

# Project Cabrio

## DRIVE AXLE REPLACEMENT

### The easy way to replace a worn outer CV-joint

BY JEFF HOLIFIELD

Since our last installment of Project Cabrio, plenty of things have happened. In addition to many, many more miles on the odometer of our 1986 Cabriolet, *Hot VW's* magazine "got the Bug" — or should we say, purchased a 1998 New Beetle. Needless to say, most of the water-cooled attention has been directed to Volkswagen's newest model. But that's behind us, and the "Project" is back on track.

From the time we did a major inspection of Project Cabrio (that included the CV boots), until we actually got around to doing it again was, well, too little too late. The driver's side outer CV boot had a major tear, and grease had slung everywhere. Worse yet, plenty of dirt had found its way into the CV itself, thanks in part to the major road construction project it passes through daily.

In such a case, there are three things we could do. Pull the drive axle, pull off the outer CV, clean it, pack with new grease, and install a new boot. With the age of our car, and the amount of dirt seen in the CV grease, we determined it would be best to also install a new outer CV at this time. But we had one other enemy, and that was time. It sounds simple enough to remove the drive axle assembly, pull off the CV, and install a new one, but the whole ordeal is a little more involved than it sounds.

The third option (the one we picked) was to replace the entire drive axle assembly with a rebuilt unit. For the do-it-yourself person working in his own garage, with simple hand tools, this is by far the easiest way to go!

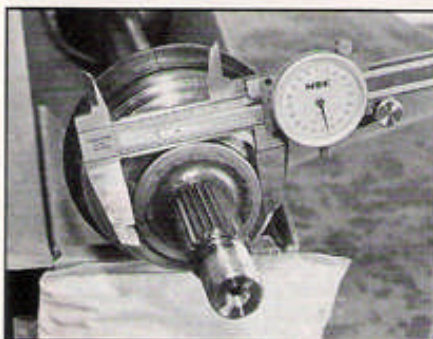
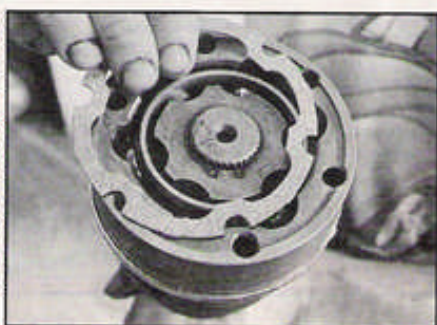
Off we went to our Genuine VW Parts man, only to find out they currently don't carry such a unit (we're told it's in the works, and they'll have them sometime in '99). Not leaving the VW dealership empty-

*Continued on page 127*



**LEFT**, in addition to the completely rebuilt drive axle assembly, you'll need to cruise over to the VW dealer and pick up a new axle nut, inner CV gasket, special "10.9" rated ball joint clamping bolt, and its mating nylock nut.

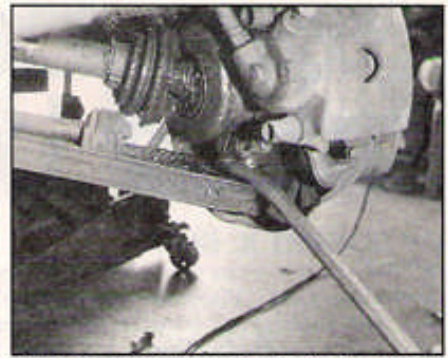
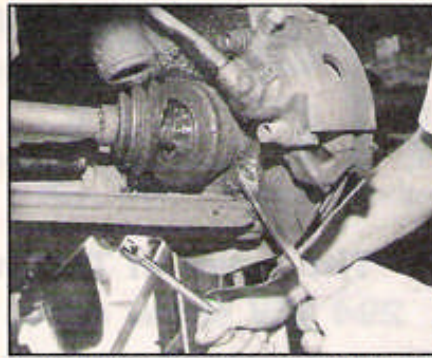
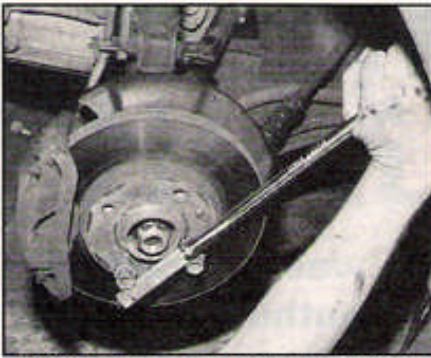
**ABOVE**, extremely sticky (and very icky) CV grease everywhere! This is what you have to look forward to when a CV boot gives way. **RIGHT**, the Volkswagen's inner CV-joint is of a unique design, in that there is recess for a gasket.



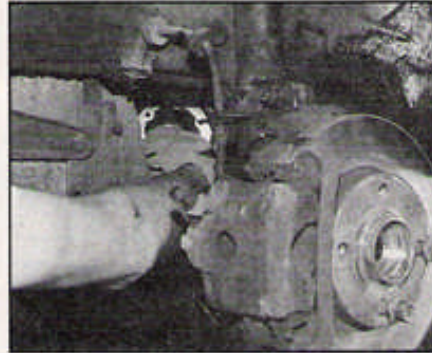
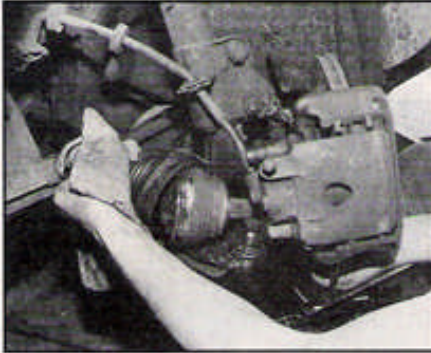
**LEFT**, 1988 and later Cabriolet axles, and all replacement CV-joints, have a larger, 53mm (2.09-inch) step on the face. This larger step could interfere with the wheel bearing's inner circlip on earlier models. Compare the rebuilt axle, and old axle being removed. If a difference is found, the circlip should be updated also.

**RIGHT**, with the car on the ground, the axle nut was loosened. It was then placed on jack stands and the tire removed. Diving right in, we cleaned off the inner CV-joint and loosened all six socket head bolts.

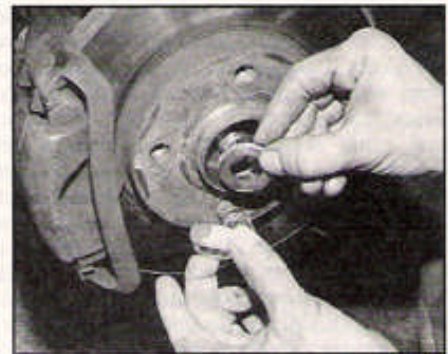
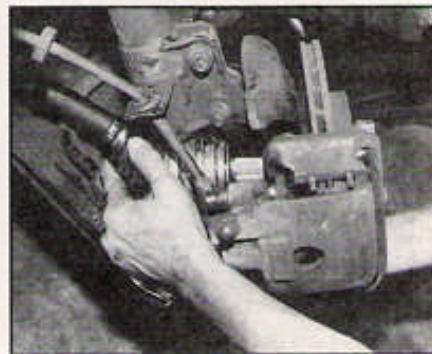
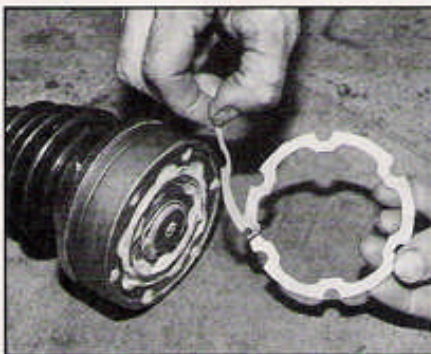




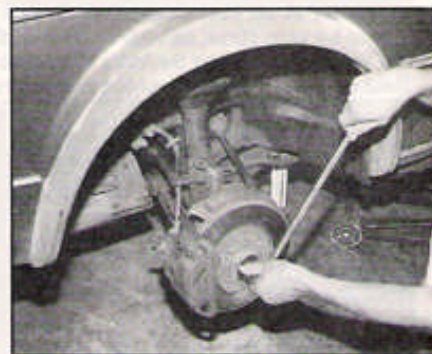
**ABOVE LEFT**, to get at each inner CV-joint bolt, we rotated the axle assembly using a bar wedged between two lug bolts that were temporarily installed. We recommend that one or two bolt(s) be left in the CV to support the axle assembly. **ABOVE CENTER**, in order to pull the strut away from the axle, the lower ball joint clamping bolt was removed. **ABOVE RIGHT**, a pry-bar (or small crow-bar) may be necessary to separate the lower arm from the bearing housing. Note: the clamping bolt must be removed completely.



**ABOVE LEFT**, the axle nut was fully removed, and the outer CV-joint slipped out of the hub. Actually, it was more like pounded out, as the splines were very stuck in the hub. Note the steering wheel was turned to help pull the axle out of the hub. **ABOVE CENTER**, the axle assembly was then completely removed, and the cleaning process began. We used spray contact cleaner to clean each bolt hole in the inner CV flange. **ABOVE RIGHT**, let the fun begin! The remanufactured axle assembly from Aragon came with the CV grease need to pack the inner CV-joint. The outer CV was fully packed at the factory and sealed with a new CV boot.



**ABOVE LEFT**, once the inner CV was fully packed with grease, the boot was turned on the axle to align the bolt holes with the CV-joint. The CV surface was then cleaned and the self-adhesive, factory gasket installed. **ABOVE CENTER**, all six inner CV-joint bolts were positioned in the CV, and the axle installed. Once supported on the inside, the outer CV was inserted into the hub. A very light amount of anti-seize compound was used on the six inner CV bolts, and on the splines of the new outer CV-joint. **ABOVE RIGHT**, the axle washer and new VW axle nut was installed finger tight at this time to insure it stays put.



**ABOVE LEFT**, with the drive axle in position and safely supported, the strut assembly and lower control arm were reunited. The new ball joint clamping bolt and nylock nut purchased at the VW dealer were installed and torqued to 37 ft.-lbs. **ABOVE CENTER**, the inner CV bolts are then snugged, followed by the large axle nut. **ABOVE RIGHT**, we torqued the inner CV-joint bolts to the recommended 33 ft.-lbs., replaced the tire, dropped the VW on all fours, and finished up by torquing the axle nut to 177 ft.-lbs.

## PROJECT CABRIO

*Continued from page 82*

handed, we picked up a new axle nut, ball joint clamping bolt (and mating nylock nut), and a self-adhesive inner CV gasket (part no. 443407309).

Looking around for the next best thing to a dealer part wasn't an easy one. Some of the "rebuilt" drive axles we looked at seemed to be little more than hosed-off trash can models with new grease packed in the CV-joints. We settled on an Aragon Engineering (East Rancho Dominguez, California) "remanufactured driveshaft" that utilized new and used parts. The new parts included the outer CV-joint (a major selling point), boots, and grease, along with a cleaned/inspected axle and inner CV. Another great selling point was the "limited" lifetime warranty, as well as the \$130-ish price tag.

For a simple "six-bolt, two-nut, pull-the-pin, pop-the-arm, and swap-it-out" procedure, there are couple of warnings and precautions that need to be observed. Right out of the gate, the main axle shaft nut needs to be broken loose, and torqued, while all four tires are on the ground. Do not attempt these two procedures while the car is on a jack stand, as the axle nut is torqued to 177 ft.-lbs., and that much force could pull a car off jack stands! The other major warning is, when the outboard CV-joint is removed from the car, the front wheel bearing-hub assembly is no longer securely held together, and the bearing can be easily damaged if the tire is reattached and the VW moved.

As for cautionary notes, be aware that the design of the outer CV-joint changed over the years. On 1987 and earlier models, the diameter of the protruding step on the face of the outer CV measured only 50mm (1.97-inch). Beginning in 1988, and on all replacement CV-joints, the diameter of the step increased to 53mm (2.09-inch). Also in 1988, a new circlip (that provided clearance the larger 53mm step) was used to secure the wheel bearing in its housing. On pre-'88 machines, the inner wheel bearing circlip needs to be changed to the later model, if it hasn't already been done in past maintenance work.

Other things to be aware of include the bolt and nylock nut that secures the strut/wheel bearing housing to the lower A-arm are of a high, "10.9" grade. Volkswagen recommends this bolt and its nut be replaced any time it is removed. Same goes for the axle shaft nut — get a new one each time it is removed (particularly with a new outer CV). And, in closing, some food for thought. CV grease is like a magnet is to metal, it will jump out and stick to anything that comes remotely close to it. It also attracts dirt and grime faster than anything else known to man, and the last thing your CV needs is dirt in the grease. Take your time, keep it clean, and let's get to work. ●