Seal data sheet

TR/AE

The TR/AE seal is a special rotary shaft seal developed for pressure applications without any shaft misalignment.

To overcome problems of heavy lip wear and lip tilting, TENUTE offers TR/AE seals, whose design enables to take a pressure of up to 5 bar at about 4 m/s circumferential speed without any shaft misalignment.

The TR/AE has a particularly tough sealing lip supported by a back-up ring made of virgin PTFE and it requires a retainer plate for a correct operation.

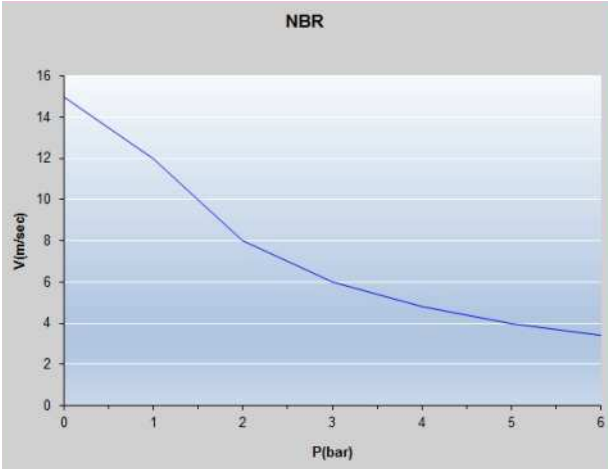
The standard TR/AE seal back is made of high resistance cotton fabric combined with a nitrile elastomer (NBR) loaded with PTFE, in lip and body areas.

Exclusive features of TR/AE seals are:

- Very robust sealing lip supported by back-up ring
- Absence of external metallic parts and consequent prevention of damages to housing bore
- No metal case and consequently no scratching of housing bore

Possible size range for TR/AE seals: $Ød_{min}$ = 15 mm; $ØD_{max}$ = 1 550 mm (please also see the drawing at the next page).

The chart at the right-hand side shows the pressure over circumferential shaft speed valid for NBR elastomer.



Materials

The TR/AE standard material is NBR (nitril rubber) loaded with PTFE, but for particular working conditions seals can be produced also in HNBR (hydrogenated nitril rubber), VMQ (silicone rubber) and FKM (fluorocarbon rubber) materials. Other combinations are available upon request.

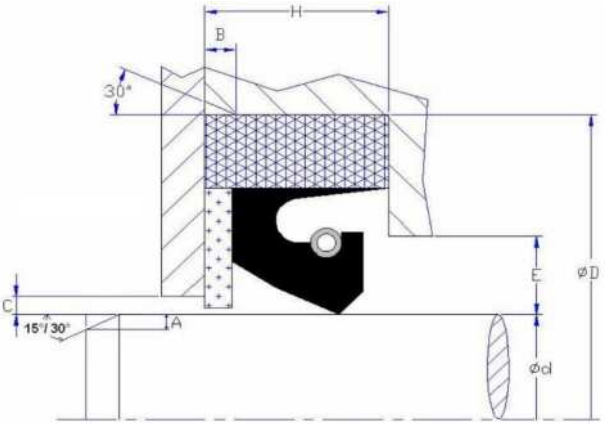
The table below shows working temperature ranges (minimum, maximum, peak (*)) applicable to each type of compound.

Material	Temperature		Standard spring
	min	max	
	°C	°C (*)	
NBR	-30	+100 (+120)	Carbon steel
HNBR	-40	+150 (+175)	Carbon steel
VMQ	-50	+200 (+250)	Carbon steel
FKM	-20	+200 (+250)	AISI 302

Assembly of TR/AE seals

The drawing shows the details of the housing dimensions and the assembly of the TR/AE seal.

Particular applications or requirements different from those details shall be agreed with the TENUTE Technical Department / SKF Seals Application Engineering.



$C_{maximum}$ ... see table below

$E_{maximum}$ = 0,5 x F

Clearance

Shaft diameter Ød		**Clearance C**
Over	Up to	max
mm	mm	mm
15	600	1
600	1 490	1,5

Shaft and housing diameter tolerance

Shaft diameter Ød		**Tolerance**	**Housing diameter ØD**		**Tolerance**
Over	Up to		Over	Up to	
mm	mm		mm	mm	
15	1 000	h11	35	1 000	H10
1 000	1 490	h10	1 000	1 550	H9

Housing height tolerance

Housing height H	**Tolerance**
mm	mm
Up to 15	+0 / -0,1
Over 15	+0,1 / -0,1

Shaft and housing chamfers

Shaft diameter Ød		Shaft chamfer A	Housing diameter ØD		Housing chamfers	
Over	Up to	minimum	Over	Up to	H	B
mm	mm	mm	mm	mm	mm	mm
15	50	1,5	35	50	10	1
50	250	3	50	250	15	1,5
250	800	4,5	250	800	20	2
800	1 490	6	800	1 550	30	3

Shaft and housing surface finishing

A roughness of Ra from 0,2 to 0,6 µm is recommended for the shaft in standard applications, while in case of high speeds, a finishing to Ra from 0,2 to 0,4 µm is recommended. Plunge grinding is required. For the housing bore a finish turning is sufficient.

Shaft hardness

Up to 15 m/s	Over 15 m/s
40 HRC	50 HRC and above

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