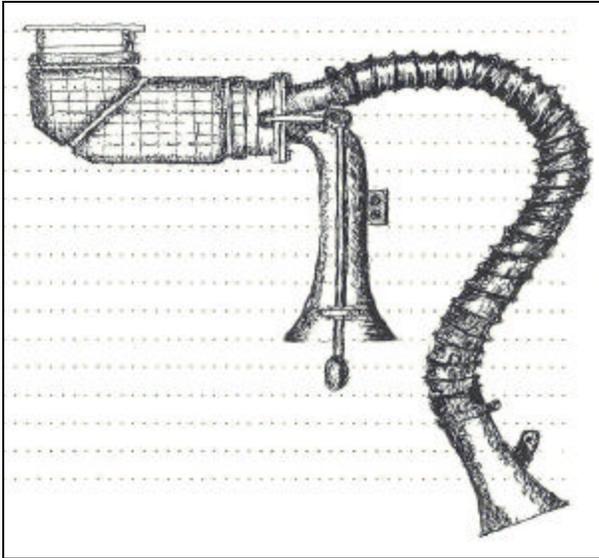


**TWO GUYS FROM TEXAS / PART 4**  
By Bruce Fullerton and Robert Mace



*The amazing Isetta "Belchfire 300" Heater System!*

As seen on TV, it's time to talk engine and transmission this issue and jump into some Dynastart/electrical system issues if Ernie can give us the real estate.

We went in two different directions on the engine and transmissions on our respective hot rods. Let's cover Robert's version of the story first.

Like Bruce's car, Robert's car coughed up a donut on the transmission side of the drive coupling and badly scarred the case. He went to Hans Rothkegel for a rebuilt side cover along with all of the gaskets needed to replace the originals. His trans was in pretty good internal condition other than that. The unit was polished up, new case cover installed and reassembled. Pretty simple.

Robert's engine was swapped out for a fresh rebuild from Werner Schwark. Never thought about all of the uses for those monster Coleman ice chests! They make great shipping containers. Robert also sent his carburetor to Bing for a first class rebuild. These guys know what they're doing! They told us that they were seeing a big spike in their Isetta carb business too.

One really nice final touch was a super polishing job on those cast aluminum valve covers! If you've got the time and like the polished look, it really sets the engine off, at least with the body off. Robert also had Speed and Sport Chrome out of Houston plate his round point cover on the fan along with the valve cover hold down bracket. Finally, the blower housing was powder coated in a nice silver finish. Robert's housing also sports the cast BMW letters and really looks neat.

Bruce's engine and transmission were already out of the car when he bought it. The trans was virtually identical to Robert's in that the outer case cover was "whirled". Bruce's transmission went to the

Woodstock, Georgia facilities of Werner Schwark for a complete teardown and rebuild. Werner had the case cover re-machined and shimmed as the race for the output bearing had been slightly crazed in the melee. All gaskets, bearings and seals were replaced and back together it went.

In addition to the transmission work, Bruce also replaced both bent flanges with a pair of really nice billet steel flanges we mentioned in an earlier installment. These guys are beautiful to say the least. It's hard to imagine what it would take to tear one of them up. New matching low profile coupling bolts, ny-lock nuts, pair of donuts, shift arm bushings and new drive shaft completed the order. Did we mention that these cars were basket cases?

Bruce's engine had 34K plus miles on it and had obviously been dorked with in the past. At the 3<sup>rd</sup> Annual Texas Minicar Roundup in Cedar Hill, Texas, Bruce spotted an absolutely beautiful red Isetta and struck up a conversation with the gentleman that had restored it and was keeping it for its owner. That gentleman was Perry Bushong, President of BMW (motorcycles) of Fort Worth.

Besides having a booming motorcycle business, Perry had been restoring vintage BMW bikes and had a museum at his restoration facility at the dealership. Besides having tons of experience and his comment "when it comes to Isettias, you have to think motorcycle, not car!" and the fact that Fort Worth was a quick three hour trip north from Austin (i.e. no freight charges), Bruce handed his engine over to Perry.

One big advantage here was being able to hop in the car and run up to Fort Worth to see the engine once it was apart. Also a great photo op for the before-and-after album on the car's restoration. Surprisingly, everything was in pretty good shape! The oil slinger was crudded up as expected but everything else looked pretty good, including the steel rod. Perry mentioned that if he found an aluminum rod in the engine, it would be returned as a paper weight.

After everything spent the night in Perry's "hot tub", it was bead blasted and power washed. The cylinder had several broken cooling fins which were repaired, was honed and made like new including a fresh coat of satin black high temperature paint. Perry recommended that the head and intake manifold be port matched and polished along with the valve job. This was matched up with a fresh Bing carb rebuild.

The crank was pressed apart and new bushings and roller bearing were installed. The Dynastart end was lapped to get rid of the rust and the flywheel end, which had been chiseled from a former "repair" had a damaged keyway. Perry had the keyway welded, ground smooth and a new keyway machined.

The piston was incredibly clean with the part number clearly visible on top ... new rings and it was ready to go back in. All bearings, seals were replaced along with new valve springs, timing chain, valve guides, spring tensioner, etc. You name it, it was all touched. One item to note here. The threads in the upper right front side of the block were stripped and one had

been “augered” to accommodate a larger bolt. These are the two threads where the coil bracket bolts on to the engine at the timing chain cover. Perry had seen this before and recommended that the coil be mounted on the firewall instead. With all of the vibration from the engine, he said there was a good chance that it might happen again over time. The threads were repaired and a new Bosch Blue coil will now roost about eight inches to the right of its former spot.

Now, we'll jump into the oil controversy. Ask the next ten people you see about their preference and you'll probably get that many different answers. That having been said, Perry's comment to us about “think motorcycle, not car” certainly made a lot of sense here. He recommended the products manufactured by Belray ([www.belray.com](http://www.belray.com)) for motorcycle engines, high endurance racing, etc. Perry has run their 20W50 product in all of the Isetta engines he's restored without a hitch. He spoke very highly of Kendall products as well. Your motorcycle shop will have this for you but call around first. It's not on everyone's shelf. Expect to pay around \$5.00 per quart too. Perry also recommended their 85W140 oil for the chain drive and transmission. Not only does it not break down but he has had zero leak problems (assuming you did your homework on gaskets, surfaces, etc.).

On a non-engine related note, we used Belray Waterproof Grease in the front steering knuckles in lieu of oil. Once again (and assuming you have new rubber O-rings installed) no leaks reported over the years. Finally, we also used Belray's Super DOT 3-4 Brake Fluid, perfect for ATE brake components.

Back to the engine. Bruce's exhaust system, valve covers, blower housing and carrier ring were shipped off to the gurus at Jet Hot's ([www.jet-hot.com](http://www.jet-hot.com)) Mississippi facilities for a sterling ceramic heat coating. Finally, in the why-stop-now category, a pair of stainless steel pushrod tubes and new seals were installed. Craig “Vech” Vechorik of Bench Mark Works in Sturgis, Mississippi has these for you if you're so inclined. As a matter of fact, just about anything your heart desires when it comes to R/25/6/7 engines, is in stock at his facility. He also rebuilds petcocks for a very reasonable price. He's even got instructions on how to build a shipping container for your engine on his Web site, <http://members.aol.com/vechbmw/>. While he no longer has the time for Isettas, he drove one as a daily driver for seven or eight years and knows them like the back of his hand. A great source for all kinds of performance tips, upgrades, don't-go-there's, etc.

Bruce is considering a future article that focuses on nothing but tips he has picked up from various folks like Vech and Perry over the past couple of years. Look for it sometime in the future coming to a Minutia near you.

#### The Dynastart Unit:

Boy, did this thing look intimidating at first sight! Even after studying John Jensen's schematics and reading the section in his resto manual, we decided

that if we pretended to ignore them that maybe they would just fix themselves. Nahhhhh!

Both Bruce's and Robert's Dynastarts had virtually identical problems. The infamous melted blue wire, cracked solder connections, worn out brushes and springs and grime-on-parade. Bruce's car had a third party voltage regulator installed and most of the wiring in the main harness going back up to the instrument panel / ignition switch / fuse box and harness to going back to the Dynastart was barbequed. Bruce's car had a 25 amp fuse on the ignition side (!). Gee, wonder how those wires could have melted? A small nail would have been at least as effective and saved someone a trip to the auto parts store, not to mention a whole fifty cents.

Robert's unit was swapped out by Werner Schwark as a part of his engine rebuild package. Bruce had his original unit and went to work on it by taking the armature/stator to Texas Starter and Alternator to have it put on a hogger and checked for continuity and to have it turned to a true 90 degrees. The smaller, outside surface where the brushes make contact is what you're looking for here. Over time, there was a slight dip worn into it and a couple of minutes on a lathe and twenty bucks did the job quite nicely.

Carl Jensen, another Austin Isetta owner and Minutia contributor (see his article in the Summer 2001 issue on Dynastarts), loaned Bruce his can of spray electrical insulator to rejuvenate his armature after turning. Kind of a nice University of Texas burnt orange. Thanx again Carl!

These folks also took the Dynastart and put voltage across it to check it out. They couldn't believe their eyes! When they hit the juice, it snapped a large screwdriver from one side of the coil windings to the other in a blink. The technician said he had never seen anything of that small size that packed that kind of wallop.



Installing the engine/transmission assembly was a two-person job. We got a small hydraulic floor jack and put the engine on top and while one person ran the jack up the other balanced and centered the engine. Be sure you have the motor mounts attached to the ENGINE, not the frame. The top mounts are fixed but the bottom mounts are threaded. Here's

where you make your adjustments so everything is square and bolt it down good and snug. Spend a couple of dollars and go to your hardware store and get new Grade 8 top and bottom nuts and washers for the motor mounts, too.

We were expecting more of a fight getting the drive coupling bolts installed given the yet unexplained offset coupling/donut issue. Wasn't really that big of a deal but that's working with a frame with no body attached. By the way, if you jack up the left rear side of the chain drive, you'll bring the drive shaft / donuts in better alignment. Jim Boyce told us to keep this top secret so don't tell anyone!

Oh yeah, don't pull a Bruce and cut the metal bands on your new donuts until *after* you've installed anything. Apparently the "DO NOT REMOVE UNTIL AFTER INSTALLATION" message in upper case block letters on the bands didn't compute with him or something. Those pups will launch across the garage like a rubber band so be careful!

Well, we've pushed Ernie to the limit on real estate so it's time to sign off. In Part 5 we'll speak to body work, paint and all of the fun stuff that comes in tow with it.



*Aaron Bowen of Classic Auto Works in Travis Peak, Texas giving Bruce's car its first squirt of Glasurit epoxy sealer. More action pix next time.*

"Belchfire 300" heater system graphic copyright  
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