Seal data sheet

T11/ML/L

The T11/ML/L seal is designed and used mostly in work rolls and back-up rolls for rolling mills and other applications, where a particularly strong seal is required.

The T11/ML/L design has a robust sealing lip with reduced interference and an L-shaped metal insert in the seal back. Therefore, it can be installed without a retainer plate. However, in extreme cases, a retainer plate might be advisable.

A vulcanized finger spring provides a uniform distribution of pressure on the shaft exerted by the sealing lip.

All the inconveniencies shown by garter spring seals are avoided, such as lip overturning, the spring popping out from its housing and consequent damages of bearing and shaft.

This seal can withstand pressures up to 1 bar. The use of T11/ML/L in applications with static or dynamic misalignment must be evaluated by SKF Seals Application Engineering respectively the TENUTE Technical Department.

Exclusive features of T11/ML/L seals are:

- Reduced lip interference
- Possibility of assembly without retainer plate
- Vulcanized finger spring
- Uniform distribution of the sealing lip pressure on the shaft
- Spring fixed in groove – therefore no inconveniences related to the spring coming out of its position e.g. during mounting

Possible size range: $Ød_{min}$ = 60 mm; $ØD_{max}$ = 1 350 mm (please also see the drawing at the next page).

Materials

The materials used for the T11/ML/L seal may vary depending on the application demands. Standard and special products are made according to the table below. SKF Seals Application Engineering / TENUTE Technical Department is available for any further investigation on different materials.

Standard production		**Special production on demand**	
Lip	NBR	Lip	HNBR, FKM, EPDM, MVQ
Spring	AISI 301	Spring	AISI 301 – AISI 316

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

Material	Temperature		Recommended circumferential shaft speed
	min	max	max
	°C	°C (*)	m/s
NBR	-30	+100 (+120)	10
HNBR	-40	+150 (+175)	18
VMQ	-50	+200 (+250)	24
FKM	-20	+200 (+250)	24

Assembly of T11/ML/L seals

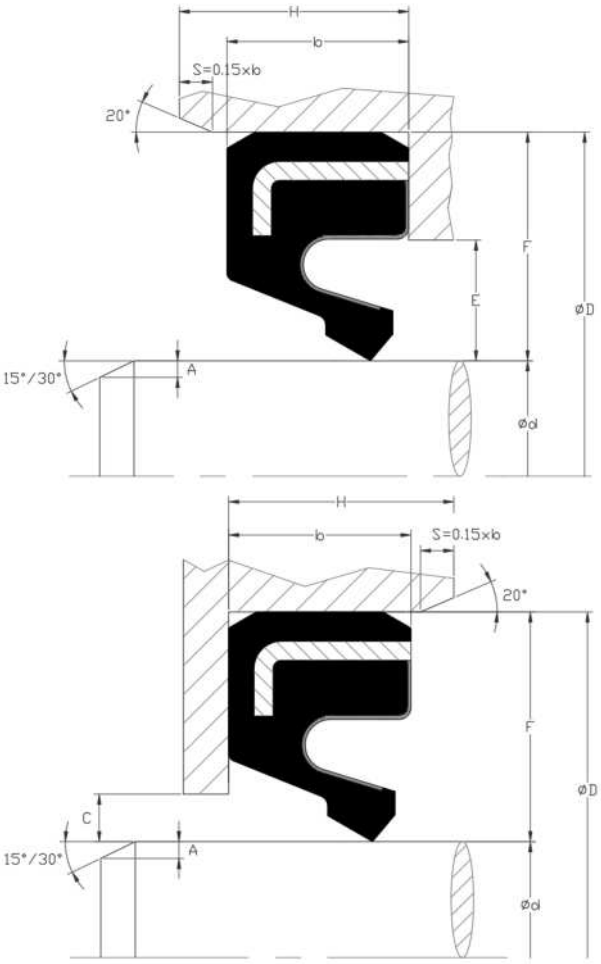
The drawing shows the details of the housing dimensions and the assembly of the T11/ML/L seal in applications without pressure.

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

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

$E_{minimum}$ = 0,3 x F; $E_{maximum}$ = 0,5 x F

In case of pressure (max. 1 bar) the lower drawing at the right-hand side is applicable to support the seal back against the pressure.



Shaft and housing diameter tolerance

Shaft diameter Ød		Tolerance	Housing diameter ØD		Tolerance
Over	Up to		Over	Up to	
mm	mm		mm	mm	
60	1 000	h11	80	1 350	H8
1 000	1 290	h10			

Housing height tolerance and chamfers

Housing height			Shaft chamfer			Housing chamfer
b	**H**	**Tolerance**	**Ød**		**A minimum**	**S**
mm	mm	mm	Over mm	Up to mm	mm	
Up to 10	b + 0,3	+0,2 / 0	60	250	3	S = 0,15 x b
Over 10	b + 0,4	+0,3 / 0	250	800	4,5	
			800	1 290	6	

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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