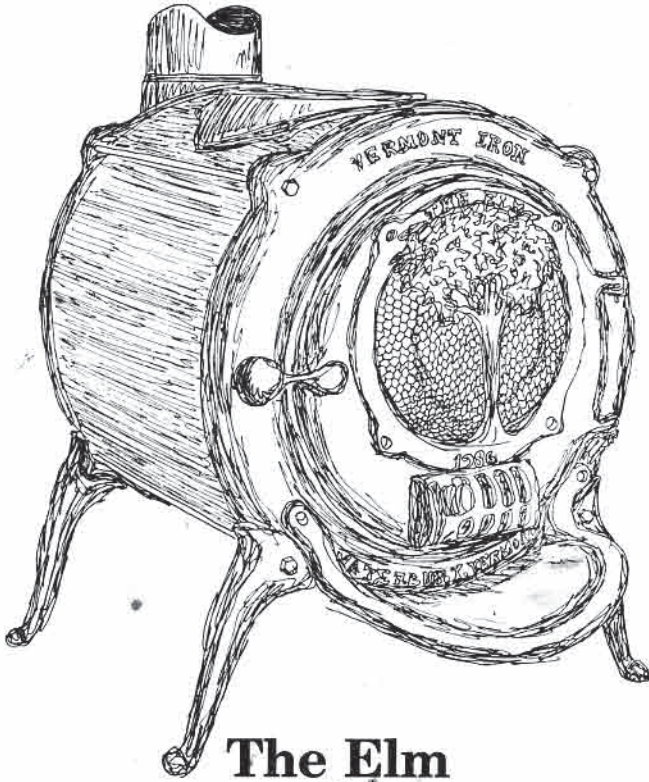
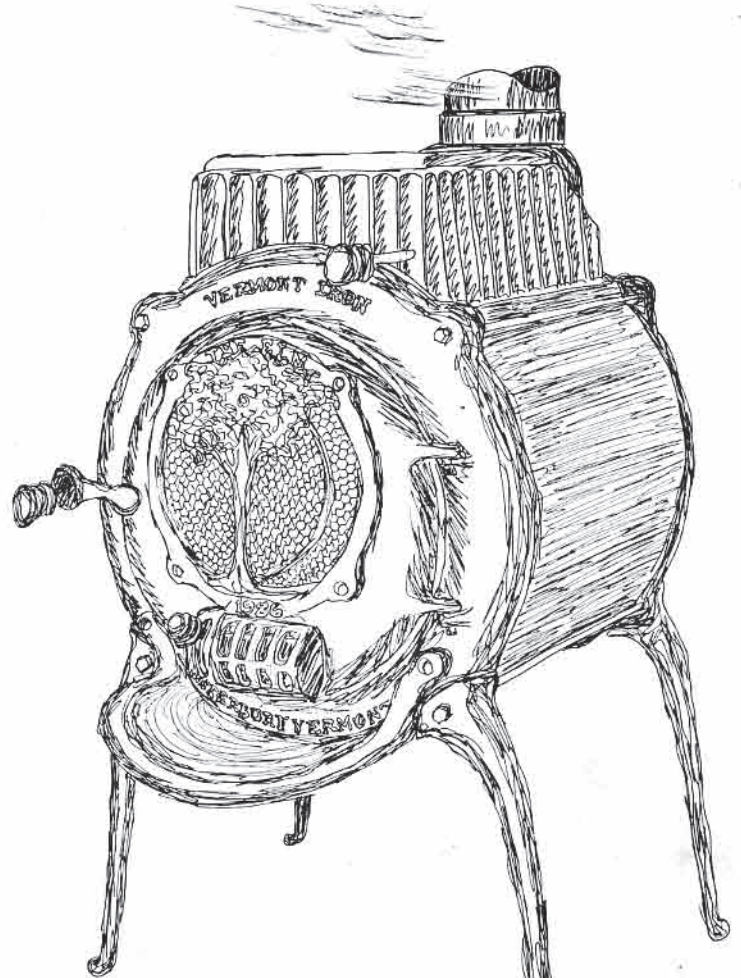


VERMONT IRON, INC.



The Elm



The Catalytic Elm

OWNER'S MANUAL

299 Prince Street • Waterbury, VT 05676 • 802-244-5254

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Choosing a Stove Location

Consider the following to help you decide where to install your stove:

- Check your home's air-flow pattern. Put your Elm in an open space with good air circulation. Forced air central heating systems may have a "manual" or "summer" switch (if not, one can be easily and inexpensively installed.) This switch turns on just the fan in the furnace and will greatly aid you in moving the air throughout your home.

ATTENTION: Do not tie your Elm or Catalytic Elm directly into a central air circulation system.

- Locate your stove as close to the middle of your home as possible.
- Do not block off normal traffic flow, exits, or fire escapes.

Clearances to Combustibles

"Combustible" means anything that can burn. Typical combustibles found near stove installations are furniture, drapes, carpets, firewood, ceilings, floors, plaster walls (lath underneath the plaster), sheetrock walls (even firestop, firecode, or $\frac{5}{8}$ " sheetrock), sheetrock walls veneered with brick, tile, stone, etc.

There are two ways to reduce the clearances to combustibles. One is to shield the stove itself with a close clearance kit available from VT Iron. The other is to shield the combustible wall with wall protection that is mounted on the wall, not the stove.

Close Clearance Kits

You can reduce the clearances to combustibles from the side of your stove by 13" by using a side shield attached to the side of your Elm or Catalytic Elm. Side shields come in two sizes, one for the CE-18 and E-18 (Vermont Iron Part #411-S). They are the same as the shields found on the bottom of Catalytic Elms, and they are installed the same way. They simply clip over the rods on the side of the stove.

Clearances to combustibles from the rear of your stove can be reduced 8" by using the appropriate rear heat shield for your Elm or Catalytic Elm. The Elm rear heat shield (Vermont Iron Part #413-S) attaches to the end of the tie rods by means of four $\frac{3}{8}$ " nuts included with the shield. The Catalytic Elm rear heat shield (Vermont Iron Part #414-S) is attached to the tie rods with four clips and four $\frac{3}{8}$ " nuts (included). Each rear heat shield comes with a 24" section of pipe shield that must also be installed in order to achieve the listed reduction in clearances. The pipe shield is attached by means of four screws and four non-combustible spacers.

Wall Protection Materials and Setup

Adequate wall protectors must:

- A. be made of non-combustible materials, including the support/spacing system;
- B. provide a well-ventilated air space between the wall and the protector;
- C. have the support/spacing system strong and stiff enough to hold the protector in place, maintaining the required air space, 1 to 2 inches.

Typical wall protector materials include: brick, ceramic tile, 24 gauge sheet metal, various type of rock masonry veneer.

We recommend 24 gauge sheet metal as shown in Figure 3G & 3H spaced out.
Any of these same materials placed directly against a combustible wall or mounted on sheetrock, plywood, etc. are inadequate/unsafe heat shields.

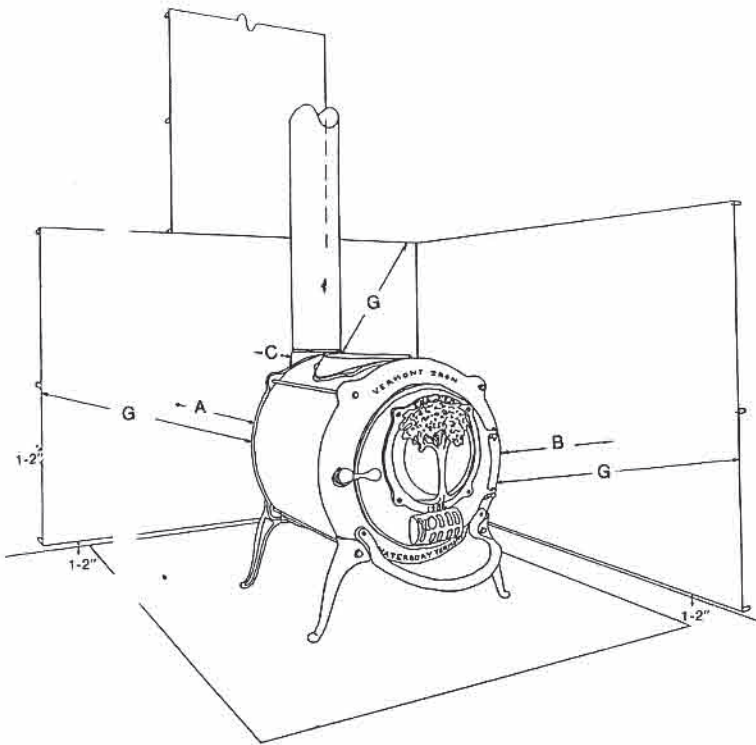


Figure 3G

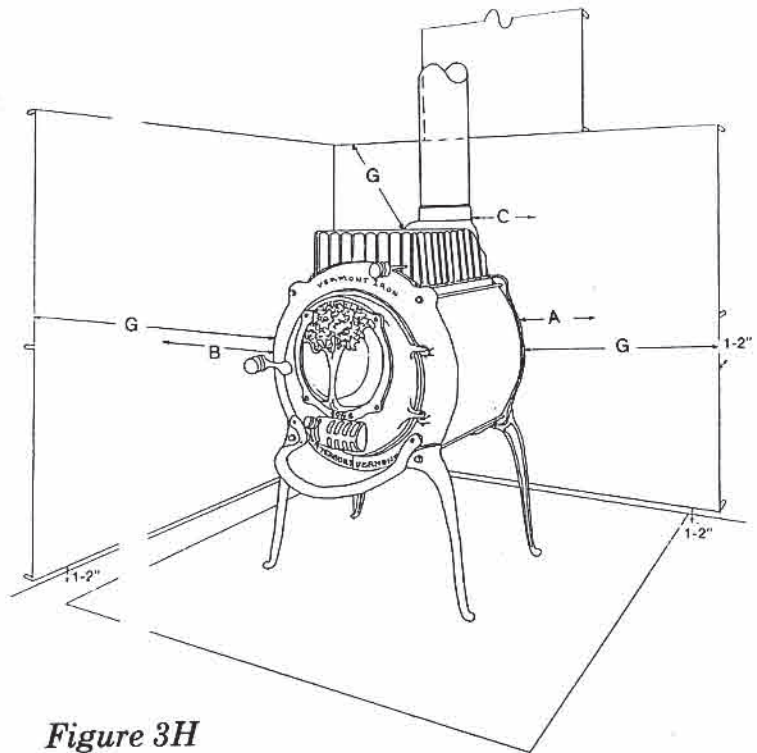
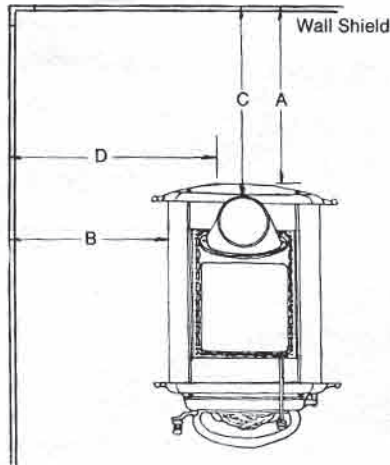


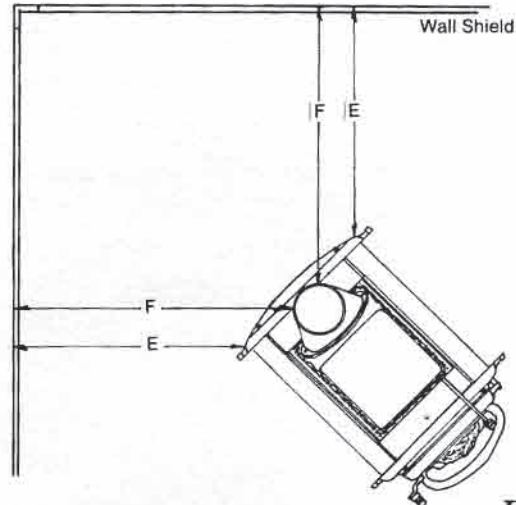
Figure 3H

The Elm and Catalytic Elm have been safety tested to UL test standard #1482 and are listed by R.F.Geisser and Associates. Copies of the test reports are available if your building inspection department so requires.

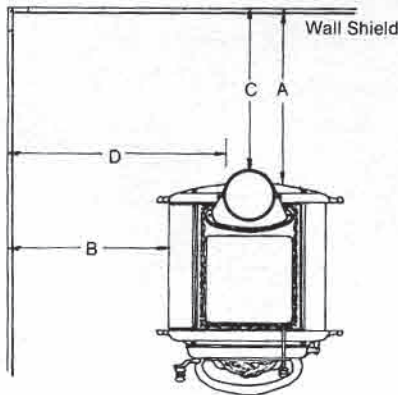
If you want your Elm or Catalytic Elm to be installed closer to combustible surfaces than listed here, check with your local building inspection department for their recommendations of wall shield materials and methods of installation.



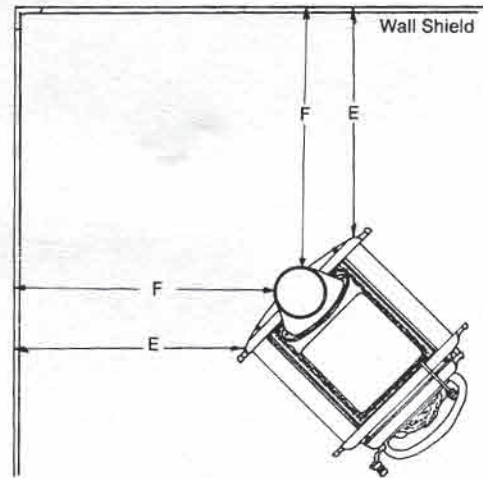
CE-24
Figure 3A



CE-24
Figure 3B



CE-18
Figure 3C



CE-18
Figure 3D

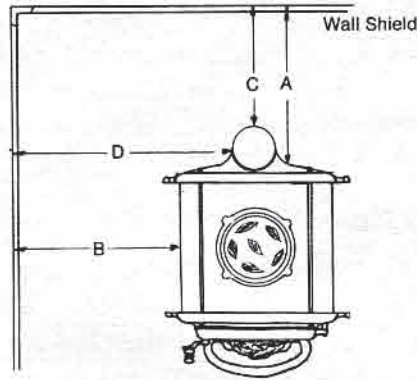
Catalytic Elm with straight wall.

Catalytic Elm in Corner

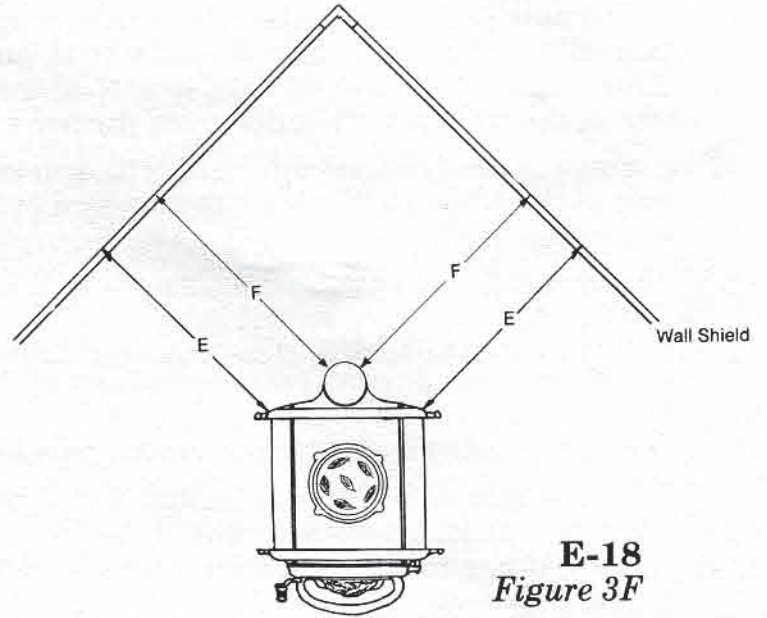
	CE-18	CE-18 w/Close Clearance Pkg.	CE-18 w/Wall Shields	CE-24	CE-24 W/Close Clearance Pkg.	CE-24 w/Wall Shields
A	30	22	12	27	19	12
B	35	22	12	35	22	12
C	29	21	12	29	21	12
D	42	29	14	42	29	14
E	29	21	12	29	21	12
F	38	30	12½	36	28	12
G	N/A	N/A	36	N/A	N/A	36

All Dimensions Given in Inches

E-18
Figure 3E



E-18
Figure 3F



Elm with straight wall

Elm in corner

	<i>E-18 w/Close Clearance Pkg.</i>	<i>E-18 w/Wall Shields</i>	<i>E-24 Pkg.</i>	<i>E-24 W/Close Clearance Pkg.</i>	<i>E-24 w/Wall Shields</i>	<i>E-36 Pkg.</i>	<i>E-36 w/Close Clearance Pkg.</i>	<i>E-36 w/Wall Shields</i>	
<i>A</i>	36	28	12	36	28	12	36	28	12
<i>B</i>	36	23	12	36	23	12	36	23	12
<i>C</i>	31	23	12	31	23	12	31	21	12
<i>D</i>	43	30	14¼	43	30	12	43	30	14¼
<i>E</i>	30	22	12	30	22	12	30	22	12
<i>F</i>	31	23	12	31	23	12	31	23	12
<i>G</i>	N/A	N/A	36	N/A	N/A	36	N/A	N/A	36

All Dimensions Given in Inches

Floor Protection Materials and Setup

The Catalytic Elm and Elm has been tested and listed to have a non-combustible surface underneath it extending a minimum of 18" in front of the loading door and 6" on the sides and rear of the stove.

There are a growing number of prefabricated, commercially available, UL listed "stove boards" being created which you could buy to protect the floor under you Catalytic Elm. Look for these at your local Elm retail store.

The floor protector sizes are good for any installation situation, i.e., if your Catalytic Elm is to be placed along one wall, in a corner, or out in the middle of a room.

Floor Protector Sizes

	<i>E-18</i>	<i>E-24</i>	<i>E-36</i>	<i>CE-18</i>	<i>CE-24</i>
<i>Length</i>	50	56	68	45	51
<i>Width</i>	35½	35½	35½	35½	35½

All Dimensions Given in Inches

These dimensions allow 6" on both sides of stove, 6" in rear, and 18" from the door (not the ash apron).

The only exception to the size of floor protector listed above would be if you vent your Elm or Catalytic Elm from the back and run the stovepipe horizontally for any distance. In this case you need to extend the back of the floor shield to 6" beyond the end of the stovepipe or to 18" from the back of the stove, whichever is larger.

You will likely meet your local code and insurance requirements by putting down any of the following floor protection systems.

1. Laying a 2" thickness of crushed stone on a 24 gauge (or thicker) sheet metal; having the stove legs on a firm surface; i.e. bricks or concrete blocks that are at least 4" square.
2. 4" thickness of brick, stone, concrete, etc., mortared, sanded, or very closely packed, placed on 24 gauge or thicker sheet metal with a wooden trim.

Stovepipe (Available from Vermont Iron — see Stove & Accessories Catalog)

- Use single wall 24 gauge (or thicker) 6" diameter black stovepipe as the connector from your Elm's elbow to the chimney.
- Stovepipe should never penetrate a wall or ceiling. It is not intended to be used as a chimney.
- The NFPA recommends stovepipe be as short as possible and have a ¼" rise for every foot of horizontal pipe.
- The male (crimped) ends of the stovepipe should point down toward the stove so liquid creosote and water (by-products of wood combustion) will run down into the stove rather than dripping and staining your hearth and stove. When stovepipe is installed horizontally keep seams on the top or side.
- Drill three ½" holes equally spaced around each joint of two pieces of pipe, and screw in #8 x ¾" sheet metal screws (VI item #119-3). (See Figure 4)
- Stovepipe should not penetrate beyond the inner wall of a masonry chimney.
- Stovepipe has to be at least 18" from unprotected combustibles.
- Install a 6" diameter stovepipe damper in the piece of pipe attached to your Elm's elbow. (No damper is needed in the Catalytic Elm as it is built-in.)

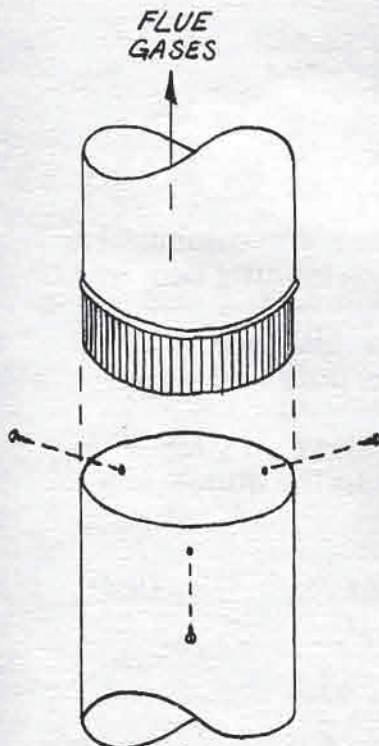


Figure 4

Stovepipe Installation

CHIMNEYS

Unsafe chimney construction and installation have been the cause of many house fires. Properly constructed, installed, and maintained chimneys should give you unlimited, safe service.

ATTENTION: DO NOT CONNECT YOUR ELM OR CATALYTIC ELM TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

There are two kinds of chimneys approved for safe wood smoke venting: UL and/or ULC prefabricated chimney listed for use with solid fuel and a lined masonry chimney.

Prefabricated Chimneys

There are three types of prefabricated chimneys:

- A. Insulated — 2 layers of metal spaced apart 1"-2" with special mineral insulating material between the layers.
- B. Air-Insulated — 3 layers of metal spaced 1" apart with barriers at the ends of each section to prevent the air from circulating.
- C. Air-Cooled (Thermosyphon) — 3 layers of metal spaced 1" apart without barriers to prevent air movement. Do not use "Air Cooled" chimneys to vent your Elm.

Vent your Elm or Catalytic Elm into 6" ID (inside diameter) chimney or in higher elevations, into 7" or 8" diameter. At any elevation Elm stoves can be vented into 6", 7", or 8" ID chimneys with good results.

Check Your Existing Prefabricated Chimney

- Is it tested to UL or ULC standards?
- Has it been installed correctly?
- Is it listed for use with solid fuels?
- Is it in "Class A"?
- It should have a cap.
- Replace improper chimneys (i.e. gas vents).

Refer to chimney manufacturer's literature for information on passing through on passing through combustible walls and ceilings.

Masonry Chimneys

They can be made of brick, cinderblock, or stone. If you decide to build one, please do a substantial amount of reading before you start. (See our references in the back of this manual.) It is often times best to hire a competent mason (they are few and far between, when it comes to chimney construction) — Get lots of references and check their work yourself.

Many homes already have a masonry chimney with at least one flue (vertical hole in a chimney) not venting a fireplace. Please do a complete check of this chimney if you plan to vent your woodstove into it. The following list will help.

1. Visually inspect the chimney from bottom to top.
 - A. There should be a tight fitting cleanout door at the base.
 - B. There should be a terra cotta tile liner in the chimney. If there isn't, the chimney should be relined (contact local chimney sweeps and stove retailers to learn the various ways to do this.)
 - C. There should be no visible cracks — check from the bottom to the top and especially from about one foot below the roof line to the top. Creosote drippings are an indication of cracks.
 - D. You should be skeptical of the chimney if there is a smooth coating of mortar covering the outside of it on any portion inside of the house. This indicates there might have been creosote leakage from the cracks between some of the bricks.
 - E. Is there a cap? A cap can help to reduce downdrafts.
 - F. Are there "pie plates" covering any unused thimbles (openings) in the chimney? Mortar these holes up before using the chimney.
 - G. Check with your local library or fire department for a copy of the NFPA's publication #211 concerned with clearances for masonry chimneys to combustibles.
 - H. Repair loose bricks — check mortar by pushing a flat-headed screwdriver into the joints.

2. Do a smoke test (If you think it necessary.)

After you have repaired any obvious cracks, mortared unused thimbles, and cleaned the chimney, it is time to do a smoke test. Buy a few smoke bombs from a hardware shop, a stove retailer, a chimney sweep, or fire department.

Locate someone at the top of the chimney with a wet blanket, (which is folded over a few times) that completely covers the top of the flue you will be using. Seal off temporarily, the opening in the chimney you plan to vent your stove into. At the cleanout door put in two smoke bombs (you could, instead of using smoke bombs, light a small smoky fire). Close and seal the door (duct tape works well). The person at the top of the chimney will cover the flue with the blanket when they can see smoke.

Height

- Most codes require prefabricated and masonry chimneys extend three feet above the highest point of roof penetration.
- Chimneys must be 2 feet higher than the nearest structure (i.e. roof or neighboring house) within 10 feet measured horizontally.
- Canadian standards require chimneys to be at least 15' high (measured from the hearth your stove sits on).

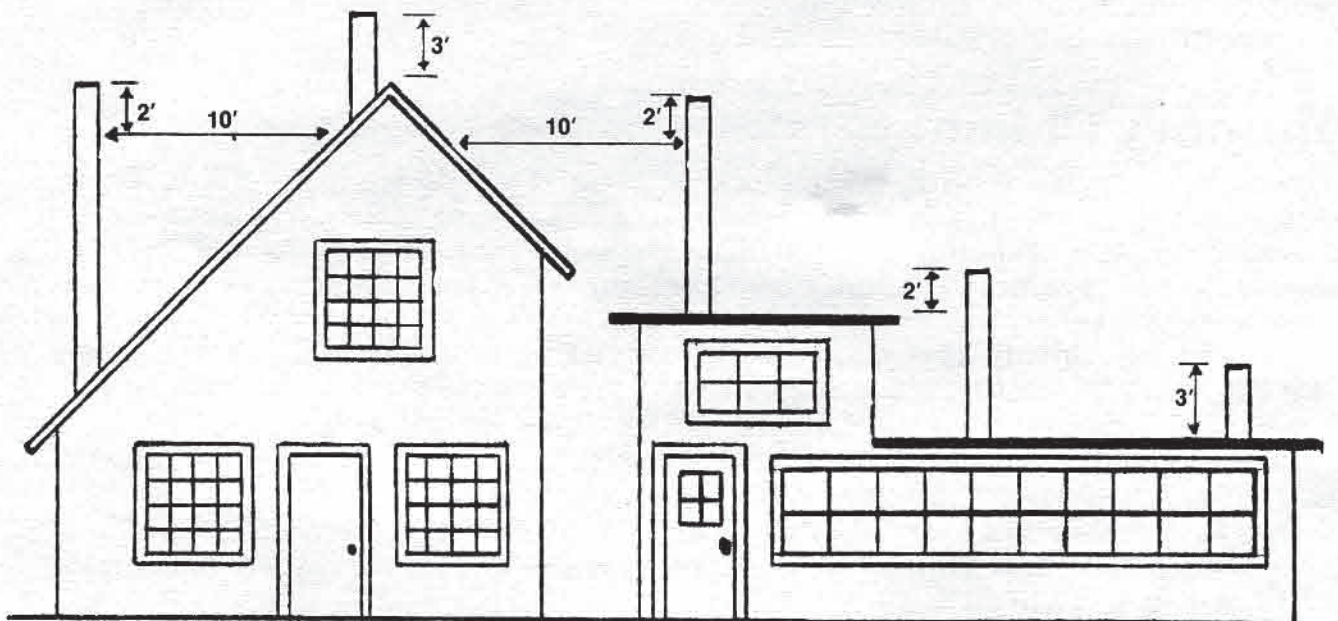


Figure 5 (Chimney Height)

Location

If you have choice of chimney location consider the following:

- Have it run through your home as much as possible. This helps keep flue gases warm, plus you will get some heat from the chimney.
- Put your chimney on the south side of your home. This helps to keep the flue gases warm.
- Put your chimney on the side of your home prevailing winds strike first — the wind will help pull the smoke up through the chimney.
- Keep it away from taller nearby buildings.

Draft

Factors which can affect chimney draft include:

- Height. A short chimney may cause a slow draft.
- Wind. It can pull smoke up or push it down chimneys.
- Outside temperature. Cold helps draft.
- Obstructions. Creosote accumulation, animal nests, bricks, tree branches over chimney, etc., can hinder draft.

Draft can also be hindered when your Elm is vented into an existing masonry fireplace. If the flue is large (“large” is not something that can be defined with exact sizes) then your Elm may not draft very well. You may find excessive creosote accumulation because the draft is slow and the flue is relatively cool (this is definitely the case when the chimney is on the outside of your house). Relining the chimney, with a 6” diameter flue, will help substantially to reduce draft and creosote accumulation problems. (Again, check with local stove retailers for specific relining materials.)

DRAFT GAUGE

If you think you may have a problem with chimney draft you can check it with a draft gauge. These are available from Vermont Iron, a wood stove retailer, or a plumbing and heating contractor. You might be able to borrow one. In mild weather the draft should be between .03 and .06, and in cold weather between .05 and .10 (these numbers are measured in inches of water lift and will be printed on the draft gauge.)

FIREPLACE INSTALLATION

Only vent your Elm or Catalytic Elm into a masonry (i.e. brick or stone) fireplace with an adequate lining. (see “Chimneys”).

Do not vent your Elm or Catalytic Elm into any type of prefabricated “zero clearance” or freestanding fireplace.

There are only three adequate ways to vent your Elm or Catalytic Elm into an existing masonry fireplace.

1. With the stove’s elbow exhausting vertically, run stovepipe up and then elbow it back towards the chimney above the mantel. The installation will provide you with additional heat from the exposed stovepipe and allow easy access for visual inspection of the chimney through the fireplace damper. To use this method you will need to carefully and accurately chip away the chimney bricks and chip a 6” diameter circular hole in the center of the flue tile. Also, this method will require the stove to be out in the room a ways. Plus, you will need to have the stovepipe away from the mantel (if it is wooden) (see “Clearances” and “Stovepipe”). Cutting into the chimney can be tricky — you may want to hire a skilled mason.
2. With the stove’s elbow exhausting horizontally, run stovepipe into the fireplace opening, then elbow it (a tee is better) through a “Positive Flue Connector” and past the damper, if possible. Our Positive Flue Connector is described in our Stove & Accessories Catalog — Vermont Iron Item #424.
3. This same method described in #2, can also be used with an Elm or Catalytic Elm with the elbow exhausting vertically if your fireplace opening is high enough to allow the stove to be put inside the fireplace. Vermont Iron’s 4” fireplace legs may solve a fireplace opening height problem for you. Look for Vermont Iron’s Item #LS-4R in our Stove and Accessories Catalog. These legs are for use on an Elm or Catalytic Elm that is entirely inside a masonry fireplace. They are never to be used in a free-standing installation.

With any of these methods you will gain more heat into the room by putting a metal shield in the back of your fireplace to reflect heat. We would like to discourage you from putting a metal shield over the opening of your fireplace. It is a major inconvenience to remove it to clean the chimney. Also, it is next to impossible to regularly inspect the chimney with a shield in the way.

OPERATION

ATTENTION: NEVER USE GASOLINE, OR GASOLINE-TYPE LANTERN FUEL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS TO START OR "FRESHEN UP" A FIRE IN THIS HEATER. KEEP ALL SUCH LIQUIDS WELL AWAY FROM THE HEATER WHILE IT IS IN USE.

Your Elm or Catalytic Elm does not require a long break-in period. Your first few fires should be relatively small so you will have an opportunity to learn how to control the fire with the air inlet and the stovepipe damper (if any).

When your Elm or Catalytic Elm is first heated up you will see some smoke rising off the body of the stove a smell a smokey odor. Please don't be alarmed. The smoke and smell are just indications of the high temperature stove paint curing. Both smoke and smell should stop within the first few hours. Open a window and door to change your house air. We suggest you have the first fire in your Catalytic Elm on a warm day.

ATTENTION: BURN ONLY WOOD IN YOUR CATALYTIC ELM. DO NOT USE YOUR ELM AS A TRASH BURNER. DO NOT OVER-FIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS YOU ARE OVER-FIRING.

A CE-18 and E-18 will burn logs up to 18" long. A CE-24 and an E-24 will burn logs up to 24" long. An E-36 will burn 36" logs. The inner glass may break if longer logs are put in and the door is closed. Glass breakage due to impact such as this is not covered by the warranty.

Starting A Fire In Your Elm

- Open stovepipe damper.
- Throw in crumpled newspaper.
- Criss-cross kindling on top of newspaper.
- Put in 2-3 small dry logs.
- Light newspaper, close door and open air inlet

Starting a Fire in Your Catalytic Elm

Follow these steps to start a fire, and to achieve catalytic "light-off" (the beginning of catalytic combustion), thus achieving the highest efficiency possible.

- Open the bypass by pulling out the bypass control rod. Get in the habit of doing this **before** you open the door.
- Follow the instructions above for starting a fire in an Elm.
- Keep a good-sized fire burning 5-20 minutes, adding wood as necessary.
- Your stove has a catalytic probe thermometer (inserted front and center in the fluted housing), it will tell you the temperature above the combustor. When the dial reads at least 250 degrees and you are satisfied that the fire is well established, engage the combustor by pushing in the bypass control rod. The rate of the fire will be immediately reduced. This is normal. Do not close the air inlet at this time.
- If the temperature above the combustor does not begin to rise slowly, open the bypass long enough to allow the fire to get hotter.
- When the dial reads 500 degrees and is climbing, the catalyst has been activated. If you do not have a probe thermometer, this point of catalytic "light-off" is a matter of guesswork and "feel". Even if the combustor is not visibly glowing (if you were able to see inside the stove) it will have started functioning at 500 degrees. A combustor will not glow until its temperature reaches about 1,000 degrees.
- The air inlet can now be adjusted to meet your heating needs.
- If your stove does not have a catalytic probe thermometer and you would like to purchase one, it is available from our Stove & Accessories Catalog, Item #451. It comes with easy to follow installation instructions.

Reloading Your Elm or Catalytic Elm

- Open the stovepipe damper (Elm) or pull out the bypass rod (Catalytic Elm).
- Open the air inlet about half way .
- Open the door very slowly to allow any smoke to go quickly up the chimney, and not out into the room.
- Rake any live coals forward.
- Put in more wood lengthwise.
- Close the door and open the air inlet fully.
- (Elm only) Begin closing the stovepipe damper and air inlet only when the fire is well established.
- (Catalytic Elm only) Push in the bypass control rod and begin closing the air inlet only when you are sure that the catalyst is active (above 500 degrees on the probe thermometer's dial).

Checking the Performance of Your Combustor (Catalytic Elm only)

Once the combustor has achieved “light-off” it will continue to be active as long as there is a steady flow of fuel (woodsmoke and gases) and air from the air inlet. If you close the air inlet completely you will slow the fire down and reduce the amount of fuel and air going through the combustor so much that the catalytic combustion stops. When the combustor is not active, the woodsmoke passes through the combustor unburned, and you get the three problems normally associated with an airtight non-catalytic woodstove: inefficiency, air pollution, and creosote.

One way to judge how well you are maintaining catalytic combustion is look at the bypass control rod every time you pull it out when you reload the stove. You can see about three inches of the rod that is exposed to the exhaust gases whenever the bypass is closed. Whatever deposits are on the rod are indicative of what is being deposited on the inside of your chimney. If the color of rod is between an ash white and dark brown, your combustor is probably performing well. However, if the rod is **black**, or worse yet, **shiny black** the combustor is not working properly. You should start making sure that the combustor has achieved “light-off” before closing the air inlet. Also begin to leave the air inlet open more than before. With a firebox full of wood the air inlet can usually be left open ¼” and still burn overnight.

Creosote Accumulation

What is creosote? It is commonly defined as the by-product of burning wood, (smoke) that has condensed on the inside of a stove, stovepipe, and/or chimney system. This very flammable deposit is usually black or brown and can be liquid, hard tar-like, flaky or bubbly. Creosote accumulates in all chimneys venting wood smoke. You can't stop it completely, even with the Catalytic Elm, but you can take steps to minimize it:

- Burn small fuel loads, and load your stove often.
- Leave the air inlet open (½” to full) for 10-30 minutes after each loading. (Please do this only when you know your chimney is relatively clean.)
- Do not smolder your fires.
- Burn dry well-seasoned wood only.
- Vent your stove into an insulated chimney (see “Chimneys”).
- Avoid using heat extractors on the stovepipe.
- Avoid the use of long lengths of stovepipe as they cause flue gases to cool and thus increase creosote buildup.
- If you have a Catalytic Elm, be sure the combustor is doing its job.

It is ideal to burn small, hot fires as opposed to large, smoldering fires. (Small means filling the firebox $\frac{1}{4}$ to $\frac{1}{2}$ of its capacity. This does not necessarily mean small pieces of wood.) Burning small, hot fires will mean less creosote but more time spent tending the stove. If someone is usually home it is best, (to slow the creosote build-up) to have 2-4 hour burns. Burning slow, smoldering fires, (i.e. the 6-12 hour type) will be desirable from time to time, so try to put the following into your stove tending routine: Each and every time you add fuel to your stove allow the logs to burn quickly for 10-30 minutes. You can do this by closing the door and leaving the air inlet open. You will again be driving off the smoke quickly, diluting the smoke and warming up the flue thus keeping the creosote accumulation to a minimum.

When you are ready to shut your Elm or Catalytic Elm down to run for 6-12 hours, you can experiment with the air inlet to find its ideal setting. Do this by steps. First, achieve "light-off" (Catalytic Elm only), and leave your air inlet open fully. Go outside and look at the top of your chimney. You should not be seeing much smoke. Next, start closing the air inlet — do this until you see a lot of smoke coming out the chimney then open the inlet a little until there is just a minimal amount of smoke. Experiment like this until you know where your inlet setting should be. Please note that the setting will change with the moisture content of your wood, with the species of wood you burn, with the temperature differences, (inside to outside) etc. By experimenting and operating your stove accordingly, you will be able to keep the creosote accumulation to a minimum.

MAINTENANCE

Catalytic Combustor — Catalytic Elm Only

Running your combustor continuously at 1800 degrees will shorten its life.

It is not recommended that you burn coal or painted wood in your Catalytic Elm or use it as an incinerator. Your catalytic combustor will remain operable longer if only wood is burned in your Catalytic Elm.

If the surface of the combustor ever clogs up, use a clean paint brush to brush it off.

If you think that your combustor has failed, contact your local Catalytic Elm retailer. Then if, together, you confirm the combustor's malfunction contact us for instructions for its return and replacement. Remove the combustor and operate the Catalytic Elm as if the combustor was still in place.

Catalytic Combustor Specifications

5.66" Diameter

3" thickness 16 cells per square inch/or 2" thickness 25 cells per square inch

Ceramic substrate with a wash coating of precious metals

Combustor wrapped in 3M Interam high temperature gasketing

Chimney Inspection and Creosote Removal

Even though you try hard to slow down creosote accumulation it will still build up in your venting system.

Inspect your stovepipe and chimney two weeks after you first start burning your Elm or Catalytic Elm.

Clean your system whenever you see a build-up of $\frac{1}{4}$ " or more. If, at the first inspection, you do not see much creosote then wait another two weeks and inspect again. If there still isn't at least $\frac{1}{4}$ " build-up then wait four weeks before inspecting again. By inspecting regularly you will know quickly how often you need to clean your stovepipe and chimney.

Buy a wire or polypropylene chimney cleaning brush (measure the inside diameter of your flue — do not buy an oversized brush).

Clean your chimney whenever it is necessary and save the cost of a professional chimney sweep.

If you aren't inclined to clean your chimney yourself, check the yellow pages under "Chimney Sweeps". Call a few of them and ask:

1. What they charge to clean your specific installation.
2. How long they have been in business in your town.
3. If they carry liability insurance.

Hire the one who is willing to answer all of your questions in a friendly and professional manner.

Ash Removal and Disposal

Periodically you will need to remove the ashes from the firebox. If you can't let the fire go completely out, let the fire die down to coals before removing excess ash. Move the live coals to the back of the firebox with a metal shovel, then shovel the ash into a metal container with a tight-fitting lid. Place the closed container of ash on a non-combustible floor or on the ground, well away from combustibles, until final disposal. If you are burying the ashes or scattering them in your garden, driveway, compost, etc., they should be kept in the metal container until the coals have completely cooled. This usually takes longer than we would expect — waiting one week is usually safe.

Never put ash into a combustible container (i.e. a cardboard box, paperbag, plastic bucket, etc.). Also, not only is it a potential fire hazard, but wood ash is potentially harmful to your house vacuum cleaner so please do not vacuum ashes out of your stove.

Hearth Window

DO NOT CLEAN GLASS WHEN GLASS IS HOT.

If the inner layer of glass gets dirty from soot, fire up your stove and open the air inlet halfway making the flames come towards the inner glass and lick the glass clean. A razor blade does the job nicely too. It is best not to use an abrasive cleaner, as this will scratch the glass.

If your inner glass breaks, contact your dealer or us. Slamming the loading door and/or forcing long wood into your stove with the door could break the inner glass. Breakage due to impact is not covered under the limited warranty.

The outer glass (only on U.S. Elm and Catalytic Elm) can break from thermal shock, —i.e., water or snow hitting it. The outer glass, is better known as a 9" pie plate (Corning Product #209) is available at many grocery, hardware, and department stores.

GLASS REPLACEMENT INSTRUCTIONS

CAUTION: THE EDGES ARE VERY SHARP, HANDLE WITH CARE!

1. Remove the door from its hinges and lay it on a table with the Elm tree facing up.
2. Remove the four stove bolts that secure the Elm tree casting and set these parts aside.
3. Take the hex mesh and pie plate out and clean the glass before you put this assembly back together.
4. Remove the broken glass.
5. Clean the castings of any ashes and creosote.
6. Wrap the new inner glass with the grooved side of the gasket wrapped around the edge. Cut this piece to length so that it goes all the way around the glass and the ends overlap about 1½".

7. Install the rope gasket around the glass, starting at one end of the straight edge going around to the other end. Wedge the gasket into the groove between the glass and the casting with a screwdriver.
8. Set the pie plate rim, (upside down), on top of this gasket.
9. Place the hexagonal mesh on top of the Pyrex plate.
10. Replace the Elm tree casting and screw in the four bolts that secure it in place, tightly, but not *too* tightly. Tighten them evenly or the glass may break.
11. The glass should be held firmly in place with the gasket acting to seal the air out, and to cushion the glass in case you accidentally hit it.

Glass Specifications:	Outer	Inner
Diameter	9 ⁷ / ₈ "	9 11/16"
Depth	1 ¹ / ₂ "	—
Thickness	1/4"	.175"
Weight	1 lb. 10 oz.	16.5 oz.
Material	Borosilicate glass	heat resistant glass ceramic

Fiberglass Rope Gaskets

The door gasket should be replaced only when you are not getting a tight seal. Your local stove dealer should have the correct replacement gasket. The window gasket needs to be replaced only when replacing a broken window. Gaskets between the firebox and ends *do not* need to be replaced often. Do not disassemble stove to inspect. Contact your local Elm dealer or us if you have reason to believe your gaskets need replacing.

Cooktop

Rust may form on the cast iron griddle, under the humidifying steamer or from spilled water. Remove rust with steel wool and touch up with paint that comes with your Elm. The cooktop on a Catalytic Elm can be protected with a coating of vegetable oil.

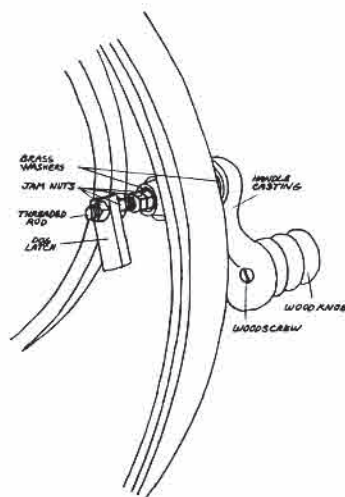


Figure 6
Positive Locking Handle

Positive Locking Handle

The Elm and Catalytic Elm's 14" loading door closes by turning the handle from the one o'clock to the nine o'clock position. If the handle works loose and doesn't seem to be closing tightly use the illustration and text below to tighten the handle.

Removal and Adjustment of the Door Handle

Before trying to remove your handle we recommend that you soak the threaded rod and nuts in a penetrating oil to prevent the threaded rod from becoming damaged during removal.

To change handle begin by removing the outer jam nut, the dog latch and the second jam nut. You can now remove the third and fourth jam nut, the inner brass washer and slide the handle out. There should be one remaining brass washer on the handle.

When re-installing the handle, be sure that a brass washer is on either side of the door to assure smooth operation of the handle. Then adjust the two jam nuts closest to the door frame so that the handle turns snugly. You can now add the third jam nut, the latch and the last jam nut. When adjusting the latch tighten the jam nuts securely or the latch will stick to the front ring when you close the door, and it won't open. If this were to happen you must remove the tree and turn the latch by hand.

Nickel and Brass Trim Kits

The nickel trim will clean up easily by washing with window cleaner sprayed on a clean cloth. Polish the brass trim with any commercially available brass cleaner.

Soapstone Griddle

Keep the griddle under your Elm or Catalytic Elm for the first week of burning. The heat given off from the bottom of your stove will drive out moisture in the griddle.

Moisture in the soapstone can cause cracking if driven off quickly. During the warranty period, if you notice more than a hair-line crack, please contact us.

To clean the soapstone:

- Sand with 220 sandpaper or
- Washer with a fairly dry paste made with baking soda or powdered laundry detergent and water.
- Do not use excessive water on soapstone.

SAFETY PRECAUTIONS

Stovepipe and Chimney Inspections

To paraphrase Smokey The Bear — Only *you* can prevent chimney fires. This short section is another reminder to check your stovepipe and chimney regularly for creosote accumulation throughout the heating season, and clean them when necessary. Replace any corroded pieces of stovepipe and be sure all seams are tight.

Fire Extinguishers and Smoke Detectors

- Have a class ABC fire extinguisher near an exit in the same room as your Elm or Catalytic Elm.
- Make it easily accessible.
- Teach all members of your family how and when to use it.
- Keep it charged at all times.
- Install 1-2 smoke detectors in your home — one near the stove and one near bedrooms.

There are two types of smoke detectors with advantages and disadvantages to both.

Ionization — These detect the numerous particles generated from flames. They contain a small amount of radioactive materials (Americium-241). They can react to a *blaze* about 30 seconds sooner than the photoelectric type.

Photoelectric — These detect *smoke* (smoldering fires are the primary cause of fire-related fatalities in the United States).

They can respond to a *smokey fire* up to 20 minutes sooner than an ionization detector.

Most fires will set off both types of detectors but in those rare cases where a smokey fire does not set off an ionization detector, (or delays its response) the delay could jeopardize someone's life. Both types are available to operate on batteries or household current.

Emergency Procedures

In case of a chimney fire or a runaway fire:

1. Close the air-inlet control.
2. Call the fire department immediately.
3. Get everyone out of the house. If there is no fire in the house itself one adult should keep checking the areas around the stove and the chimney and use the fire extinguisher if necessary.
4. Do not spray or put water into the stove or chimney. Cold water could cause the stove and/or chimney to crack.

5. Spray water on the exterior walls and roof of your house if your hose will reach — especially near the chimney. Do not spray the chimney.
6. When the fire is out, check the stove, stovepipe, and chimney very carefully for any signs of damage.

Greenwood vs. Drywood

It is not always true that the drier the fuel the less creosote will form in your chimney. In a report, "Creosote and Wood Moisture Content" by Dr. Jay Shelton, it is shown that wood fuel with a moisture content below 15-20% will actually increase (in some cases) the amount of creosote accumulation. The reason for this is that since dry wood requires less air or combustion, people will turn the air controls down and severely restrict the air flow. On the other hand, stove operators know green wood usually requires a substantial amount of air to burn so they open up the air controls. When air controls are opened up the in-coming rush of air will do three things;

1. It will draw heat up the chimney thus creating a warm flue.
2. It will dilute the smoke.
3. It will force the smoke to pass through the flue quickly.

All three of these conditions will aide in preventing smoke from condensing on the inside of the flue.

Hardwood vs. Softwood

Another common fallacy when considering creosote accumulation is that hardwoods create less creosote than softwoods. This is certainly not true if we are only talking about the volume of cord wood. A cord of hardwood, being much denser than a cord of softwood (given they have the same moisture content) would, under normal circumstances generate more creosote. But if we consider the conditions of maintaining 65-70 degree house temperatures throughout a heating season, we know that less hardwood would have to be burned than if we were to try to do the same with softwoods. Yet, it is very difficult to say which would create more creosote. Hardwood usually provides a "better buy" when we consider that less space is needed for storage, more energy is released per cord, it requires less work (for those of you who gather your own wood) and is more economical if the price of a cord of softwood is approximately the same as a cord of hardwood.

Wood Storage Tips

If you buy your wood you can usually save \$5-\$10 a cord if it is "green", meaning freshly cut. To properly season green wood you will want to follow these guidelines:

- Split wood dries much faster than unsplit.
- Stack wood allowing for good air circulation.
- Stack wood in a windy place.
- Cover drying and dry wood.
- Stack wood on unwanted lumber or logs (keep good wood off the ground).
- Store "green" wood 6 to 12 months.

SUGGESTED READING LIST

1. *Wood Heat Safety*, by Jay W. Shelton. Garden Way Publishing, Charlotte, VT. 1979.
2. *Jay Shelton's Solid Fuel Encyclopedia*, by Jay Shelton. Garden Way Publishing, Charlotte, VT. 1982.

Both of these texts, plus other related articles and papers, are available by writing to: Shelton Energy Research, P.O. Box 5235, Santa Fe, NM 87502.

Please tell them where you got their name.

BTU CHART

The following chart should help you in deciding what kind of wood to buy or cut for your stove. Other factors to include in your decision are: price, delivery, moisture content (well-seasoned wood has a moisture content of 20%), and whether the wood is cut to length and split.

HARDWOODS	BTU (Million)
Ash	24.0
Aspen	16.6
Beech, American	27.4
Birch, Paper	23.6
Yellow	26.3
Cherry, Black	21.4
Elm, American	21.4
Hickory, Shagbark	30.5
Locust, Black	29.5
Maple, Red	23.1
Silver	19.8
Sugar	26.8
Oak, Red (average)	27.4
Oak, White (average)	29.5
Walnut, Black	23.6
Willow, Black	16.6
Yellow, Poplar	17.7
SOFTWOODS	BTU (Million)
Douglas — fir (average)	20.4
Pine (average)	15.5
Spruce (average)	16.6

The above chart assumes 80 cubic feet of solid wood per 4'x4'x8' cord, and a moisture content of 20%.

THE AMERICAN ELM TREE

The American elm, (*Ulmus Americana*), has long been regarded as the most beautiful shade tree in America. With a life expectancy of 300 years, many elms in this country are older than the nation. But the elm has fallen on hard times recently with the spread of Dutch Elm Disease. With the founding of the Elm Research Institute, there is now an organization to help you treat your trees and protect them from further spreading of the disease.

As the owner of an Elm or Catalytic Elm woodstove, we think you might be interested in knowing about the Elm Research Institute.

Founded in 1964, and incorporated in 1967, ELM RESEARCH INSTITUTE was established for the purpose of "raising and administering funds for financing independent research on Dutch Elm Disease, (D.E.D.), to control the disease and save the American Elm from extinction."

ERI, a tax exempt charitable organization, has funded elm tree research grants totaling over \$1,000,000 to universities and colleges in the U.S. and Canada.

Over and above raising research money ERI has created a number of community awareness programs. These programs center on two themes. One, save your community's elm trees, and two, plant new elm trees.

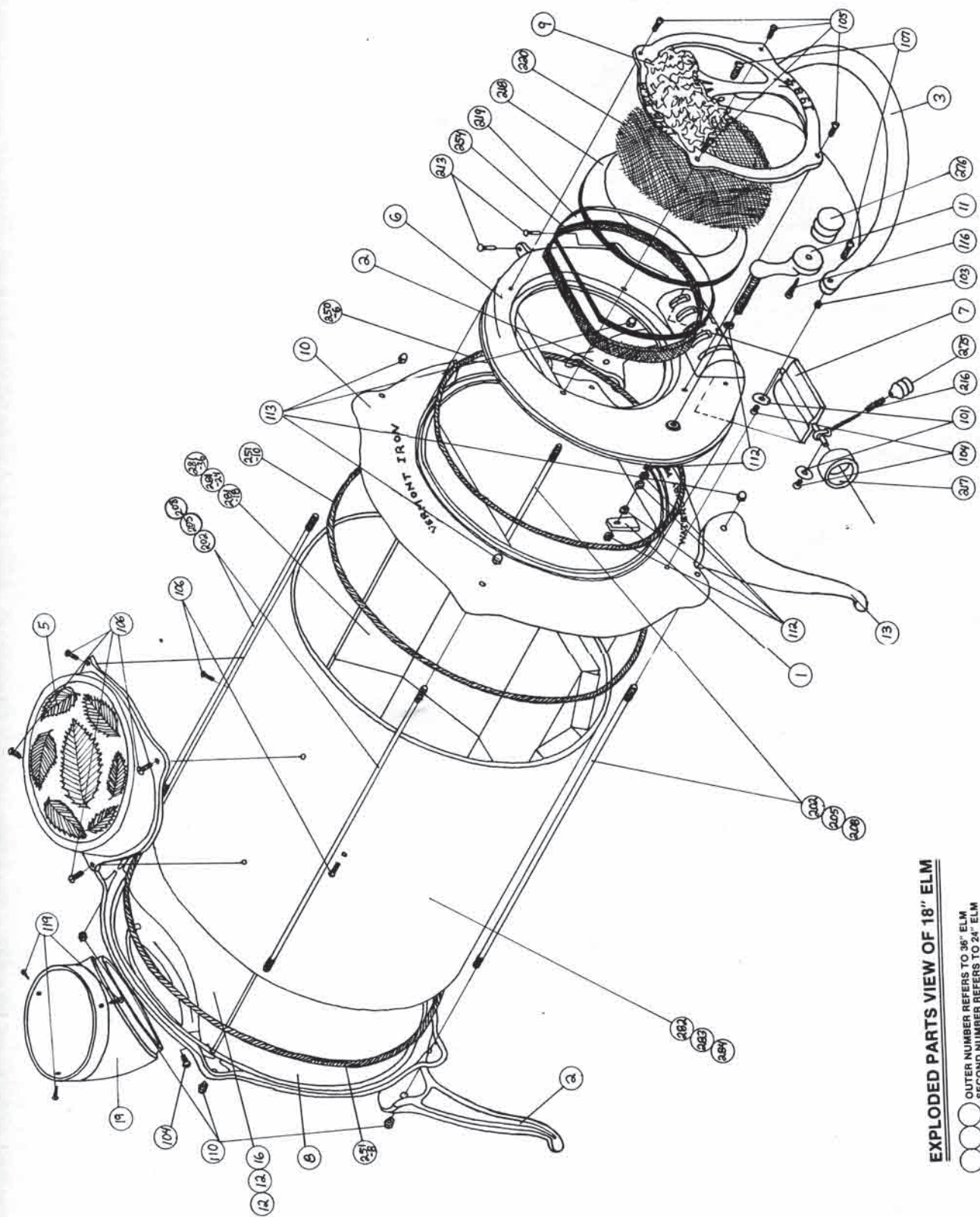
ERI is helping civic groups to begin Shade Tree Commissions, dedicated to preserving all shade trees including elm trees. Their "Johnny Elmseed" program is giving away thousands of American elm seedlings called Liberty Trees as an inducement to help locate elms that have not been treated against D.E.D. The Johnny Elmseed program's goals are twofold. One, locate and record every living elm in the country to insure preventative treatment against D.E.D. and two, replace every elm that was lost prior to this treatment with a live healthy elm seedling.

Additionally, ERI provides: information on semi-disease resistant American elms; equipment and supplies to safely inject a fungicide into living elms (with a phenomenal 98% success record); a newsletter; and much more.

For more information write to Elm Research Institute, Harrisville, New Hampshire 03450.

Another way to help prevent the spread of Dutch Elm Disease is to burn elm logs in your elm stove. Cut into firewood all the dead elms that you can, as they are homes for the elm bark beetle which carries the fungus spores of D.E.D. These beetles breed under the bark of recently dead elm wood and elm firewood must be used up before April 1st to stop the newly emerging beetles before they can go on to infect healthy elm trees in the area. If you can't burn all the elm firewood by spring, be sure to de-bark it.

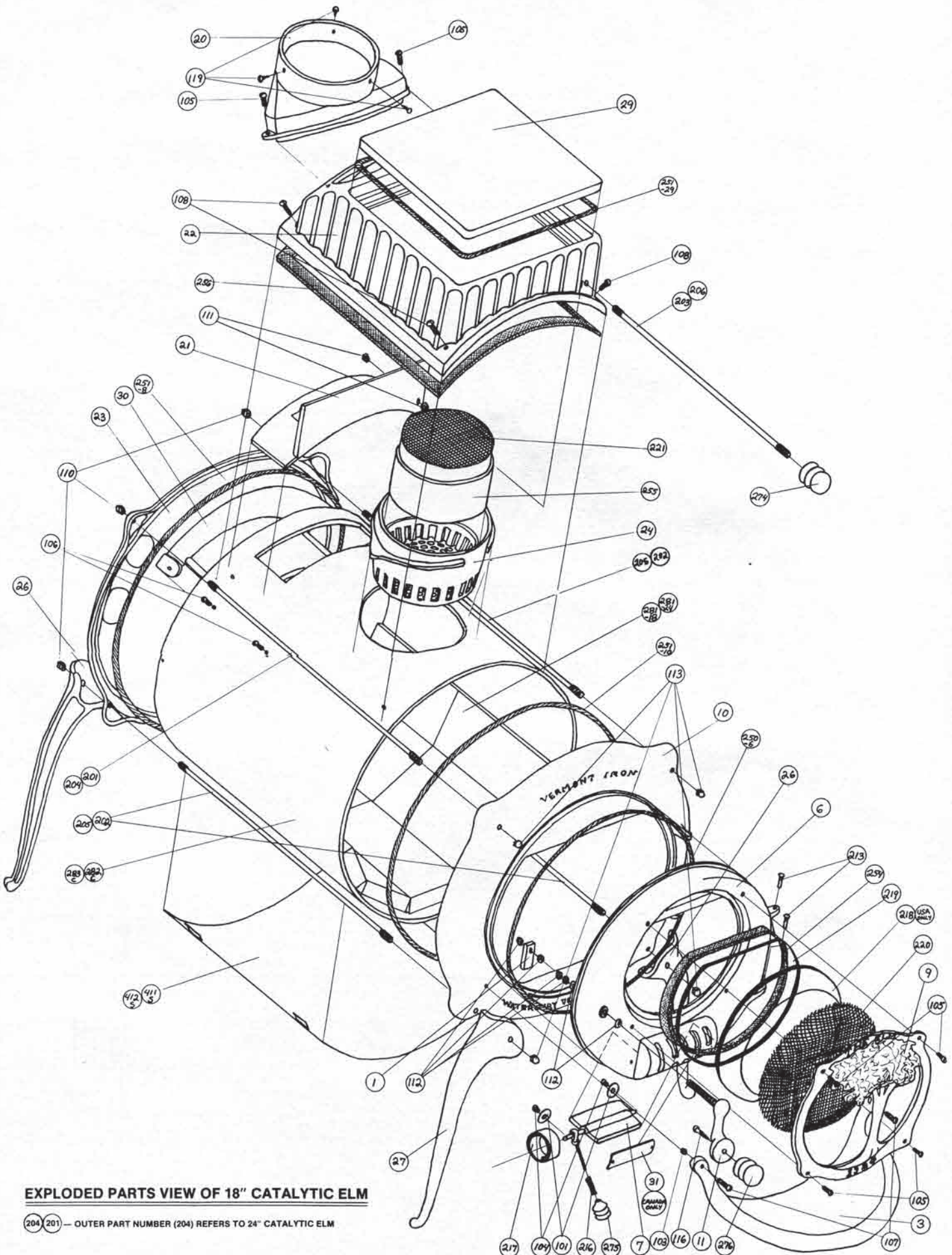
We at Vermont Iron hope you enjoy your Elm or Catalytic Elm and will join us and ERI in an effort to save the American Elm.



EXPLODED PARTS VIEW OF 18" ELM

○ OUTER NUMBER REFERS TO 36" ELM
 ○ SECOND NUMBER REFERS TO 24" ELM
 ○ INSIDE NUMBER REFERS TO 18" ELM

(Figure 7A — exploded view of Elm)



EXPLODED PARTS VIEW OF 18" CATALYTIC ELM

204 201 — OUTER PART NUMBER (204) REFERS TO 24" CATALYTIC ELM

(Figure 7B — exploded view of Catalytic Elm)

Vermont Iron Parts — VI#

- | | | | |
|-------|--|-----------|--|
| 1 | Dog (Part of door latch) | 205 | 24" Tie Rod |
| 2 | Right 8" leg | 206 | Bypass Control Rod
(24" Catalytic Elm) |
| 3 | Ash Apron | 208 | 36" Tie Rod |
| 3-BT | Brass Ash Apron | 209-C | Complete Tool Set |
| 3-NT | Nickel Ash Apron | 209-H | Holder |
| 5 | Cook top, round (Elm) | 209-P | Poker |
| 6 | Door | 209-S | Shovel |
| 7 | Draft Flap | 209 | B-Broom |
| 8 | 45° Back (Elm) | 213 | Hinge Pins |
| 9 | Elm Tree | 214 | Eye Hook |
| 9-BT | Brass Elm Tree | 215 | Pop Rivet For ID tag |
| 9-NT | Nickel Elm Tree | 216 | Stainless Steel Spring |
| 10 | Front Ring | 217 | Brass Ring |
| 11 | Handle — door | 218 | #209 Pyrex Pie Plate |
| 11-BT | Brass Door Handle | 219 | Inner Glass |
| 11-NT | Nickel Door Handle | 220 | Hexagonal Mesh |
| 12 | 24" and 36" baffle (Elm) | 221 | Catalytic Combustor |
| 13 | Left 8" leg | 222 | ID tag for Elm |
| 16 | 18" Elm baffle | 223 | ID tag for Catalytic |
| 17 | Smoke Screen (for 1976 Elms) | 226 | Elm Owner's Manual |
| 18 | Window Widget (for 1976 Elms) | 227 | Catalytic Elm Owner's Manual |
| 19 | 45° Elbow (Elm) | 250 | 1/4" Round Gasket (per foot) |
| 20 | Catalytic Elbow | 250-6 | Door Gasket |
| 21 | Bypass Damper (Catalytic Elm) | 251 | 5/16" Round Gasket (per foot) |
| 22 | Cooktop Housing (Catalytic Elm) | 251-8 | Back Casting Gasket |
| 23 | Back (Catalytic Elm) | 251-10 | Front Ring Gasket |
| 24 | Combustor Can (Catalytic Elm) | 251-29 | Cast Griddle Gasket (Catalytic Elm) |
| 25 | Flue Plug for Catalytic Retro-fit | 253 | 1/4" Double sewn (ULC Glass) |
| 26 | Right 14" leg (front or left rear) | 254 | 1/4" Window Gasket |
| 27 | Left 14" leg (front or right rear) | 254-219 | Glass Gasket |
| 28-CA | Stainless Steel Hot Water Loop
Shim Kit | 255 | 3/16" Interram Gasket for
Catalytic Combustor |
| 29 | Cast Griddle (Catalytic Elm) | 256 | 3/16" Interram Gasket for
Catalytic Cooktop |
| 30 | Interior Firebox Baffle
(Catalytic Elm) | 274 | Wood Knob — bypass control rod
(Catalytic Elm) |
| 31 | ULC Draft Reduction Plate
(Canada Only) | 275 | Wood Knob — draft flap |
| 32 | Left 4" fireplace leg | 276 | Wood Knob — door handle |
| 33 | Right 4" fireplace leg | 281-4 | 4 1/2" Firebrick |
| 34 | 18" Cast Iron Latticework
Warming Shelf | 281-8 | 8" Firebrick |
| 35 | 24" Cast Iron Latticework
Warming Shelf | 281-9 | 9" Firebrick (uncut) |
| 101 | 1/4" Fender Washer | 281-18 | Set of firebricks — (18" Firebox) |
| 102 | 1/4" Brass Flat Washer | 281-24 | Set of firebricks — (24" Firebox) |
| 103 | 1/4" 20 NC Hex Nut | 281-36 | Set of firebricks — (36" Firebox) |
| 104 | 1/4" 20 X 1/2 RHMS | 282 | 18" Stove Body |
| 105 | 1/4" 20 X 3/4" RHMS | 282C | 18" Catalytic Stove Body |
| 106 | 1/4" 20 X 1" RHMS | 283 | 24" Stove Body |
| 107 | 1/4" 20 X 1 1/4" RHMS | 283C | 24" Catalytic Stove Body |
| 108 | 1/4" 20 X 1 1/2" RHMS | 284 | 36" Stove Body |
| 110 | 3/8" 16 NC Hex Nut (nickel) | 402-AS-18 | 18" Stainless Steel Hot Water Loop |
| 111 | 3/8" NC Jam Nut | 403-AS-24 | 24" Stainless Steel Hot Water Loop |
| 112 | 3/8" Brass Flat Washer | 411-S | 18" Heat Shield — side or bottom |
| 113 | 3/8" NC Acorn Nut (nickel) | 412-S | 24" Heat Shield — side or bottom |
| 116 | #14 X 1 1/4 RHSH Wood | 413-S | Rear Heat Shield (Elm)
includes pipe shield |
| 117 | #8 X 1 1/2" SMST | 414-S | Rear Heat Shield (Catalytic Elm)
includes pipe shield |
| 119 | #8 X 3/4" SMST | | |
| 202 | 18" Tie Rod | | |
| 203 | Bypass Control Rod
(18" Catalytic Elm) | | |