INSTALLATION INSTRUCTIONS

AHREN-FIRE™ INSTALLATION

AHREN-FIRE FIREPLACE SYSTEM INSTALLATION REQUIREMENTS

1. PRODUCT APPLICATION
The AHREN-FIRE Fireplace System is designed to repair or restore existing masonry fireplaces and can also be installed for new construction.

2. INSTALLATION
The AHREN-FIRE Fireplace System MUST BE INSTALLED BY A FIREPLACE PROFESSIONAL, in accordance with the INSTALLATION & INSTRUCTION MANUAL.

3. LOCAL CODES
Contact Local Building or Fire officials about restrictions and installation inspections in your area.

4. CLEARANCES
For this product to be a UL Listed product at zero clearance to combustibles, the fireplace and smoke chamber walls and floor must be a minimum of 4" nominal thickness solid masonry units as described in NFPA 211, 3.3.78.

UL LISTED ZERO CLEARANCE TO COMBUSTIBLES

AHREN-FIRE CHIMNEY AND DAMPER REQUIREMENTS

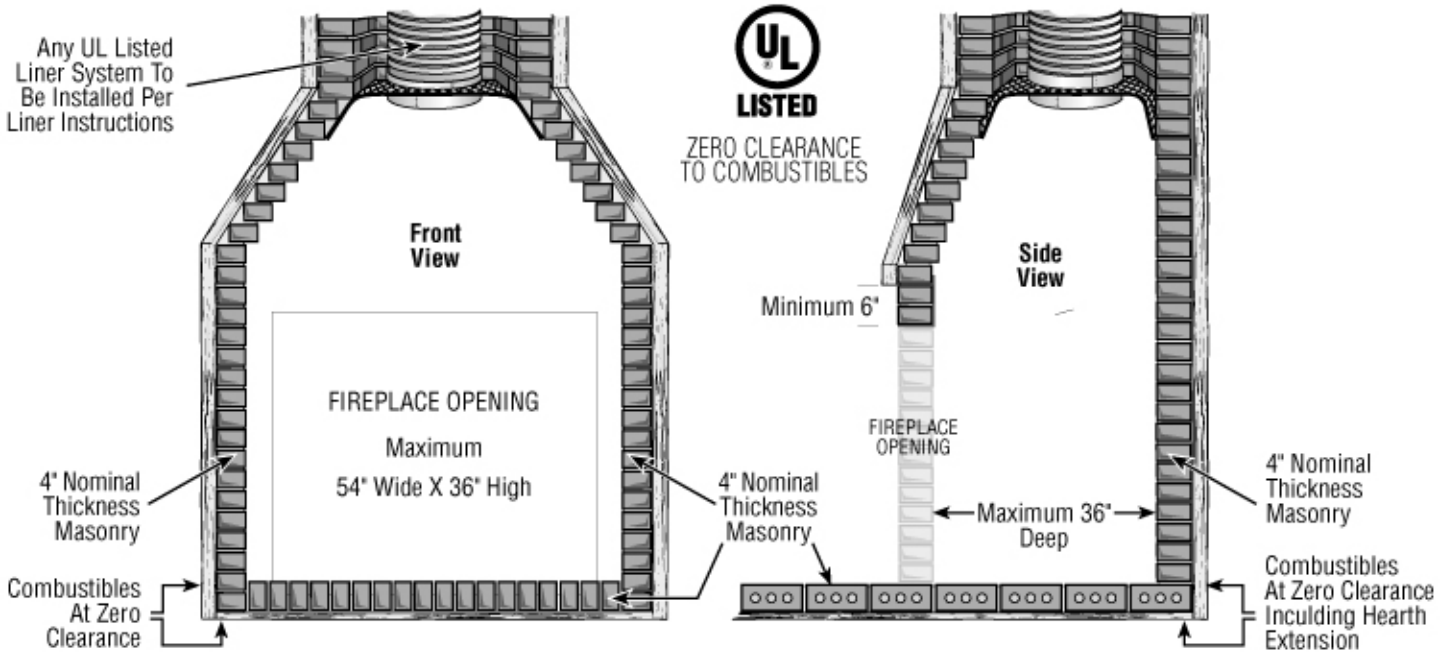
The AHREN-FIRE is intended to be installed with any UL Listed chimney lining system or any local code acceptable lining system such as:

- Poured-in-Place Liners
- Stainless Steel Flexible Liners
- Stainless Steel Rigid Liners
- Clay Tile Liners

We recommend a top sealing damper system. It is acceptable to install any top sealing damper that meets local codes or one that is UL Listed.

The chimney lining system and top sealing damper are to be installed in accordance with the manufacturer's installation instructions.

Please read the following step by step instructions carefully and thoroughly prior to installation.



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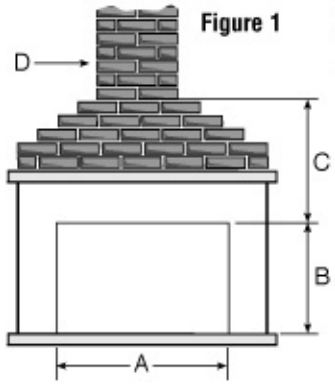
AHREN-FIRE INSTALLATION

Step 1

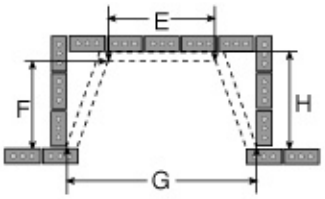
Determine the size of Ahren-Fire and type of smoke chamber to be installed. (Refer to charts on page 7)

Figure 1



Dimensions needed:

A. Fireplace opening–width
B. Fireplace opening–height
C. Smoke chamber height
D. Inside chimney dimensions
E. Existing firebox width
F. Existing firebox depth
G. Firebox shell width
H. Firebox shell depth



Step 2

The smoke chamber and chimney liner must be addressed prior to the installation of the Ahren-Fire firebox. Refer to the smoke chamber instructions of your choice. (See pgs. 4-5 for Chamber-Tech 2000™ and pg. 6 for Stainless Steel Smoke Dome.)

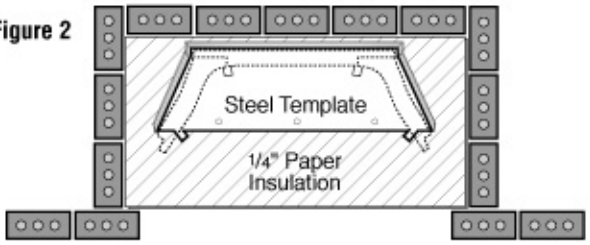
Step 3

Now that the smoke chamber has been addressed, you can begin with the firebox installation. Cut 1/4" paper insulation to the A x E x F dimensions and place on the fireplace floor. If the existing firebox is removed, use the G x H dimensions (See Figure 1)

Step 4

Place template on the firebox floor. Center it side to side and back to a minimum of 2" from the back wall. (See Figure 2)

Figure 2



Fasten it to the floor with the two masonry screws provided. (See Figure 2A)

Figure 2A

Step 5

Insulate the back sides of the Ahren-Fire back wall and corner pieces with the 1" foil-faced blanket insulation utilizing spray adhesive. Once insulated, place the back wall onto the template and temporarily brace it in place to keep it from tipping forward or back. (See Figure 3, below)

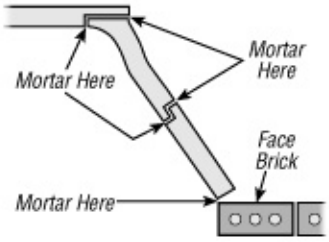
Step 6

Put a 1/8" layer of Ahren-Fire mortar on the corner piece where it will mate into the rear wall inset. (See Figure 4) Make sure the bottom of the corner is properly located on the template. Wiggle the corner while applying pressure, forcing the mortared surface into the back wall. Bend up the tabs on the template to lock the corner and back wall into place. Place the optional right angle mesh corner on the top joint to keep the two pieces together. See Step 9 for Optional Position Securing Clips. Your back wall and corner pieces should now be installed and secure. (See Figure 5)

Step 7

Measure the distance from the front edge of the corner piece and back surface of the face brick. Cut the side flare approximately 1/4" to 3/8" less than that dimension to allow for a mortar joint between the back of the face brick and side flare. (See Figure 4)

Figure 4



Step 8

Insulate the back side of the side flare with the Ahren-Fire 1" foil-faced blanket. Butter the front and back side of the overlapping lip with refractory mortar. (See Figure 4)

Step 9

Set the side flare in place. Bend up the tab on the floor template to lock it into position on the bottom and place the position securing clip to hold the top. (See Figure 6, below)

Optional Position Securing Clips are for added ease in setting up the Ahren-Fire firebox. *Top clip:* position on top of wall where corner piece and side flare meet, bend tabs downward to hold joint securely. (See Fig 6A, B and C.)

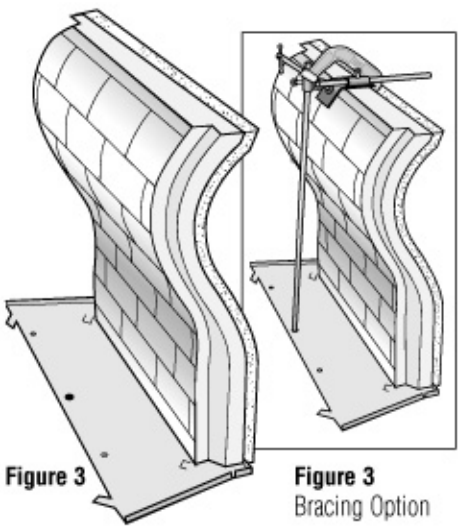


Figure 3

Figure 3
Bracing Option

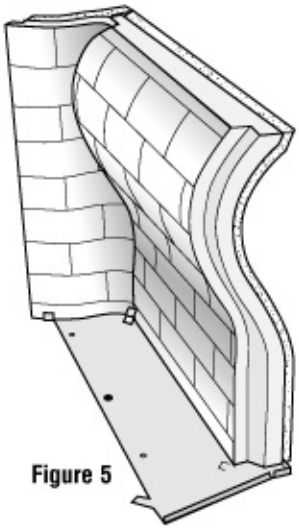


Figure 5

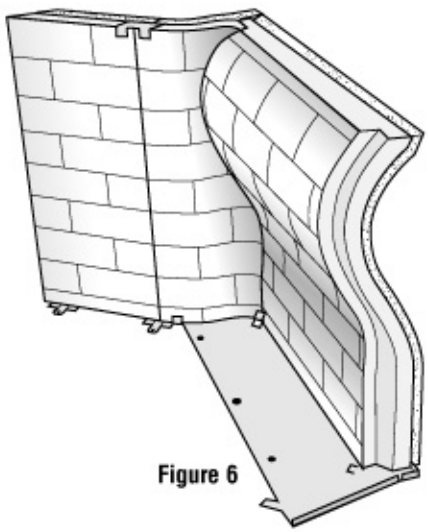
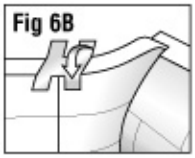
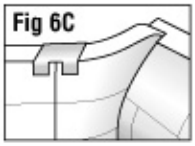


Figure 6





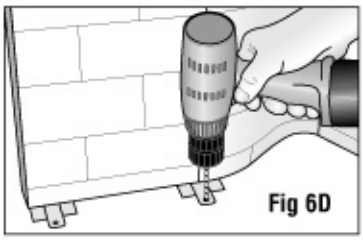


Fig 6D

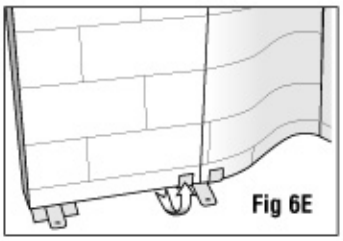


Fig 6E

Optional Position Securing Clips, continued:

Bottom clips: Place clip beneath wall where corner piece and side flare meet, screw clip down to floor, bend tabs upward to hold wall securely in place. You may also want to position a clip under the end of the side flare. (See Fig 6D and 6E.)

For extra hold on back corners, use the optional *Right Angle Mesh Corner*. Spread a thin layer of mortar on top of back corners where back wall and side corner meet, press mesh corner piece down into mortar, smooth off and let dry. (See Figure 6F.)

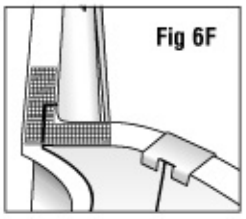


Fig 6F

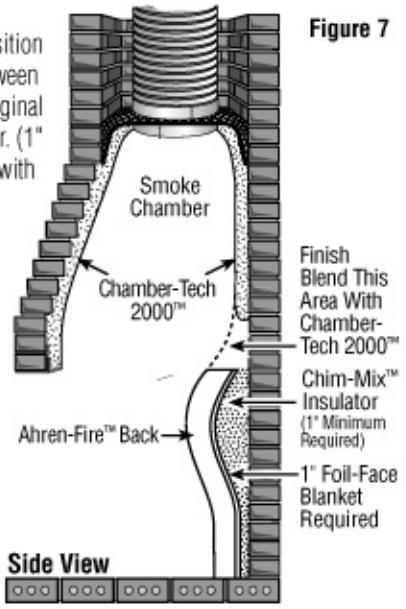
Step 10

Once the side flare is secure, tuckpoint the joint between the front edge of the side flare and the back side of the face brick. (See Figure 4)

Step 11

Now that all the panels are in position and secure, fill the back side between the Ahren-Fire panels and the original masonry with Chim-Mix Insulator. (1" minimum thickness) Fill to level with the top of the panels. (See Fig 7)

Figure 7



Step 12

If Chamber-Tech 2000 was your choice to address the smoke chamber, now is the time to finish blending the area from where you stopped applying Chamber-Tech 2000 to the top of the Ahren-Fire firebox walls, (See Figure 7) This blending should be done on the back wall as well as both sides. Make this transition as fluent as possible. Avoid sharp angles. **If a Stainless Steel Smoke Chamber was your choice**, return to **Step 6** on pg 6 to finish the smoke chamber installation.

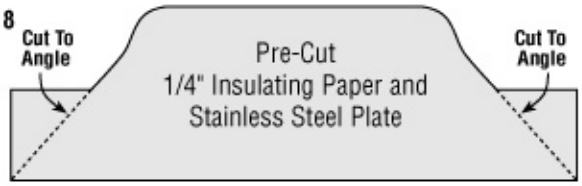
CUSTOM HEARTHS

STEP 1 *WITH* COMBUSTIBLES UNDER THE HEARTH

Step 1

The two piece hearth is ready to be installed. The 1/4" insulation paper and stainless steel plate for protecting the floor are pre-cut except for the side flare angle. Determine the proper angle and make the cut. (See Figure 8)

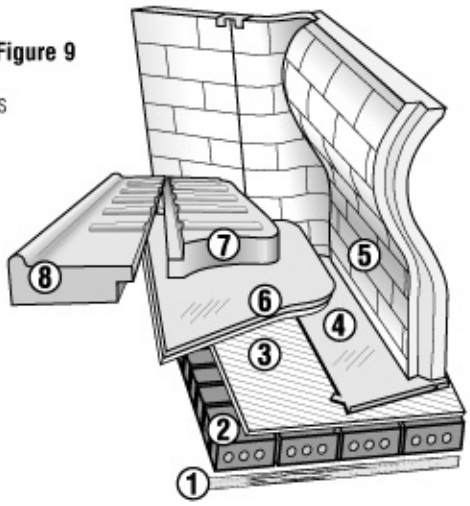
Figure 8



The insulating paper and stainless steel plate should now fit on the floor of the firebox. (See Figure 9 for proper layering)

PROCEED TO STEP 2.

Figure 9



1. Possible Combustibles
2. Brick & Masonry (4" nominal thickness)
3. 1/4" Paper Insulation
4. Steel Template
5. Ahren-Fire Firebox
6. Pre-Cut Stainless Steel Plate With 1/4" Paper Insulation
7. Hearth Back
8. Hearth Front

STEP 1 WITH *NO* COMBUSTIBLES UNDER THE HEARTH

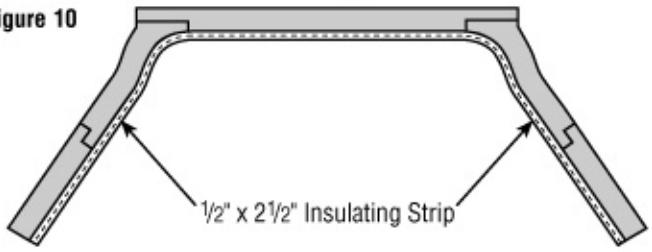
Step 1

The two piece hearth is ready to be installed. If it is determined that there are no combustibles under or in the vicinity of the fireplace floor, no floor insulation is necessary, **PROCEED TO STEP 2.**

Step 2

The 1/2" x 2 1/2" insulating strip should be installed next. Spray adhesive on the back side of the strip. Stick it to the bottom interior perimeter, (See Figure 10) This will minimize the heat transfer between the hearth and firebox. (See dotted line on illustrations)

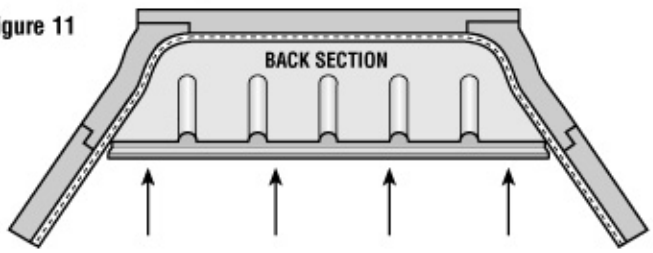
Figure 10



Step 3

Slide the back section of the two piece hearth up against the 1/2" x 2 1/2" insulating strip. (See Figure 11)

Figure 11



CUSTOM HEARTHS–CON'T.

Step 4

With a masonry saw, cut the proper angle on each side of the front Custom Hearth piece to match the angles of the side flares. (See Figure 12) Note: leave 3/8" gap on each end to allow for 1/2" diameter rope gasket (See Fig. 13)

Figure 12

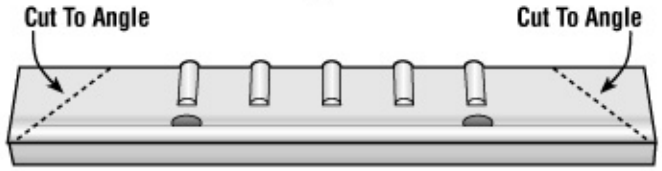
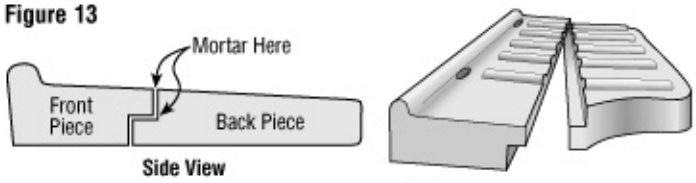
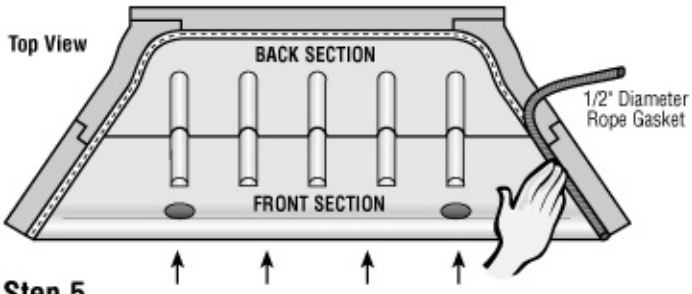


Figure 13





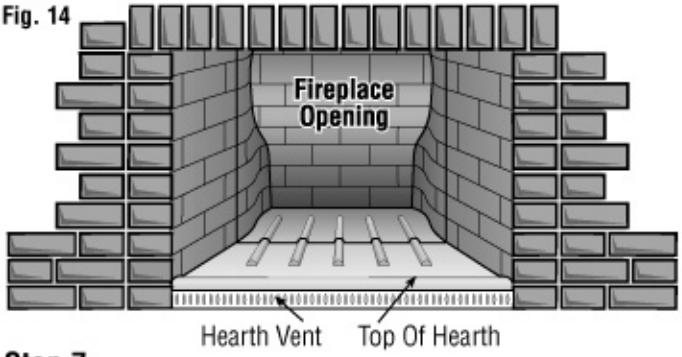
Step 5

Install the 1/2" diameter rope gasket around the perimeter of the hearth to protect the 1/2" x 2 1/2" insulating strip. (See Fig. 13)

Step 6

Cut the hearth vent to length and slide it into place to cover the insulation and air void under the hearth. (See Figure 14) The weight of the hearth alone will hold it in place.

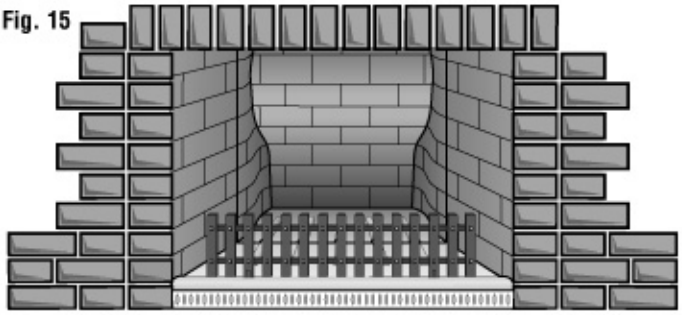
Fig. 14



Step 7

Set the log retainer in the pre-formed holes located at the front edge of the hearth. (See Figure 15) Refractory mortar can be used to secure the log retainer to the hearth permanently.

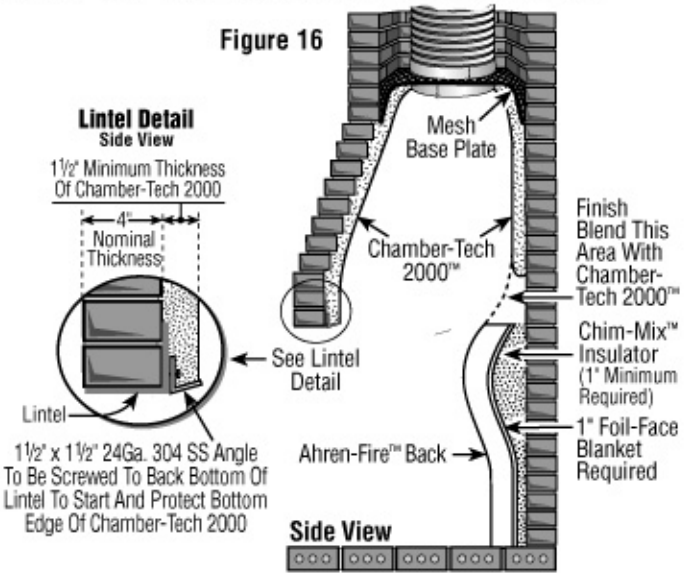
Fig. 15



CHAMBER-TECH 2000 SMOKE CHAMBER INSTRUCTIONS

Chamber-Tech 2000 should be installed in two steps when used in conjunction with an Ahren-Fire firebox. The mesh base plate and liner must be installed first. (See Expansion Tape & Mesh Base Plate Instructions-Fig. 18, page 5) Then, install Chamber-Tech 2000 down to within 12" to 16" of the top of the Ahren-Fire firebox on all sides.

Figure 16



This area will be finish blended after the Ahren-Fire firebox has been installed and prior to the hearth installation. This method will enable you to install the higher portion of the smoke chamber without disturbing the Ahren-Fire firebox installation. (See Figure 16)

Step 1

Mixer and tools must be clean.

Step 2

For best results premix entire contents of pail before adding clean water. If portions of a pail are to be mixed, first dry mix entire pail to blend any segregated ingredients.

Step 3

Chamber-Tech 2000 will set slightly faster than regular mortar. To assure enough working time adjust water and refractory temperature so that final wet mix temperature is 50°-70°F (10°-21°C). Keep mixed material shaded.

Step 4

Do not mix more material than what can be placed within 30 minutes.

Step 5

Add water slowly while mixing to obtain a slightly drier than mortar-like consistency. Approximately 6.5 quarts of water per 5 gallons of mix.

Step 6

If a handful of material tossed one foot in the air and caught breaks up,

the material is too dry. If the material sags through the fingers when caught, it is too wet.

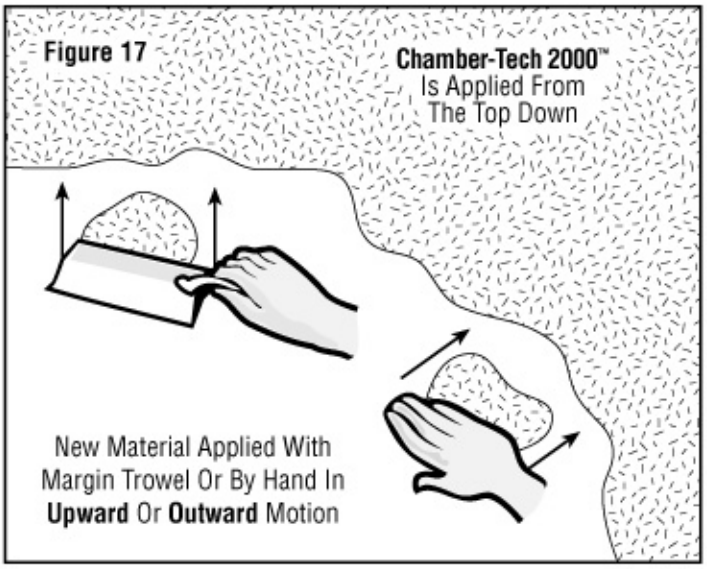
Step 7
Install material immediately after mixing with water.

Step 8
Area to be parged should be cleaned thoroughly. All loose and glazed creosote should be removed prior to material applications.

Step 9
Dampen surface prior to application to prevent rapid water absorption. No standing water should be present.

Step 10
Apply in 3/4" to 1 1/2" layers.

Step 11
The minimum final thickness must be 1 1/2". This thickness offers the proper insulation to protect zero-clearance to combustible constructions and creates a self supporting dome that is no longer dependent on physical bond.



Step 12
For best adhesion, use your hand or margin trowel to slap the material into place. (See Figure 17) This creates a suction bond. Taper or feather the bottom edge with a margin trowel from the desired thickness to zero so you will always be overlapping the material. Always blend new material into the existing material in an upward motion.

Step 13
Once material has been applied, a 3"-4" diameter round object or bottle can be used to radius the corners. The margin trowel can be used to smooth out the flat surfaces. Do not overwork the material or the suction bond can be broken. Repeat **Step 10** if more thickness is desired.

Step 14
The custom hearth can now be installed. See pg. 3

Chamber-Tech 2000 Coverage Rate For 5 Gallons / .5 Cubic Feet / 30 Lbs.

CT-2000 Thickness	Coverage In Square Feet
1/2"	12
3/4"	8
1"	6
1 1/4"	4.8
1 1/2"	4
1 3/4"	3.4
2	3

PRECAUTIONS

P-1
Once Chamber-Tech 2000 is installed, block off the fireplace opening to eliminate any air flow. This will prevent rapid drying so the product can reach its designed strength. For best results, keep material moist for at least 24 hours during curing.

P-2
Keep from freezing during 24 hour cure time.

Winter Installation: *Plug the chimney above the smoke chamber (foam rubber works well). Let room air 60°–70° F enter the smoke chamber to keep material from freezing.*

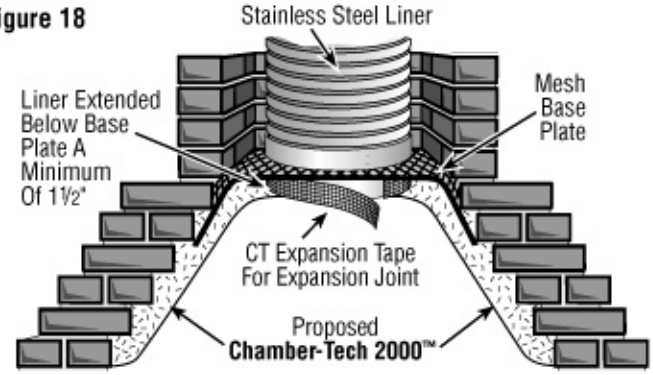
NOTE: *If homeowner has a top sealing damper, the above procedure is not needed, just keep the top sealing damper closed.*

P-3
Your customer may build a fire following a 24 hour cure time. Advise homeowner to keep fires small for an additional five days. Too high of a temperature can create steam within the material.

CT EXPANSION TAPE & MESH BASE PLATE

High heat in the smoke chamber and chimney area can cause expansion of the stainless steel liner. To prevent this expansion pressure from being a concern to the Chamber-Tech 2000, an expansion joint should be applied between the two materials. (See Figure 18)

Figure 18



The liner should be installed to extend below the base plate a minimum of 1½". Adhere the pressure sensitive adhesive expansion strip (⅛" x 1½" x Length) to the bottom of the liner. Use the following chart to determine proper length.

Liner Diameter	Liner Circumference
8"	25"
9"	29"
10"	32"
11"	35"
12"	38"
13"	41"

STAINLESS STEEL SMOKE CHAMBER INSTRUCTIONS

The stainless steel smoke chamber must be partially installed **prior to** the installation of the Ahren-Fire unit.

Step 1

Remove the old damper assembly and smoke shelf to get the proper space you need to accommodate the stainless steel smoke chamber.

Step 2

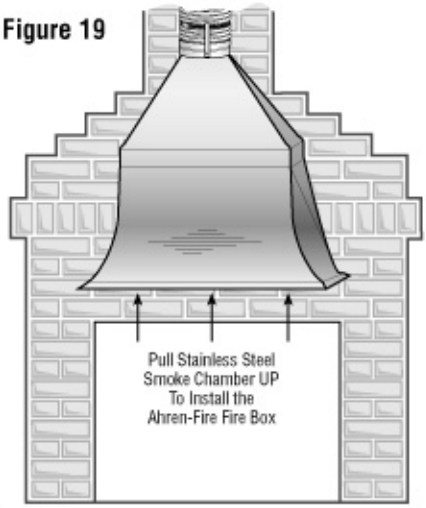
Wrap the stainless steel smoke chamber with the required 1" foil-faced blanket. (Foil side out) Adhere with spray adhesive and secure with stainless steel wire. Joints should be covered with foil tape.

Spray Blanket **Wrap Unit** **Tape Ends** **Secure With Wire**

Step 3

Drop the chimney liner down the flue low enough to attach to the top of the stainless steel smoke chamber. A band clamp attachment is provided on the top of the smoke chamber. If a wrap insulation is going to be used on the chimney liner, make sure the insulation at the bottom of the liner meets with the insulation at the top of the stainless steel smoke chamber and cover the joint with foil tape.

Figure 19



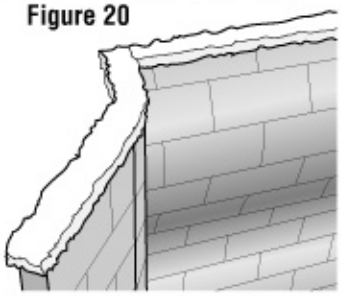
Step 4

Now that the liner is attached to the smoke chamber, pull the whole liner and smoke chamber assembly up as high as possible to permit the installation of the Ahren-Fire firebox unit. (See Figure 19) Temporarily secure the assembly in the raised position. Note: Smoke Chamber shown here without insulation.

Step 5

Go to **Step 3** of the ***Ahren-Fire Installation*** Instructions. Complete **Step 3** through **Step 12**.

Figure 20



Step 6

The Ahren-Fire firebox should now be installed and secure. Place the sealing gasket on the top edge of the Ahren-Fire unit all the way around. (See Figure 20)

Step 7

Lower the stainless steel smoke chamber down on top of the gasketing material. Mark and drill the holes for the securing straps. (See Figures 20 & 21) Fasten the securing straps with the concrete screws provided. Once secure, tighten down the smoke chamber with the hose clamp adjuster.

Figure 21

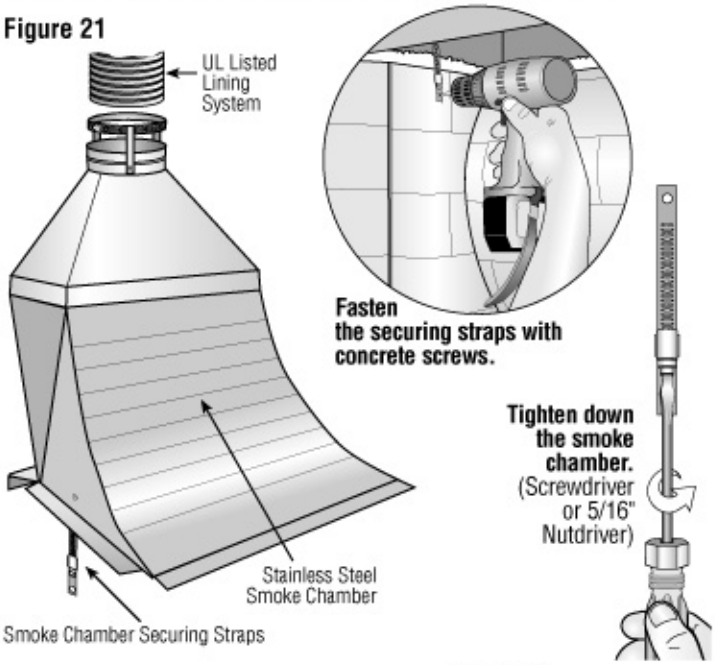
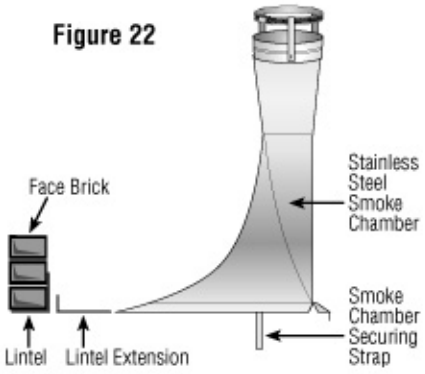


Figure 22



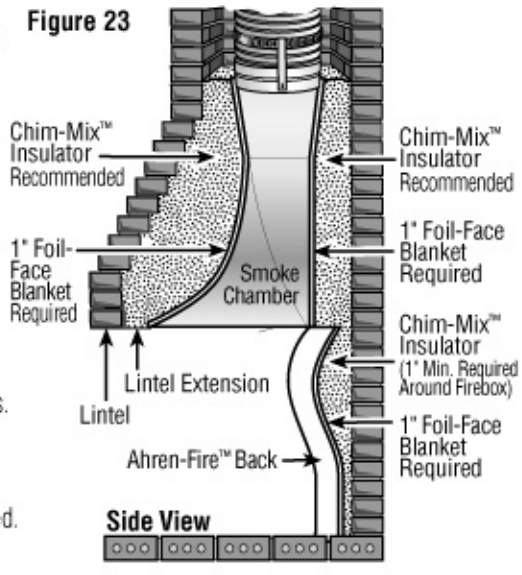
Step 8

After the smoke chamber has been secured, mark, measure and cut the lintel extension to width and length. Drill and rivet the back edge of the lintel extension to the stainless steel smoke chamber. The front edge should be flat against the back side of the existing lintel. (See Figure 22)

Step 9

Now that the stainless steel smoke chamber is secured, it is recommended the void between the smoke chamber and existing masonry walls be filled with Chim-Mix Insulator. Fill to the top of the smoke chamber. (See Fig. 23) If you intend to use Chim-Mix around your chimney liner, proceed filling to the top of the chimney per liner instructions.

Figure 23

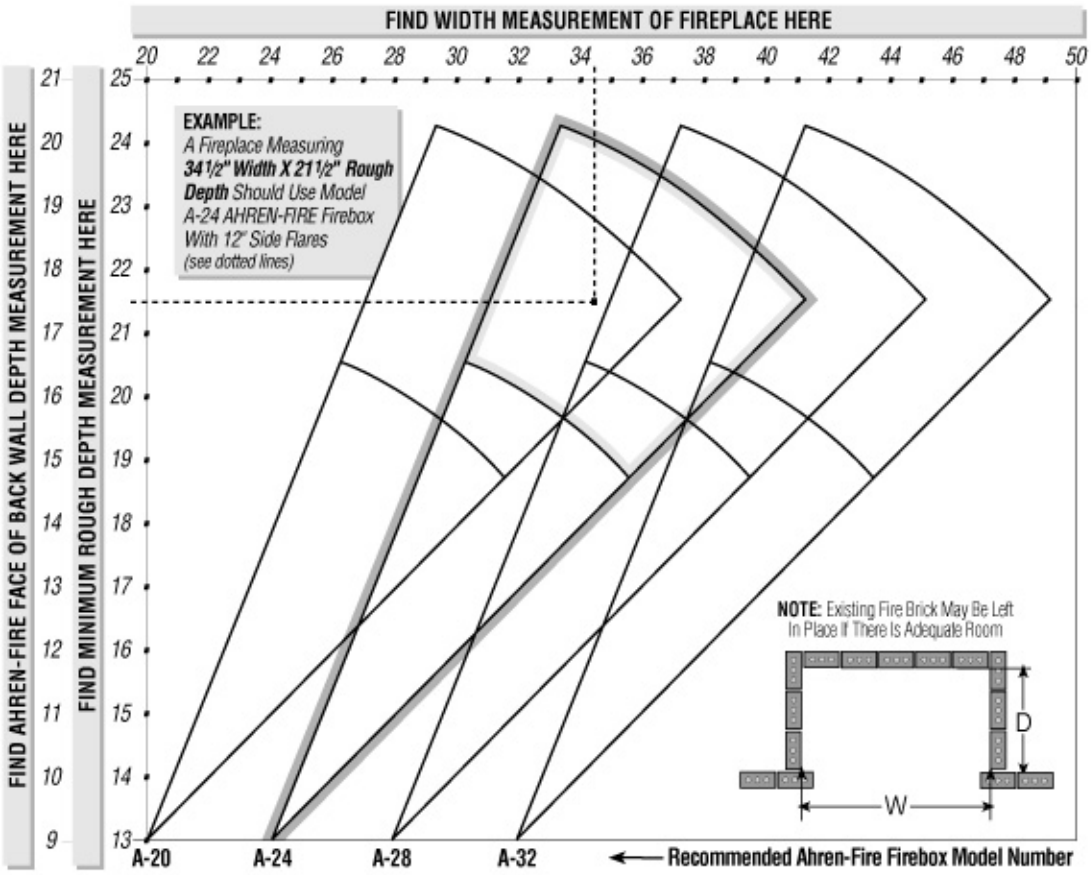


Step 10

The custom hearth can now be installed. (See pg. 3)

AHREN-FIRE SIZING CHARTS

AHREN-FIRE MODEL & SIDE FLARE SIZING CHART

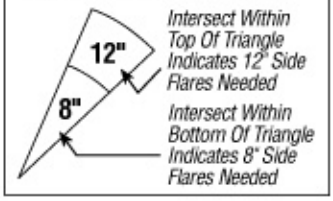


How To Use This Chart

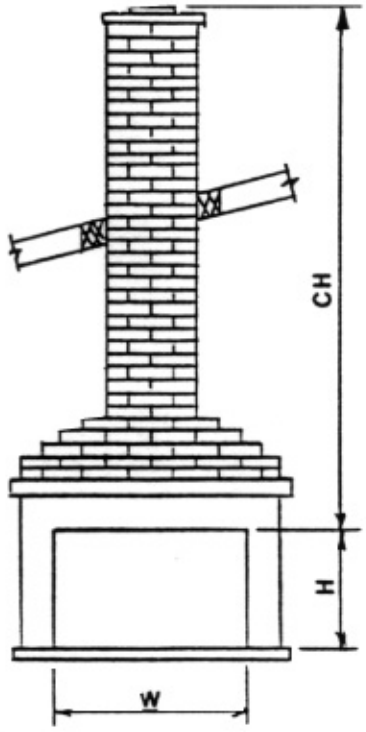
To determine which Ahren-Fire firebox model and side flares to use:

- Measure the fireplace **depth** (**D**) dimension and locate it on the **left** side of the chart.
- Measure the fireplace opening **width** (**W**) dimension and locate it on the **top** of the chart.
- Intersect those two lines on the chart.
- Choose the triangle in which your intersection falls closest to the **center**, the bottom point of that " triangle points to the Ahren-Fire firebox **Model** number that is recommended (on the bottom of chart).
- If your intersection falls in the **upper portion** of that triangle (above the line) you will need **12" side flares**, and **lower portion** (below the line) you will need **8" side flares**.

Recommended Side Flare Size

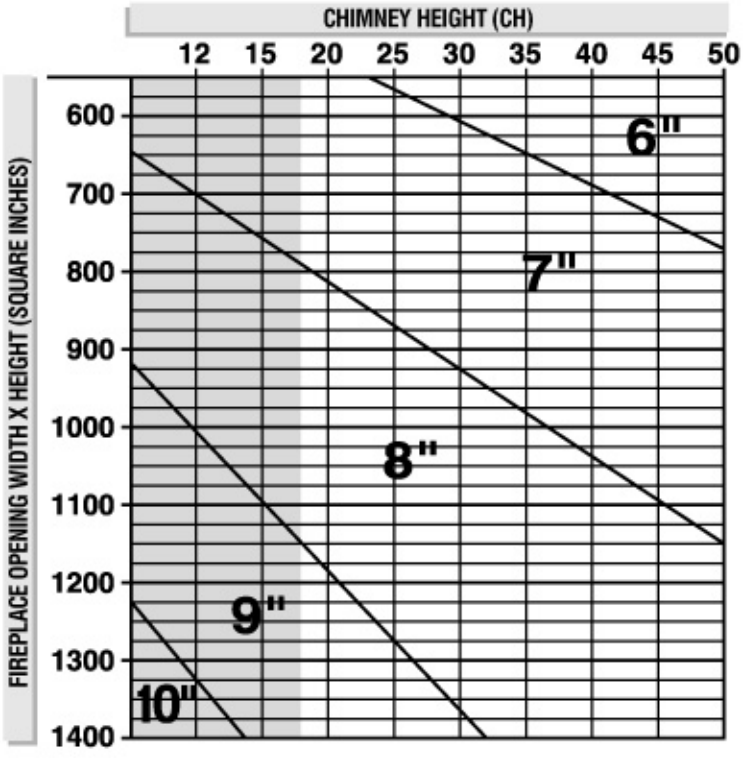


AHREN-FIRE FLUE & SMOKE DOME SIZING CHART



NOTE: Add 1" to diameter of flue for each chimney offset

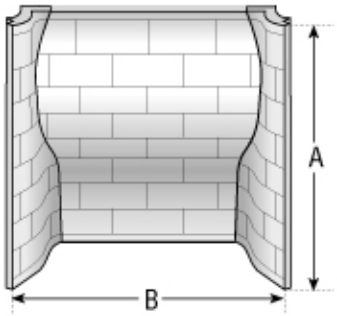
NOTE: Increase flue size 1" in diameter above chart recommendation for chimney heights less than 18' (see shaded area).



AHREN-FIRE HEIGHT & WIDTH CHART

Model	A	B
A-20	26"	20"
A-20 Tall	31"	20"
A-24	29"	24"
A-24 Tall	34"	24"

Model	A	B
A-28	29"	28"
A-28 Tall	34"	28"
A-32	29"	32"
A-32 Tall	34"	32"



PARTS, SUPPLIES & TOOLS CHECKLIST

AHREN-FIRE PARTS AND SUPPLIES:

- ☐ Back Wall
- ☐ Corners (Right & Left)
- ☐ Side Flares (Right & Left)
- ☐ Hearth (Front & Back)
- ☐ Base Template
- ☐ Position Securing Clips
- ☐ Refractory Mortar
- ☐ 1/4" Paper Insulation (Base)
- ☐ 1/2" X 2 1/2" Hearth Joint Insulation Strip
- ☐ 1/2" Hearth Joint Rope Gasket
- ☐ Pre-Cut SS Hearth Plate With 1/4" Paper Insulation
- ☐ Chim-Mix Insulator
- ☐ Log Retainer
- ☐ Hearth Vent
- ☐ 1" Foil-Faced Blanket Insulation
- ☐ Foil Tape
- ☐ Spray Adhesive
- ☐ Concrete Screws

For Chamber-Tech 2000 Usage:

- ☐ Chamber-Tech 2000
- ☐ Lintel Kit For Chamber-Tech 2000
- ☐ Mesh Base Plate

For Stainless Steel Smoke Dome Usage:

- ☐ Stainless Steel Smoke Dome
- ☐ Lintel Extension
- ☐ Smoke Dome Gasket
- ☐ Stainless Steel Rivets
- ☐ Stainless Steel Wire

TOOLS YOU WILL NEED:

- ☐ Back Wall Support (Optional)
- ☐ Tape Measure
- ☐ Screwdriver
- ☐ Nutdriver (5/16")
- ☐ Masonry Saw & Masonry Saw Blade
- ☐ Drill & Drill Bits (Metal/Masonry)
- ☐ Hammers (Misc.)
- ☐ Utility Knife
- ☐ Trowels (Misc.)
- ☐ Tin Snips
- ☐ Sheet Metal Vise Grips
- ☐ Chamber-Tech 2000 Mixing Blade
- ☐ Dust Mask
- ☐ Eye Protection
- ☐ Gloves

HOMEOWNER USE & MAINTENANCE INSTRUCTIONS

1. INSTALLATION:

The Ahren-Fire Fireplace System MUST BE INSTALLED BY A CHIMNEY PROFESSIONAL in accordance with the INSTALLATION & INSTRUCTION MANUAL.

2. PRODUCT APPLICATION:

The Ahren-Fire Fireplace System is designed to repair or restore existing masonry fireplaces and also for new construction. For this product to be a UL Listed product at zero clearance to combustibles, the existing fireplace walls, smoke chamber walls and floor must be a minimum of 4" nominal thickness solid masonry units as described in NFPA 211, 3.3.78.

3. INITIAL FIRING OF THE FIREPLACE:

The Ahren-Fire Fireplace System can be used 24 hours after installation is complete. Burn small fires for the first week to cure the mortar used and dry off any surface moisture.

4. CREOSOTE, SOOT FORMATION AND NEED FOR REMOVAL:

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors may condense on the inside of the smoke chamber and chimney liner during slow-burn firing periods. As a result, creosote residue accumulates on these interior surfaces. When ignited, this creosote makes an extremely hot fire. The smoke chamber and chimney should be inspected at least once every two months during the heating season to determine if a creosote or soot build up has occurred. If creosote or soot has accumulated, it should be removed to reduce the risk of a chimney fire.

5. RECOMMENDED CLEANING:

Access to the smoke chamber for proper cleaning can be gained through the fire place opening. The Ahren-Fire smoke chambers should be cleaned with plastic brushes. It is important that the fireplace system be inspected on a regular basis (every two months is recommended if your fuel is wood). For proper cleaning and inspection, we recommend the services of a professional chimney sweep.

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