

Wheel Bearings



A failed wheel bearing can be at best a trip-threatening experience, but at worst can be dangerous. Check them before you leave.

We weren't far from the Jardine crossing at Cape York and the radio crackled with the news that one of the 4x4s in our convoy had just been overtaken by its own trailer wheel! It took two days for the relief party to get to Bamaga and back with a repaired axle. In the meantime the stranded party had to set up a roadside camp.

This incident has given us a few laughs over the intervening years, but it could have been totally unfunny. Imagine if the trailer flipped, as one did during another trip, and was a write-off, or if the unstable combination of 4x4 and one-wheeled trailer had ploughed off the road and into one of the substantial trees that line this section of the track.

Wheel bearings are all that keep hubs concentric with the axle and if they fail it's a major repair job, at best. As always, prevention is better than cure.

The most common causes of wheel bearing failures we've come across are excessive vehicle or trailer weight and lack of maintenance.

People take too much stuff with them. Wheel bearings that have been perfectly happy trundling around town with light loads on them can change character when overloaded and run at high speed in hot weather, over rough roads.

Don't overload, but if you're in doubt about what your vehicle weighs, go to a public weighbridge and cough up a few bucks to find out. Get a 'split weight' of front and rear axles and compare those figures with the limits set out in your 4x4 owner's manual.

Lack of maintenance is common in 4x4s, because many new 4x4 owners aren't familiar with the higher maintenance requirements these vehicles have. Axles that have been through a few muddy creek crossings are quite likely to have contaminated bearing grease and while short hauls don't show up any troubles a longer haul surely will.

Pre-trip Bearing Checks

Mechanics know how to check and replace wheel bearings, but the average 4x4 enthusiast doesn't. This article isn't intended to make bearing specialists of us all, but is designed to show up if you have any bearing problems – before you find out the hard way.

A bearing condition check can be part of your normal pre-trip shakedown, because while the wheels are jacked up in turn to assess bearing free play you can also have a look at the tyres and suspension components.

The front ends of 4x4s are broadly the same, whether they have independent suspension or tubular beam axles, because all have steering drive joints that allow the front end to drive as well as steer.

With a front wheel jacked up it's easy to 'rock' the top and bottom of the tyre towards and away from the vehicle, feeling for any 'play' in the front wheel bearings. Any movement more than very slight travel and any movement that generates a 'clunking' noise are causes for alarm. It's time to weigh up your mechanical abilities, to see if you're up to the adjustment task.

Essentially, the adjustment process takes out excessive end play in the front wheel bearings, by tightening and relocking the spindle nut, but experienced eyes will pick up old or contaminated grease, or bearings that are past their use-by date.

Many 4x4 front ends have free-wheeling hubs and these need to be removed before the bearing adjustment can be carried out. If you're not familiar with the use of circlip pliers to remove the hub-retaining snap ring and a hammer and brass drift to shake loose tapered cone washers, don't try it. With the free-wheelers off, it's an ideal time to inspect and regrease them, as well.

The rear wheel bearings of 4x4s with independent rear suspension are similar to front end bearings, but the rear ends of live-axled 4x4s are different. Contaminated rear axle oil contributes to abnormal wheel bearing wear in tubular-beam rear axles. Rear axle wheel bearing wear usually shows up as a rumbling noise when cornering.

Tubular beam axles have no flexible drive joints inside their hubs and the wheel bearings are mounted inside or outside the axle tube, depending on whether the axle is a semi-floating, $\frac{3}{4}$ -floating or a fully-floating type. A fully-floating rear axle will exhibit front-end style 'rocking' free-play if the bearings are worn, but a semi-floater or $\frac{3}{4}$ -floater is more likely to have vertical free-play.

Trailer wheels bolt to a hub that's most usually mounted on bearings, pressed onto a tapered stub axle. Bearing end-play is adjusted by means of a castellated nut, locked to the stub axle by a cotter pin.

Trailer hubs are sometimes less professionally made than vehicle hubs, with inaccurate machining, so the seals don't work as they should and seal wear allows rapid contamination of the grease. Water crossings are the enemies of all wheel bearings, but particularly of poorly-sealed trailer bearings. One of the major drawbacks of grease as a lubricant is its ability to hold grit in suspension – once it's in you can only get it out by dismantling, inspecting and cleaning or replacing the bearings.

Repacking bearings with fresh grease is a job best left to mechanics, but if you're an experienced do-it-yourselfer you know too much grease can be as bad as too little, causing friction that overheats the grease and causes it to fling off more readily. 'Any old grease' is also a no-no – use specific wheel bearing grease.

If in doubt while doing your pre-trip checking call for professional help.

Don't even think about departing for the bush with suspect wheel bearings – in vehicle or trailer.

