

Selection Guide

Experience Counts

LINK-SEAL® MODULAR SEALS | CENTURY-LINE® SLEEVES | CELL-CAST® DISKS



50 years and still sealing



Experience Counts - Use the Original



CONTENTS

The System is the Solution.....	5
Applications	5
Features.....	5
Sizing Procedure.....	12-16
LINK-SEAL® Installation	17
CENTURY-LINE® Installation	18
CELL-CAST® Installation	19

LINK-SEAL® MODULAR SEALS

Properties	6-7
Bolt & Nut Specifications.....	8

CENTURY-LINE® SLEEVES

Features.....	9
Weights and Dimensional Data	9

CELL-CAST® Disks

Features.....	10
Weights and Dimensional Data	10

WS STEEL WALL SLEEVES

Weights, Dimensional Data and Specifications	11
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SIZING PROCEDURE

Steel & Plastic	12
SDR-35 Gravity Sewer Pipe	13
Ductile Iron Pipe	13
Cast Iron Soil Pipe (Extra Heavy)	14
Cast Iron Soil Pipe (Service Weight)	14
Electrical Metallic Tubing.....	15
Intermediate Metal Conduit	15
Rigid, Aluminum, Galvanized, Non-Metallic Conduit.....	16
Copper Tubing	16

INSTALLATION

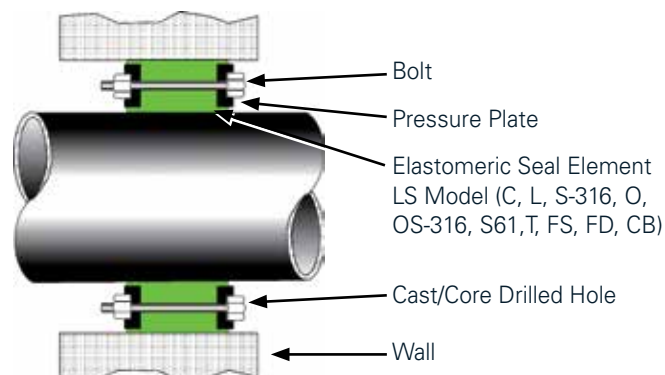
LINK-SEAL® Modular Seals	17
CENTURY-LINE® Sleeves	18
CELL-CAST® Disks	19

Typical Specifications.....	20
FAQ.....	21
LINK_SEAL® Technical Approvals.....	22
Product Ordering Code.....	23

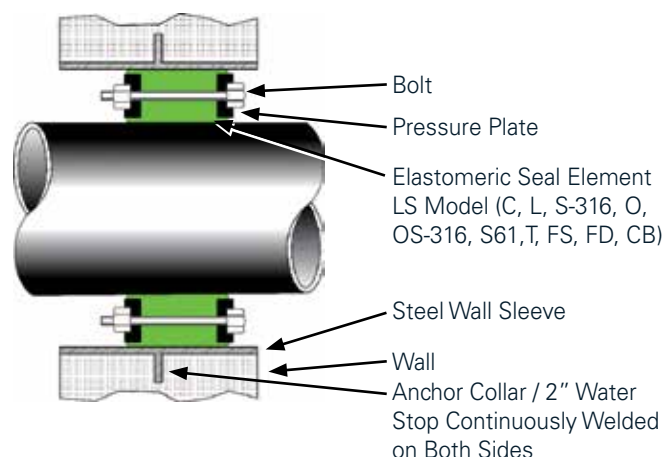
Performance data included in this manual is intended for guideline purposes only. Performance suitability for any specific application should be determined by the end user. Variation in temperature, pressure, concentration or mixtures acting synergistically may preclude recommended service use.

CAD drawings (.dwg) are available on-line. Drawings can be downloaded and inserted into Auto-CAD for drawing plans. Submittal sheets can also be accessed in a PDF file. Contact Garlock or your local authorized distributor for support and purchasing information.

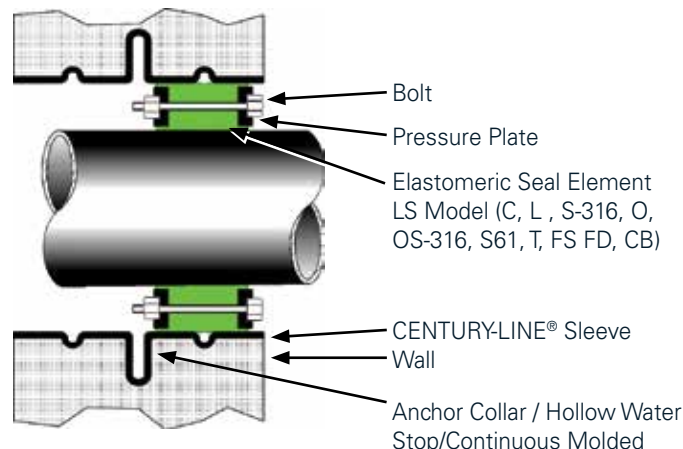
LINK-SEAL® MODULAR SEALS WITH CAST OR CORE DRILLED WALL OPENING



LINK-SEAL® MODULAR SEALS WITH MODEL WS STEEL WALL SLEEVES



LINK-SEAL® MODULAR SEALS WITH CENTURY-LINE® SLEEVES



The System is the Solution

LINK-SEAL® MODULAR SEALS

The best way to permanently seal any cylindrical object, of any size, passing through any type of concrete barrier (wall, floor or ceiling) is to use LINK-SEAL® modular seals. From ductile iron to pre-stressed concrete to metal or plastic pipe, conduit or cables - whatever your application - LINK-SEAL® modular seals will affect a hydrostatic seal capable of holding 20 psig (40 feet of static head) between the pipe and the penetration cylinder through which the pipe passes.



IN COMBINATION WITH CENTURY-LINE® SLEEVES

The best way to guarantee a perfect seal is to use CENTURY-LINE® sleeves with LINK-SEAL® modular seals. They're engineered and sized to provide a stable hole that matches dimensionally with LINK-SEAL® modular seals. It makes ordering quick and easy and guarantees a perfect fit - and seal - each and every time.



CELL-CAST® DISKS

For larger holes in poured concrete structures, (29.25" to 64.75" Ø) CELL-CAST® disks are used to produce a dimensionally stable hole and smooth concrete surface that is perfect for use with LINK-SEAL® modular seals.



Features

SAVES TIME AND MONEY

LINK-SEAL® modular seals install in up to 75% less time compared to hand fitting flashings, mastics or casing boots.

POSITIVE HYDROSTATIC SEAL

LINK-SEAL® modular seals are rated at 20 psig (40 feet of static head), which exceeds the performance requirements of most applications.

LONG SEAL LIFE

LINK-SEAL® modular seals are designed for use as a permanent seal. Seal elements are specially compounded to resist aging and attack from ozone, sunlight, water and a wide range of chemicals.

MAXIMUM PROTECTION AGAINST CORROSION

Standard fasteners have a proprietary corrosion inhibiting coating. Corrosion resistant 316 stainless steel hardware selected for maximum corrosion protection.

ISO QUALITY ASSURANCE

LINK-SEAL® modular seals are manufactured in an ISO 9001:2015 certified facility.

CONFIGURE A LINK-SEAL® MODULAR SEAL TO MATCH YOUR APPLICATION

16 sizes, color coded EPDM, Nitrile, & Silicone elastomers may be used with various hardware options to match performance characteristics with service conditions.

LINK-SEAL® Modular Seal Applications

- » Mechanical Contractors - Interior & Exterior Piping Systems
- » Manhole Pipe Entry Seals
- » Waste Treatment Plants
- » Cased Road Crossings
- » Thermal Storage Systems
- » Fire Protection Wall Penetrations
- » Cased Railroad Crossings
- » Electrical Isolation of Pipes
- » Precast Concrete Vault Seals
- » Insulated Pipe Seals
- » Dual Containment Seals
- » Marine Applications
- » Noise Dampening
- » Flexible Sign & Pole Supports
- » Electrical Isolation of Pipe Supports
- » Mining
- » Pulp & Paper
- » Decorative Fountains
- » Pool Contractors
- » Electrical Contractors
- » Waste Water & Water Treatment Plants
- » Telecommunications
- » Valve Pits
- » Refrigeration Buildings
- » Guard Post Assemblies
- » Power Generation Dams
- » Offshore Oil Rigs
- » High Pressure Tank Guards
- » Underground Steel Tanks
- » Precast Concrete Manufacturers
- » Perimeter Berm Installations Around Tank Farms
- » Flow Restrictions in Sewer Maintenance
- » Fluid Overflow Devices
- » Noise and Sway Dampener
- » Through Deck Fire Breaks
- » Bridge Construction
- » Septic Tank Installations
- » Coal Preparation Plants
- » Tunneling Operations

LINK-SEAL® Modular Seal Model Properties

WITH EPDM SEAL ELEMENTS



EPDM (BLACK)

* = Sustained operation near temperature limits may affect life expectancy.

MODEL "C" LINK-SEAL® MODULAR SEAL

Suitable for direct ground burial, normal atmospheric conditions, and conditions with occasional or periodic water contact. Provides electrical isolation where cathodic protection is required.

Type: Standard

Seal Element: EPDM (Black)

Pressure Plates: Reinforced Nylon Polymer

Bolts & Nuts: Carbon steel with corrosion inhibiting proprietary organic coating..

Temp. Range: -40° - +250°F (-40° - +121°C)*

MODEL "S-316" LINK-SEAL® MODULAR SEAL

For chemical processing & waste water treatment. High level of water-resistance, resistant to most inorganic acids and alkalis, and most organic chemicals (acetone, alcohol, ketones).

Type: Stainless

Seal Element: EPDM (Black)

Pressure Plates: Reinforced Nylon Polymer

Bolts & Nuts: 316 Stainless Steel

Temp. Range: -40° - +250°F (-40° - +121°C)*

WITH EPDM SEAL ELEMENTS



EPDM (BLUE)

Low Durometer

* = Sustained operation near temperature limits may affect life expectancy.

MODEL "I" LINK-SEAL® MODULAR SEAL

Low Durometer EPDM specifically designed for use with fragile pipe and tubing. Suitable for direct ground burial, normal atmospheric conditions, and conditions with occasional or periodic water contact. Provides electrical isolation where cathodic protection is required.

Type: Standard

Seal Element: EPDM (Blue)

Pressure Plates: Reinforced Nylon Polymer

Bolts & Nuts: Carbon steel with corrosion inhibiting proprietary organic coating..

Temp. Range: -40° - +250°F (-40° - +121°C)*

MODEL "LS-316" LINK-SEAL® MODULAR SEAL

Low Durometer EPDM specifically designed for use with fragile pipe and tubing. For chemical processing & waste water treatment. High level of water-resistance, resistant to most inorganic acids and alkalis, and most organic chemicals (acetone, alcohol, ketones).

Type: Stainless

Seal Element: EPDM (Blue)

Pressure Plates: Reinforced Nylon Polymer

Bolts & Nuts: 316 Stainless Steel

Temp. Range: -40° - +250°F (-40° - +121°C)*

WITH NITRILE SEAL ELEMENTS



NITRILE (GREEN)

* = Sustained operation near temperature limits may affect life expectancy.

MODEL "O" LINK-SEAL® MODULAR SEAL

Nitrile rubber is resistant to oils, fuel and many solvents (gasoline, motor oil, kerosene, methane, jet fuel, hydraulic fluid, water, etc.).

Type: Oil Resistant

Seal Element: Nitrile (Green)

Note: Not U.V. Resistant

Pressure Plates: Reinforced Nylon Polymer

Bolts & Nuts: Carbon steel with corrosion inhibiting proprietary organic coating.

Temp. Range: -40° - +210°F (-40° - +99°C)*

MODEL "OS-316" LINK-SEAL® MODULAR SEAL

Combination of oil resistant rubber and stainless steel hardware.

Type: Oil Resistant

Seal Element: Nitrile (Green)

Note: Not U.V. Resistant

Pressure Plates: Reinforced Nylon Polymer

Bolts & Nuts: 316 Stainless Steel

Temp. Range: -40° - +210°F (-40° - +99°C)*



LINK-SEAL® Modular Seal Model Properties

WITH SILICONE SEAL ELEMENTS



SILICONE (GREY)

* = Sustained operation near temperature limits may affect life expectancy.

Note: Sustains a constant temp. of 325°F (163°C)

MODEL "T" LINK-SEAL® MODULAR SEAL

Silicone rubber is ideal for temperature extremes. The "T" model is one-hour Factory Mutual approved.

Type: High/Low Temperature

Seal Element: Silicone (Grey)

Pressure Plates: Zinc Plated Steel

Bolts: Carbon steel with corrosion inhibiting proprietary organic coating.

Temp. Range: -67° - +400°F (-55° - +204°C)*

MODELS "FD & FS" LINK-SEAL MODULAR SEAL

Double seal for added protection

Type: Fire Seals

Seal Element: Silicone (Grey)

Pressure Plates: Zinc Plated Steel

Bolts: Carbon steel with corrosion inhibiting proprietary organic coating.

Temp. Range: -67° - +400°F (-55° - +204°C)*

LINK-SEAL® NSF Certified Product

WITH NSF 61 EPDM SEAL ELEMENTS



EPDM (BLACK)

* = Sustained operation near temperature limits may affect life expectancy.

MODEL "S61" LINK-SEAL® MODULAR SEAL

NSF 61 Certified for use in potable water (drinking water).

Type: Stainless

Seal Element: EPDM (Black)

Pressure Plates: Blue Reinforced Nylon Polymer

Bolts & Nuts: 316 Stainless Steel

Temp. Range: -40° - +250°F (-40° - +121°C)*



NSF Certificate # C0162325-01

The Model "S61" is made from Black NSF 61 certified EPDM materials, with Blue reinforced Nylon Polymer Pressure plates and 316 Stainless Steel hardware. Each shipment is packaged with a defining "NSF 61" label and batch number for traceability.

SPECIFICATIONS:

- » Type: Potable water
- » Seal Element: Black EPDM NSF 61 Certified
- » Pressure Plates: Blue Reinforced Nylon Polymer
- » Bolts & Nuts: 316 Stainless Steel
- » Temperature Range: -40°F to 250°F (-40°C to 121°C)
- » Certified to NSF/ANSI Standard 61

IDEAL FOR:

- » Hospital lines
- » Laboratories
- » Water treatment plants
- » Processes where purity is important
- » All potable water applications
- » Process water for manufacturing operations
- » Food service
- » Food OEM's
- » Sanitary milk service
- » Food transportation
- » Reservoir
- » Pumping Stations





LINK-SEAL® Modular Seal Model Properties

MATERIAL PROPERTIES OF LINK-SEAL® MODULAR SEAL ELEMENTS

Property	ASTM Method	EPDM (EPDM L)	Nitrile	Silicone
Hardness (shore A)	D-2240	50 ±5 (40 ±5)	50 ±5	50 ±5
Tensile	D-412	1450 psi	1300 psi	860 psi
Elongation	D-412	400%	300%	250%
Compression Set	S-395	15% 22 hrs. @ 158° F (70° C)	45% 22 hrs. @ 212° F (100° C)	40% 22 hrs. @ 350° F (177° C)
Specific Gravity	D-297	1.10	1.15	1.40

MATERIAL PROPERTIES OF COMPOSITE PRESSURE PLATES

Property	ASTM Method	Value
Izod Impact - Notched	D-256	1.11 ft-lb/in
Tensile Strength @ Yield	D-638	20,000 psi
Tensile Strength - Break	D-638	20,250 psi
Flexural Strength @ Yield	D-790	30,750 psi
Flexural Modulus	D-790	1,124,000 psi
Elongation, Break	D-638	11.07%
Specific Gravity	D-792	1.38
Moisture Content	—	0.18%

LINK-SEAL® Model	Tool Size/ Type Req.	Bolt Head Type
LS-200, LS-275	4mm, Allen	
LS-300, LS-315	6mm, Allen	
LS-325, LS-340, LS-360	13mm, Hex	
LS-400, LS-410, LS-425, LS-475	17mm, Hex	
LS-500, LS-525, LS-575, LS-650	19mm, Hex	
LS-615	24mm, Hex	

To provide consistency and worldwide compatibility, Garlock now offers all LINK-SEAL® Modular Seal sizes with metric bolts. The new bolts adhere to metric specifications as used by most all countries outside the U.S.A. Smaller LINK-SEAL® Modular Seals (sizes LS-200, LS-275, LS-300, and LS-315) will consist of metric Allen head or socket cap bolt heads while the balance of the line will use standard hex head metric bolts.

BOLT & NUT SPECIFICATION

» Carbon Steel

- › Carbon steel with a corrosion inhibiting proprietary organic coating. (passes 1470 hour salt spray test)
- › Tensile Strength = 60,000 psi, minimum.

An independent 1,470 hour salt spray test run in accordance to ASTM B117-97 has proven LINK-SEAL® modular seals' Carbon Steel bolts, with proprietary corrosion inhibiting coating, to be superior when compared with competitive manufactures.

» Stainless Steel

- › ANSI Type = 316, Per ASTM F593-95
- › Tensile Strength = 85,000 psi, average



CENTURY-LINE® Engineered Sleeves

CENTURY-LINE® SLEEVES

CENTURY-LINE® Sleeves are used to create circular holes in concrete poured barriers of all types including; walls, floors and ceilings. Molded from non-conductive, high impact resistant HDPE, CENTURY-LINE® sleeves are lightweight and easily installed by one construction worker without use of cranes or hoists. They are available in 16 diameters ranging from 2" to 25" (51mm - 635mm) and shipped, from stock, in any desired length.

FEATURES

» **16 sizes - 2" to 25" in diameter** (Local stock, drop ship overnight)
In the event of a field or engineering change, sleeves may be cut shorter at the job site using ordinary hand tools. Standard sleeves are 16" (406mm) in length. Longer length models may also be quickly fabricated as a custom ordered item.

» 1/8 the weight of steel

- › CENTURY-LINE® sleeves are light enough for one worker to install without a crane, hoist or helper which reduces installation time and costs. CENTURY-LINE® sleeves are easy to stock and far less expensive to ship, when compared to steel sleeves.

» Resists water migration

- › The 2" (50.8mm) water stop collar not only anchors the sleeve in position but creates a path against the migration of water around the outside of the sleeve.

» Adjusts to wall thickness

- › CENTURY-LINE® sleeves' unique hollow water stop collar acts like an expansion joint, adjusting (up to 1/2" - 12.7mm) to the thickness of the wall. This compressive force reacts against the forms like a spring, creating pressure and maintains proper sleeve location within the form.

» Nailer end caps position sleeve precisely in form

- › Specially designed end caps provide an ideal method for attaching CENTURY-LINE® sleeves to the concrete forms. The end caps assure that the sleeve holds its circular configuration during the pour. In addition to keeping out wet concrete, they also prevent dirt from entering the sleeve during backfill operations or the interim construction period.

» Tough high density polyethylene (HDPE) construction

- › High impact resistant HDPE also provides excellent resistance to acids, alkaline and other organic solvents. Ideal for cathodic protection systems, these non-conductive sleeves will neither rust, corrode or degrade. Low-temperature properties are such that they may be installed under any weather conditions suitable for pouring concrete. High temperature application limit is 150°F (66°C). The sleeve is molded with a texture on the outside surface to assure a better bond than most plastic to concrete interfaces.

» Used for shotcrete wall applications

- › For shotcrete applications, CENTURY-LINE® sleeves are easily positioned to wall form with threaded rod, and the end caps protect the sleeve penetration while the wall is formed.

Weight Comparison

WS Steel Sleeve
WS-12-37-S-12 = 60 lbs.

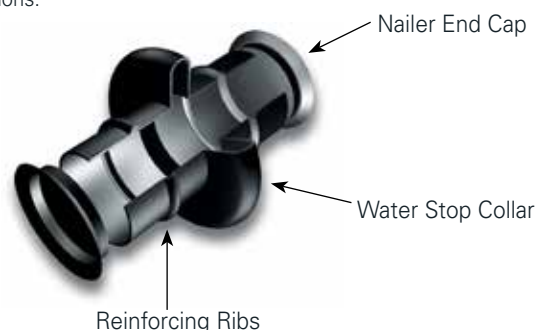
CENTURY-LINE® Sleeve
CS-12-12 = 6.5 lbs.

WEIGHTS AND DIMENSIONAL DATA MODEL CS (16" LENGTH)

MODEL	I.D. (In)	I.D. (mm)	O.D. (In)*	lbs.	Kg.
CS-2	1.98	50.04	2.13	0.70	0.32
CS-3	2.94	73.15	3.19	1.30	0.59
CS-3½	3.38	84.07	3.63	1.50	0.68
CS-4	4.03	101.60	4.38	2.00	0.90
CS-5	5.14	130.30	5.50	2.80	1.27
CS-6	6.14	155.70	6.50	3.60	1.63
CS-8	8.21	209.55	8.63	4.80	2.18
CS-10	10.19	260.35	10.63	6.40	2.90
CS-12	12.26	311.15	12.63	7.20	3.27
CS-14	14.14	360.43	14.69	11.20	5.08
CS-16	16.18	412.75	16.75	12.00	5.44
CS-18	17.45	444.50	18.00	15.50	7.03
CS-20	19.12	485.90	19.63	17.50	7.94
CS-22	20.32	527.05	21.25	21.00	9.53
CS-24	22.76	577.85	23.25	22.00	9.98
CS-25	24.81	628.65	25.25	23.00	10.43

* Water stop 2" larger than O.D.

Note: Swimming pool, floor and shotcrete applications; please specify exact lengths when ordering. Typically, a form is not installed on the top of a pool or floor, the CS sleeve water stop will not compress in these applications.



ADJUSTS TO WALL THICKNESS

CENTURY-LINE® sleeves unique hollow water stop collar works like an expansion joint, adjusting (up to 1/2") to the thickness of wall. This design creates a dynamic force against the form.



NESTING OF SLEEVES

Allow for a 2" minimum clearance between wall sleeves/water-stop collars for concrete pour.

CELL-CAST® Interlocking Hole Forming Disks



CELL-CAST® Interlocking Hole Forming Disks are designed to produce large diameter holes in poured concrete structures. Molded from non-conductive plastic, CELL-CAST® disks are lightweight and may be installed by one construction worker. They are available in a wide range of diameters using 3" and 4" thick modular disks.

FEATURES

» Economy

- › Reduces material costs by 30 to 50%
- › Cuts labor costs by 50 - 70%
- › Minimizes freight and handling charges

» Quality

- › Consistently produces dimensionally accurate openings
- › Eliminates galvanic corrosion
- › Avoids potential leak path between sleeve and concrete

» Installation

- › Lightweight - 1/8 the weight of steel pipe sleeves
- › Complete assembly accomplished in minutes
- › Easily installed by one construction worker

» Availability

- › CELL-CAST® Disks are stocked in a variety of diameters up to 64.75" (164cm) and available for immediate delivery
- › Larger sizes are available by special order

» How to Size

- › CELL-CAST® Disks are produced in 3" and 4" thicknesses and can be assembled to fit virtually any wall. For example:
- › Combine two 3" cells and one 4" cell for 10" walls
- › Combine two 4" cells and one 3" cell for 11" walls
- › Combine three 4" cells for 12" walls

Weight Comparison Keep the contractor in mind!	
WS Steel Sleeve WS-48-37-2-12 = 250 lbs.	CELL-CAST® Disks CC-48-4(3) = 62 lbs

CELL-CAST® HOLE FORMING DISKS

CELL-CAST® Model No.	HOLE I.D.	3" THICKNESS		4" THICKNESS	
		Lbs.	Kg.	Lbs.	Kg.
CC-30	29.25	10.0	4.53	10.4	4.71
CC-32	31.13	10.8	4.89	11.2	5.08
CC-36	34.75	12.6	5.71	13.1	5.94
CC-38	37.25	13.9	6.30	14.4	6.53
CC-42	41.38	16.3	7.39	16.8	7.62
CC-44	43.75	17.7	8.02	18.3	8.30
CC-48	47.25	20.0	9.07	20.7	9.38
CC-50	50.00	22.0	9.97	22.6	10.25
CC-54	52.63	23.9	10.84	24.6	11.15
CC-56	56.00	26.5	12.02	27.3	12.38
CC-60	59.25	29.2	13.24	30.0	13.60
CC-64	62.75	32.2	14.60	33.1	15.01
CC-66	64.75	34.0	15.42	34.9	15.83

Note: For walls greater than 16" and less than 8" please contact your local distributor or Garlock. Please see pages 12-16 for standard pipe and CELL-CAST® Disks ordering code page 23. Threaded rod must be requested when ordering. Specify TRA at the end of the ordering code.



TYPICAL WALL OPENING SPECIFICATION

CENTURY-LINE® Sleeves - for openings to 24.81" diameter

Where pipes must pass through walls and floors of new structures, unless otherwise shown or specified, install molded non-metallic high density polyethylene Model CS CENTURY-LINE® sleeves as manufactured by Garlock. Model CS sleeves have integrally formed hollow water stop sized having a minimum of four inches larger than the outside diameter of the sleeve itself and allowing 1/2" movement between wall forms to resist pour forces. Each sleeve assembly has end caps manufactured of the same material as the sleeve itself and installed at each end of the sleeve so as to prevent deformation during the initial concrete pour, and to facilitate attaching the sleeve to the wall forms. End caps will remain in place to protect the opening from residual debris and rodent entry prior to pipe insertion.

CELL-CAST® Disks - for openings from 29.25" to 64.74" diameter

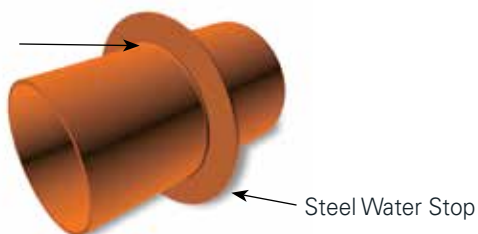
The contractor will install CELL-CAST® disks, providing a round hole in conformance with LINK-SEAL® modular seal sizing data. CELL-CAST® disks consist of 3" and/or 4" lightweight interlocking polyethylene cells stacked to form the thickness of the poured concrete wall. Molded into each cell is a cavity to accept a 2" x 4" nailer.

Leaders in Sealing Integrity

WS Steel Wall Sleeves

WS Wall Sleeves are constructed from steel and available in a wide range of diameters and lengths. They are an excellent choice for installations where the LINK-SEAL® Modular Seal and WS sleeve assembly would be subject to extremely high temperatures or where fire seals are specified.

Continuous
Weld-Bead
on both
sides



Steel Water Stop

MODEL WS (12" LENGTH)

Model	I.D.	Lbs.	Kg.
WS-2-15-S-12	2.07	5.53	2.51
WS-2½-20-S-12	2.47	7.91	3.58
WS-3-21-S-12	3.07	9.93	4.51
WS-3½-22-S-12	3.55	11.70	5.31
WS-4-23-S-12	4.03	13.61	6.17
WS-5-25-S-12	5.05	17.91	8.12
WS-6-28-S-12	6.07	22.73	10.31
WS-6-18-S-12	6.25	14.82	6.72
WS-8-32-S-12	7.98	33.55	15.22
WS-8-18-S-12	8.25	21.94	9.95
WS-10-36-S-12	10.02	46.12	20.92
WS-10-25-S-12	10.25	33.67	15.27
WS-12-37-S-12	12.00	60.14	27.28
WS-14-37-S-12	13.25	62.04	28.14
WS-16-37-S-12	15.25	71.04	32.22
WS-18-37-S-12	17.25	79.98	36.28
WS-20-37-S-12	19.25	90.00	40.82
WS-22-37-S-12	21.25	98.00	44.45
WS-24-37-S-12	23.25	107.00	48.53

Note: ws rolled sleeves (6" & 8") = .1875" wall thickness; (10") = .25" wall thickness. Intermediate sleeves available, model information on-line in a pdf file. See page 23 for Wall Sleeve ordering guide.



Model WS Painted and WSG Galvanized Steel Wall Sleeves are an excellent choice for installations where the LINK-SEAL® Modular Seal and WS sleeve assembly would be subject to extremely high temperatures or where fire seals are specified.



WS Intermediate Sleeves are used in conjunction with LINK-SEAL® Modular Seals to seal all pipes passing through concrete or masonry structures that require two belts of seals to fill the annular space between pipe and wall.



Model WS Split Sleeves are used for installations where an existing pipe run needs to penetrate a wall yet to be constructed. During wall installation a split sleeve is welded around the existing pipe and positioned in the form to center the pipe. After installation a LINK-SEAL® Modular Seal is used to seal the annular space between split sleeve and pipe.

Sizing Procedure

LINK-SEAL® Modular Seals may be sized by using one or more methods.

Method 1 - Use the charts provided (Pages 12-16) for standard pipe sizes and types.

LINK-SEAL® Modular Seal Sizing Charts for Standard Pipe

HOW TO ORDER: USING THE PROVIDED SIZING CHARTS

1. Locate charts on pages 12-16 that corresponds to the type and size pipe being used
2. Verify that your pipe O.D. matches the actual outside diameter shown on the chart
3. Determine type of wall opening (CENTURY-LINE®, Steel Sleeve or Cast/Core Bit Drilled Hole)
4. Determine LINK-SEAL® Modular Seal model to be used (See information on pages 6-7)
5. To order LINK-SEAL® Modular Seals: under the appropriate wall opening column, LINK-SEAL® Modular Seal size (from SIZE column), LINK-SEAL® Modular Seal model *** (C, S-316, L, LS-316, LS-S61, O, OS-316, T or FD/FS from pages 6-7) and indicate number of links required per seal (from LINKS PER SEAL column). [Example: LS-575-C-10]
6. To order corresponding sleeves indicate model number (from MODEL NUMBER column), length of sleeve and quantity required. [CENTURY-LINE® Example: CS-10-12"-1] [Steel Sleeve Example: WS-36-S-12"-1] [CELL-CAST® Example: CC-32-(3")2-(4")2]
7. See Page 23 for detailed visual call-outs.



STEEL AND PLASTIC PIPE WITH SAME OUTSIDE DIAMETER (IPS)

Pipe Size (Nom.)	CENTURY-LINE® SLEEVE				STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
	Actual O.D. (Inches)	Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
½	0.840	CS-2-*	LS-200-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-200-***	4
¾	1.050	CS-3-*	LS-315-***	4	WS-2-½-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1	1.315	CS-3-*	LS-300-***	4	WS-2-½-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1 ¼	1.660	CS-3-*	LS-275-***	7	WS-3-21-S-*	LS-275-***	8	3.000	LS-275-***	8
1 ½	1.900	CS-3½-*	LS-275-***	8	WS-3-21-S-*	LS-200-***	7	4.000	LS-315-***	6
2	2.375	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2 ½	2.875	CS-4-*	LS-200-***	9	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.500	CS-5-*	LS-300-***	8	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
3 ½	4.000	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.500	CS-6-*	LS-300-***	10	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10
5	5.563	CS-8-*	LS-360-***	10	WS-8-32-S-*	LS-340-***	13	8.000	LS-340-***	13
6	6.625	CS-10-*	LS-475-***	10	WS-10-36-S-*	LS-475-***	10	10.000	LS-475-***	10
8	8.625	CS-12-*	LS-475-***	12	WS-12-37-S-*	LS-475-***	12	12.000	LS-475-***	12
10	10.750	CS-14-*	LS-410-***	15	WS-14-37-S-*	LS-425-***	10	14.000	LS-475-***	14
12	12.750	CS-16-*	LS-475-***	17	WS-16-37-S-*	LS-425-***	12	16.000	LS-475-***	17
14	14.000	CS-16-*	LS-340-***	30	WS-18-37-S-*	LS-475-***	18	18.000	LS-575-***	16
16	16.000	CS-20-*	LS-410-***	21	WS-20-37-S-*	LS-475-***	21	20.000	LS-575-***	18
18	18.000	CS-22-*	LS-340-***	38	WS-22-37-S-*	LS-475-***	23	22.000	LS-575-***	20
20	20.000	CS-25-*	LS-500-***	18	WS-24-37-S-*	LS-475-***	25	24.000	LS-475-***	26
22	22.000	CS-25-*	LS-360-***	34	WS-26-37-S-*	LS-475-***	28	26.000	LS-575-***	24
24	24.000	CC-30-**	LS-500-***	21	WS-28-37-S-*	LS-475-***	30	28.000	LS-475-***	31
26	26.000	CC-30-**	LS-400-***	23	WS-30-37-S-*	LS-400-***	23	30.000	LS-575-***	28
28	28.000	CC-32-**	LS-400-***	25	WS-32-37-S-*	LS-400-***	25	32.000	LS-575-***	30
30	30.000	CC-36-**	LS-500-***	26	WS-34-37-S-*	LS-400-***	27	34.000	LS-575-***	32
32	32.000	CC-38-**	LS-500-***	28	WS-36-37-S-*	LS-400-***	29	36.000	LS-575-***	34
34	34.000	CC-38-**	LS-400-***	30	WS-40-37-S-*	LS-500-***	29	38.000	LS-575-***	36
36	36.000	CC-42-**	LS-500-***	31	WS-42-37-S-*	LS-500-***	31	40.000	LS-575-***	38
42	42.000	CC-48-**	LS-500-***	36	WS-48-37-S-*	LS-500-***	36	46.000	LS-575-***	44
48	48.000	CC-54-**	LS-500-***	40	WS-53-37-S-*	LS-525-***	40	52.000	LS-575-***	50

* = Specify sleeve length in inches ** = See CELL-CAST® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)
Technically there is no limit to the pipe size that can be sealed using LINK-SEAL® modular seals. Please contact factory for sizes not listed and for CS model plastic sleeves for walls less than 8" thick.

Note: Contact Garlock (1-800-423-2410) or your local distributor if your pipe sizing solution is not listed in the provided charts

Sizing Procedure



SDR-35 GRAVITY SEWER PIPE

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
4	4.22	CS-6-*	LS-315-***	11	WS-6-28-S-*	LS-315-***	10	6.000	LS-315-***	10
6	6.28	CS-8-*	LS-315-***	15	WS-8-32-S-*	LS-315-***	15	8.000	LS-315-***	15
8	8.40	CS-10-*	LS-325-***	9	WS-10-36-S-*	LS-315-***	19	12.000	LS-475-***	12
10	10.50	CS-14-*	LS-475-***	14	WS-14-37-S-*	LS-360-***	17	14.000	LS-475-***	14
12	12.50	CS-18-*	LS-500-***	12	WS-16-37-S-*	LS-360-***	20	16.000	LS-475-***	17
15	15.30	CS-20-*	LS-475-***	20	WS-20-37-S-*	LS-575-***	17	18.000	LS-360-***	24
18	18.70	CS-24-*	LS-575-***	21	WS-22-37-S-*	LS-360-***	29	22.000	LS-475-***	24
21	22.05	CC-30-**	LS-615-***	13	WS-26-37-S-*	LS-475-***	28	26.000	LS-575-***	24
24	24.80	CC-30-**	LS-525-***	21	WS-28-37-S-*	LS-425-***	22	28.000	LS-475-***	31
27	27.95	CC-32-**	LS-400-***	25	WS-32-37-S-*	LS-400-***	25	32.000	LS-575-***	30
30	32.00	CC-38-**	LS-500-***	28	WS-36-37-S-*	LS-400-***	29	36.000	LS-575-***	34

= Specify sleeve length in inches ** = See CELL-CAST® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

DUCTILE IRON PIPE (DIPS, AWWA-C900, AWWA-C905, PVC WATER PIPE)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
2	2.500	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2½	2.750	CS-4-*	LS-275-***	10	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.960	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.800	CS-8-*	LS-410-***	7	WS-8-32-S-*	LS-410-***	7	8.000	LS-410-***	7
6	6.900	CS-10-*	LS-475-***	10	WS-10-36-S-*	LS-410-***	10	10.000	LS-410-***	10
8	9.050	CS-12-*	LS-400-***	9	WS-12-37-S-*	LS-400-***	9	12.000	LS-400-***	9
10	11.100	CS-14-*	LS-410-***	15	WS-14-37-S-*	LS-340-***	24	14.000	LS-400-***	10
12	13.200	CS-18-*	LS-575-***	15	WS-18-37-S-*	LS-475-***	18	16.000	LS-360-***	21
14	15.300	CS-20-*	LS-475-***	20	WS-20-37-S-*	LS-575-***	17	18.000	LS-360-***	24
16	17.400	CS-22-*	LS-360-***	28	WS-22-37-S-*	LS-475-***	23	20.000	LS-360-***	27
18	19.500	CS-24-*	LS-410-***	25	WS-24-37-S-*	LS-575-***	21	24.000	LS-525-***	17
20	21.600	CS-25-*	LS-400-***	20	WS-26-37-S-*	LS-475-***	27	26.000	LS-525-***	19
24	25.800	CC-30-**	LS-400-***	23	WS-30-37-S-*	LS-400-***	23	28.000	LS-425-***	23
30	32.000	CC-38-**	LS-500-***	28	WS-36-37-S-*	LS-400-***	29	36.000	LS-575-***	34
36	38.300	CC-44-**	LS-500-***	33	WS-44-½-37-S-*	LS-500-***	33	42.000	LS-575-***	40
42	44.500	CC-50-**	LS-500-***	38	WS-50-37-S-*	LS-500-***	38	50.000	LS-500-***	38
48	50.800	CC-56-**	LS-500-***	43	WS-57-37-S-*	LS-500-***	43	56.000	LS-500-***	43

= Specify sleeve length in inches ** = See CELL-CAST® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Technically there is no limit to the conduit or pipe size that can be sealed using LINK-SEAL® Modular Seals. Please contact factory for sizes not listed and for CS model plastic sleeves for walls less than 8" thick.

Sizing Procedure



CAST IRON SOIL PIPE (EXTRA HEAVY)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
2	2.380	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
3	3.500	CS-5-*	LS-315-***	9	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
4	4.500	CS-8-*	LS-475-***	8	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10
5	5.500	CS-8-*	LS-360-***	10	WS-8-32-S-*	LS-340-***	13	8.000	LS-340-***	13
6	6.500	CS-8-*	LS-315-***	15	WS-10-36-S-*	LS-475-***	10	10.000	LS-475-***	10
8	8.620	CS-12-*	LS-475-***	12	WS-12-37-S-*	LS-475-***	12	12.000	LS-475-***	12
10	10.750	CS-14-*	LS-410-***	15	WS-14-37-S-*	LS-425-***	10	14.000	LS-475-***	14
12	12.750	CS-16-*	LS-475-***	17	WS-16-37-S-*	LS-425-***	12	16.000	LS-475-***	17
15	15.880	CS-20-*	LS-410-***	21	WS-20-37-S-*	LS-475-***	20	18.000	LS-340-***	33

= Specify sleeve length in inches ** = See CELL-CAST® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

CAST IRON SOIL PIPE (SERVICE WEIGHT)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
2	2.300	CS-4-*	LS-300-***	6	WS-4-23-S-*	LS-315-***	6	4.000	LS-315-***	6
3	3.300	CS-5-*	LS-300-***	8	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
4	4.300	CS-6-*	LS-300-***	10	WS-6-28-S-*	LS-315-***	10	6.000	LS-300-***	10
5	5.300	CS-8-*	LS-410-***	8	WS-8-32-S-*	LS-360-***	9	8.000	LS-360-***	9
6	6.300	CS-8-*	LS-315-***	15	WS-8-32-S-*	LS-315-***	15	8.000	LS-315-***	15
8	8.380	CS-10-*	LS-325-***	9	WS-10-36-S-*	LS-315-***	19	10.000	LS-315-***	19
10	10.500	CS-14-*	LS-475-***	14	WS-14-37-S-*	LS-360-***	17	14.000	LS-475-***	14
12	12.500	CS-18-*	LS-500-***	12	WS-16-37-S-*	LS-360-***	20	16.000	LS-475-***	17
15	15.620	CS-20-*	LS-475-***	20	WS-20-37-S-*	LS-475-***	20	18.000	LS-425-***	14

= Specify sleeve length in inches ** = See CELL-CAST® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Sizing Procedure



ELECTRICAL METALLIC TUBING (EMT) THIN WALL

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
½	0.706	CS-2-*	LS-275-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-275-***	4
¾	0.922	CS-2-*	LS-200-***	4	WS-2-½-20-S-*	LS-275-***	6	2.000	LS-200-***	4
1	1.163	CS-3-*	LS-315-***	4	WS-2-½-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1¼	1.510	CS-3-*	LS-275-***	8	WS-3-30-S-*	LS-275-***	7	3.000	LS-275-***	8
1½	1.740	CS-3½-*	LS-300-***	5	WS-3-21-S-*	LS-275-***	8	3.000	LS-200-***	6
2	2.197	CS-4-*	LS-315-***	6	WS-3-½-22-S-*	LS-275-***	10	4.000	LS-315-***	6
2½	2.875	CS-4-*	LS-200-***	9	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.500	CS-5-*	LS-315-***	9	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
4	4.500	CS-8-*	LS-475-***	8	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10

= Specify sleeve length in inches ** = See Cell-Cast® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

INTERMEDIATE METAL CONDUIT (IMC)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
½	0.815	CS-2-*	LS-200-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-200-***	4
¾	1.029	CS-2-*	LS-200-***	4	WS-2-½-20-S-*	LS-275-***	6	2.000	LS-200-***	4
1	1.290	CS-3½-*	LS-315-***	5	WS-2-½-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1¼	1.638	CS-3-*	LS-275-***	8	WS-3-21-S-*	LS-275-***	8	3.000	LS-275-***	8
1½	1.883	CS-3½-*	LS-300-***	5	WS-3-21-S-*	LS-200-***	7	4.000	LS-315-***	6
2	2.360	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2½	2.857	CS-4-*	LS-200-***	9	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.476	CS-5-*	LS-315-***	9	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
3½	3.970	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.466	CS-6-*	LS-315-***	11	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10

= Specify sleeve length in inches ** = See CELL-CAST® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Sizing Procedure



RIGID (RSC), ALUMINUM (ASC), GALVANIZED (GSC), NON-METALLIC CONDUIT (NRC)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
½	0.840	CS-2-*	LS-200-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-200-***	4
¾	1.050	CS-3-*	LS-315-***	4	WS-2-½-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1	1.315	CS-3-*	LS-300-***	4	WS-2-½-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1¼	1.660	CS-3-*	LS-275-***	7	WS-3-21-S-*	LS-275-***	8	3.000	LS-275-***	8
1½	1.900	CS-3½-*	LS-300-***	5	WS-3-21-S-*	LS-200-***	7	4.000	LS-315-***	6
2	2.375	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2½	2.875	CS-4-*	LS-200-***	9	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.500	CS-5-*	LS-300-***	8	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
3½	4.000	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.500	CS-6-*	LS-300-***	10	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10
5	5.563	CS-8-*	LS-360-***	10	WS-8-32-S-*	LS-340-***	13	8.000	LS-340-***	13
6	6.625	CS-10-*	LS-475-***	10	WS-10-36-S-*	LS-475-***	10	10.000	LS-475-***	10

= Specify sleeve length in inches ** = See Cell-Cast® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

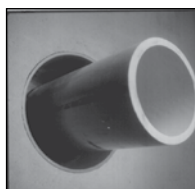
COPPERTUBING

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE			STEEL SLEEVE			CAST OR CORE BIT DRILLED HOLE		
		Model Number	LINK-SEAL® Size	Links Per Seal	Model Number	LINK-SEAL® Size	Links Per Seal	Hole I.D.	LINK-SEAL® Size	Links Per Seal
½	0.625	CS-2-*	LS-275-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-275-***	4
¾	0.875	CS-2-*	LS-200-***	4	WS-2-½-20-S-*	LS-275-***	6	2.000	LS-200-***	4
1	1.125	CS-3-*	LS-315-***	4	WS-2-½-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1¼	1.375	CS-3-*	LS-275-***	8	WS-2-½-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1½	1.625	CS-3-*	LS-275-***	8	WS-3-21-S-*	LS-275-***	7	3.000	LS-275-***	8
2	2.125	CS-4-*	LS-315-***	6	WS-3-½-22-S-*	LS-275-***	10	4.000	LS-315-***	6
2½	2.625	CS-4-*	LS-275-***	12	WS-4-23-S-*	LS-275-***	11	4.000	LS-275-***	11
3	3.125	CS-5-*	LS-340-***	8	WS-5-25-S-*	LS-315-***	8	5.000	LS-315-***	8
4	4.125	CS-6-*	LS-315-***	11	WS-6-28-S-*	LS-315-***	10	6.000	LS-315-***	10
6	6.125	CS-8-*	LS-315-***	15	WS-8-32-S-*	LS-315-***	15	8.000	LS-315-***	15
8	8.125	CS-12-*	LS-575-***	10	WS-10-36-S-*	LS-315-***	19	12.000	LS-575-***	10
10	10.125	CS-12-*	LS-340-***	22	WS-14-37-S-*	LS-410-***	14	14.000	LS-575-***	12
12	12.125	CS-16-*	LS-575-***	14	WS-16-37-S-*	LS-410-***	16	16.000	LS-575-***	14

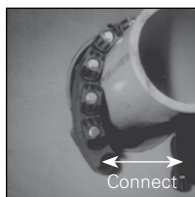
= Specify sleeve length in inches ** = See Cell-Cast® Page 10 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Installation Techniques - LINK-SEAL® Modular Seals

1. Center the pipe, cable or conduit in wall opening or casing. Make sure the pipe will be adequately supported on both ends. LINK-SEAL® modular seals are not intended to support the weight of the pipe.



2. Loosen rear pressure plate with nut just enough so links move freely. Connect both ends of belt around the pipe.

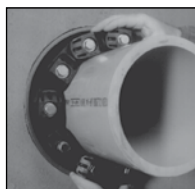


3. Check to be sure all bolt heads are facing the installer. Extra slack or sag is normal. Do not remove links if extra slack exists.



Note: On smaller diameter pipe, links may need to be stretched.

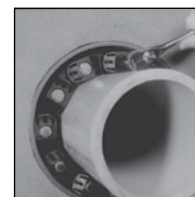
4. Slide belt assembly into annular space. For larger size belts, start inserting LINK-SEAL® modular seal assembly at 6 o'clock position and work both sides toward 12 o'clock position in annular space.



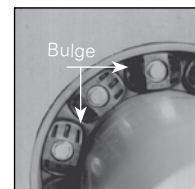
5. LS-200 through LS-315 Using a hand socket allen head or off-set wrench ONLY, start at 12 o'clock. Do not tighten any bolt more than 4 turns at a time. Continue in a clockwise manner until links have been uniformly compressed. (Approx. 2 or 3 rotations)



- 5a. LS-325 through LS-650 Using a hand socket or off-set wrench ONLY, start at 12 o'clock. Do not tighten any bolt more than 4 turns at a time. Continue in a clockwise manner until links have been uniformly compressed (Approx. 2 or 3 rotations).



6. Make 2 or 3 more passes at 4 turns per bolt MAXIMUM, tightening all bolts clockwise until all sealing elements "bulge" around all pressure plates. On type 316 stainless steel bolts, hand tighten ONLY without power tool.



7. If the seal doesn't appear to be correct using the instructions provided, call Garlock at 1-800-423-2410.

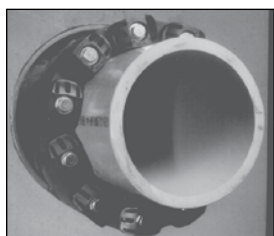
Installation Notes: LINK-SEAL® modular seal bolt heads are usually recessed below wall opening or edge of casing pipe and therefore a socket or offset wrench must be used.



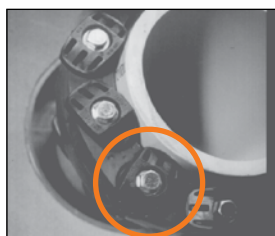
LINK-SEAL® MODULAR SEAL - DO'S

1. Make sure pipe is centered
2. Install belt with the pressure plates evenly spaced
3. Install exact number of links indicated in sizing charts
4. Check to make sure pipe is supported properly during backfill operations. Note: LINK-SEAL® modular seals are not intended to support the weight of the pipe
5. Make sure seal assembly and pipe surfaces are free from dirt
6. For tight fits, use non-polluting liquid detergent to assist installation

CORRECT



INCORRECT



If the seal doesn't appear to be correct using the techniques provided, call Garlock at 1-800-423-2410.

Always wear appropriate PPE

LINK-SEAL® MODULAR SEAL - DON'TS

1. Don't install belt with the pressure plates aimed in irregular directions. (Staggered)
2. Don't install LINK-SEAL® modular seals where weld-beads or other irregular surfaces exist without consideration of the sealing requirements
3. Don't torque each bolt completely before moving on to the next
4. Don't use high speed power tools (450 rpm or more)
5. Do not use power tools on LINK-SEAL® modular seal 316 stainless steel bolts
6. Don't use grease installing LINK-SEAL® modular seals

LINK-SEAL® Model	Tool Size/ Type Req.	Bolt Head Type
LS-200, LS-275	4mm, Allen	
LS-300, LS-315	6mm, Allen	
LS-325, LS-340, LS-360	13mm, Hex	
LS-400, LS-410, LS-425, LS-475	17mm, Hex	
LS-500, LS-525, LS-575, LS-650	19mm, Hex	
LS-615	24mm, Hex	

Hand Tools: See provided chart above. (Tools not provided.) Tools can be purchased from hardware store, auto parts store, or home improvement store.

Installation Techniques - CENTURY-LINE® Sleeves

CENTURY-LINE® Sleeves are thermoplastic wall or floor pipe penetration sleeves. One person working alone can usually install a CENTURY-LINE® Sleeve regardless of the size.

1. Measure the center line to position CENTURY-LINE® Sleeve end cap.



2. Nail one of the end caps at the marked center line. A 2" minimum clearance is suggested when nesting sleeves.



3. Place the CENTURY-LINE® Sleeve on the end cap. When field cutting non standard CS sleeve lengths, the sleeve and end caps total length should be ¼" longer than the thickness of the wall. Cut with a hand or power saw.

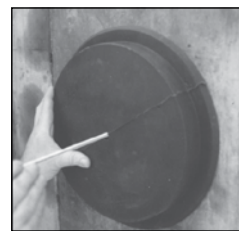


Note: To insure minimum water migration, center the water stop in wall by cutting equal lengths from each end of the sleeve, except as noted below.

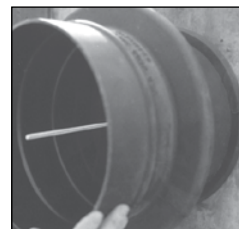
ALTERNATIVE TECHNIQUES USING THREADED ROD

After nailing end cap to form, drive (threaded rod*) through the end plate and form and (thread nut*) on other side.

Note: Remember to measure the (threaded rod*) to match the length of the sleeve.



Place the sleeve over the end cap nailed to the form.



* = Not Provided by Garlock®

Place second cap on the sleeve and use a (block of wood*) and (wing nut*) to tighten unit in place. Make certain sleeve is plumb.



Always wear appropriate PPE

4. Place second end cap on sleeve. Check to determine that the cap is properly inserted.



5. For additional stability, it's necessary to secure the sleeve with wire to the rebar. Insert the other end cap firmly, check that second end cap is positioned correctly, confirm sleeve length and close the form.



6. After the concrete is poured and cured, remove end caps with screw driver or crow bar. End caps may be replaced to protect sleeve until pipe penetration is made.



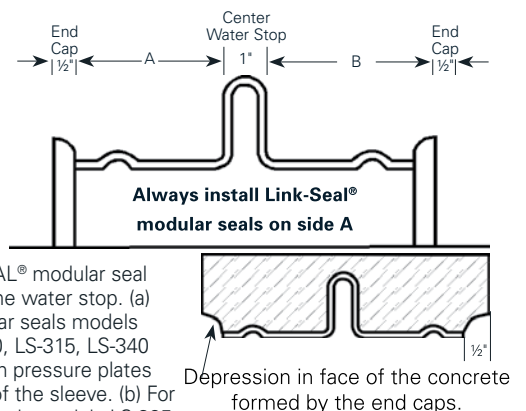
Wall Thickness	Cut From Left End	Dimension A	Cut From Right End	Dimension B
16"	0.0"	7.125"	0.0"	7.125"
14"	.875"	6.125"	.875"	6.125"
12"	1.875"	5.125"	1.875"	5.125"
10"	2.375"	4.625"	3.375"	3.625"
8"	2.375"	4.625"	5.375"	1.625"

Notes:

Example: To convert 16" to 12", cut 1.875" off each end.

End caps leave 1/2" depression in face of concrete.

On sleeves under 12" length, install LINK-SEAL® modular seal on the "long side" of the water stop. (a) For LINK-SEAL® modular seals models LS-200, LS-275, LS-300, LS-315, LS-340 and LS-360 - install with pressure plates flush with outer edge of the sleeve. (b) For LINK-SEAL® modular seals models LS-325, LS-400, LS-410, LS-425 and LS-475 - install with pressure plates partially inserted into the sleeve. When tightened, the pressure plates will "pull" into the sleeve. (c) For LINK-SEAL® modular seals models LS-500, LS-525, LS-575, LS-615 and LS-650 - the minimum sleeve length is 10". Follow the instructions in 3 above.



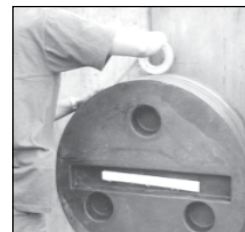
Installation Techniques - CELL-CAST® Disks

1. Locate center line where the hole is desired. This location will be used as a guide for the threaded centering assist rod.



7. Wrap each seam with one wrap of 2" wide tape to bridge any possible gaps.

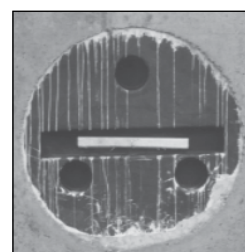
NOTE: Tape not included. Finish installing concrete forms and pour concrete.



2. A 2x4 wood nailer is included. Fasten it along with the threaded rod directly to the concrete form. This provides support and helps center the complete CELL-CAST® disk assembly.



8. After wall cures, wall forms are removed. The CELL-CAST® disk assembly is now ready for removal.



3. Slide the first CELL-CAST® disk over the *threaded rod.

Note: Use only 1 threaded rod for equal distribution. More than one rod could take disks out of shape.



9. Chip excess concrete from the edge of the CELL-CAST® disk assembly and wall.



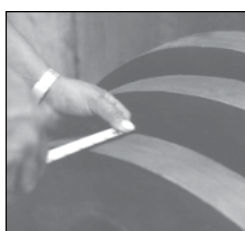
4. Secure the edges of the cell to the form using the provided steel spikes.



10. Remove disks by breaking out the entire assembly.



5. Additional disks are interlocked to accommodate finished wall thickness. Verify thickness is the same as wall.



11. Inspect the installation. A smooth opening is important for a proper LINK-SEAL® modular seal installation. Repair voids and grind smooth any ridges.



6. Guide the 1" wood block over the threaded rod and secure the assembly with the wing nut provided.



If you should have questions using the techniques provided, call Garlock at 1-713-747-6948 or 1-800-423-2410.

Note: For walls greater than 16", please contact Garlock.

*Threaded rod must be requested when ordered. Make sure TRA is added to the end of the ordering code.

Typical Specification

1.0 LINK-SEAL® MODULAR SEAL RUBBER LINKS

Must be modular, mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and the wall opening. The elastomeric element must be sized and selected per manufacturer's sizing procedure and have the following properties as designated by ASTM. Coloration must be throughout elastomer for positive field inspection. Each link must have a permanent identification of the size and manufacturer's name molded into it.

- A. Standard Service Applications = Model C
-40 to +250°F (-40 to +121°C)
EPDM = ATSM D2000 M3 BA510 Color = **Black**
- B. Potable Water/NSF 61 Service Applications = Model S61
-40 to +250°F (-40 to +121°C)
EPDM = ATSM D2000 M3 BA510 Color = **Black**
- C. Thin Walled Pipe Applications = Model L
-40 to +250°F (-40 to +121°C)
EPDM = ATSM D2000 M3 BA510 Color = **Blue**
- D. Hydrocarbon Service Applications = Model O
-40 to +210°F (-40 to +99°C)
Nitrile = ASTM D2000 M1BF510 Color = **Green**
- E. High Temperature or Fire Seal Applications = Model T
-67 to +400°F (-55 to +204°C)
Silicone = ASTM D2000 M1GE505 Color = **Gray**

Reference must always be made to the latest published Link-Seal® modular seal selection guide for the service intended.

2.0 WALL OPENING

- A. CENTURY-LINE® Sleeves - for openings up to 24.75" diameter. Where pipes must pass through walls and floors of new structures, unless otherwise shown or specified, install molded non-metallic high density polyethylene Model CS CENTURY-LINE® sleeves as manufactured by Garlock. Model CS sleeves must have integrally formed hollow water stop sized having a minimum of four inches larger than the outside diameter of the sleeve itself and allowing 1/2" movement between wall forms to resist pour forces. Each sleeve assembly must have end caps manufactured of the same material as the sleeve itself and installed at each end of the sleeve so as to prevent deformation during the initial concrete pour, and to facilitate attaching the sleeve to the wall forms. End caps must remain in place to protect the opening from residual debris and rodent entry prior to pipe insertion.
- B. CELL-CAST® Disks - for openings from 29.25" to 64.74" diameter. The contractor must install CELL-CAST® disks, providing a round hole in conformance with LINK-SEAL® modular seal sizing data. CELL-CAST® disks must consist of 3" and/or 4" lightweight interlocking polyethylene cells stacked to form the thickness of the poured concrete wall. Molded into each cell must be a cavity to accept a 2" x 4" nailer.

3.0 QUALITY ASSURANCE

LINK-SEAL® Modular Seal components and systems will be domestically manufactured at a plant with a current ISO 9001:2015 registration. A copy of ISO 9001:2015 registrations will be a submittal item.

NOTE: LINK-SEAL® Modular Seals are specifically designed as hydrostatic and/or fire rated seals and are not considered to be pipe supports. When appropriate, LINK-SEAL® Modular Seals should be used with proper pipe supports on both ends.

Frequently Asked Questions

1Q - HOW MUCH ANGULAR PIPE MOVEMENT WILL LINK-SEAL® MODULAR SEALS ALLOW AND STILL MAINTAIN A SEAL?

1A - Link-Seal® modular seals may allow angular pipe movement or misalignment depending on the ratio of annular space of the penetration to the expanded range of the LINK-SEAL® model sized for the penetration. Please call Garlock for more information.

2Q - WHEN IS THE RECOMMENDED TIME TO INSTALL LINK-SEAL® MODULAR SEALS?

2A - Always install LINK-SEAL® modular seals prior to final connections and back filling. This helps prevent off-center pipe alignment.

3Q - IS IT NECESSARY TO USE WS OR CS SLEEVES WHEN INSTALLING LINK-SEAL® MODULAR SEALS?

3A - WS model steel and CS model HDPE sleeves are specially designed for use with LINK-SEAL® modular seals and are an ideal combination for new pours. When installed with LINK-SEAL® modular seals these will provide the best possible assurance of a quality wall penetration system.

4Q - WHAT TOOLS ARE REQUIRED TO INSTALL LINK-SEAL® MODULAR SEALS?

4A - Set of ratchet tools (with extensions if needed). If installing Carbon Steel hardware a low speed (450 RPM or less) power tool can be used for multiple installations to increase efficiency.

LINK-SEAL® Model	Tool Size/Type Req.
LS-200, LS 275	4mm, Allen
LS-300, LS-315	6mm, Allen
LS-325, LS-340, LS-360	13mm, Hex
LS-400, LS-410, LS-425, LS-475	17mm, Hex
LS-500, LS-525, LS-575 LS-650	19mm, Hex
LS-615	24mm, Hex

5Q - WHAT MODEL LINK-SEAL® MODULAR SEALS SHOULD BE USED FOR SUBMERGED SEA WATER APPLICATIONS?

5A- For submerged sea water applications use Model S-316 LINK-SEAL® modular seals. See pages 6 & 7 for material property

information.

6Q - CAN I USE POWER TOOLS WHEN INSTALLING LINK-SEAL® MODULAR SEALS WITH 316 STAINLESS STEEL BOLTS?

6A - No, please refer to suggested installation techniques.

7Q - SOMETIMES WHEN INSTALLING A LINK-SEAL® MODULAR SEAL BELT, IT HANGS LOOSE ON THE PIPE EVEN THOUGH ALL MY SIZING CALCULATIONS ARE CORRECT. WHY DOES IT APPEAR THAT I HAVE TOO MANY LINKS?

7A - LINK-SEAL® modular seals are sized to fit the annular space, not the pipe. It is important to not remove links. Use the assemblies suggested by the charts or calculation. It may not look right, but it will fit.

8Q - CAN LINK-SEAL® MODULAR SEALS BE USED FOR PENETRATIONS WHERE THE PIPE IS OFF-CENTER TO THE OPENING?

8A - Centering is very important to achieve a tight seal with LINK-SEAL® modular seals. Contact your local stocking distributor or Garlock for center solutions or availability of seals for off centered applications.

9Q - HOW DO I INSTALL LINK-SEAL® MODULAR SEALS OVER A WELD-BEAD?

9A - Weld-beads and all other irregularities on the pipe or opening should be addressed in accordance with the manufacturer's and/or project engineer's suggestions to provide a round, smooth and clean surface for LINK-SEAL® installation.

10Q - CAN LUBRICANT BE USED TO INSTALL LINK-SEAL® MODULAR SEALS?

10A-Yes, any non-polluting liquid detergent is preferred over a grease. If you need to use grease or another lubricant, please contact Garlock.

11Q - DO YOU RECOMMEND THE LINK-SEAL® MODULAR SEALS BE INSTALLED IN THE BACK, MIDDLE OR FRONT OF A PENETRATION?

11A - It is better to install the LINK-SEAL® modular seals so that it is easy to access the bolt heads in case the LINK-SEAL® need to be adjusted at any time in the future. This also makes the initial installation easier.

LINK-SEAL® Modular Seal Technical Approvals

The following is a partial listing of the many Federal agencies, associations, code groups, laboratories and organizations which have approved, listed, specified, tested or otherwise indicated acceptance of LINK-SEAL® modular seals.

GENERAL CODE GROUPS, ASSOCIATIONS, LABORATORIES AND APPROVAL AUTHORITIES

AWWA - American Water Works Association
AIS - American Iron and Steel
API - American Petroleum Institute
ASME - American Society of Mechanical Engineers
Bureau Veritas - Marine Division
DNV - Det Norske Veritas
FM - Factory Mutual Engineering Corporation
LLOYD'S - Lloyd's Register of Shipping
NACE - National Association of Corrosion Engineers
NSF/ANSI 61 - Drinking Water System Components
TÜV - Technischer Überwachungs-Verein

GOVERNMENT AGENCIES

Bureau of Public Roads - Division of Bridges
United States Coast Guard
Corps. of Engineers
GSA - General Services Administration
Military Specifications
TVA - Tennessee Valley Authority
ARRA- American Recovery Reinvestment Act

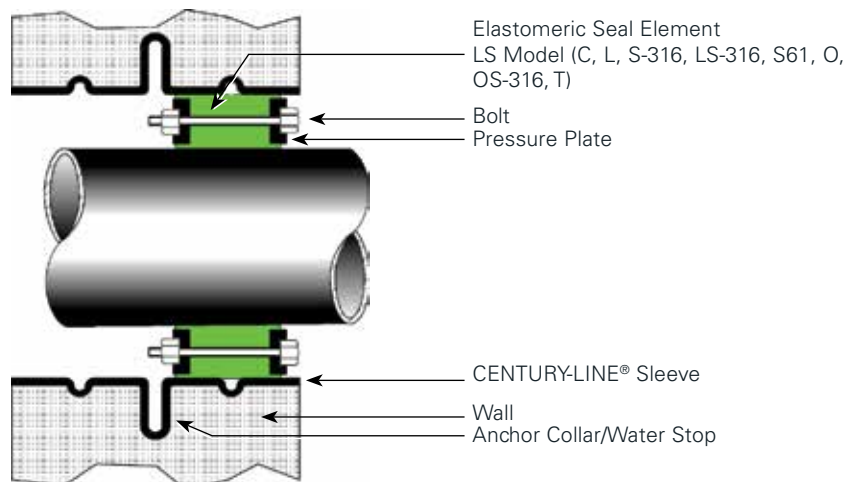
CALLING-OUT THE ORIGINAL LINK-SEAL® MODULAR SEAL SYSTEM



Approvals:	ISO 9001:2015 KAMAN - Volume 21.2: Product Spotlight, Factory Mutual, NSF 61
Elastomers:	EPDM, Nitrile, Silicone
Made in America (U.S.A.)	Yes
Permanent Identification	Yes
Corrosion Resistant Fasteners 316 Stainless as Standard	Yes
16 Model Sizes	Yes
Hi/Low Temp. Seals	Yes
FM Approved Fire Seals, NSF 61 Certified	Yes
Bolts available in Metric Format	Yes
Bolts pass 1470 hour salt spray test	Yes
Non-conductive CS Molded Sleeve Penetration System	Yes
Low torque Pressure Plate and Elastomer	Yes
Special "V" Modification Pressure Monitoring	Yes
Color Coded Elastomers and Pressure Plates	Yes
CELL-CAST® Hole Forms	Yes
On Staff Seal Engineering Assistance	Yes
Worldwide Stocking Distributors	Yes
Bolt and Nut Specifications per ASTM Standards	Yes
Universal Pressure Plate Design	Yes

Product Ordering Code

LINK-SEAL® MODULAR SEALS WITH CENTURY-LINE® SLEEVES



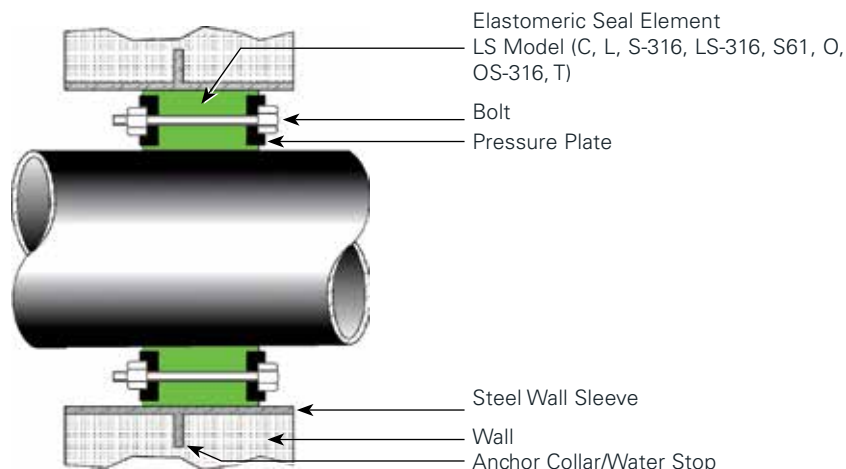
LINK-SEAL® Model No. Example

LS - 400 - C - 10
 LINK-SEAL® _____
 Size _____
 Model _____
 No. of Links _____

CENTURY-LINE® Model No. Example

CS - 10 - 16 - 1
 CENTURY-LINE® _____
 Sleeve Length (In.) _____
 No. of Units _____

LINK-SEAL® MODULAR SEALS WITH MODEL WS WALL SLEEVES



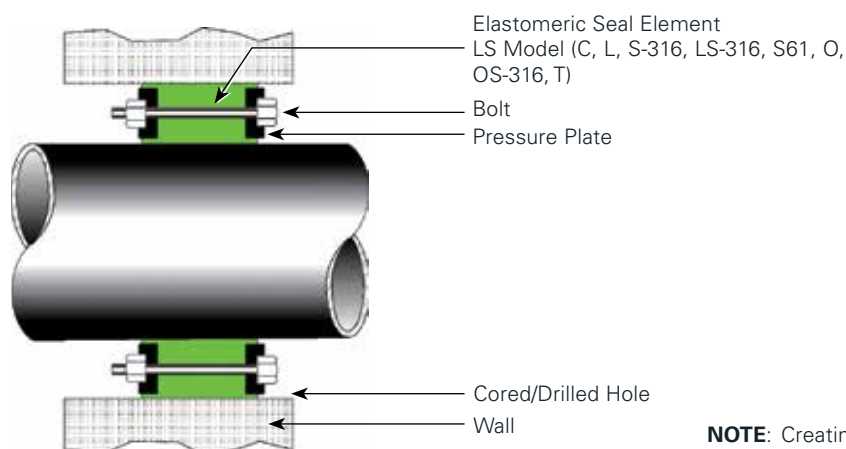
LINK-SEAL® Model No. Example

LS - 400 - C - 10
 LINK-SEAL® _____
 Size _____
 Model _____
 No. of Links _____

Steel WS Sleeve Model No. Example

WS - 14 - 25 - S - 12
 Wall Sleeve _____
 Sleeve Nominal _____
 Steel Wall Thickness _____
 Steel _____
 Length in Inches _____

LINK-SEAL® MODULAR SEALS WITH CAST, CORE DRILLED OR CELL-CAST® DISK WALL OPENING



LINK-SEAL® Model No. Example

LS - 400 - C - 10
 LINK-SEAL® _____
 Size _____
 Model _____
 No. of Links _____

CELL-CAST® Disk Model No. Example

CC - 30 - (3)2 - (4)2
 CELL-CAST® _____
 No. 3" Disks _____
 No. 4" Disks _____

NOTE: Creating a 30" (29.25" I.D.) Hole with a 14" Wall Thickness. Specify TRA at the end of the ordering code for threaded rod assembly.

*CAD (.dwg) drawings are available online @ www.garlock.com

Leaders in Sealing Integrity

WARRANTY AND CONDITION OF SALE

The seller warrants that all goods furnished under this order will be free from defects in material and workmanship and will conform to Garlock published specifications.

The limit of Garlock's liability for failure of any of our products to meet the foregoing warranty, or for breach of any other warranty, express, implied or statutory, shall be to supply an equivalent amount of product for any materials returned to us within 12 months of shipment and found to be defective by Garlock.

Due to the widely varying conditions under which our products are used or installed, Garlock offers no warranty as to their merchantability, length of service or suitability for any particular purpose, express or implied, other than described above.

The Purchaser accepts full responsibility for installation of all goods furnished under this order and for any defects or damage suffered as a result of defective installation of such goods. No instructions, advice, or aid relative to installation given by the Seller to the Purchaser shall be construed as a warranty as to the accuracy or utility of such instructions, advice, or aid, but only as an accommodation to the Purchaser and an opinion of the Seller.

The foregoing conditions of sale shall not be modified or affected in any way whatsoever by reason of Seller's receipt or acknowledgement of Buyer's purchase order or any other related instrument of paper containing additional or different conditions and, to the extent there may be any terms or provisions in such a purchase order, etc., which may be in conflict with or modification of the foregoing, such terms and provisions of such purchase order, etc., shall be deemed to have no force or effect.

PSI 1-8 04.2021

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