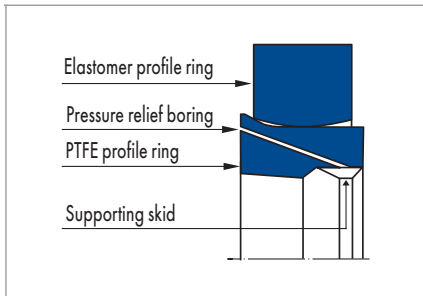


MERKEL OMEGAT OMS-S PR



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 Cl).

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 ₂ 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 _a | R _{max} |
|------------------------|-----------------|------------------|
| 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_r >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

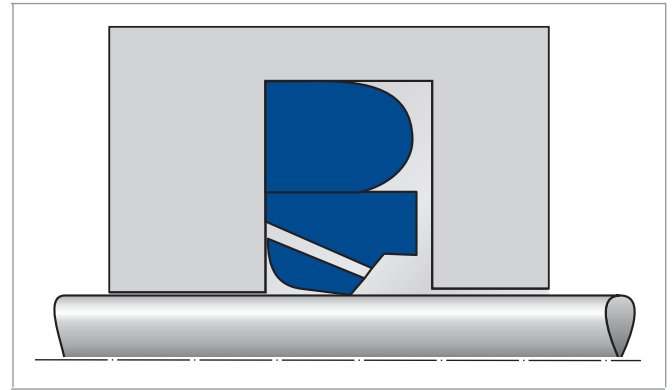
| Nominal $\varnothing d$ | D |
|-------------------------|----|
| ≤ 1000 mm | H7 |

FITTING & INSTALLATION

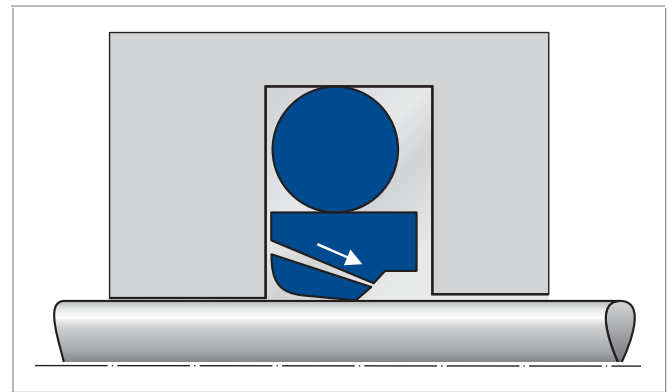
Careful fitting is a prerequisite for the correct function of the seal.
→ Technical Manual.

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.