

INSTALLATION INSTRUCTIONS
FOR BEST-Flex Models “L”, “H”, “S”, & “E”
STAINLESS STEEL CHIMNEY LINERS

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BEST-Flex Models “L”, “H”, “S”, & “E” Stainless Steel Chimney Liners.

The BEST-Flex lining system is designed and UL listed to be installed inside masonry chimneys. BEST-Flex liners are used to vent the gases and by-products produced by appliances that burn oil, gas, or solid fuels.

All appliances require certain venting specifications and the liner is not to be sized less than specified in the appliance manufacturer’s instructions. For the best operation refer to the appliance manufacturer’s instructions to determine any special necessities for that specific appliance.

The installer must contact the local building and fire code officials for a variety of reasons:

- The installation may require special inspection requirements.
- Building permits may be required before installation.
- Compliance with local building codes. (Authorities with local jurisdiction such as Inspectors, Municipality Building Departments, Fire Departments, and Fire Bureau’s have precedence over national codes).

For proper results and operation use only materials or components specified in these installation instructions. Using parts or materials not specified may result in undesirable effects. The lining system safety, code compliance, warranty and performance may be compromised if the installation instructions are not followed

BEST-Flex Stainless Steel Chimney Liners are tested and listed by Underwriters Laboratories.

- In the United States they are tested to UL 1777 and can be installed in NEW & EXISTING masonry chimneys.
- In Canada they are tested to ULC S635 and are to be installed in EXISTING masonry chimneys.

PRODUCT INFORMATION FOR BEST-Flex CHIMNEY LINERS

- The BEST-Flex Stainless Steel Flexible Chimney liner is designed to reline existing chimneys or to be used as a liner in new construction. Manufactured with the highest quality, mill certified alloy. BEST-Flex Stainless Steel Flexible Chimney Liner has a high acid fighting capability. Listed by UL Laboratories to UL 1777 & ULC S635 standards for zero clearance installation. BEST-Flex can be used to vent wood, wood pellet, coal, non-condensing gas and oil, making it the choice for venting all standard efficiency installations. UL listed BEST-Flex is available in 3” to 12” diameters (13” above is not listed) to cover a wide range of requirements found in the field today.
- The unique manufacturing systems used to make BEST-Flex utilizes a continuous strip of stainless steel, 7-ply interlocked and crimped to produce a gas and water tight lining system of superior strength and durability. BEST-Flex can be curved to go around offsets in chimneys and can be factory ovalized to custom sizes to fit most any installation requirement. Unless specified by the manufacturer, the liner is not to be field ovalized. The corrugated construction allows for expansion & contraction during the heat-up & cool-down periods, which removes any stresses on the system.
- BEST-Flex can be insulated with either a vermiculite based poured insulation or with a foil-faced ceramic wool blanket to meet UL 1777 & ULC S635 standards for chimney exteriors with zero clearance to combustibles.
- BEST-Flex Stainless Steel Chimney Liner comes with a Life Time Warranty for all fuels, with appliance efficiencies at 83 percent or lower.

MATERIALS REQUIRED FOR BEST-Flex STAINLESS STEEL LINER INSTALLATION:

Liner Model - “L”, “H”, “S”, & “E”

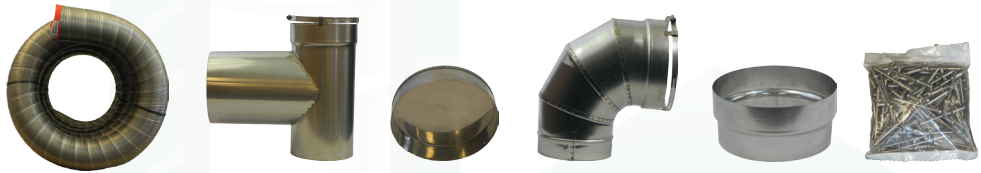
TT / TB - Two piece or one piece tee

TEC - Tee Cap

EA / EF - 15°- 90° elbow

C / CC - Coupler

Screws / Rivets



OPTION A

TP - Top Plate

TC - Top Clamp

SC - Storm Collar

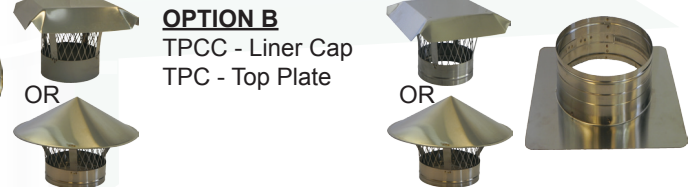
CL - Liner Cap (square/round)



OPTION B

TPCC - Liner Cap

TPC - Top Plate



INSULATION MATERIALS REQUIRED (if applicable)

Part #

- | | |
|------------------|---|
| LI2 | Liner Insulation 1/2” Foil Faced Ceramic Wool Blanket |
| LM | Liner Mesh Protective Wire Mesh Sleeve |
| FT (2”, 3”) | Aluminum Foil Tape |
| LMC(large/small) | Mesh Clamp |
| BMIX | BEST Mix |



1.) CHIMNEY PREPARATION & INITIAL INSPECTION

Before any liner can be installed the existing chimney must meet proper construction and code requirements:

- The chimney must be between 10-ft high (min) and 100-ft (max) in height.
- The chimney must have a wall thickness of 4-inch min (nominal) solid masonry unit.
- The chimney must project at least 3-ft over the point of roof penetration, and at least 2-ft higher than any point of any structure within a 10-ft radius.
- If the mass of the chimney is constructed within the structure a 2-in minimum, unobstructed air space, must surround the chimney mass to any combustible material. If the chimney is constructed on the outside of the structure, 1-in of unobstructed air space must be maintained between the chimney mass and all other combustible materials.
- When the chimney breaks the plane of a floor, ceiling, or other horizontal or vertical structure, fire stops of a non-combustible material must be used.
- The installer must verify the above with all local & national codes as required.
- If the correct clearances cannot be verified due to regional factors the liner must be installed with a UL listed insulation material.
- Any appliance that burns a liquid fuel cannot be attached to a chimney liner made to vent a solid fuel burning appliance.
- The connection pipe between the appliance and the chimney liner must have proper clearances to combustibles. This can be determined by the appliance manufacturer's installation instructions, the national building code, the local building code, or whichever factor takes precedence.
- The chimney must be cleaned comprehensively to remove all deposits of soot, creosote, or glazed creosote before any liner is installed. A full inspection must be done to determine if the chimney is structurally sound. If the existing system is found not to be in compliance with applicable building code and / or manufacturers installation instructions, the liner shall not be installed until appropriate steps have been taken in order to bring the chimney or vent into compliance with the applicable code and / or manufacturer's instructions.

Note: Installing a lining system into an existing chimney or vent does not, in any way, upgrade the resulting relined system and make it suitable for any applications that require a vent or chimney of a higher temperature handling capability, an alternative fuel, or any other more sever service than the original chimney or vent in which it is installed.

2.) SIZING THE CORRECT CHIMNEY LINER DIAMETER

- Any heating appliance connected to the lining system must not have a flue outlet size larger than the liner area at its smallest point, unless a qualified person has sized the liner to suit the appliance
- For sizing a liner used for gas and oil burning appliances refer to N.F.P.A 54 for gas and N.F.P.A 31 for oil. Also refer to the appliance manufacturer's instructions. Liners that are incorrectly sized for the appliance can lead to poor draft, excessive condensation, and creosote build-up inside the lining system. Please call New England Supply Inc. should you have any questions about sizing a liner.
- For sizing a liner used for solid fuel burning appliances the cross section area of the liner shall not be less than the cross section area of the appliance outlet collar. Unless specified by the appliance the cross section area of the flue shall not be more than three (3) times the cross section area of the appliance outlet collar. Solid fuel burning fireplace liners should be a minimum of one-twelfth (1/12) the square inches compared to the square inches of the fireplace opening. This one-twelfth (1/12) number can vary based on height of the chimney along with other calculating factors. Call New England Supply Inc. if you have any questions.

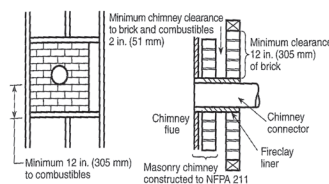
3.) DETERMINE IF THE LINER SIZED IN STEP #2 WILL FIT INTO THE CHIMNEY

- The BEST-Flex Stainless Steel Chimney Liner can be installed inside the existing flue tile or the flue tile can be removed. It is critical that the correct size liner will actually fit into the flue. Chimney construction and flue offsets may change the physical size of the interior of the chimney. It is best to test the smallest point of the chimney interior before trying to install the chimney liner. Lower a short piece of the correct size liner down the chimney to see if it will fit through, or a liner guide cone. If the chimney liner needs to be insulated extra space around the liner is required. If a round liner configuration will not fit the liner can be formed into an oval shape to fit at the factory. However an oval liner will change the cross section area and a larger liner may be needed. Please call New England Supply Inc. with any questions.

4.) INSTALLING THE BEST-FLEX STAINLESS STEEL CHIMNEY LINER

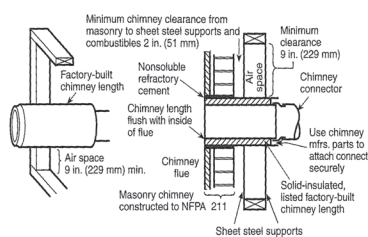
- Thimbles must be in the proper location to maintain the required clearance to combustibles from the connector pipe to the appliance. The liner length is determined by measuring from the lowest thimble (if more than one) to the top of the chimney. Add approximately Six (6) inches to attach the crown and top hardware. Cut the liner to the desired length.
- If a liner is not long enough a coupler may be used to join two pieces of liner. Attach the Coupler to the liner with the affixed band, or stainless steel screws (Male end down when applicable).
- Attach the Tee Body to the liner with the affixed band, or stainless steel screws. If the liner needs to be insulated with a ceramic wool blanket, install the blanket at this point. Attach the Tee Cap to the Tee Body at this point.
- Expand the draw band on the Tee Snout completely, slide the Tee Snout into the thimble with the draw band centered in the flue. Lower the liner

CHIMNEY CONNECTORS AND VENT CONNECTORS



System A. Minimum 3.5 in. (90 mm) thick brick masonry wall framed into combustible wall with a minimum of 12 in. (305 mm) brick separation from clay liner to combustibles. Fireclay liner (ASTM C 315, Standard Specification for Clay Flue Liners and Chimney Pots, 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: 12 in. (305 mm)

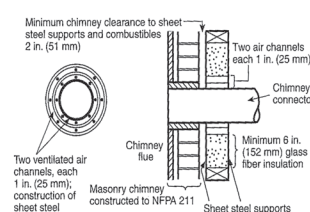


System B. Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1 in. (25 mm) or more of insulation with a minimum 9 in. (229 mm) air space between the outer wall of the chimney length and combustibles.

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 non-water-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.

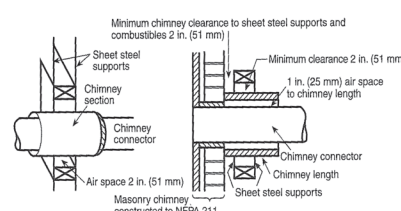
Clearance: 9 in. (229 mm)



System C. Sheet steel chimney connector, minimum 24 gauge [0.024 in. (0.61 mm)] in thickness, with a ventilated thimble, minimum 24 gauge [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 gauge [0.024 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 section shall not penetrate chimney flue liner.

Clearance: 6 in. (152 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 gauge [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 gauge [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 section shall not penetrate chimney flue liner.

Clearance: 2 in. (51 mm)

Note: All clearances and thicknesses are minimums; larger clearances and thicknesses are permitted.

down the top of the chimney, and slip the Tee Body through the draw band on the Tee Snout. You may have to rotate the liner to align the hole in the Tee Body with the Tee Snout. Once you have aligned the Tee tighten the draw band to secure the Tee Snout to the Tee Body.

- Use mortar around the assembled Tee Snout to form an airtight seal.
- At the top of the chimney there are two options:
 - **OPTION A** - use a Top Plate, Support Clamp, and Storm Collar to support and seal off the liner Top Assembly. Place the Top Plate around the liner and center them both on top of the chimney, secure them to the chimney top with masonry screws, silicone or mortar. Attach the Support Clamp around liner and secure. Push the support clamp tight onto the Top Plate. Place the Storm Collar around liner and push down tight to the Support Clamp and secure. Place a bead of silicone around the top of the Storm Collar to seal. Install the Rain Cap on top of the liner and secure. Listed Rain Caps incorporating bird screens are necessary and/or required in some areas but may be susceptible to blockage through freezing moisture in areas of low ambient temperature. Consult an authority having jurisdiction.
 - **OPTION B** - Use a Top Plate w/ collar to support and seal off the liner Top Assembly. Place the Top Plate w/ Collar around the liner and tighten the liner with the draw band clamp attached inside the Top Plate w/ Collar. Center them both on top of the chimney and secure them to the chimney top with masonry screws, silicone or mortar. Install the Rain Cap on top of the Top Plate w/ Collar and secure. Listed Rain Caps incorporating bird screens are necessary and/or required in some areas but may be susceptible to blockage through freezing moisture in areas of low ambient temperature. Consult an authority having jurisdiction.
- For inspection and cleaning purposes, wall penetrations shall not be installed directly behind the heating appliance.

5.) INSTALLING BEST-FLEX STAINLESS STEEL LINER FOR A FIREPLACE

- No Tee is used on the bottom of the liner when installing a liner for a fireplace application. The Tee is substituted with a Bottom Plate which is used to seal the liner at the top of the fireplace smoke chamber. The Bottom Plate can be installed by reaching up through the damper opening or by dismantling the face of the fireplace near the top of the smoke chamber.
- **Installing Bottom Plate through Damper.** Attach the Bottom Plate to the liner with stainless steel rivets, stainless steel screws, or a Support Clamp below the Bottom Plate. Once the Bottom Plate is secured to the liner, pull the liner up and place the Bottom Plate on top of the smoke chamber. Hold the liner in place with a temporary support (2x4's). Install top hardware by placing the Top Plate around the liner and center them both on top of the chimney, secure them to the chimney top with masonry screws, silicone or mortar. Attach the Support Clamp around liner and secure. Push the support clamp tight onto the Top Plate. Place the Storm Collar around liner and push down tight to the Support Clamp and secure. Place a bead of silicone around the top of the Storm Collar to seal. Install the Rain Cap on top of the liner and secure.
- **Installing Bottom Plate through Face of fireplace.** This solution will require more work and masonry skills to rebuild the fireplace. Remove two to four bricks in either the face or the back of the fireplace at the level of the top of the smoke chamber. If the smoke chamber is built correctly there should be approximately eight inches of masonry to go through. Once this opening has been created slide the Bottom Plate into the hole over the top of the smoke chamber. Lower the liner down from the top of the chimney and through the hole in the Bottom Plate. Secure the Bottom Plate to the Liner with stainless steel rivets, stainless steel screws, or place a Support Clamp on the liner above the Bottom Plate. This will prevent the liner from slipping down through the Bottom Plate until the top hardware has been installed. Install top hardware by placing the Top Plate around the liner and center them both on top of the chimney, secure them to the chimney top with masonry screws, silicone or mortar. Attach the Support Clamp around liner and secure. Push the support clamp tight onto the Top Plate. Place the Storm Collar around liner and push down tight to the Support Clamp and secure. Place a bead of silicone around the top of the Storm Collar to seal. Install the Rain Cap on top of the liner and secure. Seal hole in masonry smoke chamber with like material.

6.) INSULATING BEST-FLEX STAINLESS STEEL CHIMNEY LINER

Not all situations require the insulation of the chimney liner. The UL 1777 & ULC S635 Standard for installing stainless steel chimney liners requires insulation because the non code conforming chimney has zero clearance to combustibles or some other defect. Therefore the UL 1777 & ULC S635 Standard is in place for fire protection. In the United States the definition of a code conforming chimney is one that meets or exceeds the N.F.P.A.211 standard for construction of chimneys. This standard includes; proper clearances to combustibles, intact 5/8 fireclay flue liner or equivalent, minimum four inch (nominal) solid chimney wall. If the chimney meets all the requirements for a code conforming structure the only reason to reline it would be for proper sizing and appliance performance. In the case of relining gas or oil fired appliances no insulation is required (recommended for high efficiency). Regardless of existing chimney conformance, insulating the chimney liner will improve the performance of the appliance that is connected to it. The insulated liner will stay warmer and the flue will not cool as quickly which means less condensation. In wood burning appliances this will reduce the amount of creosote that will form in the liner. In oil and gas burning applications the likelihood of condensation will be greatly reduced (especially on startup). While fire protection is the main reason for insulating, insulating a liner (even if not required) will pay dividends by increasing performance and efficiency.

Please Note: For the installed liner system to meet UL standards, all UL listed components used must be installed with proper clearances.

THERE ARE TWO OPTIONS FOR INSULATING BEST-FLEX STAINLESS STEEL LINERS

Option #1 - Insulating with BEST-Wrap

BEST-Wrap needs to be installed around the liner before the liner is installed into the chimney.

- BEST-Wrap is one half inch (1/2") thick, eight pound density, ceramic wool blanket with a three mil aluminum foil face. Aluminum tape, retractable wire mesh, and mesh clamps will be needed to complete the installation. BEST-Wrap is available in four widths, 24" to fit liners 4" to 6" diameters, 30" to fit 6.5" to 8" diameters, 36" to fit 9" to 10" diameters, and 48" to fit 11" to 14" diameters.
- In a code-conforming chimney no BEST-Wrap insulation is required. The required clearance between the liner and the interior wall of the masonry chimney is 1 inch. In a code-conforming chimney that must have the tiles removed a single one quarter inch BEST-Wrap is required. The required clearance between the insulation and the interior of the masonry chimney is 0" inches.
- To install BEST-Wrap around the liner, open the blanket on a flat surface with the foil side down. Trim the blanket length wise so that it will overlap approximately one inch (1") when wrapped around the liner. Place the liner on the blanket and wrap around the liner. Apply the foil tape to the entire length of the seam on the blanket. Cut pieces of foil tape approximately eight inches (8") long, and tape across the seam every foot (12"). Place the liner into the retractable mesh sock. Using the mesh clamp, clamp the end of the liner just above the Tee Body. Expand the retractable mesh sock to the top of the liner, continue to pull until mesh sock has retracted tightly around the liner, clamp mesh at the top and cut off the excess mesh. Install the liner as described in the previous section.

Option #2 - Insulating with Thermix

- Thermix is poured into the chimney around the liner after the liner is installed. Thermix is premixed and water is just added to the mix at the time of

installation. To calculate the amount of Thermix needed to insulate around a liner please call New England Supply Inc. or go to the website.

- No minimum thickness of Thermix around a liner installed in a code-conforming chimney is required. The required clearance between the liner and the interior of the masonry chimney is 0" inches. In a non-code conforming chimney with zero clearance to combustibles, no flue liner, the minimum recommended thickness of BEST-Mix is One (1) inch. The required clearance between the insulation and the interior wall of the masonry chimney is Zero (0) inches. The minimum clearance to combustible from the exterior of the chimney is Zero (0") inches. Thermix is mixed with four to six gallons of water in a mortar pan or wheelbarrow. When mixed correctly the Thermix will have a sandy consistency with little or no water seepage when squeezed in your hand. Once mixed the Thermix is poured into the chimney around the liner. The liner should be vibrated during the pouring process to help the BEST-Mix settle around the liner. Thermix should be filled into the cavity until the chimney is full to the top. Install the top hardware as described in previous section.
- A Thermix insulated BEST-Flex liner can be used immediately after the installation is complete. Curing of the Thermix will occur over an approximately 28 day period. Approximately 70% of the curing process occurring in the first week. Drying time of the BEST-Mix will vary on the thickness of the mix and the absorption of moisture into the masonry chimney. Drying time will be accelerated by using the heating appliance.

7.) NOTICES

- For Canadian installations, the installer must post a notice at the junction between the liner system & the appliance. Notice shall state the limitations of the liner system in regards to fuel types, types of acceptable appliances, and a reminder to check the Rain Cap for icing during low ambient temperatures.
3".

8.) OPERATION

- BEST-Flex liners (insulated with Thermix) used to vent a solid fuel burning appliance please be aware that: Solid fuel burning stoves can be used immediately after the installation is complete. However the flue gas temperatures entering the liner should not exceed 500 degrees F. for a period of three weeks. A connector pipe flue gas thermometer will help monitor this temperature.
- Fireplaces can also be used immediately after the installation is completed. A small to moderate sized fire should be maintained for approximately three hours. After this time a normal fire can be established. **It is important that the operator not over fire the appliance during these initial periods.**

9.) INSPECTION AND MAINTENANCE INSTRUCTIONS

- Inspection of the BEST-Flex liner should be done at minimum once per year by a chimney professional. Inspections longer than a 1 month time period from the date of installation should not occur. If the liner is used to vent a solid fuel burning appliance inspections should be done at time periods of every 2 months during the heating season. If soot or creosote accumulations have been found during inspection and have reached a 1/4" or more the liner should be cleaned. This inspection and cleaning should be carried out by a nationally certified chimney sweep, or other qualified chimney professionals. Failure to inspect and maintain the chimney system can result in poor performance, creosote build-up, moisture issues, chimney fires, dangerous gas leakage into living spaces, and other undesirable situations.

10.) CREOSOTE FORMATION AND THE NEED FOR REMOVAL

As wood burns 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. This can result in creosote residue accumulating on the chimney liner. When ignited, this creosote can make an incredibly hot fire up to 2100deg.

- It is necessary to get access to the top and/or bottom of the chimney to properly inspect the liner. To inspect the liner from the bottom remove the connector pipe from the appliance and the chimney. Use a flash light and mirror to look into liner upwards to visually inspect for soot and creosote deposits. If the chimney has offsets you may not be able to see all the through the chimney. In this case it will be necessary to inspect the liner from both ends.
- If cleaning is required after inspection, it is recommended to use a plastic bristle brush with the same size diameter as the interior of the liner. Push the brush up from the bottom or down from the top using the appropriate number of extension poles for the height of the chimney. When cleaning from the top remove the Rain Cap before inserting the brush into the top of the liner. The Rain Cap can be removed by loosening the clamp fastener and removing the Rain Cap from the Top Plate or from the Liner (depending on method of installation).