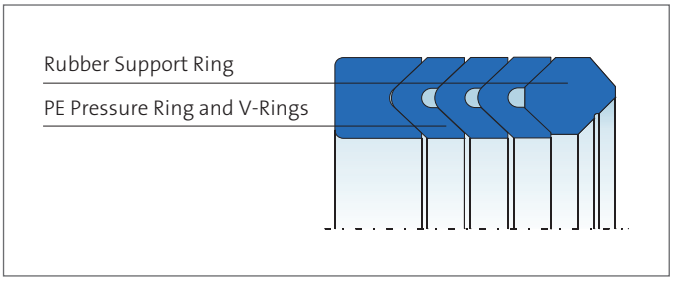
MERKEL
V-PACKING SET DMS-0180

Merkel V-packing set DMS-0180 is a seal set for sealing piston rods, consisting of a polyethylene pressure ring, polyethylene V-rings and a rubber support ring.



Applications

- Sealing of piston rods for rough operating conditions
- Suitable for use on ceramic counter faces

Material

Pressure Ring and V-Rings

Material	Designation	Color
Polyethylene PE-UHMW	PE E083	white

Support Ring

Material	Designation	Color
Nitrile rubber	NBR	black

Other material combinations are available on request.

VALUES FOR THE CUSTOMER

- High extrusion resistance due to robust pressure ring
- Very good wear resistance on ceramic (abrasive) mating surfaces.
- Effective frictional behavior
- Elastic behavior of the support ring offers axial re-adjustment properties to keep the preload of the sealing set in range, if installed in fixed housings
- Can be used in systems with metallic guides and guide bushes made of resin-bonded fabric
- Set supplied in open or endless versions
- Flexibility regarding type of housings - suitable for fixed or adjustable housings

TECHNICAL PROPERTIES

Operating Conditions

Material	PE E083/NBR
Hydraulic Oils, HL, HLP	–30 ... +80 °C
HFA Fluids	+5 ... +60 °C
HFB Fluids	+5 ... +60 °C
HFC Fluids	–30 ... +60 °C
HFD Fluids	–
Water	+5 ... +80 °C
HETG (rape-seed oil)	–30 ... +80 °C
HEES (synth. ester)	–30 ... +80 °C
HEPG (glycol)	–30 ... +60 °C
Mineral Greases	–30 .. +80 °C
Pressure	40 MPa
Running Speed	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	0,05 ... 0,3 µm	≤2,5 µm
Groove	≤1,6 µm	≤6,3 µm
Groove Sides	≤3,0 µm	≤15,0 µm

Material content M_r > 50 % to max. 90 %, with cut depth c = R_z/2 and reference line C_{ref} = 0 %

The long term behavior of a sealing element and its dependability against early failures are crucially influenced by the quality of the counter surface. Therefore a precise description and assessment of the surface is critical.
Based on recent findings, we recommend supplementing the above definition of surface finish for the sliding surface by the characteristics detailed in the table below. With these new characteristics derived from the material content, the hitherto merely general description of the material content is significantly improved, not least in regard to the abrasiveness of the surface. Please consult our Technical Manual.

Surface Finish

Metallic Sliding Surfaces

Characteristic Value	Limit	
R_a	>0,05 µm	<0,30 µm
R_{max}	<2,5 µm	
R_{pkx}	<0,5 µm	
R_{pk}	<0,5 µm	
R_k	>0,25 µm	<0,7 µm
R_{vk}	>0,2 µm	<0,65 µm
R_{vkx}	>0,2 µm	<2,0 µm

Ceramic Sliding Surfaces

Characteristic Value	Limit	
R_a	>0,05 µm	<0,20 µm
R_{max}	<2,5 µm	
R_{pkx}	<0,2 µm	
R_{pk}	<0,2 µm	
R_k	>0,25 µm	<0,5 µm
R_{vk}	>0,4 µm	<0,8 µm
R_{vkx}	>0,2 µm	<3,0 µm

Gab Dimension

The dimension D_2 is determined by factoring the maximum permissible extrusion gap, the tolerances, the guide clearance, the deflection of the guide under load, and the pipe expansion. The maximum permissible extrusion gap with a one-sided position of the piston rod is significantly determined by the maximum operating pressure and the temperature-dependent dimensional stability of the seal material. Please consult our Technical Manual.

Profile Dimension [mm]	Max. permissible gap dimension [mm]			
	16 MPa	26 MPa	32 MPa	40 MPa
7,5	0,65	0,6	0,55	0,5
10	0,7	0,65	0,6	0,55
12,5	0,75	0,7	0,65	0,6
15	0,8	0,75	0,7	0,65
20	0,95	0,9	0,85	0,8
25	1	0,95	0,9	0,85
30	1,1	1,05	1	0,95

GLAND DESIGN AND INSTALLATION

Tolerances

Diameter	Tolerances
D	H8 f8

The tolerance for the diameters d and D_2 is specified in connection with the gap dimension calculation. In typical hydraulic applications up to a nominal dimension of 1.000 mm, the tolerance fields f7 and f8 or H7 and H8 are usually chosen.

Design and assembly instructions
An axially accessible housing is required for installation. Please note the general remarks on hydraulic seal assembly in our Technical Manual.

For best results, the assembly sequence described should be followed:

- Before assembly, thinly and evenly apply grease or oil on all parts of the sealing set.
- During assembly, the piston rod must be located within the installation space.
- The parts of the sealing set are inserted into the installation space one by one, starting with the supporting ring and ending with the pressure ring.
- The V-rings must not be twisted while mounting. Trapped air between the individual V-rings while mounting is to be relieved by a slow axial preload.

Supplementary notes for installation of open versions:

- In order to ensure a sufficient sealing effect, rings of open versions of the seal sets are supplied with oversized circumferential length and inlaid rubber profile laces. An endless version of the seal set should not be cut on site.
- Insert into the housing the butt joints of a ring first. Then continue with the opposite side of the ring. Finally, smoothly guide the ring in its final position.
- When mounting the individual rings, please make sure that the butt joints are offset by 120 degrees respectively.

Installation Diagram