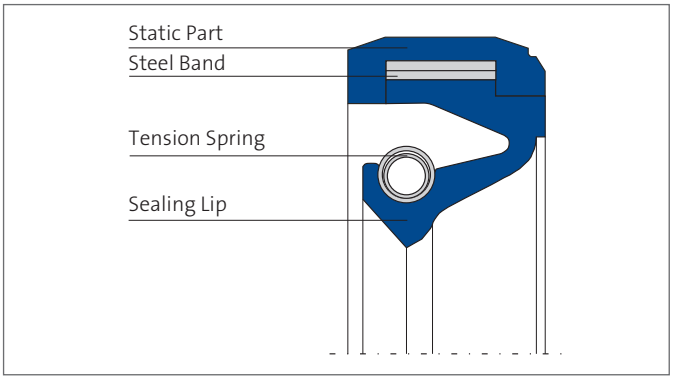
MERKEL RADIAMATIC RHS51

Merkel Radiamatic RHS51 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 RHS51 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.

TECHNICAL PROPERTIES

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 Rreases	–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 µm	≤2,5 µm
Housing	≤4 µm	≤15 µm

The counter surface is suitably machined by plunge grinding, i.e. without feed. The recommended surface hardness is approx. 60 HRC (hardening depth min. 0,5 mm). As the circumferential speed increases, the counter surface should be finished with a decreasing roughness depth R_a. The surface must not get too smooth in order to ensure sufficient lubricant film formation.
Standard value: R_a min. = 0,1 µm. 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.

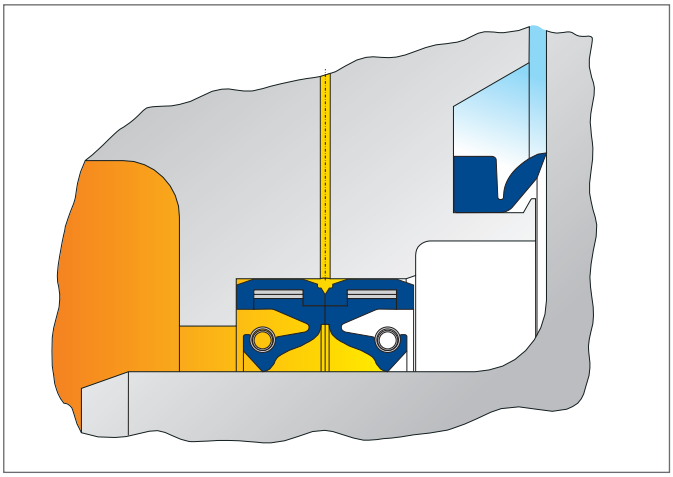
Installation & Assembly

For installation purposes an open housing design is required. The self-retaining shaft seal Merkel Radiamatic RHS51 does not usually need a cover plate and is supplied as an endless ring version. A joining on site e. g. with the bonding set RK15 is not possible. Please note the general design-related remarks in our technical manual.

Lead-in Chamfers

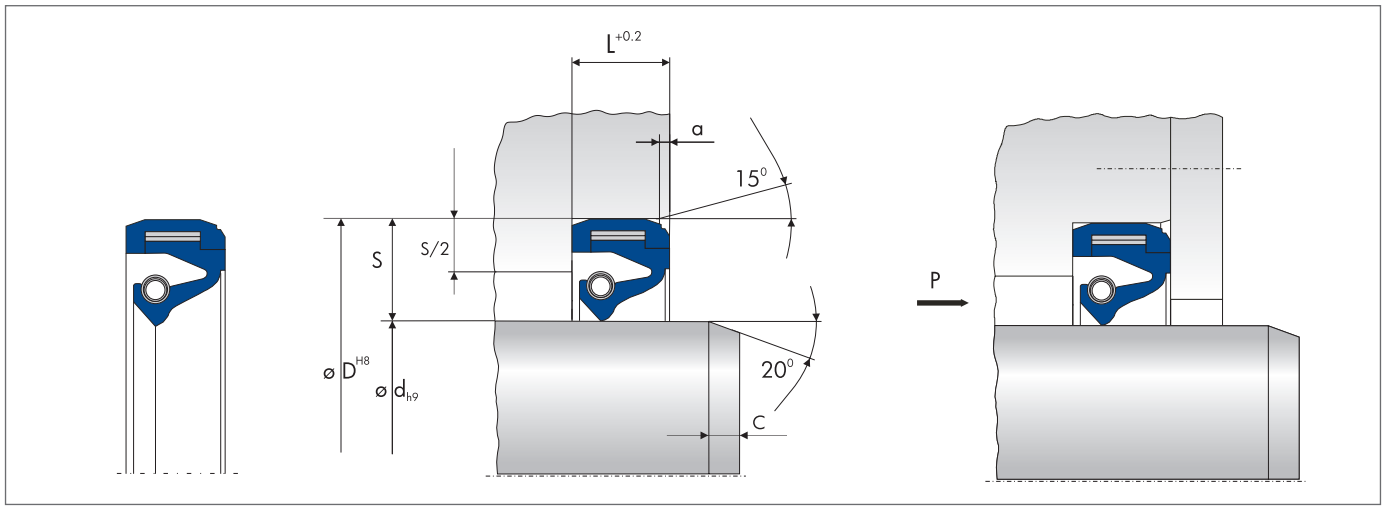
See dimension “C” in table of dimensions.

Typical Seal Arrangement



INSTALLATION

Housing recommendations for new designs



Ød [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