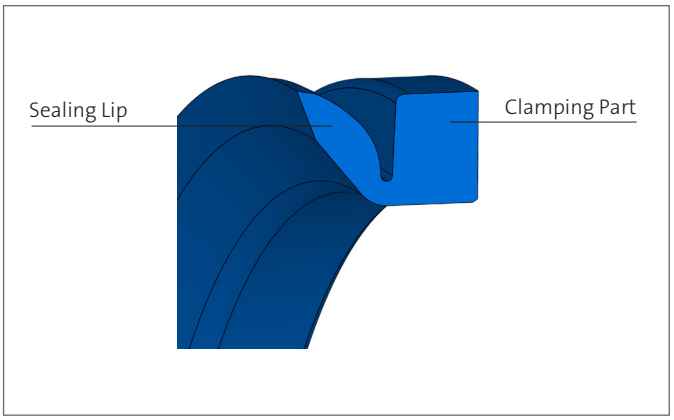
MERKEL ENVIROMATIC EA

Merkel Enviromatic EA is a water guard made of elastomeric material featuring an axially acting sturdy sealing lip with a well-defined sealing edge.



Applications
The Merkel Enviromatic EA water guard is used in a variety of applications, e. g. to protect roller bearings and gears in wind turbines, in the iron and steel industry, mining and in the pulp & paper industry.
The water guard is able to protect against dust, scale, carbon particles, spray water, rolling oil emulsions, ozone, salty air, fibers, paper particles and similar media, according to the application.

Material

Material	Designation
Nitrile Rubber	70 NBR 85 NBR
Hydrogenated Acrylonitrile-Butadiene Rubber	75 HNBR 85 HNBR
Fluoro Rubber	75 FKM 85 FKM

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

TECHNICAL PROPERTIES

Operating Conditions

Material	NBR	HNBR	FKM
Mineral Oil	–30 ... +100 °C (–22 ... 212 °F) *	–20 ... +120 °C (–4 ... 248 °F) *	–10 ... +180 °C (14 ... 356 °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 ... +120 °C (–4 ... 248 °F) *	–10 ... +180 °C (14 ... 356 °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) **	25 m/s (82 ft/s) **
Axial Clearance	±4 mm (±0,156 in)	±4 mm (±0,156 in)	±4 mm (±0,156 in)

The figures stated are maximum values, and must not be applied simultaneously.
* See note "Low temperature duty in wind power mills" – extended temperature range.
** The indication is based on stationary water guards. Rotating seals on a shaft have different limits.

Low-temperature operation in wind turbines

Freezing of the materials during a standstill is completely reversible as soon as the temperature rises again. This means a possible survival temperature far below –30 °C (–22 °F).

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_r >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 Merkel Enviromatic water guard. For further information, please get in touch with our applications consultancy services.

Radial Fixing

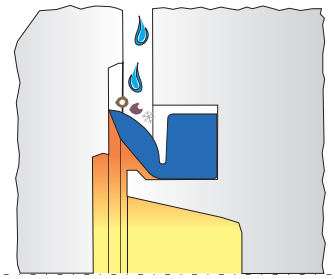
Depending on the diameter, the housing construction with a small axial support or higher circumferential velocity, it may be necessary to provide a radial fixing feature. We recommend the Merkel clamping device, consisting of:

Designation	Article No.	Scope of delivery
Clamp Band	23541422	25 m
Clamp Screw	23541423	25 pcs. per package
Retainer	60070198	50 pcs. per package

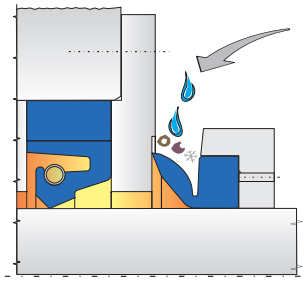
In order to assure that the clamp band is securely in place, assemble one retainer every 180 mm circumferential length, equally spread at the static clamping part of the seal.

INSTALLATION DESIGN

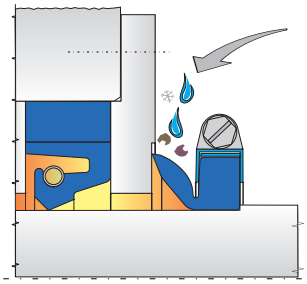
Installation Space – Examples



Work roll in steel works

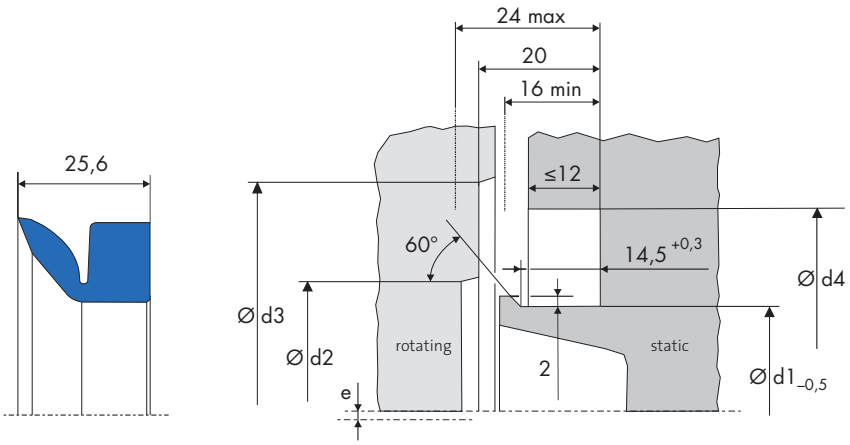


Main bearing in a wind turbine



Main bearing in a wind turbine – with clamping device

Housing Recommendation



e = coaxiality + concentricity
Ø d 4 min. = Ø d1 + 32 mm (1.26 in)
Ø d 3 min. = Ø d1 + 45 mm (1.77 in)
Ø d 2 max. = Ø d1 + 10 mm (0.394 in)
Ø d 2 min. = Ø d1 + 5 mm (0.196 in) + e