

MERKEL

V-PACKING SET V1000



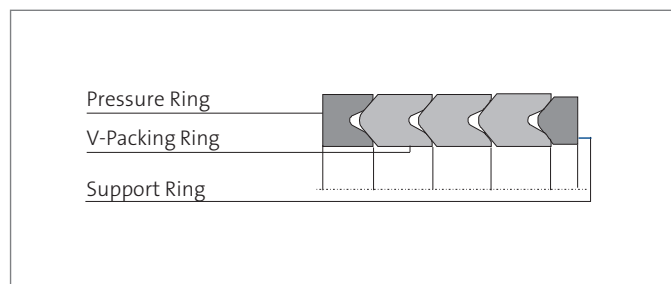
Merkel V-Packing Set V1000 is used for sealing piston rods, plungers and, in exceptional cases, pistons in highly demanding heavy industry applications. Each set comprises of one pressure ring, three or four V-packing rings and one support ring. A V1000 set is supplied either without back rings or with one or alternatively with two back rings at the support ring for enhanced extrusion resistance.

A V1000 set with an inner diameter of up to 400 mm is supplied as an endless version, matching the nominal diameter. Above 400 mm diameter, the set is supplied in an open version. In this case the rings offer additional circumferential length and must be cut to size only immediately before installation.

On request, up to an outer diameter of 1800 mm, a Merkel V-Packing Set V1000 can also be supplied as an endless version.

VALUE TO THE CUSTOMER

- Field-proven under ultra-tough conditions
- Can handle high side loads
- Can cope with excessive wear at piston rods or plungers
- Extended service life due to post tensioning properties
- Extremely long lifetime



Material

| Material | Designation | Color |
|----------------------------------|---------------|-------|
| Cotton Fabric/ Nitrile Rubber | BI-NBR B6B210 | black |



GLAND DESIGN

Operating Conditions

| Material | BI-NBR B6B210 |
|------------------------|-----------------|
| Hydraulic oils HL, HLP | −30 ... +100 °C |
| HFA fluids | +5 ... +60 °C |
| HFB fluids | +5 ... +60 °C |
| HFC fluids | −30 ... +60 °C |
| HFD fluids | – |
| Water | +5 ... +100 °C |
| HETG (rapeseed oil) | −30 ... +80 °C |
| HEES (synthetic ester) | −30 ... +80 °C |
| HEPG (glykol) | −30 ... +60 °C |
| Mineral Greases | −30 ... +100 °C |
| Pressure | 63 MPa |
| Sliding Speed | 0,5 m/s |

The figures given are maximum values and must not be applied simultaneously.

Surface Finish

| Peak-to-valley Heights | R_a | R_{max} |
|------------------------|---------------------------|-------------------------|
| Sliding Surface | 0,1 ... 0,4 μm | $\leq 4,0 \mu\text{m}$ |
| Groove | $\leq 1,8 \mu\text{m}$ | $\leq 10,0 \mu\text{m}$ |
| Groove Sides | $\leq 3,0 \mu\text{m}$ | $\leq 16,0 \mu\text{m}$ |

Material content M_t > 50 % to max. 90 %, with cut depth $c = R_z/2$ and reference line $Cr_{ef} = 0 \%$

Determination of the Housing

The dimensions of the Merkel V-packing set V1000 are given in the following lists. Correct dimensioning of the seals is very important for both operating safety and service life, since a profile width chosen too small, can lead to operating difficulties and can reduce the service life. In terms of the nominal diameters required, we recommend the following profile widths.

| Nominal $\varnothing d$ [mm] | Profile Width B [mm] |
|------------------------------|----------------------|
| >80 ... 120 | 12,5 |
| >120 ... 250 | 15 |
| >250 ... 500 | 20 |
| >500 ... 1.000 | 25 |
| >1.000 | 30 |

The housing must be adjustable in axial length. The number and height of the shims under the gland is dependent on the profile width and therefore also on the set height. The recommended minimum z values and the recommended lead-in chamfers are indicated in the table.

| Profile Width B [mm] | 7,5 | 10 | 12,5 | 15 |
|-------------------------|-----|-----|------|----|
| Tightening Value z [mm] | 4 | 8 | 10 | 12 |
| Lead-in Chamfer C [mm] | 5 | 6,5 | 7,5 | 10 |

| Profile Width B [mm] | 20 | 25 | 30 |
|-------------------------|------|----|----|
| Tightening Value z [mm] | 15 | 20 | 30 |
| Lead-in Chamfer C [mm] | 12,5 | 15 | 15 |



GLAND DESIGN AND INSTALLATION

Fits

| Diameter [mm] | Clearance fit | Housing diameter D |
|------------------|---------------|--------------------|
| >80 ... 80 | H9/f8 | H11 |
| >80 ... 120 | H8/f8 | |
| >120 ... 500 | H8/e8 | H10 |
| >500 ... 630 | 450 µm | |
| >630 ... 800 | 500 µm | |
| >800 ... 1.000 | 550 µm | |
| >1.000 ... 1.250 | 700 µm | |
| >1.250 ... 1.600 | 750 µm | |
| >1.600 ... 1.800 | 850 µm | |
| >1.800 | 950 µm | |

V-Packings with a nominal diameter of up to 400 mm

These packings have the correct assembly dimensions. They can be installed without any further advance preparation.

V-Packings with a nominal diameter of more than 400 mm

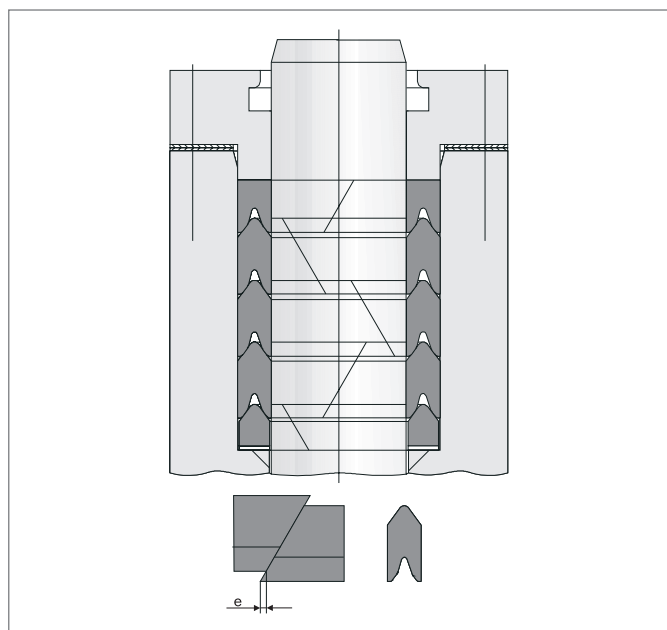
Changes in circumference length can occur, if the packings are stored for a long period of time, or are exposed to a variety of environmental influences. For this reason, V 1000 sets above 400 mm in diameter are always supplied with an additional length in circumference. Such packings must be cut to the required size only immediately prior utilization. The installation size equals the nominal length of circumference plus a length allowance "e" in accordance with table No. 1. This table is valid for the V-packing rings and the pressure ring. The support ring is cut at a blunt angle in a way that, when installed, it offers a gap of 1 to 5 mm at its butt joint. Any back-up rings contained in the set are cut to an oblique, exact fit.

Installation

Careful installation is a prerequisite for correct functioning of the V1000 set. During installation, each ring is pushed into the housing individually, at several sections of the ring simultaneously, with the butt joint first. When installing the individual rings, please make sure that the butt joints are offset by 120 degrees respectively. Before installation, the seals should be slightly lubricated. The use of neutral fat compatible with the medium is advantageous. This grease greatly reduces friction and also eases assembly. All of the rings of the seal set are brought into their final position in the housing by tightening the gland.

Additional circumferential length of pre-cut / open V-Packings

To obtain the desired sealing effect from open or pre-cut seal sets the length of the circumference must be larger than that calculated from the nominal diameter. The specific added length effects the required pressing in the joint section.



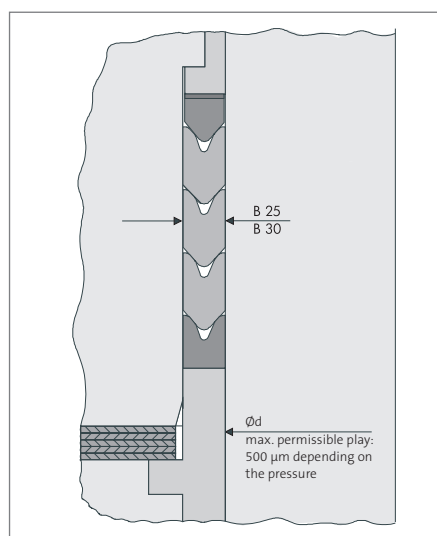
| Ø d [mm] | Additional Length e [mm] |
|------------------|--------------------------|
| >200 ... 250 | 7 |
| >250 ... 500 | 9 |
| >500 ... 750 | 12 |
| >750 ... 1.000 | 15 |
| >1.000 ... 1.500 | 20 |
| >1.500 ... 2.000 | 25 |

Table 1: Additional length e for the cutting-to-size of the rings



GLAND DESIGN

Without anti-extrusion rings



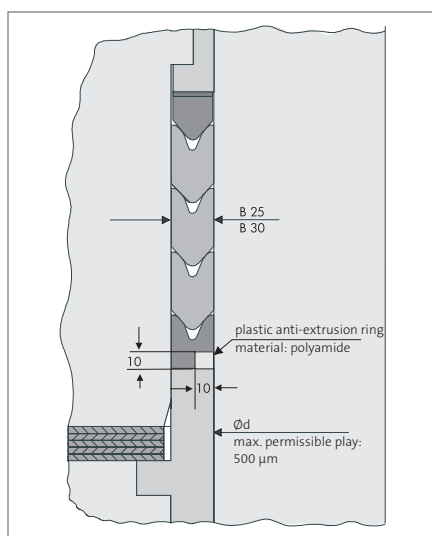
Open versions

B 25: $\varnothing 400 \dots 3.000 \text{ mm}^*$

B 30: $\varnothing 650 \dots 3.000 \text{ mm}^*$

* Further dimensions on request

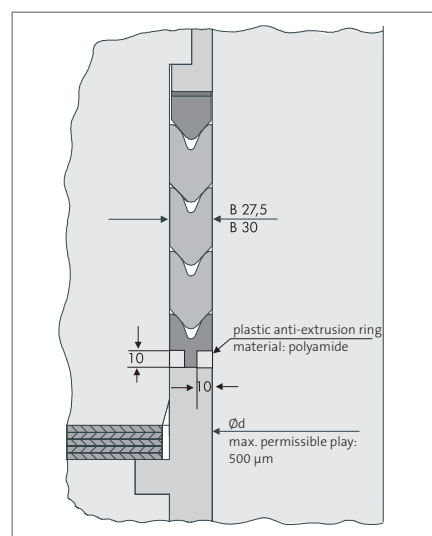
With one anti-extrusion ring



Open versions

B 25 & B 30: $\varnothing 650 \dots 3.000 \text{ mm}^*$

With two anti-extrusion rings

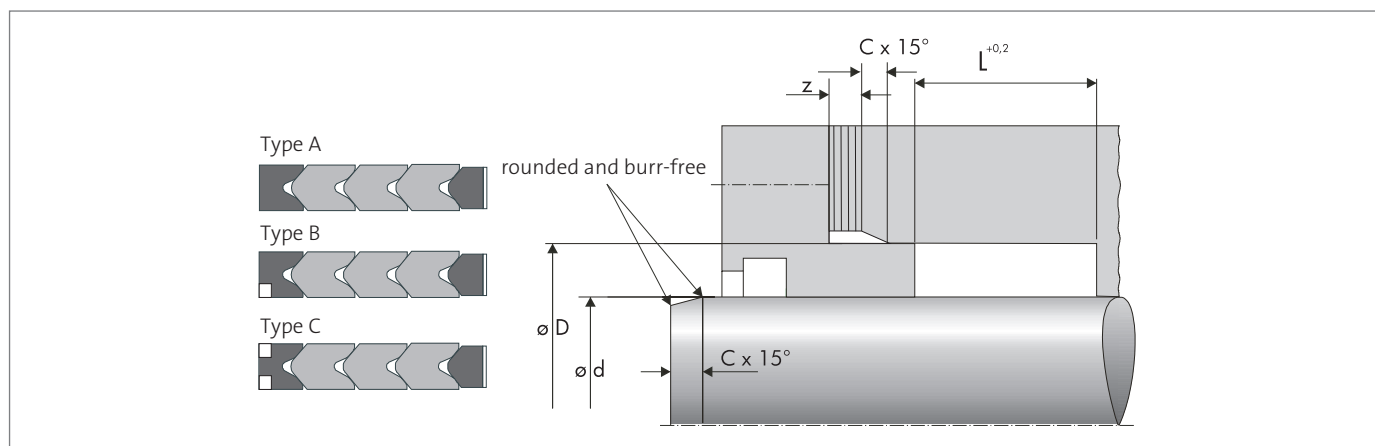


Open versions

B 27,5: $\varnothing 720 \dots 3.000 \text{ mm}^*$

B 30: $\varnothing 650 \dots 3.000 \text{ mm}^*$

Installation Diagram



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