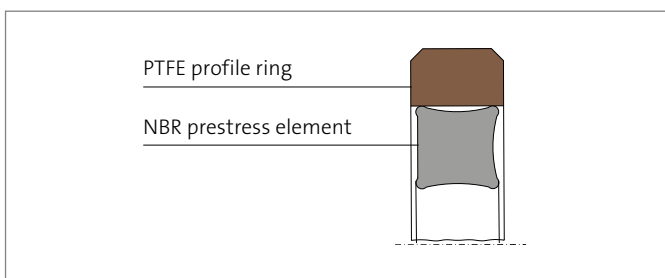




MERKEL OMEGAT OMK-QR

Merkel Omegat OMK-QR is a two-piece seal set for sealing pistons, consisting of a PTFE profile ring and a NBR profile ring as the prestressing element.



Applications

Merkel Omegat OMK-QR is used for pistons with pressure from both sides and heavy duty applications. Especially designed for large dimensions.

Material

PTFE Profile ring

Material	Designation	Color
PTFE-bronze compound	PTFE B602	brown
PTFE-carbon-fiber compound	PTFE C104	dark gray
PTFE-glass-fiber-MoS2 compound	PTFE GM201	light gray

Prestress element

Material	Designation
Nitrile rubber	NBR

Other material combinations are available on request.

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.

VALUES FOR THE CUSTOMER

- Enhanced operating reliability with tough operating parameters
- No „blow by“ with fast load changes, due to pressure activation grooves
- Very good pressure resistance capability and hardness
- Good thermal conductivity
- High resistance to abrasion
- Low friction, stick-slip-free



FEATURES AND BENEFITS

Operating conditions

Material	PTFE B602/NBR	PTFE C104/NBR PTFE GM201/NBR
Hydraulic oils, HL, HLP	-30 ... +100 °C	-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 (rape-seed oil)	-30 ... +80 °C	-30 ... +80 °C
HEES (synth. ester)	-30 ... +80 °C	-30 ... +80 °C
HEPG (glycol)	-30 ... +60 °C	-30 ... +60 °C
Mineral greases	-30 ... +100 °C	-30 ... +100 °C
Pressure	40 MPa	40 MPa
Sliding speed	5 m/s	5 m/s

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

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.

Surface finish

Peak-to-valley heights	R_a	R_{max}
Sliding surface	0,05 ... 0,3 μm	$\leq 2,5 \mu\text{m}$
Groove base	$\leq 1,6 \mu\text{m}$	$\leq 6,3 \mu\text{m}$
Groove sides	$\leq 3,0 \mu\text{m}$	$\leq 15,0 \mu\text{m}$

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

The long-time behavior of a sealing element and its dependability against early failures are crucially influenced by the quality of the counterface. 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 consult our Technical Manual.

Surface finish of the sliding surfaces

Characteristic value	Limit	
R_a	$>0,05 \mu\text{m}$	$<0,30 \mu\text{m}$
R_{max}	$<2,5 \mu\text{m}$	
R_{pkx}	$<0,5 \mu\text{m}$	
R_{pk}	$<0,5 \mu\text{m}$	
R_k	$>0,25 \mu\text{m}$	$<0,7 \mu\text{m}$
R_{vk}	$>0,2 \mu\text{m}$	$<0,65 \mu\text{m}$
R_{vkk}	$>0,2 \mu\text{m}$	$<2,0 \mu\text{m}$

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

Gap dimension

The dimension d_2 is determined by factoring in the maximum permissible extrusion gap, the tolerances, the guide clearance, the deflection of the guide under load, and the pipe expansion. (See also Merkel Technical Manual).

The maximum permissible extrusion gap with a one-sided position of the piston is significantly determined by the maximum operating pressure and the temperature-dependent dimensional stability of the seal material.

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



FEATURES AND BENEFITS

Tolerances

Diameter D	Tolerance
<500	h8
≥500	h7

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 notes

Please note the general design remarks in our Technical Manual.

Installation & assembly

Please note the general remarks on hydraulic seal assembly in our Technical Manual.

Installation diagram

