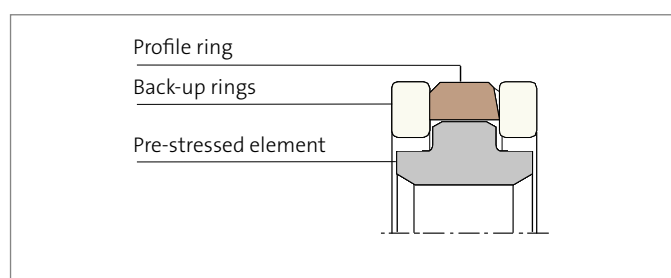


MERKEL COMPACT SEAL L 27



Merkel Compact Seal L 27 is a four-piece piston seal set made of an elastomer pre-stressing element, two active back-up rings and one PTFE/bronze profile ring.



Applications

Compact seal for sealing pistons which can be pressurised on both sides. The activated back-up rings offer a high degree of protection against extrusion, also with breathing gaps.

Operating conditions

Material	NBR/PTFE/POM
Hydraulic oils, HL, HLP	−30 ... +100 °C
HFA fluids	—
HFB fluids	—
HFC fluids	—
HFD fluids	—
Water	—
HETG (rape-seed oil)	−30 ... +80 °C
HEES (synth. ester)	−30 ... +80 °C
HEPG (glycol)	−30 ... +50 °C
Mineral greases	−30 ... +100 °C
Pressure	50 MPa
Running speed	1,5 m/s

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

VALUE TO THE CUSTOMER

- Bridges large radial gaps
- Very good resistance to extrusion, also at pressure peaks
- High resistance to abrasion
- High pressure force due to elastomer profile ring
- Low friction, stick-slip-free

Material

Profile ring

Material	Designation	Color
PTFE-Bronze-Compound	PTFE B602	brown

Pre-stressed element

Material	Designation	Color
Nitrile rubber	NBR	black

Back-up ring

Material	Designation	Color
Polyacetal	POM	white



FEATURES AND BENEFITS

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 $M_1 > 50\%$ 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_{vkx}	$> 0,2 \mu\text{m}$	$< 2,0 \mu\text{m}$

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 (please consult our 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		Max. permissible gap dimension			
D [mm]	Profile	16 MPa	26 MPa	32 MPa	40 MPa
... 70	6	0,8	0,7	0,5	0,4
>70 ... 110	8,5	1,2	1	0,65	0,5
>110 ... 200	10	1,2	1	0,65	0,5
>200 ... 350	12,5	1,8	1,4	0,9	0,7

Tolerances

Diameter	Tolerance
d	h9

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 our general design remarks in our technical manual.

Installation & assembly

Please note our general remarks on hydraulic seal assembly in our technical manual.

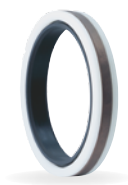


TABLE OF DIMENSIONS

Installation diagram

