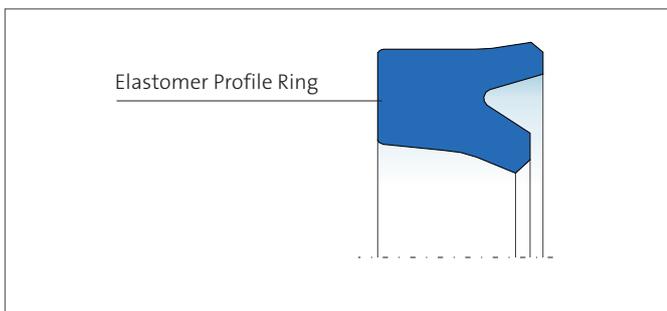


MERKEL U-CUP L20



Merkel U-Cup L20 is an elastomer U-Cup seal with an asymmetrical profile.



VALUE TO THE CUSTOMER

- Adapted for operating medium water or water emulsion

Applications

Suitable as a secondary seal within a sealing system. Nominal-diameter up to 1.000 mm.

Material

Material	Designation	Color
Nitrile Rubber	NBR	black
Fluoroelastomer	FKM	black



TECHNICAL PROPERTIES

Operating Conditions

Material	85 NBR B203 85 NBR B247	85 FKM K668 85 FKM K664
Hydraulic oils, HL, HLP	-30 ... +100 °C	-10 ... +200 °C
HFA Fluids	+5 ... +60 °C	+5 ... +60 °C
HFB Fluids	+5 ... +60 °C	+5 ... +60 °C
HFC Fluids	-30 ... +60 °C	-10 ... +40 °C
HFD Fluids	-	-10 ... +200 °C
Water	+5 ... +100 °C	+5 ... +80 °C
HETG (rape-seed oil)	-30 ... +80 °C	-10 ... +80 °C
HEES (synth. ester)	-30 ... +80 °C	-10 ... +100 °C
HEPG (glycol)	-30 ... +60 °C	-10 ... +80 °C
Mineral Greases	-30 ... +110 °C	-10 ... +200 °C
Pressure	16 MPa	16 MPa
Sliding Speed	0,5 m/s	0,5 m/s

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

Surface Finish

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

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

The long term behavior of a sealing element and its dependability against early failures are crucially influenced by the quality of the counter surface. Therefore a precise description and assessment of the surface is critical.

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 also 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_{vtx}	$>0,2 \mu\text{m}$	$<2,0 \mu\text{m}$

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

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

Profile Dimension [mm]	Max. permissible gap dimension [mm]		
	5 MPa	10 MPa	16 MPa
10	0,8	0,55	0,2
12,5	0,85	0,6	0,25
15	0,95	0,65	0,3

Tolerances

Diameter D [mm]	Tolerance
≤ 400	H11
> 400	+0,4 mm

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.



GLAND DESIGN

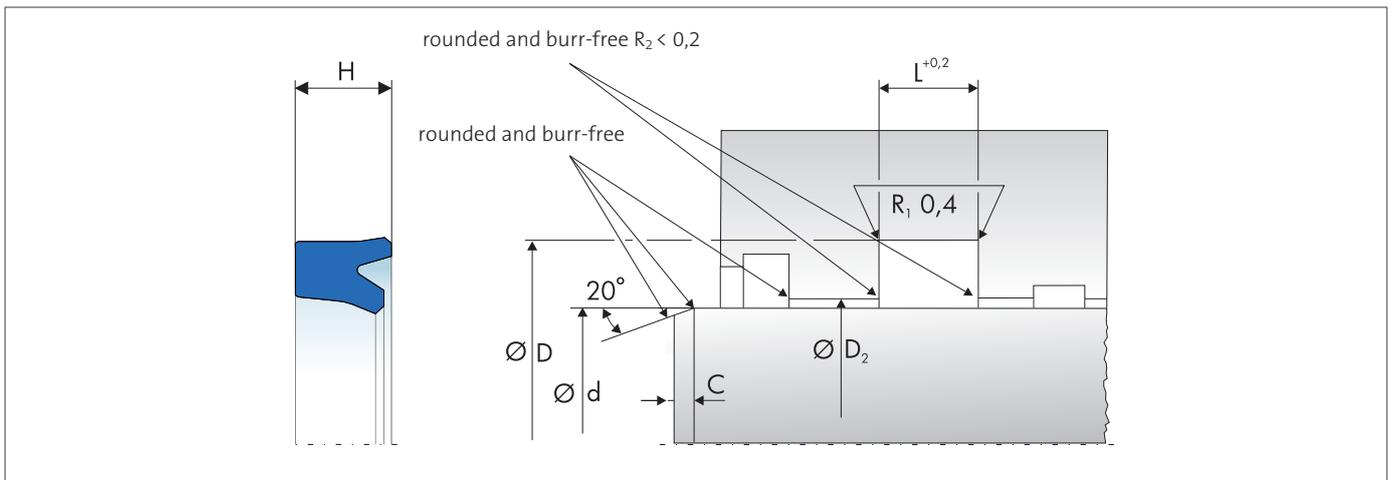
Design Notes

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



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