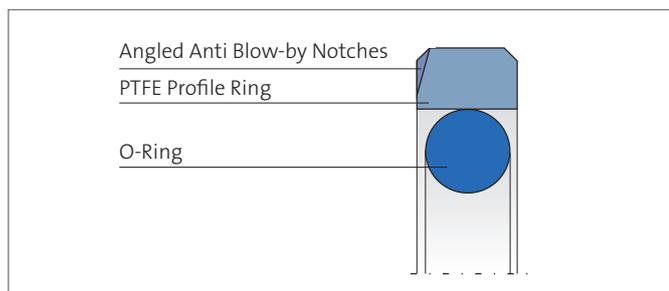


OMEGAT OMK-MR FOR AEROSPACE



Omegat OMK-MR is a two-piece piston seal set, consisting of an engineered PTFE ring and an O-Ring as energizer.



VALUE TO THE CUSTOMER

- Very high stability under pressure
- No “blow by” at fast load changes due to angled anti blow-by notches
- Very good extrusion resistance
- Excellent wear characteristics
- Low breakaway and running friction

Application

Piston seal suitable within a sealing system for reciprocating motion.

Material

PTFE Profile Ring

Material	Designation	Color	Specification
Graphite filled PTFE	Quantum® PTFE Q78-2	Dark Gray	AMS-3678/2
Carbon Fiber filled PTFE	Quantum® PTFE Q78-8	Gray	AMS-3678/8
Mineral & Moly filled PTFE	Quantum® PTFE Q78-12	Dark Gray	AMS-3678/12
Aromatic Polymer filled PTFE	Quantum® PTFE Q78-15	Beige	AMS-3678/15



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Material

O-Ring

Material	Designation	Specification	Temperature	Fluids Commonly Used
NBR	N456	AMS-P-83461	-65°F to +275°F -54°C to +135°C	MIL-PRF-5606 / MIL-PRF-83282 / MIL-PRF-87257
EPDM	E454	NAS 1613 Rev 6 NF L 17-241/41B8	-67°F to +302°F -55°C to +150°C	All commercially available AS1241 phosphate ester hydraulic fluids.
FKM	V75	AMS7276 NF L 17-164/64C8	-20°F to +400°F -29°C to +204°C	MIL-PRF-7808 / MIL-PRF-23699
FKM (low temp.)	V199	AMS7287 AMS-R-83485	-40°F to +400°F -40°C to +204°C	MIL-PRF-7808 / MIL-PRF-23699 HTS Fluids

Other material combinations available on request.

Surface Finish

Peak-to-valley Heights	R_a	R_{max}
Sliding Surface	2 to 12 μ inch (0.05 to 0.3 μ m)	\leq 99 μ inch (\leq 2.5 μ m)
Groove	\leq 63 μ inch (\leq 1.6 μ m)	\leq 248 μ inch (\leq 6.3 μ m)
Groove Sides	\leq 119 μ inch (\leq 3.0 μ m)	\leq 591 μ inch (\leq 15.0 μ m)

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

Surface Finish of the Sliding Surfaces

Characteristic Value	Limit	
R_a	$>2 \mu$ inch ($>0.05 \mu$ m)	$<12 \mu$ inch ($<0.30 \mu$ m)
R_{max}	$<99 \mu$ inch ($<2.5 \mu$ m)	
R_{pkx}	$<20 \mu$ inch ($<0.5 \mu$ m)	
R_{pk}	$<20 \mu$ inch ($<0.5 \mu$ m)	
R_k	$>10 \mu$ inch ($>0.25 \mu$ m)	$<28 \mu$ inch ($<0.7 \mu$ m)
R_{vk}	$>8 \mu$ inch ($>0.2 \mu$ m)	$<26 \mu$ inch ($<0.65 \mu$ m)
R_{vtx}	$>8 \mu$ inch ($>0.2 \mu$ m)	$<79 \mu$ inch ($<2.0 \mu$ m)

The limit values listed in the table do not currently apply for ceramic or semi-ceramic dynamic surfaces.

The service life of the sealing element is significantly influenced by the quality of the dynamic surface finish. A precise description and assessment of the surface is a must. Limiting values for standard surface parameters are listed in the table above.

In order to significantly improve seal life, a more detailed description of the surface, beyond R_a and R_{max} is necessary. We recommend referencing the table to the right for additional parameters of the R_k group and their limits



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Important Note Regarding Extrusion Gap X

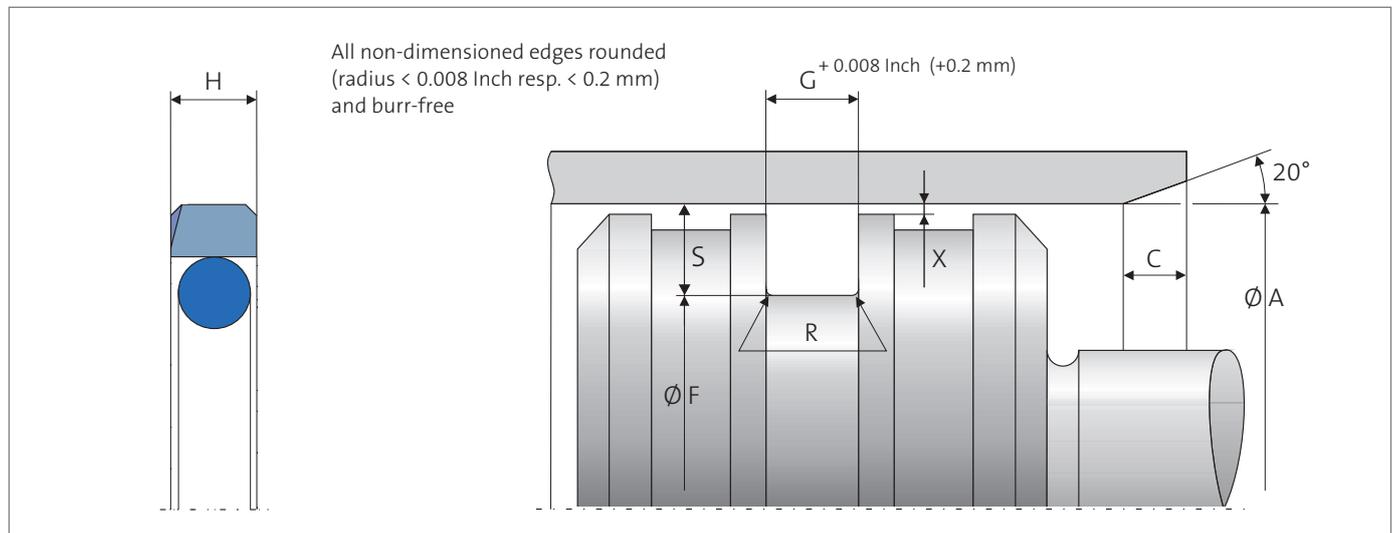
The maximum permissible extrusion gap X with an eccentric position of the piston is significantly determined by the maximum operating pressure, temperature and the material properties of the seal.

Manufacturing tolerances and side loads during operation, as well as the elastic behavior of the guide elements under load and temperature, must be considered as well.

Target is not to exceed the limits of diametrical clearance and simultaneously to avoid metal-to-metal contact of piston and housing during operation.

Profile Dimension [Inch]		Max. Permissible Gap Dimension X [Inch]			
Gland Width G	Profile S	2320 psi (16 MPa)	3770 psi (26 MPa)	4640 psi (32 MPa)	6000 psi (40 MPa)
0.081 (2.1 mm)	0.087 (2.21 mm)	0.013 (0.30 mm)	0.010 (0.25 mm)	–	–
0.126 (3.2 mm)	0.125 (3.18 mm)	0.016 (0.40 mm)	0.013 (0.30 mm)	–	–
0.166 (4.2 mm)	0.187 (4.75 mm)	0.018 (0.45 mm)	0.014 (0.35 mm)	0.010 (0.25 mm)	–
0.247 (6.3 mm)	0.277 (7.04 mm)	0.020 (0.50 mm)	0.016 (0.40 mm)	0.014 (0.35 mm)	0.010 (0.25 mm)
0.320 (8.1 mm)	0.375 (9.53 mm)	0.022 (0.55 mm)	0.018 (0.45 mm)	0.016 (0.40 mm)	0.014 (0.35 mm)

Installation Diagram



The information contained herein is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose. The information presented herein is based on laboratory testing and does not necessarily indicate end product performance. Full scale testing and end product performance are the responsibility of the user.

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