

# SKF Taconite Seals

One global design for split housings for extremely contaminated and wet applications



## Features

- Cartridge Taconite Seal of machined cast iron or steel
- Three and four axial labyrinth stages
- Internal V-ring seal to exclude contaminants and enable grease to purge
- Rotating labyrinth ring faces bearing housing to deflect and fling away water
- Short installed axial length
- The rotating labyrinth ring is sealed to the shaft by an O-ring in its bore
- 3 grub/set screws (at 120°) to center the seal on the shaft
- $\pm 0.5^\circ$  misalignment capability
- Circumferential groove to aid alignment and assembly
- Fits SKF metric SE, SNL, SNL 30, 31 and 32 series<sup>1)</sup>
- Fits SKF inch SAF, SAF B, SAW, SAFD and SDAF housings<sup>1)</sup>

## Benefits

- Excellent exclusion of contaminants
- Improved water ingress prevention (including high pressure washing)
- Longer bearing and seal service life
- Reduced grease consumption
- Reduced environmental impact
- Compact design
- Easier installation and alignment
- Compatible with new and older housings<sup>1)</sup>

<sup>1)</sup> Seals for shaft diameters,  $d_1 \geq 340$  mm (12 15/16 in.) are "bolt on" design. The housings must have a machined face to accommodate the seal.



## Heavy-duty industries

- Mining
- Mineral processing
- Cement
- Pulp and Paper
- Metals
- Marine

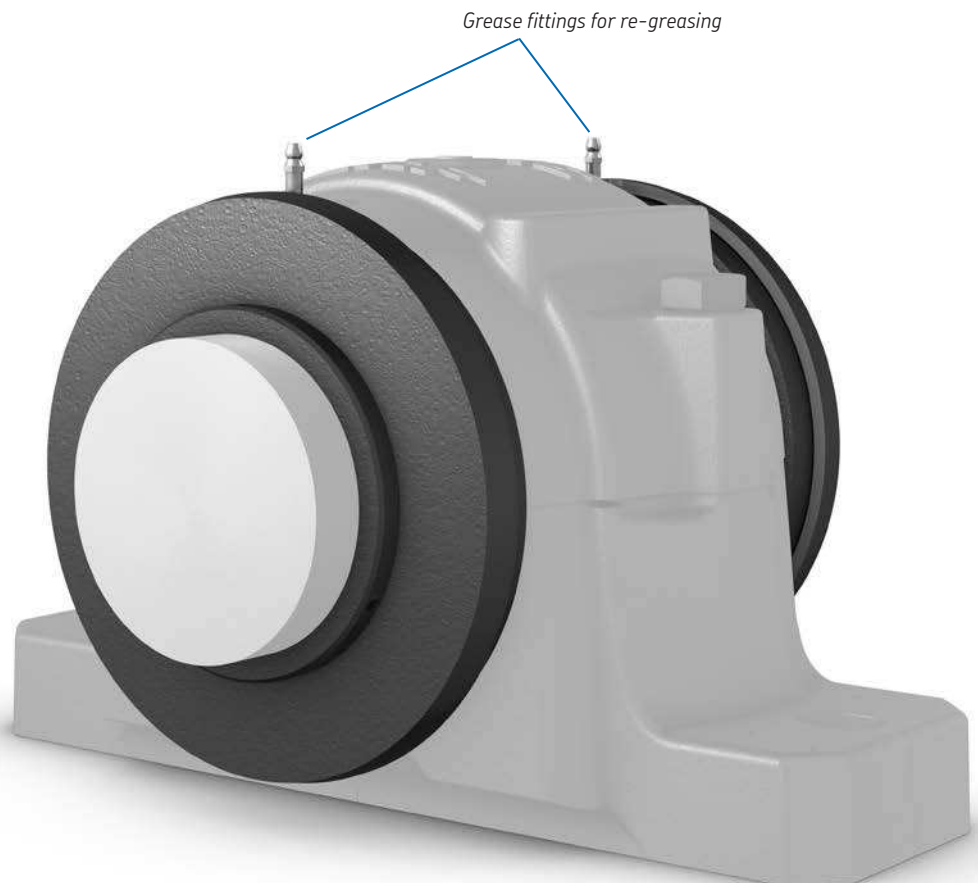
## Typical applications

- Conveyor pulleys
- Grinding mill pinion housings
- Bucket elevators
- Hoists and winches
- Jack shafts
- Pulverizers
- Fans

## Superior protection and easier alignment

The SKF Taconite Seal consists of two rings (one stationary and one rotating) which form a very narrow labyrinth between the two rings. The rotating labyrinth ring carries a V-ring seal that seals against the stationary labyrinth ring. The V-ring seal blocks contaminants from entering the bearing housing and aids the purging of contamination and old grease when the seal is re-greased.

- **Multi-stage axial labyrinth cartridge seal** – includes two labyrinth rings, an internal low friction V-ring seal and provision for grease purging
- **Purging and re-greasing of labyrinths** – via a grease fitting on the stationary labyrinth ring
- **Flinger action** – the rotating labyrinth ring flings water away from the seal
- **In-groove or bolt-on seal designs** – for SKF split housings. Seals can be customized for use with competitor housings
- **Inch or metric sizes** – a wide product range to fit housings with different shaft sizes, from 50 mm (1 15/16 in.) to 450 mm (18 in.) as standard. Contact SKF if larger sizes are needed.
- **V-ring seal and O-rings** – made of Acrylonitrile-butadiene rubber (NBR)
- **Easy alignment** – circumferential groove on the outer diameter surface of the stationary labyrinth ring aids assembly and alignment. Grub/set screws in the rotating labyrinth ring firmly secure it to the shaft.
- **Worldwide availability** – SKF can meet the needs of multinational producers and just-in-time delivery programmes



### Safety warning

All rotating machinery requires adequate fixed safety guards, including the exposed rotating labyrinth ring of SKF Taconite Seals. If manual purging of the labyrinths is used, provisions must be made for the safe purge/re-greasing of the labyrinths by extending the grease supply fittings to the outside of the safety guards.



## Grease filling and purging

The SKF Taconite Seal is supplied with a grease fitting for the re-greasing of the labyrinth. This purges the labyrinth of contamination and helps block the entrance of contaminants.

The seal can be greased three ways:

- Manually with a grease gun
- SKF SYSTEM 24
- SKF Automated Lubrication System (ALS)

To fill and purge SKF Taconite Seals, the grease used to lubricate the bearing, or one that is compatible with it, should normally be used. Where a sealed SKF spherical roller bearing is used, SKF recommends SKF LGEP 2 grease, which is the original factory fill grease in sealed spherical roller bearings with VT143 suffix. For lubrication with SKF SYSTEM24, use LGWA 2 grease.

Depending on their compatibility with the grease used to lubricate the bearing, other SKF greases can also be used – according to operating requirements:

- SKF LGHB 2 – higher ambient temperature applications
- SKF LGWM 1 – cold climates
- SKF LGGB 2 – biodegradable grease



## SKF Taconite Seal designation system and selection guide

All SKF Taconite Seals have the designation prefix TK. The seals can be ordered in metric or inch dimensions. An SKF Taconite Seal can be ordered as an individual item for metric or inch dimensions or as part of a kit with the SAF, SAF B, SAW, SAFD and SDAF inch housings. (→ **table 1**)

Designation for metric sizes consist of the prefix TK and the housing size. Designation for inch sizes consists of prefix TK and the number from **table 1**. For non-standard sizes, contact SKF application engineering service.

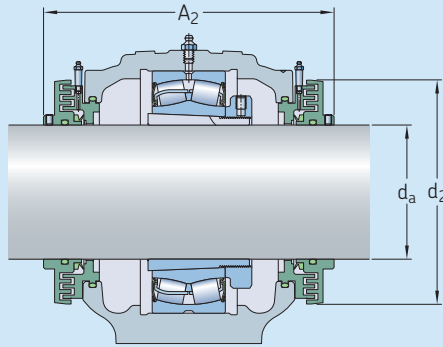
### Examples for ordering SKF Taconite Seals only:

Metric housing, adapter sleeve:	TK..	eg. TK 524
Inch housing, adapter sleeve:	TK..	eg. TK-115V

*SKF Taconite Seals in inch sizes will be available starting end of 2015*

Table 1

SKF Taconite Seal general data



Metric sizes

Principal dimensions			Designation <sup>1)</sup>	Recommended relubrication rate
da	d2	A2		
mm				grams/hr
50	125	165	TK 511	0,03
55	130	175	TK 512	0,03
60	135	180	TK 513	0,03
65	140	176	TK 515	0,03
70	150	205	TK 516	0,04
75	155	210	TK 517	0,04
80	165	225	TK 518	0,04
85	170	220	TK 519	0,04
90	175	232	TK 520	0,05
100	185	250	TK 522	0,05
110	205	260	TK 524	0,05
115	215	265	TK 526	0,06
125	225	285	TK 528	0,06
135	235	295	TK 530	0,07
140	240	315	TK 532	0,07
150	280	324	TK 34	0,09
160	290	330	TK 36	0,11
170	300	352	TK 38	0,11
180	310	382	TK 40	0,15
200	330	390	TK 44	0,16
220	350	406	TK 48	0,17
240	380	424	TK 52	0,18
260	400	424	TK 56	0,19
280	420	454	TK 60	0,21
300	440	474	TK 64	0,21
320	460, 510 <sup>3)</sup>	525	TK 68, TK 68B <sup>3)</sup>	0,33
340	490, 535 <sup>3)</sup>	525	TK 72, TK 72B <sup>3)</sup>	0,34
360	510, 555 <sup>3)</sup>	527	TK 76, TK 76B <sup>3)</sup>	0,36
380	530, 575 <sup>3)</sup>	557	TK 80, TK 80B <sup>3)</sup>	0,37
400	550, 575 <sup>3)</sup>	587	TK 84, TK 84B <sup>3)</sup>	0,37
410	560, 625 <sup>3)</sup>	587	TK 88, TK 88B <sup>3)</sup>	0,39
430	585, 635 <sup>3)</sup>	599	TK 92, TK 92B <sup>3)</sup>	0,39
450	605, 660 <sup>3)</sup>	599	TK 96, TK 96B <sup>3)</sup>	0,39

Inch sizes

Principal dimensions			Designation <sup>2)</sup>	Recommended relubrication rate
da	d2	A2		
in.				grams/hr
1 15/16	4.9	6.5	TK 24 V	0,03
2 3/16	5.1	6.9	TK-29 V	0,03
2 7/16	5.3	7.1	TK-37 V	0,03
2 11/16	5.9	8.1	TK-44 V	0,04
2 15/16	6.1	8.3	TK-53 V	0,04
3 3/16	6.5	8.9	TK-188 V	0,04
3 7/16	6.9	9.1	TK-102 V	0,05
3 11/16	7.3	9.8	TK-109 V	0,05
4 3/16	7.3	9.8	TK-113 V	0,05
4 7/16	8.1	10.2	TK-117 V	0,06
4 11/16	8.9	11.2	TK-122 V	0,06
5 3/16	9.2	11.6	TK-125 V	0,07
5 7/16	9.4	12.4	TK-130 V	0,07
5 11/16	11.0	12.8	TK-140 V	0,09
6 7/16	11.4	13.0	TK-148 V	0,11
6 11/16	12.2	15.0	TK-155 V	0,11
7 3/16	12.2	15.0	TK-159 V	0,15
7 11/16	13.0	15.4	TK-167 V	0,16
8 15/16	13.8	16.0	TK-552 V	0,17
9 7/16	15.0	16.7	TK-553 V	0,18
9 11/16	15.7	16.7	TK-607 V	0,19
10 7/16	15.7	16.7	TK-606 V	0,19
10 11/16	16.5	17.9	TK-858 V	0,21
11 7/16	16.5	17.9	TK-861 V	0,21
11 11/16	17.3	18.7	TK-859 V	0,21
12 7/16	17.3	18.7	TK 865 V	0,33
12 11/16	18.1	20.7	TK-869 V	0,34
13 7/16	19.3	20.7	TK-872 V	0,34
13 11/16	19.3	20.7	TK-875 V	0,36
15	15.0	21.9	TK-847 V	0,37
15 3/4	21.7	23.1	TK-969 V	0,37
16 1/2	22.0	23.1	TK-958 V	0,39
17	23.0	23.6	TK-838 V	0,39
18	23.8	23.6	TK-888 V	0,39

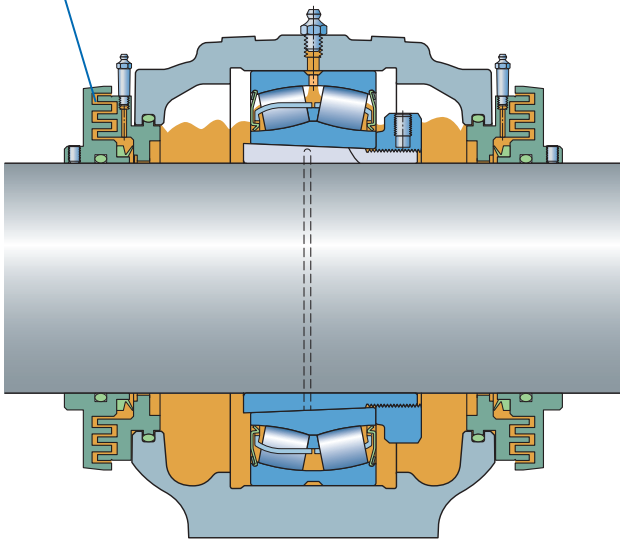
<sup>1)</sup> SE, SNL, SNL 30, 31 and 32

<sup>2)</sup> SAF, SAW, SAFD and SDAF

<sup>3)</sup> The higher d<sub>2</sub> is valid for optional "Bolt-on" SKF Taconite Seal

For inch seals that are not shown in the table, go to [www.SKF.com/group/products/bearing-units-housings/bearing-housings](http://www.SKF.com/group/products/bearing-units-housings/bearing-housings) to find optional sizes.

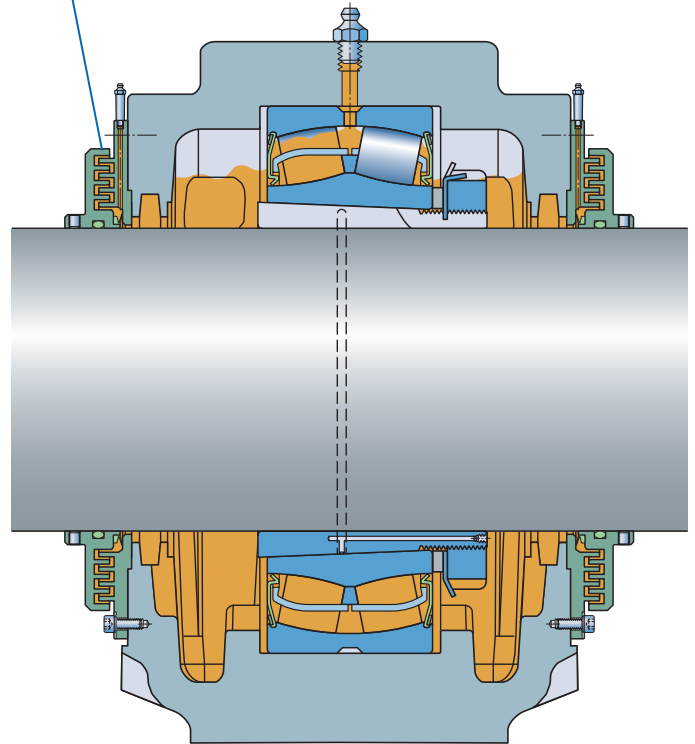
For shaft diameters from 50–140 mm (1 15/16–5 7/16 in.) labyrinths have three stages; for shaft diameters 150 mm (5 15/16 in.) and larger, labyrinths have four stages



### Housing with SKF Taconite Seal – “in-groove”

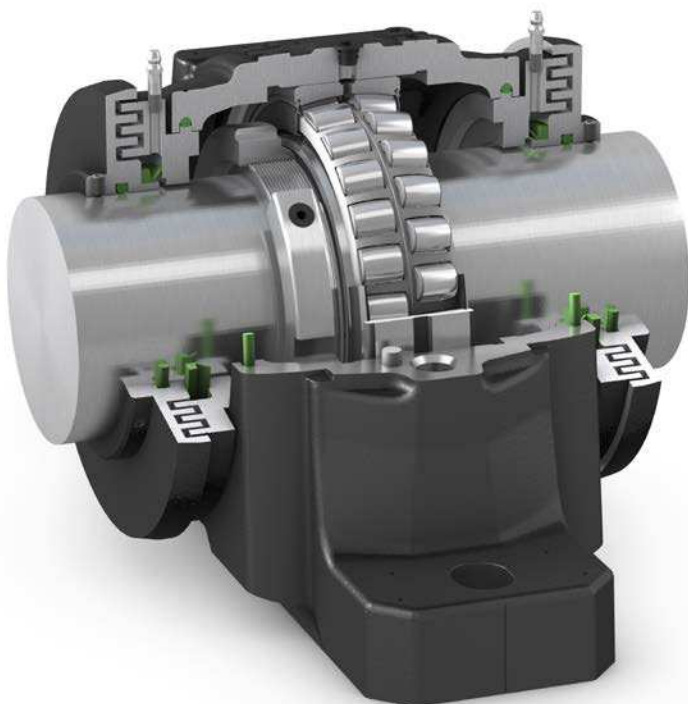
Fits into the seal groove of SKF split housings. The SKF housings do not require modification to accommodate the new “in-groove” SKF Taconite Seal. “In-groove” seals have three or four stage labyrinths, depending on size.

“Bolt-on” SKF Taconite Seal has four labyrinth stages



### Housing with SKF Taconite Seal – “bolt-on” – optional for larger sizes

The optional SKF Taconite Seal for larger sizes (from size 68) is flanged for bolting to the housing. The SKF housing can be delivered from the factory with the necessary machining or, with existing housings, can be modified by a local SKF Solution Factory to accommodate the new SKF Taconite Seal in the larger sizes.



### The ultimate SKF Three-Barrier Solution

For performance in extremely dirty and wet applications, especially where high-pressure washdowns of the machinery are common, SKF recommends the ultimate three-barrier solution:

- **SKF housing with SKF Taconite Seals** – primary barrier: prevents ingress of solid and liquid contaminants, even during high-pressure washdowns
- **Grease barrier** – secondary barrier: grease fill in bearing housing cavity
- **Upgraded sealed SKF Explorer spherical roller bearings** – final barrier: excludes contaminants during initial installation and in operation

## Case Study 1 – Conveyor pulley



Conveyor pulley bearings mounted in competitor split plummer block housings with taconite seals in an iron ore ship loading facility were suffering regular premature failures with an MTBF\* of only 12 months.

Investigation showed the cause to be gross iron contamination of the bearing grease inside the housings with samples showing a content of 5 000 to 140 000 ppm. The existing seals were replaced with SKF Taconite Seals and the levels of contamination of the bearing grease inside the housings dropped dramatically. Samples taken at 6 months showed only 10 – 60 ppm of iron and bearing MTBF was extended beyond that of the pulley lagging.

## Case Study 3 – Grinding mill pinion



The non-drive end spherical roller bearing on an ultra-fine grinding mill at a gold mine suffered failure every 15 months. Analysis showed the cause of failure to always be the same: water ingress into the

housing. When the non-drive end bearing failed, both it and the drive side bearing were replaced as a precautionary measure, increasing maintenance costs. The SKF ultimate three-barrier solution (SKF housings, SKF Taconite Seals and upgraded sealed SKF Explorer spherical roller bearings) was installed in May of 2012. The bearings are still in service with very satisfactory performance.

## Case Study 2 – Conveyor pulley



Open spherical roller bearings mounted in split plummer block housings fitted with competitor taconite seals supporting conveyor pulleys were suffering premature failures with an MTBF of approximately 18

months. Analysis showed the cause of failure to be extremely contaminated bearing grease. The ultimate SKF Three-Barrier Solution (SKF housings, SKF Taconite Seals and upgraded sealed SKF Explorer spherical roller bearings) was installed to address the problem. MTBF is now expected to be in excess of 5 years.

## Case Study 4 – Conveyor pulley



Open spherical roller bearings mounted in competitor split plummer block housings with taconite seals supporting conveyor pulleys were suffering premature failures with an MTBF between 3 and 12

months. Analysis showed the cause of failure to be contamination of the bearing grease. Since the ultimate SKF Three-Barrier Solution (SKF housings, SKF Taconite Seals and upgraded sealed SKF Explorer spherical roller bearings) was installed, there have been no further failures.

\*MTBF – Mean Time Between Failure

### The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

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PUB BU/P2 15116/1 EN · June 2015

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