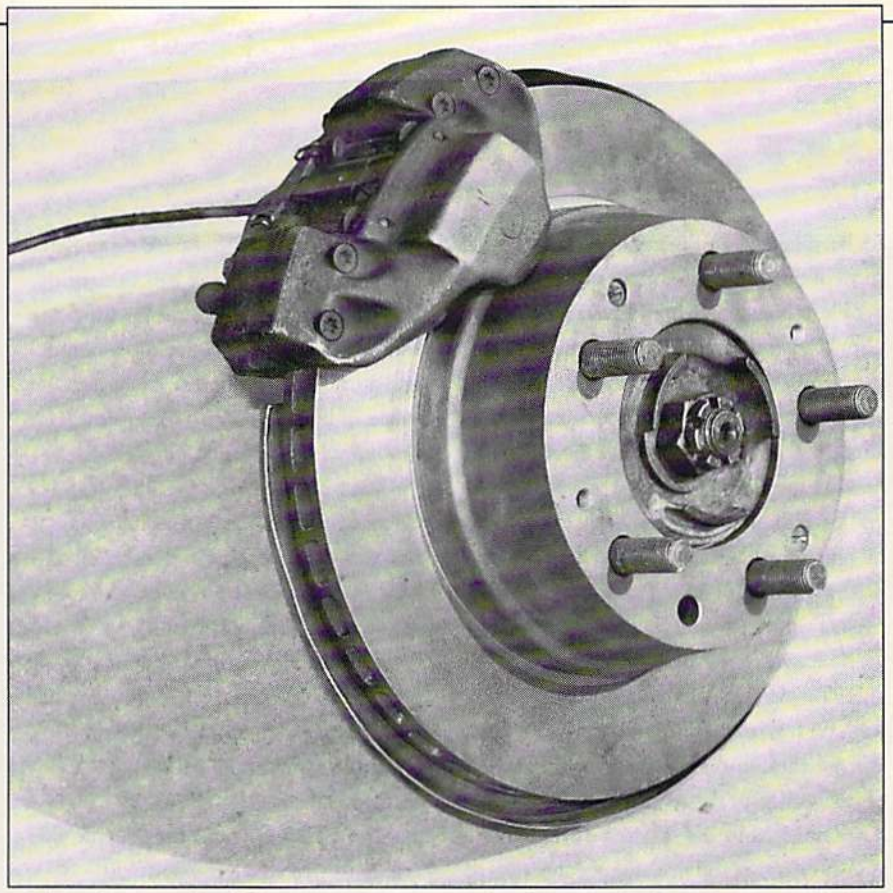
TECH PROCEDURE

914 to 911 Rear Brake Conversion

Vellios turns on the stopping power

by Victor Max
PHOTOS BY THE AUTHOR



This is the reason for all the excitement. Larger, and with internal cooling, the 911 rear brake assembly is more than ready for serious action.

In our special issue on the Porsche 914 (October 1991), we pointed out that horsepower upgrades in a 914 should be accompanied by brake system upgrades. As we mentioned then, upgrading the front is as easy as bolting in a front end from a late-model 911. In the rear, however, the process is not as easy, even though 911 components are still the upgrade of choice.

In addition to finding a way to mount the caliper, you also have to take into account the fact that the 911 rotor assembly has an internal drum-type parking brake, which makes it deeper than the 914 rear setup. There is more than one way to skin this cat, and when it got to be George Vellios' turn, he decided the factory method of hanging the caliper off the wheel bearing housing was a good one. All he needed to do was come up with his own housing and mount it to the stock trailing arm.

Of course, this was not as easy as it sounds, but his background as a machinist enabled Vellios to design a steel adaptor wheel bearing housing that was strong, could be welded and (most important of all) would allow stock 911 rear brakes to bolt onto a 914 trailing arm as if they belong there. Vellios even includes an adaptor to connect the stock parking brake cables to the 911 parking brake.

The Conversion

With a machine shop at his disposal, Vellios is all set up to convert 914 trailing arms for 911 brakes. So if you have been wondering what it takes to do this conversion, here is everything you need to know.

1) Remove the trailing arms from the car.

Set the car on jackstands in a secure location where you can leave it for the time needed for the mechanical work and conversion process, which should not be more than a day or two. Disconnect the brake lines, parking brake cables and CV joints, and remove the road wheels. Note: Depressing the brake pedal to the floor and holding it there while the brake lines are open will prevent fluid from leaking out of the lines.

2) Strip the trailing arms.

Remove the backing plates, calipers, rotors, flanges and bearings. This is a good

The stock trailing arm removed from the car and stripped.

time to check the condition of the bearings and replace them if necessary. Note the orientation of the caliper mounting tabs in relation to the trailing arm.

3) Remove the caliper mounts.

Using a grinder or a hacksaw, score the caliper mounting tabs and then strike them with a hammer to break them off. You will be sawing through this area later and breaking off the mounting tabs saves a lot of time and reduces the possibility of deflecting the cutter.

4) Set the blade depth.

Place the Vellios adaptor bearing housing face down onto the table of the mill. Run the blade of the mill down until it touches the backside of the adaptor. Remove the adaptor and lower the cutter (or raise the table) 0.350 inches plus the width of the cutter. For example, if your cutter is 0.150 inches wide, you would add this dimension to 0.350 for a total of 0.500. Thus, in this case, you would lower the cutter or raise the table by 0.500 inches.

5) Cut the trailing arms.

Secure the trailing arms one at a time to the table of the mill and cut through the weld at the depth you determined in Step 4 to remove the old bearing housing. Because of the diameter of the trailing arm in this area, you should have a cutter at least 10 inches in diameter.

6) Remove the weld.

After milling off the old bearing housing, take a grinder and remove all traces of the original weld from the outside of the trailing arm so the adaptor bearing housing will slide over the outside of the trailing arm.

7) Install the adaptor bearing housing.

The adaptor bearing housing mounts with the caliper mounting tabs in the same orientation to the trailing arm as they were on the original housing. To align the adaptor bearing housing, locate the seam in the large cylindrical bearing mount on the trailing arm. The side of the adaptor bearing housing opposite the caliper mounting tabs must be centered on this seam. Once you have aligned the adaptor bearing housing properly, MIG or TIG weld the adaptor bearing housing to the trailing arm.

Note: The wheel bearing is a press fit into the housing. If you distort the housing by using too much heat during the welding process, the bearing will not fit properly.

8) Install the trailing arm.

Fit the bearing and the new brake parts and put the trailing arm back into the car.

Once you know how it is done, the process is not nearly as daunting as it might seem. And for those able to do the conversion themselves, an hour or two at the machine shop sure beats waiting for UPS to return your trailing arms so you can get your 914 back on the road.

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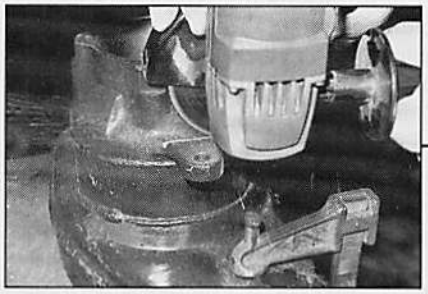
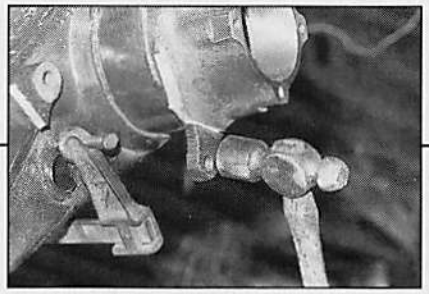
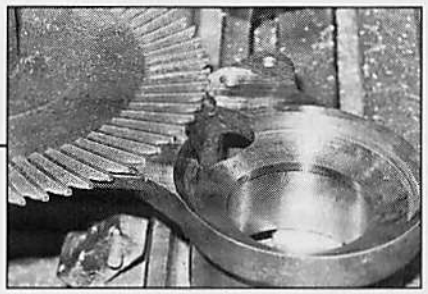


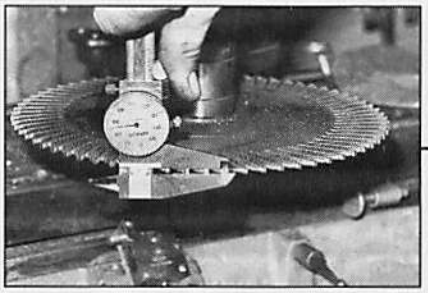
Scoring the caliper mounting tabs with a grinder.



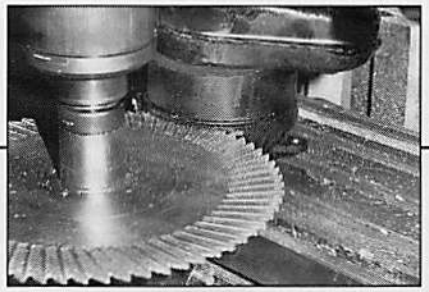
Breaking off the caliper mounting tabs.



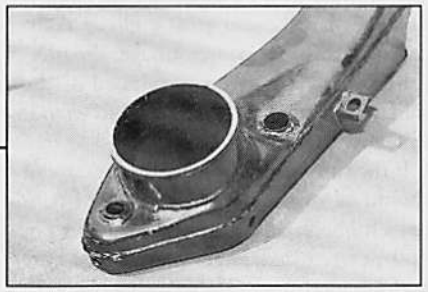
Measuring the height of the adaptor wheel bearing housing above the top of the mill table.



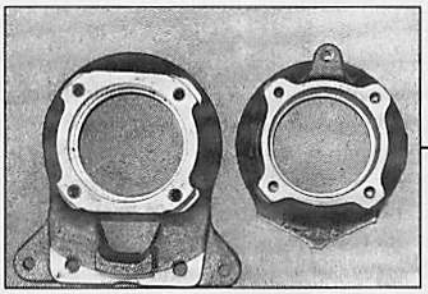
Measuring the thickness of the cutter.



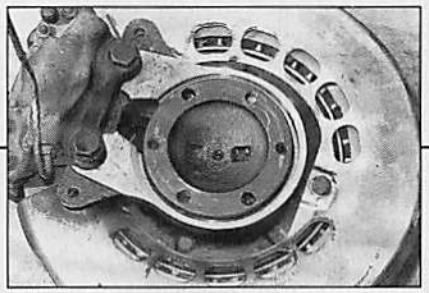
Cutting the stock bearing housing off the trailing arm.



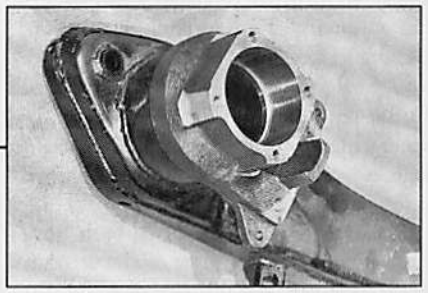
The trailing arm after the milling operation.



A comparison between the Vellios adaptor (left) and the newly-removed stock bearing housing.



The Vellios adaptor wheel bearing housing has enough clearance inside for the 930 stub axle.



The Vellios adaptor mounted on the trailing arm.