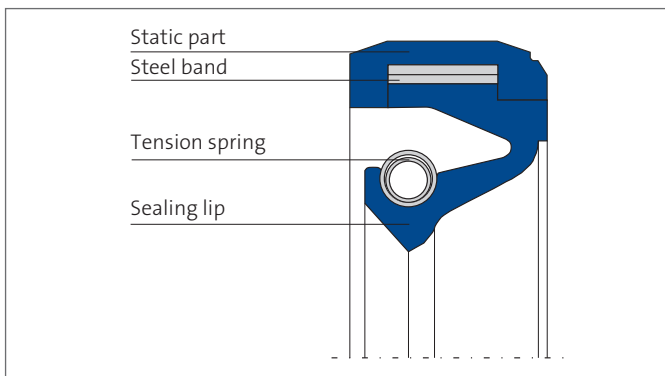


# MERKEL RADIAMATIC RHS 51



Merkel Radiamatic RHS 51 is a radial shaft seal for high circumferential speeds, consisting of two different rubber compounds and an integrated steel band. Two interposed tension springs exert evenly radial force over the whole circumference of the sealing lip, even at high misalignment of the shaft.



## VALUE TO THE CUSTOMER

- Secure, self-retaining fit
- Constant radial force of the sealing lip assuring steady performance
- Highly wear resistant
- High degree of shaft deflection
- Proven performance at high sliding speeds

### Applications

Self-retaining shaft seal for rolling mills and large gear boxes in heavy duty machine design. In order to guarantee additional lubrication from outside, the seal is designed with radial grooves. The self-retaining shaft seal Merkel Radiamatic RHS 51 can only be supplied as an endless version.

### Material

Sealing lip	Static part	Steel band	Tension spring
80 NBR B241	85 NBR B247	ST 1.4310	ST 1.4571
75 HNBR U467	85 HNBR 10040	ST 1.4310	ST 1.4571
80 FKM K670	90 FKM K683	ST 1.4310	ST 1.4571

Further material combinations on request.



## FEATURES AND BENEFITS

### Operating conditions

Material	80 NBR B241	75 HNBR U467	80 FKM K670
Mineral oils	-30 ... +100 °C	-20 ... +120 °C	-10 ... +150 °C
Water	+5 ... +100 °C	+5 ... +100 °C	+5 ... +80 °C
Lubricating greases	-30 ... +100 °C	-20 ... +120 °C	-10 ... +150 °C
Rolling oil emulsion	on request	on request	on request
Pressure	0,02 MPa	0,02 MPa	0,02 MPa
Sliding speed	25 m/s	30 m/s	35 m/s

Other media on demand. The figures given are maximum values and must not be applied simultaneously.

### Surface finish

Peak-to-valley heights	$R_a$	$R_{max}$
Sliding surface	0,15 ... 0,3 $\mu\text{m}$	$\leq 2,5 \mu\text{m}$
Housing	$\leq 4 \mu\text{m}$	$\leq 15 \mu\text{m}$

Machining is carried out most effectively by plunge grinding, i. e. without forward feed. The surface hardness should be approx. 60 HRC (min. depth of hardness 0,5 mm).

The higher the peripheral speed the lower should be the surface roughness  $R_a$  of the mating surface. In order to ensure a sufficient lubricating film the surface should not be too smooth.

Standard value:  $R_a \text{ min.} = 0,1 \mu\text{m}$ .

Profile bearing length ratio  $M_r > 50\%$  up to max. 90% at average depth  $c = R_z/2$  and reference line  $C_{ref} = 0\%$ .

Abrasive surfaces, ridges, scratches and blow-holes are to be avoided.

### Design notes

The permissible shaft misalignment (static shaft-to-bore eccentricity) is dependent on the shaft diameter.

Shaft diameter $d$ [mm]	Admissible shaft deflection [mm]
200 ... 320	2,0
>320 ... 450	2,5
>450	3,0

The permissible shaft runout (dynamic eccentricity) is dependent on the seal profile and the peripheral speed. Please ask for guide values.

### Installation & assembly

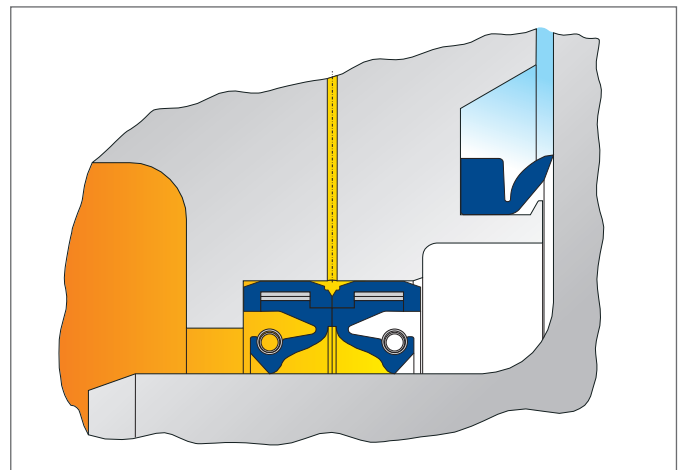
For installation purposes an open housing design is required. The self-retaining shaft seal Merkel Radiamatic RHS 51 is supplied as an endless version. A joining on site e. g. with our bonding set RK 15 is not possible.

Please note the general design-related remarks in our technical manual.

### Lead-in chamfers

See dimension "C" in table of dimensions.

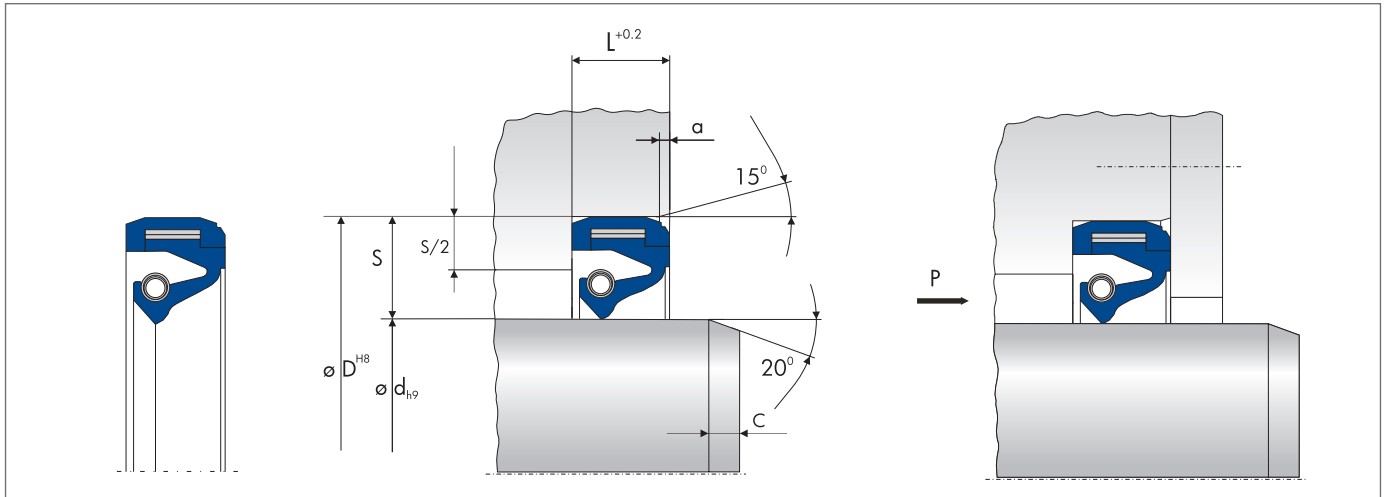
### Typical seal arrangement





## FEATURES AND BENEFITS

### Housing recommendations for new designs



$\varnothing d$ [mm]	S (Profile) [mm]	L [mm]	C [mm]	a [mm]
200 ... 450	20	20	12	4
	22	20	12	4
>450 ... 750	22	22	15	4
	25	22	15	4
>750	25	25	18	5
	32	25	18	5

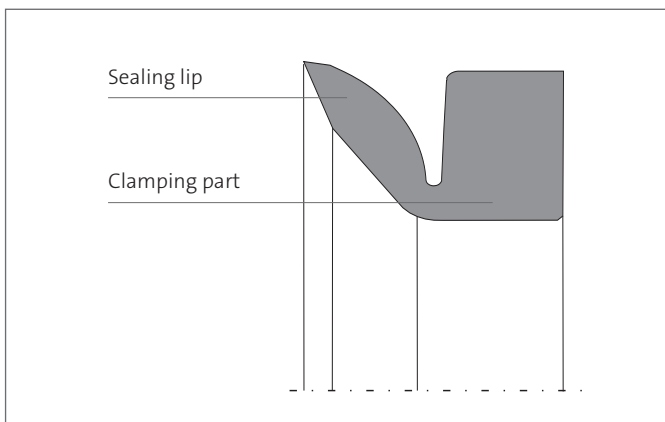
The information contained herein is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose. The information presented herein is based on laboratory testing and does not necessarily indicate end product performance. Full scale testing and end product performance are the responsibility of the user.

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# MERKEL ENVIROMATIC EAX



Merkel Enviromatic EAX is a deflector seal made of elastomeric material featuring an axially acting sturdy sealing lip with a well-defined sealing edge.



## VALUE TO THE CUSTOMER

- High wiping action against environmental factors over the part's entire lifetime
- Uniform and lasting contact pressure of a small sealing lip area, even when there is a large axial clearance
- Significant extension of the rotary shaft seal's lifetime within a sealing system
- Can be fitted into existing housings

### Applications

The Merkel Enviromatic EAX deflector is used in a variety of heavy duty applications, mainly to protect roller bearings and gears in the iron and steel industry.

The deflector is able to protect against environmental contaminations, like e. g. dust, scale, carbon particles, spray water or rolling oil emulsions.

### Material

Material	Designation
Nitrile rubber	70 NBR 85 NBR
Hydrogenated acrylonitrile-butadiene rubber	75 HNBR 85 HNBR
Fluoro rubber	75 FKM 85 FKM



## FEATURES AND BENEFITS

### Operating conditions

Material	NBR	HNBR	FKM
Mineral oil	-30 ... +100 °C (-22 ... 212 °F)	-20 ... +140 °C (-4 ... 284 °F)	-10 ... +150 °C (14 ... 302 °F)
Water	+5 ... +100 °C (41 ... 212 °F)	+5 ... +100 °C (41 ... 212 °F)	+5 ... +80 °C (41 ... 176 °F)
Mineral grease	-30 ... +100 °C (-22 ... 212 °F)	-20 ... +140 °C (-4 ... 284 °F)	-10 ... +150 °C (14 ... 302 °F)
Pressure	0,03 MPa (4,35 psi)	0,03 MPa (4,35 psi)	0.03 MPa (4,35 psi)
Sliding speed	20 m/s (65 ft/s)*	20 m/s (65 ft/s)*	20 m/s (65 ft/s)*
Axial clearance	±12 mm (±0,47 in)	±12 mm (±0,47 in)	±12 mm (±0,47 in)

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

\* The indication is based on stationary water guards. Rotary seals have different limits.

### Surface finish

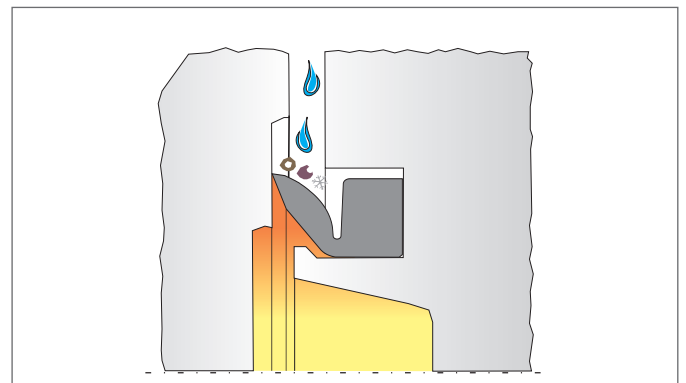
Peak-to-valley heights	$R_a$	$R_{max}$
Sliding surface	≤0.8 µm	≤2.5 µm
Housing	≤4.0 µm	≤15.0 µm

The surface hardness shall be approx. 30 HRC. Material content M, >50 % to max. 90% for a cutting depth of  $c = R_z/2$  and reference line  $C_{ref} = 0\%$

### Axial support

An axial support should most definitely be provided for the Enviro-matic deflector. For further information, please get in touch with our applications consultancy services.

### Example of assembly – work roll in a steel mill



### Housing recommendation

