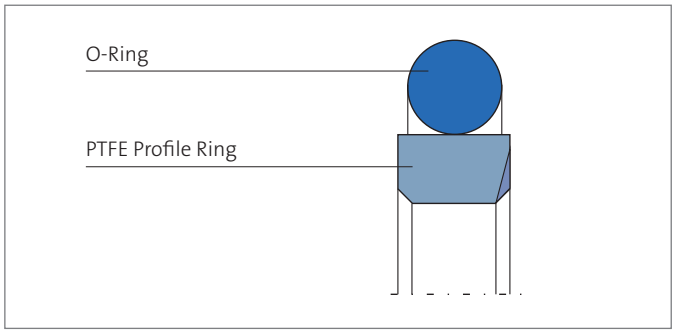
MERKEL OMEGAT OMS-MR DW

Merkel Omegat OMS-MR DW is a two-piece seal set for sealing piston rods, consisting of a PTFE Profile ring and an O-ring as a pre-stressing element.



VALUE TO THE CUSTOMER

- Safe and fast activation during pressure changes (pressure activation grooves)
- Low stress on the piston rod due to uniform load distribution (flat contact)
- Operational reliability due to robust profile ring made of PTFE compound
- Functional reliability due to high resistance to extrusion (dimensional stability)
- Stable long-term behavior due to good wear resistance of PTFE compounds

Application

Rod seal that can be used as a single seal for reciprocating movements. Suitable for rod sealing systems pressurized on both sides. Use also with unhardened piston rods.
Typical applications are injection molding machines, industrial presses, agricultural machinery, truck-mounted loading cranes, rolling mills, control devices, handling equipment, marine hydraulics.

Material

PTFE Profile Ring

Material	Designation	Color
PTFE-bronze Compound	PTFE B602	Brown
PTFE-glass-fiber-MoS2 Compound	PTFE GM201	Light Gray
PTFE-carbon-fiber-compound	PTFE C104	Dark Gray

O-Ring

Material	Designation
Nitrile Rubber	NBR
Fluoroelastomer	FKM

Other material combinations available on request.

TECHNICAL PROPERTIES

Operating Conditions

Material	PTFE B602/NBR	PTFE GM201/NBR PTFE C104/NBR	PTFE B602/FKM	PTFE GM201/FKM PTFE C104/FKM
Hydraulic Oils, HL, HLP	–30 ... +100 °C	–30 ... +100 °C	–10 ... +200 °C	–10 ... +200 °C
HFA Fluids	–	+5 ... +60 °C	–	+5 ... +60 °C
HFB Fluids	–	+5 ... +60 °C	–	+5 ... +60 °C
HFC Fluids	–	–30 ... +60 °C	–	–10 ... +60 °C
HFD Fluids	–	–	–10 ... +200 °C	–10 ... +200 °C
Water	–	+5 ... +100 °C	–	–
HETG (rape-seed oil)	–30 ... +80 °C	–30 ... +80 °C	–10 ... +80 °C	–10 ... +80 °C
HEES (synth. ester)	–30 ... +80 °C	–30 ... +80 °C	–10 ... +100 °C	–10 ... +100 °C
HEPG (glycol)	–30 ... +60 °C	–30 ... +60 °C	–10 ... +80 °C	–10 ... +80 °C
Mineral Greases	–30 ... +100 °C	–30 ... +100 °C	–10 ... +200 °C	–10 ... +200 °C
Pressure	40 MPa	40 MPa	40 MPa	40 MPa
Running Speed	5 m/s	5 m/s	5 m/s	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 Cr_{ef} = 0 %%

The long-time behavior of a sealing element and its dependability against early failures are crucially influenced by the quality of the counter surface. A precise description and assessment of the surface is thus indispensable.
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 also consult our Technical Manual.

Surface finish of the 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

The limit values listed in the table do not currently apply for ceramic or semi-ceramic counterfaces. Please also consult our Technical Manual.

GLAND DESIGN

Gap Dimension

The dimension D2 is determined by factoring in the maximum permissible extrusion gap, the tolerances, the guide clearance and the deflection of the guide under load. 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 also consult our Technical Manual.

Profile dimension		Max. permissible gap dimension			
L [mm]	Profile	16 MPa	26 MPa	32 MPa	40 MPa
2,2	2,45	0,35	0,3	–	–
3,2	3,65	0,4	0,35	–	–
4,2	5,35	0,5	0,4	0,3	–
6,3	7,55	0,55	0,45	0,35	0,3
8,1	10,25	0,6	0,5	0,4	0,4
8,1	12	0,7	0,6	0,55	0,5
9,5	13,65	0,75	0,65	0,6	0,55

At an operating temperature of above 90 °C, and simultaneous exposure to an operating pressure of more than 26 MPa, we recommend the use of the material compound PTFE B602.

Tolerances

Diameter	Tolerance
D	H8

The tolerance for the diameter d and D2 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.

Installation & Assembly

Flawless functioning of the seals is conditional on meticulous installation. Please also consult our Technical Manual.

Installation Diagram