Tech Notes

BABY GET'S A NEW PAIR OF SHOES

IF YOUR EARLY 911 OR 914 IS LACKING IN THE STOPPING DEPARTMENT, READ ON.

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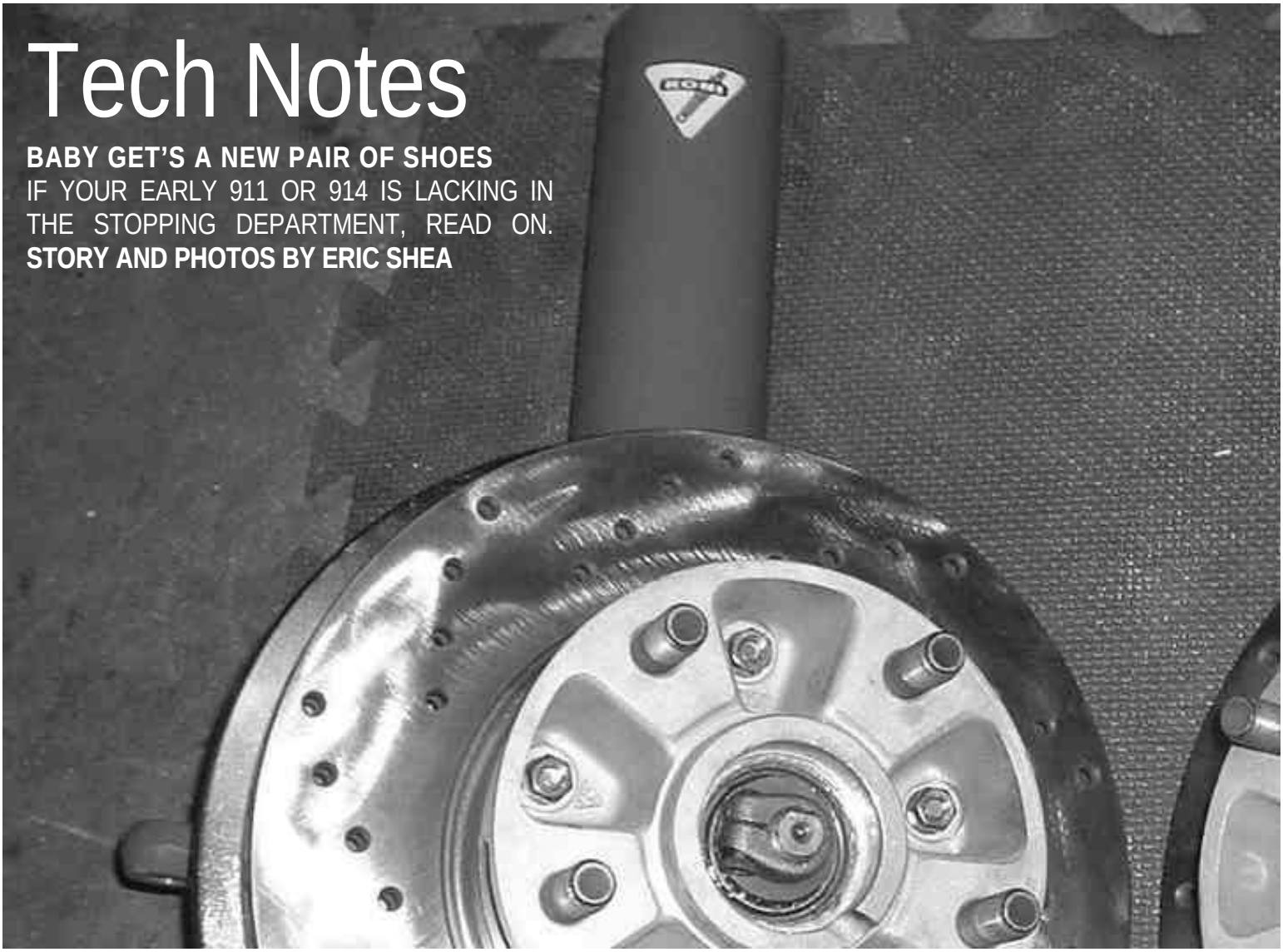

Yet another in what will probably be a never-ending string of fixer-uppers and improvements to the 911 RS clone. In this article we'll look at upgrading the 911/914 front suspension and stopping power.

One of the things the factory did with nearly every substantial increase in horsepower was to thoughtfully equal the increase in stopping power of their cars. This first happened in 1967 with the 911S, it was the first to receive vented rotors on all four corners. Then in 1969 the 911S received the lighter and larger aluminum caliper. The 1973 RS was no different. It received the 911S brakes including the aluminum calipers. The following little article will take you through the process of updating any M-Strut car to a full 1973 RS A-Strut, S-Caliper front suspension.

If you're the owner of an early 911 or 914 with the standard M-Strut configuration this may be of interest to you. Many early cars were fitted with the M-Strut. In 1969 the 911S received the A-Strut which utilized a 3.5" spacing for the new aluminum caliper. The desirable A-Strut is also a launching pad for other exotic brake applications. Later Turbo, 917 and Big Red calipers all simply bolt on to the 3.5" A-Strut. An M-Strut leaves you with little or no option in upgrading your 911's braking performance. Seeing as how this car is awaiting its new 3.0 MFI engine I felt it mandatory to improve the brakes and suspension before ever being tempted to turn the key.

The first step is to find an A-Strut assembly that doesn't cost you an arm and a leg. They're out there but the people who have them generally know what they're worth. For me the A-Strut upgrade was important on two fronts; a) for performance reasons, as stated earlier, the car would be getting a substantial increase in horsepower (nearly double it left the factory with), and b) for nostalgic reasons this car needed to have the original RS suspension package. The hunt began. A local friend (and certified 911 addict) just so happened to have such a system. It took nearly all summer to work out an

amicable trade but I finally made it happened. He got the SSI heat exchangers (I needed new ones for the MFI system) and I got the A-Struts with the proper S-Calipers. The struts were a little rough and the calipers were in need of a cleaning, new stainless steel pistons and a good rebuild. So goes the story of this project.

The rebuilding process began with the struts. The previous-previous owner had the spindles raised the proper 18mm (.71"). This was a "good thing" as some RS's and all RSR's had this option performed at the factory. This effectively lowered the car and retained the proper suspension travel without lowering the roll center. The bad thing was the quality of the work performed. Although the welds looked solid and substantial they also looked a bit sloppy. The brake hose mount was also moved up and subsequently bored out (with a jackhammer) to a size one would suspect was needed for a racing application. The first step was to get these struts down to bare metal. A trip to the local sandblaster made my wallet $10 bucks lighter and got the struts cleaned up (well worth the investment.) Then it was off to Mike Lundquist of Lundquist Restorations to have the welds reworked and the holes brought back into their proper specs. A couple coats of primer and a few more of "Koni" orange and "viola"… new A-Struts. With the struts finished it's a simple matter of screwing in the new Koni inserts and adjusting them to the desired ride quality. Total restoration cost so far $78.00 (excluding inserts).

Next I restored the calipers. The aluminum calipers have the same anodized finish that comes on our Fuchs wheels. Being beneath the car and constantly exposed to the elements anodizing was the best solution to keep these new (back in 1973) aluminum parts from corroding. Mine had seen better days and this meant they needed to be de-anodized, cleaned and polished and then re-anodized to complete the restoration. The first order of the day was to completely dismantle the caliper. This meant removing all the bleeder valves, crossover lines and the piston covers. The de-anodizing step involved glass bead blasting the calipers until the original aluminum luster began to shine through again. You can tell by the change in luster once you've penetrated the anodizing layer.

Once the calipers were blasted clean it was time to take them to the metal finishers to have them re-anodized. When you get them back its re-assembly time. The early S-calipers came with standard steel pistons. These would tend to rust making the caliper stick and bind. You may have experienced your car pulling to one side under braking. Once a piston has rusted it can't be used again. Answer? Stephen Stomski of Stomski Racing. Stephen makes replacement pistons for the S-caliper out of stainless steel. These are artfully machined and they'll never rust. Stephen is a PCA member and a pleasure to do business with. The piston kit not only comes with the 4 pistons needed it also includes new stainless steel pad retaining pins and rebuild kits. Quite the bargain.

On to the caliper rebuild. The factory suggests a thin coat of ATE brake cylinder paste on the cylinder bore, piston and piston

Old vs. new. A pair of factory lightweight S-Calipers before and after the glass bead treatment…

seal to make reassembly easier and to provide protection against corrosion. Others have suggested simply using clean brake fluid. I can now say from trying both methods… go to your local auto parts supply store and get the assembly paste. It makes "all the difference in the world." The first step after lubricating the parts is to install the piston seal into the groove in the cylinder bore. Next is to install the piston. There are three main points to this step; 1) Install the piston dust cover before installing the piston. 2) Position the piston properly in the bore. This is done using the factory tool P84… (or a piece of heavy single ply cardboard with a 20-degree angle made to duplicate the factory tool). The "stepped-down" surface of the piston must point toward the brake disc's rotation at this 20-degree angle. 2) Don't jam it! The piston must go in evenly with little or no resistance. Once the pistons are in you can slide the dust covers into their groove. It helps to have a little assembly paste on the edges of the covers for a nice fit. Before you drop them in the groove, recheck the position of the piston in the caliper. Position the dust cover and push them into place. If you're rebuilding an M-Caliper the process is similar except now you install the snap ring and your done.

On to the hubs: It's a good idea to check the condition of your bearings and hubs before you take your wheels off the car. I would always grab the wheel and tire at the top and give it a firm shake. If there's a knocking noise then you'll probably be in need of new bearings. With your suspension off the car your hubs will be in hand. The first step is to pull out the old bearings and inspect their races. Don the latex gloves and start digging. You should have plenty of paper towels close by to help wipe the grease away from the races. Inspect the races carefully. Any signs of scratching, wearing or graying in color will indicate that new bearings are in order. Fear not. They're fairly inexpensive and available just about everywhere except your local 7-Eleven.The trick is getting the old ones out and the new ones in. The factory manual tells you to heat the hubs to about 295-315 degrees before removing the races. This is done quite easily in a conventional oven. 30 minutes on bake is all it should take. Removing the races was a matter

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1) S-Caliper on the left poised next to the standard M-Caliper. The size difference is obvious. There's also a 6-pound un-sprung weight savings to take to the bank.

2) Steven Stomski's stainless steel piston and pin set along with the factory rebuild kits splayed out on the bench. The kits come complete and ready to go.

3) A pair of freshly painted Koni struts awaits inserts, hubs, vented rotors and calipers. These were sandblasted to bare metal prior to refinish.

Trial fit and assembly with the freshly zinc coated backing plates. Note to self: On final assembly it might be wise to Install left caliper on left strut (let's see if anyone catches that…)

of taking a small punch and carefully tapping around the circumference of the exposed edges. Soon the race simply pops out. Installation is similar to reversing the process except, it's wise to use a press when installing the new races and they are best kept in the freezer until show time. Basically, heat the hubs back to the 295-315 range and have the hubs in the freezer ready for installation. The temperature differences make the races virtually drop into their respective slots. Once the hubs have their new races you should hand pack the bearings with 3 ounces of hi-temp disc brake grease.

Well, you've gone this far, you might as well bolt those hubs up to a new set of rotors. Stock, drilled, cut or frozen… the choice is yours. Once they're all together it's time to mount them back on the strut spindle. Before I took that step I had my old brake backing plates cleaned and re zinc plated (yeah I know… anal but the resulting pride takes you through the roof). It was fairly in-expensive and they look like new. Rotors and hubs slide right on. Tighten the nut until the washer beneath slides back and forth with the blade of a flat screwdriver and no more. Over tightening can damage your new bearings.

Next you simply bolt your new struts, rotors, hubs and calipers back to your existing a-arms. If you've gone the Koni route you'll want to make certain the struts are both set to the same dampening force.

Of course there's a lot more to it than this now… you'll need to get new pads and bleed the brake system. You're only a few bolts away from new suspension bushings. You may want to lower the car to a nice European ride height while you're in there and if you do that then you'll need to take a little trip to the alignment shop. All in all it may be an exhaustive exercise but keep in mind; most of this can be performed while you're driving your car. Enjoy!

Sources:

www.early911sregistry.org – Great for used parts in the want ad section.
www.pelicanparts.com – Another good spot for buying and selling.
www.pca.org – Parts section good for buying and selling.
Stomski Racing -Stomracing@aol.com Stainless steel piston kits