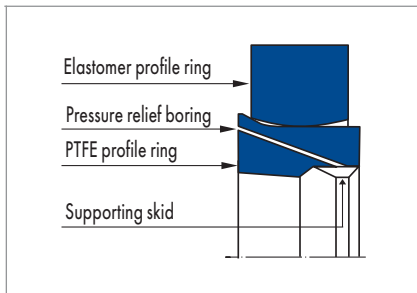


## MERKEL OMEGAT OMS-S PR



### PRODUCT DESCRIPTION

Two-component Merkel seal set for sealing piston rods, consisting of one PTFE profile ring with integrated pressure-relief function and skid with an elastomer profile ring as pre-load component. Patented product design (patent no.: DE 10117662 CI).

### PRODUCT ADVANTAGES

- Replaceable for operating environments of the Merkel Omegat OMS-S series
- Increased reliability of sealing systems under demanding operating parameters (no continuous pressure build-up in gap area)
- Extended service life of sealing systems by long-term stability (reduced loading of the sealing system by minimised friction and wear)

### APPLICATION

- Earth moving equipment
- Large cylinders
- Presses
- Injection moulding machines
- Steel hydraulics engineering
- Rolling mills

### MATERIAL

#### PTFE profile ring

Material	Code	Colour
PTFE bronze compound	PTFE B602	Brown
PTFE glass MoS <sub>2</sub> compound	PTFE GM201	Grey
PTFE carbon fibre compound	PTFE C 104	Dark grey

#### Elastomer profile ring

Material	Code	Colour
Nitrile rubber	NBR	-

Other materials are available on enquiry.

### OPERATING CONDITIONS

Pressure p	40 MPa
Running speed v	5 m/s

Medium/ Temperature	PTFE B602/NBR	PTFE GM201/NBR	PTFE C104/NBR
Hydraulic oils HL, HLP	-30 °C ... +100 °C	-30 °C ... +100 °C	-30 °C ... +100 °C
HFA fluids	-	+5 °C ... +60 °C	+5 °C ... +60 °C
HFB fluids	-	+5 °C ... +60 °C	+5 °C ... +60 °C
HFC fluids	-	-30 °C ... +60 °C	-30 °C ... +60 °C
HFD fluids	-	-	-
Water	-	+5 °C ... +100 °C	+5 °C ... +100 °C
HETG (rapeseed oil)	-30 °C ... +80 °C	-30 °C ... +80 °C	-30 °C ... +80 °C
HEES (synthetic ester)	-30 °C ... +80 °C	-30 °C ... +60 °C	-30 °C ... +80 °C
HEPG (glycol)	-30 °C ... +60 °C	-30 °C ... +60 °C	-30 °C ... +60 °C
Mineral greases	-30 °C ... +100 °C	-30 °C ... +100 °C	-30 °C ... +100 °C

Other combinations of materials are available on enquiry.

### DESIGN NOTES

Please observe our general design notes in → Technical Manual.

#### Surface quality

Peak-to-valley heights	R <sub>a</sub>	R <sub>max</sub>
Sliding surface	0,05 ... 0,3 µm	≤2,5 µm
Groove base	≤1,6 µm	≤6,3 µm
Groove flanks	≤3,0 µm	≤15,0 µm

Percentage contact area M<sub>p</sub> >50% up to max. 90% at cutting depth c = Rz/2 and reference line C ref = 0%.

The long-term behaviour of a sealing element and its reliability against premature failure are substantially influenced by the quality of the countersurface. An exact description and evaluation of the surface is thus indispensable. Based on current findings, we recommend supplementing the above definition of the sliding surface's surface quality with the parameters shown in the following table. With these new parameters from the material fraction, the description of the material fraction, which until now had been quite general, is also substantially improved regarding precisely the abrasiveness of the surface. → Technical handbook.

## Sliding surfaces

Abrasivität/MCP-Index	Characteristic value
$R_a$	>0,05 mm ... 0,30 mm
$R_{max}$	<2,50 mm
Core surface roughness $R_{pkx}$	<0,50 mm
Reduced centre height $R_{pk}$	<0,50 mm
Full centre height $R_k$	>0,25 mm ... 0,70 mm
Reduced groove height $R_{vk}$	>0,20 mm ... 0,65 mm
Full groove height $R_{vkk}$	>0,20 mm ... 2,00 mm

The limit values listed in the table do not currently apply to ceramic or partially ceramic countersurfaces.

## Admissible gap dimension

The dimension D2 is determined under load with reference to the maximum permissible extrusion gap, the tolerance levels, the guide play and the compressive deflection of the guide. → Technical Manual. The maximum permissible extrusion gap with one-sided position of the piston rod is primarily determined by the maximum operating pressure and the temperature-dependent form stability of the sealing material.

Profile dimension	16 MPa	26 MPa	32 MPa	40 MPa
20,0 mm	0,80 mm	0,70 mm	0,60 mm	0,55 mm
12,5 mm	0,75 mm	0,65 mm	0,55 mm	0,50 mm
15,0 mm	0,75 mm	0,65 mm	0,55 mm	0,50 mm
17,5 mm	0,75 mm	0,65 mm	0,55 mm	0,50 mm

At an operating temperature above 90°C and simultaneously applied operating pressure above 26 MPa we recommend the use of the material compounds PTFE B602 and PTFE C104.

## Tolerances

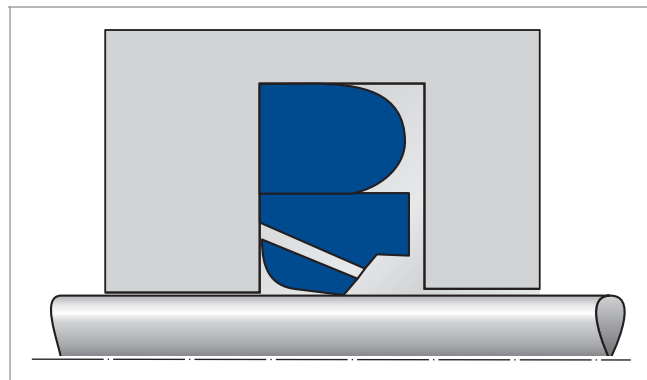
Nominal $\varnothing d$	D
$\leq 1000$ mm	H7

## FITTING & INSTALLATION

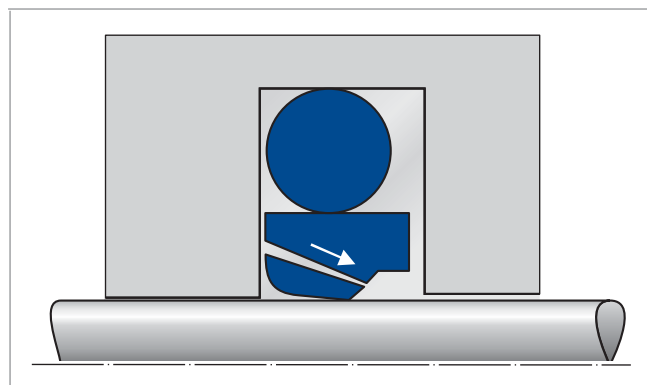
Careful fitting is a prerequisite for the correct function of the seal. → Technical Manual.

## SPECIALITIES

### Mode of operation



Position in the operating environment



Position in the operating environment during pressure relief

It is essential  $p_z < p_H$ , whereas

- $p_z$  = pressure in the gap area (in the diagram left)
- $p_H$  = pressure in the main area (in the diagram right)
- The Omegat OMS-S PR has an integrated pressure-relief function. Once the gap pressure  $p_z$  is greater than the pressure in the main area  $p_H$  (e.g. caused by poor speed conditions during extension and retraction) the seal is reliably relieved. The sealing function of the Omegat OMS-S PR is similar to the tried-and-trusted Omegat seals.