

## BEARING SOLUTIONS FOR AUTOMOTIVE AFTERMARKET



### NSK PRESENCE IN THE AUTOMOTIVE INDUSTRY - LIGHT VEHICLES

Since its inception in 1916, NSK has played an important role in the production of components of high precision and reliability, promoting new technologies in all fields in which it operates.

As a global manufacturer of original parts for the automotive industry, NSK has prepared high quality components for OEMs, such as sophisticated EPS systems (Electric Power Steering) and CVT (Continuously Variable Transmission), which are considered state of the art technology. These revolutionary systems were created to meet the challenges of the 21st century.

With this experience and determination, NSK will continue to contribute to the automotive industry through innovation in their research and development centers around the world.



### NSK PRESENCE IN THE AUTOMOTIVE INDUSTRY - MEDIUM AND LIGHT TRUCKS

One of the fastest growing sectors of the automotive segment is pick ups and SUVs. In this segment the main challenge is durability due to the severe conditions in which they operate. NSK is a key supplier of original equipment (OE) and aftermarket, providing the technology and quality necessary to achieve the required durability.





## NSK PRESENCE IN THE AUTOMOTIVE INDUSTRY - MOTORCYCLES AND ATVS

Motorcycles and ATVs play an increasingly important role for both recreation and commercial purposes in various parts of the world.

As part of the automotive segment, there is increasing demand for OE quality replacement parts.

Being a leading producer of high quality bearings worldwide, NSK provides original equipment (OE) technology to the most significant motorcycle and ATV manufacturers in the world.



## NSK PRESENCE IN THE AUTOMOTIVE INDUSTRY - HEAVY VEHICLES

High loads, impacts and contamination are the working conditions of the bearings in the commercial vehicle (CV) segment.

That is why NSK uses the latest technology for the purpose of developing cleaner steels, better thermal treatments, and more effective lubrication. This improves bearing life and increases efficiency.

NSK, as the original equipment (OE) supplier of the most important heavy equipment manufacturers, has the quality necessary to increase uptime and reduce maintenance.



**AUTOMOTIVE BEARINGS - POWERTRAIN**



**Tensioner and Idler Units for Timing Belt**

NSK's high reliability has been attained by using special grease and high performance seals. Optimum timing belt tension is achieved with a multi-disc damper adjusted to various engine specifications. (auto tensioner)



**Pulleys for Engine Accessory**

High precision and lightweight plastic pulley bearing with creep prevention function guarantee reliability. NSK pulleys are the exact replacement for original type of belt and layout.



**Special Ball Bearings for Alternator**

Highly reliable alternator bearings offer the best in performance under high temperature conditions, high speed and under extreme contamination conditions to achieve a longer life.



**MCB – Magnetic Clutch Bearings for A/C Compressor**

NSK produces thin cross-section double row angular contact ball bearings for magnetic clutch applications. Magnetic clutch bearings have high performance sealing and high moment rigidity to provide for a long life.



**Needle Roller Bearings for A/C Compressor**

NSK manufactures drawn cup and thrust needle roller bearings with integrated races for unsurpassed durability at high rotational speeds. A combination of high steel purity and properly hardened rollers and raceways provides the highest performance level.



**Standard Ball Bearings for Engine Accessory**

NSK utilizes the cleanest steel, special greases, and advanced seal technology to meet the OEM requirements for noise and durability.



**Integrated Shaft Bearing Units for Water Pump**

High reliability has been achieved with special grease and high performance seals. NSK offers a wide line of bearings to meet all requirements.

# 150 Bearings in a Vehicle

A typical vehicle usually contains between 100 and 150 bearings. NSK produces these type of bearings at an OEM quality level, along with a wide range of other automotive products including components for transmission systems, steering columns, electric power steering (EPS) and continuously variable transmission (CVT) systems.



In addition, the automotive industry has undergone drastic changes due to the demand of increasingly compact and more fuel efficient vehicles. NSK has developed improvements in bearing steel such as ultra-clean EP steel (with lower level of impurities), carburized and carburnitrurized steel TF (Tough Steel), as well as high performance integral seals with 3 and 4 barriers to prevent grease runoff or contaminant entry. NSK has become a global leader in innovation and development of related components with handling, steering and braking.



**AUTOMOTIVE BEARINGS - TRANSMISSION**



**Clutch Release Bearings**  
NSK self-centering clutch release bearings with resin sleeves have increased reliability by reducing the number of component parts combined with NSK tribology technology.



**Standard Ball Bearings for Transmission**  
NSK bearing and seal technology enables transmission bearings to operate under moderate metal particle contamination conditions to ensure the maximum useful life.



**Special Ball Bearings for Transmission**  
NSK TM series bearings stand out with special seal technology. Long life has been achieved by specially designed seals for transmissions. The particular design keeps the transmission oil in, while preventing the ingress of impurities.



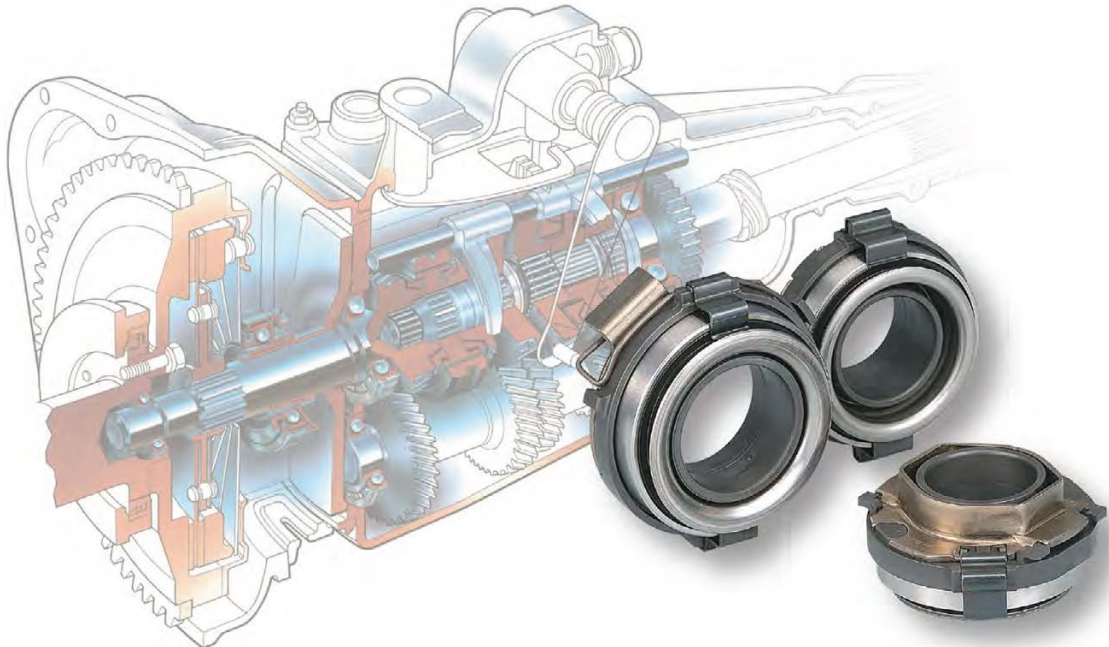
**Tapered Rolling Bearings for Transmission**  
Special original materials and heat treatment have been developed by NSK for longer life. The best quality bearing surfaces are required for operating in contaminated oil conditions found in transmission applications.



**Cylindrical Rolling Bearings for Transmission**  
NSK high capacity cylindrical roller bearings accommodate radial and axial loads from gear meshing. The latest generation of transmissions requires the most durable and efficient bearing designs using more pure steels, special cages, and larger rollers.



**Needle Roller Bearings for Transmission**  
The needle bearing for transmissions needs to be the most capable in terms of speed and load. NSK's use of ultra-clean steel and properly hardened rollers and raceways provides the highest performance level.



**Special Ball Bearings for Differential Coupling**  
NSK thin walled large diameter bearings for 4WD couplings are part of the sealing system. These bearings have superior heat resistance, high load capacity, and excellent sealing performance.

## AUTOMOTIVE BEARINGS - CHASSIS



### Deep Groove Ball Bearings for Wheel End

NSK uses high purity steel, special greases, and the best seal technology to meet the OEM requirements for noise and durability.



### Tapered Rolling Bearings for Wheel End

Special material composition and heat treatment technology have been developed by NSK to deliver longer life. Tapered roller bearings have the advantage of high load capacity in relation to size and very good durability.



### First Generation Hub I Bearing Assembly

Reliable preload calibration provides ease of assembly. Sealed for life design with premium all weather grease is water and contamination resistant. Advanced multi-lip seal technology requires zero maintenance.



### Second Generation Hub II Bearing Assembly

Reliable preload calibration provides ease of assembly and contains a flange in the outer ring. Sealed for life design uses premium all weather grease. Advanced multi-lip seal technology requires zero maintenance.



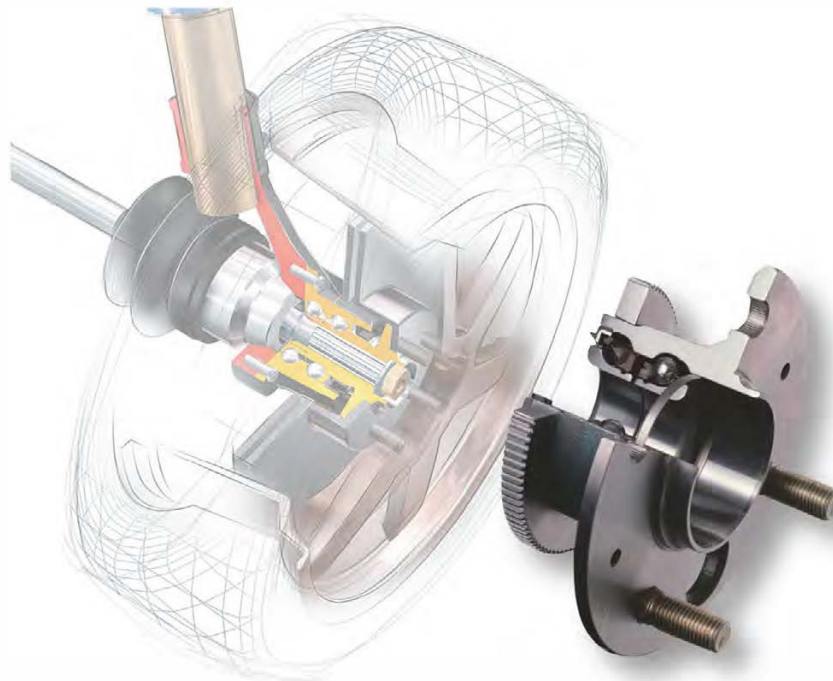
### Third Generation Hub III Bearing Assembly

Premium OE technology ensures vehicle specific fit, form and performance. Long life low friction bearing has a super finished precision matched bearing raceway. Sealed for life design uses premium all weather grease.



### Ball Bearings for Steering System

NSK uses high purity steel, special greases, and the best seal technology to meet the OEM requirements for noise and durability.



### King Pin Bearings

NSK bearings for king pin applications on commercial vehicles work with a minimum of oscillation though operate under high loads. These applications require bearings that meet the highest quality standards.



# NSK

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