

General notes on installation

Although the materials for our hydraulic seals are particularly efficient and robust, it is nevertheless necessary to handle the seals with care to prevent mechanical damage particularly to the sealing lip which would inevitably cause leakage. In addition, prior to installation, all seals must be double checked for damage or ageing that could have occurred during transportation or storage.

To ensure safe installation of seals, please note the following:

1. For single acting seals, the seal must be installed with the prestressed side facing the direction of pressure.

2. Installation chamfers on the cylinder and on the rod are essential. The installation chamfer should be at an angle of 20°.

Recommended lengths C:

$$B = (D-d)/2$$

Profile widths B (mm)	Length of installation chamfers C (mm)
4	2
5	2.5
7.5	4
10	5
12.5	6.5
15	7.5
20	10
25	10

For the installation of wipers in axially accessible installation housings, the following installation chamfers (L) dependent on installation housing heights (H) are recommended to facilitate installation:

H (mm)	L ₁ (mm)
≤4.5	0.6
5	0.6
6	0.8
7	0.8
8	1
9	1
10	1.4
12	1.8
14	2
16	2.4

3. Edges must be deburred. Radii and chamfering must be in accordance with the installation guidelines.

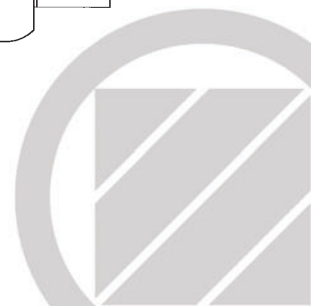
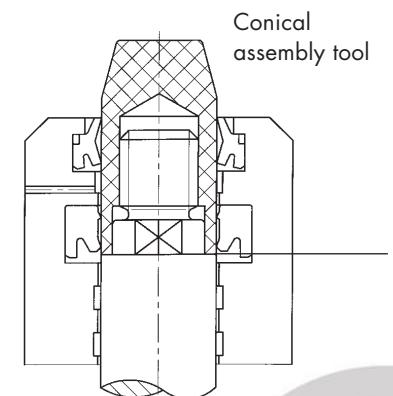
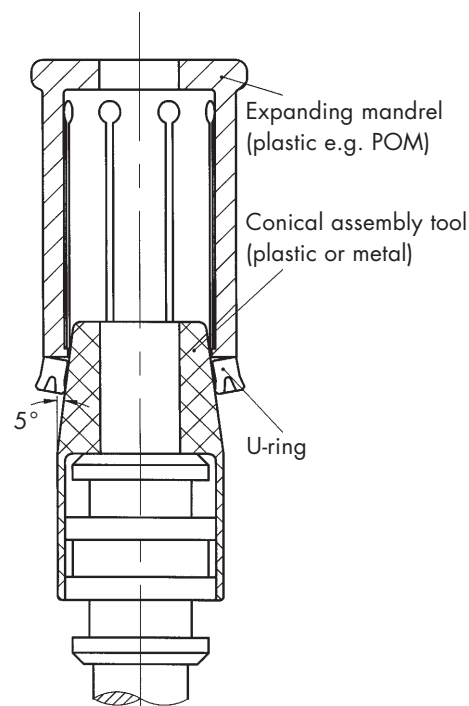
4. Dust, dirt and swarf must be carefully removed.

5. Tips of screws and installation grooves for guide elements etc. should be covered using an installation cone to avoid the seal being pushed over gaps, bore holes or rough surfaces.

6. Cylinders, rods and seals must be greased or oiled before installation. However consideration must be given to compatibility with the medium.

7. Before installation seals should be heated in oil or hot water at approx. 80°C to aid expansion and facilitate fitting. With PTFE seals these can be more easily returned to their original shape and calibrated if they are first heated in oil or water to a temperature between 80°C and 120°C. When immersing seals in heated oil or water consideration should always be given to the temperature resistance of the seal material.

Using installation tools for u-rings in piston and rod applications



8. All installation tools such as mandrels, cones etc. should be made of soft material (e.g. POM) and must not have any sharp edges.

9. With the installation of N and NI rod seals in closed grooves, the minimum diameter d_{min} is dependent on the profile width B:

$$B = (D-d)/2$$

B(mm)	4	5	6	7.5	10	12.5	15
d_{min}	25	30	40	50	80	100	120

Standard dimensions N and NA piston seals for sizes $d > 25$ mm can generally be installed with the use of a suitable installation tool in closed or semi-open installation housings.

Fabric reinforced piston seals and Vpacking sets can only be installed in axially accessible installation housings.

Particulars for PTFE material

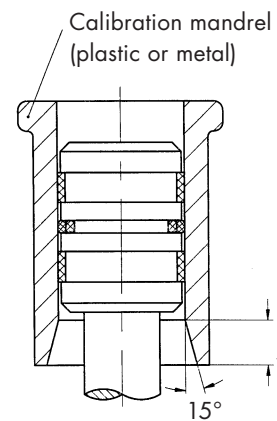
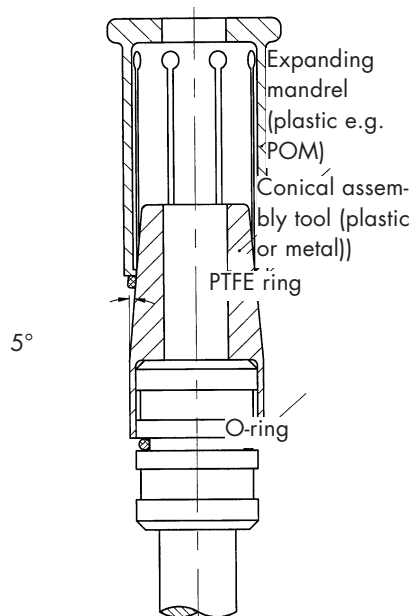
As PTFE has almost no elastic characteristics, PTFE seals with o-ring energising elements (SPOR 30, SPOR 31, KPOR 30, KPOR 31) must be particularly carefully installed and subsequently calibrated. With rod seals $d < 25$ mm we recommend installation in axially open installation housings. Please follow the installation guidelines below:

Installing piston seals in a closed groove

Insert O-ring flat in the groove (not twisted).

Slide the PTFE ring over a conical installation tool using an expanding mandrel until it snaps into the groove. The ring is expanded in the process.

Recalibration of the stretched PTFE ring is facilitated by the use of a calibration mandrel with an inner diameter matching the cylinder diameter.



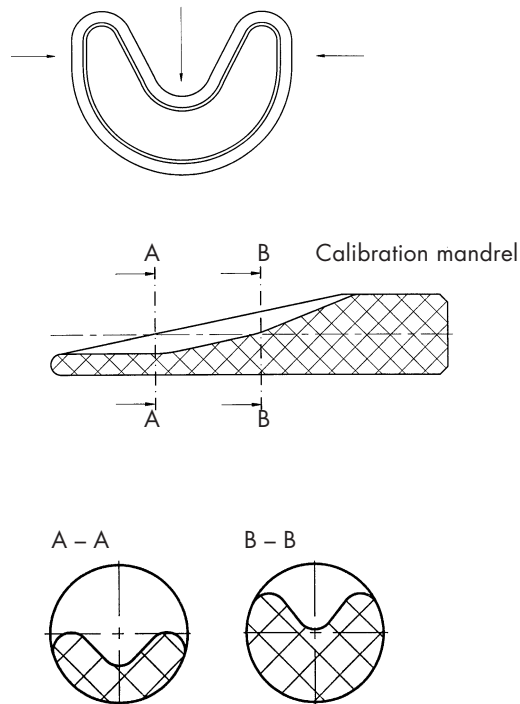
Installing rod seals in a closed groove

Insert the O-ring flat in the groove (not twisted).

Press the PTFE ring together in a kidney shape ensuring that no sharp bends are formed.

insert the compressed PTFE ring in the groove.

Calibrate using a mandrel.



Smallest nominal seal widths that can be installed in axially closed installation housings (mm)

Seal type	Series				
	000	001	002	003	004
KPOR 30	>14	>18	>25	>45	>80
KPOR 31	>14	>18	>25	>45	>75
KK 71	>10	>12	>15	>32	>70
KNA 44	>35	>50	>70	>100	>135
SPOR 30	>10	>12	>15	>32	>70
SPOR 31	>12	>15	>20	>38	>70
SNI 43	>32	>68	>105	>290	>450



Introduction to the descriptions

Descriptions of our hydraulic seals

"Time is money", particularly when applied to quick procurement of seals. With our clearly defined order code we aim to simplify the selection and ordering of our seals and to avoid errors in communication. In addition, a simple description structure forms the basis for quickly being able to find the suitable seals in our catalogues and on the Internet.

Order code

For an order deviating from the standard, please include the attributes of the seal in accordance with the following order code.

Piston seals:

Product group / Design /
Profile number / Specification /
øD Installation housing /
ød Installation housing /
L Height of installation housing /
Model / Material / Hardness /
Compound / Material code / Colour

Rod seals:

Product group / Design /
Profile number / Specification /
øD Installation housing /
ød Installation housing /
L Height of installation housing /
Model / Material / Hardness /
Compound / Material code / Colour

Product groups

In this catalogue you will find the product groups (BG)

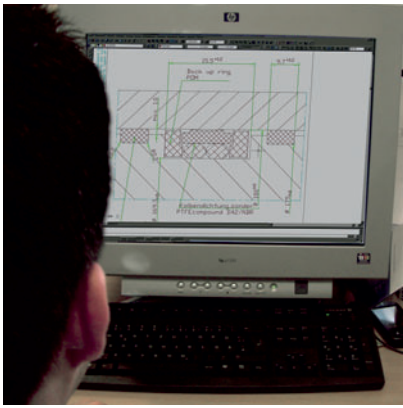
K = piston seal
S = rod seal
A = wiper
F = guide elements

Designs

Within the product groups above, we differentiate according to the following designs (BF):

Product group	Design(BF)	Description
K; S	N	Symmetric u-ring
K	NA	Asymmetric u-ring with outer main sealing lip
S	NI	Asymmetric u-ring with inner main sealing lip
K	K	Compact piston seal
K; S	POR	PTFE seal with O-Ring energising element
K	PUOR	Polyurethane seal with O-Ring energising element
K; S	DS	V-Packing set
K; S	DR	V-Pack ring
A	E	Wiper without metal reinforcement / single-acting
A	M	Wiper with metal reinforcement (metal bonded fit / metal reinforcement)
A	D	Double wiper
A	DM	Double wiper with metal reinforcement (metal bonded fit / metal reinforcement)
F	B	Guide strips
F	RK	Piston guide ring
F	RS	Rod guide ring





Profile number

There is a Dichtomatik profile number for each design. You will find these in the profile overview or in the descriptions of the individual designs.

Specification

Product group	Design	Specification	Description
K;S	N; NA; NI; POR	E	suitable for one-sided pressure load
K	K; POR; PUOR	Z	suitable for two-sided pressure load
F	RK	EN	inner relieving grooves
F	RK; RS	30/45	diagonal cut
F	RK; RS	90	straight cut
F	RK; RS	ST	layered cut

Dimensions

Rod seals and piston seals, wipers and guide elements are always defined according to the installation housing dimensions. In practice, this means that you must always measure the installation housing and not the seal. With regard to the height, the L dimension (height of the installation housing) appears on all delivery papers. For your information we also give the H dimension (seal height) for all standard dimensions in our catalogues. Please note that for all u-rings, the installation housing must be larger than the seal height.

This is necessary to ensure an equal distribution of pressure and to activate the sealing function. For piston seals and piston guide rings, we always give the outer diameter (cylinder liner diameter) as the reference dimension; with rod seals / rod guide rings and wipers, always the inner diameter (rod diameter).

Examples:

KNA 28 50 x 40 x 8 (D x d x L)
SNI 30 40 x 50 x 9 (d x D x L)



Model

Product group	Design	Model	Description
K;S	DS	1/0; 2/1; 3/2	Referring to the combination of fabric and elastomer rings
K	N; NA; K	STA	Outer back-up ring
S	N; NI	STI	Inner back-up ring
K	N; NA; K	STFA	Back-up ring with integrated outer guide element
S	N; NI	STFI	Back-up ring with integrated inner guide element
K	NA	STFAH	Back-up ring with integrated outer guide element + retaining ring
K;S	N; NA; NI	ZL	second sealing lip
K;S	N; NI	ZLSTI	second sealing lip/inner back-up ring
K;S	N; NA	ZLSTA	second sealing lip/outer back-up ring

