

The Onan Saga - Lessons in ways an Onan can break (long)

I'm sure a few people can benefit from this, so I will write it up before the experience starts to fade. If you are having problems with your Onan 2800 Microlite, you might learn something helpful. I also have lots of pictures posted on the Yahoo Roadtrek group site in albums beginning with "Red Rover - Onan"

This is our experience in buying a used Onan and installing it in our 1995 Roadtrek. Having gone through this, I would have to recommend against it unless you are fortunate enough to have someone like Jim Caudill nearby. If we had to depend on a Onan Service Center it probably would have been cheaper to buy a new Onan (and that assumes the Service Center has a competent Onan mechanic, which does seem to be rather rare).

Our Onan came from a 1997 Roadtrek - in this installation the Onan hangs under the van, which is a vulnerable spot for dirt and moisture. Our 1995 Roadtrek has a generator compartment, so the installation is quite different. And the installation itself went very smoothly with Jim's expertise.

The previous owner had drained the gas from the generator and it had clean oil in it. It had been removed from his Roadtrek and put in storage some time before. It had 119 hours on it. Despite one mouse nest inside the case, and a little grime it appeared to be in good shape. Jim cleaned it up, changed the oil, and got it running. It ran terribly. Jim had lots of experience tuning Onans and there was obviously something wrong. He found that the factory "seal" over the idle mixture screw had been tampered with and it was way out of adjustment. He reset that and it still ran horribly. After an extensive search he discovered a damaged rubber cap (in photos) that resulted in a vacuum leak. When the leak was sealed it began running correctly. Jim tuned it up and it was ready to install.

The installation went easily - holes had to be cut in the generator compartment and wires run to the battery, the transfer switch, and the control panel. An exhaust pipe had to be bent (non-trivial because of the odd size, but only one bend required). I was amazed how quickly it went in and was running nicely. It was not as quiet as Jim's Onan, but his seems to be exceptionally quiet.

We went home happy. We ran it occasionally over the next several weeks - tested the Onan resonator and measured some dB levels. Put some mass loaded vinyl in the compartment to see if it changed the db levels. Did not take the RT on any trips. While preparing for a weekend away, I thought I would re-measure the sound levels. **The generator started but would not keep running unless the button was held down.** Weird. I called Jim. He said that means the generator is not generating electricity and there are a bunch of reasons that can happen.

We took it over to Jim's. He had the Onan Service manual out - it has detailed troubleshooting guides. First thing to test is low oil. Either the oil is low or the low oil sensor is not working (apparently Onan left the low oil sensor off more recent models because

sensor failure is a worse problem than low oil). We checked the oil. The oil level was very high! We siphoned off several ounces of oil. Engines don't generate more oil as they run. That means gas must be getting into the oil. One way to tell - check the spark plug. We pulled out the spark plug. Yuck! So the carburetor was in need of rebuilding. And since Onan doesn't make rebuild kits anymore, that means \$170 for a new carburetor.

Okay, but the engine is running despite this carburetor problem, but it is not generating electricity so there is another problem. Down the trouble shooting list in the Service Manual. Well, the next stuff on the list requires removal of the generator. We timed it. It took 25 minutes to get the Onan out - one of the underneath mounted Onans is likely faster.

Jim worked his way through the Service Manual. He got to the slip ring and brushes item. That required more dismantling (photos) and one of the slip rings was shiny and the other was not. He tested the resistance. The shiny one was within spec, the dull one was not. So he cleaned the rings as the Service Manual said. Resistance was now 0.2 and 0.3 ohms. Problem solved!

Not so fast! The generator still would not produce electricity. Back to the Service Manual trouble shooting. The next thing was the voltage regulator. Lots of tests for that. Guess what? It fails. And guess what else? An Onan voltage regular makes a carburetor look cheap. Jim discovered Flight Systems - a company that makes after market electrical components for Onans (among other things). And they make a somewhat more reasonably priced (and rebuildable and returnable) voltage regulator. (and hey - Jim is now a Flight Systems dealer, see him if you need one of these beauties).

It turns out that the voltage regulator tries to compensate for higher resistance in the slip rings and brushes. That works until the point it can't do it anymore and the voltage regulator fails. I wonder how many voltage regulators get replaced and then fail again because the slip rings are never cleaned? After all it is easier to test the voltage regulator than to disassemble the generator to the point you can test the slip rings - even though the slip rings are before the voltage regulator on the trouble-shooting list.

And another thing - everyone thinks you need to exercise the generator (Onan says for 2 hours every month) to keep the carburetor passages clean - which is true. Well, you also need to exercise the generator to keep the slip rings from tarnishing. And if you are in a damp environment this would be even more critical. So draining the gas and letting the generator sit over the winter is an invitation for future trouble. It is likely the Onan would run for awhile (like ours did) - until the voltage regulator fails because it can no longer compensate for the high resistance.

So, if you have a generator that has not been run in awhile, you might want to check the resistance on the slip rings. It could save you the cost of a voltage regulator.

The parts were ordered and Jim installed them. Generator runs, produces electricity, but it is not running well. What now? Jim finally concludes it is a linkage problem and a careful check reveals a misconnected spring on the choke linkage. This was on a brand new carburetor! When the spring is changed to match the old carburetor the beast runs like a champ.

Re-installation took 45 minutes. Runs great. Easily runs the Fedders A/C and a 1500 watt space heater. We are happy.

We tell Jim that if his metal fabrication / machine shop business is slow, he can always take in Onan overhauls for extra money. He doesn't seem enamored with the idea – doesn't think there is much of a market either. But if you have an Onan problem (and Dayton Ohio isn't too far away), you might want to try to talk him into it.