Press Release

NSK Ltd.
CSR Division Headquarters
Public Relations Department

New Product: NSK LCube II Tapered Roller Bearings for EV Transmissions

Contributes to higher fuel economy (lower power consumption).

NSK Ltd. (NSK; Headquarters: Tokyo, Japan; President & CEO: Toshihiro Uchiyama) has developed a new tapered roller bearing “NSK LCube II” for use in electric vehicle (EV) transmission systems.

A special process is applied to the surface of each roller, significantly increasing durability and seizure resistance under severely low (thin) lubrication conditions. Utilizing less lubricant and lower viscosity lubricant contributes to higher fuel economy (lower fuel/electricity consumption). NSK is targeting 4 billion yen in sales by 2030.

Development Background

Amongst increasing environmental concerns, consumers and businesses around the world are demanding better fuel economy from motor vehicles, leading to the rapid development of EV.

To improve fuel economy, there has been a shift to using less lubricant and/or lower viscosity lubricant in transmission systems. As a result, tapered roller bearings in transmissions are being subject to increasingly severe lubrication conditions, increasing the risk of lubrication oil film depletion (lean lubrication conditions), surface damage, and bearing seizure.

Higher efficiency transmission systems are seen as key to improving fuel economy, so NSK set out to develop a high reliability bearing capable of overcoming these hurdles.

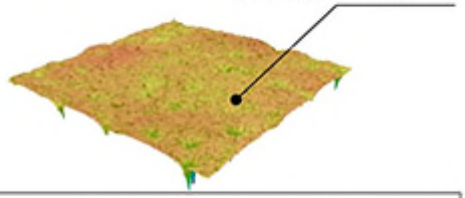
Product Features

1. Improved Durability and Seizure Resistance

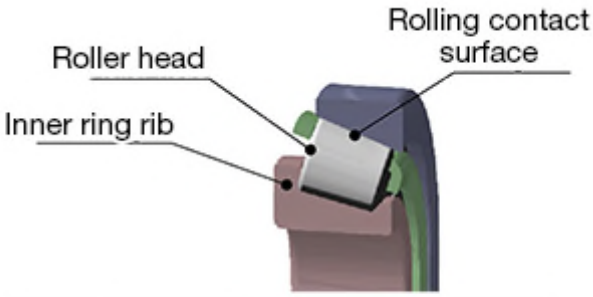
The rollers are processed to create pore-like micro indents in the surface of the steel (rolling contact surface and roller head). This microstructure helps retain an oil film that is well suited for tapered roller bearing applications. Improved oil film retention significantly inhibits surface damage, achieving more than eight times higher durability and equal or greater seizure resistance compared to conventional products.

2. Reduced Friction at Low Speeds

Improved lubricant oil accumulation and retention (easier to form oil film) in the roller surface contributes to 10% lower friction at low speeds compared to conventional products.



Surface of NSK LCube II (enlarged). Micro indents are formed in rolling contact surface and head.



Micro indents improve oil film retention of rolling contact surface and roller heads.

	Conventional	NSK LCube II
Microstructure indents retain oil	No	Yes
Durability	→	More than 8x higher
Seizure resistance	→	Same or higher
Friction at low speeds	→	10% lower

Product Benefits

NSK LCube II contributes to improving efficiency and reliability in EV.

About NSK Ltd.

NSK started its journey manufacturing the first bearings in Japan in 1916, and has since developed into a global organization researching, designing, and manufacturing Motion & Control™ solutions supporting essential mobility and industry applications. NSK is currently the top supplier of bearings in Japan, and is the third largest supplier in the world by market share.

Our responsive products and technologies, including a diverse range of solutions for precision machining, are used to enhance automotive performance and industrial productivity while reducing energy consumption to unprecedented low levels. In the early 1960s we set our sights outside Japan, and to date, have established business locations across 30 countries.

NSK Corporate Philosophy

NSK contributes to a safer, smoother society and helps protect the global environment through its innovative technology integrating Motion & Control. As a truly international enterprise, we are working across national boundaries to improve relationships between people throughout the world.

NSK Vision 2026: Setting the Future in Motion

Contributing to Society While Growing as a Company-NSK Will Set the Future in Motion by Creating New Value Beyond the World's Expectations