ERA Forum
Technical Help

(Editor's Note: If you haven't been on the Electrical Rebuilder's Association's new Web site—you're missing out on the best information sharing in the industry. New members and the old faithful are making the Technical Help Forum *the* place to go with rebuilding questions, and all sorts of technical info. *Following is only a small sample of what's going on.*)

POST: Hi everyone, hope I get this right the first time posting. This may be a long post. Have a 11/2000 Ford Focus SE 16v 2.0L has Ford 6g alternator Lester no. 8260 (with f601 white regulator). In September of last year we rebuilt the unit and all was well until June of this year when unit came in with the rectifier melted and the rotor was BLUE from heat. I sent them another rebuilt unit that I had on the shelf and advised them to check the car for problems due to the damage. About a month later (July) they call and say the car is back again and they send me the car. We removed the alternator and this one also had a melted rectifier and this time the stator and the rotor were blue from heat.

I purchased a new unit from WRS (part no. 1-2349-01fd). We installed the unit, we also ran a new positive cable from the alternator directly to the battery. (The original wire went down to the starter and the connection at the alternator was damaged.) After the installation and charging the battery (yes, we load tested it and it is good), the alternator was done and we started checking the system and found that the alternator was maxing out just with the standard loads. It was pumping out 100 amps (reading off of the positive battery cable from the alternator).

I do not have my readings (sorry) but it was just not acting right on the car, (it was tested prior to installation with a NW Regulator test plug). If I remember right at an idle it would be OK, but as soon as I took the rpm up it would max out. I told the garage customer that they needed to look at what was causing this problem. I was thinking field monitor, SIG computer problem? They took the car and told their customer to take it to the dealer.

Well, the car came in today on a hook, it did not go to the dealer but did go to another shop that put in a new computer. The customer picked up the car yesterday and drove it about 100 miles and that was it, the battery light started to flicker and the car died in the road. We get it in today and take the alternator back off and the rectifier has already started to melt down, the positive post is loose in the rectifier assembly and you can see where the plastic around the positive post is already melting. I have ordered another alternator from WRS and will have to wait for it before I can do any testing on the car tomorrow.

Has anyone run across anything like this? Does anyone have any suggestions on what could be causing this to happen? What am I missing? Once I get the new alternator on I will take all my readings again and see if it is still acting like it did the first time around.

REPLY: Yes, a few years ago same thing happened to me with a 2G alternator. Burned up two of them. Loaded tested two-month-old battery, tested OK, but load was coming from battery. Installed new battery, everything went back to normal. Something in battery was making alternator max out. Customer had no more trouble since then. Change the battery and see what happens.

REPLY: If a battery IS shorted, usually it will get hot while charging it with a charger or alternator. My best advice is what was already posted. Change the battery and see if you are still at 100 amps. I would think about 70 to 80 with lights and air on would be normal for this car. I have been having much better luck on 6Gs since switching to OEM rectifiers.

REPLY: We all have those that give us a fit. If you were reading 100-plus amps on the battery cable and if all your other vehicle loads were mounted at the solenoid you would be seeing only what was going through the battery. These are all parallel paths for current to flow and you would be hooked up on the battery path only. So it looks to me that the battery is bad or the wiring going to it is grounding out somewhere in the loom if that cable is in a loom. Assuming there is no other connection between your amp gauge and the battery + post. Quickest way to eliminate the battery is disconnect and sub another in with a very good set of jumper cables.

Hope I read your post right as to where you had your amp meter hooked.

If not then move it to the battery path and see how many amps the battery is consuming.

POST: Hi all, I have an update on this problem. Installed the new alternator today and have the following readings. The first set of readings is on the positive cable that is coming off of the alternator and goes directly to the battery. Beginning battery voltage 12.6; at idle no loads 14.93 30a; at idle w/lights 14.8 33a; at idle w/lights and ac with blower on high 14.8 80a; at idle with just the blower on high 14.8 60a (no compressor or lights); at idle w/radiator blower only 14.9 48a; at idle w/full load at 1,000 rpm 14.8 95a.

So I turn everything off and I am just sitting there with the car at idle and the reading is 14.9 30a then all of a sudden it drops to 13 amp from 30 amps. Not sure why, nothing was on.

These readings are on the negative cable of the battery: at idle no loads 14.8 10a; at idle w/lights 14.8 25a; at idle w/lights and a/c with blower on high 14.7 65a; at idle w/just the blower on high 14.7 53a; at idle w/full load 14.5 69a; at idle w/full load at 1000 rpm 14.7 85a.

I put in another battery and took these readings again and nothing changes. Any thoughts?

REPLY: Could the change from 30 to 13 be the radiator fan?

REPLY: A 17 amp draw that comes and goes could be a seat motor or trunk lock that is stuck on and popping the breaker. I had one several years ago. The trunk pull down solenoid would sometimes not cancel and draw till it overheated and blew the breaker. Good luck.

REPLY: Looks like the a/c is over half your load. Does the car have one cooling fan or two? Most Fords only have one. Ford cooling fans are a common problem. You need to measure what the cooling fan is drawing. Twenty amps is normal.

REPLY: Can you elaborate on that when you have time? I have noticed many Fords pulling way too many amps with the a/c on, from back in the Tempo

days to now.

On a 3G 130 amp Taurus lights and air at idle was 80 amps. On an older Lincoln of mine I installed the same 3G alternator and it usually pulls about the same.

That car came with a 60 amp, it's an 81, and since it was new it has been hard on alternators.

REPLY: Part of the problem might be the a/c blower motor. Thirty amps is too high. Unit is probably only protected by a 30 amp fuse or breaker. Even after this is lowered somewhat, seems like you will still have excessive current draw somewhere else. EDITED...I looked up the fuse rating for this particular vehicle. It has a 40 amp fuse, so the blower will be drawing around 30 amps on HI SPEED. Sorry about that.

POST: I took some readings off of the cooling fans and on high it was at 30 to 33 amps. Also as someone else said the a/c blower seems to be at about 30 amps. The customer just had a new computer put in this car and had it programmed, he is taking it back to where they did that work and I will see what happens from there. Meanwhile I told him not to use his a/c in hopes of saving this (the 4th) alternator.

REPLY: Hate to tell people not to use a/c, but I have, too...it's amazing how much difference between low and high though...sometimes 30 amps!

POST: Hi all. I'd like to hear comments on your results, good and bad, about consigning alternators and starters into commercial accounts. I'm considering starting a consignment program but unsure how to price or what units to consign. How many inventory turns should I expect a consigned account to make every year? What return on an investment are you seeing?

I am a medium-sized rebuilder specializing in agricultural and industrial accounts. Doing some automotive work with accounts that do both A and I and automotive but that's about it. Think consignment might pick up some more automotive business away from the parts stores that run daily delivery and keep my rebuilders busier through our typically slower winter months.

I run a weekly route truck that puts on as many as 300 miles a day since central Nebraska is rather sparsely populated. Any and all comments would be greatly appreciated to help me make a decision whether a consignment program will be a profitable venture or not. No sense keeping rebuilders busy if there's no profit in it, right?

REPLY: I have done the consignment thing for over 40 years. Used to be easy with only about 20 units at each place. Today it's different. I have had as many as 50 garages with my units, today I am down to only two. And there is a reason for that—got more than I can do unless I hired some more rebuilders, and I just don't want to hire anyone. Over the years I guess I sold thousands of extra units I would have missed. At one time it was the only way I did business. Best way to start out is try a few well known businesses that you do business with. Stock them with the 20 top sellers (10alt/10str). Beats the return on your money that's just sitting in the bank and inflation eating it up.

Yes, every now and then you will get bit and lose the consignment. I can only remember about two that I lost and never did get units or money. But it's the same on open account customers—you'll get bit by them also.

I would recommend this consignment to anyone who wants to pick up some extra sales, especially if he has an outside salesman.

REPLY: I did consignments for years before pulling them all back in. It never worked for me. The main problem I ran into was the techs. Instead of using the catalogs supplied for unit selection, their preferred method was opening boxes until they found one that looked like the old one. This resulted in the wrong unit being installed, boxes destroyed, and the wrong unit in the wrong box. They also like to use your unit as a diagnostic tool. This results in half the inventory you still own having been installed and removed and often damaged.

When I decided to stop doing consignments I made my customers a deal too good to refuse. I offered them the stock at an additional 25 percent off and let them pay over six months (they had to pay the cores charges as well). All but one customer took the deal. At that point they owned the assortment and I maintained it for them. Once a year we did a stock cleanup with these terms. For every dollar we take back you have to buy $2 of new stock. This worked well for us from the late 70s until the mid 90s. I produced and printed our own catalogs and price sheets. My salesmen visited once a week with a stock order, picked up cores, straightened up the shelves—even put labels on the shelves.

Parts proliferation became the problem. There are too many part numbers for an installer to stock. It's too expensive and ties up too much of their capital.

Now I don't even do assortments. I had dealers stocking over 100 part numbers and we still were running deliveries to them all day. Life is much easier now. I've stopped printing catalogs and price sheets. I don't have a salesman on the road for the weekly stock deliveries. Some of the customers tried stocking other companies' units for a while, but they all gave up.

That's how it is in my part of the country. It might be an entirely different market where you are. If you decide to go with consignments my one big piece of advice is—protect yourself, DO THE PAPER WORK. Get everything in writing so there is no chance of a misunderstanding with your customer. I put the consignment form I used on the Web site in the Business Aids section. I paid a lawyer good money to create the wording for me and it worked well. You can find it at http://www.electricalrebuilders.org/business/forms.php.

REPLY: Two things got us out of the consignment business. One was the proliferation of part numbers. Number two was the fast rate at which part numbers were becoming obsolete. It's bad enough to watch that happen with the inventory on your shelves without multiplying that by the number of consignments you have out there. Those two things along with the other factors mentioned in previous posts made the decision to stop consigning an easy one for us. Looking back I really don't think it was profitable at the time.

POST: Need help identifying 6g unit. This unit looks exactly like the 7799-11 except the clock position is at 3:00

instead of 11:00. This unit is a new OEM but the numbers aren't legible.

REPLY: 7796.

POST: I haven't rebuilt a 10MT starter in about 20 years, so I need a refresher. On high torque pole shoes which way does the long lip go? I seem to recall it always goes in the direction of rotation. Is that correct?

What about the solenoid spring. There is a long solenoid and a short solenoid and a long spring and a short spring. Do they always match up long to long and short to short? I just tore down some cores to look at and it seems anything goes. I have long solenoids with short springs and vice versa. Any advice would be appreciated.

REPLY: You are right on all counts.

REPLY: What makes the difference on the solenoid is the short one is "metric" and needs a matching plunger assembly. We typically use the short spring in all automotive applications because it helps with the 3510 hot start problem by having less mass to get hot and expand. With the advent of PMGR starters we don't do a lot of these either—but you always get some. We won't sell one to a motorhome customer—we insist on the PMGR unit. Have fun.

REPLY: I come from the old school and use a long spring for the long solenoid and short spring for the short solenoid. The long spring worked for many a year on the long solenoid.

Only way I might know for sure (what Delco still uses) would be to order a new OEM long solenoid from Delco (hopefully the spring will come with it.) My way of thinking is a short spring on a long solenoid will get it into the flywheel if the solenoid magnetic field gets a little weak for whatever reason, but the long spring will get it out of the flywheel quicker for whatever reason. Normally the long side goes toward the rotation, but I have seen them reversed with no noticeable effect that I could tell.

REPLY: Pole shoes. I always put the long side to match up with the thickest part on field coil. Hopes this helps.

POST: Snubber? We were asked to supply one of these for a fish boat so when someone switched off the battery while the engine was running they wouldn't damage the Prestolite alternator. Apparently this is a diode line between the b+ and gnd of the alternator. Does anyone use these and if so what is the value of the diode?

REPLY: Sounds like they are talking about a zener or avalanche diode. Northwest Regulator sells one with wire leads already on it. I think JIMCO has them too. Hope this helps you make a few dollars.

REPLY: Northwest Regulator sells a spike diode that might help you with this. It can only hold a high current spike for a few seconds. It will take up to 200 amps for milliseconds. Our part number is 50-02535.

POST: We have rebuilt a solenoid (three terminal) twice for a Satoh (Chinese) tractor starter. The solenoid works perfectly in our shop...pulls in great and has plenty of travel. The customer is putting it on starter and testing it on their tester and says it only clicks. When they bypass solenoid it works fine. I feel very confident (trying not to sound too egotistical) the solenoid is not the problem. Any suggestions?

REPLY: I would have them bring in starter and solenoid so I could test in together on my bench then if it worked as advertised I would tell them to go find the problem on the tractor. Until you have both on your bench to test together there is no way to tell if you have a problem or not.

REPLY: If this customer has a starter tester, this tester should have some way to measure the volt/current coming to and flowing through the solenoid. Maybe low voltage going to the "S" terminal, maybe his tester is a battery charger, maybe a "slug" is needed, like the old Chrysler tin can sol, maybe the drive for whatever reason is bottoming out on the DE, preventing the contacts from mating, maybe the plunger is not attached to the shifting fork properly, maybe it's one of the above. Lots of maybes posted here and maybe I will think of some more and maybe I will repost. Hopefully one of these "maybes" is the correct answer.

REPLY: When you say bypass the solenoid, do you mean bypass the switch? I assume this solenoid mounts on the starter. Low voltage at the S terminal is my guess. Either rewire the switch wire or try a Bosch relay.

REPLY: Have them check the shift fork. If it can be put in reversed it may allow the plunger a little more travel and close the contacts.

POST: Help! I have a customer who has returned three 50MTs asking for warranty. All three have twisted splines on armature shaft so solenoid can't pull drive from at rest position. I think there was a service bulletin from Delco years ago but can't seem to find it. I have called Delco tech service and their answer was "I have never heard of that happening" standard answer.

REPLY: I'll dig through my old Delco stuff but I don't remember seeing the bulletin you mention.

REPLY: One additional thought. We have gotten armatures with bad splines before. I am sure you know about that, I am just covering another base...

REPLY: We have seen this caused by hydro-lock. A small coolant leak filled the cylinders overnight and they could not get that baby to turn over no matter what they tried. Once started, restart was easy until enough time passed to refill the engine with coolant. Hope this helps.

REPLY: I don't remember seeing that bulletin. Seems to me that if they twisted during the crank cycle, either over lots of crank cycles or few crank cycles, the twist on the splines would be CW. Then if it was caused by kickback the twist would be CCW. My first inspection would be the shafts (soft and maybe not heat treated properly), then the solenoid contacts for signs of a heavy current draw.

REPLY: Did all of the armatures come from the same source? We did a 50MT about two weeks ago that did the same thing. The unit was going on a freshly rebuilt motor, and I suspected there was some external resistance that caused it, but I also suspected the armature.

It was a Wilson armature, but they

are selling them without a core charge, so I suspect that they are new ones coming from China. I couldn't tell if it has the same heat treatment on the shaft as the original, so I ordered one from another source just so I did not risk a second come back from the same customer. Has anyone else had this problem?

POST: Customer has Yale F-lift GC52 older model with 6V gen with pump on back of gen and would like to convert to 12V alternator. Can we do this? Please help.

REPLY: I'm not aware of any alternators that drive a hydraulic pump. We do however convert a lot of 6V systems to 12V by converting the generator to 12V. We also recommend converting the starter to 12V so as not to damage the flywheel. If we can help out feel free to call us!

POST: One of my technicians asked me to inquire if anyone has any experience with a product he saw advertised called "Gloves in a Bottle." If so, does it work as advertised?

REPLY: Zep sold a product called glove. You put it on before you start work and it helps to keep grease and grime from being absorbed into the skin. My guys liked it.

REPLY: There are several companies that make a product like this. Like Dan said, "You put it on before you start work and it helps to keep grease and grime from being absorbed into the skin." It makes clean up easier. I don't use it, but I have an employee that loves it, and that won't work without it.

REPLY: I use Fortress skin cream, works great.

REPLY: Sometimes I use petroleum jelly. Top this off at the end of the day with "Utter butter."

REPLY: In winter I use the petroleum jelly also...it's messy, but the absolute best thing for cracked hands. I have been wondering about the gloves in a bottle, it would be nice if it kept the grease out of your skin. Best thing I found for cleaning my hands after they are dirty is dishwashing with a little bleach added. Tough being single and having to wash your own dishes!

REPLY: Here's a link to Zep's Web site and their hand protection product. It's called Zep Glove: http://www.zep.com/ProductCatalog/P ...&subSection=900. We use a lot of Zep products with excellent results.

POST: Customer has VW chassis to Porsche kit car approximately 1985 with Motorola alternator and says light stays on. Does anyone have light wire diagram? Please help. I have not seen this car yet. I have to go on service call and would like to go with diagram or more info.

REPLY: The blue wire at the regulator is the light wire. It is a direct feed ign to bulb, bulb to D+ at alt/reg. Works just like a 10si. Dash light grounds through regulator at rest. When unit is charging pos at both sides of bulb put light out. If light is glowing could be bad trio in alternator or resisted feed to bulb from ign. If light is on bright remove blue wire from alt. If light stays on wire is shorted to ground. If light goes out problem is in alternator.

POST: Looking for an OE Delco number for a John Deere reman no. RE-501166 or a Dixie no. TS-1716. Any help would be great.

REPLY: 10479098.

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