



VORTEX

THE GREASE-PUMPING SEAL

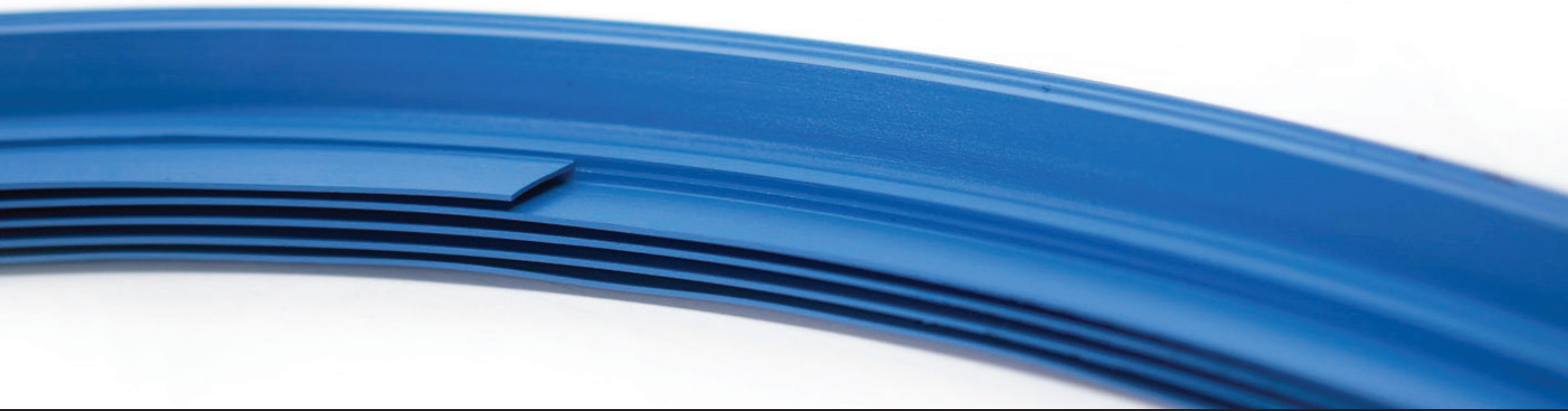
The Vortex seal is a next-generation sealing solution engineered specifically for main bearing applications in wind turbines. The Vortex seal breaks away from the traditional radial lip and labyrinth seals with an innovative approach to rotary sealing. With an internal thread configuration, the seal creates a pumping action that forces grease to migrate towards the bearing, even under shaft deflections, improving service life and preventing catastrophic bearing failure due to grease loss.

Combining System Seals' class-leading engineered seals with an innovative pumping function to bring forward the next generation of wind turbine main bearing seals.



System Seals' GlobalOne program partners with its customers to drive down the overall cost of product ownership and optimise supply-chain logistics worldwide.





VORTEX

THE GREASE-PUMPING SEAL

BENEFITS

Design

- Pumping from the helical lip prevents leakage even under shaft deflections
- Direct retrofit to existing seal pockets/grooves for all diameter bearing shafts
- Custom design available for direct replacement of metallic labyrinth seals
- Available for use in both direct drive and geared turbines

Performance

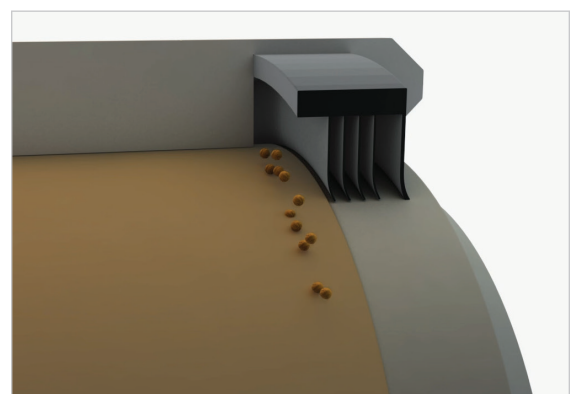
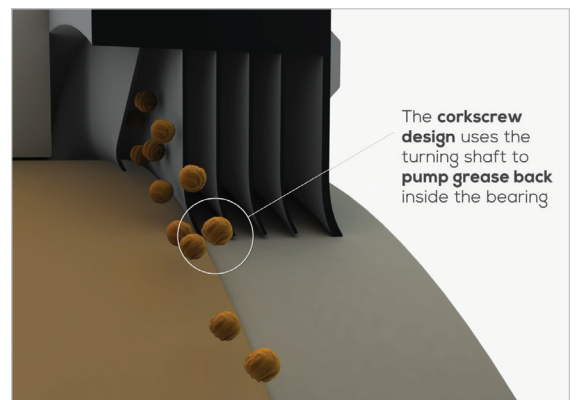
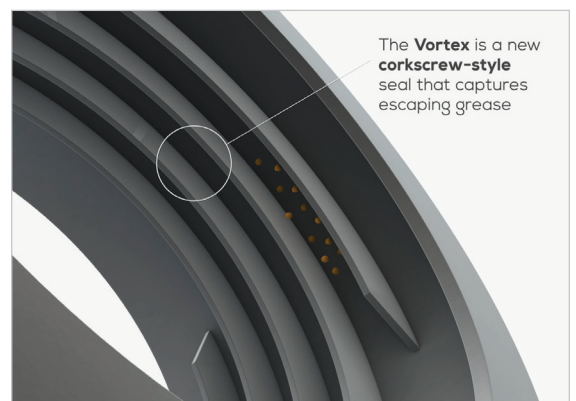
- Consistent seal force across all diameters reduces friction and heat generation
- The seal's external dust lip prevents contaminants from entering the bearing
- Seal designed for pressurized grease retention up to 0.5 bar
- Pumps grease toward the main bearing to improve service life and prevent catastrophic bearing failure due to grease loss

Service

- Split design for easy up-tower installation with no bonding required
- Exceptional abrasion resistance to increase service life
- No need for hardened sliding surface
- Compatible with multiple greases

Cost

- Savings in lubrication, clean up and disposal
- Reduces downtime
- Increases output productivity
- Lowers maintenance and labour costs



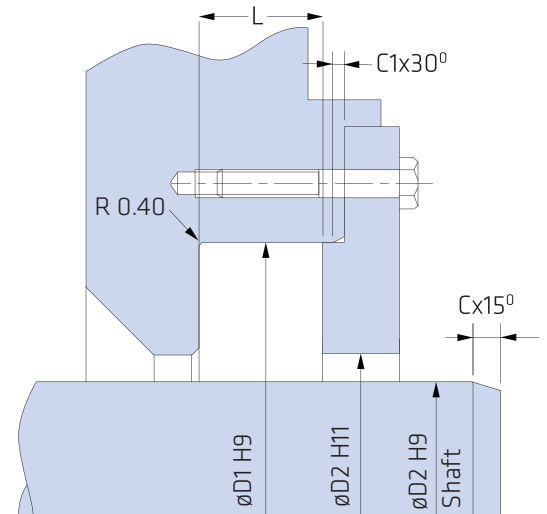
MATERIAL

The Vortex seal uses System Seals' proprietary polyurethane formula with excellent material properties that provide exceptional abrasion resistance 8 times greater than traditional elastomers when tested in accordance with ASTM D5963 / ISO 4649.

SIZES / PLATFORM

Shaft Diameter $\varnothing d$	B	$\varnothing D1$	$\varnothing D2$	L +0.25
>200.00 mm	20.00	d + 40.00	d+7.00	16.00
>200.00 mm	20.00	d + 40.00	d+7.00	20.00
>250.00 mm	22.00	d + 44.00	d+7.00	20.00
>450.00 mm	25.00	d + 50.00	d+8.00	22.00
>800.00 mm	30.00	d + 60.00	d+10.00	30.00
>800.00 mm	32.00	d + 64.00	d+10.00	25.00

Sizes available up to 5000.00 mm in all diameters to retrofit existing seal grooves and labyrinth seals.



OPERATING PARAMETERS

Parameter	Metric	Imperial
Temperature Range	-40°C to +100°C	-40°F to +212°F
Max Linear Speed	5 m/sec	16 ft/sec
Max pressure	0.5 bar	7 psi

SURFACE FINISH

Parameter	Ra	Rt	RMS
Sliding surface	≤0.8 μm	≤4 μm	24 RMS
Sides of groove	≤4 μm	≤16 μm	160 RMS

COMPATIBLE GREASES

- Mobil SHC 460 wt
- Mobil SHC 007
- Mobil SHC
- Stabyl EOS E2
- SKF LGEP 2
- Mobulux Ep2
- GLEITMO 585k
- Klüberplex BEM 41-141*
- FAG Arcanol 460

*Please contact System Seals for Vortex use with Kluber



VORTEX

THE GREASE-PUMPING SEAL

INSTALLATION SNAPSHOT

- Remove main bearing retaining cover
- Scrape excess grease out of internal cavity into a bucket and discard
- Ensure that the seal housing is free from contaminants
- Separate the seal at the split ends
- Wrap the seal around the shaft making note of the “*This side Out*” marking for orientation. “*This side Out*” should be facing the atmosphere side
- Apply installation tool, if needed, to assist sliding the seal into place
- Align connector pins to their receiving holes and reconnect seal at the split line
- Slide seal up and into the housing, ensuring it is completely seated into place. If a tool is used, slide the seal over the tool ramp
- Remove the installation tool, if used, and ensure that the split-end connection is tight
- Wipe down the seal and reinstall retaining cover
- Reapply grease per OEM recommendations

