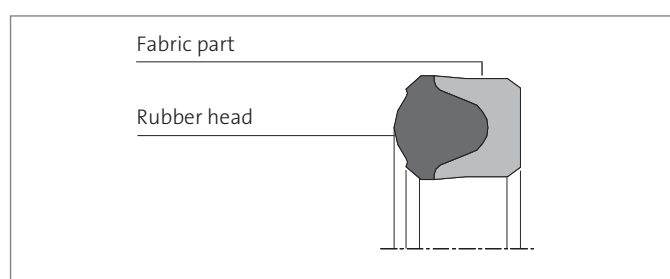


MERKEL® COMPACT SEAL S8



Merkel Compact Seal S8 is a single-piece rod seal with a rubber head enclosed in the fabric part.



VALUE TO THE CUSTOMER

- Easy to install
- Excellent sealing action also in the low-pressure range
- Low friction due to fabric part

Application

Rod seal for light and medium duty hydraulic applications

Operating conditions

Material	85 NBR B247
Hydraulic oils, HL, HLP	−30 ... +100 °C
HFA fluids	+5 ... +60 °C
HFB fluids	+5 ... +60 °C
HFC fluids	−30 ... +60 °C
HFD fluids	—
Water	+5 ... +100 °C
HETG (rape-seed oil)	−30 ... +80 °C
HEES (synth. ester)	−30 ... +80 °C
HEPG (glycol)	−30 ... +60 °C
Mineral Greases	−30 ... +100 °C
Pressure	25 MPa
Sliding Speed	0,5 m/s

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



TECHNICAL PROPERTIES

Material

Material	Designation	Color
Nitrile rubber	NBR	black

Surface Finish

Parameter	Tolerance [μm]		
	Sliding Surface	Groove	Groove Sides
R_a	0,05 ... 0,3 μm	$\leq 1,6 \mu\text{m}$	$\leq 3,0 \mu\text{m}$
$Rz1_{\text{max}}$	$\leq 3,0 \mu\text{m}$	$\leq 6,3 \mu\text{m}$	$\leq 15,0 \mu\text{m}$

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

The long-time behavior of a sealing element and its dependability against early failures are crucially influenced by the quality of the counter surface. A precise description and assessment of the surface is thus indispensable.

Based on current findings, we recommend supplementing the above definition of the surface finish of the sliding surface with the parameters shown in the following table. These new parameters based on the material content significantly improve the previously only general description of the material content, particularly with regard to the abrasiveness of the surface.

Further information in our Technical Manual.

Surface Finish of the Sliding Surfaces

Parameter	Tolerance [μm]			
	HP-HVOF*	Plasma**	Hardchrome	Thermo-chem.***
R_a	0,05 ... 0,15	0,15 ... 0,3	0,1 ... 0,25	0,05 ... 0,3
R_{pk}	$\leq 0,1$	$\leq 0,1$	$\leq 0,3$	$\leq 0,5$
R_{vk}	0,1 ... 0,6	0,2 ... 1,5	0,2 ... 0,5	0,2 ... 0,65
$Rz1_{\text{max}}$	./.	./.	./.	$\leq 2,5$
R_k	./.	./.	./.	0,25 ... 0,7
R_{pkx}	./.	./.	./.	$\leq 0,5$
R_{vkx}	./.	./.	./.	0,2 ... 2,0

* High Pressure - High Velocity Oxygen Fuel Flame-sprayed Surfaces

Carbides: WC/Ni, $\text{Cr}_2\text{C}_3/\text{NiCr}$

$\emptyset$ -Porosity: $\leq 0,5\%$

Typical layer thickness: 125 μm

** Ceramic Counter Surfaces

Ceramic: Al_2O_3 , TiO_2 , Cr_2O_3

$\emptyset$ -Porosity: $\leq 3\%$

Typical layer thickness: 150 μm

*** Hardened Counter Surfaces

Nitro-carburized; induction hardened

Gap Dimension

The maximum permissible extrusion gap with a one-sided position of the piston rod is significantly determined by the maximum operating pressure. In the case of larger gap dimensions than specified in the table full-surface back-up ring of plastic should be used behind the seal.

Profile Dimension	Max. Permissible Gap Dimension [mm]	
Profile [mm]	16 MPa	25 MPa
≤ 6	0,2	0,1
$>6 \dots 10$	0,2	0,1
$>10 \dots 15$	0,2	0,1

Tolerance recommendation and dimension D_2

The admissible gap width, tolerances, guide play and deflection of the guide under load are to be observed in rating D_2 .

Nominal- $\emptyset$ d [mm]	d	D
≤ 80	f8	H11
$>80 \dots 120$	f8	H11
$>120 \dots 340$	f7	H11

Fit example for metal guides

Nominal- $\emptyset$ d [mm]	d	D
≤ 80	H9/f8	H11
$>80 \dots 120$	H8/f8	H11
$>120 \dots 340$	H8/f7	H11

Design Notes

Please note the general design remarks in our Technical Manual.

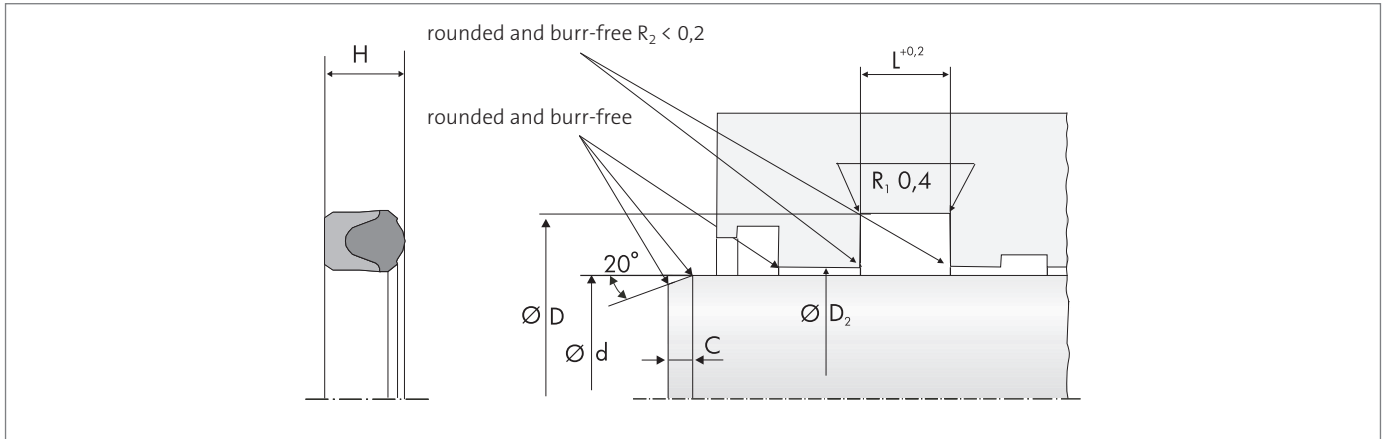
Installation

Please note the general remarks on hydraulic seal installation in our Technical Manual.



INSTALLATION

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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