

Late BJ8 Front Wheel Bearing Replacement & End Play Adjustment

This write up assumes that you are performing a complete overhaul, replacing bearings and performing an end play adjustment from scratch.

The idea with end play adjustment is that if you assembled just spacers and bearings - leaving out the shims - then tightened down the castle nut the whole assembly wouldn't quite make contact with the backing plate. If you could reach inside you'd find the spacers would move around on the shaft. If you mounted the wheel you would notice that it would move slightly up, down and from side to side. By adding shims you reduce and eliminate this slop by forcing these two spacers to become a load bearing part of the suspension.

Spare Parts - You will want to have new bearings (inner and outer), high temp bearing grease, a new (inner) grease seal and a set of shims - I did mine with 4x0.030, 4x0.010, 4x0.005, 4x0.003 and had plenty left over.

Disassembly - As you pull apart you will find (in order): grease seal, spacer, inner bearing, cone spacer, shims, outer bearing, notched washer, castle nut. As you disassemble, keep these old parts handy and inspect for cracks or signs of fatigue. Generally the bearings will be replaced and the spacers re-used, so spend time going over the spacers - one of mine has a lengthwise crack and had to be replaced. Once you have the hub removed, clear it of the old grease using rags, brake cleaner, etc. Once you have done this you will need to tap out the existing bearing races - from the back side of each race observe a notch in the hub that you can slide a screw driver into. Tap lightly to dislodge the race and be sure not to score the hub.

Assembly - First, tap in the new bearing races. To do this you will want to find something in your toolbox with a diameter equal to that of the race - I found a socket for each and was able to place the bearing into the hub by hand, fit the socket against it, then tap on the socket with a hammer (and an extension, in the case of the outer bearing) to seat the bearing. Tap in the grease seal using the old seal or a block of wood to avoid hitting it directly with a hammer. In my case I was able to press it almost completely into place by hand. If, as in my case, removing the old seal scored up the hub a bit be sure and use a dremel to smooth the surface before attempting to mount the new seal.

Adjustment Notes - I've read that adjustment should be done dry, but I do not necessarily agree. In my case, on both sides, the inner bearing tended to catch on the shaft - at times requiring some effort to remove it. The adjustment process requires the hub to come off and on - at least partly - in order to change out shims, and if the inner bearing catches it's easy to damage the grease seal removing it. I discovered that it was easiest to grease the inner bearing, but not the cone spacer, first just in case I had trouble getting the inner bearing off the shaft. The inner grease seal has a spring mounted under the inside lip that will become dislodged if you put too much force on that lip - trying to pull the hub off will do this, easily.

Adjustment - Mount the whole assembly as described but without shims. Tighten the castle nut (to no more than 40 foot pounds) and get a feel for the amount of play you have. Take care here to observe the source of the play - if other elements of your suspension are loose (kingpins, in my case) you will get a deceptive amount of play. What you are concerned about here is play about the axis of the shaft, not play which includes motion of the backing plate. Wedge and clamp as appropriate to eliminate other sources of play. As you spin the disc notice how freely it spins and how much slop there is up, down and from side to side.

Remove your castle nut, washer and the outer bearing and add a big shim, like an 0.030, and re-assemble. Spin the disc and notice drag, then grab the disc and check for play up, down and from side to side. What you're trying to do is to add as few shims as possible such that the disc still spins freely and has as little slop as possible. Keep adding big shims until you have no end play. This is your "high" point. You know you won't need any more than this space in shims. You'll also notice that the wheel is getting more difficult to spin. Let's say you tried a 0.030 and found there to still be some slop. You then added another 0.030 and found no end-play, but the wheel wouldn't spin freely. You now know that you need to be somewhere between 0.030 and 0.060, so you take out that second 0.030 and put in two 0.010 shims. If you get slop, you know you need to be between 0.050 and 0.060.

It's very much a trial and error process, so don't be afraid to take a step back - it helps to write down what you've tried, to keep track of your narrowing range of what *should* be the right number of shims.

Final Assembly - Once you have the right shims identified, take out the castle nut, washer, outer bearing, shims and cone shaped spacer. Lubricate with a grease of your choice and re-assemble. Tighten the

castle nut to between 40 and 70 foot pounds, such that you can get a cotter pin through the hole in the shaft.