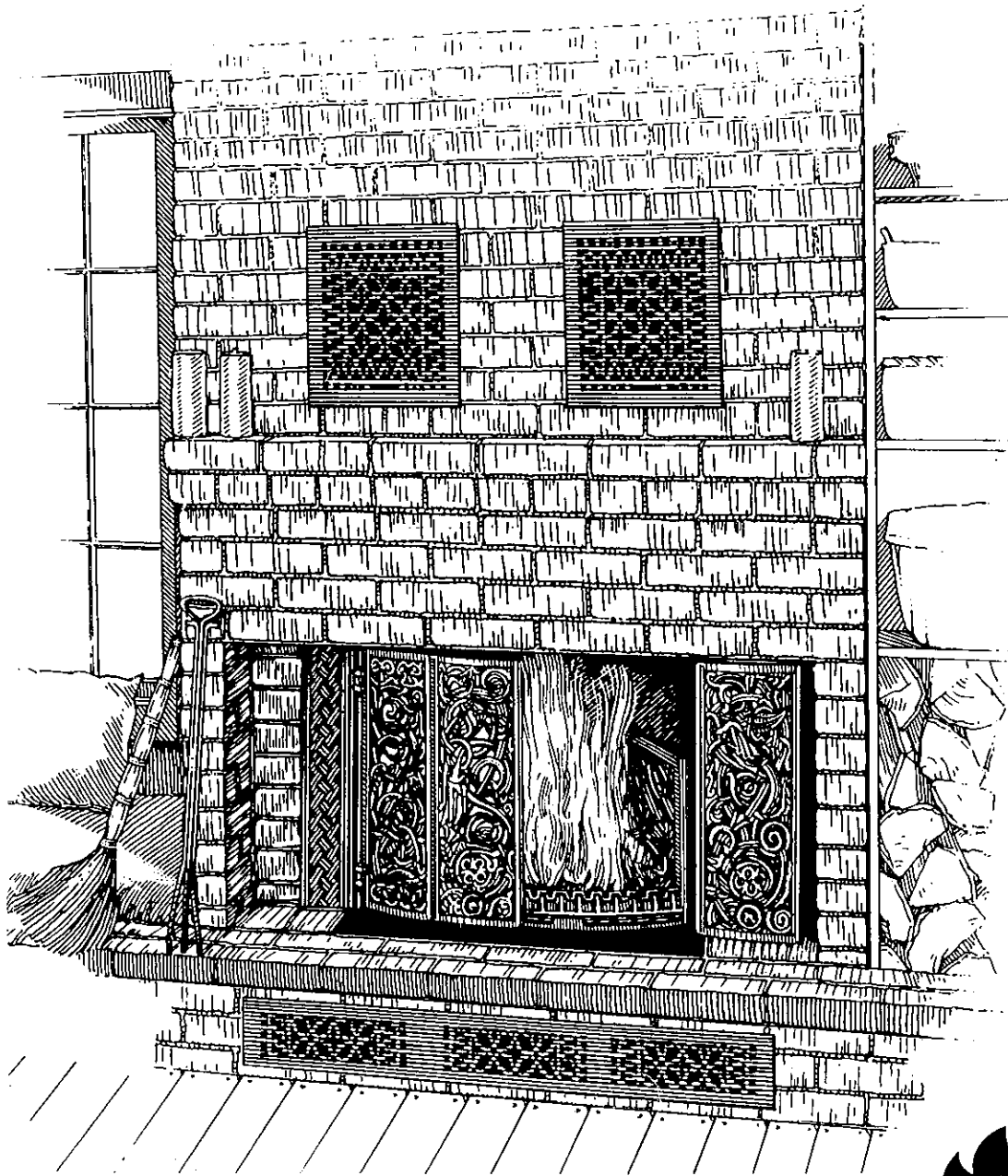


# SYSTEM 18

## Installation and Operating Instructions



**JØTUL®**

# JOTUL SYSTEM 18

## Installation and Operating Instructions

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This symbol on the nameplate of the product means it is listed by Underwriters Laboratories Inc. Only those products bearing this listing mark are considered as covered by UL's listing and follow-up service.

**SAFETY NOTICE:** If this fireplace is not properly installed, a house fire may result. For your safety, follow the installation directions. Contact local building or fire officials about restrictions and installation requirements in your area.

# PART I

## Product Overview

### GENERAL INFORMATION

The Jotul Fireplace System 18 is a cast iron, controlled combustion fireplace for use as a home heating system. It produces both radiant and convective heat. The cast iron fireplace is surrounded by a masonry enclosure. Combustible materials may be brought safely in contact with the sides, rear and top of the masonry enclosure. Do not install combustible materials on front face of masonry enclosure. The fireplace may be positioned inside or outside the house. The chimney can be positioned either behind or on top of the masonry enclosure. No type of chimney other than that specified in these instructions may be used.

**DO NOT INSTALL IN ANY MANNER OTHER THAN THOSE OUTLINED IN THESE INSTRUCTIONS. WHEN OPERATING AND MAINTAINING THE JOTUL SYSTEM 18, FOLLOW THE GUIDELINES GIVEN IN THESE INSTRUCTIONS. KEEP THESE INSTRUCTIONS SO THAT THEY ARE ALWAYS AVAILABLE TO ANYONE USING THE FIREPLACE. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS IN YOUR AREA.**

The Jotul System 18 may be used either as an open fireplace, or with its doors closed, as a heating system. When operating the fireplace with the doors closed, the heat output is regulated by the air inlet valves located on the two center doors. To increase heat output, increase the amount of air allowed in through the valves. To reduce heat output, decrease the amount of air through the valves.

#### CREOSOTE - 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 condense in the relatively cool chimney flue during a slow-burning fire. As a result, the creosote residue accumulates on the flue lining. When ignited, this creosote can produce an extremely hot fire.

The chimney connector and chimney should be inspected at least once every two months during the heating season to determine if a creosote build-up has occurred.

If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.

#### WOOD STORAGE

When storing wood outside, it should be covered from the elements and stored off the

ground. Make certain that the wood pile has good air circulation through it in order to promote drying and aid seasoning. To obtain the most benefit from the wood you burn, use only seasoned wood which has been cut and split for at least one year. Burning unseasoned or wet wood causes rapid development of creosote, as well as reduces the heating value of the wood being burned.

#### HEAT TRANSFER

The Jotul System 18 transfers heat to the house in two ways:

(1) **RADIANT HEAT:** the heat given off by the open flames, the cast iron doors, and the masonry enclosure. Radiant heat, heats by warming objects and people directly.

(2) **CONVECTED HEAT:** the heat transferred to the house by air which as it circulates around the fireplace and enclosure is heated. This heated air then circulates back into the house.

The air inlet grills below the fireplace and the air outlet grills above the fireplace must have **UNRESTRICTED** air openings equal to:  
Inlet air opening-116 sq. in. minimum free air below the fireplace. Outlet air opening-155 sq. in. minimum free air above the fireplace.

**NEVER RESTRICT OR CLOSE OFF EITHER THE AIR INLET OR OUTLET OPENINGS. DOING SO MAY RESULT IN DANGEROUS OVERHEATING OF THE FIREPLACE SYSTEM.**

#### HAZARDS CONNECTED TO THE USE OF THE JOTUL SYSTEM 18

Any use of fire, even with the doors of the fireplace closed, represents a certain danger. With intense firing, the temperatures of the cast iron can exceed 932°F (550°C). Please take note of these special precautions:

- Loose flammable material must be kept a safe distance away from the fireplace.
- Children must be taught that the fireplace is hot and must not be touched.
- Never use the fireplace if there are combustible gases present in the room, such as paint fumes or cleaning fluids.
- Poisonous gas, such as carbon monoxide, can be pulled out of the fireplace, if, for example, the house's ventilation system, such as a kitchen exhaust fan, creates a low-pressure condition in the area where the fireplace is located.
- Make sure that sparks and embers do not get out when the fireplace doors are open. The spark screen must always be used when operating the System 18 as an open fireplace.

- Ashes should be placed in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If ashes are disposed of by burial in the soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

- Use solid wood fuel. Never use liquid fuels. Liquid fuels utilized in a fireplace can result in an explosion and fire. Never use gasoline, gasoline-type lantern fuel, kerosene, lighter fluid, or similar liquids to start or freshen up a fire in this fireplace. Keep all such liquids well away from the fireplace while it is in use.

## OPERATION

The System 18 is simple to use. It may be operated either as an open fireplace or with its doors closed as a heating system.

*NOTE: During the first firing moisture may form on the surface of the enamelled doors. This condensate should be removed with a damp cloth or sponge as it will permanently stain or pit the surface.*

### OPEN FIREPLACE USE

1) Place a generous amount of crumpled newspaper in the fireplace.

2) On top of the paper, place a loosely stacked pile of dry, finely split kindling.

3) Light the paper.

4) Once the fire has established itself, add larger pieces of kindling and small pieces of wood. Allow this wood to catch and burn well before adding normal size logs.

5) Once the fire is burning, place the screen over the fireplace opening. Always use the screen when burning an open fireplace. Never leave the fireplace burning unattended without the screen in place.

6) Should you experience a sluggish starting or smoking fire in a cold fireplace, close the doors and open air valves. This focuses the air directly into the fire making it burn more rapidly, while at the same time warming the chimney to establish the necessary draft for continued combustion. Once the smoky fire has stopped, open the doors fully and replace the screen.

**WARNING:** Fireplaces equipped with doors should be operated only with doors fully open or doors fully closed. If doors are left partly open, gas and flame may be drawn out of the fireplace opening, creating risks of both fire and smoke.

### CLOSED DOOR OPERATION

Follow steps 1, 2, and 3 for open fireplace use.

4) Close the doors and completely open the air inlet valves. This will allow the fire to start rapidly.

5) After the kindling and splits of wood have caught and are burning well, add normal size logs.

6) Once the fire is established and the desired heat output is achieved, adjust the air inlet valves to a setting which meets your heating needs.

Experience will be the best guide in determining the most appropriate fuel loads and air settings to be used. This will vary with climate and seasonal conditions as well as your own personal comfort level. For example, on a cool, fall evening, it might make more sense to burn small, frequent loads of wood, rather than to fully load the fireplace. The fully loaded fireplace will burn slowly with a smothering fire due to restricted air supply. Creosote will rapidly be produced in the chimney flue and an excessive amount of smoke released into the atmosphere.

### REFUELING

Fully open the air inlet valves when refueling the System 18. Allow the newly added fuel to burn vigorously for 10-15 minutes before resetting the air valves.

By burning in this way, several benefits are achieved. First, when new wood is placed on burning embers, smothering takes place. Opening the air valves fully hastens burning while supplying oxygen to the smoke or gases released from the wood. Second, increased combustion results in increased heat moving up the chimney, which in turn becomes warmer providing a steadier draft. Finally, by burning hot, with excess air at each fueling, creosote production is reduced.

# SWEEPING AND MAINTENANCE

## SWEEPING

When wood burns, soot and creosote may develop and could, together with other non-combustible particles, settle in the chimney and chimney connector. If these deposits increase, it may be necessary to have them removed. This should be done by sweeping both the chimney and the chimney connector. Inspection of the chimney can be done quickly and simply by using a hand held mirror. With the System 18, this may be done either inside the fireplace at the flue exit for a top mounted chimney, or with a rear mounted chimney installation at the base of the chimney through the clean-out door. To make an inspection with a mirror, tilt it in such a way that the reflection of the sky is seen. Next, position the mirror in such a way that the four sides of the chimney flue can be inspected. The light of the sky should provide adequate light to carry out the inspection.

What to look for when inspecting the chimney:

- 1) Creosote or soot build up.

SOLUTION - Clean the chimney.

- 2) Blockages caused by debris such as leaves, sticks, birds' nests, etc. This is most important before using the fireplace after the summer.

SOLUTION - Remove debris and clean if necessary.

- 3) Cracks or voids in the tile flue liners or the mortar joints between the liners. This is especially important if a chimney fire has occurred.

SOLUTION - Contact a professional chimney sweep, mason or your local fire officials for a safety inspection before using the chimney.

As a rule, the chimney and chimney connector should be inspected at least once every two months during the heating season to determine if it should be cleaned.

## CLEANING THE CHIMNEY AND CHIMNEY CONNECTOR

To clean the chimney system of the fireplace, two stiff wire chimney brushes are needed. A 11" x 11" brush for cleaning the chimney flue and a 7" round brush for cleaning the chimney connector.

*NOTE: The inside diameters of ceramic tile flue liners vary by manufacturers. Check the actual inside diameter of the flue tile before purchasing the chimney brush.*

## REAR CHIMNEY

STEP 1. Use the 11" x 11" brush to clean the chimney flue. Clean by passing the chimney brush, securely fastened to suitable lengths of chimney brush rod, carefully back and forth through the flue. This cleaning must be done from the top of the chimney. Exercise care when cleaning the chimney from on top of the house.

STEP 2. Use the 7" round brush to clean the insulated connector pipe which connects the fireplace to the masonry chimney. Clean by passing the brush carefully back and forth through the pipe from inside the fireplace. This should be done using a chimney brush securely fastened to a flexible chimney brush rod. Before beginning to clean the pipe, seal off the area around the bottom of the fireplace so that the material removed from the pipe is contained inside the fireplace for clean up, later.

STEP 3. Remove the dislodged creosote from the clean out pit. After clean up, close the cleanout door and make certain it is tightly sealed.

## TOP CHIMNEY

STEP 1. Use the 11" x 11" brush to clean the chimney flue. Clean by passing the chimney brush, securely fastened to suitable lengths of chimney brush rod, carefully back and forth through the flue. This cleaning must be done from the top of the chimney. Exercise care when cleaning the chimney from on top of the house.

STEP 2. Use the 7" brush to clean the adjustable connector pipe. Clean by passing the chimney brush, securely fastened to suitable lengths of chimney brush rod, carefully back and forth through the flue. This cleaning must be done from the top of the chimney. Before cleaning the chimney, close the door and air inlet valves tightly to prevent soot and creosote from escaping the fireplace during cleaning.

## MAINTENANCE

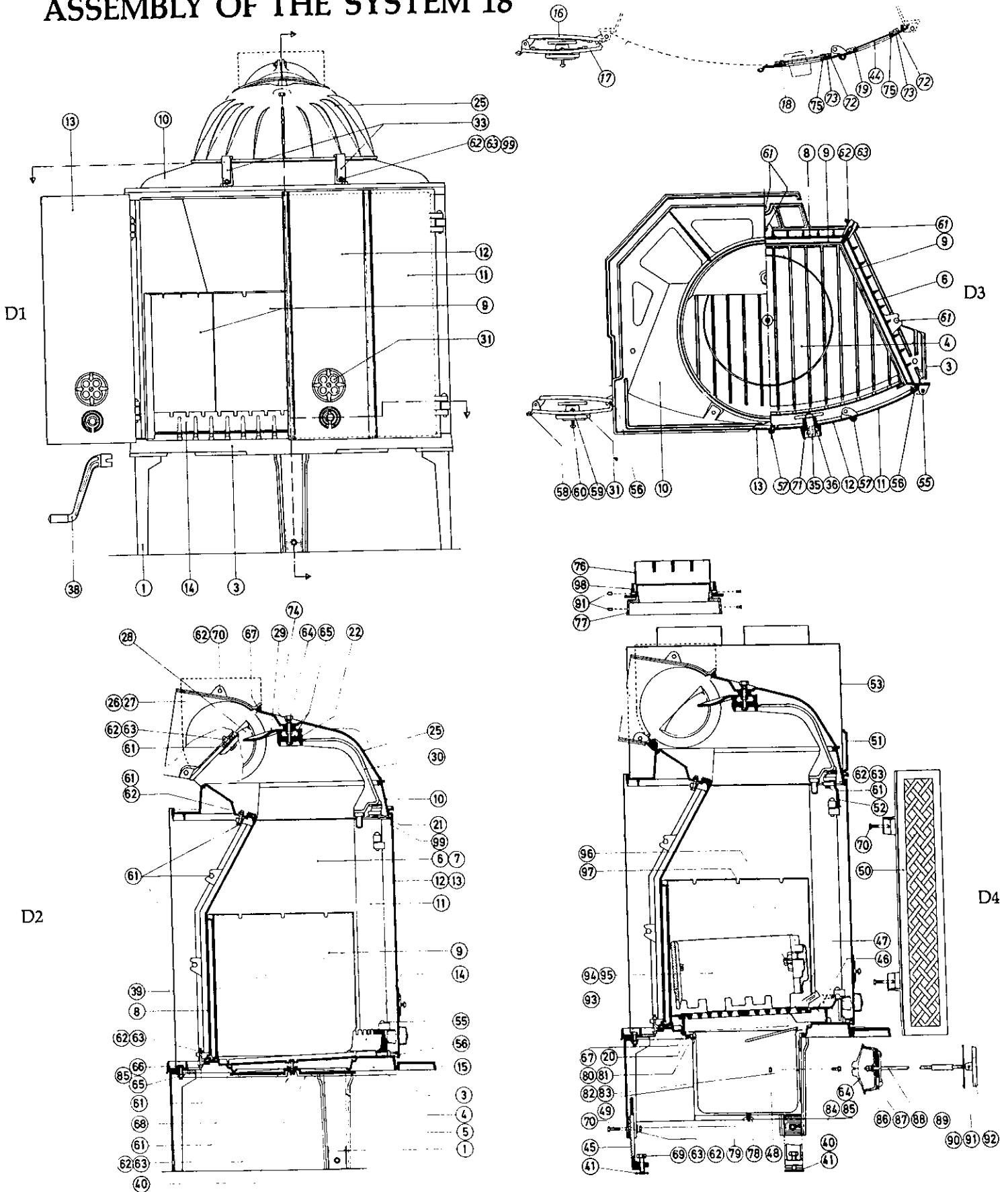
Little maintenance is required with the Jotul Fireplace System 18. However, it is important to check certain items such as the gaskets on the doors and replace them when necessary. Gaskets may be obtained from your local Jotul dealer and fixed to the doors, with water glass (sodium silicate).

The door hinge pins should be periodically oiled for easy operation and to inhibit rusting during the summer months.

After use during the heating season, remove all ashes and thoroughly clean the fireplace and paint or lightly oil the inside of the fireplace to inhibit rusting on the surface of the castings. During the summer months leave the doors open at times to allow air to circulate through the fireplace and chimney to reduce condensation.

Periodically check the cast iron burn plates to ensure they are sound and have not cracked. These burn plates should be replaced if cracking or other signs of deterioration have occurred.

# PART II Construction ASSEMBLY OF THE SYSTEM 18



# PARTS LIST

Diagram number	Catalog number	Description
	340637	Insert System
1	101857	Legs
3	101859	Base Plate
4	101860	Cover Plate
5	101861	Traverse Bar
6	101862	Side Plate, Right
7	101863	Side Plate, Left
8	101864	Back Plate
9	101865	Burn Plate
10	101866	Top Plate
14	101877	Ash Retainer
15	101878	Ash Lip
21	101875	Steering bracket
22	101885	Friction Dish for Adj. Handle
25	101856	Smoke Hood
26	101870	Smoke Outlet (Half Part)
27	101871	Smoke Outlet Half Part with Fold
28	101872	Damper
29	101873	Activation Handle for Damper
30	101874	Regulation Handle for Damper
33	101912	Locking Dogs
38	100494	All purpose Tool and Handle
	340638	Grate with Equipment System 18-2
45	101854	Extension Legs
46	101879	Grate Frame
47	101880	Grate
48	151464	Inner Ash Bucket
49	151465	Cover for Ash Tray Complete
41	125634	Floor Protector
62	116832	Nut 6k M6
70	117099	Screw 6k w/collar M6 x 25
65	116881	Screw 6k M10 x 35
81	117248	Screw, Plate Steel 4, 8 x 19
	340639	Opening Reducer System 18-3
52	101883	Opening Reducer
62	116832	Nut 6k 6M
63	120004	Washer 18 x 18 x 0 1/4
61	117139	Screw 6k H. M6 x 35
	340640	Front Side Panels 18-4
50	101881	Front Side Panels
70	117099	Screw M6 x 25
	340641	Frame Panel, Top System 18-5
51	101882	Frame Panel, Top
	340642	Surrounding Sheet Steel, Top System 18-6
53	151495	Surrounding Sheet Steel, Top
	340643	Spark Guard, System 18-7
	151497	Spark Screen (not shown)
	340652	Equipment for Top Connection, Sys. 18-8
76	180358	Chimney Sweep Protection
77	101911	Adapter
98	101489	Adapter Ring
91	117076	Screw, unbrako, Set M6 x 10
	340657	Cast Iron Doors 1 Set, System 18-9
11	101867	Door Side
12	101868	Door Center Right
13	101869	Door Center Left
56	125674	Gasket 1/4" x 860
57	125675	Gasket 1/4" x 1455
58	125676	Gasket 1/4" x 920
71	117140	Washer 17-30-3
35	151443	Door Latch Assembly
36	122614	Locking Staple
50	116964	Screw Syl. H. M8 x 35

Diagram number	Catalog number	Description
59	116994	Nut M8 Form A Flat
31	101438	Air Control
	340659	Glass Doors, System 18-10
19	101937	Glass Doors Right Side
18	101938	Glass Doors Center Right
17	101939	Glass Door Center Left
16	101940	Glass Doors Left Side
35	151443	Door Latch Assembly
36	122614	Locking Pin
71	117140	Washer Round 17-30-3
31	101438	Air Control
60	116964	Screw Cyl. H. M8 x 35
59	116994	Nut 6K M8 Form A. Flat
58	125676	Casket 1/4" x 920 mm Al. Silicate Cart. a 50m
75	125752	Gasket
44	141059	Glass Ceramic
73	125753	Clips For Glass
72	116844	Screw 6k H M6 x 10
57	125675	Gasket 1/4 x 1455 mm Al. Silicate Cart. a 50m
56	125674	Gasket 1/4" x 860 mm Al. Silicate Cart. a 50m
	340659	Equipment for Coal Burning System 18-11
96	101942	Coal Basket, Front Retainer
94	101943	Coal Basket, Right Side Plate
95	101944	Coal Basket, Left Side Plate
93	101945	Coal Basket, Back Plate
86	101936	Air Control Base
87	101284	Inlet Control 92mm
88	151547	Shaft Assembly
85	178274	Gasket, Round 09 Hole
62	116832	Nut M-6
64	117004	Nut 6k H M8
90	151562	Indication Plate Assembly
92	101977	Knob
89	125735	Bushing
80	125736	Support
97	116888	Screw 6k H M6 x 16
84	178321	Screw Pan Head M6 x 12
91	117076	Allen Screw M6 x 10
	340637	Insert System 18-1 Conts
39	151494	Steel Cover Complete
40	125720	Insulation Plate
55	125677	Rivet 6 x 44mm
61	117139	Screw, collar M6 x 35
62	116832	Nut M6
63	120004	Washer 18 x 18 x 0 1/4"
64	117039	Screw 6k M8 x 60
65	117004	Nut 6k M8
66	117108	Screw 6k M8 x 35
67	125193	Gasket 04 x 690 mm Al. Silicate
68	125679	Gasket 05 x 915 mm Al. Silicate
69	125769	Spring
70	117699	Screw Collar M6 x 25
85	178274	Washer 10,5 x 21 x 2,5
99	116949	Screw M6 x 35
	340661	Coal Basket, System 18-12
96	101942	Coal Basket, Front Retainer
94	101943	Coal Basket, Right Side
95	101944	Coal Basket, Left Side
93	101945	Coal Basket, Back Side
97	116888	Screw 6k H. M6 x 16

All parts listed in shaded areas are not available in the USA.

## STANDARD EQUIPMENT

The Jotul System 18 is delivered assembled from the factory, with the exception of the following parts, which are included but must be assembled:

- Legs (3)
- Smoke hood and adjustable outlet
- Burn plates (3)
- Ash lip
- Ash retainer
- Bi-fold doors (2)
- Adjustable legs (3)
- Bottom heat shield
- Front side panels (2)
- Stainless steel flue outlet adapter (For REAR installations)
- Adjustable stainless steel connector pipe adapter (For TOP installations)
- All-purpose tool and handle

**LEGS.** Lay the fireplace on its back. Fit the three legs into the guides cast into the bottom plate and attach the legs, using the 8 x 35mm bolts, nuts and washers provided.

**SMOKE HOOD.** Place a generous bead of furnace cement in the circular channel located on the top of the fireplace. Place smoke hood on top of the fireplace and fit into the circular channel. Tap the smoke hood firmly with the heel of your hand and rotate slightly side to side to ensure a tight seal. Finally, place the two locking dogs in their guide brackets and bolt to the fireplace, using the two 6 x 35mm bolts provided. Insert these bolts from below and attach washers and nuts from above. Do not over tighten.

*NOTE: The smoke hood should be positioned so that the smoke outlet is perpendicular to the back of the fireplace.*

**BURN PLATES.** Place the rear plate, with the notched edge up, in its guide groove in the back of the fireplace. Then place the right and left burn plates, with their notched edges up, in their guide grooves and slide them to the rear. The burn plates are grooved in such a way as to hold them in place. All three burn plates are the same size and are interchangeable.

**FRONT SIDE PANELS.** Fit the panels to the sides of the fireplace. Attach by tightening down the 6 x 25mm bolts with washers to the bolt ears located on the side of the fireplace.

**ASH LIP.** Hook the locking tabs of the ash lip underneath the front edge of the fireplace and lock it into place. Do not force the ash lip down. If it is properly aligned with the front of the fireplace, it fits easily into place.

**ASH RETAINER.** Place the ash retainer at the front of the fireplace and fit it into guide grooves on the floor of the fireplace opening.

**BI-FOLD DOORS.** The System 18 doors are of a bi-fold design, fastened to the fireplace by hinges located on either side of the fireplace. To assemble the door sections, hang the left and right outer doors on the hinges, using the pins provided. Once these door sections are hung, hang the center doors, using the remaining door pins.

To shut and close the doors, first close the left-hand door and latch it, using the all-purpose handle. Then close and latch the right-hand door in the same manner.

**STAINLESS STEEL FLUE OUTLET ADAPTER.** This piece is used in rear vent installations. The stainless adapter connects the 8" UL Listed, Metalbestos Residential Type and Building Heating Appliance Chimney Section, to the cast iron flue outlet of the System 18. The crimped or fluted end of the adapter is installed so that it fits inside the flue outlet of the smoke hood. The large end of the adapter is made to fit over the outside of the inner liner of the metal chimney section.

**ADJUSTABLE STAINLESS STEEL CONNECTOR PIPE ADAPTER.** This piece of equipment is used with top vent installations to connect the flue outlet of the System 18 to the 12" x 12" tile flue liner of the masonry chimney. The connector pipe consists of three pieces: A square to round piece, and two sections of pipe tapered to allow one section of pipe to slide inside the other. To assemble the connector pipe, fit the small pipe inside the large pipe with the crimped or fluted ends facing down. Next, fit the square to round flue tile adapter into the top section of the slip pipe and secure the joint with three stainless steel sheet metal screws. The connector pipe assembly can now be adjusted to its appropriate length by sliding the bottom up or down.

**ADJUSTABLE LEGS.** These pieces allow the height of the fireplace to be raised above the height of the standard legs. The adjustable legs also enable the unit to be leveled when the fireplace is installed on uneven floor surfaces. The adjustable leg package consists of:

- Three extension legs and 6 x 25mm. bolts, nuts, and washers
- Three fine adjust leveler bolts 10 x 35mm.
- Three metal leg pads

To assemble the adjustable legs, attach the extension legs to the standard legs and fasten with bolts provided. Thread the leveler bolts to the extension legs. The extension legs provide coarse adjustment and the leveler bolts allow for fine adjustment. The metal leg pads are placed beneath the leveler bolts to provide a rigid base surface.



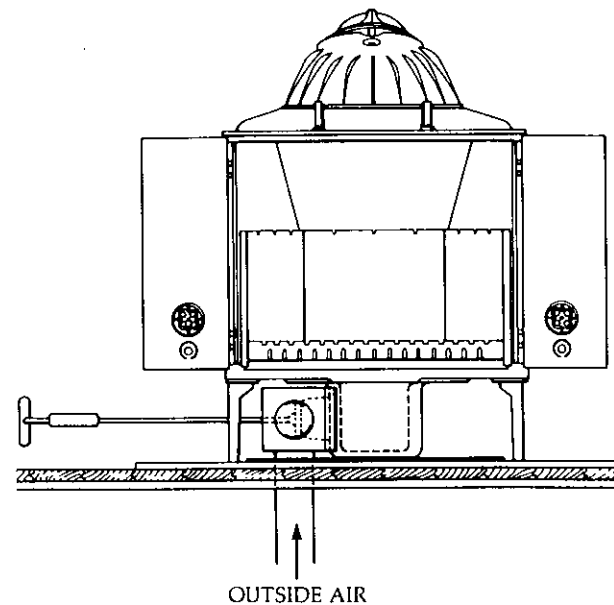
**BOTTOM HEAT SHIELD.** To assemble the bottom heat shield, remove the 6mm nut used to tighten the traverse bar to the bottom cover plate to floor of the fireplace. Install the bottom heat shield with the nut recess facing up and the notch for the legs facing toward the rear of the fireplace.

## OPTIONAL EQUIPMENT

The following items are available as optional equipment to be used in the installation or operation of the Jotul Fireplace System 18.

**OUTSIDE AIR KIT.** This piece of equipment allows outside combustion air to be introduced directly into the fireplace chamber. The kit consists of the following items:

- A cast iron grate bearer and rotating grate.
- Ash disposal buckets. Inner and Outer.
- An air regulator assembly.



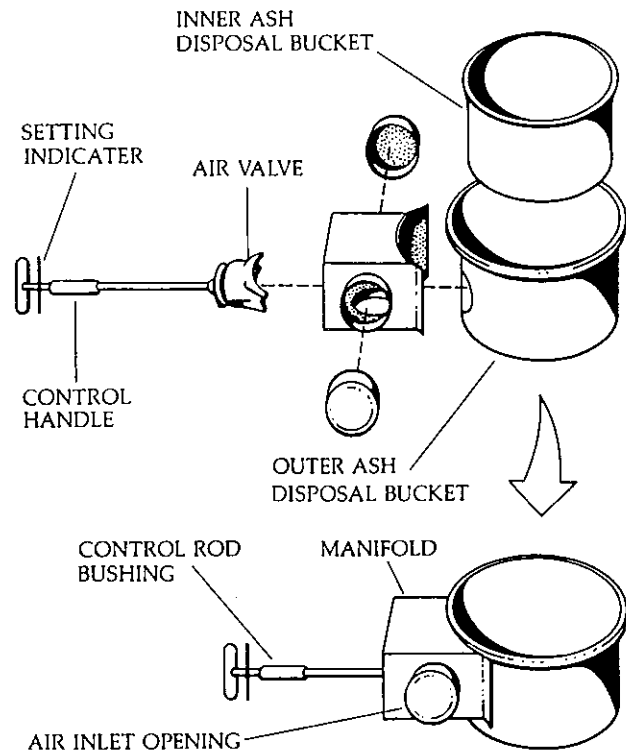
D5. POSITION OF OUTSIDE AIR KIT.

To install the outside air kit, first remove the circular coverplate in the floor of the fireplace. When removing the cover plate, it is also necessary to remove the heat shield at the same time. Set the heat shield aside, it will be installed later in the assembly of the outside air kit.

Remove the bolt in the base of the outer ash disposal bucket.

Remove the oval cover on the side of the outer bucket.

Next, place a bead of furnace cement in the recessed molding which held the circular cover plate.



D6. ASSEMBLY OF OUTSIDE AIR KIT.

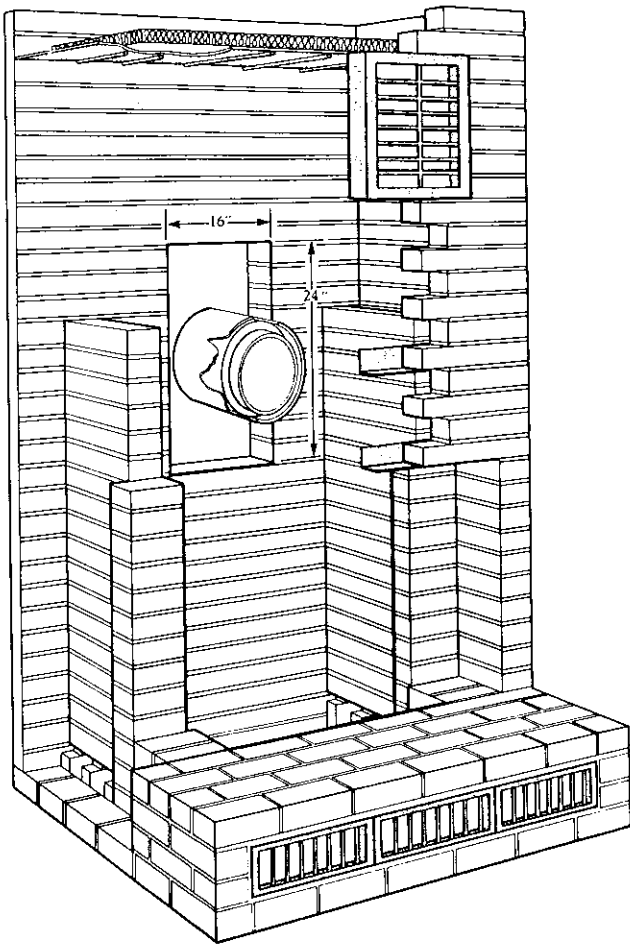
Place the outer bucket down into the circular opening in the floor of the fireplace. Make certain that a good seal is made between the top edge of the outer bucket and the furnace cement. **MAKE CERTAIN THE OPENING FOR THE OUTSIDE AIR VALVE IS PROPERLY POSITIONED FOR OPERATION OUTSIDE OF THE MASONRY ENCLOSURE.** Remove excess furnace cement.

Screw the three sheet metal screws with the three spacer brackets into the holes located just below the top edge of the outer bucket. Attach outside air valve assembly to outer bucket over the opening, using the nuts and bolts provided. Next, slide the outside air manifold over the control rod and fasten with the screws provided.

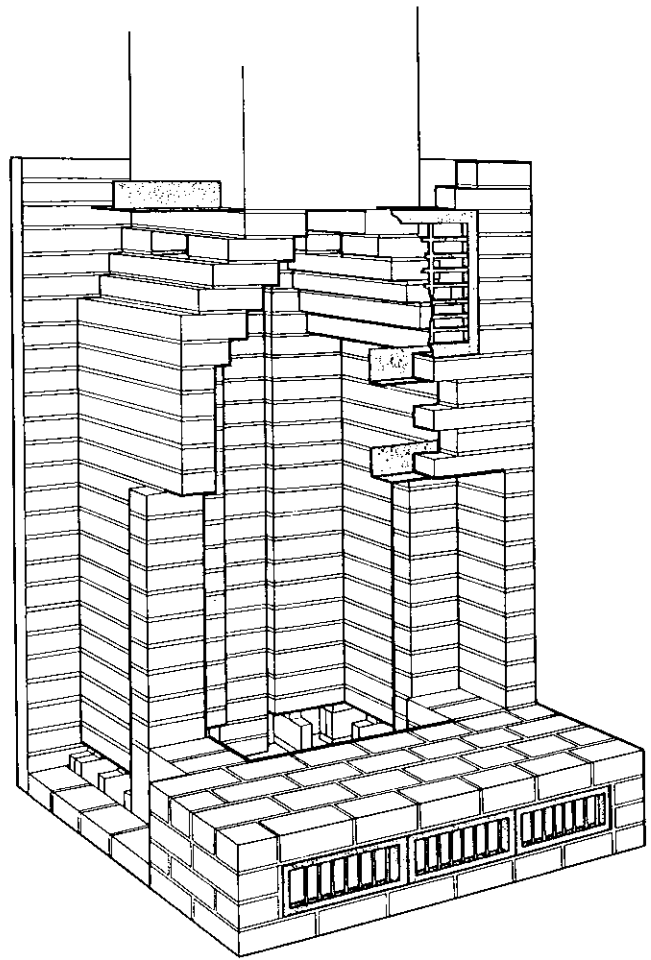
Attach the heat shield to the bottom of the outer bucket. Connect a 4" diameter metal air source tube or pipe to one of the three openings in the outside air manifold.

Insert the inner bucket. Install the grate bearer and rotating grate. Install the control rod bushing, the setting indicator and, the control handle during construction of the masonry enclosure and hearth.

**ASH DISPOSAL KIT.** An inner and outer bucket and grate system provide for ash collection and removal from inside the fireplace. Install bucket system as described in outside air kit, exclude air valve assembly. Make certain that the bottom heat shield is installed.



E1. REAR VENT CUTAWAY



E2. TOP VENT CUTAWAY

## INSTALLATION

### STRUCTURAL SUPPORT

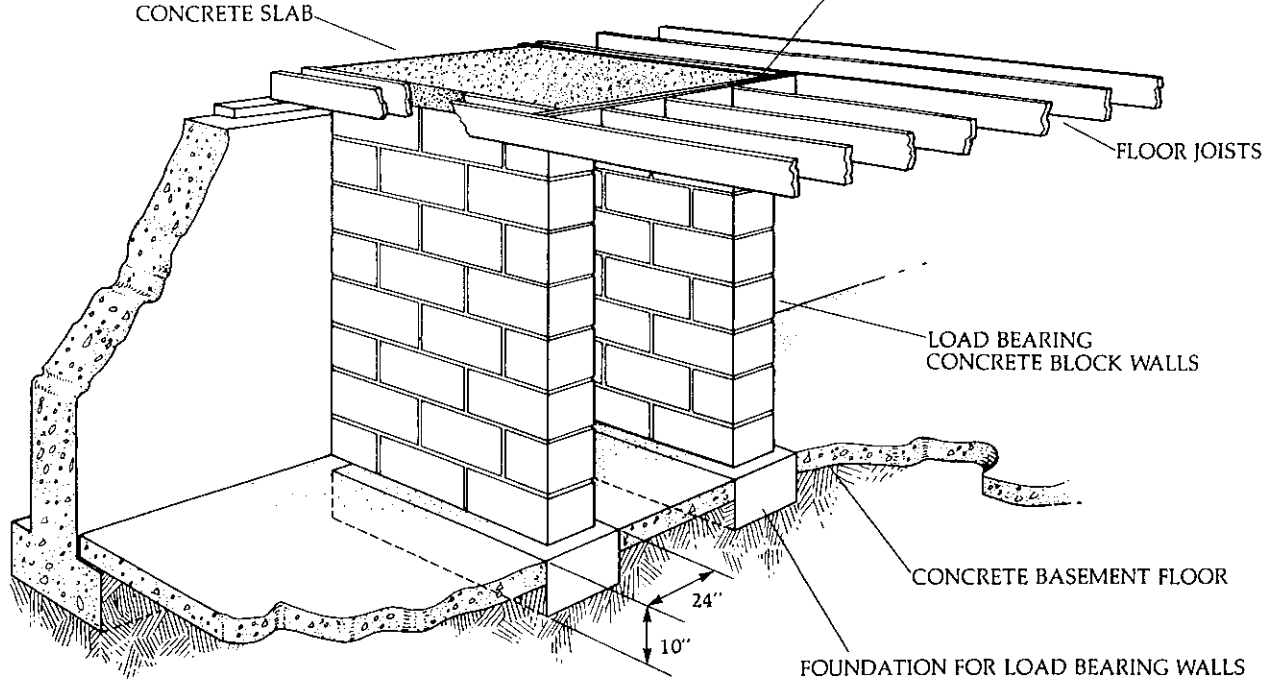
While the System 18 is considerably less complicated to build than a conventional masonry fireplace and requires less masonry, it does require structural reinforcement. READ THESE INSTRUCTIONS ENTIRELY BEFORE PROCEEDING.

DO NOT INSTALL IN ANY MANNER OTHER THAN THOSE OUTLINED IN THESE INSTRUCTIONS. WHEN OPERATING AND MAINTAINING THE JOTUL SYSTEM 18, FOLLOW THE GUIDELINES GIVEN IN THESE INSTRUCTIONS. KEEP THESE INSTRUCTIONS SO THAT THEY ARE ALWAYS AVAILABLE TO ANYONE USING THE FIREPLACE. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS IN YOUR AREA.

*NOTE: The dimensions given in these instructions represent MINIMUM dimensions. The dimensions may be increased but NEVER REDUCED.*

### FIREPLACE INSIDE THE HOUSE

Two methods of structural support and foundation are given in these instructions so that the owner or installer may choose a solution most suitable to the requirements of the particular job. Both alternatives have been designed to safely support the weight of the Jotul Fireplace System 18 to insure that the structural integrity of the house is safeguarded. While other structural solutions may be used, we suggest that they be reviewed by a structural engineer and approved by a local building official before work is begun.



### E3. CUTAWAY VIEW OF MASONRY SUPPORT

#### MASONRY SUPPORT

For use with both TOP and REAR chimney installations. The materials needed are:

- Concrete block - 8" x 8" x 16"
- Concrete
- Mortar
- Sand
- #3 concrete reinforcing rods

STEP 1. Mark off the outside dimensions of the masonry enclosure, as shown in illustrations for rear or top vented chimneys. See page 10, illustration E5.

STEP 2. Remove the flooring and joists in the marked off area. Make certain to adequately support the severed joists during this phase of construction.

STEP 3. Head off the floor joists.

STEP 4. Mark the position of the load bearing 8" concrete block walls so that they are positioned beneath the outside edges of the base of the masonry enclosure, represented by the area of the floor removed above.

STEP 5. Using the center line of the block wall as a mid-point, mark off an area 24" wide by the length of the walls, to serve as the foundation for the load-bearing walls.

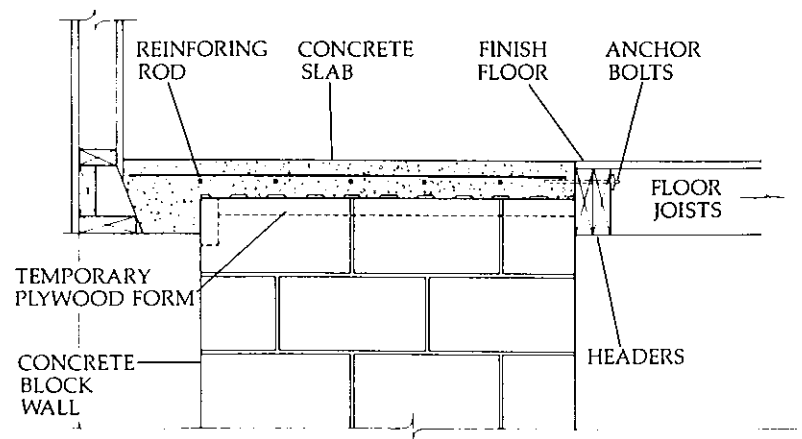
STEP 6. Remove the marked-off portion of the concrete floor and the soil beneath to a depth of 10" from the top of the floor or to undisturbed soil.

STEP 7. Using the trench created in step 6 as a form, pour the footer so that it is level with the existing floor. Allow the footer to cure thoroughly before proceeding to the next step.

STEP 8. After the foundation has properly set, the 8" concrete block walls can be laid up to the floor joist area.

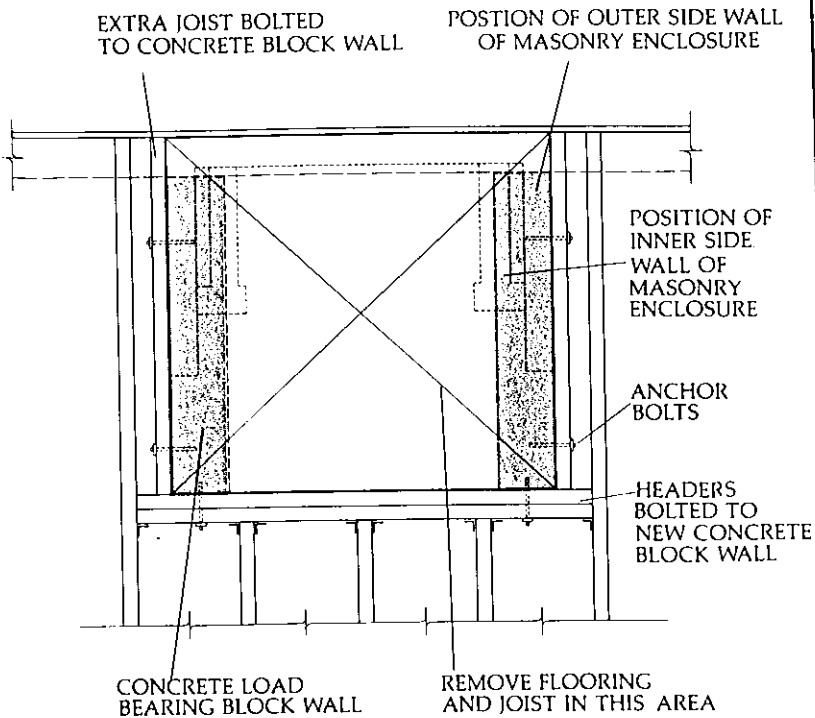
STEP 9. Anchor the floor joists and headers to the block walls.

STEP 10. Pour a 4" thick concrete slab on top of the block walls in the area to serve as the base of the fireplace. The concrete slab should be reinforced with #3 concrete reinforcing rods placed 8" on center. The headers provide the form for the sides of this concrete slab. The plywood form for the concrete slab should be placed *between* the block walls (NOT ON TOP) and should be properly supported to carry the load of the concrete being poured on top of it. The form is removed after the concrete has cured. Allow the slab to cure thoroughly before continuing the construction of the fireplace enclosure. See illustration E4.



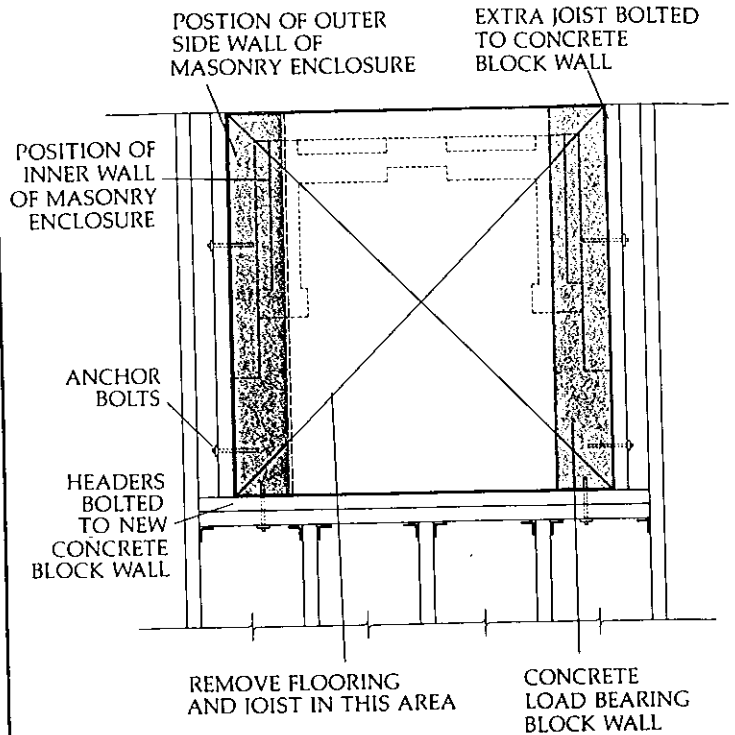
E4. CONCRETE SLAB & PLYWOOD FORM DETAIL

# REAR VENT

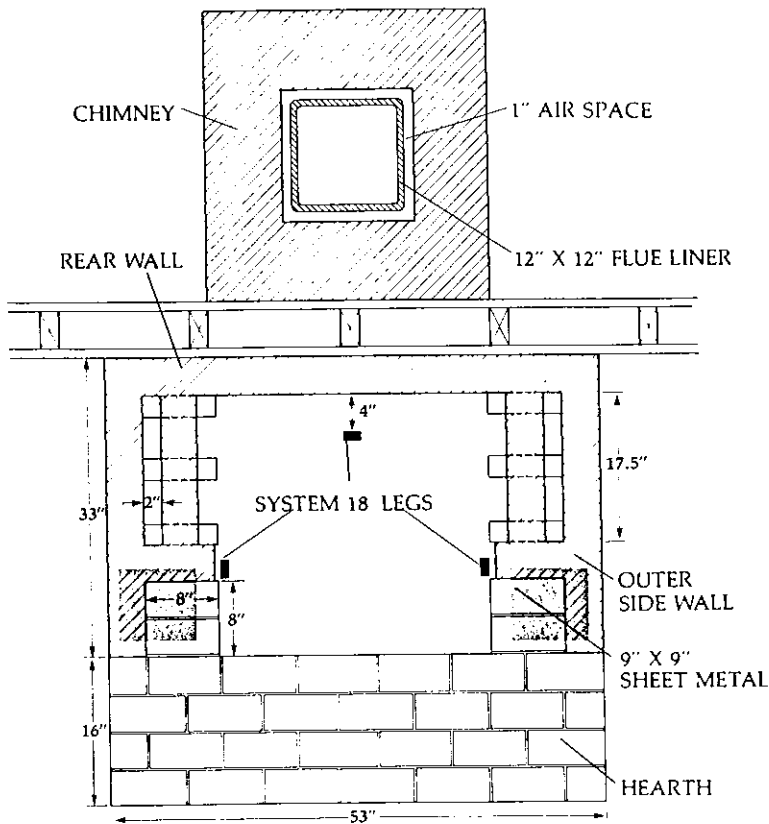


E5. PLAN VIEW OF MASONRY SUPPORT

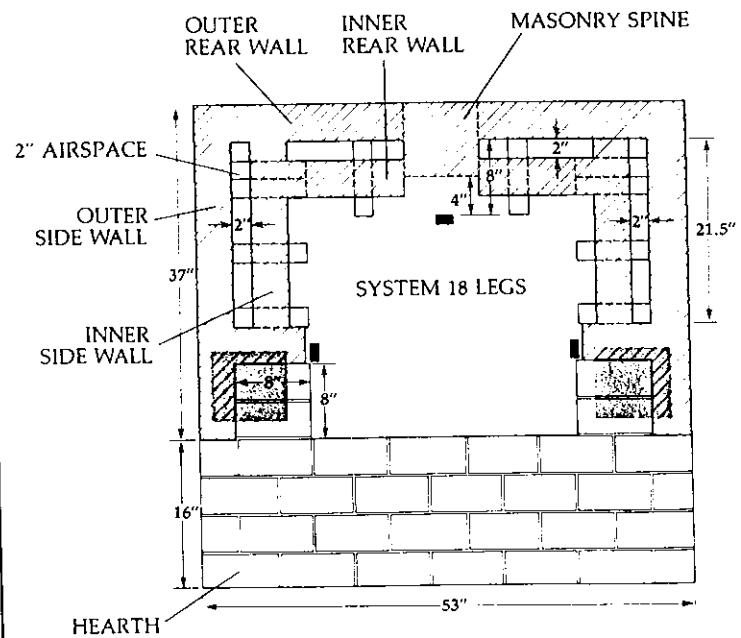
# TOP VENT



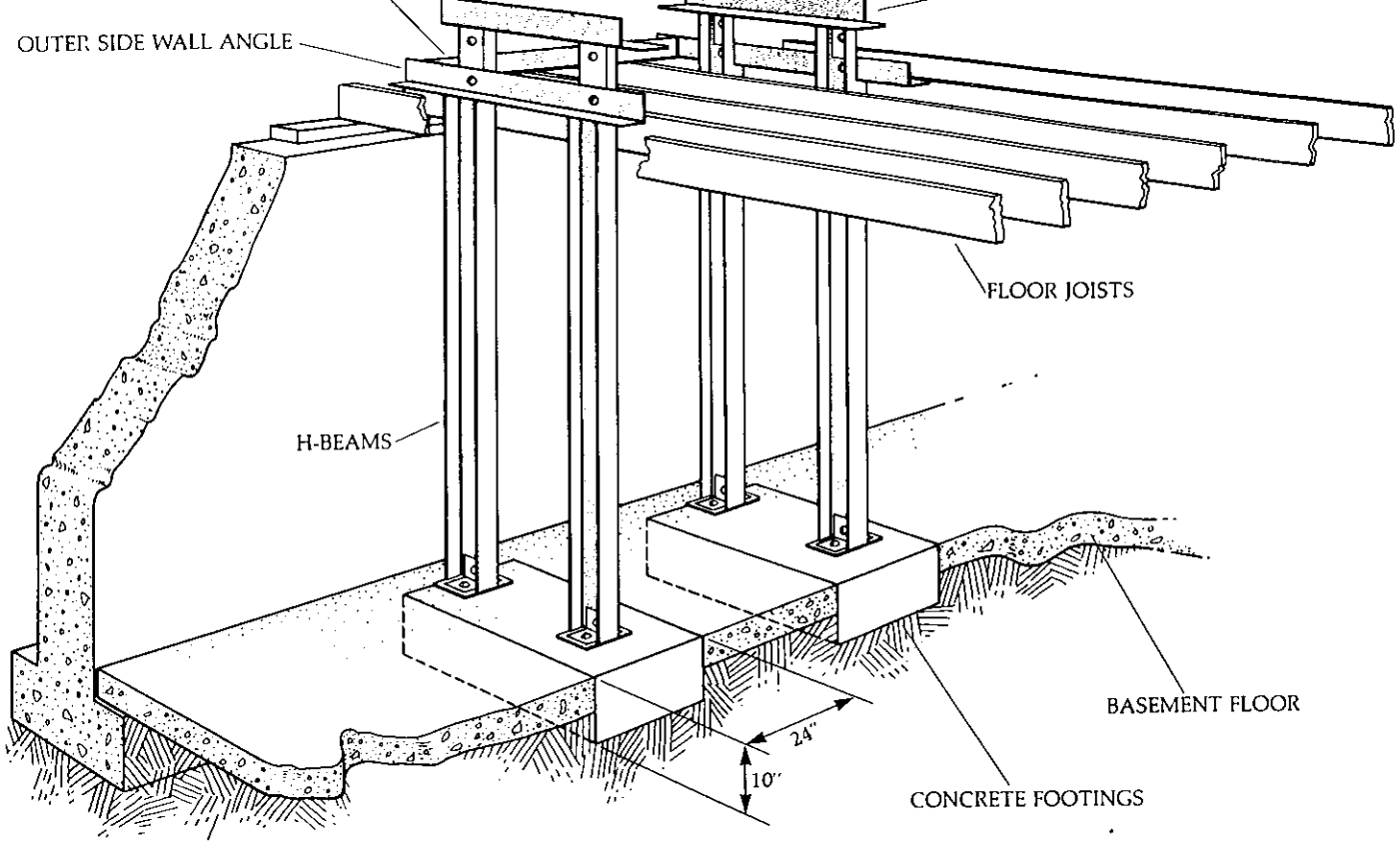
E7. PLAN VIEW OF MASONRY SUPPORT



E6. PLAN VIEW MASONRY ENCLOSURE



E8. PLAN VIEW MASONRY ENCLOSURE



E9. REAR VENT CUTAWAY VIEW OF H-BEAM SUPPORT

## H-BEAM SUPPORT SYSTEM

For use with REAR CHIMNEY installation only.

This system of support uses structural steel members anchored into concrete foundation pads to support and carry the fireplace system. This structural system requires materials other than ordinary masonry. Careful measurements should be taken and the layout thoroughly checked before ordering and cutting the materials. The materials needed are:

- Inner sidewall angles,  
2 pcs 3½" x 3½" x ¼" x 17½"
- Outer sidewall angles,  
2 pcs 3½" x 3½" x ¼" x 33"
- Outer wall angles,  
1 pc 3½" x 3½" x ¼" x 45"
- H-Beam Columns,  
4 pcs 4' x 13' x (floor to floor height + 7")
- Lintel, 2 pcs 3½" x 3½" x ¼" x 4'3"
- Base Plates, 4 plates ½" x 4' x 8'
- Clip angles, 4 L's 5' x 5' x ⅝" x 3'  
2 L's 4' x 4' x ¼" x 3'  
8 L's 4' x 4' x ¼" x 3'
- Bolts 20 5/8" x 3 min
- Anchor bolts, 8 5/8" x 8" 2" thread
- Concrete reinforcing rod 24 pcs ⅝" x 20"

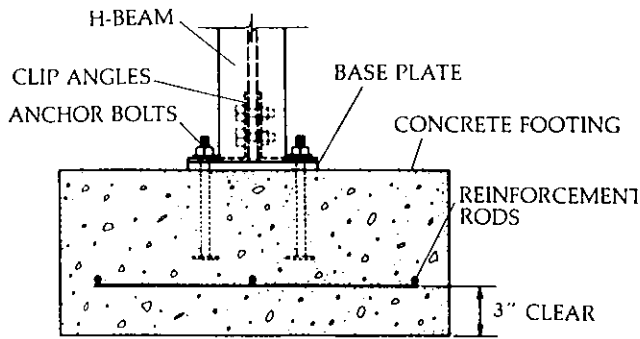
*NOTE: The cast iron fireplace and hearth are supported on the floor framing of the house. The masonry enclosure is supported by the steel beams.*

**STEP 1.** Lay out the position of the masonry enclosure and locate the areas of the floor to be removed to permit the installation of the H-beams. See illustration E11.

**STEP 2.** After removing the areas of the floor in Step 1, determine the location of the four vertical H-beams on the floor below using a plumb bob or similar tool to ensure that the columns are square and correctly centered in the openings made in the floor above. Determine the center point of each of the four beams. Mark off a 2 ft. x 4 ft. area around the four center points.

**STEP 3.** Remove the 2 ft. x 4 ft. areas of concrete marked off in Step 2, as well as the necessary amount of soil, to a 10" depth or to undisturbed soil.

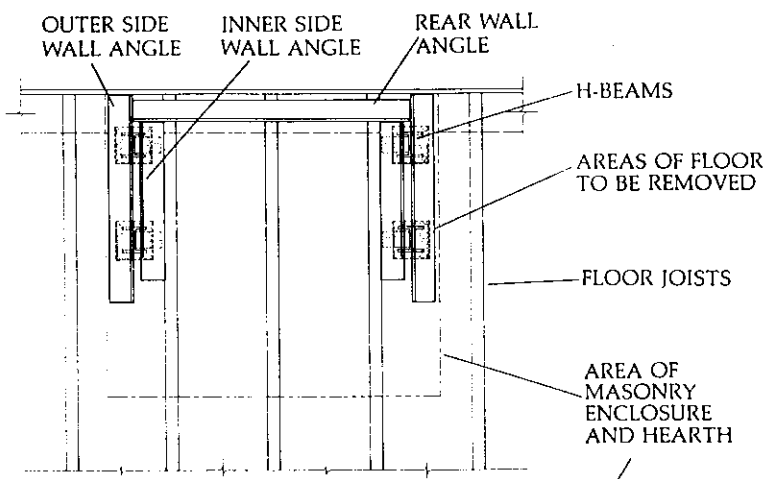
**STEP 4.** Pour the two foundation pads, reinforcing the concrete with 6 pieces of 3/8" x 20" reinforcing rod for each beam. Pour concrete up 2' from the bottom. Place 1 rod at the center point of each beam and 2 rods parallel to the first, each 2" from outside edge. Place the other 3 rods in similar position, perpendicular to the first three. Tie the rods together and complete pouring the pads. See illustration E10.



E10. CONNECTION OF H-BEAM TO FOOTING

STEP 5. After the pads have been poured, and before the concrete sets, place the  $\frac{1}{2}$ " x 4" x 8" base plates in the concrete with the 2  $\frac{3}{8}$ " anchor bolts. Make certain that base plates are properly centered to receive the columns. Check that the position of the H-beams is properly aligned with the areas to be supported in the fireplace enclosure layout on the floor above. All final adjustments must be made before the concrete sets up.

STEP 6. Allow the pads to cure thoroughly before setting the H-beam columns. H-beams should be cut to a length of basement floor to the first floor above the basement plus 7".

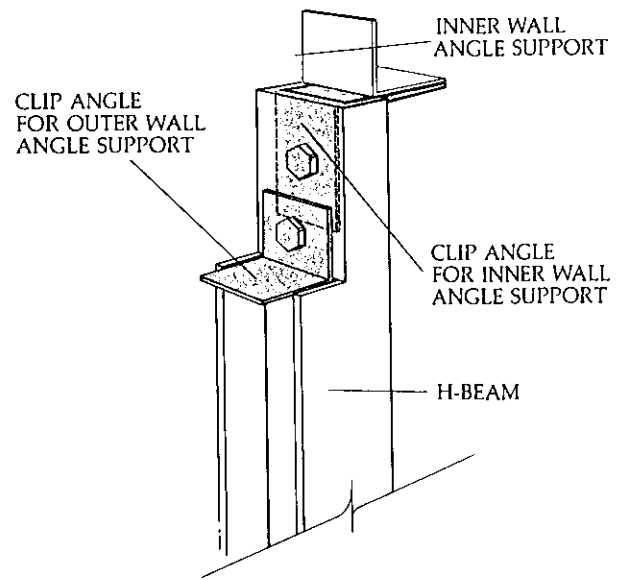


E11. TOP VIEW OF H-BEAM SUPPORT

STEP 7. Install the H-beam columns and attach them to the base plate using the 4" x 4" x  $\frac{1}{4}$ " x 3" clip angles. These clip angles should be slotted to permit final adjustments before fastening to base plates. Attach clip angles to the H beams with  $\frac{5}{8}$ " x 3" bolts. See illustration E12.

STEP 8. Moving to the floor above, attach outer angles  $3\frac{1}{2}$ " x  $3\frac{1}{2}$ " x  $\frac{1}{4}$ " to H-beams with  $\frac{5}{8}$ " x 3" bolts. Lay rear angle  $3\frac{1}{2}$ " x  $3\frac{1}{2}$ " x  $\frac{1}{4}$ " and fasten to the two outer angles using the two 4" x 4" x  $\frac{1}{4}$ " x 3" clip angles. See illustration E11.

STEP 9. Attach the inner angles to the H-beam using the 5" x 5  $\frac{3}{8}$ " x 3" clip angles.



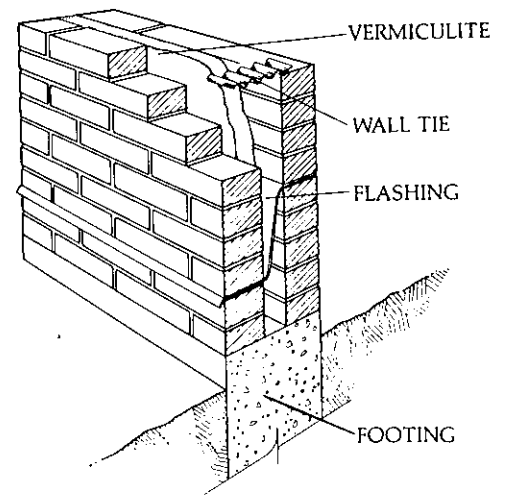
E12. ATTACHMENT OF CLIP ANGLES TO H-BEAM

STEP 10. Make sure that all the columns are square and all the angle iron sections are level before tightening all the bolts.

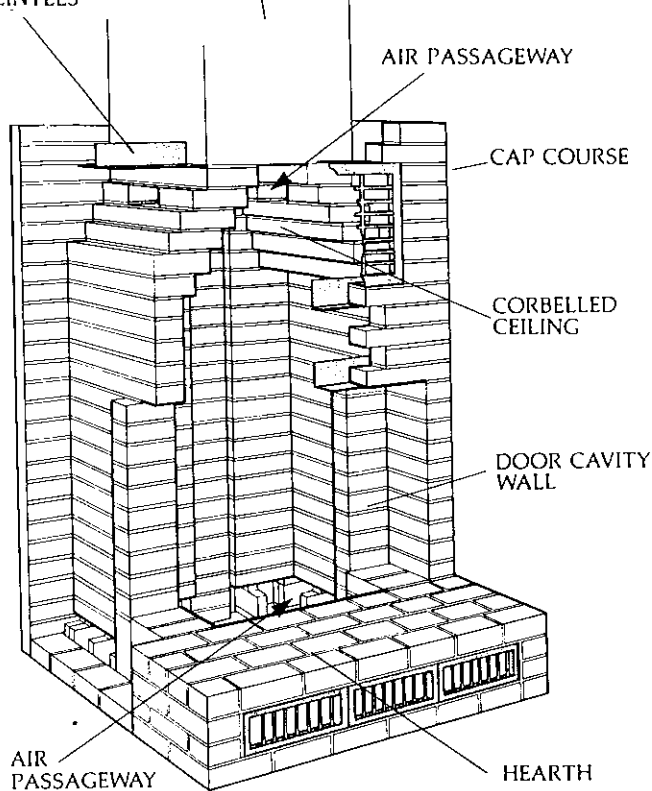
## FIREPLACE OUTSIDE HOUSE

The System 18 can be positioned flush with the interior side wall of the house, with most of the system located outside the house. The structural support used for this type of installation is similar to that of a conventional masonry fireplace located in a similar position.

Refer to top chimney masonry enclosure illustration for appropriate dimensions. The cavity between the inside and outside walls of the masonry enclosure should be filled with vermiculite (or equivalent) to insulate the exposed masonry enclosure.



E13. CAVITY WALL CONSTRUCTION



E14. TOP VENT CUTAWAY

## CONSTRUCTION OF MASONRY ENCLOSURES

### TOP CHIMNEY INSTALLATION MATERIALS & LAYOUT

#### Materials Needed:

- Fully assembled System 18
- Brick
- Clean sand
- 1 pc. 28" x 48", 24 gauge galvanized sheet metal
- 4 lintels 52" x 3½" x ¼"
- Grills for both inlet and outlet air
- 2 pcs. 9" x 9", 24 gauge galvanized sheet metal
- ⅜" millboard
- Stainless steel connector pipe adapter

### LAYOUT TOP CHIMNEY INSTALLATION

Begin by making floor protection. The materials needed are:

- 1 piece of ⅜" millboard, 33" x 46" having a thermal conductive  $K \leq 0.84 \text{ BTU in/ft}^2 \text{ h F}^\circ$
- 1 piece of 24 gauge galvanized sheet metal 28" x 48"

STEP 1. Place millboard on the floor in its proper position. Space the millboard out from the wall 4", or one brick's depth to allow space for the rear wall enclosure.

STEP 2. Place sheet metal over millboard.

STEP 3. Place System 18 on the floor protection.

STEP 4. Check that System 18 has the proper clearances to the inside of the outer walls of the enclosure. All clearance measurements for positioning the walls of the masonry enclosure are made from the three legs of the fireplace.

Minimum clearances to:

- Inside face of outer rear wall - 8"
- Inside face of outer side wall - 8"
- Inside face of inner side wall - 2"
- Inside face of inner rear wall - 2"

STEP 5. Layout the position of the side walls along the side of the floor protection. See illustration E15.

STEP 6. Mark out the position of the outer rear wall and inner rear walls which have a 2" air space clearance between them.

STEP 7. Lay out the door cavity wall behind the front panels. A slight gap (¼") should be maintained between the side of the fireplace and the door cavity walls to allow for expansion.

STEP 8. Install any optional equipment before proceeding with the construction.

## CONSTRUCTION OF MASONRY ENCLOSURE FOR TOP CHIMNEY

STEP 1. Position System 18 and re-check clearances given in Step 4 of layout.

STEP 2. Insert the Adjustable Stainless Steel Connector Pipe Adapter into the System 18 flue outlet. Extend the adjustable adapter to a length of 24". This measurement is made from the top of the fireplace's flue outlet, to the bottom of the adapter's flat, square section.

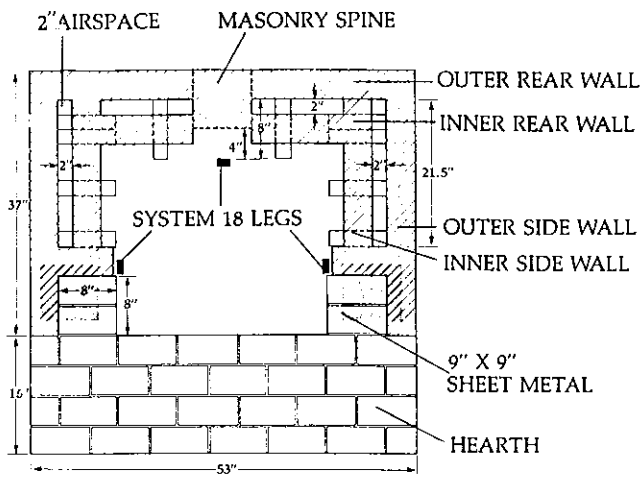
*NOTE: If extension legs are used to raise the height of the fireplace above its standard height, the additional height must be added according to the masonry enclosure height.*

STEP 3. Begin construction of outer, rear, and side walls.

*NOTE: The center of the outer rear wall has a thickness of 8" to serve as a reinforced support for the top mounted chimney. See illustration E15.*

STEP 4. Begin construction of inner, rear, and side walls which have a minimum 2" air space clearance to the outer enclosure walls.

*NOTE: The open spaces at the base of each of the inner walls, as well as, the 2" air space clearance between the inner walls and the outer walls allow for air circulation. These openings should be cleaned of excess mortar. See illustration E14.*



E15. PLAN VIEW OF MASONRY ENCLOSURE

STEP 5. Lay out the door cavity walls behind the front side panels. A slight gap ( $\frac{1}{4}$ " ) should be maintained between the side of the fireplace and the door cavity walls to allow for expansion.

STEP 6. Build all walls up to the height of the front edge of the fireplace.

STEP 7. Place fireplace opening lintel in position. The lintel should be spaced  $\frac{1}{4}$ " from the edge of the fireplace to allow for expansion. This  $\frac{1}{4}$ " area should be filled with a ceramic gasket material. The ends of the lintel should rest on the outer walls of the enclosure.

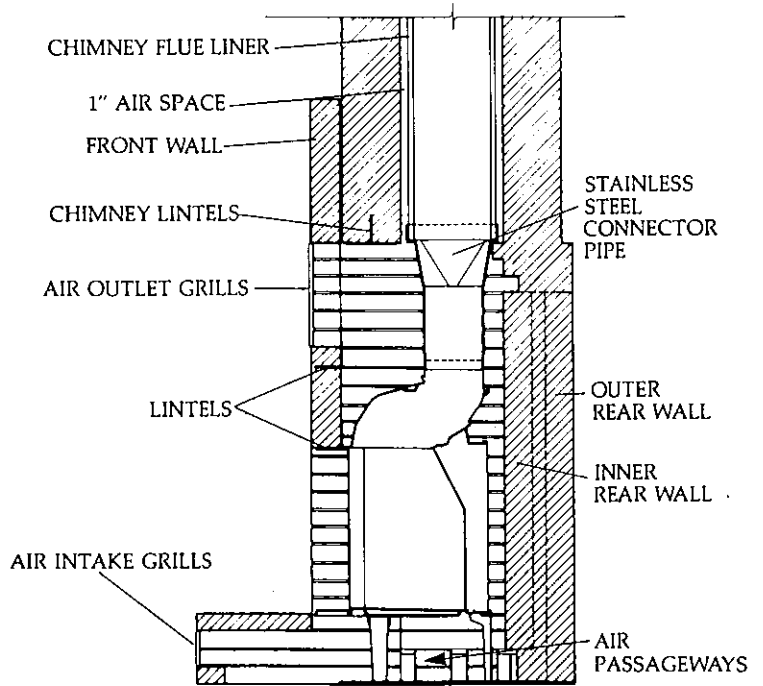
STEP 8. Place the 9" x 9" pieces of sheet metal in the open area between the lintel and the door cavity walls and the outer side wall. Place pieces of sheet metal so that they rest on the top edge of the fireplace. See illustration E15. Seal the joints around the sheet metal with a light wash of mortar.

STEP 9. Place a second lintel approximately 12" above the fireplace opening lintel. The purpose of this lintel is to provide support for the front enclosure should repairs need to be made on the cast iron fireplace.

STEP 10. From the fireplace opening lintel height, build up the inner rear and side walls 4 additional courses (approx. 8").

STEP 11. Begin construction of side and rear corbells. Continue the side and rear corbells for 5 courses (approx. 10") leaving out a brick in the center of the side and rear corbells as an air passageway.

NOTE: If extension legs are used to raise the height of the fireplace above its standard height, the additional height must be added according to the masonry enclosure height.



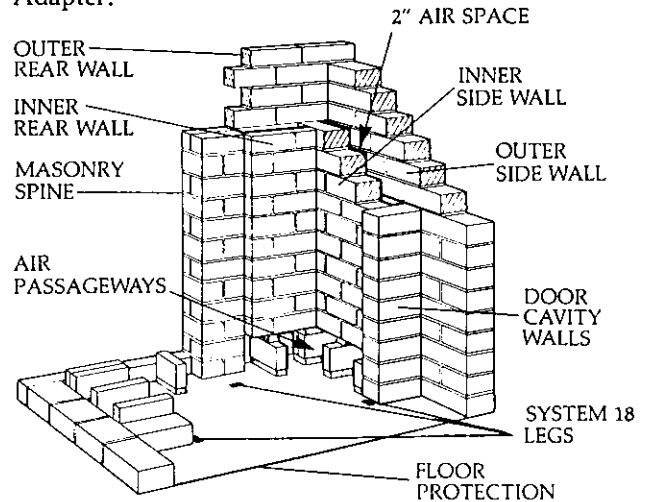
E16. TOP VENT SECTION

STEP 12. Cap the air spaces created between the inner and outer walls and extend the masonry to the outer rear and side walls in the next course (Cap course).

STEP 13. Adjust the Adjustable Stainless Steel Connector Pipe Adapter down onto the cap course.

STEP 14. Install two 52" x 3 1/2" x 1/4" angle supports at the front of the masonry enclosure so that they support both the front inner and outer walls of the masonry chimney.

STEP 15. Place the 12" x 12" tile flue liner in the Adjustable Stainless Steel Connector Pipe Adapter.



E17. TOP CHIMNEY MASONRY ENCLOSURE CUTAWAY

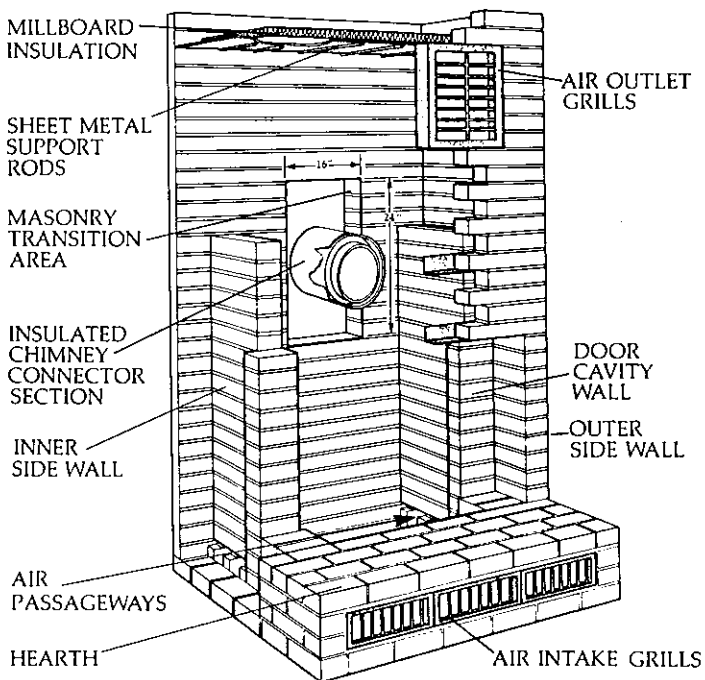


STEP 16. Finish front wall even with cap course height, placing air outlet grills in the front masonry wall not less than 5' and not higher than 6' above the floor, except when using extension legs. Place grills one or two courses below cap course. These grills should have a minimum *free air* opening of 155 sq. in.

STEP 17. Continue construction of all outer walls of the masonry enclosure to a minimum height of 7'6" with solid masonry.

STEP 18. The hearth should be constructed to provide a minimum 16" clearance from the front of the fireplace opening, and 8" to each side of the fireplace opening. Air intake grills should be installed in the hearth below the fireplace opening. These grills should have a minimum *free air* opening of 116 sq. in.

STEP 19. Continue chimney construction as described in the Chimney Construction section of these instructions.



E18. REAR VENT CUTAWAY

## REAR CHIMNEY INSTALLATION

The materials needed are:

- Fully assembled System 18
- Brick
- Portland cement
- Clean sand
- 2 pieces of, 24 gauge galvanized sheet metal, 1 piece 45" x 31", 1 piece 52" x 32"
- 2 lintels, 52" x 3½" x ¼"
- 4 pieces concrete re-inforcing rod ¼" x 33"
- Grills for inlet and outlet air

- 8" Metalbestos UL Listed Residential Type and Building Heating Appliance Chimney Connector Pipe
- ¾" millboard for floor protection having a thermal conductivity of  $K \leq 0.84$  BTU in./ft<sup>2</sup>.h F°
- 2" millboard - for enclosure lid
- Stainless steel flue outlet adapter

## LAYOUT OF MASONRY ENCLOSURE FOR REAR CHIMNEY

Make floor protection. The materials needed are:

- 1 piece of ¾" millboard 46" x 31" having a thermal conductivity of  $K \leq 0.84$  BTU in./ft<sup>2</sup>.h F°
- 1 piece of 24 gauge galvanized sheet metal 46" x 31"

STEP 1. Place ¾" millboard on floor in its proper position. Space millboard out from the wall 4" or one brick's depth to allow space for rear wall of enclosure.

STEP 2. Place 45" x 31" piece of sheet metal over millboard.

STEP 3. Place System 18 on floor protection.

STEP 4. Check that System 18 has the proper clearance to the inside of the outer walls of the enclosure.

*NOTE: All clearance measurements are taken from the three legs of the fireplace.*

Minimum clearances:

- From leg of fireplace to inside face of rear wall - 4"
- From side legs of fireplace to inside face of outer sidewall - 8"
- From side legs of fireplace to inner side walls - 2"

STEP 5. Lay out clearances for inner side wall clearances.

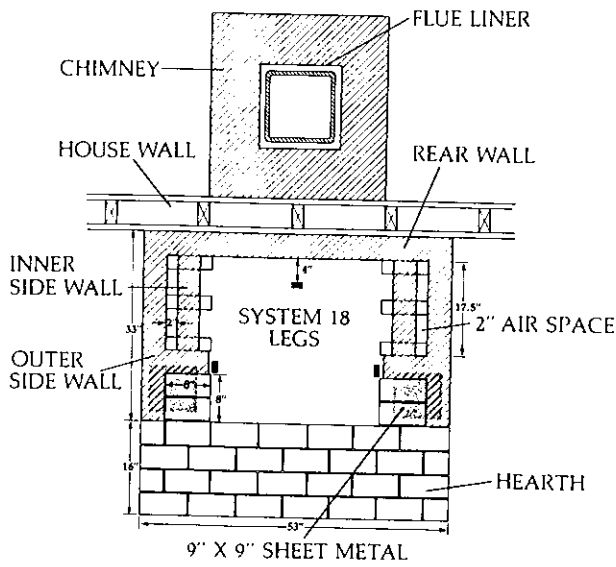
STEP 6. Lay out the inner side wall position.

STEP 7. Lay out the door cavity wall behind the front panels. A slight gap (¼") should be maintained between the side of the fireplace and the door cavity walls to allow for expansion.

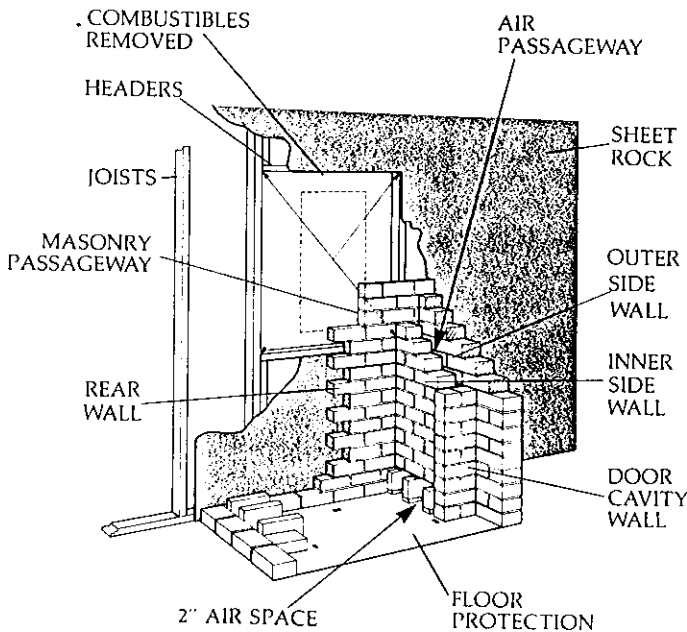
STEP 8. Mark out the projected center point on the rear wall where the insulated connector pipe will pass through.

STEP 9. Measure out an area 30" x 30" around the projected center point of the insulated connector. Remove this area of wall to provide proper air space clearance to combustibles. Head off any severed wall studs.

STEP 10. Install any optional equipment before proceeding with the construction.



E19. REAR VENT PLAN VIEW MASONRY ENCLOSURE

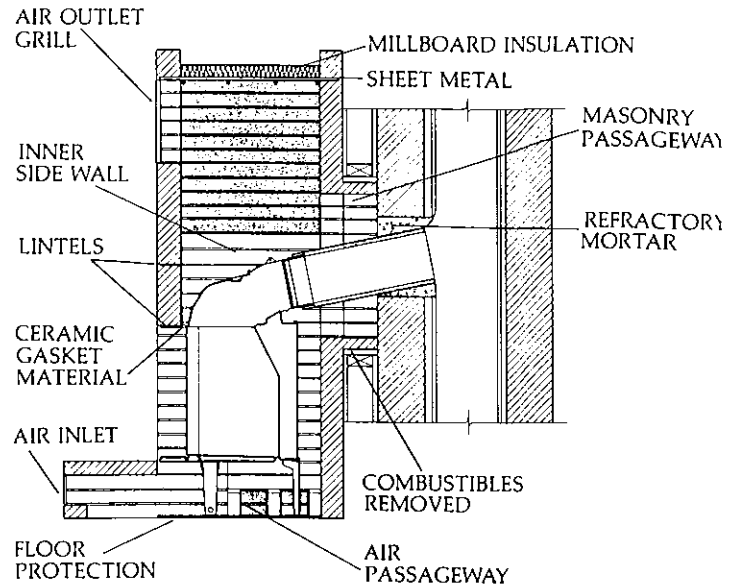


E20. REAR CHIMNEY MASONRY CUTAWAY

### CONSTRUCTION OF MASONRY ENCLOSURE FOR REAR CHIMNEY

*NOTE: If extension legs are used to raise the height of the fireplace above its standard height, the additional height must be added according to the masonry enclosure height.*

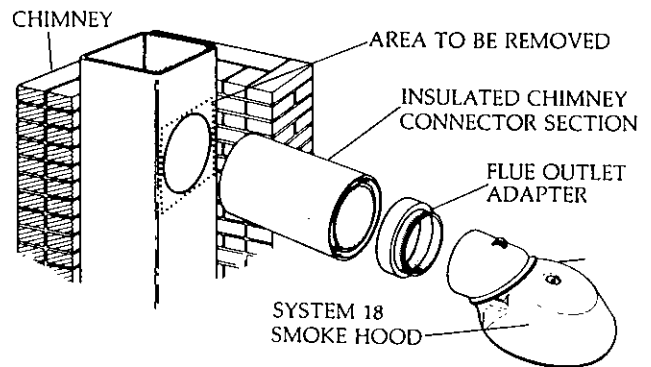
STEP 1. Position the fully assembled System 18 and re-check clearances given in Step 4.



E21. REAR VENT SIDE SECTION

STEP 2. Build up rear wall of enclosure to the base of 30" x 30" opening in house wall.

STEP 3. Using the center line of the 30" x 30" opening, construct a 16" x 24" opening in the rear wall of the enclosure centered with the 30" x 30" opening in the house wall.



E22. CONNECTION OF THE SYSTEM 18 TO THE TILE FLUE LINER

STEP 4. Then connect the rear wall of the enclosure to the masonry chimney by creating a masonry passageway or tunnel to encase the insulated chimney connector.

STEP 5. Connect the flue outlet of System 18 and masonry chimney using the stainless steel flue outlet adapter and the insulated chimney connector pipe. To do this, install the 8" diameter Metalbestos Residential Type Building and Heating Appliance Chimney Section through the masonry passageway and fit it flush with the bottom edge of the opening in the 12" x 12" ceramic tile flue liner.

*NOTE: Make a vent opening in the ceramic flue tile to connect the fireplace to the chimney flue. Use one of the two following methods:*

1) Lay out the outside diameter of insulated chimney section on ceramic flue tile liner. Next, inscribe diameter of chimney with a slightly larger square. The square area represents the area of the flue tile to be removed. Remove the square area marked off by either of these two methods:

*Method A: Drill tightly spaced holes with ½" masonry drill along the perimeter of the marked off square on the ceramic liner. Using a large masonry chisel, continuously scribe a chisel line over the drilled holes. Tap sharply in the center of the square until the square breaks away from the flue tiles. CAUTION: Ceramic flue tiles are extremely brittle. Repeat the tapping and chiseling steps until clear fracture lines appear. Failure to do so may result in a fractured flue. DO NOT USE A CRACKED LINER. REPLACE AND BEGIN AGAIN.*

*Method B: Using a circular saw with a masonry cutting blade, cut an opening in the flue tile using the marked off square as a guide. CAUTION: USE EYE AND FACE PROTECTION WHEN USING A MASONRY SAW.*

STEP 6. Build up masonry chimney around area where insulated chimney joins flue tile liner. Because of the 10 degree inclination of the chimney connector, an uneven joint is created between the end of the chimney connector and the inside face of the flue tile liner. This area must be carefully tied into the brick courses of the chimney by sealing the area around the insulated chimney connector with refractory mortar. See illustration E19.

STEP 7. Construction of the inner side walls is shown in illustration E20. Note that open spaces at the base of the inner side walls allow for air circulation and that the 2" air space clearance to the outer walls should be kept free of excess mortar. These inner walls should be constructed to a height of 48".

STEP 8. Build all walls up to the height of the front edge of the fireplace.

STEP 9. Place fireplace opening lintel in position. The lintel should be spaced ¼" from the edge of the fireplace to allow for expansion. This ¼" area should be filled with a ceramic gasket material. The ends of the lintel should rest on the outer walls of the enclosure.

STEP 10. Place the 9" x 9" pieces of sheet metal in the open area between the lintel and the door cavity walls and the outer side wall. Place pieces of sheet metal so that they rest on the top edge of the fireplace. See illustration E19. Seal the joints around the sheet metal with a light wash of mortar.

STEP 11. Place a second lintel approximately 12" above the fireplace opening lintel. The purpose of this lintel is to provide support for the front enclosure should repairs need to be made on the cast iron fireplace.

STEP 12. Finish front wall even with cap course height, placing air outlet grills in front masonry not lower than 5' or higher than 6' above the floor. These grills should have a minimum free air opening of at least 155 sq. in.

STEP 13. At a height of 74" begin construction of the top masonry enclosure. Place ¼" rerods 8" on center parallel to the masonry enclosure side walls. Place the 52" x 32", 24 gauge sheet metal on the masonry walls. Place 2" millboard (where ⅜" has a thermal conductivity of  $K \leq 0.84$  BTU in./ft<sup>2</sup>.h F°.) on the sheet metal. See illustration E13.

STEP 14. Complete construction of the outer masonry walls up to a minimum height of 6'6".

STEP 15. The hearth should be constructed to provide a minimum 16" clearance from the front of the fireplace opening, and 8" to each side of the fireplace opening. Air intake grills should be installed in the hearth below the fireplace opening. These grills should have a minimum free air opening of 116 sq. in.

## CHIMNEY

The Jotul Fireplace System 18 is described as a Fireplace System because its three separate units: 1) the cast iron fireplace, 2) the masonry enclosure, and 3) the chimney, have all been designed and tested as a System. They are dependent upon one another for safe and efficient operation as a System. The chimney is a crucial part of this wood burning installation. IT IS IMPORTANT THAT SPECIAL ATTENTION BE PAID TO UNDERSTANDING THE CONSTRUCTION AND FUNCTION OF THE MASONRY CHIMNEY USED WITH THE JOTUL SYSTEM 18. DO NOT INSTALL ANY CHIMNEY OTHER THAN THAT OUTLINED IN THESE INSTRUCTIONS.

One of the first things a new Jotul System 18 owner should do is to make contact with a professional chimneysweep to set up a regular cleaning schedule or familiarize yourself with your chimney and how to inspect and clean it. Contact your local dealer for information about chimneysweeps in your area.

The chimney used with the Jotul Fireplace System 18 is fully integrated into both the top and rear installation and must be constructed in the following manner. The type and construction of the foundations to be used as footings for the chimney are found in the section describing the masonry enclosures.

### Materials:

- Portland Cement-Lime Mortar Type N
- Brick and/or cement block (masonry)
- 12" x 12" tile chimney flue liners
- A well made clean-out with a tightly sealed door.

**Height requirements:**

- Maximum allowed height - 50 ft.
- Minimum allowed height - 14 ft.

WHILE THE CONSTRUCTION OF THE SYSTEM 18 CHIMNEY IS SIMILAR TO ORDINARY MASONRY CHIMNEY CONSTRUCTION, THERE ARE CERTAIN IMPORTANT DIFFERENCES. THESE DIFFERENCES ARE:

- The thickness of the masonry (8 INCHES)
- The preservation of the 1" air space around the flue tile
- The 2" air space clearance to combustibles around the outside of the chimney.
- Firestop spacers must be used when the chimney passes through combustible levels such as the floors of the house.

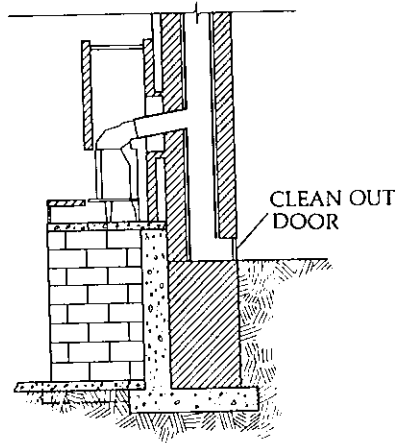
**CONSTRUCTION**

STEP 1. Lay out the position of the 12" x 12" tile flue liner.

STEP 2. Mark a 1" space around all four sides of the 12" x 12" tile flue liner. See illustration 9.

STEP 3. Lay out the 8" masonry wall so that the inside face of the 8" wall is positioned 1" from the tile liner.

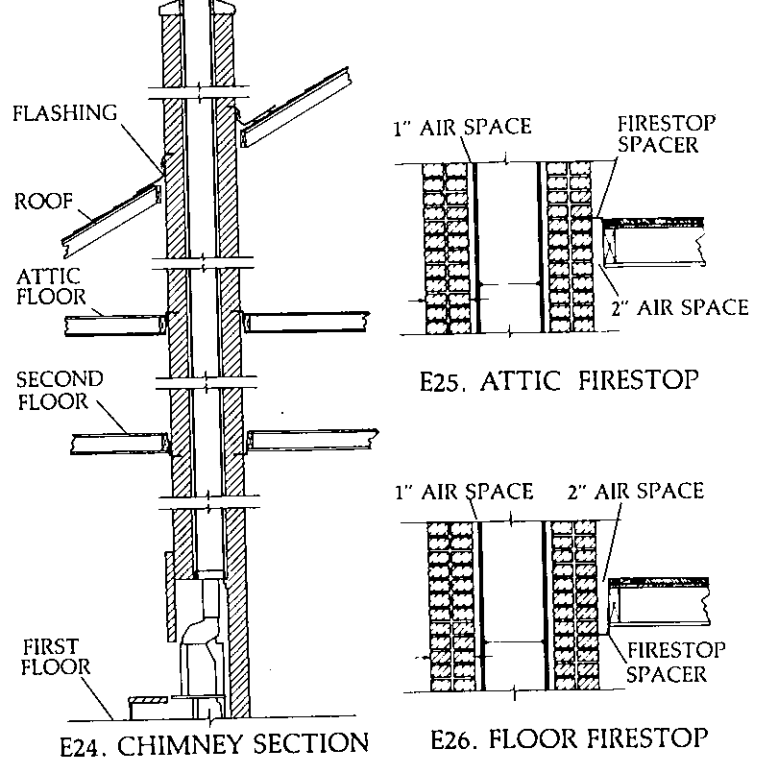
STEP 4. Build up the chimney, taking special care to clean the mortar joints between the sections of the tile liners.



E23. REAR CHIMNEY CLEAN OUT DOOR LOCATION

STEP 5. At an appropriate height, locate and install a clean out pit with a tightly sealing door. Remember to remove all excess mortar and other debris which may have fallen down and collected in the clean out pit during construction.

STEP 6. Continue construction of the chimney, making sure that when the chimney passes through a combustible area a 2" air space is maintained.



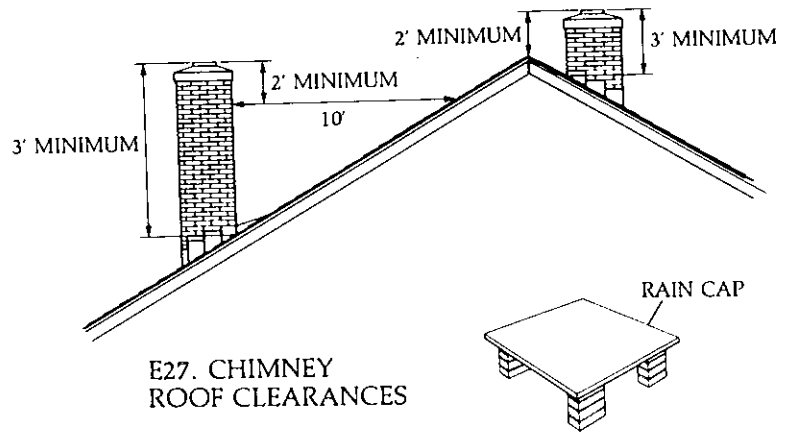
E24. CHIMNEY SECTION

E25. ATTIC FIRESTOP

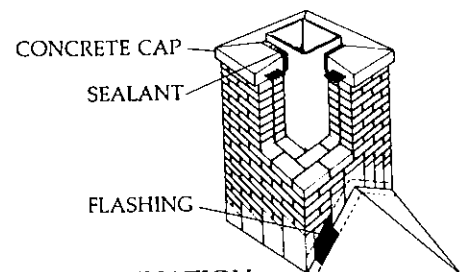
E26. FLOOR FIRESTOP

STEP 7. When passing through ceilings and attic areas, fire stops must be installed.

STEP 8. Continue chimney to its termination and seal off the 1" air space at the top. Make certain that the chimney is properly flashed at the roof and that a 2" air space clearance is properly maintained. The chimney's height above the surface of the roof and the roof line must be in accordance with the dimensions shown in illustration E27. Install chimney cap.



E27. CHIMNEY ROOF CLEARANCES



E28. CHIMNEY TERMINATION