Project Cabrio

Replacement shocks for safer handling and a better ride

BY JEFF HOLIFIELD

Kaaa-Boom! It's the sound of firecrackers and bottle rockets filling the air in our favorite Mexican fishing village, San Felipe. It was also the sound our little water-pumper made as it launched itself out of a pot hole that was larger than most backyard coi ponds. Overall, we were amazed how well the '86 VW took it, including the diminutive 175/70R13 front tire that continued to hold air; but we knew something was wrong. As it turned out, we blew out the right front strut.

The damping ability of the original struts and rear shocks had already begun to wane before our trip south of the border. The Cabriolet had a lack luster ride, floated off large bumps, and rough roads turned into harsh jolts. The overall feel instilled zero confidence in the cornering abilities of the VW, which incidentally, is known for its great handling. Interestingly, when the infamous "bounce on the corner of the car" trick was tried, the shocks appeared to do an adequate job returning the car to stability. No way, no how — a simple drive over railroad track crossing was enough to put all doubts to rest.

Upon returning home, we cruised by ABD Racing (909/351-9566) in Riverside, California, to find the hot ticket in replacement strut inserts and rear shocks. Looking for a good investment that wouldn't drain the bank, Tokico gas shocks came to the forefront of the pack. Along with our new Tokicos, we requested new front strut bearings (upper mounts) and rear shock isolators from VW Genuine Parts be added to the parts list.

The dramatic change in character of the VW was outstanding from the word go. The new Tokicos (along with new VW strut bearings) smoothed out the ride, and provided a major improvement in the overall cornering abilities of the car. The harder we pushed the Cabriolet in the twisties, the more impressed we were with the shocks. The only thing that's holding us back now are the stock 13-inch tires (although, four-wheel drifts can be fun, too!). With nearly a thousand miles under our belt, we couldn't be more pleased with ABD Racing's recommendation of Tokicos strut inserts and shocks.

Follow along with us as Adrian Saldivar from ABD Racing installs a full set of Tokico dampers on Project Cabrio, and transforms it from a wallowing basket case into a pleasant, road holding automobile.

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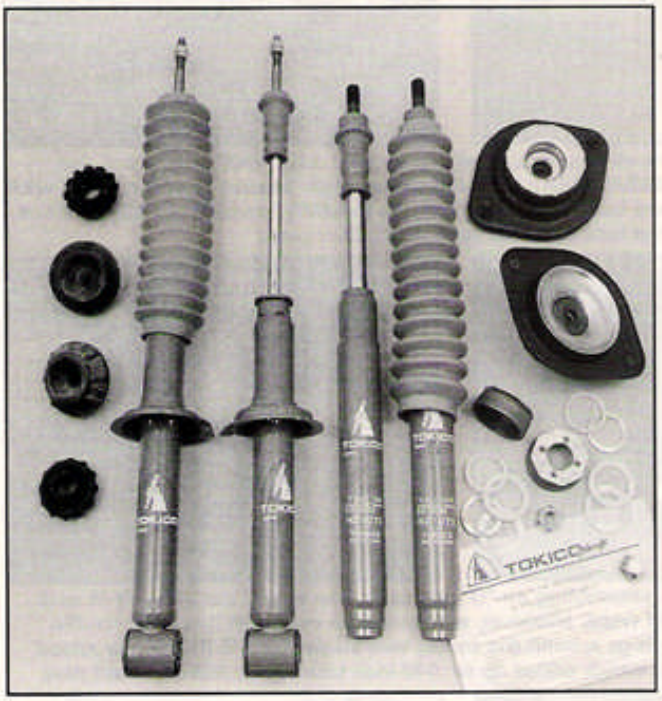
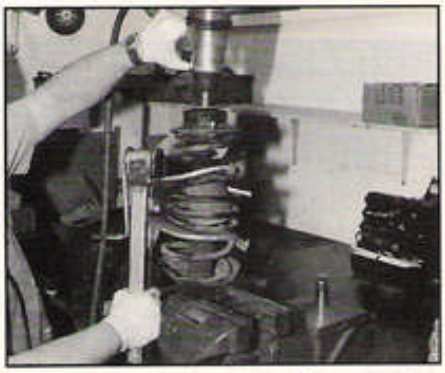
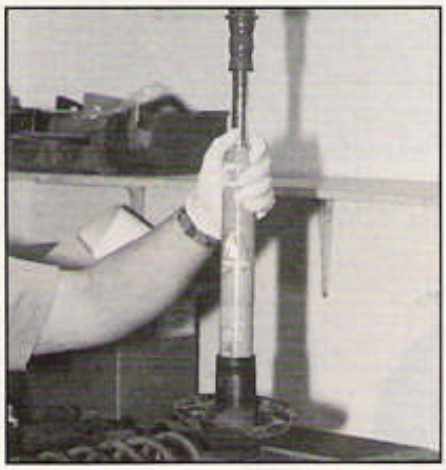


Our performance oriented Tokico strut cartridges and rear shocks came with custom urethane bump stops and protective piston rod covers, while the inserts came with additional parts, such as nylon spacers, metal shims, and special strut gland nuts. Instructions on converting VW's wet strut to a Tokico cartridge insert were also supplied. In keeping with our desire for quality parts, we requested authentic VW Genuine Parts from our VW dealer for the other required items, such as the upper strut mounts (also known as strut bearings) and upper/lower rear shock isolators.

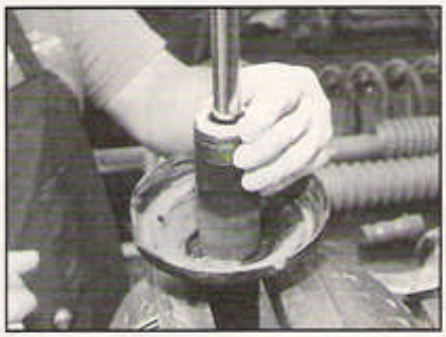
ABOVE LEFT, minutes after arriving at ABD Racing, ace mechanic Adrian Saldivar had the Cabriolet's chassis up on jack stands, removed the front tires, and got busy removing the two lower strut bolts from the wheel bearing housing. ABOVE RIGHT, under the hood, the two strut mount retaining nuts are removed. Check out how worn the rubber is on our original upper strut mounts (arrow). And this was *after* the load was taken off.



ABOVE LEFT, remove the soft brake line from the holder on the strut, and remove the strut/spring assembly from the VW. ABOVE RIGHT, this is where things become a little dicey for the home mechanic. Even though removed from the car, the spring is still compressed and stores plenty of energy. The spring MUST be compressed with a proper spring compressor before loosening the strut's top nut, or you run the risk of serious injury or property damage. For the hard-core do-it-yourselfers, either rent a quality spring compressor, *or* remove the strut assembly yourself and take it to a shop (like ABD Racing) that has the proper tools and can install the Tokico insert for you. If you want to do it yourself, also consider a large sturdy bench vise, a requirement as well.

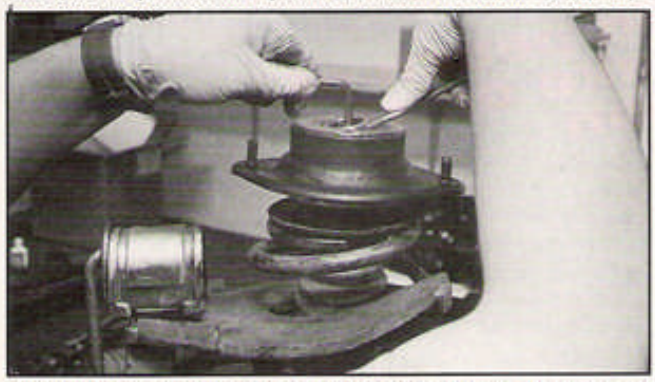


ABOVE LEFT, after removing the strut nut, and top components, slowly release the spring compressor from the spring, and remove it from the strut. Using a spanner wrench, large Channel-Locks, or a simple hammer and screwdriver (shown), loosen the stock strut gland nut and remove. ABOVE RIGHT, the stock shock uses the strut as the body, and is full of oil. Carefully remove the shock insert and drain shock oil.



ABOVE LEFT, the new Tokico cartridge is then inserted into the empty strut housing, and seated. ABOVE CENTER, select the appropriate nylon spacer for the cartridge, and install. ABOVE RIGHT, spin on the Tokico supplied gland nut, and torque to 90 ft.-lb. (isn't it nice to have the proper tools?). Next verify there is .050-inch to .180-inch space between the cartridge body and gland nut flange. If not, remove gland nut and add one of the supplied metal shims on top of the nylon spacer. Add gland nut and torque to 90 ft.-lb.

ABOVE LEFT, install the protective boot, pulling it over the gland nut. Return the spring, and carefully compress it before adding the next components. According to the factory manual, this small washer (shown) is supposed to go under the spring retainer; but, when we disassembled *both* factory struts, it was on top, and so that's where we returned it. ABOVE CENTER, be sure to pull the spacer out of the old strut mount, and drop it in the new Genuine Parts strut mount (#171 412 329A). ABOVE RIGHT, add the strut mount to the assembly, followed by the wide-face VW washer, and top off with the new lock nut supplied with the Tokico cartridges.



ABOVE LEFT, with no spring pressure on the upper retainer, tighten the strut nut to 52 ft.-lb. Note that a hex wrench may be required to hold the piston rod from rotating. *Never* grab the piston rod with any tool. To do so will damage the upper seal, and void the shock's warranty. Remove the spring compressor, making sure the spring seats right in both upper and lower retainers. ABOVE RIGHT, install the strut assembly back in the car, torquing the two small strut bearing nuts to 15 ft.-lb. Slide in the strut on the wheel bearing housing. Install the standard lower bolt, and the upper eccentric bolt (shown). Don't forget to get a front end alignment.

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ABOVE, finish up the front by torquing both lower strut bolts/nuts to 59 ft.-lb., and reinserting the brake line in the strut's built-in holder. Add wheels, lower off jack stands, and torque lugs to 81 ft.-lb.

ABOVE, moving to the rear of the VW, remove the protective cap over the shock tower and remove the nut and special washer that hold the rear shocks in place.

ABOVE, loosen the lower shock bolt and the wheel lug nuts, and raise the rear of the car. Place jack stands on the chassis, not the rear suspension axle beam or trailing arms. Remove wheel, the lower shock bolt, and the coil-over assembly.

ABOVE, while the upper shock isolator still looked new, the lower one (which supports all the weight of the rear of the car) had seen better days. On the left is the old smashed isolator, on the right the new VW Genuine Parts #171 512 333.

ABOVE, with the old coil-over shock in hand, it was back to the bench vise and in it went. The top nut was slowly loosened until all the spring pressure was removed (no need for spring compressor here). The long spacer, upper spring retainer, and coil spring were then removed and the shock thrown out. Our new Tokico unit was then clamped in the vise by its lower mount. Once the protective boot was secured, the spring, retainer, and spacer was added. Using a little body weight to pull the spring down (shown), Adrian was able to hand-thread the nut on the first half inch or so. Torqued to 15 ft-.lb.

ABOVE, slip the new Genuine Parts lower isolator on, and return the coil-over assembly to the car. In position, the new upper isolator (171 512 335) was installed, along with the special cupped washer and nut, but only finger tight for now.

ABOVE, Adrian then used a floor jack to raise the trailing arm so the lower shock bolt would slip right in. Add the nut and torque to 33 ft.-lb. With the tire on, and the car on the ground, torque the upper nut to 23 ft-.lb. and replace the protective cap.