

Wheel Bearing Replacement 2004.5-2005 Passat TDI

Rear Bearing/hub assembly replacement

This is a fairly straight forward process. Pictures are not necessary for most of this procedure for a person with skills to do this repair. Anyone who thinks they need more pictures should not be doing this job and let someone else operate the tools. A checklist is provided at the end of this document.

YOU are responsible for following all standard safety procedures when working on an automobile. YOU accept all liability for the results of undertaking to do this repair.

Loosen wheel bolts. This varies by vehicle and is dependent on wheel style.

Lift and safely support the left rear of the car.

Remove wheel bolts. I also screw in a [Metalnerd™](#) wheel assist tool **MN14WH** into the hole after removing the first bolt.

Remove wheel.

Remove caliper bolts. 13mm socket or box wrench plus counter-holding 15mm wrench (such as Metalnerd™ **MN15BT**) are required.

Remove the caliper and let it safely rest on top of the caliper bracket. Do not remove the parking brake cable. Do not remove the brake line.

Mark the outer brake pad and remove the brake pads.

Remove the brake rotor disc (and wheel assist tool if used). Just tilt the side facing the front the car towards you and you can take the rotor out of the "slot" of the caliper bracket.

On the opposite ("back") side, remove the ABS sensor clip. Refer to the picture below. Just press the tab towards the wire and pull out. If necessary you can use a pick tool to unhook the clip. Slip it off the wire.

Unclip the ABS sensor wire from the two closest green retainers.

Rotate the hub as necessary to align the large unthreaded holes with the bolts.

Using a suitable 8mm hex tool, loosen all bolts and then remove all bolts. I used a 3/8 inch drive hex bit and 3 inch extension.

Pull out hub assembly from the axle. The backplate will now be loose. Re-install an upper bolt sufficiently to hold the backplate in position.

While supporting the hub, use a small screwdriver or punch and hammer to *gently* tap the ABS sensor out of the hub. There are little notches in the end of the hub where you can start. Work your way around the hub and tap the sensor out a little at a time. You may get it out far enough to use a screwdriver as a pry tool. Be gentle with this sensor and work it out a bit at a time. This is the hardest and most time consuming step of this repair.

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Here is a picture of the sensor removed from the hub. Note the locating tab on the left and notches on the end of the hub.



The alternative method is to use tool 80-200. After removing the clip and before unbolting the bearing, use this tool as a pry tool. It fits where the clip was and one can pry out the sensor provided it isn't really stuck hard into the bearing.

Here is a picture of the sensor and clip in place on the hub (but the clip has to be off to fit the hub into the axle).



Lightly grease the sensor around the o-ring seal on it with a thin coating of wheel bearing grease.

Push the sensor into the new hub. The locating "pointer" should be aligned with a notch on the end of the hub. You can position the sensor on the edge of the axle hole and push the hub on if necessary.

Remove the backplate retaining bolt, slip it through a hub bolt hole and the backplate, align it with a bolt hole on the axle and install the hub and backplate on the axle. Leave the bolt a little loose and install the other 4 bolts. Tighten all 5 bolts finger tight then tighten all bolts to 60 Nm (44 ft-lbs) in an alternating pattern.

Install the ABS sensor retaining clip and reseal the sensor wire into its retainers.

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Install brake disc and align holes with threaded holes in the hub. I reinstall the Metalnerd tool here to keep the disc in place.

Install brake pads with the marked pad on the outside.

Install the brake caliper and its bolts. You might make this a little easier by using a wind-back tool (such as Metalnerd™ tool **MN3272**) to turn the caliper piston in about 1/2 rotation or so. I put the top bolt in first and then easily pivot the caliper to align the bottom bolt. Tighten the bolts to 35 Nm.

Install the wheel with bolts snug.

Lower the vehicle to the ground.

Tighten the wheel bolts in an alternating pattern to 120 N. Re-install any wheel or bolt trim.

Depress the brake pedal and operate the parking brake a few times to ensure the rear brakes operate properly. The parking brake should hold the wheels at four clicks.

Test drive the car at low speed to ensure proper operation. The ABS system will set a fault and illuminate a cluster light if you've damaged the sensor.

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Front wheel bearing on a Harbor Freight budget

If you can't afford \$2000+ for the portable hydraulic tool and accessory kit, and don't have a press and the necessary press tools as shown in the VW repair procedure, you can do the repair with tools from Harbor Freight or similar sources. The tools mentioned are for reference. The item numbers can change at any time and they often have the tools by several numbers at the same time.

HF tools used: slide hammer (item #60327), wheel bearing kit (item #66829) and electric impact wrench (item #69606). Some auto part stores will loan/rent equivalent tools.

Other tools are typical of tools used by anyone working on automobiles with metric nuts and bolts.

Parts: front wheel bearing and large axle bolt. Optional: inner axle joint bolts N 904 411 03 in case the 12pt XZN teeth are worn out.

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There is a checklist of all steps at the end of this document.

The following steps are covered in detail in the CV boot replacement procedure.

[CV boot replacement procedure PDF](#)

Start by removing any wheel covering over the center axle bolt and wheel bolts.

Loosen but do not remove the center axle bolt. It will be 17mm hex internal or 21mm hex outer bolt.

Loosen but do not remove the wheel bolts.

Lift and safely support the vehicle.

Remove the wheel bolts and wheel.

Remove the T25 Torx screw from the sound baffle and remove the baffle.

Disconnect the electrical connector for the pad wear sensor and remove the wiring for the ABS sensor from the same support bracket by turning it 90 degrees then up and out.

Remove the 6mm hex bolts from any axle heat shield and remove the heat shield.

Loosen all the XZN 10 bolts on the axle transmission flange using a tool such as Metalnerd™ **MXZ10** and then remove them. This will require the transmission to be in neutral so you can turn the axle. Use a screwdriver through the brake caliper into the brake disc to counter hold the axle from turning while loosening the bolts.

If working on the right side, turn the wheels a bit to the left. If working on the left side, turn the wheels a little to the right. Remove the large axle bolt and maneuver the axle out. Moving the transmission end of axle forward on the right side or rearward on the left side makes it easier.

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Disassembly of the brake is next.

Note how the spring is installed so you know how it goes back in later. Use a sturdy blade screwdriver to pry loose the brake retaining spring.

Remove any caps over the caliper guide pins and unscrew the guide pins with a 7mm hex bit.

Pry out the caliper if necessary. The inner pad will come out with it if it has the spring clips holding it to the caliper piston. Remove the outer brake pad.

Hang the caliper up out of the way from the rear upper link.

Remove the caliper bracket 18mm head bolts and the caliper bracket.

Remove the brake disc.

Pull/push the ABS sensor out of the bearing housing enough so that it no longer protrudes into the CV joint area.

Insert the slide hammer through the hub then install the washers and nut on the end of the slide hammer rod. I prefer VW washers 8D0 412 145B. They have an inner diameter that is just right for the slide hammer rod. Also, the ones in the puller kit are not as sturdy. Pull out the hub using the slide hammer. Mine came out without the bearing race. Here is a picture of the removed hub on the slide hammer.



If the bearing race came out with the hub, you will need to use a bearing separator and appropriate other tools (e.g. press) to remove the race.

Now we can remove the bearing using the wheel bearing kit. Size up the plates that will be used by comparing them to the replacement bearing. The numbers referenced below came from the parts in my old kit.

-06 approximately as wide as the inner races of the bearing.

-17 wide enough to press the outer metal edges of a bearing but not wider than the bearing.

-16 wider than the bearing.

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Use the large diameter tube and its end plate. Put a washer on the bolt and run it through the end plate, tube and bearing. Put plate -17 against the bearing, another washer, and then the long nut (threads towards the bearing) on the bolt protruding through the bearing housing. Snug it up and ensure everything is centered.

Here's a picture of the assembly with bearing removed from housing. The large diameter tube is not pictured so you can see everything else.



Counter hold the long nut with a 32mm box wrench or socket and wrench. Use an impact wrench such as the one mentioned above with an impact socket on the bolt to tighten the bolt and thus extract the bearing. Mine was 27mm but the kits have been known to vary.

Now we can reassemble everything with the new bearing.

Lightly grease inside the bearing housing.

Prepare to install the bearing by putting a washer on the bearing kit bolt, then a plate larger in diameter than the bearing such as -16 with the flat side against the bearing. ***With the smaller inner diameter facing the housing and larger inner diameter facing out to you***, install the bearing up to the bearing housing with the bolt passing through. On the end of the bolt, install the large tube plate with flat side towards the bearing housing, a washer and the long nut with threads towards the washer. The large plate will cover the opening normally filled with the CV joint.

Here's a picture of the assembly with the -17 plate. The housing would be between the large plate at the left and the bearing. Smaller inner diameter of bearing faces the large plate.



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Snug up the assembly so that the bearing is centered in the hole. Counter hold the nut and start tightening the bolt by hand to ensure the bearing starts straight into the housing. Continue installing the bearing with the impact wrench until the bearing is nearly completely in. Disassemble/reassemble the bolt parts replacing the -16 plate with the -17 plate. Snug up the assembly, center the plate on the bearing and then finish seating the bearing. It will stop against the ridge in the bearing housing.

Disassemble the installation bolt parts and replace the large tube plate with the smaller -06 plate. Reassemble the bolt so that the -17 plate flat side presses on the hub, the hub is centered in the bearing, the flat side of the -06 plate presses on the bearing inner race facing the CV joint cavity in the housing. You can use hand tools to tighten the bolt and push the hub into the bearing until it stops. No impact wrench is required for this.

Remove the installation bolt and reassemble the axle and brake in reverse sequence of removal. You might find the caliper easier to install if you use a large C-clamp and wheel bearing kit plate against the brake pad to push the caliper piston into the caliper just a little bit. Seat the ABS sensor all the way in and then pull it back a hair so it doesn't rub the CV joint as you turn the hub.

Torque values:

Axle to transmission flange: 10Nm and then 77Nm in a cross pattern.

Caliper bracket bolts: 120Nm (89 ft-lb)

Caliper slider pins: 25Nm (18 ft-lb)

Heat shield bolts: 25Nm (18 ft-lb)

Wheel bolts: 120 Nm (89 ft-lb)

Large axle bolt: 120 Nm then ½ turn for 14mm bolt, or 190Nm plus ½ turn for 16mm bolt. Most of the cars have the 14mm bolt. (Very tight)

Operate the brakes to reseal the brake pads.

Test drive the car a low speed and test braking to ensure the ABS does not set a fault.

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| Left | Rear wheel bearing replacement checklist | Right |
|------|--|-------|
| | Loosen wheel bolts | |
| | Raise and support vehicle | |
| | Remove wheel bolts | |
| | Remove wheel | |
| | Remove caliper bolts | |
| | Remove caliper and safely hang out of the way | |
| | Mark outer brake pad and remove brake pads | |
| | Remove brake disc | |
| | Remove ABS sensor clip | |
| | Unclip ABS wire from two closest retainers | |
| | Rotate hub so large unthreaded holes align with bolts | |
| | Using suitable 8mm hex tool loosen all bolts | |
| | Remove all bolts | |
| | Pull hub from axle mount | |
| | Re-install one bolt to hold backplate in position | |
| | Using small screwdriver, gently punch/pry sensor from hub. Three hands may be required. | |
| | Discard old hub | |
| | Lightly grease sensor around o-ring | |
| | Push sensor into hub aligning "pointer" with a "slot" | |
| | Remove backplate retaining bolt and install hub | |
| | Align large hole of hub and install all 5 bolts finger tight | |
| | In alternating pattern tighten bolts to 60 Nm and mark them | |
| | Verify all bolts are marked | |
| | Install ABS sensor retaining clip | |
| | Reseat ABS sensor wire in retainers | |
| | Install brake disc aligning holes with threaded holes in hub | |
| | Install brake pads with marked pad facing you | |
| | Install brake caliper | |
| | Install brake caliper bolts and tighten to 35 Nm | |
| | Install wheel with bolts snug | |
| | Lower vehicle to the ground | |
| | Tighten wheel bolts in alternating pattern to 120 Nm | |

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| Left | Front wheel bearing replacement checklist | Right |
|------|--|-------|
| | Loosen large center axle bolt (17mm in/21mm out) | |
| | Loosen wheel bolts (17mm) | |
| | Raise and support the vehicle | |
| | Remove wheel bolts | |
| | Remove wheel | |
| | Remove T25 screw for sound baffle | |
| | Remove sound baffle | |
| | disconnect wear sensor connector and unclip ABS wiring from bracket | |
| N/A | Remove heat shield bolts (6mm hex) and shield | |
| | Remove 6 inner axle shaft bolts (XZN 10) | |
| | Remove large bolt | |
| | Remove axle shaft | |
| | Pull/push ABS sensor out of housing CV joint area | |
| | Pry brake pad spring out with screwdriver | |
| | Disconnect brake wear indicator connector | |
| | Rotate connector 90 deg. and remove from holder | |
| | Remove caps over guide pins | |
| | Unscrew guide pins (7mm hex) | |
| | Remove caliper and safely hang/support | |
| | Remove outer brake pad | |
| | Remove 18mm head caliper bracket bolts and bracket | |
| | Remove rotor | |
| | Pull out hub | |
| | Remove bearing race from hub if necessary | |
| | Remove bearing from housing | |
| | Install new bearing facing the right way! | |
| | Install hub | |
| | Install rotor with a couple of wheel bolts to hold it | |
| | Install caliper bracket and bolts 120 Nm | |
| | Use C-clamp and plate to push piston into caliper | |
| | Install outer brake pad | |
| | Install caliper and inner brake pad | |
| | Screw in guide pins to 25Nm | |
| | Install retaining spring | |
| | Connect wear indicator and install ABS sensor wire into bracket | |
| | Install axle shaft | |
| | Install large axle shaft bolt finger tight | |
| | Install 6 inner joint bolts finger tight then 77Nm in cross pattern | |
| | Install heat shield 25Nm | |

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| | Install sound baffle | |
| | Push in ABS sensor | |
| | Remove bolts holding rotor and install wheel | |
| | Tighten wheel bolts to 120 Nm | |
| | Tighten axle bolt to 120 Nm | |
| | With wheel on the ground, tighten axle bolt 1/2 turn | |
| | Install wheel and bolt covering if any | |
| | Depress brake pedal to reseat brake pads | |
| | Test drive | |