

## TR/3/BT

The TR/3/BT seal is a standard TR/3 rotary shaft seal, sufficiently robust to prevent keep contamination out of the sealing system and damaging the main lip.

A rubber button (similar to a half O-ring) on its top provides the mechanical locking of the seal in its housing bore as well as an improved sealing of the static seal area at the back of the seal.



The TR/3/BT features a seal back in high resistance rubber/fabric and a lip made of abrasion-resistant compounds loaded with PTFE. Together with an improved seal design, this enables enhanced performance with reduced maintenance interventions.

The TR/3/BT solid back and lip area provide a good flexibility, to compensate shaft misalignment and a maximum pressure of 0,5 bar.

The TR/3/BT is also available as split version TR/3/BT/SPLIT enabling easier assembly (no pressure applicable) in applications, where it would be difficult or even impossible to use an endless design. Both designs, TR/3/BT endless and TR/3/BT/SPLIT require a retainer plate for a correct operation.

There is also the possibility of gluing the TR/3/BT/SPLIT large diameter seals, using cold or hot gluing processes.

Possible size range for TR/3/BT seals:  $\varnothing_{d_{min}} = 15 \text{ mm}$ ;  $\varnothing D_{max} = 2\,530 \text{ mm}$  (please also see the drawing at the next page).

Dimensions and tolerances are according to DIN 3760.

Exclusive features of TR/3/BT seals are:

- Mechanical locking of seal due to a rubber button (integrated half O-ring)
- Increased sealing capability at the static seal area due to the rubber button
- Improved resistance to possible shaft misalignments
- Decreased radial force exerted on shaft
- Reduced friction and consequent temperature decrease
- Protected spring to avoid slipping/popping out from groove
- Reduced spring preload
- Absence of external metallic parts and consequent prevention of damages to housing bore

## Materials

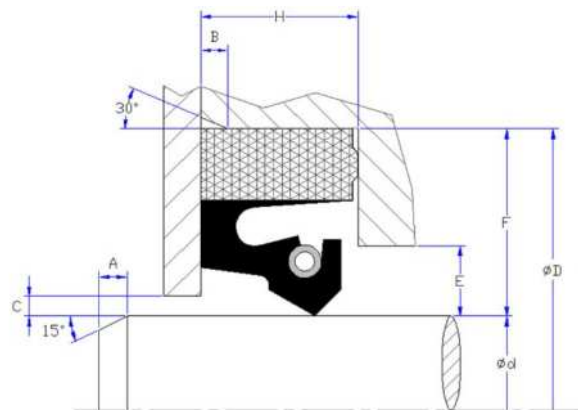
The table below shows working temperature ranges (minimum, maximum, peak (\*)) applicable to each type of compound as well as possible spring configurations.

Material	Temperature		Standard spring	Special spring	Recommended circumferential shaft speed	Misalignment
	min	max				
	°C	°C (*)				
<b>NBR</b>	-30	+100 (+120)	Carbon steel	AISI 302	15	According to cross section
<b>HNBR</b>	-40	+150 (+175)	Carbon steel	AISI 302	20	
<b>FKM</b>	-20	+200 (+250)	AISI 302	AISI 316	25	

## Assembly of TR/3/BT seals

The drawing shows the details of the housing dimensions and the assembly of the TR/3/BT seal.

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



$$C_{\text{maximum}} = 0,2 \times F$$

$$E_{\text{maximum}} = 0,5 \times F$$

## 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	30	1 000	H10
1 000	2 480	h10	1 000	2 530	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	30	50	10	1
50	250	3	50	250	15	1,5
250	800	4,5	250	800	20	2
800	1 500	6	800	1 500	30	3
1 500	2 480	7,5	1 500	2 530	40	4

## 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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