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Please read this entire manual, including the warranty section, before starting installation.

Four photos of the heater taken at various points during the install process are required. See the warranty section for more information.

TO ENSURE SAFE, LEGAL, AND EFFICIENT OPERATION OF THIS HEATER, SECTION 1 MUST BE REVIEWED PRIOR TO STARTING THE INSTALLATION.

SECTION 1 SHOULD BE REVIEWED REGULARLY DURING THE INSTALLATION PROCESS TO AVOID MISTAKES AND COSTLY REPAIRS.

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SECTION 1: AVOIDING INSTALLATION ERRORS

The Temp-Cast modular system was designed to be as "fool-proof" as possible, and is easily and properly installed when the instructions are followed. Unfortunately, every year, one or two installers do not read or follow the instructions, resulting in a costly repair. **This section reinforces the most important installation points** *which cannot be altered or ignored* **for a safe and effective heater.** Please review this list *before* starting the installation *and* as the work progresses, especially if you are hiring someone to do the installation. If both you and your installer follow this checklist, the likelihood of errors is greatly reduced.

- 1. Adhere to <u>all required clearances</u>, on <u>all sides</u> of the heater <u>and above</u> the heater. Check any local requirements in terms of clearances.
- 2. <u>All air spaces</u> between the masonry facing and the corrugated spacer <u>must</u> be back-filled with mortar. Air spaces between the facing and the corrugated spacer will restrict the heating output of your unit to as little as 20% of its design capability. This is a very costly error to fix, requiring the entire facing to be removed and correctly re-installed.
- 3. Do not use concrete blocks as a facade. Concrete blocks are difficult to properly back-fill behind without air spaces, especially if they are cut for fitting. We only suggest a brick, natural stone, or natural rock facing with a thickness of 4" (10 cm) but not more than 5" (12.5 cm).
- 4. A masonry facade <u>must</u> be installed on <u>all</u> four sides and top of heater, even if some areas will not be visible. Failure to have a continuous masonry facade of 4" (10 cm) on all four sides and top of heater will create a fire hazard.
- 5. Ensure the corrugated spacer is attached to <u>all four sides</u> of the core before starting the facing.
- 6. The space between the back of the door frame and heater core must be sealed with ceramic wool. This will prevent any combustion gases from leaking out around the door frame.
- 7. During trial fitting, <u>ensure</u> that the air slot in the bottom of the door frame <u>is aligned</u> with the air slot in the concrete pad. This is the reason the frame cannot be mounted on the outside of the masonry work when the facade is thicker than 4" (10 cm). The air slot will not sign up properly.
- 8. The air slot between the bottom of the door frame and the concrete pad <u>must not be obstructed</u>. The facing under the door frame must be "cut" to create a 2" (5 cm) x 15" (38 cm) air slot and this space must be kept free of rough masonry, mortar, ceramic wool, or other debris.
- 9. Provide additional combustion air and a non-combustible hearth for both doors of a "See-Through" fireplace. 8" (20 cm) diameter of air is necessary, divided between the two doors. This creates an air wash for each glass door. See Fig. 16.
- 10. Provide an expansion joint on the top, between the masonry cap and masonry facade. This prevents cracks caused by vertical expansion of the core.

SECTION 2: INTRODUCTION

GENERAL INFORMATION

The Temp-Cast 2000 is a modular "site-built" fireplace kit. The assembled parts form the "core" of the fireplace, including internal flue passages. Additional or different parts may be included depending on the configuration, such as refractory pieces for the see-through model.

Read these instructions *completely* before beginning the installation. Failure to follow these instructions may create a fire hazard, hamper the performance of the fireplace, and void the product warranty.

SITE PREPARATION

The following instructions detail the assembly of the Temp-Cast 2000 Fireplace, on a properly prepared and supported concrete pad. Support requirements are described in the *Planning Guide*, and related *Plan Drawings*. If you require assistance with the support details for the fireplace or other preparatory work, please contact your dealer or the factory. If you are unsure regarding *any* aspect of the installation of this product, please contact your dealer or the factory. The factory's contact details are:

Temp-Cast LLC

8820 Grey Cloud Island Dr S Saint Paul Park, MN, 55071, USA staywarm@tempcast.com

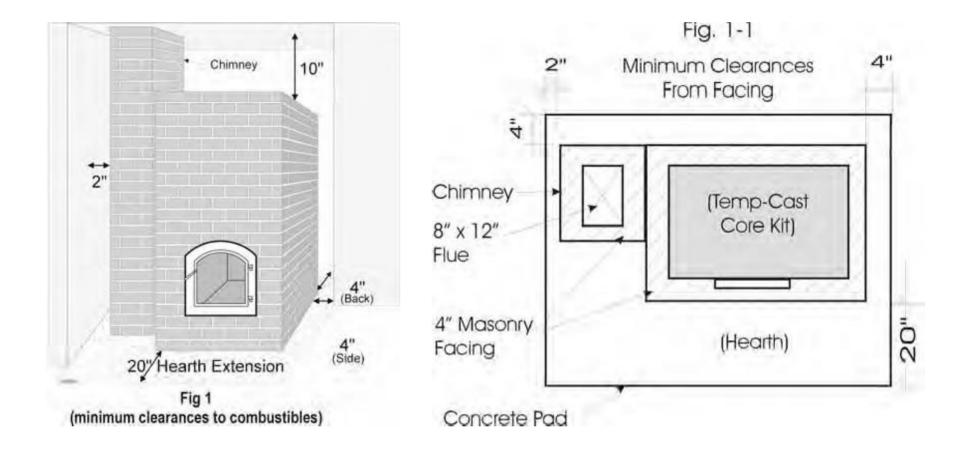
INSTALLATION VIDEOS

You can find installation videos and more information at **tempcast.com**.

CLEARANCES

A minimum clearance of 4" (10 cm) from the back and sides of the completed fireplace (i.e. from the masonry facing) to combustible materials is required. The clearance required from the top of the heater is 10" (25.5 cm). Also check with your local building authority in case they require a greater distance for wood heaters.

48" (122 cm) clearance is required in front of the door and a non-combustible hearth of 20" (51 cm) deep is required, extending 8" (20.5 cm) either side of the door. Also, a clearance of 2" (5 cm) is required between the chimney and any combustible construction.



Failure to maintain minimum clearances to combustibles may create a fire hazard.

THE FACING

Once the core is assembled, it must be faced with additional suitable heat-storing masonry material. (See also *Section 5*.) Suitable facade materials include brick, solid brick, or stone which can also be covered with stucco or tile. Concrete block facings are not recommended¹. The facade must be between 4" (10 cm) or 5" (12.5 cm) of solid masonry².

If using solid bricks, they should not be perfectly flat on the top and bottom. A depression is necessary to ensure the bricks do not move during thermal expansion³.

DELIVERY AND HANDLING

The fireplace kit weighs approximately 3,400 lbs (1,540 kg) and is normally delivered on two wood pallets, covered with plastic. If unloaded by forklift, it should be placed on a level and even surface, so that parts will not fall when strapping is cut. Unpacking should be done *by at least two persons*.

Visible damage to the pallet or contents must be reported immediately to the delivery person and noted on the shipping bill before accepting delivery. Damaged or missing parts must be reported to your dealer (or Temp-Cast) and the shipping company promptly.

The pieces must be handled with reasonable care to avoid damage, although minor chips to corners and edges are acceptable and do not affect installation performance. The parts should be stored indoors, in a dry area. When possible, in cold weather, the parts should be left in a heated area for a few days prior to beginning the installation.

As soon as possible after delivery, the fireplace should be unpacked and dry assembled. Dry assembly will help you become familiar with all of the parts, ensure delivery is complete, and also ensure that no parts are damaged.

¹ Hollow brick must be filled.

² Substantially thinner facings may not comply with building codes, due to higher surface temperatures, requiring greater clearances to combustibles. Thicker facings will make the heater slow to respond and more difficult to regulate. Make sure you have the facing on-site before you start constructing your heater.

³ Insulating products such as Timbercrete or Hebel are not suitable.

TOOLS

The following tools are required for assembly:

- 48" (1.2 m) and 12" (0.3 m) levels
- Powered cutting tool⁴
- 1/2" (1.25 cm) hammer drill and masonry bits
- Heavy rubber mallet
- 2" (5 cm) margin or pointed trowel
- 2" packing tape (e.g. "Scotch" tape)
- Black magic marker
- Pencil
- Utility knife
- Bucket, water, and sponge
- Measuring tape
- 20 ft (10 m) tie-down or web-clamp, for temporary support of side channels (Step 18)

ADDITIONAL MATERIALS

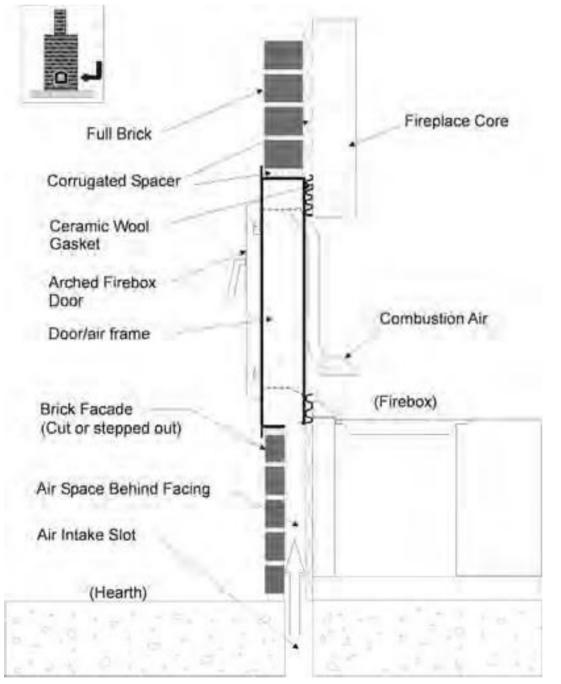
- All masonry facing and chimney materials
- Standard cement to level the base
- For rear connections, and additional Chimney Clean-out (see Section 5)
- Where the transition box (which contains a damper) is not used, a chimney damper
- If the facade is carried to the ceiling, a vent to allow the heat to escape from behind the extended facade
- 6" or 8" Combustion Air Supply Duct (e.g. Galvanized Duct See next section)

⁴ Options include a 4"-7" (10 cm - 17.75 cm) grinder with diamond blade, a circular saw with diamond blade, a masonry "water" saw, or a gas concrete saw (less accurate and convenient on smaller cuts)

COMBUSTION AIR SUPPLY

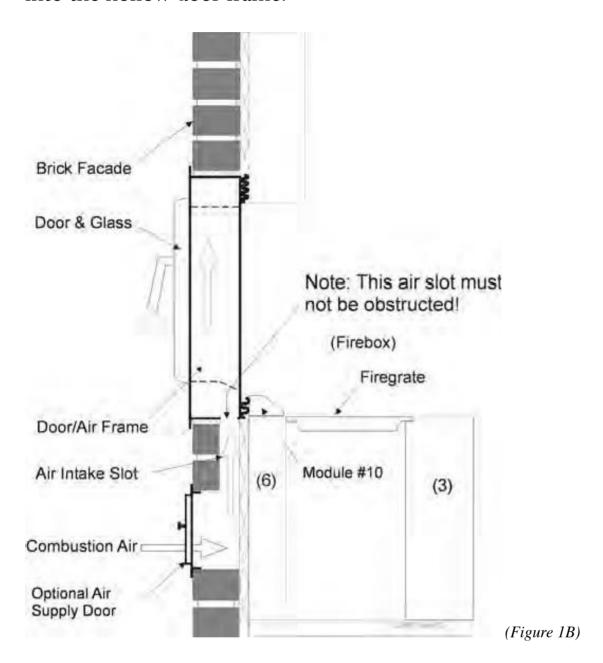
The Temp-Cast heater requires an unrestricted air supply for proper combustion and maximum performance.

Combustion air can be drawn from either outside or inside the house and delivered through a 15" (38 cm) x 2" (5 cm) air intake formed in front of the heater during construction of the concrete floor pad. Air is then directed up behind the facing masonry, and into the hollow door frame through slots on the bottom. The air travels up inside the door frame and feeds the fire from above, creating an "air-wash" across the doors to keep the door glass clean, and below to burn off the coals.



(Figure 1A)

Where an inside air source is permitted by the relevant building authority, the installation can be designed to use inside air from the same room as the heater. In this case, the air supply door must be installed under the loading doors for a standard heater. For a seethrough heater, two separate air intakes, one under each door is necessary⁵. The air-intake door will allow combustion air to be drawn from the room, travel up behind the facade and into the hollow door frame.



In a basement installation, outside air can still be brought into the fireplace, if ceiling height permits. Where local building codes permit, a raised hearth can be constructed, and 6" (15 cm) of fresh air can be fed into this structure. The air is brought to the front of the heater into a 15" (38 cm) x 2" (5 cm) masonry slot or custom-fabricated "boot" and treated as normal outside air installation.

⁵ Technically, a single air intake can be split to go to both doors. However, this is a more complex build and we recommend it only for experienced builders. Contact Temp-Cast before planning on this design.

⁶ A false chimney can be used for this air supply.

SECTION 3: CHIMNEYS AND DAMPERS

GENERAL REQUIREMENTS

Temp-Cast fireplaces require an approved chimney system for safe and satisfactory performance. Code-approved masonry and factory-built chimney systems are both acceptable.

In addition to building code requirements, every chimney system should:

- Extend straight up from the base of the fireplace
- Be at least 18 ft (5.5 m) in height
- Have an access at the base, with a tight-fitting metal door, for chimney cleaning
- Have a cross-sectional area of at least 50 square inches, or 320 square centimeters
- Not be connected to another appliance or to any air ducts

Methods for connecting

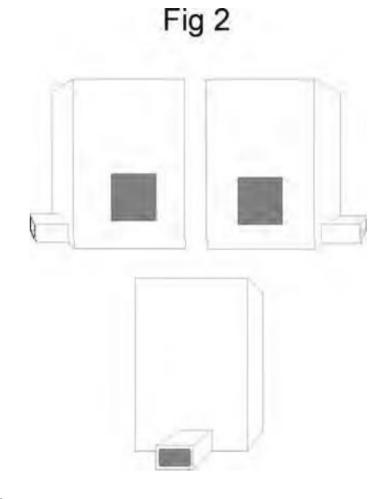
There are two main methods of connecting the fireplace to a flue. A Base-Exit Damper/ Transition (BXT) is a great method for connecting the heater to a factory-built chimney, but you can also connect without it if necessary. Instructions and recommendations for both methods are documented.

FLUE CONNECTIONS

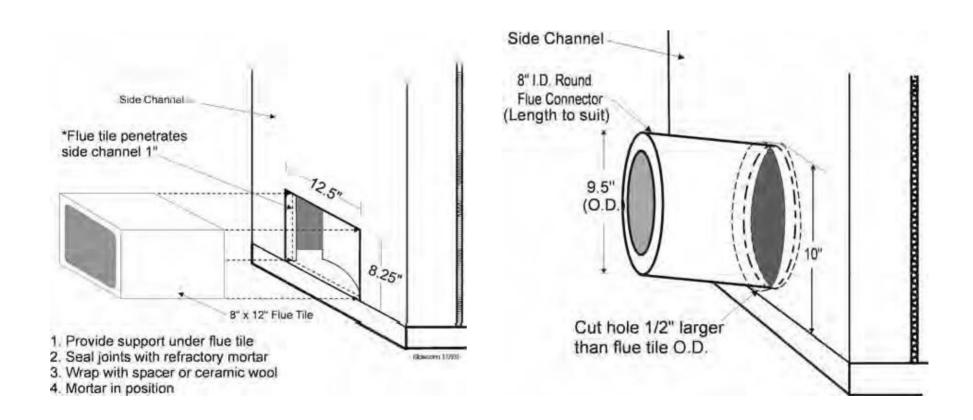
The chimney connection is made at the bottom of the fireplace, in the first course. The connection can be made on either side of the fireplace or through the back wall, into the cross manifold (see Figure #2).

The flue connection can be up to 5 ft (1.5 m) long, creating heated benches and allowing additional flexibility in chimney locations.

For a side connection, the side channel (Part #30 or #31) is cut to receive the connector (See Step 18). Make this cut carefully so that a smooth transition from the fireplace to the chimney results, free of obstructions to the flow of the escaping smoke. Use joint sealing mortar to make it completely smoke tight.



The connector piece penetrates the fireplace side channel about 1" (2.5 cm), but care must be taken to ensure it does not protrude past the inner edge of the side channel.

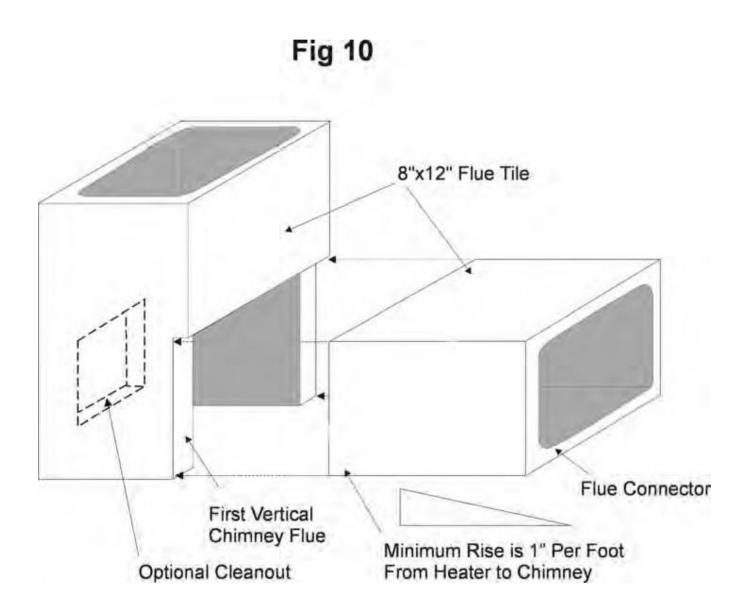


If the connection is made at the back of the fireplace, the cross manifold (Part #3) is cut to receive the flue connector. This joint must be smoke-tight. (See also Section 3, Step 3).

MASONRY CHIMNEYS

Masonry chimneys should have carefully aligned flue liners, with joints that are smoke-tight and joined with refractory mortar. The inside surface of the liner should be smooth, with all excess mortar removed. Refractory, clay, and UL/ULC listed stainless steel are all acceptable liners.

An access for a chimney clean-out can be cut in the first vertical flue tile.



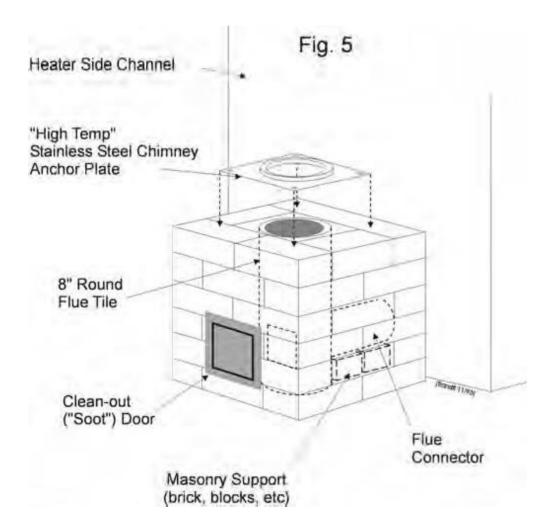
A 4" grinder with a diamond blade is ideal for cutting accurate and neat holes in the refractory concrete parts.

FACTORY-BUILT CHIMNEYS

We do not recommend exterior chimneys (see Section #4 of the Planning Guide), but if a chimney on the outside of the house is unavoidable, then an insulated factory-built (e.g. "HT" or 2100°F / 1150°C) chimney is the better choice.

When a factory-built chimney is started at the floor level, there will not be sufficient space to access the clean-out cap under it. In order to provide a clean-out access, one of the following two methods is suggested.

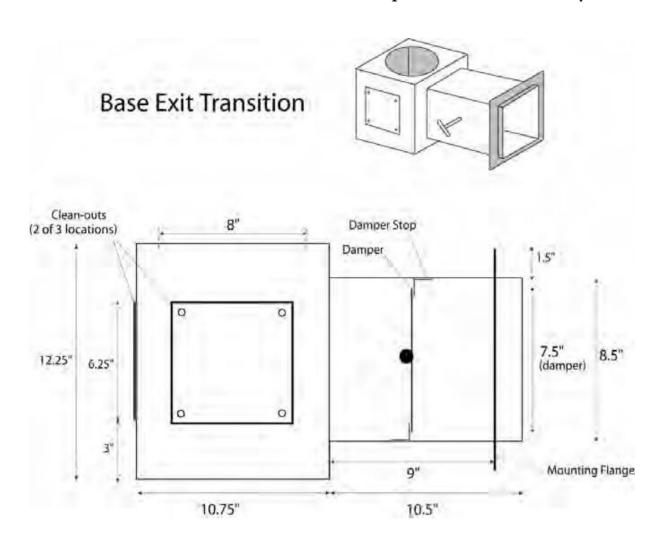
Create a masonry connection to the fireplace, with 8" (20.5 cm) round flue tile. Add vertical sections of 8" round flue tile, with a clean-out access built into the first vertical section. Wrap the horizontal tile and the first vertical flue tile with the "ceramic wool" blanket and ensure they cannot be dislodged. Continue with flue tile and masonry to the point where the transition to the chimney is wanted. Install an anchor plate approved for the chimney on top of the last masonry section, with the chimney continuing from this point. If the chimney will also be enclosed in masonry, the layout of the first masonry courses must take this into account.



⁷ Confirm this connection method with your local building officials.

BASE-EXIT DAMPER/TRANSITION (BXT)

A Temp-Cast base-exit damper/transition (BXT) is another method to make a suitable connection from the heater to a factory-built chimney, and also incorporates a damper and clean-out access that is not otherwise possible with factory-built chimneys.



If you use a damper of any kind, be certain to read cautions regarding Carbon Monoxide (CO). Carbon Monoxide is a colorless, odorless, tasteless, flammable, poisonous gas that can cause brain damage and death. A carbon monoxide alarm is strongly recommended during indoor combustion of any kind, whether inside a Temp-Cast heater or not.

The following details the installation of the Temp-Cast base-exit damper/transition (BXT).

- 1. At Step 18, position the BXT, sitting on the concrete slab. Mark where the damper will be installed into the side channel (Parts #30 or #31), or rear manifold (Part #3), and cut a 9 1/2" x 9 1/2" opening.
- 2. Cut the damper rod to length, if required, to extend beyond the masonry which will enclose the entire assembly. In rare cases, extending the rod may be necessary.

- **3.** Attach the handle to the rod with the nut extender and nuts supplied. Check the operation of the damper to become familiar with its operation. (The handle is usually shipped inside the damper.)
- **4.** Attach a strip of ceramic wool to the outside of the side channel around the damper opening, with high-temperature silicone. Lay a strip of ceramic wool on the bottom edge of the opening and insert the BXT. Insert the damper into the opening and slightly compress the ceramic wool. It may be helpful to temporarily support the damper box until masonry work has been started around it.
- **5.** Cover the damper rod so it will not be inadvertently cemented in position during installation of the masonry facing. Flexible cardboard or 1/2" copper pipe (not supplied) may be used for this.
- **6.** With at least 3 metal screws, attach an approved masonry adapter to the top of the damper assembly and install the first vertical section of the factory-built chimney.
- 7. Enclose the entire damper assembly with at least 4" (10 cm) of solid masonry, leaving an access for the clean-out. If the factory-built chimney will also be enclosed, the first masonry courses must take this into account.

Other methods of connecting factory-built chimneys may be also acceptable. Consult the chimney manufacturer, a *certified* installer, or your local building officials.

SECTION 4: STEP-BY-STEP ASSEMBLY

ASSEMBLY NOTES

- 1. Dry-assemble the heater upon delivery, to check the condition of all parts and to familiarize yourself with the parts. If some parts are not numbered, you may find it helpful to do so using this manual before taking the unit apart again.
- 2. Cutting flue tiles and fireplace parts should be done outdoors due to the excessive dust created. *Wear suitable ear, eye, and lung protection*.
- 3. A grinder with a diamond blade is best for cutting holes in the flue tiles and fireplace parts. Round holes can also be cut as six-sided or eight-sided shapes with a gas, water, or circular saw, or drilled every inch (2.5 cm) and then cut with a reciprocating saw fitted with a masonry blade. Rounding or beveling the inside edges of the hole in the parts creates the least resistance to the flow of smoke and gases, maximizing draft and performance.

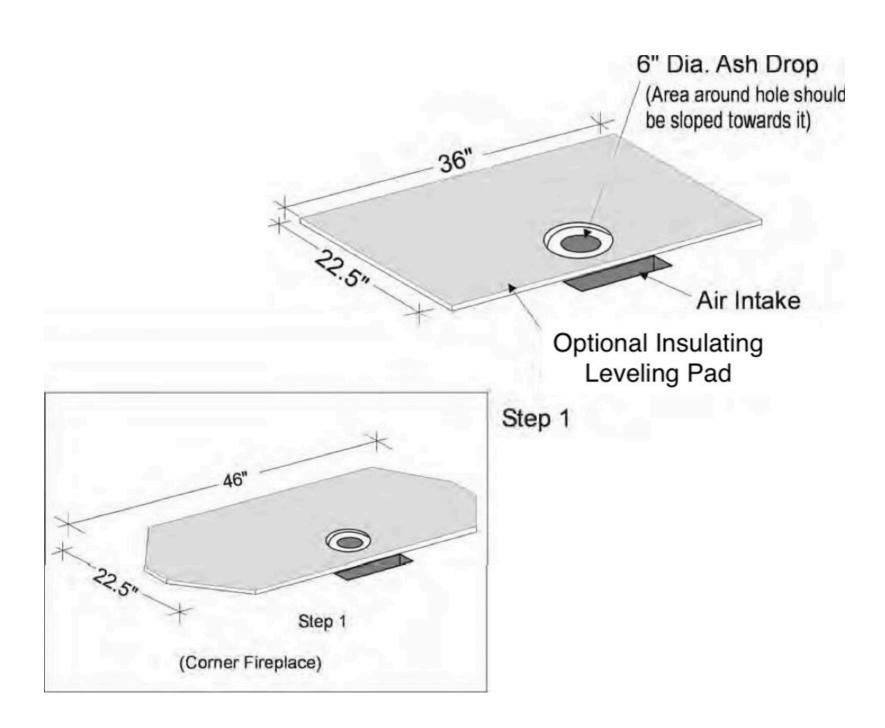
Plan view of side connection Side Channel Flue Tile (Chimney Connector) Bevel these edges (on all sides of flue tile & rough opening) (Cross Manifold)

4. When using the ceramic-fiber gasket material, it should only be *slightly* compressed. Compressing it too tightly will defeat its purpose as an expansion gasket. A small amount of refractory mortar can be used to cement the gasket in position.

- 5. Refractory casting occasionally leaves behind rough spots or small bumps on the parts. If these rough spots should occur in a joint between 2 parts, they may prevent a tight joint and make installation of subsequent parts more difficult. Remove any such bumps with a rasp or scraping tool before assembling.
- 6. Refractory mortar should be used sparingly, applying a small 1/4" (0.5 cm) to 3/8" (1 cm) bead between parts. The finished joint should have a very thin skin of refractory mortar, which is the strongest. In addition, the parts will only fit properly if the thinnest possible joint is created. Apply a small amount on the outside edges of the part, where indicated by the shaded areas. Do not use a full bed of mortar. Seat the parts completely, using a rubber mallet, so that a little mortar squeezes out. After each course, scrape off and save excess mortar for possible later use. Periodically wipe the parts inside and out with a damp sponge to ensure excess mortar has not been left behind.

STEP 1: INSULATING AND LEVELING PAD

If an optional insulating leveling pad is to be installed, ensure it is installed before installing the heavy weight Leveling Pad. Check that it is square to the concrete floor pad. Ensure that the air intake hole is located immediately in front of the board and centered. (It is also advisable at this point to double check that there will be sufficient clearances to combustible construction around the fireplace.)



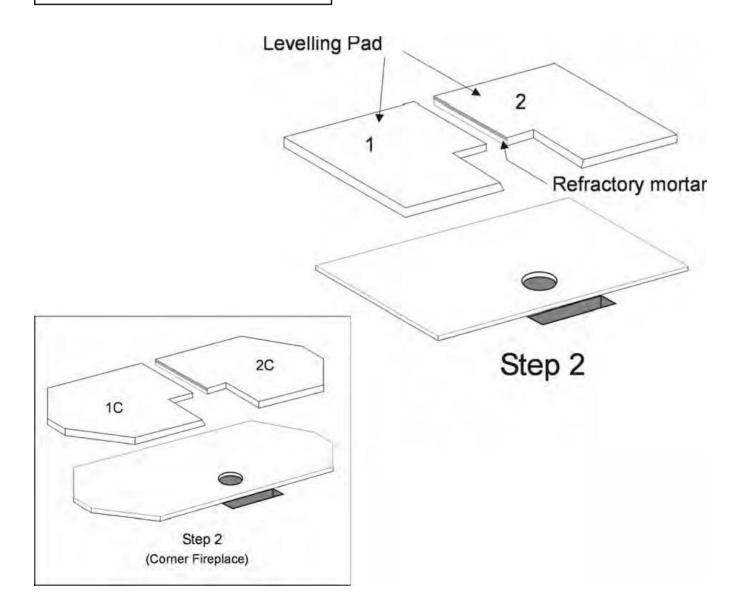
STEP 2: LEVELING PAD

"Dry" assemble (i.e. without mortar) the two halves of the Leveling Pad (Parts #1 & #2) on the optional Insulation Leveling Pad, or on the concrete floor pad, so that the air intake slot is not obstructed and is centered in front of the Leveling Pad. Ensure that the 6" (15.25 cm) diameter ash drop is located within the cut-out section of the base. Check that the floor is reasonably level before starting to install the Leveling pad. Additional mortar may be necessary to level it as required.

Lay the two halves of the Leveling Pad in a 1/2" (1.25 cm) bed of common mortar, using refractory mortar between them. Using the 48" (1.2 m) level, tap the base into the mortar, ensuring that it is level. Before the mortar has set, tap down along the centre-line of the leveling pad, so that the centre of the pad is about 3/16" (0.5 cm) lower than the sides. (See illustration below.) This centre-line gap will ensure that parts in the upper courses lean in slightly, simplifying installation.

Weights

#1 and #2 - 49 lbs (22 kg) #1C and #2C - 59 lbs (27 kg)



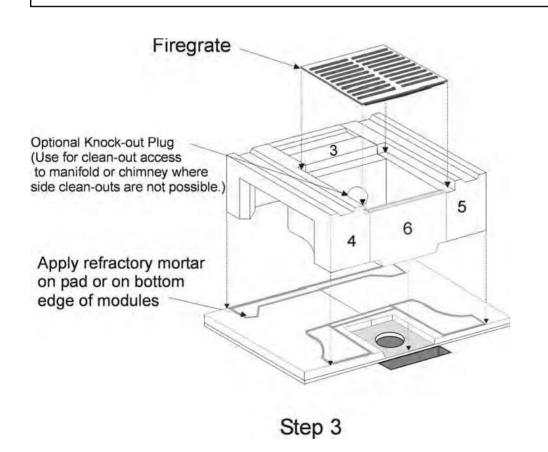
STEP 3: COURSE 1

Next, dry assemble the first course of parts, including the grate, to check for proper fit. This course must be centered on the Leveling Pad, so that equal space is left on both sides for the heat exchange channels. Mark the correct placement with a pencil.

If the chimney is to be connected at the rear of the fireplace, mark the cross manifold (Part #3) to be cut for the flue connection. Take this part outdoors and cut a hole for the flue connector being used. For flue tile or "HT" chimney, cut the hole the same size as the inside dimensions of the flue connector. The flue connector or HT adapter will then be mortared or attached to the outside of the cross manifold (Part #3)8.

Confirm the layout of fireplace and chimney connection, and all dimensions and locations of clean-out doors. Draw a line on the Leveling Pad to mark the outside edges of the base course. Now remove the parts, cut the flue hole in #3 if required, and re-assemble, using a small amount of the refractory mortar provided on the bottom edges and between parts. Seat the parts with the rubber mallet, then wipe off all excess mortar.

Once final assembly has been started, the entire core should be assembled in a continuous operation, so that minor adjustments to previous courses can be made before the refractory mortar has set. Place the fire-grate in position, which should fit loosely to allow for expansion. Cover the fire-grate to keep it clean.



Weights

#3 - 61 lbs (30 kg)

#4 and #5 - 82 lbs (37 kg)

#6 - 22 lbs (10 kg)

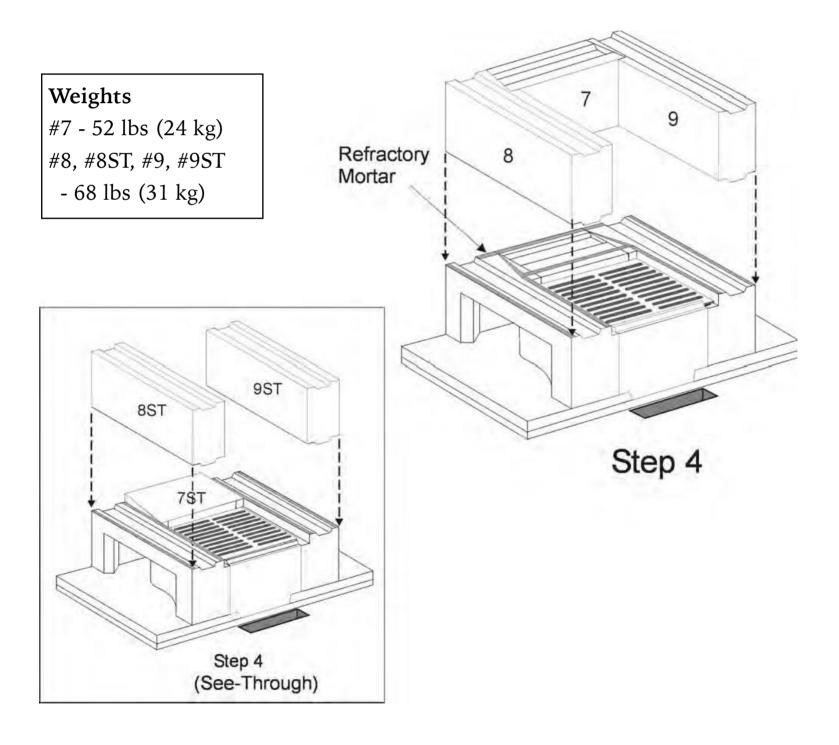
⁸ Holes for a *side* connection are discussed at Step 18.

STEP 4: COURSE 2

Assemble the second course, with Parts #7, #8, and #9. A small bead ($\sim 1/2$ ") of refractory mortar is laid on the outside edges where the two parts meet⁹. Note that the parts are numbered in the order that they should be placed. For a "See-Through" fireplace, these 3 parts are slightly different "ST" versions.

Use the rubber mallet to seat the parts. Remove excess mortar and wipe inside and out with a damp sponge as work progresses.

When installing the parts on this course and subsequent courses around the firebox opening, take care that the parts are flush *at the front of the fireplace*. This will produce the most level surface on which to install the door frame later.



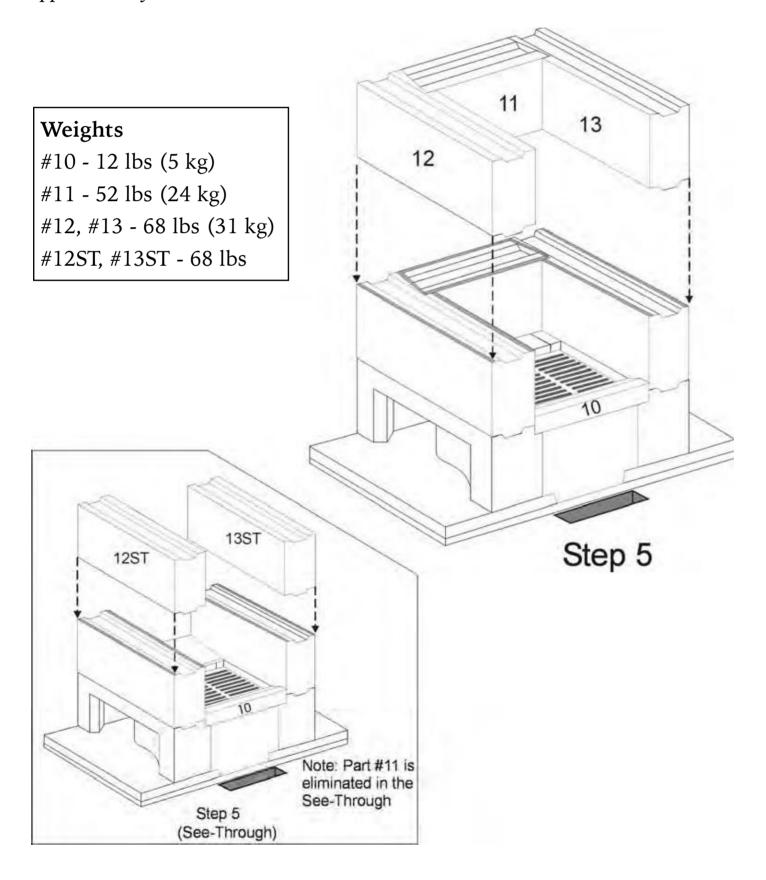
⁹ The bead can be laid on either part, whichever is easier.

STEP 5: COURSE 3

Install Parts #10, #11, #12, and #13, using refractory mortar. Also "butter" the ends of Part #10, so there are no gaps on the ends. (Note that Parts #11, #12, and #13 are identical to the previous course.) In the See-Through Fireplace, there is no Part #11.

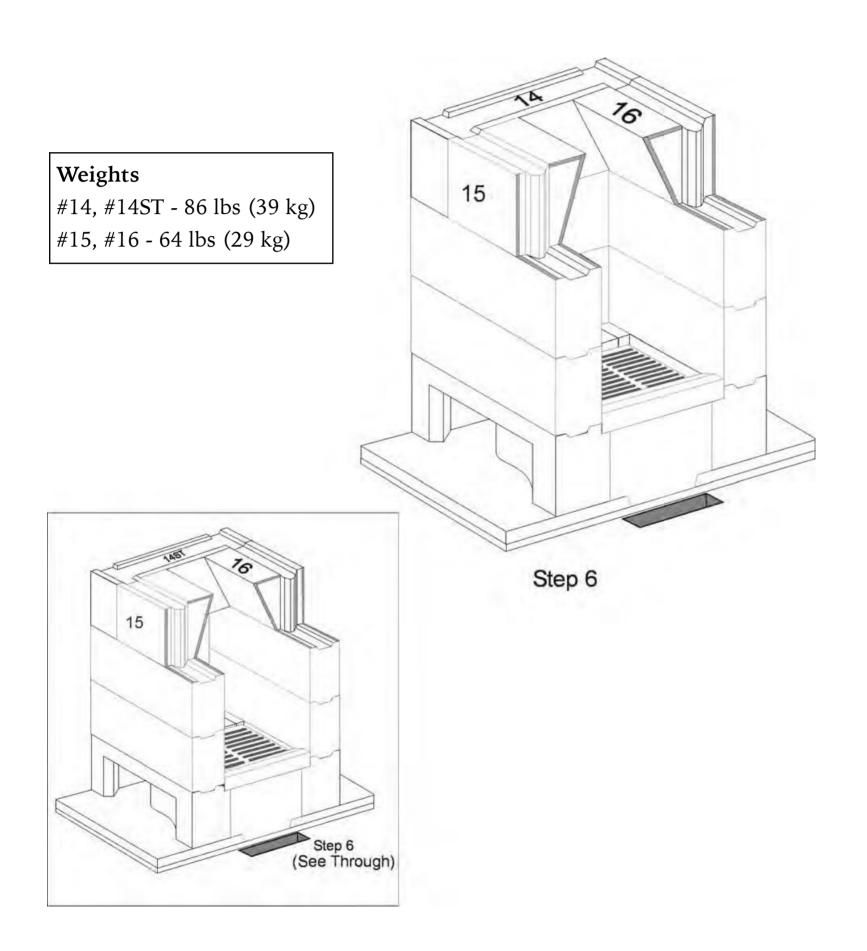
Seat with rubber mallet and ensure that joints are tight.

Remember to keep the *front edges* of the parts aligned and use a 48" level to ensure that the four sides are plumb. Leveling the courses is not critical. It is sufficient if the courses are *approximately* level.



STEP 6: COURSE 4 - LINTEL

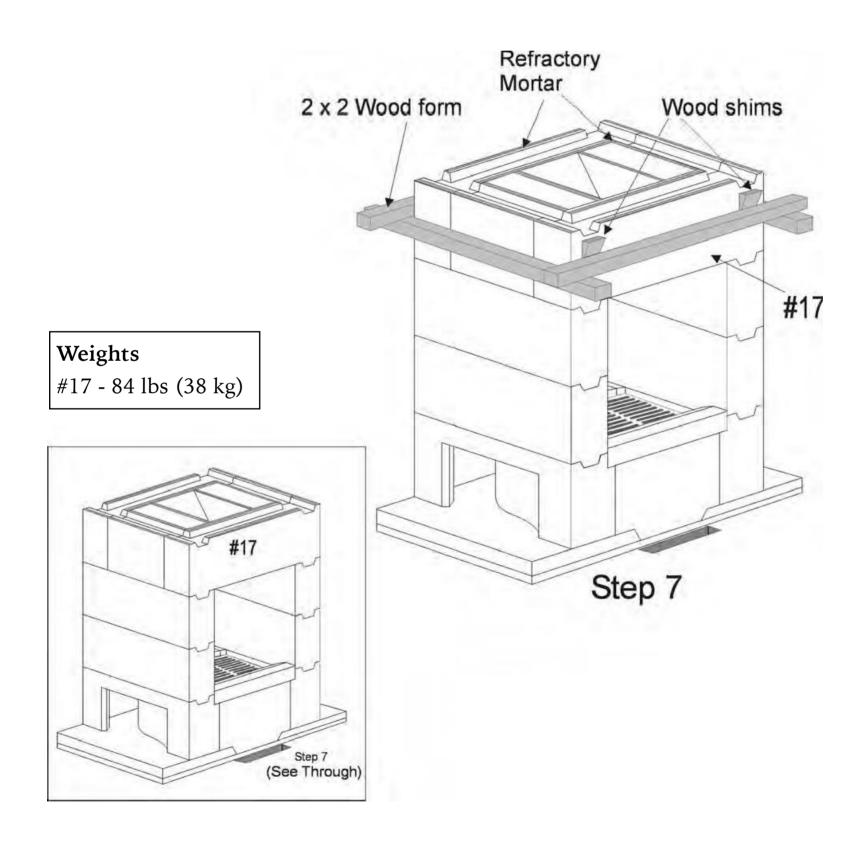
Install the lintel course, Parts #14, #15, and #16, in order, using a small (\sim 3/8") bead of refractory mortar on the outside edges of the adjoining parts.



STEP 7: COURSE 4 - LINTEL 2

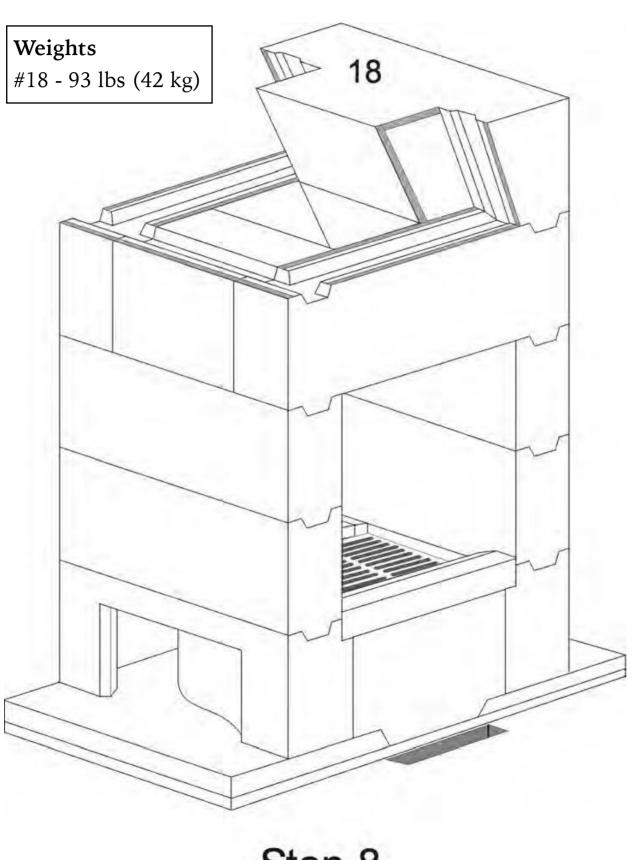
Complete the lintel course with Part #17. Ensure that it aligns with the *front edges* of the previous course. Seat firmly with the rubber mallet to ensure thin, strong joints and stable support for the next course.

If necessary, this course can be clamped with a tie-down until the refractory mortar sets. A wood form can be made in a pinch, but a ratchet strap is much quicker and easier.



STEP 8: COURSE 5 - "SMOKE THROAT"

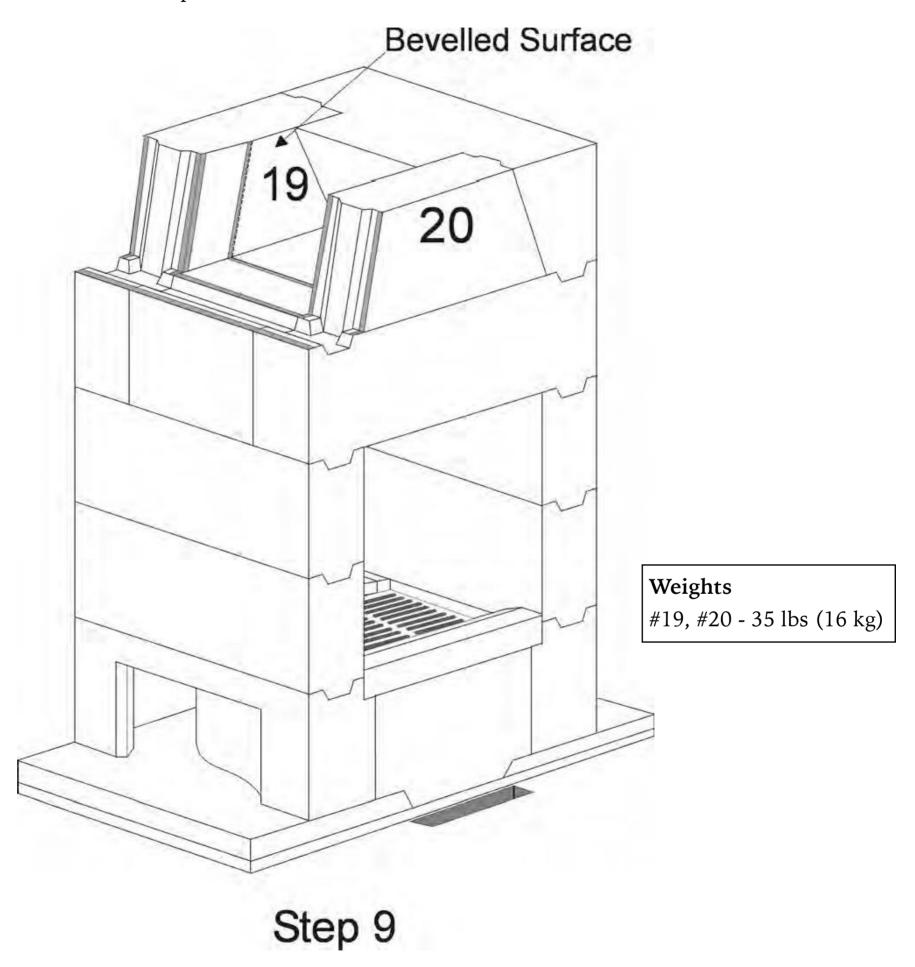
This is the "smoke throat" course and begins with Part #18. This part is heavy and awkwardly shaped, and usually requires two persons.



Step 8

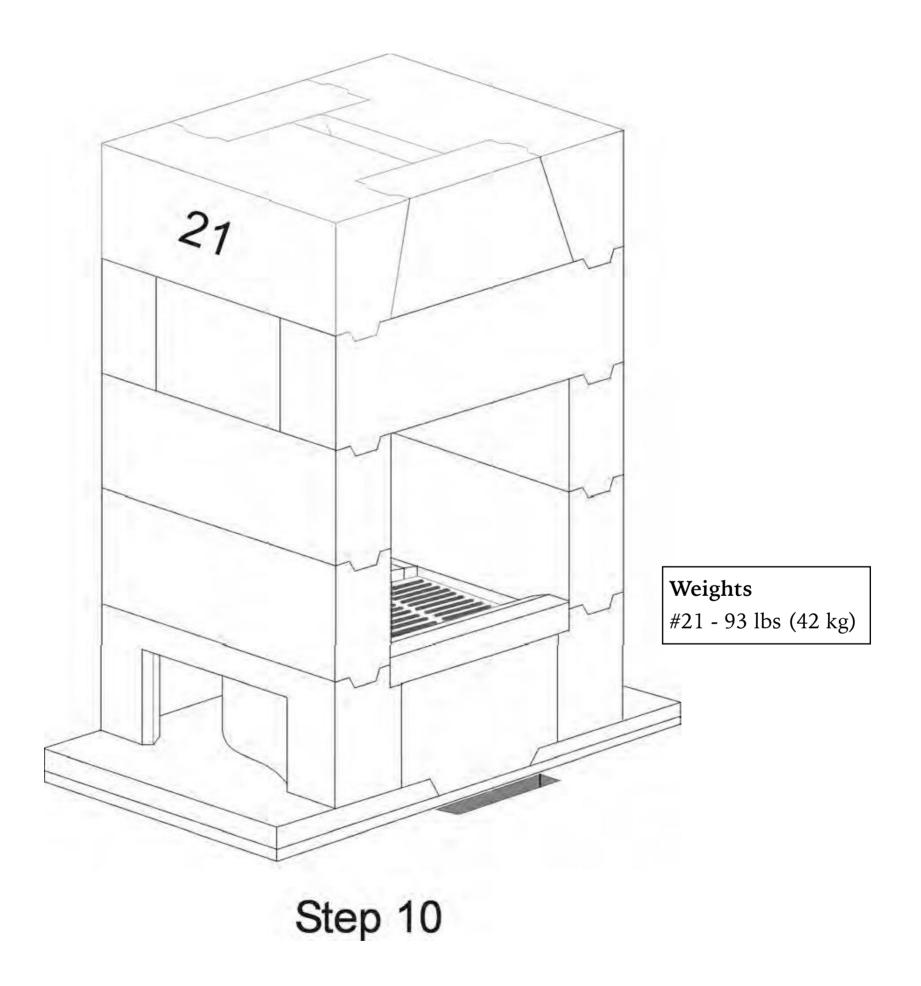
STEP 9: COURSE 5 - "SMOKE THROAT" 2

Continue the "smoke throat" course with Parts #19 and #20. Note that the slightly beveled surfaces of these parts face in towards the firebox.



STEP 10: COURSE 5 - "SMOKE THROAT" 3

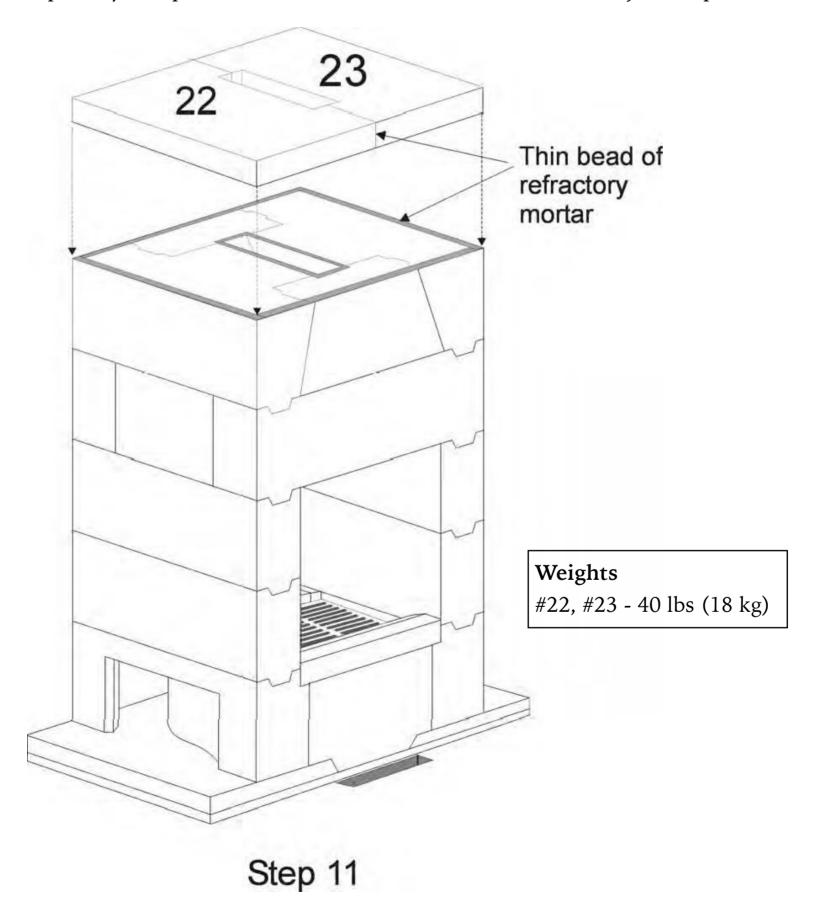
Complete the "smoke throat" course by installing Part #21. Remove all excess mortar and wipe the parts clean inside and out.



STEP 11: COURSE 6

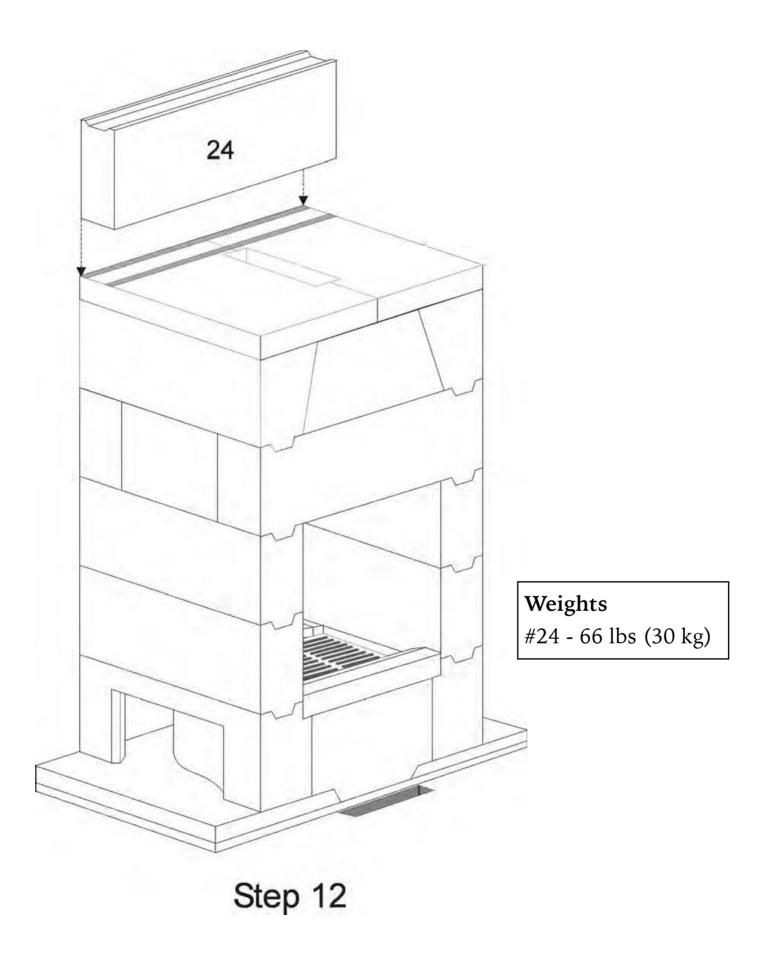
These two parts, Parts #22 and #23, form the floor of the secondary combustion chamber. They are not keyed and are simply mortared in position with a *thin bead* of refractory mortar, around the edges and between the two parts. If this installation includes a Bake Oven, these parts and subsequent courses are detailed on page 26.

Tap firmly into place with the rubber mallet, to create as thin a joint as possible.



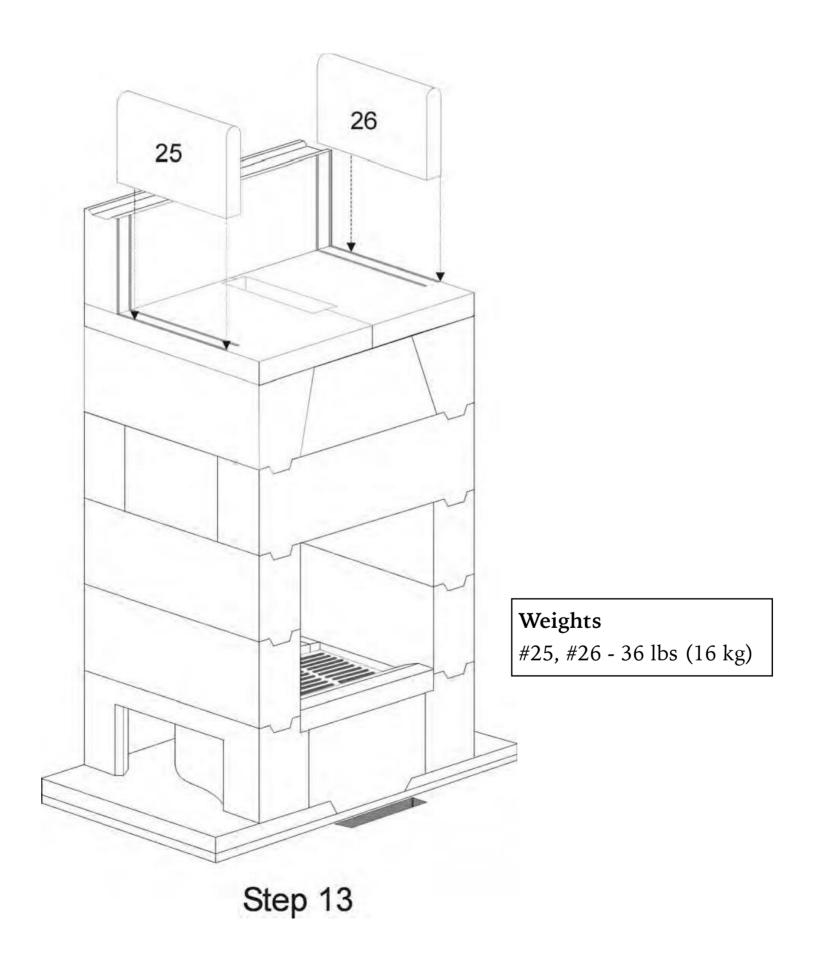
STEP 12: COURSE 7

Mortar and place the lower rear wall of the secondary combustion chamber, Part #24. Note that the bottom edges of the parts on this course are not keyed.



STEP 13: COURSE 7 PART 2

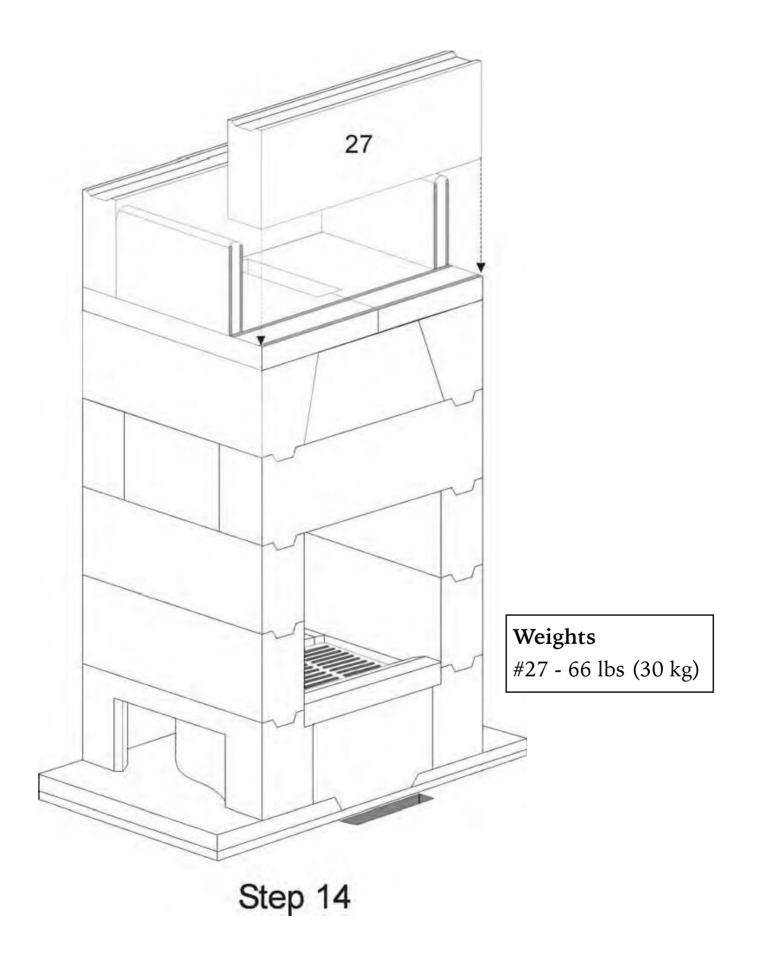
Install the two short side walls of the secondary combustion chamber, Parts #25 and #26. These parts are not keyed and must be checked periodically to ensure they don't get out of position while the refractory is drying.



STEP 14: COURSE 7 PART 3

Install the lower front wall of the secondary combustion chamber, Part #27.

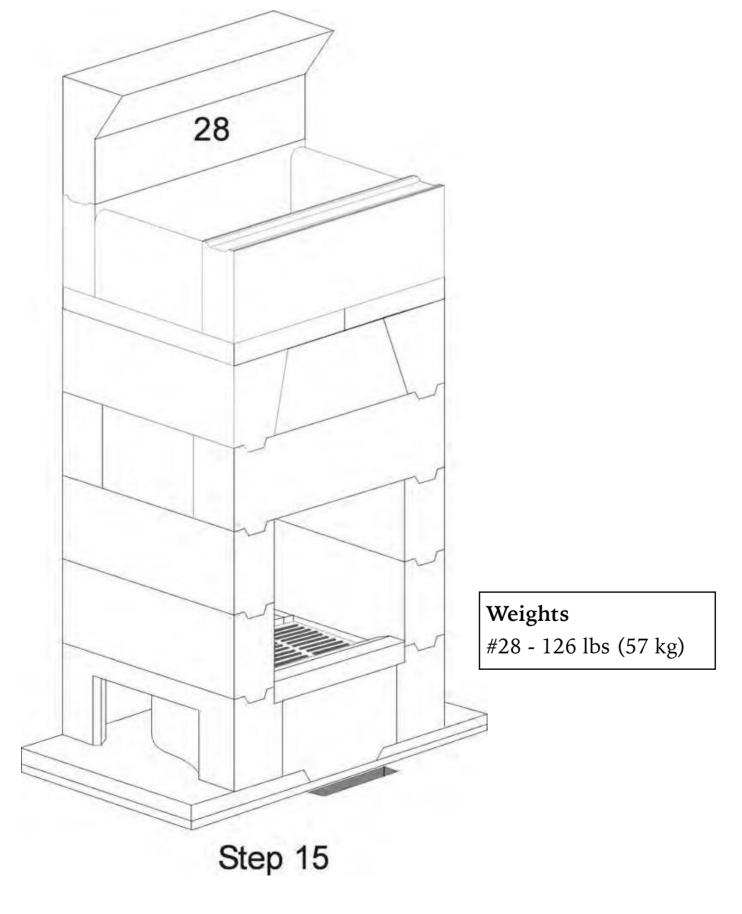
Seat this part with the mallet and double-check the position of the side walls. Adjust with the rubber mallet as required.



STEP 15: COURSE 8

Install Part #28, the upper rear secondary combustion wall.

This is also a heavy part and may require two people, so that the previous course does not get disturbed. Installation is easiest if the bottom of the part is placed first into position and then raised upright. So this part does not tilt inwards, a little extra refractory mortar can be used on the inside edge of the part.

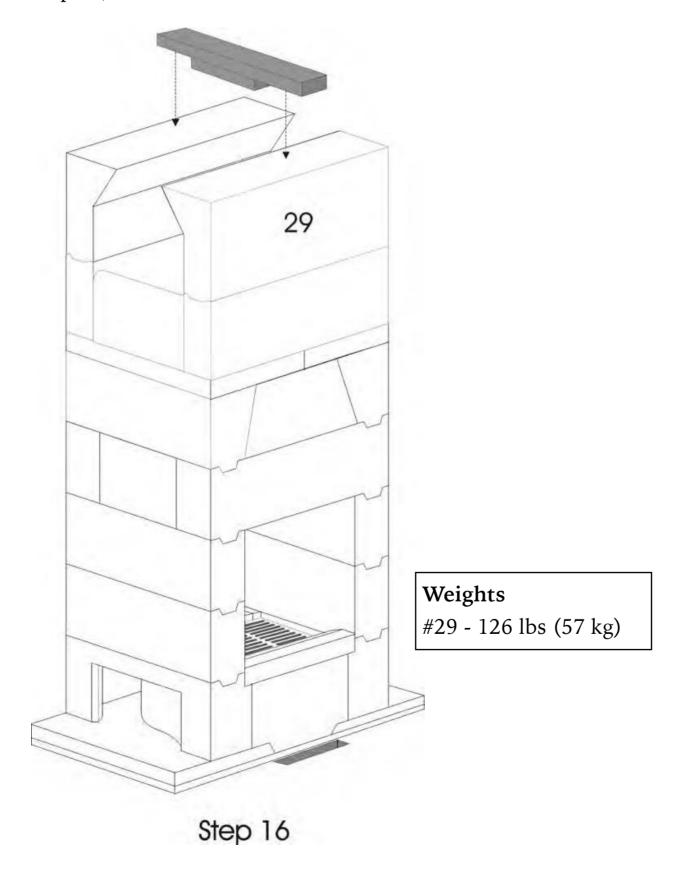


STEP 16: COURSE 8 PART 2

Part #29 is installed to complete the secondary combustion chamber, forming the front wall.

These two upper walls may have a tendency to lean inward while the mortar is setting. Leaning can be prevented by making a simple wood jig. Cut a length of 2" (5 cm) x 4" (10 cm), 11 7/8" (30 cm) long. This piece will be the "spacer."

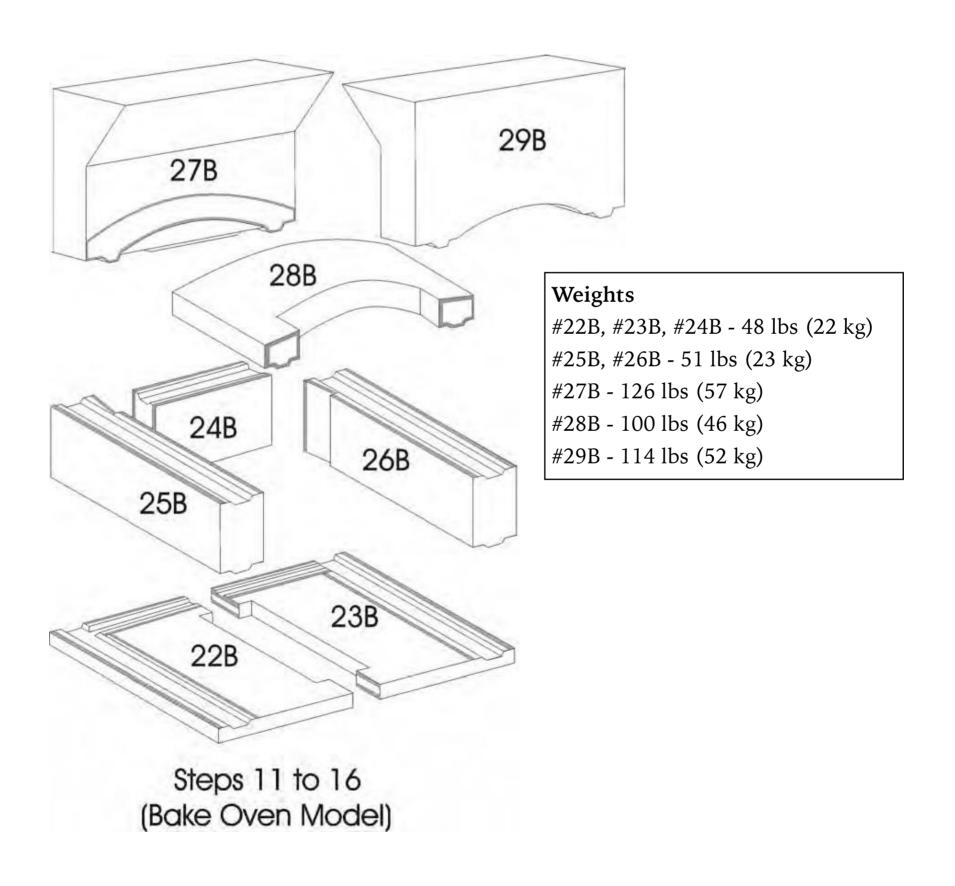
Nail this piece to a longer piece of wood. Place the jig on top of the walls, so that the spacer hangs down and prevents the walls from leaning inward. (This jig can be left in place until Step 20).



STEPS 11 THROUGH 16: BAKE OVEN VERSION

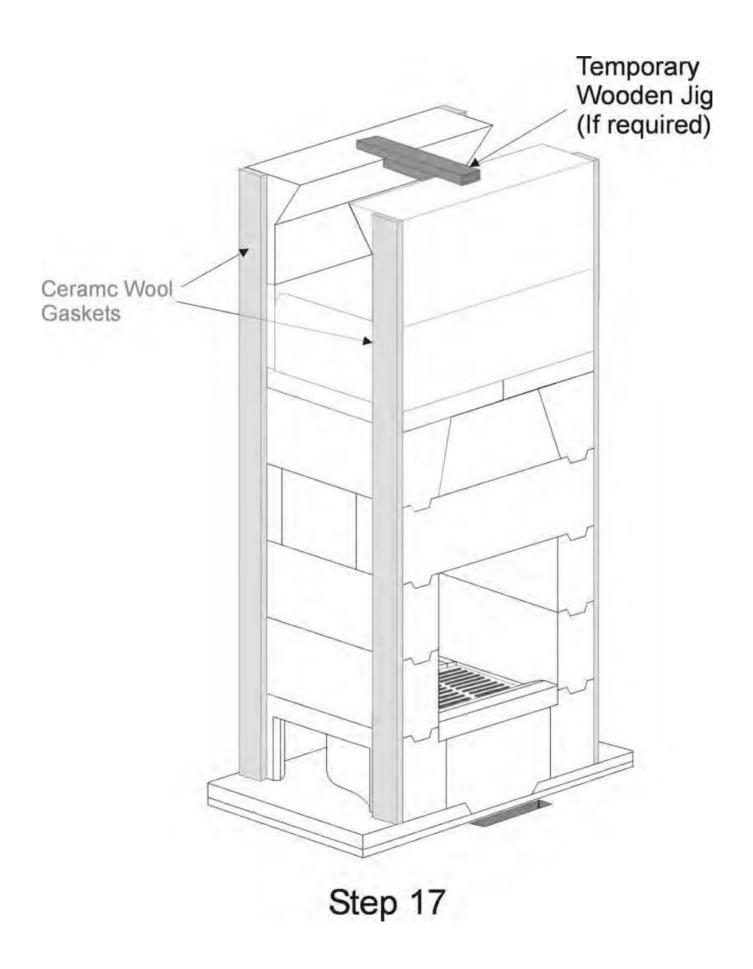
Assemble the Bake Oven parts, in numerical order, as illustrated below. Parts #22B and #23B are laid with a bead of refractory mortar around the outside edges of the parts and seated with the rubber mallet. Use refractory mortar whenever one part joins another, as indicated by shaded areas.

Remember to immediately remove excess mortar and clean the inside with a damp sponge.



STEP 17: CERAMIC WOOL GASKETS

Find the ceramic fiber "Cutting Plan" in Section 5 for the model you are installing. With a tape measure, magic marker, and straight-edge, transfer the "Cutting Plan" dimensions and piece numbers to the ceramic fiber. Cut out the four strips marked 3"x72" (Side Channels) K1 through K4, and glue them to the exterior of the core as shown below, using five or six evenly spaced small dabs of refractory mortar.



STEP 18: HEAT EXCHANGE COURSE 1

If the flue connection is on the *side* of the fireplace, the hole for the flue connector is cut at this point, as shown. See the figure for cutting parts 30 and 31 below. For a Corner Fireplace, see *Steps 18 Through 20: Corner Fireplace Version*.

When you dry assemble the lower heat exchange channels, Parts #30 and #31, mark the location of the flue hole. The hole in the heat exchange channel should be cut as tightly as possible, up to about 1/4" (0.5 cm) larger all around than the flue hole.

In addition cut a 6" (15.25 cm) x 6" (15.25 cm) hole in the opposite heat exchange channel, on the non-chimney side, for a cleanout door. Align this hole with the center of the cross manifold, Part $#3^{10}$.

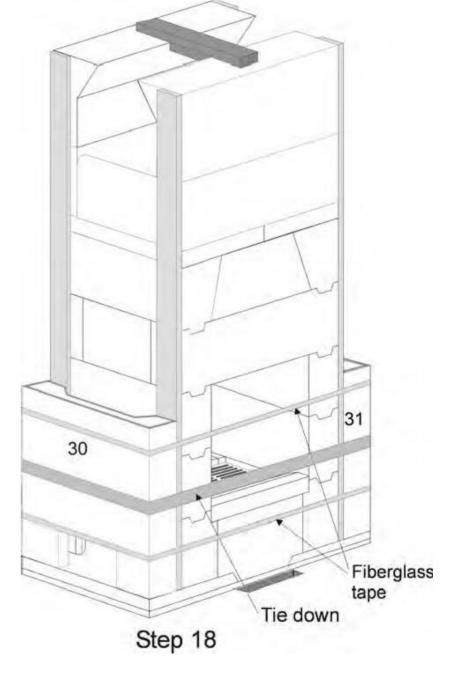
The transition from fireplace to flue connector should be as smooth and rounded as possible, so that the smoke does not encounter any corners or ledges as it enters the flue connector.

Ensure that the ceramic fiber strips have been applied to the core walls. Position the first two heat exchange channels, using refractory mortar on their bottom edges only.

Weights

#30, #31 - 95 lbs (43 kg)

Use a "tie-down" or web clamp around the 2 channels to *slightly* compress the ceramic fiber. Secure the channels with two bands of packing tape, then remove the "tie-down" or clamp.

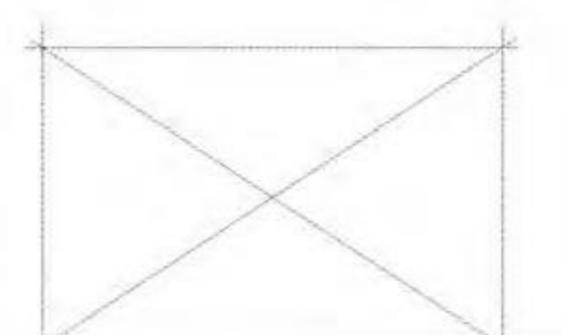


¹⁰ If a *rear* chimney connection has been made, the second cleanout door may be installed on the *opposite* side channel, to simplify inspection and cleaning from both sides. Both cleanout doors should align with the center of the cross manifold. A third cleanout will be necessary for the base of the chimney.

(Part # 30 or 31)

Using A Masonry Saw, Cut Around Perimeters Of The Opening, Slightly Past The Corners, As Ilustrated. (Saw Cuts Can Be Filled With Refractory Cement.) Also Cut An "X" Through The Center To Ensure That The Pieces Are Easily Removed Without Breaking The Remaining Section.

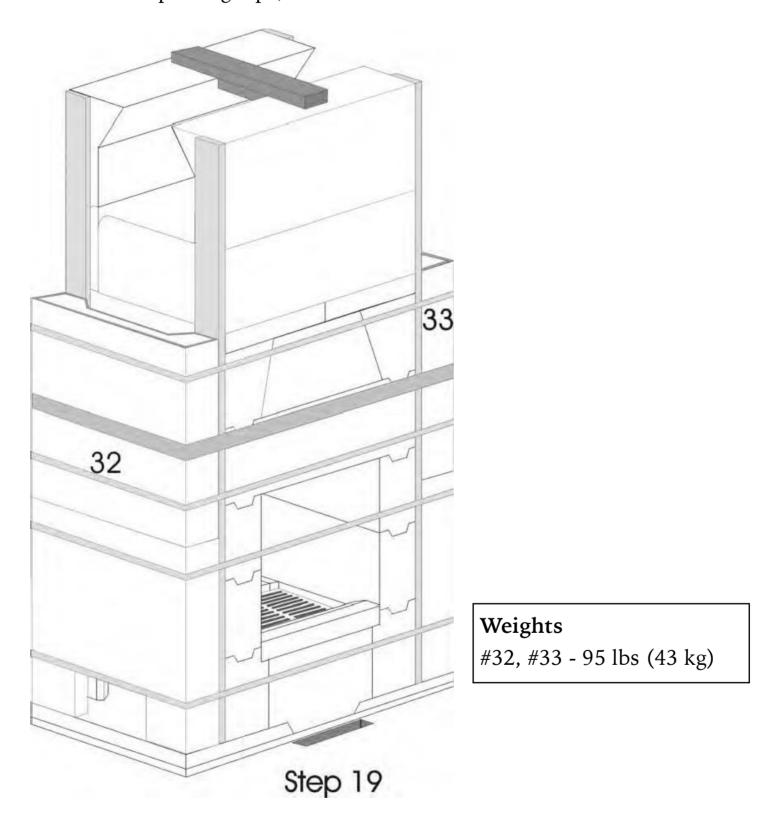
WARNING: IF THE SAW CUTS DO NOT GO ALL THE WAY INTO THE CORNERS AND SLIGHTLY BEYOND, DO NOT ATTEMPT TO SMASH OUT THE CENTER PIECES.



STEP 19: HEAT EXCHANGE COURSE 2

Set the middle heat exchange channels (Parts #32 and #33) in place, using a *thin* joint of refractory mortar between channels¹¹.

Slightly compress the ceramic fiber using the "tie-down" and secure these two channels with two bands of packing tape, as illustrated.

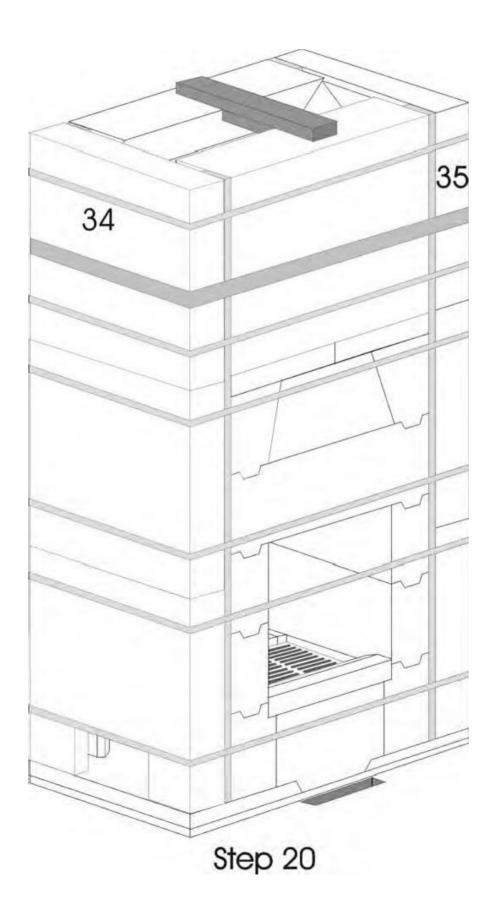


¹¹ If mortar squeezes out on the inside surface of the heat exchange channels, wipe it off. Keeping the mortar back from the inside edges will prevent having to reach in to wipe off excess mortar from this area.

STEP 20: HEAT EXCHANGE COURSE 3

Install the upper heat exchange channels, Parts #34 and #35. Note that these are slightly different than the other four, with a transition formed on the inside upper surfaces, and an enclosed top.

Use a thin refractory mortar joint between these and the previous channels and secure these parts with the tie down and packing tape. (Remove the temporary wood support jig.)

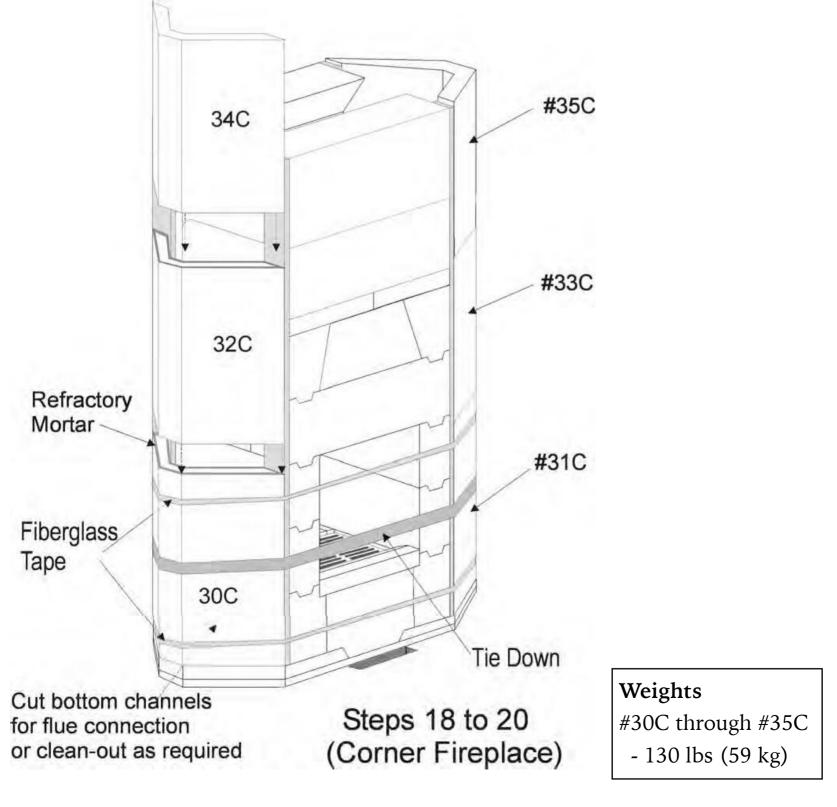


STEPS 18 THROUGH 20: CORNER FIREPLACE VERSION

If the chimney connection is to be made in the side of the fireplace, dry assemble the first corner channel and mark the location of the flue hole on the designated surface. Mark a location for a cleanout door on the opposite channel. Cut these holes outdoors.

Re-assemble the first two corner channels, using a little refractory on their bottom edges. Use a tie-down and two bands of packing tape or fiberglass-reinforced tape around each pair of channels, so they do not fall during the next few steps.

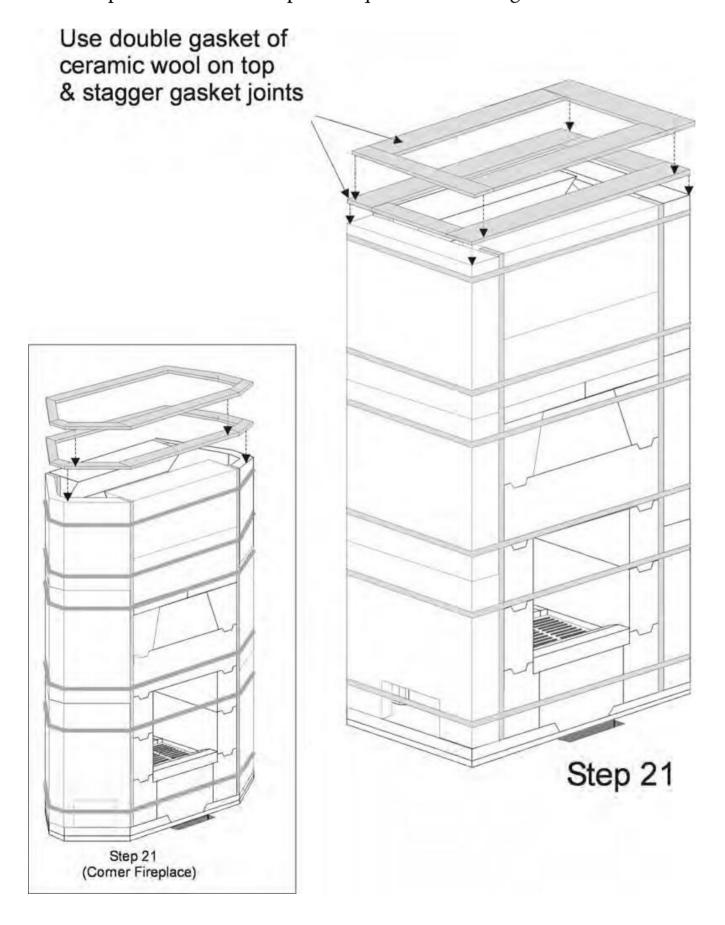
Continue with the other four corner channels, using refractory mortar between them. Secure each pair of channels with two bands of packing tape or fiberglass reinforced tape as they are installed.



STEP 21: TOP CERAMIC WOOL GASKETS

Install a gasket of strips of ceramic wool to the top of the fireplace, as illustrated below. (A few spaced dabs of refractory mortar can be used to keep gaskets in place.)

Install the remaining strips, as illustrated, using a *small* dab of refractory mortar to hold them in place. Trim the strips as required for a snug fit¹².



¹² Corner fireplace gaskets are placed with the same overlapping principle in mind.

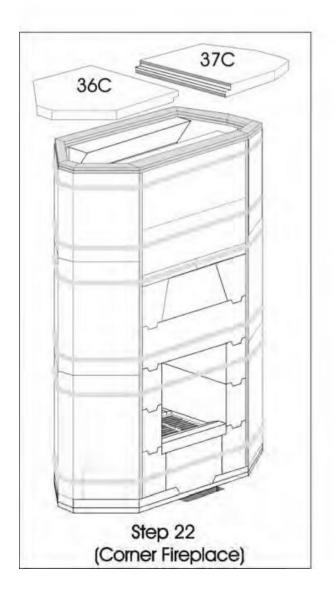
STEP 22: COURSE 9 - FIREPLACE LID

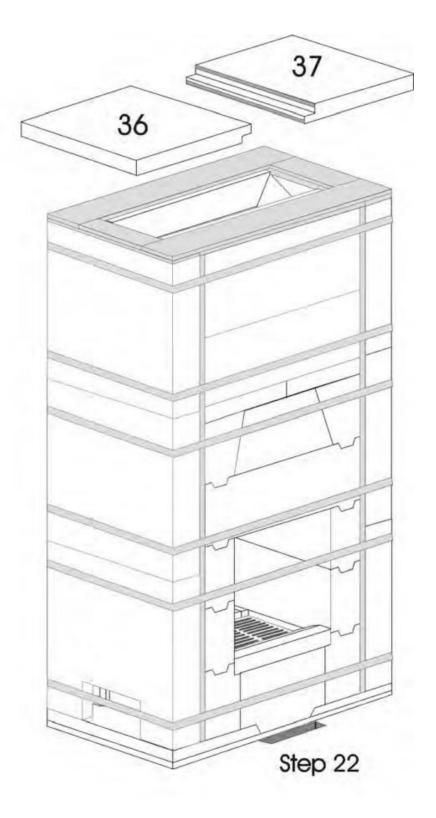
Place the two halves of the fireplace lid on top, using refractory mortar between them. The smoothest side should be placed down, and the parts are interchangeable left to right. Note that *no mortar* is used between the lid and the ceramic gasket.

Because the lid is slightly smaller than the top of the fireplace, an equal amount of space should be left around the perimeter.

Weights

#36, #37 - 80 lbs (36.5 kg) #36C, #37C - 95 lbs (43 kg)





STEP 23: FLUE CONNECTION

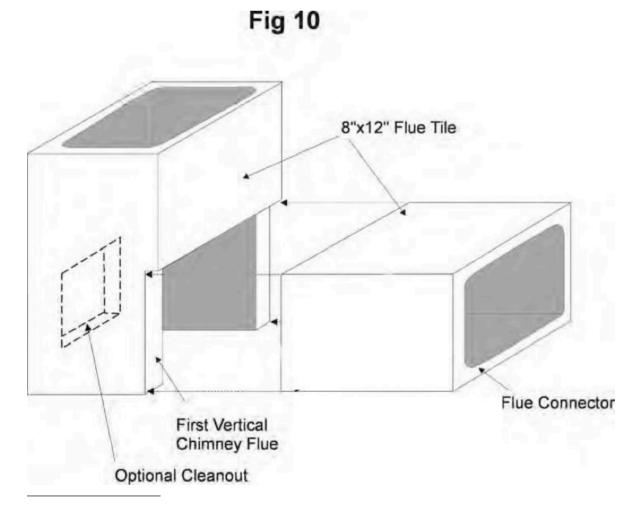
Cut the flue connector to the correct length. Install the flue connector with refractory mortar to the heat change channel and support it in the correct position.

Extra care must be taken to be certain that the flue connector does not go beyond the inner surface of the heat exchange channel. Ideally, the connector should also penetrate the heat exchange channel no more than one inch (2.5 cm).

Reach inside the flue connector to smooth and round the corners of the connection. Remove excess refractory mortar from the inside edges of the flue connector.

Cut the First Vertical Chimney Flue tile, as shown. Note that the chimney clean out is shown in the preferred position, in-line with the flue connector. If this alignment is not possible, the clean out can be on either of the other two available sides¹³.

Wrap the flue connector and the first vertical flue tile with extra ceramic wool, "coreflex," or cardboard spacer, and mortar them solidly in position with common mortar. *All joints must be sealed with refractory mortar to be smoke tight*.



¹³ If a chimney clean-out is planned for a lower level, a cleanout door should still be installed at the flue connection level, for inspection and removal of fly ash which will accumulate at the bottom of the heat exchange channels.

STEP 24: SPACER INSTALLATION

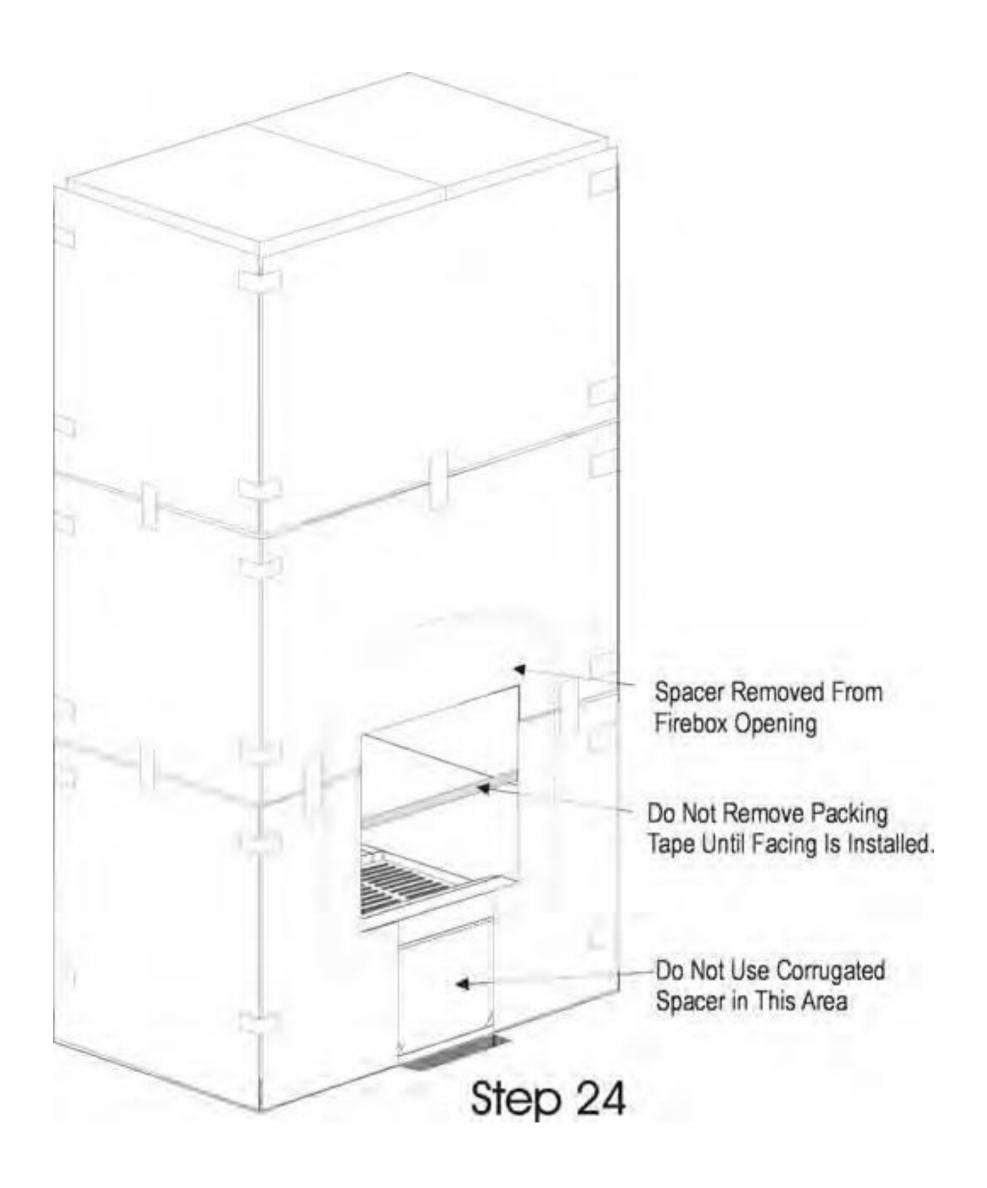
Remove the "tie-downs," but leave the tape in place. The heater now needs to be completely wrapped with the corrugated spacer supplied. The openings for fire doors, bake ovens, air doors, and clean-outs need to be pre-cut, so that the tape is not inadvertently cut, which would release the tension on the downdraft channels.

To pre-cut the opening for the firebox, lay two pieces of corrugated spacer on the floor, with their longest sides butting. Measure up from the bottom of the spacer 13 1/2" (34.5 cm) and draw a horizontal line across the spacer. Measure over 6" (15.25 cm) from either side edge and draw a vertical line at this point. Remove the door from the frame and place the frame on the spacer, using the two lines drawn to position the bottom and left edges of the frame. Trace around the entire frame and then remove the frame. Cut the spacer approximately 1/2" (1.25 cm) larger than the traced line on all sides and remove the piece.

Place these two cut pieces on the front of the heater, starting at the bottom. Continue with other pieces of corrugated spacer around the heater, but pre-cut any holes for clean-outs, air doors, bake ovens, and so on using the same technique as the firebox doors, to prevent cutting the tape¹⁴. Tape the spacer in place¹⁵. Also, cut out a section of spacer in the area of the air intake slot, directly under the firebox, as illustrated.

¹⁴ When installing the cardboard on the back side, it may be helpful to cut the cardboard vertically *part-way* through where it covers the ends of the side channels. This will help to prevent any air gaps from being created in these areas.

¹⁵ For corner units, a flexible "coreflex" spacer is supplied. Wrap this around the heater *twice* to get the correct thickness.



SECTION 5: DOOR FRAMES AND FACADE

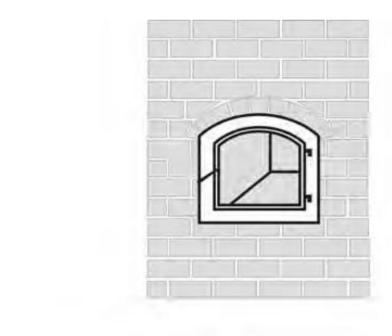
THE DOOR FRAME FLANGE

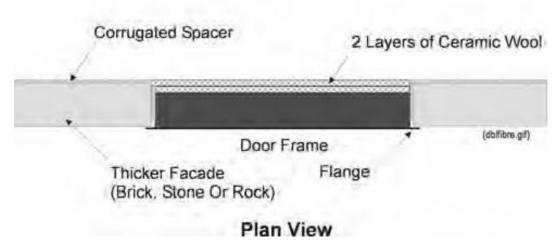
The Temp-Cast "arched" door system was designed so that a standard 4" (10 cm) brick, with a nominal thickness of 3.75" (9.5 cm), could be easily installed behind the door flange. However, since brick sizes vary greatly across North America and internationally, masons often cannot find a suitable brick in these dimensions. In addition, natural stone and rock often cannot be found in these dimensions.

The following techniques will allow thicker facades to be concealed behind the door flange.

FOR FACADES UP TO 4.25" (10.8 CM) THICK

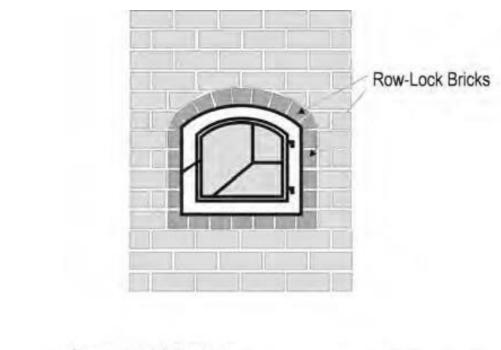
Glue an extra layer of 1/2" (1.25 cm) ceramic fiber between the door frame and the heater core, on top of the standard 1/2" layer. When slightly compressed, this extra layer will provide up to 3/8" (1 cm) additional space behind the door flange.

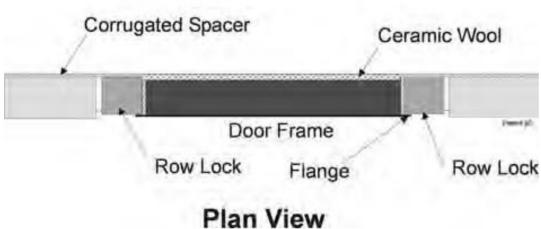




FOR FACADES OVER 4.25" (11 CM) THICK

For facades more than 4.25" (11 cm) thick, a "row-lock" bond can be employed, in which half-bricks are cut to approximately 3" (7.5 cm) and laid around the door frame, fitted behind the flange. Thicker facade materials can then be laid up next to these "row-lock" bricks.





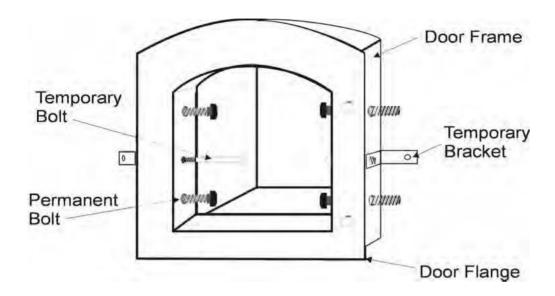
Alternatively, attach fire-brick "splits" around the door frame opening with refractory mortar, *before* the ceramic wool is applied. These splits, up to 1.5" (4 cm) thick, increase the space between the core and the flange, allowing for a thicker facade material behind it.

In all cases, increase the combustion air space under the door by the thickness of the added splits. E.g. Cut an extra 1.5" (4 cm) from the facing under the door if 1.5" (4 cm) splits are added.

INSTALLING ARCHED FIRE DOORS

Although experienced masons may use a different technique to attach the arched door frame, the following method ensures two critical points:

1. The finished door frame <u>must not</u> be *permanently* attached directly to the core. This will ensure the frame is isolated from the thermal expansion of the refractory.



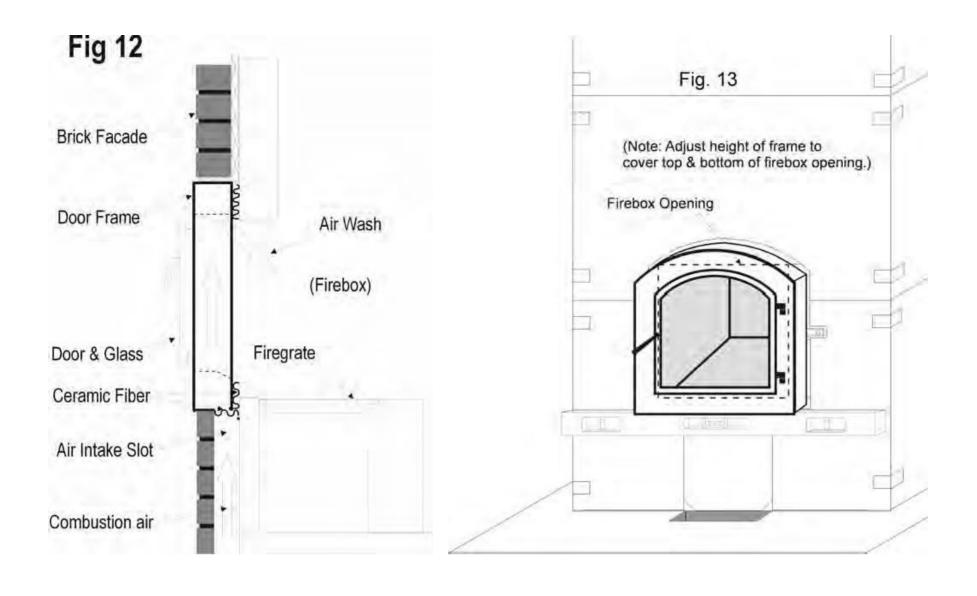
2. Air slots in the bottom of the frame and in the concrete floor pad are *properly aligned and unobstructed*. See Fig. 12.

ARCHED FIRE DOORS - STEP 1

Remove the doors from the frame and set them aside. Position the door frame on the core so that the slope of the bottom inside edge of the frame (i.e. the "sill" of the door frame) and the slope of Part #10 form a nearly continuous angle (see Fig. 12). Level the frame and make a pencil mark on the cardboard spacer along its bottom edge¹⁶.

The door frame position can be adjusted up or down slightly to accommodate the facade, so that the frame will sit on top of a masonry or stone course. *However, ensure that the door frame still covers the firebox opening, particularly on the top, in the case of an arched frame.* See Fig. 13.

¹⁶ Rear doors on a See-Through Fireplace are positioned *slightly higher* than the front doors. The difference is about 1.5" (4 cm). Refer to the section *Installing "See-Through" Doors* a few pages ahead.



ARCHED FIRE DOORS - STEP 2

Build up the masonry facade to the *bottom* of the firebox door, *while maintaining a 2"* (5 cm) x 15" (38 cm) air slot under the door. Adjust the height of the door frame as necessary to suit the masonry courses, ensuring the frame still covers the firebox opening. Trace the frame on a cardboard spacer.

Using a small amount of refractory mortar, glue a 3" (7.5 cm) strip of ceramic wool to the face of the core where the cardboard was removed¹⁷. Also glue a strip a ceramic fiber on the top of the last masonry course, ensuring that the air slot in the bottom of the door frame is not obstructed.

¹⁷ For example, Pieces #K13, #K14, and #K15 on the ceramic wool cutting plan.

Place the door frame in position and brace it firmly with a length of 2x4¹⁸ wedged under the one of the hinges and nailed to the floor. A second 2x4 can be braced under the upper door opening¹⁹. Ensure that the ceramic gasket is slightly compressed, *but not crushed*.

Caution: It is important that the ceramic fiber be slightly compressed *and* glued in place, so that it cannot fall out. This will ensure that live embers cannot fall into the space between the door and the heater core, or into the air intake and create a potential fire hazard.

No combustible materials should be installed *in* the foundation or *under* the foundation, due to the potential fire risk.

Cover the door frame to keep it clean for the rest of the installation. Continue to Step 3.

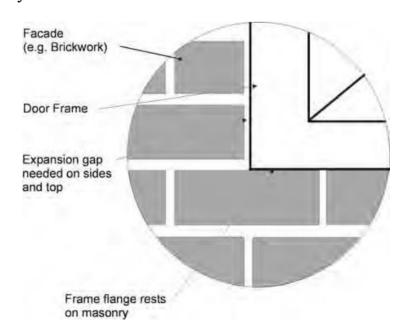
IF THE FLANGE WILL NOT COVER THE FACADE

If the masonry facade *will not* be hidden behind the door flange, care must be taken to ensure that *an expansion gap* is created between the facade and the door frame.

Glue a 3" (7.5 cm) strip of ceramic wool (Pieces #K13 through #K15) onto the core where the cardboard was just removed. Also place one or two strips of ceramic wool fiber on top of the masonry course, so that air cannot leak into the firebox from under the door frame. Care must be taken to ensure the air slots in the bottom of the door frame are not obstructed. Place the door

frame in position and bolt it or brace it with 2x4s. The bottom flange of the door frame rests on the masonry. *Do not remove the factory-installed cardboard* "coreflex" gasket around the door frame.

Continue with Step 3. However, ensure that an expansion gap of about 1/8" (3 mm) is left between the masonry and the side and top flanges of the door frame.

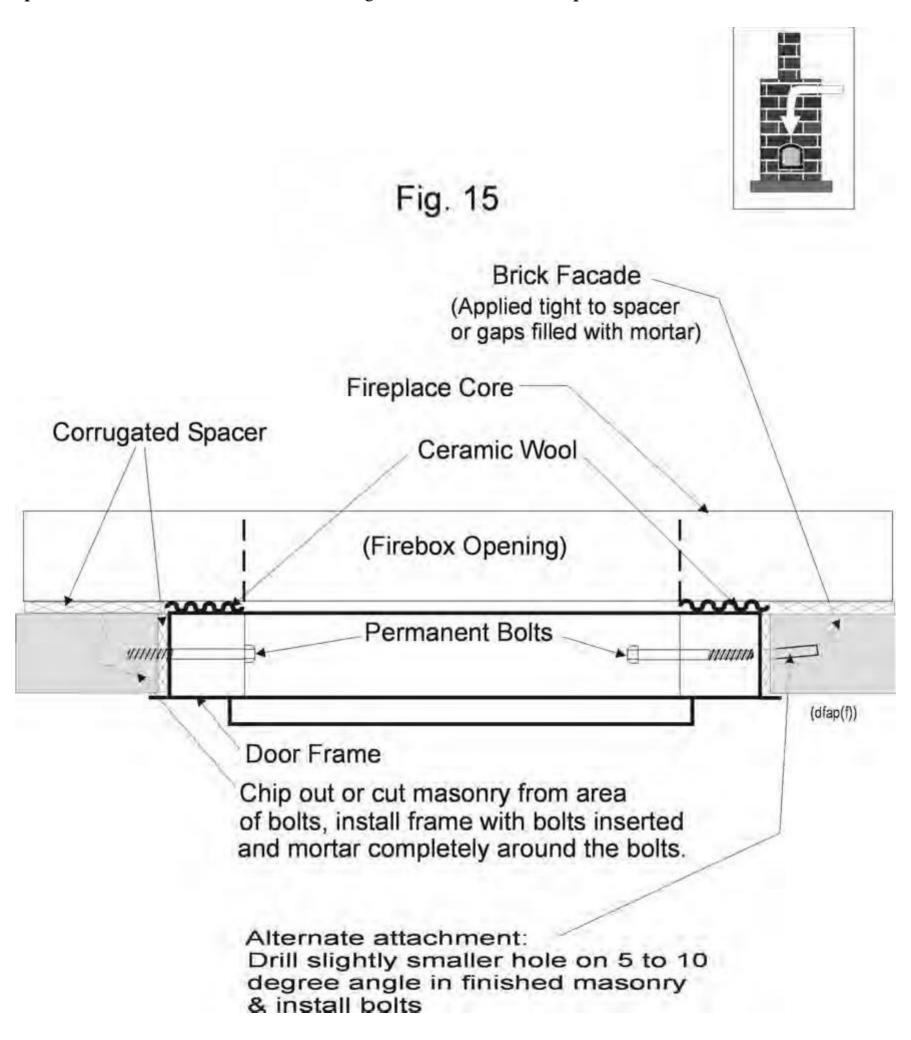


¹⁸ American 2x4 is not precisely 2" x 4", but roughly 1 1/2" (4 cm) x 3 1/2" (9 cm).

¹⁹ Alternately, the frame is fitted with two small brackets, which can be used to temporarily secure the frame to the core with the "tap-con" screws supplied.

ARCHED FIRE DOORS - STEP 3

Continue with the masonry facade, up to the level of the first permanent bolt attachment. Insert the four permanent bolts into the frame. Chip or cut the brick or other masonry, so that a cavity is created around the area of the bolt. Continue raising the facade, filling the space around the bolt with mortar, tight to the "coreflex" spacer.



ARCHED FIRE DOORS - STEP 4

When the facade is complete and the masonry has fully set, remove the two temporary bolts from the frame. If the two small brackets were used, this will detach the frame from them. The door frame is now independent of the fireplace core and will not be affected by the thermal expansion of the core.

Replace the doors on the frame and check for proper fit and operation.

ALTERNATIVE ATTACHMENT METHOD

If cutting or chipping masonry around the bolts is not possible, an alternate (but more difficult attachment method can be used.

- 1. Remove the four *permanent* bolts from the door frame. Build the facade around the door frame (or around the flange, as the case may be) and complete the masonry work.
- 2. When the masonry work is fully set (i.e. after one or two days), make a mark on the masonry where the four bolts will go, using the bolt holes as a guide. *Care must be taken at this point so the threaded holes on the outside of the frame are not damaged.*
- 3. Unbolt the frame from the two temporary brackets and take the door frame out. If the "coreflex" spacer comes out with the frame, replace it before the frame is reinstalled.
- 4. Using a masonry drill of the same thickness as the permanent bolts, drill holes into the masonry at the marks made earlier. These holes should be at least 1" (2.5 cm) deep and on a slight angle (about 5°) towards the firebox.
- 5. Reinstall the door frame and attach the four permanent bolts. The slightly angled holes will draw the frame tight to the ceramic wool gasket. Do not re-bolt the frame to the temporary brackets.

AIR SUPPLY DOORS

If an air supply door is to be installed, its frame is installed in the facade when it reaches the desired height (see Fig. 1B). The installer can use mortar, lead anchors, or "tap-con" screws to secure the door frame.

CLEAN-OUT DOORS

Similarly, cleanout door frames are installed when the facade reaches the height of the cleanout holes in the heat exchange channels. The cleanout doors should be located on both sides of the heater, at the bottom of both heat exchange channels, in line with the cross-manifold, Part #3.

When a side chimney connection is made, one of the two clean-out doors should be placed at the bottom of the chimney, so that the bottom of the heat exchange channel on that side can also be accessed from the same door. In the case of a rear chimney connection, a third clean-out door will be required for the chimney itself²⁰. Cover all door frames immediately after installation to keep them clean.

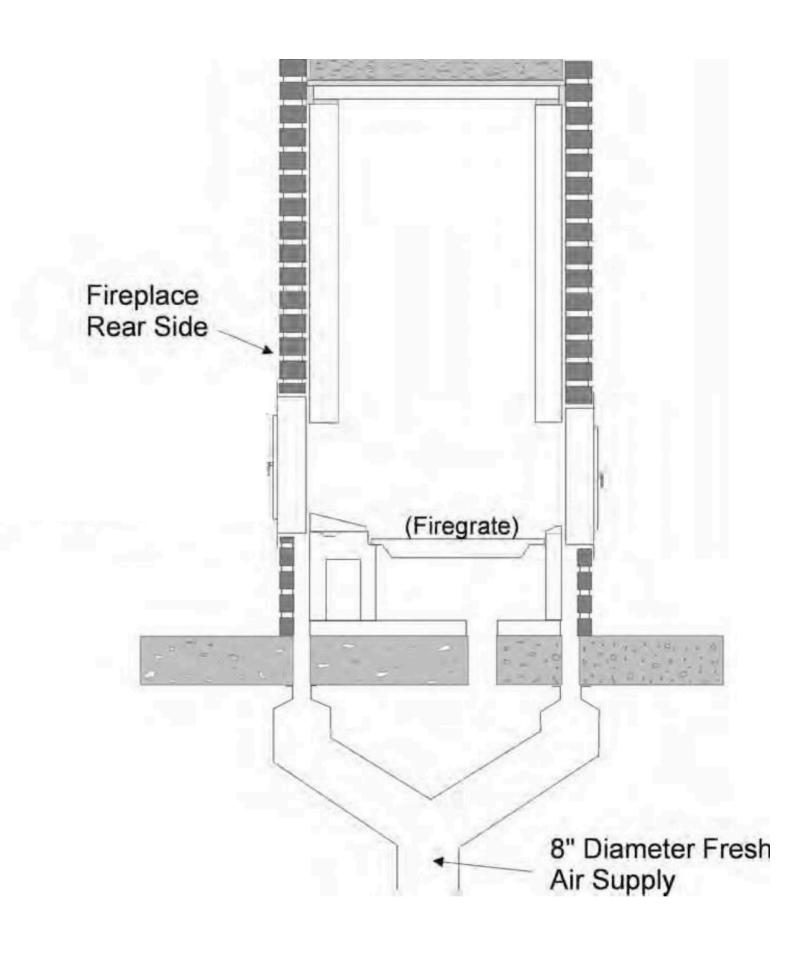
INSTALLING "SEE-THROUGH" DOORS

The installation of a second set of fire doors for a "See-Through" fireplace will follow the same steps previously detailed.

In addition, the installer must ensure that half of the 8" (20.5 cm) diameter combustion air supply is fed to the second door, and that an identical 2" (5 cm) x 15" (38 cm) air slot is created behind the facade, under the door frame, on the rear side of the fireplace²¹.

²⁰ A third Temp-Cast clean-out should be ordered.

²¹ Without this provision, the rear doors will not have an air wash and will become dirty.



INSTALLING BAKE OVEN DOORS

We recommend that the Bake Oven door be installed directly on the core with a gasket and Trim Plate, in contrast to the fire doors. Without the benefit of an "air wash," the door glass will tend to stay cleaner if it is as close as possible to the fire. *In this case, the door frame is installed before the facade reaches this level.*

Some installers may want to install it on the facade, without a Trim Plate, which may be acceptable only if the appearance of the glass is not a consideration.

To make the installation simpler, tap the hinge pin out of the hinge and remove the door from the frame. Place the door back into the frame before fixing the frame in place.

The Bake Oven Trim Plate simplifies the installation and creates a neater finished appearance. With the trim plate in position, the masonry facade can be set away from the door frame without exposing the heater core.

To install the trim plate, cut out the opening of the bake oven in the corrugated spacer. Hold the trim plate in position and mark the rectangle of the trim plate on the corrugated spacer. Cut the spacer out of this area.

Attach the trim plate to the core with the "tap-con" screws provided.

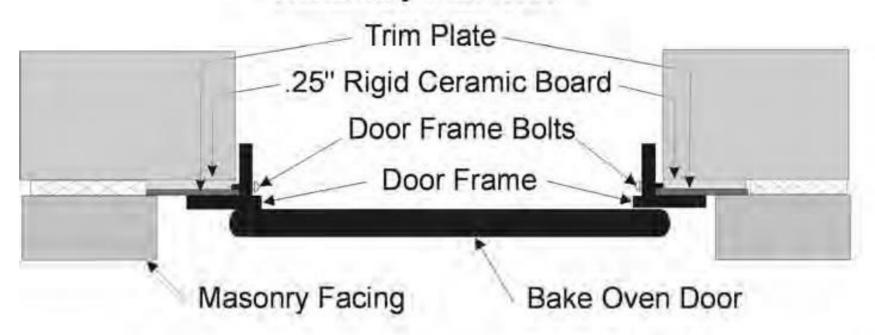
Position the bake oven door and attach it with the four machine screws supplied, which go behind the trim plate²². Check that it is level and plumb.

Note: When the masonry facing is installed, a space of 1" (2.5 cm) to 1 1/2" (4 cm) must be left between the door and the masonry to allow the door to fully open and for full movement of the door handle. (See Figure 18a.)

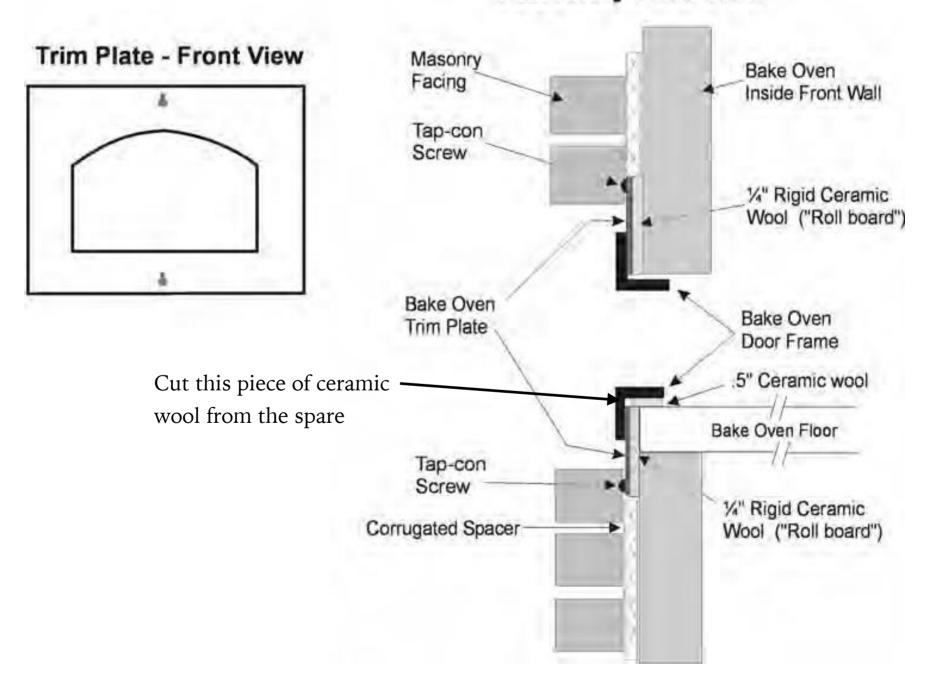
²² Leave the door off or cover it to keep it clean during masonry work.

Fig 18a

Assembly Plan View



Assembly Side View



INSTALLING THE FACADE

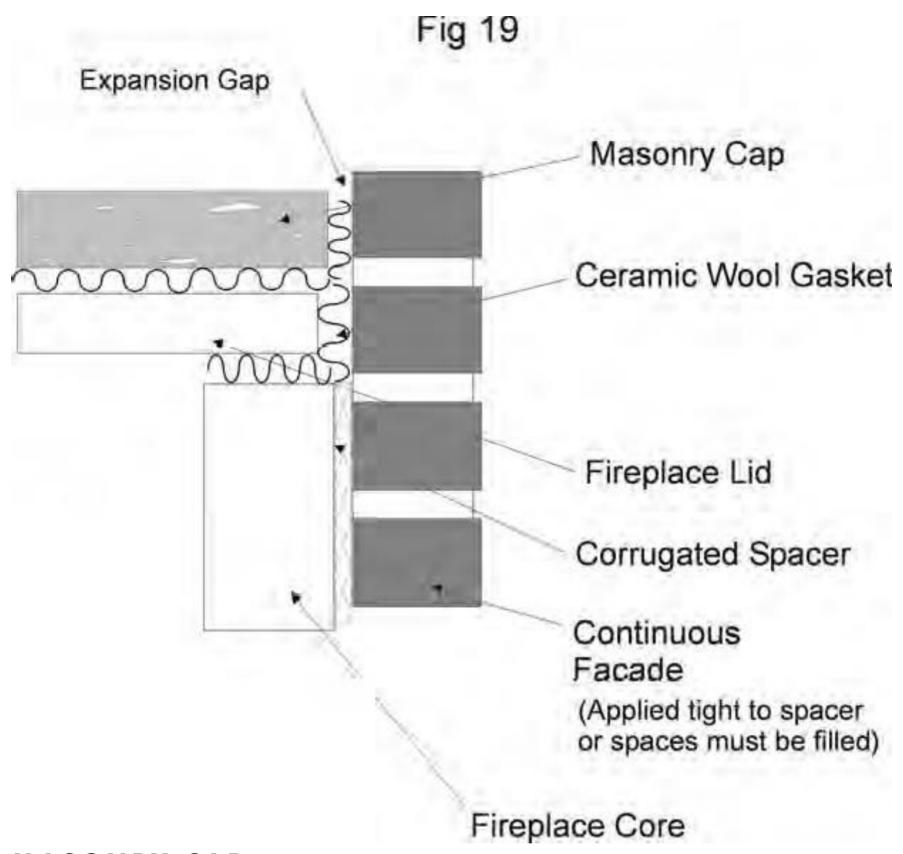
Most facades will be installed by professional masons, who will have their own methods of planning and working. (Refer also to "Facade/Flange Options" earlier in this section.)

Several details concerning the installation of the masonry facade are unique to Temp-Cast fireplaces and must be kept in consideration.

Caution: It is important that <u>no air</u> be able to get into the space between the heater core and facing on all four sides and the top and around firebox and bake oven door frames. **FAILURE TO SEAL THESE SPACES MAY RESULT IN A FIRE HAZARD.**

These points <u>must be followed</u> during the installation of the facade:

- 1. <u>All spaces</u> between the corrugated spacer and masonry facing must be filled. <u>Do not leave</u> an air space between the facing and the heater core.
- 2. The masonry courses directly below the fire doors *must be sliced in half* or stepped out. This will provide a permanent air slot, which will feed combustion air from below into the bottom of the air frame and into the fire. (See Fig. #1a and #1b.)
- 3. An expansion break must be created between the masonry cap and the facing to allow for unrestricted vertical expansion of the core. (See Fig. #19 and Fig. #20.)
- 4. The facade *must be continuous* on all four sides and the top of the heater. The heater core *must not be left exposed* at any point.

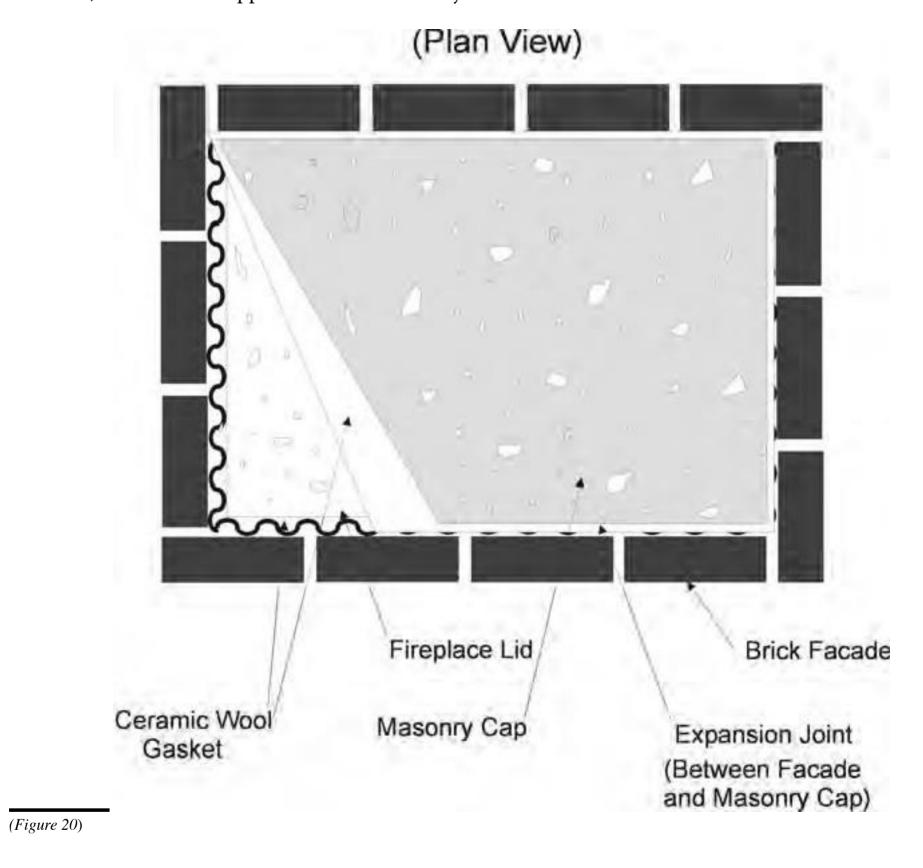


MASONRY CAP

The facade must be continued at least 4" (10 cm) above the top of the fireplace parts. Fill in the resulting space between the facade and the sides of the fireplace lid with ceramic wool. Place a layer of 1/2" (1.25 cm) ceramic wool (Piece #K23) on the top of the fireplace, ensuring it runs up the sides and ends of the facade. (See Fig. #19 and Fig. #20).

A continuous masonry cap of at least 2" (5 cm) *must be added* to the top of the fireplace. It can be poured concrete, stone, brick, or other solid masonry material. *Remember to include an expansion joint*.

The facade can be continued into the ceiling, if desired. In this case, open spaces should be created in the top course of the masonry facade; or decorative metal grills should be installed, to vent the trapped heat and humidity.



The installation of your Temp-Cast fireplace is now complete. Allow the heater to "dry out" with air intake door open for two weeks before beginning the curing process.

Before firing the heater, refer to the Owner's Manual for curing and firing procedures.

CUTTING PLANS

numbers onto the ceramic fiber supplied, before starting to make any cuts Note: Using a measuring tape & marker, transfer all dimensions and piece This will ensure that there will be sufficient ceramic fibre in the required shapes.

Ceramic Wool Cutting Plan

(Standard Fireplace) (Standard Bake Oven) (Standard See-through)

(24" x 150")

K11) 3"x30" (Top Front) (K12) 3"x30" (Top Rear) (K15) (Door) **K19** 2 K20 **K**5 4 3 ক 3"x36" (Top Front) See-Through 3"x72" (Side Channel) 3"x72" (Side Channel) 3"x72" (Side Channel) 3"x72" (Side Channel) 3"x18" 3"x18" K21 (K6) 3"x36" (Top Rear) K22 1.5"x64" - (Bake Oven Door)-K10 (Top Side) (K14) K13 K9 (Top Side) 3"x16" (K8) (Top Side) (Extra) 3"x22" K16 3"x24" (Door) 3"x24" (Door) 3"x18" (Door) (Top Side) 3"x16" (Extra) K23 (Hireplace Lid) 44" × 24"

numbers onto the ceramic fiber supplied, before starting to make any cuts. Note: Using a marker & measuring tape, transfer these dimensions and piece This will ensure that there will be sufficient ceramic fibre in the required shapes.

Ceramic Wool Cutting Plan

(Corner Fireplace)
(Corner Bake Oven)
(Corner See-through)
(24" x 150")

K20 3"x24" Door	K19 3"x24" See-	K11) 3"x30" (Top Front)	(K5) 3"x30" (Top Front)	<u>क्</u>	্ব্ৰ 3	ින 3	(<u>K1</u>)
	x24" 3"x18" See-Through		Front)	"x72" (S	"x72" (s	"x72" (s	"x72" (S
3"x18" K22	18" K21	K12 3"x3	(K6) 3"x30" (Top Rear)	3"x72" (Side Channel)	3"x72" (Side Channel)	3"x72" (Side Channel)	3"x72" (Side Channel)
K10	ন্ত্ৰ	3"x30" (Top Rear)					
3"x58" (*Top Side)	3"x58" (*Top Side)	K17 1.5"x40" Bake-Oven Door	K15 3"x18" (K16 3"x18" (Door)	(кв) 3"х24" (*Top Side)	(K7) 3"x24" (*Top Side)	(K14) 3"x24" (Door)	ктз з"х24" (Door)
			(Fireplace Lid)	54" x 24"			(K23)

* Trim top side strips on comer channels to correct length & angle as required.

SECTION 6: WARRANTY

Temp-Cast LLC warrants, subject to the conditions and exceptions noted below, that should this product become defective due to materials or workmanship within the specified warranty period, Temp-Cast LLC will repair or replace the defective part, at its option.

Warranty Period

Refractory parts are warrantied for five years from the date of purchase. Metal parts are warrantied for one year from the date of purchase.

Exceptions

The following are not covered by this warranty:

- 1. Glass components
- 2. Stress or cracks caused by normal thermal expansion
- 3. Defects or cracks of any kind in the masonry facade
- 4. Any other materials or labor, including removal and replacement of masonry facades
- 5. Damage caused by incorrect installation, or by failing to follow installation instructions
- 6. Damage caused by incorrect operation or abuse, or by failing to follow the curing and operating instructions

Conditions

- 1. The Registration Card must be completed and mailed within 30 days of installation to: Temp-Cast LLC, 8820 Grey Cloud Island Dr S, Saint Paul Park, MN 55071, USA.
- 2. At least four installation photos (or a video) must be included with the Registration Card, showing the completed core, the core with partial facade erected, the completed installation, and one showing a normal fire following the curing process. The last photo can be send separately at a later date.
- 3. All defective parts must be properly crated and shipped pre-paid to the factory.
- 4. Temp-Cast must be contacted for approval prior to any part being returned for a warranty claim.

Registration Card

Name							
Street Address							
City, State, ZIP							
Email							
Purchase Date							
Install Date							
Dealer							
Installer							
Installer City							
Installer Phone							
Options Installed							
Primary Purpose	Main Heat	Source	Zone/Supplem	ental Heat Only	Decorative Fireplace	Other	
Facade Material							
Facade Thickness							
House Type	Frame	Log	Timber Frame	Post and Beam	Straw Bale Ed	arth/Adobe	Concrete
House Style	Bungalow	2 Sto	ory 3 Story	Split Level	Other		
Total House Size							
Area Heated With Temp-Cast							
Comments							

You can also register by sending an email answering these questions to staywarm@tempcast.com with "Heater Registration" in the Subject line.