



LENNOX HEARTH PRODUCTS

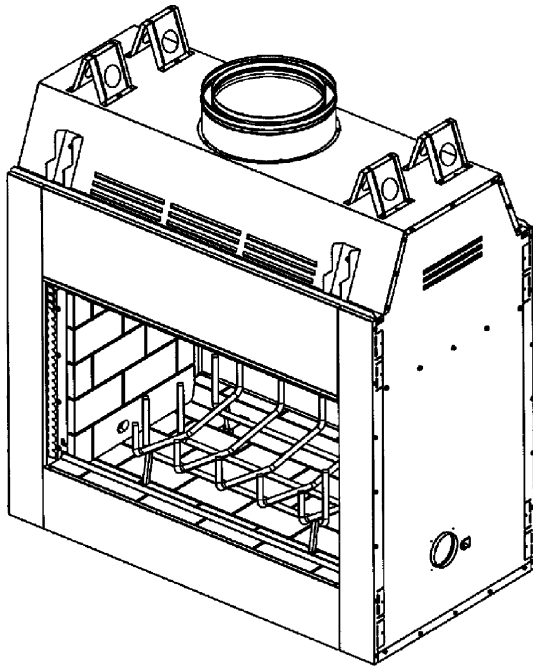
INSTALLATION INSTRUCTIONS

MAGNA-FIRE

43" Wood Burning Fireplace
P/N 850,004M REV. F 10/2006

MODELS

LS43ST



This installation manual will enable you to obtain a safe, efficient and dependable installation of your fireplace system. Please read and understand these instructions before beginning your installation.

Do not alter or modify the fireplace or its components under any circumstances. Any modification or alteration of the fireplace system, including but not limited to the fireplace, chimney components and accessories, may void the warranty, listings and approvals of this system and could result in an unsafe and potentially dangerous installation.

**IMPORTANT! TO ASSURE PROPER ALIGNMENT OF GLASS DOORS:
INSTALL THIS FIREPLACE IN A SQUARE AND PLUMB CONDITION,
USING SHIMS AS NECESSARY AT SIDES AND/OR BOTTOM.**

**RETAIN THESE INSTRUCTIONS
FOR FUTURE REFERENCE**



We suggest that our woodburning hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Woodburning Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).



OMNI-Test Laboratories, Inc.

OTL Report No. 116-F-19-02

TABLE OF CONTENTS

Safety Rules	page 2
Tools and Building Supplies	page 2
Precautions	page 3
Introduction	page 3
Clearances/Height Requirements	page 3
Chimney System	page 4
Assembly Outline	page 4
Location of Fireplace	page 4
Assembly Steps	page 5
Preinstallation Notes	page 5
Clearances	page 5
Installing the Fireplace	page 5
Framing Wall Variations	page 6
Framing Specifications	page 7
Fireplace Specifications	page 8
Installing the Chimney System	page 9
Ten Foot Rule Summary	page 12
Multiple Terminations	page 12
Chimney Component Calculations ...	page 12
Special Offset Instructions	page 12
Vertical Elevation Chart	page 13
Offset Elevation Chart	page 14
Offset Calculations	page 15
Installing Offsets	page 15
30° Offset through Floor/Ceiling	page 16
Glass Doors	page 16
Optional Equipment Considerations .	page 16
Combustion Air Kits	page 16
Gas Line Connection	page 17
Cold Climate Insulation	page 17
Fireplace Finishes	page 17
Mantels and Trim	page 17
Hearth Extensions	page 17
Finish Requirements	page 19
Installation Components	page 19

IMPORTANT: PLEASE READ AND UNDERSTAND THESE RULES TO FOLLOW FOR SAFETY.

1. Before starting your fireplace installation, read these installation instructions carefully to be sure you understand them completely and in entirety. Failure to follow them could cause a fireplace malfunction resulting in serious injury and/or property damage.

2. Always check your local building codes. The installation must comply with all local, regional, state and national codes and regulations.

3. These fireplaces must be installed with Security Chimneys FTF13 (12 1/2" inside diameter) Chimney System only. These systems are intended for use in any application where a traditional masonry type fireplace would apply. The chimney system must always vent to the outside of the building.

4. To ensure a safe fireplace system and to prevent the build-up of soot and creosote, inspect and clean the fireplace and chimney prior to use and periodically during the heating season.

5. Use solid fuel only. DO NOT use artificial wax based logs, chemical chimney cleaners or flame colorants in your fireplace.

6. DO NOT use charcoal or coal under any circumstances.

7. NEVER use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or "freshen up" a fire in this fireplace. Keep any flammable liquids a safe distance from the fireplace.

8. NEVER leave children unattended when there is a fire burning in the fireplace.

9. Always keep flue damper open when heat is present in the fireplace.

10. Before servicing, allow the fireplace to cool. Always shut off any electricity or gas to the fireplace while working on it. This will prevent any possible electrical shock or burns.

11. This fireplace is not intended to heat an entire home or be used as a primary heat source. It is designed to ensure homeowner comfort by providing supplemental heat to the room.

12. Always ensure an that adequate supply of replacement combustion air from the outside of the house is accessible to the fire to support normal combustion. Fireplaces consume large volumes of air during the normal combustion process. In the event the home is tightly sealed with modern energy efficient features, the optional combustion air kit may not provide all the air required to support combustion.

The manufacturer is not responsible for any smoking or related problems that may result from the lack of adequate combustion air. It is the responsibility of the builder/contractor to ensure that adequate combustion air has been provided for the fireplace.

13. DO NOT use a fireplace insert or any other products not specified herein by the manufacturer for use with this fireplace. All gas log sets must be operated with the damper clamped open.

14. "Smoke free" operation is not warranted nor are we responsible for inadequate system draft caused by mechanical systems, general construction conditions, inadequate chimney heights, adverse wind conditions and/or unusual environmental factors or conditions beyond our control.

15. Never, under any circumstances, install a fireplace, chimney component or any accessories, that has visible or suspected physical damage as a result of handling or transportation. These items should be inspected by your distributor or qualified factory representative to ensure safe condition. When in doubt, consult your distributor.

16. For additional safety considerations and complete operating instructions, refer to the Care and Operation Manual provided with the fireplace.

TOOLS AND BUILDING SUPPLIES NORMALLY REQUIRED

Tools should include:

- Phillips screwdriver
- Hammer
- Saw and/or sabersaw
- Level
- Measuring tape
- Plumb line
- Electric drill and bits
- Pliers
- Square

Building supplies:

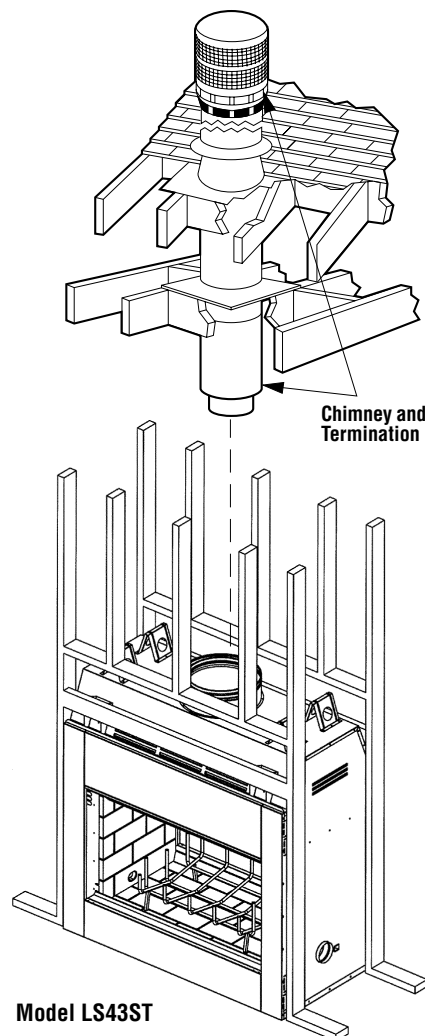
- Framing materials
- Wall finishing materials
- Caulking materials (noncombustible)
- Fireplace surround and hearth extension materials (noncombustible)

PRECAUTIONS

Note: These fireplace systems are not difficult to install. However, in the interest of safety, it is recommended that the installer be a qualified or certified "tradesman" familiar with commonly accepted fireplace installation and safety techniques as well as prevailing local codes.

The most important areas of concern dealing with the installation of factory-built fireplaces are clearances to combustible materials, proper assembly of component parts, height of the chimney system, the proper use of accessories supplied by the manufacturer and the techniques employed in using finishing materials applied to the wall surrounding the fireplace, hearth extensions and wall shields. Each of these topics will be covered in thorough detail throughout this manual. Please give each your special attention as you progress with your installation.

TYPICAL INSTALLATION



Model LS43ST

Figure 1

INTRODUCTION

General Information

This Signature Series LS43ST is a radiant-heat, two-sided fireplace with a variety of glass door options. A steel grate is also included with the LS43ST to properly position the fire. An outside combustion air kit is available as optional equipment.

Note: Illustrations shown reflect "typical" installations with nominal dimensions and are for design and framing reference only. Actual installations may vary due to individual design preferences. However, always maintain minimum clearances to combustible materials and do not violate any specific installation requirements.

These fireplaces have been tested and listed by Omni-Test Laboratories (Report No. 116-F-19-02) to U.L. standard 127. These units are intended for installation in residential homes and other buildings of conventional construction including commercial, not in mobile homes.

These fireplace systems are designed for installation in accordance with the National Fire Protection Standard for chimneys, fireplaces and solid fuel burning appliances; NFPA 211 and in accordance with codes such as the BOCA Basic/National Codes, the Standard Mechanical Code and the Uniform Building Codes.

The local authority having jurisdiction should be consulted before installation, to determine if any permits need to be obtained.

WARNING: FAILURE TO USE MANUFACTURE PROVIDED PARTS, VARIATIONS IN TECHNIQUES AND CONSTRUCTION MATERIALS OR PRACTICES OTHER THAN THOSE DESCRIBED IN THIS MANUAL MAY CREATE A FIRE HAZARD AND VOID THE LIMITED WARRANTY.

The LS43ST system consists of three "sub-systems":

1. The Fireplace and Door Assemblies
2. The Chimney and Termination
3. The Optional Combustion Air Kit

CLEARANCES AND HEIGHT REQUIREMENTS

The fireplace may be placed on or near normal construction materials*. The combustion air kit, firestop spacer and roof flashing (not chase flashings) may be placed directly on or against normal construction materials.* The chimney and fireplace outer wrapper require a minimum 2" and 1" air space to combustibles respectively. A combustible mantle may be installed 12" above the opening of the fireplace as per NFPA 211, Section 7-2.3.3.

The fireplace opening of the LS43ST must be kept a minimum of 12" (305 mm) from a side wall. A perpendicular side wall can not be closer than 12" (305 mm) to the LS43ST fireplace.

As with all chimney installations, avoid overhead obstructions such as trees, power lines, etc. Additionally chimney terminations must meet certain clearance to roof requirements detailed in the paragraph titled Ten-Foot Rule Summary.

The fireplace and chimney system must be enclosed when installed in or passing through a living area where combustibles or people may come in contact with it. This is important to prevent possible personal injury or fire hazard.

For questions, please call your distributor or the manufacturer. Special restrictions apply to the front and facing of the fireplace and nearby walls (See pages 18, 19 and 20).

*Construction Materials:

- framing materials
- paneling
- particle board
- flooring
- dry wall
- etc.
- plywood

CHIMNEY SYSTEM

These fireplaces are designed and code listed for use with Security Chimneys FTF13 chimney System only. Always use Security Chimneys FTF13 chimney components with these fireplaces. Do not modify or alter these components as this may cause a potential serious hazard and void the Warranty.

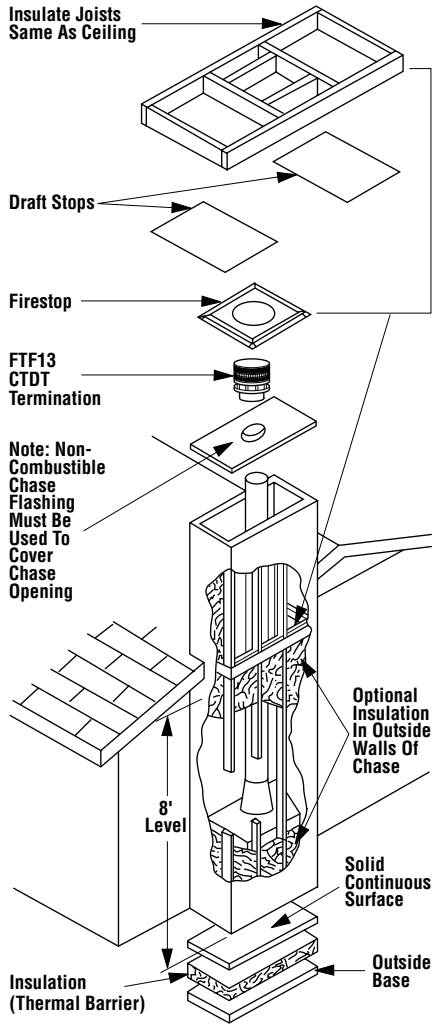


Figure 2

WARNING: IF INSULATION IS USED, THE FIREPLACE MUST NOT BE PLACED DIRECTLY AGAINST IT. INSULATION OR VAPOR BARRIERS, IF USED, MUST FIRST BE COVERED WITH GYPSUM BOARD, PLYWOOD, PARTICLE BOARD OR OTHER MATERIAL TO ASSURE INSULATION AND VAPOR BARRIERS REMAIN IN PLACE.

WARNING: DO NOT PACK OR FILL REQUIRED AIR SPACES WITH INSULATION OR OTHER MATERIAL. NO MATERIAL IS ALLOWED IN THESE AREAS.

Note: Do not insulate the chase cavity with blown or fill type insulation materials.

Chimney Height

The total height of your LS43ST fireplace system from the surface the fireplace rests on to the chimney top must not exceed 80' (24.4m) and must also meet minimum system height chart.

Minimum System Height

Model LS43ST	Security's FTF13
Vertical Installation	14' 0" (3.7 m)
One Offset	15 ½ 0" (3.9 m)
Two Offsets	22' 0" (5.6 m)

Chase Enclosure

A chase is a vertical box-like structure constructed to surround the fireplace and chimney. Refer to Figure 2 for a typical chase configuration. A chase should be constructed and insulated just like any outside wall. Chase insulation in a cold climate installation is not required for safety.

ASSEMBLY OUTLINE Before You Start

Check your inventory list to be sure you have all the necessary parts supplied in good usable condition. Check also for any concealed damage.

Check the operation of the damper. The damper is controlled through the use of a control lever located within the firebox opening at the top center just behind the firebox lintel (Figure 3). The control lever snaps into place at the extreme range of motion, up and back in the closed position. When pulled forward and down, the damper is open.

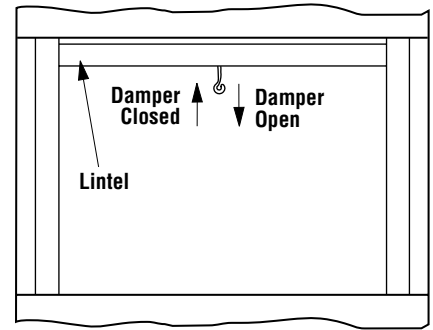


Figure 3

LOCATION OF FIREPLACE

Carefully select the proper location for heat circulation, aesthetics, chimney obstructions and clearance to side wall(s). With proper pre-planning, a slight adjustment of a few inches can save considerable time and expense later during construction and assembly.

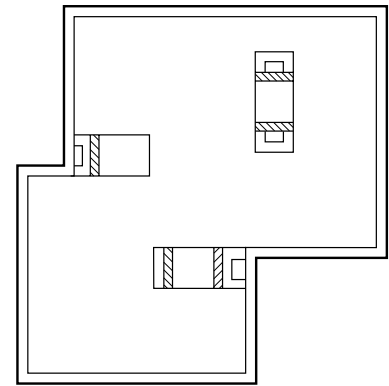


Figure 4

Carefully consider the position of the fireplace opening with respect to the location of adjacent or nearby stairwells, bath or kitchen exhaust fans and/or return air registers for forced air furnaces/air conditioners that could cause a smoking fireplace condition if the house is tightly insulated.

This system is intended to be installed in residential homes and buildings of conventional construction, not in mobile homes.

When locating the fireplace, consideration must be given to combustibles and final finishing. For an example of this, see *Figure 5* and confine the final location of combustible finish materials to the "Safe Zone".

DO NOT permanently place furniture or other items such as decorative pillows within 60" of the fireplace front face.

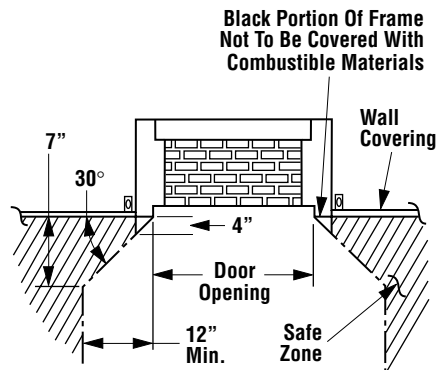


Figure 5

ASSEMBLY STEPS

Note: The following steps represent the normal sequence of installation. Each installation is unique, however, and might require a different sequence.

1. Position firebox prior to framing or into prepared framing.
2. Install the chimney system.
3. Install optional outside combustion air kit.
4. Plumb gas line if a decorative gas appliance will be used. (Gas connections should only be performed by an experienced, licensed/certified tradesman).
6. Install both door assemblies.
7. Complete finish wall material, surround and hearth extension to your individual taste.

Study the three dimensional illustration (*Figure 1*) to get a general idea of each element of your fireplace system.

PRE-INSTALLATION NOTES

The fireplace may be installed directly on a combustible floor or raised on a platform of an appropriate height. Do not place fireplace on carpeting, vinyl or other soft floor coverings. It may, however, be placed on flat wood, plywood, particle board or other hard surfaces. Be sure fireplace rests on a solid continuous floor or platform with appropriate framing for support and so that no cold air can enter the room from under the fireplace.

The fireplace may be positioned and then the framing built around it, or the framing may be constructed and the fireplace positioned into the opening.

Usually, no special floor support is needed for the fireplace, however, to be certain:

1. Estimate the total weight of the fireplace system including chimney and surround materials such as brick, stone, etc., to be installed. Shipping weights for the fireplace may be found on page 20.
2. Measure the square footage of the floor space to be occupied by the system, surrounds and hearth extensions.
3. Note the floor construction, i.e. 2 x 6's, 2 x 8's or 2 x 10's, single or double joists, type and thickness of floor boards.
4. Use this information and consult your local building code to determine if you need additional support.

If you plan to raise the fireplace and hearth extension, build the platform assembly then position fireplace and hearth extension on top. Secure the platform to the floor to prevent possible shifting.

CLEARANCES

Minimum clearance to combustibles for the appliance is as follows: sides - 1" (25 mm), floor - 0" (0 mm), adjacent wall - 12" (305 mm), ceiling - 37 1/2" (953 mm).

INSTALLING THE FIREPLACE

Step 1. Slide the fireplace into prepared framing or position fireplace in its final position and frame later.

The fireplace may not be recessed into a combustible floor. Maintain the floor to hearth clearance established by the fireplace lower front face.

Step 2. Insert the provided metal safety strips, beneath the fireplace as illustrated (*Figures 6, 7 and 8*). The safety strips should overlap 1/2" for continual coverage of the floor.

Note: Safety strips are not required when fireplace rests on a noncombustible surface.

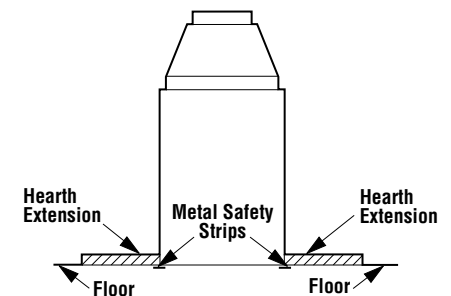


Figure 6

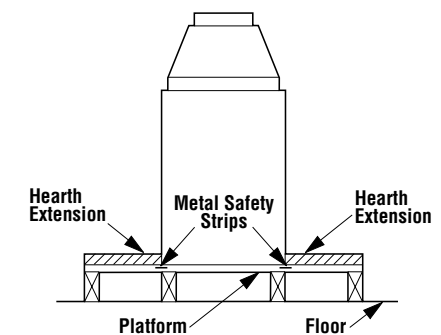


Figure 7

Note: Install the hearth extension only as illustrated.

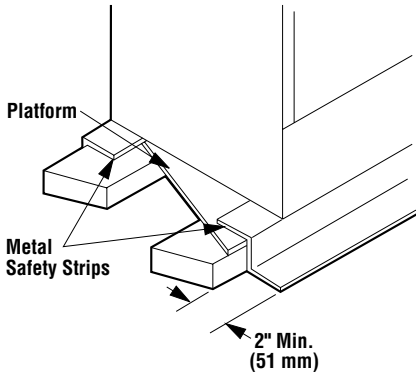


Figure 8

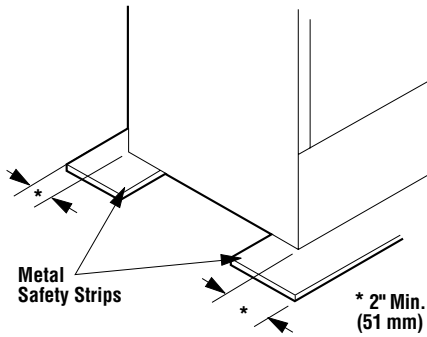


Figure 9

The safety strips should extend in front and sides of the fireplace opening 2" (51 mm). In the event a wooden support is used to elevate the fireplace above the floor, a "Z" type safety strip should be fabricated and used to protect the front surface of the wood support as well as the floor beneath the hearth extension (see Figures 8 and 9). The safety strips should be tacked down to prevent possible movement.

Note: The "Z" type safety strip is not supplied.

Step 3. Refer to fireplace drawings and specifications on pages 7 and 8 for framing dimensions and details. False header may be positioned directly on top of the fireplace spacers (see Figures 10, 11 and 12).

IMPORTANT: UNDER NO CIRCUMSTANCES CAN THE FIREPLACE TOP SPACERS (FIGURE 10) BE REMOVED OR MODIFIED, NOR MAY YOU NOTCH THE HEADER TO FIT AROUND OR BE INSTALLED LOWER THAN THE SPACERS. THE HEADER MAY BE IN DIRECT CONTACT WITH THE TOP SPACERS BUT MAY NOT BE SUPPORTED BY THEM.

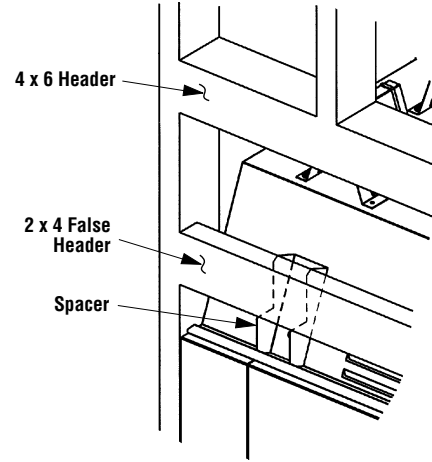


Figure 10

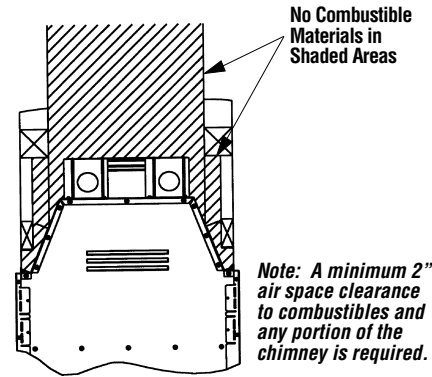


Figure 11

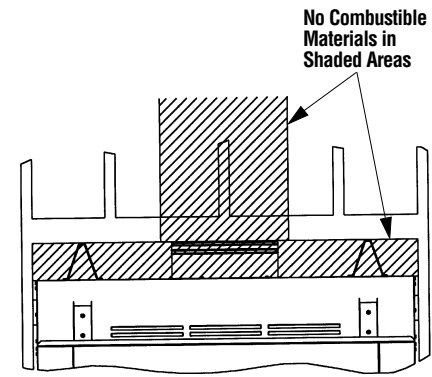
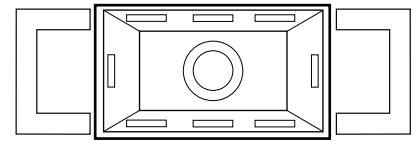


Figure 12

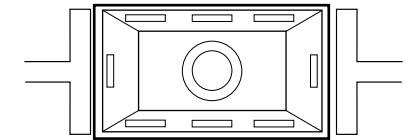
FRAMING WALL VARIATIONS

As many as six (6) different framed wall configurations can be constructed to enclose the LS43ST fireplace. The following illustrations depict these variations of wall enclosures. Several of these designs may incorporate book shelves, wood storage boxes, etc.

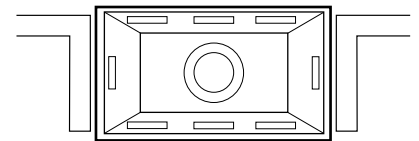
LS43ST - Wall Types



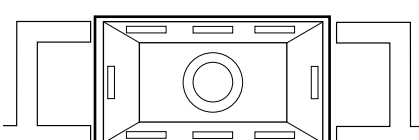
"C" Type Wall



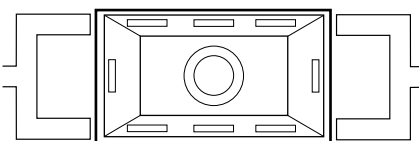
"T" Type Wall



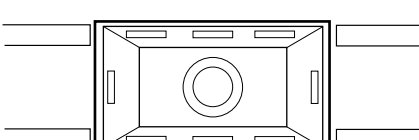
"L" Type Wall



"H" Type Wall



"Y" Type Wall



Parallel Wall

Figure 13

FRAMING SPECIFICATIONS

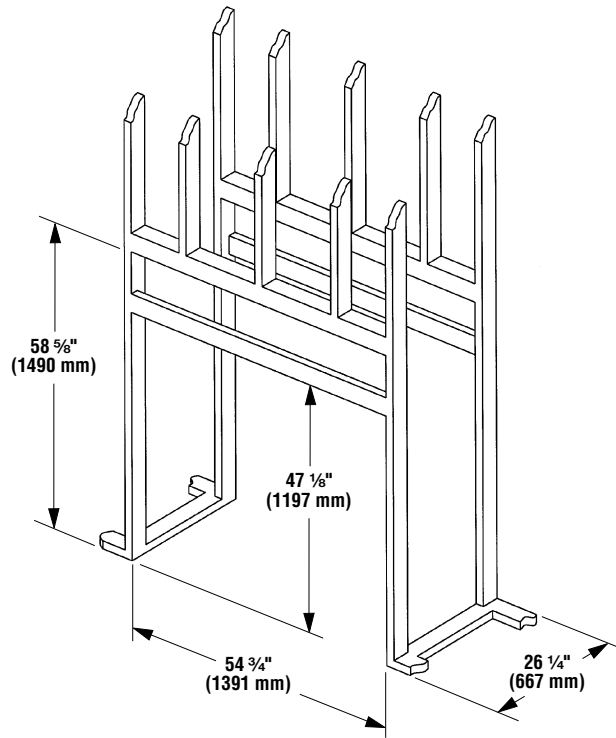


Figure 14

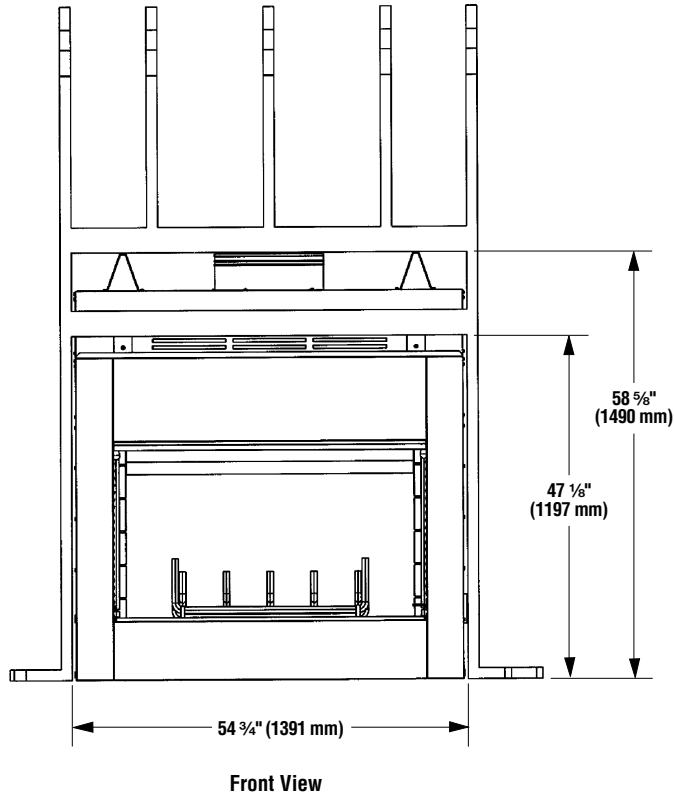


Figure 15

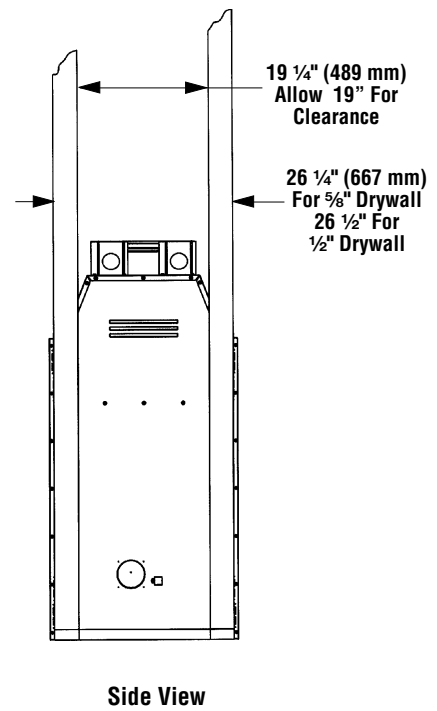


Figure 16

NOTE: DIAGRAMS & ILLUSTRATIONS NOT TO SCALE.

FIREPLACE SPECIFICATIONS

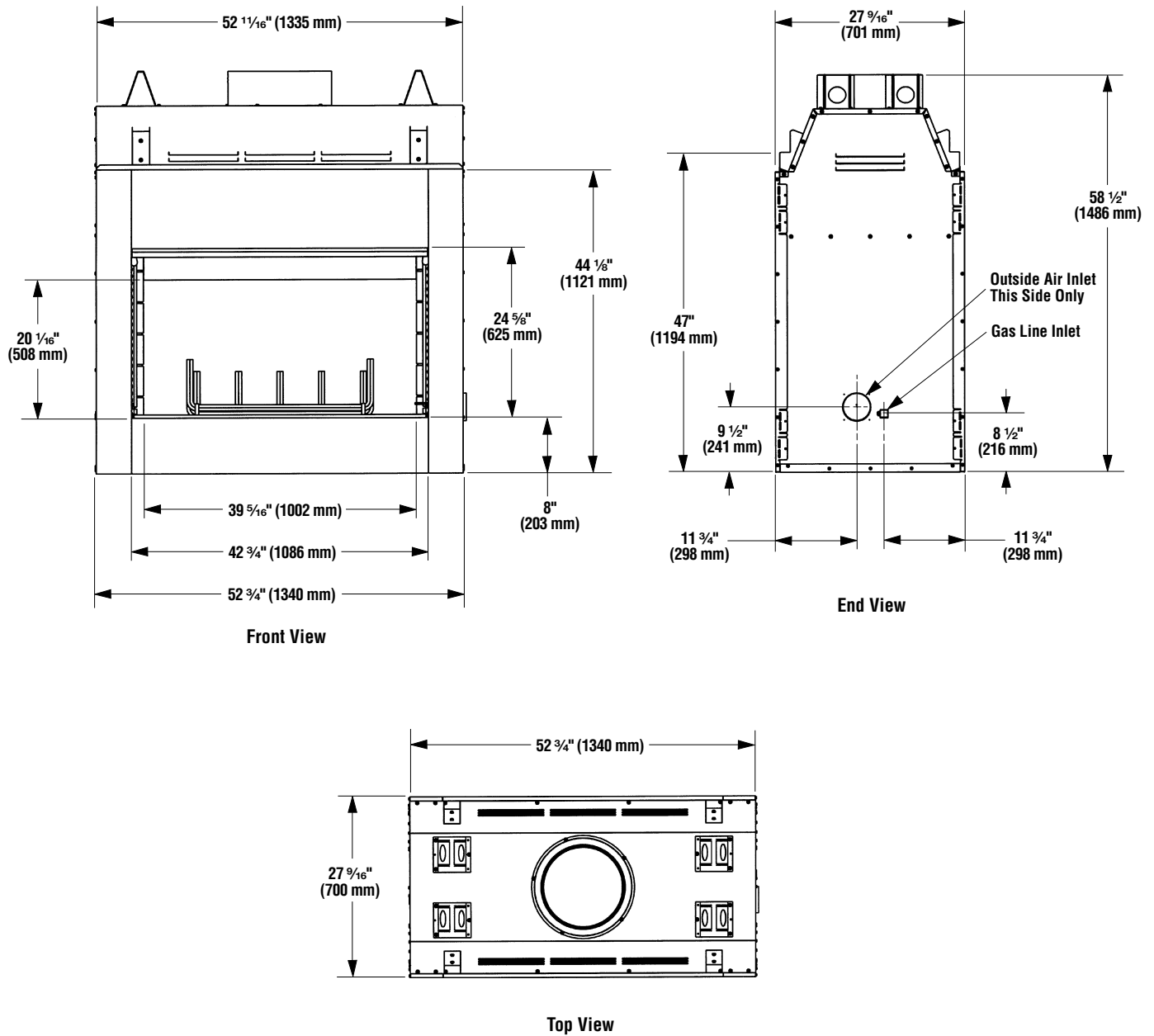


Figure 17

Step 4. Two sets of nailing tabs have been provided. One set of four is to accommodate 5/8" drywall and the other set is for 1/2" drywall.

To insert the unit into prepared framing, bend the four nailing flanges adjacent to one of the fireplace faces completely over 180 degrees until they are flush with the cabinet. Bend the remaining nailing flanges adjacent to the opposite face out 90 degrees (see Figure 18). Slide the unit through the framed opening with the face adjacent to the flanges bent fully over 180 degrees, inserted first.

Slide the unit into the prepared framing until the unit is centered between the walls. Fold the nailing tabs back against the framing, level the unit with shims as necessary and secure the fireplace to the side frame members with 8d nails or screws as appropriate.

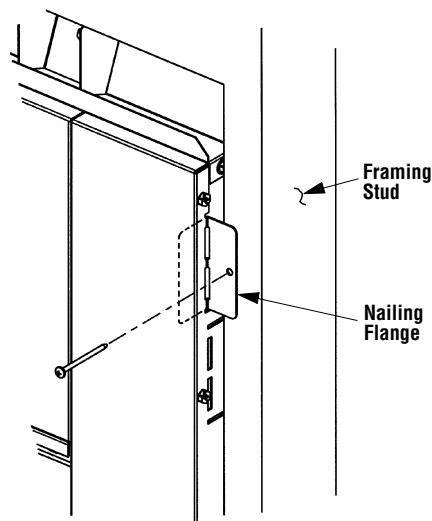


Figure 18

Note: The nailing tabs are exempt from the fireplace clearances described on the fireplace clearance label.

INSTALLING THE CHIMNEY SYSTEM

Step 1. Check flue damper for proper operation. To open, pull handle down and release. Damper will open automatically. To close, push handle up. The damper should lock into the closed position.

Note: The damper is set to one opening, but may be switched if necessary.

Step 2. Using standard construction framing techniques, construct opening for chimney route up through the ceiling(s) and roof or through an outside chase.

Framing must maintain adequate minimum air space clearance at all times.

CAUTION: ALLOW MINIMUM 2" (51 MM) CHIMNEY AIR SPACE TO COMBUSTIBLE FRAMING MEMBERS THROUGHOUT VERTICAL OR OFFSET CHIMNEY INSTALLATION. ALSO MAINTAIN AIR SPACE ON TOP OF THE FIREPLACE AS DEFINED BY THE SPACERS AND STANDOFFS.

A minimum 2" (51 mm) air space must be reserved for all materials extending for any continuous length surrounding the chimney.

See Figures 26 and 27 and charts "Framing Dimensions for Ceiling and Roof" on page 10, which specify minimum ceiling and roof dimensions.

For new construction, to determine chimney center line, use plumb line from roof or ceiling above fireplace to center of flue collar on fireplace.

For remodeling, plumb to center of flue collar from ceiling above, drive nail through ceiling from below to mark position, then mark and cut to passage from above ceiling (around nail) (Figure 19). Then plumb from ceiling or roof level directly above hole which has just been completed.

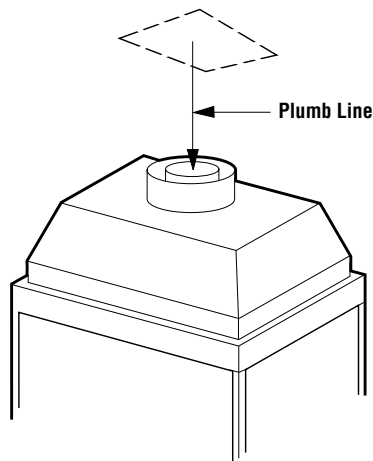


Figure 19

Step 3. Position appropriate firestop spacer at ceiling and nail temporarily with two (2) 8d nails. Use flat firestop spacer, Model F10FS-2, if chimney penetrates ceiling vertically. If chimney penetrates ceiling at 30° angle (offset chimney), use Model F10FS30-2. Nailed, one each on opposite sides to hold firestop spacer in position. Nail permanently, using at least two (2) more 8d nails, after chimney sections have been assembled through the firestop spacer and after any necessary adjustments have been made. Firestop spacer must be secured by at least four (4) 8d nails when completely installed.

Note: If there is a room above ceiling level, firestop spacer must be installed on the bottom side of the ceiling. If an attic is above ceiling level, firestop spacer must be installed on top side of ceiling joist (Figures 20 and 21).

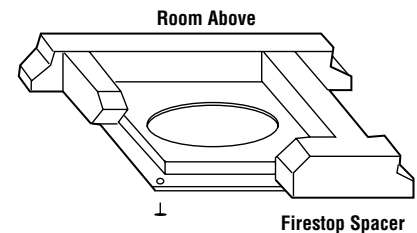


Figure 20

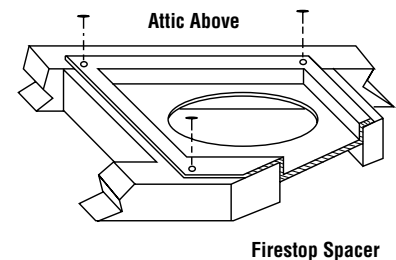


Figure 21

Step 4. Note: Chimney sections are constructed with a unique locking tab design which ensures an immediate, tight assembly between sections. Plan your chimney requirements carefully before assembly as chimney is difficult to disassemble after installation. If disassembled, the tabs might become damaged. Be certain tabs are properly formed to ensure tabs engage properly.

The FTF13 chimney system is a two-piece chimney, which snaps together from the fireplace up. Start with the inner flue section. With the lanced end up, snap-lock it into the matching collar on top of the fireplace. At all subsequent joints, the upper flue section fits into the preceding flue section. Each piece snaps together by means of locking tabs (7 locking tabs per joint). Check each piece by pulling up slightly from the top to ensure proper engagement before installing succeeding sections. If the flue has been installed correctly, it will not separate when you test it. Also, the inner flue joint where each section is joined should be tight and flat without gaps (Figure 22).

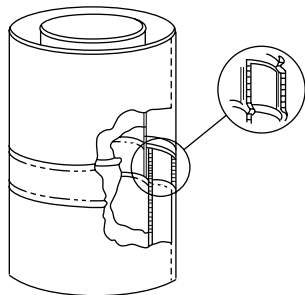


Figure 22

Outer pipe section installs in just the opposite way; the lanced end goes down and each new section goes OVER the outside of the previous section installed (Figure 23).

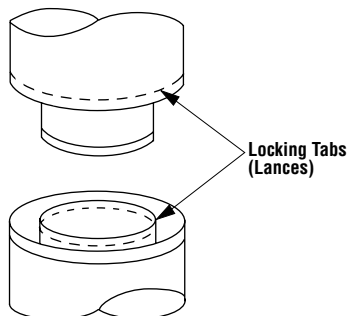


Figure 23

Note: Assemble one component of chimney at a time (inner section first, then outer section last) before proceeding with the next complete section.

Continue to assemble the chimney up through framed ceiling opening. Assemble just enough to penetrate the roof flashing openings (Figure 24). Always maintain 2" (51 mm) minimum air space to combustible materials and always check each pipe joint (inner and outer) to ensure proper engagement.

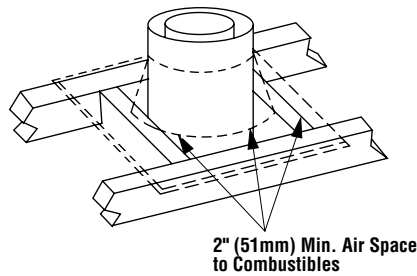


Figure 24

Check vertical alignment of chimney pipe so that it projects from the roof in a true vertical position. Security's chimney sections do not need to be screwed together. Additional reinforcement is not necessary, except in certain offset conditions (see to page 16, Figure 47).

Step 5. The height of vertical chimney pipe supported only by the fireplace must not exceed 30' (9.1 m). Chimney heights above 30' (9.1 m) must be supported by a Model FTF13-S4 stabilizer installed at 30' (9.1 m) intervals.

Note: The Model FTF13-S4 adds 3" (76 mm) net effective height to the total chimney system.

Install the Model FTF13-S4 stabilizer by fitting inner section down into respective section of proceeding flue pipe and locking outer stabilizer section into place over the outer chimney pipe. Position for proper clearance through framed opening and nail straps securely (under tension in "shear") into place on framing. Use 8d nails. Attach successive lengths of chimney pipe directly to stabilizer using same techniques as described in Step 4 (Figure 25).

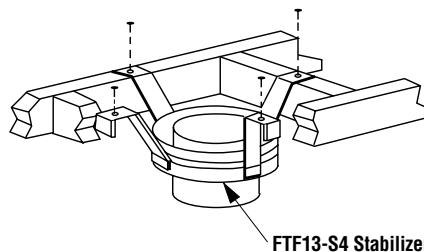


Figure 25

Note: Do not apply excessive pressure to any subsequent chimney sections following the stabilizer when installing. Ensure each subsequent chimney section is securely attached by testing as noted in Step 4.

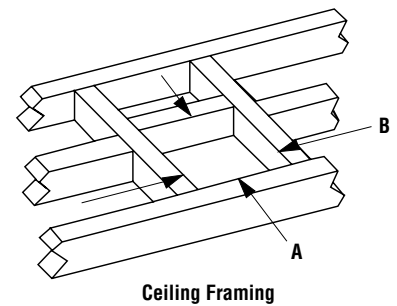


Figure 26

Framing Dimensions for Ceiling

Flue Type	Ceiling Opening	
	A	B
FTF13, Vertical at 2" (51 mm)	19" (483 mm)	19" (483 mm)
FTF13, Offset At 2" (51 mm)	19" (483 mm)	29" (737 mm)

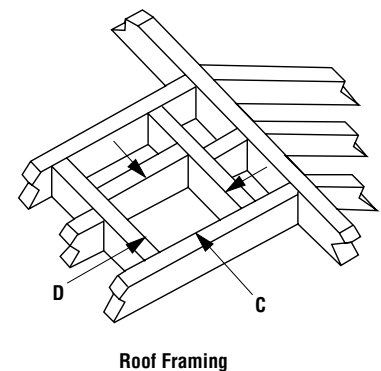


Figure 27

Framing Dimensions for Roof

Pitch	FTF13 at 2" (51 mm)	
	C	D*
0/12	19" (483 mm)	19" (483 mm)
6/12	19" (483 mm)	20" (508 mm)
12/12	19" (483 mm)	27" (686 mm)

* Perpendicular to Roof Ridge.

Step 6. Select proper Security Chimneys roof flashing based on pitch of roof. Use chart below for selection:

Roof Pitch	FTF10
Flat to 6/12	F10-F6
6/12 to 12/12	F10-F12

Next, slide roof flashing over extended chimney section that previously has been installed above the roof opening in Step 4. FTF10 flashings require flashing spacers. Slide flashing all the way down until the flashing base rests flat on the roof (Figure 28). Again, check the vertical position of the chimney and the 2" (51 mm) minimum air space to combustibles.

Note: Do not caulk or seal the ventilating openings.

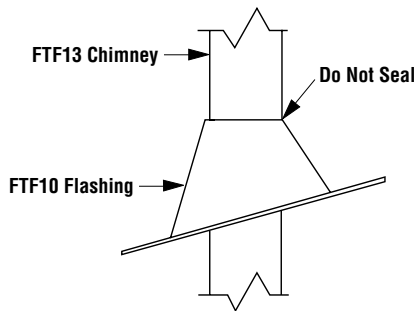


Figure 28

Step 7. Secure flashing by nailing along the perimeter into roof using 8d nails. If shingled roof, slide upper end and sides of roof flashing under shingles (trim if necessary), seal the top and both sides of the flashing to the roof with roof caulking. Cover nail heads with roof caulking (Figure 29).

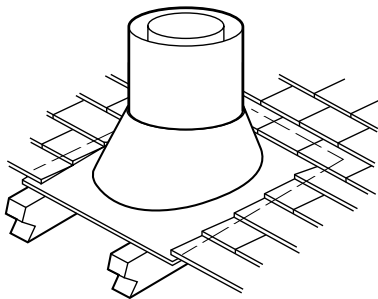


Figure 29

Step 8. The standard Security Chimneys FTF10 roof flashing assembly includes a storm collar. Slide storm collar over outer chimney, align with top surface of flashing, insert storm tab in slot, pull tight and bend tab back over slot. Seal storm collar to outer chimney with roof caulking or mastic around entire circumference of pipe. Also add extra roof caulking where storm collar meets flashing and to the tab/slot area to seal completely against water penetration (Figure 30). Check all joints very carefully to ensure no water intrusion can take place.

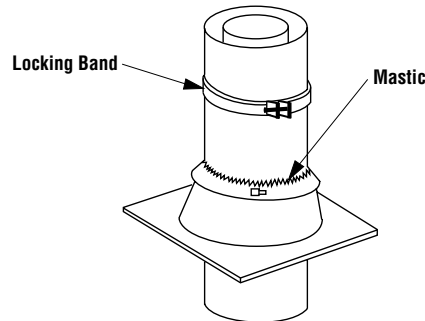


Figure 30

Step 9. Security Chimneys locking band, Model FLB, may be required if the chimney extends too high above the roof flashing. As a general rule, if the chimney extends more than 6' (1.8 m) above the roof/flashing, the use of locking bands is advisable to strengthen the chimney joints. Align the locking band at the pipe joint. Locking bands wrap around pipe joints equally covering the joints of both pipe sections. Use nut provided and TIGHTEN snugly. Do not over tighten as this might damage chimney section (Figure 30).

Note: If chimney extends more than 8' (2.4 m) above roof surface, guy wires are also recommended. Use three (3) guy wires, attach to locking band assembly, extend and secure to roof in a triangular pattern (Figure 31). Guy wires are not supplied by the manufacturer.

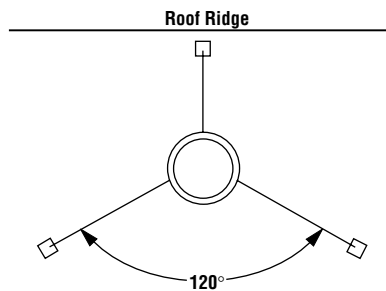


Figure 31

Step 10. Using an FTF13-CTD Round Termination:

1. Hold FTF13-CTD over top of last chimney section (see Figure 32).
2. Center inner slip section in inner flue pipe-slip down.
3. Center outer locking section over outer flue pipe. Push down until locking tabs are firmly engaged.
4. Pull up slightly on CTD to ensure locking joint has firmly engaged.

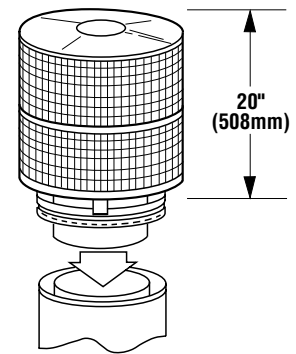


Figure 32

Using a FTF13-CTDT Chase Termination:

Refer to specific installation instructions included with the FTF13-CTDT chase termination for clearance and installation details.

Using a FTF13-CT1 Chase Termination:

Refer to specific installation instructions included with FTF13-CT1 chase terminations for clearance and installation details.

Using a FTF13-CT2 Chase Termination:

Refer to specific installation instructions included with FTF13-CT2 chase terminations for clearance and installation details.

Note: It is recommended that all exterior exposed metal fireplace components; such as terminations, flashings, storm collars and/or flue be painted with a premium quality, high temperature, rust preventative paint designed for metal. This is especially important when installations are made in abnormally adverse or corrosive environments; such as near lakes, oceans or in areas with consistently high humidity conditions. Consult the paint manufacturers instructions for proper preparation and application.

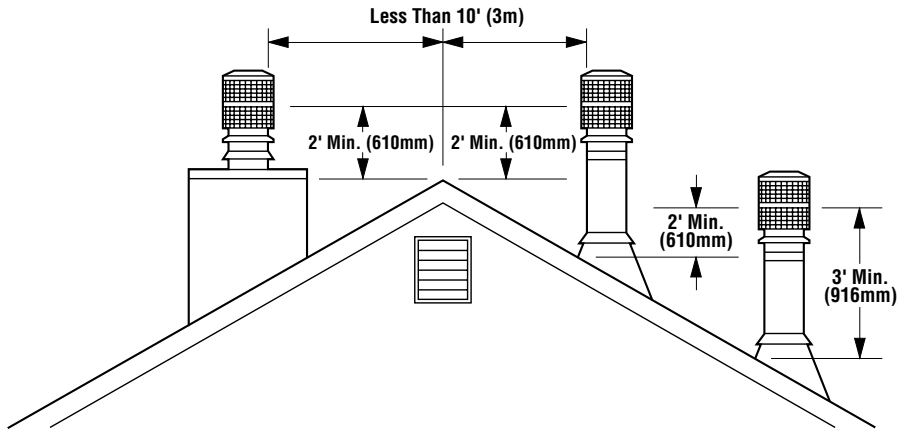


Figure 33

TEN FOOT RULE SUMMARY

The minimum chimney height above the roof and/or to adjacent walls and buildings is specified by all major building codes.

If the horizontal distance from the peak of the roof is less than 10' (3 m), the top of the chimney must be at least 2' (610 mm) above the peak of the roof.

If the horizontal distance from the chimney edge to the peak of the roof is more than 10' (3 m), a chimney height reference point is established on the roof surface located horizontally 10' (3 m) from the chimney edge. The top of the chimney must be at least 2' (610 mm) above this reference point. In all cases, the chimney cannot be less than 3' (914 mm) above the roof at the edge of the chimney.

The 2' in 10' rule is necessary in the interest of safety, but does not ensure smoke-free operation. Trees, buildings, adjoining roof lines, adverse wind conditions, etc., may require a taller chimney should the fireplace not draft properly (Refer to Figure 33).

MULTIPLE TERMINATIONS

If more than one termination is located in the same chase or within the same general proximity, we suggest they should be separated in distance at least 24" (610 mm) horizontally from flue center to flue center and stacked or staggered vertically at least 18" (410mm) apart, from the termination of one smoke exit to the termination of another smoke exit (Figure 34).

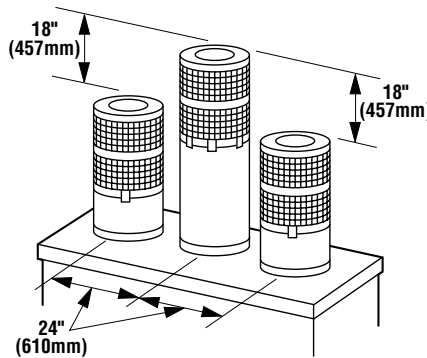


Figure 34

This suggestion is provided in the interest of better operation. If the terminations are located too close to each other, smoke may migrate from one flue into the other.

FTF13 CHIMNEY COMPONENT CALCULATIONS

The minimum installed height of the LS43ST fireplace system (including fireplace and chimney components) is 15' (4.6 m). 22' (5.6m) with two offsets. The maximum system height is 80' (24.4 m).

To determine the number of chimney sections and chimney components required, follow these steps:

1. Determine total vertical height of the fireplace installation. This dimension is measured from the surface the fireplace sets on to the point where smoke exits from the termination.

2. Determine the number of chimney components required, except chimney sections. This would include firestop spacers, stabilizers, roof flashing, etc.

3. The effective heights of the components are:

LS43ST Fireplace	=	58 ½" (1486 mm)
FTF13-12	=	10 ¼" (260 mm)
FTF13-18	=	16 ¼" (413 mm)
FTF13-36	=	34 ¼" (870 mm)
CTD Termination	=	4" (102 mm)
CT1 Termination	=	18" (457 mm)
CT2 Termination	=	15" to 23" (381 mm – 584 mm)
CTDT Termination	=	12" to 18" (305 mm – 457 mm)
S4 Stabilizer *	=	3" (76 mm)*

* Required for every 30' (9.1 m) of vertical chimney and 10' of offset chimney.

4. Determine amount of chimney height required by subtracting total combined height of all pre-selected components (fireplace and chimney components from total desired height.)

Reference Vertical Elevation Chart and determine the number of chimney sections (quantity and length) required.

SPECIAL OFFSET INSTRUCTIONS

To clear any overhead obstructions, you may offset your chimney system using Security's 30° offset and return elbows. Use two elbows - an offset elbow to initiate the offset and a return elbow to terminate it. A 30° offset elbow, angling in any direction, may be the first component used off the top of the fireplace flue collar.

FTF13 VERTICAL ELEVATION CHART

Height Of Chimney Only		Number Of FTF13 Chimney Lengths			Height Of Chimney Only		Height Of Chimney Only		Number Of FTF13 Chimney Lengths			Height Of Chimney Only	
Inches	Feet/Inches	12"	18"	36"	MM	M	Inches	Feet/Inches	12"	18"	36"	MM	M
11	0 11	1	0	0	279	0.28	461 1/2	38 5 1/2	0	1	13	11722	11.72
17	1 5	0	1	0	432	0.43	465 1/2	38 9 1/2	2	0	13	11824	11.82
21 1/4	1 9 1/4	2	0	0	540	0.54	471 1/2	39 3 1/2	1	1	13	11976	11.98
27 1/4	2 3 1/4	1	1	0	692	0.69	479 1/2	39 11 1/2	0	0	14	12179	12.18
33 1/4	2 9 1/4	0	2	0	845	0.85	489 1/2	40 9 1/2	1	0	14	12433	12.43
35	2 11	0	0	1	889	0.89	495 1/2	41 3 1/2	0	1	14	12586	12.59
37 1/4	3 1 1/4	2	1	0	946	0.95	499 3/4	41 7 3/4	2	0	14	12694	12.69
43 1/4	3 7 1/4	1	2	0	1099	1.10	505 3/4	42 1 3/4	1	1	14	12846	12.85
51 1/4	4 3 1/4	0	1	1	1302	1.30	513 1/2	42 9 1/2	0	0	15	13043	13.04
55 1/4	4 7 1/4	2	0	1	1403	1.40	523 3/4	43 7 3/4	1	0	15	13303	13.30
61 1/4	5 1 1/4	1	1	1	1556	1.56	529 3/4	44 1 3/4	0	1	15	13456	13.46
67 1/4	5 7 1/4	0	2	1	1708	1.71	534	44 6	2	0	15	13564	13.56
69 1/4	5 9 1/4	0	0	2	1759	1.76	540	45 0	1	1	15	13716	13.71
79 1/4	6 7 1/4	1	0	2	2013	2.01	547 3/4	45 7 3/4	0	0	16	13913	13.91
85 1/4	7 1 1/4	0	1	2	2165	2.17	558	46 6	1	0	16	14173	14.17
89 1/2	7 5 1/2	2	0	2	2273	2.27	564	47 0	0	1	16	14326	14.33
95 1/2	7 11 1/2	1	1	2	2426	2.43	568 1/4	47 4 1/4	2	0	16	14434	14.43
103 1/4	8 7 1/4	0	0	3	2622	2.62	574 1/4	47 10 1/4	1	1	16	14586	14.59
113 1/2	9 5 1/2	1	0	3	2883	2.88	582	48 6	0	0	17	14783	14.78
119 1/2	9 11 1/2	0	1	3	3035	3.03	592 1/4	49 4 1/4	1	0	17	15043	15.04
123 3/4	10 3 3/4	2	0	3	3143	3.14	598 1/4	49 10 1/4	0	1	17	15196	15.20
129 3/4	10 9 3/4	1	1	3	3296	3.30	602 1/4	50 2 1/4	2	0	17	15297	15.30
137 1/2	11 5 1/2	0	0	4	3493	3.49	608 1/4	50 8 1/4	1	1	17	15450	15.45
147 3/4	12 3 3/4	1	0	4	3753	3.75	616 1/4	51 4 1/4	0	0	18	15653	15.65
153 3/4	12 9 3/4	0	1	4	3905	4.91	626 1/4	52 2 1/4	1	0	18	15907	15.91
158	13 2	2	0	4	4013	4.01	632 1/4	52 8 1/4	0	1	18	16059	16.06
164	13 8	1	1	4	4166	4.17	636 1/2	53 0 1/2	2	0	18	16167	16.17
171 3/4	14 3 3/4	0	0	5	4362	4.36	642 1/2	53 6 1/2	1	1	18	16320	16.32
182	15 2	1	0	5	4623	4.62	650 1/4	54 2 1/2	0	0	19	16516	16.52
188	15 8	0	1	5	4775	4.78	660 1/2	55 0 1/2	1	0	19	16777	16.78
192	16 0	2	0	5	4877	4.88	666 1/2	55 6 1/2	0	1	19	16929	16.93
198	16 6	1	1	5	5029	5.03	670 3/4	55 10 3/4	2	0	19	17037	17.04
206	17 2	0	0	6	5232	5.23	676 3/4	56 4 3/4	1	1	19	17189	17.19
215 3/4	17 11 3/4	1	0	6	5480	5.48	684 1/2	57 0 1/2	0	0	20	17386	17.39
222	18 6	0	1	6	5639	5.64	694 3/4	57 10 3/4	1	0	20	17647	17.65
226 1/4	18 10 1/4	2	0	6	5747	5.75	700 3/4	58 4 3/4	0	1	20	17799	17.80
232 1/4	19 4 1/4	1	1	6	5899	5.90	705	58 9	2	0	20	17907	17.91
240	20 0	0	0	7	6096	6.10	711	59 3	1	1	20	18059	18.06
250 1/4	20 10 1/4	1	0	7	6356	6.36	718 3/4	59 10 3/4	0	0	21	18256	18.26
256 1/4	21 4 1/4	0	1	7	6509	6.51	729	60 9	1	0	21	18517	18.52
260 1/2	21 8 1/2	2	0	7	6617	6.62	735	61 3	0	1	21	18669	18.67
266 1/2	22 2 1/2	1	1	7	6769	6.77	739	61 7	2	0	21	18771	18.77
274 1/4	22 10 1/4	0	0	8	6966	6.97	745	62 1	1	1	21	18923	18.92
284 1/2	23 8 1/2	1	0	8	7226	7.23	753	62 9	0	0	22	19126	19.13
290 1/2	24 2 1/2	0	1	8	7379	7.38	763	63 7	1	0	22	19380	19.38
294 3/4	24 6 3/4	2	0	8	7487	7.49	769	64 1	0	1	22	19533	19.53
300 3/4	25 0 3/4	1	1	8	7639	7.64	773 1/4	64 5 1/4	2	0	22	19641	19.64
308 1/2	25 8 1/2	0	0	9	7836	7.84	779 1/4	64 11 1/4	1	1	22	19793	19.79
318 3/4	26 8 3/4	1	0	9	8096	8.10	787	65 7	0	0	23	19990	19.99
324 3/4	27 0 3/4	0	1	9	8249	8.25	797 1/4	66 5 1/4	1	0	23	20250	20.25
328 3/4	27 4 3/4	2	0	9	8350	8.35	803 1/4	66 11 1/4	0	1	23	20403	20.40
334 3/4	27 10 3/4	1	1	9	8503	8.50	807 1/2	67 3 1/2	2	0	23	20511	20.51
342 3/4	28 6 3/4	0	0	10	8706	8.71	813 1/2	67 9 1/2	1	1	23	20663	20.66
352 3/4	29 4 3/4	1	0	10	8960	8.96	821 1/4	68 5 1/4	0	0	24	20860	20.86
358 3/4	29 10 3/4	0	1	10	9112	9.11	831 1/2	69 3 1/2	1	0	24	21120	21.12
363	30 3	2	0	10	9220	9.22	837 1/2	69 9 1/2	0	1	24	21273	21.27
369	30 9	1	1	10	9373	9.37	841 3/4	70 1 3/4	2	0	24	21380	21.38
376 3/4	31 4 3/4	0	0	11	9569	9.57	847 3/4	70 7 3/4	1	1	24	21533	21.53
387	32 3	1	0	11	9829	9.83	855 1/2	71 3 1/2	0	0	25	21730	21.73
393	32 9	0	1	11	9982	9.98	865 3/4	72 1 3/4	1	0	25	21990	21.99
397 1/4	33 1 1/4	2	0	11	10090	10.09	871 3/4	72 6 3/4	0	1	25	22142	22.14
403 1/4	33 7 1/4	1	1	11	10243	10.24	875 3/4	72 11 3/4	2	0	25	22244	22.24
411	34 3	0	0	12	10439	10.44	881 3/4	73 5 3/4	1	1	25	22396	22.40
421 1/4	35 1 1/4	1	0	12	10700	10.70	889 3/4	74 1 3/4	0	0	26	22600	22.60
427 1/4	35 7 1/4	0	1	12	10852	10.85	899 3/4	74 11 3/4	1	0	26	22854	22.85
431 1/2	35 11 1/2	2	0	12	10960	10.96	905 3/4	75 5 3/4	0	1	26	23006	23.01
437 1/2	36 5 1/2	1	1	12	11113	11.11	910	75 10	2	0	26	23114	23.11
445 1/4	37 1 1/4	0	0	13	11309	11.31	916	76 4	1	1	26	23266	23.27
455 1/2	37 11 1/2	1	0	13	11570	11.57	924	77 0	0	0	27	23470	23.47

FTF13 OFFSET ELEVATION CHART

A Offset (Inches)	B Height (Inches)	FTF13-ES30 Offset/Return Elbow Set	FTF13-S4 Stabilizer	Number of FTF13 Chimney Sections			A Offset (mm)	B Height (mm)
				12"	18"	36"		
4	15 3/4	1	0	0	0	0	102	400
9	24 1/2	1	0	1	0	0	229	622
12	29 3/4	1	0	0	1	0	305	756
14 1/4	33 1/2	1	0	2	0	0	362	851
17 1/4	38 1/2	1	0	1	1	0	438	978
20 1/4	43 3/4	1	0	0	2	0	514	1111
21	45 1/4	1	0	0	0	1	533	1149
22 1/4	47 1/2	1	0	2	1	0	565	1207
25 1/4	52 1/2	1	0	1	2	0	641	1334
26 1/4	54 1/4	1	0	1	0	1	667	1378
28 1/4	57 3/4	1	0	0	3	0	718	1467
29 1/4	59 1/4	1	0	0	1	1	743	1505
31 1/4	63	1	0	2	0	1	794	1600
32 1/2	65	1	0	4	1	0	826	1651
34 1/4	68 1/4	1	0	1	1	1	870	1734
36 1/4	71 3/4	1	0	3	0	1	921	1822
37 1/4	73 1/4	1	0	0	2	1	946	1861
38 1/4	75	1	0	0	0	2	972	1905
39 1/4	77	1	0	2	1	1	997	1956
41 1/2	80 1/2	1	0	1	4	0	1054	2045
43 1/4	83 3/4	1	0	1	0	2	1099	2127
44 1/2	85 3/4	1	0	3	1	1	1130	2178
45 1/4	87 1/2	1	0	0	3	1	1149	2223
46 1/4	89	1	0	0	1	2	1175	2261
48 1/4	91 1/2	1	0	2	0	2	1226	2324
49 1/2	94 1/2	1	0	1	5	0	1257	2400
51 1/4	97 3/4	1	0	1	1	2	1302	2483
54 1/4	103	1	0	0	2	2	1378	2616
55 1/4	104 1/2	1	0	0	0	3	1403	2654
56 1/2	106 1/2	1	0	2	1	2	1435	2705
59 1/2	111 3/4	1	0	1	2	2	1511	2838
62 1/2	116 3/4	1	1	1	0	3	1588	2965
65 3/4	122	1	1	0	1	3	1664	3099
67 3/4	125 1/2	1	1	2	0	3	1721	3188
69 3/4	128 1/2	1	1	1	3	2	1772	3264
70 3/4	130 3/4	1	1	1	1	3	1797	3321
73 3/4	136	1	1	0	2	3	1873	3454
75 3/4	139 1/2	1	1	2	1	3	1924	3543
79 3/4	146 1/4	1	1	1	0	4	2026	3715
81	148 1/4	1	1	3	1	3	2057	3766
82 3/4	151 1/2	1	1	0	1	4	2102	3848
87 3/4	160 1/4	1	1	1	1	4	2229	4070

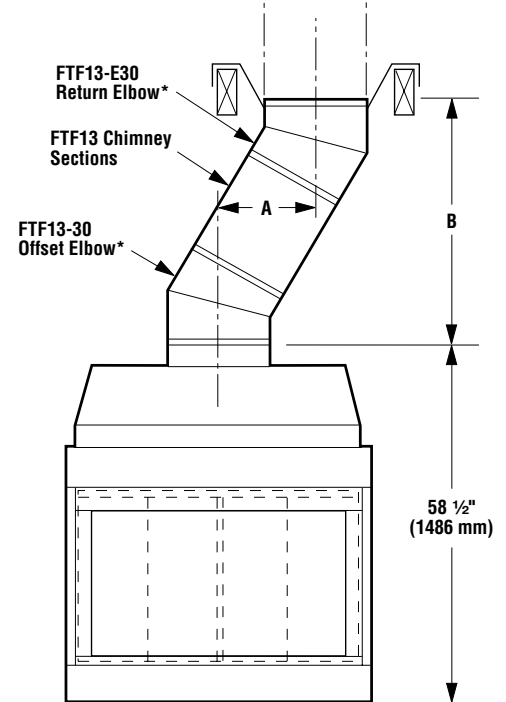


Figure 35

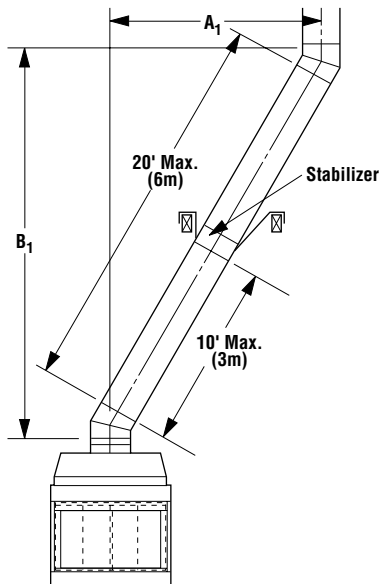


Figure 36

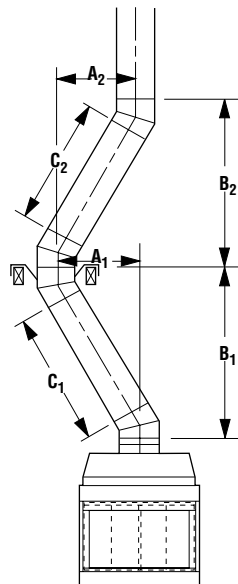


Figure 37

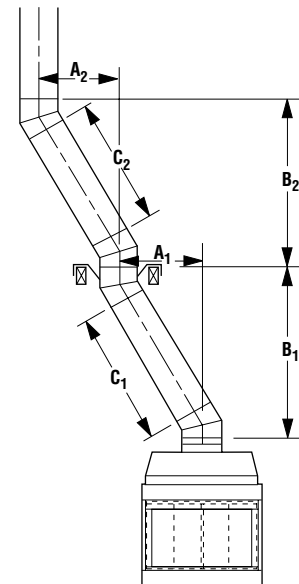


Figure 38

The offset and return elbows may be attached together, or a section or sections of chimney may be used between, but do not exceed 20' (6.1 m) in total length between elbows (see Figure 36). If sections of pipe exceed 10' (3 m) between elbows, a chimney stabilizer must be used at the midpoint. The stabilizer support straps must be attached under tension (in shear) to structural framing members above. When two sets of offset elbows are used, the maximum combined length of chimney used between elbows cannot exceed 20' (6.1 m) (see Figures 37 and 38). **Example:** If $C_1 = 10'$ (3m) then C_2 cannot exceed 10' (3 m).

If an offset exceeds 6' in length, each chimney joint beyond the first 6' of offset to the return elbow, must be secured by a No. 8 x 1/2" sheet metal screw located at the underside of the joint (Figure 39).

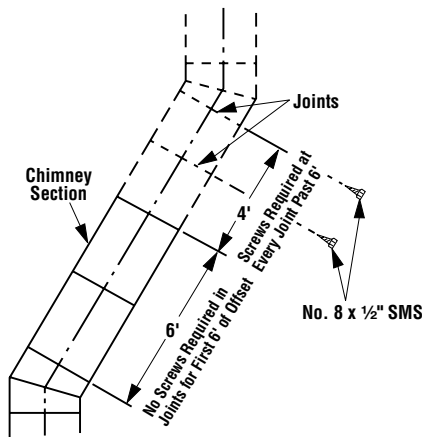


Figure 39

A 1/8" (3 mm) diameter hole must be drilled in the chimney joint using a 1/8" (3 mm) diameter drill. Hole should be drilled in center of joint overlap (Figure 40). Be sure to drill only through the outer chimney casting. Do not puncture the inner flue.

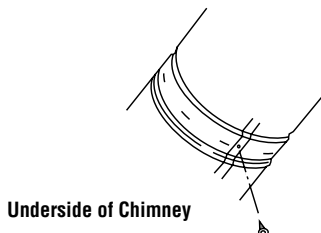


Figure 40

Maximum offset of the chimney system is 30°. Two offset elbows must not be assembled to form a 60° offset. However, two sets of offset and return elbows may be used on a single flue system, provided the total height of the system exceeds 22' (5.6 m).

Return elbow support straps must be securely attached under tension (in shear) to structural framing members above.

OFFSET CALCULATIONS

1. Use Offset Chart to determine amount of horizontal offset (A) and height (B) for various chimney sections.
2. Use "Height of Chimney Only" column to determine combinations of pipe used above return elbow to achieve desired heights. Reference Components Effective Height Chart in vertical elevation chart section.
3. Use Elevation Chart as job estimator only. Add necessary firestop spacers and stabilizers as required. Firestop spacers must be used as shown in Figures 20 and 21 and stabilizers as shown in Figure 25.

INSTALLING OFFSETS

First, review Offset Elevation Chart and Figure 35 on page 14 for reference.

Step 1. Determine the offset distance where chimney is to pass through the first ceiling-dimension "A." To find this point on your ceiling, first determine the center point for a vertical chimney following the instructions for vertical installation.

Measure height to the ceiling from the top of fireplace-dimension "B." Use Offset Elevation Chart to find dimension "A." Mark point where you will drive your nail to show the center point for your offset ceiling cut.

Step 2. Proceed by using the Straight Up Installation Instructions for cutting and framing ceiling and roof openings.

Note: See "Framing and Dimension" Chart for the sizes of the ceiling and roof openings. The size of the roof opening varies with the degree of pitch of the roof.

OFFSET ELBOW ASSEMBLY

Offset elbows install the same as chimney sections. First, snap the inner section INTO the preceding inner section of flue. Check connection by pulling up slightly to ensure a tight fit. Next, the outer sections snap locks OVER the preceding outer section of chimney. Again, check outer section by pulling up slightly to ensure proper connection is made.

RETURN ELBOW ASSEMBLY

Return elbows install the same way as round terminations and stabilizers:

- Step 1.** Hold return elbow over top of last chimney section.
- Step 2.** Center inner slip section into inner flue pipe-slip down.
- Step 3.** Center outer locking section over outer chimney pipe-push down until locking joint has firmly engaged.
- Step 4.** Pull up slightly on return elbow to ensure locking joint has firmly engaged.
- Step 5.** Secure support straps to framing members by nailing under tension in shear (Figure 41).

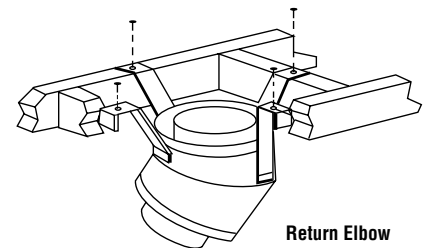


Figure 41

Note: The return elbow assembly performs the same function as a stabilizer. Consider this when determining the need for a stabilizer.

Note: Do not apply excessive pressure to any subsequent chimney section following return elbow assembly when installing. Ensure subsequent chimney sections are securely attached by testing as noted above.

CHIMNEY OFFSET 30° THROUGH FLOOR OR CEILING

It may be necessary to assemble the chimney at 30° when passing through the floor or ceiling area. Use the F10FS30-2 firestop spacer as shown in *Figures 42 and 43*.

Support the chimney at floor or ceiling penetration with a FTF13 stabilizer if distance of chimney below ceiling is 10' (3 m) or more. Maintain 2" (51 mm) minimum air space to combustibles from chimney sections. The chimney must pass vertically through the attic space.

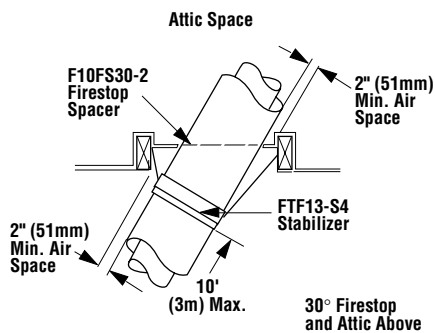


Figure 42

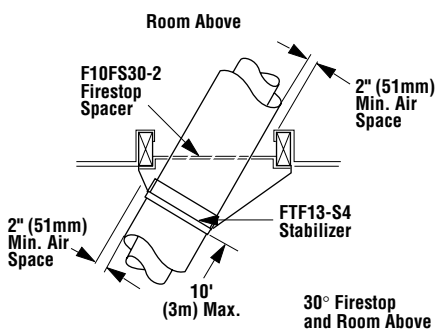


Figure 43

GLASS DOORS

The LS43ST fireplace require the use of glass doors. The selection of glass doors available for use with these fireplace are: 43LSBF, 43LSBF-B, 43LBF, 43LBF-BB, 43LBF-BS and 43TBA. The use of any other non-listed door on these fireplaces may result in a potential fire hazard and is not recommended.

IMPORTANT: IT IS NECESSARY TO ORDER AND INSTALL THE DOOR STYLE OF YOUR CHOICE. GLASS DOORS ARE NOT OPTIONAL.

CAUTION: REMOVE THE PLASTIC PROTECTIVE COATING FROM THE DOORS BRASS PIECES BEFORE ASSEMBLY AND INSTALLATION. FAILURE TO REMOVE THE COATING BEFORE FIRST USE WILL RESULT IN DAMAGE TO THE BRASS FINISH.

Make a careful inspection of all parts before installing the doors to insure they are undamaged and complete. Always use two (2) glass door assemblies for each side of the LS43ST fireplace.

CAUTION: DO NOT TOUCH THE DOORS WITH YOUR HANDS WHILE THE FIREPLACE IS IN USE. ALWAYS USE DOOR HANDLES. DOORS WILL BECOME VERY HOT WHEN FIREPLACE IS IN USE.

Note: Design characteristics of a dual-opening fireplace (whether masonry or factory-built) may cause it to not draft properly and smoke. For this reason, glass doors are required with the LS43ST fireplace.

WARNING: THESE FIREPLACES SHOULD BE OPERATED ONLY WITH THE DOORS FULLY OPEN OR FULLY CLOSED (FIGURES 44 AND 45). IF DOORS ARE LEFT PARTLY OPEN, GAS AND FLAME MAY BE DRAWN OUT OF THE FIREPLACE OPENING, CREATING RISKS OF BOTH FIRE AND SMOKE.

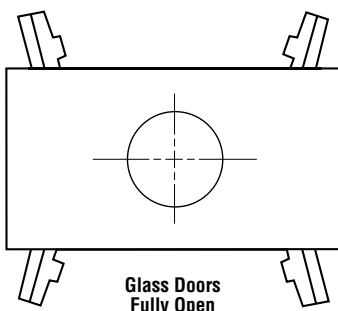


Figure 44

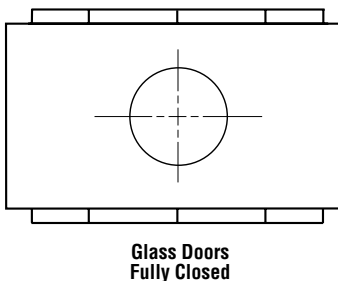


Figure 45

OPTIONAL EQUIPMENT Combustion Air Kit

Use combustion air kit, Model FOAK-4 or FOAK-4LD (*Figure 46*), with these fireplace systems. Refer to installation instructions packed with the air kit for specific information. Outside air drawn into the fireplace supplies air to the fire for combustion. The outside air kit must be installed before the fireplace is framed and enclosed in the finished walls.

IMPORTANT: ALTHOUGH THE COMBUSTION AIR KIT IS DESIGNATED AS AN OPTIONAL ACCESSORY IT IS HIGHLY RECOMMENDED THAT IT BE INSTALLED. DUE TO THE OPERATING CHARACTERISTICS OF MULTI-OPEN FIREPLACES, A PROPERLY INSTALLED SOURCE OF OUTSIDE COMBUSTION AIR CAN ENHANCE THE OPERATING PERFORMANCE OF THE APPLIANCE. THE COMBUSTION AIR KIT IS NOT REQUIRED FOR THE SAFE OPERATION OF THE LS43ST.

There is a one-hand operated shut-off valve located on each side of the fireplace opening behind the screen. Refer to label for directions of operation. The combustion air damper should be fully open when the fireplace is in operation and fully closed when the fireplace is not in use to prevent outside air from entering your home.

If additional length of duct is necessary, purchase locally available 4 inch diameter (12.5 in.²) Class 0 or Class 1 ducting. The duct may extend up to 50' (15.2 m) in any direction.

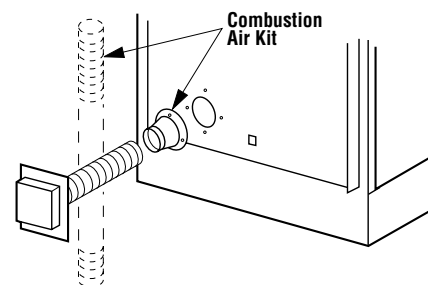


Figure 46

Outside combustion air may be run upwards or vertically through framing and ceiling joists, with the hood installed through an outside wall and 3' (914 mm) below the termination. Ducting may also be run downward through floor joists and under the home to a ventilated crawlspace not considered part of the living area of the home.

CAUTION: NEVER LOCATE THE AIR INLET WHERE IT COULD BE BLOCKED BY SHRUBS, SNOW DRIFTS, ETC. NEVER LOCATE THE AIR INLET IN GARAGE OR ANY AREA WHERE THERE IS ANOTHER FUEL BURNING APPLIANCE OR PRODUCTS EMITTING COMBUSTIBLE GASES SUCH AS PAINT, GASOLINE, ETC. IN COLD CLIMATES, IT IS RECOMMENDED THAT THE COMBUSTION AIR DUCT BE INSULATED.

Note: Do not terminate combustion air kit in attic space under any circumstances.

CAUTION: IN NO EVENT MAY THE TOTAL DUCT FOR BRINGING IN OUTSIDE AIR EXCEED 50' (15.2 M).

GAS LINE INSTALLATION

The LS43ST fireplace has been approved to accept a 1/2" (13 mm) gas line for an approved gas appliance. Always have the appliance installed by a qualified, licensed plumber in accordance with all local building codes. The gas line may enter either end of the fireplace.

CAUTION: PLUMBING CONNECTIONS SHOULD ONLY BE PERFORMED BY A QUALIFIED, LICENSED PLUMBER. MAIN GAS SUPPLY MUST BE OFF WHEN PLUMBING GAS LINE TO FIREPLACE OR PERFORMING SERVICE.

If you're installing a gas line, connect it before the fireplace is framed and enclosed in the finished wall. The gas knockout is determined by a 1 1/8" (29 mm) round indentation located at the bottom and slightly off center in the side refractories. **THE KNOCKOUT IS ALWAYS REMOVED FROM INSIDE THE FIREPLACE. DO NOT REMOVE THE KNOCKOUT UNLESS YOU ARE INSTALLING A GAS LINE.** If removal is attempted from the outer wrapper, side-refractory damage may occur. With a medium-sized hammer, lightly tap the surface of the indentation. The refractory material is very thin in this area and is easily removed. Once a small hole has been made, continue tapping until you have reached sufficient diameter for the gas line to fit through. The entire knockout does not have to be removed. Remove insulation in the gas line channel.

Install a 1/2" (13 mm) gas supply line through fireplace wall for connection to a decorative gas appliance inside the firebox. Outside, the gas supply line must connect to a gas shut-off valve usually recessed flush into the wall or floor. The valve should be controlled by a removable valve key for safety.

Always plumb gas line installation per local codes. Check all connections with soap suds; leaks will bubble. Never test any gas line connection with a match or open flame.

IMPORTANT: REPACK INSULATION MATERIAL IN SQUARE HOLE AROUND GAS LINE, INTERIOR AND EXTERIOR, TO SEAL.

This provision is intended for connection to a decorative gas appliance incorporating an automatic shut-off device and complying with the Standard for Decorative Gas Appliances for installation in vented fireplaces, ANSI Z21.60 (1991) or American Gas Association draft requirements for Gas-Fired Log Lighters for Wood Burning Fireplaces, Draft No. 4 dated August, 1993. Install in accordance with the National Fuel Gas Code, ANSI Z223.1. This complies with the revised U.L. 127 standard.

CAUTION: WHEN USING THE DECORATIVE GAS APPLIANCE, THE FIREPLACE DAMPER MUST BE SET IN THE FULLY OPEN POSITION.

Vent Free Appliances

These units have been tested and approved to ANSI/IAS/AGA Z21.11.2 for use with unvented gas appliances and complies with the standard for Factory-Built fireplaces, UL 127.

The unit has been tested for use with any unvented gas log sets having a maximum rating of 40,000 BTU. The minimum mantle configurations are outlined in *Figure 47*.

These fireplaces have been marked with a maximum rating of 40,000 BTU to assure that homeowners do not exceed the allowable limits for all allowed installations of mantles.

NEVER INSTALL AN UNVENTED GAS LOG SET WITH A BTU GREATER THAN 40,000.

COLD CLIMATE INSULATION

If you live in a cold climate, it is especially important to seal all cracks around the fireplace and wherever cold air could enter the room with noncombustible material. Surround material must be caulked where it meets the black metal facing of the fireplace to avoid cold air intrusion. Use noncombustible caulking material only on fireplace facing to seal. Also, the outside air inlet duct should be wrapped with noncombustible insulation to minimize the formation of condensation. Do not place insulation materials directly against the chimney sections.

Note: 2" (51 mm) air space must be preserved for all materials extending for any continuous length adjacent to the chimney.

It is especially important to insulate between the studs of an outside chase cavity and under the floor if the floor is above ground level. Do not place insulation directly against the fireplace or chimney system.

FIREPLACE FINISHES Mantels and Trim

It is sometimes best to frame your fireplace after it is positioned and the chimney is installed. Frame enclosure for chimney and fireplace with 2 x 4's (or heavier) lumber.

Note: The header may rest on the two (2) metal top spacers on top of the unit but the header must not be notched to fit around the spacers.

In installations, combustible mantels and trim may be installed 12" (305mm) above the opening as per NFPA 211, Section 7-3.3.3. and *Figure 47*. If a mantel is of a noncombustible material, it is exempt from the requirements as long as it does not interfere with the operation of glass doors.

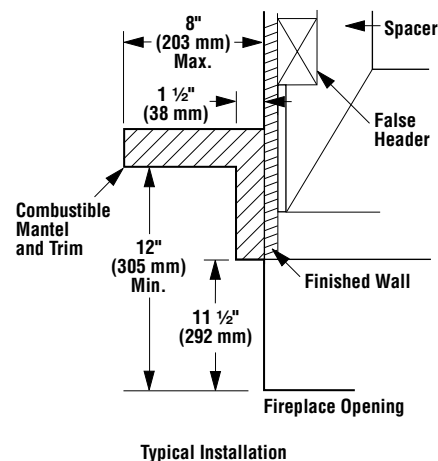


Figure 47

Hearth Extensions and Wall Shields

A hearth extension must be installed with all fireplaces. It is to protect the combustible floor in front of the fireplace from both radiant heat and sparks. The hearth extension must extend 12" beyond both sides of the fireplace opening and 20" beyond the front (see *Figure 48*). Use a hearth extension constructed of a durable noncombustible material having an equal or better (lower k value) insulating value of $k = .84 \text{ BTU IN/FT}^2 \text{ HR } ^\circ\text{F}$ or a thermal resistance that equals or exceeds $r = 1.19 \text{ HR } ^\circ\text{F}^2/\text{BTU IN}$. With these values, determine the minimum thickness/material required using the formula and *Page 18*.

Note: Any noncombustible material whose k value is less than .84 or whose r value is more than 1.19 is acceptable.

If the fireplace is installed on a combustible floor, use the metal safety strips (provided) on the floor extending half under the fireplace and half under the hearth extension (refer to *Figures 6 & 7*).

Hearth Extension Dimensions

A	20"
B	39-3/8"
C	12"
D	63-3/8"

Note: To convert inches to millimeters divide by 0.03937

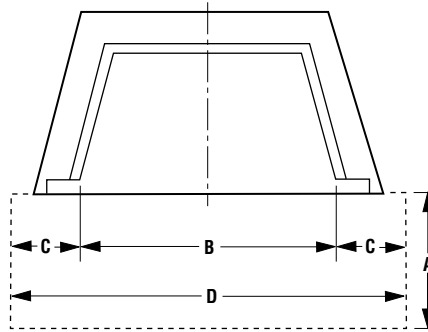


Figure 48

Methods of Determining Hearth Extension and Wall Shield

Equivalents - To determine the thickness required for the alternate material when either the "k" value or "r" value is known, use either the **k formula** or **r formula**.

Example: If Micore 160 is to be used for the hearth extension fireplace, how thick must this material be?

k_M = k value per inch of **alternate** material
 r_M = r value per inch of **alternate** material
 T_M = minimum thickness required for **alternate** material
 T_S = standard thickness of the **alternate** material

k_L = k value per inch of **listed** material
 r_L = r value per inch of **listed** material
 T_L = minimum thickness of **listed** material

Note: An asterix "*" indicates, it is a value taken from **Table 1**.
Using the k formula:

Minimum thickness of alternate material (T_M) = $\frac{\text{k-value (per Inch) of alternate material } (k_M) \times \text{Specified min. thickness of listed material } (T_L)}{\text{k-value (per inch) of listed material } (k_L)}$

$$T_M \text{ (inches)} = \frac{k_M}{*.84} \times T_L$$

$$T_M \text{ (inches)} = \frac{*.35}{*.84} \times 1"$$

$$.416 \text{ (inches)} = .416 \times 1"$$

Answer - The minimum required thickness of the Micore 160 is .417", therefore round up to nearest standard thickness available which is 1/2".

Using the r formula:

Minimum thickness of alternate material = $\frac{\text{r-value (per Inch) of listed material } (r_L) \times \text{Specified min. thickness of listed material}}{\text{r-value (per inch) of alternate material } (r_M)}$

$$T_M \text{ (inches)} = \frac{r_L}{r_M} \times T_L$$

$$T_M \text{ (inches)} = \frac{*1.19}{*2.86} \times 1"$$

$$.416 \text{ (inches)} = .416 \times 1"$$

Answer - The minimum required thickness of the Micore 160 is .417", therefore round up to nearest standard thickness available which is 1/2".

Listed Material			
	k (per inch)	r (per inch)	Listed Min. Thickness
Listed Material	.84 k_L	1.19 r_L	1" T_L
** Approved Alternate Materials for Floor/Hearth Protection			
Alternative Materials	Thermal Values		Minimum Thickness (rounded to nearest 1/8 inch)
	k (per inch) k_M	r (per inch) r_M	Min. Thickness T_M
Kaowool M Board	.47	2.13	.56" (1/2")
Micore 160™ U.S. Gypsum	.35	2.86	.42" (3/8")
Micore 300™ U.S. Gypsum	.46	2.17	.55" (1/2")
Durock™ Cement Board U.S. Gypsum	1.92	.52	2.29" (2-1/4")
Hardibacker™	1.95	.513	2.32" (2-3/8")
Hardibacker 500™	2.30	.435	2.74" (2-3/4")
Cultured Stone Hearth-stone™	2.82	.355	3.36" (3-3/8")
Wonderboard	3.23	.31	3.85" (3-7/8")
Super Firetemp M Johns-Manville	.61	1.64	.73" (3/4")
Super Firetemp L Johns-Manville	.54	1.85	.64" (5/8")
Face brick	9.00	.111	10.71" (10-3/4")
Common brick	5.00	.20	5.95" (6")
Cement mortar	5.00	.20	5.95" (6")
Ceramic tile	12.5	.08	14.88" (14-7/8")
Marble	~11	~.09	13.10" (13-1/8")

Table 1

** If the hearth extension material(s) that is intended to be used is NOT listed on Table 1, the material can still be used if the material(s) is noncombustible. However, the manufacturer of the material must provide either the listed k-value per inch or r-value per inch with listed thickness so that the minimum thickness required for the hearth can be calculated (per instructions on this Page and/or as specified in the NFI Certification manuals).

Note: Also see NFI (National Fireplace Institute) Certification Manuals showing other acceptable calculation methods and acceptable alternate materials which can be used.

A wall shield is required where a continuous perpendicular side wall is within 12" of the fireplace opening (**Figure 49**). Use a 36" W x 36" H wall shield constructed of a durable, noncombustible material having an equal or better (lower k value) insulating value than $k = .54 \text{ BTU IN/FT}^2 \text{ HR } ^\circ\text{F}$. At no time may a perpendicular side wall be located closer than 9" from the fireplace opening.

If fireplace is installed diagonally across a 90° corner; no wall shields are required.

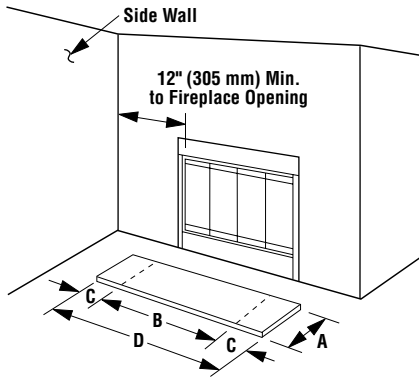


Figure 49

Calculating Minimum Thickness if Multiple Materials are Used

At times it is important to know what combination of materials are acceptable for use as floor protection. The "R values" are used to determine acceptable combinations of materials because "R values" are additive where r and k values are not.

"R value" = 1/k = "r" x thickness of material used

Example: Given that the required "R value" for a suitable floor protector used must be equal to or greater than:

$$"R" = r_L \times T_L = 1.19 \times 1" = 1.19."$$

If it is desired to elevate a marble hearth extension to a level of 5" or more above the floor surface. What combination of noncombustible materials can be used to accomplish this?

If common brick is used so that the 3 1/2" dimension is the height, "R" for the common brick becomes:

$$"R"_{\text{brick}} = r_M \times T_S = 0.20 \times 3 \frac{1}{2}" = .70$$

Using 1/2" of mortar to set the brick, "R" for the mortar is calculated as follows:

$$"R"_{\text{mortar}} = r_M \times T_S = 0.20 \times \frac{1}{2}" = .10$$

Next, a 3/4" marble slab set in 1/2" mortar covers the brick, "R" for the marble and mortar becomes:

$$"R"_{\text{marble}} = r_M \times T_S = 0.05 \times \frac{3}{4}" = .038$$

$$"R"_{\text{mortar}} = r_M \times T_S = 0.20 \times \frac{1}{2}" = .10$$

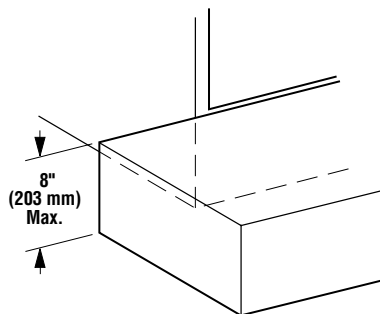
The sum of all "R values" is: $.70 + .10 + .038 + .10 = .938$

This would NOT be an acceptable combination of material for the hearth extension since the total calculated "R value" of the materials used is under the required "R value" of 1.19. An additional layer of insulating materials must be used.

Note: Also see NFI Certification Manuals for expanded explanation on calculating "R values" when multiple materials are used.

WARNING: THE CRACK BETWEEN THE FIREPLACE AND THE HEARTH EXTENSION MUST BE SEALED WITH A NON-COMBUSTIBLE MATERIAL.

WARNING: WHEN INSTALLING HEARTH EXTENSION IN FRONT OF THE FIREPLACE, THE FIREPLACE MUST BE RAISED IF HEIGHT OF HEARTH EXTENSION EXCEEDS 8" ABOVE BOTTOM OF FIREPLACE (FIGURE 50).



Maximum Thickness of Hearth Extension when Fireplace is on the Floor.

Figure 50

FINISH TO YOUR TASTE

There are a wide variety of "finished looks" for your LS43ST fireplace from formal wall decor with elaborate mantels to rustic wood paneling or warm brick facings.

Only noncombustible materials like marble, stone, tile, brick, etc. may overlap the black front facing, but be careful not to interfere with the operation of the glass doors.

Seal all joints between the black facing and wall surrounds to prevent cold air intrusion. Use noncombustible caulking material only to seal the black metal facing to the surround material on the finished wall. Combustibles may also project beyond the sides of the fireplace opening as long as they are kept within the shaded areas (*refer to Figure 5*).

ACCESSORY PARTS AND COMPONENTS LIST FOR THE LS43ST

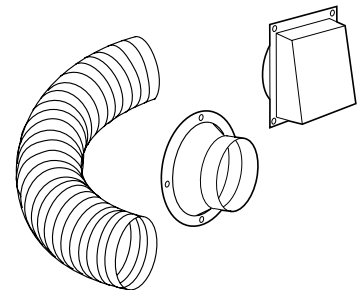
The accessory parts and components shown on pages 19 and 20 are to be used only with your LS43ST fireplace system. Separate installation instructions are packaged with all combustion air kits and chimney terminations.

If you encounter any problems or have questions concerning the installation or application of this system, please contact your distributor. For the name of your nearest distributor call:

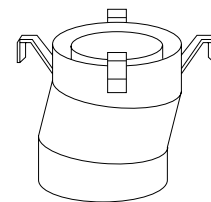
LENNOX HEARTH PRODUCTS
1110 West Taft Avenue
Orange, CA 92865

INSTALLATION COMPONENTS

The following items are available for use in the installation of this appliance.



Outside Combustion Air Kits		
(with duct)	81L87	FOAK
(without duct)	81L88	FOAK-LD

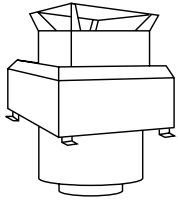


Combination		
Offset/Return Elbow	63L35	FTF13-OR15

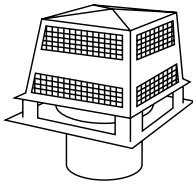
Model	Part Number	Weight
LS43ST	23M92	400 lbs.

NOTE: DIAGRAMS & ILLUSTRATIONS NOT TO SCALE.

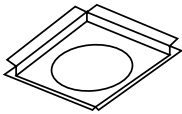
INSTALLATION COMPONENTS



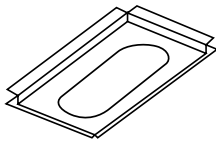
Chase Termination
(Square) 63L54 FTF13-CT2



Chase Termination
(Square) 63L50 FTF13-CT1



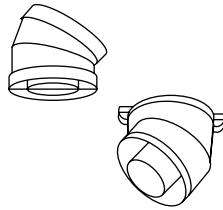
Firestop Spacer (Flat) 63L36 F10FS-2



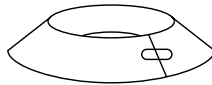
Firestop Spacer (30°) 63L37 F10FS30-2



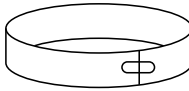
Chimney Section 63L19 FTF13-12
63L20 FTF13-18
63L21 FTF13-36



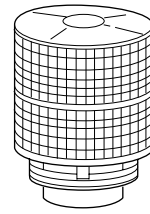
Offset/ Return
Package (30°) 63L24 FTF13-ES30



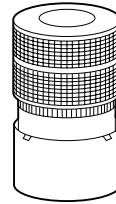
Storm Collar 63L59 FSC



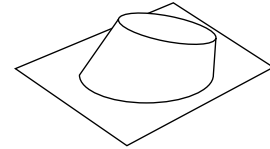
Locking Band 63L60 FLB



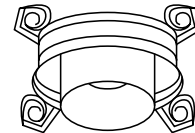
Chase Termination
(Round) 63L44 FTF13-CTD



Chase Termination
(Round) 63L47 FTF13-CTDT



Flashing 63L40 F10F6
63L41 F10F12



Stabilizer 63L27 FTF13-S4

NOTE: DIAGRAMS & ILLUSTRATIONS NOT TO SCALE.

The manufacturer reserves the right to make changes at any time, without notice, in design, materials, specifications, prices and also to discontinue colors, styles and products. Consult your local distributor for fireplace code information.

LENNOXTM

HEARTH PRODUCTS

1110 West Taft Avenue
Orange, CA 92865

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