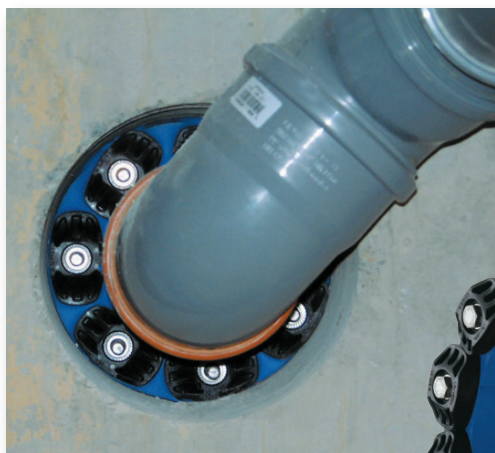




PSI Link-Seal® Modular Seals



General Information • Technical Data • Selection Guide • Installation Instruction

EXCLUSIVE AGENT:



中華五金有限公司
CHUNG WAH METAL CO., LTD.

Link-Seal® Modular Seals

General Information



Fields of Application

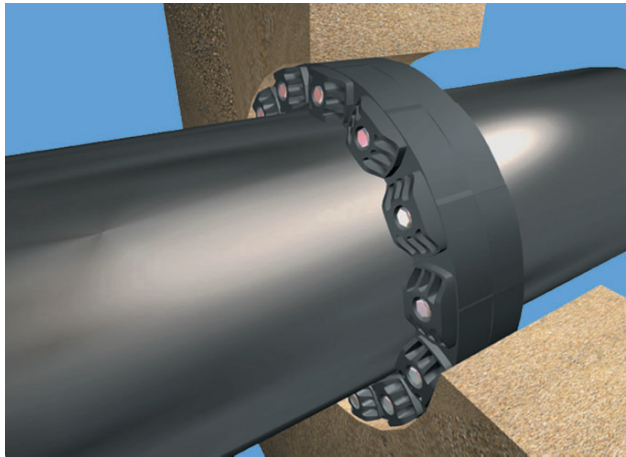
Link-Seal® Modular Seals are designed for multiple applications. Link-Seal® Modular Seals can be used wherever annular spaces must be sealed reliably. Main fields of application:

- Wall ducts
- Tank embedding
- Protective pipe seals

Advantages

- Solid rubber parts ensure a long life
- Oil-, fuel-, solvent-, and high temperature-resistant versions available on request
- Safe positioning inside walling
- Perfect even for retrofitting
- Easy and quick installation thanks to pre-assembled modules
- Choice of zinc-plated or V4A stainless steel screws
- Absorption of shock, noise and vibration stresses and strains
- Different colours for different rubber qualities
- Electrically isolating
- Hydrostatic sealing against pressing water

The principle



The radial expansion of the rubber ensures hydrostatic pressure tightness.

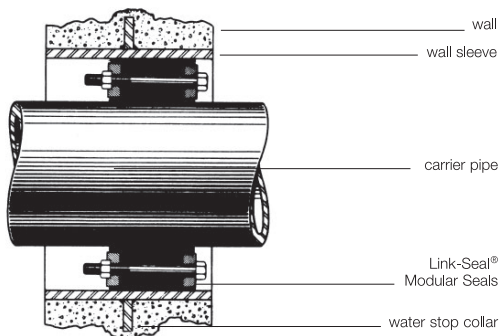
For very thin-wall plastic pipes e.g. flexible preinsulated- or wave-shaped pipes, a PSI Kompakt seal type FW is recommended.

Material Properties

Temperature resistance	Standard version black Type T, grey Type O, green*	-40° C up to +80° C -55° C up to +204° C -40° C up to +70° C
Oil, jet fuel resistance	Type O (not UV-resistant)	
Special version for plastic pipes	blue EPDM extra soft	Shore 40 ± 5
Pressure tightness	up to 5 bar (TÜV and Lloyd's registered) Original Link-Seal® up to 3 bar (Lloyd's registered) Original Link-Seal® types BC and BS316	
Dielectric strength	500 V/mm	

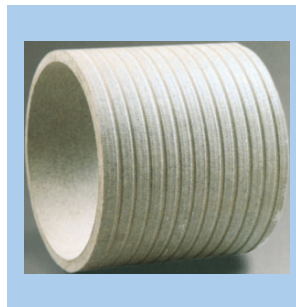
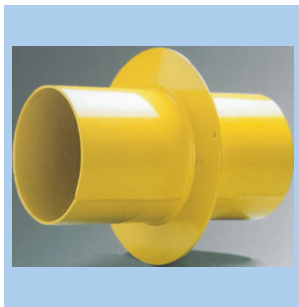
*LS 440 and LS 650 Nitrile rubber black with green marking
The values specified for the pressure tightness are valid at 23°C.
For other, above all, higher permanent operating temperatures, an ejection safety device should, if necessary, be fitted.

Sectional drawing of a Link-Seal® Modular Seals



Wall sleeve

PSI offers wall sleeves in PVC, carbon steel galvanised, stainless steel or asbestos free fibre cement.



Link-Seal® Modular Seals

Technical Data



Type	Version	Sealing Element	Pressure Plates	Bolts and Nuts	Temperature Range	Application
C	Standard	EPDM-rubber black	Reinforced nylon polymer	Carbon steel zinc dichromated	-40° C to + 80° C	General application under normal atmosphere in water or a humid environment, Suitable for electrical insulation and cathodic protection.
S 316	Standard stainless steel	EPDM-rubber black	Reinforced Nylon Polymer	stainless steel	-40° C to + 80° C	High resistance against water, most other inorganic substances (acids and alkalis) and against most organic substances (e.g. acetic, acid, acid, acetone).
B	Shore 40±5	EPDM-rubber blue	Reinforced Nylon Polymer	Carbon steel zinc dichromated	-40° C to + 80° C	See type C, especially for plastic pipes
BS 316	Shore 40±5	EPDM-rubber blue	Reinforced Nylon Polymer	stainless steel	-40° C to + 80° C	See type S 316, especially for plastic pipes
O*	Oil resistant	NITRILE-rubber green	Reinforced Nylon Polymer	Carbon steel zinc dichromated	-40° C to + 70° C	Good resistance against oil, aromatic fuels, solvents and other mineral oil based products.
OS 316*	Oil resistant	NITRILE-rubber green	Reinforced Nylon Polymer	stainless steel	-40° C to + 70° C	Good resistance against oil, aromatic fuels, solvents and other mineral oil based products.
KTW/ W270**	Shore 50±5	EPDM-rubber black incl KTW-stamp	Reinforced Nylon Polymer blue	stainless steel	- 40° C to + 80° C	Appropriate for potable water applications
T***	High and low temperature	Silicone rubber grey	St 37 zinc dichromated	Carbon steel zinc dichromated	- 55° C to + 204° C	No insulating properties, especially suitable for extreme temperatures.

*LS 440 and LS 650 Nitrile rubber black with green marking

** Elastomer tested in accordance with KTW and W270

***on request

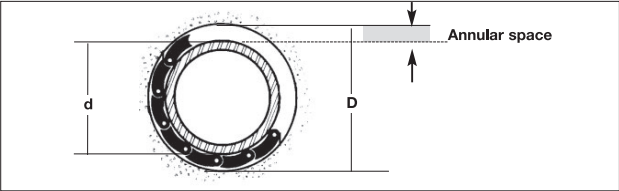
Link-Seal® Modular Seals

Selection/Order Submittal Sheet



1. Which type is suitable?

Calculate the annular space. The annular space is half the difference between your pipe size and the wall opening diameter. Use the following formula:



Wall opening I.D. (D)

-

Actual Pipe O.D. (d)

=

Annular space

2

From the adjacent chart, select the size closest to the annular space calculated in step1. You have selected the correct size Link-Seal® modular seal if the free state thickness is less than the annular space and the expanded state thickness is greater than the annular space.

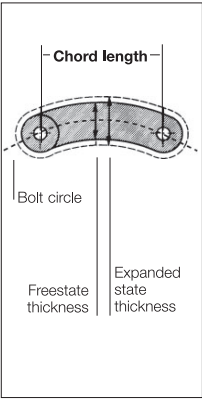
Type	Free state thickness	Annular space	Expanded state thickness	Necessary wall thickness
LS 200	12.7 mm		15.7 mm	75 mm
LS 265	16.0 mm		20.0 mm	75 mm
LS 275	16.0 mm		20.0 mm	75 mm
LS 300	18.0 mm		22.5 mm	100 mm
LS 310	18.0 mm		22.5 mm	100 mm
LS 315	21.1 mm		26.0 mm	100 mm
LS 325	23.2 mm		30.0 mm	120 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 ^a	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	150 mm

Type:

2. How many elements do you need?

Calculate the number of elements required to fit around the pipe and seal the annular space. Determine the bolt circle for Link-Seal® modular seal assembly by using the formula below.

Type	Chord length	Carrier pipe O.D. min.	Carrier pipe O.D. max.	Min. no. of Segm.
LS 200	30.0 mm	from 21.3 mm	up to 323.9 mm ^a	4
LS 265	41.0 mm	from 50.0 mm	up to 406.4 mm ^a	5
LS 275	25.6 mm	from 0.0 mm	up to 90.0 mm	4
LS 300	41.0 mm	from 44.5 mm	up to 250.0 mm	5
LS 310	57.5 mm	from 60.3 mm	up to 406.4 mm ^a	5
LS 315	38.4 mm	from 37.0 mm	up to 315.0 mm	5
LS 325	79.8 mm	from 133.0 mm	up to 711.0 mm	6
LS 340	41.4 mm	from 30.0 mm	up to 323.9 mm	4
LS 360	55.1 mm	from 40.0 mm	up to 406.4 mm	5
LS 400	93.1 mm	from 139.7 mm	up to 1220.0 mm	6
LS 410	67.6 mm	from 60.3 mm	up to 323.9 mm	5
LS 425	93.1 mm	from 144.0 mm	up to 1220.0 mm	6
LS 440	99.0 mm	from 139.7 mm	up to 1220.0 mm	6
LS 475	68.6 mm	from 60.3 mm	up to 1220.0 mm	5
LS 500	99.8 mm	from 100.0 mm	up to 1220.0 mm	5
LS 525	99.8 mm	from 133.0 mm	up to 1220.0 mm	6
LS 575	79.5 mm	from 130.0 mm	up to 1220.0 mm	5
LS 615 ^a	155.5 mm	from 219.0 mm	up to 3000.0 mm	6
LS 625	106.7 mm	from 133.0 mm	up to 2000.0 mm	5
LS 650	106.7 mm	from 133.0 mm	up to 2000.0 mm	5
LS 700	155.5 mm	from 219.6 mm	up to 3000.0 mm	6



¹ As from O.D. 150 mm we recommend to enlarge your coredrill to install Link-Seal® type 310.
² As from O.D. 300 mm we recommend to enlarge your coredrill to install Link-Seal® type 325.
³ LS 615 NOT suitable for plastic pipes.

Wall Opening I.D. (D)

+

Pipe Diameter O.D. (d)

x 3.14 =

Bolt Circle

:

Chord length

=

Number

2

Number:

Link-Seal® Modular Seals

Selection/Order Submittal Sheet



3. Which version is suitable?

Please determine the rubber and bolt quality suitable for your application. The relevant abbreviations are shown in the following chart.

Version:

Rubber	Bolts/nuts	
	galvanised	stainless steel
Standard EPDM-rubber (black)	C	S 316
Oil resistant Nitrile rubber (green)*	O	OS 316
Temperature resistant Silicone rubber (grey)	FS	-
Temperature resistant Silicone-rubber (grey)	T	-
EPDM rubber (blue, Shore 40 ± 5)	B	BS 316

*LS 440 and LS 650 black nitrile rubber with green markings

4. Correct article number?

Please select the correct article number corresponding to your choice.



Type	C	B	S 316	O	BS 316	OS 316	T
LS 200	2-025-00001	2-025-00300	2-025-00139	2-025-00040	2-025-00340	2-025-00156	2-025-00080
LS 265	2-025-00017	2-025-00309	2-025-00186	-	2-025-00349	-	-
LS 275	2-025-00010	2-025-00301	2-025-00140	2-025-00039	2-025-00341	2-025-00150	2-025-00088
LS 300	2-025-00002	2-025-00302	2-025-00141	2-025-00041	2-025-00342	2-025-00151	2-025-00081
LS 310	2-025-00018	2-025-00310	2-025-00187	-	2-025-00359	-	-
LS 315	2-025-00012	2-025-00303	2-025-00146	2-025-00049	2-025-00343	2-025-00157	2-025-00089
LS 325	2-025-00003	2-025-00304	2-025-00142	2-025-00042	2-025-00344	2-025-00152	2-025-00082
LS 340	2-025-00004	2-025-00058	2-025-00143	2-025-00050	2-025-00064	2-025-00055	2-025-00070
LS 360	2-025-00008	2-025-00059	2-025-00144	2-025-00051	2-025-00065	2-025-00056	2-025-00071
LS 400	2-025-00009	2-025-00305	2-025-00172	2-025-00043	2-025-00345	2-025-00153	2-025-00072
LS 410	2-025-00011	2-025-00060	2-025-00173	2-025-00052	2-025-00066	2-025-00161	2-025-00073
LS 425	2-025-00005	2-025-00306	2-025-00174	2-025-00044	2-025-00346	2-025-00154	2-025-00084
LS 440	2-025-00015	-	2-025-00176	2-025-00257	-	2-025-00258	-
LS 475	2-025-00006	2-025-00307	2-025-00145	2-025-00045	2-025-00347	2-025-00155	2-025-00085
LS 500	2-025-00007	2-025-00308	2-025-00147	2-025-00046	2-025-00348	2-025-00158	2-025-00086
LS 525	2-025-00013	2-025-00061	2-025-00148	2-025-00047	2-025-00067	2-025-00159	2-025-00087
LS 575	2-025-00014	2-025-00062	2-025-00149	2-025-00053	2-025-00068	2-025-00160	2-025-00074
LS 615	2-025-00215	-	2-025-00185	2-025-00220	-	2-025-00265	-
LS 625	-	2-025-00260	-	-	2-025-00261	-	-
LS 650	2-025-00016	-	2-025-00177	2-025-00255	-	2-025-00259	-
LS 700	-	2-025-00470	-	-	2-025-00471	-	-

Article no.:

Link-Seal® modular seal calculation online:
www.psi-products.de

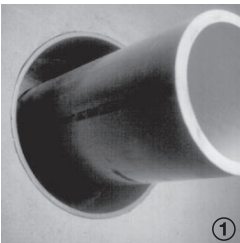
5. Order submittal sheet

Quantity	Type	Version	Article no.	Total

For further information please contact PSI GmbH. We apply our General Terms and Conditions to all orders. Subject to technical changes. The user must ensure that the chosen product is suitable for his application. Our warranty is limited to the replacement of defective material. For prices see our current price list.

Link-Seal® Modular Seals

Installation Instruction



Centre the pipe, cable or conduit in wall opening or casing. Make sure the pipe is adequately supported at both ends. Link-Seal® modular seals are not intended to support the weight of the pipe.



Loosen rear pressure plate with nut just enough so that the links move freely towards and away from each other. Connect both ends of the belt.



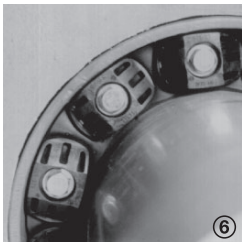
Check to be sure bolt heads are facing the installer. Sagging is normal. Do not remove links in case of sagging. It may be necessary for smaller pipes that the belt must be stretched when installing!



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.



Start at 12 o'clock position. Tighten every bolt in a clockwise manner. Tighten only by hand!



Do not tighten any bolt more than 4 turns at a time. Continue in a clockwise manner. Make 2 or 3 more passes at 3 turns per bolt until links have been uniformly compressed and the max. torque (see table) is reached.



Repeat tightening after approx. 2 hours. Especially the Link-Seal® types LS 500 up to LS 700 have to be tightened several times depending on the installation conditions (annular space, temperature, etc.).

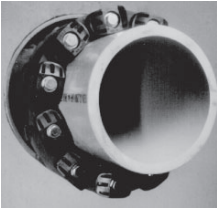
Max. torque at 23°C			Type
for types C, S316 rubber black O and OS316 rubber green type T rubber grey Shore 50 ± 5°	for types BC and BS316 rubber blue, Shore 40° ± 5°	for types LS version KTW/W270 Shore 50° ± 5°	
2 Nm	2 Nm	2 Nm	LS 200 to LS 275
8 Nm	6 Nm	8 Nm	LS 300 to LS 360
27 Nm	20 Nm	27 Nm	LS 400 to LS 475
65 Nm	50 Nm	65 Nm	LS 500 to LS 575
110 Nm	65 Nm	–	LS 615
65 Nm	50 Nm	65 Nm	LS 625 to LS 700

Link-Seal® Modular Seals

Installation Instruction

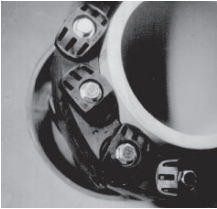


Please consider the right equipment when you install Link-Seal®



Link-Seal® modular seals – Do's

1. Make sure pipe is centred.
2. Install the belt with the pressure plates evenly spaced.
3. Install the belt and pay attention to the fact that the pressure plates are evenly aligned.
4. Check to make sure pipe is supported properly during backfill operations.
5. Make sure seal assembly and pipe surfaces are free from dirt.



Link-Seal® modular seals – Don'ts

1. Do not fit the belt as long as the pressure plates are not aligned.
2. Don't install Link-Seal® modular seals with spiral pipes.
3. Don't torque each bolt completely before moving on to the next.
4. Do not use high speed power tools.
5. Please note that the Link-Seal® is not a fixing point.

PSI warranty is limited to the replacement of faulty material. The user himself is responsible for checking if the products he is using are suitable for his application.

Original Link-Seal® Selection Table

Selection for core drilled holes



core drilled holes	LS		Selected seal	
	Medium pipe Ø _a [mm]		Quantity of elements	Type LS ...
50	10	- 18	4	275
	40	- 48	8	275
80	48	- 53	7	200
	32	- 45	5	340
100	48	- 57	6	315
	55	- 64	6	300
	62	- 68	6	265
	68	- 75	9	200
125	42	- 61	5	360
	58	- 74	7	340
	73	- 82	8	315
	80	- 89	8	300
	87	- 93	8	265
	95	- 100	12	200
150	53	- 67	5	475
	58	- 76	5	410
	66	- 82	6	360
	82	- 99	9	340
	105	- 114	7	310
	112	- 118	10	265
	118	- 125	14	200
200	90	- 104	6	575
	103	- 117	7	475
	103	- 124	7	410
	116	- 133	9	360
	132	- 149	13	340
	155	- 164	10	310
250	134	- 154	8	575
	140	- 160	6	440
	153	- 163	9	475
	158	- 177	7	400
	166	- 186	12	360
	178	- 192	7	425
	190	- 203	9	325
	206	- 212	12	310
300	157	- 173	7	500
	184	- 204	10	575
	190	- 210	8	440
	208	- 226	12	410
	216	- 236	15	360
	234	- 244	20	340
	240	- 253	11	325
	255	- 264	15	310
	182	- 210	8	650
350	207	- 229	9	500
	223	- 239	9	525
	234	- 254	12	575
	253	- 267	14	475
	253	- 274	14	410
	266	- 286	18	360
	258	- 274	10	400
	276	- 293	11	425
	286	- 296	24	340
	294	- 303	13	325
	307	- 314	18	310

Original Link-Seal® Selection Table

Selection for core drilled holes



core drilled holes	LS		Selected seal	
	Medium pipe Ø _a [mm]		Quantity of elements	Type LS ...
400	204	- 234	9	625
	234	- 255	9	650
	264	- 279	10	500
	273	- 289	11	525
	284	- 304	14	575
	292	- 310	11	440
	303	- 317	16	475
	308	- 327	12	400
	326	- 341	12	425
	340	- 353	15	325
450	230	- 260	7	700
	254	- 265	10	625
	266	- 286	7	615
	285	- 311	11	650
	307	- 329	12	500
	327	- 339	12	525
	335	- 354	16	575
	345	- 356	13	440
	355	- 367	19	475
	358	- 377	14	400
	376	- 393	14	425
	375	- 386	24	360
	390	- 403	17	325
500	280	- 310	8	700
	304	- 334	12	625
	335	- 359	12	650
	357	- 379	14	500
	373	- 389	14	525
	385	- 400	18	575
	390	- 410	14	440
	408	- 427	15	400
	426	- 443	16	425
	440	- 453	19	325
600	380	- 410	10	700
	404	- 434	15	625
	436	- 457	15	650
	457	- 479	17	500
	473	- 489	17	525
	490	- 503	17	440
	503	- 509	25	475
	508	- 527	19	400
	526	- 543	19	425
	540	- 553	23	325

All other sizes on request!



Available in these versions:

- Type C: Rubber EPDM (black standard), screws galvanized
- Type BC: Rubber EPDM (blue, extra soft for plastic pipe), screws galvanised
- Type S316: Rubber EPDM (black), screws S316 (V4A) stainless steel
- Type BS316: Rubber EPDM (blue, extra soft for plastic pipe), screws S316 (V4A) stainless steel
- Type O: Rubber Nitrile (green, oil-resistant), screws galvanized.
- Type OS316: Rubber Nitrile (green, oil-resistant), screws S316 (V4A) stainless steel.



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. P-13097
This Certificate consists of 3 pages

This is to certify that the
Deck/Bulkhead Penetration
with type designation
LINK-SEAL

Manufactured by
Pipeline Seal and Insulator Inc.
Houston, United States

It found to comply with
Det Norske Veritas' Rules for Classification of Ships

Application
Pipe penetrations for use above freeboard deck, Not in fire divisions.

Temp. range:	See certificate
Max. work press:	See certificate
Sizes:	See certificate

Place and date
Havik, 2009-03-26
for DET NORSKE VERITAS AS

Local Office
DNV Houston

This Certificate is valid until
2012-12-31

Notar: This Certificate is subject to terms and conditions available on the Det Norske Veritas website. No additional charge to design or construction may render this Certificate invalid. The validity date refers to the Type Approval Certificate and not to the approval of equipment or installation.

DET NORSKE VERITAS AS - VERITASVEIEN 1, 1322 HØVIK, NORWAY - TEL: (+47) 67 97 89 00 - FAX: (+47) 67 97 89 11
Form No. 25.004 Issue: January 98 Page 1 of 3



BESCHEINIGUNG

Prüfbericht: DDA4/118/94

Auftraggeber: PSI Products GmbH
Ulrichstraße 25
72116 Mössingen

Hersteller: PSI Pipeline Seal and Insulator, Inc.
6525 Gofoth Street
Houston, Texas 77021
U.S.A.

Gegenstand: Ringraum-Dichtung in Modul-Bauweise

Der o.g. Gegenstand wurde unter Berücksichtigung technischer Regeln geprüft und die qualitätsichernden Maßnahmen für die Fertigung begutachtet.

Der Geltungsbereich mit allen Einzelheiten ist in dem Prüfbericht enthalten.

Der Hersteller ist berechtigt, an dem o.g. Gegenstand das Bauteilkennzeichen

TÜV - SW 007 - 94

anzubringen.

Mannheim, den 24. September 2003
BB-DOB-MAN/jjo

TÜV BAYERN HESSEN SACHSEN SÜDWEST E.V.
Bau und Betrieb
Dampf- und Drucktechnik
Kompetenzzentrum Druckbehälteranlagen
Die Sachverständige

Dr. rer. oec. John
Dr.-Ing. John



Project: -

Client: PSI Products GmbH
Ulrichstraße 25
72116 Mössingen, Germany

Clients Order Number: -

Inspection Dates
First: 18 August 2004

Date: 06 September 2004
Order Status: vollständig
Final: 18 August 2004

This certificate is issued to the above named customer, who hereby to certify, that the undersigned Inspector of this company has visited the factory at the above named address and has seen, and checked the drawings of the following Ringraumdichtungen to be certified.

Link-Seal in Modulbauweise
Modell LS der Materialtypen C, D und BC
Modell S-LS des Materialtyps C

Diese Tests wurden entsprechend der Beschreibung von PSI Products GmbH "Druckprüfung für die Ringraumdichtung Typ Link-Seal in Modulbauweise" durchgeführt. Das Datum der Prüfbeschreibung ist der 18. August 2004.

Die Ergebnisse werden in dem Bericht genannt.

Schlussfolgerung:
Die Schlussfolgerung der Prüfungen ist, dass die oben genannten Dichtungen für den tatsächlichen Druck, so als in der Tabelle angegeben, unabhängig sind:

Link-Seal Typ	Tatsächlicher Druck
LS 200-650 Type C	5 bar
LS 200-650 Type BC	3 bar
LS 200-650 Type D	5 bar
S-LS 100-650 Type C	3 bar


 A.H. Zempst
 Surveyor to Lloyd's Register EMEA
 A member of the Lloyd's Register Group

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.



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...

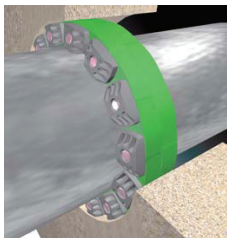
Link-Seal modular seals are manufactured in an ISO 9001:2000 certified facility.

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.

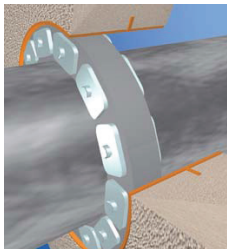


Pre-cast or Cored Wall Openings in Combination with Nitrile (green) Link-Seal® Modular Seals



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.



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.

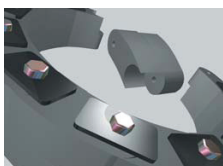
Pressure Plates: Reinforced Nylon Polymer

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.



Link-Seal® Modular Fire Seals

1-Hour Factory Mutual Approved

Link-Seal® modular fire seals provide up to one-hour protection against flames, smoke, gases and water, even when exposed to temperatures up to 1900°F. (1038°C.).

These seals are a proprietary Link-Seal® modular seal design formulated from Hi-Temp silicone and incorporate special designed carbon steel pressure plates. For installations from 1/2" to 120" diameter Link-Seal® modular fire seals are used with WS wall sleeves or core bit drilled openings.

Model T

One Hour FM Approved
Approved by Factory Mutual as a 1-hour fire stop in accordance with ASTM E814-81 Fire & Hose Stream Criteria Listing #J.I.OH4A5.AC

Model FS or FD

These are essentially two T Models back-to-back for added protection. In Model FS, a tie rod (nut coupler) tightens both seals simultaneously - for use when only one side of a hole is accessible.

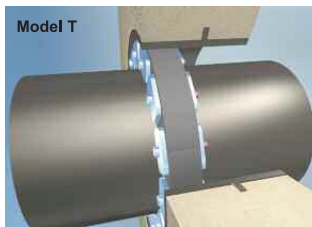
Minimum Wall & Floor Thickness for Model T Fire Rated Seals

LINK-SEAL® MODEL	MINIMUM WALL OR FLOOR THICKNESS
LS-200-T	2.25" (57 mm)
LS-275-T	2.25" (57 mm)
LS-300-T	3.00" (76 mm)
LS-315-T	3.00" (76 mm)
LS-325-T	4.00" (102 mm)
LS-340-T	4.00" (102 mm)
LS-360-T	4.00" (102 mm)
LS-400-T	5.00" (127 mm)
LS-410-T	5.00" (127 mm)
LS-425-T	5.00" (127 mm)
LS-475-T	5.00" (127 mm)
LS-500-T	5.00" (127 mm)
LS-525-T	5.00" (127 mm)
LS-575-T	5.00" (127 mm)

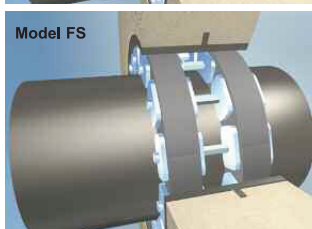
Minimum Wall & Floor Thickness for Model FD or FS Fire Rated Seals

LINK-SEAL® MODEL	MINIMUM WALL OR FLOOR THICKNESS
LS-200-FD or FS	4.50" (114 mm)
LS-275-FD or FS	4.50" (114 mm)
LS-300-FD or FS	6.00" (152 mm)
LS-315-FD or FS	6.00" (152 mm)
LS-325-FD or FS	8.00" (203 mm)
LS-340-FD or FS	8.00" (203 mm)
LS-360-FD or FS	8.00" (203 mm)
LS-400-FD or FS	10.00" (254 mm)
LS-410-FD or FS	10.00" (254 mm)
LS-425-FD or FS	10.00" (254 mm)
LS-475-FD or FS	10.00" (254 mm)
LS-500-FD or FS	12.00" (305 mm)
LS-525-FD or FS	12.00" (305 mm)
LS-575-FD or FS	12.00" (305 mm)

Model T



Model FS



Model FD



Link-Seal® Modular Fire Seals - Testing Procedure



Certified test furnace with pipe and cable penetrations and fire rated Link-Seal® modular seal installed in concrete floor slab. Twenty-seven thermo couples were used per slab.



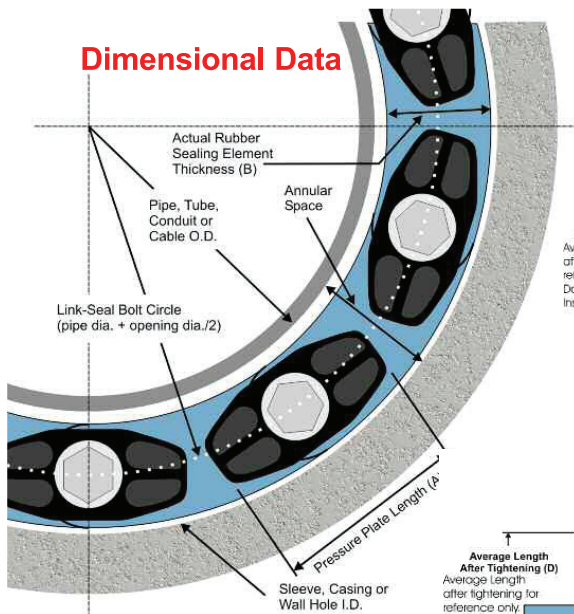
Test slab being raised from furnace at completion of test. (Slab was then positioned vertically for hose stream test.)



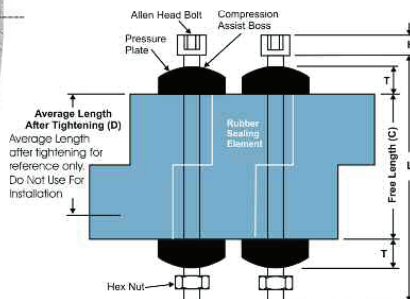
Test slab after hose stream. Cold water striking the 1900°F slab caused scalling of concrete, but left Link-Seal® modular seal intact. Unexposed side showed no evidence of water damage.



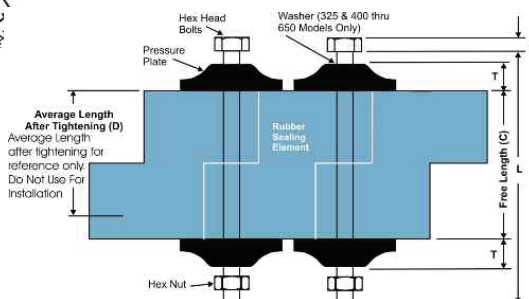
Dimensional Data



For LS-200 through LS-315



For LS-325 through LS-650



*Dimensional Data for Models C, L, O, S-316, S61, LS-316 and OS-316

LINK-SEAL MODEL NO.	RUBBER SEALING ELEMENT			PRESSURE PLATE		BOLT				WEIGHT FOR 10 LINK SECTION (LBS)	MIN. REQUIRED SEATING WIDTH
	ACTUAL THICKNESS (B)	FREE LENGTH (C)	AVG. LENGTH AFTER TIGHTENING (D)	(A)	(T)	ALLEN HEAD HEX ACROSS FLATS	(H)	THREAD SIZE	(L)		
LS-200*	0.48"	1.75"	1.38"	1.06"	0.31"	4mm Allen (0.157")	4.95mm (0.195")	M5-0.8	70mm (2.755")	0.70	2.25"
LS-275*	0.61"	1.75"	1.38"	0.97"	0.31"	4mm Allen (0.157")	4.95mm (0.195")	M5-0.8	70mm (2.755")	0.75	2.25"
LS-300*	0.69"	2.37"	1.87"	1.56"	0.44"	6mm Allen (0.236")	7.87mm (0.310")	M8-1.25	90mm (3.543")	2.15	3.00"
LS-315*	0.81"	2.37"	1.87"	1.44"	0.44"	6mm Allen (0.236")	7.87mm (0.310")	M8-1.25	90mm (3.543")	2.30	3.00"
LS-325*	0.88"	2.63"	2.00"	3.13"	1.00"	13mm (0.511")	5.30mm (0.215")	M8-1.25	90mm (3.543")	5.50	4.00"
LS-340*	1.00"	2.70"	2.25"	1.48"	0.66"	13mm (0.511")	5.30mm (0.215")	M8-1.25	120mm (4.720")	3.30	4.00"
LS-360*	1.24"	2.70"	2.25"	2.05"	0.77"	13mm (0.511")	5.30mm (0.215")	M8-1.25	120mm (4.720")	5.10	4.00"
LS-400*	1.38"	3.50"	2.75"	3.50"	1.06"	17mm (0.669")	6.40mm (0.250")	M10-1.5	130mm (5.118")	12.00	5.00"
LS-410*	1.43"	3.37"	2.87"	2.52"	0.88"	17mm (0.669")	6.40mm (0.250")	M10-1.5	130mm (5.118")	8.20	5.00"
LS-425*	1.06"	3.00"	2.25"	3.50"	1.19"	17mm (0.669")	6.40mm (0.250")	M10-1.5	130mm (5.118")	10.00	5.00"
LS-475*	1.56"	3.38"	2.63"	2.63"	0.88"	17mm (0.669")	6.40mm (0.250")	M10-1.5	130mm (5.118")	10.00	5.00"
LS-500*	2.25"	3.75"	2.75"	3.63"	1.06"	19mm (0.748")	7.50mm (0.300")	M12-1.75	140mm (5.511")	22.50	5.00"
LS-525*	2.06"	3.75"	2.87"	3.63"	1.06"	19mm (0.748")	7.50mm (0.300")	M12-1.75	140mm (5.511")	21.00	5.00"
LS-575*	1.81"	3.75"	3.00"	3.00"	1.00"	19mm (0.748")	7.50mm (0.300")	M12-1.75	140mm (5.511")	15.50	5.00"
LS-600*	3.09"	4.00"	3.00"	6.00"	1.90"	30mm (0.748")	12.50mm (0.490")	M20-2.5	180mm (7.086")	60.60	6.00"
LS-650*	2.71"	3.98"	3.00"	3.96"	1.19"	19mm (0.748")	7.50mm (0.300")	M12-1.75	140mm (5.511")	26.10	6.00"

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.

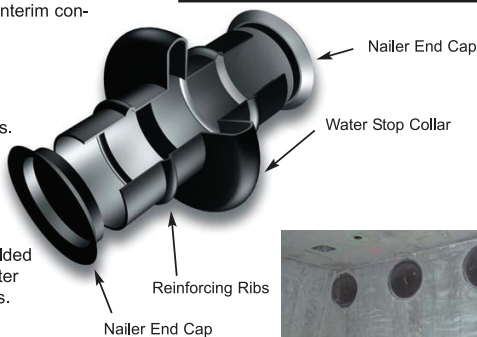


Century-Line® Sleeves Model CS (16" length)

Weights and Dimensional Data

MODEL	I.D. (In.)	I.D. (mm)	Ibs.	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.

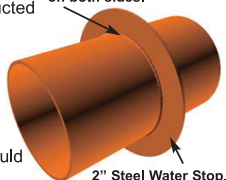
They are an excellent choice for installations where the Link-Seal® Modular Seal and WS sleeve assembly would be subject to extremely high temperatures or where fire seals are specified.

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.



2" Steel Water Stop.

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

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

Cell-Cast® Hole Forming Disks - Model CC

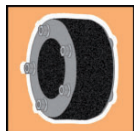
Weights and Dimensional Data

CELL-CAST® MODEL NO.	HOLE I.D.	3" THICKNESS lbs.	KG	4" THICKNESS 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
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: Intermediate sleeves available, model information on-line in a pdf file.

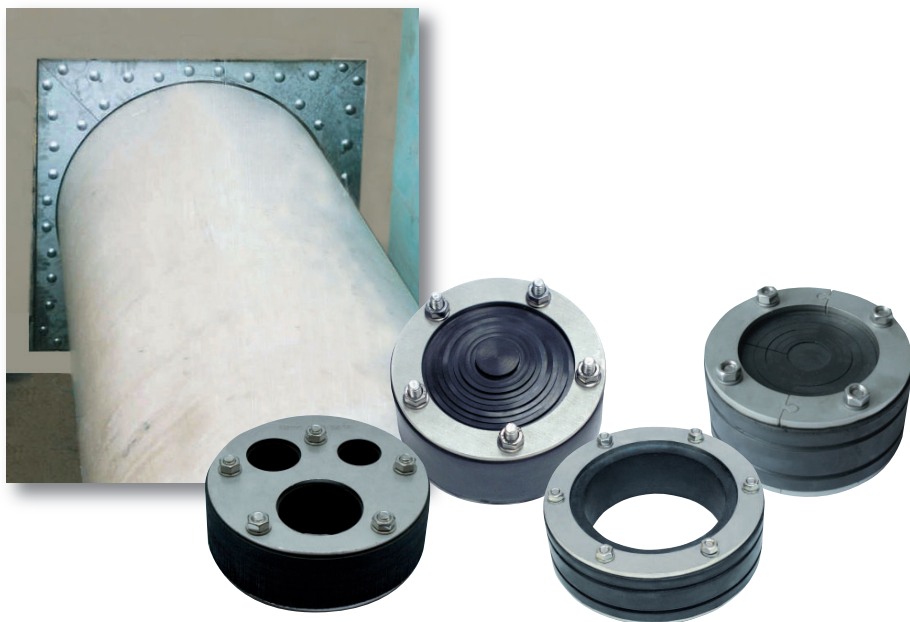


PSI Kompakt Seals

Kompakt Standard

Kompakt KTW/W270 for potable water

Kompakt Varia



General Information • Selection Guide • Order Submittal Sheet • Installation Instruction

EXCLUSIVE AGENT:



中華五金有限公司

CHUNG WAH METAL CO., LTD.

PSI Kompakt Seals

General Information



The Sealing System

The PSI sealing system Kompakt is the perfect complement to our Link-Seal® modular seal. It offers ideal sealing for wall openings for gas, water and sewage pipes as well as for cables. The Kompakt seal is a **pressure tight system**. Pressure plates made of **stainless steel**.

Description

The 40 mm wide rubber element is compressed by means of two metallic discs. The PSI Kompakt seals the annular space between the carrier pipe and the casing pipe or the core drilled hole against water or gas.

Accessories

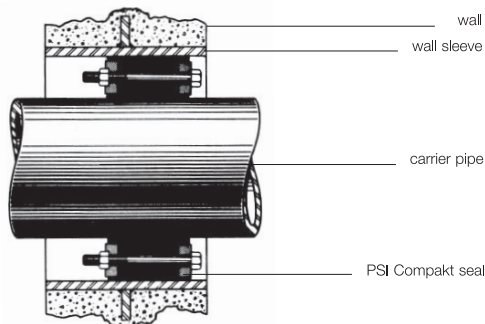
PVC, steel and asbestos-free fibre cement sleeves, rubber ring, KB epoxy resin - coating of core drilled hole.

	Kompakt Standard	Kompakt FW for district heating pipes	Kompakt Standard with NBR rubber	Kompakt Standard with KTW/W270 approval*
pressure plate material	S304 (V2A)	S304 (V2A)	S304 (V2A)	S304 / S316 (V2A/V4A) upon request
closed	Standard	Standard	Standard	Standard
split/open version	available	Upon request	available	available
pressure tightness	3.0 bar at secure position up to 5.0 bar	3.0 bar at secure position up to 5.0 bar	3.0 bar at secure position up to 5.0 bar	3.0 bar at secure position up to 5.0 bar
KTW/W270 potable water	no	no	no	yes
rubber thickness	40 mm	2 x 40 mm	40 mm	40 mm
rubber quality	EPDM	EPDM	NBR	EPDM
UV-resistance	yes	yes	no	yes
temperature range	-30°C up to +120°C	-30°C up to +120°C	-30°C up to +70°C	-30°C up to +120°C
shore	43 ± 5°	43 ± 5°	40 ± 5°	50 ± 5°
core drilled hole min/max	50 - 400 mm	125 - 400 mm	80 - 250 mm	50 - 400 mm

The values specified for the pressure tightness are valid at 23°C. For other, above all, higher permanent operating temperatures, an ejection safety device should, if required, be fitted.

*Elastomer tested in accordance with KTW and W 270

Sectional drawing of a PSI Kompakt seal





General

The PSI Kompakt seal type Varia is a flexible wall penetration sealing system which can be used as a temporary blind plug for non pressing water or as a single lead-through for pressing water.

The sealing range of the Kompakt seal e.g. type Varia 1.5 for a core drilled hole I.D. 100 mm is continuous from 18 up to 65mm because of the small steps of 5 mm per ring. The Kompakt seal type Varia 1.0 for core drilled hole I.D. 100 is especially applicable by house lead-in for retrofitting. Four different sizes of carrier pipe can be passed through with the Varia seals for core drilled holes I.D. 150 mm and 200 mm. The seals are especially made for plastic pipes with soft rubber.

Kompakt Varia 1.5 DN 80:

The Kompakt seal type Varia 1.5 ND 80 is made for a core drilled hole /wall sleeve I.D. 80 mm and for carrier pipes or cable, continuously from 18 up to 45 mm.

Kompakt Varia 1.5 ND 100

The Kompakt seal type Varia 1.5 ND 100 is made for a core drilled hole /wall sleeve I.D. 100 mm and for carrier pipes or cable, continuously from 18 up to 65 mm.

Kompakt Varia 1.0 ND 100 split version

The Kompakt seal type Varia 1.0 ND 100 has been designed in a split version for a core drilled hole/wall 100 mm I.D. sleeve for retrofitting and can be used for carrier pipes, O.D. 20 mm, 25 mm, 32 mm, 40 mm, 50 mm and 63 mm.

Kompakt Varia 1.5 ND 110

The Kompakt seal type Varia 1.5 ND 110 can be used like type Varia 1.5 ND 100 but for a core drilled hole /wall sleeve I.D. 110 mm.

Kompakt Varia ND 150

The Kompakt seal type Varia ND 150 is made for a core drilled hole /wall sleeve I.D. 150 mm and for carrier pipes O.D. 60,3-63 mm, 75-76,1mm, 88,9-90 mm und 110 mm.

Kompakt Varia ND 200

The Kompakt seal type Varia ND 200 is made for a core drilled hole /wall sleeve I.D. 200 mm and for carrier pipes O.D. 110 mm, 125 mm, 139,7-140 mm und 160 mm.

Technical Data:

	Varia 1.5 ND 80	Varia 1.5 ND 100 ND 110	Varia 1.0 ND 100 split version	Varia ND 150	Varia ND 200
pressure plates	S304 (V2A) one part	S304 (V2A) one part	S304 (V2A) two parts	S304 (V2A) one part	
tightness as a blind plug	1,5 bar	1,5 bar	1,0 bar	for non pressing water	
tightness with medium pipe				1,0 bar	
KTW/W270	no	no	no	no	
rubber thickness	40 mm	40 mm	40 mm	40 mm	
rubber quality	NBR	NBR	NBR	EPDM	
UV-resistance	no	no	no	yes	
temperature range	-30°C to +70°C	-30°C to +70°C	-30°C to +70°C	-30°C to +120°C	
shore hardness A	50° ± 5°	50° ± 5°	50° ± 5°	43° ± 5°	
carrier pipe dimensions	18 mm – 45 mm	18 mm – 65 mm	20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm	60,3-63 mm, 75- 76,1 mm, 88,9- 90 mm, 110 mm	110 + 125 mm 139,7-140 mm, 160 mm
core drilled hole/wall sleeve I.D.	80 mm	100 mm 110 mm	100 mm	150 mm	200 mm

The values specified for the pressure tightness are valid at 23°C. For other, above all, higher permanent operating temperatures, an ejection safety device should, if required, be fitted.

Cutting of onion rings



To peel off the onion rings, push the rings backward by hand or with a screwdriver and cut into the skin with a sharp knife. Afterwards pull off the ring by hand.



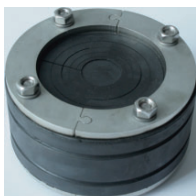
Varia 1.5 DN 80



Varia 1.5 ND 100



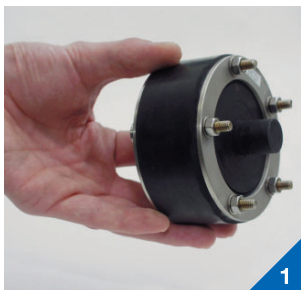
Varia 1.5 with large flange ND 100



Varia 1.0 split version



Varia ND 150



Push out the centre plug by hand or screwdriver



Push the onion ring backwards...



Slightly cut into the "skin" behind the ring to be taken out



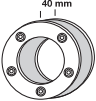
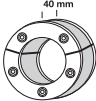
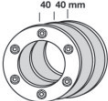
and pull away the onion ring

The installation of the prepared seals type Varia according to the installation instructions for Kompakt Seal!

PSI Kompakt Seals

Selection Guide



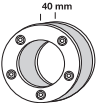
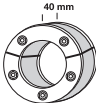
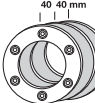
								
I.D. core drilled hole e.g. wall sleeve	carrier pipe in mm		V2A-pressure plates bolts V2A/S304 Rubber quality: EPDM		V2A-pressure plates split version bolts V2A/S304 Rubber quality: EPDM		V2A-pressure plates bolts V2A/S304 rubber thickness 2x40 mm Rubber quality: EPDM	
mm	min.	max.	art. no.	€/pcs	art. no.	€/pcs	art. no.	€/pcs
50	6	12	4-023-23241		*		*	
70	10	22	*		*		*	
70	24	32	4-023-22328		4-023-22518		*	
70	32	41	4-023-22329		4-023-22519		*	
80	20	28	4-024-22330		4-024-22520		*	
80	32	40	4-024-22331		4-024-22521		*	
Varia seal 1.5 with onion ring sealings NBR								
100	18	65	4-023-22439					
Varia seal 1.5 with onion ring technology and large flange								
100	18	65	4-023-22440					
Varia seal 1.0 with onion ring technology split version								
100	20,25,32,40,50,63		*		4-023-22451			
100	15	22	*		*		*	
100	20	28	4-023-22380		4-023-22517		*	
100	25	32	4-023-22651		4-023-22537		*	
100	32	40	4-024-22332		4-024-22522		*	
100	36	44	4-024-22333		4-024-22523		*	
100	46	56	4-024-22334		4-024-22524		*	
100	55	65	4-024-22335		4-023-22525		*	
Varia seal 1.5 with onion ring sealings NBR								
110	18	65	4-023-22339					
119 (KG ND 125)	45	54	4-023-22394		*		*	
119 (KG ND 125)	55	64	4-023-22395		*		*	
119 (KG ND 125)	70	77	4-023-22396		*		*	
125	55	64	4-024-22336		4-024-22526		*	
125	61	70	4-023-22259		*		4-023-22260	
125	70	78	4-024-22337		4-024-22527		4-023-22387	
Varia seal ND 150								
150	63, 76, 90, 110		4-023-22358					
150	46	54	4-023-22656		*		*	
150	56	66	4-023-22657		*		*	
150	69	78	4-023-22463		*		4-023-22485	
150	79	91	4-024-22338		4-024-22528		*	
150	85	94	4-023-22382		*		4-023-22388	
150	98	110	4-024-22339		4-024-22529		*	
191 (KG ND 200)	106	115	4-023-22397		*		*	
191 (KG ND 200)	117	126	4-023-22398		*		*	
191 (KG ND 200)	132	141	4-023-22399		*		*	
Varia seal ND 200								
200	110,125,140,160		4-023-22359					
200	88	103	4-023-22658		*		*	
200	108	115	4-024-22340		4-024-22530		4-023-22389	
200	116	126	4-024-22341		4-024-22531		*	
200	119	128	4-023-22383		*		4-023-22390	
200	132	141	4-024-22342		4-024-22532		*	
200	135	144	4-023-22384		*		4-023-22391	
200	150	160	4-023-22652		*		*	

*Available on request/customised Ckompakt seal up to 3000 mm O.D.

PSI Kompakt Seals

Selection Guide



								
I.D. core drilled hole e.g. wall sleeve	carrier pipe in mm		V2A-pressure plates bolts V2A/S304 Rubber quality: EPDM		V2A-pressure plates split version bolts V2A/S304 Rubber quality: EPDM		V2A-pressure plates bolts V2A/S304 Rubber thickness 2x40 mm Rubber quality: EPDM	
mm	min.	max.	art. no.	€/pcs	art. no.	€/pcs	art. no.	€/pcs
250	135	144	4-023-22464		4-023-22539		4-023-22486	
250	140	149	4-023-22482		*		4-023-22483	
250	150	159	4-023-22465		*		4-023-22487	
250	157	162	4-024-22343		4-024-22533		*	
250	156	165	4-023-22385		4-023-22649		4-023-22392	
250	165	175	4-023-22659		*		*	
250	174	181	4-024-22344		4-024-22534		4-023-22488	
250	178	187	4-023-22386		*		4-023-22393	
250	197	202	4-023-22653		*		*	
250	204	210	4-023-22654		*		*	
300	178	187	4-023-22466		4-023-22501		4-023-22489	
300	193	204	4-024-22345		4-024-22535		4-023-22484	
300	198	207	4-023-22467		*		4-023-22490	
300	218	226	4-024-22346		4-024-22536		*	
350	224	233	4-023-22468		*		4-023-22491	
350	249	258	4-023-22469		*		4-023-22492	
350	270	282	4-023-22655		*		*	
400	270	280	4-023-22477		4-023-22478		*	
400	279	288	4-023-22470		*		4-023-22493	
400	304	313	4-023-22471		*		4-023-22494	
400	314	323	4-023-22472		*		4-023-22495	
400	320	330	4-023-22480		4-023-22481		*	

*Available on request/customised Kompakt seal up to 3000 mm O.D.

PSI Kompakt Seals

Selection Guide



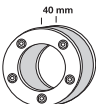
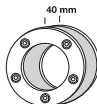
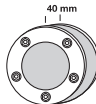
			NBR (Nitrile)		Potable Water		Blind	
I.D. core drilled hole e.g. wall sleeve	carrier pipe in mm		V2A-pressure plates bolts V2A/S304 Rubber quality: NBR (Nitrile)		V2A-pressure plates bolts V2A/S304 Rubber quality: EPDM with KTW/W270 approval**		Blind V2A-pressure plates bolts V2A/S304 Rubber quality: EPDM	
	mm	min. max.	art. no.	€/pcs	art. no.	€/pcs	art. no.	€/pcs
50	6	12	*		4-023-34051		4-023-22327	
70	10	22	*		4-023-34052		*	
70	24	32	*		4-023-34053			
70	32	41	*		4-023-34054			
80	20	28	4-023-34004		4-023-34055		4-024-22347	
80	32	40	4-023-34005		4-023-34056			
100	15	22	*		4-023-34057		4-024-22348	
100	20	28	4-023-34007		4-023-34058			
100	25	32	4-023-34008		4-023-34059			
100	32	40	4-023-34009		4-023-34060			
100	36	44	4-023-34010		4-023-34061			
100	46	56	4-023-34011		4-023-34062			
100	55	65	4-023-34012		4-023-34063			
125	55	64	4-023-34000		4-023-34064		4-024-22349	
125	61	70	4-023-34014		4-023-34065			
125	70	78	4-023-34015		4-023-34066			
150	46	54	*		4-023-34067		4-024-22350	
150	56	66	*		4-023-34068			
150	69	78	4-023-34018		4-023-34069			
150	79	91	4-023-34019		4-023-34070			
150	85	94	4-023-34001		4-023-34071			
150	98	110	4-023-34021		4-023-34072			
200	88	103	*		4-023-34073		4-024-22351	
200	108	115	4-023-34002		4-023-34074			
200	116	126	4-023-34024		4-023-34075			
200	119	128	4-023-34025		4-023-34076			
200	132	141	4-023-34026		4-023-34077			
200	135	144	*		4-023-34078			
200	150	160	4-023-34028		4-023-34079			

*Available on request / special designs up to ND 3000 upon request
**Warning, no stock, please note delivery time
Seals split version in the rubber qualities: NBR and KTW/W270 upon request

PSI Kompakt Seals

Selection Guide



			NBR (Nitrile)		Potable Water		Blind	
								
I.D. core drilled hole e.g. wall sleeve	carrier pipe in mm		V2A-pressure plates bolts V2A/S304 Rubber quality: NBR (Nitrile)		V2A-pressure plates bolts V2A/S304 Rubber quality: EPDM with KTW/W270 approval**		Blind V2A-pressure plates bolts V2A/S304 Rubber quality: EPDM	
mm	min.	max.	art. no.	€/pcs	art. no.	€/pcs	art. no.	€/pcs
250	135	144	4-023-34029		4-023-34080		*	
250	140	149	*		4-023-34081			
250	150	159	*		4-023-34082			
250	157	162	*		4-023-34083			
250	156	165	4-023-34033		4-023-34084			
250	165	175	4-023-34034		4-023-34085			
250	174	181	4-023-34035		4-023-34086			
250	178	187	4-023-34036		4-023-34087			
250	197	202	4-023-34037		4-023-34088			
250	204	210	4-023-34038		4-023-34089			
300	178	187	*		4-023-34090		*	
300	193	204	*		4-023-34091			
300	198	207	*		4-023-34092			
300	218	226	*		4-023-34093			
350	224	233	*		4-023-34094		*	
350	249	258	*		4-023-34095			
350	270	282	*		4-023-34096			
400	270	280	*		4-023-34097		*	
400	279	288	*		4-023-34098			
400	304	313	*		4-023-34099			
400	314	323	*		4-023-34100			
400	320	330	*		4-023-34101			

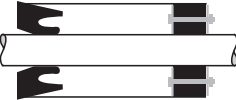
*Available on request / special designs up to ND 3000 upon request

**Warning, no stock, please note delivery time

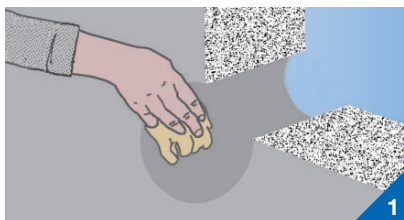
Seals split version in the rubber qualities: NBR and KTW/W270 upon request



Accessories

Description	pcs.	I.D. core drilled hole or wall sleeve	O.D. in mm	art. no.
 Rubber ring 		DN 70	18-32	4-012- 22800
		DN 80	30-40	4-012- 22801
		DN 80	42-50	4-012- 22802
		DN 90	32-42	4-012- 22803
		DN 90	42-54	4-012- 22809
		DN 100	8-20	4-012- 22804
		DN 100	25-40	4-012- 22805
		DN 100	40-56	4-012- 22806
		DN 100	56-66	4-012- 22807
		DN 120	60-75	4-012- 22808
 Guide for M6 und M8		DN 50 bis 200		4-023- 22650
 KB epoxy resin 2 components coating for core drilled holes total 1.1 kg				4-015- S22005

PSI Kompakt Seal Installation Instruction

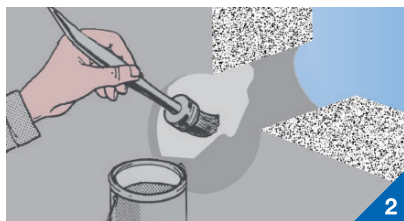


Clean casing pipe/core drilling and carrier pipe.

We recommend coating core drillings with KB epoxy resin in order to protect the concrete and smoothen enpossible cavities/grooves.

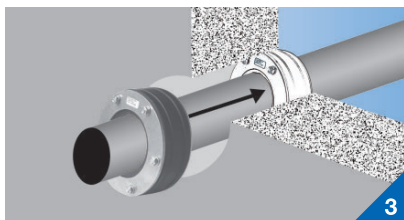
Verify the casing pipe/core drilling and carrier pipe diameters based on the sealing kit data.

Insert PSI Kompakt seal into the casing pipe or core drilling flush with the wall and insert the carrier pipe. Care must be taken to ensure the sealing insert is mounted on the outside of the building. In doing so, the nuts should preferably point to the inside in order to be accessible for subsequent tightening.



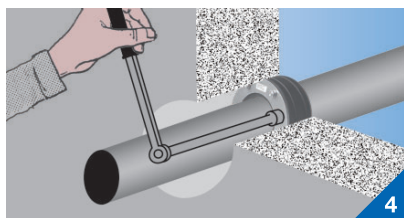
The PSI Kompakt seal split version is available for subsequent mounting.

Tighten the nuts a few turns clockwise. Repeat this procedure two or three times, but not beyond the maximum torque (see table below).

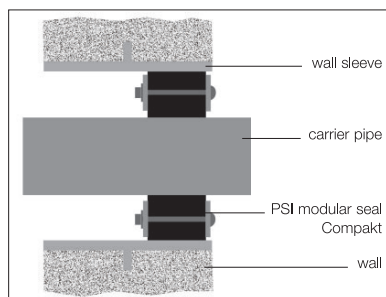


Important notes:

- The PSI Kompakt seal is not an anchor point or pipe support
- The carrier pipes have to be centred and supported
- We recommend reducing the respective maximum torques in case of particularly thin-walled plastic pipes such as flexible casing and corrugated pipes (see table below)
- For long clamping strokes, deep hexagon sockets are additionally required for installation



nuts	max. torque	torque for thin-walled plastic pipes
M 6	5 Nm	5Nm
M 8	10Nm for standard seal (Shore 43 ± 5) 20Nm for special seals (Shore 50 ± 5)	8Nm for standard seal (Shore 43 ± 5) 15Nm for special seals (Shore 50 ± 5)
M 10	30Nm	22Nm
M 12	35Nm	25Nm



PSI Wall Penetration Systems

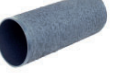
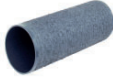
Sets

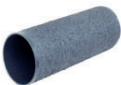
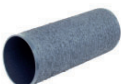
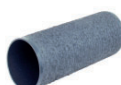
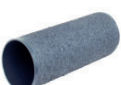


PSI wall penetration sets offer users a complete house entering system consisting of:

- PVC wall sleeve with special surface wrinkling
- Casing support for wall sleeves with extra-large flange for fasting to the casing
- Kompakt seals with closed/split **stainless steel pressure plates** appropriate for use against pressing water – SKZ or MFPA certified.

The following sets are available from stock:

Art. no. of set	Casing support	Wall sleeve	Kompakt seal	Rubber ring
4-024-S00000 1/2 " to 2"	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/400 mm Art. no. 4-014-22705	 2 pieces Kompakt Varia V2A closed 100/18-65 mm Art. no. 4-023-22439	
4-024-S00006 1/2 " to 2"	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/250 mm Art. no. 3-029-00120	 2 pieces Kompakt Varia V2A closed 100/18-65 mm Art. no. 4-023-22439	
4-024-S00001 1/2 " to 2"	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/400 mm Art. no. 4-014-22705	 1 piece Kompakt Varia V2A closed 100/18-65 mm Art. no. 4-023-23439	 1 piece 100/25-40 Art. no. 4-012-22805
4-024-S00007 1/2 " to 2"	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/250 mm Art. no. 3-029-00120	 1 piece Kompakt Varia V2A closed 100/18-65 mm Art. no. 4-023-22439	 1 piece 100/25-40 Art. no. 4-012-22805
4-024-S00008 1/2 " to 2"	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/400 mm Art. no. 4-014-22705	 2 pieces Kompakt Varia V2A split 100/20;25;32;40;50;63 mm Art. no. 4-023-22451	
4-024-S00009 1/2 " to 2"	 2 Stück ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/400 mm Art. no. 4-014-22705	 1 piece Kompakt Varia V2A split 100/20;25;32;40;50;63 mm Art. no. 4-023-22451	 1 piece 100/25-40 Art. no. 4-012-22805
4-024-S00011	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/400 mm Art. no. 4-014-22705	 2 pieces Multicable fix V2A for subsequent splitting 100/8; 2x10;12;14;16;18 mm Art. no. 4-032-00012	
4-024-S00010	 2 pieces ND 100 Art. no. 4-014-22713	 1 piece I.D. 100/400 mm Art. no. 4-014-22705	 1 piece Multicable fix V2A for subsequent splitting 100/8; 2x10;12;14;16;18 mm Art. no. 4-032-00012	

Art. no. of set	Casing support	Wall sleeve	Kompakt seal
4-024-S00002 duct 110	 2 pieces ND 150 Art. no. 4-014-22715	 1 piece I.D. 150/400 mm Art. no. 4-014-22707	 2 pieces Kompakt seal V2A 150/98-110 mm Art. no. 4-024-22339
4-024-S00003 duct 125	 2 pieces ND 200 Art. no. 4-014-22716	 1 piece I.D. 200/400 mm Art. no. 4-014-22712	 2 pieces Kompakt seal V2A 200/116-126 mm Art. no. 4-024-22341
4-024-S00005 duct 160	 2 pieces ND 200 Art. no. 4-014-22716	 1 piece I.D. 200/400 mm Art. no. 4-014-22712	 2 pieces Kompakt seal V2A 200/150-160 mm Art. no. 4-023-22652
4-024-S00004 duct 160	 2 pieces ND 250 Art. no. 4-014-22717	 1 piece I.D. 250/400 mm Art. no. 4-014-22711	 2 pieces Kompakt seal V2A 250/157-162 mm Art. no. 4-024-22343
2-020-S00001 duct 110	 2 pieces ND 150 Art. no. 4-014-22715	 1 piece I.D. 150/400 mm Art. no. 4-014-22707	 1 Link-Seal® ring, 7 LS 310 S316 core drilled hole 150 mm, pipe O.D. 110 mm, 7 x art. no. 2-025-00187
2-020-S00002 duct 160	 2 pieces ND 200 Art. no. 4-014-22716	 1 piece I.D. 200/400 mm Art. no. 4-014-22712	 1 Link-Seal® ring, 10 LS 310 S316 core drilled hole 200 mm, pipe O.D. 160 mm, 10 x art. no. 2-025-00187
2-020-S00003 duct 110	 2 pieces ND 150 Art. no. 4-014-22715	 1 piece I.D. 150/250 mm Art. no. 3-029-00122	 1 Link-Seal® ring, 7 LS 310 S316 core drilled hole 150 mm, pipe O.D. 110 mm, 7 x art. no. 2-025-00187
2-020-S00004 duct 160	 2 pieces ND 200 Art. no. 4-014-22716	 1 piece I.D. 200/250 mm Art. no. 3-029-00123	 1 Link-Seal® ring, 10 LS 310 S316 core drilled hole 200 mm, pipe O.D. 160 mm, 10 x art. no. 2-025-00187

PSI Multiple Sealing Multicable



- Multiple Sealing
- Pressure tight up to 1 bar
- High quality
- Easy handling and installation



General Information • Installation Instruction

EXCLUSIVE AGENT:



中華五金有限公司
CHUNG WAH METAL CO., LTD.

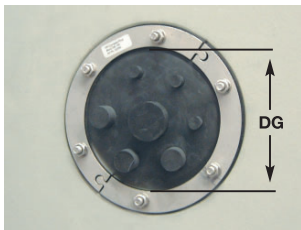
PSI Multiple Sealing Multicable Installation Instructions



You can fill the blind plug with **pipes/cables from O.D. 4 to 32; 40; 50 mm**. The sealing is pressure tight up to 1 bar. The system is divided and therefore suitable for installation with pipes/cables

already installed. For each opening we supply blind fillers which can be taken out when inserting the pipe/cable. Unused openings will be sealed with the blind fillers. This gives you the possibility to

install other pipes/cables later. For the installation you do not need any special tools beside a torque wrench.



Multicable flex (arbitrary) tabular overview

Core drilled hole mm	example number cable/pipe	O.D. example cable/pipe in mm	Art. no.
50 (22 DG)	5	4	4-032-00006
	4	6	
80 (43 DG)	4	10	4-032-00001
	4	12	
100 (58 DG)	4	15	4-032-00002
	5	12	
125 (82 DG)	4	20	4-032-00003
	5	15	
150 (112 DG)	4	30	4-032-00004
	5	25	



Multicable fix (pre-selected)

Core drilled hole	Selected outer diameter of cable/carrier pipe in mm	Art. No.
100	8; 2x10; 12; 14; 16; 18 mm	4-032-00012

Installation:

Take off the divided pressure plates and cut the holes for the cables/pipes vertically with a knife. Now you can insert the in-situ pipes/cables in the rubber sealing plate. Then you have to bolt the pressure plates on the rubber and finish the installation in the wall.



Technical Data

Pressure plate:	V2A/S304 split version
Pressure tight:	1 bar
Rubber thickness:	1 x 40 mm
Rubber material:	EPDM
Temperature range:	-30 up to +120 °C
Shore:	43 ± 5

The values specified for the pressure tightness are valid at 23°C. For other, above all, higher permanent operating temperatures, an ejection safety device should, if required, be fitted.

EXPERIENCE COUNTS



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