

Less than you can imagine



Imagine if bearings were harder, generated less friction, or could tolerate contamination... The bearings would last even longer, operate at even higher speeds, perform better with insufficient lubrication, and take higher loads without failing.

SKF has such bearings.

NoWear[™] coated bearings

NoWear[™] bearings are still made of steel but the rolling elements, and the raceways if necessary, are coated with a new type of diamond-like carbon which is only a few microns thick. The steel is coated using a physical vapour deposition process that has been optimised for bearings and other components used in difficult operating conditions. Steel coated in this way has all the resilience of the metal but the hardness and low friction coefficient of NoWear[™].

The combination of SKF know-how and the processes and materials employed makes NoWear[™] a winning solution for your business. Now you can significantly increase the lifetime of bearings used in demanding operating environments, improve the perfomance of



your machinery, and reduce your risk of unplanned downtime.



Characteristics of NoWear[™]

- Superior to alternative coatings in rolling contact fatigue tests.
- Highly resistent to wear (see figure 1).
- Tolerant to marginal lubrication conditions and contamination.
- Enables longer relubrication intervals (see figure 2).
- Makes it possible to use less and/or "green" lubricants.

For a coating to function properly in a bearing, it has to withstand rolling contact fatigue, create little friction and prevent adhesive wear. The NoWear[™] bearings give you all this – as well as the standard high quality that you expect from an SKF bearing.

Hard facts about NoWear™	
Hardness	1 200 HV
Friction coefficient (dry)	0,1 – 0,2
Thickness	~1 µm
Max temperature	+350 °C

Figure 1. The results show that smearing could not be provoked in NoWear^m 22222E/C3 bearings. The test bearings were loaded and unloaded 100 times while rotating. If no smearing occured, bearing speed was increased and subjected to another 100 load cycles. When damage was observed, the test was stopped and the maximum nd_m value before smearing was recorded. The test results are supported by field experience in soft calenders for paper mills.







Figure 2. High speed grease life test of NU312 ECP/C3 in standard and NoWear[™] execution. The relubrication interval could be prolonged by a factor 15–20 under these conditions. Shaft speed 6000 rpm (nd_m 570 000), load C/P 18, standard roller bearing grease. The NoWear[™] temperature curve shows the average of four different tests.

NoWear[™] ...everywhere!

Switching to a coated bearing often makes sense whenever the life or speed of a standard bearing is reduced due to lack of lubricant, sudden load variations, contamination or high operating temperatures. NoWear[™] is proven in a wide range of applications including:

Paper machines. Bearings in soft calender rolls are prone to smearing. Using NoWear[™], this risk is eliminated and bearing life typically increases by a factor of three or four. Some paper mills have found that this allows them to wait with bearing replacement until the calender roll needs regrinding, ensuring that expensive production downtime is kept to a minimum.



Compressors. Cylindrical roller bearings in compressors can be subjected to low loads and vibrations. In standard bearings, these conditions often cause smearing. Experience shows that NoWear[™] bearings can solve this problem and that they can also be used successfully in compressors which use the refrigerant as the lubricant.

Hydraulic motors. Bearings can suffer from severe and unequally distributed abrasive wear in hydraulic motors. In one example, a low speed hydraulic motor with the bearings lubricated by a low viscosity oil, the uneven wear distribution led to the destruction of the shaft washer and the motor failed. Using NoWear™ bearings, the wear was eliminated (see pictures).

Other areas where NoWear[™] is being used includes Marine & Offshore, Material Handling,

Left: NoWear[™] bearing washer after hydraulic motor test. Right: Standard bearing after same test.

Racing and Mining & Construction. NoWear[™] can, besides bearings, also be used in components like gears or other parts suffering from wear.

Source: U Olofsson KTH, Stockholm



Vibrations? Poor lubrication? High load?

NoWeatTM Problem solved!

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Printed in Sweden on environmentally friendly paper by Elanders Graphic Systems AB.

Publication **504** 2000-10 www.skf.com

