

RX-8 PWR Radiator Install

By RYAN SCOTT

Photos By RYAN SCOTT

WATER IS WET, THE SKY IS BLUE, and rotaries need plenty of cooling capacity. Many speculate that the 3rd generation RX-7's reliability problems are centered around and inadequate cooling system. And if we know that, then Mazda engineers of course know those things as well. But would that knowledge translate to a robust cooling setup for production RX-8's?

Owner Jeff Huang purchased his PWR Intercooler from Vivid Racing. It arrived shortly after, at which time Jeff and I setup an install date with Lightspeed Motorsports of St Louis, MO. John at Lightspeed was gracious enough to donate his time for the install.

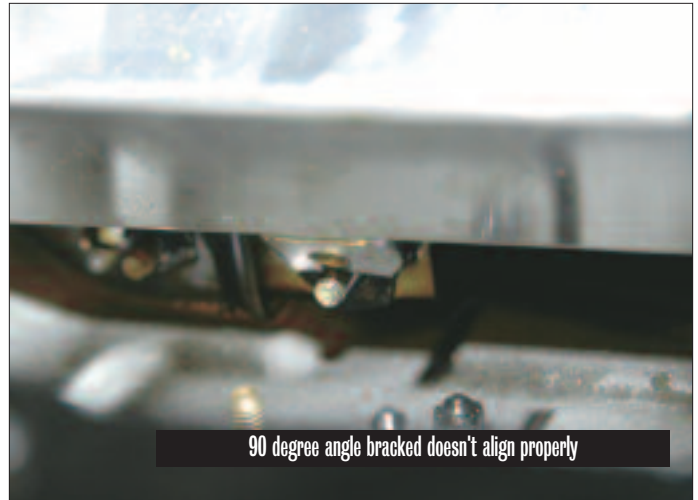
Jeff and I pulled the new PWR unit from it's box for inspection and were



impressed. Nice welds along all seams, solid looking aluminum endtanks, and a thick core all indicated a piece made with performance in mind. After playing around, it was time to get to work . . . or at least watch John as he got to work. The radiator didn't come with any written instructions, but all we really needed to know was pull old radiator – replace with new piece. Simple sounding, but that proved to be something more than simple.

Pop the hood on a RX-8 and the first thing you'll notice is the row of plastic cubes behind the front firewall. These are the ecu box, battery box, air box, radiator fill bottle, and the pcm box. All of these minus the pcm box (far drivers side) had to be removed. To remove them, it was basically a system of trial and error, remove some screws and yank to see if it's still attached or not. This took approximately 30 minutes to remove the row of boxes and reveal the electric radiator fan and wiring harness, and everything to this point is relatively easy.

Removing the radiator fan is not something Mazda wanted to make easy. They made the fan housing almost the exact width of the distance between the frame rails. You must unclip the wiring harness completely and pull it to the side, remove a few of the bolts and braces that hold the oil cooler lines in place, and push all this out of the way. Still, relative easy to this point. The



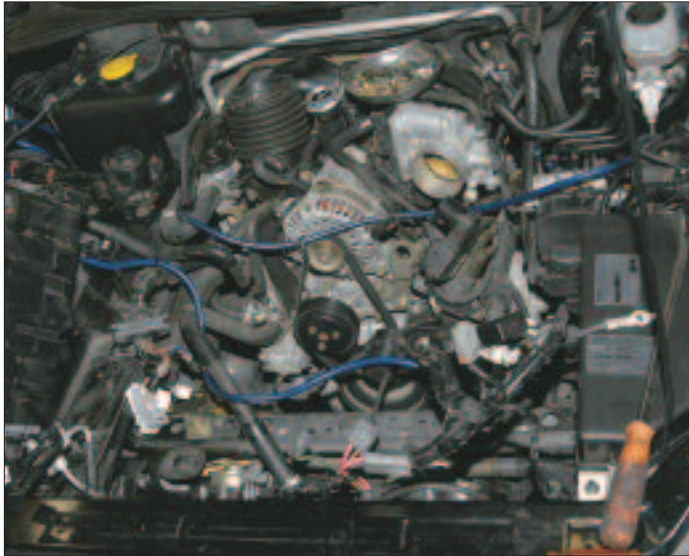
90 degree angle bracketed doesn't align properly

real trick comes into play with actually removing the radiator fan and radiator itself. You see, both pieces are the same width as the distance between the frame rails. This means there's no room to tilt them from side to side, and everything must be out of their way. Most things are flexible enough that doing just that isn't a big issue, except for the aluminum air conditioner lines. Doh! If you have any misgivings with having to bend your a/c lines, get over it. To install the radiator you have no choice, they must be bent somewhat and lifted up and over to clear enough room for the radiator and fan to slide out.

We approached the a/c lines rather tentatively at first, knowing how easy they are to kink, and thereby cause a major headache. My only advice, go slow, take you time bending it out of the way. It's not rocket science, just be careful and you'll be fine.

But even with the lines out of the way, it wasn't a simple slide out process. More like a grab, yank, tug, twist, and grunt, quite simply Mazda didn't make this easy. And in removing the electric fan, we did some fin damage to the stock radiator. Not anything that would cause a leak or any marked change in cooling capacity, but still frustrating. In Mazda's defense, they built a stock





cooling system that fills the available area nearly 100%, it's an admirable job of engineering.

After removing the fan, the last step was the radiator itself. Drain the remaining fluid, remove the coolant lines, and unbolt the a/c condenser bracket from the



Bottom mounting holes mis-aligned

radiator to free things up and lift the radiator out from the top.

Side by side the improvements in the PWR radiator are obvious. As mentioned before, it has a thicker core and solid aluminum endtanks. Undoubtedly it provides more cooling capacity than the stock unit, but we couldn't help but wonder, is this worth it? The stock radiator really is huge, and looks to be a solid well-engineered piece. Our opinion is that the stock



radiator will suffice for all but repeated road-course racing, or forced induction applications.

Little annoyances with the PWR also surfaced once slid into place. The top mounting brackets on the stock piece are at a 45 degree angle, and 90 degrees on the PWR. This meant that the tabs on the PWR would not slip over the mounting bolts, and we had to leave the top mounting locations loose. Also, one of the bottom holes would not line up, which threw off the alignment of the whole radiator just a touch, and necessitated that we Dremmel out the top mounting holes so that the bolts would thread in. Annoying yes,

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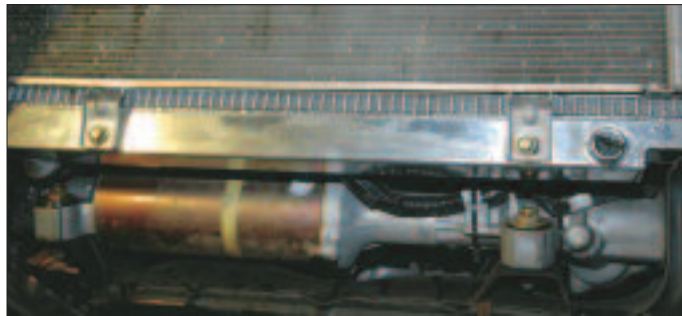
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but these are little things that hopefully PWR will address with future units.

We were able to reassemble everything without doing any damage to the delicate fins of the shiny new radiator, amazingly.

One trick was to grind off a couple unnecessary tabs from the passenger side of the radiator fan shroud, this gave us about another 1 inch of clearance. Also, the just plain retarded cold-air intake for your battery box (try the job, you'll see what I mean) was not re-installed, and was discarded. Mazda engineers got a little overboard with that one.

John did an excellent job of remembering where each of the removed screws and bolts went, and put things back together in a flash, he made it look a lot easier than it probably was. And we were all pleased to find no leaks after filling the fluid reservoir and letting the car idle for a few minutes. One pleasant surprise was how easy the RX-8 is to refill with fluid. 2nd and 3rd generation RX-7's are notorious for taking days or weeks to completely fill, owners having to carry around a milk jug full of water and top the system off until the low coolant warning buzzer finally gives it up. Not so with the RX-8, just fill the plastic reservoir and start the car. It pulls the fluid through just fine on it's own, and not one



peep from the buzzer.

Job completed and reflecting, it's not that hard to do really. Just lots of disassembly, and get over any inhibition you might have with bending the a/c lines. It's a rather tedious job that can be very frustrating when trying to figure out how in the heck you're going to slide that fan assembly out. But stay focused, and this is a job just about any shade-tree mechanic can tackle. The only question is, do you need it? **RX**

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