PSI ORIGINAL LINK-SEAL®
MODULAR SEALS

WWW.PSI-PRODUCTS.COM

GENERAL INFORMATION

Fields of Application

Link-Seal® Modular Seals are designed for a wide range of applications. Link-Seal® Modular Seals can be used wherever annular spaces need to be reliably sealed.
Main fields of application:

- Wall penetrations
- Tank embedding
- Casing pipe seals

Advantages

- High quality rubber parts ensure longest lifetime
- Potable water-, oil-, fuel-, solvent-, and high temperature-resistant versions available upon request
- Safe positioning inside walling
- Perfect even for retrofitting
- Easy and quick installation thanks to pre-assembled modules
- Choice of zinc-plated or S316 (V4A) stainless steel bolts
- Different colors for different rubber qualities
- Electrically isolating
- Hydrostatic sealing against pressing water
- Original product with longest lifetime experience on the market

The Principle

The radial expansion of the rubber ensures a permanently pressure tight and secure sealing of the annular space.

For very thin-walled plastic pipes e.g. pre-insulated, flexible and corrugated pipe systems, a PSI Compakt seal type FW is recommended.

Recommendation

The inside of the core drilling should be coated in order to protect the reinforcement. Therefore we recommend using core hole sealing respectively epoxy resin (see p. 31-34).

More content can be found at
www.psi-products.com

TECHNICAL DATA

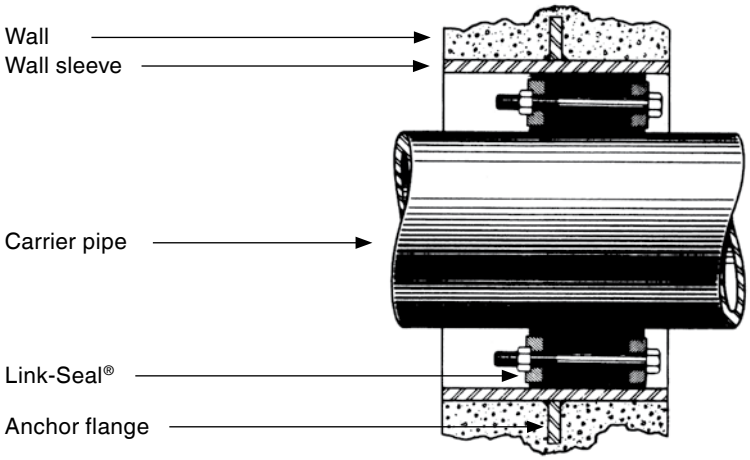
Material Properties

Temperature resistance	Standard version black Type T, grey Type O, green* KTW/W270**	-40 °C up to +80 °C from -55 °C to +204 °C from -40 °C to +70 °C from -40 °C to +80 °C
Oil, fuel and solvent resistant	Type O **(not UV-resistant)**	
Especially for plastic pipes	blue version	Shore 40 ± 5
Pressure tight	up to 5 bar (TÜV, Lloyd's Register) Original Link-Seal® up to 3 bar (Lloyd's Register) Original Link-Seal Type BC and BS316	
Electrical insulation	Dielectric strength 500 V/mm	

* LS 440 and LS 650 Nitrile rubber black with green marking. The values specified for the pressure tightness are valid at 23 °C. For different, in particular higher permanent operating temperatures, it might be necessary to fit an ejection safety device.

** The KTW/W270 version is used whenever the seal comes into contact with potable water.

Sectional drawing of a wall penetration sealed with Link-Seal® Modular Seals ring seal



Wall Sleeves

PSI offers wall sleeves in PVC, galvanized steel, S304 (V2A) or asbestos free fibre cement with an inner diameter of 50 mm up to 2350 mm.

TECHNICAL DATA

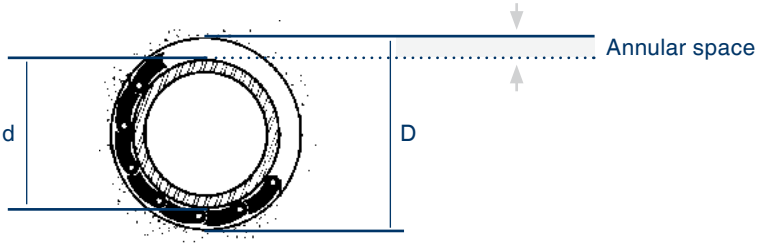
Type	Version	Sealing element	Pressure plates	Nuts and Bolts	Temperature range	Application
C	Standard	EPDM rubber black	fibre reinforced polyamide	strength class 8.8 galvanized	-40 °C up to +80 °C	General application in a normal atmosphere, water, or a humid environment. Suitable for electrical isolation and cathodic corrosion protection.
S 316	Standard stainless steel	EPDM rubber black	fibre reinforced polyamide	Material A 4-70 stainless steel	-40 °C up to +80 °C	High level of water-resistance, resistant against most inorganic substances (acids and alkalis) and most organic substances (acetic acid and acetone)
BC	Shore 40 ± 5	EPDM rubber blue	fibre reinforced polyamide	strength class 8.8 galvanized	-40 °C up to +80 °C	See type "C", but particular for plastic pipes
BS 316	Shore 40 ± 5	EPDM rubber blue	fibre reinforced polyamide	Material A 4-70 stainless steel	-40 °C up to +80 °C	See type "S 316", but particular for plastic pipes
O*	Oil resistant	Nitrile rubber green	fibre reinforced polyamide	strength class 8.8 galvanized	-40 °C up to +70 °C	Good resistance against oils, aromatic fuels, solvents and other mineral oil based products
OS 316*	Oil resistant	Nitrile rubber green	fibre reinforced polyamide	Material A 4-70 stainless steel	-40 °C up to +70 °C	Good resistance against oils, aromatic fuels, solvents and other mineral oil based products
KTW/ W270**	Shore 50 ± 5	EPDM rubber black, with a KTW stamp	fibre reinforced polyamide natural color	Material A 4-70 stainless steel	-40 °C up to +80 °C	Suitable for applications in potable water
T***	High and low temperature resistant	Silicon rubber grey	St 37 galvanized	strength class 8.8 galvanized	-55 °C up to +204 °C	No isolating properties, especially suitable for extreme temperatures

* LS 440 and LS 650 black nitrile rubber with green markings
** Elastomer tested in accordance with KTW and W270
*** available upon request

TYPE SELECTION

01. Which type?

The suitable Link-Seal® for the application results from the thickness of the annular space between casing pipe (wall sleeve/core drilling) and media pipe. The perfect Link-Seal® is smaller than the annular space in a non-tensioned condition and larger in tensioned condition. The annular space is calculated as follows:



Casing pipe inside (D) - **Carrier pipe outside (d)** = **Annular space**

2

The calculated value must lie between the values in the table for “non-tensioned condition” and “tensioned condition”. Simply enter the calculated value in the right place in the “annular space thickness“ column and determine the right type

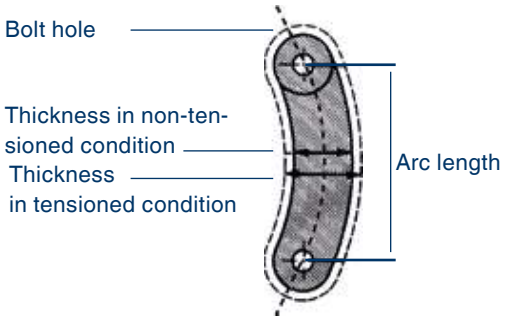
Type	Thickness without tension	Annular space is	Thickness with tension	Required wall thickness
LS 200	12.7 mm		15.7 mm	75 mm
LS 265	16.0 mm		20.0 mm	75 mm
LS 275	16.0 mm		20.0 mm	75 mm
LS 300	18.0 mm		22.5 mm	100 mm
LS 310	18.0 mm		22.5 mm	100 mm
LS 315	21.1 mm		26.0 mm	100 mm
LS 325	23.2 mm		30.0 mm	120 mm
LS 340	25.5 mm		34.0 mm	120 mm
LS 360	32.0 mm		42.0 mm	120 mm
LS 400	36.3 mm		46.0 mm	140 mm
LS 410	37.0 mm		48.5 mm	140 mm
LS 425	28.4 mm		37.0 mm	140 mm
LS 440	44.0 mm		55.0 mm	140 mm
LS 475	41.3 mm		48.5 mm	140 mm
LS 500	60.3 mm		71.5 mm	150 mm
LS 525	55.4 mm		63.5 mm	150 mm
LS 575	48.0 mm		58.0 mm	150 mm
LS 615[3]	81.6 mm		98.0 mm	150 mm
LS 625	83.0 mm		98.0 mm	150 mm
LS 650	69.0 mm		84.0 mm	150 mm
LS 700	95.0 mm		110.0 mm	200 mm

Type:

TYPE SELECTION

02. How many elements?

After the type definition the required number of elements needs to be calculated. Determine the bolt circle by using the formula below and divide the value by the arc length of the chosen type (see table). The result, rounded up or down, shows the required number of elements.



Casing pipe inside (D) + **Carrier pipe outside (d)** / **2** **x 3.14** = **Bolt hole** : **Arc length** = **Number**

Type	Arc length	Outer diameter of Pipe	Outer diameter of Pipe	Minimum no. of Segments
LS 200	30.0 mm	from 21.3 mm	to 323.9 mm(1	4
LS 265	41.0 mm	from 50.0 mm	to 406.4 mm(1	5
LS 275	25.6 mm	from 0.0 mm	to 90.0 mm	4
LS 300	41.0 mm	from 44.5 mm	to 250.0 mm	5
LS 310	57.5 mm	from 60.3 mm	to 406.4 mm(2	5
LS 315	38.4 mm	from 37.0 mm	to 315.0 mm	5
LS 325	79.8 mm	from 133.0 mm	to 711.0 mm	6
LS 340	41.4 mm	from 30.0 mm	to 323.9 mm	4
LS 360	55.1 mm	from 40.0 mm	to 406.4 mm	5
LS 400	93.1 mm	from 139.7 mm	to 1220.0 mm	6
LS 410	67.6 mm	from 60.3 mm	to 323.9 mm	5
LS 425	93.1 mm	from 144.0 mm	to 1220.0 mm	6
LS 440	99.0 mm	from 139.7 mm	to 1220.0 mm	6
LS 475	68.6 mm	from 60.3 mm	to 1220.0 mm	5
LS 500	99.8 mm	from 100.0 mm	to 1220.0 mm	5
LS 525	99.8 mm	from 133.0 mm	to 1220.0 mm	6
LS 575	79.5 mm	from 130.0 mm	to 1220.0 mm	5
LS 615(3	155.5 mm	from 219.0 mm	to 3000.0 mm	6
LS 625	106.7 mm	from 133.0 mm	to 2000.0 mm	5
LS 650	106.7 mm	from 160.0 mm	to 2000.0 mm	7
LS 700	155.5 mm	from 219.6 mm	to 3000.0 mm	6

IMPORTANT:

(1
From an outer diameter of DA 150 we recommend to enlarge the borehole to be able to use at least Link-Seal® Type LS 310.

(2
From an outer diameter of DA 300 we recommend to enlarge the borehole to be able to use at least Link-Seal® Type LS 325.

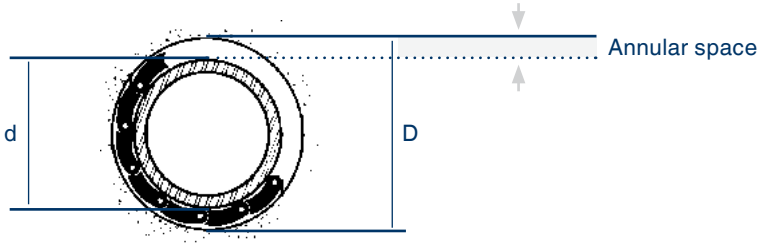
(3
The LS 615 is not suitable for PE pipes.

Quantity:

TYPE SELECTION

01. Which type?

The Link-Seal® ring seal suitable for the application depends on the annular distance between the casing pipe (wall sleeve) and carrier pipe. The optimal type is smaller than the annular space when in free state, and larger when in expanded state. The annular space is calculated from:



Casing pipe inside (D) - **Carrier pipe outside (d)** = **Annular space**

2

The calculated value must lie between the values in the table for "thickness in free state" and "thickness expanded". Simply enter the calculated value in the right place in the "annular space thickness" column and determine the type.

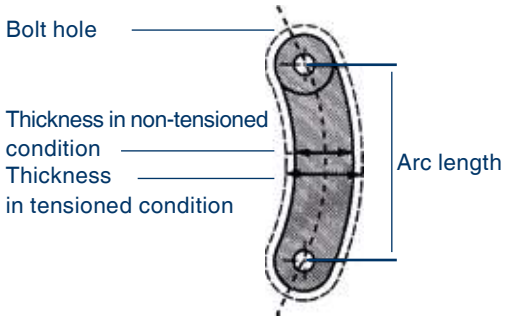
Type	Thickness without tension	Annular space is	Thickness with tension	Required wall thickness
LS 200	12.7 mm		15.7 mm	70 mm
LS 275	16.0 mm		20.0 mm	70 mm
LS 300	17.5 mm		22.5 mm	100 mm
LS 315	20.5 mm		26.0 mm	100 mm
LS 325	24.0 mm		30.0 mm	120 mm
LS 340	24.5 mm		34.0 mm	120 mm
LS 360	31.5 mm		42.0 mm	120 mm
LS 400	35.5 mm		46.0 mm	140 mm
LS 410	36.5 mm		48.5 mm	140 mm
LS 425	28.6 mm		37.0 mm	140 mm
LS 440	44.0 mm		55.0 mm	140 mm
LS 475	41.3 mm		48.5 mm	140 mm
LS 500	61.0 mm		71.5 mm	150 mm
LS 525	53.0 mm		63.5 mm	150 mm
LS 575	48.0 mm		58.0 mm	150 mm
LS 625	83.0 mm		98.0 mm	150 mm
LS 650	69.0 mm		84.0 mm	150 mm

Type:

TYPE SELECTION

02. How many elements?

After the type definition the required number of elements needs to be calculated. Determine the bolt circle by using the formula below and divide the value by the arc length of the chosen type (see table). The result, rounded up or down, shows the required number of elements.



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Type	Arc length	Outer diameter of Pipe	Outer diameter of Pipe	Minimum no. of segments
LS 200	30.5 mm	from 21.3 mm	to 323.9 mm(1	4
LS 275	25.0 mm	from 0.0 mm	to 90.0 mm	4
LS 300	40.5 mm	from 44.5 mm	to 406.4 mm(2	5
LS 315	38.4 mm	from 37.0 mm	to 315.0 mm	5
LS 325	79.0 mm	from 133.0 mm	to 711.0 mm	6
LS 340	42.0 mm	from 30.0 mm	to 323.9 mm	4
LS 360	55.5 mm	from 40.0 mm	to 406.4 mm	5
LS 400	93.0 mm	from 139.7 mm	to 1220.0 mm	6
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LS 440	99.0 mm	from 139.7 mm	to 1220.0 mm	6
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LS 500	99.0 mm	from 100.0 mm	to 1220.0 mm	5
LS 525	99.0 mm	from 133.0 mm	to 1220.0 mm	6
LS 575	79.0 mm	from 130.0 mm	to 1220.0 mm	5
LS 625	106.7 mm	from 133.0 mm	to 2000,0 mm	5
LS 650	106.7 mm	from 160.0 mm	to 2000.0 mm	7

Quantity:

IMPORTANT:

(1 From an outer diameter of DA 150 we recommend to enlarge the borehole to be able to use at least Link-Seal® Type LS 300.

(2 From an outer diameter of DA 150 we recommend to enlarge the borehole to be able to use at least Link-Seal® Type LS 325.