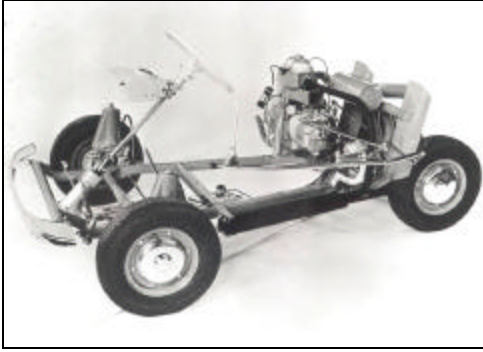


TWO GUYS FROM TEXAS / PART 2 ã
By Bruce Fullerton (#1712) and Robert Mace (#1713)



Last issue we covered the history of our cars, initial condition, dismantling process and some general pointers. Both of us have gotten a slew of information and help from a lot of great people! We can't pass up this opportunity to personally thank Werner Schwark, Hans Rothkegel, Isetta John Wetzel, Terry Sayther, Jim Boyce, Carl Jensen, Perry Bushong and Firemarshal Bill Waite for their advice and input on our restorations.

Also, thanks to all of you who have contacted us about our first article! We've had a lot of positive feedback and plan to continue with this series as our cars move closer to flaming the asphalt once again.

John Jensen responded to our blurb about the right rear spring being arched slightly more than the left. Looks like the springs' arches are the same but the right mounting bracket is welded at a slight angle which makes the spring hang lower. Thanx John!

As promised in the last issue, let's talk in a bit more detail about the rebuild process on the front suspension, steering and brake system.

Prior to dismantling the front steering knuckles, we both made note of any wobble or wear in the brass bushings in the knuckles. Both of our cars were rock solid and required no further attention relative to the bushings with the exception of a good cleaning. All rubber parts such as the tie rod and lower swing arm silentblocs, O-rings and front shock bumpers were replaced with new ones. In addition, items such as the grease fittings and kingpin wedge pins were replaced. The old grease fittings were extremely gunked up and at a buck a copy it was well worth it. Bruce's tie rod looked like it had seen duty in Baja and Robert's was badly rusted so they were replaced with new units.

This might be a good time to remind you to install large metric washers both above and below each silentbloc on your tie rod ends and steering damper. In regards to the tie rod, should we live long enough for the new silentblocs to disintegrate, the nut and bolt could drop right out the bottom leaving you with no steering. Those washers will put a stop to that. If you want to visit an ER, do it on your own terms!

One helpful note might be to point out the proper positioning of the lower swing arm silentbloc. Our new ones were about 1/2" wider than the width of the front end of the swing arm. Make sure the new

silentbloc is positioned properly so the brake backing plate is perpendicular to the ground. You want your brake shoes/linings parallel to your drums' braking surface when reassembled. Pay careful attention to this!

BMW welded a slightly offset L-bracket in the middle of the "axle cross member" where a steering damper could be mounted but apparently was never installed on the Isetta although it was used on the 600. Cost cutting measure? We both ordered an early VW bus damper for under \$15.00 from California Import Parts at www.vvcalimports.com. It's part number VWC-211-425-021-A (drop the VWC- and you have the original VW factory number). Bruce was able to salvage a tie rod bracket from one of Terry Sayther's BMW 600 parts cars at Terry's award winning BMW repair facility in South Austin and Werner Schwark supplied Robert with a really nice zinc plated unit. This setup is perfect! At full right and left lock, there is enough clearance between the tie rod and base of the damper to slide a credit card through ... just enough.



New steering damper, bracket and tie rod

We used plenty of bearing grease on everything and put the front components back together. We might suggest that you use some fine grit (280-440) sand or aluminum oxide paper on the wedge pins as well as lightly hone the hole it fits into in the stub axle. Along with a good slathering of fresh grease, you should have no problem driving them in once the slot on the kingpin is properly aligned.

When it comes to installing the coil springs, remember that the tightly spaced coils are at the bottom. Also, don't be like Robert and make sure that you extend the shock pistons all the way up before installing your shock towers. You don't want to get that tower cranked all the way down only to discover that the threaded part of the shock piston is "down there" and have to start all over again. There's more to this story but we'll cut Robert some slack and file it in the "Third Time's A Charm" folder. Also, remember that the lower part of the bottom of the tower goes to the rear. Oh, that's right! You remembered to take a picture of it before you dismantled it. Never mind.

Both cars had totally worn out shocks. Robert went to Isetta John for a rebuild and Bruce opted for new

“Schwark absorbers” (say that fast ten times). One thing to make sure of when you install your new/rebuilt front schwarks, er, shocks is to mount them with the longer side of the bottom eyelet facing out. If you look at your shocks from the front you’ll see that the eyelet is welded off-center. That’s not a mistake. Installing them backwards is.

The pedal assembly was pretty straightforward. The stepped bolt that runs through the base of the steering housing that secures the three pedals was a bit sticky but bead blasting and a good coat of bearing grease cured that ill. That steering shaft bearing in the top of the housing looked absolutely brand new after cleaning and was repacked and installed. Ditto for the steering screw lower bearing.

Like all other cast aluminum pieces, the housing was bead blasted and clear coated for that nice, soft gray look. Just out of pure curiosity, Bruce looked into having his steering housing anodized but the plating shop owner talked him out of it stating that there was no way he could guarantee a consistent finish. If you figure that these things were probably made from a bunch of melted down mess kits and Me-109 propellers it was a point well taken. New stainless steel cap screws and a new grease fitting replaced the old corroded originals. The final touch was to install a thread protector on all grease fittings. These are the small rubber, finger shaped sleeves normally used for covering exposed ends of bolt threads. Your hardware store will have them for you. Go with the ¼” jobs. They look sharp, will keep dust, dirt and water out of those grease fittings and set you back about 10 cents a copy.

On a side note: At disassembly, be sure to mark your male and female steering screws so you can reassemble them correctly when time comes. When you take the male screw out of its female counter part, just as the male screw comes out, turn the bottom outward and look to see if BMW Munich did it for you. You’ll most likely see a “V” or checkmark shape stamped into each piece. You want to have an equal number of turns right and left when you finish. Ditto on the steering shaft that connects the bottom of the screw to the outside main steering (Pittman) arm.

Replacing the front wheel bearings was straightforward on both cars. One could build a good argument for using sealed bearings here. Anything you can do to eliminate future leaks and promote long-term general tidiness helps. We’ll talk about another idea here in a minute.

Make sure you either document the order everything goes together or have a copy of the exploded diagram for the Isetta front end, Plate 3. It’s a big help to individually “dry fit” the bearings in both the hub and on the spindle to make sure of a good tight fit but also to make sure you won’t have to pound them on. Use some fine grit aluminum oxide paper and lightly polish the spindles on your car. Just use your paper like a shoe shine rag and move it slowly back and forth like you were polishing your shoes. That way, the reassembly will go quite easily. Wet sanding with a coat of WD-40 is even better.

Some cars had a thin shim behind the outside bearing in order to make the hub fit snugly, i.e., not be able to move back and forth on the spindle. Robert’s car did not have any, Bruce’s car had one on the left side only.

Bruce’s replacement bearings were sealed Federal Mogul units and Robert’s were the open race type, just like the originals. If you get the open race type, be sure to take it to a automotive shop and see if they’ll let you use their bearing packer and grease ‘em up like Mr. Universe. Ditto for all bearings in your car.

That other idea we mentioned comes from Perry Bushong, President of BMW (Motorcycles) of Fort Worth. Perry, has rebuilt several Isettas and knows ‘em cold. He takes the oil reservoir caps that screw into to the top rear of the steering knuckles, drills and taps them for grease fittings and fills both reservoirs with Delray (or equivalent) waterproof grease. No leaks not to mention helping damp the potential for the dreaded front end “Isetta Watusi”. If and when you end up in one of those high speed, Dukes-of-Hazzard-style back road police chase routines, you’re in command!



Fresh powder, fresh Michelin’s fresh everything!

The clutch and accelerator cables in both our cars were replaced. Bruce’s car got a new stainless steel brake pedal adjusting rod as well. Install these after you read the next couple of paragraphs though.

We recommend that you bend and install your new brake lines at this point. We both ordered a new set of the “Cunifer” stainless lines. Bruce proceeded to royally screw up the first set with his new tube bender. Reminds us of the old motto in bowling league way back when, “League night is not the night to practice” (although you would never have known it by watching our team in action). Go to Auto Zone and buy a pair of \$3.00 practice lines. You’ll get the hang of it. Be sure allow the line to stand off of the inside of the frame about 3/16” to allow for the inside width of the tubing holders, if you use them. We’ll discuss this in more detail in just a second.

Here’s another gotcha ... when bending your lines that attach to the top two outlets on your master cylinder, be sure to start your bend as absolutely

close to the threaded fitting as possible. If you don't, those two top lines will arc above the top of the frame. The fun will start when you put the body back on only to find that the floorboard is mashing down on them. Of course, your close friends and half of the neighborhood will be witnesses to this snafu when it happens. Don't go here!

If you're inclined to use "off the shelf" brake lines, stand advised that the fittings we've seen are longer (more threads) than the original lines. You'll have a problem on the hose end of the lines in that you won't be able to screw them into the hoses far enough to snug down the retainer springs (5-72). Watch out for this one!

And this one too! Those L-brackets that attach between the front brake lines and hoses have two holes drilled in them. These are the brackets that secure the brake lines to the inside of the wheel wells. The holes are drilled at opposite corners of the bracket. Make sure that the top hole is to the rear of the car and the bottom hole is facing front. If you get them backwards (as in the previous picture of the front end) the holes won't line up with the body. Avoid yet another rude awakening when you get your body back on the frame. And, yes, the brackets in the picture have now been correctly installed now.

Now's the time to install your new lines. You'll need to have clear access to the inside of the frame if you opt (or are forced) to use the tubing holders discussed below. If you install your clutch and accelerator cable guide tubes and master cylinder plunger assembly first, they will be in your way when trying to fasten the front left and rear brake line tube holders to the frame.

You probably have either missing or very brittle metal tabs on the inside of the frame and middle crossmember that hold your brake lines in place. Let's assume that they are gone for the sake of this conversation. Go to your hardware store and buy 1/4" ID tubing clamps. If that description doesn't jump out at you, they look like a lower case "b" from the side. You can spread the two sides of the top part of the "b" open so you can slide it on to the brake line, close it back together and run a self tapping sheet metal screw with a star washer through it into the frame. You'll find both the nylon kind and zinc plated units which are plastic coated. We prefer the latter. You'll usually find them in the vicinity of the electrical section of the store. Since your lines are 3/16" OD, splurge for a foot of 1/4" OD x 3/16" ID clear tubing. Cut it into one inch sections, split it down one side with an Exacto knife, wrap it around your line, put the tubing holder over it and, whammo, you're set. Functional, good looking, cheap.

By the way, the metal tab on the rear crossmember is probably going to be in good shape compared to the others since it's probably spent its life covered with grease. Ours were fine. We put a small section of heat shrink tubing on the tab for good measure. Just put a couple of inches of the clear tubing around the line where it passes through this tab and you're done.



Watch out for the bends in those top two brake lines!

100% of the people we quizzed told us not to use any type of sealer (like Permatex) on the brake lines or hoses. Just crank 'em down firmly and that's that. All agreed that the DOT 5 silicone brake fluid was the way to go as well. First, it doesn't tend to absorb water over time and it doesn't take off paint or powder if you should get a little messy with that bleeding job or spring a leak at some point in time. Your new hoses should be in the 18 inch range. The threads should be 10mm x 1.00mm, one male, one female fitting. Robert got the exact replacement black rubber hoses while Bruce went to the guys at Bavarian Autoworks (www.bavauto.com) for a set of their braided stainless steel units, part number SSBH-18MF. About \$25.00 each and sharp as all get out.

Robert had his wheel cylinders rebuilt by White Post Restorations and Bruce took the new cylinder route as his were in pretty bad shape. We know there has been a running dialogue about using the front (17mm bore) cylinder on the rear (original had a 12mm bore). Neither one of us is qualified to jump in the middle of that one but suffice it to say that our cars are both to factory spec here.

The brake adjusters were a simple task of dismantle, bead blast, paint, lube and reassemble. New stainless steel bolts and washers replaced the originals. Old brake lining rivets were drilled out and the shoes and standoff adjusting screws were blasted and the shoes clear coated. The brake and clutch shop was elated to actually get some clean brake shoes to work with! The drums were turned to get a good smooth finish and the shoes were arc'ed, once the new linings had been riveted on, to a true 360 degrees.

You might want to make note here. The shoes on our cars had obviously had at least one brake job done on them in the past. What usually happens here is that the rivet holes in the shoes get enlarged every time the old rivets get drilled out. The small rivets that suppliers give you with your new linings are just too small in diameter to work on some of these shoes. We solved the problem by having the shop use one size larger and slightly longer rivets with a

small brass washer on the underside of the brake shoe. Bingo!

The rear brake is a slightly different breed of cat. While using the same basic shoe/cylinder/adjuster setup as the front, there is a stud at the top back side of each shoe which serves two purposes, 1.) the fastening point for the top brake spring and 2.) secures one end of the top hand brake actuating lever on the front shoe and the vertical lever that your hand brake cable fastens to on the rear shoe. The brake springs on your Isetta are all the same except that one top rear spring that fits around each one of those studs. Each end of the top rear spring is bent in a loop for this purpose.

One other detail to watch out for ... when you're reinstalling your front brake shoes, be sure to note that one shoe should have the BMW part number facing out, the other one facing in. This allows proper seating of the grooves at the top and bottom of each shoe with the cylinder/piston tabs on the adjuster at the bottom and the wheel cylinder at the top. These shoes appear to be identical at a glance but if you don't do it this way, you'll see that they just don't fit quite right at the top and will make proper adjustment just about impossible.

Robert rebuilt his master cylinder with a kit available through the usual channels. Bruce's car had a "retro-misfit" unit complete with a can of brake fluid jammed in upside down. Hans Rothkegel supplied a fresh, new master cylinder which meets original spec and looks spiffy with its spun aluminum filler cap.

Well, it's time for us to "leave the arena". Next issue, we'll address the chain drive, tires and wheels plus feedback and/or suggestions from our readers.

Future installments which are currently under construction include engine rebuild details, a close up look at the Dynastart unit, the electrical system from front to back, chrome plating, lubrication and a plethora of knit-pickin' details. Feel free to contact Bruce at brucef@austin.rr.com and/or Robert at bubba@whirlingpool.com.

Finally, be sure to motor over to Robert's "Improved for New Millenium" Web site, "*Isetta Source*" at www.whirlingpool.com/isetta/, for the latest in fast breaking, high impact Isetta Web info and news.



We're off to the lake! See ya'll next time ... BF & RM