

# 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.

## CHECKING A HUB BEARING ASSEMBLY

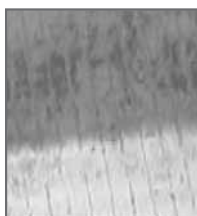


It can be a challenging task to properly diagnose a damaged hub bearing assembly. This information will help you to recognize common causes of noise generation and know how to examine a hub bearing assembly.

1) The first step is to verify the source of any unfamiliar noise. Often this can be attributed to road surface conditions such as newly paved roads or roads with uneven surface characteristics, which can cause unusual and intensified noises. The tread design, composition and wear patterns of vehicle tires can be another source of unfamiliar noise. Unusual wear patterns are generally

caused by lack of tire rotation, poor alignment, improper pressure or worn suspension parts. After eliminating noise generation caused by road surface conditions, tire design and wear patterns, it's time to make a more detailed examination of the wheel assemblies as well as the hub bearing assemblies.

### Sources of Unfamiliar Noise:



Roads with uneven characteristics



Tread design



2) Prior to checking a hub bearing assembly, make sure you have the proper tools.



3) Perform a hand rotation check on the wheel. Next, grasp the wheel at the 3 o'clock and 9 o'clock positions. Push while oscillating and also pull while oscillating the wheel. Perform a second check, following this same procedure, grasping the wheel at the 12 and 6 o'clock positions. In addition,

listen and feel for roughness. After making all preliminary inspections, check the hub bearing assembly more precisely.



4) If applicable, remove the wheel cover to access

the lug nuts. Remove the lug nuts and the wheel and tire assembly. Next, remove the caliper from the caliper mounting bracket. To prevent damage to the brake line due to the weight of the caliper, make sure the caliper is properly supported with either an "S" hook or a piece of wire.



5) Remove the caliper mounting bracket and then remove the brake rotor.



6) Rotate the hub bearing assembly by hand. Bearings normally do not loosen

up under typical use. If the hub bearing assembly appears to be

loose the bearing may be damaged, the axle nut may have backed off, or the axle nut may not have been properly clamped. Any roughness, looseness or noise from the bearing is an indication that the bearing is damaged and needs to be replaced.



7) To check a hub bearing assembly's internal clearance, a dial indicator

with a magnetic base is required. To obtain accurate readings from the dial indicator it is important to thoroughly clean and smooth the surfaces where the dial indicator base and tip will be placed. Carefully use a fine file, wire brush, emery cloth or honing stone as appropriate to remove any debris, nicks or burrs.



8) The dial indicator base should be placed rigidly on the knuckle or a secure

portion of the suspension. When setting the dial indicator tip, the indicator itself should have ample

travel for the variation around the face. Position the indicator tip perpendicular on the wheel pilot as close to the center of the hub bearing assembly as possible. This will provide the most accurate results.



9) Grasp the wheel flange at the 3 o'clock and 9 o'clock positions,

and push while oscillating the hub bearing assembly approximately 90° side-to-side at least five times. Set the dial indicator to zero. Next, pull while oscillating the hub bearing assembly approximately 90° side-to-side at least five times. Proper loading and oscillation is necessary in order to fully seat the bearings.



10) Observe the total indicator movement. If it exceeds 0.004", replace

the hub bearing assembly.

**⚠ WARNING** Failure to observe the following 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.

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

*Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.*

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