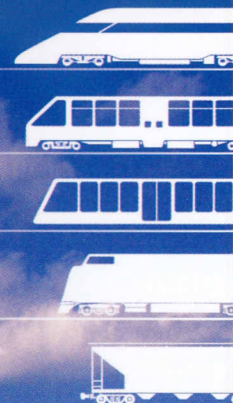


NTN®



Rail solutions



Champions
of the world rail speed record





NTN has equipped all the Shinkansen trains for the last 40 years. SNR has been a technical partner of the French TGV since its launch and worked closely with SNCF and ALSTOM to achieve the 2007 world rail speed record of 574.8 km/h.

With **NTN**® and **SNR**®, the future is already on track

Since they joined forces in 2008, NTN and SNR have forged a single corporate entity becoming larger every day as a major contender in the worldwide bearings market. The merger has been successful thanks to a number of special factors: our shared values, a mutual strategic vision, major skills synergies and a highly complementary customer base.

The potential released has caused us to accelerate our development in the rail industry, impelled not only by our long joint history in this field, but also by our position as the unrivalled leader in high-speed rail technology. The union of our experience and our strengths has enabled us to move ahead of the field in the rail industry and to anticipate the future as if it were happening now.



High speed



Intercity



Underground rail and trams



Locomotives



Freight transport

A full range
tailored for
all types
of rolling stock

From the London Underground through French intercity trains to the Tokyo Shinkansen, NTN and SNR offer a huge range suitable for all types of bogie, meeting the specific needs of each sector of rail transport and the standards in force in different countries.

REFERENCES : ABRF JOIGNY - ADTRANZ - ALSTOM - ARBEL - BOMBARDIER - CFD -

DB - DYMOS - FAIVELEY - HITACHI - JAPAN RAILWAYS - KCRC - KORAIL - MITSUBISHI ELECTRIC - NOVATRANS -

RATP - RENFE - SMRT - SNCB - SNCF - TEXELIS - TOSHIBA - VALDUNES - VOITH - VOSSLOH - WATTEUW

Efficient, reliable, high-tech solutions

NTN and SNR have combined their cutting-edge technological expertise to respond to the most rigorous demands of the industry and to design and develop bearings capable of covering the entire rail market.

JOURNAL BEARINGS

- NTN** : Friction seals
Metric dimensioning
AAR dimensioning
(Association of American Railroads)
- SNR** : Labyrinth seal
Metric dimensioning

AXLE BOXES

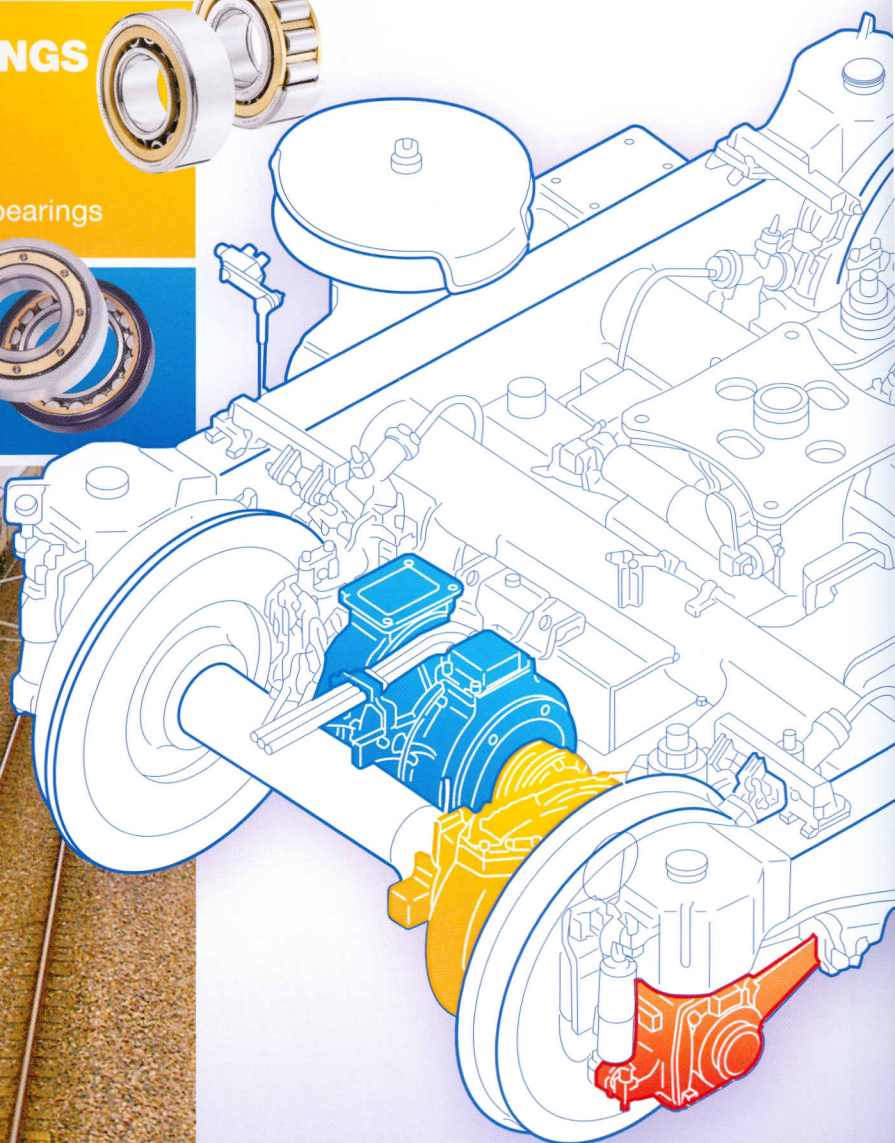
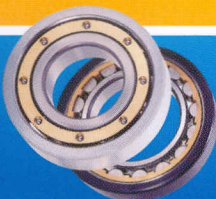
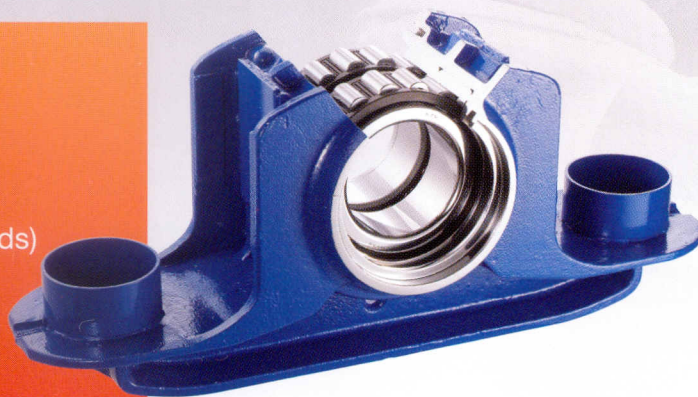
- SNR** : Design, calculation and manufacture

TRANSMISSION BEARINGS

- NTN** : Specific design for tapered roller bearings
- SNR** : Large units for tapered roller bearings and clutch-release bearings

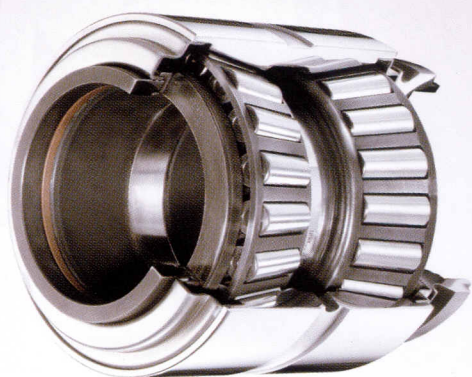
MOTOR BEARINGS

- NTN** : Insulated bearings
- SNR** : Standard bearings



More than 70 years of unequalled experience for railway requirements

NTN and SNR enjoy close partnerships, both for original equipment assembly and for parts supplies, with the most important players in all major international rail projects. Between them, NTN and SNR total 70 years of experience, during which they have developed solutions that illustrate their ability to provide expert responses to complex issues, while guaranteeing their customers exceptional quality and total security.



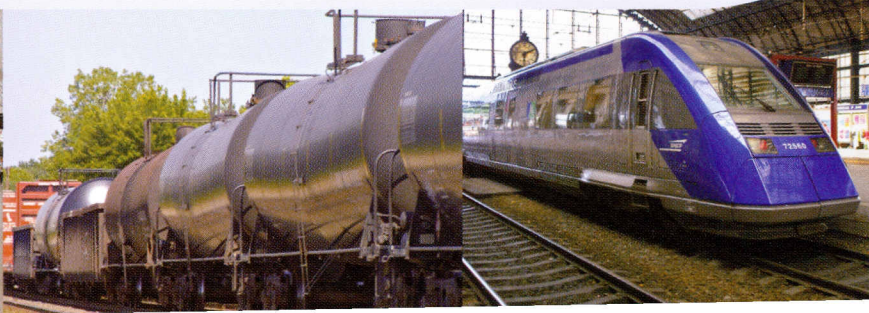
An uncompromising culture of reliability

Reliability is founded not only on the acquisition, transmission and optimisation of expertise, but also on a culture of trust and attention that enables each of us to undertake projects in the most reactive and effective manner. The culture of reliability at all levels is one of the secrets of the longevity of NTN and SNR. The world rail speed record bears witness to this: the record-breaking TGV was fitted with standard bearings, certified for service speeds of 350 km/h, without any special features. NTN and SNR can also justly be proud of not having been involved in any major railway incident ever, a fact which today underpins our unique worldwide reputation and presence.

Research and innovation a driving force

NTN and SNR have intensified their joint research and development activities. Thanks to the advances we have made in the high technology sector, and more precisely in mechatronics, we have become a powerful engine for innovation in the rail industry:

- **Self-regulating sensor cartridges**
- **Anti-fretting coatings**
- **Megaohm™**
- **Polyamide or solid single-block cage**



High added-value services

NTN and SNR work with their customers at all stages of their projects, providing them with the mix of services that they need.

1 - Design and calculation

A calculation department is available to customers to facilitate the progress and development of their research projects. Applications engineers are seconded to support them in their dimensioning analyses and in their choice of the right bearing. World-beating technology and tools are provided for them. For example, Sharc software, developed by SNR, is used to calculate the service life of a bearing by taking a range of different elements into consideration: stress, lubrication, the geometry and micro-geometry of the bearing, axle distortion etc.

2 - Testbed trials

A test laboratory, accredited by COFRAC, is used to certify that each bearing meets the EN 12080 standard. The testbed offers all the expertise required to meet customers' test needs by guaranteeing flexibility, compliance with lead times and high-quality measurements. Full-scale tests are carried out in different load and speed conditions.

3 - Bearing audits

Our technical assistance department staffed by experts enables our customers to benefit at any time from bearing reliability audits that include visual, electron microscope and molecular analyses etc.

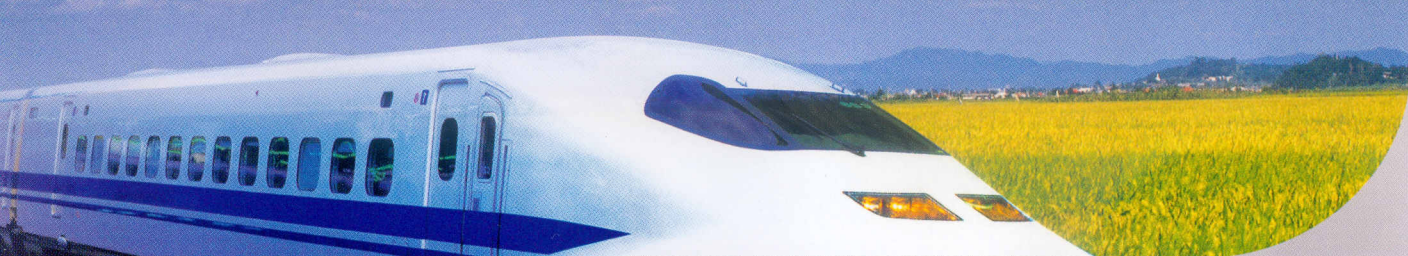
4 - Training

Theoretical training enables design offices to improve bearing dimensioning. Practical training courses are also provided for fitting and maintenance crews.

5 - Renovation of rail cartridges

Thanks to the experience and skills of our technicians, we are able to offer the highest quality of service in rail cartridge renovation: removal and examination of the cartridge, supply of a replacement cartridge, cleaning and analysis of the cartridge, repair or replacement of damaged components, protection and packaging, part tracking, the guarantee of an «as new» cartridge.





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