ERA EXCHANGE

YOUR GUIDE TO ELECTRICAL REBUILDING

December 2019 $12.95



AUTO ELECTRIC CORNER
Clone Starters, Crosley Generator & Paris-Rhone Alternator

HOW A BATTERY AFFECTS CHARGING VOLTAGE
State of Charge and Internal Conditions

2020 TENTATIVE TRADE SHOW SCHEDULE!
See Page 13

COMMON SENSE | Learning the Hard Way

A WORD FROM THE PRESIDENT
We Need Your Help!



The Trade Show Committee would like you to help us grow our show, by encouraging the manufacturers and suppliers of our industry to participate in the ERA Expo 2020 in Cincinnati, coming up near the end of March.

We need suppliers of component parts, complete units, cleaning equipment, shop supplies and testing equipment to participate. Whether it be to display in a booth on the show floor or to present a technical seminar, their participation is both welcomed and appreciated.

The Trade Show Committee mailed out over thirty vendor packets for this year's show about a month ago. These packets contain information and pricing for exhibitors at our upcoming event. The committee has been hard at work in putting together a complete schedule. You will find the tentative schedule on page 13.

Our request to you is to please ask your sales reps, your contact persons at your suppliers, "Will you be in Cincinnati next March?" Let them know that you plan to be there and would really like to see them there too! There are suppliers in our industry who have not exhibited in years. Let them know that you want them to come back. Even the suppliers who exhibit every year, need to hear that you are looking forward to meeting with them again. Do not think for a moment that your voice does not count. In today's marketplace – every voice counts. When they hear the message enough times, they will begin thinking, "We need to be there!"

The Trade Show Committee needs a "Boots On The Ground" campaign to promote the only "All Electrical Trade Show" in our industry. I believe that the voice of the buyers goes a lot further than correspondence from a small committee group or a phone call from our office. Together we can make difference. We can make this show bigger and better than last year's.

On behalf of the complete Board of Directors, including the Advisory Board, we wish you and your family a Happy & Joyous Holiday Season. HO, HO, HO and Merry Christmas.

Ken Plourde

NEW ERA MEMBERS

One Way Alternators & Starters
Elizabethton, Tennessee

Jacksonville Starter & Alternator
Jacksonville, Arkansas

MPA
Kernersville, North Carolina

Savannah Auto Electric
Savannah, Missouri
Recruted by Kevin Stone at Romaine Electric

Greenlight Auto Marine Electric Inc.
Plantation, Florida

Countryside Repair
Elkton, Kentucky
Recruted by ASAP

Bud's Starter & Alternator Shop
Jonesboro, Arkansas

ABOUT THE COVER

4.0 KW Denso starter damaged by sticking switch.

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CONTENTS

2 A WORD FROM THE PRESIDENT
2 NEW ERA MEMBERS
3 INDUSTRY NEWS
4 AUTO ELECTRIC CORNER — Clone Starters, Crosley Generator & Paris-Rhone Alternator
7 COMMON SENSE — Learning the Hard Way
9 INSULATOR OR NOT
10 HOW A BATTERY AFFECTS CHARGING VOLTAGE State of Charge and Internal Conditions
13 2020 TENTATIVE TRADE SHOW SCHEDULE
15 CLASSIFIED ADS

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Rebuilding is Recycling!

INDUSTRY NEWS
& ANNOUNCEMENTS

Romaine Electric Acquires B&C Truck Electric

Romaine Electric is excited to announce the acquisition of B & C Truck Electric in Kansas City, Missouri and Irving, Texas.

Steve and Paula Hillis purchased B & C Truck Electric in 1990. In short order they grew the business from one to four employees. In 1991 B & C became a Leece Neville distributor, their first OEM distribution line. In 1997 they acquired Electric and Magneto, which brought them distributorships of Prestolite, Motorola, Zenith Carburetors, Motorcraft, Bosch and others. Their employee count also grew to eight. In 2003 they opened the location in Irving. In 2006 they acquired KC Diesel and Electric which launched them into the diesel fuel injection business.

"Our business has grown to 17 employees. We've enjoyed so many wonderful relationships with our customers and suppliers. Now it's our time to enjoy retirement. We know that Romaine will continue to provide the same quality products and services that we've built. We could not walk away unless we knew our customers would be taken care of," Steve Hillis said.

"We are very excited to expand our offerings with all of the products that B & C has developed," stated Romaine's President and CEO Nick Staub. "Most importantly, we are fortunate to inherit such a fantastic crew of dedicated employees that are seasoned in our industry. There are many new and exciting products like diesel fuel injection, turbochargers, wiper systems and more. We will be leaning on their experience to bring us up to speed. This will be a fun challenge for our organization."



AUTO ELECTRIC CORNER — Clone Starters, Crosley Generator & Paris-Rhone Alternator



BY MOHAMMAD SAMII

Clones vs Real…!

I was surprised when a good service customer of ours called saying the 17870 Mitsuba starter that we sent them for a 2004 Honda Accord (2.4L) did not match the core that they took off the car, and asked us to double check if we might have sent the wrong starter.

The starter in question is a common one. We have rebuilt, sold, and installed many. We keep two of them always on the shelf. Given the fact that both of our application catalogs, KwikFinder and Partref, as well as Apptrak all call for the same part number, I could not come up with a real explanation about differences, if there were any. So I asked them if they could please bring both starters over to see what the differences are. That was not a problem as they are literally across the street, and I can actually see the Accord they are working on up on the lift, from my shop!

As it turned out, the Big Guys struck again! Either because of a lack of skill to rebuild the original or perhaps it is cheaper to make a clone look-but-not-alike of some other brand of starter, they had come up with the a replacement for the real 17870 Mitsuba starter shown on the photo (*see Figure 1*), and have filled their supply chain with them. It was based on a Mitsubishi PMGR starter with a solenoid, and a silly adaptor for the "S" terminal to connect to the Honda's wiring. Their own unique DE housing and drive allowed it to fit in place of the real 17870 starter.

No worries about rebuilding them, as one can possibly find replacement armature and brushes, but the drive and DE housing, as well as the solenoid were specially-made parts that no cross reference would ever show. It was truly an un-rebuildable unit for the aftermarket but only rebuildable by the manufacturer who has correct but exclusive replacement parts. Large remanufacturers fill the market with this sort of ingenuity and stock the shelves of the part stores to make the sales, without letting their customer know what they are buying.

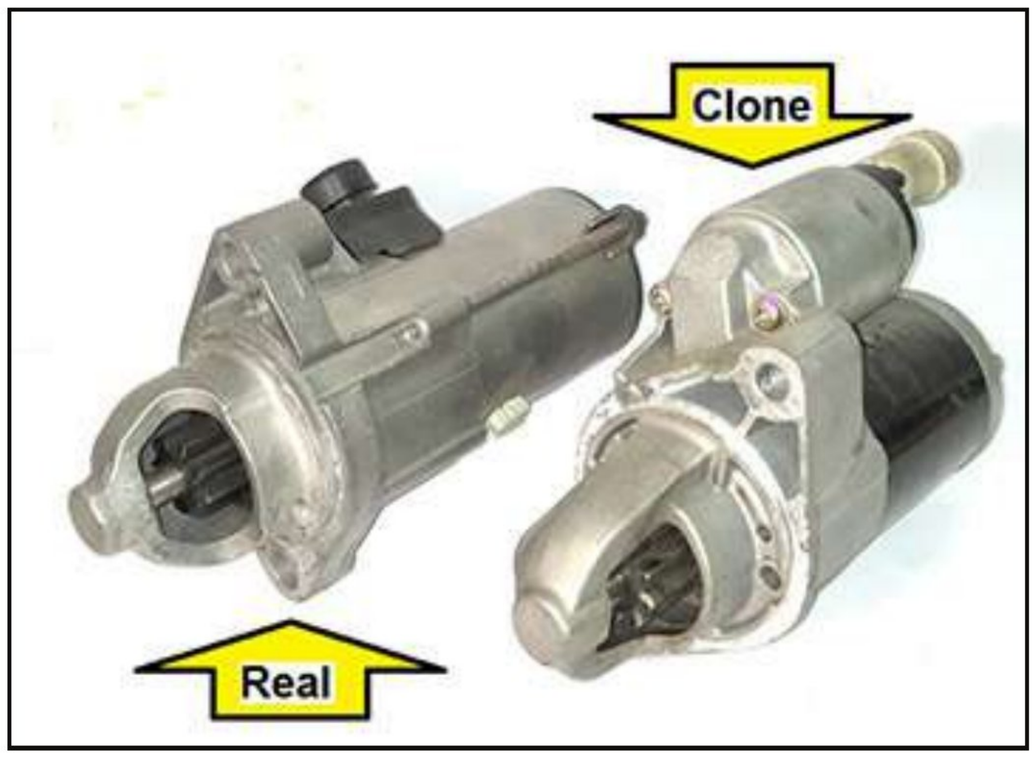


Figure 1 – Original Mitsuba starter and its cloned version

Over the years we have noticed several such MOD units by large rebuilders. We always had the problem of trying to figure out any reasonable repair/rebuild, but obviously this phenomenon still exists and is fulfilled by national and international marketers.

Older but a Classic

Occasionally a unit shows up that reflects the bygone, post WW2 years with an auto design and production that seems out of place today, even though it was important and trendy in its day. Case in point was the Auto-Lite generator and regulator of a 1946 Crosley that was sent over by a shop some 30 miles away to be rebuilt. We were told the owner is a collector and keeps this car in top shape! (*see Figure 2*)



Figure 2 – A 1948 Crosley convertible (Photo courtesy jalopyjournal.com)

For those who are familiar with it, Crosley Corporation or later on, Crosley Motor Incorporated in Cincinnati was the original builder of what today is known as the "subcompact". It was almost a "micro car", long before the word became fashionable. They were hugely popular during the war years during gas rationing because they could get an unheard of 50 miles per gallon.

They were in production from 1939 until 1952 when their popularity declined due to the Big Three offering much larger and more comfortable cars when the rationing of gasoline was lifted, the migration to suburbia began, and the baby boom started. Crosley shut down in 1952 when their deal to be purchased by Nash fell through. By then, they had a couple of assembly plants in Marion and Richmond, Indiana.

The Auto-Lite generator (GAS-4190) did not need much more than a thorough cleaning, a bearing, a bushing, and a set of brushes, which fortunately were the old Ace # E-74 which we had left from way back when,

not remembering the last time they were used!

The voltage regulator (VRP-4004F) was solidly built and weighed three times as much as a similar size regulators of these days. It only needed minor adjustment and was set at 7.1V after it was serviced (*see Figure 3*).



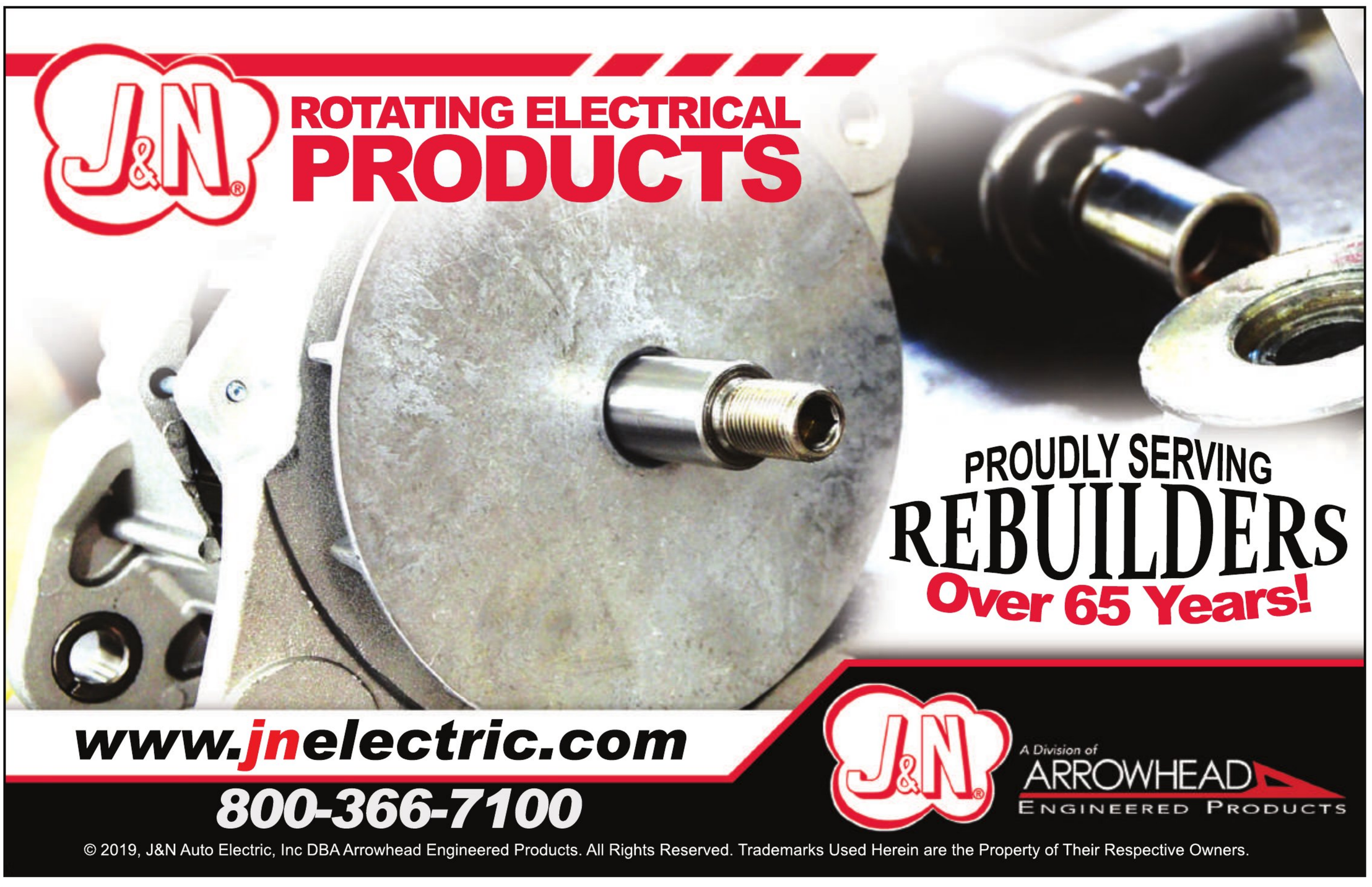
Figure 3 – Crosley's generator and regulator

The generator had a surprisingly fast cut-in feature that charged almost immediately as it was run with the regulator. That was not surprising because it was physically almost half as long of the small 4-cyl 750CC engine that was common to the later Crosley models (*see Figure 4*).

Crosley automobiles that filled a very special niche in the chronicles of the American Automobile Industry are popular within certain collector circles and some of the more fancier restored Crosleys can go for tens of thousands of dollars. Quite a sum for a car that started selling new for $350 at first, and of course much more in



Figure 4 – Size of the generator as compared to the engine



their last years. The founder, Powell Crosley Jr. was an industrialist who amassed lots of money by selling auto parts with his brother and business partner Lewis M. Crosley. They had many other business ventures. A more significant company he established was Crosley Radio Corporation to manufacture cheap radios in the 1920's and 1930's. In 1925 they became the largest radio manufacturer in the world. All of that income was used to make Crosley automobiles that was a childhood dream of his.

Working on some of this older stuff and learning about their history is a pleasure that is hard to describe. It really shows how far we have come in automotive technology.

Paris-Rhone Alternator

This brand that has been around for a long time originated in France and the company became a major European manufacturer of rotating electrical during the war and post war years, competing with likes of Robert Bosch, SEV Marchal, Ducellier and others. In the late 70's they as well as others were purchased and became a part of Valeo as a part of their initial European and later on global expansion.

Our (or my) first experience with the more modern version of these alternators that had an integral/bolt-on regulator was their application in Renault automobiles that were sold in limited numbers in the 80's but did not become a house-hold name. Later versions of these alternators showed up in a few other cars but also in some industrial engines that are still are used in a variety of applications. Some were also was used in some RV's that had Renault diesel engines (*see Figure 5*).

One of the most common regulators used on these alternators is the YH1652 or WAI's IP-1652 (*see Figure 6*). It includes the brush-holder and has plug code 270 with L and IG terminals. One thing that I learned a long time ago (and the hard way!) was to never apply 12V directly to the "L" terminal of this alternator. This was nearly the first version of regulator to incorporated a "Light" driver circuit. Unlike the 10-SI's of those days, when applying 12V directly to "L" terminal (Marked as 1 on the 10-SI's housing) would not have any ill-affect on the regulator. But doing the same to a Paris-Rhone would immediately burn out the light driver circuit. In most cases the alternator would then work but the light would not go off. Having the "L-IG" arrangement of the regulator pins (*see Figure 7*) would also contribute to the confusion as the "IG" terminal is physically smaller than the "L" and is on the right side of the plug where usually the "L" is located in a typical oval "S – L" arrangement.

Well…that all for this issue. Until I see you again, keep up the good work.

You can contact Mohammad Samii by email at: sammyselectric@sbcglobal.net, or by calling the ERA Tech Help Line at 636-584-8324.



Figure 5 – Paris-Rhone 14893 alternator (Photo courtesy Apptrak)

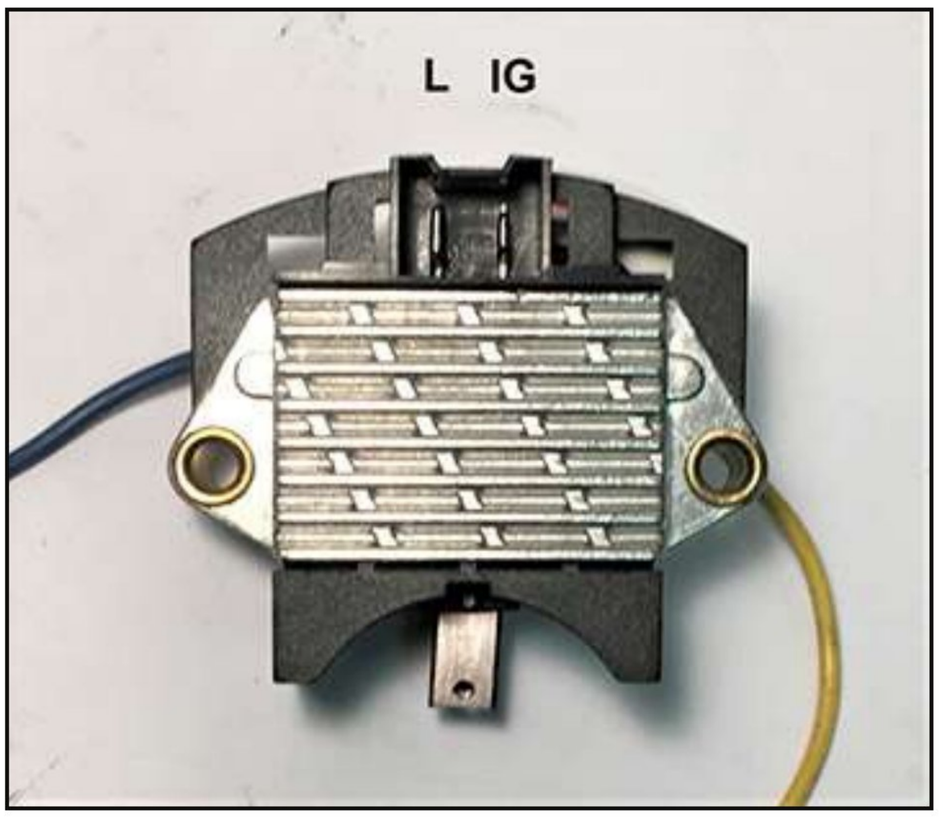


Figure 6 – WAI's IP1652 regulator and its pin configuration

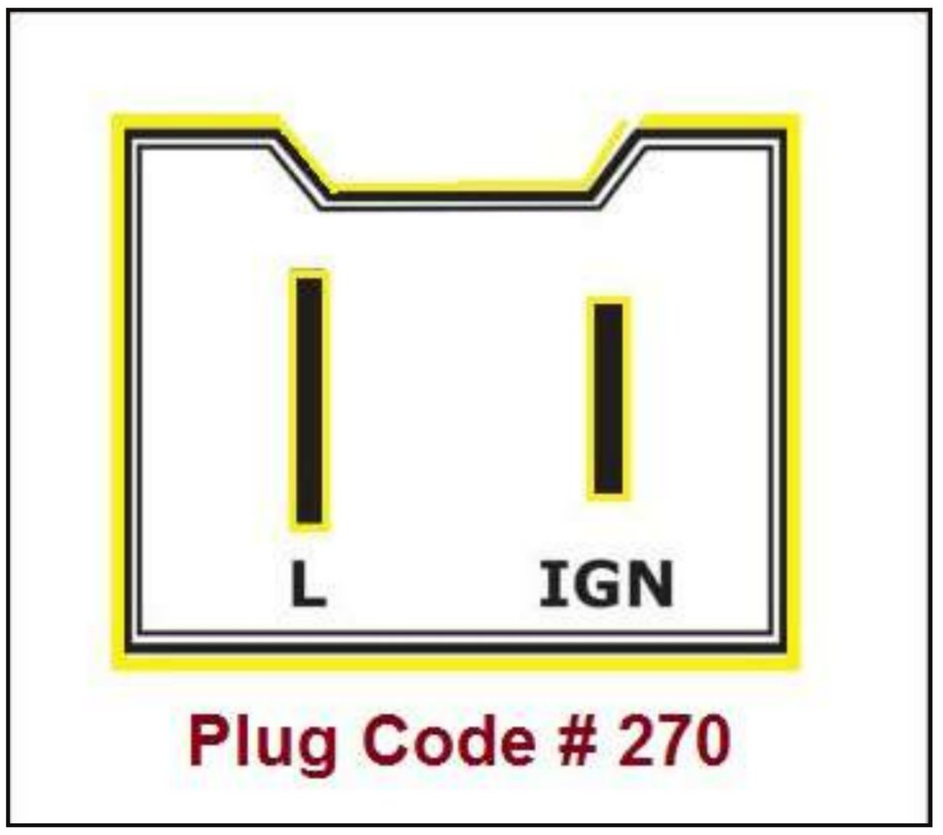


Figure 7 – Plug code #270 (Note the "L" terminal is on the left)

COMMON SENSE —
Learning the Hard Way



BY BOB THOMAS

The most common argument, or perhaps "excuse" is a better word, for not going to industry events, like a trade show or any technical training event, is not being able to leave the business for a few days. At one time, I have to confess that I felt exactly the same way. It took me almost 20 years in business to discover just how wrong I was.

I am and always have been a procrastinator. I put things off. And that included going to a trade show or a training event that required traveling what I considered "too far away" or "cost too much" to attend. I believed then that taking care of my own business and customers was infinitely more important. I was afraid that I might lose a sale, or worse yet, a customer. I was against paying for something that I believed should be cheaper or better yet, free. I was wrong.

I cannot claim to have figured this out on my own. I had considerable help. It was from a person that I did not even know at the time, but he later became a friend. We met by chance at a rebuilder get-together in Orlando at PCO Distributing, now long-closed but then owned and operated by the late Ken Peck. It was held on a Saturday, and less than a two-hour drive from my home. Ken had talked me into agreeing to go, there would be food and it was free. In spite of second thoughts at the last minute, I made the trip to keep my word.

It was there that I met Rob Buksar by chance. Rob asked me what my biggest problem was and I answered quickly, "Not being able to get away from my small business. Not having an employee that I was willing to trust it with." I even joked that I did not actually own the business. The business owned me!

Rob's answer to that problem was immediate, brief and offered with a straight face. "Lock the door and hang a sign on it. Let your customers know why you are not there and when you'll be back." He was not joking but this suggestion seemed ludicrous to me. I explained my misgivings and fears of doing that. I'd lose business and customers, I told him.

"No you won't," Rob replied. "You just think that would happen." He assured me that he knew many small rebuilding businesses that did exactly that on a regular basis and they were all still doing fine. He challenged me to prove him wrong.

Driving back from Orlando, I kept thinking about what Rob had said, even though I did not completely trust his assurances. But eventually, after spending weeks fantasizing about the idea, I decided to give it a try, just once. I made plans to attend an E+ Trade Show in Indianapolis that was still four months away. I confess that the lure of a side trip to the Indianapolis Motor Speedway Museum played a part in that decision. It was on my bucket list, before the movie called it that. The museum was not a part of that trade show, but close



enough to squeeze in a visit if I booked a late return flight.

Before departing, I took some of Rob's advice and added a few precautions of my own. About two weeks before leaving I printed a stack of one page notices on bright colored paper using large type. They contained where I was going, why I was going (**to get better trained to serve their needs**), the dates that I would be closed and the day that I would be back. I made sure that every one of our regular customers received at least one copy. Then, before leaving, I left a heavy cardboard box and some repair tags with a neighboring business and a similar notice was taped to the front door. By that point, I was hoping that it would work out as Rob promised, but still a bit worried that I would find my worst fears realized upon return.

What happened while I was gone was not at all what I was expecting. The box was full of alternators with more on the floor. The first day back, the phone rang all day. Some were just calling to see if I made it back OK.

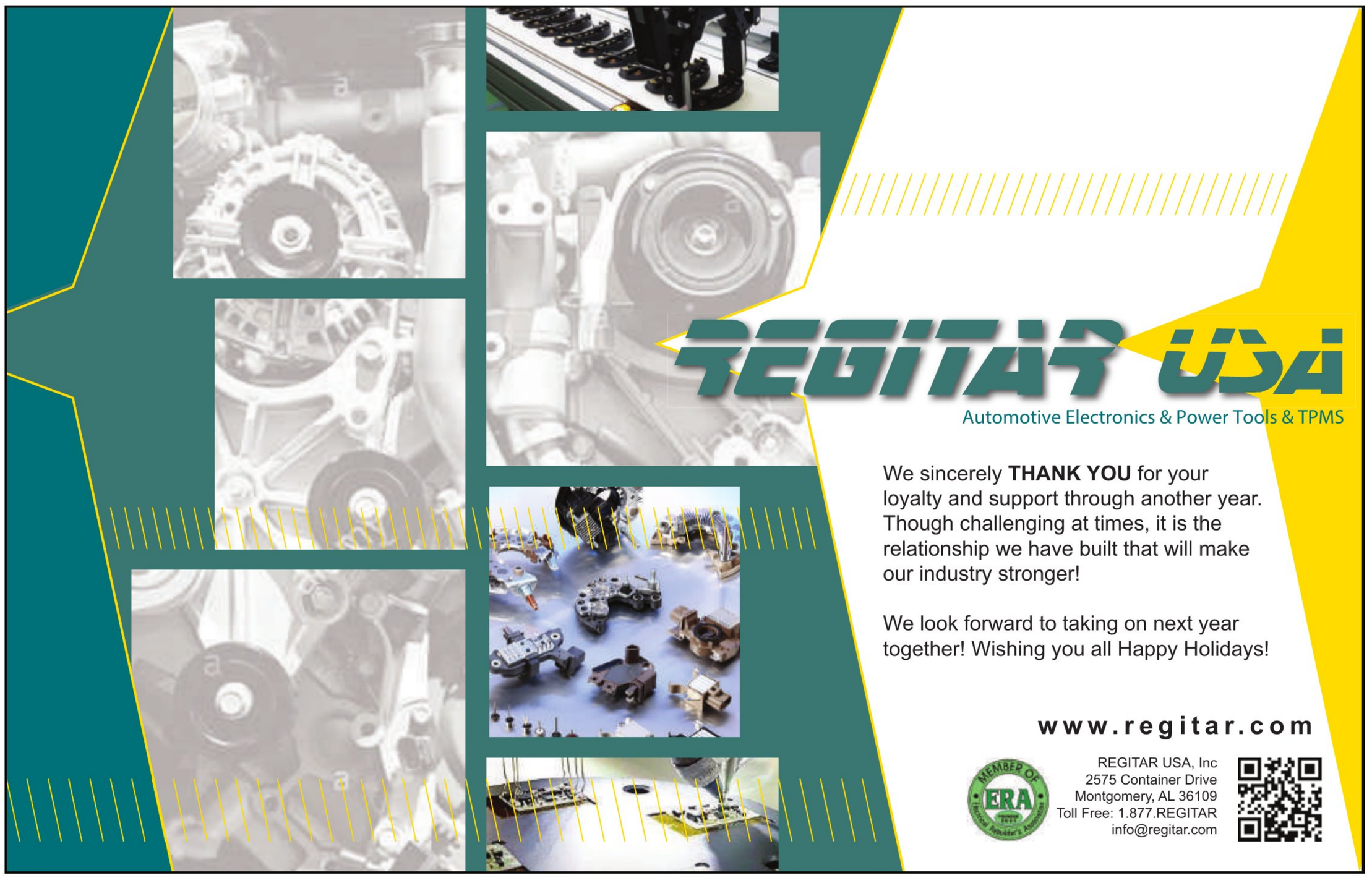
I have lost customers over the years from mistakes and misunderstandings. But I cannot recall ever losing a customer because I was out of town for training or even a vacation for that matter. I came to see a lost sale as part of the cost of doing business.

What I have learned since then is that losing a sale is small in perspective to what I lost during those 20 years when I was "skipping out" on the many opportunities that were available in those days. Opportunities to learn were abound in the 90's. Not only did major suppliers like Ace and WAI offer day-long training seminars for free, but the APRA held weekend clinics every spring with a cornucopia of topics and speakers, so many that you had to choose which ones to attend. The APRA also offered a two-day course on electrical basics, the technical side of qualifying parts and testing units properly. Then there was the APRA's annual trade show and The Electrical Rebuilders Exchange E+ show. Today, your opportunities are much more limited.

Lessons that I could have learned at a seminar (had I been there) had been learned the hard way in the field by trial and error, at both my own expense and that of my customers. Looking back, I would have been much better off had I taken the time to attend such events sooner, rather than waiting to be prodded and challenged by someone who at the time was a total stranger.

The next ERA Expo is a little less than four months away. If you are afraid that your business will suffer if you close for a few days to attend, I challenge you to prove me wrong. But you cannot wait until the last minute to make that decision. Now is the time decide. Lay out a plan to notify your customers, not just that you will be away for a few days, but explain why. The rewards will surprise you.

You can contact Bob Thomas at: ere.bobt@gmail.com or by phone at: 904-673-7301.



INSULATOR OR NOT



BY BOB THOMAS

We tend to believe that the line that separates an insulator from a conductor is a fine one. Of course a conductor allows current to flow while an insulator prohibits it – at least when it comes to the low voltage direct current that we work with every day.

We realize that conductors are not equal when it comes to passing current. But while they come with a wide spectrum of resistance values, they all do conduct current. If a high enough voltage is applied (like in the hundreds of thousands of volts used in transmission lines), even the best insulator will allow some current to flow. But even when working with 12 volts, you cannot assume that the material that it's made of will always automatically make it one or the other.

The case in point is a rubber stator lead insulator from a 30SI alternator that was sent to me along with the photos (shown below) by ERA member Dan Bell of Whatcom Electric in Bellingham, WA. These insulators are manufactured out of a hard rubber compound, which would normally make it an excellent choice to keep the stator lead wires from shorting between each other and safely away from the alternator's SRE housing, which could ground them out in a 30SI.

As you can see in the photos, the stator lead insulator on the right is in pretty rough shape (*see Figure 1*). It is obviously dried out and cracked – but it is still the same rubber compound as the one on the left, or is it?. You may be thinking that you would reject that insulator anyway, without wasting any time testing it based on how bad it "looks".

But what if your customer was in a hurry to get a big piece of equipment back into operation on a job site? And what if you did not have a new one in stock to replace it? Would it cross your mind that nobody but you would ever see it anyway? Would you take the time to test it before re-using it?

As you can see in the second photo, The insulator is no longer insulating. It is plainly capable of conducting some current, as evidenced here using an ohm meter test (*see Figure 2*).

How often do you check a used insulator for conductivity?



Figure 1 – 30SI stator lead insulators



Figure 2 – 30SI insulator being tested for conductivity.



HOW A BATTERY AFFECTS CHARGING VOLTAGE
State of Charge and Internal Conditions



BY BOB THOMAS

The most common technique for testing the charging system of any vehicle is a simple voltage test. In other words, reading the voltage at the battery with the engine running under full electrical load. Generally speaking, voltage readings around 14 volts represent a healthy charging system. This is under the assumption that a PCM is **not** lowering the voltage set point through the regulator. On those such vehicles, 12.6 volts could be normal, but that is another subject altogether.

Even when discounting any influence from a variable set point, a low voltage reading does not necessarily mean that there is something wrong with the alternator or the voltage regulator. Further testing is mandated when the voltage at the battery is low because another part of the charging circuit could be causing that lower reading.

The next step should be insuring that voltage is not being lost by unwanted resistance between the alternator and the battery. The quickest way to do that, assuming it is accessible, is to **measure the voltage at the alternator** – negative meter lead to the alternator's back housing and positive to its output terminal. The difference in voltage between the alternator and the battery should not exceed two-tenths of a volt.

If the difference is any higher, you must **test for a voltage drop.** You do that on the positive side by connecting one DVM lead to the battery's positive terminal and the other to the alternator's output terminal. Then check for the loss of voltage on the negative side using the negative terminal and the alternator's rear housing. When there is a significant enough loss to be causing problems, it should be obvious using this method.

If the voltage readings between the battery and the alternator are the same, or within the allowed difference, then **either the alternator or the battery is at fault.** Just because the battery cranks the engine and seems to be OK, does not necessarily make it so. Do not assume just yet that the problem is in the alternator because the battery does affect voltage.

How can it be the battery?

The primary purpose of an alternator's voltage regulator is to **limit voltage**, but the battery is the **basis of regulation**. Think of a voltage regulator as

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working like the pressure regulator on your air compressor. Voltage is the pressure in an electrical system and the battery is where that pressure is stored. If the compressor stops working or cannot keep up with usage, the air in the tank will eventually drop below the desired pressure setting of the regulator. There is a direct correlation between the amount of air in the tank and the pressure that is available to be regulated.

Where this air compressor analogy differs from a real-life charging system is in the battery. While a battery does store electrical energy as the air compressor's tank stores air, the battery must convert that electrical energy into chemical energy to do so. The battery's state-of-charge and its ability to handle that electrical-to-chemical conversion, can both affect charging voltage.

State-of-Charge

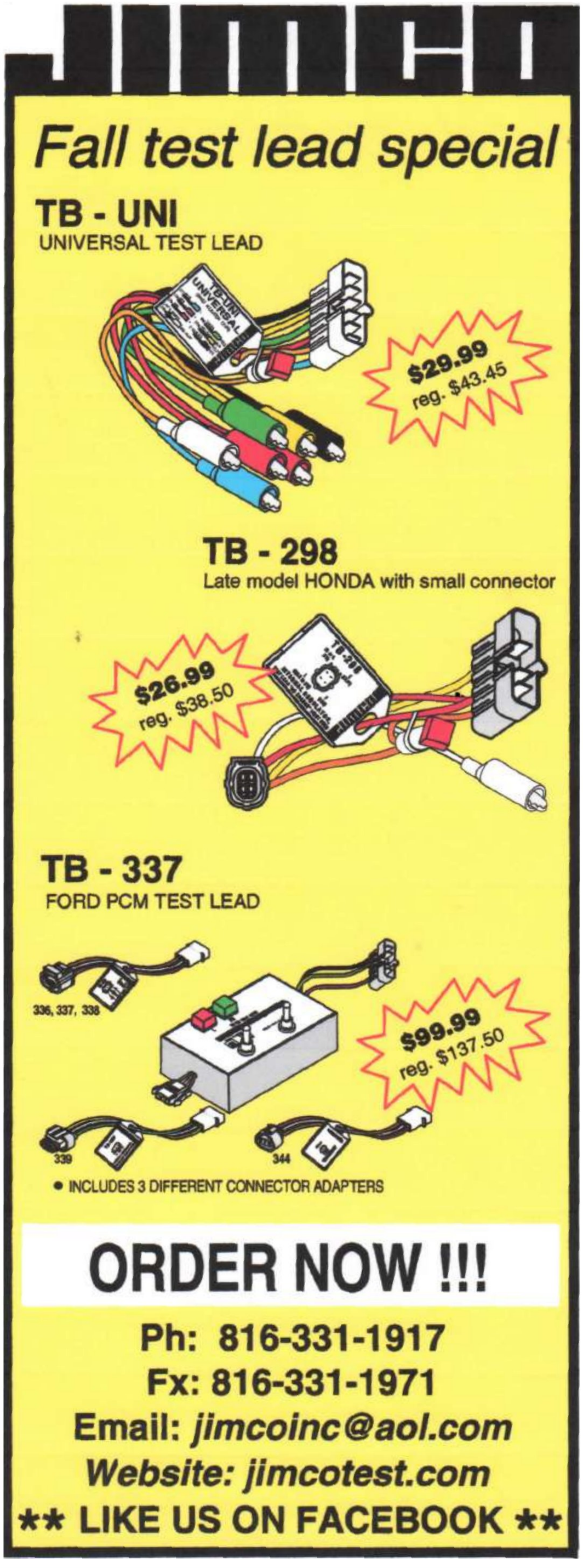
Before condemning an alternator or voltage regulator for causing low voltage, you must verify that the battery is fully charged. Always begin any charging system check by testing the battery first.

Verify the state-of-charge with a hydrometer if possible, or by reading its open circuit voltage (disconnected from any loads). If the battery has recently been on a charger, the surface charge must be removed before performing this voltage test. You can do this by letting it sit for at least several hours before testing or more quickly by simply load-testing the battery. If you do that, allow a minute for it to recover from the load test.

The voltage figures in the State-of-Charge Table (*see Figure 1*) are approximate for a new 12-volt battery at 75F. Voltage readings will be lower at colder temperatures and slightly higher at warmer temperatures because battery temperature also affects voltage. Keep in mind that anytime a 12-volt battery reads 10.5 volts, it is an indication that one cell is shorted. That is because a 12-volt battery has six cells in series, each one contributing 2.1 volts.

Condition of the Battery

No battery is ever going to last forever, in spite of advertising claims that JC Penney made of its "Forever" battery in the 1970's. As a lead-acid battery ages, its performance declines. There is no way around that fact. The length of life and the time of its inevitable demise are affected primarily by the design and manufacturing quality of the battery, the environment in which it lives (high temperatures and severe vibrations shorten it) and the way that it



is discharged and recharged. Sitting in a discharged state causes sulfation, making it the worst-case scenario for any lead-acid battery.

Sulfation is the number one cause of early battery failure. It is the buildup of lead sulfate crystals on a battery's plates. The lead sulfate is part of a natural process that happens as a battery is discharged. During recharging, these crystals dissolve as the sulfur rejoins the hydrogen and oxygen in the water to become sulfuric acid again. But when a battery is left discharged, or it is repeatedly under-charged, the buildup of lead sulfate can increase to a level that normal recharging can no longer dissolve it. As the depth of lead sulfate crystals increases, the internal resistance in the battery increases which limits the flow of charging current. That in turn affects the charging voltage and reduces available cranking amperage. Sulfation also affects the charging cycle, which results in longer charging times, less efficient or incomplete recharging, and higher than normal battery temperatures during recharging.

Stratification is a form of sulfation that has more damaging results. A lead–acid battery contains a mixture water and acid. Sulfuric acid is heavier than water, which causes the acid formed at the plates during charging to flow downward and collect at the bottom of the battery. Eventually the mixture will reach a more equal distribution, but that process, called diffusion, happens slowly. Vibrations from driving helps to speed this up. But if the vehicle sits for long periods and is only recharged periodically, the electrolyte becomes stratified with a higher concentration of acid at the bottom of the plates and mostly water at the top. Repeated cycles of partial charging and discharging will increase stratification, reducing the capacity and performance of the battery. The lack of acid at the top of the plates reduces energy conversion and allows corrosion to attack the plates. At the same time, the high concentration of acid at the bottom of each cell increases sulfation there.

A number of battery testers today look at a battery's voltage, internal resistance, or conductance to gauge its condition. These testers, when used properly, can predict available cold cranking amperage and the battery's overall condition. We will take a closer look at some of these is a future issue.

You can contact Bob Thomas by email at: ere.bobt@gmail.com or by phone at 904-673-7301.

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Lunch

12:30 – 3:00
Seminars continue

3:00
Load Buses to Return to
Hotel for Dinner Break

7:00 – 9:00
Roundtable

FRIDAY, MARCH 27

8:00 – 12:00
Seminars

12:00 – 1:00
Lunch Buffet

1:00 – 7:00
Exhibition Open

SATURDAY, MARCH 28

8:00 – 9:00
Seminar

9:00 - 12:00
Exhibition Open

12:00 – 1:00
Lunch Buffet

1:00 – 4:30
Seminars

5:15
Load Buses to
Sign Museum

6:00 – 10:00
Happy Hour & Dinner
(Includes Museum Tour, Neon Sign Workshop Tour, and Dinner Entertainment)

10:00
Load Buses to
Return to Hotel

SUNDAY, MARCH 29

8:00 – 9:00
Annual ERA Board of
Directors Meeting &
Election of Officers
(All Members Welcome)

Make Plans to Spend the Day at J&N

Mark your calendars now for March 26th, 2020. The ERA Tradeshow kicks off in high gear on Thursday. We will arrive at J&N at 9:00 a.m. to begin an exciting day of information, tours and a delicious meal. The tours will include a trip through one of the most sophisticated, high tech warehouse and shipping facilities in our industry and we will also get a look at what's going on in J&N's rebuilding shop.

As most of you are aware, J&N Electric carries many non-rotating electrical products. They want you to be up to date on all of the product lines that they carry. Various manufacturers will present the very latest information on their products, such as:

- Learn all about the latest in LED lighting and what is candlepower vs. lumens?
- Did you know that there are now vehicle specific fuses?
- What is the real difference between an intermittent vs. continuous duty solenoid?

Stay ahead of your competition! Learn all of this valuable information! Increase your sales and your bottom line! Come and spend the day with us at J&N Electric!

NEED HELP?
It's just a phone call away

1-636-584-TECH (8324)

Tech Help from Mohammad Samii



Do you need help testing an alternator or getting it to work as it should on a vehicle? Call the ERA Tech Help Line and talk to an industry veteran that has over 40 years of rebuilding and on-car experience. Mohammad Samii can help you to find the answers that you need to solve any rebuilding problem. No question is too difficult. "Sammy" has a formidable list of resources at his disposal and is backed up by a line of regular ERA Forum contributors. The ERA is there to help when you need it.

NEW ERA MEMBER BENEFIT
from
LESTER CATALOG COMPANY

Effective January 1, 2019

Lester Catalog is offering a $100 discount for an annual subscription to ERA members

lestercatalog@waiglobal.com
or call
1-800-877-3340

Contact your customer service representative at WAI Global to request your discount upon purchase or renewal of Lester Catalog

Electrical Rebuilder's ERA Association Founded 2001 — *Members Helping Members*

Have you seen this ERA label that's available?

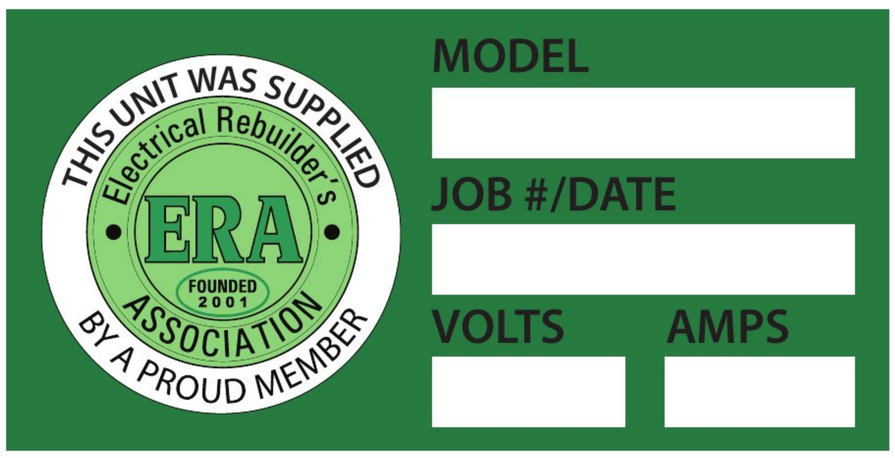
In response to requests for a label to help members identify their alternators and starters, this new ERA Unit ID label is now available. The 1.5" x 3" tough waterproof vinyl label provides space to write or stamp a unit number, your invoice number or date, the units voltage and the unit's amperage. This 2-part label comes with a self-adhesive cover sheet to preserve your unit info. It has been designed to work with both rebuilt and new units and is manufactured to last many years in the field.

These attractive labels are affordably priced and can be ordered today by calling the ERA office at **(636) 584-7400.**

18 labels per sheet

1 sheet: $14.00 each
6 or more sheets: $12.00 each

Price includes postage within the U.S.



ACTUAL SIZE

REBUILDER'S MARKETPLACE

PARTS, SUPPLIES, EQUIPMENT FOR SALE

Vintage starter and generator field coils. Ace, Autolite, IPM, Preferred Electric and Vulcan part numbers. Listed in Excel spread sheet to send via email. Call 860-528-8174 or email ken@guyselectric.com

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Battery charger repair parts for all brands, batteries and battery chargers for all applications. PLP Battery Supply 800-642-3451 www.plpbattery.com

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WANTED rebuildable Military electrical cores, any quantity, Prestolite 60 amp alts, Leece Neville 24V starters, CE Niehoff 24V alternators, Bendix 650 amp oil cooled alts, 300 amp Teledyne generators, any quantity, send your list or if not sure send pictures, and we can identify. 305-633-1524 or hy@cmearma.com

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Selling a used Jimco brand test bench for starters, alternators and generators. Call 815-747-6110

3500 AND 3599 CORES. Contact Larry at Hagemeister Enterprises. 800-944-0494

For sale lots of cores heavy duty, industrial, agricultural and import. Call with OE or Lester numbers 314-664-2101

BUSINESS FOR SALE

Complete starter and alternator rebuilding business w/house, shop and barn on two acres in the country. Well established with loyal clientele. $210k (920-566-2723)

Alternator and starter shop for sale in central Oregon good clientele. Main focus is battery sales, new and rebuilt alternator's and starters appx 1500 units in stock. Has been in business sense 1985 located in Redmond Oregon. Bend is 18 miles away Redmond and bend are the fastest growing city's in Oregon. There is also a 2 bedroom apartment above the shop. Larry H 541-401 3881

SERVICES

R&R ALL STARTER DRIVES. North Atlantic Starter Drive, 741 Broadway, Pawtucket, RI 02861 800-822-2735 Email: popsy26@verizon.net

MISCELLANEOUS

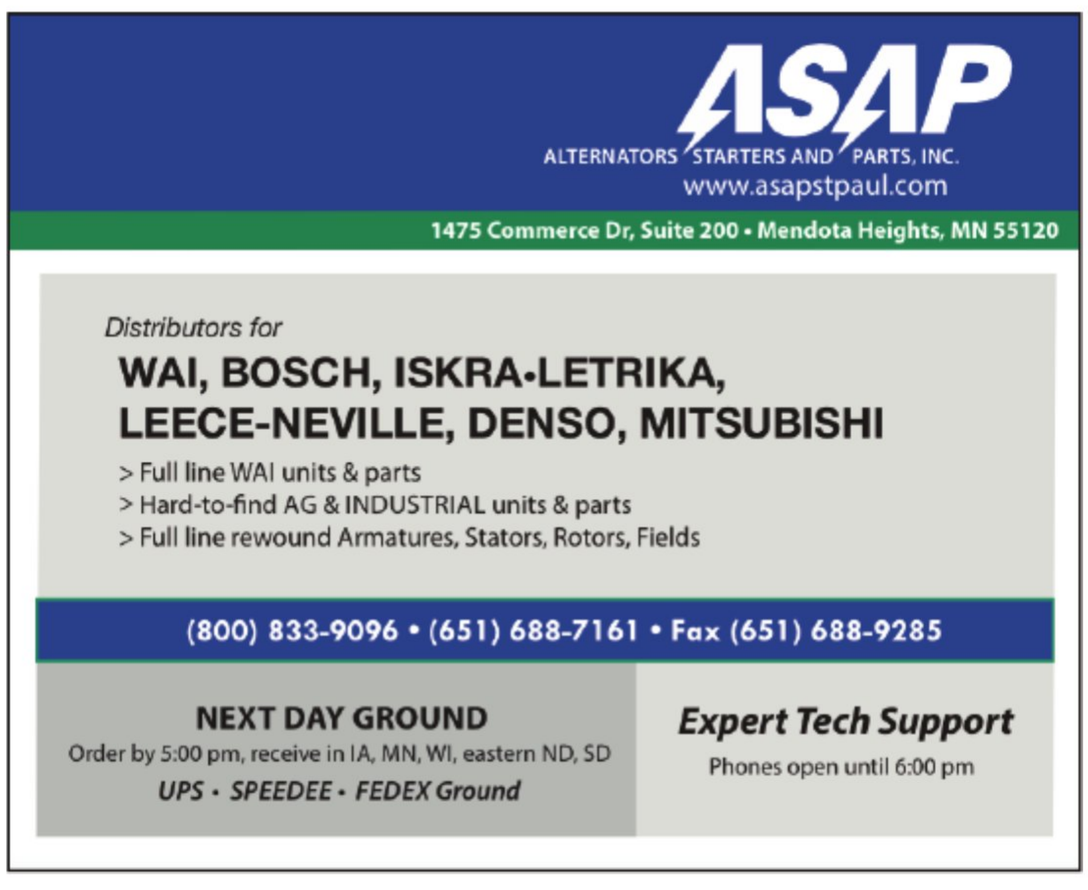
United Battery Systems in Portland, Oregon is seeking an experienced Rotating Electrical Rebuilder. Qualified Applicants will have 3 to 5 years' experience rebuilding Alternators, Starter Motors and Generators. Please email a resume to susan@unitedbattery.net to apply for this position.

Partner wanted in great weather Myrtle Beach. Bring your shop or stock too much work here for just me. 50-50 deal 843-455-8062

HIRING: Looking for a change but want to stay in the industry? Join our growing Sales team! Please email info@regitar.com for more information.

ADVERTISING: If you'd like to submit a classified ad, email Stephanie at smsdesigns@hotmail.com. ERA members receive the first 25 words free. It's an ERA benefit!







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Reference: M573
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