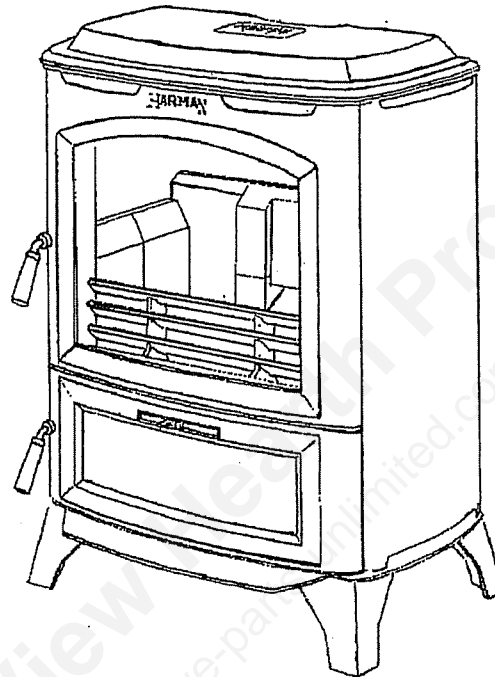


HARMAN E

MODEL CW30



OPERATOR'S
MANUAL

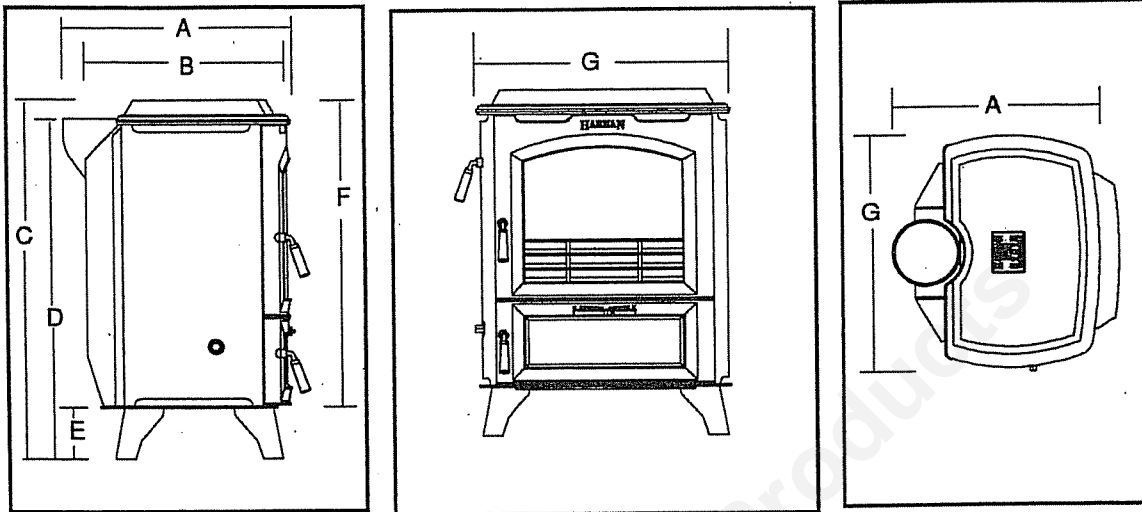


FOR USE IN THE U.S. AND CANADA
SUITABLE FOR INSTALLATION IN MOBILE HOMES

Cette guide d'utilisation est disponible en français
chez votre concessionnaire de Harman Stove Company

**SAFETY NOTICE: IF THIS HARMAN E MODEL CW30 WOOD/COAL STOVE IS NOT PROPERLY
INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW THE INSTALLATION
DIRECTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS
AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.**

Specifications – Harman E, Model CW30



<p>Maximum Heat Output, BTU/hr **</p> <ul style="list-style-type: none"> • Wood -50,000 • Coal -75,000 	<p>Weight – 545 lbs (248 kg)</p>
<p>EPA Heat Output Range, BTU/hr ***</p> <ul style="list-style-type: none"> • 10,000–34,000 <p>Particulate Emissions, Average ***</p> <ul style="list-style-type: none"> • 3.6 gm/hr 	<p>Glass Door – standard</p> <ul style="list-style-type: none"> • Inner panel – flat ceramic* • Outer panel – curved borosilicate* <p>* Replace only with glass supplied by Harman Stove Company</p>
<p>Heating Capacity – 900 to 2,000 sq ft</p>	<p>Convection Blower – standard</p> <ul style="list-style-type: none"> • Variable speed – up to 105 cfm • Electric rating – 0.55A, 120V, 60Hz
<p>Recommended Fuel Type</p> <ul style="list-style-type: none"> • Wood – 18" (450 mm) • Coal – Anthracite: pea, nut or stove <p>Maximum Fuel Load</p> <ul style="list-style-type: none"> • Wood – 40 lb (18 kg) • Coal – 60 lb (27 kg) 	<p>Outside Air Connection – Optional</p> <ul style="list-style-type: none"> • 3" (80 mm) diameter
<p>Flue Collar</p> <ul style="list-style-type: none"> • Reversible, top and rear • 7" (180 mm) diameter – standard • 6" (150 mm) diameter – optional 	<p>Dimensions</p> <ul style="list-style-type: none"> • A – 23.0"(585 mm) • B – 20.25" (520 mm) • C – 36.5"(910 mm) • D – 34.5"(875 mm) • E – 5.5"(140 mm) • F – 31.0"(790 mm) • G – 26.5"(675 mm)
<p>** These figures are based upon burning seasoned hardwoods or quality anthracite coal, and operating the stove at high heat outputs. Local weather conditions, the quality and type of building construction, floor plan, stove placement and other variables will influence your CW30's ability to achieve similar heating capacity and BTU output.</p> <p>***Based upon specific test conditions used during EPA testing procedures.</p>	

The Harman CW30 has been tested and listed to the test standards ANSI/UL-1482 and CAN/ULC-S627 by Warnock Hersey. It is intended for installation in accordance with NFPA 211 (Standard for Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances), CAN/CSA-B365 (Installation Code for Solid-Fuel Burning Appliances and Equipment), and when installed in mobile homes, with standards set forth by HUD (Mobile Home Construction and Safety Standards.)

The Harman CW30 meets the U.S. Environmental Protection Agency's emission limits for wood heaters sold after July 1, 1990. **NOTE:** It is a violation of Federal law to burn wood, except for ignition purposes, when the air control is in the "coal" position. See Operation section for details.

SAFETY NOTICE: IF THIS HARMAN E MODEL CW30 WOOD/COAL STOVE IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW THE INSTALLATION DIRECTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION REQUIREMENTS IN YOUR AREA.

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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.

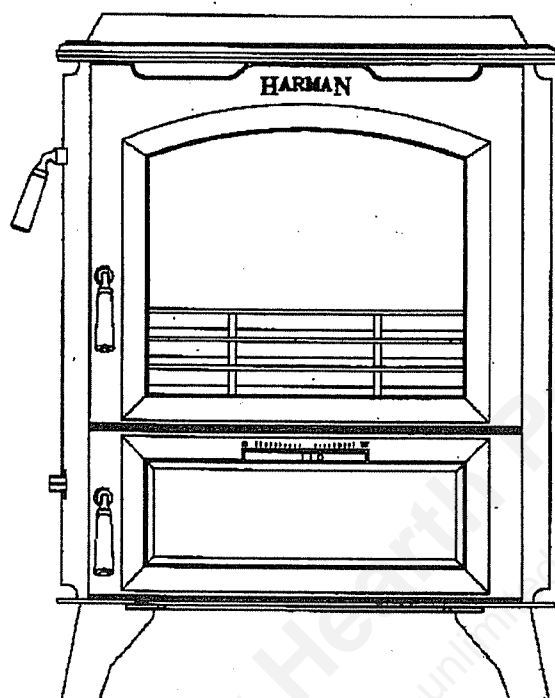
SUITABLE FOR MOBILE HOME INSTALLATIONS.

SAVE THESE INSTRUCTIONS.

Harman Stove & Welding, Inc.
352 Mountain House Road
Halifax, PA 17032

Introduction

Welcome



Stove Features and Benefits.

The Harman E, Model CW30, is an innovative and unique development in the solid fuel industry. It allows the homeowner to switch from wood to coal and back again without having to let the fire die in order to change grates or other components. The only change required is that of the air control lever, easily accomplished from the front of the stove while the stove is operating. Advanced engineering technology results in a stove that is both efficient and clean-burning. It is listed for use in both the U.S. and Canada, and is approved for use in mobile homes when properly installed.

The unique design of the Harman E takes advantage of both convection heating and radiant heating principles. Convection heating spreads its warmth by circulating warm air through vented side, back and top panels, aided by the convection blower (standard on all stoves.) Radiant heating provides that special warmth near the heater itself, traditionally associated with the hearthplace.

The Harman E offers a reversible 7" (180 mm) flue collar that allows for either top exit or rear exit installation. The removable ashpan, accessed through its own door, makes ash removal quick and neat. An optional direct connection for outside air is available, as is a 6" inch (150 mm) flue collar.

The design of the Harman E is one of understated, graceful proportion, blending well with any decor. The glass fire-viewing panel is generous in size for maximum enjoyment. It is available in a variety of paint colors as well as black, allowing you to choose a rich hue which becomes the highlight of a room, or a soft shade which blends subtly into the background.

Whether you choose coal or wood as your fuel, your investment in a Harman E is one that will reward you for years to come.

Operation

General Considerations

Draft

Before you install and operate your Harman E wood and coal stove, familiarize yourself with the contents of this manual. Pay particular attention to the explanation of draft and its effect on stove performance in the Installation section. By following the installation and operating guidelines, you will ensure proper draft and gain maximum efficiency and enjoyment from your stove.

Fuel

Your Harman E can burn either wood or coal efficiently. Here are some guidelines concerning choice of proper fuel that will help you obtain the best performance.

Wood. Select hardwoods if possible, as they are heavier and contain more heating capacity (BTU's) per load than do softwoods. Wood should be split and stored under cover for "seasoning" – a year is recommended. Your stove is not an incinerator – do not burn garbage, painted or treated wood, plastic, or other debris.

Coal. In the coal mode, high quality anthracite (hard) coal is the preferred fuel for your stove. Either pea, nut or stove size will burn well (sizes ranging from 1" to 2-1/2" diameter). Soft (bituminous) coal may burn well depending on its quality and size (try nut size – roughly 1-1/2" in diameter.)

Store coal under cover – wet coal should ignite easily if it is added to an already existing coal bed, but frozen coal is something to avoid. Sub-freezing temperatures can create a solid mountain out of your uncovered coal pile. A bin to hold three tons of anthracite coal, on a solid foundation, takes up only 4' x 8' x 4' (1215 mm x 2430 mm x 1215 mm) of space.

Whether burning wood or coal, keep the area around the stove free from clutter. Keep all combustibles, including fuel, beyond the code-required clearance distance (48" or 1215 mm in the U.S., 1525 mm or 60" in Canada). Never store fuel in front of the stove where it could interfere with door operation, safe loading, and ash removal.

Do not burn garbage or flammable fluids such as gasoline, naphtha, or engine oil.

The Stove

Doors

Your stove has a large glass-paneled door for loading and fire viewing, and a separate smaller door for removing ashes. To open the doors, turn the handles clockwise and pull out; to close them, return the handles to a straight up position, and push in to engage the latch while turning the handles counterclockwise.

If the latch in either of your Harman E's doors needs adjustment, follow the instructions given in the Maintenance section.

Both doors must be closed while the stove is in operation, and the gaskets routinely examined for wear and replaced when necessary. Good door seals are important for maintaining control of the stove. Operating the stove with either door open, or with a door inadequately sealed, could create a serious overfiring condition (discussed later in this section.)

The glass used in your Harman E is manufactured to exacting standards to withstand the high heat of the fire, but like all glass, it must be treated with common sense and care. Never abuse the glass by slamming the door shut or striking the glass with a heavy object. If the glass is broken or damaged, do not operate the stove until it has been replaced. (See instructions in the Maintenance section.)

Grates and Grate Bars

The Harman E's unique grate system consists of two bottom rotating grates and three front grate bars. The bottom grates sift ash down into the ashpan when rotated back and forth. The grate bars keep the fuel from coming in direct contact with the glass, and keep hot coals and embers from spilling out while reloading. Never build a fire directly against the glass.

Harman E, Model CW30 Wood and Coal Stove

The grates and grate bars must remain in place at all times, whether burning coal or wood. Do not tamper with or change the configuration of this grate system.

Building and Maintaining a Fire

Break-In Fires

The Harman E is built to withstand the high temperatures of combustion. The first fire, however, should "break-in" the stove to the fluctuating temperatures that will be generated during daily use. This fire will expose the stove to alternate heating and cooling cycles, allowing the cast iron and refractory bricks to expand and contract.

Build your first fire slowly, gradually allowing the heat output to increase. Allow the fire to burn down, then add more fuel to raise the temperature again. Repeat this cycle a few times if you like.

As you begin to operate your stove at higher

temperatures, you will notice a "hot" or unpleasant smell; this is just the paint going through the curing process, and will disappear after a few fires.

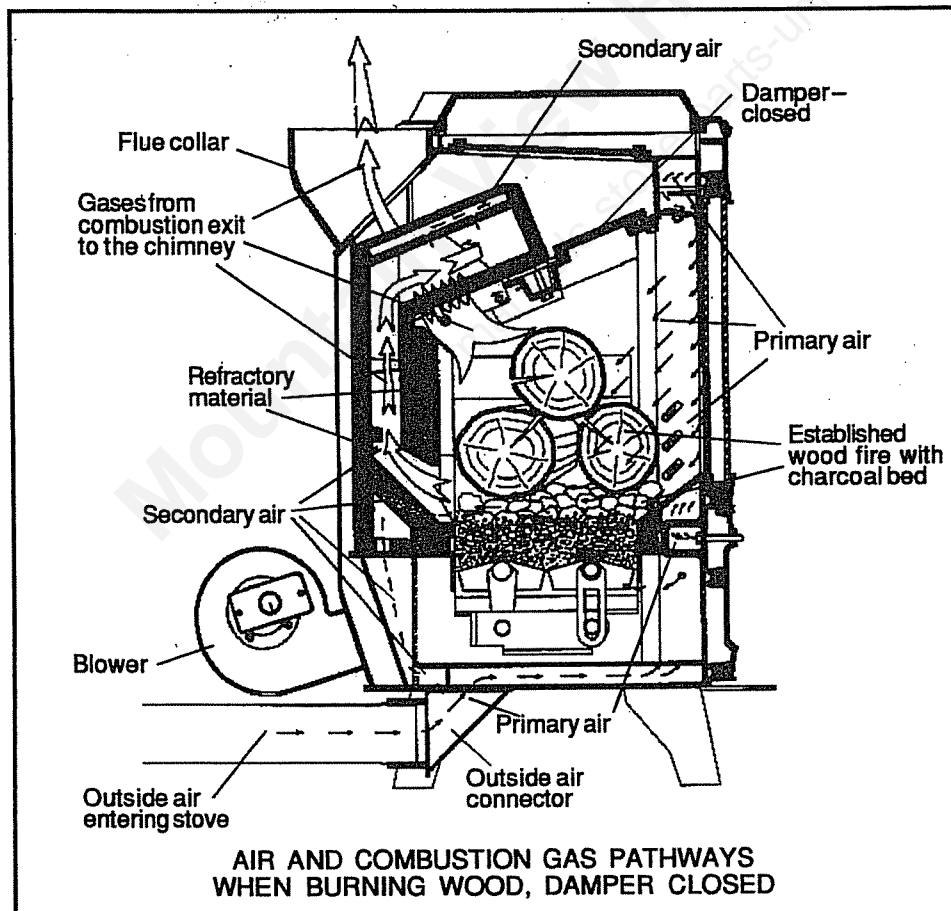
The Combustion Process

Wood. Combustion in your Harman E is complex, and differs for wood and coal. During a wood fire, with the air control set in the "wood" position, primary combustion air enters the bottom of the stove, is directed up to the top of the load door and then down past the glass, finally entering the combustion chamber. Secondary combustion air enters the bottom of the stove and is delivered directly to the secondary combustion areas behind and above the firebox, where it provides the additional oxygen required for clean burning. (see page 17)

During combustion, burning proceeds through several stages – an initial evaporation stage, where moisture is released from the wood; a stage where volatile gases containing much of the wood's heating capacity are released and burned; and a charcoal stage, where the remaining charcoal burns to release the additional heat available. What is left after this final stage is ash. Within the firebox, two or more of these stages are generally occurring at once.

Coal. For proper coal burning, most of the primary air supply must enter the burn area *underneath* the fire. (Secondary air flow remains the same.) When you adjust the air control lever from the wood to the coal setting, most of the primary air delivery is routed under the grate system, providing the necessary oxygen the base of the coal bed.

Like wood, coal burns



Harman E, Model CW30 Wood and Coal Stove

through several different stages – a drying stage (usually short); a stage when volatile gases are released and burned; a stage in which only solid carbon remains; and a final stage consisting of dead ash.

Controls

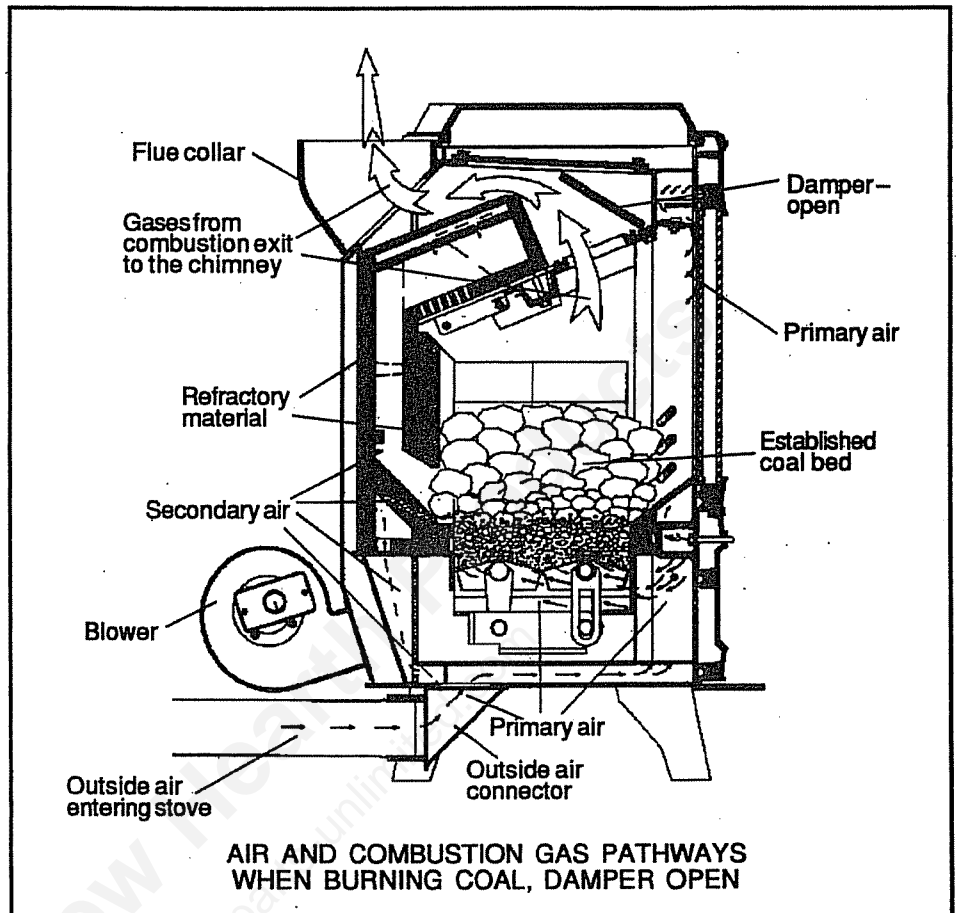
Two important controls – the bypass damper handle and the air control lever, are located on the stove. Together they determine the path combustion air and exhaust gases will take through your stove.

Damper. When the damper is open, the combustion gases go directly from the main combustion chamber to the flue collar and exit into the chimney.

When the damper is closed, combustion gases are routed through the secondary combustion system; here they are mixed with additional air, and any remaining volatile gases are burned before exiting at the flue collar.

When the damper handle is in the rear position, the damper is open; in the straight up and down position, it is closed.

Air Control. The air control lever must be in the proper position for the fuel you are burning. To set its position, open the ash door and move the lever to the left of center for coal and to the right of center for wood. Close the ash door. A



built-in stop prevents the air control from shifting from one mode to the other.

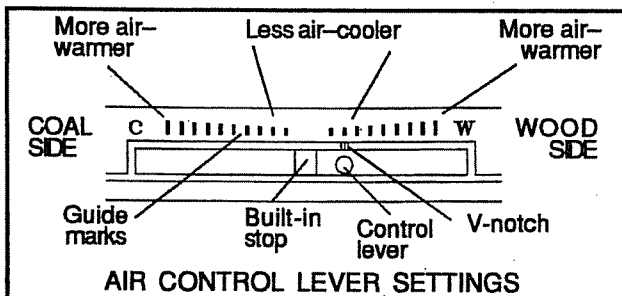
Using this lever, you will be able to vary the amount of air delivered to the fire, creating a range of heat outputs for either fuel. For coal, low is to the right, and high is to the far left. For wood, low is at the left, and high is to the far right. Graduated markings provide a quick reference to guide you in choosing the desired setting. Do not under any circumstance alter the configuration or operation of the air control lever.

Building and Maintaining the Fire

Wood. Set the air control lever at the maximum wood position. Build the fire with the bypass damper open. The convection blower should be off for the first five minutes of fire-building.

Do not use chemicals or fluids to start the fire.

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



Harman E, Model CW30 Wood and Coal Stove

while it is in use. Build a bed of paper and kindling; place several 1"-2" (25 mm – 50 mm) split pieces of dry wood on top, followed by a few 2" – 3" (50 mm – 80 mm) split pieces. Ignite the paper.

Allow the fire to burn until a good charcoal bed, 2" – 3" (50 mm – 80 mm) is formed; close the bypass damper. (You may need to leave the load door open a crack to get the blaze going properly, but never leave the stove unattended.) Add more wood to create a deeper charcoal base (3" – 4", or 80 mm – 100 mm thick); remember to open the bypass damper before opening the loading door.

Once the charcoal bed is established you may add a full load of wood. After adding the fuel, leave the damper open and the air setting at maximum for 5 to 15 minutes; close the damper and allow the air setting to remain on high for an additional 5 to 10 minutes. Then adjust the air lever and blower speed for the desired heat output.

Reloading. Once you have prepared and maintained a thick charcoal bed, you should be able to reload the stove, allow some open damper burning at the maximum air setting, close the damper and reset the air control in about five minutes.

Blower. To regulate the speed of the convection blower, adjust the control from low to high by turning the knob located on the blower. The blower speed should be matched to the air control lever setting.

When the setting is to the left of the "V" notch, the blower should always be at the minimum setting (corresponding to a blower speed of 750 RPM.) At settings to the right of the notch, the blower may be set to your desired comfort level. Be sure that the blower cord does not run under, over, above or in front of the stove.

The following guidelines for air settings can be used for wood burning; as you become familiar with your stove, you will know which settings best heat your home.

Minimum burn rate – air control fully to left.

Medium low burn rate – air control centered in V notch.

Medium high burn rate – air control centered between the V notch and the maximum setting.

Maximum burn rate – air control fully to the right.

Coal. Coal fires are most appropriate during

the coldest winter months. You may wish to use your Harman E as a wood stove during the spring and fall, and shift to coal when winter is here to stay.

Coal fires require a thick base of charcoal for ignition. With the air control lever set for wood, build a solid 3" – 4" (80 mm – 100 mm) charcoal base as described previously. (Or, if **switching from wood to coal**; allow the wood fire to burn down to a 3" – 4" [80 mm to 100 mm] base.) When the base is established, open the ash door and reset the air control lever to the left of center, the coal mode, at maximum air (fully to the left.) Load a small amount of coal (about a gallon) evenly over the charcoal. Leaving air at maximum and the damper open, allow this coal to catch (5 to 10 minutes.) Add another small load, and allow it to catch.

The damper should remain in the open position when burning coal.

Once you have several inches of coal ignited and burning with a strong blue flame, you can add a full load of coal – about 40 pounds (18 kg.) When loading (or reloading) large amounts of coal, be sure you do not "throw" in the fuel. Coal should be evenly layered to start, then sloped upward from front to back. The maximum coal bed should be no higher than the top grate bar in front, and in back, about 2" – 3" below the top of the rear firebrick wall.

When burning coal, adjust the blower speed to match the air control lever setting — low blower speeds with low air settings, higher blower speeds with higher air settings.

Reloading. Before reloading, empty the ashpan (remember to close the ash door while emptying the pan.) The ashes will be cool at this time. Replace the ashpan and increase the air to maximum. While wood ash will normally fall through the grates on its own, the rotating grates must be manually cleared at this point when burning coal, to force coal ash into the pan. Take the handle provided with your stove, and fit it over the protruding end of the rotating grate (on the lower left side of the stove.) The grates are linked, and will both rotate. Work the grates back and forth using small strokes until a few coals fall into the ashpan; if nothing happens,

switch to a few large sweeping strokes. Stop rotating the grates when you feel resistance on the handle, or when the ashpan shows a few live coals. Most coals must remain above the grates to ignite the next load. With experience you will soon learn the best method for clearing your stove's grates of coal ash.

Occasionally you may encounter "clinkers," which are fused pieces of partially burned coal. Clinkers are more likely to occur when burning your fire extremely hot, and when using lower quality coals. If you feel "jamming" in the grates while rotating them, you may have a clinker entering the grate area. Stop working the grates, and run the stove hot for an hour or so; then try rotating the grates again; the clinker may break up and drop into the pan. Clinkers, if large, must be physically removed to keep from jamming the grate system. Watch the top of your coal bed when you first begin to shake. If one area remains higher than the rest, you probably have a large clinker under that spot. Using a poker or tongs, try to free the clinker and lift it up through the coal bed. Discard it safely in your ash container.

When **changing from coal to wood**, allow the fire to burn down after shaking, until you have about a 3" (80 mm) coal bed; at this point, open the ash door and move the air control lever to the wood mode. Add some 2"– 3" (50 mm– 80 mm) pieces of wood. Gradually build up your wood fire; remember to shake the grates after emptying the ashpan until you are sure all coal ash has worked its way through.

**Hot while in operation.
Keep children, clothing and
furniture away. Contact
may cause skin burns.**

Overfiring

Avoid overfiring your stove, a potentially hazardous situation which can lead to overheating of combustible materials, damage to the stove, and in extreme cases, cause a fire. Overfiring is caused by too much air flowing through the stove too quickly; you may have positioned the primary air control level too far to the right or left (wood/coal), inadvertently left the damper open (wood),

or not kept up with routine maintenance, such as checking door gaskets for wear.

Overfiring results in excessive fuel consumption, and may cause parts of the stove or chimney connector to glow red. If you notice signs of overfiring, reduce the air supply to the fire, and review the Maintenance section in this manual.

Never leave the stove unattended if either the ash or load door is open. Overfiring may result.

In the event of a chimney fire, call your local fire department; make sure everyone is safely out of the house. Reduce the air intake of the stove as much as possible using the air control lever; close the bypass damper to further restrict air flow. Do *not* throw water on the fire; this can cause stove damage and create an even more dangerous situation. Have your chimney professionally cleaned and inspected before resuming burning in your stove.

Disposal of Ashes

The Harman E was designed to provide access to the ashpan without the need for opening the main door. Before opening the ash door and removing the ashpan, open the bypass damper. Wearing heavy protective gloves, open the ash door and remove the ashpan by pulling it forward by the handle. Close the ash door before taking the ashes outside for safe disposal.

A good time to empty the ashpan is before loading. This ensures that the ashes will be cold and safer to handle than directly after shaking the grates or tending the fire.

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

Never use the ash disposal container for other trash. Wood ash can be added to your garden or compost, but coal ash should be taken to a landfill for safe disposal.

Maintenance

Like all fine equipment, your Harman E requires some routine maintenance and inspection. Follow the guidelines in this section to guarantee safe, efficient operation.

The Stove

Surface

The stove's exterior surface should be dusted periodically with a soft cloth. For more thorough cleaning, wait until the stove is cool before using a damp cloth to clean any blemishes.

Controls

To avoid a rust build-up on the inner surfaces of the controls, work the controls back and forth several times during the summer, or any prolonged period when you are not using your stove.

The Fire Chamber

The inside of the fire chamber should be examined for damage to the refractory lining material. If any bricks have been damaged, replace them with Harman Stove Company replacement parts.

Glass – Replacement

If the stove's glass is cracked or broken, you must replace it before operating your stove. Remove pieces carefully. Replace glass only with Harman Stove Company replacement glass panels; do not use substitutes.

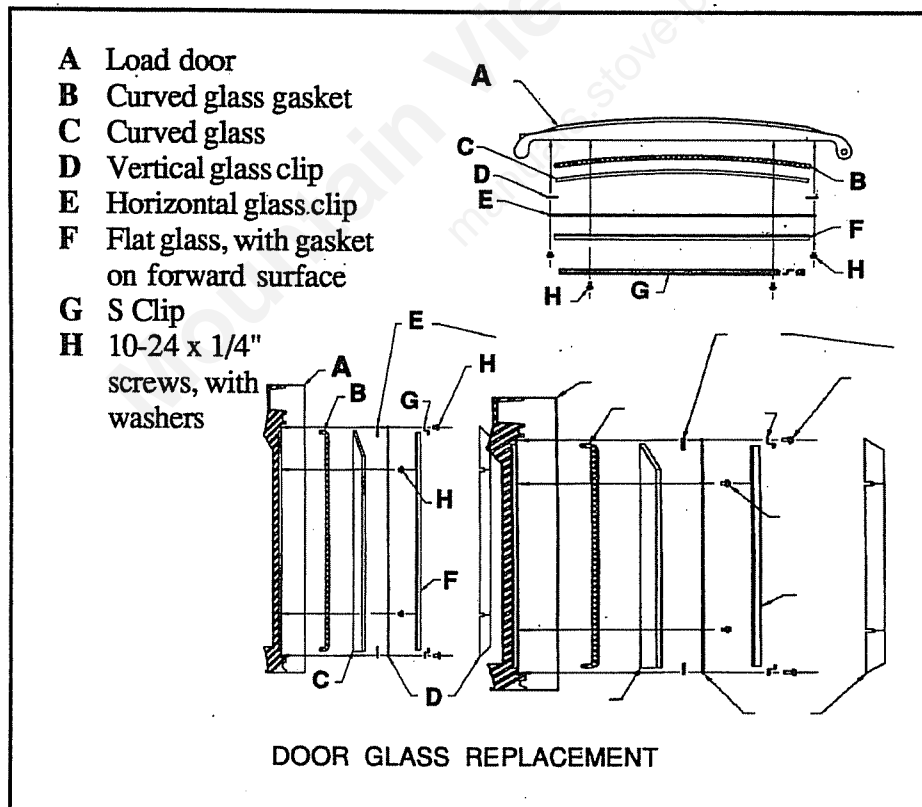
To replace the glass panel(s), you will need to remove the door. To do this, remove the single bolt located under the Harman emblem on the stove top. Lift the top off the stove and set it carefully aside. With the front door in the open position, lift it straight up and place it on a soft surface.

Carefully remove damaged glass, gasket material, fasteners, bars and clips (set aside); clean the cement channels thoroughly with a wire brush.

Referring to the diagram, note how the various components of the door system fit together. Lay the load door face down on the soft surface, and install the 1/4" gasket material as instructed in the section on "Gaskets." Set the curved glass pane gently onto the gasket, with the curve downward. Install the flat vertical and horizontal glass

clips so that they are lined up properly with the screw holes. Reinstall four of the 1/4" screws and washers in the vertical clips. Leave the horizontal clips unattached for now. Attach the self-adhesive gasket (supplied) to the front (forward) surface of the flat glass panel. Place the flat glass assembly (gasket downward) on top of the clips. Install the two "S" clips (one at the top of the assembly, and one at the bottom as shown), lining them up with the fastener holes on the horizontal glass clips. Complete the assembly by reinstalling the remaining four 1/4" screws and washers through the S clips and all underlying components.

Be careful when install-



ing new glass panels to allow for the clearance required (1/8- or 3 mm total) for expansion and contraction. If the glass seems too tight, contact Harman Stove Company.

Glass—Cleaning

From time to time be sure to clean accumulated ash from the inner glass surface; allowing this “fly ash” to remain on the glass for long periods can result in “etching” due to the acidity of the ash. The creosote which accumulates on your glass should burn off during your next hot fire.

Never clean the glass while it is hot, and do *not* use abrasive substances. Wash the surface with cool water, and rinse thoroughly. You may wish to use a non-abrasive cleaner specifically designed for use on stove glass. In any case, dry thoroughly before relighting your stove.

Gaskets

Gaskets are used at strategic positions when building the Harman E for controlling the path that incoming and outgoing air and gases take through the stove. You must check these gaskets from time to time, and replace them when necessary. The gaskets are made of fiberglass of different sizes (obtainable from Harman Stove Company) and are fixed in place with a high temperature stove gasket cement. To change a gasket, first remove the worn fiberglass and clean the channel with a wire brush. Clean any other surfaces that come into contact with the gasket. Place a small bead of cement in the channel. Press new gasket material, cut to length, into the channel; do not overlap the ends. Seat the gasket firmly by applying pressure when possible; for example, after changing the damper gasket, close the damper. Allow the cement to dry before using your stove.

Gasket are located: -

- On the doors to provide airtight closure.
- Between the damper frame and the stove.
- Between the damper and the damper frame.
- Between the inner top and the frame.
- Around the flue collar.

Handles

The handles on your Harman E are attached to threaded shafts. After a period of time, you may find that either the front or ash door does not close as firmly as when your stove was new. This is due to a natural compression of the gaskets. To tighten the seal, open the door and rotate the handle one full turn counterclockwise.

Blower

The blower on your Harman E stove requires very little maintenance. You should, however, keep the air inlet and the motor free of dust and dirt.

The Chimney System

Creosote and Soot

When wood and coal are burned slowly, they produce tar and other organic vapors, as well as fly ash and soot, which combine with expelled moisture to form creosote and soot residues. The creosote vapors or soot condense in the relatively cool chimney flue (associated with a slow burning fire.) As a result, creosote or soot residues accumulate on the flue lining. When ignited, this creosote or soot can result in an extremely hot fire.

The chimney should be inspected at least once every two months during the heating season to see if a creosote or soot build-up has occurred. Checking your chimney and chimney connector more frequently, especially while you are getting used to your stove, is recommended. To inspect this system, let the stove cool. Using a flashlight and mirror, check the interior of the chimney connector, and the chimney itself. If a significant layer of creosote or soot has accumulated (1/8" or 3 mm) it should be removed to reduce the risk of a chimney fire.

To clean deposits from the surface of the connector, use a stiff wire brush after dismantling the connector assembly. To clean the chimney, use a specially designed brush sized to fit your particular flue opening, or call an established chimney cleaning service.

At the end of the heating season, perform a thorough examination of your chimney system, and have it repaired if necessary.

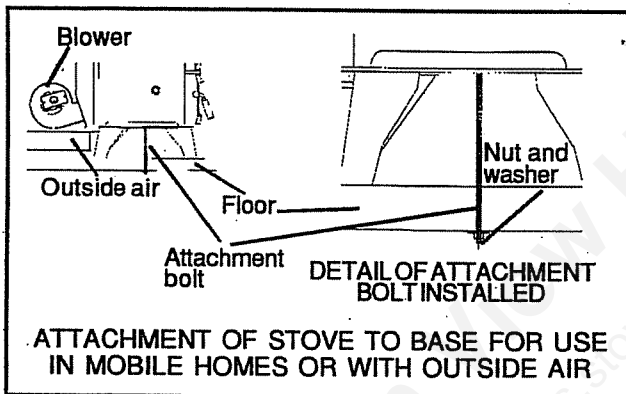
Installation

Assembly

Mobile Home Attachment

Mobile Home Attachment. When installing the Harman E in a mobile home, the stove must be securely attached to the home. On the bottom plate of the Harman E is a 5/16" threaded hole; by purchasing a piece of 5/16" all-thread rod from your local hardware store, of the appropriate length for your installation, you can permanently attach the Harman E to the solid base of your mobile home.

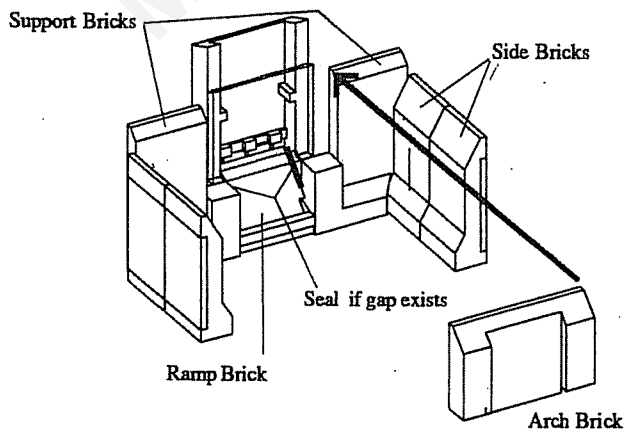
CAUTION: When tipping the stove to install the attachment rod, be sure not to tilt it beyond 45°. Tipping the stove too far could result in the



refractory bricks slipping out of place.

Installing the Arch Brick

The special refractory material used to line the Harman E's firebox is an important component for the proper operation of your stove. The sides of the ramp brick should be checked for



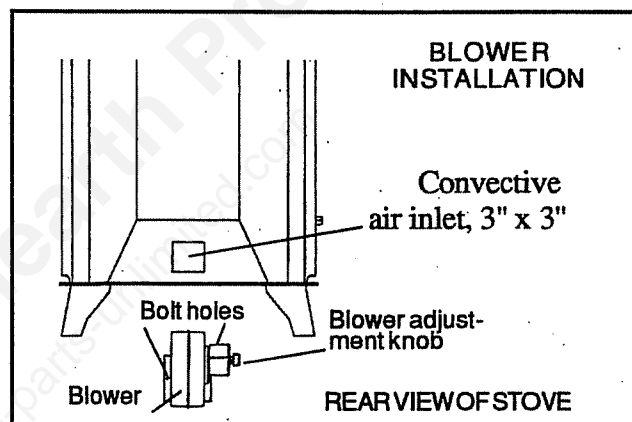
PLACEMENT OF THE ARCH BRICK

clearance. If clearance exists, seal the gap with a small bead of furnace cement as shown. The arch brick must be installed on top of the support bricks as shown. Push the support bricks against the ramp brick to close gaps between the bricks.

Blower

Place the blower against the convective air inlet, located on the sloping surface of the bottom of the lower stove back, and align the bolt holes. Tighten the bolts, but do not overtighten.

The power cord for the blower must be connected to a grounded outlet, and may not be



routed above, under, over or around the stove itself.

Reversing the Flue Collar

After you have decided on the location of your installation you may wish to reverse the position of the flue collar. The collar may be installed for either top exit or rear exit of the flue gases.

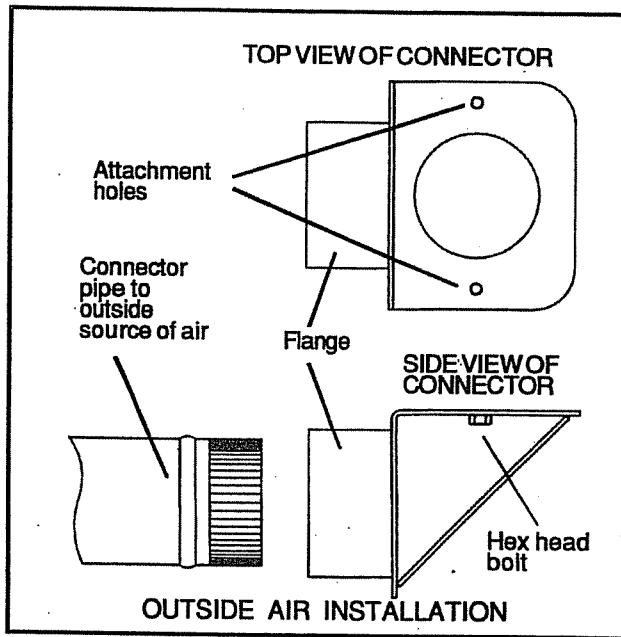
To change the position, loosen the two bolts that attach the collar. Flip the collar 180 degrees, fit it to the rear opening with the bolt holes aligned, and replace the bolts. Snug them down, but do not overtighten.

Outside Air

The Harman E is designed to accommodate the use of outside air introduced directly to the stove. The opening is centrally located underneath the stove, roughly 6" (150 mm) from the back edge.

The Outside Air Connector attaches directly to this opening, using two 1/4-20 x 1/2" hex head bolts.

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Outside air is always required when installing the Harman E in a mobile home, and is required for every installation by certain local building codes. Check with your local building inspector to find out requirements. Some signs to watch for that indicate a possible need for outside air are: poor performance of other heaters or of the Harman E, including smoke roll-out and odor; the disappearance of the same symptoms when a window is opened near the stove; and condensation on windows in the winter. Modern homes with tight windows and doors, vapor barriers, and particularly with exhaust systems are the most likely to require outside air.

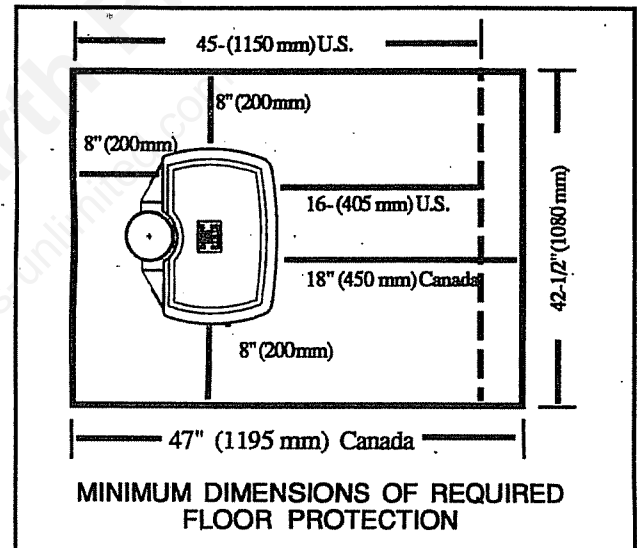
An outside air duct less than 5' (1525 mm) long may be 3" [80 mm] in diameter, and be made of masonry tile, 26 gage (0.019- [0.483 mm]) galvanized steel, or other approved noncombustible material; it should have a 1" (25 mm) clearance to combustibles. Systems longer than 5' (1525 mm), or containing more than two elbows, should have a 4" (100 mm) diameter duct to provide an adequate flow of combustion air. Any system must have a damper that is capable of fully closing.

The air duct must terminate outside the dwelling and be screened to prevent debris and small animals from entering, and may not end in an attic, basement, garage, or other interior space.

In any installation using direct outside combustion air, the stove must be secured to the structure. (See Mobile Home Attachment.)

Floor Protection

In all installations, the area under and around the stove must be protected from falling ash and live coals. *The area under a horizontal run of chimney connector must also be protected.* This protector must be of noncombustible material, and positioned as shown in the accompanying illustration. The guidelines for floor protection are: 1) completely under the stove and any horizontal runs of connector; 2) 8" (200 mm) in back of the stove; 3) 8" (200 mm) to each side; 4) U.S. 16" (405 mm) in front of the doors; *Canada* 18" (450 mm) in front of the doors; 5) 2" (50 mm) to *each* side of any horizontal runs of chimney connector.



Clearances

Clearance is the empty space required between the stove or chimney connector to the nearest combustible surface or object, such as walls, ceilings, floors, or furniture. Clearance distances may only be reduced by using methods approved by either the CAN/CSA B365 standard (*Canada*) or NFPA 211 (*U.S.*) Contact your building authority for information if you are interested in reducing clearance distances other than those presented here.

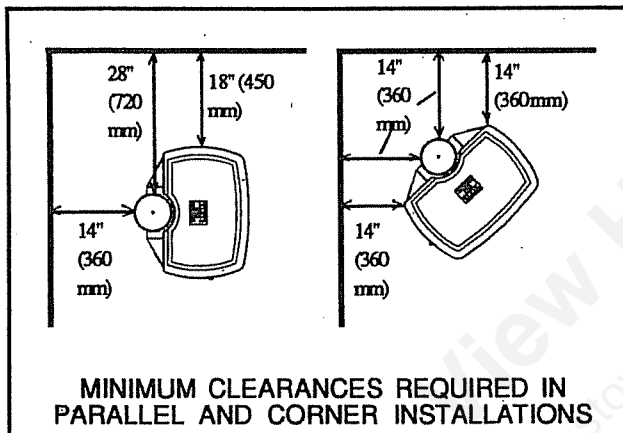
Parallel versus Corner Installations

A parallel installation is one in which the back and sides of the stove are parallel to the walls behind and to the side of the stove. A corner installation

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is one in which the back of the stove is positioned diagonally across a corner of the room. Each installation requires its own set of clearances.

For parallel installations, the required clearance distances from the stove are: 1) to the side wall, 18" (450 mm); 2) to the back wall, 14" (360 mm.) From the chimney connector to the wall, 14" (360 mm) and to the ceiling, 18" (450 mm). NOTE: for a vertical chimney connector in a parallel installation the distance of the connector to the *side* wall must be 28" (720 mm), due to the required side clearance of the stove itself. Fireplace installations must meet these same clearance requirements; specifically follow these guidelines for mantel and trim clearances.



For corner installations, the clearance distances from the stove are 14" (360 mm) from each corner of the stove measured straight back to the nearest combustible material, and 14" (360 mm) from the chimney connector to the walls.

From the front of the stove, clearance to combustible materials such as furniture, curtains, fuel, etc., is: 48" (1215 mm) in the *U.S.* and 60" (1525 mm) in *Canada*.

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 airtightness 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 excessive cooling or not enough room to vent exhaust gases quickly. 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 Harman E will produce enough hot gases to keep the chimney warm so that adequate draft is maintained throughout the burn cycle, yet overdrafting does not occur.

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 to check on additional local regulations which may influence the design and placement of your venting system.

The Harman E may be installed with either 6- (150 mm) or 7" (180 mm) 24 gage chimney connector pipe. Size of the connector should correspond to the size of the flue collar opening. Do not use makeshift compromises. 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 sheetmetal screws. Screws may be a maximum of 3 feet (1 m) apart. A 1-1/4" (30 mm) overlap is required at each joint, including the flue collar attachment. No more than two 90° elbows should be used, and the total length of connector should not exceed 10 feet (3 m). All horizontal runs of connector must have a minimum upward slope of 1/4" (6 mm) per foot (20 mm per meter.)

Wall pass-throughs

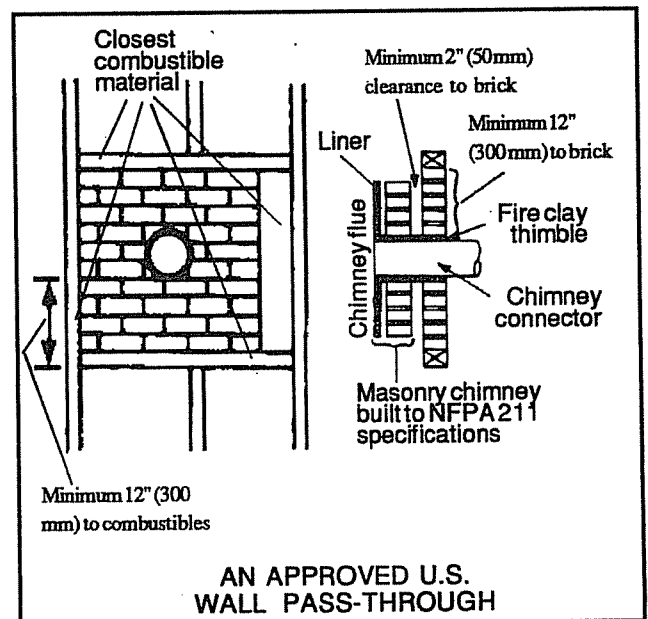
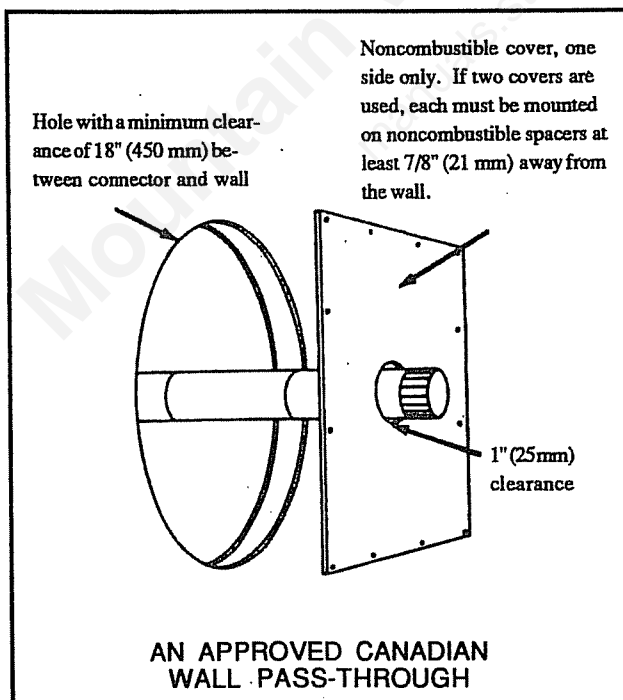
Occasionally it is necessary to pass the chimney connector through a combustible wall to reach the chimney. Depending on your local building codes, and the pertinent provincial or national codes, there are several choices for accomplishing this safely. Before beginning your installation, contact local 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" (450 mm) air space between the connector and the wall. It allows use of one or two covers as described in the diagram. The two other 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" (300 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.

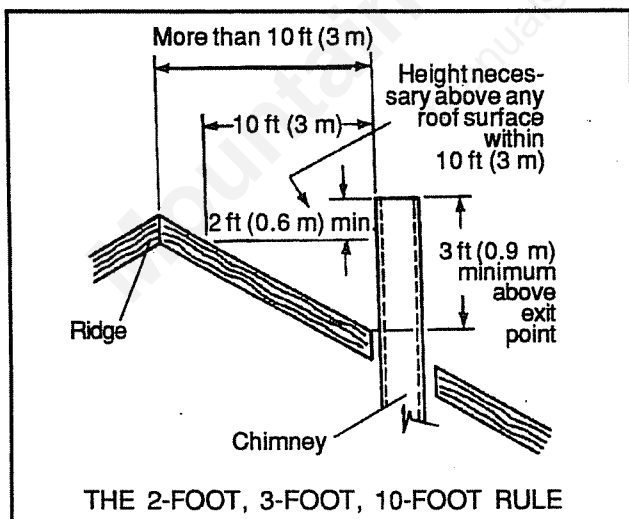


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The Chimney

The Harman E must be installed on a chimney approved for use with solid-fuel appliances. In the *U.S.*, the Harman E 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*, the Harman E is listed for use with prefabricated chimneys tested and listed to the high temperature (650 C) chimney standard, ULC S-629, or with a code approved masonry chimney. For *Mobile Homes*, the Harman E must only be installed with prefabricated chimney systems, including the installation components, tested to either UL 103 or ULC S-629 which have been approved for use in mobile homes; the diameter should match the diameter of the flue collar opening.

The minimum recommended height for any chimney is 16 ft (4.8 m) above flue collar height. For non-mobile home installations, 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" (200 mm 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 point at which they exit from the roof, provided that no part of any structure is within 10 ft (3 m) as measured outward

from the chimney's top height. If there is not ten feet of clearance from the top of the chimney, then the chimney must extend 2 ft (6 m) above the highest point within the 10 ft (3 m) radius.

Do not connect this unit to a chimney flue serving 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

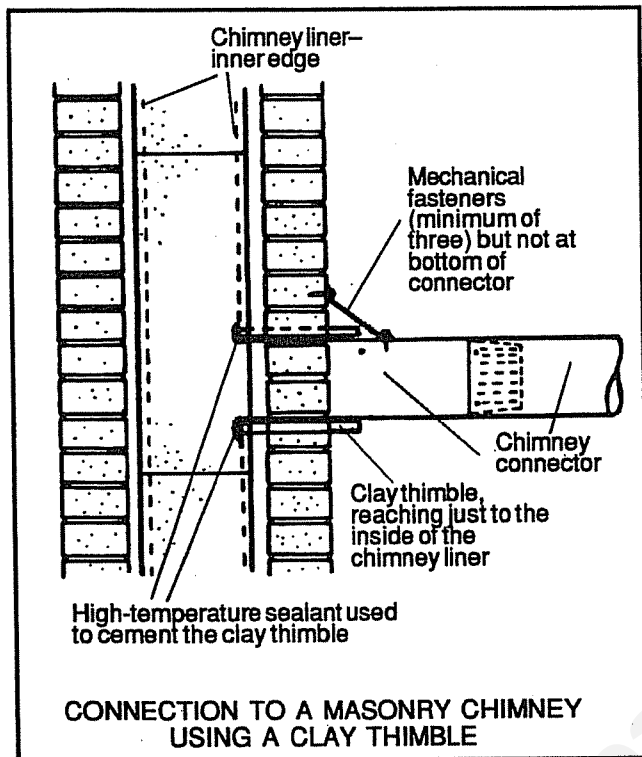
If you plan on using a pre-existing masonry chimney, have it thoroughly inspected and cleaned. Any faults which make the chimney unsafe and unusable must be repaired prior to use. These can include improper height, structural defects, blockages, inadequate clearance to combustibles, unsealed openings 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 must have 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 com-

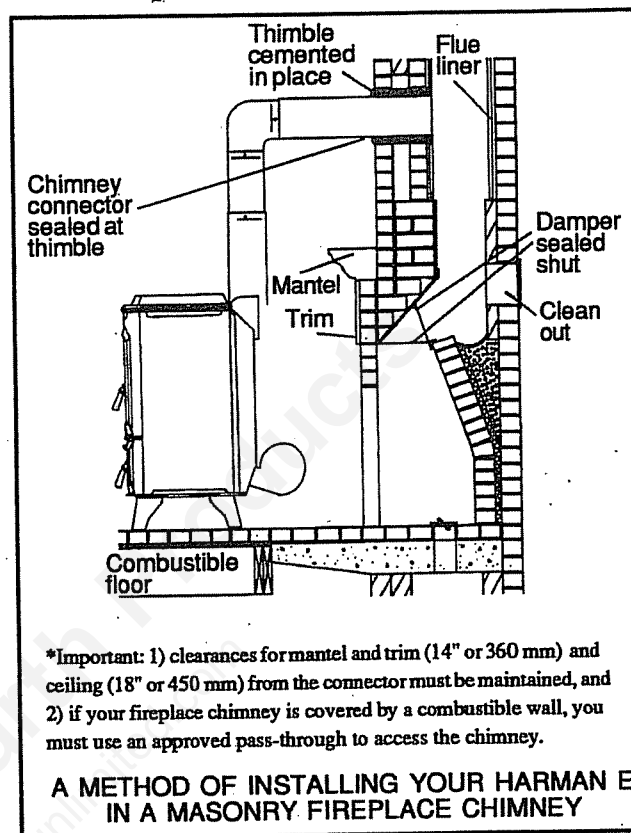


pletely inside the masonry to the inner edge of the flue liner, and may be easily removed for chimney and connector inspection. A breach pipe must extend at least 2" (50 mm) into the room, so the connector can be attached with sheetmetal screws.

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 Harman E. 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 -- 14" (360 mm) to sides and 18" (450 mm) to ceiling. 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.

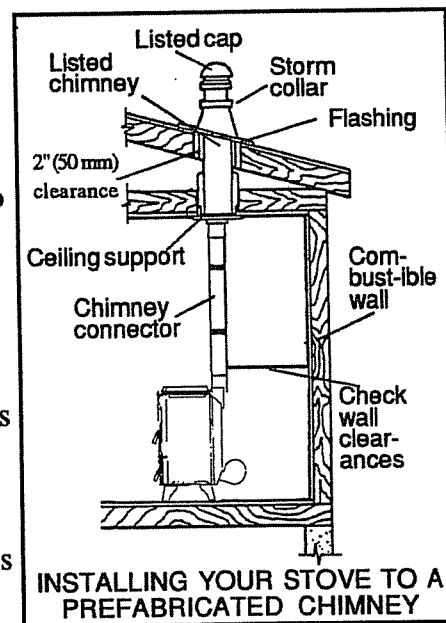
If your fireplace chimney is behind a combustible wall, you must use an approved wall pass-through system to gain access to the masonry chimney. The chimney connector must enter the chimney at a place where it is lined, and the fireplace must be made inoperable. For example you



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.

Installing to a Prefabricated Chimney

When installing your Harman E on 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



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installation techniques. All prefabricated chimneys must be tested to either the U.S. or Canadian high-temperature standards, UL 103 or ULC S-629.

Mobile Home Installations

The Harman E is listed for mobile home installation in both the U.S. and Canada. Because of the unique features of modern mobile homes, such as super insulation, there are some additional requirements for such installations.

First, the stove must be securely attached to the mobile home floor. Second, all stoves installed in mobile homes must have a direct outside air connection. (See Assembly Instructions.) A vapor barrier must be in place where the approved chimney system exits the mobile home.

Caution: The structural integrity of the mobile home floor, walls, and ceiling/roof must be maintained.

Mobile home installations must use approved factory-built chimneys tested and listed for this specific use, to either of the high temperature standards, ULC S-629 or UL 103. Any components used to install the chimney must be listed for this use and supplied by the chimney manufacturer. Do not substitute makeshift compromises. In Canada, chimney connectors must be tested and listed to the standard in CAN/ULC-S641-M87.

In addition to meeting the size and height requirements detailed in the Chimney section the chimney must also be removable to the roof line area in order to allow for transport. When designing your system, consult with the chimney dealer to ensure that your system meets this requirement, and ask for specific details on how to

remove it.

Follow all the clearance, floor protector and other general guidelines in the Installation section when installing your Harman E in your mobile home.

Warning: Do not install in sleeping room.

The Harman E was tested with the doors shut and must always be operated this way. If operated with either of the doors open, you may expose yourself to gases containing poisonous carbon monoxide or overfire the stove causing damage to the stove and/or chimney.

Do not burn any fuel other than wood or coal, such as charcoal, which can cause increased carbon monoxide production or overfiring. 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 or other combustion related odors you need to increase ventilation and/or draft to avoid a dangerous buildup. If you smell smoke, turn up the air control lever setting, and thoroughly ventilate your dwelling. During future burns, be careful not to overload the stove with fuel, so you will not be tempted to constantly operate at a low air control setting.

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.

Caution: Always wear fire-resistant gloves to operate the stove. The shaker handle may be used as a tool to adjust the air control. Remember the air control is hot while in operation.

Clean Burning Concept with wood:

It is possible to burn your Harman E and produce very little or no smoke. No smoke means less creosote and more heat from your wood.

Here is the general concept. Air enters the firebox from the air wash "A" and travels down across the glass forming a curtain of air which helps to keep the glass clean. Then the air goes through the wood and hot charcoal bed causing combustion to occur and gases to be produced. The hot gases produced in the charcoal bed exit the firebox through the igniter tunnel "B" and mix with air entering through the ramp brick "E" located in the rear center of the firebox. Most of the gases (or smoke) produced by the burning wood rise and exit the firebox through a ceramic waffle "C" which has 45 holes in it. Secondary "D" air enters in front of the waffle. This air mixes with the smoke while the super hot gases from the igniter tunnel pass over the waffle causing it to glow. Heat, fuel (smoke) and oxygen are all present so secondary combustion occurs and burns the smoke creating more heat and no smoke out the chimney.

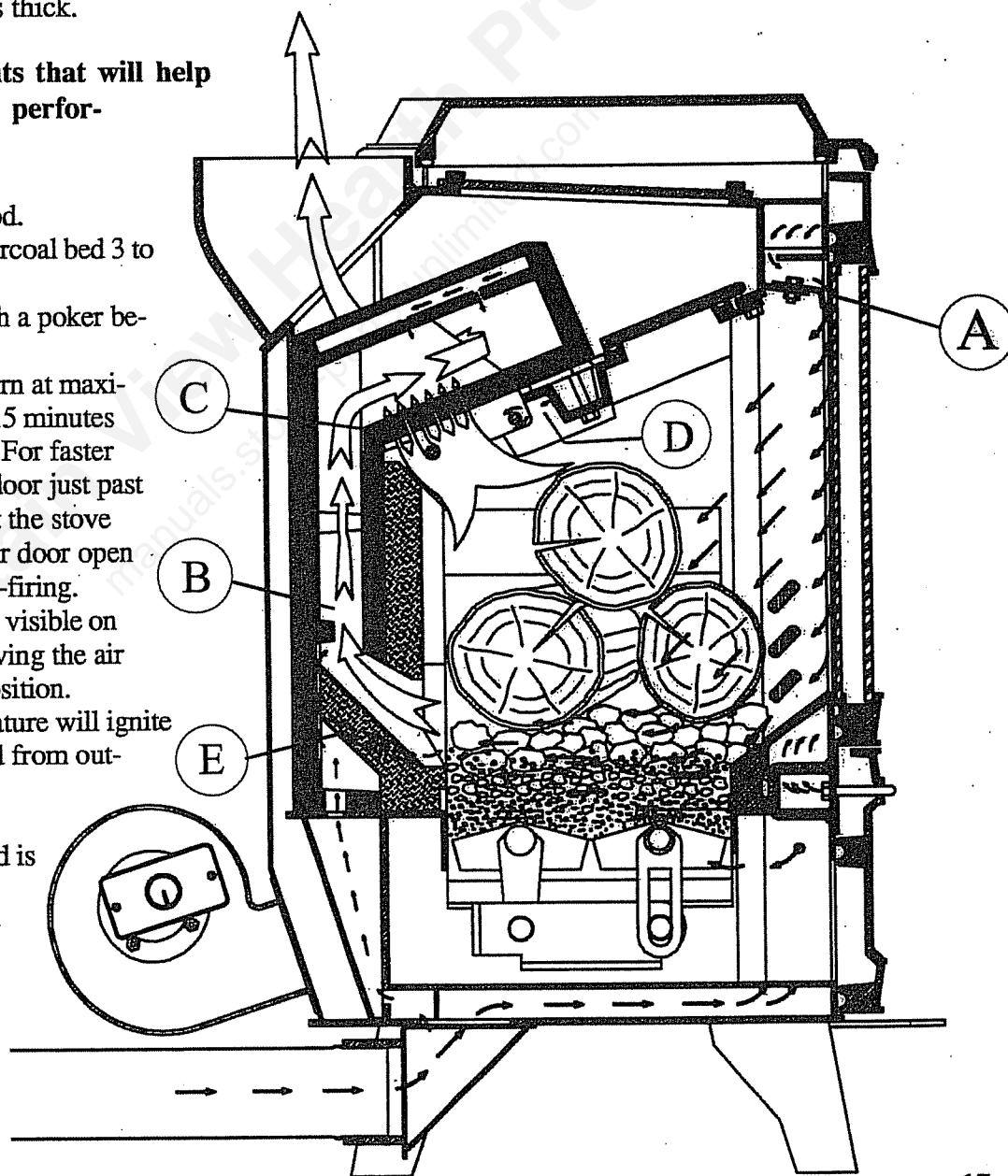
The "E" Combustion System depends on the red hot charcoal bed produced by the burned-up wood. Without the hot charcoal the gases in the igniter tunnel will not be hot enough to cause secondary combustion when they reach the waffle. Therefore, the first goal when you light a fire is to achieve a charcoal bed 3 to 5 inches thick.

Here are some hints that will help you achieve maximum performance from your "E".

1. Burn dry seasoned wood.
2. Maintain a glowing charcoal bed 3 to 4 inches deep.

Level charcoal bed with a poker before adding wood.

4. After adding wood, burn at maximum setting for 5 to 15 minutes after closing damper. For faster results, open the top door just past the latch but never let the stove unattended with either door open as this can cause over-firing.
5. Wait until a red glow is visible on the waffle before moving the air slide to the desired position.
6. Wood at room temperature will ignite faster than cold wood from outside.
7. If when refueling your stove the charcoal bed is less than desired, add smaller dry wood before adding normal size wood.
8. Clean Ramp Brick area "E" with a vacuum cleaner when cleaning firebox.





"5 YEAR LIMITED STOVE WARRANTY" (Residential)
"1 YEAR LIMITED WARRANTY" (Commercial)
(See Exclusions Noted Below)

HARMAN STOVE & WELDING, Inc. warrants its products to be free from defects in material or workmanship, in normal use and service, for "5" years from date of sales invoice.

If defective in material or workmanship, and if removed by the owner within 60 months of installation, Harman Stove & Welding, Inc. will, at its option, repair or replace the product as described below.

The warranty above constitutes the entire warranty with respect to Harman Stove & Welding, Inc. products. HARMAN STOVE & WELDING, INC. MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING "ANY" WARRANTY OF MERCHANTABILITY, OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. No employee, agent, dealer, or other person is authorized to give any warranty on behalf of Harman Stove & Welding, Inc.. This warranty does not apply if the product has been altered in any way after leaving the factory. Harman Stove & Welding, Inc. assumes no liability for "resultant damages of any kind" arising from the use of its products. In addition, the manufacturer shall be held free and harmless from liability from damage to property related to the operation, proper or improper, of the equipment. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

THESE WARRANTIES APPLY only if the device is installed and operated as recommended in the user's manual.

THESE WARRANTIES WILL NOT APPLY if damage is caused by abuse, accident, improper installation, negligence, or use beyond rated capacity.

SERVICE LABOR RESPONSIBILITY -- In furnishing replacement parts, Harman Stove & Welding, Inc. assumes no responsibility for any labor expenses, for service removal or reinstallation.

HOW TO MAKE CLAIM -- Any claim under this warranty should be made to the dealer from whom this appliance was purchased. Then contact is made with manufacturer, contact Harman Stove and Welding, Inc., 352 Mt. House Rd., Halifax, PA 17032, giving the model and serial numbers, the date of purchase, your dealer's name and address, plus a simple explanation of the nature of the defect.

SHIPPING COSTS -- The transportation charges are as follows:

- (1) Customer prepays freight back to factory.
- (2) Harman Stove & Welding, Inc. prepays the repaired or replaced stove freight charges.

NOTE: Prior approval by phone or in writing shall be made before shipping entire unit to manufacturer.

THIS WARRANTY IS LIMITED TO DEFECTIVE PARTS -- REPAIR AND/OR REPLACEMENT AT OUR OPTION AND EXCLUDES ANY INCIDENTAL AND CONSEQUENTIAL DAMAGES CONNECTED THEREWITH.

WARRANTY EXCLUSIONS

- 1) Electrical components, gauges and pressure valves shall carry the stated warranty of the manufacturer making such parts;
- 2) Fire brick;
- 3) Door packing;
- 4) Paint;
- 5) Glass and pressure valves;
- 6) Units damaged by freezing [hot water models only]; and
- 7) Acts of God.

PLEASE READ THE LITERATURE ENCLOSED BY THE MANUFACTURER WITH THE VARIOUS ACCESSORY DEVICES. THESE DEVICES ARE "WARRANTED BY THE MANUFACTURER" NOT BY HARMAN STOVE & WELDING, INC.. FURTHERMORE, THESE ACCESSORY DEVICES MUST BE INSTALLED AND USED ACCORDING TO THE RECOMMENDATIONS OF THE MANUFACTURER.

Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state which may be enforceable in a Court of Law.

REMEDIES -- The remedies set forth herein are exclusive, and the liability of seller with respect to any contract or sale or anything done in connection therewith, whether in contract, in tort, under any warranty, or otherwise, shall not, except as herein expressly provided, exceed the price of the equipment or part on which such liability is based.

CLARIFY -- The above represents the complete warranty which is given in connection with stoves manufactured by Harman Stove & Welding, Inc.. No other commitments, verbal or otherwise, shall apply except by a written addendum to this warranty.