

# YOUR FIREPLACE

An Owner's  
Manual



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## INTRODUCTION

Since man first tamed fire many, many years ago, open fires have cooked food, warmed souls, inspired poems, excited romance, created visual delight, generated stories, and brought folks closer together.

Although millions have enjoyed the warmth and cheer an open fire brings, few people actually know about the inner workings of a fireplace, or about its maintenance and operation.

This book is your owner's manual. Nothing elaborate, just the basics you need to get the best use of your woodburning system. Familiarize yourself with the information, then keep it nearby to answer any questions that may arise.

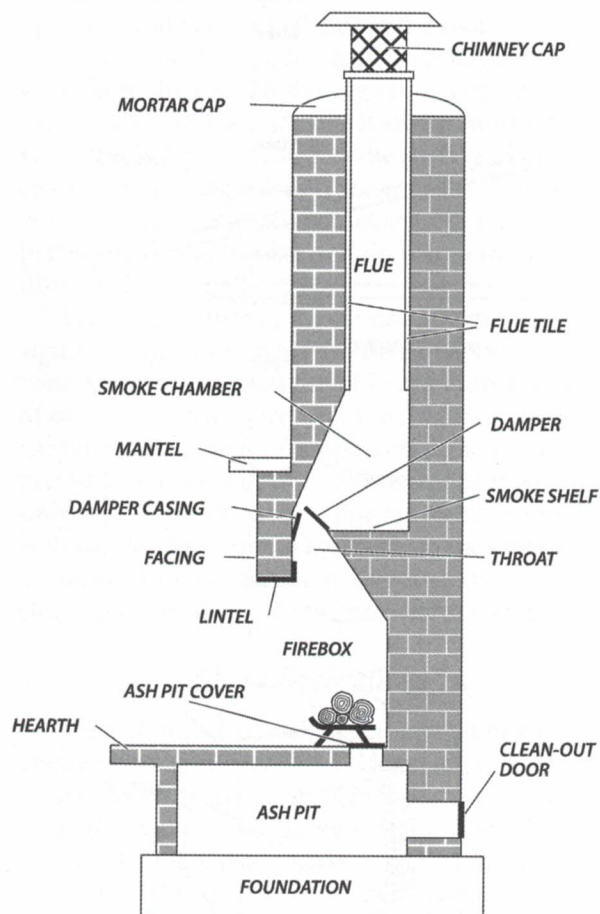
### Did You Know?

- A fireplace can remove more heat from your house than it puts in?
- You lose more heat through a fireplace opening than an equivalent size hole in the wall?
- Even though you are very warm in front of a fire, the room temperature is not rising significantly and can even be dropping?
- Today there is enough wood fuel to heat at least half, and probably all the homes in the United States without depleting the forests?
- Decomposing wood puts as much carbon dioxide into the atmosphere as if you had burned the wood — without the energy benefits?
- If burned trees are replaced in equal quantities, the new trees will absorb 10 – 20 times as much carbon dioxide as was produced by the burning trees?
- Burning trash in your fireplace may damage your chimney and create a safety hazard?

## FIREPLACE AND CHIMNEY CONSTRUCTION

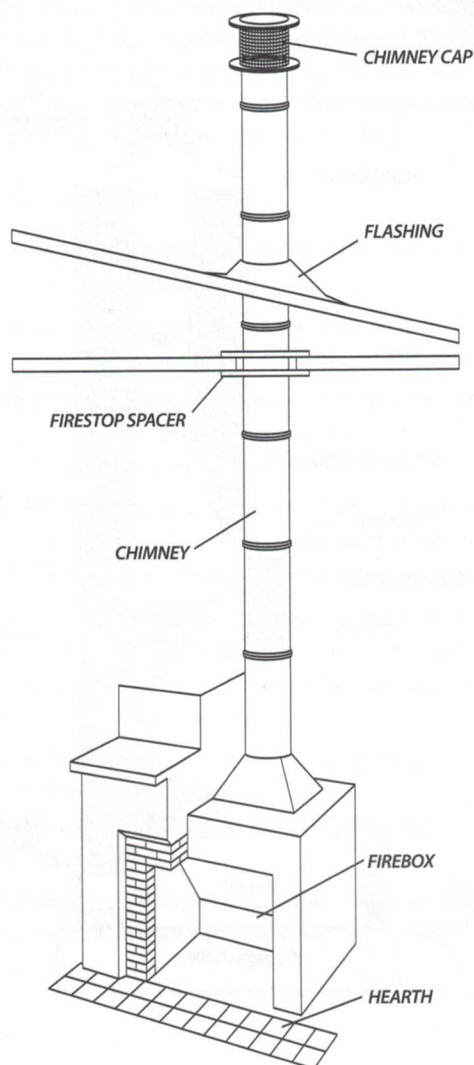
### Masonry

Masonry fireplaces are generally constructed of brick or stone. The firebox may be metal but is most often built of firebrick. The chimney is usually lined with a terra cotta liner, or may have a stainless steel or poured masonry liner.



## Prefabricated

These are generally factory preassembled units specially designed to allow placement in close proximity to combustible materials; hence the misnomer "zero clearance." Some are designed to put off more heat and burn with much greater efficiency than a traditional fireplace, incorporating many benefits of the woodstove. Freestanding fireplaces would also fall into the prefabricated category.



## HEATING DEVICES

Any outdoorsman can tell you that a campfire is better than no fire — but only slightly better as a heating device. No matter how big a bonfire you build, the best you'll do is scorch your front while your backside freezes. Move the fire indoors and place a chimney over it, and you wind up with the same situation. With the traditional fireplace, the chimney pulls the heat from the room and returns it to the great outdoors.

The net heat gain from the traditional fireplace is a little better than zero. Some people cannot understand how it can be so hot in front of an open fire and yet not be heating the room.

Here's how: Infrared energy is radiated outward from the fire. This energy is converted to heat on the surface it strikes. It strikes your skin, your skin is heated. It strikes the surface of the chair, the chair is heated. It strikes your clothes, your clothes are heated. But let something get between you and the fire and do you notice the difference? You bet!

The temperature of the air has not gone up significantly, and it may have dropped. Now if your room is crammed full of heavy drapes, lots of overstuffed furniture near the fireplace, thick carpeting, etc., the heat created on these surfaces can add some heat to the air. But that heat will only stay in the room for a few moments before it is drawn to the fireplace and sent up the chimney. Traditional fireplaces warm hearts, souls, friendships, and romances. They don't warm rooms.

## Glass Enclosures

The volume of air pulled through an open chimney is significant. "So I'll keep my damper closed," you say. While the fire is burning? And what about at the end of the evening when the fire has died down and you are ready to go to bed? Close the damper then, and you will probably wake up to a house full of smoke. So all night your damper is open and all night your furnace is



busy pumping hot air in, while the open chimney allows the hot air out. This is why glass enclosures are an investment and not a purchase. When the fire dies down, you close the doors and go to bed knowing that the air your furnace heats will not be swallowed up and spit outside by your chimney.

When buying glass doors, give heed to the old adage — “You get what you pay for.” This is as true here as anywhere. A new door for \$200 may not look much different than a \$450 door, but add a year’s use and the difference will be apparent. The cheaper one will be warped, discolored, and in poor operating condition, while the more expensive one will be like new.

### **Woodstoves**

There are two types of woodstoves used in conjunction with a fireplace. A woodstove insert which actually sits in the fireplace opening. And a hearth stove which usually sits on the hearth in front of the fireplace opening.

If you are going to have a woodstove installed in your fireplace, make sure it is done by a certified chimney professional. If you already have one installed, have a chimney professional inspect it. The woodstove should be vented to the top of the chimney instead of just dumping the smoke into the fireplace. (This is outlined in the National Fire Protection Standard 211, and required by most manufacturers.)

If the smoke is dumped into the fireplace, you can count on poor draft, excessive creosote buildup (which means it will cost more to have it cleaned), and a greater potential for a fire hazard. Having the woodstove flue relined means you will burn less wood and the maintenance costs will be lower. This will save you money in the long run and make your home safer.

## **FIREPLACE ACCESSORIES**

### ***Poker***

If you only have one tool, this is the one to own. The poker is good for a multitude of chores while tending the fire. Its main use is for rousing the flames by opening new air passages among the embers and rearranging the fuel. It can also be used to adjust certain types of dampers while the fire is burning.

### ***Tongs***

Tongs are good for bringing unburned log ends back into the fire.

### ***Brush Or Hearth Broom***

A brush or hearth broom is useful for cleaning the hearth.

### ***Ash Bucket And Shovel Set***

Use your bucket and shovel set to remove ashes from the fireplace. Do not attempt to remove the ashes if they are still warm.

Place the bucket in the fireplace with the damper open. Shovel the ashes slowly into the bucket. This will cause a minimum amount of dust to enter the room. When done scooping the ashes, cover with the metal lid before removing it from the fireplace. This will prevent any ash from flying out during transport.

It’s a good idea to wait a couple of days after your last fire to clean out the ashes. Many fires have been started from warm ashes that were dumped on something that later caught fire. Better to be safe than sorry.

### ***Screen***

Every fireplace should have a screen to prevent sparks and embers from flying into the room.

## Grate

This is another item that is really necessary for proper enjoyment of your fireplace. The size of your fireplace grate should be half the depth of your fireplace, two-thirds the width, and high enough off the floor to allow room for a bed of ashes and still maintain good airflow. Many people make the mistake of buying the largest grate they can fit in their fireplace. This is not only unnecessary, it's dangerous. It's a good idea to buy a good, quality grate. Cheap, lightweight grates can burn out as often as every one to two years. Good grates last five years or more.

## CHIMNEY CAPS

### *Five Good Reasons Your Chimney Needs A Cap*

#### *A Cap Keeps Out The Rain*

If this were the *only* reason for installing a cap, it would be enough. You'll seldom find an uncapped chimney over five years old that has not suffered some kind of water damage. Go over to your fireplace right now and look at the back fire wall near the base. Run a screwdriver or coin across the mortar between the bricks. Seem a little crumbly? Or maybe it's obvious just looking at it. Rain accumulates on the smoke shelf, mixes with creosote in the chimney, and turns into a highly corrosive acid. It then seeps down and attacks the mortar joints on the back wall of the fireplace. The mortar binding the bricks becomes weak and may loosen. Additionally:

- Rain soaks into the mortar joints in the flue. When it freezes it expands, eroding and weakening the mortar joints and thus the whole chimney.
- Rain can set off a bad odor in the chimney. This will happen in warm weather, especially if the chimney is dirty or has bird droppings

on the smoke shelf.

- If you have a metal firebox, rain will rust it out in 10 to 15 years. Often, the whole fireplace unit will need to be replaced. You won't see the rust until the damage is done as it starts from the back and eats through to the front. By the time you see the rust, it's time to replace the firebox, or the whole unit, which can cost a small fortune.
- If you have a woodstove insert in your fireplace, the rain will cause it to rust rapidly. Heat greatly increases the rate of oxidation (rusting). The continued use of the stove means the creosote residue mixed with water and heat will cause the corrosion to take place at a greatly accelerated rate.
- The rain and creosote mixture will also cause your damper to rust. Replacement of a fireplace damper can cost around \$500 or more for a traditional fireplace damper — a damper installed at the top of the chimney will cost \$300 – \$500.

#### *A Cap Keeps Out Birds, Squirrels, And Other Varmints*

Birds are fun to look at but they do have a few bad qualities when perched in your chimney.

- They chirp and flutter constantly, driving sane folks nuts with their incessant chattering. Their droppings accumulate in a vulgar mass on the smoke shelf causing a bad odor. This also leaves a breeding ground for mites, and a rare but serious lung disease called histoplasmosis.
- A squirrel can wreck a house faster than a dozen two-year olds. Once squirrels get inside the chimney, the only way out may be through the damper. Wait till you see a soot-covered squirrel panic in your living room or den. You will quickly lose interest in them as furry, cuddly creatures, and chances are your homeowner's insurance won't cover the damages.



- Raccoons also seem like cute, cuddly creatures, until you open up the damper some morning and find a mother raccoon and a nest full of babies. Raccoons are fierce creatures when they feel cornered, or when they have a nest of young to protect. They also carry diseases like rabies and roundworm. If raccoons have to be removed, it may cost a hefty sum. This can be prevented by the installation of a chimney cap.

### ***A Cap Reduces The Risk Of Roof Fires***

Roof fires from hot embers, burning paper, etc., are common. Installing a chimney cap will help prevent them, as its spark arrestor will help trap hot airborne embers.

### ***A Cap Keeps Out Leaves And Debris***

Leaves and debris can choke a flue, causing smoke and dangerous carbon monoxide fumes to spill back into the room. Dry leaves can also set off a chimney fire in a dirty flue.

### ***A Cap Inhibits Downdrafting***

A fireplace that smokes can result from several factors. One of these is backpuffing. Backpuffing can occur when the wind blows the smoke back down the flue into the room. A cap can help prevent it. There are even special caps to promote draft if this is a common occurrence.

### ***Choosing A Cap***

The best materials for a cap are stainless steel or copper. They won't rust or corrode and will withstand the intense heat of a chimney fire. It is well worth the investment. Caps manufactured either completely or partially of stainless steel and copper can usually be purchased only from chimney professionals. Most hardware store variety caps are manufactured of either galvanized steel or aluminum. Galvanized steel is okay for seldom used fireplaces. However, they will rust and corrode with day-in, day-out use. If you live along

the coast, the salt air will also corrode a galvanized cap quite rapidly, leaving ugly rust stains on the chimney and even on your roof. These can be very hard to remove. Aluminum is somewhat resistant to corrosion, but will melt in the extreme temperatures of a chimney fire.

Be certain to choose a cap that fastens securely to your chimney. Buy your cap from a chimney professional, as he or she will make certain you have the correct size and install it properly. They will also make certain you get the type of cap that best suits your needs.

## ***TOP-SEALING DAMPERS***

If you found out too late that you needed a cap, chances are you may have a rusted, broken damper. Most dampers are made of cast-iron. Like a cast-iron skillet, cast-iron dampers rust very easily. When the fireplace damper is rusted, usually the most cost-effective, easiest way to replace it is with a top-sealing damper.

A top-sealing damper sits at the top of the chimney and has a cable and bracket assembly in the firebox. The cable has a pull chain on it that is used to close the damper. Because a top-sealing damper mounts to the top of the chimney, when it's shut it keeps out rain, leaves, and animals. It also prevents warm room air from escaping.

Some top-sealing dampers have a built-in cap so when the damper is open, it still keeps out animals, leaves, and rain. Top-sealing dampers are sold only by chimney professionals, and are a good investment. As with any fireplace damper, don't forget to open it before using the fireplace.

## ***GETTING THE FIRE STARTED***

### ***Open The Damper***

This sounds like the appliance repairman telling his customer to plug in the appliance, but it is forgotten more times than most people care to admit.



## ***Check The Draft***

If the flow in the chimney is reversed or stagnant, you may find you have a room full of smoke before the draft begins to move in the right direction. One way would be to strike a match and extinguish it directly in front of the fireplace watching where the smoke goes. If it flows *into* the fireplace, you have a draft. If it goes any place but into the fireplace, you have little or no draft.

To create a draft, roll a cone of newspaper and light the big end, holding it so the flames reach just below the damper. Do not let them rise above the damper. This could set off a chimney fire. If you find you are constantly having to do this, you might consider keeping a hair dryer nearby. A hair dryer can also be used to heat up the flue, creating a draft. The advantage to this is that it creates heat, and is totally smokeless. You can keep it going as long as you need. When you're sure you have a draft, you can light the fire.

If you still have a problem getting a draft going, try opening a nearby window. Also, check to see that all competing vents (other fireplaces, bathroom and kitchen fans, etc.) are off. Consult your chimney professional for assistance with chronic draft problems.

## ***Prepare The Ashes***

You should always have a 1" – 2" bed of ash under your fire. Always be certain there is 1" – 2" between the ashes and the fire grate. Taper the ashes from about 3" at the back to ½" at the front. This funnels air up into the fire.

## ***Lay The Fire***

You need three things to lay a fire:

**Tinder.** Most people use wadded up newspaper. It's better to roll the paper into a cone and place it pointing to the back of the fireplace. This produces a hotter, quicker fire, with less smoke initially. Other forms of tinder would be hemlock, birch bark, cedar twigs, or dry pine needles.

**Kindling.** Consists of twigs, branches, and

small splits of wood anywhere from ¼" to 1" in thickness. This is the most important ingredient to build a good fire and usually the most overlooked. Most people try to start their fire with only the tinder and wood and then wonder why they spend the next hour trying to get it going. Keep a good supply of kindling on hand.

**Fuel.** These instructions will be limited to laying a fire when wood is used as the fuel. A discussion on types of wood follows later in this manual. If you follow these instructions for laying a fire, you will find there is no need for artificial logs. Newspaper logs are alright if added to wood, but don't burn them by themselves.

Although there are many ways to lay the fire, the method below seems to work the best with the least amount of effort. The trick to successfully laying any fire is an adequate amount of kindling. Three logs are the perfect amount for starting a fire. Any less and you will have difficulty in maintaining a blaze; any more is simply too much and can be hazardous.

## ***"Z" Method***

Place tinder on ashes under the grate. Place about 1" of kindling on the bottom of the grate. Now place a medium to large log at the rear, not quite touching the wall. Arrange a second log no larger than half the size of the first log at the front of the grate. Fill the space between these two with additional kindling. Finally, place a split log diagonally across the top of the first two forming a "Z" with the three logs. One match to the tinder should produce a roaring fire. When the second and third logs begin to produce coals, add more wood.

## ***Putting It Out***

Okay, so you've successfully started the fire, enjoyed the good company and conversation around it, and are ready to call it quits for the evening. Rather than let the fire burn itself out, stand the unburned logs on end in the back corner of the fireplace. They will rapidly extinguish



themselves leaving you several well seasoned pieces to start your next fire.

## **BUYING WOOD**

### ***Units of Measurement***

#### ***Cord***

This is a unit 8 feet long by four feet high by four feet deep, or 128 cubic feet. Because of the irregular shape of logs, the average cord contains only about 80 cubic feet. The way the wood is stacked largely determines how much wood you actually receive. There is an old New England rule for stacking that pretty well sums it up: "If you're selling, stack it so a cat can run through. If you're buying, stack it so it can't."

#### ***Face Cord/Run/Rick***

This is a unit eight feet long by four feet high and any depth. It's important to specify "full cord" if that is what you intend to buy. If you don't, you may end up with an abbreviated version.

#### ***Truckload***

This is obviously a pretty vague unit of measurement. What size truck? The average cord of seasoned hardwood weighs about two tons. If it is delivered in a half-ton pickup, you're not getting a full cord.

#### ***By The Pound***

A pound of wood, regardless of its type, is a pound of wood. The only difference in types of wood is in density. An oak log weighs considerably more than the same size pine log. This means there is more fuel packed into the oak log, and it is worth more. When buying by any other unit of measurement, you may pay more per pound for softwoods. If hardwood is available in your area, it's a good idea to specify hardwood when ordering.

## **Placing The Order**

It is best to buy from someone who has been recommended to you. The second choice is to buy from a full-time, established wood dealer. While the number is increasing, there are very few around. The advantage to buying from dealers is that you are buying from a businessman who has a reputation to protect if he wants to stay in business.

### ***Be Specific***

When ordering, ask questions:

Is it hardwood or softwood?

100% hardwood?

What type of wood?

How much per cord? A full cord?

Is it seasoned? How long?

To what lengths is it cut? Is it split?

Specify full cord if that's how much you want. If you have a choice between hardwood or softwood, specify hardwood. If you don't have a choice, you can always go somewhere else. Unless the price difference between the two is greater than \$25, pay the extra for the hardwood. Specify dry, seasoned wood. If it is green, you should pay considerably less for it. Tell them you want it stacked, but be aware that many will charge you extra to do so. If you want it split, specify.

### ***When It Arrives***

It is important to be there when the wood arrives and be firm about getting what you pay for. Check the wood as it's unloaded. Then measure to make sure that what's delivered is what you've paid for. Check for dryness by looking for check marks. These are cracks that radiate outward from where the center of the whole log would be. The larger the better. Green wood may appear dry, but without pronounced check marks, you can be assured it is not. Another method of testing is to bang two pieces together. Dry wood will give a sharp ringing sound. Green wood will

give a dull thud. If you ordered hardwood, don't accept pine, cedar, or other softwoods. If you do, you are paying filet mignon prices for hamburger.

### Storing Your Wood

Wood should be split as soon as possible. Unsplit wood will take considerably longer to season. Wood should be stored off the ground. Ask your chimney professional about a log rack. If possible, store wood in the sun. Wood stored in shade takes longer to season and can decay. Cover the pile with plastic on rainy days. Occasional light rains won't hurt, but continuous or heavy rains can slow down the seasoning process considerably. Don't store wood in the house or stacked up against the house or garage. Cut wood attracts all kinds of varmints and undesirables.

### Characteristics of Woods for Fireplace Use\*

Species	Ease of starting	Coaling Qualities	Sparks	Fragrance
Apple .....	Poor	Excellent	Few	Excellent
Ash .....	Fair	Good	Few	Slight
Beech .....	Poor	Good	Few	Slight
Birch, white.....	Good	Good	Moderate	Slight
Cedar .....	Excellent	Poor	Many	Good
Cherry .....	Poor	Excellent	Few	Excellent
Elm.....	Fair	Good	Very Few	Fair
Fir, Douglas.....	Good	Low	Many	Good
Hemlock.....	Good	Low	Many	Good
Hickory.....	Fair	Excellent	Moderate	Slight
Locust, black.....	Poor	Excellent	Very Few	Slight
Maple, sugar.....	Poor	Excellent	Few	Good
Oak, red.....	Poor	Excellent	Few	Fair
Pine, white or yellow .....	Excellent	Poor	Moderate	Good

\*Courtesy of Maine Bureau of Forestry and School of Forestry, Oregon State University.

### Ratings for Firewood\*\*

Type of Tree	Relative amount of heat	Easy to burn?	Easy to split?	Does it have heavy smoke?
<b>HARDWOOD TREES</b>				
Ash, red oak, white oak, beech, birch, hickory, hard maple, pecan, dogwood.....	High	Yes	Yes	No
Soft maple, cherry, walnut .....	Medium	Yes	Yes	No
Elm, sycamore, gum ....	Medium	Medium	No	Medium
Aspen, basswood, cottonwood, yellow-poplar .....	Low	Yes	Yes	Medium
<b>SOFTWOOD TREES</b>				
<b>Southern yellow</b>				
pine, Douglas fir .....	High	Yes	Yes	Yes
Cypress, redwood .....	Medium	Medium	Yes	Medium
<b>White cedar, western red cedar, eastern red cedar.....</b>				
Medium	Yes	Yes	Medium	
<b>Eastern white pine, western white pine, sugar pine, ponderosa pine, true firs .....</b>				
Low	Medium	Yes	Medium	
Tamarack, larch.....	Medium	Yes	Yes	Medium
Spruce.....	Low	Yes	Yes	Medium

\*\*Courtesy of USDA Forest Service



## WHAT'S IT LIKE TO HAVE A CHIMNEY FIRE?

It's no picnic. Chances are it will only scare the daylight out of you. However, it can damage the house considerably if allowed to get out of control. A chimney fire burns so hot (sometimes in excess of 2100°F), it can crack the flue tiles in a masonry chimney. With a prefabricated chimney, a chimney fire can cause the joints to separate or cause the pipe to warp. In either situation, the fire can then spread to other parts of the house. The brickwork itself can radiate enough heat to ignite paneling or surrounding woodwork. The fire can melt mortar from the masonry chimney joints and send it flying into the air like a roman candle with red hot pieces falling on your roof and your neighbors' roofs. Add to that the embarrassment of having three fire trucks parked in front of your house, and you begin to get the picture.

After a chimney fire, it's very important to have a chimney professional clean and inspect the chimney. There could be a buildup of creosote that is blocking the flue. There could also be cracked or damaged flue tiles (in the masonry chimney), or warped or separated pipe (in the prefab chimney). This could create a dangerous, life-threatening condition. If you have a second chimney fire in a damaged chimney like this, the cracks in the chimney can open up and creosote and flames can penetrate through the tiles or pipe. Add this to a chimney that has cracks, and you can end up with flames and creosote coming into contact with surrounding combustibles including roof joists, paneling, etc.

### *What Is Creosote?*

Nothing ever burns completely. Wood smoke is a combination of unburned gases and a fog of unburned tar-like liquids. When these gases come in contact with a cool surface, they will condense and form a nasty dark brown or black substance which has an unpleasant acrid odor. This is cre-

osote. Creosote starts as a liquid which results from the condensation of flue gases. Creosote comes in a range of forms: sooty, ash-like deposits; dry, flaky deposits; sticky, tacky deposits resembling tar; or hard, shiny deposits. Creosote collects inside the flue passage, in offsets and in termination parts of your chimney. These deposits reduce the flow of gases through the chimney system which may result in a weak draft or smoke spillage into the room.

Creosote is highly flammable. When it's allowed to build up, the result could be a chimney fire. No matter what kind of chimney you have, such overheating is dangerous to the chimney structure and the surrounding building. Veteran woodburners know the importance of keeping their chimneys clean. However, many newcomers to heating with wood may be unaware of the potential harm and hazard of creosote buildup.

There are three factors that influence creosote deposits:

**Smoke Density:** High smoke density increases the rate of creosote formation. Smoke density can be reduced by increasing the flow of air, and by using smaller pieces of wood or adding less wood more often. Hotter fires will also lessen the smoke density by causing more complete combustion of the wood and gases.

**Temperature Of The Condensing Surface:** The cooler the surface, the more creosote will condense. One can relate this to water vapor condensing on the outside of a glass of cold water on a humid day, except it's the reverse — condensation occurs on the inside of a chimney, especially when the outside cold air makes the surface of the inner chimney relatively cool. Keeping stack temperatures high will reduce this problem.

**Residence Time:** The longer the smoke stays in your chimney, the more likely it is to condense on the surface.

## ***How To Minimize Creosote***

### ***Burn Only Seasoned Hardwoods***

Dry hardwoods reduce the generation of creosote because of their high-burning temperatures and low smoke density.

### ***Don't Allow The Fire To Smolder Overnight***

When you are finished with the fire, separate the unburned pieces from the coals. Stand unburned logs on end at the back of the fireplace.

### ***Don't Burn Trash In Your Fireplace***

Burning trash in your fireplace can dirty your chimney fast and send large embers up the flue. This can create a dangerous situation. If there is a creosote buildup, a large ember will likely set the creosote on fire. One of the other things that can happen is that the large embers could ignite the roof or surrounding combustibles.

### ***Check For Buildup Periodically***

An inspection should be done at least once a year by a chimney professional to make sure everything is in good working condition. In fact, an annual inspection is required by NFPA 211 Standard. In addition to this, *you* need to conduct periodic inspections to check for buildup. You can do this by opening the damper and looking into the smoke chamber with a flashlight. Most experts recommend cleaning when the buildup reaches  $\frac{1}{8}$ " to  $\frac{1}{4}$ ". Keep in mind the buildup is usually thicker the further up the flue.

## ***How Often Should A Chimney Be Cleaned?***

The answer is at least once a year. But more frequent cleanings may be needed based upon:

1. How often you use the fireplace or woodstove.
2. How your fireplace and chimney are constructed.

3. How you manage your fire.
4. What type of wood you burn.
5. How well seasoned the wood is.
6. How often you let the fire smolder itself out.
7. What the weather is like.

## ***What To Do In Case Of A Chimney Fire***

1. Call the fire department. Hopefully the fire will be out before they get there, but you will want them to inspect the structure and make sure there are no hidden hazards or hot spots.
2. If you have a stove, close off the air inlets. If you have a fireplace with glass doors, close the doors and the vents. If you have an open fireplace, go to the next step. Do not attempt to close the damper. This could pose a danger to you.
3. Go outside and hose down the roof surrounding the chimney. Do not wet the chimney itself or try to put water down the flue. Not only will it make a mess of your house where the water comes out the other end, but it will very likely damage the flue tiles.
4. After the firemen leave, call a chimney professional to get your chimney inspected for damages and document the findings for insurance purposes before cleaning. Chances are the firemen will condemn the chimney until you have it inspected. A dangerous myth is that a chimney fire will leave the chimney clean — this is *not* true. The truth is, the fire will compound the problem by causing the creosote present to expand and honeycomb. This could cause a blockage, and also present a surface where more creosote will collect. Then it will be more likely to ignite again with much less provocation. If the chimney is inspected by a chimney professional, he can clean the chimney and look for cracked or damaged flue tiles.



and recommend a solution for repair if necessary.

5. It's also important to document the fire and talk to your insurance agent. Your insurance company may help cover the cost of repairing your chimney, but you have to prove there was a fire and the chimney was damaged. Be sure to get a report from the fire department, your chimney professional, and get the names of your neighbors or other people who may have been at the scene. Be sure to contact your insurance agent right away.

## **CLEANING YOUR CHIMNEY**

### ***A Word To Do-It-Yourselfers***

Learning to clean your own chimney may save you money if you use your fireplace often. But some of the most surprised people are those who experience a chimney fire a week after they thought they had cleaned their chimney. If you are going to clean it yourself, it's still very important to have a chimney professional inspect your chimney for fire hazards at least once a year. Here are a few dos and don'ts when cleaning your own chimney:

**Do** use the right equipment. A steel wire or polypropylene bristle brush is the only reliable tool to use. It's always amusing to see the array of new gadgets invented to simplify chimney cleaning. They usually fade away as quickly as they appear.

**Do** spend the couple of dollars on a how-to book. It may save you a lot more than you would spend cleaning the soot off your furniture, carpets, and drapes.

**Don't** neglect to clean the smoke chamber. If you haven't cleaned the smoke chamber, you haven't cleaned the chimney. There is no way to clean this

part of the chimney from above. It must be cleaned from below. The National Fire Protection Standard 211 states "For cleaning purposes, means shall be provided for access to the venting area above and immediately behind any movable damper valve plate in masonry fireplaces and steel fireplace units." Talk to your sweep about this. Removing the damper plate fulfills this requirement. There are however some damper plates that are nonremovable. But, an access door can usually be installed to provide access to your smoke chamber and make cleaning the smoke chamber a lot easier.

**Don't** use a chain, bag of bricks, old Christmas tree, goose, or anything other than a brush made of the proper materials and cut to fit the inside dimensions of your flue tile. Doing so can seriously damage your flue tiles and masonry, not to mention the goose!

### ***How To Choose A Chimney Professional***

Would it surprise you to know all professionals are not alike? If you don't already have a chimney professional, [www.homesaver.com](http://www.homesaver.com) is an excellent place for locating one. Here are a few things to look for while shopping for a chimney professional:

#### ***What Are His Credentials?***

Does he belong to a national or state organization? Has he been certified by the Chimney Safety Institute Of America? Or has he been certified by his state organization or the National Fireplace Institute? Does he regularly attend seminars to keep up-to-date? A "no" to these questions doesn't necessarily indicate he won't do a good job. But because technology is always changing, a chimney professional has to keep up on changes by attending seminars and getting recertified

every few years. If he doesn't do these things, it indicates he's not serious about his profession.

### ***Is He Insured?***

Most chimney professionals carry insurance. Make sure he is insured before making an appointment.

### ***What Is His Training?***

Has he had any formal training in chimney sweeping? If so, where? Did he go to school, or work with another professional? Modern sweep methods have been in existence since around 1978. Most of today's sweeps are chimney professionals whose overall business is based on making your chimney safer. Today's chimney professional is technologically advanced. Many are certified through the Chimney Safety Institute of America and/or the National Fireplace Institute and abide by stringent safety and building codes. Beware of other tradesmen who claim to have *worked around* chimneys for many years. If their price seems overly attractive, then it's *too good to be true*.

### ***What Are His Rates?***

If he is charging a whole lot less than others in the area (like 30%–50% less), be careful. He might be taking a shortcut somewhere, or he may plan to make up for it in some other way. On the other hand, if he is charging more than the norm, he is likely worth it.

### ***Does He Have A Minimum Charge?***

Chimney professionals are honest folks who will tell you if your chimney does not need cleaning. However, he has taken the time and given you an inspection, and that's worth something. Most will charge an inspection fee even if they don't clean the chimney.

### ***Does He Provide You With A Written Condition Report?***

Most chimney professionals will leave the customer with a written condition and damage report informing the customer of the condition of his chimney and any defects he may have discovered while working in the chimney. In this report, the chimney professional should note any conditions he feels are not safe and need improvement. If you have a woodstove, he should advise you of the safety of the installation or any deficiencies he finds.

### ***Does He Have The Proper Cleaning Equipment?***

One of the most important cleaning tools a chimney professional should own is a good vacuum. A good vac will help control the soot while the chimney is being cleaned. This means you shouldn't have any soot floating around in the house. Most vacuums used for sweeping have special filters to trap the creosote dust particles. The chimney professional will use a steel brush or a polypropylene brush attached to chimney rods. These rods may be either fiberglass or flexible polypropylene. Just as the chimney brush has replaced the goose once used in England, the chimney rod has replaced the rope and weight system. When your chimney professional cleans your chimney and fireplaces, he should also do a thorough inspection.

Many chimney professionals own a Chim-Scan Video Inspection System that can be used to see the inside of your chimney. The chimney professional scans the flue with this special closed-circuit camera. There is a cable that connects the camera to a monitor so he can document any *unseen* hazards. This also gives you the opportunity to thoroughly see the *inside* of your chimney. Many homes have been saved through the use of this special equipment.

Many chimney professionals do the cleaning from the top of the chimney. It can also be done



from below, but he will probably still go to the top to make an inspection of the top of the chimney. He may want to look at the chimney in the attic area or another accessible area to look for hidden dangers. He will make a thorough inspection of the fireplace area and smoke chamber.

### **Chemical Chimney Cleaners**

Never use a chemical chimney cleaner you are unsure about. Your chimney professional will advise you of a good product to use. Some chemical cleaners and home remedies can greatly damage your chimney. These cleaners are often very corrosive and will cause deterioration to your chimney, damper, and firebox. They may also emit unhealthy fumes.

There are many chemical cleaners on the market that are "tried and true." They are chemicals manufactured by reputable companies that often specialize in products specifically for chimneys. These chemicals have been around for some time and are effective when used properly. Your chimney professional can tell you which product is right for you. Many of these chemicals can also be used as maintenance products to help prevent excessive creosote buildup. *This does not take the place of cleaning your chimney*, but should make removal of creosote easier in the future.

## **TROUBLESHOOTING GUIDE**

### **Smoke Problems**

Here are some of the most common causes of smoke problems. Simply find the symptom that most fits your situation. If you don't know the exact conditions which are leading to your problem, just follow through each diagnosis until you solve the problem. It is possible, and even probable, that your fireplace is suffering from more than one problem. Many times, where a single problem is not sufficient to cause backpuffing, several combined will. If this is the case, each

problem will have to be tracked down and cured separately. Should none of these cures work, do not let the backpuffing continue!

Contact a chimney professional for further assistance in diagnosing the problem and prescribing the cure.

### **Problem: Constant Smoking**

#### **Solution A:**

Is your damper open? If it is and the smoking continues, open a nearby window as close to the fireplace as possible. If the smoking lessens or stops when the window is opened, the problem may be inadequate air supply.

Homes today are designed or modified to be as airtight as possible. The flow of air up the chimney cannot exceed the flow of air into the house. All air removed from the room must be replaced by fresh outside air. This air normally enters the home through small cracks and imperfections in doors, windows, and walls.

Experiment until you have found the smallest effective window opening that eliminates the problem. You can then either leave the window open to that degree while the fire is burning, or install a fresh air duct. If you install a duct, be certain it has the same cross-sectional area opening as the open window setting found to be effective. Also be sure to add a valve or close-off to allow for sealing of the duct when not in use.

#### **Solution B:**

Extinguish the fire and look for interior obstructions. A chimney may be clogged by a squirrel or bird nest. Soot and creosote can plug or restrict the airflow. If the chimney is older, the problem may be structural failure. Fallen bricks, tile, or metal may be obstructing the flue.

All obstructions must be removed. A blocked chimney is a fire hazard and should never be used until completely cleaned and inspected. Chimneys blocked as a result of structural failure should be rebuilt or relined.

### ***Solution C:***

If you have a woodstove and your chimney cap has a screen, there is a chance the screen is clogged with creosote. Clean it with a scraper and steel wire brush. Also, check your woodburning habits and the condition of the wood. If this doesn't seem to be the problem, consult a chimney professional. There could be a problem with your installation.

### ***Problem: Erratic Smoking***

#### ***Solution A:***

What is the weather like outside? If the outside temperature is fairly close to the inside temperature and there is a high pressure cell in the area, you probably don't have enough air pressure in the house to maintain a draft. The solution here is to wait for the weather to change.

#### ***Solution B:***

Check for the existence of competing vents. Kitchen and bathroom fans, or chimneys for other stoves or fireplaces may overpower the chimney by drawing the air they need *in* through the chimney when you're wanting the smoke to go *out*. To solve this, make sure each vent has adequate airflow.

If the house is two or more stories, hot air rising and escaping from the top story (due to an open window, poor insulation, major leaks, etc.) can create negative pressure lower in the structure and pull air in from the outside, even back down the chimney.

### ***Problem: Erratic Smoking With Hard-To-Light Fires***

#### ***Solution A:***

Check your wood. Excess moisture in the wood can be one problem. Dense wood, which is hard to light, can cause an initially cool fire which can result in poor draft and excessive smoke.

### ***Solution B:***

On woodstoves, check your damper opening or draft setting. An opening that is either too large or too small can result in incomplete combustion. Experiment until you find the smallest effective settings.

While experimenting, don't make drastic changes. The key is consistency and moderation in making your adjustments. Make small adjustments spaced well apart. This gives the fire time to adapt to the new setting before you make any further adjustments.

#### ***Solution C:***

Check to see if the draft is actually passing through the fire. Move a smoldering stick or lit match around the firebox opening of the fireplace, or around the outside of the woodstove. Deflections in the smoke will indicate air being sucked toward the fire.

In fireplaces, the draft should funnel inward and upward and be strongest near the floor. Fresh air should surround and be drawn into the fire, forming a narrow, fast-moving column of air near the damper. If you find that the draft is missing the fire, wait until everything has cooled off and then adjust the height of the grate.

A weak draft can be concentrated by forming the ashes in a wedge tapering upward from the ashes to the sides of the grate. This forms a funnel which should focus all incoming air to the base of the fire.

#### ***Solution D:***

Analyze your start-up procedure. Pay special attention to loading patterns and kindling used.

### ***Problem: Smoking Occurs In Light Breezes***

#### ***Solution A:***

Measure your flue's dimensions when the fire is out.

In a fireplace, the rule of thumb is that the



opening of the fireplace should be no larger than ten times the flue area.

The area of a rectangular flue can be determined by multiplying the lengths of any two adjacent sides. For instance, a flue tile with an inside dimension of 6"×11" has an area of 66 square inches. To find the area of a round flue, begin by measuring the diameter and dividing it by two. This gives you the radius. Multiply the radius by itself, and then take *that* answer and multiply it by 3.14. This gives you the area of the circle. For round flues in many cases a 12 – 1 ratio can be used rather than 10 – 1.

To determine the firebox opening, multiply its height by its width. Now divide this by 10. This should give you the minimum flue opening.

For fireplaces, the remedy may be to reduce the fireplace opening. This can be done by asking your chimney professional to install glass doors, install a product to lower the fireplace opening, or lower the lintel. There are also fans that can be placed on top of the chimney to induce draft.

#### ***Solution B:***

Measure the effective height of your chimney. This includes only the part of the chimney that starts above the point where the wood burner enters the chimney.

Requirements for proper height vary considerably. Factors which affect proper height are climate, surrounding landscape, prevailing winds, altitude, etc. Any chimney with an effective height of less than 10 feet will generally cause problems. Also make certain the top of the chimney is at least two feet higher than the highest point within 10 feet of the chimney. It should also be higher than the highest point on your home.

#### ***Problem: Smoking Occurs In Heavy Winds***

##### ***Solution:***

Check for obstructions that might create a downdraft. Roof lines, trees, hills, or nearby structures can all cause downdraft problems.

When the wind blows over and down around them, the downdraft blows down the flue, sending smoke into the house. A chimney cap will reduce the effect of these vertical blasts of wind.

#### ***Problem: Smoking Occurs When Glass Doors Or Stove Doors Are Opened***

##### ***Solution:***

This is most often cured by simply opening the doors very slowly, allowing the airflow to adjust in the firebox. Opening the draft control several minutes prior to opening the doors will raise the temperatures and eliminate a lot of the smoke, reducing chances of backpuffing when the door is opened.

#### ***Problem: Smoking Occurs When Household Doors Are Opened***

##### ***Solution:***

A household door opened or closed too rapidly can result in a change in your home's air pressure, causing the draft to briefly stop or even reverse. This is more often a problem with fireplaces than woodstoves. A temporary solution would be to use hydraulic door closers. A permanent solution is to provide your fire with its own independent air supply.

Another problem can result from inward opening doors fanning the air, resulting in momentary backpuffing. A high-backed chair or screen placed between the door and wood burner may cure this problem.

#### ***Damper Problems***

While a damper is simple, mechanically speaking, trying to adjust it can result in a cascade of soot into your fireplace, and a room full of dust and ash. If you're not sure about it, call a chimney professional. It will be much less expensive than having to call a professional carpet and upholstery cleaner.

## ***Sooty Fireplace Face***

If the brick is old, be prepared to clean all of it and not just the sooty part. Generally, anything that will remove the soot may also clean the brick to a like-new condition. Unfortunately, the surrounding brick has aged naturally. If after weighing this you still want it clean, here are some methods you can try:

1. Mix a solution of three tablespoons trisodium phosphate to one gallon warm water. Scrub hard with a stiff brush, cleaning the brush often. Rinse the surface well. If the brick is smooth, use a sponge instead of a brush.
2. Add ½ cup ammonia to one quart of warm water and detergent. Add enough detergent to produce a respectable amount of suds. Scrub the brick with a stiff bristle brush and rinse well.
3. Try using a powdered cleaner containing bleach.
4. You can try a commercial brick cleaner, but if you do so, read the instructions carefully. Be careful when using products containing muriatic acid to clean fireplace brick. If it is not rinsed off thoroughly, the vapors from the residue can damage brass and may discolor some bricks. If not neutralized, it may damage the mortar.
5. Your best bet is to consult with your chimney professional on what is the correct product for your particular problem. There are many products made specifically for fireplaces with smoke and creosote stains. Your chimney professional may offer to clean the brick for you.

## ***Chimney Odors***

That sour, sickly odor you have is the odor of creosote. The odor is almost always present in the chimney, but is usually carried up and away by the draft. Unfortunately, when warm weather comes, the draft is sometimes insufficient to carry the

odors away and can even reverse itself, carrying the odor into the room. Warm weather may coincide with the rainy season, and high humidity further aggravates the problem by increasing the strength of the odor. Here are some steps to take to help eliminate the odor:

1. Have your chimney cleaned by a professional. Occasionally this will eliminate the problem. However, sometimes this will not take care of it. If you have clay flue tiles, creosote has probably soaked into the tiles for years and a complete cleaning cannot coax the soaked-in creosote out of the flue.
2. Ask your chimney professional to install a chimney cap. Having a chimney cap will help keep rain out of your chimney. This will help in preserving your chimney and eliminating odors. But cap or no cap, humidity can still get in the chimney.
3. Ask your chimney professional to install a top-sealing damper. These dampers are designed to be closed when not in use. They help seal out rain, animals, etc., and help seal in heating and air conditioning. This will help your utility bills. A top-sealing damper will keep out rain, but it also cuts off the airflow, so be sure to also use a chimney deodorant.
4. There are several deodorants on the market that can mask the problem. There are deodorants that sit back behind the damper and help absorb the odor through a raised wick. There are sprays that can be used in the firebox and smoke chamber to help eliminate odors.
5. One last culprit that may be causing your chimney to have an odor is badly deteriorated masonry. This can cause moisture to seep through to the inside of the chimney, causing a bad odor. In this case, you need to talk to your chimney professional about getting the chimney repaired.



### ***Mortar In Firebox Deteriorating***

It's best to have a chimney professional do the work. If the mortar has eroded back  $\frac{1}{2}$ " or more, it should be patched. There are patching materials that come in caulking tube form and make this a do-it-yourself job. However, if you find loose bricks, or damaged bricks, consult your chimney professional.

### ***FIREPLACE SAFETY***

1. Keep the chimney clean.
2. Be sure your chimney is in good condition — have it inspected annually by a chimney professional.
3. Don't use charcoal lighter fluid or kerosene to start the fire — use only commercially approved firestarters.
4. Be sure the damper is open before starting the fire.
5. Don't burn trash in the fireplace.
6. Use a fire screen.
7. Seasoned wood is safer than green wood — hardwoods are safer than softwoods.
8. Never leave small children alone in a room with a fire.