

## X100 rear wheel bearing install

Well here is my attempt of a walk through to change the rear wheel bearings on a 2006 Jaguar XK8. My right rear has started to howl as of recently, so I figured with over 100,000 miles, it may be time to replace them. I couldn't find a write up with pictures on our side of the forum. Donb has a good write up for the x300, and while quite similar, there are a few differences. Plus there is always more than one way to skin a cat.

Parts needed (cost ~\$130):

Inner and outer wheel bearings (I chose Timken bearings and races, part numbers are):

LM503310 (outer wheel race)

LM503349A (outer wheel bearing)

SET45 (inner wheel bearing and race)

Bearing grease (again, Timken brand)

2 one time use hub nuts (Jaguar PN: JZN100035)

2 zip ties



Tools needed:

1 3/16" and 1 1/4" socket (preferably deep socket, though regular size will work)

1/2" breaker bar with extra pipe if the going gets tough

1 1/16" socket

11/16" wrench

7/8" wrench

8mm wrench

15mm wrench

Needle nose pliers

Screwdriver

Box cutter

3 lb hammer

Torque wrench

Bearing driver kit

Shop press

Jack and stands

Wheel chocks

Your brain (optional, but may be easier with it...I tried to without but it didn't work so well)

Lots of orange hand cleaner (also optional if single, probably more mandatory if married and you want to keep it that way)

First, is safety first. When you jack up the rear of the car, be sure the front wheels are properly blocked and jack stands are used in the rear. Apply the emergency brake.

Loosen lug nuts on rear wheels and take off wheels.



Using a 1 1/16" socket on a breaker bar, loosen the hub nuts.



Release the emergency brake.



If you plan on taking the emergency brake off of the hub assembly (I did as I didn't want to bend the components or have anything fall off and get lost while working on the bearings), you will want to take off the emergency brake from underneath the car. Crawl underneath the car and disconnect the "Y" bend in the emergency brake line (it sits in front of the rear differential/sub frame).



This will entail 1) loosening the main nut right at the "Y" bend (I marked the bolt it is threaded onto so it was adjusted properly when put back together)

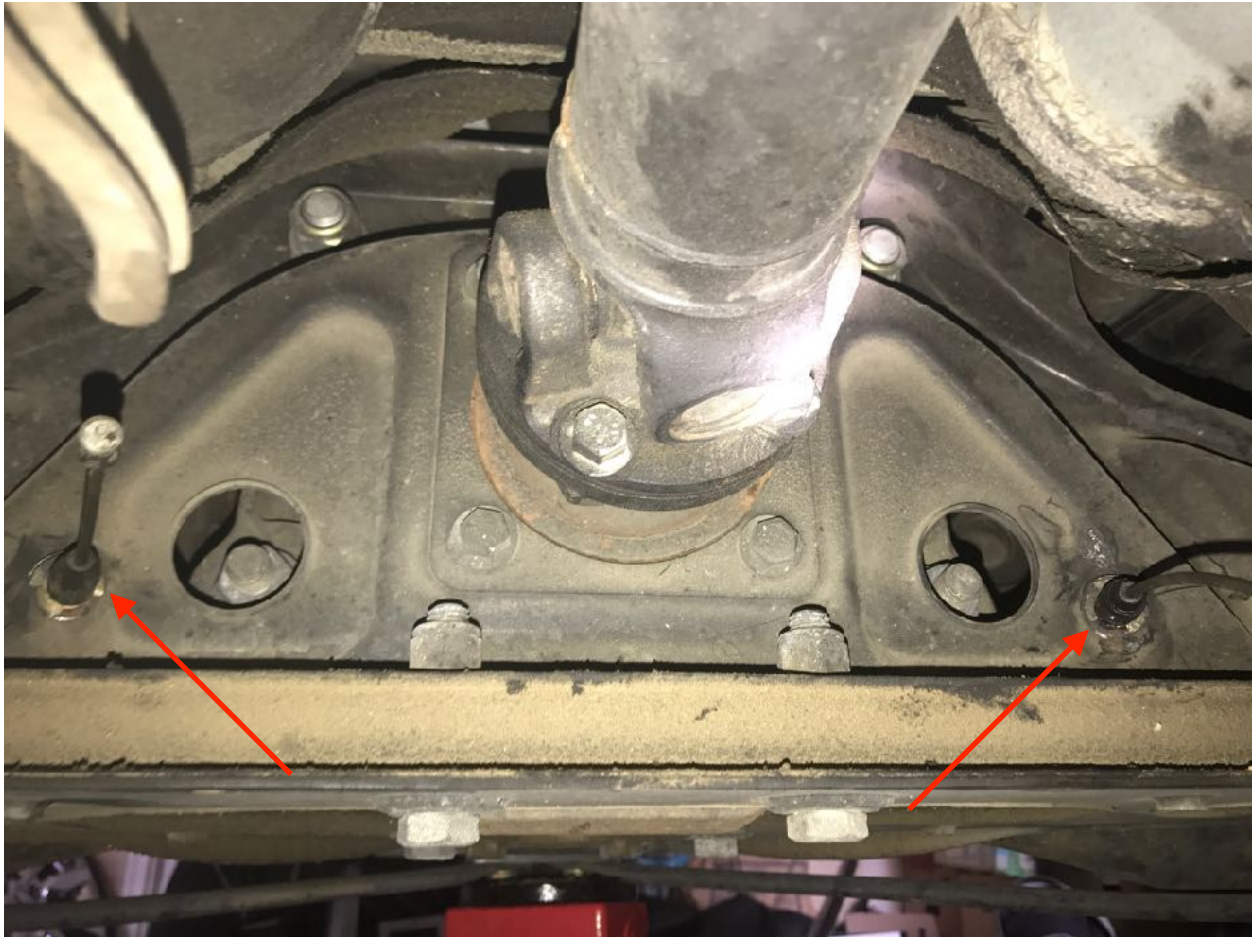


2) disconnecting the coupler in the emergency line (it is made to just pull the line through) and





3) disconnecting the 2 "C" clips on the sub frame using a screwdriver.





The other way you can do it is you can take the emergency brake off by popping off the plastic coupler (seen lying on your back and looking upwards at the hub assembly) and then releasing the pin in the emergency brake near the brake shoes inside the hub assembly (you will obviously need to take the brake rotor off for this). I did not try this way but it is said to be a bit harder.





Unscrew the hub nut and the entire assembly will now flop forward. Be careful not to let it fall too hard too far forward as you still have the ABS and brake lines connected.

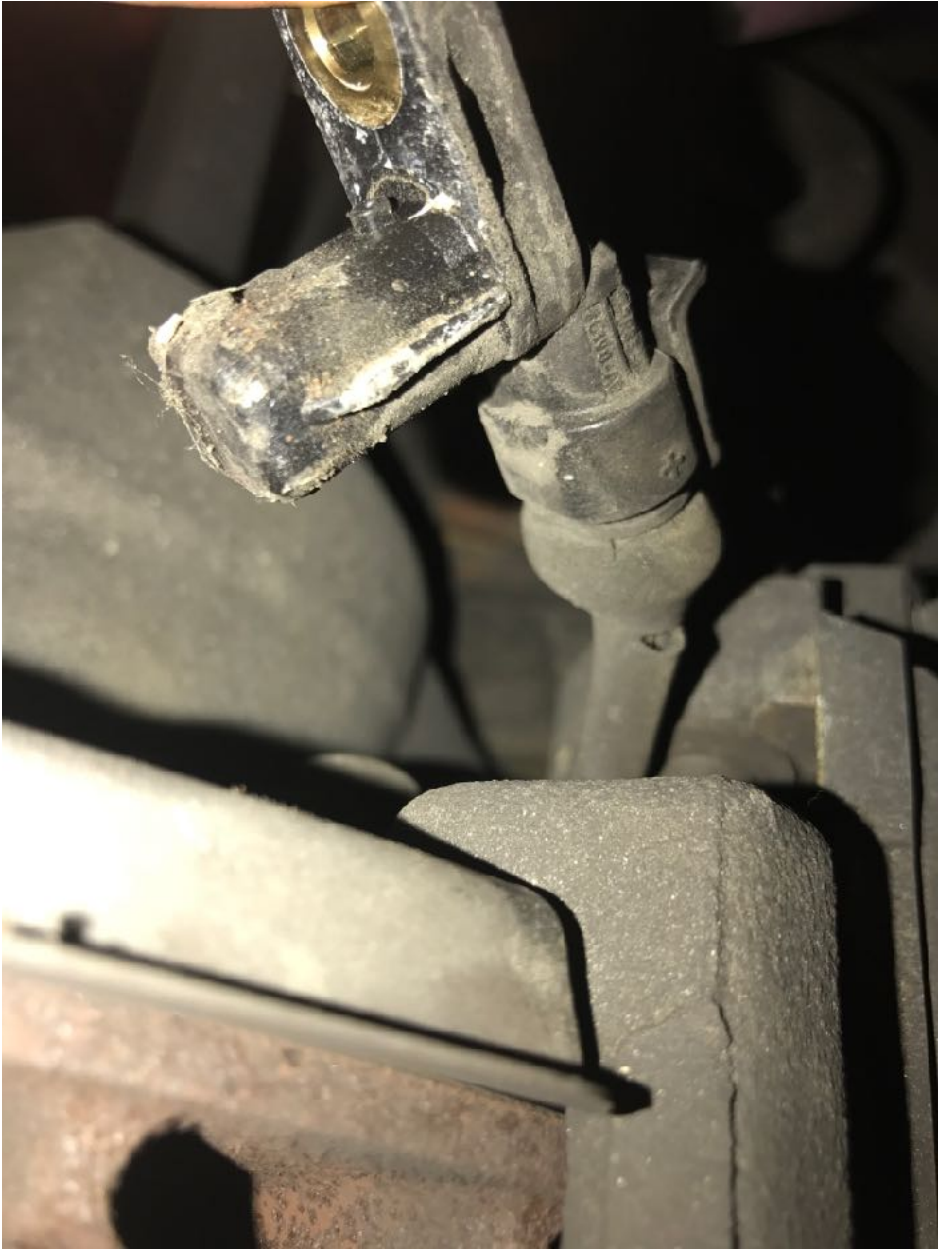


Using the 8mm wrench, unscrew the ABS sensor on top of the housing. Cut the zip tie that secures the ABS wire to the housing. Now is a good time to clean your ABS sensor if dirty.





Dirty ABS sensor..



Clean ABS sensor...



Unbolt the two 15mm bolts on the back of the caliper. Pull the caliper off the rotor and either hang the assembly with a hanger or set on a raised object like a box so it does not put strain on the brake line. Now would be a good time to check for brake pad wear. If you are lucky, the hub assembly will slide right out at this point like one side of mine did. If you are not so lucky, like my other side, the hub will stay on and you will need to persuade it off later.





Using a marker, mark the position of the fulcrum shaft head (rearmost bolt head on the lower bushing assembly) so you can save the alignment setting (there is a mark on the eccentric bolt flange for this, too).





Using an 11/16" wrench for one side, and a 7/8" wrench for the other, loosen the fulcrum shaft bolt and pull out while supporting the entire assembly as it will fall to the ground.



Take the entire assembly and support it from the rotor, face up. I used some 2x4's I had laying around. Taking another 2x4, lay it across the top of the wheel studs and strike the board with a mallet. The rotor will come free of the hub assembly.





Take off the emergency brake components. There are two springs holding the shoes together, two pins with springs securing the shoes to the dust shield, and a very small pin holding on the lower linkage to the cable. I found needle nose pliers worked best for all of this.







If your ABS gear like wheel has not come out, you should be able to pull it off the back of the hub by hand. If it is frozen on, go to the next step.







If your bearings are frozen on your hub, flip the unit upside down, and still supporting it with 2x4's (on the cast assembly, don't support from the dust shield) place a 1 3/16" or 1 1/4" (depending on the brand) on the uppermost (inner) wheel bearing face. Using your mallet (or a sledge hammer, whatever your preference), strike the socket downwards to drive the hub out of the face of the assembly. It took a number of good blows to get one of mine to free up.







Using a press with the proper bearing tool, press out the races from the hub assembly. You can also drive out the races using a mallet and a cold chisel or punch. There is a key way inside the assembly to make this easier. The bearings themselves just slid off of the hub shaft.











Clean out the entire assembly, including the bearing seals if you are reusing. The bearing seals have very small "O" shaped spring hidden inside each of them, don't lose them. Yuck, after 100,000 miles these bearings were pretty gross.



Pack your new bearings and races with grease. I was pretty liberal with the grease (though not too liberal as too much grease can cause "churning" and be detrimental) and even assembled the unit, hand spun the hub for a minute, and pulled the bearings back out to repack any loose spots. Slide them on in the correct order (they only fit on the races and hub shaft one way). Be sure you included the two spacers in between the bearings (one wide and one very skinny in mine).







Insert the hub into the unit and place the inner bearing and seal on. Add the ABS wheel inside (I cleaned parts like this with a toothbrush prior to reassembly).

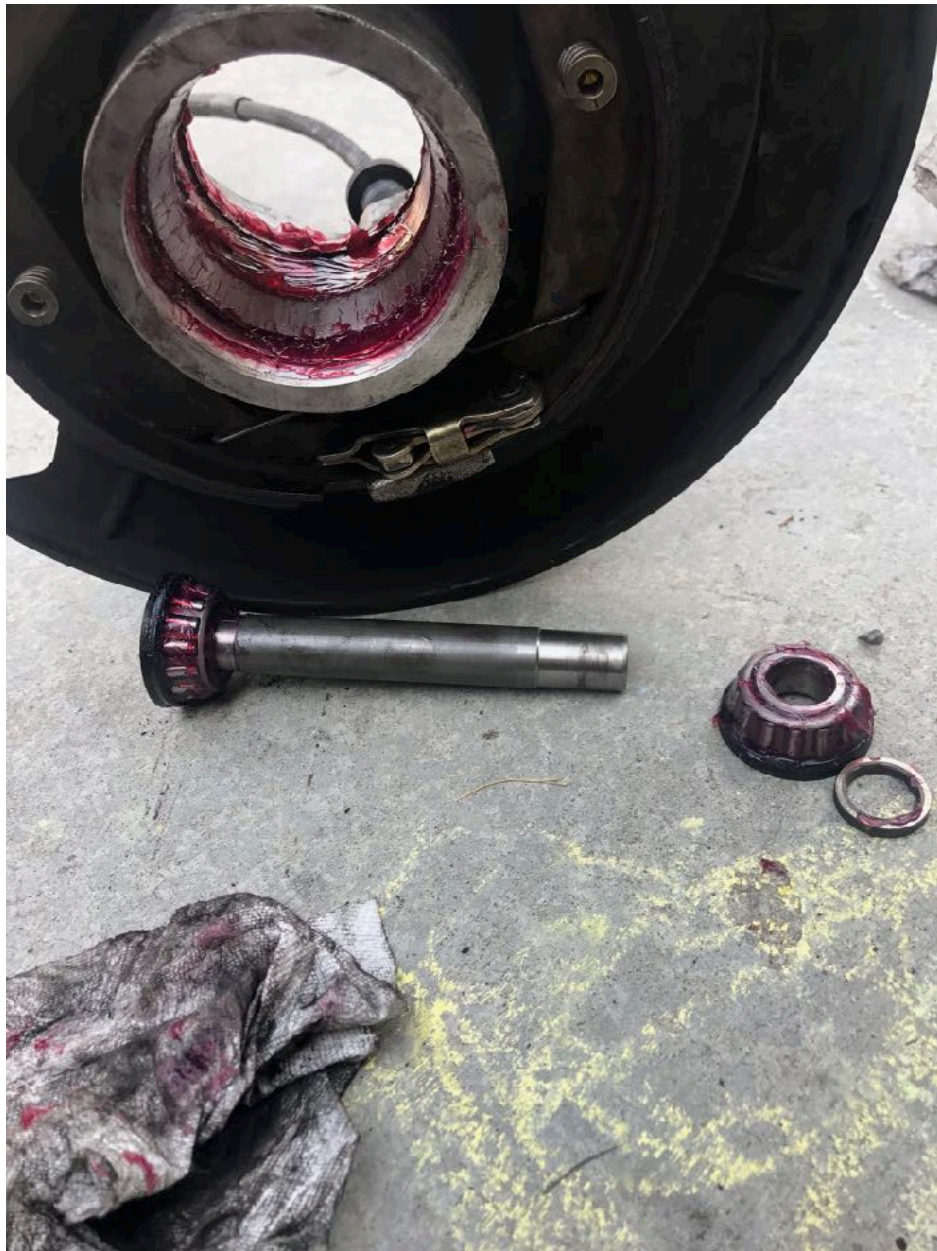








I pulled out the lower bushings and cleaned and repacked them with grease. I wasn't too concerned with wear but figured they could use a freshening up.



Put the emergency brake back on the hub. Connect the cable back to the linkage using the small pin. I found it easier to leave the bottom spring on and "fold" the lower portion onto the assembly. Then pull apart the upper part and install the adjustment mechanism. I then placed the top spring on with needle nose pliers. Lastly, take the two pins with springs and secure the brakes onto the dust shield. The rubber seal on the backside that slides along the emergency brake cable housing was difficult to press back in. Just dab some grease on it and it will slide right into position. Slide the brake rotor on over this.



Install the complete unit back on the car in reverse order. First the lower fulcrum bolt and nut and tighten to 88-118 newton meters (64-87lb/ft). Tighten the caliper bolts and ABS sensor. Finish off and torque the hub nut to 304-336 newton meters (224-247lb/ft). Don't forget to reconnect the emergency brake underneath! Reinstall the wheel and take for a test drive!

This entire process can and has been done without a shop press. I didn't get one until half way through the process. I wish I would have started out with it. It made the press work so much easier. After comparing the Harbor Freight press with others ranging \$700-1200 (and my wife's eyes bugging just a little bit), I found a HF 20 ton press for \$150 with bearing tools on Craigslist that had only been used once for, you guessed it, a bearing job. It is not a press for precision work, but it certainly made pressing races in and out a heck of a lot easier!

I originally bought a bunch of tools in gearing up for this job, including a nice screw type hub puller and a bearing press kit that can be used while the hub is in place. Do yourself a favor and don't. Hub pullers don't work for the rear hubs due to how they are fastened on. I broke a 1/2" ratchet before I realized I was working against myself. Also managed to break a pry bar when trying to pry the hub off.

My recommendation would be to skip it all and go buy a press. I know it will probably only get used once every ten years, but it's sure a lot cheaper than paying a shop to do all the work, and you can do it on a weekend when everyone else is closed. Speaking of which, I probably called over ten shops with each one telling me they wouldn't touch it and that they didn't have recommendations for who to do it. Does nobody press wheel bearings anymore?



After I took both hub assemblies off I found the spindle that the hub nut screws on had mild surface rust on the bearing side that was making noise (left picture), whereas there was not rust on the opposite spindle (right picture).



After investigating further I found a small bump and crack in the inner wheel bearing seal of the problem hub/spindle. It looks like that was where the small amount of water made it through and possibly caused the bearing to wear prematurely. I ordered a seal to replace that one. Seals are cheap (\$7-11 per seal) so it probably wouldn't be a bad idea to replace them all, though I didn't. Here are pictures of both spindles, and the problem bearing seal:







Here are the hubs side by side for comparison. The problem side is pitted on part of it, though not exactly where the bearing sits. The good hub is smooth and the bearing slide on and off with relative ease. The pitted one, oddly enough, is actually ridged up and thicker where the bearings sit, where you might expect them to be thinner from wear. This was the cause of the bearings sticking and the hub not coming free. I took some 220 grit sandpaper and lightly sanded down the hub shaft where the bearings were having a hard time seating. I still had to persuade the inner bearing on with a mallet, but it fit better. I'm guessing one of the hubs was replaced at some point in its life as each side looked and fit a little different with the bearings.



I didn't know the hub nuts were one time use only, as they have a coiled wire inside the nut that acts as a locking washer. I was dead in the water for a bit while I waited on those to put it back together. I also had a bear of a time getting the bearing off of the hub until I figured out how to support it and use a socket and mallet from the back side. I had been trying to strike the back side of the hub plate with a mallet and even used a punch but couldn't get a decent enough angle on it to be effective.



Whichever way you do it, I hope this "how to" will help someone out down the road. I sure learned a lot from doing it and would have found it helpful to read a step by step to avoid some of my mistakes.