

# SPECIFICATION



## INSTALLATION PRACTICE FOR INSIGNIA™ HYDROPHILIC END SEAL SLEEVE

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# **Installation Specification for Hydrophilic End Seal Sleeve**

## **1.0 Intent**

1.1 It is the intent of this specification to detail a safe, efficient, cost-effective installation method of a compression gasket sealing product that swells with the presence of water, called Insignia™ Hydrophilic End Seal Sleeve for the junction of a main or lateral pipe and a manhole. The end seal is a molded rubber gasket that provides a full-circle compression seal to a substantial area at the end of a mainline pipe that will be rehabilitated by lining. This hydrophilic sealing product is intended for use in conjunction with most pipe rehabilitation systems, including but not limited to: inverted CIPP liners, pull-in-place CIPP liners, and fold-and-form plastic pipe liners. The Insignia Hydrophilic End Seal product shall be commercially available from LMK Technologies or an LMK distributor for use as an adjunct to rehabilitative pipe lining projects on a price per kit basis. The materials and installation practices shall, at a minimum, adhere to the requirements ASTM F3240-17 “Standard Practice for Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-in-Place Rehabilitation of Main and Lateral Pipelines.”

## **2.0 Overview**

2.1 The Insignia End Seal product and process consists of providing a full-circle, molded gasket made of hydrophilic rubber seal at the junction of a main or lateral pipe and a manhole by using a material specifically engineered to provide the most safe, efficient, cost-effective, watertight seal at the end of a rehabilitated pipe. Gaskets that do not swell with water, are not molded, or that are dispensed like caulk are not equal and shall not be used. Any substitution to the specification to be deemed equal must provide 10,000 hour hydration/dehydration test results that prove the hydrophilic rubber will not dry out at various cycles.

2.2 The Insignia End Seal kit includes a tubular sleeve constructed of a hydrophilic polymeric material, designed with a specified length and wall thickness to provide a compression seal to the end of a pipe at the manhole, a stainless steel band and anchor screws for end seal sleeves 18” or larger in diameter.

2.3 The installation practice of the hydrophilic end seal sleeve is simple. The field technician inserts the tubular sleeve within the pipe to be rehabilitated, one-half inch to one-inch from the end of the pipe. The mechanical fastener is placed against the inner wall of the tubular sleeve, securing the tubular sleeve against the inner wall of the pipe. [For sizes 18" and larger, anchor screws shall be installed to assist in holding the mechanical fastening band in place.] After the mechanical fastener is secured in place, a liner is inserted through the tubular sleeve utilizing known installation methods. After the liner is set in place, the tubular sleeve will swell in the presence of water, creating a full-circle seal between the newly-installed liner and the host pipe for the entire circumference of the Insignia End Seal. It will take a minimum of 36 to 48 hours for the hydrophilic rubber to swell in the presence of water.

### 3.0 **Material**

3.1 The components utilized for the Insignia End Seal shall be provided in kits that are designed to accommodate varying pipe diameters, manhole depths, junction configurations, and pipe liner products. The Insignia End Seal kits are compatible with most rehabilitative pipe liner products, including cured-in-place and fold-and-form. Additionally, the Insignia End Seal kit may be used with many different pipe liner installation and curing methods, including inversion, pull-in-place, hot water curing, steam curing, ultraviolet curing, and ambient curing methods. The kit components of the Insignia End Seal include a tubular sleeve, a mechanical fastener band and anchor screws for sizes 18" and larger.

3.2 Tubular Sleeve: The member that creates the end seal is a hydrophilic neoprene rubber of approximately 50 Shore A durometer. The tubular sleeve has a uniform wall thickness and width, and a diameter slightly less than the interior pipe diameter. The hydrophilic neoprene rubber has the following characteristics:

Characteristic	Unit	Value	Test Method
Shore A Hardness	point	50 +/- 5	ASTMD2240
Tensile Strength	psi	1177	ASTMD412
Elongation at Break	%	523	ASTMD412
Specific Gravity		1.2	ASTMD297

3.3. Sizes: The Insignia End Seal Sleeve is available in standard sizes of 6", 8", 10", 12", 15", 18", 21", 24", 27", 30", 33", 36", 42", 48" and 54". Custom sizes are also available.

### 4.0 **Installation Recommendations**

4.1 Access to the ends of the pipe to be rehabilitated: Access a manhole where a main pipe or a lateral pipe connects. A technician may access the manhole interior via conventional methods to access the main or lateral pipe to be rehabilitated. The pipe interior at the manhole shall be measured from 6:00 to 12:00 and from 3:00 to 9:00. The mean shall be the nominal inner diameter.

4.2 Cleaning and Inspection: All roots, deposits, and debris should be removed from the pipe with hydraulically powered equipment, high velocity jet cleaners, or mechanically powered equipment as per NASSCO recommended specifications for sewer collection system rehabilitation. Since the Insignia End Seal provides a seal based on compression instead of adhesion, extensive cleaning beyond obvious obstructions is optional. A full-circle seal at the ends of the pipe will be achieved regardless of the presence of fats, oils, and grease which is inherent in sewer pipes even after high velocity jet cleaning. It should be noted that the various pipe rehabilitation installation methods have different installation standards (such as ASTM standards and manufacturer's recommendations), and those installation standards should be observed during installation of the liner.

4.3 Since the Insignia End Seal product may be used with a variety of rehabilitative pipe liners, the standard installation practices of each individual pipe liner method should be closely followed. Therefore, procedures should be used that meet applicable NASSCO, ASTM, NACE and SSPC standards and provide quality assurance controls that meet the manufacturer's printed recommendations.

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