WHAT YOU NEED TO KNOW:
WHEEL BEARINGS AND HUB ASSEMBLIES

Wheel bearings are an essential vehicle component. They assist and enable:

- Low-resistance and low-friction rotation of wheels
- Transfer of axial and radial forces as the vehicle is in motion
- Measurement of vehicle speed data (ABS, ESP, TCS)
- Correct tracking and positioning of wheels
- Support for the wheel hub, brakes and wheels

Wheel bearings have evolved in design and function over the years, becoming more compact and integrating additional functions into the assembly. Here is a summary of the evolution of wheel bearing technology in response to improvements in engineering and different OEM requirements.



Standard Tapered Roller Bearing

- Uncommon in modern passenger cars
- Typically used as inner and outer pairs
- Can handle moderate speed
- Frequent inspection, adjustment and re-greasing required
- Non-integrated seal



Generation One

- For driven or non-driven axles
- Typically pre-greased and maintenance free
- Pre-load set when tightening axle or spindle nut
- Integrated seal
- With or without ABS encoder ring
- Without flange and pressed into steering knuckle or onto hub



Generation Two

- For driven or non-driven axles
- Cannot be disassembled without damaging unit
- Pre-greased and maintenance-free
- Pre-load set when tightening axle or spindle nut
- Integrated seal
- With or without ABS encoder ring
- With one flange

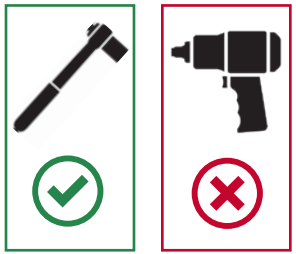


Generation Three

- Common for modern passenger cars
- For driven or non-driven axles
- Pre-greased and maintenance free
- Initial pre-load set during orbital roll form process
- Integrated seals
- With or without ABS sensor
- With inboard and outboard flange
- With or without orbital roll form
- Following axle nut torque value is important to part service life

For a successful wheel-end repair:

GENERAL



- Follow all OEM removal and replacement procedures.
- Follow the OEM torque value and sequence.
- Only use a calibrated torque wrench for all final fastening.
- Inspect all mating surfaces for abnormal wear or damage and ensure mating surfaces are clear of all rust, debris and contaminants.
- Do not reuse axle nuts and or other assembly hardware (retention clip, bolts etc.).
- Never subject a bearing or hub assembly to a to a strong magnetic source or shock load, such as a drop.
- If equipped, disconnect ABS sensor harness before removal. Ensure to properly route and securely reconnect after installation.
- If ABS service light remains illuminated after installation of a new component, diagnose function of body side harness.

STANDARD TYPE

- Use proper and contaminant-free lubricating grease and bearing packer when servicing bearings (NLGI #2). Do not over-grease.
- Ensure to follow the correct pre-load process when performing adjustment.
- Use correct installation process and procedures. Force should be applied evenly across the correct race. Bearing should be installed squarely to the shaft or housing.
- When replacing seal, ensure to use the correct one for the application.

GENERATION 1/2/3

- Do not attempt to service pre-greased, pre-sealed hub assemblies.
- Never handle a hub assembly solely using the ABS wire.
- Before pressing a Generation 1 wheel bearing, verify correct orientation of ABS ring if integrated into seal.
- To ensure correct diagnosis of ABS signal, verify type of sensor signal (Active or Passive).

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