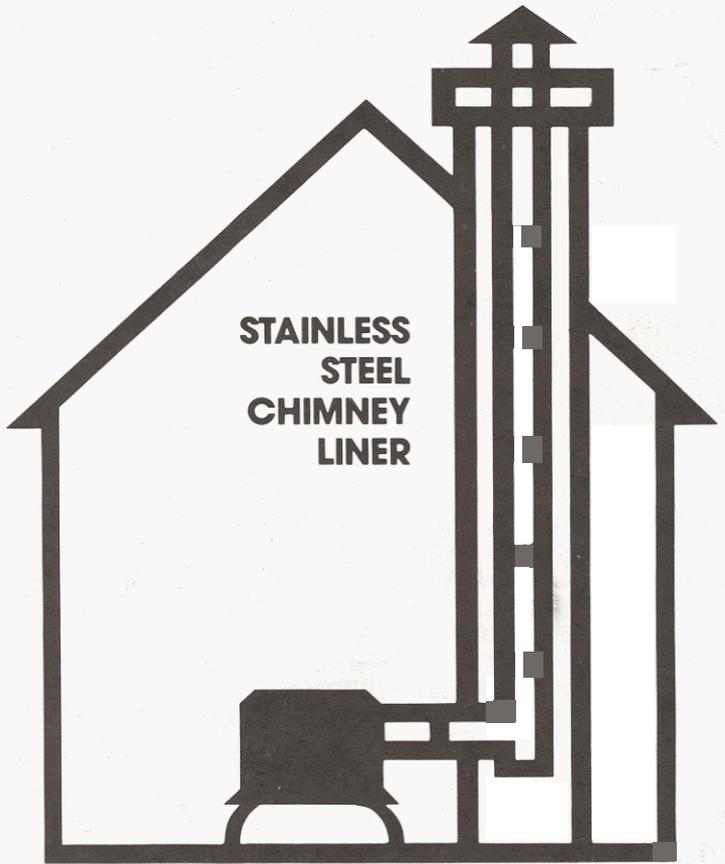


Installation Manual

GRAY

STAINLESS FLUE



FOR USE IN RESIDENTIAL AND BUILDING HEATING APPLIANCES FUELED WITH GAS, LIQUID FUEL OR SOLID FUELS SUCH AS WOOD STOVES, COAL STOVES, WATER HEATERS, GAS FURNACES AND OIL BURNERS

5" -6" -7" -8" DIAMETER

This Product is Listed by
UNDERWRITERS LABORATORIES INC.
and Bear the Mark:



INSTALLATION INSTRUCTIONS

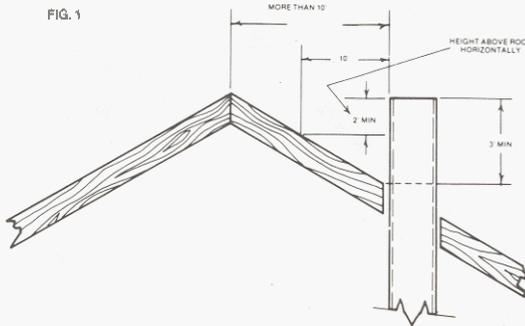
MAINTENANCE RECOMMENDATIONS

Thank you for purchasing Gray Stainless Flue Chimney liner. This high quality product will give you many years of fine service provided these installation instructions are followed and your Gray Stainless Flue chimney liner is maintained according to the suggested schedule.

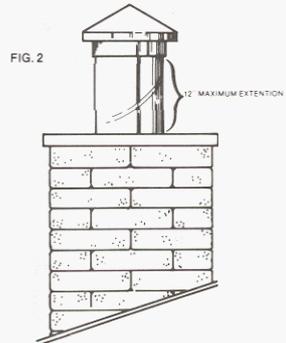
Safe installation and operation of your heating system is imperative.

CHIMNEY PLACEMENT

The National Fire protection association (NFPA) standard 211 requires that the chimney extend at least three feet above the highest point where it passes through the roof and must be at least two feet higher than any portion of the building located within ten feet of the chimney. (FIG. 1)



When installing Gray Stainless Flue Chimney Liner in your masonry chimney do not allow the liner to extend more than 12" above the termination of the masonry chimney in order to prevent formation of excessive creosote due to condensation. (FIG. 2)



CHIMNEY INSPECTION

Prior to installation of your Gray Stainless Flue chimney liner the masonry chimney should be inspected for structural integrity. It must be stressed that the Gray Stainless Flue chimney liner is not a chimney structure itself. It is designed to line or reline existing structurally sound masonry chimneys. Inspect the chimney for loose or eroded mortar, cracked and or missing bricks. In the interior check for obstructions, unused flues and creosote build up. In this regard it is especially important to remove tar glaze creosote deposits adhering to the inside of the chimney. All exterior cracks must be filled, loose mortar and missing bricks replaced. Interior obstructions which may inhibit correct installation of the chimney lining system must be removed.

BUILDING CODES

These instructions are to serve as a guide for qualified installation technicians. There may however be building codes in your area which reference this type of in-

stallation. Contact local building or fire officials about restrictions and installation inspection in your area.

Do not substitute materials in your installation. Use only Gray Stainless Flue materials and Ther Mix™ insulation.

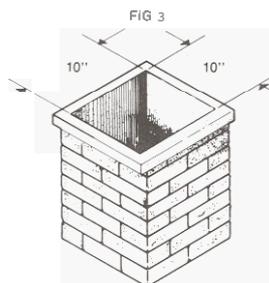
A. MAXIMUM AND MINIMUM LENGTH

The minimum length of your Gray Stainless Flue Chimney liner shall be no less than fifteen (15) feet. The maximum length shall be no greater than eighty (80) feet.

SIZE

Gray Stainless Flue Chimney Liner must be sized to conform to your heating appliance. The diameter of the liner must be no less than the diameter of the flue collar on the appliance or as otherwise specified by the appliance manufacturer.

In addition to the flue collar dimensions, chimney internal size must be considered. A minimum of one inch space is required between Gray Stainless Flue Chimney liner and the inside wall of the masonry chimney. For example a chimney measuring 10" x 10" square may be lined with a maximum 8" round liner to allow 1" space around all surfaces. (FIG. 3)



Should the inside dimensions not be square, refer to the small dimension for proper size. As an example, a 10" x 8" masonry chimney will permit a maximum 6" diameter liner to insure a 1" wall space from the 8" dimension.

To determine proper length of your Gray Stainless Flue liner assembly lower a weighted rope through the masonry chimney to its base. Remove the rope and measure the length. To determine the number of pipe lengths required for installation subtract from liner assembly length the number of tees required. One tee will be required for appliance installation. One tee is recommended at the base of the installation to serve as a clean out. When selecting the number of pipe lengths required remember to subtract 2" from each pipe length to determine the assembled length. For example a 36" pipe will yield 34" assembled length. A 24" pipe will yield a 22" assembled length. Total tees plus pipe lengths equal assembly length.

CLEARANCE FOR COMBUSTABLE MATERIALS

The maximum air space clearance between interior masonry chimneys and combustible materials shall be at least two (2) inches in conformance with the National Fire Protection Association Standards #211.

The minimum air space clearance between exterior masonry chimneys and combustible materials shall be one (1) inch in conformance with the National Fire Protection Association Standards #211.

The air space in either instance shall not be filled.

The minimum thickness of brick used in the construction of masonry chimneys to be lined with Gray Stainless Flue Chimney liner shall be four (4) inches in conformance with the National Fire Protection Association Standards #211.

INSTALLATION AND ASSEMBLY:

TOOLS AND MATERIALS

Gloves
Hammer
1/8 high speed drill bit, masonry
drill bit and electric drill

Screwdriver
Cold Chisel
Ladder
Tin snips

Pop rivet gun
Rope (sufficient to extend from
top to bottom of chimney)
Mortar mix and pan

Trowel
Silicon caulk
Eye protector
Steel S hook

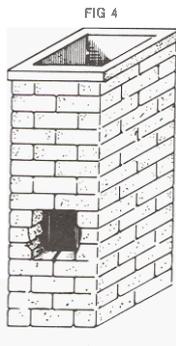
MEASUREMENT

Prior to installation locate the inlet to the chimney for your heating appliance. This location will determine placement of the tee through which your appliance will connect to the liner.

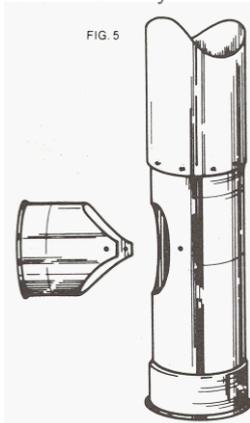
Additionally, a tee should be located at the base of the liner assembly to serve as a cleanout.

CHIMNEY PREPARATION

If an appliance is not presently connected to the chimney, an opening must be made in the brick. Locate a single brick at the midpoint of the area to be opened. Drill around the perimeter of the brick with a masonry drill bit. Remove surrounding bricks until the opening is large enough to insert the removable branch of the tee. Do not remove an excessive amount of brick. (FIG. 4)



Repeat this process at the base of the chimney for the cleanout tee. Check the chimney to insure it is clean and free of excessive protrusions

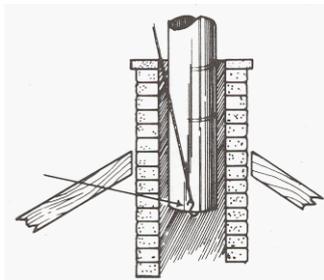


INSTALLATION:

First assemble the bottom clean out tee body to a length of pipe liner. Remove the tee branch. The tee body is assembled by locating the 1/8" holes in the tee and drilling through the hole with a 1/8" high speed drill. Pop rivet the sections with the rivets supplied. Insert a tee cap on the bottom of the tee. Do not rivet the cap to the tee as you may wish to remove it when cleaning your liner. (FIG. 5)

Working from the roof with appropriate scaffolding lower the assembled tee body and liner pipe into the chimney using the rope and S hook to within 6" of the end of the first section of liner pipe. Secure the liner and assemble the next liner section with supplied rivets. Repeat the process insuring that the tee body which is to accept your appliance connector is located at the proper position behind the prepared opening in the chimney. Continue the installation with liner pipe until 6" of pipe protrudes from the top of the chimney. (FIG. 6)

FIG 6



Install tee branches at the clean out opening and appliance opening using the stainless self drilling screws supplied with the tee.

CHIMNEY WALL CLOSING

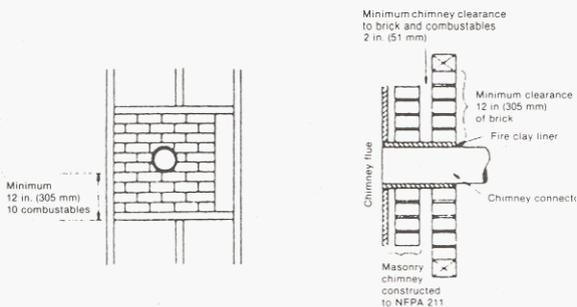
Using brick and mortar seal the tee branch tightly in the chimney. The branch should be flush to the outside of the chimney and mortared tightly in place as it will support the weight of the liner.

PASSING THROUGH WALLS

If it is necessary to pass through combustible walls to connect the solid fuel heating appliance to the chimney liner the following clearances must be maintained.

SYSTEM A

Minimum 3.5 in. (90mm) thick brick masonry wall framed into combustible wall with a minimum of 12 in. (305 mm) brick separation from clay liner to combustibles. Fire clay liner (ASTM C315 or equivalent). minimum 5/8 in. (16 mm) wall thickness, shall run from outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place. **(Clearance in mm 121305)**

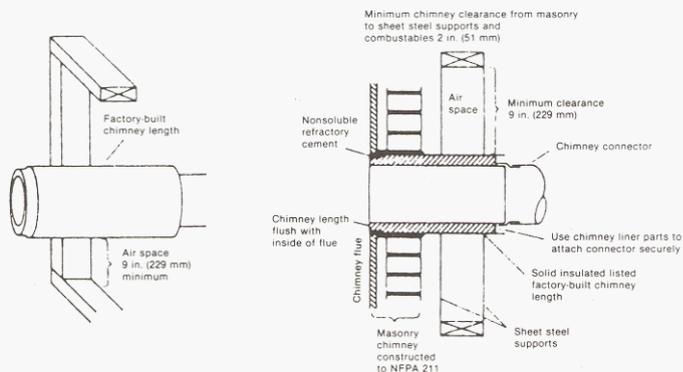


SYSTEM B

Solid insulated listed factory-built chimney length of the same inside diameter as the chimney connector and having 1 in. (25 mm) or more of insulation with a minimum 9 in. (229 mm) air space between the outer wall of the chimney length and combustibles.

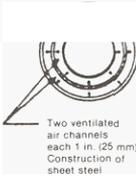
The inner end of the chimney length shall be flush with the inside of the masonry chimney flue and shall be sealed to the flue and to the brick masonry penetration with nonwater-soluble refractory cement. Supports shall be securely fastened to wall surfaces on all sides.

Fasteners between supports and the chimney length shall not penetrate the chimney liner. **(Clearance in mm 91229)**

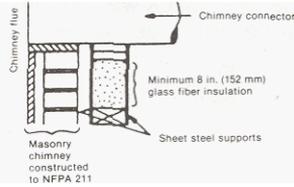


SYSTEM C

Sheet steel chimney connector, minimum 24 gage [0.024 in. (0.61 mm)] in thickness, with a ventilated thimble, minimum 124 gage [0.024 in. (0.61 mm)] in thickness, having two 1 in. (25 mm) air channels, separated from combustibles by a minimum of 6 in. (152 mm) of glass fiber insulation. Opening shall be covered and thimble supported with a sheet steel support, minimum 24 gage [0.24 in (0.61 mm)] in thickness. Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney sections shall not penetrate chimney flue liner. (Clearance in mm 6/152)



Minimum chimney clearance to sheet steel supports and combustibles 2 in. (51 mm)

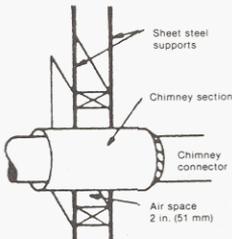


SYSTEM D

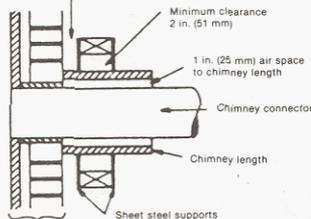
Solid insulated listed factory-built chimney length with an inside diameter 2 in. (51 mm) larger than the chimney connector and having 1 in. (25 mm) or more of insulation, serving as a pass-through for a single wall sheet steel chimney connector of minimum 24 gage [0.024 in. (0.61 mm)] thickness, with a minimum 2 in. (51 mm) air space between the outer wall of chimney section and combustibles.

Minimum length of chimney section shall be 12 in. (305 mm). Chimney section concentric with and spaced 1 in. (25 mm) away from connector by means of sheet steel support plates on both ends of chimney section. Opening shall be covered and chimney section supported on both sides with sheet steel supports of minimum 24 gage [0.024 in. (0.61 mm)] thickness.

Supports shall be securely fastened to wall surfaces on all sides and shall be sized to fit and hold chimney section. Fasteners used to secure chimney sections shall not penetrate chimney flue liner. (Clearance in mm 2/51)



Minimum chimney clearance to sheet steel supports and combustibles 2 in. (51 mm)



Masonry chimney constructed to NFPA 211

ADDITIONAL REQUIREMENTS:

1. Insulation material used as part of wall pass-through system shall be of non-combustible material and shall have a thermal conductivity of $1.0 \text{ Btu}\cdot\text{in.}/\text{ft}^2\cdot^\circ\text{F}$ ($4.88\text{kg}\cdot\text{cal}/\text{hr}\cdot\text{m}^2\cdot^\circ\text{C}$) or less.

2. All clearances and thicknesses are minimums; larger clearances and thicknesses are acceptable.

3. Any material used to close up an opening for the connector shall be of noncombustible material.

4. A connector to a masonry chimney, except for System B, shall extend to on piece through the wall pass-through system and the chimney wall to the inner face of the flue liner, but not beyond.

Do not connect more than one solid fuel appliance to a single chimney liner.

Do not connect gas fired appliances to liners connected to solid fuel appliances.

INSULATION:

Before securing the chimney top pour proper insulation around the liner. Gray Stainless Flue Chimney Liner must be insulated with Ther Mix™ listed insulation. Insulation not only makes your Gray Stainless Flue Chimney liner a safe system; it additionally reduces condensation and creosote and increases the rigidity of the entire chimney.

Listed Ther Mix™ insulation should be installed in conformance with manufacturers instructions. Following said instructions, insure the liner is centered in the chimney and fill to within 6" of the chimney top.

After installation of your Gray Stainless Flue Chimney liner and your heating appliance is complete, the following precautions must be taken.

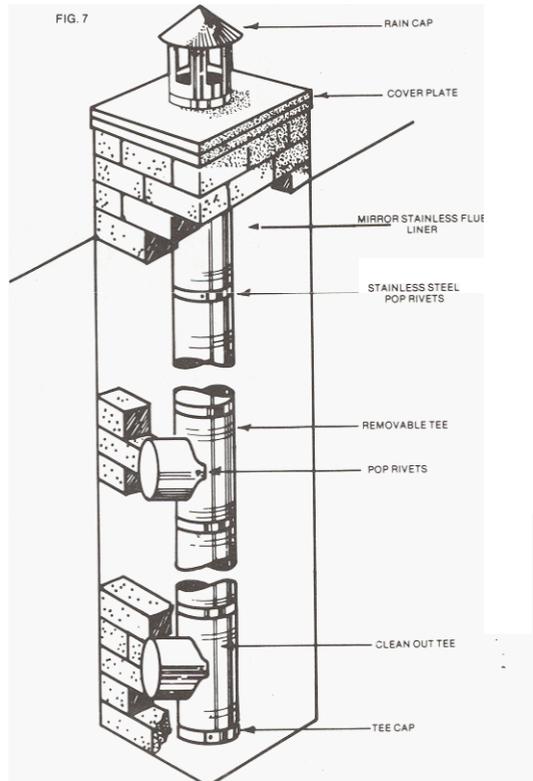
A. If time permits, a period of three weeks should elapse prior to firing the appliance in order to allow the Ther Mix™ insulation to cure and expel excess moisture.

B. Curing may be accelerated by firing the appliance to attain a temperature of 500°F at the chimney liner for a period of 24 hours.

FINISHING THE INSTALLATION

Install a cover plate on top of the chimney, cutting the plate to fit over the top of the chimney and seal with silicon caulk.

Do not seal the liner to the top plate. The top plate serves as a chimney cover and location for the liner, but the liner must be allowed to expand vertically during heating and cooling. (FIG. 7)



MAINTENANCE

Your Gray Stainless Flue Chimney Liner should be cleaned at least once a year by a professionally certified Chimney Sweep.

The chimney liner system should be inspected monthly during the heating season to determine if creosote or soot build up has occurred.

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

CREOSOTE AND SOOT FORMATION AND NEED FOR REMOVAL

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors may condense on the inside of the chimney liner during slow-burning firing periods. As a result, creosote residue accumulates on the chimney liner. When ignited, this creosote makes an extremely hot fire.

TO CLEAN YOUR GRAY STAINLESS FLUE CHIMNEY LINER

- A. The chimney cap must be removable. Do not rivet the chimney cap to the liner. Use the stainless steel screws supplied with the chimney cap.
- B. Remove the chimney cap from the top of the installation when the liner is cool.
- C. Using a chimney cleaning brush of the proper diameter for the liner brush in an up and down motion throughout the length of the lining assembly. Accumulated creosote deposits will drop to the bottom of the assembly.
- D. Remove accumulated creosote deposits from the base of the clean out tee.