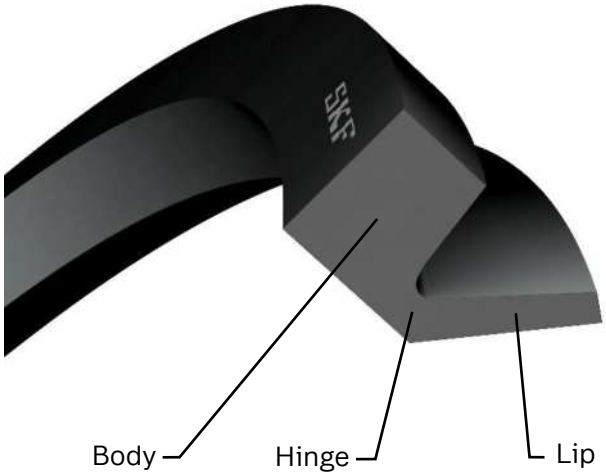
Seal data sheet

TR/VA



The TR/VA seal is a very flexible axial shaft seal or V-ring developed based on SKF / TENUTE experience over the years to properly operate in applications without pressure.

The seal body is completely made of rubber and the cross section consists of three main parts:

The TR/VA body helps to keep the seal in the right position on the shaft during rotation.

Due to the shape of the sealing lip and the resilience of the polymer used, the TR/VA seal compensates both for angular deviations as well as axial displacement between the shaft and the sealing surface.

The hinge connects the elastic sealing lip with the solid body. It works as a spring between the seal body and the sealing lip. It enables a constant pressure of the sealing lip onto the mating surface.

Exclusive features of TR/VA seals are:

- Resistance to possible shaft misalignments, angular deviations as well as axial displacements

Possible size range for the TR/VA seals: ØSHAFT$_{min}$ = 19 mm; ØSHAFT$_{max}$ = 2 020 mm (please also see the drawing at the next page).

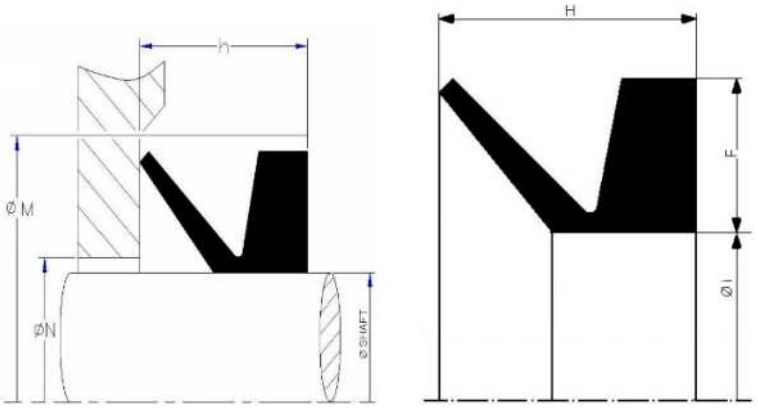
Materials

The standard material for the TR/VA is a nitril elastomer (NBR) with 60 Shore A filled with PTFE, but for particular applications, the TR/VA can be manufactured in different materials like hydrogenated nitril elastomer (HNBR), silicone elastomer (VMQ) or fluorocarbon elastomer (FKM). The table below shows working temperature ranges (minimum, maximum, peak (*)) applicable to each type of compound.

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

Assembly of TR/VA seals

The left drawing shows the details of the housing dimensions and the assembly of the TR/VA seal. In the right-hand drawing you can see the seal cross section and related dimensions. Please also refer to the table below.



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

For this axial shaft seal, it is important to check the shaft speed. A circumferential shaft speed exceeding 6 – 8 m/s requires an axial support, whilst over 10 – 12 m/s a radial retention is necessary.

ØSHAFT		**ØN**	**ØM**	**h**	**H**	**F**
Over	Up to	max	min			
mm	mm	mm	mm	mm	mm	mm
19	38	ØSHAFT + 2	ØSHAFT + 12	6 ±0,8	7,5	4
38	68	ØSHAFT + 3	ØSHAFT + 15	7 ±1,0	9	5
68	105	ØSHAFT + 4	ØSHAFT + 18	9 ±1,2	11	6
105	155	ØSHAFT + 4	ØSHAFT + 21	10,5 ±1,5	12,8	7
155	210	ØSHAFT + 5	ØSHAFT + 24	12 ±1,8	14,5	8
210	2 020	ØSHAFT + 10	ØSHAFT + 45	20 ±4,0	25	15

Surface finishing

For shuffling surfaces, a roughness of Ra from 0,3 to 1,6 µm is recommended for most of the standard applications, while in case of high speeds, a finishing to Ra from 0,2 to 0,6 µm is recommended. For the shaft no special tolerance or roughness is required, but we recommend keeping Ra values below 3,2 µm.

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