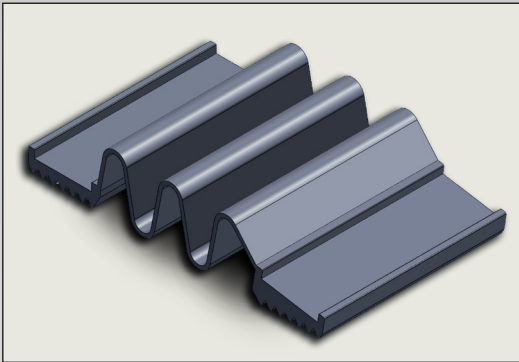


# LSS INTERNAL CHIMNEY SEAL

**Lightweight internal rubber sleeve developed to stop inflow under the manhole frame.**



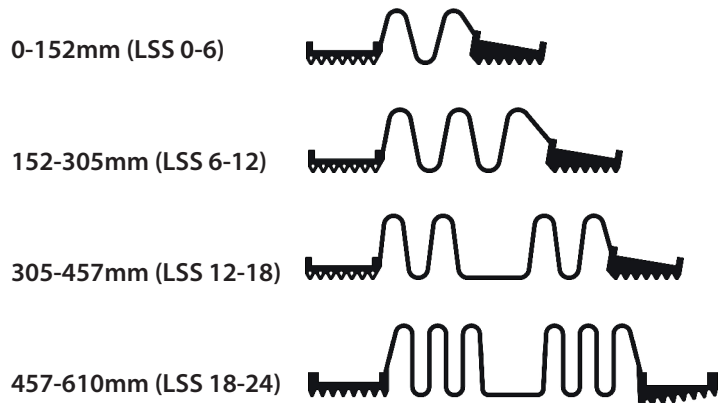
## ADVANTAGES:

- Lower Cost
- Easier Installation
- More Range of Coverage
- Eliminate the Need for Extensions
- Provides Flexible, Water Tight Seal
- Mechanical Seal, does not Rely on Chemical Bond

**RUBBER SLEEVE** Available in four widths with unexpanded vertical heights of 203mm (LSS 0-6), 254mm (LSS 6-12), 355mm (LSS 12-18), and 457mm (LSS 18-24). The flexible rubber sleeve shall be extruded or molded from a high grade rubber which conforms to the applicable material requirements of ASTM C-923. The seal shall have a minimum thickness of 3.3mm for durability and resistance to tearing and puncturing, and a range of coverage which allows a span of up to 610mm vertical without the use of an extension. Flexibility of this material allows one size to fit a frame/ chimney diameter range of up to 20%.

**EXPANSION BANDS** The one piece channeled expansion bands are 44mm wide and are fabricated from high quality, corrosion resistant, 16 gauge stainless steel conforming to the applicable material requirements of ASTM A-240, Type 304, with no welded attachments. The multiple transverse tab slots in the band provide for 63mm of diameter range. An easy to use mechanical expansion tool quickly expands the band to compress the rubber sleeve against the manhole frame and chimney. Once expanded, the band is locked into place by engagement of the locking tabs which secures the band in its expanded position providing a flexible watertight seal.

## LIGHTWEIGHT CHIMNEY SEAL



# SPECIFICATIONS

## GENERAL

This section includes the materials and procedures required for the internal sealing of the frame-chimney joint area of brick and block manholes and the entire chimney area of precast, fiberglass and plastic manholes.

## FRAME SEAL

Frame seals shall be designed to prevent leakage of water through the above described portions of the manhole throughout a 50 year design life. The seal shall remain flexible throughout this design life, allowing repeated vertical movements of the frame of not less than 50mm and/or repeated horizontal movement of not less than 13mm, at rates greater than 2.5mm per minute. Frame seals shall consist of a flexible internal rubber sleeve and stainless steel expansion bands, all conforming to the following requirements:

- 1. RUBBER SLEEVE** - The flexible rubber sleeve shall be extruded or molded from a high grade rubber conforming to the applicable material requirements of ASTM C-923, with a minimum 1500 psi tensile strength, a maximum 18% compression set and a hardness (durometer) of 48±5. The sleeve shall be corrugated and available in four widths with unexpanded vertical heights of 203mm (LSS 0-6), 254mm (LSS 6-12), 355mm (LSS 12-18), and 457mm (LSS 18-24).

The sleeve shall have a minimum thickness of 3.3mm and a range of coverage which allows a span of up to 610mm of chimney without the use of an extension. The area of the seal that compresses against the manhole frame casting and the chimney/cone shall have a series of sealing fins to facilitate a watertight seal. Any splice used to fabricate the sleeve shall be hot vulcanized and have a strength such that the sleeve shall withstand a 180 degree bend with no visible separation.

- 2. EXPANSION BANDS** - The expansion bands shall be integrally formed from 16 gauge stainless steel conforming to the applicable material requirements of ASTM C-923, Type 304, with no welded attachments. The expansion bands shall have a minimum adjustment range of 63mm diameter and a positive locking mechanism which secures the band in its expanded position after tightening.

## INSTALLATION

The contractor shall field measure the manhole to determine the information required on the manufacturer's "Sizing and Ordering" procedure. This information is needed to obtain the proper size of the bands as well as the size and width of the rubber sleeve.

The surfaces against which the sleeve are to be compressed shall be circular, clean, reasonably smooth and free of any loose material and excessive voids. If the masonry surface is rough, sloped, or irregular and would not provide an effective seal, an approved non shrink patching mortar shall be used to prepare a uniformly vertical surface for the bottom of the sleeve to seal against. Any flaws in the manhole frame such as cracks, pits or protrusions, shall be repaired by either filling with mortar or grinding smooth.

After the rubber sleeve has been placed in the proper position, the stainless steel expansion bands shall be lubricated and placed into the band recesses and individually expanded as required to provide a watertight seal.

## PHYSICAL PROPERTIES

**Tensile Strength**  
1500 psi

**Elongation at break**  
350% min.

**Hardness (Durometer)**  
48+5

**Accelerated oven-aging**  
max. 15% decrease of tensile,  
20% of elongation

**Chemical resistance**  
no weight loss in 1 N of  
sulfuric or hydrochloric acid

**Compression set**  
18% max. decrease

**Water absorption**  
max. 10% increase by weight

**Ozone resistance**  
Rating 0

**Low temperature brittle point**  
No fracture at -40°C.

**Tear resistance**  
200 lb. f/in.

**Splice strength**  
180° bend with no  
visible separation



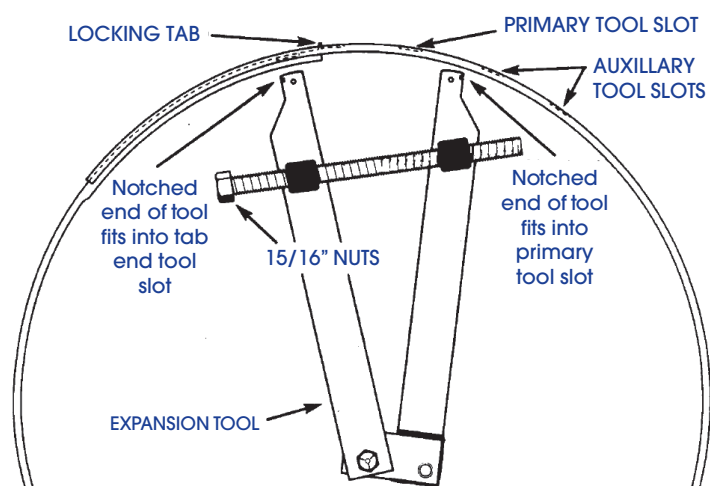
# PREPARATION AND INSTALLATION

**SURFACE PREPARATION** – All loose and protruding mortar and brick that would interfere with the seal's performance shall be removed and the appropriate surfaces of the frame, chimney and/or cone/corbel prepared in accordance with the manufacturer's instructions.

**INSTALLATION** – Read complete instructions before starting installation.

1. Install the rubber sleeve with the printing facing up at the top and the top edge of the seal lined up with any previously applied alignment marks.
2. Wipe off the outside of one stainless steel band and apply a moderate coating of band lubricant to the slot area and a light to moderate coating to the remainder of the band's outside surface. Either the top band or the smaller band, if two different sized bands are being used, is to be installed first.
3. Install the band in the appropriate band recess with the slotted end against the rubber surface. Position the expansion tool as shown below and expand the band until the locking tabs pop into the tightest slots possible. To ensure proper tightness, stop expanding and let the seal "relax" for 30 to 60 seconds and then try to tighten again to the next set of slots. Once the band is fully tightened, loosen the expansion tool slowly until the tabs are fully engaged in the slots, and then continue to loosen and remove the tool. When installing a larger diameter band, use one of the auxiliary tool slots to start the expansion process. Move one leg of the tool to the primary tool slot if necessary to complete expansion.
4. Lubricate the second band and install it in the other band recess, attach the tool and expand as before, keeping the bands parallel. The seal may be adjusted up or down as required for minimum or maximum chimney coverage or if excessive sleeve expansion is required.
5. If a third band is needed, lubricate and install band in centre recess of seal and expand as before.
6. Check the top and the bottom edges of the installed sleeve to insure that they have been properly compressed against the surfaces.

**NOTE: ALWAYS WEAR GLOVES WHEN HANDLING THE BANDS**



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