

WHEEL

WHEEL BEARING KIT
BRAKE DISC HUB KIT

NTN® 



With You

WHY CHOOSE AN NTN-SNR BEARING?

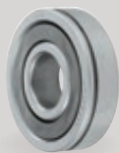
- A wide range of standard and special bearings
- 4 range extensions per year
- A range that covers 98% of registered vehicles in Europe
- A broad range for European and Asian applications: Audi, Daewoo, Fiat Group, Honda, Mazda, Mitsubishi, Renault Group, Peugeot-Citroën Group, Subaru, Suzuki, Opel Group...
- All components (caps, bolts, circlips...) are included in the kits
- Installation instructions in the kit (ASB® technology)
- The correct tightening torque is printed on the wheel bearing kit box
- NTN-SNR is a development and supply partner to major vehicle manufacturers such as, Renault, Fiat, PSA, VW, Ford, and Mazda

For a wheel bearing to operate correctly it not only depends on the bearing being fitted correctly (follow the manufacturer's instructions) it also relies on the quality of the components used to manufacture the bearing.

While supplying exceptionally high-quality components to manufacture the wheel bearings, NTN-SNR also pays particular attention to all the other components supplied in the wheel bearing kit, components such as the screws, bolts, nuts, stop rings, caps and seals, as many of these components cannot be reused, the NTN-SNR wheel bearing kits provide mechanics with all of the components needed to replace the wheel bearing correctly.

If one bolt or nut fails, if one nut comes loose, it's the whole assembly that fails this is why NTN SNR only supply the correct parts for a correct fitment. Copying a component based on a drawing or a sample can be dangerous if poor quality materials are used, heat treatment of the hubs is very important to the safe operation of the bearing; these important aspects for the production of a reliable safe part cannot always be seen with a visual inspection.

THE EVOLUTION OF THE WHEEL BEARING



Standard

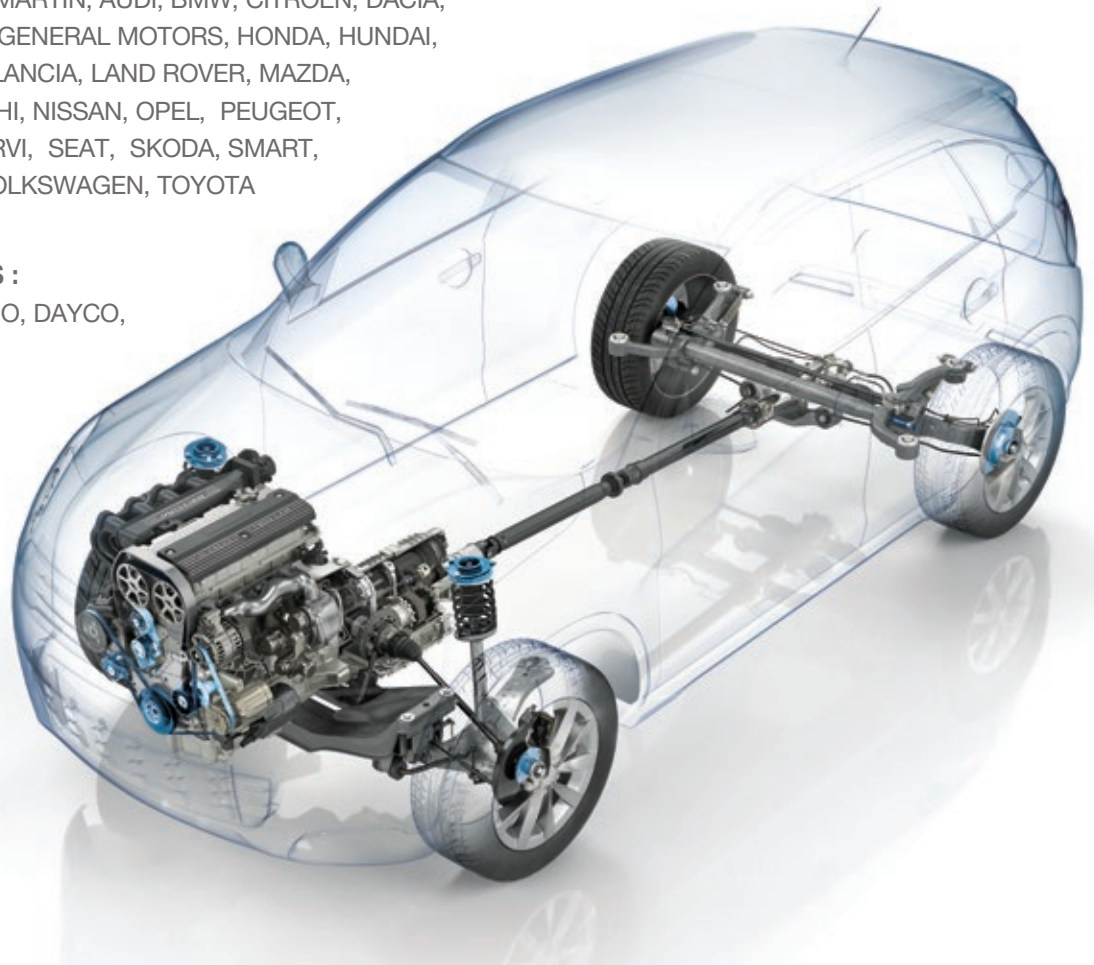
Génération 0	Génération 1	Génération 2
Seal	Encoder seal	Flange
Lubrication	Axial load:	Axial load
Fastening	- pre-loaded	toothed wheel
Axial load	- pre-lubricated	Encoder seal
Renault 12 Ford Ka	Suzuki Swift Kia Cee'd Hyundai i30	VW Golf Smart Fortwo Audi A3

MAIN AUTOMOTIVE CUSTOMERS

ALFA ROMEO, ASTON MARTIN, AUDI, BMW, CITROEN, DACIA, DAIMLER, FIAT, FORD, GENERAL MOTORS, HONDA, HUNDAI, ISUZU, JAGUAR, KIA, LANCIA, LAND ROVER, MAZDA, MERCEDES, MITSUBISHI, NISSAN, OPEL, PEUGEOT, PORSCHE, RENAULT, RVI, SEAT, SKODA, SMART, SUZUKI, VAUXHALL, VOLKSWAGEN, TOYOTA

AUTOMOTIVE SUPPLIERS :

BEHR, BOSCH, BREMBO, DAYCO, DELPHI, FTE, GATES, VALEO, ZF



Safety-critical part

Brake disc with bearing

Disc with bearing pressed in

Renault Trafic
Peugeot 5008
Mercedes Citan

Génération 3

Fasteners (bolts)
Sensor holder

Toyota Yaris
Ford Focus
Alfa 159

A RANGE OF WHEEL HUB KITS FITTED WITH BEARINGS

Since 2003, the NTN-SNR Group has been developing a complete range of brake disc hub kits fitted with bearings for the most popular vehicles of the Renault, Nissan, Vauxhall and PSA ranges. The brake disc hub kit contains OEM products, including the bearing pressed into the brake disc and the small parts needed for installation such as nuts and grease cap.

WHAT DOES THIS ASSEMBLY COMPRISE OF?

A BEARING

NTN-SNR bearings are OEM parts. They are the same bearings as we supply to the auto manufacturers as original equipment. We have comprehensive expertise regarding installation and operating conditions thanks to the following aspects:

- Knowledge of the manufacturers' recommendations
- Mathematical modelling and calculations
- Our testing at engineering test centres
- Expertise in the method of fitting bearings which we carry out at our own test facilities

Note that once the bearing has been installed, it cannot be extracted from its housing without destroying it (the outer ring of the bearing). When a disc is worn, the complete assembly must be replaced. NTN-SNR recommends replacing brake discs in pairs.

A BRAKE DISC HUB

In developing this part together with our brake partners, we followed the OEM product development process:

- Validation of drawings
- First article inspection of samples: dimensional and metallurgical analyses
- This disc is an original equipment quality product.

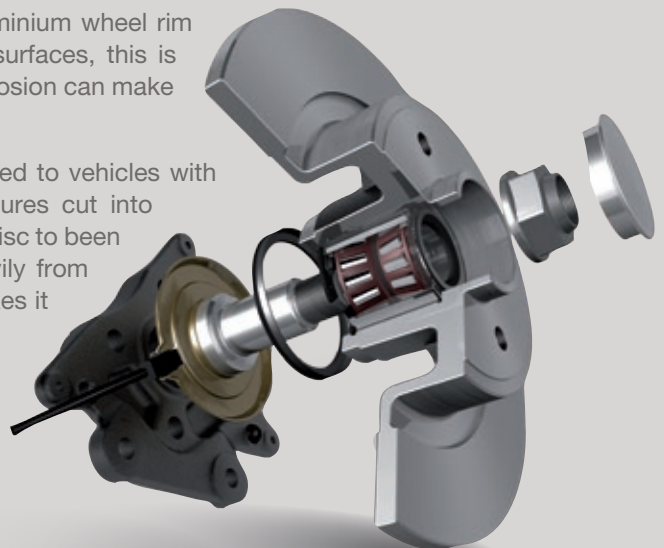
AN ASSEMBLY

The bearing is specifically designed for a given disc. One of the main keys to its correct operation lies in controlling the tolerance of the bearing. The installation of the bearing in to its housing entails a reduction in the diameter of the bearing. That reduction needs to be anticipated in the design stage and kept carefully under control during production. Only first-rate suppliers like NTN-SNR can guarantee assembly of such precision.

WHY PAINT BRAKE DISC HUB KITS?

We paint the contact area between the disc hub and the aluminium wheel rim because it can cause corrosion problems between the two surfaces, this is normally particularly bad where alloy wheels are fitted, this corrosion can make it very difficult to remove the wheel from the vehicle

We paint the entire surface of the disc, if the disc is to be fitted to vehicles with aluminium wheels. Aluminium wheels often have large apertures cut into them to enhance the look of the wheel, this allows more of the disc to be seen through the wheel itself, a corroded hub detracts heavily from the overall aesthetic look of the wheel, a painted disc hub makes it possible to reduce this problem.





AT THE HEART OF YOUR SAFETY

ASB® technology plays an essential role in the operation of many on-board systems. The ASB® bearing sensor transmits information taken from the wheel, to a number of different computers in the vehicle.



ABS

Helps prevent the wheels from locking during sudden or harsh braking and reduces stopping distance while maintaining a controlled steering response.



ESP

Enables the vehicle to maintain a controlled direction if the tyres lose road traction (skidding)



SPEED

Enables the computer to interpret and display the exact speed of the vehicle



NAVIGATION

The ASB® system makes it possible to detect your position even in a tunnel.



HILL-START ASSIST

Prevents the vehicle from rolling backward when stopped on an incline

Bearings are safety-critical components!

Selecting a poor quality ASB® sensor bearing can lead to the following problems:

- An ABS signal malfunction that supplies incorrect information
- Spurious activation of the ABS system, which can adversely affect vehicle operation.
- Incorrect estimation of the speeds of each wheel by the computer

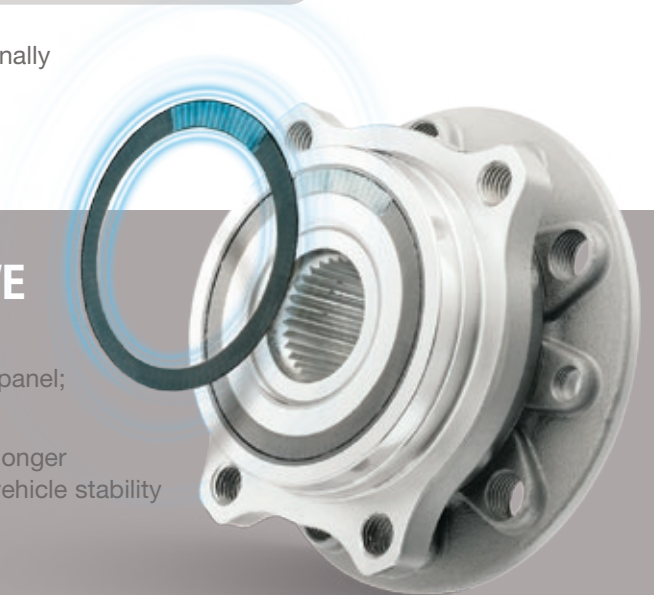


The ESP system can no longer ensure a controlled direction of the vehicle

- Incorrect speed indication, resulting in the risk of unintentionally and dangerously exceeding the speed limit

LOSS OF THE ASB® SIGNAL CAN HAVE DRAMATIC CONSEQUENCES...

- The ABS fault indicator will light up on the instrument panel; the ABS system will no longer work - this is an MOT failure.
- The ABS system will no longer function correctly; it will no longer prevent the wheels from locking up, and no longer ensure vehicle stability during braking



For your safety and for the safety of your customers **you can trust the NTN-SNR brand.**

NTN-SNR, ORIGINAL QUALITY

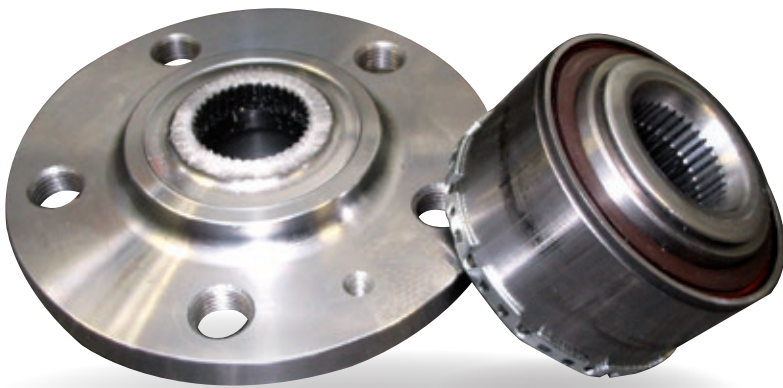
NTN-SNR is top manufacturer of wheel bearings in Europe; these safety-critical components are manufactured on every continent.

Quality and performance are at the core of our success, but product reliability and driver safety is also among our highest priorities.

NTN-SNR bearings are designed and produced using the most advanced technologies incorporating the best quality steels, lubrications, heat treatments, seals, etc.

Before the production run of any bearing, all our prototype bearings are tested for 18 months to ensure compliance with the manufacturers' technical specifications.

Cheap copied parts can be dangerous!



CHEAP COPIED BEARINGS



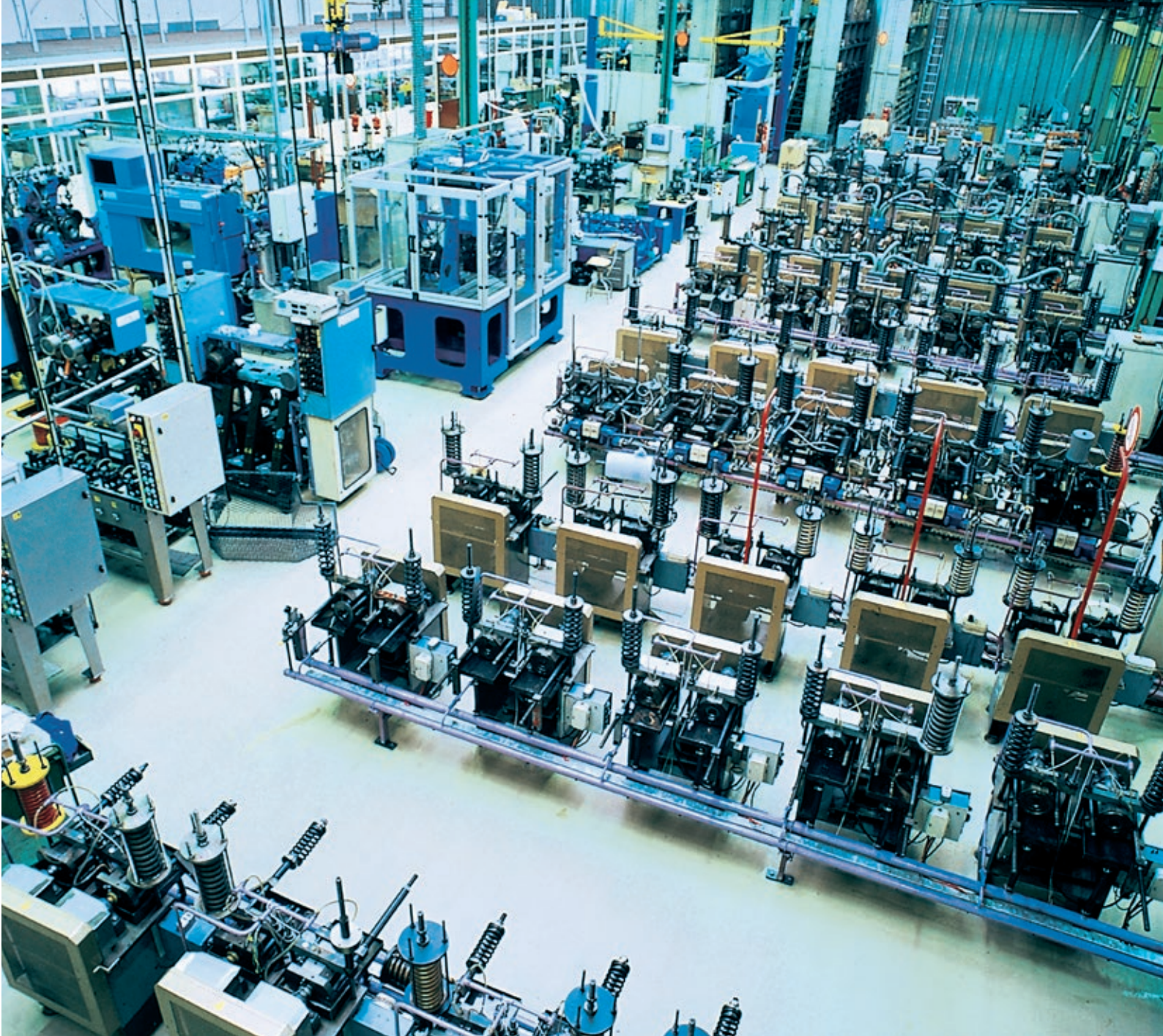
ORIGINAL NTN-SNR BEARING

Cheap copied bearings have appeared on the market over the past few years, these bearings can put the life of drivers and their passengers at risk if they fail.

NTN-SNR have conducted tests on a range of copied bearing products and test results show some dangerous problems with a lot of the products tested as listed below.

- The installed bearings do not comply with the OEM specifications, especially with regard to service life and quality. Reduced service life can lead to premature deterioration and the risk of brake disc malfunction.
- The magnetic encoders installed on the discs, which are used for ABS and ESP systems, are not of OEM quality. Some were found to have the wrong number of magnetic pick-ups giving incorrect readings.

These defects are very serious and could be the cause of fatal accidents!



The NTN-SNR Test Centre, working together with the R&D department, also conducted tests on the cheap copied wheel bearings. These bearings can be installed in place of NTN-SNR ASB® bearing XMGB40899 bearing fitted to the front of the VW Polo VII and Fox, the Audi A2 and A3, the Seat Cordoba IV and Ibiza V, and the Skoda Fabia.

The tests were conducted in compliance with the technical specifications of Volkswagen. **The results show premature and dangerous failures of these products.**

How to identify an original NTN-SNR bearing

- The NTN or SNR logo and date code are the most effective means of identifying an NTN-SNR bearing.

NTN-SNR: BEARING REMOVAL AND INSTALLATION INSTRUCTIONS

Follow these precautions:

- Always check the technical manual relating to the vehicle.
- Prepare the vehicle and the necessary tools before starting the installation. Make sure they are clean and in good condition.
- Make sure that the kit is the right one. Take the bearing out of its packaging at the last minute and place it on a clean work surface.
- Clean the parts and assemblies located near the bearing and make sure that they are in good condition. In particular, inspect for scratches, scrapes or dents on the hub, stub axle and drive shaft. Replace any damaged or worn parts.
- Do not remove any parts which are not included in the kit.
- Never disassemble or separate the components of a bearing.
- For correct installation of the bearing, always use suitable tools.
- Always apply fitting pressure through the outer ring of the bearing, the installation force must never be transmitted through the seal or inner rings (pressure through the seal or inner rings will result in internal damage to the bearing, making it noisy and fail prematurely)
- Apply the tightening torques recommended by the manufacturer (this can be found on the label of the kit).

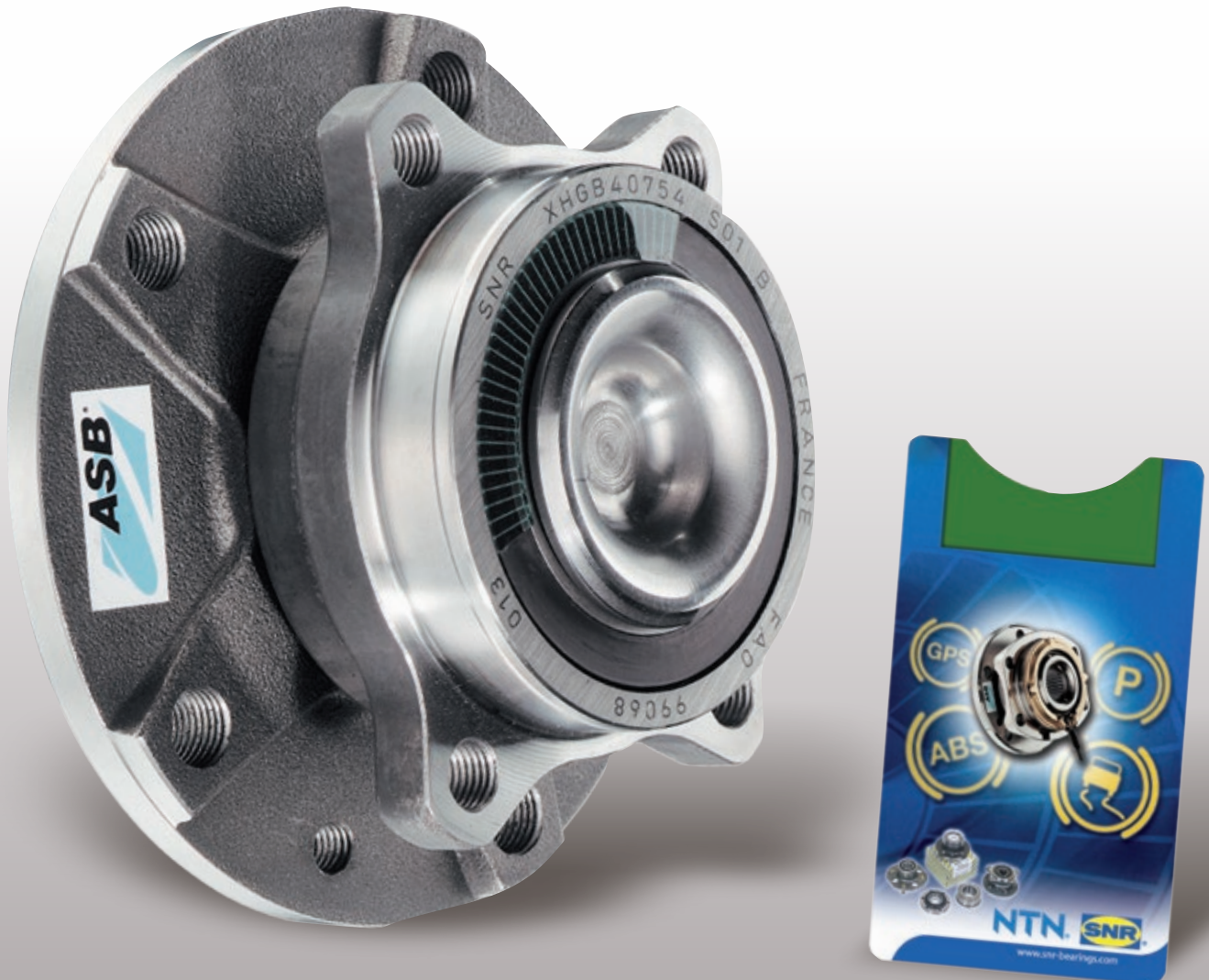


Special tools developed
for special bearings !



Follow these instructions for installation/removal of a bearing equipped with ASB® technology:

- 1st generation bearings (symbol: XGB...): Follow the bearing orientation: the markings on the bearing indicate the face with the magnetic encoder, which must always be fitted facing toward the centre of the vehicle (i.e. facing engine , gearbox or the centre of the axle)
- The bearing must be pressed-in using tools that have the required clearances in order to avoid denting or damaging the encoder (the old bearing is perfect for this task).
- Bearings must be handled and stored carefully in order to protect them from any impacts and contamination by metallic particles or moisture.
- Bearings must be kept away from any magnetic sources that may come into contact with the ASB® encoder (contact with a magnetic source such as a screw driver will damage the ASB® encoder)
- Any bearing with a magnetic encoder which is damaged and or dented, in particular due an impact, must not be used.



Use an ASB tester card to safely identify which side of the bearing the ASB® is fitted, the side with the bearings ID and date code is stamped also indemnifies the side the encoder is fitted.



24 000 M² ENTIRELY DEDICATED to the **Automotive Aftermarket**

Intended to serve a large area extending from South America to Russia and from Western Europe to the Middle East, this ultra-modern building is optimised for order processing and has been designed with environmental friendliness in mind. This major investment has been made in response to the growth of the market and reflects the goal of NTN-SNR to develop and consolidate its position as market leader.

“We have worked on developing Western Europe, which is our main market, and on exports, which represent a significant share of our sales nowadays. The continuity of that development over the coming years necessitates changes in our logistics methodology,” says Eric Malavasi, Director of Automotive Aftermarket and Logistics. This new building, along with the modernisation of processes, enables NTN-SNR to pursue growth in the automotive aftermarket segment and to optimise throughput of the 7,000 products that it offers to its clients. It allows us to supply 40 tonnes of parts per day under ideal conditions.

NTN-SNR, YOUR N°1 PARTNER



As a manufacturing leader, NTN-SNR defends original quality beside automotive constructors and independent aftermarket companies.

Driven by your requirements and the engagement of our teams, our know-how is also demonstrated by a quality of service which values your activity.

That is why NTN-SNR, the world's leading wheel bearing manufacturer, is today your legitimate partner.

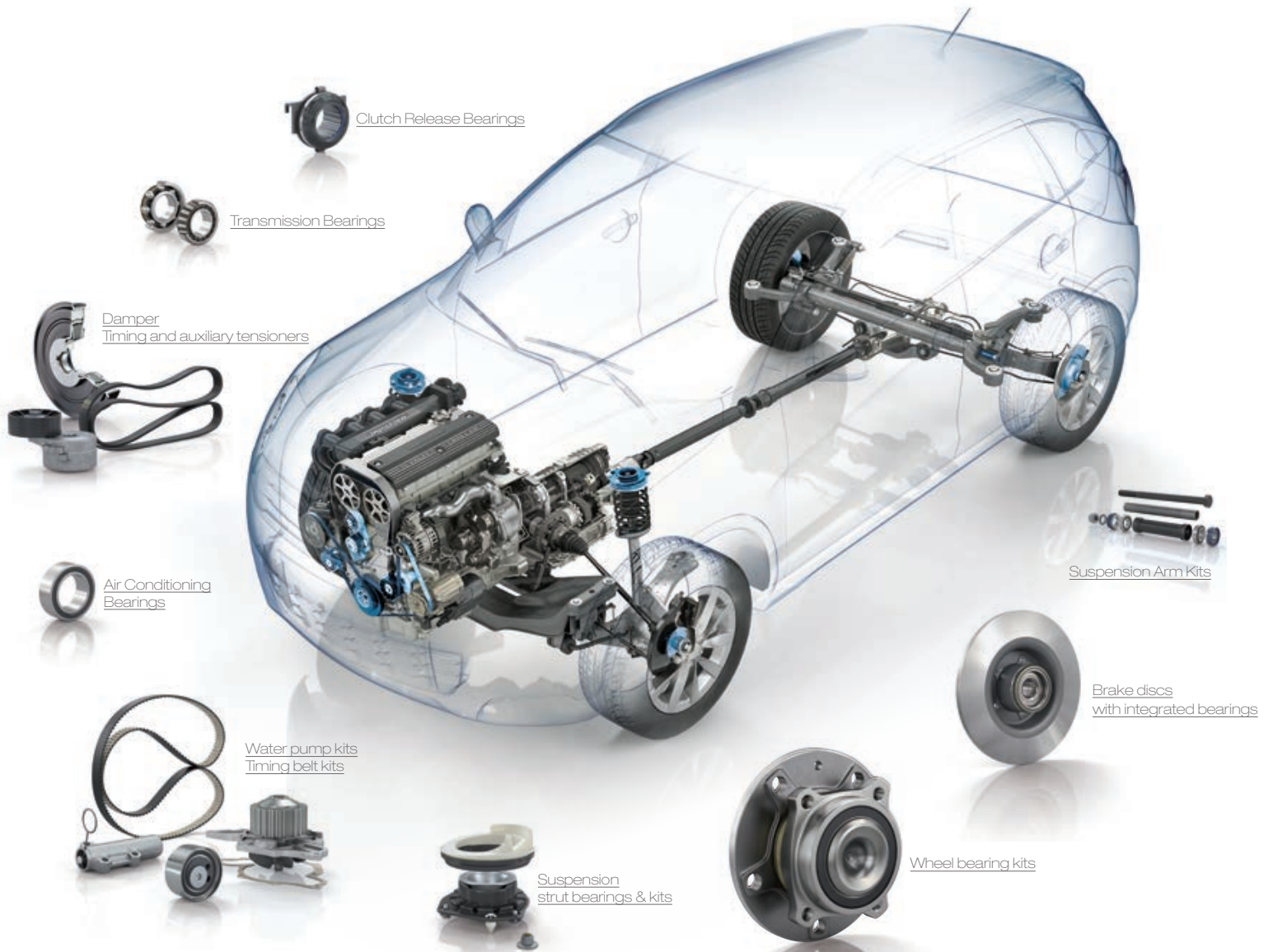
NTN® **SNR**®

**BEARINGS AND
WHEEL KITS**



With You

PARTNER FOR TODAY AND TOMORROW



Clutch Release Bearings

Transmission Bearings

Damper
Timing and auxiliary tensioners

Air Conditioning Bearings

Water pump kits
Timing belt kits

Suspension
strut bearings & kits

Suspension Arm Kits

Brake discs
with integrated bearings

Wheel bearing kits



AUTOMOTIVE AFTERMARKET

ORIGIN GUARANTEED



With You

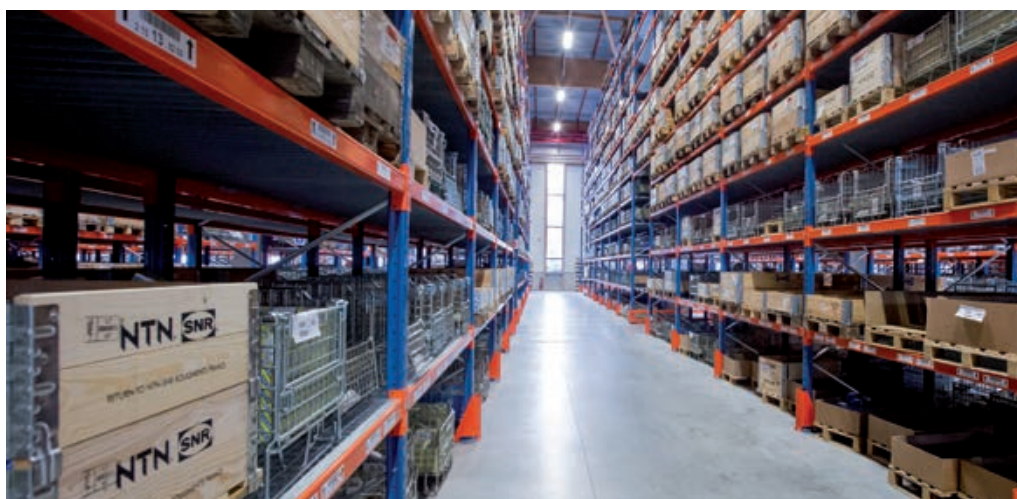


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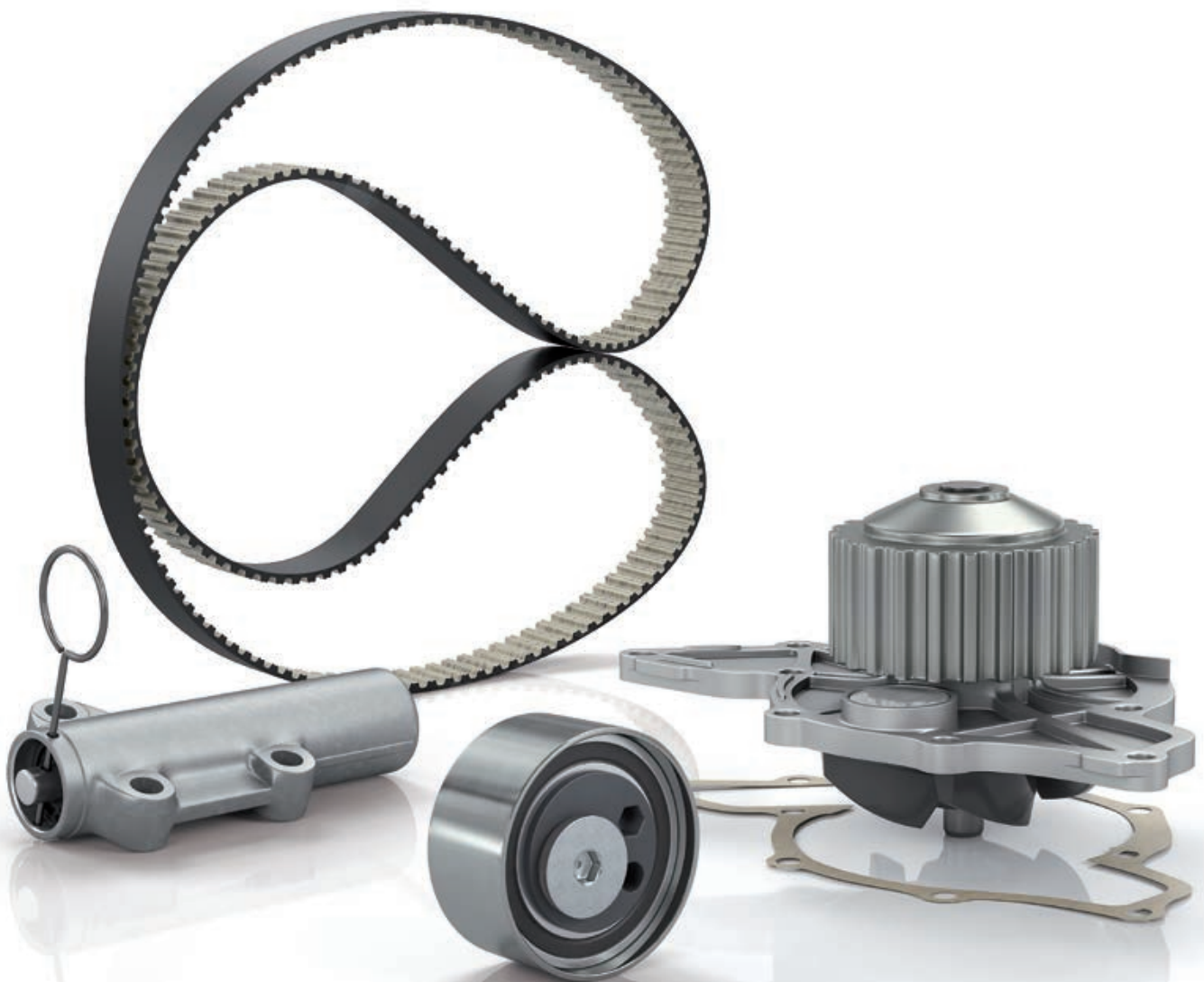
ENGINE TIMING

In this product range, we are transforming from dealer to manufacturer. NTN has a presence in both Asian and European vehicles and it is a major supplier of original equipment hydraulic tensioner rollers.

TIMING KITS with water pump

These are timing kits that include a water pump. Initially, most of these new products are for French vehicles – Peugeot and Renault. In future, the range will evolve according to the need.

Unlike their other European colleagues, most French auto mechanics systematically replace the water pump at the same time as the timing kit. This explains why we gave priority to the French applications.



ACCESSORIES

This product range includes accessory KITS and PULLEYS (nearly 450 part numbers), overrunning alternator PULLEYS (nearly 100 part numbers) and DAMPERS.

DAMPERS AND DAMPER KITS

Of minor impact five years ago, the damper market is now experiencing strong sales growth due to aspects such as the following:

- Growing awareness of the necessity of replacing this part
- An increase in the number of vehicles equipped with a simple pulley or with a damper pulley
- The increasing number of vehicles subject to potential breakdown as a result of ever heavier constraints, such as additional driven components, “start-stop” functions, or downsizing for petrol engines...

Nowadays, nearly 95% of all sales are related to diesel engines.

NTN-SNR recommends changing the screws together with the damper, especially when tightening angles are applied. For that purpose, NTN-SNR offers a complete range of damper kits with screws.

While installing the damper for the first time or replacing it, mechanics apply high tightening torques as well as tightening angles for certain applications.

The risks include:

- Failure of the pulley or the screws (large amount of play)
- If the screw fails, it can cause damper failure, belt failure...



ACCESSORY DRIVE BELTS

The increase in the number of accessories and the growing sophistication of the new generation of vehicles means that a single belt can affect many different components.

As a result, it is becoming a vital factor in the proper functioning of a vehicle.

If a drive belt breaks, all of those component systems stop working – from the alternator to the air conditioning, along with the power steering. It can even lead to a failure of the timing belt, in some cases resulting in severe damage to the engine itself.

For that reason, we strongly recommend replacing the drive belt whenever replacing the timing belt and pulleys.

This range of belts (nearly 800 part numbers) strictly complies with standards and OE demands, just as we apply them in the production of our timing and alternator pulleys as well as our wheel bearings.



BRAKE DISC HUBS with integral bearings

NTN-SNR has grown considerably in recent years, with a range of 28 part numbers, consisting entirely of original equipment products. Today it is the specialist for this type of product on the European market. Its status as OEM supplier and its technical expertise in these products, in the design and manufacture of bearings and in the clamping conditions in the housing, make it a major player in this market.

WHEELS

Already a leading supplier of wheels in Europe, SNR is strengthening that position thanks to NTN, particularly due to usage in German vehicles. At Mercedes, for example, NTN equips the front end of vehicles and SNR equips the rear end.



SUSPENSIONS

NTN-SNR has always been a major supplier for this market in Europe. In OEM trade, NTN-SNR supplies equipment to the biggest carmakers: BMW, FIAT Group, RENAULT Group, PSA, Hyundai, Kia, Porsche, Opel...



TRANSMISSIONS

With a range of more than 300 part numbers in OEM quality – 80% of which are special bearings – NTN-SNR is considerably strengthening its premium position vis-à-vis independent aftermarket professionals. Our clients benefit directly from the synergy with NTN, with its 115 different parts.



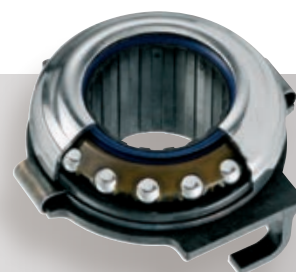
COMMERCIAL VEHICLES (LCV, HGV)

Special and standard wheel bearings for light commercial vehicles as well as more than 100 different bearings for heavy goods vehicles.



CLUTCHES

51 part numbers for mechanical bearings for French, Italian and Asian vehicle marques (Nissan, Mitsubishi, Suzuki, Subaru...)



AIR CONDITIONING

Most vehicles today are equipped with an air conditioning system. Those systems comprise a compressor with a pulley in which there is a bearing with two rows of balls. For this niche market, we offer 9 bearings.



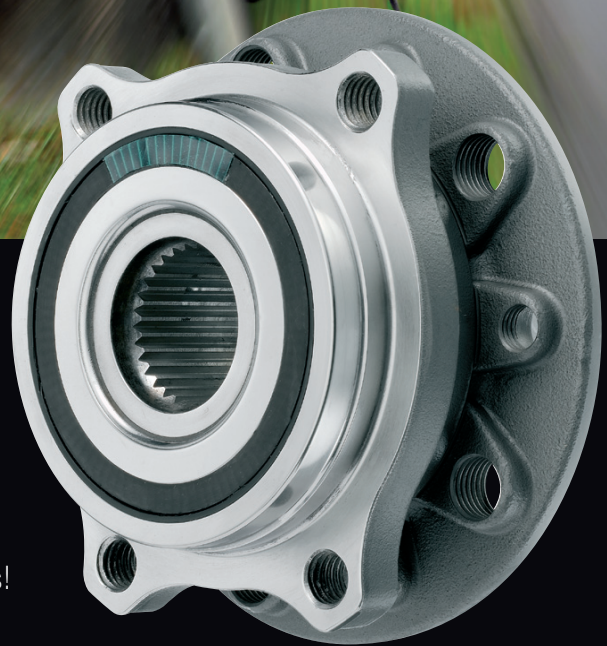
Why risk your **SAFETY?**



The right brand is not only a guarantee of quality and durability.

The right brand is also the best way to ensure your safety and the reliability of your car.

You wouldn't make any economies with your life. So why risk your life by buying counterfeit products!



NTN® **SNR**



WHEEL BEARING
RANGE

DIAGNOSTIC EXPERT

ANALYSIS & RECOMMENDATIONS



With You



MAIN CAUSES OF FAILURE

Most failures are detected by **noise**; however, there are many causes

- | | | | |
|---|--|----|---------------------------------|
| 1 | Indentations or breakage of the shoulder | 6 | Loss of grease |
| 2 | Scratches on successive balls | 7 | Vibration |
| 3 | Consecutive flaking due to a faulty seal | 8 | Difficulty in steering straight |
| 4 | Fatigue spalling | 9 | Clacking / Noise |
| 5 | Seizure / Overheating / Faulty lubrication | 10 | ABS faults |

WHEEL BEARING

In most of the cases, when one of these faults occurs, there is no alternative other than to replace the bearing.



GENERAL RECOMMENDATIONS RELATED TO FITTING

- Use the correct tools
- Work in a clean and clear area and avoid dropping the part
- An assembly with an abnormal noise requires the bearing to be changed
- Never loosen or tighten the driveshaft nut when vehicle is on the floor
- Do not let the vehicle down on the floor with the driveshaft loose or removed
- The surface of hub and driveshaft must be checked for damage (no cracks or deep scratches)
- To ensure correct operation of the wheel speed sensor, make sure the magnetic seal does not remain in contact with any magnetic part
- Bearings should always be handled with care in order to avoid any damage
- Comply with the manufacturer's torque recommendations

WHEEL BEARING Range



1 INDENTATIONS OR BREAKAGE OF THE SHOULDER DUE TO A FAULTY FITTING

EVIDENCE

- Presence of indentations located on the edge of the track and often seen over the complete circumference of the ring
- The indentations are in line with the position of the rolling elements
- Damaged or broken shoulder
- A slapping noise to the assembly

CAUSES

- The bearing was off-centre when fitted
- The bearing fitting was incorrect
- The bearing was dropped onto a hard surface
- The bearing tightening load was transferred through the rolling elements



NTN-SNR ADVICE

- Apply the load on the right ring, the fitting force should not go through the rolling elements
- Follow the general recommendations related to fitting

WHEEL BEARING Range



2 SCRATCHES ON SUCCESSIVE BALLS FROM AN UNTIGHTENED DRIVESHAFT

EVIDENCE

- Damage with circular grooves deforming the surface of the balls
- Grooved scratches similar to "petanque balls"
- Matching damage on the bearing tracks

CAUSES

- The vehicle was moved without the driveshaft or hub nut in place (such as when being serviced)
- Damage on the balls from contact and rolling on the inner edge of the track, due to a gap between the inner races



NTN-SNR ADVICE

- Avoid moving any vehicle when the driveshaft nut is not tight

WHEEL BEARING Range



3 CONSECUTIVE FLAKING DUE TO A FAULTY SEAL

EVIDENCE

- Local or generalised oxidation of the bearing
- Reddish or black staining more or less widely distributed on the bearing
- Pitting has damaged the surface to a variable extent

CAUSES

- Insufficient or incorrect sealing for the installation
- Damage to the bearing seal during maintenance
- Lack/non replacement of the cap



NTN-SNR ADVICE

- Never dis-assemble a sealed bearing, damage is inevitable
- Avoid spraying with liquids
- Follow the general recommendations related to fitting

WHEEL BEARING Range



4 FATIGUE SPALLING

EVIDENCE

- Track surface damaged from flaking

CAUSES

- Faulty fitting
- Faulty (deformed) mating components



NTN-SNR ADVICE

- Follow the general recommendations related to fitting

WHEEL BEARING Range



5

SEIZURE / OVERHEATING / FAULTY LUBRICATION

EVIDENCE

- The bearing has shallow metal surface damage on the tracks
- The bearing components are welded
- Components are coloured

CAUSES

- Lack of or incorrect bearing lubrication
- Micro-welding between bearing components
- Grease is contaminated due to pollution ingress



NTN-SNR ADVICE

- Watch out for any possible loss of grease which appears unusual
- Follow the general recommendations related to fitting

WHEEL BEARING Range



6 LOSS OF GREASE

EVIDENCE

- The mechanic notes an escape of grease from the bearing seals

CAUSES

- A large rise in bearing temperature causing deterioration of the grease
- Entry of water contaminates the grease

NTN-SNR ADVICE

- Check that there is not an overheating problem (e.g. a sticking hand brake)
- Check the bearing seal condition



WHEEL BEARING Range



7 VIBRATION

EVIDENCE

- On the road, the driver senses vibrations in the driving compartment

CAUSES

- Bad condition of the mating parts (a balance problem)
- Incorrect tightening of the bearing

NTN-SNR ADVICE

- Check the wheel balance
- Follow the general recommendations related to fitting of the wheel bearing or torque



WHEEL BEARING Range



8 DIFFICULTY IN STEERING STRAIGHT

EVIDENCE

- Driven in a straight line the vehicle tends to drift to the left or to the right

CAUSES

- Incorrect adjustment of the drivetrain
- Steering system stiffness: worn ball joints
- Incorrect tightening of the bearing

NTN-SNR ADVICE

- Check the axle adjustments
- Replace the ball joints



WHEEL BEARING Range



9 CLACKING / NOISE

EVIDENCE

- A loud noise from the front axle (when parking)

CAUSES

- A small movement of the bearing in the stub axle housing

NTN-SNR ADVICE

- Check the dimensions and condition of the stub axle housing



WHEEL BEARING Range



10

EVIDENCE

- The ABS warning panel light comes on or remains on

CAUSES

- Computer failure
- Sensor failure
- Connection problem
- Encoder deteriorated
- Bearing fitted the wrong way round



NTN-SNR ADVICE

- Check the encoder and sensor are clean
- Never bring a magnet near to the encoder
- To fit bearings of first generation in the right way, make sure to use the ASB® test card
- Use of the NTN-SNR card tester is essential