

EXPERIENCE COUNTS



Information and sizing charts updated 2-08.

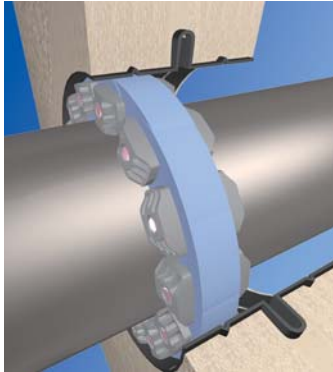
The Selection Guide **for Hole Forming and** **Sealing Pipe Penetrations**





Three Techniques Used to Create Through Wall Hole Penetrations in Combination with various Link-Seal® Modular Seal Options.

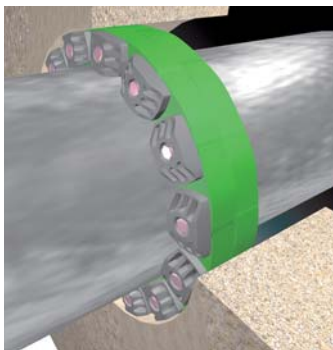
Century-Line® Model CS Sleeves in Combination with “low durometer” EPDM (blue) Link-Seal® Modular Seals



Century-Line® Model CS Sleeves are ideal for poured wall construction. Made of HDPE thermoplastic, they are lightweight and easy to handle. Molded-in waterstop and reinforcing ribs serve to anchor the sleeve in the wall and resist pour forces. Nailer end caps are provided to make placement in forms simple and accurate.

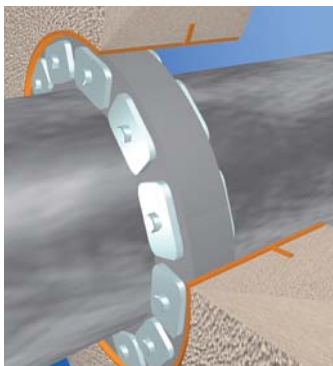
Sleeves are available in 16 diameters, up to 25”, and any length. In the event of a field change they can be shortened with ordinary hand tools.

Pre-cast or Cored Wall Openings in Combination with Nitrile (green) Link-Seal® Modular Seals



Link-Seal Modular Seals are also commonly installed in cored wall openings or pre-cast openings such as those formed by use of Cell-Cast® Disks for pipe penetration hole forms. See Cell-Cast Disk (page 4) or contact PSI for more information.

Model WS Steel Sleeves in Combination with Silicone (grey) Link-Seal® Modular Seals



Model WS Steel Sleeves are made from heavy-wall welded or seamless pipe. A full circle waterstop plate acts as positive water seal and anchor to prevent thrust movement. The 2” collar (water-stop) is continuously welded on both sides. Model WS is available in a wide range of diameters and any length. Sleeves are protected by a coating of red primer. Hot dip galvanizing is available on request.



A combination of Century-Line® Sleeves and Link-Seal® Modular Seals perform a “No Leak Solution” for this pump room application.

Features

Saves time and money...

Link-Seal modular seals install in up to 75% less time compared to lead-oakum joints, hand fitted flashings, mastics or casing boots.

Positive hydrostatic seal...

Link-Seal modular seals are rated at 20 psig (40 feet of 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 two-part zinc dichromate and proprietary corrosion inhibiting coating. Corrosion resistant 316 stainless steel available for maximum corrosion protection.

Certification/Approvals...

Factory Mutual Fire Approvals. Also a wide variety of approvals from various Federal agencies, associations, code groups, laboratories and organizations.

ISO Quality Assurance...

Link-Seal modular seals are manufactured in an ISO 9001:2000 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.



Certificate No. NACB7895



Certificate No. 10125



Link-Seal® Modular Seal Model Options

with EPDM Seal Elements



EPDM (Black)
EPDM (Blue) Low Durometer

Model “C” or “L” Link-Seal Modular Seal
Suitable for use in water, direct ground burial and atmospheric conditions. Provides electrical isolation where cathodic protection is required.

Type: Standard
Seal Element: EPDM (Black) or EPDM (Blue)
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -40 to +250°F (-40 to +121°C)*

Model “S-316” Link-Seal Modular Seal
For chemical processing & waste water treatment. EPDM rubber is resistant to most inorganic acids and alkalis, some organic chemicals (acetone, alcohol, ketones).

Type: Stainless
Seal Element: EPDM (Black) or EPDM (Blue)
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: 316 Stainless Steel
Temp. Range: -40 to +250°F (-40 to +121°C)*

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

with Nitrile Seal Elements



Nitrile (Green)

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.).

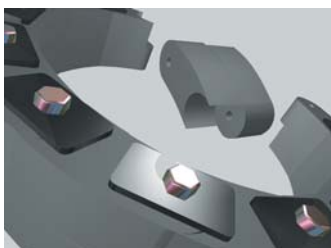
Type: Oil Resistant
Seal Element: Nitrile (Green) Note: Not U.V resistant.
Pressure Plates: Reinforced Nylon Polymer
Bolts & Nuts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -40 to +210°F (-40 to +99°C)*

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 to +210 °F (-40 to +99°C)*

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

with Silicone Seal Elements



Silicone (Grey)

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: Steel Zinc Dichromate
Bolts: Steel with 2-part Zinc Dichromate & proprietary corrosion inhibiting coating.
Temp. Range: -67 to +400°F (-55 to +204°C)*

Model “FD/FS” Link-Seal Modular Seal
Double seal for added protection.

Type: Fire Seals
Seal Element: Silicone (Grey)
Pressure Plates: Steel zinc dichromate
Bolts: Steel with 2-part Zinc Dichromate proprietary corrosion inhibiting coating.
Temp. Range: -67 to +400°F (-55 to +204°C)*

NOTE: Sustains a constant temp. of 325°F. (163° C.)
* = Sustained operation near temperature limits may affect life expectancy.

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%	45%	40%
		22 hrs. @ 158°F (70°C)	22 hrs. @ 212°F (100°C)	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	2.05 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%

Bolt & Nut Specifications

Standard: Carbon Steel
Carbon steel, zinc dichromated per ASTM B633, with an additional corrosion inhibiting proprietary organic coating. (passes 1470 hour salt spray test)
Tensile Strength = 60,000 psi, minimum.

Option: Stainless Steel
ANSI Type = 316, Per ASTM F593-95
Tensile Strength = 85,000 psi, average.

Century-Line® Pipe Penetration Sleeves

are used to create circular sleeved holes in concrete poured barriers including; walls, floors, ceilings, structural supports and tank footings. Molded from non-conductive, high impact resistant HDPE, Century-Line® sleeves are lightweight and easily installed by one construction worker. They are available in 16 diameters ranging from 2" to 25" 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 (See page 9). 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 store 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 long tortuous 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 a prevailing tension which 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, alkalis 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 other plastics, 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.

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.

The system is the solution

Century-Line® sleeves are engineered to mate with Link-Seal® modular mechanical seals for a lifetime of leak-proof performance. PSI/Thunderline/Link-Seal® is your one-stop source for everything you need to effectively seal the annular space between pipes and concrete barriers through which they pass. Charts on the following pages provide Century-Line® sleeve model numbers for standard size pipe along with corresponding Link-Seal® modular seal model numbers.

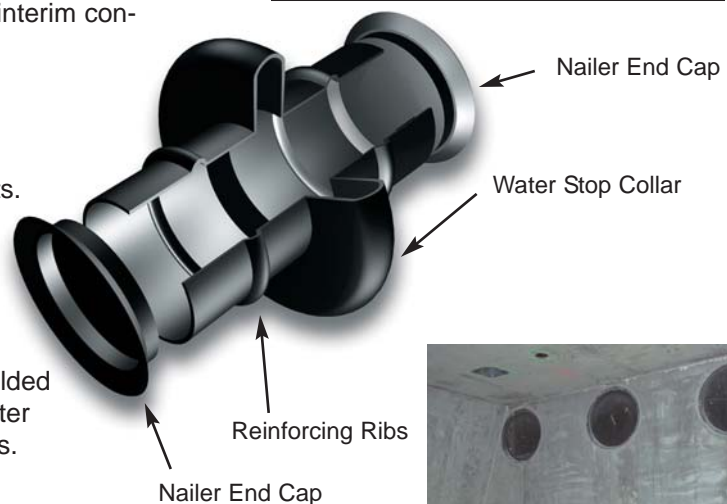


Century-Line® Sleeves Model CS (16" length)

Weights and Dimensional Data

MODEL	I.D. (In.)	I.D. (mm)	lbs.	Kg.
CS-2	1.98	50.3	0.70	0.32
CS-3	2.94	74.7	1.30	0.59
CS-3-1/2	3.38	85.9	1.50	0.68
CS-4	4.03	102.4	2.00	0.90
CS-5	5.14	130.6	2.80	1.27
CS-6	6.14	156.0	3.60	1.63
CS-8	8.21	208.5	4.80	2.18
CS-10	10.19	258.8	6.40	2.90
CS-12	12.26	311.4	7.20	3.27
CS-14	14.14	359.2	11.20	5.08
CS-16	16.18	411.0	12.00	5.44
CS-18	17.45	443.2	15.50	7.03
CS-20	19.12	485.6	17.50	7.94
CS-22	20.32	516.1	21.00	9.53
CS-24	22.76	578.1	22.00	9.98
CS-25	24.81	630.2	23.00	10.43

Weight Comparison	
WS Steel Sleeve WS-12-37-S-12 = 60 lbs.	Century-Line Sleeve CS-12-12 = 6.5 lbs

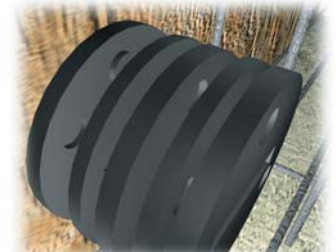


Cell-Cast® Hole Forming Disks

Cell-Cast® Hole Forming Disks are designed to produce large diameter holes in poured concrete structures. Molded from HDPE plastic, Cell-Cast® disks are lightweight and may be installed by one construction worker. They are available in a wide variety of diameters. Disks are either 3" or 4" thick allowing one to form a hole in 3" walls or thicker (except 5").



Weight Comparison	
WS Steel Sleeve WS-48-37-2-12 = 250 lbs.	Cell-Cast Disks CC-48-4(3) = 62 lbs.



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.
- Sized to work with Link-Seal Modular Seals.
- 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.

Flexibility

- 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.

WS Steel Wall Sleeves

WS Wall Sleeves are constructed from steel and available in a wide range of diameters and lengths.

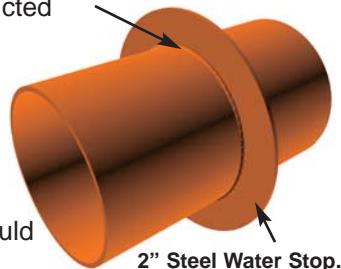
They are an excellent choice for installations where the Link-Seal® Modular Seal and WS sleeve assembly would be subject to extremely high temperatures or where fire seals are specified.

Note: WS sizes thru. 10" are schedule 40. WS sizes 12" and up have a standard .375" wall thickness. ws rolled sleeves (6" & 8") = .1875" wall thickness; (10") = .25" wall thickness.

How To Order

Please see Page 5 for ordering information on Link-Seal® modular seals and WS Steel Sleeves. For diameters larger than 24", contact PSI at 1-800-423-2410

Continuous Weld-Bead on both sides.



Note: Threaded rod must be requested when ordering. Specify TRA at the end of the ordering code.

Cell-Cast® Hole Forming Disks - Model CC

Weights and Dimensional Data

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

Model WS (12" length)

MODEL	I.D.	lbs.	Kg.
WS-2-15-S-12	2.07	5.53	2.51
WS-2-1/2-20-S-12	2.47	7.91	3.58
WS-3-21-S-12	3.07	9.93	4.51
WS-3-1/2-22-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
<u>ws</u> -6-18-S-12	6.25	14.82	6.72
WS-8-32-S-12	7.98	33.55	15.22
<u>ws</u> -8-18-S-12	8.25	21.94	9.95
WS-10-36-S-12	10.02	46.12	20.92
<u>ws</u> -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: Intermediate sleeves available, model information on-line in a pdf file.

Weight Comparison	
WS Steel Sleeve WS-12-37-S-12 = 60 lbs.	Century-Line Sleeve CS-12-12 = 6.5 lbs

Link-Seal® Modular Seal Sizing Charts for Standard Pipe

How to Order: Using the Provided Sizing Charts

1. Locate charts on pages 5-7 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 (Model CS, WS or Cast/Core bit drilled).
4. Determine Link-Seal modular seal model to be used (See information on page 2).
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, O, OS-316, T or FD/FS from page 2) 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. **[CS Example: CS-10-12"-1] [WS Example: WS-36-S-12"-1] [CC Example: CC-32-(3")2-(4")2]**

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

SDR-35 Gravity Sewer Pipe

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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-600-***	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 4 *** = 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.

Steel and Plastic Pipe with Same Outside Diameter (IPS)

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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
1/2	0.840	CS-2-*	LS-200-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-200-***	4
3/4	1.050	CS-3-*	LS-315-***	4	WS-2-1/2-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1	1.315	CS-3-*	LS-300-***	4	WS-2-1/2-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1-1/4	1.660	CS-3-*	LS-275-***	7	WS-3-21-S-*	LS-275-***	8	3.000	LS-275-***	8
1-1/2	1.900	CS-3-1/2-*	LS-300-***	5	WS-3-21-S-*	LS-200-***	7	4.000	LS-315-***	6
2	2.375	CS-4-*	LS-300-***	6	WS-3-1/2-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2-1/2	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
3-1/2	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 4 *** = 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.

Ductile Iron Pipe (DIPS, AWWA-C900, AWWA-C905, PVC Water Pipe)

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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-3-1/2-22-S*	LS-200-***	8	4.000	LS-300-***	6
2-1/4	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-475-***	8	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-44-1/2-37-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 4 *** = 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.

Copper Tubing

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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
1/2	0.625	CS-2*	LS-275-***	4	WS-2-15-S*	LS-275-***	5	2.000	LS-275-***	4
3/4	0.875	CS-2*	LS-200-***	4	WS-2-1/2-20-S*	LS-275-***	6	2.000	LS-200-***	4
1	1.125	CS-3*	LS-315-***	4	WS-2-1/2-20-S*	LS-275-***	6	3.000	LS-315-***	4
1-1/4	1.375	CS-3*	LS-275-***	8	WS-2-1/2-20-S*	LS-200-***	5	3.000	LS-300-***	4
1-1/2	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-3-1/2-22-S*	LS-275-***	10	4.000	LS-315-***	6
2-1/2	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 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Cast Iron Soil Pipe (Extra Heavy)

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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-3-1/2-22-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 *** = 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)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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 *** = 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.

Electrical Metallic Tubing (EMT) Thin Wall

Conduit Size (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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
1/2	0.706	CS-2*	LS-275-***	4	WS-2-15-S*	LS-275-***	5	2.000	LS-275-***	4
3/4	0.922	CS-2*	LS-200-***	4	WS-2-1/2-20-S*	LS-275-***	6	2.000	LS-200-***	4
1	1.163	CS-3*	LS-315-***	4	WS-2-1/2-20-S*	LS-275-***	6	3.000	LS-315-***	4
1-1/4	1.510	CS-3*	LS-275-***	8	WS-3-21-S*	LS-275-***	6	3.000	LS-275-***	8
1-1/2	1.740	CS-3-1/2-*	LS-300-***	5	WS-3-21-S*	LS-275-***	8	3.000	LS-200-***	6
2	2.197	CS-4*	LS-315-***	6	WS-3-1/2-22-S*	LS-275-***	10	4.000	LS-315-***	6
2-1/2	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 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Intermediate Metal Conduit (IMC)

Conduit Size (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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
1/2	0.815	CS-2*	LS-200-***	4	WS-2-15-S*	LS-275-***	5	2.000	LS-200-***	4
3/4	1.029	CS-2*	LS-200-***	4	WS-2-1/2-20-S*	LS-275-***	6	2.000	LS-200-***	4
1	1.290	CS-3-1/2-*	LS-315-***	5	WS-2-1/2-20-S*	LS-200-***	5	3.000	LS-300-***	4
1-1/4	1.638	CS-3*	LS-275-***	8	WS-3-21-S*	LS-275-***	8	3.000	LS-275-***	8
1-1/2	1.883	CS-3-1/2-*	LS-300-***	5	WS-3-21-S*	LS-200-***	7	4.000	LS-315-***	6
2	2.360	CS-4*	LS-300-***	6	WS-3-1/2-22-S*	LS-200-***	8	4.000	LS-300-***	6
2-1/2	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
3-1/2	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 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Rigid (RSC), Aluminum (ASC), Galvanized (GSC), Non-Metallic Conduit (NRC)

Conduit Size (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE			WS MODEL 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
1/2	0.840	CS-2*	LS-200-***	4	WS-2-15-S*	LS-275-***	5	2.000	LS-200-***	4
3/4	1.050	CS-3*	LS-315-***	4	WS-2-1/2-20-S*	LS-275-***	6	3.000	LS-315-***	4
1	1.315	CS-3*	LS-300-***	4	WS-2-1/2-20-S*	LS-200-***	5	3.000	LS-300-***	4
1-1/4	1.660	CS-3*	LS-275-***	7	WS-3-21-S*	LS-275-***	8	3.000	LS-275-***	8
1-1/2	1.900	CS-3-1/2-*	LS-300-***	5	WS-3-21-S*	LS-200-***	7	4.000	LS-315-***	6
2	2.375	CS-4*	LS-300-***	6	WS-3-1/2-22-S*	LS-200-***	8	4.000	LS-300-***	6
2-1/2	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
3-1/2	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

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.

Frequently Asked Questions

1) Q- Can lubricant be used to install Link-Seal® modular seals?

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

2) Q- How much angular pipe movement will Link-Seal modular seals allow and still maintain a seal?

A- 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 PSI for more information.

3) Q- Is it necessary to use WS or CS sleeves when installing Link-Seal modular seals?

A- WS model steel and CS model HPDE sleeves are specially designed for use with Link-Seal modular seals. When installed with Link-Seal modular seals these sleeves provide the best possible assurance of a quality wall penetration system.

4) Q- Sometimes when installing a belt of Link-Seal modular seals, it hangs loose on the pipe even though all my sizing calculations are correct. Why does it appear that I have too many links?

A- Link-Seal modular seals are basically sized to fit the opening, not the pipe. Use the assemblies suggested by the charts or calculation. It may not look right, but it will fit.

5) Q- Can Link-Seal modular seals be used for penetrations where the pipe is off-center to the opening?

A- Centering is very important.

Minimum Wall Thickness Required for Link-Seal® Modular Seals

MODEL NO.	MINIMUM WALL THICKNESS
LS-200/LS-275	2.25"
LS-300/LS-315	3.00"
LS-325/LS-340/LS-360	4.00"
LS-400/LS-410/LS-425/LS-475	5.00"
LS-500/LS-525/LS-575	5.00"
LS-600/650	6.00"

Contact PSI for more information.

6) Q- Is it necessary to use riser clamps, pipe saddles and hanger supports with Link-Seal modular seals?

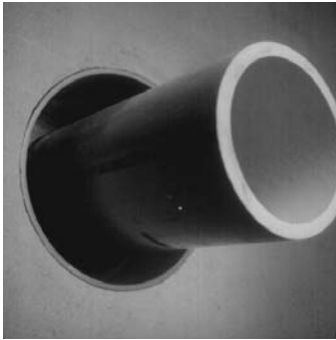
A- Designed as a penetration seal, Link-Seal modular seals are not intended to be a structural support. Standard pipe hanger practice should always be applied.

7) Q- What tools are required to install Link-Seal modular seals?

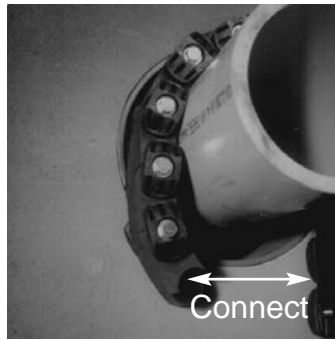
A- A socket or offset wrench with 5/16", 1/2", 3/8", 9/16", 3/4" & 1-3/16" sockets will handle all installations. A low speed (450 RPM or less) power tool is suggested for multiple installations to increase efficiency. (see next question)

8) Q- Can I use power tools when installing Link-Seal modular seals with 316 stainless steel bolts?

A- No, please see suggested installation techniques.



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.



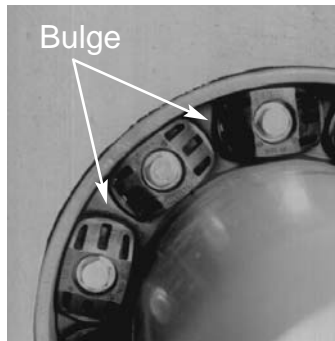
3. Check to be sure all bolt heads are facing the installer. Extra slack or sag is normal. Do not remove links if extra slack exists. **Note:** On smaller diameter pipe, links may need to be stretched.



4. Slide belt assembly into annular space. For larger size belts, start inserting Link-Seal modular seal assembly at the 6 O'Clock position and work both sides up toward the 12 O'Clock position in the annular space.



5. Using a hand socket or offset 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 PSI at 800-423-2410.**

Installation Notes: The Link-Seal® modular seal bolt heads are usually recessed below the wall opening or the edge of casing pipe and therefore a socket or offset wrench must be used. Hand Tools: Use 5/16" hex or #6 screwdriver for LS-200. 1/2" hex requires 3/8" drive socket wrench. 9/16" and 3/4" hex requires 1/2" drive socket wrench. (Tools not provided.)

**Always Wear Safety Equipment
When Installing Link-Seal® modular seals!**

Always Wear Safety Equipment When Using Link-Seal® Modular Seals!



Link-Seal® Modular Seal - Do's

1. Make sure pipe is centered.
2. Install the belt with the pressure plates evenly spaced.
3. Install the 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.



Link-Seal® Modular Seal - Don'ts

1. Don't Install the 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.



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.



3. Place the Century-Line® Sleeve on the end cap. When field cutting non standard CS sleeve lengths, the sleeve and endcaps total length should be one-fourth (1/4") longer than the thickness of the wall.



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

Always Wear Safety Equipment When Using Century-Line Sleeves & Link-Seal Modular Seals!

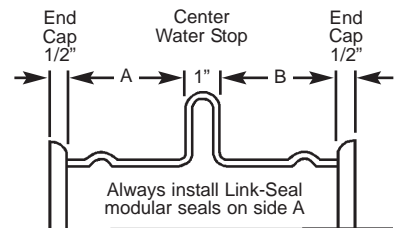


5. For additional stability, it's necessary to secure the sleeve with wire to the rebar. Insert the other end cap firmly, check that second end cap is positioned correctly, confirm sleeve length and close the form.

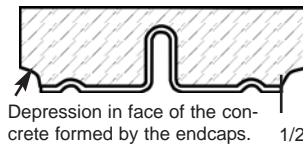


6. After the concrete is poured and cured, remove end caps with screw driver or crow bar. End caps may be replaced to protect sleeve until pipe penetration is made.

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.



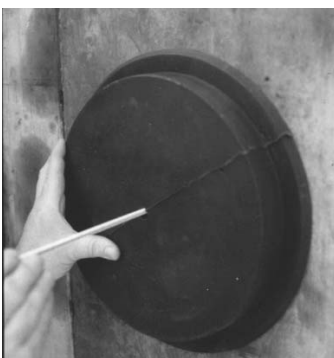
Wall Thickness	Cut From Left End	Dimension A	Cut From Right End	Dimension B
16"	0.0"	7.125"	0.0"	7.125"
14"	.875"	6.125"	.875"	6.125"
12"	1.875"	5.125"	1.875"	5.125"
10"	2.375"	4.625"	3.375"	3.625"
8"	2.375"	4.625"	5.375"	1.625"



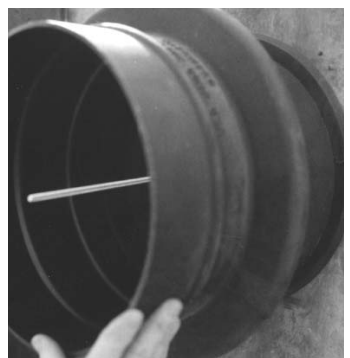
Notes:

- Example: To convert 16" to 12", cut 1.875" off each end.
- Endcaps leave 1/2" depression in face of concrete.
- On sleeves under 12" length, install Link-Seal® modular seal on the "long side" of the waterstop. (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-600 and LS-650 - the minimum sleeve length is 10". Follow the instructions in 3 above.

Alternative Technique 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 PSI.



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.

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

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.



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.



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.



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



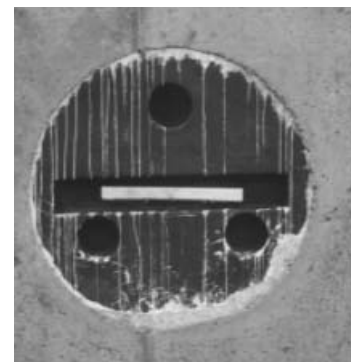
5. Additional disks are interlocked to accommodate finished wall thickness. Verify thickness is the same as wall.



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



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.



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



9. Chip excess concrete from the edge of the Cell-Cast® disk assembly and wall.



10. Remove disks by breaking out the entire assembly.



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

If you should have questions using the techniques provided, **Call PSI at 713-747-6948 or 800-423-2410.**

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

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

Always Wear Safety Equipment When Using Cell-Cast® Disks!



Warranty and Conditions 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 Pipeline Seal & Insulator, Inc. published specifications.

The limit of PSI'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 PSI.

Due to the widely varying conditions under which our products are used or installed, PSI 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.



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PSI-LSLCLCC-2/08

Modular/Mechanical Seal and Sleeve Specification

Typical Specification

1.0 Penetration Seals

Use a modular, mechanical seal, consisting of rubber links shaped to continuously fill the annular space between the pipe and the wall opening. Link-Seal® pressure plates shall be molded of glass reinforced nylon. Hardware shall be mild steel with a 60,000 psi minimum tensile strength and 2-part Zinc Dichromate coating per ASTM B-633 and Organic Coating, tested in accordance with ASTM B-117 to pass a 1,500-hour salt spray test (or 316 Stainless Steel). Coloration shall be throughout elastomer for positive field inspection. Each link shall have permanent identification of the size and manufacturer's name molded into the pressure plate and sealing element. The Contractor will submit to verify the modular seals are domestically manufactured at a plant with a current ISO-9001:2000 registration. Copy of ISO-9001:2000 registrations shall be a submittal item. PSI-Thunderline/ Link-Seal® Modular Seal as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX, or pre-approved equal.

2.0 Sleeves and Wall Openings

A. For diameters up to 24.81" install molded non-metallic high density polyethylene sleeves (HDPE) with integral hollow, molded water-stop ring four inches larger than the outside diameter of the sleeve itself. End caps and reinforcing ribs, domestically manufactured in an approved ISO-9001:2000 facility. Century-Line® Sleeve as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX., or engineered pre-approved equal.

B. For openings from 29.25" to 64.74" in diameter, use a modular hole-forming system consisting of interlocking HDPE plastic discs, domestically manufactured in an ISO-9001:2000 facility. The system shall provide a round hole in conformance with Link Seal® Modular Seal sizing data. Cell-Cast® Hole Forming Discs as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX, or engineer pre-approved equal.

Consideration of brands other than mentioned above shall be submitted to the Engineer for evaluation at least 10 days prior to bid due date and shall include evidence of a minimum of 25 years of successful in-service application of the mechanical seal, as well as current ISO-9001:2000 registration.