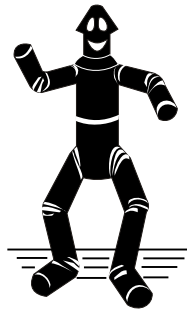


Manual for Installation and Maintenance of

ELMER'S PIPE



ROUND AND OVAL RIGID AND ROUND, OVAL, AND RECTANGULAR FLEXIBLE STAINLESS STEEL RELINING SYSTEMS

Manufactured by:

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Tested and Listed to UL-1777 (Zero-Clearance) by Underwriters Laboratories® Inc. (File#: MH26662)
UL® listed sizes 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" diameters rigid & flexible. Small and large oval rigid and flexible, and rectangular flexible.

All installations must be made in accordance with all state and local codes which may differ from this manual.

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About Elmer's Stainless Liner System

The stainless steel relining system manufactured by Elmer's Pipe Inc. has been engineered for relining existing masonry chimneys and lining new masonry chimneys. Every component is designed for function, durability and safety. Use of materials other than those specified in these instructions will invalidate the listing and could prove dangerous to the user. Stainless rigid round and oval liner are available in 22 gauge and 24 gauge thicknesses and are joined by a double seam roll lock with both male (crimped) and female (uncrimped) ends. Listed sizes include 3" through 12" round, and equivalent oval or rectangular sizes.

Elmer's FLEX is made from continuously seamed, stainless inter-locked strip, that is .018" in thickness and is wound four-ply. Listed sizes include 3" through 12" round, and equivalent oval or rectangular sizes.

To uphold the listing, ovalizing of the Elmer's FLEX in the field is not permitted. Ovalization of the FLEX is confined to the manufacturing facility of Elmer's Pipe, Inc., until such ovalization can be accurately performed and verified by the installer. Ovalized 6" and 7" flexible liner is available on a custom basis.

The Elmer's system has been listed using a single wrap of Elmer's 1/4" F/F **BLANKET** (1" clearance), the Elmer's **ZC BLANKET** (See "Zero Clearance Installations"), and CHIM-MIX™ at least 1" minimum thickness.

The Elmer's system is available in Type 304 and Type 316 stainless steel. Type 316 offers superior corrosion resistance, especially when exposed to sulfuric acid. Use of Type 316 is required when a coal or oil burning appliance is to be used.

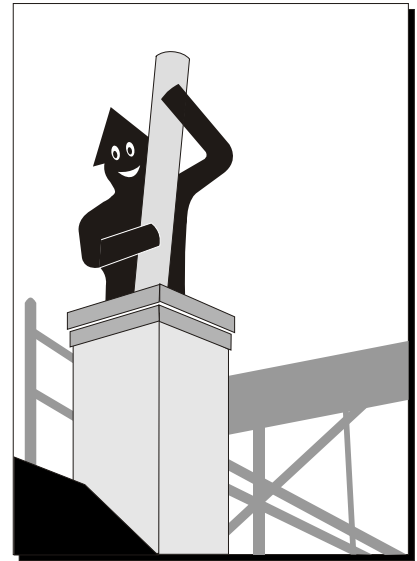
The Elmer's Stainless Relining System is intended to be installed in existing masonry chimneys, which may or may not incorporate a liner of fireclay tile, or may be used as a substitute for masonry fire-clay tile liners in a new chimney. The system is to be installed in all new or existing masonry chimneys that are used for the natural draft venting of gas, liquid, and solid fuel fired residential type appliances, and masonry fireplaces. While extreme care has been taken to make the system as safe as possible, proper installation, operation, and maintenance should be followed.

Who Should Install the System

The Elmer's stainless chimney liner is intended for installation by a qualified professional, in accordance with this installation manual.

While installation of the Elmer's system is accomplished using a very straight forward procedure, it should be noted that **EXTREME CAUTION** is advised when attempting to climb or work upon any roof. Installation of the Elmer's system generally requires the services of two (2) people and is best performed by a professional, experienced in dealing with chimneys. The installer must possess the equipment and expertise necessary to climb up onto the roof, as well as scaffold around the chimney to be able to safely install the liner system.

Adherence to the procedures outlined in the training manual will result in a **better performing, long-lasting installation.**



Before Deciding to Reline

Before relining materials are ordered, consideration should be given to determine:

1. Whether the chimney is a good candidate for relining with stainless system, see “**Can the Chimney Be Relined**”.
2. Whether the chimney will accommodate the proper sized flue for the appliance being installed, see “**Sizing Your Liner**”.
3. Whether the chimney will conform to national and local building codes.

About Codes & Safety

National and local building codes should be strictly adhered to. Local building inspectors, fire safety officials, or code enforcement officers should be consulted regarding any installation requirements in your area. The National Fire Protection Association standards #211 (masonry chimneys, fireplaces and vents), #54 (National Fuel Gas Code), and #31 (Oil Burning Equipment) address chimney requirements. Under no circumstances should the installer attempt to circumvent existing codes.

Installation Of Elmer’s Stainless Into A Clay Tile Lined Chimney

While the use of the Elmer’s system in an unlined masonry chimney satisfies code requirements as a suitable substitute for 5/8" clay tile, the question often arises regarding insertion of stainless into an already lined chimney.

If the candidate chimney is already lined (and complies with NFPA and local codes) insertion of a stainless liner is viewed as an attempt to enhance performance and/or chimney life. Installation of Elmer’s Stainless Steel liners into a tile lined chimney is acceptable, if it already conforms to existing codes. The installation should, however, be insulated properly for zero clearance situations. (See, “*Zero Clearance Installations*”)

Installation of the stainless does not cause the chimney to be any less code worthy. Flue diameter requirements must continue to be met.

The determination to further insulate must be made by the installer. Several factors must be considered:

1. Is this an inside or outside chimney?
2. What kind of flue gas temperatures are anticipated?
3. What is the added expense to insulate with ceramic blanket?

4. Is there adequate room for liner and blanket?

Suffice to say that whenever a flue conduit can be:

- A. Round
- B. Smooth
- C. Kept warmer
- D. More corrosion resistant,

the performance and life of the chimney are enhanced.

Construction Of New Chimneys With Elmer's Stainless Liners

A new masonry chimney can be built using Elmer's stainless liner substituted for clay tile liner. Installed with 1/2" ZC BLANKET or with 1" minimum of CHIM-MIX™ it becomes a ZERO-CLEARANCE CHIMNEY. A masonry chimney built to the zero-clearance standard is a safer chimney than normally available.

Masonry chimneys that are insulated perform better, and usually stay cleaner than uninsulated masonry chimneys. New EPA certified wood stoves are tested on small diameter insulated metal chimneys. Whenever a masonry chimney can be insulated and sized properly for the woodstove that is to be vented into it, the performance of that woodstove will be improved. A zero clearance chimney provides additional safety to the homeowner's family and the decreased likelihood of a structural fire resulting from a chimney fire.

When building the chimney lay all the masonry up to the crown and then install Elmer's lining system after the masonry and mortar have set up and hardened. Installed in this way, the installation procedure is the same as that of an unlined chimney.

Through the Damper Installations

When installing an appliance into a masonry fireplace or through the damper it is critical that a listed Direct Connect system be used. When a listed Direct Connect system is used to connect into the Elmer's system, the listing on the Elmer's system is maintained. BE SURE TO FOLLOW THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

When the Elmer's system is installed through the damper and directly into a fireplace insert or a clean-out tee in the firebox, no insulation should be placed around the liner at or below the level of the damper frame. A damper plate or insulation may be used around the liner to prevent cold air from descending into the room, and to prevent room heat from escaping up the chimney.

Can The Chimney Be Safely Relined

A determination must be made on the suitability of the chimney for relining. A thorough inspection must be made of the general condition of the chimney. Loose or deteriorated mortar and cracked or missing bricks should be repaired. Care should be taken to locate and close any breeches (holes) not being used as a thimble. The chimney should be thoroughly cleaned of tar glazed creosote, debris and any other obstructions (loose bricks, nests, etc.). Only one coal or wood burning appliance should be connected to a single chimney flue. Do not connect a wood burning appliance to any flue venting a gas fired appliance.

There will be instances where the proper diameter flue size will not fit down the chimney without removing existing tile. Whenever chimney lining tile has a great deal of glaze creosote and there are signs of leakage between the ceramic tile and chimney exterior, it is a good idea to remove all the tile and proceed with the reline.

NFPA 211 requires that:

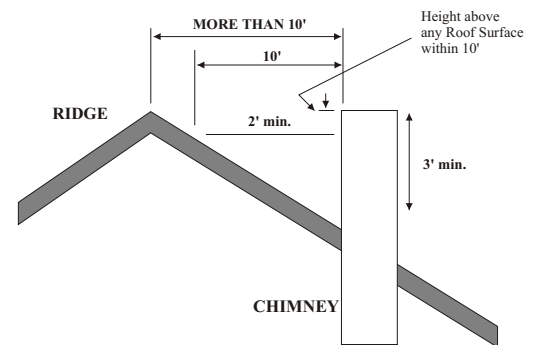
1. The chimney be at least three (3) feet higher than the point where it passes through the roof and at least two (2) feet higher than any part of the roof within ten (10) feet, measured horizontally.

(Ref: 1996 NFPA 211, 1-8.1.1 & Table 4-2) (See Illus. 2)

2. The minimum air space clearance required between interior masonry chimneys (those which have any portions of the chimney located within the exterior wall of the building) and combustible materials shall be at least two (2) inches. (For exceptions see "Zero Clearance Installation") The minimum air space clearance required between exterior masonry chimneys (those which have the chimney completely outside the exterior wall of the building, excluding soffit or cornice area) and combustible materials shall be at least one (1) inch.

3. The chimney shall be constructed of at least four (4) inches of brick or concrete.

• Illus. 2

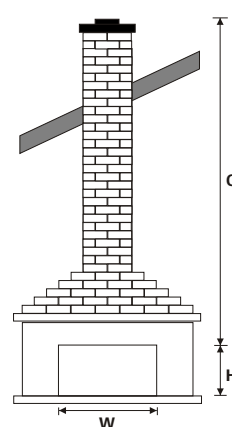


Sizing The Liner

The diameter of the liner to be used for a single appliance should not be smaller than the area of the flue collar venting the appliance. If used to vent an open fireplace, the area of the liner should be at least ten percent of the cross sectional area of the fireplace opening. (Consult Chart A for information on determining cross-section area and Chart B for matching flue diameter.) For an installation where combustibles are less than 1" from the exterior of the masonry, the Elmer's system requires the use of a one half inch foil faced ceramic blanket wrap. (No air space is needed between the blanket and the inside masonry wall.)

The length and width of the chimney should be measured. From the smaller of the two dimensions subtract one inch. This will dictate the maximum size (diameter) liner which can be installed in the chimney. For installations with at least 1" clearance to combustibles, Elmer's 1/4" F/F Blanket or 1" minimum of CHIM-MIX™ may be used. A short length of the proposed liner complete with insulation and mesh wrap or a substitute of the same size should be dropped down the complete length of chimney to be certain the proposed liner will fit.

• Chart A (Mason's rough Sizing Method)



Example: Using the illustration to the left:

H=30"
W=40"
CH=12"

1. Multiply the height and the width of the fireplace opening together:

$$30'' \times 40'' = 1200''(\text{square inches})$$

2. If the CH measurement is 20' or taller, divide 1200 by 12. If CH is less than 20' then divide 1200 by 10:

$$1200'' \div 10 = 120''(\text{square inches})$$

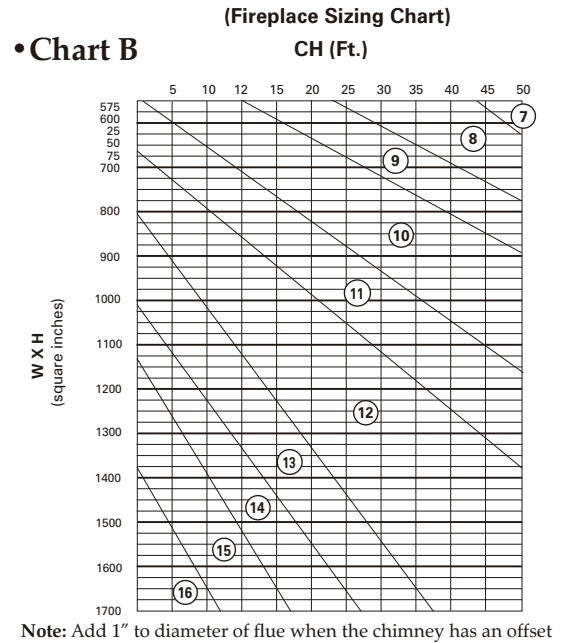
$$120'' = 12.36'' \text{ diameter}$$

Therefore this chimney would require a flue diameter of 12.36".

The length of the liner required is determined by measuring the height of the chimney from the bottom of the chimney or the bottom of the intended flue opening to the top of the masonry chimney. If the flue opening is the bottom of the liner, add twelve (12) inches to this dimension. This will allow at least eight (8) inches below the flue opening and four (4) inches (minimum) above the top of the chimney. The liner should not extend more than six (6) inches above the top of the chimney.

Whenever possible, the lining system should be run to the very bottom of the chimney with a cleanout tee and tee cap installed. This will make inspection and flue maintenance easier. Do not install a suspended liner without a tee cap at the base of the liner tee.

Once the overall length of liner has been determined, it will be necessary to subtract the length of the tee (or tees) with its reservoir cap. From each length of the liner to be used, remember to subtract the two inches lost for the crimp. EXAMPLE: A 48" length of liner yields 46" of effective length; a 36" length yields 34"; a 24" length yields 22"; a 12" liner yields 10". A maximum height of 100 feet is recommended.



Offsets

Installations that require an offset must not use a rigid offset of greater than 30 degrees. In most instances relines with offsets are more easily accomplished by using flexible liner. Whenever the liner cannot be centered in the chimney and held there by the top plate assembly (especially in offsets) 1/2" ZC BLANKET should be used as the insulator and centering device. No air space in the chimney is required with 1/2" ZC BLANKET.

Evaluating The Job

After it has been determined that:

1. The chimney is a valid candidate for relining and it will conform to codes, and
2. the proper sized liner (with insulation) will fit into the chimney, and
3. the overall length of liner has been determined, other points must be considered which will influence the job.

Many factors (including but not limited to: roof surface, height and pitch, type of scaffolding, wind/weather conditions) will be considered by the professional when determining the length (and weight) of each component to preassemble before taking to the roof.

DO NOT ATTEMPT TO PREASSEMBLE AND CARRY ANYMORE LENGTH AND WEIGHT THAN YOU CAN SAFELY HANDLE

Enough insulation and protective wire mesh will be required to wrap the cleanout tee and its reservoir cap, as well as all the liner, up to a point three (3) inches below the top of the chimney. Three inches should be left uninsulated to allow the liner to grow taller when heated without lifting the top plate off the chimney top.

The number of stainless clamps necessary for the installation will be determined by calculating how many preassembled (and wrapped) portions of liners will be used in the entire job. Elmer's Pipe, Inc. recommends that no more than three 36" liners be preassembled before installation. Each preassembled portion will require two (2) stainless clamps.

Tools & Materials

- | | |
|--------------------------------|--------------------------|
| ❖ Ladder(s)/Scaffolding | ❖ 5/16" Hex Head Driver |
| ❖ Tape Measure/Rope/Chain/Hook | ❖ Elmer's ultimate Blade |
| ❖ Tin Snips/Side Cutters | ❖ Screwdriver |
| ❖ Caulking Gun | ❖ Utility Knife |
| ❖ Tube of Silicone Caulking | ❖ Spray Adhesives |
| ❖ Power Drill | ❖ (Masonry Drill Bit) |
| ❖ 5/32" Elmer's ultimate Bit | ❖ (Cold Chisel) |
| ❖ Pop Rivet Gun | ❖ (Trowel) |
| ❖ Eye Protection | ❖ (Mortar Mix) |
| ❖ Gloves | ❖ (Hammer) |
| ❖ Mask/Respirator | ❖ Skil Saw |

() Necessary only if thimble installation or chimney crown repair is required

Preparation For Installation

Determine the location of the flue tee. An existing masonry or metal thimble may be used if the diameter of the thimble is larger than the diameter of the liner system to be installed. If the thimble is of the same size or smaller diameter than the liner being installed or if there is no existing thimble, a new thimble must be installed.

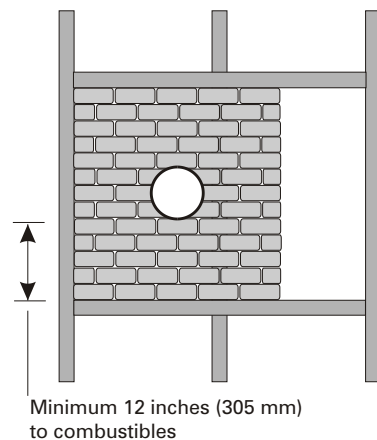
(See "Installing the Thimble")

If the thimble is larger than the diameter of the intended liner, a thimble sizer will be required. Use of a properly sized thimble is critical to the installation of the Elmer's system.

If a combustible wall must be passed through in order to get to the chimney, it is **EXTREMELY IMPORTANT** to use a currently accepted NFPA 211 method or a listed wall pass through unit. Be sure to follow the manufacturer's installation instructions, and all codes when making such an installation. (See **Illus. 3**)

• Illus. 3

Minimum chimney clearance to brick and combustibles: 2 inches (51 mm)



One example of an NFPA approved wall pass through. Other examples can be found in Table 6-7.5 of NFPA211, 1996

Installing the Thimble

Determine the location where the thimble will be. Do not install a wall penetration assembly directly behind a heating appliance. Draw a circle onto the masonry chimney with a diameter 1" larger than the intended thimble hole. Using the masonry drill bit, drill holes into the mortar around the brick which appears to be in the center of your intended thimble. After drilling holes all around the first brick, remove the remaining mortar around it with a hammer and cold chisel until the brick is free and can be pried out of the chimney. Repeat until enough bricks have been removed enabling you to insert the new metal thimble with at least 1/2" space all around.

Lay in mixed mortar to form a base for the thimble. Place pieces of brick and mortar all around the thimble, making sure that the thimble itself is completely surrounded with mortar.

Installation of a larger thimble in replacement of a smaller one is performed by enlarging the hole in the chimney enough to mortar in the new one. A mask or respirator is advisable when working with red brick dust and old mortar. Eye protection should always be worn when drilling or breaking brick.

Assembling the Components

If the tee body has a takeoff bolted to it, remove the takeoff. If the takeoff has already been removed, check to be sure that the properly sized takeoff has been included. Prefit the takeoff to be sure it will easily slide over the lip of the takeoff body. Begin preassembly by placing the reservoir tee cap onto the bottom of the tee body. Using a 5/32" cobalt drill bit, drill through one of the holes in the tee cap into the crimped end of the tee. Install a 5/32" pop rivet (provided) into this first hole. Repeat until the tee cap is joined to the tee with all four (4) rivets.

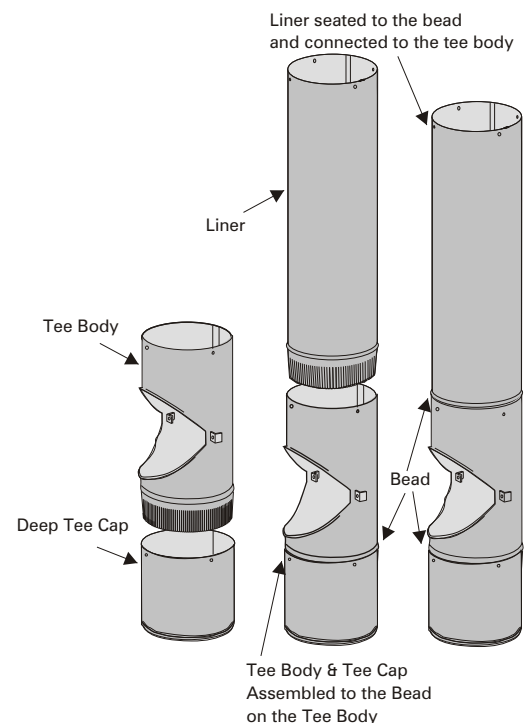
If the relining system is going to consist of all rigid liner and fittings, proceed as indicated below. If Elmer's FLEX is to be all or part of the system, go to "Installing A Flexible Liner System".

Insert a length of liner into the tee body. Remember that all crimped ends are to be installed in the downward position. Fully seat the liner section into the tee until stopped by the circumferential bead. Using one of the holes in the tee as a pilot hole, drill a 5/32" hole right through the liner. Making sure that the liner has remained fully seated (to the bead) install a 5/32" pop rivet into the hole. Repeat the process for the hole opposite the first pop rivet. Install the remaining rivets for the other holes using the same method. (See Illus. 4)

PREASSEMBLE NO MORE SECTIONS THAN YOU KNOW CAN BE SAFELY TRANSPORTED UP ON THE ROOF AND INSTALLED INTO THE CHIMNEY

Most chimneys can be relined by preassembling two or three sections of liners, with each section consisting of 72" or 96" of liner. *Example: A 15' (overall) system could be installed in two sections, one consisting of the tee and two 36" liners and a second consisting of three 36" liners.*

• Illus. 4



Liners are joined into these 6'-9' sections by using the same technique as joining the first liner to the tee. If possible, joining of liners should be performed on a flat surface. Each liner should fully seat to the bead. Each joint to be connected up in the chimney should be prefit on the ground to facilitate installation.

Insulating the Elmer's System With Blanket Insulation

The Elmer's ceramic **BLANKET** is packaged in 25' long rolls of four different widths. The 24" wide rolls may be used for 3"-6" liner systems, the 30" wide rolls for 7", 8", 36" wide roll for 9"- 10", and the 48" for 11"-12". To select the proper blanket sizes for oval and rectangular liners, refer to the round diameter sizes used to make them.

Roll out the blanket on a flat surface. Place the preassembled liner sections on top of the blanket, allowing at least 4" of blanket to extend beyond the female end of the liner (the end with the pre-punched holes). With a utility knife, trim the blanket at the bead of the male (crimped) end of the liner. Spray adhesive onto the blanket and fold the blanket up around the liner, starting at the bead, using the spray adhesive to hold the blanket together at the overlap. Continue to wrap the liner all the way up to within 1" from the pre-punched holes at the top of the section. This end must be left exposed to facilitate mating the two major sections up on the roof. Carefully cut away the insulation along the lip of the takeoff opening and tape the exposed edges with Alunitape.

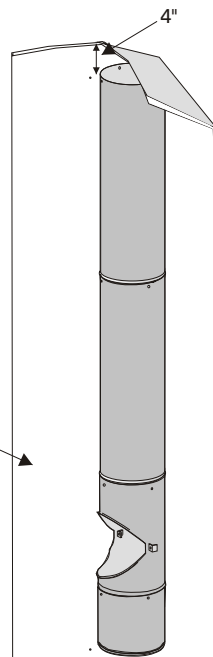
(See Illus. 5a & 5b)

Foil faced blanket should be installed with the ceramic blanket between the stainless liner and the foil facing. The vertical seam should be taped with aluminized tape.

• Illus. 5a

Liner sections with tee body and reservoir cap in position to be wrapped in blanket

White ceramic wool side up; foil faced side down.



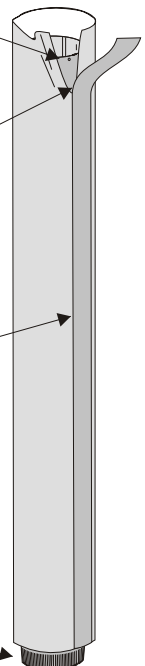
• Illus. 5b

Exposed female end of liner

Elmer's Alunitape run along entire seam

1" overlap in blanket

Exposed crimp



Zero Clearance Installations With Blanket Insulation

If the chimney being relined does not have at least 1" between the exterior of the masonry and any combustibles, the installation should be treated as a **ZERO CLEARANCE** installation. The Elmer's **BLANKET** labeled "**ZC**" ($\frac{1}{2}$ " F/F **Blanket**) must be used to comply with listing requirements.

Roll out the appropriate length of **BLANKET** with the foil faced side down. Place the stainless liner along the edge of the **BLANKET**, spray adhesive onto the white ceramic wool and roll the liner onto the **BLANKET** making sure the blanket completely surrounds the liner. Using the **ALUMITAPE**, secure the seam of **BLANKET** along the entire length of liner.

When 1" or more of air space is present between the exterior of the masonry and any combustibles, the regular $\frac{1}{4}$ " F/F Elmer's **BLANKET** may be used.

Determine what portion of the liner will extend beyond the top of the chimney. To allow for liner growth, no insulation wrap should be used on the upper 3" of the liner inside the chimney or on the exposed length above the chimney. Should you discover upon installation that the insulation extends too far up the liner, a final adjustment may be made at that time.

To insulate the sections with the tee attached, repeat the procedure again allowing 4" of insulation to extend beyond the exposed female end. Spray with adhesive and roll and fold around liners and tee body. Trim off insulation $\frac{1}{2}$ " below the bottom of the reservoir cap. Place seam so it will line up with a corner of the chimney, not the middle of a side, to be certain the wrapped liner will slide down the chimney. Also, be sure not to have the seam cross the tee takeoff opening.

With a utility knife cut around the outside of the lip surrounding the takeoff hole in the tee. Adhesive spray one side of the cutout and stick to the bottom of the reservoir cap. (See **Illus. 6**)

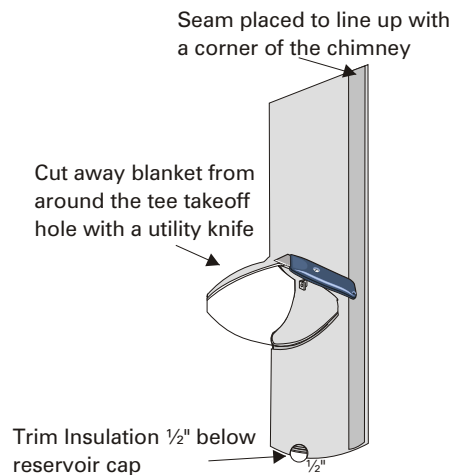
The newly wrapped insulation should overlap itself approximately 1". Cut away any excess insulation, being careful not to cut through the layer next to the liner.

Installing the Protective Mesh

Each portion of insulated liner should now be sleeved with the protective mesh. The mesh is .011" minimum Type 304 Stainless Steel and is available in socks of four widths (when measured flat). The 12" mesh is used for 5" - 6", 15" for 7" - 9" diameter liners, 18" mesh for 10" - 11" diameter liners, and the 22" mesh for 12" diameters. To select the proper sizes for oval and rectangular liners, refer to the round diameter sizes used to make them. (See **Illus. 7**)

Beginning a gain at the crimped end, slip the mesh over the liner, pulling it all the way up to the end of the blanket (which is still open, exposing the female end of the liner). Some installers find it easier to apply the mesh by pre-rolling it onto itself as a nylon stocking is rolled up before it is put on. The pre-rolled stainless "stocking" is then slipped over the end of the Elmer's **BLANKET** wrapped liner section and then unrolled up the "leg" of the liner. At a point approximately 3" below the pre-punched holes, secure a stainless clamp around the mesh, blanket and liner. Tighten the clamp securely and begin to pull the mesh in the direction of the crimped end. You will note that the mesh will constrict in diameter and conform to the size of the blanketed liner. Pull the mesh down to fit the blanket (all the way down beyond the bead). Clamp the mesh blanket and liner just

• **Illus. 6**



• **Illus. 7**

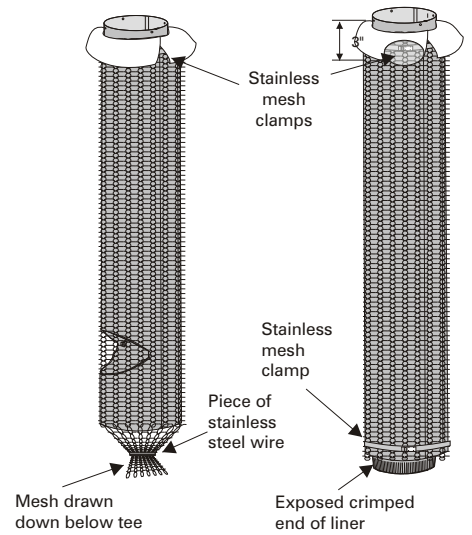
above the bead. Trim off the remaining portion of the mesh. Repeat for all preassembled liner sections.

To install the wire mesh over the section with the tee body, begin by slipping the wire mesh sock over the covered reservoir cap. Pull it all the way beyond the exposed female end of the liner. Be sure to extend at least four (4) inches beyond the end of the liner. Again secure the clamp one (1) inch below the pre-punched holes and pull the mesh down around the blanket. Trim the mesh leaving 6" extending beyond the bottom of the reservoir cap. Gather the open end tightly under the cap and tie it securely using a 6" piece of stainless wire.

DO NOT TRIM THE MESH AWAY FROM THE TAKEOFF HOLE AT THIS TIME

Check the female end of each section to ensure that the pre-punched holes are exposed.

Insulation and mesh around liner section with tee (left) and three liner sections (right)



Zero Clearance Installations With Chim-Mix™ Insulator

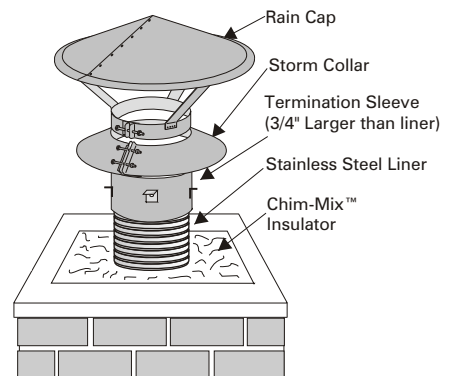
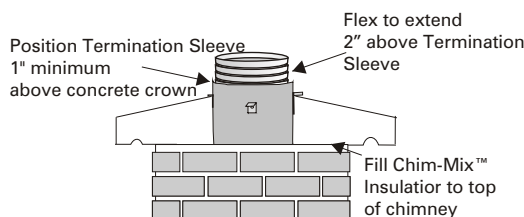
A minimum of 1" of Chim-Mix™ is required when there is zero clearance between the masonry chimney exterior and combustible construction. (Chim-Mix™ can be used with flexible systems and is not recommended with rigid systems.)

Mix the Chim-Mix™ Insulator by adding 1.5 gallons of water per cubic foot of dry insulator and blend thoroughly either by hand or in a power mixer. Once properly mixed the Chim-Mix™ Insulator will appear only damp and have a granular consistency. This will assure proper flowability without affecting insulative qualities. **BE SURE TO WEAR PROPER EYE PROTECTION AND DUST MASK.** It may be necessary to pack ceramic blanket insulation in the clean-out and thimble openings to prevent the Chim-Mix™ insulation from flowing out these openings during the pouring process. This blanket insulation can be left in the chimney. (Refer to the Material Safety Data Sheet for proper handling of these materials.)

During the pouring process, distribute the Chim-Mix™ Insulator evenly on all sides of the liner. Wiggle and tap the liner periodically as you pour to assist in setting the insulator into position. Fill to the top of the chimney.

Standard Termination With Chim-Mix™ Insulator

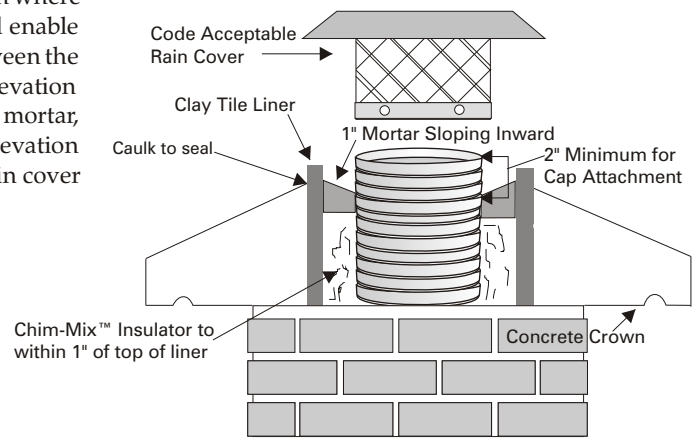
Fill the Chim-Mix™ Insulator to the top of the chimney. Position the termination sleeve (which should be 3/4" larger than the liner) around the liner at an elevation so a minimum of 1" will be up above the concrete crown once poured. It may be necessary to slightly recess the termination sleeve into the Chim-Mix™ Insulator to achieve this elevation. Install termination components. (See Illus. 8)



Clay Tile Termination With Chim-Mix™ Insulator

Fill the Chim-Mix™ Insulator to the top of the chimney. The Elmer's liner should be cut so it is 4" above the chimney. Cut a tile liner to a length where it will be up above the concrete crown a minimum of 2". This will enable proper attachment of a code acceptable rain cover. Fill the void between the Elmer's liner and the tile with the Chim-Mix™ Insulator to an elevation within 1" of the top of the Elmer's liner. Fill the top 1" void with mortar, sloping it inward towards the liner. Make sure this mortar top elevation does not interfere with the attachment of the rain cover. Install rain cover per manufacturers instructions. (See Illus. 9)

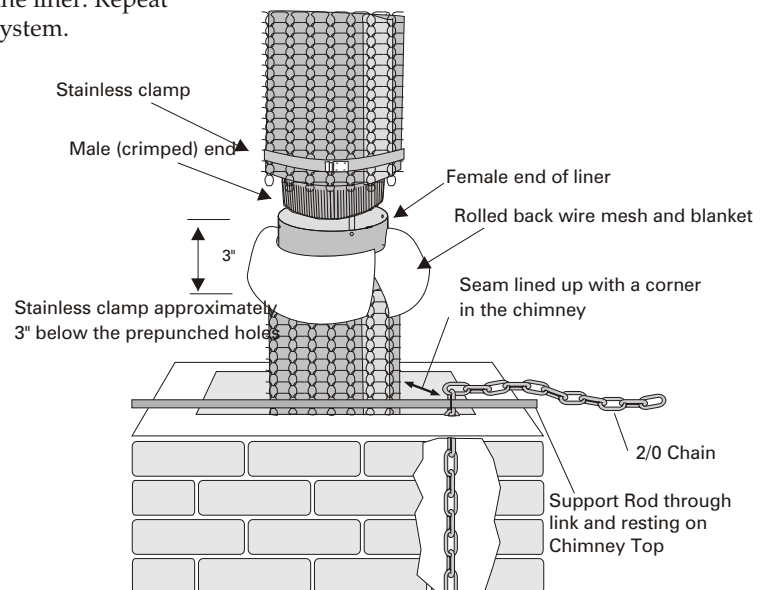
• Illus. 9



Installing the Rigid Liner System

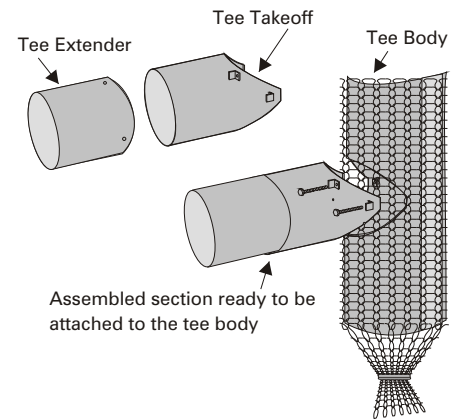
Exercise **EXTREME CAUTION** when climbing and working on any roof. Insert the liner section with the tee body attached down the chimney. There are several methods available to lower a liner into the chimney. One example is to use 2/0 chain with a tarp hook, attached to the chain with a "Quik Link"™, and hooked into the tee opening. The chain needs to be kept tight so that the hook doesn't disconnect while lowering the liner sections. After the liner is lowered to where 3" or 4" projects above the chimney top, a length of steel rod is inserted through a chain link and the two ends of the rod are rested on two sides of the chimney top. The liner is completely supported and held in place. Insert the next section into the one extending above the chimney. (See Illus. 10) Drill and rivet all four pre-punched holes being certain that the male end is fully seated. Release the clamp located just above the bead. Slide the clamp up 6"-8" and tighten it enough to hold it up out of the way. Fold the blanket extending up from the female (lower) section and apply enough spray adhesive to adhere it in place as before. Pull the wire mesh up around the newly wrapped portion of blanket. Loosen and lower the clamp back down over the mesh and secure once again, this time about 1" below the top of the newly positioned blanket. Holding onto the chain, remove the steel rod and lower the liner. Repeat this procedure until all liner sections form one continuous system.

• Illus. 10



Secure the liner at the chimney top when the takeoff hole in the tee body is aligned with the thimble. Carefully snip a small opening at the L-brackets of the tee takeoff and slip the takeoff nose through them and over the lip of the takeoff. Using a 5/16" hex head drive, thread both 2" 10-24 stainless bolts through the drilled holes in the L-brackets on the takeoff into the threaded L-brackets of the tee. Draw the takeoff up snug to the tee section. Be sure the takeoff covers the lip of the tee takeoff opening completely. Snip off the mesh that has remained inside the tee body with a pair of side cutters. If the thimble is of a larger diameter than that of the liner system, insert the thimble sizer over the protruding takeoff. Make certain that the takeoff of the tee extends through the thimble by at least 2". If not, remove the takeoff, slide in and fasten a tee extender and install the takeoff. (See **Illus. 11**)

• **Illus. 11**



Installing a Flexible Liner System

Elmer's FLEX is manufactured in 25' coils, 5' lengths, and upon request, custom lengths. A 25' coil should be unrolled and completely stretched before any cuts are made. Coils are manufactured to a standard stretched length of 26' 2". When a new coil is unrolled it will have shrunk to an average 23 to 24 feet and it will be necessary to stretch it back to its full length. Stretching the coil can be simplified by attaching a handle with two hooks to each end of the coil. There should be two prepunched holes at each end of the coil and the hooks are fastened to them. Attach one end to an immovable object and pull on the other end until the coil is stretched to its full length.

When deciding whether to install an entire length of flexible relining system all in one insertion, the same consideration for safety should be used.

DO NOT ATTEMPT TO INSTALL MORE FLEXIBLE LINER THAN YOU KNOW CAN BE SAFELY TRANSPORTED UP ON THE ROOF AND INSERTED INTO THE CHIMNEY.

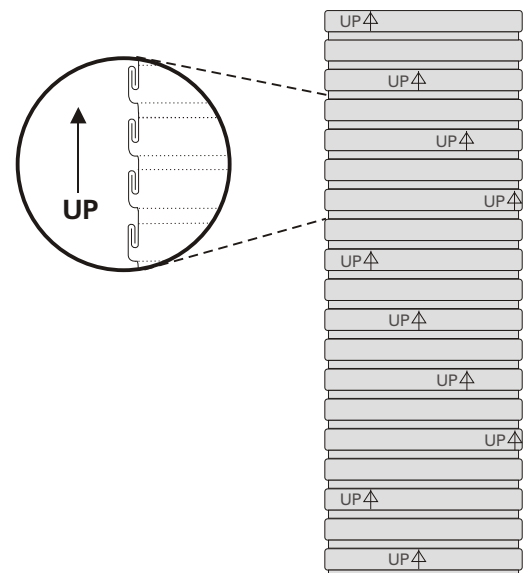
If cutting of the flexible liner is necessary, use a Skil Saw (or equivalent) with a blade made for cutting stainless steel, such as Elmer's ultimate Blade. Measure and mark where the flexible liner is to be cut. Cut the rib at a 45 degree angle. This helps to "weld" the interlock and prevent the two ends from expanding. Proceed to cut around the circumference of the pipe, between the ribs, until you have cut completely through the pipe.

ALWAYS WEAR EYE PROTECTION WHEN CUTTING METAL

When installing a flexible liner be sure to install with the proper end UP. Flexible liner has a stamped marking with the word UP and an arrow on the ribs to show the proper direction for installing the liner system.

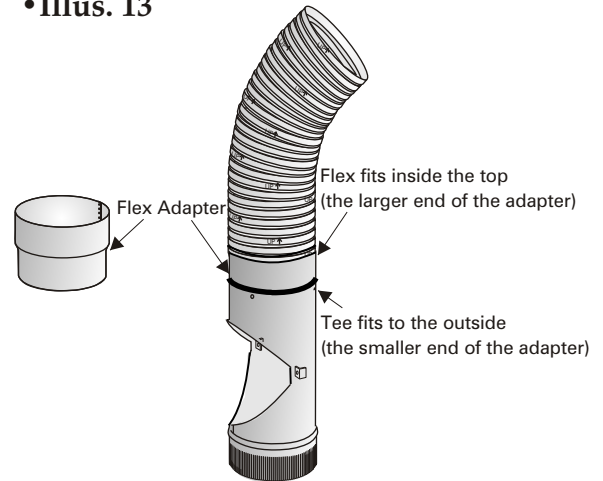
To determine what end must be installed in the up position should the arrow be missing, look at the flexible pipe ribs. The top side is like a bottle top and the connector from the rib above comes down into it like a piece of stove pipe. The bottom side of the rib looks like a flex adapter and runs down into the rib below it. (See **Illus. 12**)

• **Illus. 12**



Install a flex adapter on over the bottom end of the liner. Secure the flex adapter to the liner with the four 5/32" rivets provided. Insert the male end of the flex adapter into the female end of the tee and secure with four rivets. (See **Illus. 13**) The flexible liner system is insulated in the same manner as the rigid. If more than one section of flexible liner is to be used, the same allowances must be made to allow for mating the two sections. (See *"Insulating the Elmer's System"*). Two or more sections of flexible liner may be joined by using a flex adapter at each connection. Flexible liner installations can be made easier by using a nosecone on the leading end of the liner. A rope attached to the eye of the nosecone can be used to help steer the liner down the chimney and around offsets and obstacles. Or a winch may be used to haul the liner up from the bottom of the fireplace or chimney.

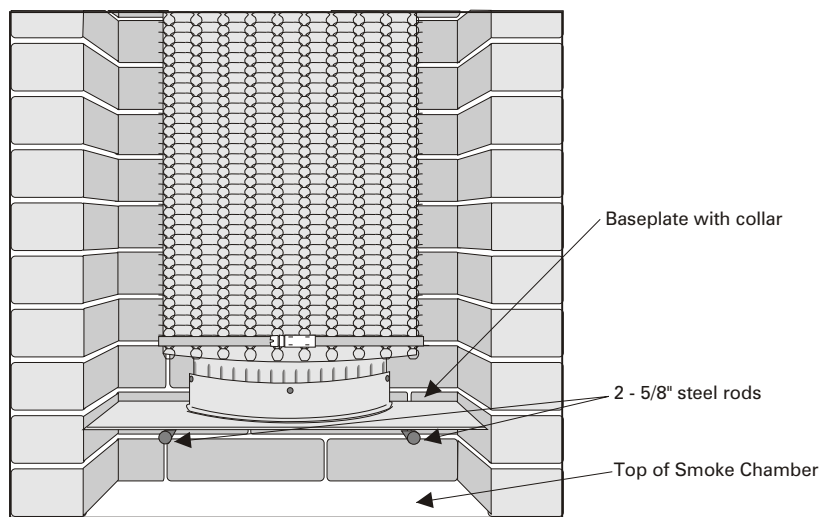
• **Illus. 13**



Installing a Fireplace Liner

A bottom plate will need to be installed at the top of the smoke chamber. The bottom plate can be supported by installing two lengths of 5/8" steel rods on either side of the bottom plate hole. (See **Illus. 14**) Access to the smoke chamber may be accomplished through the rear outside wall of the fireplace or through the damper. If access is made through the rear outside wall, a large cleanout door can be installed. It may be necessary to place ceramic wool blanket around the edges of the bottom plate to seal the sides. A fireplace liner system is insulated and topped off in the same manner as the rigid and flexible systems. Lower the insulated liner down the chimney into the bottom plate and attach it to the bottom plate collar with four rivets. When a cleanout door is installed in the rear fireplace wall and the bottom plate is accessible from above, the rivets can be placed on the outside of the liner and bottom plate collar. When access is only possible from below and through the damper, a right angle drill can be used to drill the four rivet holes and the rivets installed from inside the liner.

• **Illus. 14**



Fireplace reline showing insulated liner lowered into baseplate supported by 2 - 5/8" steel rods.

Topping Off the Job

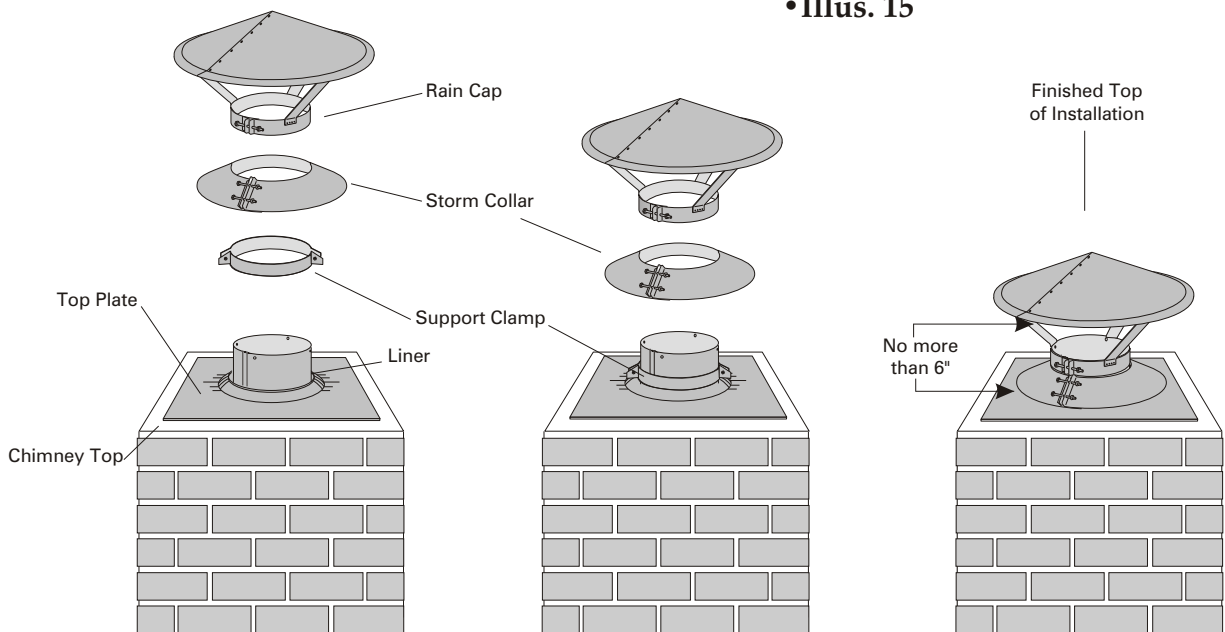
After installing the takeoff onto the tee, the final position of the system is now clearly seen. Check to be sure that the upper 3" of liner within the chimney and all liner above the chimney have no insulation or protective mesh over the outside. If any insulation is present on this portion of the liner, it should be cut away, making sure that any clamp located in this area is first moved down. Any cuts made should be ABOVE the clamp.

Thoroughly clean the top of the masonry chimney. A new crown wash may need to be trowelled on. Measure the distance across both dimensions of the chimney top. Trim the top plate to fit the configuration of the chimney top so that no stainless overhangs the outside edge of the brick. Secure the top plate to the chimney top with silicone caulking or lags and shields. Be sure the top plate slides easily over the upper liner sections.

DO NOT POP RIVET, SCREW, BOLT OR MORTAR THE LINER TO THE CHIMNEY. ALLOWANCE MUST BE MADE FOR THE LINER TO EXPAND AND CONTRACT VERTICALLY DUE TO HEATING AND COOLING.

A support clamp should be installed on top of the top plate with both bolts completely tightened and the clamp securely riveted to the liner. Fasten a storm collar to the liner and slide it down so that its lower edge covers the support clamp and rests on the support plate. Be sure the beveled edges of the support clamp are up to allow the storm collar to rest on the top plate. Tighten the storm collar securely in this position. The storm collar will act as an additional support mechanism for the entire installation. Seal any opening between the storm collar and the liner to which it is attached with silicone sealant.

Install a rain cap to the top of the liner. Slide the rain cap collar over the liner and tighten the bolt and nut to secure it. A rain cap should be used on every liner system. (See Illus. 15)



Installing the Appliance

Connector pipe (single wall stove pipe) must be at least 18" from any combustible surface or materials. If you must pass through a combustible wall in order to install the appliance, a listed wall penetration system or other NFPA 211 approved method must be used. Consult local codes for specific requirements in your area.

Follow the appliance manufacturer's installation instructions carefully. A small fire is recommended for the first firing to verify that the entire system is performing properly.

Stovepipe paint begins curing at about 400° F. At this temperature the coating becomes soft & glossy. When the coating reaches about 500° F, the organic portion of the coating burns away giving off fumes containing carbon dioxide, carbon monoxide, nitrogen dioxide and very small amounts of aldehydes. It is very important that the room be well ventilated while burning the stove for the first two or three times. Smoke and fumes caused by burning may cause nausea. After a few burns at 700° F or more, most of the organics will be burned off.

All crimps should be inserted in the direction of the appliance. All connector joints should be screwed securely with three (3) screws per joint before firing.

Inspection & Maintenance

Inspection and maintenance of the Elmer's system is performed by removing the chimney connector (stove pipe) from the chimney, or from a second tee installed at the level of the cleanout door at the base of the chimney. Both chimney connector and liner system should be inspected frequently and cleaned at least once a year by a certified chimney sweep to follow up on maintenance required by the warranty program. Use of a stainless wire brush is recommended for cleaning the liner and pot brush (if necessary) for the tee and reservoir cap. Frequent cleaning of the connector pipe is advised.

Creosote and Soot Formation and Need for Removal: When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors may condense on the inside of the chimney liner during slow-burning firing periods. As a result, creosote residue accumulates on the chimney liner. When ignited, this creosote makes an extremely hot fire.

The chimney liner system should be inspected at least once every two months during the heating season to determine if a creosote or soot build-up has occurred. If creosote or soot has accumulated, it should be removed to reduce the risk of chimney fire.

**CONSULT THE MANUFACTURER'S
RECOMMENDED PROCEDURE ON HOW TO
PROPERLY OPERATE THE APPLIANCE**