ERA EXCHANGE

YOUR GUIDE TO ELECTRICAL REBUILDING

December 2018 $12.95

AUTO ELECTRIC CORNER
Denso P-Series, Chinese Starter and Unique Denso Alternator

DENSO'S SMART IMS
For 39MT Starters and More

2019 ERA TRADE SHOW
Tentative Schedule & Event Synopsis

See Pages 12 & 13

COMMON SENSE | HOW WILL TARIFFS AFFECT OUR INDUSTRY

A WORD FROM THE PRESIDENT
More Website Building Tips



Hopefully, you have already begun the process of building your own website. In addition to a Home page and an About Us page, you will want to have a page to show and display your products and describe the services that you have to offer.

At least one good photo on each page is important, to keep visitors interested, several is better but anything over three should be saved for a photo galley page. In the case of products, include everything that you've got. A picture of neatly displayed inventory is good, but its even better if you or a smiling employee are holding an alternator or starter in front of it. If you sell batteries, let them know. Two things that should be included are **names of all parts** that you sell or service, and **brand names of their manufacturer's.** Brand names of every vehicle or piece of equipment should be included too. The size of the text is not that important.

You may be thinking that nobody will bother reading or looking for a specific name. And you would be correct. But you are not putting them there for people read, but for search engine web crawlers to find. The internet is far too vast for anyone to explore like you would a shopping mall or a big box store. Humans do not live long enough and the internet has no road signs or directions, just numerical IP addresses on huge server computers storing millions of websites.

Web crawlers or internet bots as they are sometimes called are constantly combing the internet for new web pages. They work 24 hours a day, 365 days a year, gathering information and cataloging it for quick retreival. You want to use key words that help those bots catalog your new website in the best light possible because search engines will supply your traffic – each visitor a potential customer. Think of it this way: The words get them to your site, the photos and story get them to your front door.

Everybody uses a search engine to find what they need and about 75% of all searches use Google. There are several other popular search engines. Bing is Microsoft's default search engine that was launched about 10 years ago and it handles about 10% of the searches today. Yahoo, one of the first popular search engines and at one time the biggest, still handles around 8%. A large part of your website's success is dependent upon being noticed by search engines – espeically Google.

Search engines work by downloading full web pages, anylizing them and cataloging what is on that page. If you have done a lot of web searching, you have probably noticed that you are often taken directly to a page on a site, not that site's homepage. You should design every page like it is a backup homepage because many times, it is where a visitor will land first. That neans it needs to contain your business name, address, phone number and most importantly a menu to get the visitor to other pages on your site – in the least, your homepage, about us page and a contact page.

Next month I'll cover some other pages and features that you might want to include that will draw more viewers to your site.

Mike Dietrich

ABOUT THE COVER
Circuit board of Delco's Smart IMS.

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Rebuilding is Recycling!

INDUSTRY NEWS
& ANNOUNCEMENTS

2019 ERA Expo in Springfield, Missouri

The next ERA Expo is now only four months away - April 4th thru 7th. This promises to be a special event that you do not want to miss with two exciting plant tours. Mark those dates on your 2019 calendar now!.

The lodging, show and seminars will all be under one roof at the Oasis Hotel and Conference Center, located north of downtown Springfield and about half a mile off of I-44. Springfield-Brandon Airport is only 10 minutes away. The host hotel provides free shuttle service. American, Delta, United and Allegiant all schedule multiple daily flights to and from their hubs. Parking is plentiful and free for those who choose to drive. High speed wireless internet service is also free throughout the facility. This hotel provides a free breakfast buffet each morning to all guests.

The events kick off early on Thursday morning, April 4, with a plant tour of Springfield Remanufacturing Corp. SRC began as the remanufacturing division of International Harvester. They became an independent employee-owned company in 1983 and now rebuild everything from alternators to transmissions and engines. Their products are sold as OEM branded reman through dealerships.

On Thursday afternoon, the buses will head for NorthStar Battery's newest manufacturing facility, one of the most modern AGM battery plants in the world. NorthStar will also present a seminar. A very busy day concludes with a roundtable discussion Thursday evening.

On Friday morning, April 5, a tour of Wonders of Wildlife is scheduled. This one-of-a-kind attraction is a national museum and aquarium dedicated to the preservation of wildlife. Three seminars are scheduled for Friday afternoon. All of the topics and presenters can be found on page 13. The Expo's show floor will open for three hours Friday evening beginning at 5 pm.

Saturday morning, April 6, begins with more seminars, followed by lunch. The show's floor then reopens for three more hours from 1 to 4 pm. It will be followed by the week-end's final seminar.

Saturday evening's special event is not yet quite finalized, but it will be something different and include dinner. Details will be provided in the January issue. The ERA's Annual Meeting will be held Sunday morning, immediately following breakfast. All members are invited and encouraged to attend.



AUTO ELECTRIC CORNER — Denso P-Series, Chinese Starter and Unique Denso Alternator



BY MOHAMMAD SAMII

Denso P-series starters

The P-series Denso starters were once a lot more popular and an earlier option for replacing then aging 40-MT's and some 42-MT starters. The availability was only OE units then and their higher prices required special customers willing to spend 2 or 3 times the price of rebuilding an average 40-MT or 42-MT at that time. But their performance and longevity made them popular with customers who relied on the reliability of their equipment and were willing to pay for a more robust starter.

One such customer of ours that had replaced a half dozen or so such starters is a company that provides soil services. In our area that constitutes the application of all forms of fertilizers and herbicides to huge tracts of farm land in the appropriate season. They use large machinery, mostly made by Ag-Chem (now owned by the AGCO conglomerate) and are trade-named TerraGator. These machines are older model 1603T's that were equipped with CAT 3208 diesel engines.

In that application, the vibration was a serious issue and they could not get a 42-MT to last reliably. So when we offered to try a more reliable replacement, the high price of the unit was no object . We replaced a few that are still in service to this day, but now and then, we have had to rebuilt some of them over the years (*see Figure 1*).

A common model was the 428000-1422 (18572) and we had one of them come in recently for rebuilding. After general service, clean-up, and worn parts replacement, we also installed an IMS switch. But following extended final testing, we noticed that the solenoid occasionally chattered. Since the solenoid coils checked fine, we dismantled the starter to verify the continuity of the shunt coil.

Those familiar with Denso F-series starters know that its shunt coil is wrapped around the main field coils in parallel with the hold-in coil of the solenoid,. That is part of the early soft-start features of these starters and when they became open, the drive would not disengage after start. A John-Deere Denso 028000-3290 (16635) starter was a good example of this (*see Figure 2*).

In our case the problem was chattering, but it should be noted that in the P-series starter that we were rebuilding, the shunt coil is in series with the solenoid's hold-in coil - not in parallel as in the F-series. If the shunt goes open in this starter, it will chatter. A detailed inspection of the field coils revealed that we did have one open spot on the shunt coil that by barely touching a certain part of the winding, we could make it go open or have continuity. The broken part was located after some diligence and replaced. The starter was assembled and then performed perfectly every time (*see Figure 3*). The

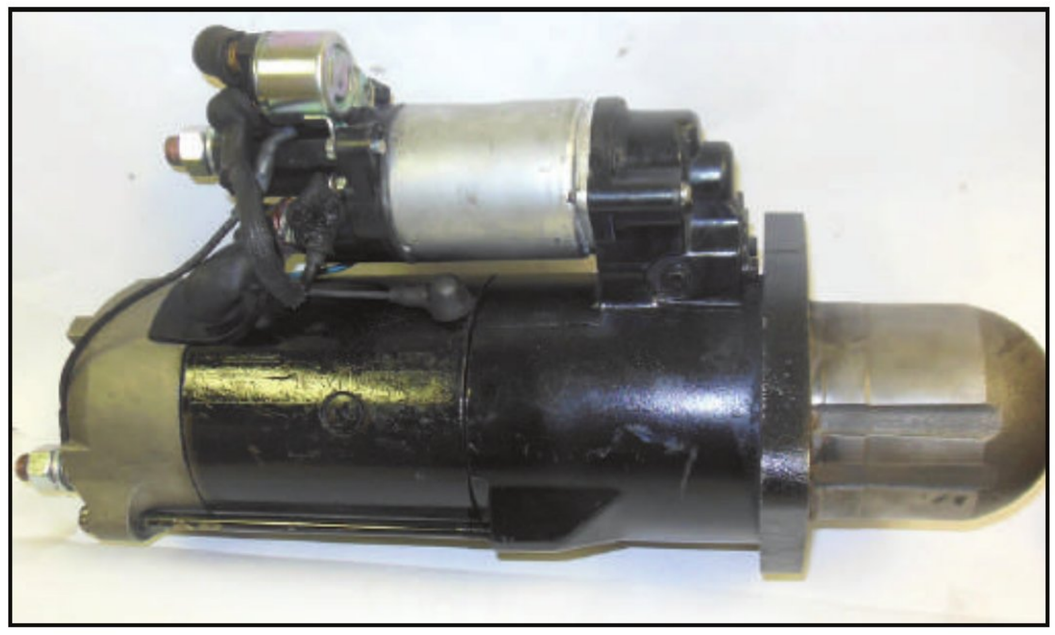

Figure 1 – Denso 428000-1422 (18572) starter with added IMS

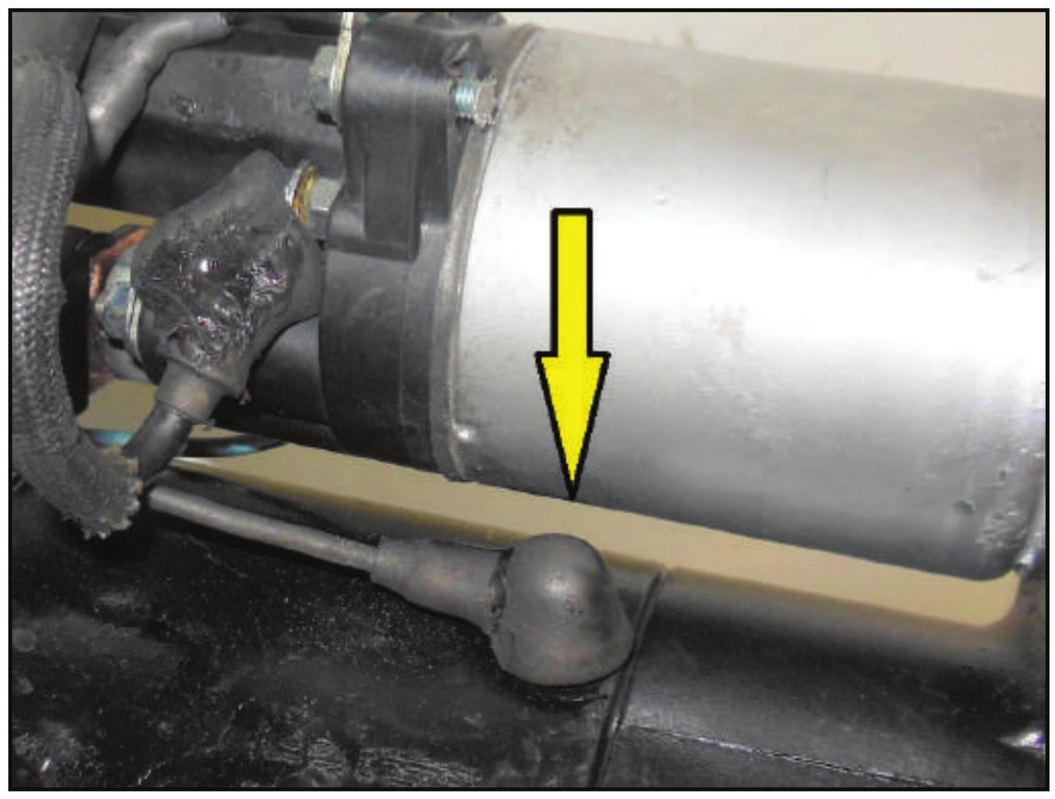

Figure 2 – Solenoid coil connection to the shunt coil

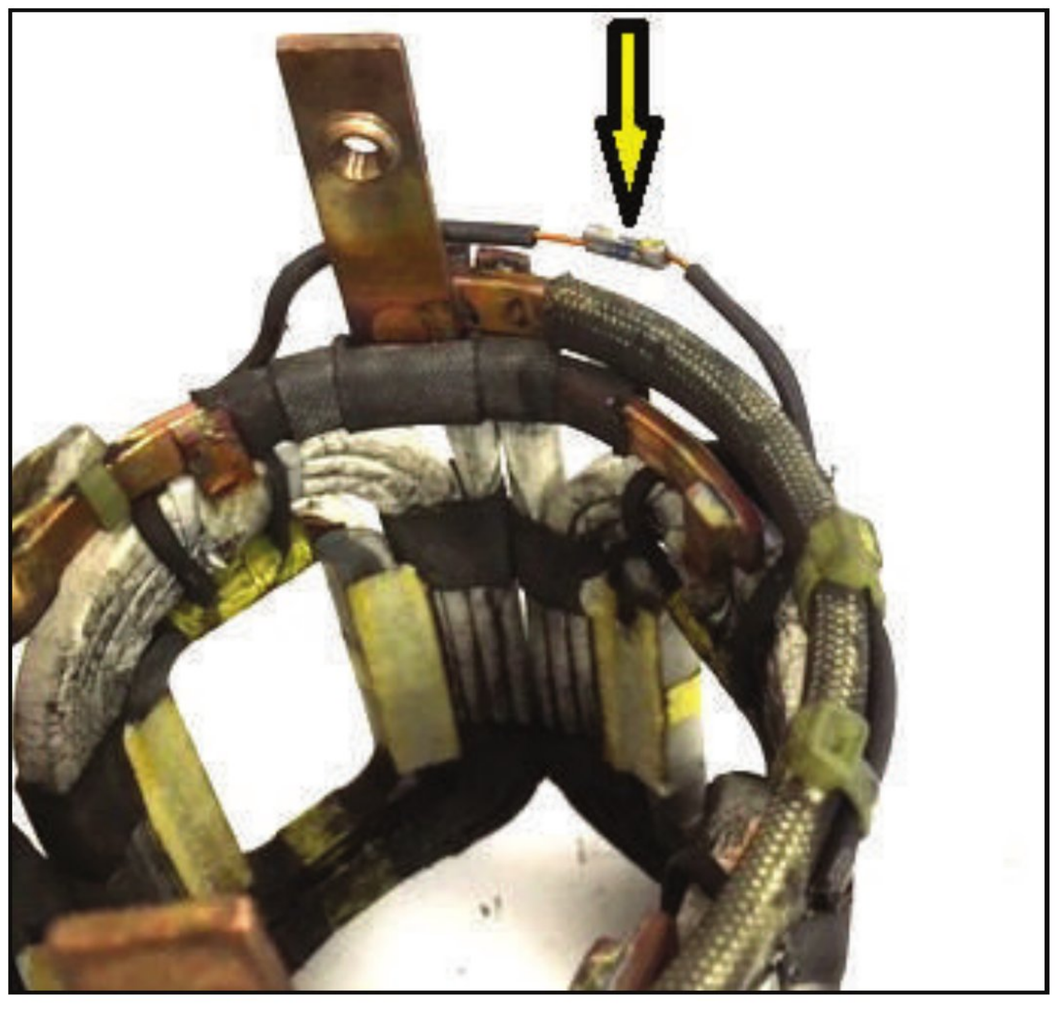

Figure 3 – Broken shunt coil causing intermittent chattering

lesson learned was that spending a little more time in testing a unit can detect problems that may come back to haunt you later!

For a detailed explanation of the operation of Denso F-series starters and their shunt coils, I refer you to a highly detailed article by Bob Thomas and Wes Grueninger, available in the ERA Technical Library online, called: **Denso F-series 4 kW Starters.**

A Couple unique units…!

One of the advantages that custom rebuilding and small rebuilders have is exposure to units that a large production rebuilder would never see, or if they do, they would not know what to do with it. Here I share with you a couple of such examples:

Denso 021000-8430 (12008).. This alternator was brought in for rebuilding. It was used on some Isuzu diesel engines and has popularity among those who restore older Air-Stream RV's of certain models that were built on a P-30 Chevy/GMC chassis but were equipped with a 6DBB1 Isuzu industrial/marine engine rather than the more common GM motor. The reliability of the Izusu engine made it popular among the owners of these recreational vehicles (*see Figure 4*).



Figure 4 – Denso 021000-8430 (12008) alternator

Since this alternator does not have an SRE bearing, it cannot be tested without the attached vacuum pump that also serves as the SRE support. They did not send it in with that pump, so we had to improvise! Searching the bottom layer of a couple of my drawers, I found a piece that I had saved many years ago from a discarded pump of nearly similar model (*see Figure 5*). It supported the rotor for testing. I am not sure how could I have tested it with without my contraption (*see Figure 6*).

This alternator has an attached lead with 3 terminals, namely E, N, F (for Ground, Stator, and Field), and it runs with a 6-pin B- Circuit external regulator. The problem with our unit was worn out brushes that are readily available. The steel slip-ring was also scored and needed to be machined out and polished. Since the stator and rectifier were intact, the unit was cleaned up, put back together and delivered to the owner who was very relieved and pleased. He promised to mention us on their own Air Stream group website to let the other Airstream owners know about us!

Some details of this alternator can be seen in Jimco's TB-990 catalog which is easily reached within seconds through the ERA website. Go to Jimco Catalog Online, then to "Look Up Diagrams", choose "Nippondenso", and scroll down until you see the "Nippon28" box. Then click on it. That brings up the easily printable diagrams and drawings showing how to test the alternator. This benefit of ERA membership can be a real time-saver when you have to test an older alternator that you are not quite sure about.



Figure 5 – Our SRE adapter for the Denso 12008 alternator

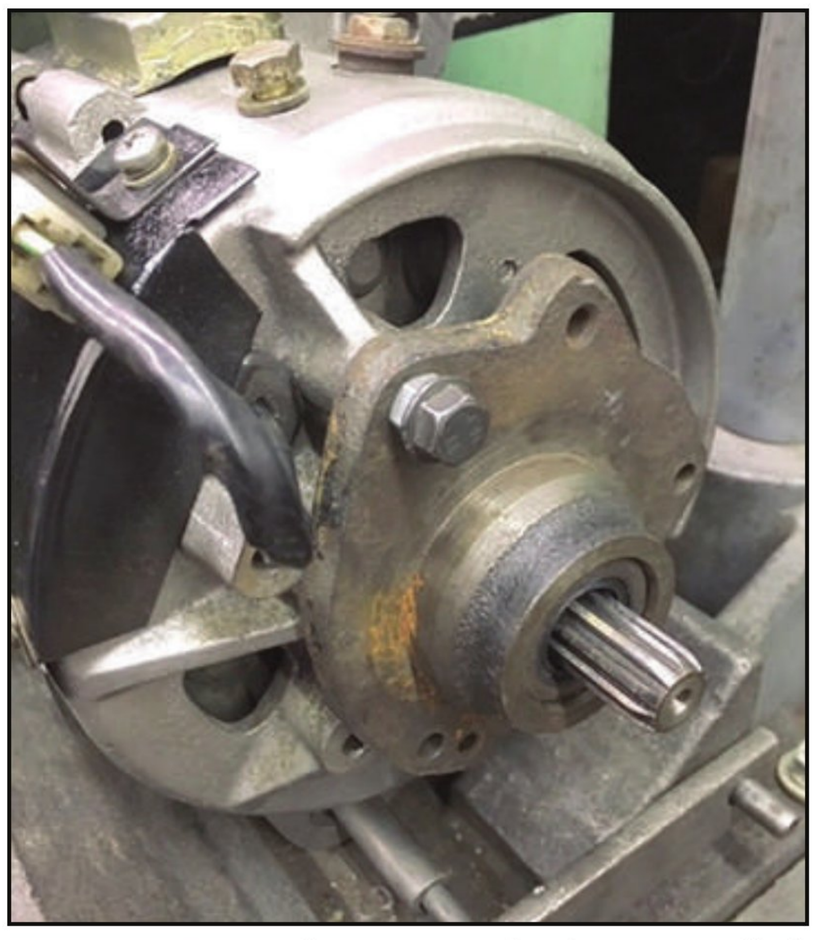

Figure 6 – Denso alternator with adapter installed

A Chinese Starter…Our second oddball unit was a Chinese no-name starter, brought in from a nearby small town's construction equipment sales and repair company (*see Figure 7*). Besides being off of a small diesel engine of a Chinese-made generator set, they had no idea of the model, brand, serial number or any such information. Their own usual rebuilder had turned it down after some inspection that included losing a few pieces of hard to find (and guess) hardware…!

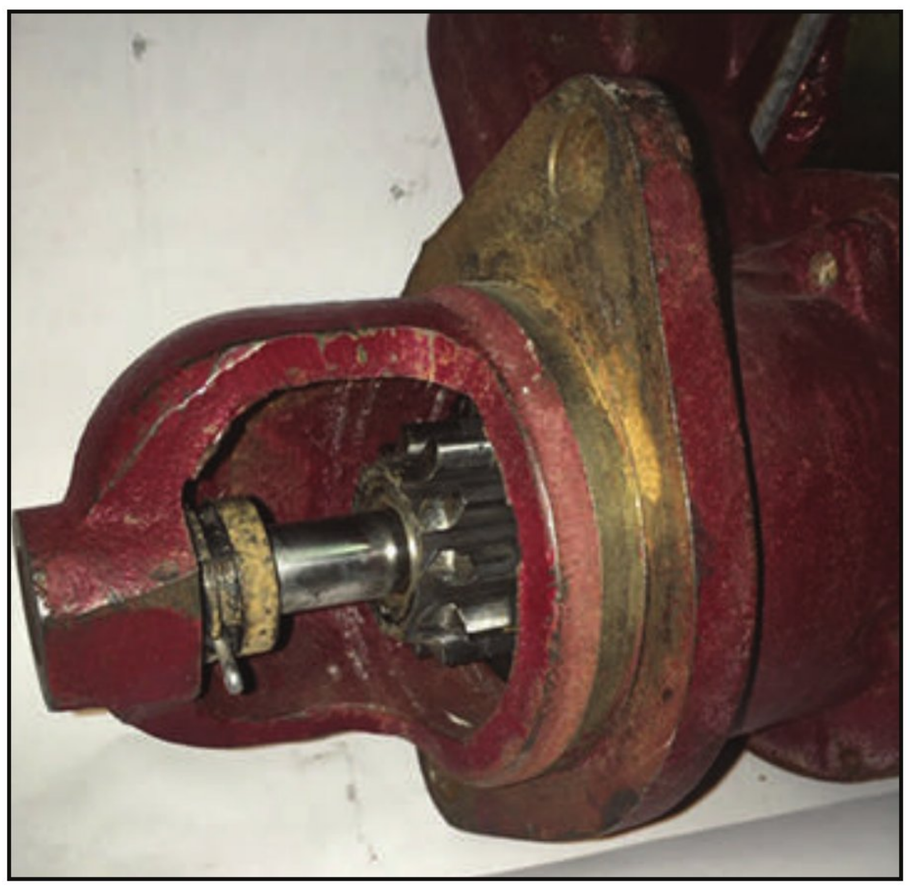

Figure 7 – The unknown Chinese starter with damaged drive

After teardown and a thorough inspection, we found that the major parts were intact but the drive pinion was badly chewed up and the solenoid needed some work. Here is where the skills of our friend Mike Tweed (The Drive Doctor) saved the day. He skillfully found a pinion gear from a Bosch drive that matched the pitch and measurements of our Chinese drive. With some machining and modifications he managed to install that gear into the body of our drive, making it look and function like a brand new one (see *Figure 8*).

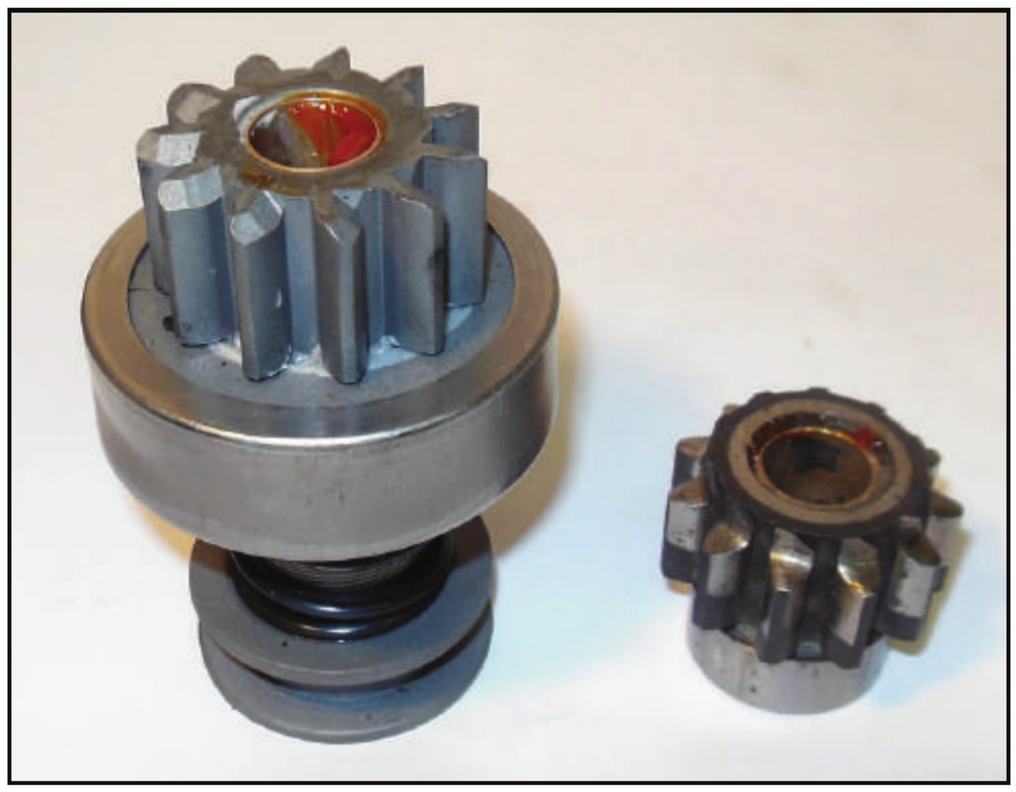

Figure 8 – The rebuilt drive by The Drive Doctor

The rest of the starter was cleaned and put together with use of some miscellaneous "spare" brush springs and some improvised spacers, break washers and assorted hardware (*see Figure 9*).

Once they came to pick it up, I handed them the old pinion gear that Mike had sent back with the drive, insisting that they inspect their flywheel because it is perhaps damaged so much that it ruined the original drive. And as usual, we price such units not by parts and labor, but according to the value that it may have for the customers whose options were very limited.

Until I see you again, keep up the good work.

sammyselectric@sbcglobal.net

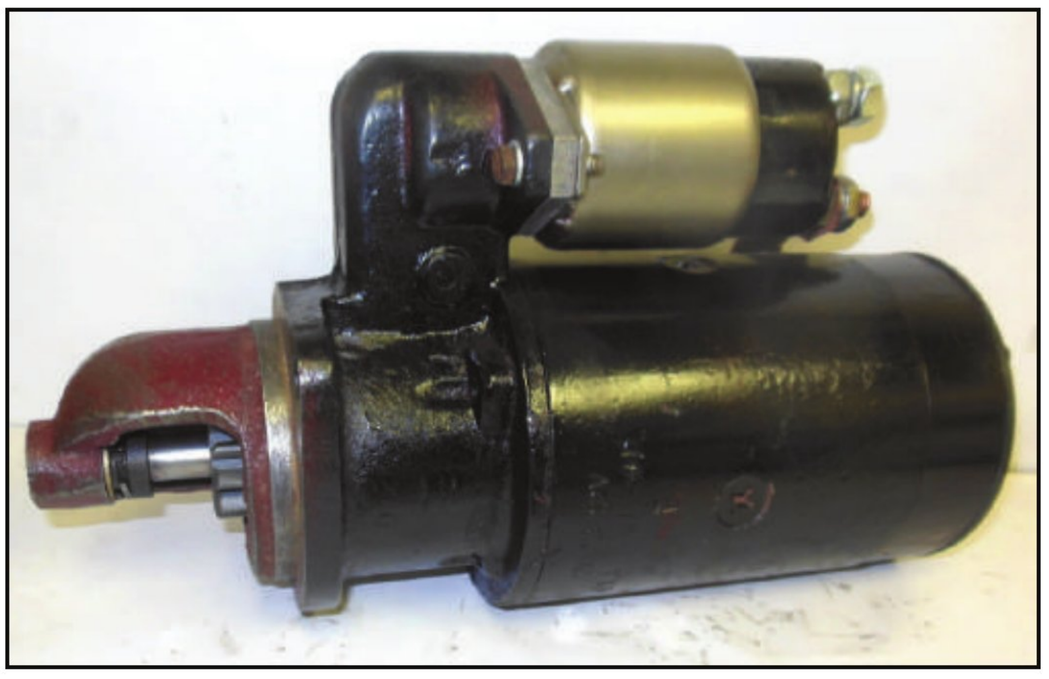

Figure 9 – The rebuilt Chinese starter



COMMON SENSE —
How Will Tariffs Affect Our Industry

WITH MIKE WHITEIS AND NICK STAUB

Ever since the tariffs on China-made goods were announced earlier this year, there has been much speculation and concern among all members of our rebuilding industry. In October, some of our suppliers made announcements in emails to their customers or by posting information on their websites about possible impending price increases. The intent was to alert customers to help them prepare.

For the record, a 10% tariff on certain China-made goods went into effect in September, one week after they were announced. If a new trade agreement is not reached before the end of the year, that tariff will increase to 25%. Hundreds of products of all types were included in the government's lists (there have been at least two). Among the items were vehicle electrical parts (alternators, starters and motors), including component parts of those items. All types of vehicles are covered, including automotive, heavy duty, agricultural, and industrial as well as boats and airplanes.

Beyond that, we asked some of our major suppliers to share their opinions as to how these tariffs will affect electrical rebuilders in the US. To best serve you, our members, here are the responses that we received before our deadline:

Mike Whiteis, Arrowhead Engineered Products wrote back first:

"Tariffs clearly pose an additional cost to all of our businesses, and one that successful businesses will have to pass along to their customers. The business owners who try to absorb the full impact of the tariffs could find themselves in a very difficult cash flow and profit position – one which will get worse in the event that the US Trade Representative indicates that higher tariffs will go into effect as has been proposed effective January 1, 2019. While it is not enjoyable to pass along cost increases to customers, it is a necessary part of the survival and success of business.

"At the end of the day, we would do well to remember that we supply parts for people who NEED them. No one woke up this morning and said, "I'd like to buy a new alternator" any more often than someone said, "I'd like to have an appendectomy today." While there may be a temptation for people to dread the situation, the reality is that our ultimate customers will continue to buy what they need first, and then to have a secondary consideration for the price. We are all governed by market forces to not overcharge in this situation as the supply remains robust. It simply is a robust supply at a higher price point.

"While tariffs pose higher costs, they also provide better opportunity for domestic remanufacturing, OEM, and non-Chinese products to be more competitive. Naturally, both the severity and duration of the tariffs affects this equation. Tariffs will present opportunities for the entrepreneurial minded businesses."

Nick Staub, Romaine Electric wrote:

"There are some basic facts that impact this situation: There are few options for the U.S. as it relates to starters and alternators as there is no other country that is "tooled up" to supply the breadth of units that are currently sourced from China. Nor is it possible for any country to tool up the vast number of units and components in a timely fashion. It is very unlikely that any would even try to do this, considering most agree that this situation is temporary.

The OEM suppliers are not immune to this situation either. We have seen several notices from the OEM's that we represent indicating that prices will be going up and potentially even higher if no new agreement is signed prior to year end when the tariffs move from 10% to 25%.

New starters and alternators are gaining in popularity in the market place. When large distributors can eliminate

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the cost of administering cores coming and going, I feel it's unlikely that they will go back (to remanufacturing).

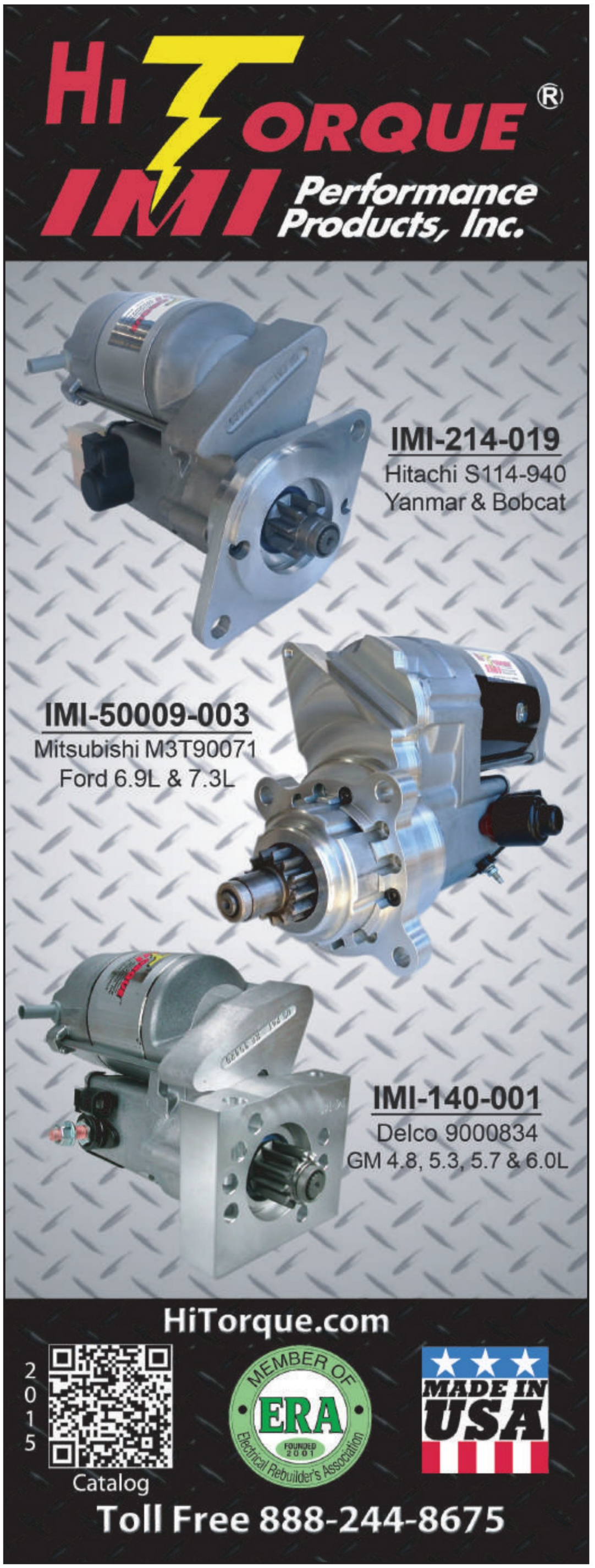
China's export business is key for them. Much like farming is for the U.S.. We have seen many times where our government has subsidized our farmers. I fully expect China to do something similar should we fail to get a new agreement before year end. The RMB (China's dollar) is falling against the USD so our money buys more. Again without a new trade agreement, that should only increase. China also charges it's exporters a VAT (value added tax) on their exports. It's rumored that their government is looking at reducing that to a degree, which amounts to a subsidy.

The small rebuilder has historically been extremely hesitant to raise prices to their customers. This isn't a criticism as I assume this is a dynamic shared by many industries. I'm old enough to remember the days when our industry was subjected to copper surcharges. I find this situation to be very reminiscent of those times. What I recall is that rebuilders, when faced with these surcharges, were **forced** to increase their prices to their customers. I also remember several commenting to me that they were shocked at how little "push back" they got from their customers. Many lamented not raising their prices earlier. I've seen the same with regards to the tariffs. We notified our customers of the impending 10 % tariffs we all would be subjected to. I didn't receive any comments beyond just being aware of the items affected so that they could increase their prices on those items. None of the many rebuilders that called me personally were concerned that it would negatively impact their business.

Should we get into January without a new trade agreement and tariffs hit 25%, the situation will become more of an issue. The 10% is really not an impact in my mind currently. 25% will be another animal. I've thought about this for several months now and see few options, short of raising prices throughout our distribution chain. In the end, our customers still need their vehicles to start and charge, and a very high percentage of units and components are and will continue to be sourced from China.

Will it increase rebuilding? Perhaps. I would think that the opportunities would lie in the larger, heavier units. When we think about Ford PMGR's and other small units, I don't believe even the 25% will have a great impact. If anything it could play into the mega rebuilders hands as they already rebuild these units in Mexico and will have a much lesser impact.

Ultimately the small rebuilder is largely in charge of their own destiny. I believe we all sell what we believe in. Our customers come to us to solve their problems first. Price is secondary - I truly believe. It will be up to each of us individually to communicate properly to our customers. The good news is that it's not our fault. We didn't make this situation happen, but we are impacted by it. If the rebuilder wants to use this situation to steer customers more towards rebuilding rather than new units, they will. Remember however components are all affected as well.



DELCO'S SMART IMS For 39MT Starters and More



BY BOB THOMAS

It has been nearly two years since Delco Remy announced their new Smart IMS (intermediate magnetic switch) for 39MT starters. At that time it was only available as an option on new starters in both 12 and 24 volt versions. The part numbers of those starters are 61003201 and 61003202 respectively.

This past spring they announced that it would soon be available as a kit, which could be easily installed on any 39 MT, as well as 29, 37, 40, 41 or 42MT starters. Demand has outpaced supply since the release of the kit. We had to wait three months to get one on back-order. The cost was about $30 more than the original 39MT IMS.

The Smart IMS was designed to eliminate warranty claims from damage caused by conditions outside the starter. Issues like operator errors, low or defective batteries and faulty cables were taken into consideration. The goal was to cover over-cranking, cranking on low voltage, engaging the starter while the engine is running, engaging the starter too quickly after a failed attempt (causing kick-back) or holding the starter switch on, when the solenoid's contacts do not close (click-no-crank). The Smart IMS addresses all of those issues.

When compared to an original 39MT relay (*see Figure 1*), it is not hard to tell them apart. The plastic cap is considerably larger to house the control circuit. Notice that the positive battery wire terminal is considerably heavier (both thicker and wider) than those on the original IMS (*see Figures 2 and 3*). Given the high amperage draw of a 39MT pull-in coil (230 amps), that was a needed improvement. Aside from physical size,the Smart IMS has an extra wire to monitor voltage on the the starter's motor terminal. It is permanently attached to the back side of new switch (*see Figure 4*).



Figure 1 – Delco's new Smart IMS (right) next their original IMS (left).



Figure 2 – Front view comparison of their B+ wire end terminals, Smart IMS (right) and original IMS (left).

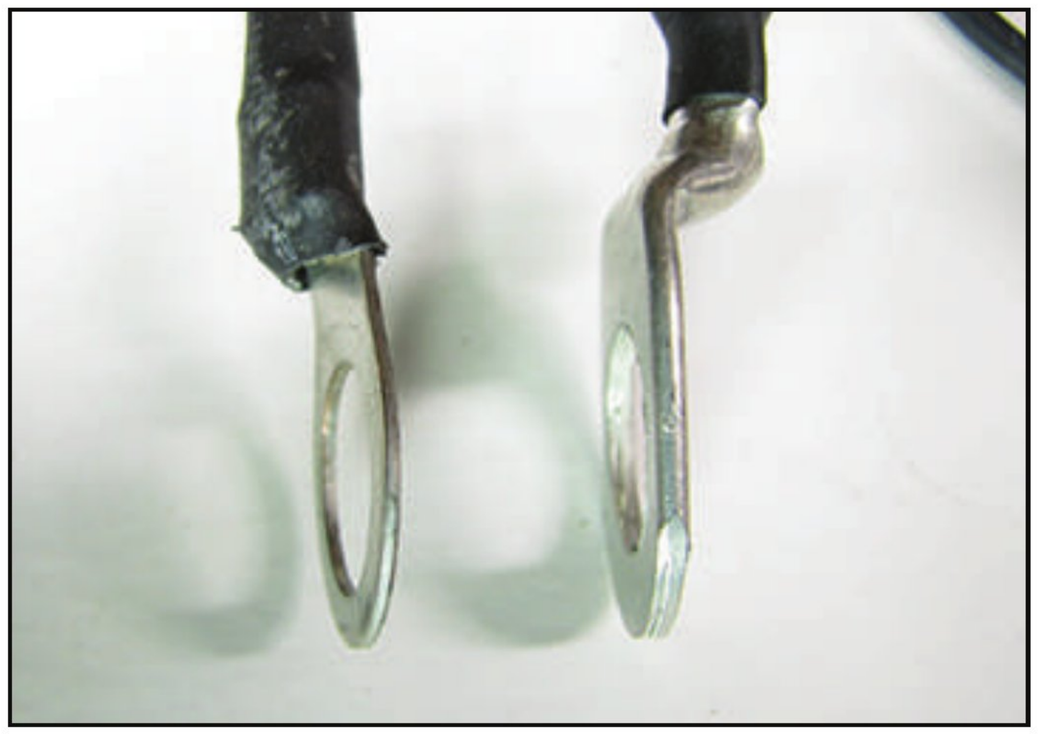


Figure 3 – Side view of the B+ wire terminals, Smart IMS (right) and original IMS (left).



Figure 4 – Smart IMS with motor terminal connection.

DELCO'S SMART IMS

The Smart IMS comes with the B+ and solenoid switch wires attached, making it impossible to get them confused during installation. However, if you happen to remove them for some reason, Delco has covered that base too. The top of the B+ stud on the relay is painted red (*see Figure 5*).

The Smart IMS lacks the ground terminal that its predecessor had, meaning that the new IMS is **case grounded.** Delco Remy supplies a jumper wire in the kit to ground the metal base of the IMS to the ground terminal on the solenoid when it is installed on engines that are not already grounded (*see Figure 5*). However, in that case you are essentially grounding an isolated ground engine block with a 10 gauge wire that theoretically would only be used by the control relay.

Both the 39MT starter and its solenoid are isolated ground, yet the Smart IMS is not. Granted, isolated ground applications are few and far between in today's market, but they do exist. That is my personal opinion and only complaint of this truly innovative control relay.

The heart of the Smart IMS is its small programmable circuit board (*see Figure 6*) which has total control of the switch. The term "programmable circuit board" comes straight from Delco's website, but by no means does it imply that the IMS circuit board can be re-programmed at any time once it has been sealed inside. I had to cut the cover away to get that photo and can attest that it is inaccessible and well-sealed from any contaminates.

How It Works

When voltage is applied to its switch terminal, it signals the PCB to engage the starter. Within a few milliseconds, it checks open circuit battery voltage to insure that it is above 11.75 volts and below 13.75 volts. If it is within those parameters, it activates the relay by powering the coil. This feature inhibits cranking on a low battery or accidentally engaging the starter while the engine is already running.

If at any time, the voltage applied to the IMS's switch

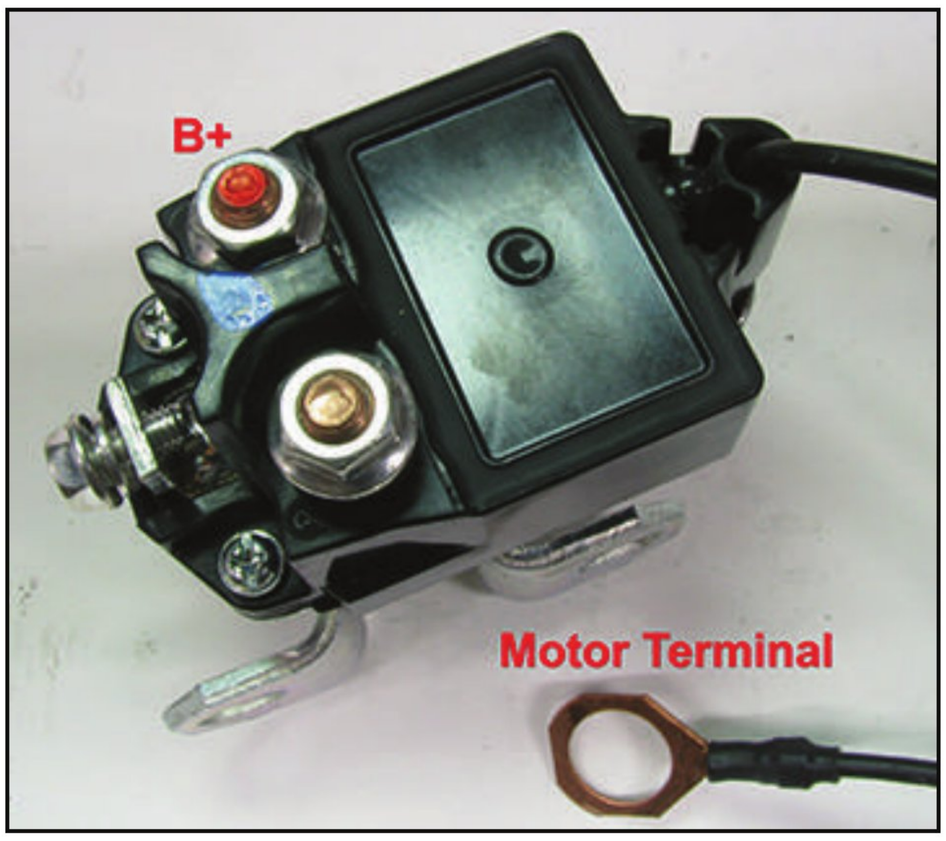


Figure 5 – Top view of Smart IMS showing color coded B+ terminal.



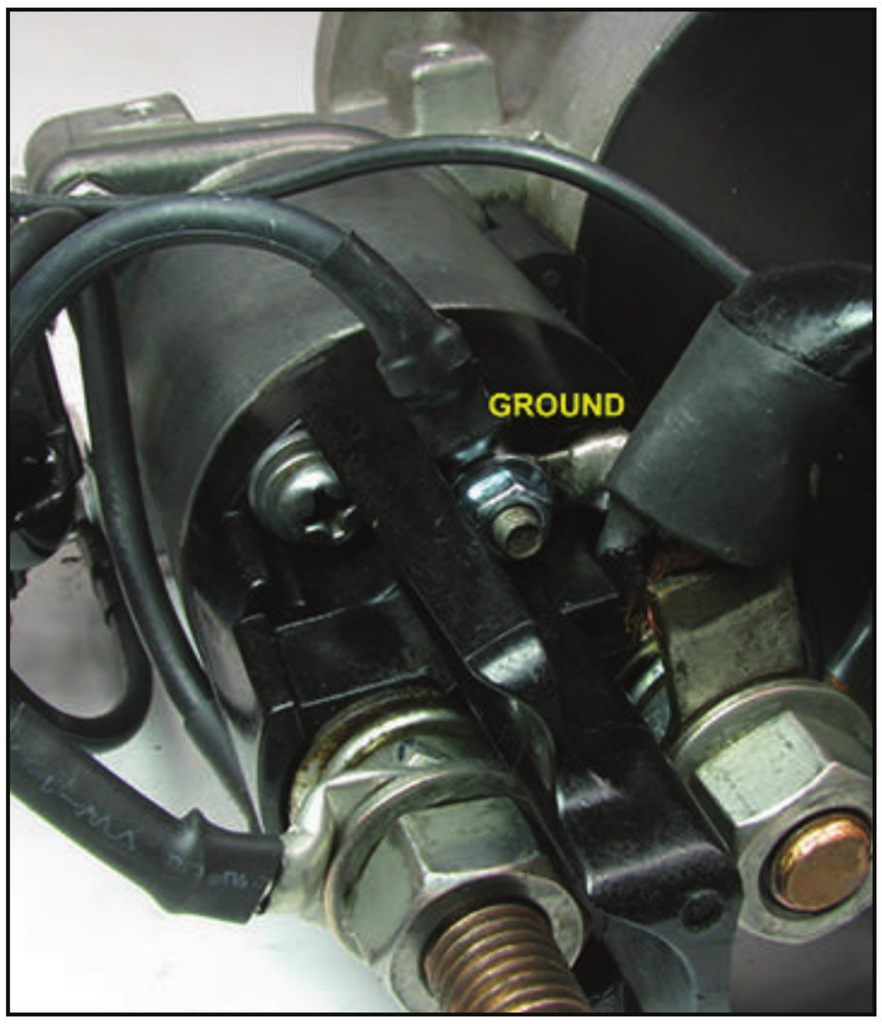


Figure 6 – Smart IMS ground wire connected to the solenoids ground.

terminal drops below 8 volts, it will not engage at all or disengage if already cranking. That prevents attempted cranking or continued cranking on excessively low voltage.

By monitoring voltage on the solenoids motor terminal, the PCB can determine the exact instant that the engine starts. It will then deactivate the IMS, a full second or more before the operator has time to release the switch. This feature protects the drive's clutch from being over-run by an operator holding the key on start for too long.

In the event of a click-no-crank, the control board deactivates the relay and automatically re-tries the start on its own. This prevents the operator from holding the switch in the start position in such instances, which will quickly overheat the starter solenoid's pull-in coil. Remember that 10 volts times 230 amps equals 2300 watts, ten times what most soldering guns draw. Any reader who has seen more that a few 39MT cores has encountered a solenoid with the switch terminal connection to the solenoids coils completely desoldered.

The control circuit also limits cranking to 20 seconds and enforces a 10 second delay before any additional cranking. There is also a three-second delay after each start attempt, to prevent recranking an engine that is rolling back off of a compression stroke, saving the starter from kick-back damage.

These features will prevent most 39MT starter failures caused by accidental abuse. While they may cause some operator complaints, they should virtually eliminate denied warranty claims that can upset both you and your customer. But you must educate each customer to expect the Smart IMS's unique characteristics. They will likely appreciate the protection that the Smart IMS provides and be less likely to complain later about a feature designed to prevent them or an employee from damaging the starter unintentionally.

Installing a Smart IMS is relatively simple if you follow the instructions that Delco provides. However, I would not trust an end user with the installation, unless you are confident that they understand the terminology used in the instructions. A single improper connection could damage the PCB and the 1/2" motor terminal could fit on other studs.

Testing an installed starter equipped with the Smart IMS is similar to testing any other starter. But the person doing the testing must be aware of the voltage limits required for the IMS to operate. Open circuit voltage and voltage drop readings are essential. For instance, if a battery bank is connected to a charger on boost, the open circuit voltage could very well exceed 13.75 volts. The PCB would read that as engine running and would not engage the starter.

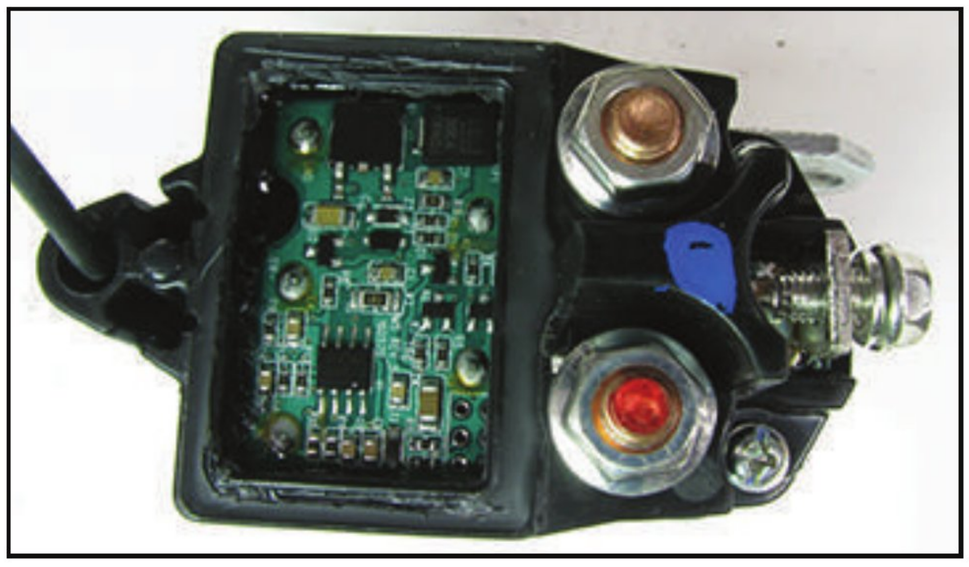


Figure 7 – View of the Smart IMS circuit board that has complete control of the switch.

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Springfield, MO Trade Show
Tentative Schedule*
April 4-7, 2010

*This schedule is tenative and subject to change as show planning continues.

Thursday, April 4, 2019

8 AM to 12:00 PM	SRC Plant Tour	
12:00 PM to 1:00 PM	Lunch	
1:00 PM to 5:00 PM	NorthStar Battery Plant Tour	
5:30 PM to 6:30 PM	Dinner break	
6:30 to 8:30 PM	Group Meeting & Roundtable Discussion	Ken Plourde

Friday, April 5, 2019

8:00 AM to 12:00 PM	Wonders of the Wildlife Tour	
12:00 PM to 1:00 PM	Lunch	
1: 00 PM to 2:00 PM	Starter Drives & Solenoids	Dan Smith
2:00 PM to 3:00 PM	Apptrak & Plug Codes	Dan Bell
3:00 PM to 3:15 PM	Afternoon Break	
3:15 PM to 4:00 PM	Latest Regulator Developments	Gene Kaiser
4:00 PM to 5:00 PM	Generator Testing & Mechanical Regulators	Joe Davis
5:00 PM to 8:00 PM	2019 ERA Expo	

Saturday, April 6, 2019

8:00 AM to 9:00 PM	Sharpening & Adjusting Lathe Cutting Bits	Mike Dietrich
9:00 AM to 10:00	PartRef & YouTech Group	Dennis Jacinto
10:00 AM to 10:15AM	Break	
10:45 AM to 12:00 PM	New Units & Systems Updates	Mohammad Samii
12:00 PM to 1:30 PM	Lunch	
1:30 PM to 4:30 PM	2019 ERA Expo	
4:30 PM to 5:30 PM	Rebuilding Issues, Slip-Rings & Case Studies	Mohammad Samii
5:30 to 6:30 PM	Break	
6:30 PM to ……	2019 ERA Gala	

Sunday, April 7, 2019

7:00 AM to 8:00 AM	Breakfast
8:00 AM to 10: 00 AM	Annual ERA Meeting *(all members welcome)*

2019 Show Event Synopsis

Thursday, April 4, 2019

Springfield Remanufacturing Corp. Plant Tour
SRC is one of the premiere remanufacturing facilities in the US. They remanufacture everything from alternators and starters to transmissions and diesel engines. Their customers are OEM manufacturers who offer reman choices to their dealerships.

NorthStar Battery Plant Tour
NorthStar Battery manufactures and markets batteries world-wide. Their newest facility in Springfield houses the most advance AGM battery factory in the world.

Group Meeting & Roundtable Discussion
Moderated by Ken Plourde

Friday, April 5, 2019

Wonders of the Wildlife National Museum and Aquarium
This non-profit educational and conservation-themed attraction is the only one of its kind in the US. It was created by Pro Bass Shops founder Johnny Morris to educate and promote the conservation of wildlife.

Starter Drives & Solenoids
Dan Smith is one of our industries leading experts in starter drives and solenoids. His seminar will include everything you need to know about these two critical starter parts, including how you can rebuild or reclaim those that cannot be sourced ecconomically. Dan works for both Arrowhead Engineered Products and J&N Electric.

Apptrak & Plug Codes
Dan Bell is the owner of Whatcom Electric in Bellingham, WA. He will demonstrate how to efficiently use Apptrak, Whatcom Electric's own, in-house software database that is available online at a discount to ERA members. He will also explain how to use the plug code feature, a part of Apptrak that is available to all ERA members from the ERA's website homepage.

Latest Regulator Deveopments
Gene Kaiser is the Quality Control and Technical Manager for Regitar-USA in Montgomery, AL. He will explain comput-er-controlled regulators, including LIN and BSS, plus what you need to test them.

Generator Testing & Mechanical Regulators
Joe Davis will explain the best methods to use when testing generators or mechanical regulators. He will also include some trouble-shooting tips and explain the proper method for adjusting mechanical regulators.

Saturday, April 6, 2019

Sharpening and Adjusting Lathe Cutting Bits
Mike Dietrich, ERA President, rebuilder and originally a machinist by trade ,will explain the intricaies of sharpening and setting up lathe cutting bits. Everyone has their own ideas, but this is your chance to hear an expert tell you how to get the best results quickly.

PartRef and YouTech Group
Dennis Jacinto is the founder of YouTech Group and PartRef, an online database free to ERA members. He will explain how to get the best use of PartRef, whether you are searching by application, part number or characteristic. He owned Lester Catalog for many years and has extensive knowledge of cataloging and databases for vehicle parts.

New Units and Testing Methods
Mohammad Samii is the ERA Technical Advisor and owner of Sammy's Auto Electric in Champaign, IL. This seminar will cover some of newer units that are showing up for rebuilding. Also testing procedures for newer units that based on ERA Help-Line calls are a source of confusion as well as interest to the rebuilders will be discussed.

Rebuilding Issues, Slip Rings & Case Studies
Mohammad Samii will cover a number of common rebuilding issues, including the replacement of slip rings and case studies of particular problems that he has run into in his business, many of those on newer vehicles.

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Displays Selected and Measured Voltage set point	Yes, on front panel display screen	No, no display on tester
LIN/BSS ID reported and decoded into Manufacturer and Class (LIN)/Type (BSS)	Yes, on front panel display screen	No, no display on tester
Regulator Field duty cycle report (DFM)	Yes, on front panel display screen	No, no display on tester

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