

MOTOR | CHASSIS | SERVICE

WHEEL BEARING KITS FOR CARS: TO KEEP THINGS RUNNING SMOOTHLY.



 **RUVILLE**
YOUR PARTNER

**RUVILLE – IT'S ALL
ABOUT QUALITY.**



Every wheel bearing kit from RUVILLE puts you on the safe side. In highly complex, sensitive systems such as motor vehicles, a large number of different parts have to work together smoothly to meet the needs of each specific vehicle. Particularly where Asian car models are concerned, the range is constantly expanding and it's important to keep up-to-date. So make the most of our high quality standards, reliable know-how and tailor-made service:

- **OE quality**
- **Top performance**
- **Low wear and tear**
- **Matching type, matching fit and also matching the requirements!**
- **Fast, low-cost replacement**
- **Broad range of products for cars**
- **Constantly high supply availability**
- **Simple ordering on-line or using the print catalogue**
- **Committed service**



THE RIGHT KNOW-HOW FOR EVERY GENERATION.

RUVILLE supplies wheel bearing kits for all common European and Asian cars and vans to customers in more than 100 countries around the world. The wheel bearings are purchased only from OE suppliers and thus comply with the strictest quality requirements.

Our wheel bearing kits comprising only OE components therefore offer our customers a complete solution for professional repairs. Our constantly updated full range keeps pace with all technical innovations as and when they occur. Together with the well-established single-row tapered roller bearings, deep-groove and angular ball bearings, RUVILLE naturally also supplies 1st, 2nd and 3rd generation wheel bearings.

The range also includes wheel bearings with integrated ABS pulse generator rings which are increasingly in demand. Here RUVILLE offers a special service with a detector card for clear identification of the correct installation direction.

RUVILLE also has the best solution for the brake discs with integrated wheel bearings increasingly to be found in French car models: OE-compliant brake disc kits for the one-sided and complete axle, including dust cover caps and axle nuts.



Standard bearing
Tapered roller bearing
(single row)



1T generation
Tapered roller bearing
(double row)



1st generation
Angular ball bearing
(double row)



2D generation
Angular ball bearing
(double row)



2.1 generation



3E/3EW generation



3.2/3.2W generation

Overview of the RUVILLE wheel bearing programme:

- **No. of wheel bearing kits: 1007**
- **No. of wheel hubs: 100**
- **Altogether 251 wheel bearing types for vans**
- **approx. 14,000 KTYP Nos.**
- **approx. 84,000 vehicle links in TecDoc**

TAPERED ROLLER BEARING SINGLE ROW

Bearings in general:

Bearings reduce the friction in shafts and axles. They can take both radial and axial loads with the least possible friction and wear. Roller bearings are available for all kinds of loading cases and requirements.

Tapered roller bearings

Tapered roller bearings can be dismantled, with the inner ring and outer ring fitted separately. Tapered roller bearings take up axial forces in only one direction so that normally a second, mirror-inverted tapered roller bearing is required as a counterstay.

In this respect they are similar to angular ball bearings, with a higher load rating but lower speed suitability.



Wheel bearing kit: tapered roller bearings.

Comprising for example:

- 2 dismantled tapered roller bearings for mirror-inverted installation
- Castellated tab washer
- Split pin
- Shaft seal
- Grease cap

1ST GENERATION ANGULAR BALL BEARING – DOUBLE ROW

1st generation wheel bearings are compact units with defined preset bearing clearance; they have for-life grease lubrication (maintenance free) and are usually also fitted with a seal. The roller bodies –

balls in this case – are arranged in a double row.



1st generation wheel bearings

Comprising for example:

- Compact bearing unit with double-row angular ball bearing
- Axle bolt
- 2x2 self-locking nuts

1ST GENERATION T-TAPERED ROLLER BEARING – DOUBLE ROW

1st-generation roller bearings, such as IT-generation roller bearings, are compact bearing units with tapered rollers as roller bodies instead of balls.

Tapered rollers can take higher axle loads and greater lateral acceleration.



IT-generation roller bearings

Comprising for example:

- Compact bearing unit with double-row tapered roller bearing
- Circlip
- Axle nut

2ND GENERATION ANGULAR BALL BEARING – DOUBLE ROW

2nd generation wheel bearings are compact units with defined preset bearing clearance; they have for-life grease lubrication (maintenance free) and are usually also fitted with a seal. They are as cost-effective as the 1st generation wheel bearings while also offering the advantage of an integrated flange, e.g. for fastening brake discs and wheel rims.

The example shown here features the wheel bearing unit secured in the wheel carrier with an innovative circlip that also clamps the bearing outer ring in the axial plane.



Wheel bearing kit, 2nd generation

Comprising for example:

- Compact bearing unit with double-row angular ball bearing
- Axle nut

3RD GENERATION DOUBLE ROW

3rd generation wheel bearings are highly integrated units with ultra-precise running accuracy. They have two fastening flanges: one for the brake disc and wheel rim, the other for fastening to the axle body.

The integrated speed encoder shown in the picture generates the ABS/ESP signals needed for suspension control. The bearings have for-life lubrication and integrated seals. The clamping force of the preset bearing clearance is applied and controlled by a cold-rolled riveted collar.

The double-flange design of this generation is beneficial in terms of easy installation, so that faulty or incorrect installation is now finally a thing of the past.



3rd generation wheel bearing kit
Comprising for example:

- Compact bearing unit with double-row angular ball bearing
- Self-locking axle nut
- 3 screws for fastening to the axle body
- Grease cap

BRAKE DISCS WITH INTEGRATED WHEEL BEARINGS

In some French car models, the wheel bearings are integrated in the brake disc and can therefore only be replaced as a complete unit for safety reasons.

To change the wheel bearings, the brake discs have to be replaced axle for axle. The bearings integrated in the brake disc are usually 1st generation or IT generation bearings.



Brake disc kit with integrated wheel bearings
Comprising for example:

- 2 brake discs
- 2 grease caps
- 2 axle nuts

WHEEL BEARING WITH INTEGRATED ABS PULSE GENERATOR RING

Automotive engineering is making increased use of wheel bearings with a magnetic ABS pulse generator ring. This applies to double-row cylindrical bearings with preset clearance (1st generation) and also 2nd and 3rd generation wheel hubs. The magnetic pulse generator

ring assumes the function of the ABS sensor ring otherwise fitted to wheel hubs or drive shaft joints. In double-row cylindrical wheel bearings (1st generation), the magnet ring is integrated in the radial seal. In wheel hubs with integrated bearing (2nd generation), it can also be fitted to the outside. The pulse generator ring consists of a ferromagnetic sintered material with changing polarity.



Important note:

When replacing a double-row cylindrical wheel bearing with a sensor ring integrated in the radial direction, always **heed the installation direction of the bearing.** Failure to comply will disable the function of the vehicle dynamics systems such as ABS, ESP, etc.

The signal is processed for example by a Hall generator (3-pole) that generates a signal whose frequency is proportional to the wheel speed. This is then the input signal for the ABS/ESP/ASR control units.

Please therefore always heed the installation instructions on the leaflet accompanying the corresponding wheel bearing kits. If in any doubt, the RUVILLE detector card can be used to check the

sensor ring integrated in the bearing in order to ascertain the correct direction of installation for the bearing.

Furthermore, no test voltage may be applied to the Hall generator's connections as this could damaged the electronic components.

Wheel hub with conventional ABS ring



Wheel hub with magnetic encoder ring



Polarisation in the magnetic encoder ring

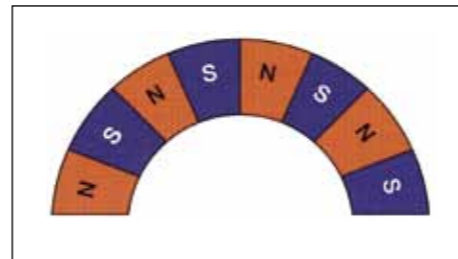
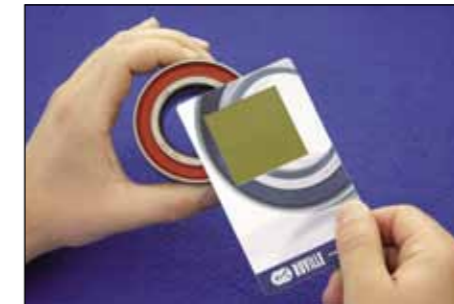
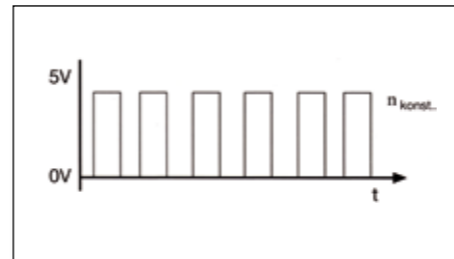


Chart showing the Hall generator signal



Using the detector card on a sensor bearing, with detection of the pulse generator in the lower picture.

Twin-tandem wheel bearing



INNOVATIVE SOLUTIONS AT THE READY

The central challenge facing automotive engineering today is to cut back on consumption and emissions. There is still plenty of scope for tapping into technical potential for boosting efficiency. Around two thirds of all possibilities for reducing carbon emissions consist in innovative optimisation of the power train and chassis.

Less friction means less fuel consumption, so that one aspect of development work consists in reducing frictional resistance. The focus therefore is on suitable bearing concepts geared to correct temperature development that make a major contribution to saving fuel and reducing emissions.

Twin-tandem wheel bearings are one particularly outstanding example, replacing the conventional double rows of tapered bearings with 2x2 rows of ball bearings. The reduced friction with correspondingly lower temperature development brings about a fuel saving of up to 1.5%.

A new weight-saving concept has also been introduced: wheel bearings with integrated axial spline. They weigh around 10% less than conventional bearings with radial spline, adding up to a full kilogramme for four wheels.

In future, there will be an increasing trend to use the new twin-tandem wheel bearings and wheel bearings with integrated axial spline by Schaeffler as wheel bearings for cars and small vans, in view of the remarkable energy saving potential they offer. As part of the Schaeffler Group, RUVILLE will be promoting these innovative technologies on the aftermarket. Place your trust in RUVILLE's know-how and pioneering technology – to keep everything running smoothly in future, too.



Wheel bearing with integrated axial spline

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