Disassembling, cleaning & repacking Outer CV Joints >>>

Posted by: silverd2 (9538) on 2011-03-26 18:39:46

I have never found a reason to change an axle assembly on any of the many German cars I've owned and serviced. Only once had to replace a CV joint (77 Rabbit) and that was totally my fault. It literally took a couple thousand miles, with a ripped open boot, to finally start clicking then binding...no boot or grease left by that point.
These joints do NOT "contaminate" and fail that easily. A failed boot usually starts with a slit between the folds that expels grease all over your brakes, suspension and fender well. It's easy to spot the grease on the fender liner, if you're paying any attention to your car. Unless you drive it in a Baja, Dakar or other dirt rally, it's not gonna suck in a bunch of abrasive and become irreparably damaged in a short time. I've let em go for weeks and still find unscored shiny balls and races...even on a 200K mile VW that's been rebooted twice. Many replace the entire axle with an aftermarket unit, when all that's wrong is a ripped boot. I don't even begin to get that, when all the hard work is getting the axle out and in...and I don't find doing the boot replacement with the axle still in the car easier or even an acceptable method. I think getting it all the way out of the car and locking it in a vice is much easier...and essential to cleaning, inspecting and repacking the joint properly.
An outer CV boot kit is $25 or less...including a new axle bolt, clamps, washer, spacer, c-clip and grease.

Anyway, with that editorial out of the way, I put together a little pictorial documenting how I disassemble, clean, inspect and repack my outer CV's.
I used the Bentley method to remove the axle (pinch bolt, upper control arms popped out of bearing housing, etc...) and the same with removal from and remounting to the shaft. The only extra step I take is removing the inner CV cast aluminum heat shield...lots more room to work axle out...worth the 3 extra bolts. The CV boot clamps can be "fun" to put on correctly...easy with the special "push-while-it-pinches" proper tool, which I used to borrow from a friend. Now I use an altered set of long handled wire cutters (not pictured), which had chipped cutting blades, so I ground the jaws into the proper angle and shape to pinch CV boot clamps tight. All those steps, including proper replacement of new dished washer, plastic spacer and c-clip on shaft, are up to you...It's all in the Bentley. This pictorial is all about the CV joint itself.

This is the only method I have ever used. It's the only way I feel assured that I've done a thorough inspection and maintenance...plus it's easy, for the most part requires no tools, only requires a couple of old rags and a few squirts of cheapo brake parts cleaner. Other methods require buckets full of solvent, offer no thorough inspection opportunity and run the real risk of leaving hidden contaminates in the joint...esp the type CV here.

WARNING: You may get dirty. If this is a problem, disregard this procedure and go with Raxles, as do others here...AND better yet pay someone else to do it for you...your manicure will remain clean and intact :)
I personally have no faith in aftermaket axle shafts' questionable construction/component quality (and esp cheaper brands...the prices are too suspicious for me) ...and more importantly, why throw out a perfectly operating, unfailed component???

High tech method of CV removal...baby sledge and a railroad spike (a "drift" as Bentley calls

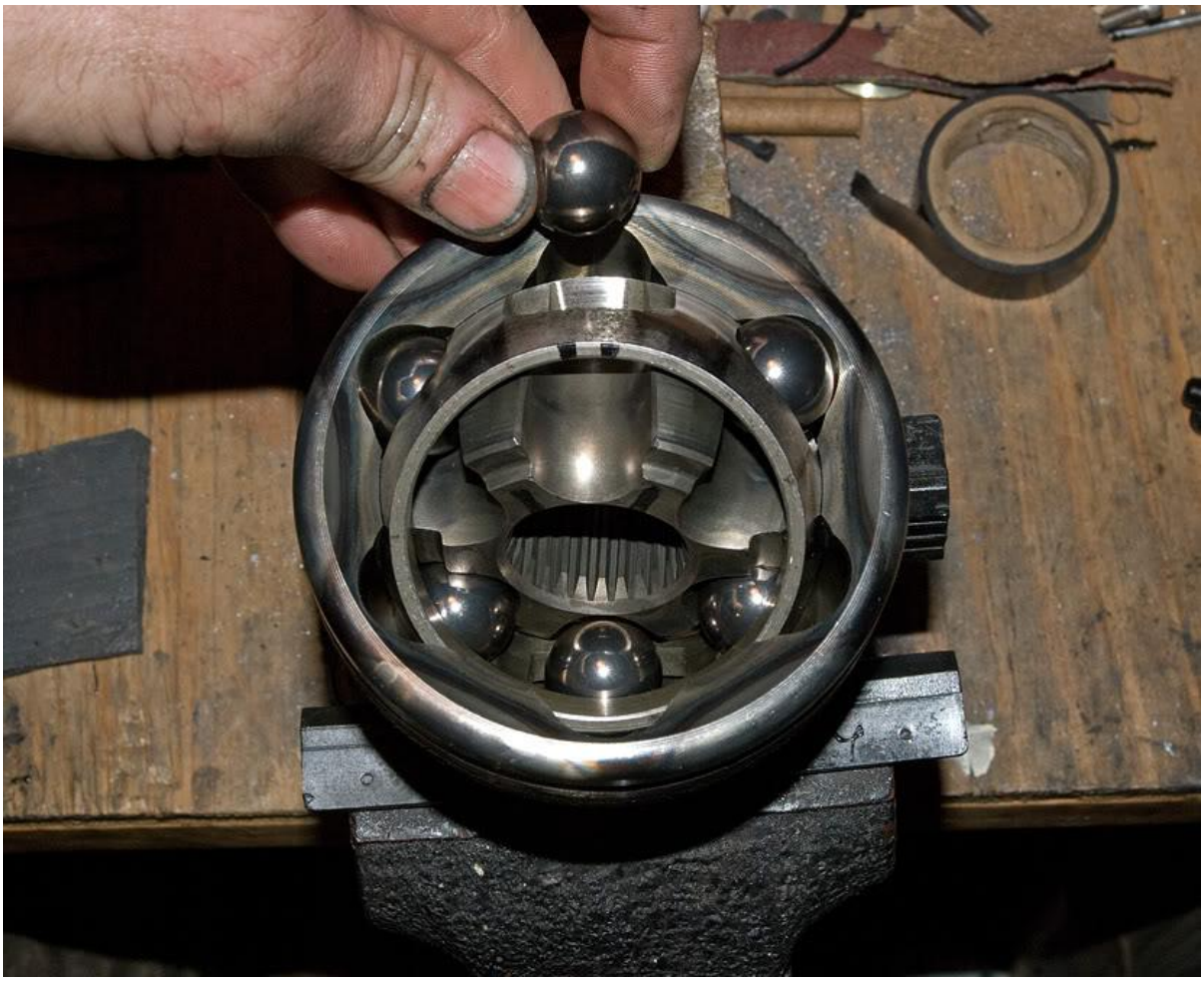
it). Place firmly against a thick section of the the inner ball race...good firm whack and it's off. It only has to pop over a rounded edge c-clip on the end of the shaft. You can NOT hurt the inner race or shaft this way...it's actually still the Bentley method in their hard copy manuals for same year VW's which have the same CV joints. I've found that trying to remove them by using an axle bolt is extremely difficult and the torque required causes the shaft to rotate in the vice (and I use soft jaws).

NOTE: I used the axe bolt to drive mine off. You have two choices: 1. Do it while the axle is still attached to the transmission and make sure it is in gear or 2. Rig up something to help keep the shaft from turning. For me it was a bolt through one of the holes that attach the inside CV to the axle with a pair of vise grips so that the shaft would not rotate. I had placed a cloth in the vise to make sure I didn't mar the axle but this let the axle turn. This also damaged the circlip so make sure you use the new one.

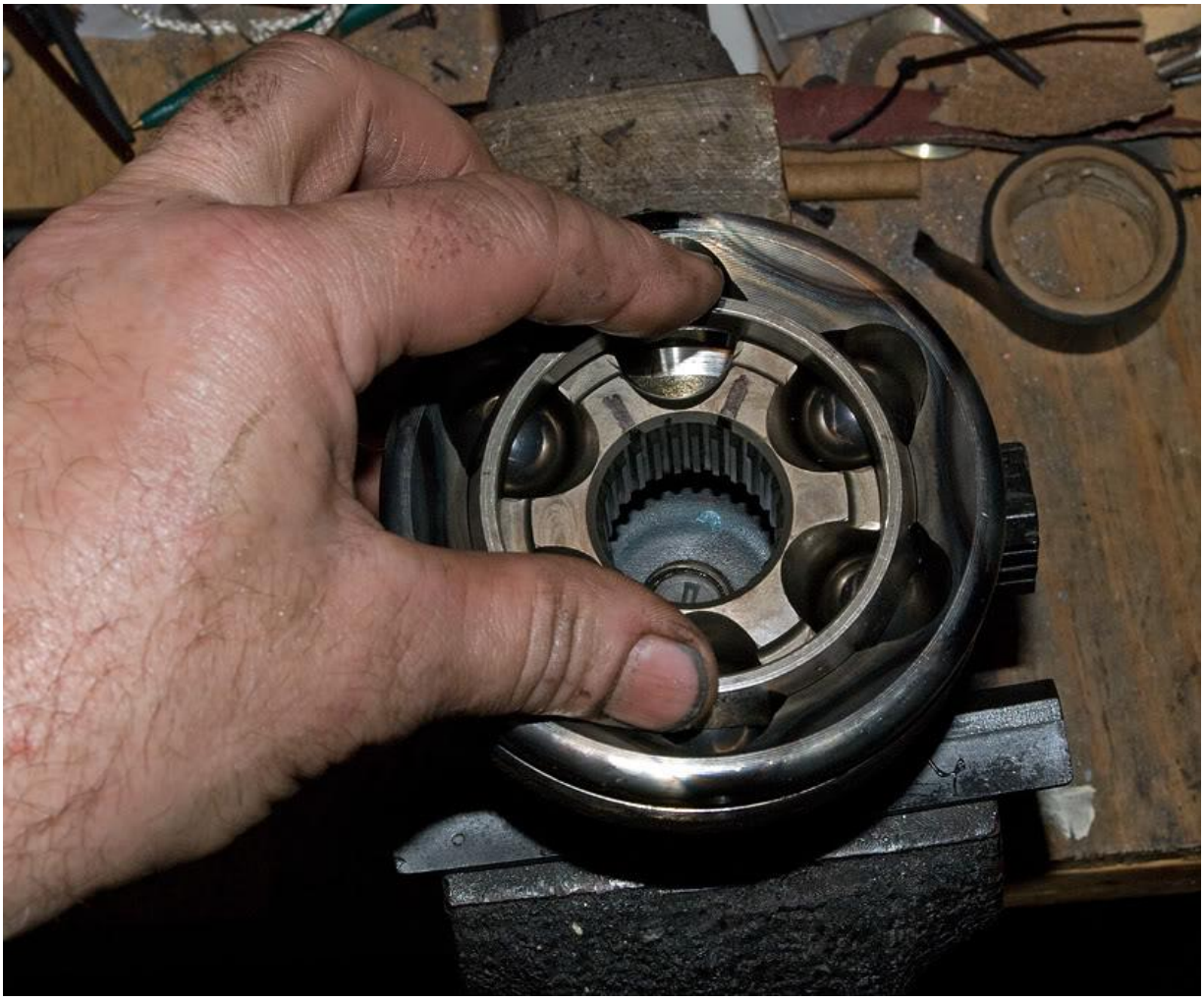
It's not a Rubik's cube...it's just a 6 hour Playskool clock...simple to disassemble with your fingers. Lock in a vice and mark the 12 o'clock position of outer race (joint), ball cage and inner race with permanent marker (Sharpie here....CAUTION: Permanent marker washes off with brake parts cleaner). This view is with all parts already cleaned for clarity.

I’ve designated the 12 o’clock ball as #1 and continue through #6 in a clockwise direction. Start disassembly by pushing down inner race, cage and #4 ball simultaneously, which will lift ball #1 to removal position.

Remove number #1 ball and place it in a location labeled #1. I always return all parts, including each ball, to their exact original locations.

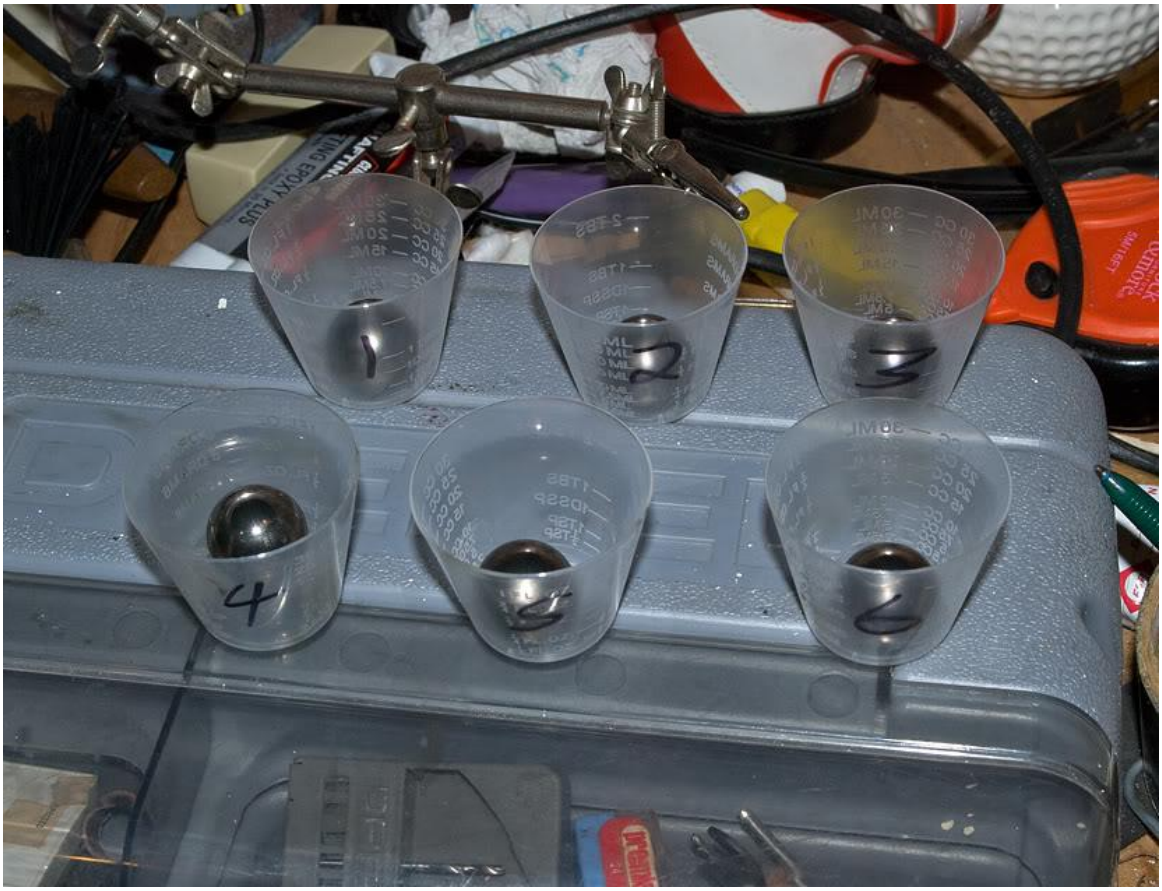


Return CV joint assembly to it’s original flat configuration. I’ve found this assures free movement for the next ball removal. I recommend this step between every ball removal, to assure no binding of parts and no chance of any part falling out of place.



Next, going around the clock in order, press down inner race, cage and ball at #5 position to lift and free ball #2 for removal ...direct opposite side for every ball.

This is how I kept track of the balls, to assure being returned to correct positions upon reassembly. Why mess with what was working?



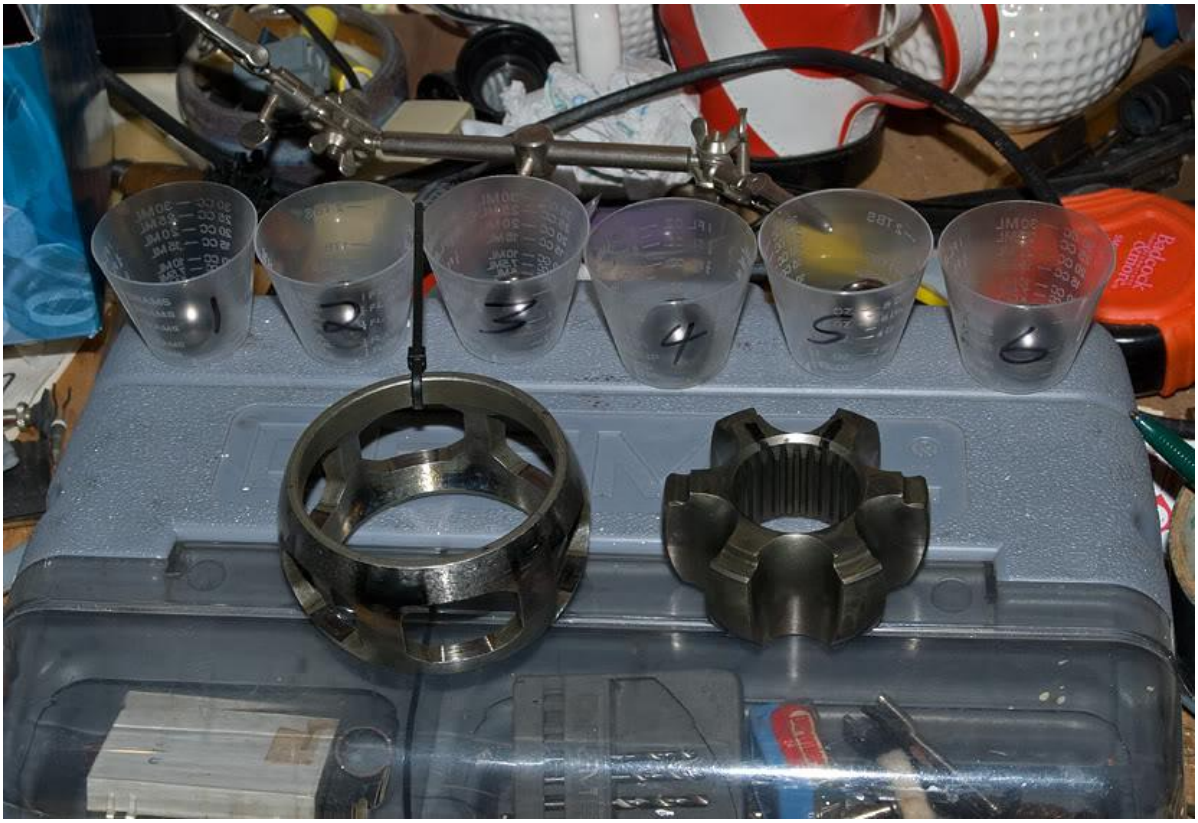
After having gone through each ball removal step, until #6 has been removed last, leaving ball cage flat, turn inner cage 90 degrees and work out carefully buy lining up it's protrusions with the cages open slots...doesn't matter how much you have turn it to find the free removal point, since it's correct position for replacement has been marked.
Note: Before removal, it's a good idea to assure proper position on the clock, by adding whatever it takes (plastic wires ties for instance) to assure that and top position...in case you don't have or washed away position marks.

Pull the inner race free.

Do the same with ball cage...turn 90 degrees.

Work out with slots lined up with outer race protrusions to free it up and remove.

Notice wire tie on the ball cage, to keep track of 12 o’clock. I remark inner race and cage with Sharpie after a good cleaning.



Time for finger painting...lightly coat totally cleaned outer race with supplied grease.

Reassembly:

Grease coat and carefully work cage back in at 90 degrees, with slots over outer cage protrusion, however you need to turn it to drop into place, to position for no binding rotation.
Note: The grease alone will not erase the Sharpie marks.

Turn cage to flat position, correct (marked side up) to prepare for insertion of inner race.

Grease coat and work inner race in at 90 degrees, fitting protrusions into ball cage slots until it’s in a position to rotate freely.

Flatten inner race, ball cage and rotate till all marks line back up to 12 o’clock (#1) position.

Press ball cage and inner race down at position #3, to facilitate inserting greased ball #6.

Again, flatten parts first.

Then press down ball cage and inner race at position #2 and insert greased ball #5. Continue the same around counterclockwise (reverse of disassemble), being sure to flatten cage and race between each ball insertion, to assure no binding smooth assembly.

With axle bolt screwed in flush, to seal interior of CV joint while grease packing, squeeze as much as possible into the center.

Packing tool: 19mm deep well socket with electrical tape sealing one end. I used my finger, but I like this method.

Press in grease, to make room for more. When all is in, it will pack the CV nicely from inside out. 80 gm pack will fit into joint alone (per Bentley).

More fun than squarshin tadpoles :) ... "the iliad" by Ed Sanders 1969...Johnny Piss-off...cult classic...anyone?

Slide joint back on and pop in place with a plastic/rubber hammer till it pops over the new c-clip on shaft...goes on easy compared to removal. Put another 40 gms (half remaining pack) of grease (per Bentley) in new boot before slipping it onto joint.

The rest is up to you. Enjoy.