

TFW/PTV

The TFW/PTV axial shaft seal – same as the standard TFW design – is commonly used on the back-up rolls of hot and cold rolling mills.

As visible in the image at the right-hand side, the seal needs to be bolted into its position, acting as a first barrier against water, improving the overall sealing system.

The TFW/PTV seal also features a treated iron insert, completely covered by rubber. It is suitable to be mounted in open housing bores.



The TFW/PTV seal is characterized by an exclusive PTFE antifriction band vulcanized on the sealing lip – patented with number PCT/EP2006/004962. The PTFE grade is filled according to surface conditions and roughness related to the application. This PTFE band is an integral part of the seal body.

Thanks to the self-lubricating properties of PTFE, the sealing lip provides a remarkably longer life-time compared to traditional seals made of standard elastomers.

Laboratory tests as well as investigations on-site show significantly reduced lip wear and increased sealing performance on the long run, as well as a significantly increased stability over time compared to existing PTFE cold glued strips or sprayed solutions.

Being firmly tightened onto the seal end plate by means of bolts, the TFW seal enables stability and a reliable sealing performance, whilst a slot at the 6 o'clock position allows water to flow out of the sealing system.

The TFW/PTV seal features a particularly flexible sealing lip capable of following axial displacements of up to $\pm 12,5$ mm in a very rigid body, which does not deform under pressure of the seal inner ring. Thanks to the two O-rings placed under the flange, also the static sealing effect is provided.

Exclusive features of TFW/PTV seals are:

- Antifriction material vulcanized during the process according to patent PCT/EP2006/004962
- Significantly reduced friction and temperature generated by friction
- Increased seal life-time compared to seals made of standard elastomers
- Mountable in open housings via bolts
- Increased stiffness due to metal insert fully covered by rubber and consequent prevention of damages to the contact surfaces
- Improved capability to follow axial displacement up to $\pm 12,5$ mm
- Improved static sealing functionality due to the two integrated O-rings

Possible size range for TFW/PTV seals: $\varnothing d_{\min} = 30$ mm; $\varnothing D_{\max} = 2\,300$ mm (please also see the drawing at the next page)

Materials

The standard material for the TFW/PTV seal is a nitrile elastomer (NBR), but it is also available as hydrogenated nitrile elastomer (HNBR) or fluorocarbon elastomer (FKM) on request.

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

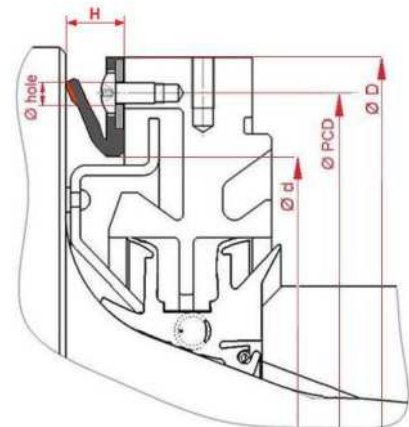
Material	Temperature		Coefficient of friction	Recommended circumferential shaft speed
	min	max		max
	°C	°C (*)		m/s
NBR	-30	+100 (+120)	0,13	20
HNBR	-40	+150 (+175)		30
FKM	-20	+200 (+250)		30

The standard PTFE compound used for the TFW/PTV coating design is PTFE filled with bronze. For more details and possible other PTFE coatings, please contact the TENUTE Technical Department / SKF Seals Application Engineering.

Assembly of TFW/PTV seals

The drawing shows the details of the housing dimensions and the assembly of the TFW/PTV seal.

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



Metal parts surface finishing

Axial shaft seals can work in contact with Ra values ranging from 0,8 to 1,6 μm . Nevertheless, in applications with high circumferential speed or particular fluids, lower values are required. Please align and agree those values with the TENUTE Technical Department / SKF Seals Application Engineering. For an accurate match of holes and screws a check of holes positions and their distance on the wheelbase diameter of the TFW/PTV seal is recommended. The image above shows the two important parameters for a proper assembly of the TFW/PTV seal – \emptyset PCD (Pitch circle diameter = diameter of the circle passing through the centre of all the fixing screws) and \emptyset hole.

Seal counterface hardness

For the sealing counterface a hardness of 50 HRC or above is recommended.

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