Keep Rolling:
Proper CV Joint & Bolt Maintenance

Constant Velocity Joints, or CV Joints, on your Volkswagen transfer torque from the transmission to the drive wheels at a constant speed, while accounting for the motion caused by the suspension. The CV Joints are packed with a special grease and sealed in a rubber or plastic boot, and can last through 100,000 miles as long as the boot doesn't crack or get damaged. Proper maintenance is critical to ensure that your CV Joint keeps functioning smoothly.

Know the Signs

Whether your VW is a road warrior, a show winner or a newly-acquired barn find, there's a good chance your CV Joints and Boots are in need of some maintenance. Luckily, there are some telltale signs you can look for:

- Clicking or popping noise while turning
- Shudder or side-to-side shake during acceleration
- Clunking when shifting from drive to reverse
- Worst case scenario, the CV Joint will disintegrate while driving and your VW will be inoperable

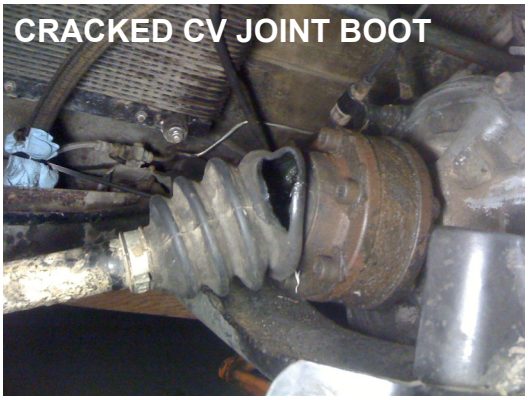
CV Joint & Boot Upkeep

When caught early, maintenance is relatively inexpensive. Servicing the CV Joint can be messy, as the grease has to be removed and repacked. However, it's a better alternative than having to replacing the entire CV Joint and Driveshaft.

Inspect the CV Joint dust boots for cracks and tears. If the boots are in good condition, the CV Joints are probably clean and adequately lubricated. But if either boot is cracked, torn or leaking, remove it, clean and inspect the CV Joint and then repack it before installing a new boot. If the balls, splines or races are damaged, corroded, worn or cracked, replace the entire CV joint. Pack the bearing assembly with CV joint grease.

CV Joint Service

Note: Regreasing of the axles and CV Joints is not difficult, but it is a VERY messy job. Have plenty of rags or paper towels on hand and, if you prefer to keep your hands semi-clean, latex gloves.



CRACKED CV JOINT BOOT

1. Do one side at a time from start to finish (there's a reason for this). Remove the hub cap and the split pin from the 36mm nut holding the brake drum. Loosen the 36mm nut, THEN jack the wheel off the ground. Support it on a jack stand (don't trust just the jack).
2. Remove the brake drum.
3. Now that you have the wheel off for easy access, crawl under the car where you'll see the two CV Joints on each drive shaft, each held in place by six bolts. Sometimes these will have an Allen Key head, and some have a 12-point star head. *Note: Make sure you use the correct driver – you need a good connection to re-torque these when you've finished. You may need to get a 12-point driver from a VW shop if you car has these (most other automotive shops carry them as well).*
4. Under the bolts you will find a washer and a set of three "paired" plates, two for each of the bolts (three plates for six bolts).
5. Remove the six bolts from each end of the CV drive shaft. The drive shaft will then come free very easily. Each exposed end of the CV Joints are full of black grease, so be prepared!
6. Lay the shaft down for the moment and clean off all grease inside the dished CV attachment plate in both the gearbox and the stub axle (you'll be repacking these with fresh grease later).
7. The CV joints are held on the drive shaft by a circlip. You'll have to wipe the grease from the end of the shaft to see it. Moly grease is black, and REALLY sticky, so if you find the grease looks more brown and watery, then it's way overdue for a change.
8. There is also a rubber boot on the inner side. On some cars these are held with one-shot hose clamps to the aluminum CV cover; on others there is a cover with a raised retaining ring and the rubber boot just fits over this ring. On the small end of the rubber boot, a hose clamp fixes the boot to the shaft. With both ends of the boot free, you can slide it away from the CV joint.
9. With the rubber boot freed, you can gently tap the aluminum cover plate off the joint and down the drive shaft. Then with the circlip removed, the CV joint can be driven off the shaft – it's a light interference fit. Open the jaws of a vice so the shaft fits between, and the jaws support the inner CV race. Tap the axle downwards until it comes off. You may want to put rags or similar under the shaft to catch it.
10. The CV Joint will come apart, but you can leave it assembled and wash it in solvent (mineral spirits, kerosene, etc.). Use a toothbrush to get rid of all traces of old grease (several fresh batches of solvent may be needed).
11. Now inspect the joint. If the balls and races are shiny and bright, you can reuse the joint. If the balls are "blued" or there is any scoring of balls or races, the joint is worn. You can still reuse it if you like, but start saving for a replacement – it might last a thousand miles or 10 thousand miles. New joints are costly, so regreasing them about every 5 years (depending on use) can save you a lot of money.

12. If you do need to disassemble the joint, you can turn the inner race about 30 degrees to the outer race and the two will pop apart with hard finger pressure. Remember the note about only servicing one axle/CV Joint at a time? The balls are matched to the joint, so you do NOT want to play mix-n-match. Doing just one joint at a time ensures that the right balls go in the right joint.
13. Clean old grease out of the rubber boot and the aluminum cover plate too. This will be almost completely refilled with new grease as a reservoir.
14. Once the joint is completely clean, place it in the (clean) palm of your hand, and start pushing Moly grease into the balls and races with your other hand until it works out the other side into your hand.

Note: The CV Joints are lubricated with black Moly grease (the pack usually says "contains 3% Molybdenum Disulphide"). It is sometimes called Extreme Pressure grease, Castrol LMM or similar.

15. Place the CV Joint back on to the axle and push it down so you can replace the circlip (compress this clip first to get a firm grip if needed). Now work as much grease as you can into the drive shaft side of the joint, and bring the aluminium cover plate up to the inner side and make sure its as full of grease as you can get it before pushing it back on to the outer race – if some grease squeezes out the inner part of the cover (the drive shaft hole) then you've done a good job. Pack more grease under the rubber boot and bring it up to the cover. Fit the hose clamp(s) as required.
16. Do the CV joint at the other end of the drive shaft.
17. Before reattaching the drive shaft to the gearbox and stub axle, fill the recesses in the attachment flanges with grease so you have a reservoir on that side of the joint, but wipe the outer circle (where the bolt holes are) clean. Add a mound of grease to the exposed side of the joint too, but clean the rim where the bolt holes are.
18. Bring the CV joint up to the flange and reinsert the bolts - you did clean these too didn't you? We don't want ANY dirt getting in to the expensive CV joint!
19. Make sure each bolt has it's washer (they have tiny ridges to act as a lock washer); and the plate under each pair of bolts must be present too.
20. Tighten the bolts to 25 ft-lbs. You may have to push the rubber boot away with your thumb to get the tool on to the bolt, and rotate the joint for easier access as you go. The four CV joints should use about a pound (1/2 kilo) of grease (a full tube of grease-gun grease). Don't skimp on this – those joints work hard, and careful attention to cleanliness and lots of new grease will ensure a long life for them.
21. Once you've finished with one side of the car, do the other – remember, it's therapeutic for both you and the car.

There you have it – "as new" CV joints which will last you many thousands of miles. After you have driven a few miles, check the CV joint bolts – I found two of the 24 bolts were not torqued properly – whether I'd missed the final tightening, or they had worked loose I don't know, but it's a good check, the last thing you need is a drive shaft coming loose at 60mph and flailing everywhere.

This newsletter contains content adapted from **Rob and Dave's Aircooled Volkswagen pages**.