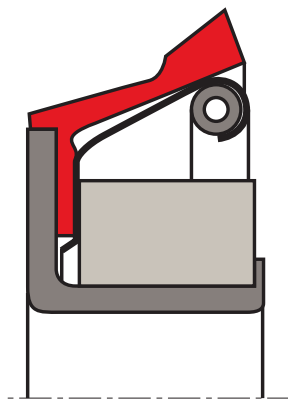


oil seal R111

seal spec



application



description

the rotary shaft seal R111 external lip has been developed specifically for the severe operating conditions encountered in the rolls of paper making machines hot and cold rolling mills, heavy industries and where high speed and misalignment are encountered.

the life and performance of a lip seal are largely dependent upon the preload of the seal lip on the shaft. in this respect the R111 design offers a significant advantage over conventional garter spring seal types as a result of its highly elastic garter finger spring combination.

shaft misalignment (shaft deflection, bearing clearance, out of round and run out) creates changes to the lip preload that can in conventional seals compromise either or both lip tip sealing integrity and seal life. the finger garter spring combination in R111 largely eliminates the effects of external forces causing changes in lip tip preload and therefore is more likely to maintain the fluid film underneath the lip the condition of which has the greatest effect on seal life and performance.

even with the severe misalignment capability of the R111 design high speeds are also permissible up to 35 m/s. when fitting the R111 seal over a long shaft or into a housing where the lip cannot be seen another significant advantage is evident as the spring cannot come adrift from its housing as a result of the garter finger spring configuration eliminating spring detachment.

all garter and finger springs are constructed from stainless steel. the finger spring being clamped and the sealing lip bonded to the metal of the case eliminating any potential leakage between the seal components. all garter and finger springs are constructed from stainless steel. the finger spring being clamped and the sealing lip bonded to the metal of the case eliminating any potential leakage between the seal components.

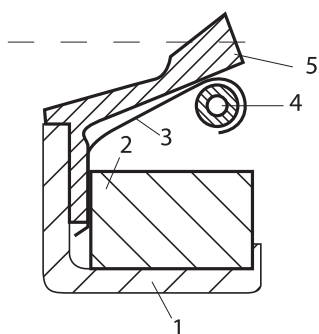
category of profile

molded/standard/trade product only.

single acting rotary shaft seal

seal construction

the illustration below shows the construction of the R111 seal and its component parts:



1. steel outer ring in Fe-PO3 with a finish surface according to the relevant DIN standard for outer diameters.
2. steel filler ring in Fe37 steel providing the rigidity required ensuring an accurate assembly of the seal in the groove.
3. stainless steel spring carrier to BS1 301 S 01 is designed:
 - a) to ensure the spring retention during the assembly.
 - b) if necessary to permit the removal and refitting of garter spring in AISI 316 to provide a predetermined sealing lip preload which will permit the sealing element to follow shaft deflections.
4. garter spring in AISI 316 to provide a regulated loading on the sealing lip and enable the sealing element to follow shaft deflections.
5. sealing element is available in the elastomers listed below and is bonded to the steel outer ring.

storage instructions: the seals should be kept in dry and dark condition, flat in their own boxes. recommended storage temperature: 20°C ± 5 Seal, storage life: about 5 years.

**operating parameters & material**

material	temperature	max. surface speed	hardness	specific gravity	application
s-mart NBR 70 shore A (±5)	-20°C ... + 120°C	≤ 25 m/s	71°	1,30 - 1,36	lubricating oils, hydraulic oils and greases on mineral base, water, HFA, HFB, HFC liquids, caustic washing solutions
s-mart FKM 70 shore A (±5)	-20°C ... + 220°C	≤ 35 m/s	72°	1,36 - 1,40	mineral based liquids and greases, HFA, HFB, HFC, HFD liquids, water, chemicals and solutions. non application in some difficult inflammable liquids on phosphoric acid ester base recommend for use with firesafe oils
s-mart MVQ 70 shore A (±5)	-60°C ... + 170°C	≤ 25 m/s	73°	2,11 - 2,17	applications: organic oils and oils with high aniline point, motor oils and gear drive oils medium. swell characteristics in mineral based oils and greases. now applicable in aliphatic and aromatic hydrocarbons. this material has good temperature resistance including low temperature flexibility.

the data herein are the results of tests we believe to be reliable.

we do not however guarantee that the same results will be reproduced by tests in other laboratories using different sample preparation and evaluation conditions.

shaft & housing tolerances [mm]

shaft Ø [mm]	≤ 100 ± 0.080
	101 ÷ 150 ± 0.100
	151 ÷ 250 ± 0.130
	≥ 250 ± 0.250
housing Ø [mm]	≤ 76 ± 0.025
	77 ÷ 150 ± 0.040
	151 ÷ 255 ± 0.050
	256 ÷ 510 + 0.05/-0.10
	511 ÷ 1015 + 0.05/-0.15
	> 1015 + 0.05/-0.25
shaft Ø	fitting chamfer "F"
≤ 250	7.00
> 250	12.00

max misalignment admissible 2,5 mm

we recommend the use of a tapered fitting ring when press fitting the R111 seal

shaft hardness & surface finish

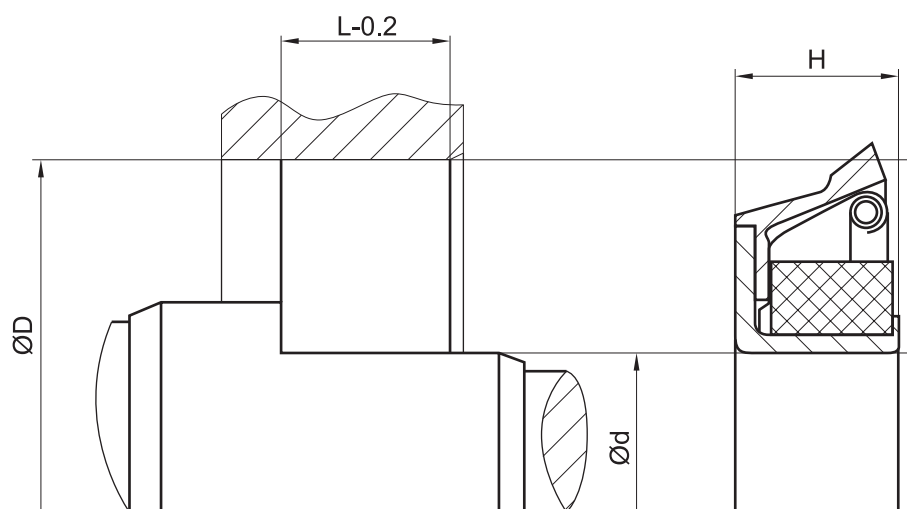
speed [m/s]	max roughness [μm]		HRC	hardness
	Ra	Rmax		
≤ 10	0,5-0,6	2 - 3	30	plunge ground
11 ÷ 16	0,3-0,5	1 - 2	40	
> 16	0,2-0,3	0,8 - 1	50	

shaft finish

chromium-oxide coatings have the disadvantage of reduced heat transfer and should not be used at higher speeds (>10 m/s). also recommended are wear sleeves case carburized or through hardened with plunge grinding. HARDNESS: 58 62 HRC.

**seal & housing recommendations**

please note that we are able to produce those profiles to your specific need or any non standard housing. for detail measurements, please see seal-mart catalog...



don't hesitate to contact our technical department for further information or for special requirements (temperature, speed etc.), so that suitable materials and/or designs can be recommended.