ceramic glass available from your dealer.
 Inspect and clean chimney frequently. Under certain conditions of use, creosote buildup may occur rapidly.
DO NOT OVERFIRE - IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING.

CLEARANCE TO COMBUSTIBLE SURFACES

- A - Unit to Sidewall 24"
- B - Stove to Backwall 24"
- C - Chimney Connector to Sidewall 34"
- D - Chimney Connector to Backwall 18"
- E - Hopper to Backwall 3"
- F - Floor Protector, Side and Rear 8"
- G - Floor Protector, Front 16"
- H - Pipe Connector to Ceiling 18"



Floor protector must be a 3/8" min. thickness, non-combustible material or equivalent, extending beneath heater and to front/side/rear as indicated on the diagram.

* Not Tested - NFPA Guidelines

ELECTRICAL RATING: 115VAC, 60 HZ, 2.1 AMPS
DANGER: Risk of electrical shock. Disconnect power supply before servicing. Route power cord away from unit. Do not route power cord under or in front of appliance.

CAUTION: RISK OF EXCESSIVE TEMPERATURES AND DAMAGE TO UNIT. PROPER OPERATION REQUIRES THE USE OF ONLY RICE SIZE ANTHRACITE COAL.



CAUTION: HOT WHILE IN OPERATION. DO NOT TOUCH. KEEP CHILDREN AND CLOTHING AWAY. CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. KEEP FURNISHINGS AND OTHER COMBUSTIBLE MATERIALS A CONSIDERABLE DISTANCE AWAY FROM THIS APPLIANCE.

Manufactured by: Harman Stove Co.
 352 Mountain House Rd. • Halifax, PA 17032

Exempt From EPA Certification under 40 CFR 60.531

Date of Manufacture
 2004 2005 2006 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

READ THIS

Always empty the hopper when not burning for more than a week. When left standing for long periods with wet coal, the pusher block will rust and corrode, causing it to seize. If the stoker is then turned "on", damage to the pusher assembly and feed motor will result. This will be considered neglect and will void the warranty on those parts. If the unit has not been burned for a period of time, always check to see if moving parts are free before using. This can best be determined by shaking the adjuster rod.

Wet Coal

Freshly delivered coal is watered down to eliminate dust when loading and unloading. Wet coal does not flow as well as damp or dry coal. We do not recommend burning wet coal, however, we realize if it's the only coal you have it is better to burn it than freeze. If you must burn wet coal, the feed rate must be increased in order to get the same size fire. As the wet coal in the hopper dries out, the feed rate must be decreased. If you don't, the feeder will over-fire the stove and waste coal. Doing this once or twice a year will not damage your stove as long as it is hot and burning. The damage is caused when the hopper has wet coal in it when the stove is cold. This will cause rust and corrosion which is not covered by your warranty.

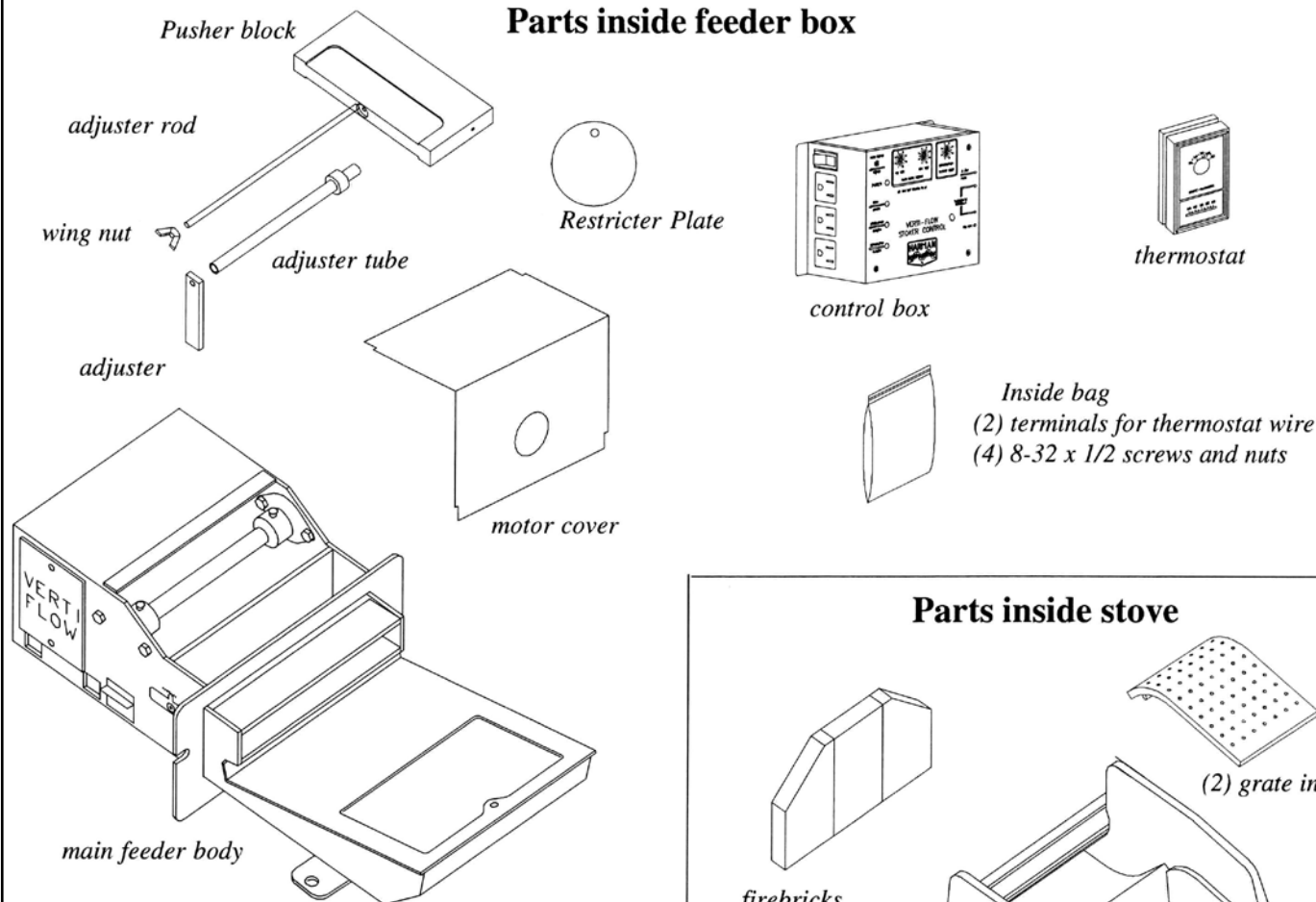
Damp Coal

Usually after the coal dries for three or four days, depending on conditions, it will flow very well and feed properly. The feed rate will then be the same as for dry coal.

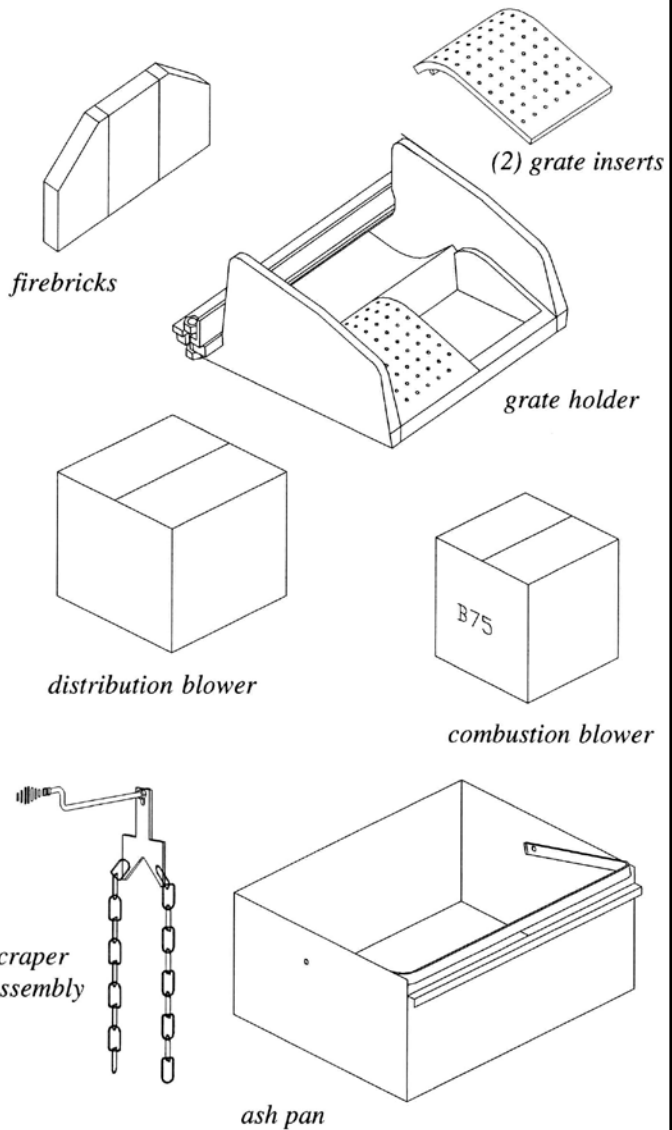
Damp coal also should not be left in the hopper of a cold stove. Even dry coal can hold or draw enough moisture to promote rust. Always empty the hopper when the stove will not be used for more than a week.

PACKING LIST

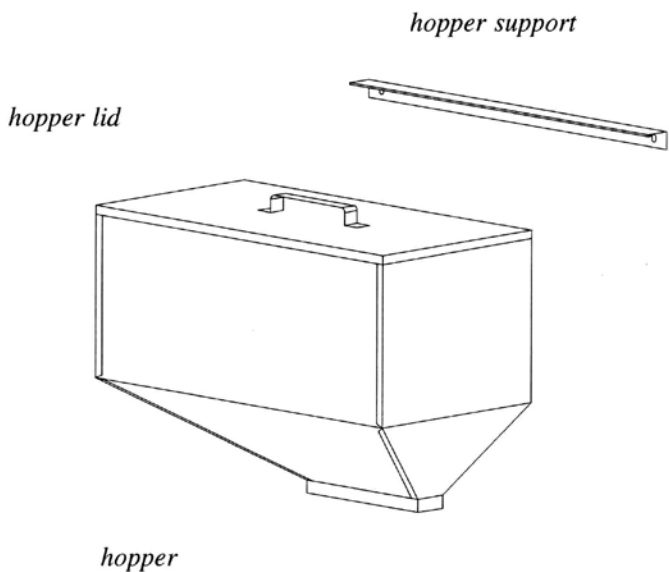
Parts inside feeder box



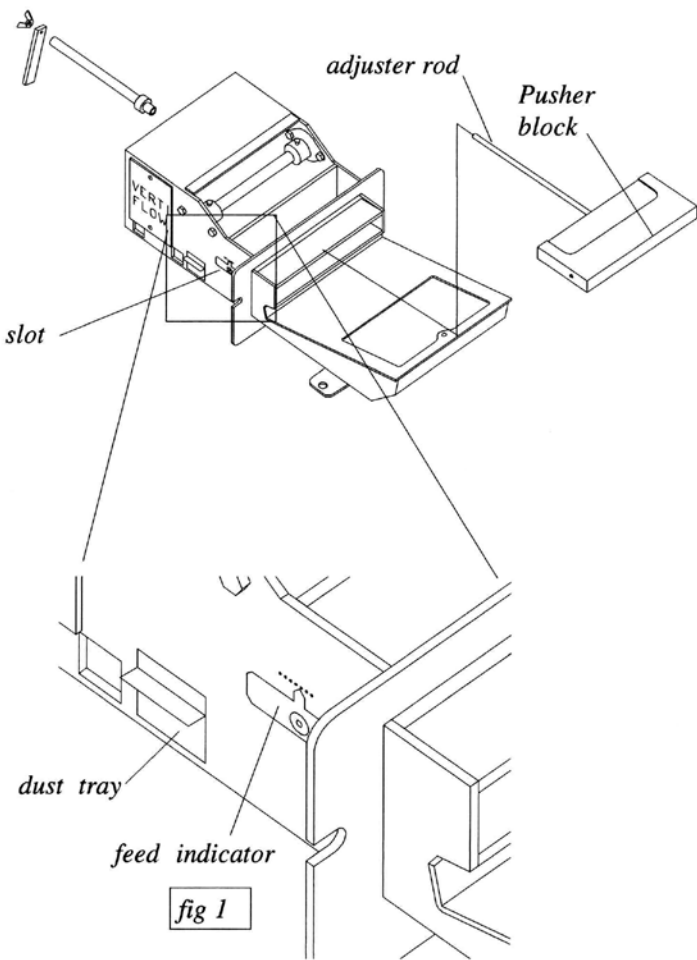
Parts inside stove



Parts inside hopper box



ASSEMBLY



First, a note to you, the customer.

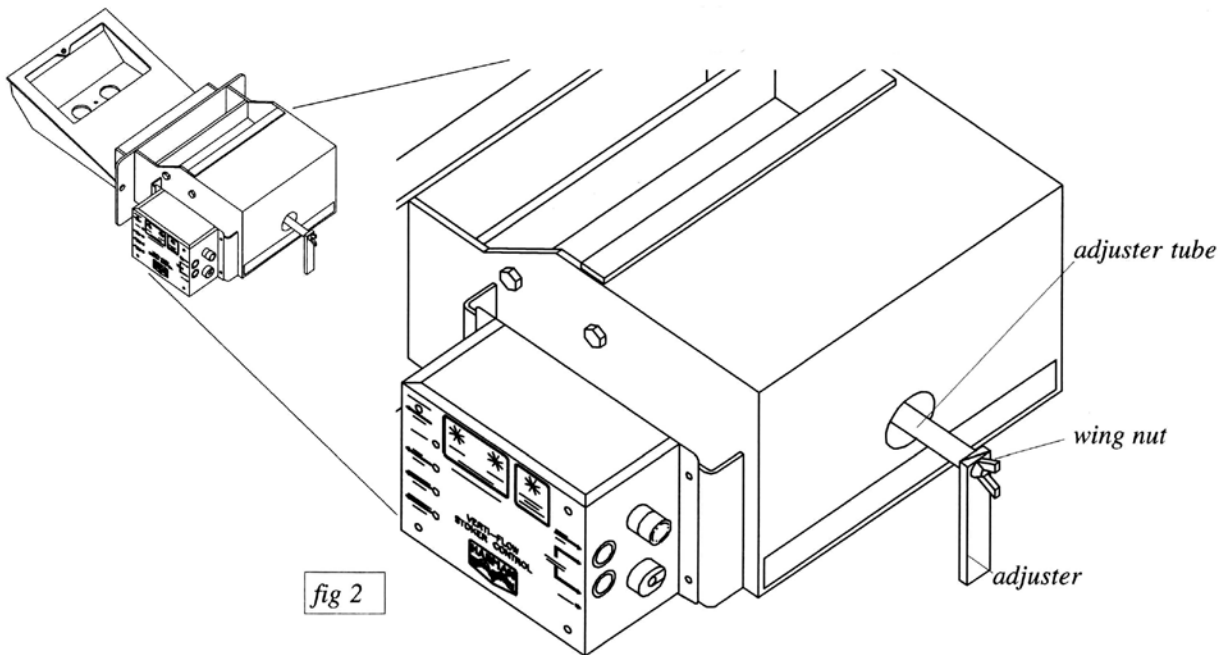
This section on Assembly is in the manual for your information should you ever need to move your unit and to help you understand how each part is installed.

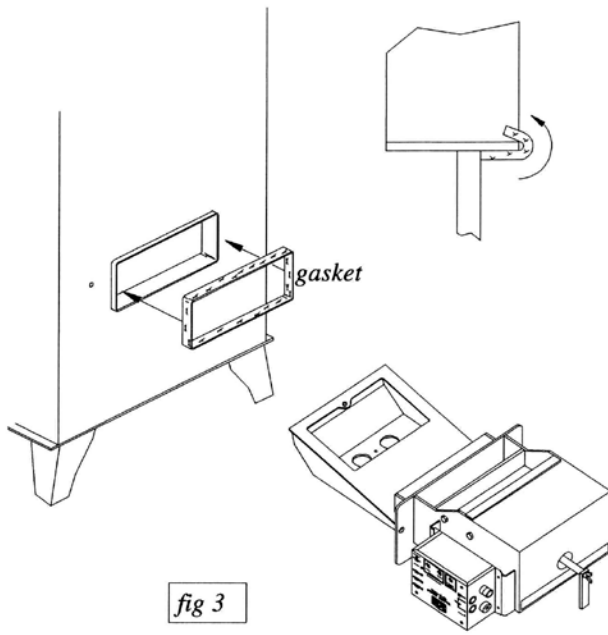
Harman Home Heating recommends that your dealer complete the assembly of this stove. It is also recommended to take a draft reading with the stoker burning. This reading should be recorded on the warranty coupon when you activate your warranty.

Feeder

Begin assembly by sliding the pusher block with the adjuster rod from the front through the slot shown in fig.1. Be sure the pusher block is turned with the bolt hole to feed indicator side.

Next, hold the pusher block in the most rearward position and slide the adjuster tube over the adjuster rod until it bottoms out on the pusher block. Thread the adjuster over the adjuster rod. Thread wing nut onto the end of the adjuster rod.





Make sure the gasket is in place on the feeder opening on the rear of the unit, as shown in fig 3. Insert the stoker into the opening in the rear of the unit. Attach using (2) 5/16 X 1 1/4 bolts.

Blowers

Install the smaller of the two blowers on the bottom of the feeder by sliding it into the bracket as far as it will go. Install restricter plate on blower as shown below in Fig. 4.

Slide the larger blower into place on the bottom rear of the stove. NOTE: The bolt holes on the blowers are not used.

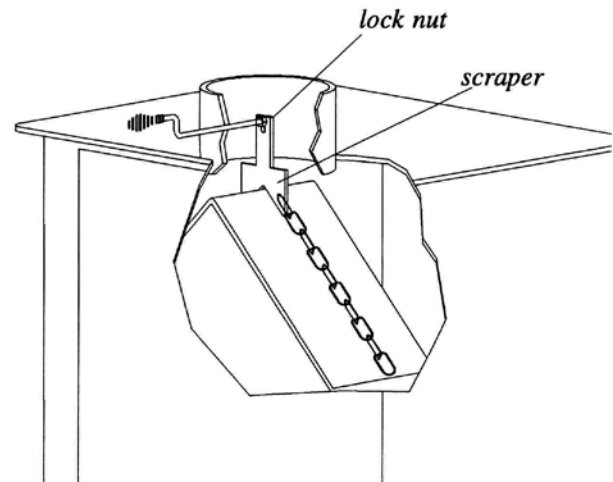
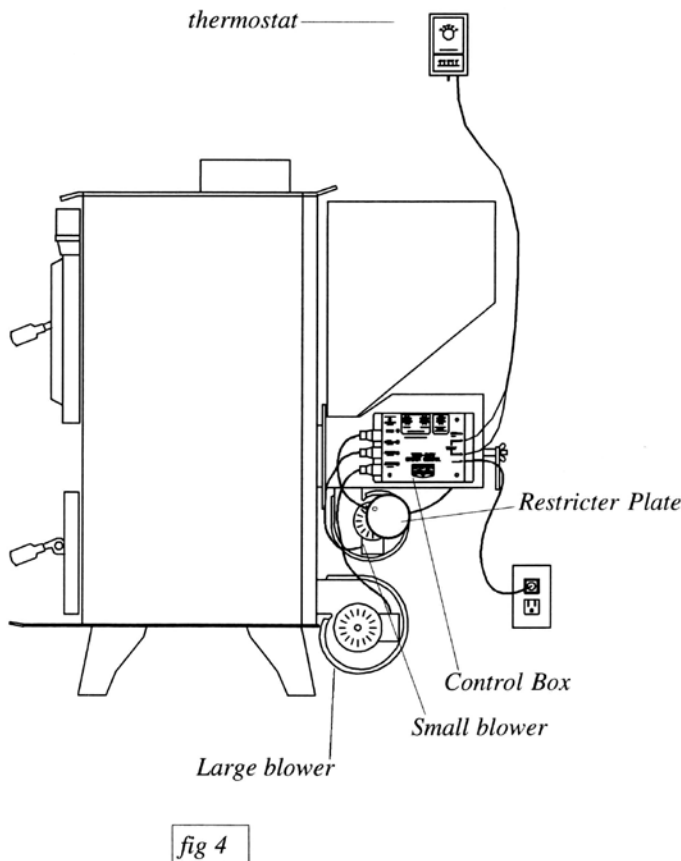
Control Box

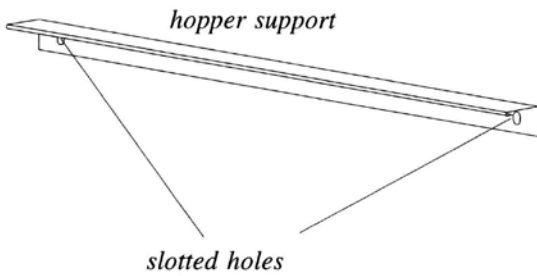
Install the control box on mounting pad provided on the side of the stoker with (4) #8-32 bolts. NOTE: The receptacles go toward the front.

Plug the gear motor into the top, the small combustion blower into the middle, and the large distribution blower into the bottom receptacle on the control box as shown. More on the control later.

Cleanout Scraper

Install scraper as shown below with locking nut on each side of the scraper. Tighten nuts when in the rear most position to assure alignment. Cycle rod in and out to clean unit.





Hopper

Install hopper support on top rear of stoker.

Note that the bolt holes in the hopper support are slotted for adjustment. Insert the funnel end of hopper into the hopper slot on the feeder as shown. Push the top of the hopper under the hopper support, causing the slot on the bottom side of the support to hook onto the hopper. The hopper support will spring up slightly for the hopper to go under. If you have difficulty getting the hopper under, adjustment may be necessary. Use slotted holes shown at left. Now the feed motor cover can be installed.

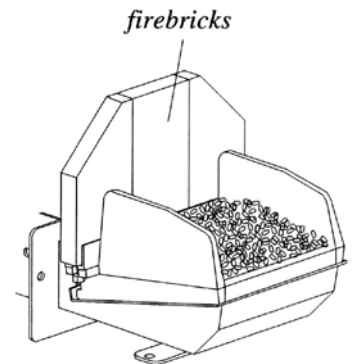
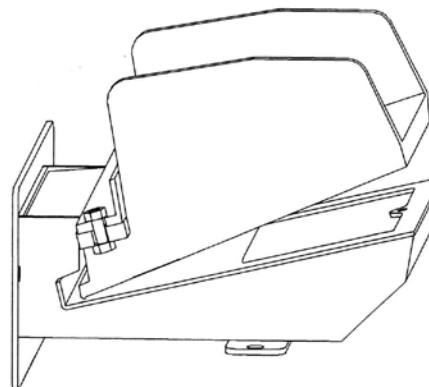
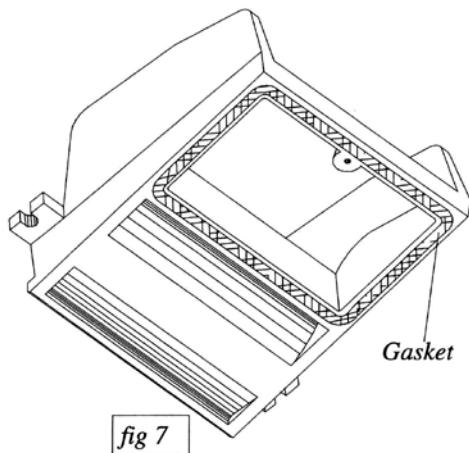
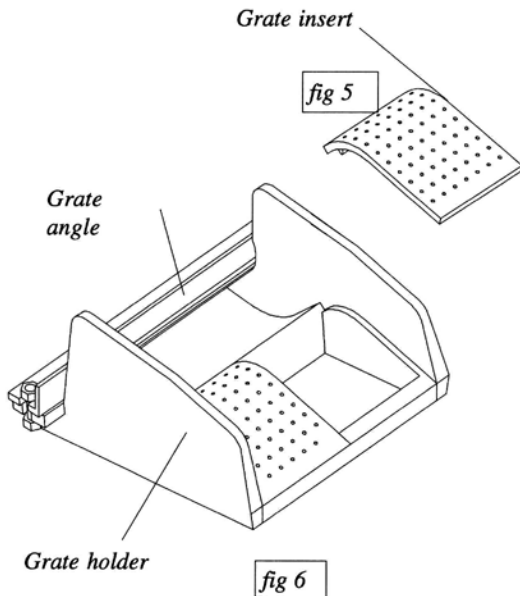
Grate

The grate is composed of four pieces: the grate holder, (2) grate inserts, and grate angle. The grate angle is bolted to the grate holder with (2) 3/8 X 1 1/4 bolts. Before installing the grate holder, the 3/8" round gasket must be checked in the groove on the bottom side of the grate holder, as shown in fig. 7. Check to be sure the gasket has not been damaged.

The grate holder must be installed through the top door opening after the feeder has been installed.

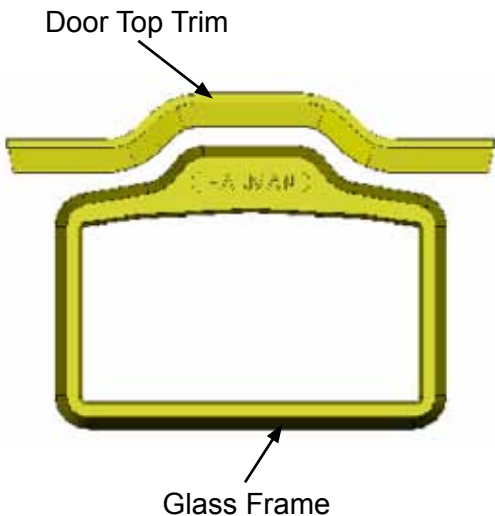
Locate the flange at the rear of the grate holder into the slot on the feeder as shown below. Bolt the front end down with the 1/4 x 20 Allen bolt and nut provided. The rear end will be locked in place by the flange. Before tightening the bolt be sure the grate holder is back as far as possible and centered side to side on the feeder opening.

Install grate inserts as shown at left. Divide the spaces between the inserts equally and be sure they are not tight. The spaces are needed for expansion.



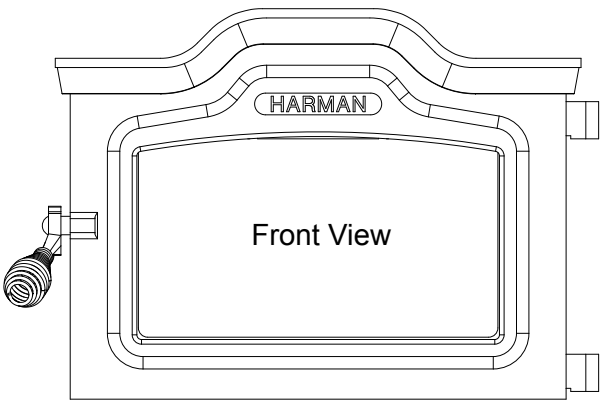
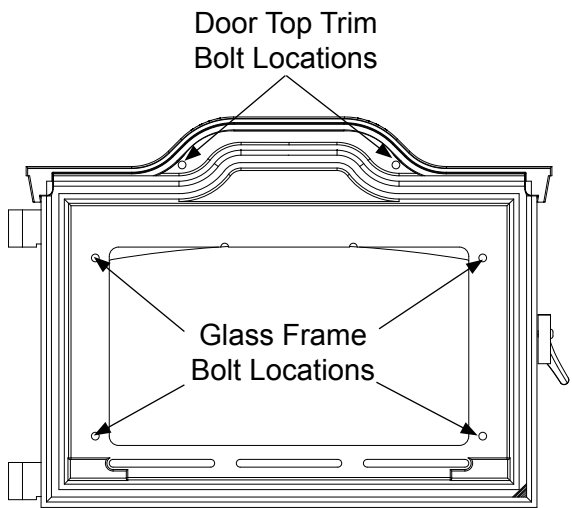
IMPORTANT
Be sure the grate holder is centered and back as far as possible.

Install firebricks as Shown

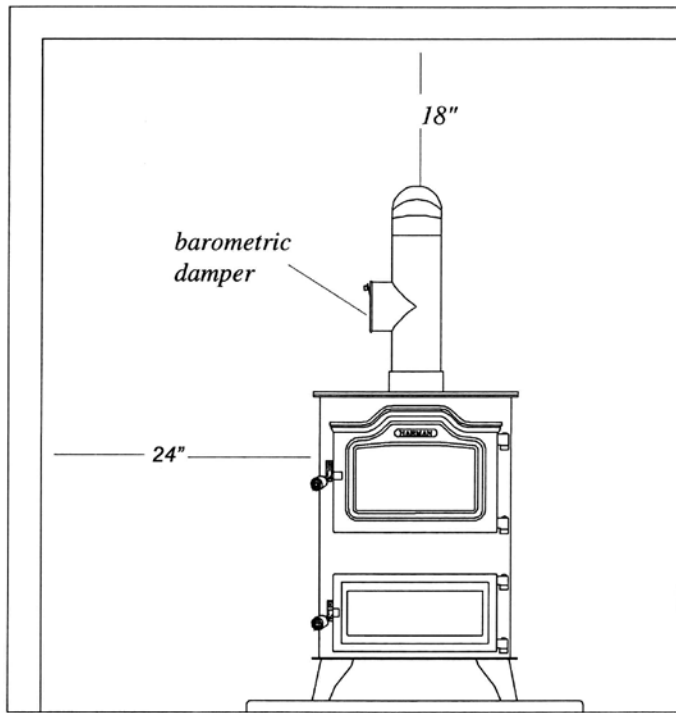


Door Assembly

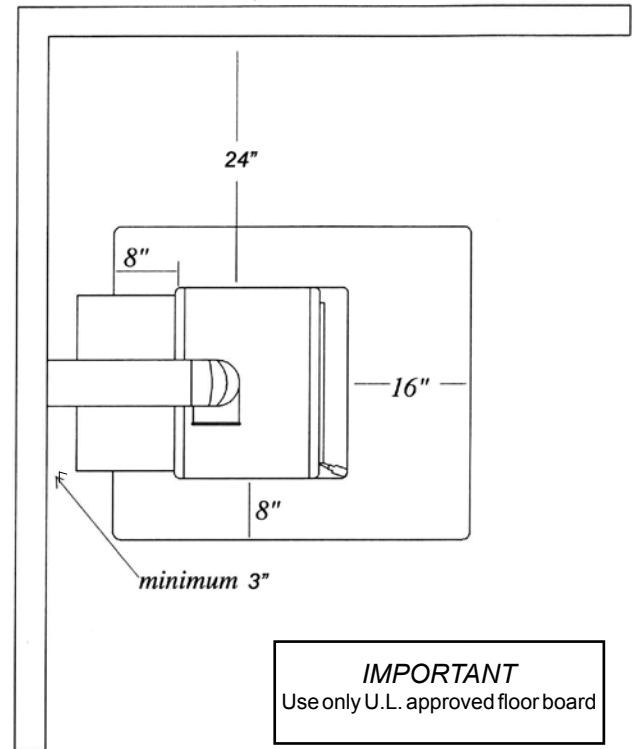
Lay the glass frame face down on a flat surface. The glass panel should have channel gasket on the ends (short sides) only. Place the glass panel into the frame, making sure that it is completely down in the frame. Now lay the door onto the frame and secure it using four 1/4-20 flange head bolts. With the assembled door still lying face down, slide the door top trim under the top of the door. Align the holes and secure the top trim using two 1/4-20 hex head bolts.



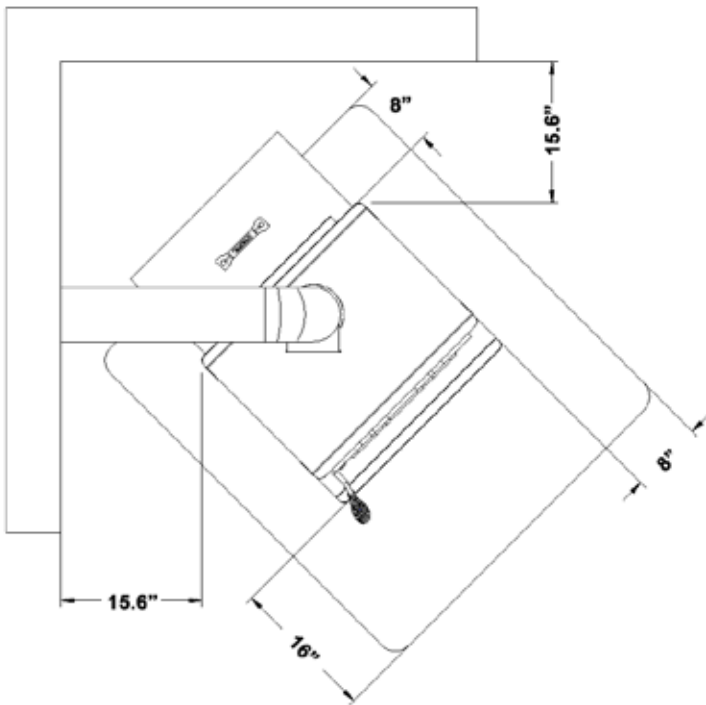
Front View



Top View



Clearance to Combustibles



INSTALLATION

Place the stove a minimum of 3" from a combustible wall from the rear of the hopper and a minimum of 24" from the sides. The stove should be placed on a noncombustible floor, or a minimum 3/8" thick noncombustible floor protector. Install a 6" stove pipe from flue opening to chimney with a barometric damper. Secure all pipe joints with sheet metal screws. Plug power cord into a 120 volt receptacle.

Refer to the section on operation to light a fire. With the stove burning and stabilized, set barometric damper at .04 to .06 on the draft meter. We do not expect you to own a draft meter. Therefore, have your dealer do set-up and fine tuning.

If your chimney will not produce .04 on the draft meter, a draft inducer should be installed by your dealer. The draft inducer may help to provide the additional draft needed for proper operation. If not, the chimney will need to be corrected.

Chimney Connectors and Chimneys

Draft

Draft is widely misunderstood. It is important that you, the stove operator, realize that draft is a variable *effect*, not a given quantity. Stoves and chimneys do not *have* draft, yet draft is the key to your stove's performance.

Draft is a force, produced by an operating stove and the chimney to which it is attached. It is created by hot gases rising up the chimney, creating a pressure difference between the inside of your home and the outside air. It continually moves fresh combustion air into the stove, and hot exhaust gases out of the stove; without this constant flow, the fire will go out.

Other factors, such as barometric pressure, winds, the tightness of the home, the total inside chimney volume, chimney height and the presence of venting devices such as exhaust fans also play a role in maintaining an adequate draft. Low barometric pressures, super insulated homes, and exhaust fans can reduce draft; winds can play havoc with draft; and too large or too small a chimney volume can cause reduced draft due to the excessive cooling or not enough room to vent the exhaust gases. Introducing outside air directly to the stove may help remedy a low draft problem. Some signs of inadequate draft are smoking, odor, difficulty in maintaining the fire, and low heat output. Overdraft can be caused by a very tall chimney even if it is the recommended size, and can cause overfiring of your stove. Signs of an overdraft include rapid fuel consumption, inability to slow the fire, and parts of the stove or chimney connector glowing red. It is important that you follow the chimney guidelines in this manual, including size, type, and height to avoid draft problems.

When installed and operated according to this manual, the appliance will produce enough hot gases to keep the chimney warm so that adequate draft is maintained throughout the burn cycle.

Chimney Connectors

In general, following these guidelines will ensure compliance with all national and provincial codes; prior to beginning your installation, check with your local building code official(s) regarding any additional local requirements or regulations which may influence the design and placement of your venting system.

The Magnum Stoker may be installed with (.6 mm) 24 gauge chimney connector pipe. The size of the connector should correspond to the size of the flue collar opening. Do not use makeshift components.

No part of the chimney connector may pass through an attic or roof space, closet or other concealed space, or through a floor or ceiling. Whenever possible, avoid passing the connector through a combustible wall; if you must, use an approved wall pass-through, described later in this section.

Assemble the connector beginning at the flue collar, with the crimped ends pointing towards the stove (to keep debris and creosote flakes inside the system). Each joint, including the one to the stove's flue collar and the one to the chimney itself should be secured with at least three sheet metal screws. Screws may be a maximum of 3 inches apart. A 1-1/4" (32 mm) overlap is required at each joint, including the flue collar attachment. No more than two 90 degree elbows should be used, and the total length of connector should not exceed 10 feet (3m) All horizontal runs of connector must have a minimum upward slope of 1/4" per foot (20 mm per meter).

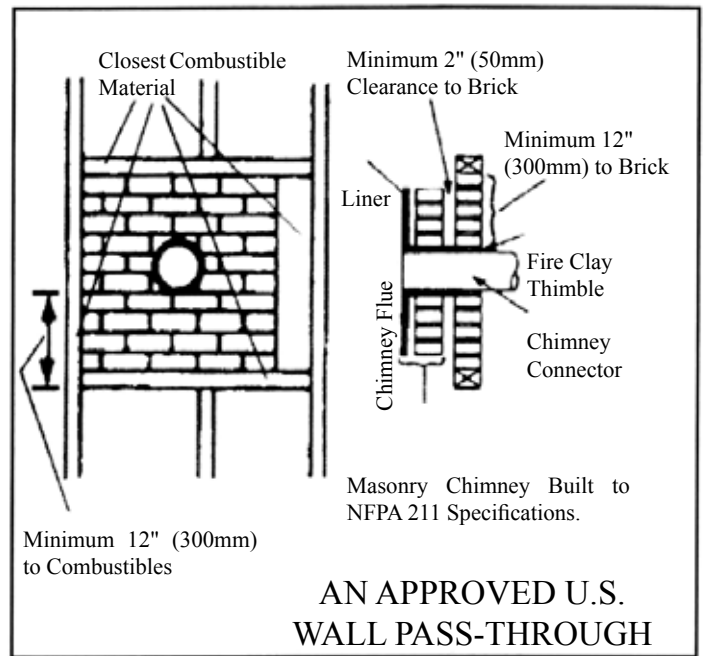
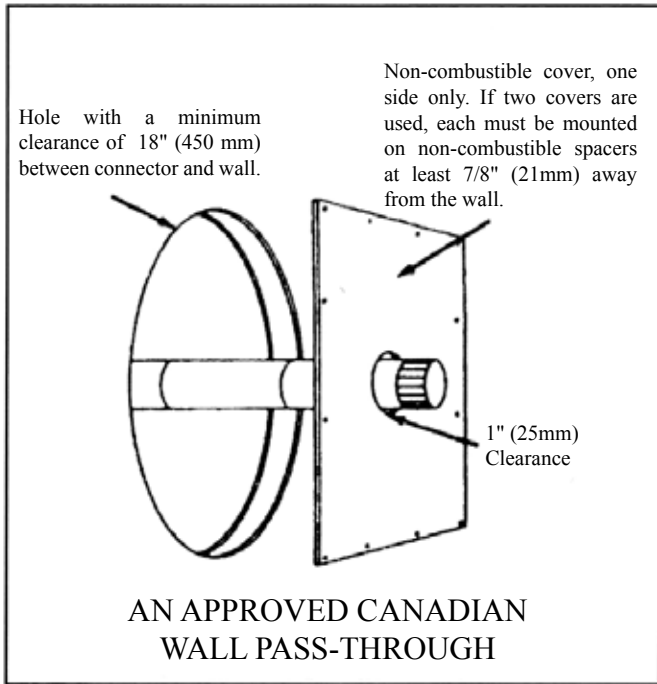
Wall Pass-thrus

Occasionally it is necessary to pass the chimney connector through a combustible wall to reach the chimney. Depending on your local building codes, and the pertinent provincial or national codes, there are several choices for accomplishing this safely. Before beginning your installation, contact local officials, and also the chimney connector and chimney manufacturer for specific requirements.

Canada. Three methods are approved by the Canadian Standards Association. The diagram shows one method requiring an 18" (460 mm) air space between the connector and the wall. It allows use of one or two covers as described in the diagram. The other two methods are described in detail in the current issue of CAN/CSA B365, the national standard.

United States In the U.S., the national code is NFPA 211. While many localities adopt this standard, be sure to check with local authorities before beginning your installation.

The NFPA (National Fire Protection Association) permits four methods for passing through a combustible wall. A commonly used method to pass through a wall directly to a masonry chimney is to clear a minimum 12"(305 mm) around the entire chimney connector, and fill it with brick masonry which is at least 3.5"(90 mm) thick. A fireclay liner, minimum 3/8" (9 mm) wall thickness must run through the brick wall to the chimney liner (but not beyond the inner surface of the liner). It must be cemented in place with refractory cement. This method is illustrated. For details on the other three options, refer to the most recent edition of the NFPA 211 code.



The Chimney

This unit must be installed into a chimney approved for use with solid-fuel appliances. In the U.S., it must be connected to (1) a prefabricated chimney complying with the requirements for Type HT chimneys in the Standard for Chimneys, Factory-Built, Residential Type and Building Heating Appliances, UL 103, or (2) a code-approved masonry chimney with a flue liner.

In Canada, this unit is listed for use with prefabricated chimneys tested and listed to the high temperature (650 degrees C) chimney standard, ULC S-629, or with a code approved masonry chimney.

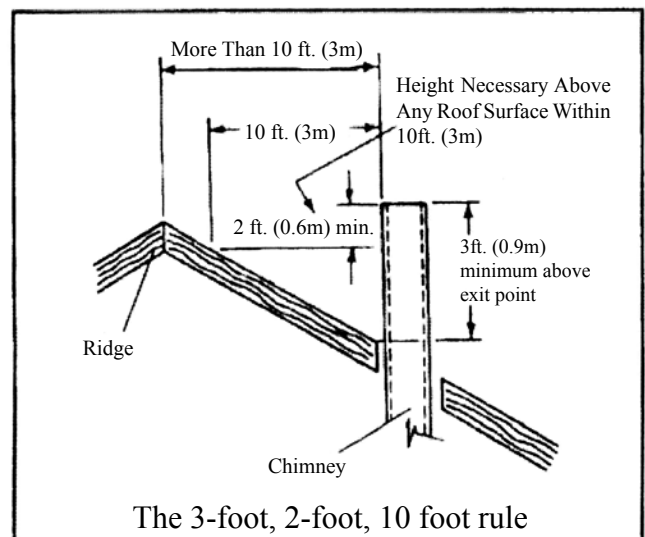
The minimum recommended height for any chimney is 16 ft (4.8 m) above flue collar height. A round flue (either masonry or approved prefabricated), of either 6" (150 mm), 7" (180 mm) or 8" (200 mm) may be used. For square or rectangular masonry chimneys, nominal sizes of 8" x 8" or 8"x 12" (200mm x 200 mm, 200 mm x 300 mm) may be used.

Codes require that solid-fuel chimneys extend 3 ft (0.9 m) above the highest point at which they exit from the roof. Then, the chimney must extend 2 ft.(6 m) above the highest point within a 10 ft (3 m) radius. Thus, the 3 foot, 2 foot, 10 foot rule:

- 3ft.** - Above roof exit point
- 2ft.** - Higher than anything within-
- 10ft.** of the chimney.

Do not connect this unit to a chimney flue servicing another appliance.

NOTE: The restriction of not venting more than one appliance to the same flue applies to the *U.S.* specifically. While it is not recommended that you use the same chimney for more than one appliance, in *Canada* certain exceptions may be made. Be sure to contact your building code inspection official to see if this option is allowed in your area, and to find out the specific requirements for such an installation.



Existing Masonry Chimneys

If you plan on using a pre-existing masonry chimney, have it thoroughly inspected and cleaned. Any faults which make the chimney unsafe and unusable must be repaired prior to use. These can include improper height, structural defects, blockages, inadequate clearance to combustibles, unsealed openings into other rooms of the house, signs of creosote or smoke leakage, a loose or absent clean-out door, or absence of a liner.

Do not connect to any air distribution duct or system

Venting to a Masonry Chimney

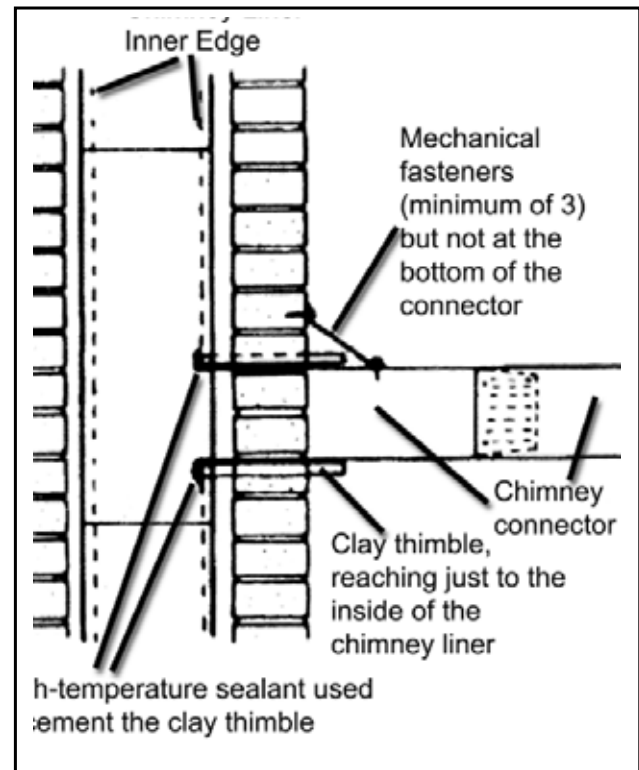
When connecting to a masonry chimney, several provisions are standard. First, whether the chimney connector is vented to the chimney through a thimble or a breech pipe, neither must pass beyond the inner surface of the chimney liner, and both must be firmly cemented in place with refractory cement. (A thimble is a masonry pipe which is inserted through the chimney wall, and is frequently the preferred method; a breech pipe is a piece of steel pipe used the same way.) In Canada, a breech pipe has ridges or protrusions to lock it firmly into the refractory cement. In either case, the chimney connector vents to the chimney through the thimble or breech pipe.

Using a thimble, the connector slides completely inside the masonry to the inner edge of the flue liner, and may be easily removed for chimney and connector inspection. A breech pipe must extend at least 2" (50 mm) into the room, so the connector can be attached with sheetmetal screws.

Venting to a Masonry Fireplace Chimney

In some situations, a code compliant chimney originally used for a masonry fireplace may be used to install your stove. In addition to the requirements found in the previous paragraphs, it is important to be aware that all clearances must be met, including those from the chimney connector to combustibles. Do not forget to include floor protection in your plans. (See Clearances and Floor Protection in this section.) Since many fireplaces have exposed wooden mantels and trim, pay special attention to the clearances necessary to these materials.

If your fireplace chimney is behind a combustible wall, you must use an approved wall pass-through system to gain access to the masonry chimney. The chimney connector must enter the chimney at a place where it is lined, and the fireplace must be made inoperable. For example, you might remove the damper, replacing it with a secure, airtight, noncombustible seal (removable for inspection); this also satisfies the requirement that no room air must be allowed to enter the chimney.



Do not burn any fuel other than coal. Never use highly volatile substances in your stove, such as gasoline, which could cause an explosion.

When solid fuels are burned completely, they produce water and carbon dioxide. However, in long slow burns, a substantial amount of carbon monoxide may be produced. If allowed to build up, carbon monoxide (which is odorless) can prove fatally poisonous. Proper ventilation and draft will prevent this from happening. If you smell smoke, thoroughly ventilate your dwelling. Contact your dealer to arrange for a draft test.

Other causes of poor ventilation or draft are icing, exhaust fans, a blocked outside air inlet, and room air starvation. If your stove is sluggish and you get occasional odor, check these possibilities and increase the air flow in your home.

Installing to a Prefabricated Chimney

When venting your stove using a prefabricated chimney, be sure to contact local building code authorities, and to follow the manufacturer's instructions *exactly*. Use only the manufacturer's parts; do not use makeshift installation techniques. All prefabricated chimneys must be tested to either the U.S. or Canadian high-temperature standards, UL 103 or ULC S629.

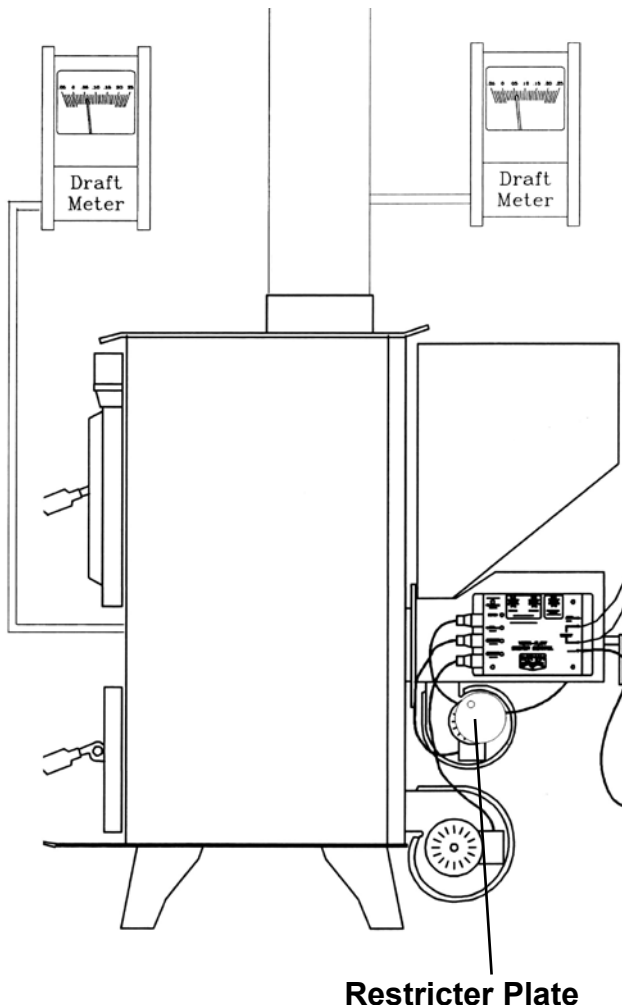
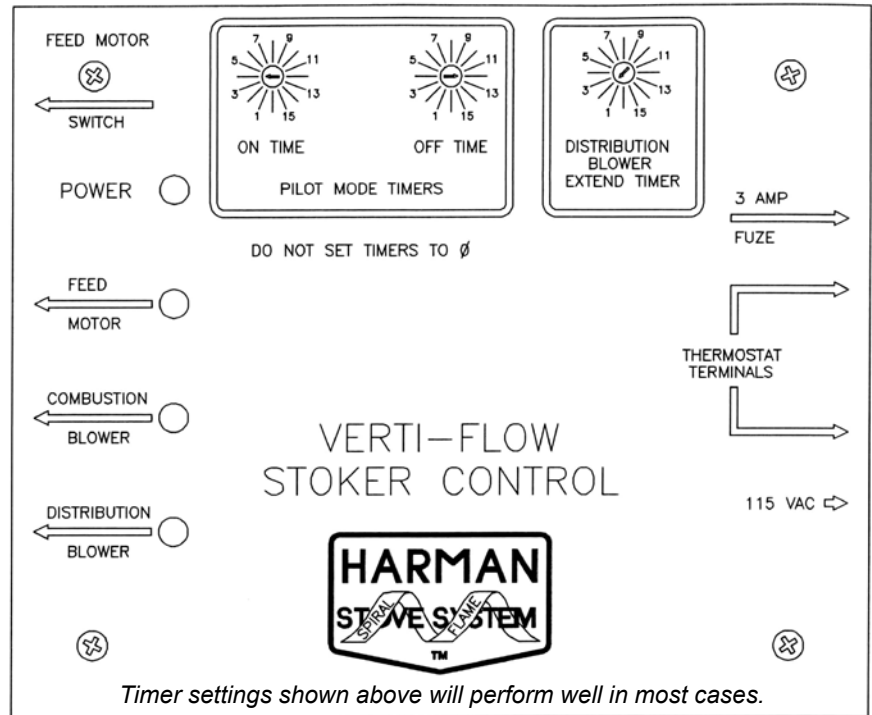
Fine Tuning Draft

With a fire burning and stabilized, take a draft reading in the flue pipe and note the reading. Next take a reading in the fire box by removing the bolt in the front center of the unit.

While watching the draft meter, close the restrictor plate on the combustion blower slowly until the needle reads about the same as it did on the flue. An example would be a flue reading of .05 and a firebox reading of .02. Close the restrictor plate until the firebox reading is .04 to .05. Closing the restrictor plate will reduce the positive pressure from the blower and increase the negative pressure in the firebox.

WARNING!

If draft is at .00, carbon monoxide will escape into the room. Too much carbon monoxide can kill you.



Verti-Flow Stoker Control

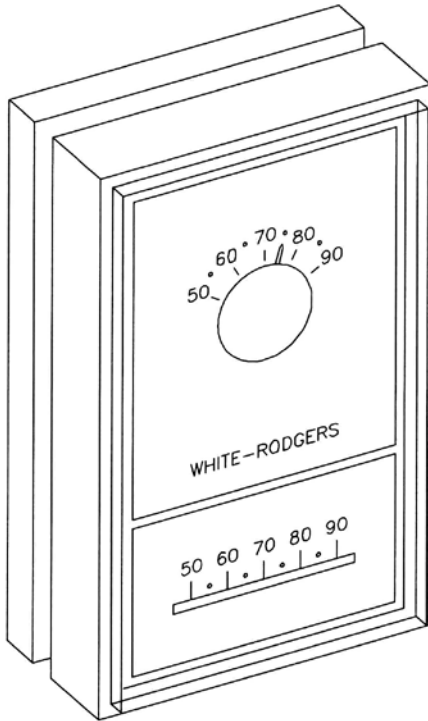
This section describes the features and operations of The Harman Verti-Flow Stoker Control. The timers are adjustable from 0 minutes to 15 minutes in 1 minute steps. There are red lights on the front panel to show proper operation of the timer. One indicator shows power is applied to the unit. The other 3 indicators show when power is available at the adjacent receptacle.

The stoker control will be mounted on the side panel of the feeder directly below the coal hopper. The three receptacles and switch will be facing forward. The power cord, 3 AMP fuse access port and the thermostat connections to the rear.

The top receptacle provides power to the coal feeder motor. Thus, the plug from the coal feeder motor should be inserted into this receptacle.

The center receptacle provides power for the combustion blower motor. Thus, the plug from the combustion blower should be inserted into this receptacle.

The bottom receptacle provides power for the distribution blower motor. Thus, this final receptacle should be used by the plug from the distribution blower motor.



The thermostat connections on the back panel of the Stoker Control are .25 inch male quick connect terminals. The mating connectors (supplied) should be .25 inch female quick connector terminals. The wire should be no smaller than 22 gauge.

The thermostat connections should only be connected across the thermostat switch inside the thermostat unit. This switch is the type which opens (turns off) when the set point temperature is reached, and closes (turns on) when the room temperature falls below the temperature. (This is the type supplied with the unit.)

The AC power cord should be the last connection made. The power cord should be plugged into a 120 AC volt, 60 hertz, properly grounded wall outlet. This wall outlet should also be capable of handling 3 amps of current because this is the maximum amperage this unit will draw.

Place the thermostat in a central location. Do not place it in an isolated room with poor air circulation.

Operation

Basic Theory of Operation

After the stoker control is properly installed, operation of the stove may begin. The stove operation is controlled from the thermostat. This means if the room temperature is cooler than the temperature set on the thermostat, the stove will begin operation with the stoker control in the inactive state. Once the room temperature reaches the thermostat set point temperature, the combustion blower and coal feeder will turn off, but the distribution blower will still operate. At this point, the stoker control has taken control of the stove's operation. The timer will continue to control the stove until the room temperature drops below the thermostat set point temperature. At this time, the stove will operate constantly until the room temperature reaches the thermostat set point again and the cycle repeats.

It should be noted that the timer adjustments do have a 0 minute position. The default conditions for these adjustments set for 0 minutes are as follows: "on time= 0," off time= 0 unit will run constantly; "on time" greater than 0," off time" 0, unit will run constantly; "on time" 0," off time" greater than 0, unit will cycle on and off with the "off" time being the controlling timer. It is not recommended that the 0 minute time be used on any of the adjustments. The 0 minute time is an invalid condition on the stoker control.

When the stoker control first takes control in the maintenance cycle, two timers are activated, the "distribution blower" timer and the unit "off" timer.

The "distribution blower extend timer" is an off delay timer. This means after the combustion blower and coal feeder turn off, the distribution blower will operate for the set period of time before turning off. The stoker control timing range for this function is 0 minutes to 15 minutes.

The purpose of having the off delay timer on the distribution blower is to exhaust the excess heat in the stove that is inherent after the combustion blower and coal feeder turn off. For this reason, it is not recommended that a 0 time setting be used. This will minimize any possibility of overheating the stove.

The other timer, which begins when the stoker control first takes control, is the "off" timer. This function of the stoker control is adjustable from 0 minutes to 15 minutes. Programming this timer with a value lets the stoker timer know how long to keep the combustion blower and the coal feeder turned off between maintenance cycles.

Once the off timer has finished timing and the room temperature has not fallen below the thermostat set point, the "on" timer function will begin. The programmable range for this function is also 0 minutes to 15 minutes. Once the "on" timer has started, all output (combustion blower, distribution blower, coal feeder) receptacles will become active for the programmed amount of time. When the "on" timer has finished timing, the stoker control will recycle and the "distribution blower" timer along with the "off" timer will once again become active.

The final operator interface is the switch on the front panel adjacent to the receptacles. This switch in the "on" position allows power to the coal feeder motor receptacle. In the "off" position, power will be removed only from the coal feeder motor receptacle. This switch in the "off" position, will stop the coal from moving across the grates and allow for easy lighting of the fire. Once the fire has been established move the switch to the "on" position.

How to Operate the Stoker Control

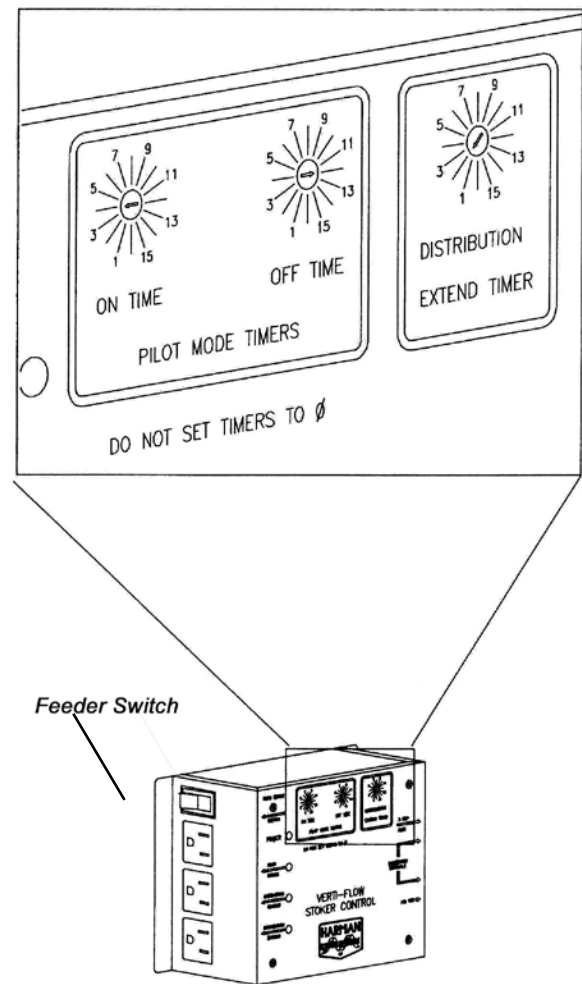
There are four operator interfaces on the stoker control. The operator interfaces are one rocker switch and three, 16-position rotary switches.

The rocker switch is a power switch that controls only the coal feeder motor. For normal operation, this switch should be placed in the "on" position. This switch's operation can be verified by a small red light above the coal feeder receptacle being on when the switch is on. If the stove needs to be shut down, simply place the rocker switch in the "off" position. The small light above the coal feeder receptacle will turn off.

The other three switches are the customer's adjustments for the timers (on time, off time, distribution blower time). These switches can adjust each timer individually from 1 minute to 15 minutes in 1 minute increments. Do not set timers to 0.

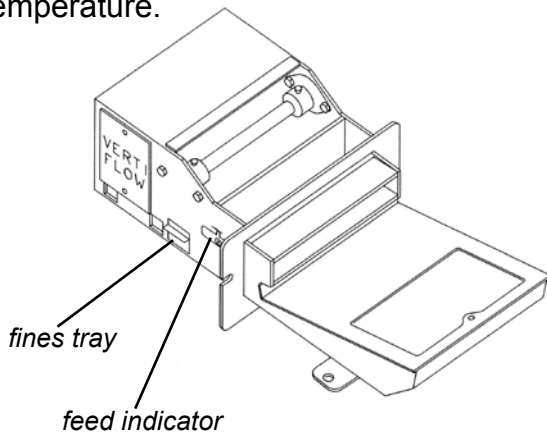
The "on" time and the "off" time should be programmed to a minimum time that keeps the coal burning during the maintenance cycling mode. The distribution blower time should be programmed for a time which is long enough to move the excess heat from the stove to the room heated. If this time is programmed for a longer time than the "off" time, the distribution blower will operate continuously. This will have no damaging effect on the stoker control.

Recommended timer settings to start are, "on" 4 minutes, "off" 12 minutes, extend timer 2 minutes. You may find that these settings produce too much heat in pilot mode. If so, you can reduce the "on" time and increase the "off" time. However, be aware that you can go too far and have the fire go out. It is best to make adjustments one minute at a time.



To start a fire, you first pour rice coal into the hopper. With the thermostat turned up and the stoker running, the coal will begin to feed onto the grate inside the stove. This process can be accelerated by adjusting the feed rate to the maximum position. When the coal starts to come up out of the grate and is almost up to the area where the holes start, turn the feed rate back to about 3/8" and turn off the feed motor with the switch on the side of the stoker control. Place some crumbled newspaper and fine kindling (6" to 8" long), or wood pellets and starter gel, on the grate and ignite. You'll want to have a hot active fire, then start adding some rice coal on top of it. Once a good coal fire is burning, the feed motor can be turned on and the coal fire will continue to get larger. Fresh coal will continue to be pushed onto the grate and ashes will be pushed off the grate. The feed rate must be adjusted so the coal is burned up and turned to ashes before reaching one inch from the end of the grate. Too high of a feed rate will push unburned coal off the coal grate, therefore not allowing a complete burn.

After the fire is burning and the feed rate is adjusted, you can now set the thermostat to the desired temperature.

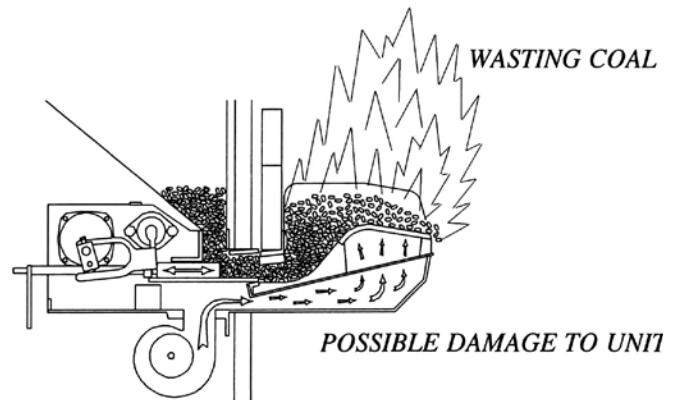
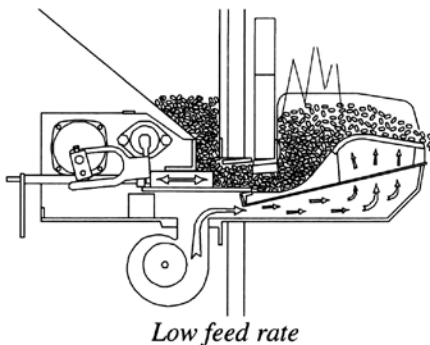
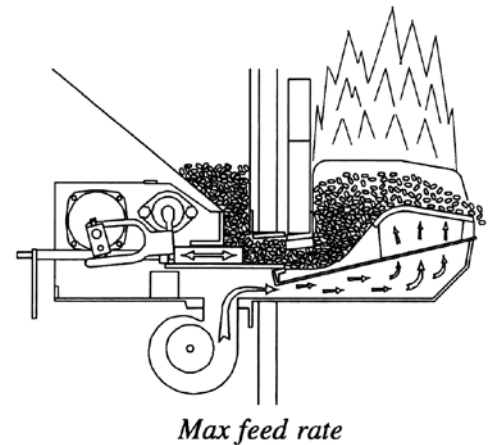
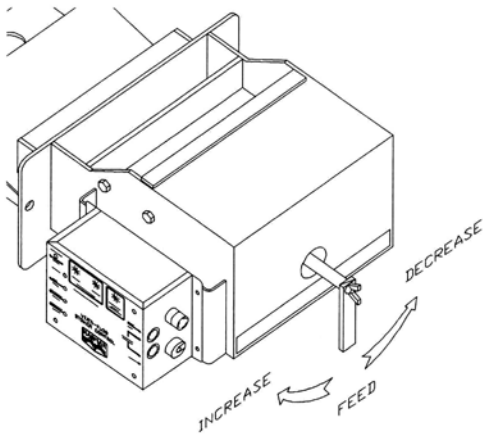


Feed Adjustment

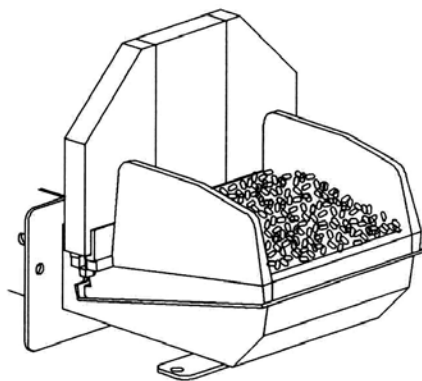
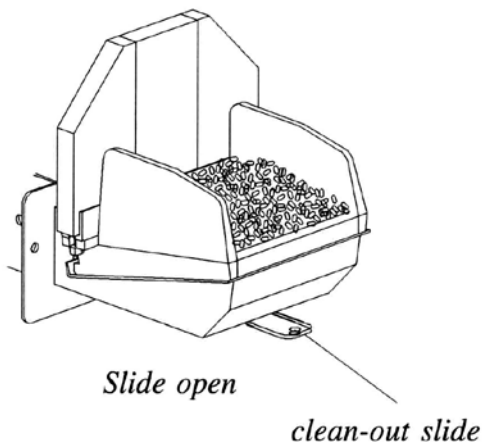
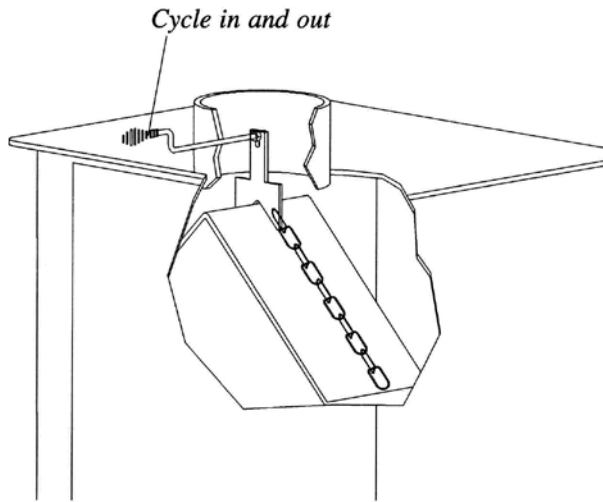
Adjust feed rate by turning adjuster clockwise to increase and counterclockwise to decrease. Each complete turn will move the fire about 1".

The feed indicator on the side of the feeder shows how far the pusher moves each stroke. There are dots above the indicator spaced 1/8 " apart. A movement of one dot would give a low burn, two dots medium and three dots high. Lock the adjuster with the wing nut after adjusting.

See drawings.



Over Fired, No Good



MAINTENANCE

With each hopper of coal that is burned, approximately one ashpan full of ashes must be removed. Failure to remove the ashes will result in a blocked up grate and the fire will not burn properly. Remember, the ashpan will be hot, so always wear protective gloves.

Weekly:

The small tray in the side of the stoker should be removed and emptied. (see illustration on previous page)

The spring handle located at the rear of the flue-pipe should be cycled in and out several times. This action cleans the interior of the heat exchanger and causes the dust to fall into the ashpan.

Every 3 Months:

The grate "clean-out" slide should be opened and re-closed as shown in drawings at left.

In the "closed" position, be sure the "grate clean-out" slide is straight across as shown.

The easiest way to handle this slide is through the ash door with a poker inserted into the hole at the end.

The purpose of this operation is to let any fly ash build-up, from under the grate, fall into the ashpan.

This operation can be performed while the unit is burning. However, you should first lower the thermostat to lower the stove temperature and be sure you are wearing protective gloves.

This cleaning can also be performed when the unit is cold, by lifting out the grate inserts and removing the ash with a vacuum cleaner.

Annually:

At the end of the heating season is the best time to perform annual maintenance. The reason is, rust and corrosion can form much faster in the high humidity of summer.

Remove all coal from hopper.

Remove all ashes.

Remove and clean flue pipe.

Check chimney and clean if necessary.

Remove hopper and check for rust at bottom edges. If rust is found, remove it with a file or sandpaper and paint the area with spray paint available from your dealer.

Check the feeder for rust and corrosion where the hopper fits into it.

IMPORTANT: Check the pusher block to see that it moves freely. This can best be done by shaking the adjuster rod. If it does not move freely, it should be removed and cleaned. Also remove any rust or corrosion from the area where the pusher block slides and coat with a rust inhibiting product. To remove pusher block - - Remove cover, remove wing nut, adjuster, and adjuster tube. Remove motor mount with motor in place and cord still attached. Swing pusher assembly up as high as it will go. Remove feed indicator from side with Allen wrench. Now the pusher block can be removed. To reinstall -- just reverse the procedure. If the pusher block cannot be moved, call your dealer.

IMPORTANT: Always empty the hopper when not burning for more than a week. When left standing for long periods with wet coal, the pusher block will rust and corrode, causing it to seize. If the stoker is then turned "on", damage to the pusher assembly and feed motor will result. This will be considered neglect and will void the warranty on those parts. Always check to see if moving parts are free before using, if the unit has not been burned for a period of time. This can best be determined by shaking the adjuster rod.

TROUBLE-SHOOTING

FEEDING PROBLEMS

Wet Coal -- Wet coal does not flow the same as dry coal. Therefore, the feed rate will change with wet coal. If it is too wet, it may not feed at all. Wet coal can also cause a sulfur odor.

Wrong Size Coal -- The Verti-Flow System is designed to burn rice coal (or buckwheat coal if rice is not available) If buckwheat coal is burned, raise the draft setting from .04 to .06. Larger coal will not feed or burn properly.

Hopper Blocked -- Sometimes wood, paper, or other foreign objects accidentally end up in your coal bin and can slow down or block the flow of coal. You may have to empty the hopper to find the blockage.

Pusher Out Of Adjustment -- This can happen when more than one person tends the stoker. One person does not tell others what adjustments were made.

Gas Alarm Buzzes or Sulfur Odor Exists -- A sulfur smell may be noticed when the top door is opened during operation with wet or damp coal. This is normal. However, it is not recommended that wet coal be used or the top door be opened for more than a few seconds while burning to inspect the fire. You may also notice the odor when opening the hopper lid. This is from the moisture being evaporated from the coal in the hopper.

Lack of draft or a down draft in the chimney will cause gases to escape from the unit. No stove will function properly without draft. Any draft problem should be corrected before use.

A draft inducer may be installed to increase draft in marginal situations.

The installation should be performed by your dealer who is factory trained to correct any problem on initial start-up. After proper installation, many years of trouble-free operation can be expected.

Stoker Control Trouble-Shooting

This trouble-shooting guide is designed to help the customer find basic problems external to the stoker timer. If a problem cannot be located by using this guide, servicing of the stoker control or replacement may be required. This should be done by qualified personnel only.

PROBLEM: No motors or lights will turn on.

Check the AC power cord to the stoker control.

Check the 3 amp fuse on the side panel of the stoker timer. (Replace only with a 3 amp "slow blow" fuse.)

PROBLEM: Lights on the stoker control are on, but motors will not operate.

Check the AC power plugs from the motors (are they securely plugged into the correct outlet.)

PROBLEM: One of the motors will not operate.

Check if the light above the receptacle is lit.

Check the AC power plug from the motor (is it securely plugged into the correct outlet.)

PROBLEM: The motors are cycling on and off, but not in the correct order.

Check the AC power plugs from the motors (are they securely plugged into the correct outlet.)

PROBLEM: Coal feeder motor will not turn on.

Check if the red light is lit, if not, check if the feed motor switch is turned on.

PROBLEM: The motors turn on and off as programmed, but the room temperature is below the thermostat setting.

Check the connections from the stoker control to the thermostat.

Check the thermostat for proper operation.

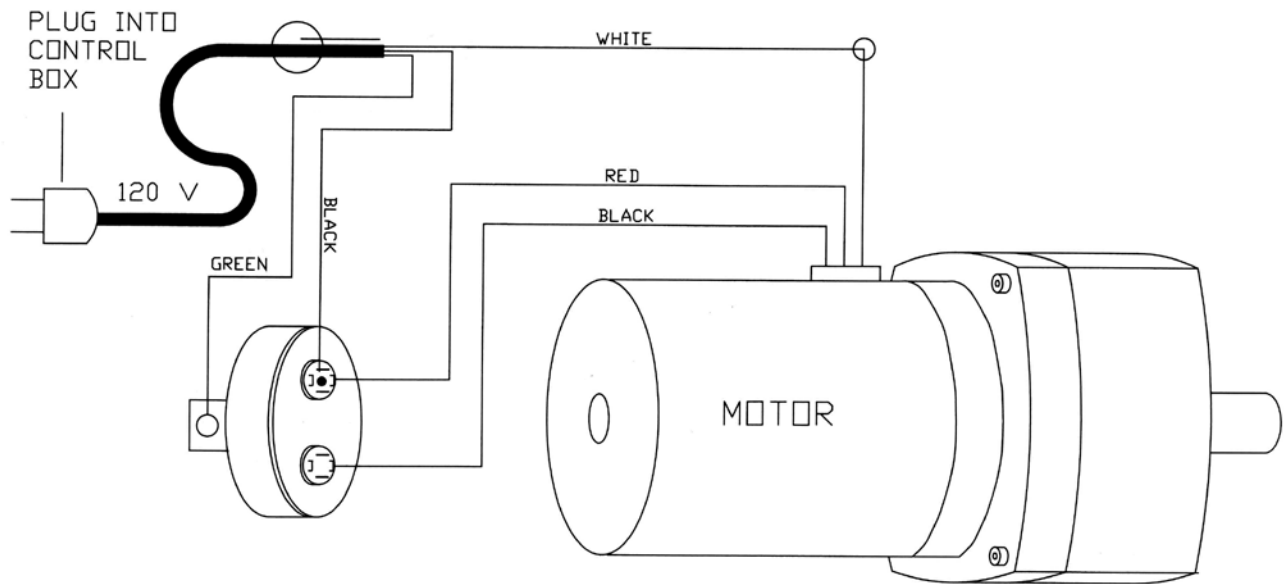
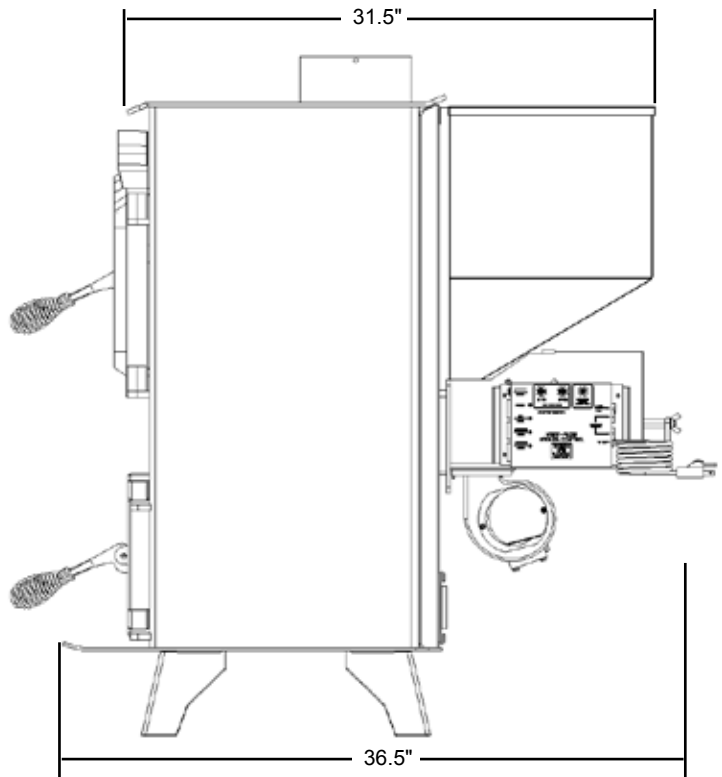
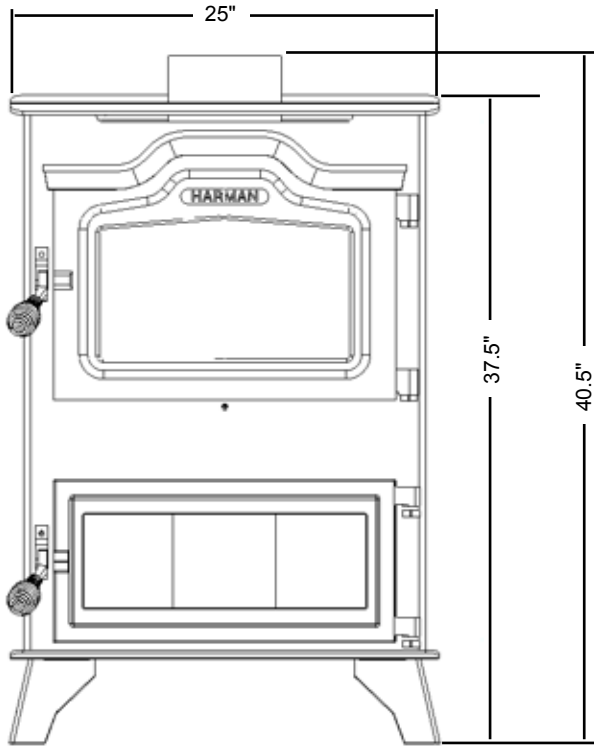
PROBLEM: The motors do not turn off, even when the room temperature is above the thermostat set point.

Check that the programmed off time is not for 0 minutes.

Check the connections from the stoker control to the thermostat.

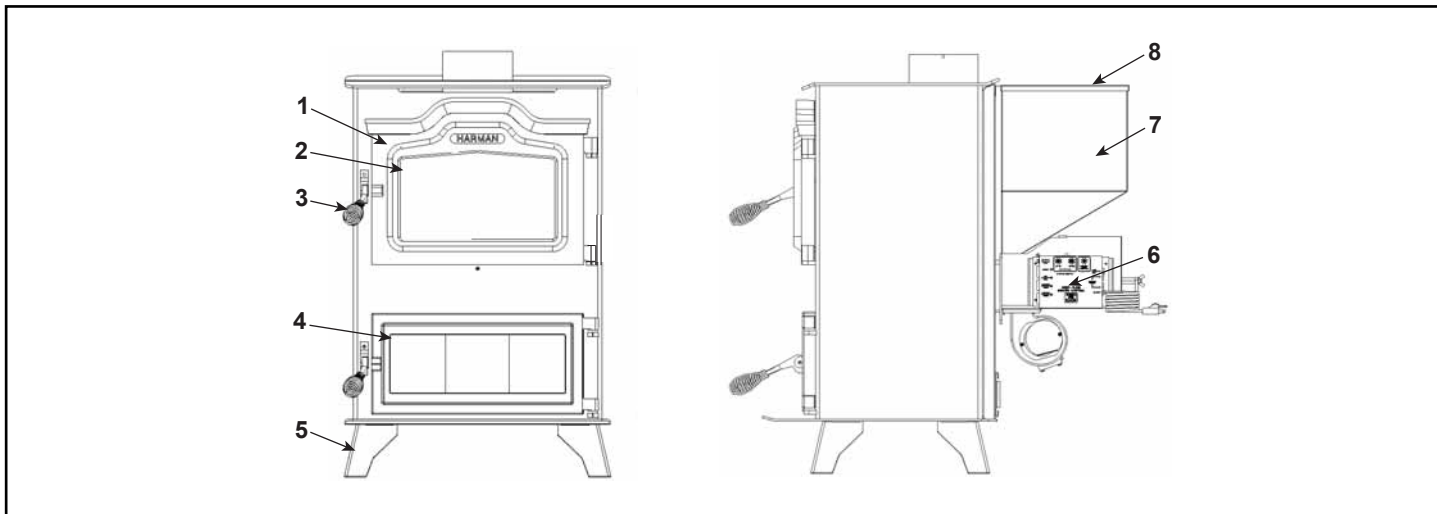
Check the thermostat for proper operation.

SPECIFICATIONS



STOKER MOTOR WIRING DIAGRAM

1-70-03244-1 (Black), 1-70-03244-2 (Charcoal), 1-70-03244-3 (Goldenfire), 1-70-03244-4 (Metallic Blue),
1-70-03244-5 (Honey Glo), 1-70-03244-10 (Mojave Red), 1-70-03244-12 (Forest Green)



IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.

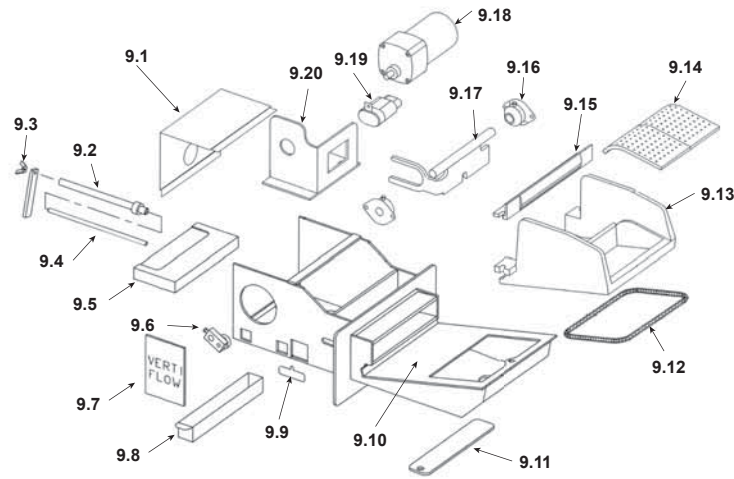


**Stocked
at Depot**

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
1	Load Door - Roped		1-10-08140A	Y
	Load Door Hinge Pin	Pkg of 4	4-30-00138A	Y
	Door Kit Assembly	Black classic	1-00-00138-1	
	Gasket Round Rope 1/2" (Load Door - Ash Door)	20 Ft	1-00-53500	Y
	Load Door Top	Cast	4-00-00034-1	
	Load Door Top (Gold)	No longer available	3-00-00034-4	
2	Glass Frame	Cast	4-00-00037-1	
	Glass Frame (Gold)	No longer available	3-00-00037-4	
	Rect Glass 8-1/2" X 14-15/16"		3-40-8501494	Y
	Gasket 5/8" Channel (Glass)	5 Ft	1-00-98187	Y
3	Spring Handle 1/4" - Gold (Heat Exchanger Handle)		1-00-01004	
	Spring Handle 1/2" - Gold (Load/Ash Door Handle)	Pkg of 3	3-40-00086-3-3	
	Door Handle - Cast	Qty 2 req	4-00-00042	Y
	Door Latch	4 Sets	1-00-00036	Y
4	Ash Door - Roped		1-10-08141A	
	Ash Door Tile Plate (Steel)		2-00-01148	Y
	Ash Pan		1-10-00170	Y
5	Mag Leg - Cast	Qty. 4 Req.	4-00-00044P	
6	Timer Control Box		3-20-44322	Y
	Fuse Holder - Timer Control Box		3-20-00900	Y
7	Hopper Assembly w/Lid	Black	1-00-01005-1	
	Hopper Clip		2-00-01035	
	Hopper Weldment - Unpainted		1-10-03879	Y
8	Hopper Lid		2-00-07087	
	Hopper Handle - Cast		3-00-00219S	

Additional service part numbers appear on following page.

#9 Feeder Assembly



IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.

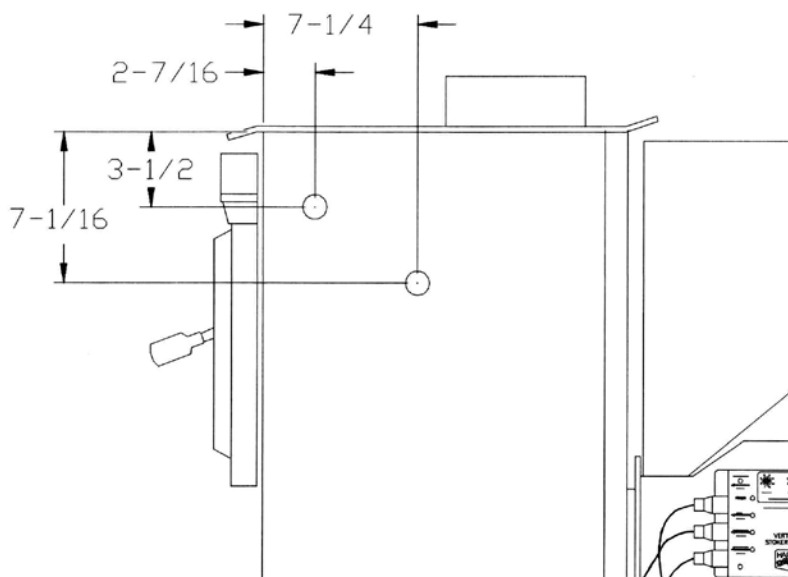
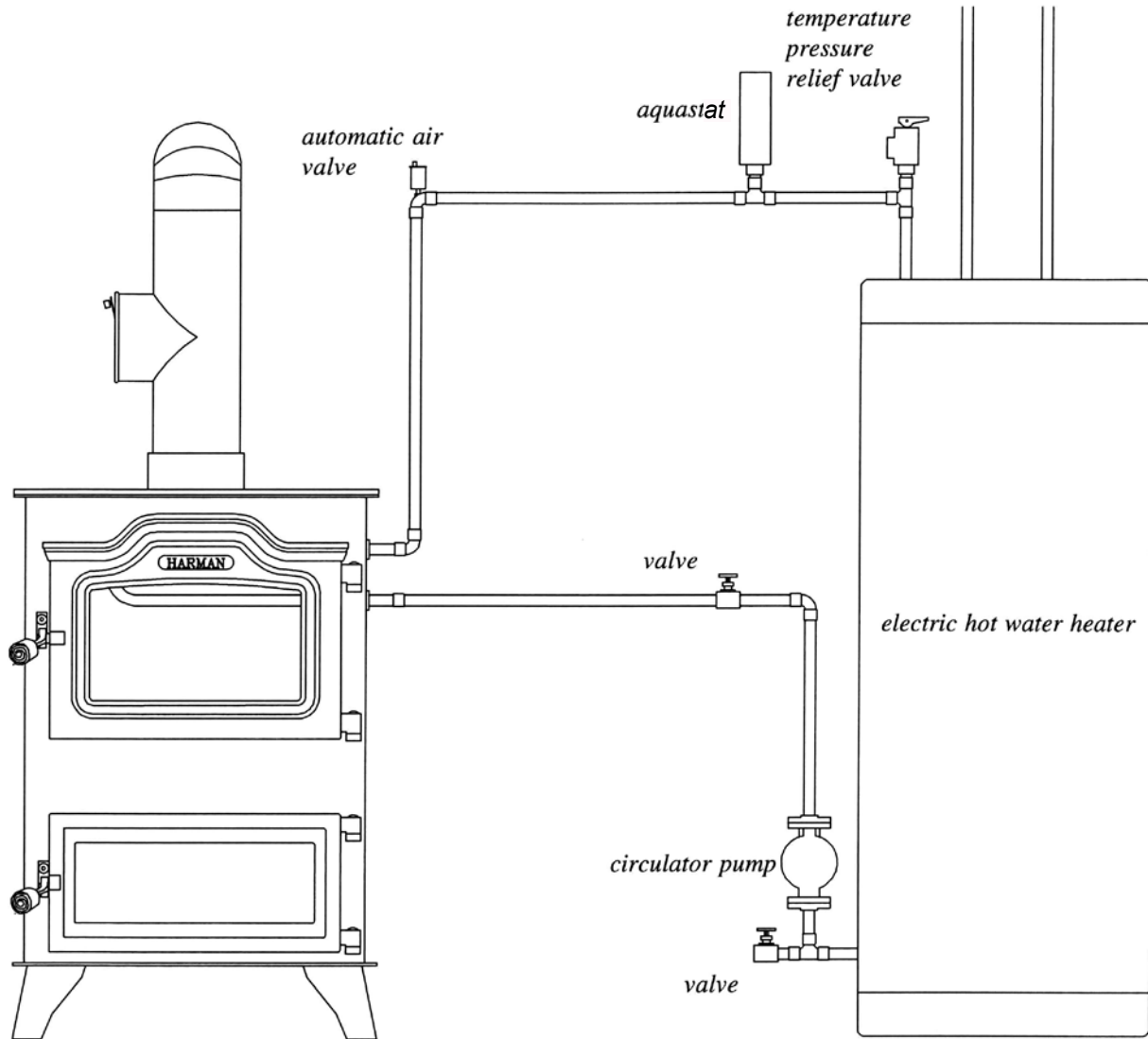


**Stocked
at Depot**

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
9.1	Feeder Motor Cover		2-00-00052P	
	Pusher Block Assembly (w/Tube & Threaded Rod)		1-10-00099	Y
9.2	Pusher Block Adjuster Tube		1-10-00050P	
9.3	5/16-18 Zinc Plated Cold Forged Wing Nut	Pkg of 25	3-30-8012-25	Y
9.4	Pusher Block Adjuster Rod	Pkg of 2	2-00-08011-2	Y
9.5	Pusher Block		3-50-00026	Y
9.6	Cam Block Assembly		1-10-00102A	Y
	Feeder Cam Block		3-50-00054	Y
	Cam Bearing		3-31-3014	Y
9.7	Cam Arm Cover		2-00-00053P	Y
9.8	Fines Tray		2-00-00055	Y
9.9	Feed Indicator Hardware		1-00-00056	Y
	Capacitor Holder Kit - uses 3 AMP Slow Blow Fuse		3-20-36533	
9.10	Feeder Body Weldment		1-10-00687	Y
9.11	Clean-Out Slide		2-00-00048P	Y
9.12	Gasket 1" White w/Adhesive (Feeder Gasket)	10 FT	1-00-88100	Y
9.13	Grate Holder Assembly		1-10-01000	Y
	Gasket Hd Rope (Grate Holder)	5 Ft	1-00-43375	Y
9.14	Grate Inserts	Qty. 2. Req.	4-00-00046D	Y
9.15	Grate Angle - Cast		3-00-00218	Y
9.16	Pillow Block - 3/4" Flange		3-31-324122	Y
9.17	Pusher Arm Weldment		1-10-00025	Y
9.18	Gearmotor - 1/80 HP-4.5 RPM		3-20-60075	Y
9.19	Capacitor 370 Vac Motor Run		3-20-69654	Y
9.20	Feed Motor Mount		1-10-00031P	

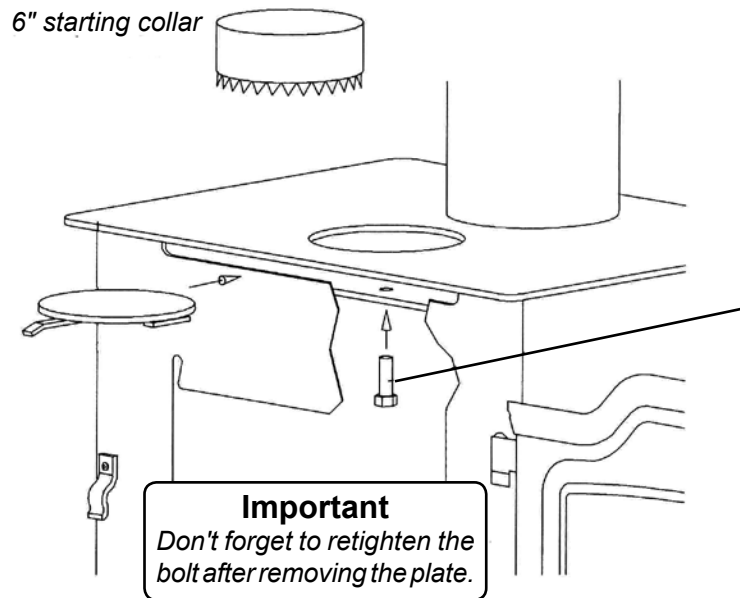
Additional service part numbers appear on following page.

Domestic hot water coil hookup



Cut holes with 1 1/8" hole saw where shown . Install coil with hardware provided. Hook up as shown above. If the distance between the unit and the tank is less than 10 feet, the circulator pump and aquastat are not needed. The aquastat is to turn on the pump when the water reaches temperature in systems over 10 feet apart.

Hot Air Duct Option



Your stoker has a built-in feature that lets you take the air that normally blows out from the front and puts it out the top into a 6" duct.

To do this, remove the 6" round plate from the top of the unit by removing the bolt located in the top of the firebox. A 3/4" wrench will fit the bolt. Remove the plate from the front by using the small handle on the plate. Turn bolt all the way in and tighten.

Next, block off the front blower opening with a piece of heavy fiberglass rope. Insert rope through the 6" duct opening and push front to block off the front air passage.

Now, install a 6" starting collar in the 6" hole and run the duct to a register in the desired room.

NOTE: THIS DUCT OPTION IS INTENDED TO SUPPLY ONE REGISTER ONLY, WITH A MAXIMUM DISTANCE OF 20 FEET FROM UNIT.

**Hearth & Home Technologies Inc.
LIMITED LIFETIME WARRANTY**

Hearth & Home Technologies Inc., on behalf of its hearth brands ("HHT"), extends the following warranty for HHT gas, wood, pellet, coal and electric hearth appliances that are purchased from an HHT authorized dealer.

WARRANTY COVERAGE:

HHT warrants to the original owner of the HHT appliance at the site of installation, and to any transferee taking ownership of the appliance at the site of installation within two years following the date of original purchase, that the HHT appliance will be free from defects in materials and workmanship at the time of manufacture. After installation, if covered components manufactured by HHT are found to be defective in materials or workmanship during the applicable warranty period, HHT will, at its option, repair or replace the covered components. HHT, at its own discretion, may fully discharge all of its obligations under such warranties by replacing the product itself or refunding the verified purchase price of the product itself. The maximum amount recoverable under this warranty is limited to the purchase price of the product. This warranty is subject to conditions, exclusions and limitations as described below.

WARRANTY PERIOD:

Warranty coverage begins on the date of original purchase. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the product by an independent, authorized HHT dealer/ distributor, whichever occurs earlier. The warranty shall commence no later than 24 months following the date of product shipment from HHT, regardless of the installation or occupancy date. The warranty period for parts and labor for covered components is produced in the following table.

The term "Limited Lifetime" in the table below is defined as: 20 years from the beginning date of warranty coverage for gas appliances, and 10 years from the beginning date of warranty coverage for wood, pellet, and coal appliances. These time periods reflect the minimum expected useful lives of the designated components under normal operating conditions.

Warranty Period		HHT Manufactured Appliances and Venting							Components Covered
Parts	Labor	Gas	Wood	Pellet	EPA Wood	Coal	Electric	Venting	
1 Year		X	X	X	X	X	X	X	All parts and material except as covered by Conditions, Exclusions, and Limitations listed
2 years				X	X	X			Igniters, electronic components, and glass
		X	X	X	X	X			Factory-installed blowers
				X					Molded refractory panels
3 years				X					Firepots and burnpots
5 years	1 year			X	X				Castings and baffles
7 years	3 years		X	X	X				Manifold tubes, HHT chimney and termination
10 years	1 year	X							Burners, logs and refractory
Limited Lifetime	3 years	X	X	X	X	X			Firebox and heat exchanger
90 Days		X	X	X	X	X	X	X	All replacement parts beyond warranty period

See conditions, exclusions, and limitations on next page.

WARRANTY CONDITIONS:

- This warranty only covers HHT appliances that are purchased through an HHT authorized dealer or distributor. A list of HHT authorized dealers is available on the HHT branded websites.
- This warranty is only valid while the HHT appliance remains at the site of original installation.
- Contact your installing dealer for warranty service. If the installing dealer is unable to provide necessary parts, contact the nearest HHT authorized dealer or supplier. Additional service fees may apply if you are seeking warranty service from a dealer other than the dealer from whom you originally purchased the product.
- Check with your dealer in advance for any costs to you when arranging a warranty call. Travel and shipping charges for parts are not covered by this warranty.

WARRANTY EXCLUSIONS:

This warranty does not cover the following:

- Changes in surface finishes as a result of normal use. As a heating appliance, some changes in color of interior and exterior surface finishes may occur. This is not a flaw and is not covered under warranty.
- Damage to printed, plated, or enameled surfaces caused by fingerprints, accidents, misuse, scratches, melted items, or other external sources and residues left on the plated surfaces from the use of abrasive cleaners or polishes.
- Repair or replacement of parts that are subject to normal wear and tear during the warranty period. These parts include: paint, wood, pellet and coal gaskets, firebricks, grates, flame guides, light bulbs, batteries and the discoloration of glass.
- Minor expansion, contraction, or movement of certain parts causing noise. These conditions are normal and complaints related to this noise are not covered by this warranty.
- Damages resulting from: (1) failure to install, operate, or maintain the appliance in accordance with the installation instructions, operating instructions, and listing agent identification label furnished with the appliance; (2) failure to install the appliance in accordance with local building codes; (3) shipping or improper handling; (4) improper operation, abuse, misuse, continued operation with damaged, corroded or failed components, accident, or improperly/incorrectly performed repairs; (5) environmental conditions, inadequate ventilation, negative pressure, or drafting caused by tightly sealed constructions, insufficient make-up air supply, or handling devices such as exhaust fans or forced air furnaces or other such causes; (6) use of fuels other than those specified in the operating instructions; (7) installation or use of components not supplied with the appliance or any other components not expressly authorized and approved by HHT; (8) modification of the appliance not expressly authorized and approved by HHT in writing; and/or (9) interruptions or fluctuations of electrical power supply to the appliance.
- Non-HHT venting components, hearth components or other accessories used in conjunction with the appliance.
- Any part of a pre-existing fireplace system in which an insert or a decorative gas appliance is installed.
- HHT's obligation under this warranty does not extend to the appliance's capability to heat the desired space. Information is provided to assist the consumer and the dealer in selecting the proper appliance for the application. Consideration must be given to appliance location and configuration, environmental conditions, insulation and air tightness of the structure.

This warranty is void if:

- The appliance has been over-fired or operated in atmospheres contaminated by chlorine, fluorine, or other damaging chemicals. Over-firing can be identified by, but not limited to, warped plates or tubes, rust colored cast iron, bubbling, cracking and discoloration of steel or enamel finishes.
- The appliance is subjected to prolonged periods of dampness or condensation.
- There is any damage to the appliance or other components due to water or weather damage which is the result of, but not limited to, improper chimney or venting installation.

LIMITATIONS OF LIABILITY:

- The owner's exclusive remedy and HHT's sole obligation under this warranty, under any other warranty, express or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified above. In no event will HHT be liable for any incidental or consequential damages caused by defects in the appliance. Some states do not allow exclusions or limitation of incidental or consequential damages, so these limitations may not apply to you. This warranty gives you specific rights; you may also have other rights, which vary from state to state. EXCEPT TO THE EXTENT PROVIDED BY LAW, HHT MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE.

NOTES

