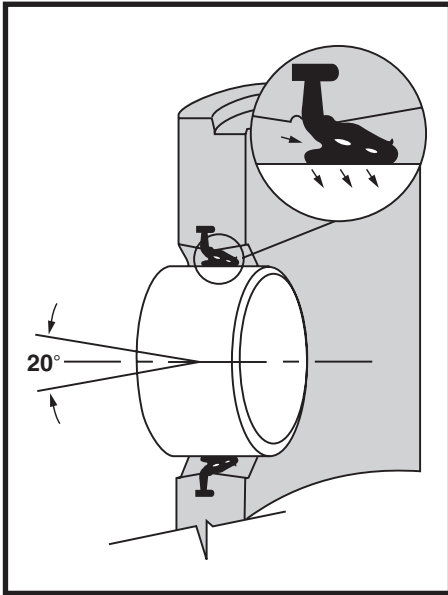




A•LOK® X-CEL

PIPE TO MANHOLE CONNECTOR FOR SANITARY SYSTEMS



PART 1 - GENERAL

The **A-LOK X-CEL** is a maximum performance flexible pipe to manhole connector designed to produce a watertight seal between a pipe and concrete structure.

The profile of the **A-LOK X-CEL** is based on the traditional A-LOK connector, but with enhanced features to improve performance. One example of this is the patented "water pocket". This unique design utilizes the untapped pressure of ground water to exert a clamping force about the connector and pipe allowing the connector to operate in deeper installations. This design has been proven in tests beyond 15 psi of hydrostatic water pressure and provides 45% more rubber contact with the pipe, allowing greater pipe deflection to be achieved.

PART 2 - MATERIAL

The standard rubber connector is molded or extruded from compounds formulated for wastewater applications and engineered to conform with the requirements of section 4.1.1 of ASTM C-923. Alternative compounds are available upon special request.

PART 3 - ADVANTAGES

The **A-LOK X-CEL Connector** functions on pure compression, making field installation quick and easy. Just clean and lubricate the

connector and pipe, center the pipe in the connector and insert. This rapid installation permits immediate backfilling, enhancing project safety, and overcomes the normal problems encountered with water, running sand and other unstable trench conditions.

The **A-LOK X-CEL** with its enhanced profile giving the connector 45% greater rubber contact with the pipe. This allows the pipe to be deflected in excess of 10° of omnidirectional deflection while still maintaining a watertight seal. These enhancements improve the connector's ability to compensate for shear due to settlement or ground movement.

On larger diameter pipe when size prohibits a gasket from being installed in a flat plane, an **A-LOK X-CEL Connector** can be configured to be cast in a curve with the connector staying perpendicular to the center line of the pipe. This design has resulted from years of extensive research and development and causes no loss of compression or deflection.

PART 4 - REFERENCES

- A. **ASTM C-923** Resilient Connector Between Reinforced Concrete Manholes Structures, Pipe and Laterals.
- B. **ASTM C-1244** Standard Test Method For Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test
- C. **ASTM C-478C** Standard Specification for Precast Reinforced Concrete Manhole Sections

PART 5 - PERFORMANCE

The **A-LOK X-CEL Connector** meets or exceeds all material and test requirements outlined in ASTM C-923 titled "Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals."

RESILIENT TEST REQUIREMENTS OF A.S.T.M. C-923

TEST	RESULTS	ASTM METHOD
Chemical resistance 1 N Sulfuric acid 1 N Hydrochloric Acid	no weight loss no weight loss	at 22°C for 48h
Tensile strength	1200 psi or 8.5 MPa, min	D 412
Elongation at break	350% min.	
Hardness	±5 from mfg's. specified hardness	D 2240 (Shore A durometer)
Accelerated oven-aging	decr. of 15%, max. of original tensile strength, decr. of 20% max. of elongation	D 573, 70±1°C for 7 days
Compression set	decr. of 25%, max. of original deflection	D 395, Method B, at 70°C for 22h
Water absorption	increase of 10%, max. of original by weight	D 471, immerse 0.75 by 2-in. or 19 by 25-mm Specimen in distilled water at 70°C for 48h
Ozone resistance	rating 0	D 1171
Low-temp brittle point	no fracture at -40°C	D 746
Tear resistance	200 lbf/in. or 34 kn/m	D 624, Method B

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PART 6 - DIMENSIONAL DATA

A•LOK X-CEL Cross Sections / Pipe Size OD's



92 Molded Series
4.25" - 7.25"



93 Molded Series
8.50" - 13.00"



93 Extruded Series
13.25" - 29.00"



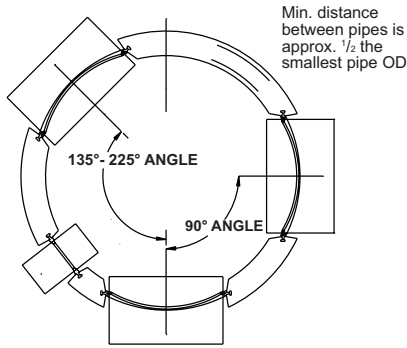
94 Extruded Series
30.00" - 59.50"



95 Extruded Series
60.00" - 87.50"

Larger Sizes Available
Upon Special Request

PART 6 - DIMENSIONAL DATA CONTINUED



MAX. PIPE SIZE OD's

Manhole Diameter	135° - 225° Pipe Angle	90° Pipe Angle
42"	26.5"	22.0"
48"	31.5"	25.0"
60"	42.0"	32.0"
72"	51.5"	38.0"
84"	59.5"	44.0"
96"	73.5"	50.0"
108"	76.0"	56.0"
120"	85.0"	62.0"

PART 7 - SPECIFICATIONS

A flexible pipe to manhole connector shall be used whenever a pipe penetrates into a pre-cast concrete manhole or structure.

The connector shall be the **A-LOK X-CEL CONNECTOR** as manufactured by A-LOK PRODUCTS, INC., Tullytown, PA, or approved equal.

The design of the connector shall provide a flexible, watertight seal between the pipe and concrete structure. The connector shall assure that a seal is made between:

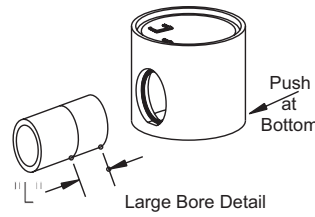
(1) The connector and the structure wall by casting the connector integrally with the structure wall during the manufacturing process in a manner that it will not pull out during pipe coupling. The connector shall also be capable of being cast into a round structure by curving the connector in a manner that allows it to remain centrally located within the structure wall and perpendicular to the pipe. This configuration will result in no loss of seal or deflection of pipe entering a concrete structure.

(2) The seal between the connector and the pipe shall be made by the compression of the connector between the outside circumference of the pipe and the hole opening of the struc-

INSTALLATION INSTRUCTIONS

STEP 1:

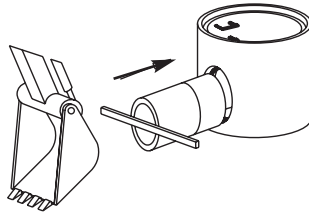
Confirm that the pipe surface is smooth, clean and free of foreign materials, chips, gouges and form seams due to manufacturing or handling. Slightly bevel any sharp or blunt edges caused by the cutting of the pipe.



STEP 2:

Lubricate the connector and the entire section of the pipe that will be inserted into the connector. The chart below lists A-LOK's minimum lubrication length "L".

PIPE SIZE	MIN. LUBRICATION LENGTH "L"
4" - 15"	12"
16" - 18"	18"
21" & Larger	24"



STEP 3:

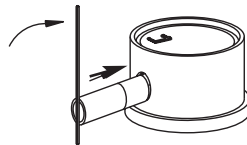
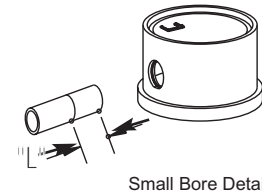
Center the pipe and connector square to each other and insert the pipe into the connector using a bar or back hoe depending on the size. Once the pipe is coupled with the connector, deflect the structure or pipe to achieve the proper angle.

WARNING

To ensure the A-LOK X-CEL Connector remains a flexible watertight connector, it is A-LOK Products, Inc. strong recommendation that no mortar be placed between the pipe and wall of the concrete structure. The use of mortar in this area would decrease the effectiveness of the connector to compensate for shear caused by settlement or ground movement.

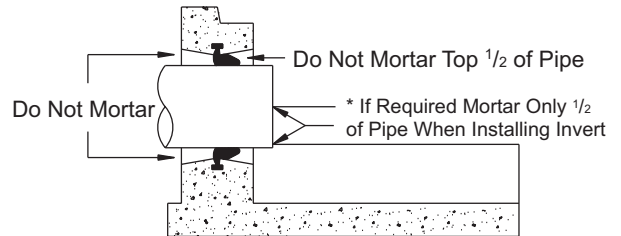
NOTE:

To find approximate subgrade, measure from the outside base of the structure to the junction of the connector and flat spot. Then add the wall thickness of the pipe plus 1/4 inch.



CAUTION:

When installing pipe stubs for future pipeline installation, all stubs must be properly restrained to prevent any movement by means other than the **A-LOK X-CEL Connector**.



ture. The connector shall be the only component to affect the seal between the pipe and structure.

The connector shall be made from materials that conform to the physical and chemical requirements outlined in Section 4, "Materials and Manufacture" of ASTM C-923 "Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole

Structures, Pipes, and Laterals", and the overall design will meet or exceed Section 7, "Test Methods and Requirements" of ASTM C-923.

The connector shall be sized specifically for the type of pipe being used and shall be installed in accordance with the recommendations of the manufacturer.

Any questions regarding the A•LOK X-CEL Connector, please call 1-800-822-2565



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