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TECHNICAL SERVICE INSTRUCTIONS

Servicing and Replacing Tapered Roller Wheel Bearings

Application: Caravan and trailer wheel hub assemblies fitted with serviceable tapered roller bearings.

Purpose: To provide a consistent procedure for removing, inspecting, servicing and replacing wheel bearings, including correct adjustment of the castle nut and installation of the locking pin.

Tools Required

- Calibrated torque wrench
- Tool kit for fasteners
- Hoist or appropriate lifting equipment with locking devices
- NLGI2 wheel bearing grease

WARNING: Suspension components are heavy and may be under load. Failure to adequately support the chassis and suspension may result in serious injury.

Safety Precautions

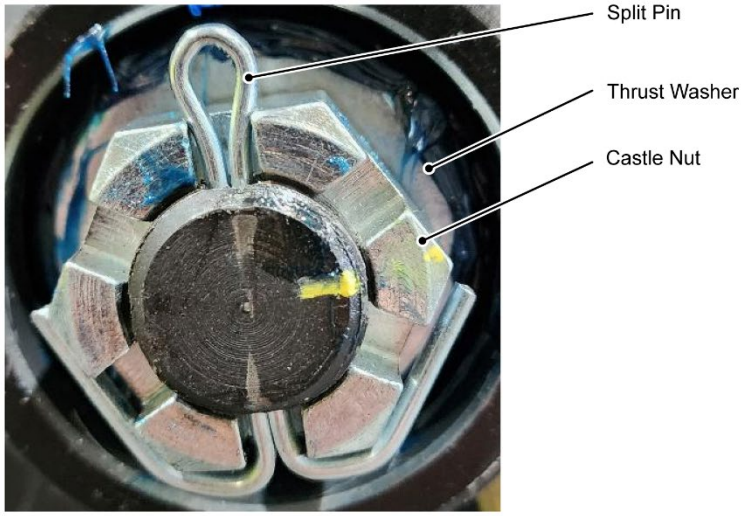
- Park the caravan or trailer on firm, level ground and secure it against rolling.
- Raise and support the caravan or trailer in accordance with the manufacturer's lifting instructions, using suitable equipment rated for the load.
- Never work under a caravan or trailer supported only by a jack.
- Wear safety glasses when removing or installing components that are press-fitted.
- Use the correct replacement bearings, seals, grease and locking components for the axle.
- If the spindle, hub, bearing races or other critical components are damaged, do not return the assembly to service until the fault has been rectified.

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1. Removal of the Wheel Hub

a) With the wheel removed, carefully remove the grease cap by progressively working around its edge.

b) Remove the split pin from the castle nut and discard it. The split pin is for single use ONLY.



c) Unscrew the castle nut and remove the thrust washer.

d) Carefully slide the drum or hub off the spindle, ensuring the outer taper bearing does not fall and become contaminated or damaged.

e) Remove the inner bearing and seal as required for inspection and servicing.

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2. Cleaning and Inspection

Clean the bearings and associated components using a suitable cleaning method. Dry the components thoroughly and inspect them under adequate lighting.



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Inspect the following:

- Bearing rollers: Check for pitting, scoring, discolouration, corrosion, cracking or abnormal wear.
- Bearing cups and races: Clean and check for pitting, scoring, overheating and other surface damage.
  Note: Only remove the outer races when replacement is required.
- Spindle: Inspect the bearing journals and seal contact surface for wear, scoring, burrs or damage.
- Hub: Inspect the bearing cup seats for damage and confirm the cups are correctly seated.
- Seal: Replace the seal after removing.
- Grease: Check for contamination, moisture, metal particles or signs of overheating.

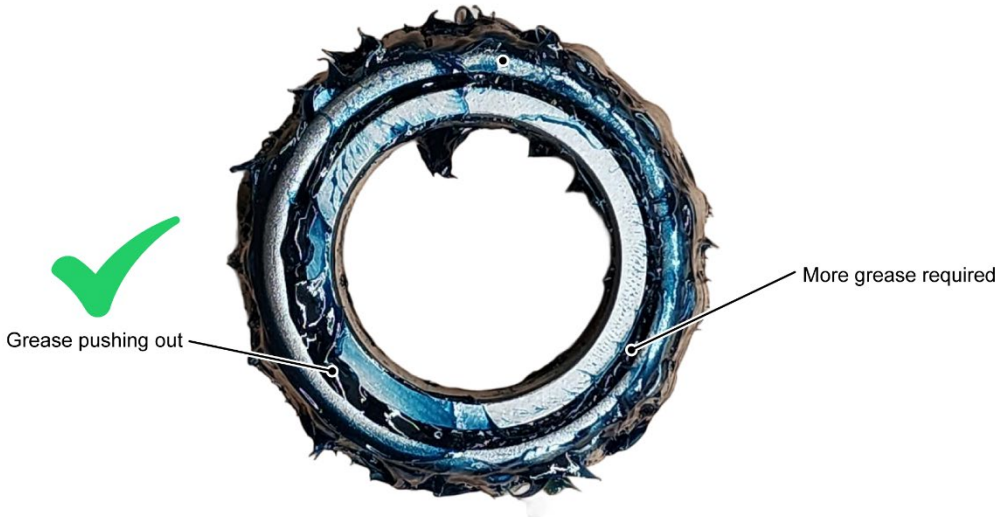
Replace any bearing that is damaged, worn or otherwise unsuitable for continued service. Always replace a bearing cone and its matching cup as a set. Use only the specified bearing part numbers.

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3. Packing the Bearings with Grease

a) Place a quantity of grease into the palm of your hand or use a suitable bearing-packing tool.
b) Press the wide end of the bearing into the grease, forcing grease between the rollers and the bearing cage.
c) Rotate the bearing progressively and repeat the process around its circumference.
d) Continue until grease has been worked through the entire bearing and all rollers are adequately packed.

Ensure the bearings and surrounding components remain clean during assembly.



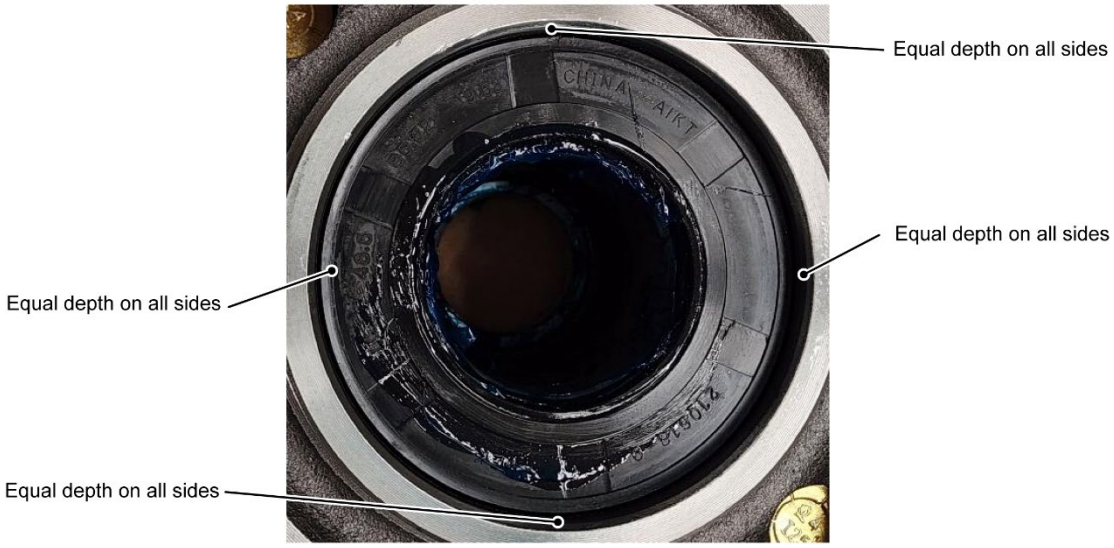
Recommended wheel bearing grease type: NLGI2

NOTE: If a bearing cup requires replacement, use an appropriate drift or installation tool. Install the new cup squarely and ensure it is fully seated against the retaining shoulder.

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4. Reinstall the Hub

a) Replace the outer bearing races if required.
b) Insert the greased inner bearing.
c) Install a new seal and ensure the seal is seated properly.



d) Carefully slide the hub onto the spindle without damaging the seal lip.
e) Install the greased outer bearing.
f) Install the thrust washer and hand tighten the castle nut.

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5. Adjusting the Bearings and Fitting the Castle Nut

Correct bearing adjustment is critical to wheel-end reliability. Tapered roller bearings require a small amount of axial end play; they must not be clamped tightly together.

For the standard tapered bearing configuration using a castle nut and split pin, the reference procedure is:

a) Slowly rotate the hub while tightening the castle nut to 68 Nm to seat the bearing component.



b) Loosen the castle nut to remove the applied torque. Do not rotate the hub during this step.

c) Finger-tighten the castle nut until it is just snug.

d) Back the nut off slightly until the first suitable castle slot aligns with the hole in the spindle.

e) Insert a new split pin through the aligned slot and spindle hole.







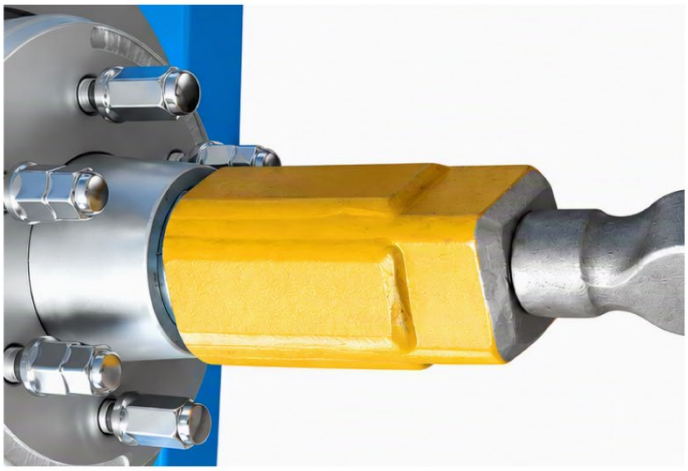
NOTE: Tuffride may use a different installation method during manufacturing. Do not copy this method outside of manufacturing. For servicing, use ONLY the image on the left above.

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6. Final Assembly and Inspection

a) Apply a thin layer of grease (approximately 4 mm deep) inside the dust cap to help absorb possible moisture. Refit the dust cap, ensuring it is correctly seated and undamaged.

NOTE: Do not fill the dust cap with grease.



The above tool is recommended for the dust cap installation. This tool allows force on only the shoulders of the dust cap and does not deform the dust cap.

b) Reinstall the wheel and tighten the wheel fasteners in the specified sequence and to the manufacturer's torque requirements.

c) Rotate the wheel or hub and check for smooth operation, binding, roughness or abnormal noise.

NOTE: Ensure that excessive grease has not contaminated the brake linings, drum, rotor or other friction surfaces.

7. Maintenance Requirements

Inspect and service wheel bearings at the intervals specified by the axle, caravan and trailer manufacturers, and whenever operating conditions or symptoms indicate that inspection is necessary.

Signs requiring investigation include:

- Excessive wheel movement or bearing end play.
- Unusual wheel-end noise or roughness.
- Abnormal heat at the hub.
- Grease leakage.