

Diagnosis of worn wheel end bearings

Challenge

Wheel end bearings are vital components of a car. They are crucial for safe, quiet operation, minimising rolling resistance and assuring proper ABS function. On average the replacement cycle is around **150.000 Km**. This is only a rule of thumb, the lifetime of wheel end bearings is negatively impacted by:



Incorrect installation

- Incorrect torque setting
- Incorrect (press)fitting of bearing in the hub
- Damage to the bearing during the installation process



Heavy driving conditions

- Extra weight due to pulling a trailer or a caravan
- Sporty driving (heavy breaking, acceleration, cornering)
- Uneven road surfaces (potholes, speed bumps, curbstones)



Car modifications

- Bigger rims and low profile tires
- Lowered suspension
- Track width adjustments (fitting wheel spacers or wheels with lower ET value)



Extreme environmental conditions

- Extreme temperatures, snow, road salt, flooding, dust & sand

A worn wheel end bearing will negatively impact the car's road holding and cause the car to fail the vehicle inspection. Therefore wheel end bearings must be checked during every maintenance inspection.

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Easy Solutions

Symptoms indicating worn or failing wheel end bearings.

If below symptoms occur, a worn wheel bearing is most probably the cause:

- A humming, rumbling or growling noise that increases with acceleration or as the vehicle turns
- A loud constant whining or grinding noise when the vehicle is in motion
- Looseness, excessive play in the steering wheel (vague steering) or a clunking noise (especially when driving over rough road surfaces)
- Vibration, felt in the steering wheel, which changes with the vehicle speed or as the vehicle turns
- ABS system issues (may be related to failure of the ABS sensor integrated in the wheel end bearing)

LOOK FOR THESE TELLTALE SIGNS

 Clunking or grinding noise under vehicle	 ABS light is illuminated
 Steering wheel vibration	 Steering wheel play

Note: Play or looseness and clunking noises may also indicate a worn suspension component.

Identifying the faulty wheel end bearing

In many cases it's difficult to say which bearing is worn as the noise travels through the car body or frame. Here are a couple of tricks to help identify the faulty wheel end bearing:

- Lift the car so the wheel is off the ground and can spin freely
- Check play/looseness by trying to shake the wheel with 2 hands at 2:45h and 5:30h position. If the wheel feels loose, the bearing is worn or damaged and should be replaced as soon as possible
- Rotate the wheel by hand and listen for any unusual noise. Please note that noise can only be noticeable when driving the car. A stethoscope helps to identify noise that is not noticeable with the naked ear or only in the interior of the car when driving
- Check vibration by holding the suspension spring with your index and thumb fingers and spinning the wheel with the other hand. For a wheel bearing that is bad you will feel vibrations in the spring. A good new bearing will cause absolutely no vibration in the spring and the best part of this trick is that you will also be able to tell when a bearing is going bad before it makes any noticeable noise

Check every wheel of the car and replace the wheel end bearing if you notice any play, noise or vibration.



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