ERA EXCHANGE

YOUR GUIDE TO ELECTRICAL REBUILDING

March 2018 $12.95

AUTO ELECTRIC CORNER
Drive Doctor, Corrosion Issues and HID Headlights

HARLEY-DAVIDSON REVERSING MOTOR
Niche Market for Electrical Rebuilders

MEET THE 2018 SEMINAR PRESENTERS

2018 ERA TRADE SHOW SCHEDULE

PLAIN TALK | A Tale of a Sales Master

A WORD FROM THE PRESIDENT
Trade Show Fast Approaching



It is hard to believe that it's March already and our ERA Expo 2018 in Montgomery, AL is only a month away. If you have not already registered but plan to go, don't procrastinate any longer.

You can download an interactive PDF registration form using the button on our homepage: "Registration is open". Just download and save it on your computer. Then open it and fill out using your keyboard. Save the form again filled out. Then email it to the ERA office, FAX it to the office, or send it by mail with a check if you prefer. Of course, you can also call the office and register over the phone. The office number is (636) 584-7400. We have tried to make it easy. But whatever you do, don't wait any longer.

We had to change the schedule for Thursday after our last edition was mailed. The space limited Hyundai plant tour filled up the first week. Although Hyundai only offered one tour a day, they agreed to accommodate us with a second tour, thanks to persuasion from Regitar and the City of Montgomery. But the second tour forced us to reshuffle the Thursday schedule, which you'll find on page 14. You can print a copy of the new schedule from the website's homepage using a button marked "Schedule Change".

If you are booked for the Hyundai tour, Michele should have contacted you by now. But if you have not heard from her, please call the office to see which tour you are on. The Thursday schedule is very tight and it must be maintained. Don't be late for the bus that you are assigned. If you are on the first bus and miss it, the second bus is already full.

If you have not yet booked your room, I urge to do it now - today. Space is limited and there is no reason to put it off. If something comes up and you have to cancel, there is no charge so long as you do that at least 48 hours before expected arrival. You can book your room at the Embassy Suites by Hilton Montgomery by calling 334-269-5055. Everything happens there except the tours – and they depart from there. With free breakfast each morning for each guest and the free manager's reception each evening, the room price is well within reason. Join Hilton Honors online before booking to get free wi-fi throughout the facility.

If your business is down and you think you can't afford it, I would challenge you to invest in that business by going to this event. Every single day is designed to help you make your business more profitable and less stressful. I'd ask you how much your time is worth and how much of it that you have wasted over the last year searching for hard to find parts or struggling with a technical problem? ERA Expo has the answers.

I will see you there!

Mike Dietrich

NEW ERA MEMBERS

Auto Diesel Electric Supply LLC
Reno, Nevada

Sunny Hollow LLC
Hitchins, Kentucky

A & R Electrical LTD
Bremampton, Ontario, Canada

The Motor Man Inc
St. Thomas, Ontario, Canada

Vehicle Electrical Supply
Murrieta, California

S & L Auto Parts
Murphy, North Carolina

Reliance Electric Motors
Hudson, Wisconsin

ABOUT THE COVER

Tandem set of planetary gears for a Harley-Davidson reverse motor.

ERA EXCHANGE

Volume 35 Number 7

March 2018

Published monthly by the
Electrical Rebuilder's Association
PO Box 906
Union, MO 63084
Phone 636-584-7400
office@electricalrebuilders.org

EDITORIAL ASSISTANT / Bob Thomas

DESIGN & PRODUCTION / Stephanie Schroeder

CONTRIBUTING WRITERS / Mike Dietrich, Mohammad Samii, Bob Thomas, Glen McLaughlin

CONTENTS

2 A WORD FROM THE PRESIDENT
2 NEW ERA MEMBERS
3 INDUSTRY NEWS
4 AUTO ELECTRIC CORNER — Drive Doctor, Corrosion Issues and HID Headlights
6 PLAIN TALK — A Tale of a Sales Master
7 HARLEY-DAVIDSON REVERSING MOTOR Niche Market for Electrical Rebuilders
12 MEET THE 2018 SEMINAR PRESENTERS
14 2018 TRADE SHOW SCHEDULE
19 CLASSIFIED ADS

Copyright 2018 • Printed in the United States

The publisher retains the right to edit for content, style or space. All submissions become the property of the ERA Exchange. Opinions expressed herein of contributing authors do not necessarily reflect the opinion of the staff or policy of the ERA Exchange. All advertisers herein warrant that they are duly authorized to engage in the business described by them when applying for advertising and further warrant they are duly authorized to use any copy, illustration and any trademarks or trade names which may be specified for use in their ad. The ERA Exchange limits its liability due to production errors or omissions to the running of a correction in the next issue.

Rebuilding is Recycling!

INDUSTRY NEWS
& ANNOUNCEMENTS

Past President Henry Henke is Home

ERA Past President Henry Henke is finaly home from the hospital and doing well, following a 68-day, drawn out series of medical problems that began following a routine knee surgery. He has no memory of much of what happened but family members have filled him in. It was touch-and-go at times with the original hospital and doctors basically giving up on him, recomending home care or a nursing home.

"I had my left shoulder replaced in July of 2017, all went well and I now have full use of the arm", he explained in an email. "I decided to have my left knee replaced and went in for the procedure on December 12. I've been told that this went as expected, but I have no memory of anything after the surgery. I've been told that I even walked for the nurse, but later in the day things began to go south and I wound up in intensive care. I was sent home December 18 and started rehab. Nine days later I fell in the house and according to my family I was mumbling words but not making any sense. I wound up back in hospital. I still don't remember any of this. My son told me that at one point the hospital informed my family I was not responding to anything they had done, so my family had to choose between home care or a nursing home.

"Thankfully, my son called a doctor friend and explained every thing that had happened. The doctor immediatly made arrangements for me to be admitted to the ER of a different hospital. I spent all of January there in la la land. On February 5 I was moved to a regular room. That is the first thing that I can remember on my own since December 12. I was released February 13 and am feeling pretty good now but still very weak and low on energy. But I'm happy to be home. Tim's doctor friend watched over my case and arranged for many, many test's. I am on no meds at all. The staff at the last hospital believe I had a drug reaction that caused it all.

"I would like to thank everyone for their prayers and words of encouragement. I am not sure about United Starter right now, just glad to be home. THANKS' TO ALL" HANK

2018 ERA Trade Show



Embassy Suites by Hilton Montgomery
300 Tallapoosa St,
Montgomery, AL 36104
(334) 269-5055
Group Rate: $114 per night + tax
Group code: ERA

AUTO ELECTRIC CORNER — Drive Doctor, Corrosion Issues and HID Headlights



BY MOHAMMAD SAMII

Drives…and Ford Diesel Starters…!

A good number of the calls on the ERA's Hotline concern unique parts, either old or new, and are inquiries as where to find them. As you well know, most parts and units are available through various industry suppliers but there are some parts that must be looked for, called for, posted on the ERA website or EBay searched for. With persistance and a little luck, a suitable replacement does usually show up.

One of the areas that a long drawn out search is not necessary is starter drives. A very capable ERA member company "The Drive Doctor" has managed to handle every oddball, new, or old drive that I have needed, and he has been coming through for me repeatedly with flying colors.

One example is an older Onan stand-by generator that was equipped with the Prestolite MEO-6003 starter for which we needed a drive. Going with the more economical version of the drive, The Drive Doctor shipped us this very reasonably priced new P1818 starter drive that worked out just fine (*Figure-1*).

Another example was the drive assembly for a 6696 Ford starter for the 6.7L diesel engine that I could not find a breakdown anywhere. This one was rebuilt and returned. It looked great and worked just fine. Without sounding like a commercial, I am a firm believer that these sorts of companies who try to keep us going deserve our support.

Speaking of Ford starters for diesel trucks (F250 thru F550), the common 6669 starter that was used extensively on 7.3L engine was superseded (not by application, but usage) by 6670 used on their not-so popular 6.0L Diesels. The later diesel engines like 6.4L use a similar starter numbered 6675, and their latest, 6.7L engine uses the 6696 starter, which looks very similar to the former but with a little difference.

Figure-2 shows the 6675 and 6696 starter side by side. Notice the third mounting hole of the 6675 has a 10mm x 1.5 thread, whereas the 6696 starter has an 8mm x 1.25 thread, but otherwise they look similar.

Due to labor time and the fact that these starters (6675 and 6696) are not easiest ones to change, I have not tried to experiment with them to see if they interchange with the use of appropriate hardware, thus I only warn you of the differences of their mounting bolts.

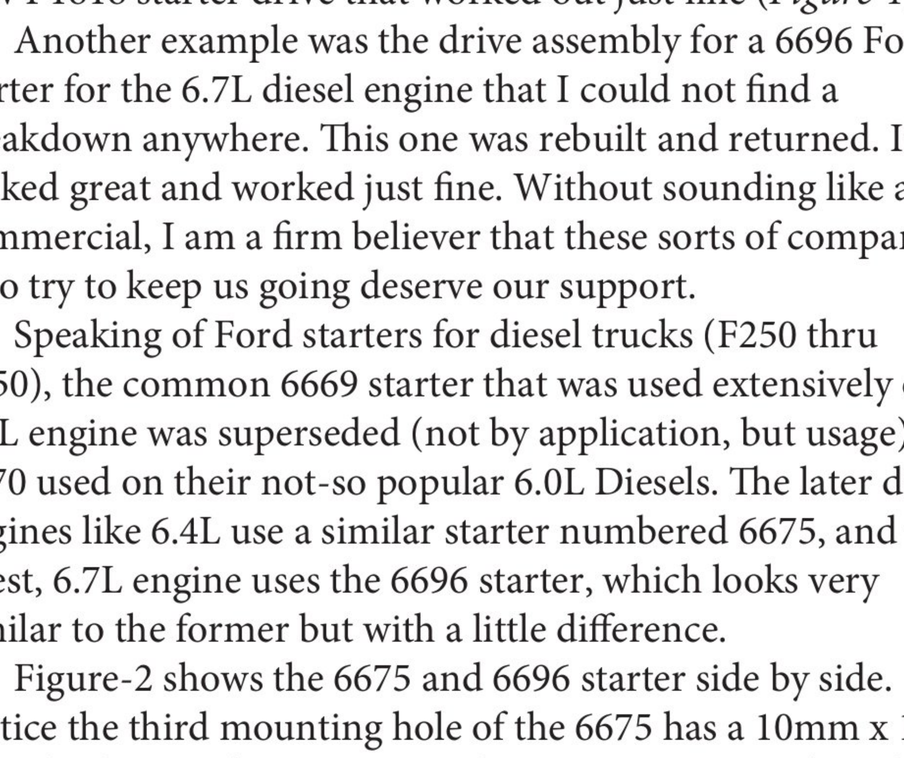


Figure 1 – The old Prestolite drive and the replacement from "The Drive Doctor"

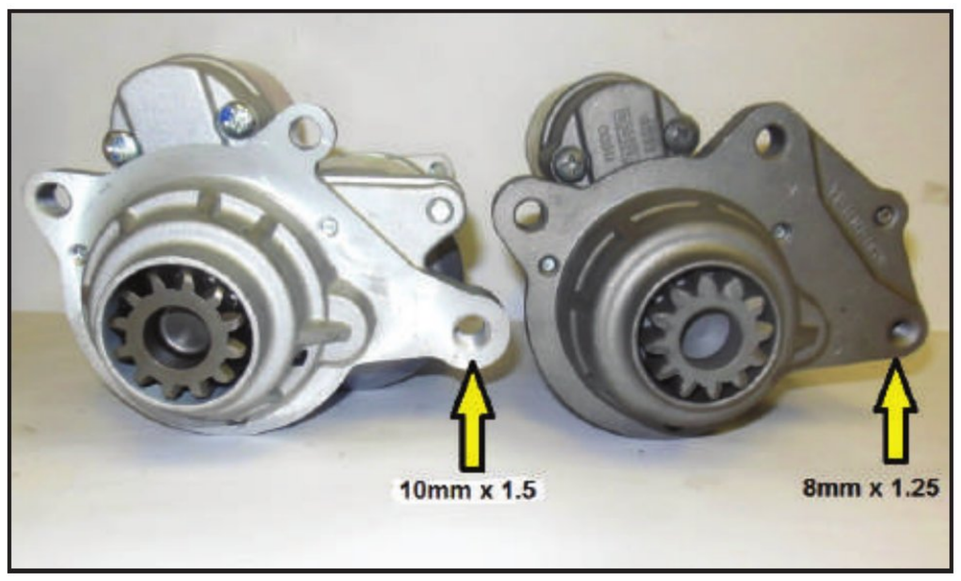


Figure 2 – 6675 and 6696 starters and their threaded mounting hole difference

These two starters use very similar drive assemblies. The replacement drives are listed and available for the 6675 but none is listed for the 6696. I do not know the reason, but to be on the safe side, I had ours rebuilt as I mentioned above.

Corrosion and Poor Connections…!

It seems that poor connections are a major cause of many failed starters that we encounter. Given starters require very high in-rush currents in 100's or 1000's of amps (depending on the application), then the importance of the clean and solid connections needs to be of utmost importance. In many units this is not the case!

The natural wear and tear, and deterioration due to age are common and to be expected. The additional deterioration that is specific to weather, the sprayed salt on the road, and issues such as partial flood or water damage all contributes to additional problems (mostly corrosion) that can disable a starter in a very short time.

There are many examples but a recurrent one, much to my surprise, is the little 17593 Valeo starter that is mostly used on later models Kia Souls and Hyundai Accent with 1.6L engine. These are not very common cars but since we still supply a few repair shops, we do get calls for them. Their problem is usually a poor and rusted connection on the battery and motor posts of the solenoid. Excessive build-up of corrosion completely insulates it. (*Figure-3*).

The solenoid is just too small and unique to be rebuilt, but luckily replacements (WAI 66-9464 and J&N's 245-40029) are available at minimal prices. I have added a complete starter to my stock for quick turn-around for the next time. Most part stores do not have one in their inventory.

The build-up of corrosion and rust is not exclusive to above mentioned starter and its solenoids. We see many industrial units which seem clean, but once the solenoid gets opened, all sorts of surprises show up.

We had a clean Bosch 18949 starter for inspection and repair that only had the brush lead to the motor post burned off. The brush-holder assembly (J&N 151-24026 or WAI 69-9129) was all that was needed to fix it. On a whim, I decided



Figure 3 – Deteriorated 17935 starter post due to corrosion and poor connection

to open the solenoid and take a look inside for any issues. As you can see on Figure-4, I am glad that I did. The amount of rust and build-up was extreme. I have no idea how a clean starter and solenoid could have deteriorated to that extent. I learned another lesson to not assume a clean unit is also pristine inside!

I will share with you a few other solenoid problem perhaps in the next month's issue.

Xenon HID Headlights

Advances in technology and added bell-and-whistles that are designed to bring the buyers into the showrooms are undeniably here to stay and more and more of them are on the way. Regardless of their purpose, the fact that these items are very expensive to fix does not come into any equations, and you would not hear a word from a salesman as to how much, say a self-park feature or an adaptive cruise control cost to repair when it stops functioning.

Without going into the very high-end stuff, I would like to shed a little light on a much more common and simpler item that is wildly used, namely the Xenon HID headlight.

The HID (High Intensity Discharge) headlights use a ballast, much like your florescent shop-light to fire a strong arc across two electrodes inside of an enclosed capsule filled with a metallic vapor. Once the arc starts between the two electrodes, the metallic vapor reacts and releases energy in the form of light. Figure-5 shows the complete headlight assembly of a 2009 Cadillac Escalade with Xenon (HID) lighting, and Figure-6 shows the ballast.

As an auto electric shop who works on various aspects vehicles electrical system, lighting system repair is also part of our job, and that is when we run into trouble with the cost of a repair. List price of the OE ballast and the bulb is roughly $575 for the above application, and when diagnostic and labor time are added, the price tag of 900 to a 1,000 dollars is not far off the mark. There are cheaper aftermarket/EBay parts available, but when the customer is stranded or is in a hurry, the cheaper aftermarket parts are not an option. HID headlights should last many times longer than a Halogen light bulb and usually are rated atjust 35 - 40W, whereas a typical Halogen headlight bulb

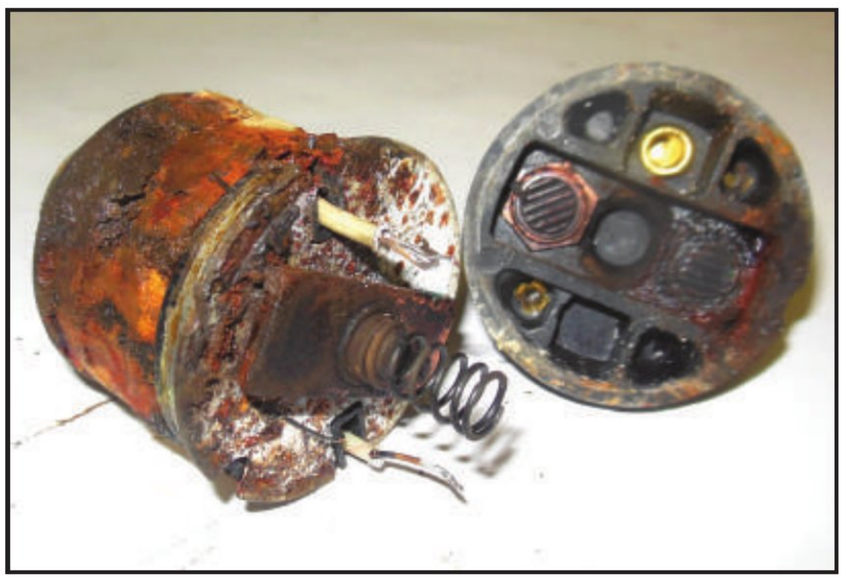


Figure 4 – Inside of a Bosch solenoid that looked very clean on the ouside



Figure 5 – The Xenon HID headlight assembly for 2009 Cadillac Escalade



Figure 6 – The HID ballast made by Hella in Germany

is rated at 60 - 65W. Thus they are more efficient.

The thing we have learned about the HID lighting is: 1) we do not accept any vehicle with aftermarket or modified HID lighting for headlight issues (a very slippery slope)…and 2), the customer is forewarned about the possible cost of the repair. Once the premise is accepted, then we write the work order.

I am looking forward to see many of you during the 2018 ERA Show in Montgomery. Until then, keep up the good work.

PLAIN TALK — A Tale of a Sales Master



BY BOB THOMAS

I first met Robert Allen Buksar, during an open house BBQ at PCO Distributors in Orlando in the fall of 2000. PCO was a regional parts supplier that rebuilt starter solenoids and drives that were sold and delivered along with other parts and supplies via their own truck all around the southeast. PCO's co-owner, sales manager and number one truck driver Ken Peck hosted the event as a way to bring rebuilders together so that they might get to know one another better. He considered any additional business that the event might generate a bonus. In many ways, Ken was a lot like Rob. They both understood the value of networking. Both were gifted masters in the art of salesmanship.

The APRA's Big R Show taking place at the Orlando Convention Center about 15 miles away. I cannot remember the exact date, but I do remember our conversation like it was yesterday. Rob didn't know me from Adam, only that I was in the business. I, on the other hand had recognized him immediately from his photo in the Electrical Rebuilder's Exchange. Rob sat down directly across from me, most likely because he noticed that I was eating alone. Then he started our conversation by asking me about my business, which was doing pretty well at the time.

But Rob refused to accept my short answer. He persisted with further questions about my take on the industry and how the changes had affected my business in particular. I had downsized my shop, I told him, not replacing employees who had left on their own in the late 90's. It was now just my wife Sarah, myself and one other employee. We were selling fewer units now but making more money than ever before. The changes in technology meant that the newer units cost and sold for more. When we had more business than we could handle, I simply raised prices a little to "thin the herd". Life was good. But Rob knew that life is never as perfect as the picture that I was painting so he asked what I liked to do in my spare time. What spare time? I was working long hours six days a week! Looking back now, Rob had already figured that out.

Eventually I admitted that the current lack of an employee, capable of running the business for a week, inhibited Sarah and I from taking a real week-long vacation. I confided that we were both becoming burned out. It is the age-old curse of the self employed, I told him. When you have the time, you don't have the money. But when you finally have the money, there is no time.

Without taking even a moment to think of his response, Rob asked me why we didn't just put up a "Gone Fishing" sign and close for a week? He pointed out that it was something that many small business have done successfully for years.

I confessed to having considered it but had rejected the idea in fear of loosing some of our hard-earned regular customers. We could afford to lose a week's worth of business income but not the customers altogether. Customers are the life blood of any business, I told him, and I was afraid of loosing them permanently to another supply source. The bulk of our customers at the time were automotive repair shops that needed parts today, right now - not next week. I understood the end users too, who wanted their transportation repaired and returned as soon as possible. They might give up their car or truck for a day, but never a week. I did not want to let any customers down.

Fortunately for me, Rob had a gift for persuasion – the sign of a true sales master. Within minutes he convinced me that our customers would understand, so long as we let them know in advance. He understood that my fear was really just a lack of confidence in the business I had built up over 20 years. He predicted that not only would we not loose any customers, but that their loyalty would increase during our absence. He assured me that we would have plenty of work waiting when we returned. Not completely convinced, but tired enough to give it a try, we took that vacation a few months later. And amazingly Rob was 100% correct on all accounts.

Following that meeting an annual week-long vacation to the Florida Keys between Christmas and New Years became a regular part of our life. Later we moved our vacation week to May and rented a cabin in North Carolina. We owe Rob for all of the memories we made, the places we've seen and people we met on those trips. They probably would have never happened if not for Rob Buksar at Ken Peck's chicken BBQ. I have thanked Rob several times over the years since, most recently just a few months ago. Evidently, he has done this so many times, for many different people, that he has never been able to recall our first meeting.

Although we talked for over 15 minutes that day, I only asked Rob one question. I had assumed that he was in Orlando for the APRA Show and attended the PCO get-together as a side trip. But he corrected me by explaining that he came to Orlando just for the PCO BBQ. So I asked him why in the world he would travel that far, from Gary, IN to Orlando FL, for BBQ chicken with a small group of mostly local rebuilders? He told me it was because the chicken was free and Ken Peck had asked him.

What struck me most was that Rob went out of his way to strike up a conversation with someone he'd never met, pry a business or personal problem out of them, suggest a solution to that problem and then convince them that the recommendation would work. But that's just normal for Rob Buksar.

Rob was unable to write his normal Plain Talk column for this issue, so I've taken this opportunity to write about him.

HARLEY-DAVIDSON REVERSING MOTOR
Niche Market for Electrical Rebuilders



BY GLEN MCLAUGHLIN

I fell upon a new niche market that has worked out well for me and I'd like to share it with my fellow ERA members. Those of you who read the Forums on our website probably already know what it is. But for those who don't, it's rebuilding the back-up motors used on Harley-Davidson Tri Glide motorcycles.

Harley-Davidson came out with the Tri Glide in 2009 (*see Figure 1*). It is their first factory three-wheeler since 1975. That was when they discontinued the three-wheel Servi-Car, which had been in production since the early 1930's. It was marketed as a utility vehicle. The Tri Glide on the other hand is a pure open road cruiser. The electric reverse motor was originally an option on the Tri Glide but has since been made standard equipment. As I discovered first hand, backing up one of these 1,200-pound beasts with leg power is no easy task, especially for Harley's aging customer base.

I fell upon this unique motor unexpectedly when the local Harley dealership's parts manager asked me to look into one (*see Figure 2*) to see if it was rebuildable. From the outside, as you can see in the photo, it looks a lot like a PMGR starter with an over-sized drive end housing. I quickly learned two things from the parts manager. They are failing at an unusually high rate and a new one now retails for $1,499.00. The dealer told me that this motor was the single most expensive part on the motorcycle and that no component service parts were available to fix it. It took me about two seconds to decide it was worth my time to take that look.



Figure 1 – Three-wheel Harley-Davidson Tri Glide that uses the electric reverse motor.



Figure 2 – This looks like a PMGR starter but is actually a Harley-Davidson reverse motor.



Figure 3 – The drive uses a serviceable roller clutch similar in size to a 27MT Delco starter.

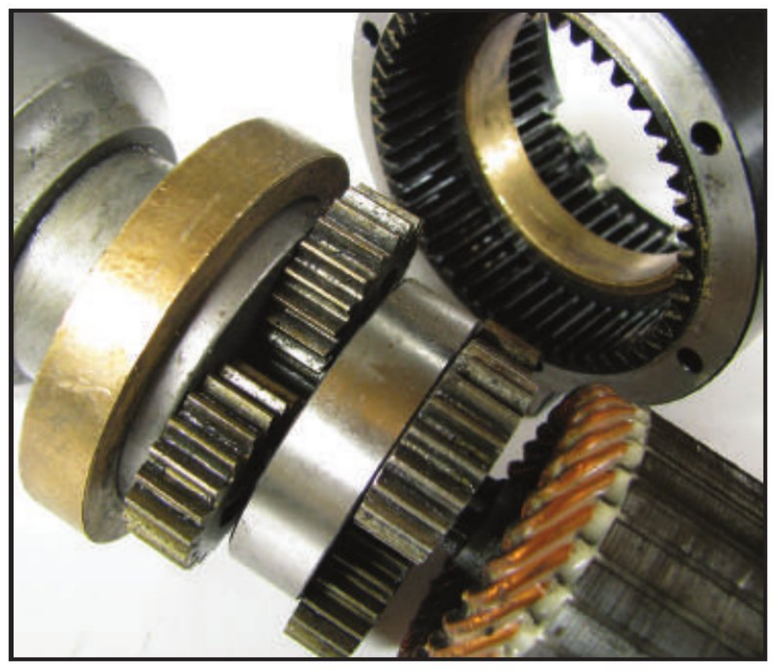


Figure 4 – The armature turns the pinion through a tandem set of planetary gears – for an armature to pinion ratio of 54-to-1.

What I discovered is that the drive end assembly is a masterpiece of machine work. It houses a CCW roller drive clutch and pinion gear (*see Figure 3*) the size of what you might find in your typical 27MT starter. It is supported by a ball bearing on the drive end. The pinion's shaft is driven by a unique double planetary gear setup (*see Figure 4*) that provides an end gear reduction ratio of about 54-to-1. Watching the drive rotate slowly (compared to a normal starter) was a treat in itself once I got one working. I checked it with two different tachometers and came up with a pinion speed of 180 RPM.

The double planetary gear box and roller clutch drive are over-built and unlikely to ever fail, although I must warn you that the aluminum stationary gear case housing is very fragile and can be damaged if you are not careful. More about that later. **But don't use any power tools on this motor!**

Once you get inside one of these (using hand tools), you'll see that the planetary gears are packed with grease. Not only is this unnecessary, it actually robs the motor of the power that it takes just to move the massive amount of grease around. In most of the motors that I've disassembled, that grease had been pushed into the motor section – all the

way to the brushes. We have all been rebuilding planetary gear starters for decades now and know from experience just how much grease the OE manufacturers use – very little. When I rebuild this motor, it goes out the door with a lot less grease that what it came in with.

After having now rebuilt over a dozen of these to date, I can tell you that the major problem I've found has been brushes sticking in the brush holder (*see Figure 5 and 6*). Sometimes, the armature is damaged as a result (*see Figure 7 and 8*). The good news is that these parts are both common to automotive applications and relatively inexpensive from many of our suppliers. The drive motor is all Hitachi – in case you didn't notice from the photos. The armature, brushes, brush holder and CE housing are all the same parts used in Nissan Maxima starters of the mid-90's although the field case has been modified to fit the reverse motor's gear case. An applications check showed that this armature was used in at least 10 different Hitachi starters. Using Lester 17713 or 17695 will get you the correct armature, brushes, brush holder and CE bushing. In about half of the ones that I've disassembled, the armature was salvageable.

The solenoid is a ZM 892 (*see Figure 9*). It is very similar to the one used on the early Ford diesel pick-up starter – Lester 17037. However, the plunger is heavily modified, and it must be re-used (*see Figure 10*). A unique adapter plate (*see Figures 11 and 12*) with Hitachi drive return spring and a very special shift lever (*see Figure 13*) are used to allow the Mitsubishi switch to work with the Hitachi style spring. Note that the solenoid side of the adapter plate is beveled to accommodate the modified plunger.

Personally, I prefer re-using the original solenoid since the Harley reversing motor will only draw a fraction of the amperage that it was designed to handle. This solenoid should outlast several sets of brushes. If you have doubts, you can easily test the voltage drop across the contacts when free-spin testing to insure it is within limits. The drop should be no

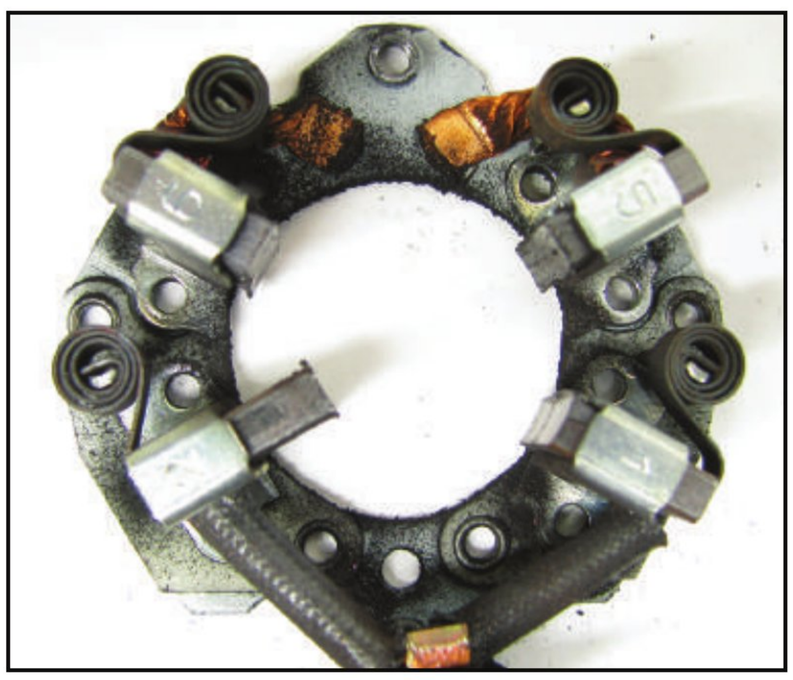


Figure 5 – The Hitachi brush holder and brushes are the most common cause of failure, often just stuck.

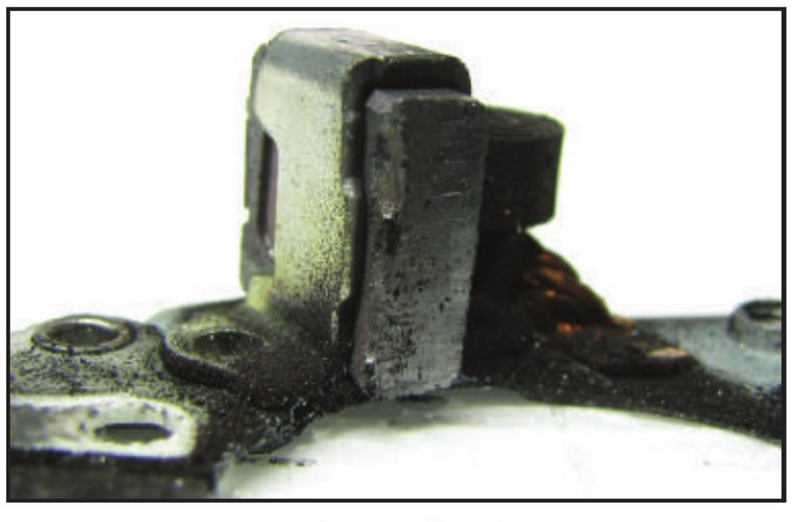


Figure 6 – Notice the results of severe arcing on one of the seized brushes.

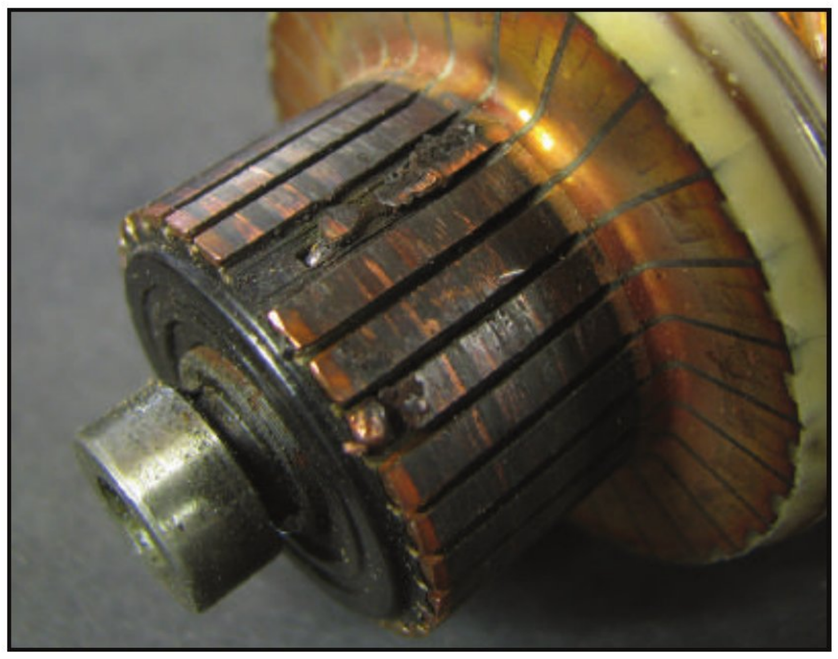


Figure 7 – Repeated attempts to use a failing reverse motor can destroy the armature.

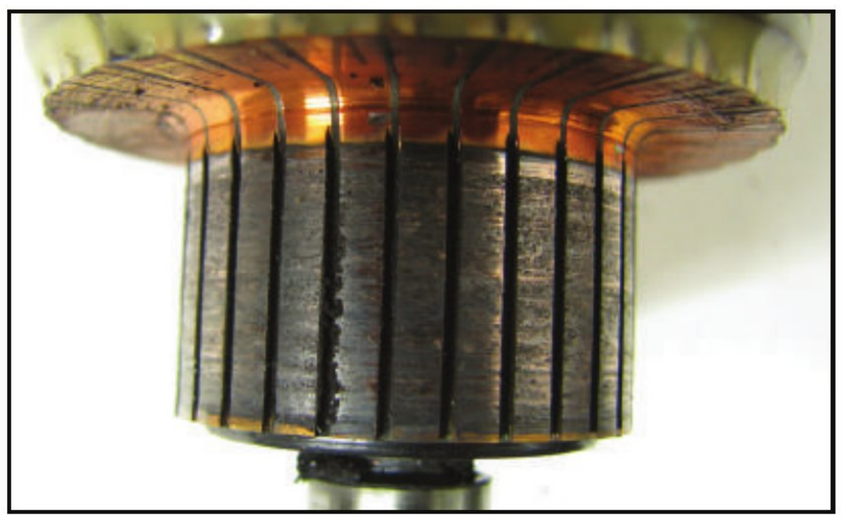


Figure 8 – Arcing was just beginning to damage one bar, but this armature is salvageable.



Figure 9 – The ZM solenoid makes it easily identifiable.

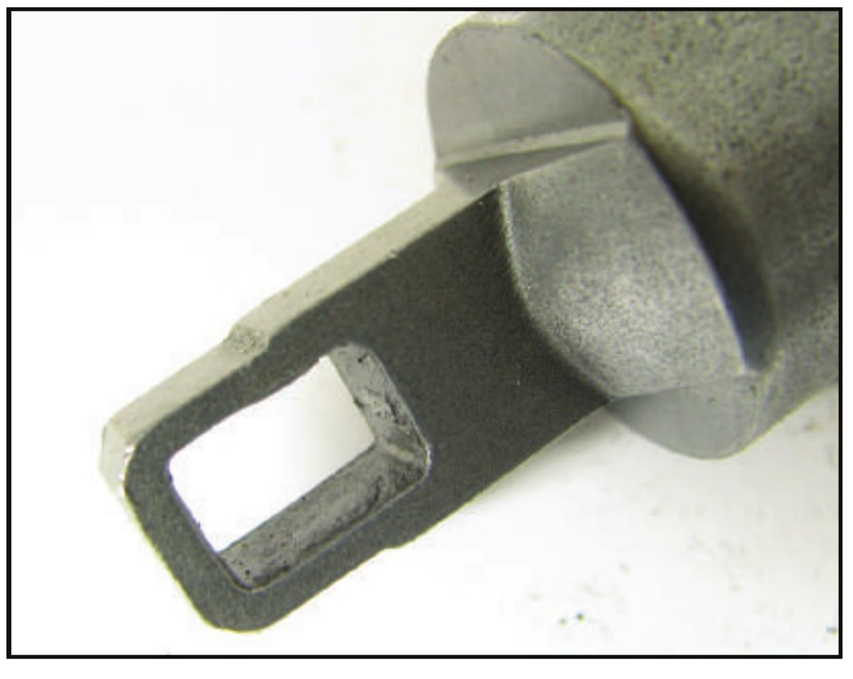


Figure 10 – The ZM plunger has been modified significantly to prevent interference with the DE housing.

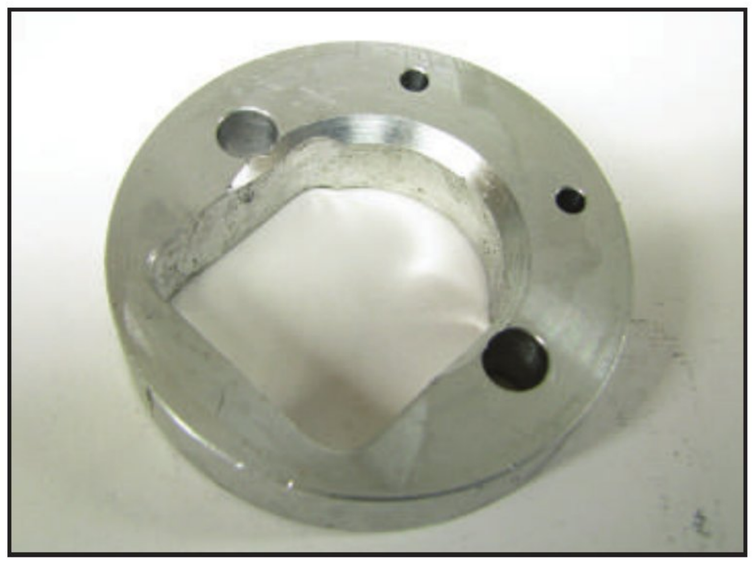


Figure 11 – The aluminum adapter plate has been recessed for plunger clearance.



Figure 12 – The Hitachi style spring fits the other side of the solenoid adapter plate.



Figure 13 – You can see the large yoke has been welded to the top section of the Hitachi shift lever.

more than a few tenths of a volt if the contacts are good.

If you do replace the solenoid, use the same ZM part number, to insure the original plunger will match the throw. I highly recommend that you check the pinion's at rest position once reassembled. The pinion should barely protrude past the front surface of the DE housing – no more than 1/10th of an inch. I've been told that the clearance to the ring gear on the trike is about 1/8th of an inch. If it protrudes too far, it will stay engaged and the only way to stop it is to climb aboard, hit the brake. That will bead short the motor and open a 150 amp circuit breaker.

The most fragile part on this motor is the aluminum gear case housing that I mentioned earlier. The two motor thru-bolts thread into two small tabs that have been machined into this beautiful piece of aluminum workmanship. The thru-bolts are 10-24 Allen head cap screws and the aluminum piece that they screw into is **TINY** (*see Figure 14*). If you over torque them, you will break the tab (*see Figure 15*).

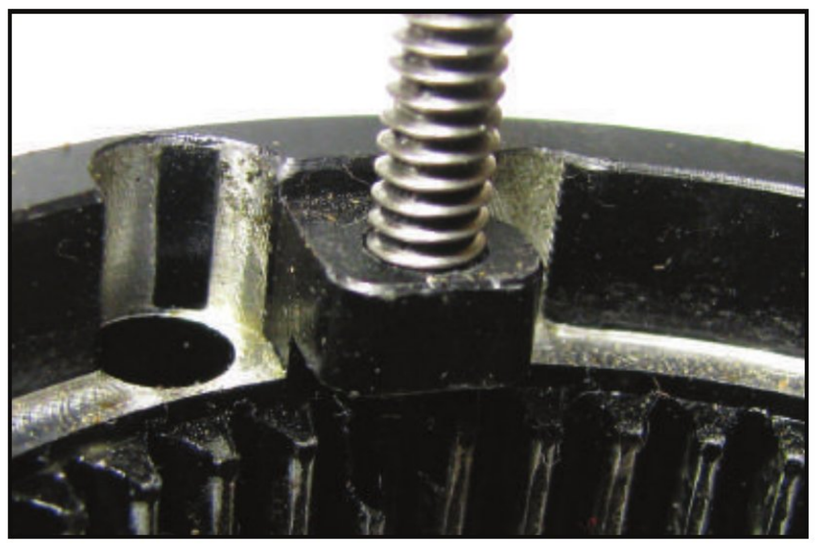


Figure 14 – The most fragile and easily broken part of this motor is the tiny tab on the aluminum gear case to which the #10 thru-bolts must attach.

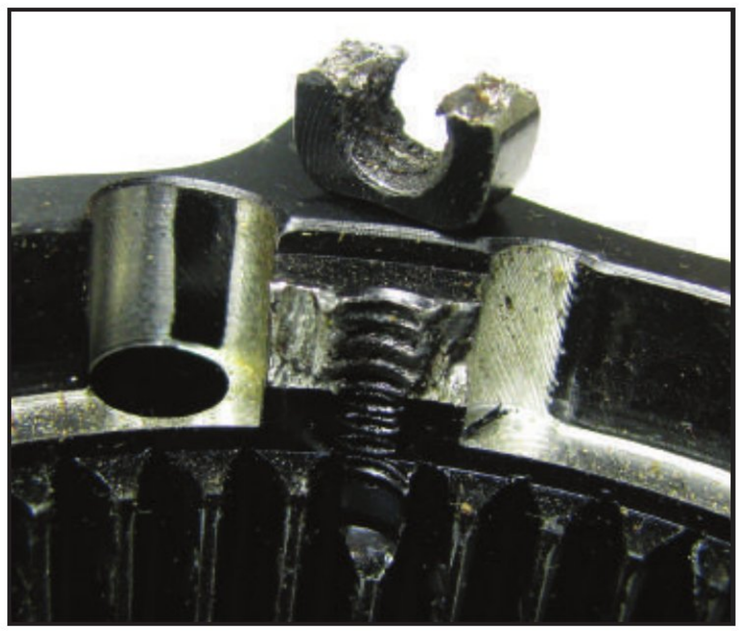


Figure 15 – Here you can see the same tab that has already been broken.



For that reason, I don't use anything but hand tools on this motor. In an effort to determine a torque limit or specification for the thru-bolts, we used the un-damaged tab on the pictured gear case, to see exactly how much torque the tab could withstand. Just as we passed 25 inch-pounds, I heard it crack. I highly recommend stopping at 20 inch-pounds and the use of blue thread locker **under the thru-bolt heads** (*see Figure 16*), not on the threads! That gear case is irreplaceable. The only way you can get one is from a core.

If you have a Harley dealership in your area, it is worth a visit to chat with their parts manager. He is your best potential customer and source of cores. My suggested selling price to the dealership is to be in the $195 to $225 range. My sources say they can get $450 for a rebuilt one. As my prime core supplier, they deserve a good break. The dealership that I work with has given me extra cores, which allow me to stock one on the shelf for a walk-in customer. But I do not bite the hand that feeds me. Walk-ins must pay the full higher price.

There is one last bit of information that I'd like to share – how this motor works on the Tri Glide. There is what looks like a small switch panel on the left side handlebar. It's actually the LHCM, or left hand control module that communicates with the ECM. Pushing the R button on the LHCM tells it that reverse is being requested by the rider and it communicates that request to the ECM. For the reverse motor to work, the engine must be running at less than 1500 RPM, the trike must be stationary or moving less than two miles per hour, the transmission must be in neutral and there must be no reverse system trouble codes present. When all is well, the request for reverse is then forwarded to the RCM. Only then will it activate the reverse control solenoid, that in turn powers the switch terminal on the ZM starter solenoid on the reverse motor. It is not a simple circuit. But when the button is pushed, all that happens instantly. A 150 amp manual reset circuit breaker protects the reverse motor circuit.

The reverse motor itself and its control solenoid are mounted on the right side of the trike in front of the differential case. The motor's pinion mates with a ring gear on the differential.

Glen McLaughlin is the owner of Starter-Alternator Service in Myrtle Beach, SC. He has been in the electrical rebuilding business for 55 years, owning or managing shops in Maine, Vermont, Virginia, North Carolina, Florida and South Carolina.

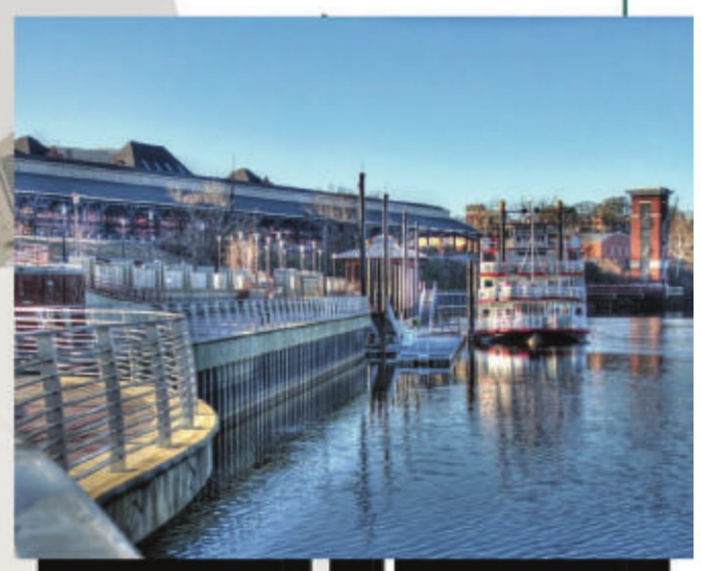


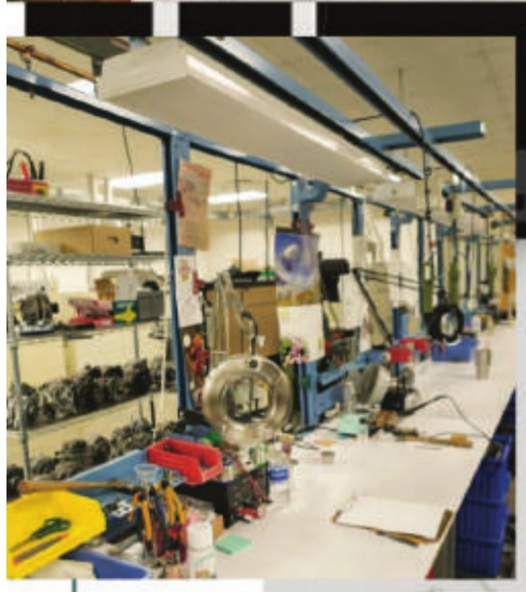
Figure 16 – You must use thread locker to secure the thru-bolts because of the tab's torque limits. But do not put in on the threads. Put threadlocker on the bolt's heads only.















See Y'all Soon!

Come discover what **MONTGOMERY** and **REGITAR USA** have to offer you. As we celebrate our 30th Anniversary, enjoy some Southern hospitality while enhancing our industry.

REGITAR USA

2018 ERA Expo
Thursday, April 12 - Sunday, April 15
Embassy Suites by Hilton

2575 Container Drive | Montgomery, AL 36109
Tel: 334.244.1885 | Toll Free: 1.877.REGITAR | Fax: 334.244.1901 | info@regitar.com
www.regitar.com

Meet the Seminar Presenters



Mohammad Samii

Topics: Challenges of Rebuilding and Testing Today's Units; Understanding PCM-Alternator Communications

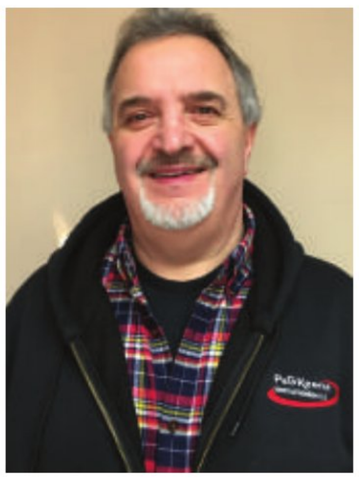
Mohammad Samii is a noted industry educator and writer who has has been involved in electrical rebuilding since 1973. He opened his own automotive electric business, Sammy's Auto Electric Service, Inc in Champlain, IL in 1979 and began teaching others in the trade through APRA sponsered seminars in 1992. His monthly column, *Auto Electric Corner*, was a regular feature in APRA publications for nearly 25 years before he joined the ERA team as Technical Advisor in June of last year. Like his monthly columns, Sammy's seminars are always filled with pertinent and up-to-date information, based largely on his own research, experiences and knowlege.



Dennis Jacinto

Topic: Cataloging Options
with Dan Bell

Dennis Jacinto began his career in 1977 at FEMSA of America, a supplier of alternator and starter component parts for imports units. In 1983, he launched his own company, Component Parts Company (CPC), in Newcastle, California, and later expanded into the rebuilding of starter drives and solenoids. Around 1990, CPC began publishing its own cataloging as well as the PIC Picture ID catalogs in a cooperative venture with a customer. In 1994, CPC took over management of the Lester Catalog numbering system and purchased the company shortly thereafter. In 2000, the parts side of CPC was sold to Romaine Electric and Dennis concentrated on the catalog business full time. As Lester Catalog, Dennis expanded into CD's, DVD's and a web application - Kwikfinder. In 2009 he sold Lester to WAI and continued to manage it for another 3 years. After a brief hiatus, Dennis returned to the catalog and data business, beginning first with turbochargers and eventually endied up back in the rotating electrical segment where he started. Today his new business YouTech Group publishes the Partref online catalog, accessable from the ERA website. They also build new websites with or without e-commerce as well as provide a host of related services such as OE Research, Data Mapping, Vehicle Population Data and more.



Sam Castiglione

Topic: AC and DC Motor Rebuilding
with Mike McGovern and Bill Grant

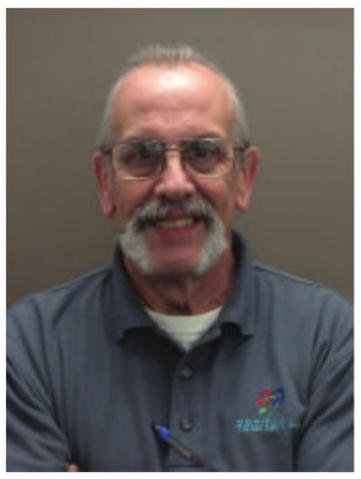
Sam Castiglione and Mike McGovern have been best friends and business partners for over 40 years, beginning as auto mechanics tuning engines, then rebuilding alternator, starters and generators and founding International Winding, Inc in Villa Park, IL after purchasing Sal's Amarco Armature in 1983.



Dan Bell

Topic: Cataloging Options
with Dennis Jacinto

Dan Bell, a nationally known and respected DC electrical industry expert, began his training in 1968 as an Anti-Submarine Warfare and Electronics specialist in the US Navy. In 1971 Dan founded Whatcom Electric and Battery in Bellingham, WA, a business that has evolved into a remanufacturer of premium rotating electrical products for the automotive, heavy-duty, marine and agricultural industries. Dan has been providing charging and starting expertise to all in need for over 45 years. He developed Apptrak, the most comprehensive and versatile digital cataloging system in our industry, covering applications, component parts breakdowns, interchanges and detailed component specifications for identifying and cataloging armatures, rotors and stators. He also worked with the ERA to put alternator plug codes online from the ERA website. Dan's ongoing commitment to the cataloging of starters, alternators and generators ensures that this resource will be available far into the future.



Gene Kaiser

Topic: Charging Systems of Tommorow Today

Gene Kaiser is Quality Control and Techical Manager for Regitar USA in Montgomery, AL. He entered our industry in 1977 at Jim's Auto Electric in Columbus OH. A few years later he became the supervisor of a 10-man remanufacturing shop - Hite Parts Exchange. Gene stayed in remanufacturing for 20 years before receiving a call from Transpo Electronics in Orlando, FL, asking if he would be interested in moving to Florida to work for them in sales. They had just bought Ace Electric and needed someone with both alternator and starter experience. He worked in sales at Transpo for 5 years and then transferred into new product development. He left Transpo when the company was sold and move back into the private sector, overseeing new product development and engineering for Powermaster. After two years there, he received a call from Regitar USA and has been Quality Control and Technical Manager for going on 12 years now.

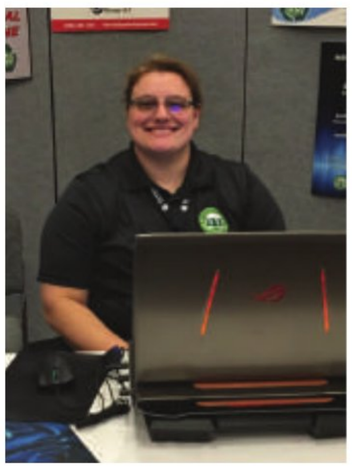


Bill Grant

Topic: AC and DC Motor Rebuilding
with Sam Castiglione & Mike McGovern

Bill Grant has a background in AC and DC motors that spans 38 years. He has worked in every facet of the AC and DC motor industry, from sourcing parts to rebuilding motors, troubleshooting and training.

MEET THE SEMINAR PRESENTERS



Jessica Myers

Topic: Navigating the ERA Website

Jessica Myers of Crystal Development in Lowell, IN is the ERA's webmaster, administering the association's website now for well over two years. She studied at DeVry University from 2008 to 2012 and earned degrees in Web Graphic Design and Multimedia Design as well as Development and Web Gaming Programming. She also worked in DeVry's Outreach program, presenting seminars to high school students about various programs that the college had to offer.

After her graduation from DeVry, Jessica began working for Urban Communications Inc, a broadband internet service provider in southern Metro Chicago, as their in-house web designer. There, she also worked to solve computer hardware problems within their system.

Jessica has spoken at numerous HerWorld events to encourage more women to enter the field of computer programming.



Dan Smith

Topic: How To Survive in Today's Marketplace *with Nick Staub*

Dan Smith has 45 years of hands-on experience in the field of automotive electric rebuilding and service. It began in 1973, when his first job was working in his uncle's rebuilding shop. Dan opened his own business, United Auto Electric in Fitchburg, MA in 1978, which he operated until 2001. During that time he also rebuilt import starter drives and solenoids using equipment that he designed and manufactured himself. He joined Boston Auto Electric in 2001 where he served as their sales manager until 2011,when BAE was purchased by Arrowhead, a Minnesota-based national supplier of alternators, starters, DC motors and their component parts. Dan continued calling on rebuilders in the Northeast, serving as a district sales manager for Arrowhead. Following the recent merger between Arrowhead and J&N Electric in Cincinnati, Dan's duties changed again. He is currently the Northeast Sales Manager for J&N Electric and Arrowhead's OEM Sales manager. Dan has been presenting seminars since the 1980's and is always eager to share his knowledge with others in the industry. He has served on the boards of both the APRA and the ERA.

See page 14 for the complete show schedule with seminar dates and times



Mike McGovern

Topic: AC and DC Motor Rebuilding

with Sam Castiglione and Bill Grant

Mike has run the day to day operations of IWI, Inc. for 35 years. Sam runs the day to day operations of P&G Keene Electrical Rebuilders, LLC, a starter and alternator remanufacturing business in Brigeview, IL. P&G Keene has been in business for over 40 years. All of their knowledge and expertise comes from practical "hands-on", experience. You might say that their formal education was the "School of Hard Knocks."

Over the years, as China came into the industry, they struggled to rewind automotive products and be competitive. To survive, they expanded and re-invented themselves by rewinding larger armatures as well as rewinding and rebuilding both DC and AC motors. Out of necessity, they developed their own sources for the motor component parts such as brushes, brushholders, housings and field coils.



Brian Koehlinger

Topic: New Product Developments in the Heavy Duty Market

Brian Koehlinger is the Senior Sales Manager of BorgWarner PowerDrive Systems. He is responsible for sales and product development for their commercial vehicle aftermarket business. Brian leads new product development, product and program introductions, and product life cycle management. He has been with BorgWarner (former Remy International) since February 2012. Prior to his current position, he spent 14 years at Navistar as a program manager, service parts engineering manager, and chief engineer. He will likely be joined by a heavy duty product manager for a seminar focused on the latest technologies in the heavy duty electrical market.



Nick Staub

Topic: How To Survive in Today's Marketplace *with Dan Smith*

Nick Staub is the CEO of Romaine Electric in Kent, WA, a suburb of Seattle. He has been involved in the automotive electrical industry since 1982, when at age 19 he began working for the family business. He called on electrical rebuilders around the Northwest while working in sales for five years. Then he took over as CEO in 1989 after his father passed away. Nick has also served as an APRA board member - from 2008 to 2015. Today, Romaine Electric owns and operates 12 locations, including some small rebuilding stores. They continue to remanufacter complete units as well as component parts like armatures, rotors and stators in house. His unique set of experiences gives him a true perspective of the industry.

Montgomery, AL Show Schedule: April 12-15, 2018

THURSDAY, APRIL 12

8:45
Load Shuttles for **1st** Hyundai VIP Plant Tour

9:30 – 11:00
1st Hyundai VIP Plant Tour

1:45
Load Shuttles for **2nd** Hyundai VIP Plant Tour

2:30 – 4:00
2nd Hyundai VIP Plant Tour

4:30 – 5:30
Seminar: Cataloging Options
with Dan Bell & Dennis Jacinto

5:30 – 7:30
Free Managers Reception

7:30 – 8:30
Seminar: Challenges of Rebuilding & Testing Today's Units - Part 1
with Mohammad Samii

Due to overwhelming response, Hyundai has graciously given us an additional tour slot. Please note these schedule changes above in red.



FRIDAY, APRIL 13

6:00 – 9:00
Free Breakfast Buffet

7:30 – 7:45
Load Shuttles to Regitar

8:00 – 10:30
Manufacturing Tour of Mobiltron in Taiwan - Live; Seminar: Charging Systems of Tomorrow Today
with Gene Kaiser

10:30 – 11:45
Seminar: Understanding PCM – Alternator Communications
with Mohammad Samii

12:00 – 1:00
Luncheon Buffet

1:00 – 1:30
Seminar: Navigating ERA Website
with Jessica Myers, Bob Thomas & Ken Plourde

1:30 – 2:30
Seminar: Roundtable Open Discussion
with Ken Plourde, Jessica Myers & Bob Thomas

2:30 – 5:30
ERA Expo Show Floor Open

5:30 – 7:30
Free Managers Reception

SATURDAY, APRIL 14

6:00 – 9:00
Free Breakfast Buffet

8:00 - 9:15
Seminar: AC & DC Motor Rebuilding
with Sam Castiglione, Mike McGovern and Bill Grant

9:30 – 10:30
Seminar: New Product Developments in Heavy Duty
with Brian Koehlinger & Adam Peavler (sponsored by WAI)

10:45 – 12:00
Seminar: How to Survive in Today's Marketplace
with Dan Smith & Nick Staub

12:00 – 1:00
Luncheon Buffet

1:00 – 4:00
ERA Expo Show Floor Open

4:00 – 5:15
Seminar: Challenges of Rebuilding & Testing Today's Units - Part 2
with Mohammad Samii

5:30 – 7:30
Free Managers Reception

7:45 – 8:00
Board Riverboat

8:00 – 10:00
Riverboat Dinner Cruise aboard the Harriott II - Dinner Served @ 8:30 pm

SUNDAY, APRIL 15

7:00 – 8:00
Free Breakfast Buffet

8:00 – 9:00
Annual ERA Board of Directors Meeting

REBUILDER REGISTRATION FORM

Montgomery, AL
April 12-15, 2018



COMPANY NAME _____

ADDRESS _____

CITY _____

STATE/PROVINCE _____ ZIP/POSTAL CODE _____

PHONE _____ FAX _____

EMAIL _____

SEND THIS FORM WITH A CHECK OR CREDIT CARD INFO TO:

ELECTRICAL REBUILDER'S ASSOCIATION
PO BOX 906
UNION, MO 63084

OR FAX TO: 636-584-7401

OR EMAIL TO: office@electricalrebuilders.org

TO PAY BY CREDIT CARD: (circle one) MC VISA DISCOVER AMEX

CARD NUMBER _____

NAME ON CARD _____

EXPIRATION DATE _____

PLEASE NOTE:
VIP HYUNDAI TOUR IS ONLY AVAILABLE TO THE FIRST 50 PEOPLE REGISTERED AND THE REGITAR TOUR IS ONLY AVAILABLE WITH THE ENTIRE SHOW BUNDLE

ATTENDEES NAMES (Please print clearly) **EVERYONE MUST REGISTER**	**REGISTRATION** INCLUDES: EXPO FLOOR ACCESS, SATURDAY LUNCHEON & SATURDAY RIVERBOAT		**ENTIRE SHOW BUNDLE** INCLUDES: EXPO FLOOR ACCESS, FRIDAY AND SATURDAY LUNCHEONS, ALL SEMINARS (INCLUDING REGITAR TOUR ON FRIDAY), SATURDAY RIVERBOAT		**VIP HYUNDAI TOUR** THURSDAY 4/12 **ONLY THE FIRST 50 PEOPLE REGISTERED MAY ATTEND** **FREE TO ATTEND WITH REGISTRATION** (MUST CHECK BOX IF YOU WOULD LIKE TO BE ELIGIBLE)	SUB TOTAL
	MEMBER BEFORE 3/15 **$45** AFTER 3/15 **$55**	**NON-MEMBER** BEFORE 3/15 **$55** AFTER 3/15 **$65**	**MEMBER** BEFORE 3/15 **$195** AFTER 3/15 **$245**	**NON-MEMBER** BEFORE 3/15 **$230** AFTER 3/15 **$285**		
1)						
2)						
3)						
4)						
5)						
6)						
7)						

Cancellation Policy: Cancellations are subject to a 15% processing fee. NO REFUNDS will be made after March 15th.

TOTAL ⇨

Customer Web Portal

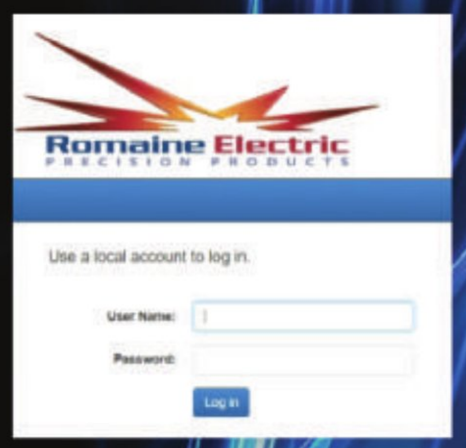
ROMAINE EZ-CONNECT™

ez-connect.romaineelectric.com

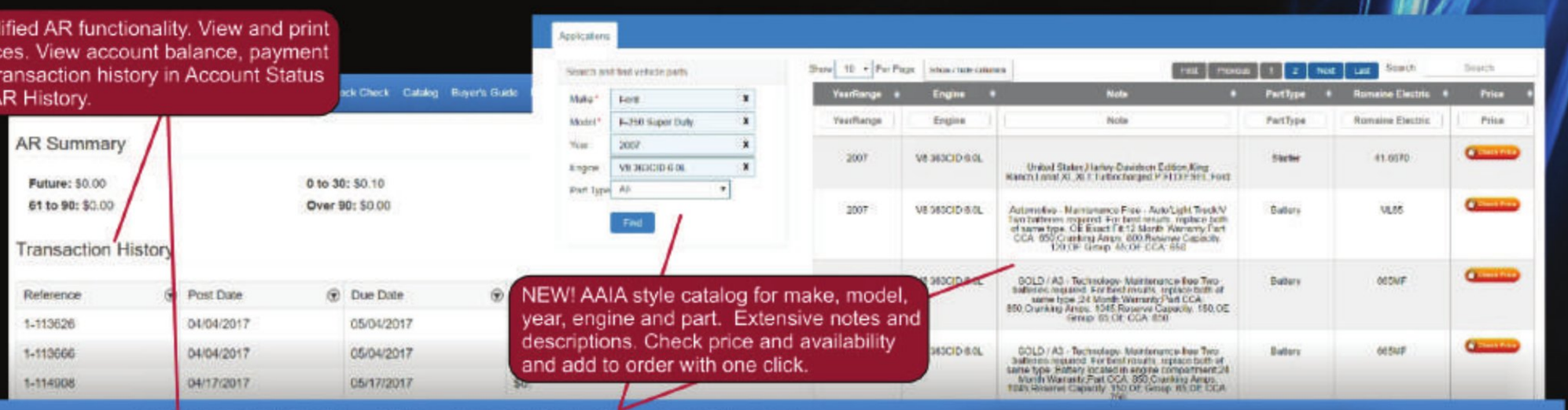
Bold...Easy...Inovative....

queue the next generation CWP (Customer Web Portal).

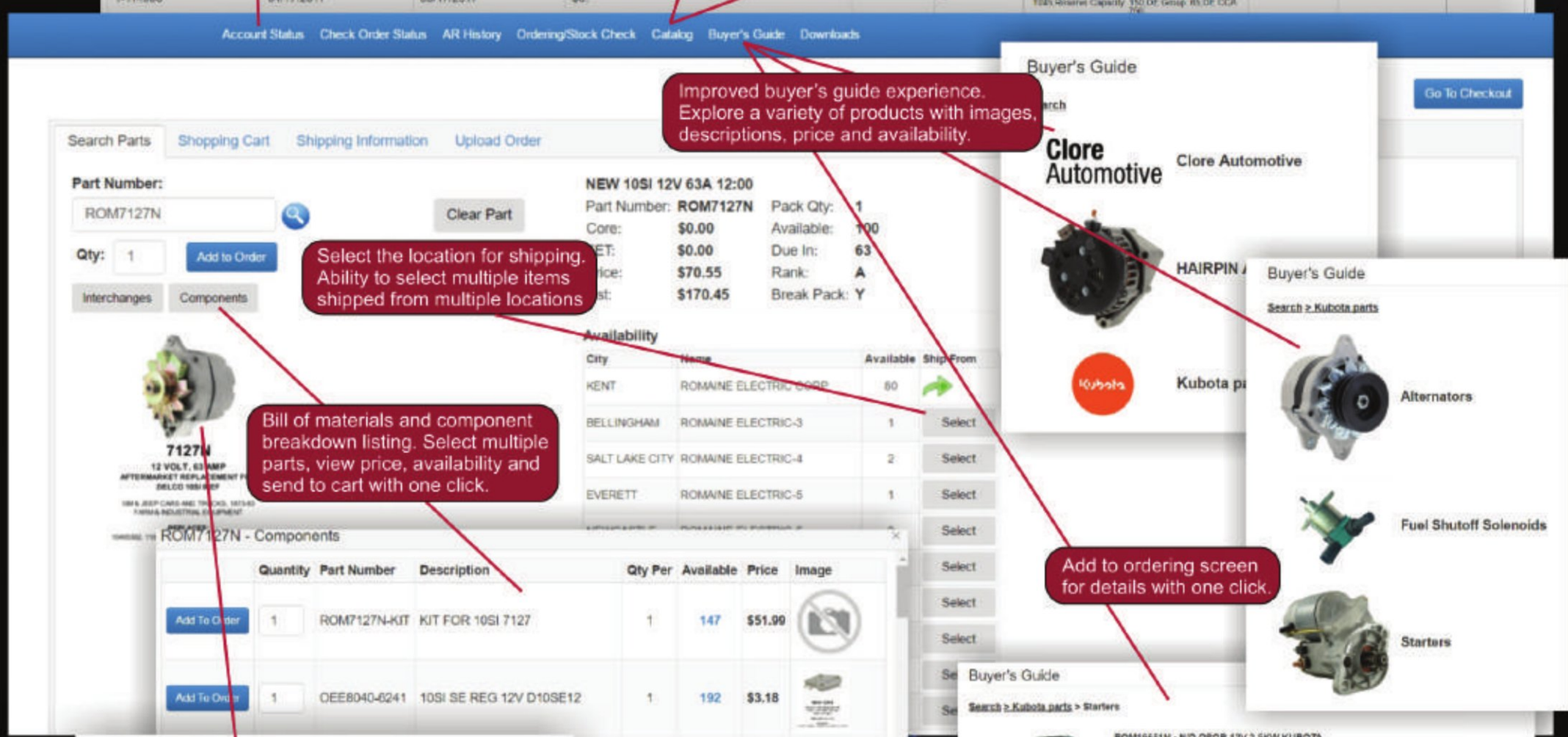
Revised as a more dynamic online ordering system with improved functionality. Easier, intuitive to use and navigate, this enhanced version incorporates new features, catalogs, and other applications designed to streamline the online ordering user experience that brings e-commerce to the level you expect.



Simplified AR functionality. View and print invoices. View account balance, payment and transaction history in Account Status and AR History.



NEW! AAIA style catalog for make, model, year, engine and part. Extensive notes and descriptions. Check price and availability and add to order with one click.



Improved buyer's guide experience. Explore a variety of products with images, descriptions, price and availability.

Select the location for shipping. Ability to select multiple items shipped from multiple locations

Bill of materials and component breakdown listing. Select multiple parts, view price, availability and send to cart with one click.



Images displayed. Click for collective view and other hi-res individual images.

Add to ordering screen for details with one click.

Need a Login? Email ez-connect@romaineelectric.com

Romaine Electric
PRECISION PRODUCTS

Hi Torque® IMI Performance Products, Inc.



HiTorque.com

2015 Catalog

MEMBER OF ERA Electrical Rebuilder's Association FOUNDED 2001

MADE IN USA

Toll Free 888-244-8675

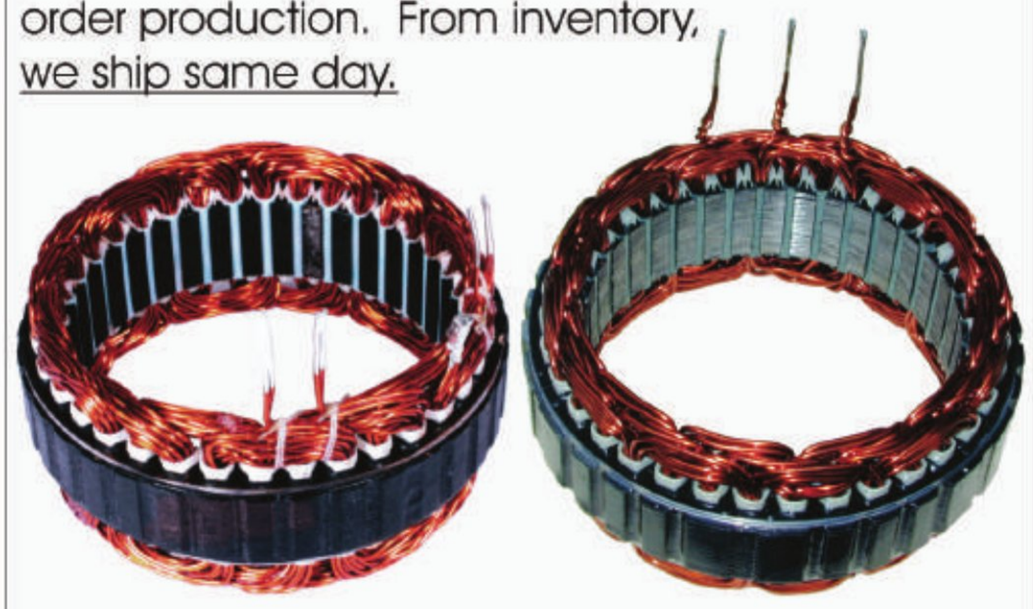
Reman Division

1020 Milledge St
East Point, GA 30344

Rebuilding IS Recycling

The largest independent stator rewinder in the United States.

Our modular production allows quick build-to-order production. From inventory, we ship same day.



Phone:800-241-7370 | **Fax:**404-559-8584
Email:jnorton@bpsparts.com
Internet:www.bpsparts.com

ONLINE CATALOG

PARTREF.com

50,000 Rotating Electrical Units

Lookup by Vehicle App, Part # or Attribute
Includes Product, Bills of Material, Specs & more

Offered FREE to ERA members accessed through ElectricalRebuilders.org

Non-Members who want access, please use contact info below

YouTech Group LLC

(866) 285-1292 • dennis@youtechgroup.com

NEW ERA MEMBER BENEFIT

from

LESTER
CATALOG COMPANY

Effective January 1, 2016

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

ANYTHING ODDBALL GIVE US A CALL!

C.C. BATTERY CO.

QUALITY AND SERVICE SINCE 1923

YOUR RESOURCE FOR REWOUND & NEW

ARMATURES • ROTORS • STATORS
DE HOUSINGS • COMPLETE UNITS

YOUR WAREHOUSE FOR

LOADHANDLER • NIEHOFF • POWERBRIGHT
COLE-HERSEE • UT • JIMCO • C-TEK • DIXIE
LEECE-NEVILLE • PRESTOLITE • LETRIKA
QUICKCABLE • LUCAS CAV • BUSSMANN
KEI • MITSUBISHI • POWERLINE • NIKKO

DRIVES
COMPONENTS

R&R

SOLENOIDS
CONVERSIONS

800-531-1038 • FAX 361-882-9163 • 361-882-5561
e-mail: ccbattery@aol.com • www.ccbattery.com
3513 AGNES ST. • CORPUS CHRISTI, TX 78405

We've got the Solenoid you need ...

The Power of WAI

		GREAT	BETTER	BEST
42MT 12V		66-113	66-113-1 (Two Year Warranty)	66-113-USA
40MT 12V		66-106	66-106-1 (Silver Contacts)	66-106-USA
39MT 12V		66-155	66-155-USA	10511408 (OEM)

Call us now for price and availability

WAI

USA
WAI Corporate Florida
3300 Corporate Way
Miramar, FL 33025

1.800.877.3340
www.waiglobal.com



REBUILDER'S MARKETPLACE

BUSINESS FOR SALE

For sale starter & alternator rebuilding shop. Have 700 plus units ready for sale. Equipment shelving and more. Will sale with property or without. 304-568-4326 or 304-568-2049

WELL ESTABLISHED, TURN KEY STARTER AND ALTERNATOR REBUILDING BUSINESS in Wi. Includes units, parts, equipment, forklift and customer base. With or without property. (920) 460-4845

SERVICES

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

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

Do you have any surplus tools, equipment or parts that you don't need and would like to sell? As an ERA member, you can list up to 25 words for free right here. It is just one of many ERA membership benefits.

Is there a topic or article that you'd like to see covered in the ERA Exchange? Call Bob Thomas and let him know about it – 904-673-7301. The ERA wants to help you!

MISCELLANEOUS

Would you like to know what other members think about a particular issue related to your rebuilding business? Go the the ERA's website – electricalrebuilders.org and check out the ERA Forums.

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

Rebuilt OE units ready to install. Mitsubishi 215A alternator (A8TU0091): 200A 31SI alternator (19011105): 24V Iskra starter (11130977). Call Mike at 850-623-5111 CST.

TEST EQUIPMENT: D&V ALT-99 Alternator Tester, Electrocheck 83 HD Alternator Starter Load Testers, D&V JBT-3 Testers, Regulator Testers, Ground Fault Analyzers, Diode Testers: p.falk@straucon.com www.straucon.com

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

USED EQUIPMENT FOR THE REBUILDER. AgAuto Electrical has updated it's offering of used equipment. Please go to www.agautoelectrical.com. For questions please call Debbie at 847-331-4793.

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

LEECE-NEVILLE 24-VOLT (40MT size) starter cores. Paying $35.00 each. FOB Miami. Contact Howard at 305-633-1524 or email: hy@cmearma.com

Test Equipment for sale: D&V ALT99 Alternator Computerized Test bench: Master alternator profile comparison. Database storage. Test print out capable.Light usage, good condition. Please contact: troy.light@waiglobal.com.

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

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

ASAP
ALTERNATORS STARTERS AND PARTS, INC.
www.asapstpaul.com
1475 Commerce Dr, Suite 200 • Mendota Heights, MN 55120

Distributors for
WAI, BOSCH, ISKRA•LETRIKA, LEECE-NEVILLE, DENSO, MITSUBISHI
> Full line WAI units & parts
> Hard-to-find AG & INDUSTRIAL units & parts
> Full line rewound Armatures, Stators, Rotors, Fields

(800) 833-9096 • (651) 688-7161 • Fax (651) 688-9285

NEXT DAY GROUND
Order by 5:00 pm, receive in IA, MN, WI, eastern ND, SD
UPS • SPEEDEE • FEDEX Ground

Expert Tech Support
Phones open until 6:00 pm



New or Remanufactured

Outright or Exchange

Factory Warehouse
Marine, Farm & Industrial
Specialty Starters
Marelli *Bosch* *CAV*

We can rebuild Your Starter

Phone: 360-636-5950 Fax: 360-423-1298
E-mail: factorywarehousemike@gmail.com



ERA EXCHANGE
PO Box 906
Union, MO 63084
CHANGE SERVICE REQUESTED

NEED HELP? It's just a phone call away. 1-636-584-TECH (8324)



The ERA ... We've Got It All Online For You!

Books • Forums • JIMCO Manuals • Wiring Diagrams
DVDs • Technical Library • Training Videos • Supplier Sources
Equipment Manuals • Forms • ERA Exchange

WE'RE HERE FOR YOU 24/7
www.electricalrebuilders.org



HC CAR GO
Your Expert in Parts

Plan to visit us at the
ERA Trade Show
Embassy Suites,
Montgomery/Alabama
April 12th-15th 2018

WAGNER

Your North American
HC-CARGO Distributor
Wagner Alternators
& Supplies, Inc.
Sales: 800-345-5927
Fax: 909-465-5032
E-mail: info@Wagneralt.com

www.Wagneralt.com