



Brand of **NTN corporation**

DRIVELINE

Gear box and clutch
release bearings





DRIVELINE range

As a leading manufacturer the NTN Group designs, develops and manufactures innovative gearbox and clutch release bearing solutions. The bearings in our DRIVELINE range covers the requirements of demanding applications, both as original equipment and as aftermarket products. In collaboration with the world's major vehicle manufacturers, NTN designs and manufactures a range of heavy-duty bearings that cover virtually all European and Asian automotive brands. These durable, robust products, used in our DRIVELINE range maximise vehicle service life.

More than 160 million gearbox and clutch release bearings are produced in our factories per year.

NTN and SNR gearbox bearings

Uncompromising product reliability

The design and manufacture of gearboxes is an exact science with no tolerance for imprecision.

They provide for:

- The positioning and rotation of shafts relative to the housing
- The absorption of the synchroniser ring loads

High-quality products, SNR bearings are designed to:

- **Eliminate all play in the gearbox**
- **Operate in a harsh environment:** high temperatures, possible gearbox oil contamination, heavy loads, deflection of shafts due to increased engine torque, lack of lubricant in case of oil leakage from the gearbox, etc.
- **Meet specific requirements** such as mechanical strength, performance, acoustics, precision mounting, etc.

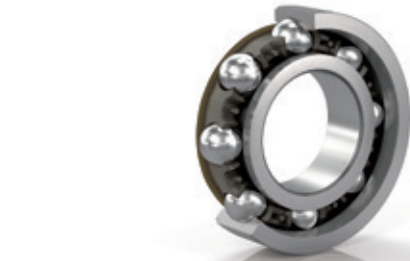
Gearbox bearing features

- A range of more than 300 part numbers – 123 products with the NTN label and 179 with the SNR label.
- 80% of this range comprises of special bearings for 3 types of gearboxes: Automatic, manual and continuously variable.
- A range that covers more than 155 automotive gearbox configurations.



Gearboxes have between 3 and 14 bearings (6 bearings on average), located primarily at the ends of the shafts (main shaft, secondary shaft and differential). These parts play a vital role in the vehicle's transmission system.

SNR product range: A range of gearbox bearings



Single-row ball bearings (AB)

- Located at the end of shafts
- Special or standard
- Preassembled, they operate with low energy loss



Tapered roller bearings (EC)

- Located at the end of shafts
- Special or standard
- Higher load-bearing capacity than single-row ball bearings



Cylindrical roller bearings (RNU)

- Located at the front of the main shaft



Double-row tapered roller and ball bearings (FC / GB)

- Located at the front of the main shaft



Needle bearings (NRB)

- Located in the middle of shafts



The replacement of gearbox bearings

Gearbox bearings are not generally treated as wear and tear parts – they have an estimated replacement rate of less 1%.

The complete gearbox can be replaced:

- Previously used gearbox rebuilt/reconditioned by the automotive manufacturers
- New gearboxes sold by gearbox manufacturers on the aftermarket
- Used gearboxes sold on the internet

The gearbox can be repaired by a garage or a shop that specialises in reconditioning.

To satisfy new technical requirements and always with a view to reducing CO2 emissions, we design and test our bearings to:

- Withstand higher temperatures
- Optimise the size of the bearings
- Increase rotational speed

SNR clutch release bearings

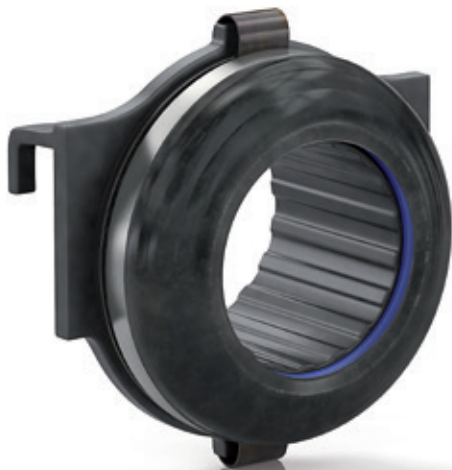
Active in this market for many years, we have developed a range of clutch release bearings that meets the needs of most automotive manufacturers worldwide. The production volume of our clutch release bearings (in France and Japan), makes NTN a world leading manufacturer.

A complete range:

- **Standard bearings:** ideal for meeting relatively low torque requirements.
- **Release bearings with self-centring washer:** enable realignment of any offset between the main shaft of the gearbox and clutch diaphragm.
- **Double-seal release bearings:** enable optimisation of seal integrity and prevent dust ingress.
- **Release bearings with diaphragm support ring (BAD) :** a reinforced plastic ring made of Teflon and carbon fibre that limits friction and wear on the diaphragm of the mechanism that withstands high temperatures.



BAD release bearing



Technical characteristics of our clutch release bearings

- **Special sheet steel construction** used in original equipment by automotive manufacturers
- **An angular contact bearing** optimised for the opposing axial loads exerted by the diaphragm
- **A polyamide cage** developed to withstand frequently applied forces of acceleration
- **A seal** designed to extend service life in a highly contaminated environment
- **Specially modified lubrication**, mainly to withstand high temperatures, enabling the release bearing to last longer

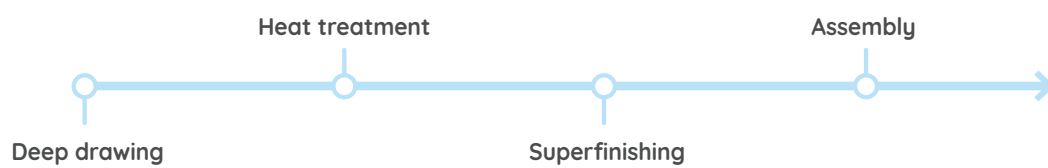


To guarantee the reliability of our parts, we have implemented **strict quality control** procedures throughout the production process.

Our tests include:

- A test on our bearings to measure the high-temperature endurance of the grease
- Clutch system tests to measure the load cycle, speed and temperature of the release bearing mechanism
- A test to determine torque and acoustic characteristics to ensure optimal performance

Manufacturing stages:



NTN, your strategic partner

A dedicated logistics centre

- Logistics centre in Annecy, France, exclusively dedicated to automotive aftermarket products
- More than 10,000 m²
- More than 35,000 products per day shipped worldwide

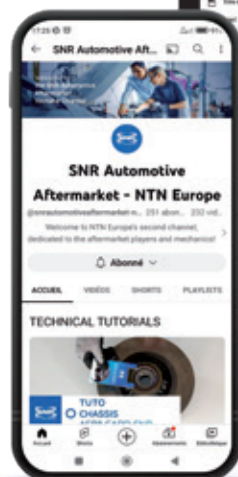




Services

To meet your day to day requirements, NTN supports you with:

- Technical experts who assist you with your everyday issues
- On-site training courses and e-learning modules
- Technical bulletins and Tech'Info installation tips
- An SNR Automotive Aftermarket **YouTube** channel exclusively dedicated to garages





Make the world
a reliable*
road to drive



Our Driveline range

Our gearbox and clutch bearings meet the demands of harsh conditions in both OEM and aftermarket applications. We work with major auto-manufacturers the world over to design and manufacture extremely strong bearings for all European and Asian brands. Our Driveline range optimises the service life of your gearboxes with robust, long-lasting products.

* At NTN, we innovate for greater reliability on the road.





NTN

Make the world **NAMERAKA**



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NTN EUROPE - 1 rue des Usines - 74000 Annecy
RCS ANNECY B 325 821 072 - Code APE 2815Z - Code NACE 28.15
www.ntn-snr.com

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