

# Automotive TechTips

**TIMKEN**  
Where You Turn

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Maximizing bearing performance and life remains an objective throughout The Timken Company, from design teams and manufacturing associates to our field sales team and distributors. TechTips help you install and maintain Timken® bearings, seals and components to maximize their life and performance and the systems in which they operate. For more information regarding Timken automotive products and services, visit [www.timken.com](http://www.timken.com) or contact your local Timken distributor.

## WHEEL BEARING REPLACEMENT



Proper wheel bearing removal and installation is essential in avoiding premature damage to bearings and surrounding components. The following are the steps for replacing tapered single-row wheel bearings in passenger cars and light trucks.

### 1 Wheel end disassembly



Follow the vehicle manufacturer's recommended procedure to

remove the tire and wheel assembly, disk brake caliper, dust cap, cotter pin, adjusting nut and washers.

Pull the rotor/hub assembly toward you to loosen the outer bearing cone assembly. Then remove the outer bearing cone assembly. Pull the rotor/hub assembly off the spindle; the inner bearing cone assembly, inner cup, outer cup and seal will come with it.

Before removing the inner bearing cone assembly from the rotor/hub assembly, use a seal puller to remove the seal. Discard the seal after removal. Remove the inner cup and the outer cup from the housing with a cup driver or mild steel bar.

### 2 Clean and inspect hubs and spindles

Remove all old lubricant from the rotor/hub assembly and spindle, then



clean the rotor/hub assembly and spindle with kerosene or mineral oil. In-

spect the spindle for wear. Use a fine file, wire brush, emery cloth or honing stone as appropriate to remove any debris, nicks or burrs.

Follow the vehicle manufacturer's recommendation for permissible spindle wear. A light grease coating on the cone seats will make installation easier and prevent fretting.

### 3 Install cups



Use a cup driver or mild steel bar to press or drive the new inner cup and outer cup into the hub/rotor assembly until they are solidly seated against the hub shoulders. Be careful not to damage the cup surfaces. Never use a bearing cone assembly to drive a cup.

### 4 Lubricate



Pack the inner bearing cone assembly with grease. A mechanical grease packer is recommended.

Place the bearing cone assembly, small end down, into the grease packer funnel. Plug the bore of the large end of the bearing cone assembly with the conical retainer. Firmly press down on the conical retainer. This enables the grease to be forced between the rollers, cage and cone. Smear excess grease on the outside of the bearing cone assembly.

Pack grease in the hub cavity between the inner and outer cups. Also, liberally coat the hub cap inner wall with grease; this layer combats moisture and retains the grease in the inner and outer bearing cone assemblies.

### 5 Install grease seal



The grease seal must be replaced when it leaks or when bearings are being repacked or replaced. Install the inner bearing cone assembly in the hub, then the new seal. Make sure the seal lips are pointed in the right direction following the vehicle

manufacturer's specification. Use the proper seal installation tool.

### 6 Install rotor/hub assembly



Slide the rotor/hub assembly back over the spindle, being careful not to damage the seal against the spindle. Pack the outer bearing cone assembly with grease following the procedure outlined in the first paragraph of Step 4. Install the outer bearing cone assembly, washer and adjusting nut on the spindle.

### 7 Bearing adjustment



Use a torque wrench to tighten the adjusting nut to 50 ft. lbs. while turning the rotor. Back off the adjusting nut 1 full turn. Then retorque the nut to 10 ft. lbs. while turning the rotor. Next, back off the adjusting nut ¼ turn. Lock the nut with a new cotter pin.

### 8 Check bearing adjustment



Use a dial indicator to measure end play. Mount the indicator base as close to the center of the hub/rotor as possible. With the indicator tip against the end of the spindle, set the indicator at zero. Grasp the rotor at three o'clock and nine o'clock. Push the rotor in while oscillating and read the dial indicator. Then pull the rotor out while oscillating and read the dial indicator again. The bearing end-play is equal to the total indicator movement, which should be between 0.001" and 0.007". If not, repeat steps 7 and 8. Reinstall all components as the vehicle manufacturer recommends.

**WARNING** Failure to follow these warnings could create a risk of serious injury.

Proper maintenance and handling procedures are critical. Always follow installation instructions and maintain proper lubrication.

Never spin a bearing with compressed air. The rollers may be forcefully expelled.

Failure to back off the adjusting nut may cause the bearing to run hot and be damaged, which could cause wheel to lock or come off during operation.

**CAUTION** Failure to follow this caution could create a risk of injury.

If a hammer and bar are used for installation or removal of a part, use a mild steel bar (e.g., 1010 or 1020 grade). Mild steel bars are less likely to cause release of high speed fragments from the hammer or bar or the part being removed.

*TechTips is not intended to substitute for the specific recommendations of your equipment suppliers.*

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