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A WORD FROM THE EXECUTIVE DIRECTOR
What Are You Working On?

AUTO ELECTRIC CORNER
Solenoid Catalog, 37 to 41-MT Changeover, Real or Assumed Warranties

TOOLS OF THE TRADE
Delco Snap-Ring Tool

A WORD FROM THE EXECUTIVE DIRECTOR
What Are You Working On?



I have asked in the past for some of you to step up and help us with some content for the magazine, several of you have responded and that certainly helps. As many of you are aware, Mohammad Sammi our monthly contributor is retiring and has closed his shop to prepare for his upcoming auction. He has agreed to continue writing if he has a subject to write about. Most of his articles were about real-life experiences with units or vehicles in his shop which is no longer. I want to take a moment to publicly thank Mohammad for his lifelong contributions to this industry and particularly his contributions to the ERA as a writer, technical advisor and seminar instructor, not to mention a fellow rebuilder and friend! Mohammad you are a CLASS ACT!





Now back to the subject! I know that I can't be the only shop that takes in and rebuilds odd or uncommon units. Being somewhat of a history buff, antique units really intrigue me and many of you as well, now is the time to slow down, take a few pictures with your phone, write a short description and send it to the office to publish in the magazine. Although you may not have a degree in journalism, it just needs to be understandable, we'll do the rest.

As an example, yesterday a new customer came in with a Ford generator and regulator, it appeared somewhat odd or possibly someone's mixture of parts. As the customer described the vehicle to us, it turns out to be a 1940 Ford GP (pronounced jeep). I'm certain only a few of you even know that Henry Ford built these. In 1939 the US Government sent out bid documents to over 130 vehicle manufacturers in the US to develop this vehicle, only 3 responded, Ford being one of them and Willys being another, they jointly built these for the military. Oh, and the GP doesn't stand for "General Purpose", it stands for "Government Pygmy" being recognized as a ¼ ton vehicle. I will photograph this unit for next month's magazine.

Please step up and help us with content, this is **your** magazine!

Mike Schroeder

NEW ERA MEMBERS

Auto Electric
Fergus Falls, Minnesota

Yoders Workshop
Kalona, Iowa

Ohio Valley Engine Repair
Patriot, Ohio

Austin Parts & Service
Akron, Ohio

ERA EXCHANGE

Volume 41 Number 10

September 2024

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 Schroeder, Mohammad Samii

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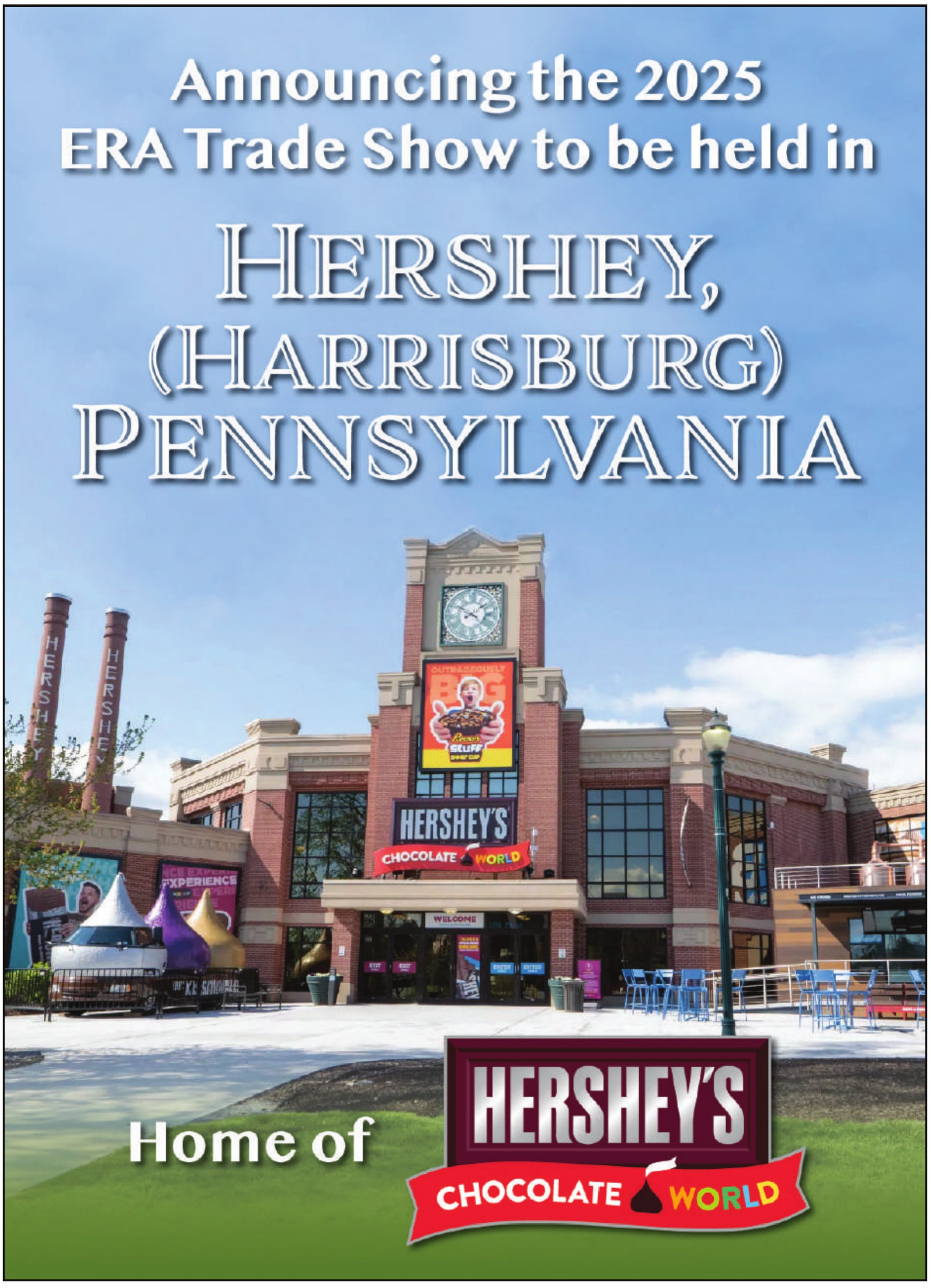

AUTO ELECTRIC CORNER —

Solenoid Catalog, 37 to 41-MT Changeover, Real or Assumed Warranties



BY MOHAMMAD SAMII

The age of internet and online publishing has practically eliminated the printing of new catalogs, manuals, price-sheets and such in paper format. The service information that is used for car repair such as All-Data, Mitchell On-demand, Moto-Logic and many others has not been printed in paper manuals for years, if not decades, and nearly all of their products are sold and used online, accessed through the internet. This may not be an issue for many, but within our industry as well as some others, in certain segments of our society not everyone is equipped with a computer and Internet access for a variety of reasons. One exception that I received last week was this comprehensive solenoid catalog by Just Parts, Inc., as shown in *Figure-1*.

The company is a well-known supplier to our industry and is one of the major quality solenoid manufacturers. Their latest solenoid catalog is one of the most complete such up-to-date books that is truly a complete guide for any rebuilder looking for information regarding solenoids, relays, series-parallel switches, etc. This catalog is a great help for solenoid identification, application and other details. A sample page is shown in *Figure-2*.

I want to thank Just Parts for publishing this manual and sending them to their customers free of charge. Call the company to open an account and ask for this solenoid catalog. It is a great help to our shrinking industry and our aging demographic, which the thought of it is highly appreciated and deserves our support.



Figure 1 – Just Parts Solenoid Catalog



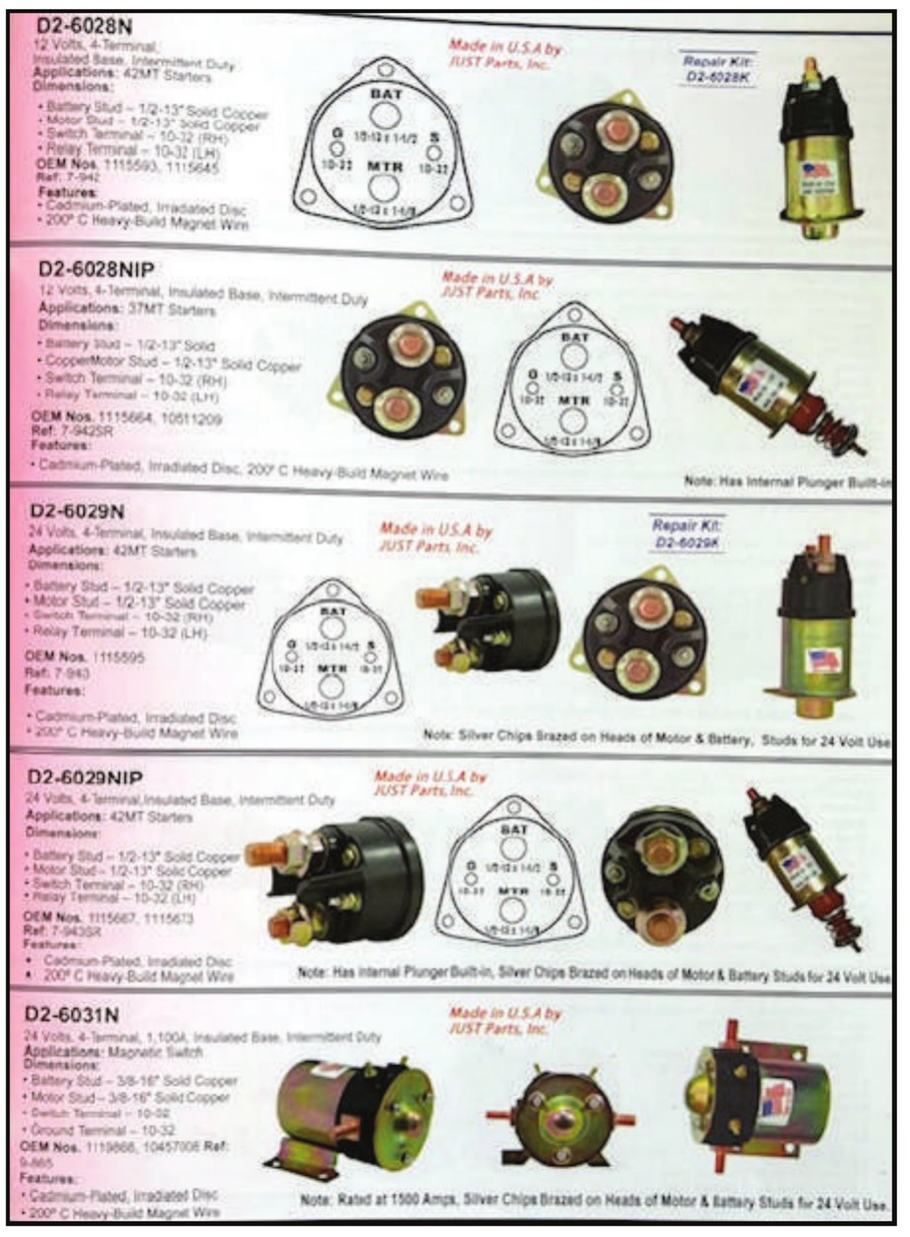

Figure 2 – A Sample Page of the Catalog

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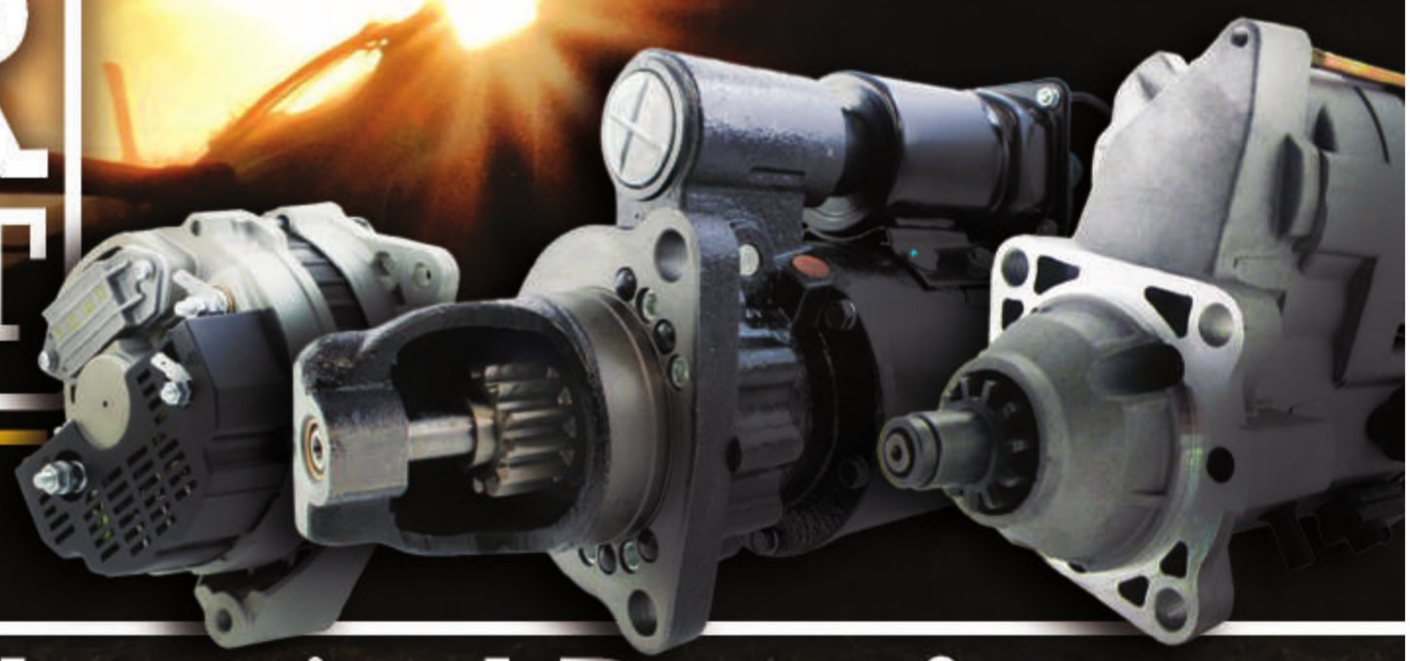

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37 to 41-MT Changeover…!

Rebuilding a known starter or alternator is routine work but when it comes to a starter that all you know of it is its type and model and you have no information about its application, gear size and the type of solenoid you need to use makes a difficult guessing game and necessitate some leg work. In such cases not letting the customer off the hook and asking many related questions and some catalog search becomes necessary to ensure the unit you are building is correct and will work when installed.

My case in point was this 41-MT starter that a very good customer of ours brought in with a broken drive assembly, shattered and missing a few teeth. This customer is a mobile HD technician that makes service calls to many farmers and specializes in working on many industrial units, cranes, and is on-call for many fuel pumping stations due to his unique expertise and qualification. He is the to-go guy for many farmers who have tampered with their machinery, and now need someone to fix it right. In this case the owner had bolted up a starter he had from another machine, and thought it will work.

There was not much exact information about the truck this starter came from, and as you know pinpointing the exact unit on a lot of medium and heavy duty trucks is not as easy task as finding a starter for a car or pickup truck. HD and Medium Duty trucks may come with a variety of engine and transmission combination that even the owners might not know for sure what they have, and that information is necessary for finding the right starter or alternator. Luckily he had the Vehicle Identification Number (VIN) which is a 17-digit number and he sent it to me later in a text message.

There are many VIN decoder options available to determine a vehicle going by its VIN. Luckily one of the most comprehensive and best site is provided to us free by our government…courtesy of our taxes. In this case National Highway Traffic Safety Administration (NHTSA) is the one. The website that can be easily found by a Google search of NHTSA-VIN Decoder will open a page such as shown in *Figure-3*. Putting in the VIN will give you detailed information about the vehicle in question.

Our VIN search gave me the information, as this was a 1993 Chevrolet C7 Kodiak chassis equipped with a CAT engine. A call to my buddy at the parts department of our local Chevy dealer who also has access to truck information revealed that the needed starter is a 1993963 or a 10461081 which both are 37-MT's and both were considered obsolete at the dealership stock, but now I had numbers to work with. It may be obsolete to the dealer but not to us. A catalog search showed these 37-MT starters would have a 10-tooth drive.

The 41-MT starter that my customer brought in had its drive exploded but after removing it and going by what was left of it, it was determined it had a 12-tooth drive, and possibly the reason for it being broken in pieces.

I did have a CW 10-tooth drive in the stock (J&N 220-12291) but some strange reason it would not fit the into the armature shaft for reasons I never understood. Experimenting with other available 41-MT drives in my stock, I realized it is possibly the armature shaft that is so slightly twisted, probably because of wrong drive that was shattered.

A new 2041 armature and an N-480 conversion drive from METCO (Standard Starter Drive/The Drive

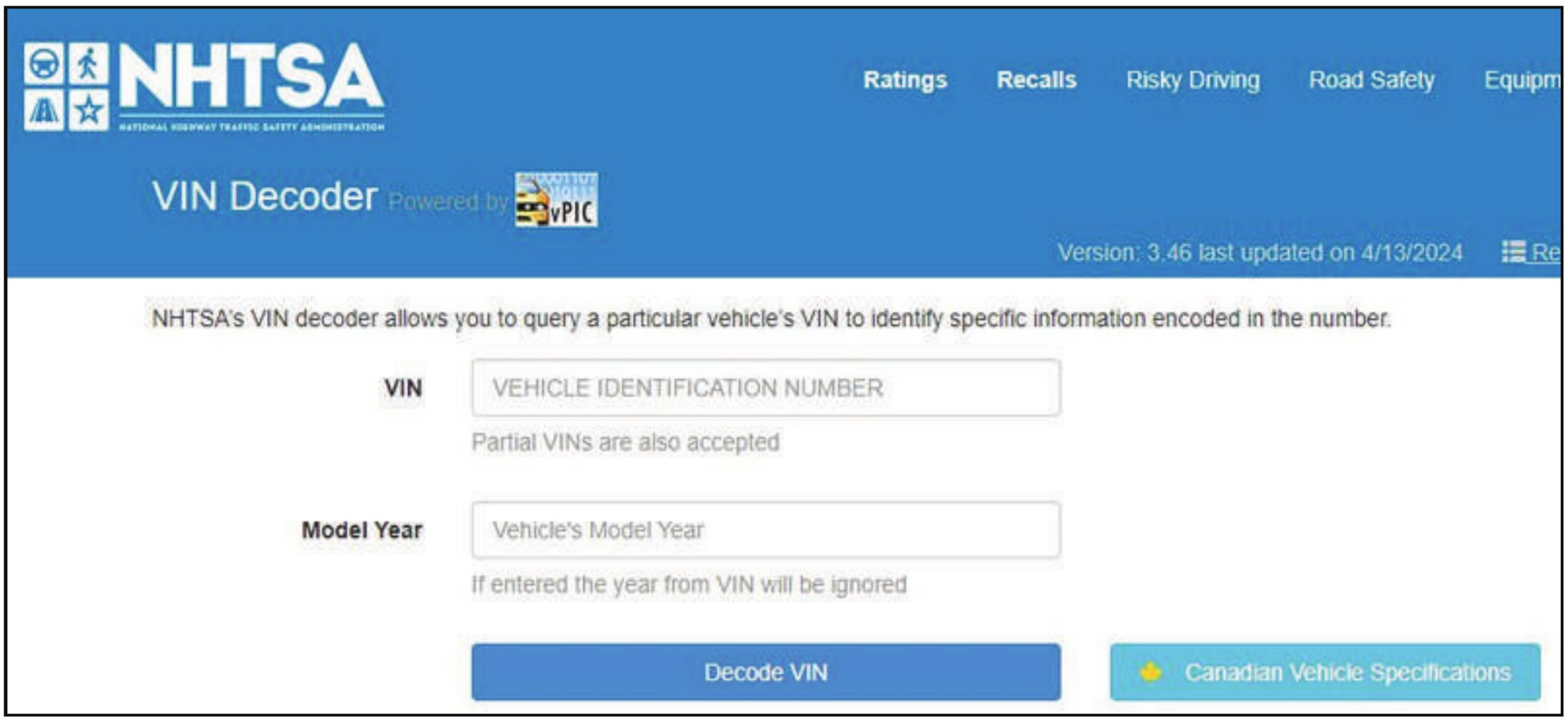

Figure 3 – VIN Decoder Page by NHTSA

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Doctor) made our wrong starter into a suitable one for the application. The new drive not fitting the old armature shaft but sliding easily over the new one is shown in *Figure-4* but not even a slight twist is noticeable. Interestingly enough, the DE housing of this 41-MT (Delco 10472566, *Figure-5*) has the exact dimension and spacing as the 37-MT that the dealer had provided the information, but of course not interchangeable. I also supplied a new firewall mounted Cole-Hersee solenoid to replace his old dirty one for added reliability.

The lesson that our service technician customer relayed to his farmer customer was to avoid replacing look-alike starters from one machine to the next just because it bolts up…!

Warranty, Real or Assumed…!

Here is case in which the customer's statement had to be taken with the proverbial grain of salt! The case involved an old Farmall 4406 tractor starter. The owner claimed that the tractor had been sitting for a long time, and that he now was in the process of restoring it, starting with the starter.

Upon inspection, it became obvious that, not only had this unit been sitting idle, but more than likely, it had been under water. The amount of corrosion and rust built up after so many years did not leave any salvageable parts. The field coil, the armature and the drive had to be replaced. Additionally the drive-end plate was cracked and broken in two. The customer had tried to repair it himself and by not lining things up properly before tightening the thru-bolts, he managed to crack and break the end plate! After the estimate was given and accepted, we ordered the necessary parts and assembled the starter. It worked fine, and it looked perfect as shown in *Figure-6*. The starter was picked up by the happy owner.

In less than 2 months, we got a call, saying that the started had failed and needed to be looked it. The customer claimed that something had gone wrong inside it, and that it had suddenly quit working.

After the unit came in and was torn down, we noticed the same issue with water intrusion existed again. The

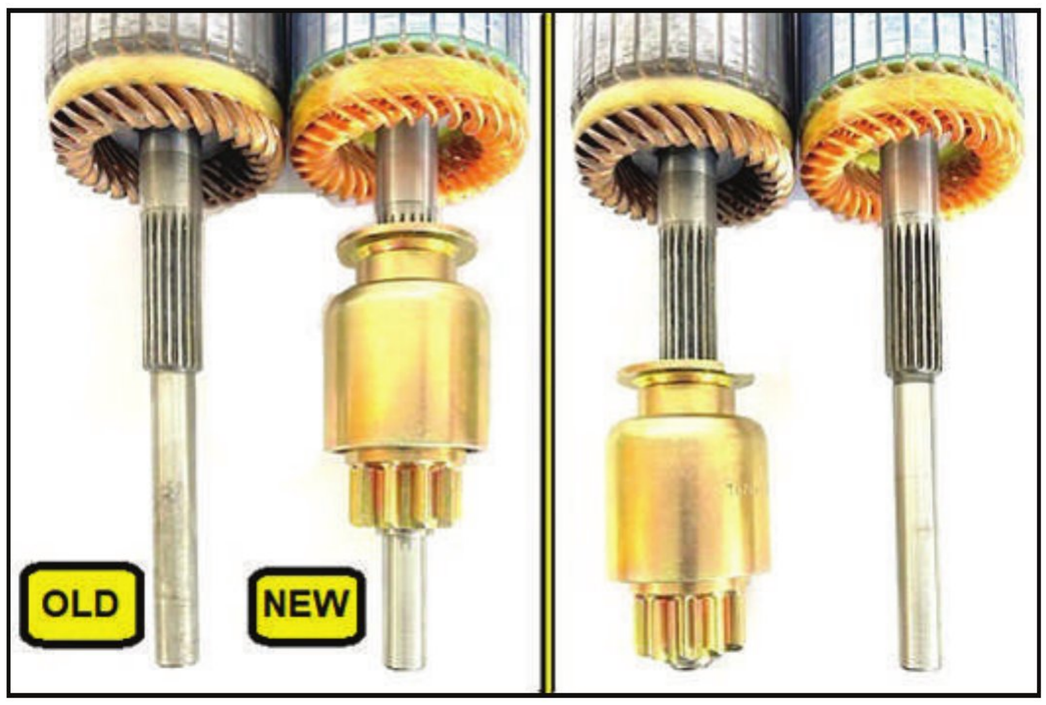

Figure 4 – New Drive Not Fitting the Armature Shaft

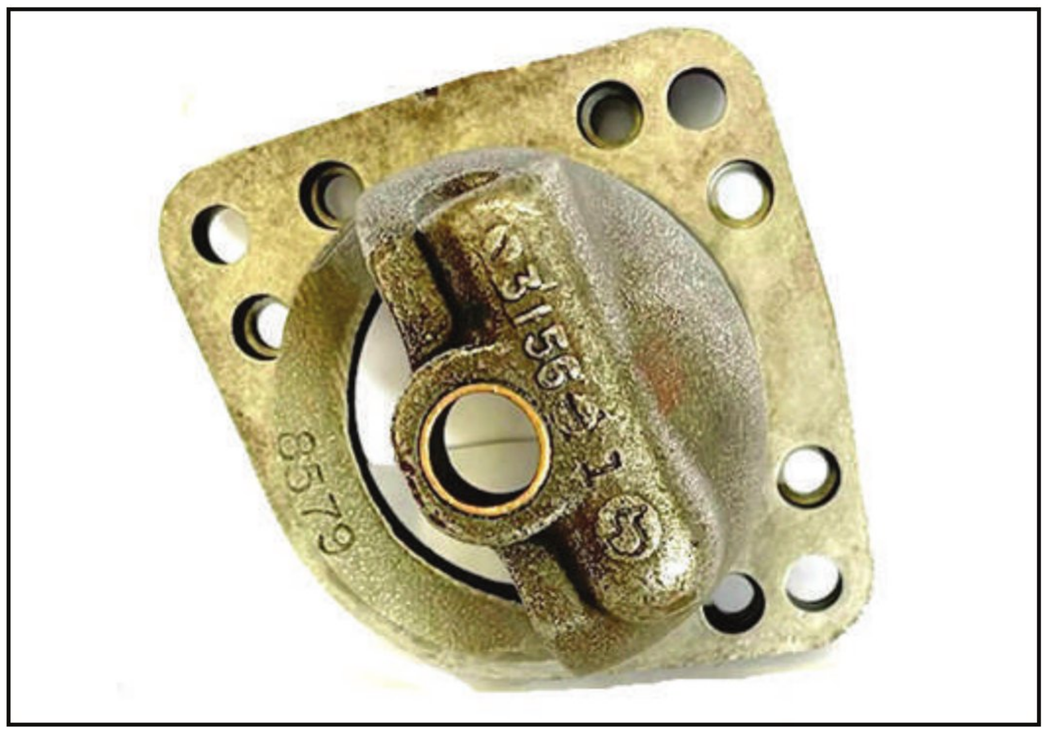

Figure 5 – 41-MT Drive End Housing

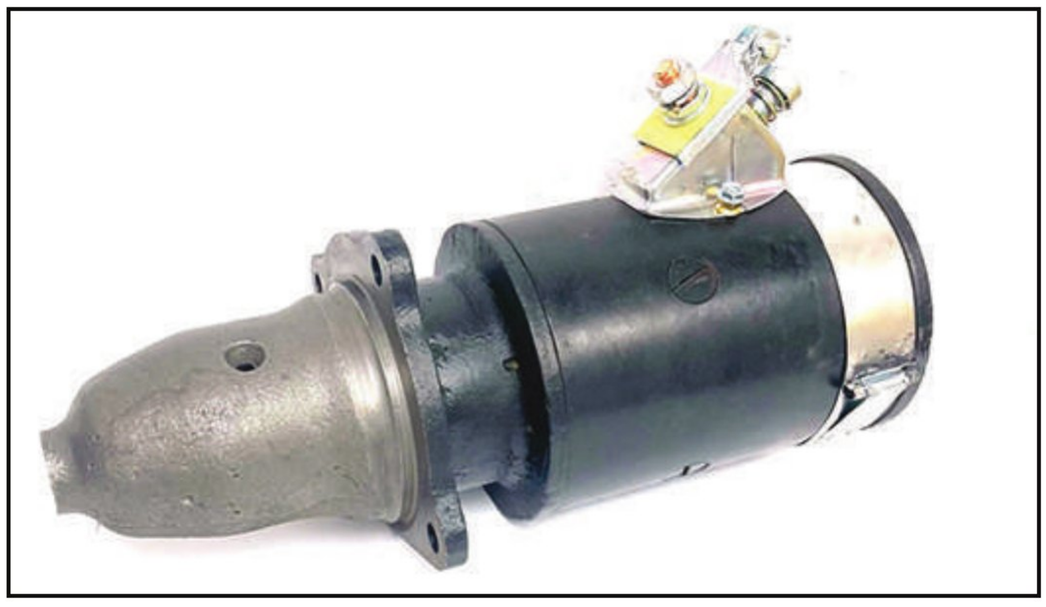

Figure 6 – A Farmall 4406 Starter

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huge amount of corrosion, which was built up in such a short time, was almost unbelievable. Additionally, the customer's claim that the starter had not been used much, was easily dismissed—as the solder sprayed out from the armature had laid a good trace inside the field housing (*Figure-7*) — contradicting his "starter-suddenly -not-cranking-anymore" claim! Further investigation showed the build-up of a lot of corrosion, enough to put a waterline mark on the new drive-end plate which had been installed only a couple of months ago. (*Figure-8*)

Once all of these facts were shown and explained to the customer, his claim of warranty gently disappeared, and he accepted the new repair estimate…with the caveat that the real problem of water intrusion should be found and corrected. Otherwise, any further rebuilding of this unit would serve no purpose and it will fail again.

So, it is not a bad idea to inspect any core or any alleged defective unit to see what caused the problem, and take corrective action … regardless of a customer's statements to the contrary.

Well, that's all for this issue. Until I see you again, keep up the good work and remain healthy.

You can contact Mohammad Samii by email at: sammyselectric@sbcglobal.net, or by calling the ERA Tech Help Line at 636-584-8324 or his business at 217-398-3864

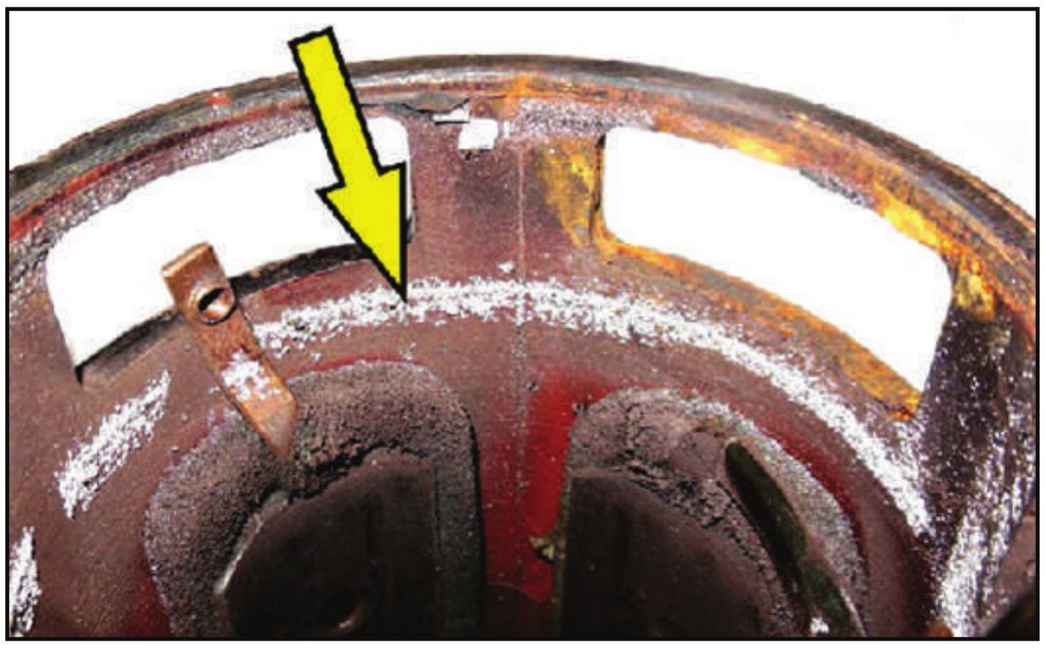

Figure 7 – Sprayed Solder Due to Over-cranking



Figure 8 – Water Intrusion Mark on DE Housing

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TOOLS OF THE TRADE —
Delco Snap-Ring Tool



BY MOHAMMAD SAMII

I had this tool for perhaps well over 35 years and it is one of those rare tools that was often seen on many rebuilders' bench, especially the medium size rebuilders as the 5, 8, or 10-MT starters were the bulk of the popular starters of those days (*Figure-1*).

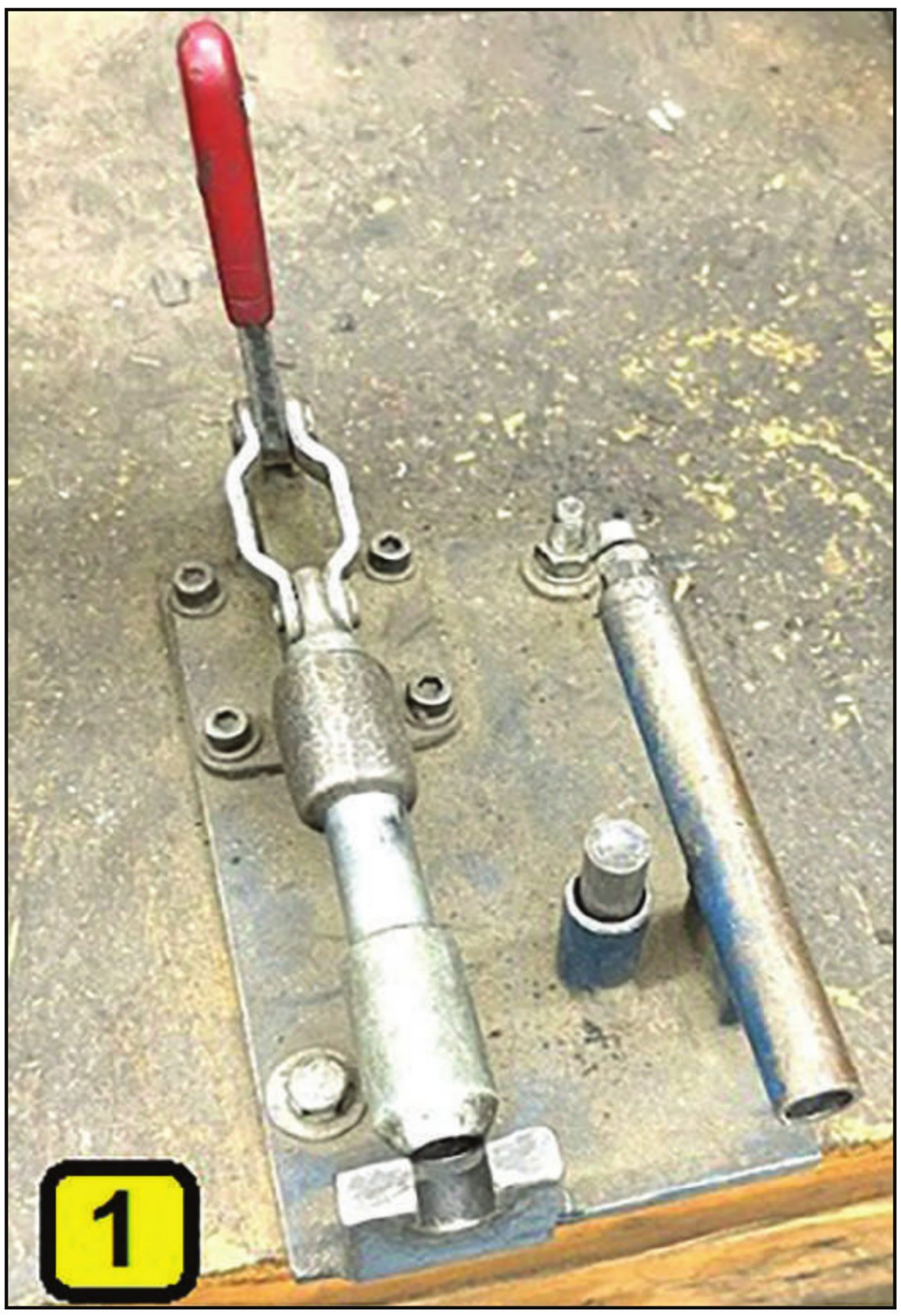

Figure 1

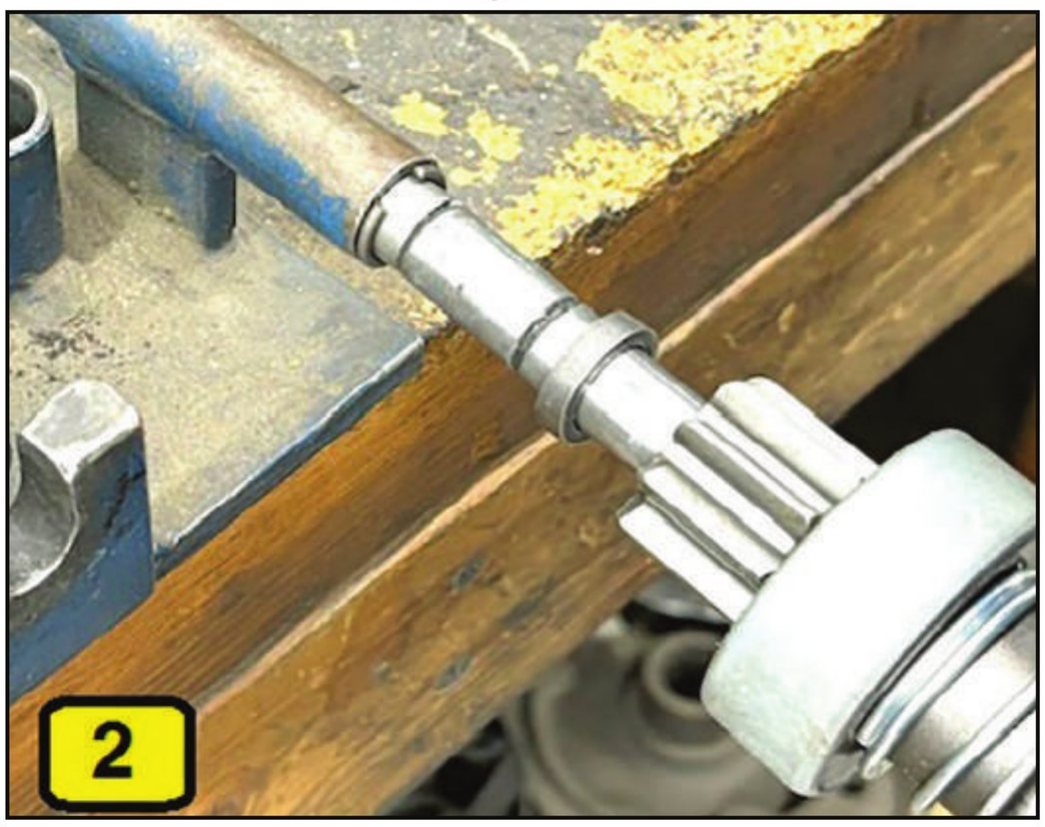

Figure 2

This thing has been in use in my shop for years even until now when the demand arises. Of course, we do not see many 10-MT starters these days but surprisingly this thing works well for some Bosch, Mitsubishi's, and Denso small starters for putting the retaining ring into the collar. I believe it was made by a company called Auto Electric Supplier and working with it is simple:

Insert the snap ring (retaining ring) into its holder and push the armature shaft through the spring-loaded tube (*Figure 2*) until the snap-ring falls into the groove (*Figure 3*). Move the armature to the left side of the



Figure 3

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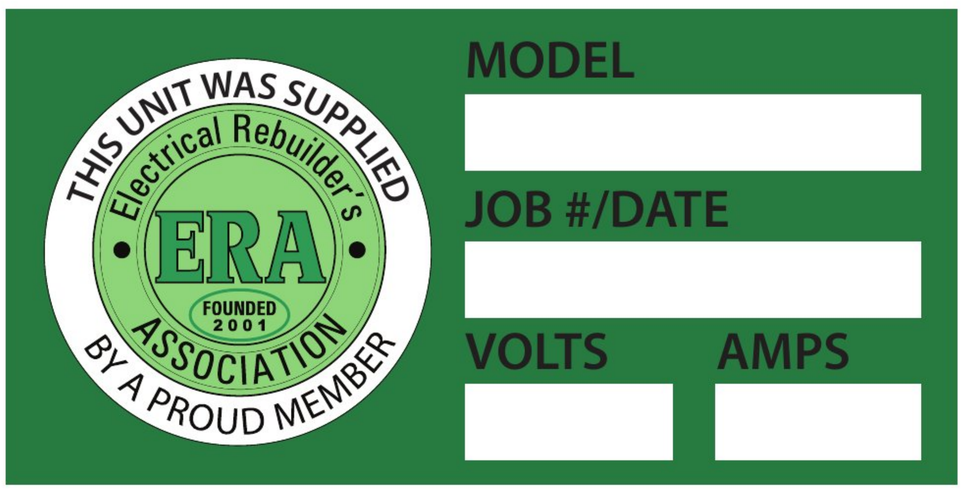

fixture as shown (*Figure 4*), pull the handle toward you until you hear a click, which is the retaining ring has fallen into the collar's groove. Install the thrust collar, and you are done (*Figure 5*).

This was a useful fixture for its days which is still useful to put certain snap-rings into the collar of various newer units as mentioned above, saving time and effort.

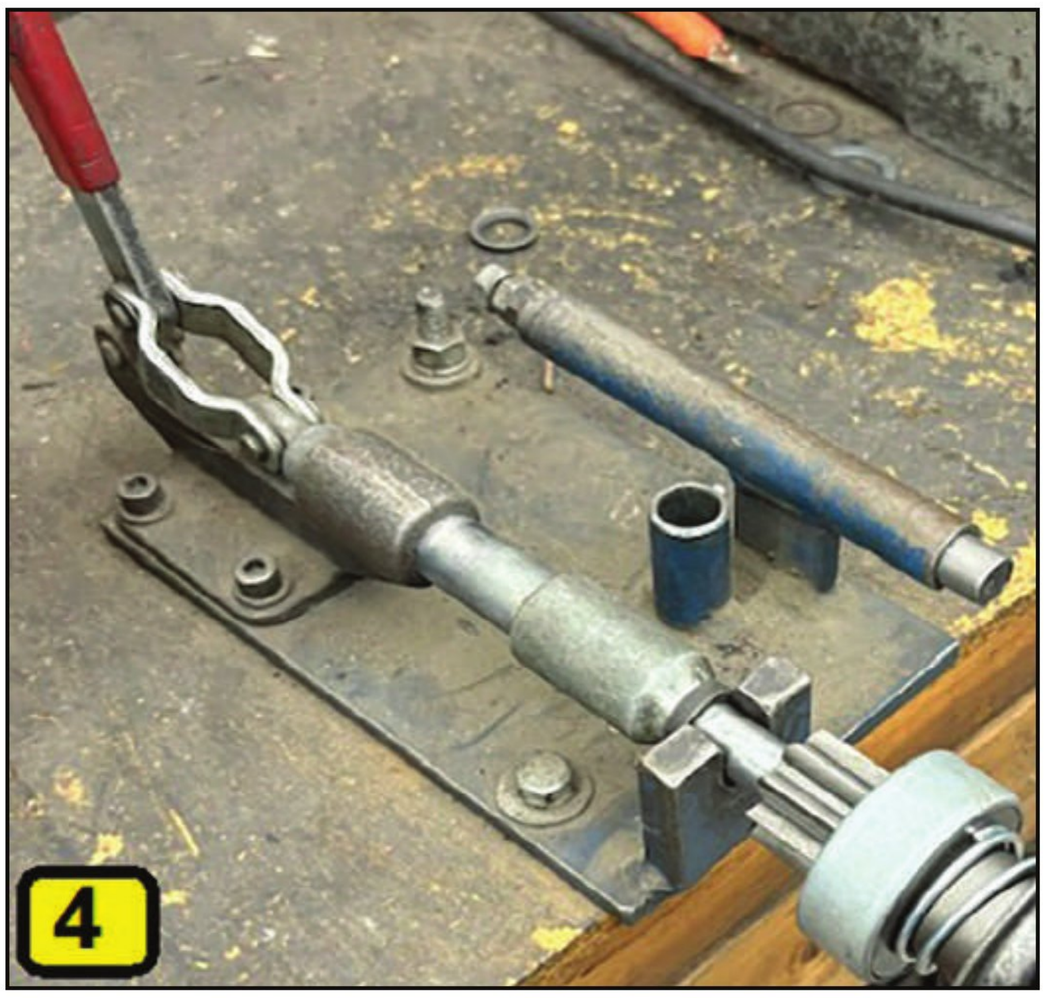

Figure 4

I have made a short YouTube video of its operation which will be posted on the ERA website when this issue of Exchange is posted. This tool is a reminder of the days when there were many companies who made tools for the electrical rebuilding industry. With a few notable exceptions such as CAE Pullers or Lewis Tool and Die, those tool companies are a rarity now.

I am not sure what will happen to this tool after I shut down my business, but hope it will find a good home.

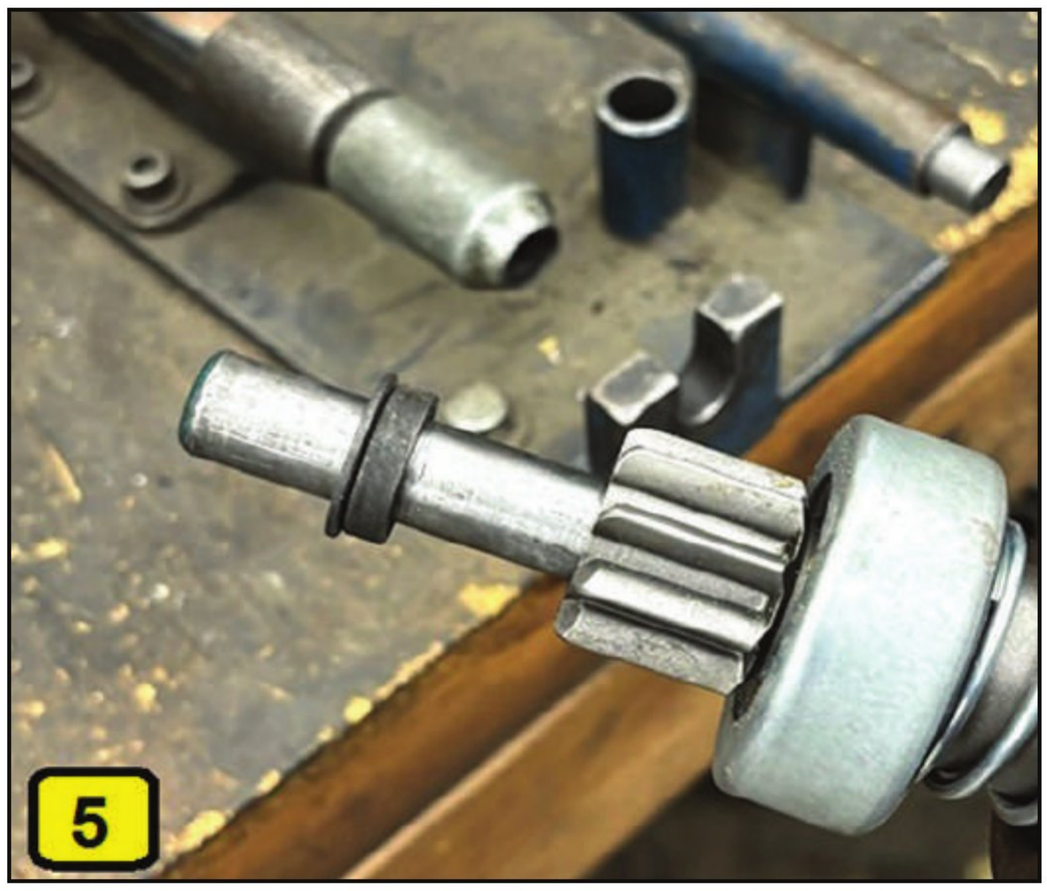

Figure 5

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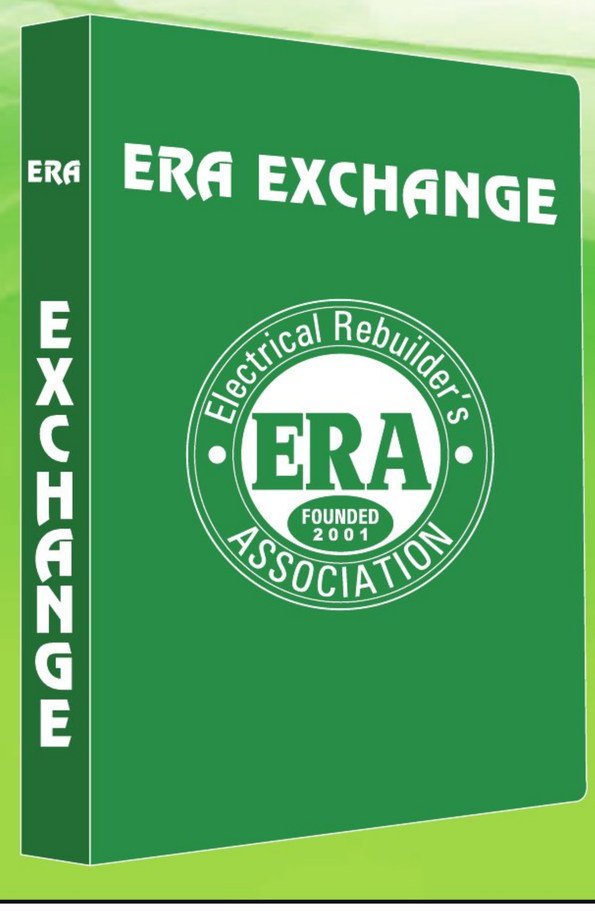

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Henry Ford once said,

"A MAN WHO STOPS ADVERTISING TO SAVE MONEY IS LIKE A MAN WHO STOPS A CLOCK TO SAVE TIME."

Advertising is an integral part of a successful business. It is not enough to have a good internal operation.





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