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Kripli’s Corner

Your Voice Counts!

The APRA has received the following invitation: “The Under Secretary of Commerce for International Trade Stefan Selig and Deputy United States Trade Representative Robert Holleyman would like to invite your organization to a discussion of potential trade & investment issues to address through the 2016 U.S.-China Joint Commission on Commerce and Trade (JCCT)”. Which really means you, our APRA members, have a voice in these discussions.

This is where membership can really count, and you can see action from your inputs.

If you have a topic you want addressed and put onto the agenda of the JCCT, please drop me a letter, an e-mail, or a phone call. Let me know what concerns you have with our government’s Chinese relationship and what we can do to help and protect your business. Think about the power of our concerted voice: when speaking from a large group and having a seat at the table, we get noticed. This is a great opportunity.

Believe it or not, we are only 6 months away from the Big R/ReMaTecUSA Show. We are on the Vegas strip this year, which means you will want to book your hotel early. A great room rate is available for the Big R/ReMaTecUSA and AAPEX Show, and rooms are going fast. Beat the rush and secure a great room rate at a great location, the Paris Hotel.

I always welcome response or rebuttal to my comments at kripli@apra.org

Respectfully,
Joe Kripli
Welcome NEW MEMBERS

Company ........................................ Contact .............................................. Location

DAH KEE CO, Ltd. ........................................ May Hsin .............................................. Tainan Hsien, Taiwan
AMBAC International .................................. Robert Irsherwood ......................... Elgin, South Carolina

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ISSUE 5 | REMAN CONNECTION
Around the Industry

ATP Industries Group Ltd. Awarded the Queen’s Award at APRA European Symposium

APRA Member ATP Industries Group Ltd., an independent remanufacturing company specializing in advanced automotive transmission and electronic products has been awarded a 2016 Queen’s Award for Enterprise in the Innovation category at the APRA European Symposium.

The award was made for “Having demonstrated substantially improved performance, via outstanding innovation, over a two year period.” ATP won the award for developing a highly complex and technically advanced transmission test suite that permits the precise validation and calibration of the electronic, hydraulic, mechanical and software functions of the product. This ensures that the high quality levels expected by OEM customers are consistently achieved and this in turn, increases productivity and customer satisfaction as well as reducing potential warranty costs.

The company works with multiple advanced technologies and has over 45 years of expertise in transmission remanufacturing.

APRA at PAACE Show in Mexico

APRA’s President, Joe Kripli and Chairman of the Board, Omar Cueto distributed APRA’s new Global Sourcing Directory at the PAACE Automechanika Show in Mexico City, Mexico, which took place April 13-16.
PRODUCT UPDATES

Polaris Systems, Inc Announces New “Polaris XA” Software

Polaris Systems, Inc. announced their next generation of software, Polaris XA, at the 2016 Polaris User conference. Partnering with Rocket Software to develop this product, the new software will be released in Q4 2016.

Polaris XA contains up to date technology that allows its users to implement specific business processes easily and quickly.

Touch Technology–Polaris XA utilizes touch technology so that technicians can easily log on and off jobs with better accuracy.

Integrated Mobile Technology–compatibility with both iOS and Android, outside salespeople can retrieve relevant customer data, take orders using their iPhone or android tablet.

Open Application Technology–Users will be able to download any report or piece of information into an Excel spreadsheet, Word or PDF document.

CBG Technologies Introduces New Product Precision Parts Cleaning Applications

CBG Technologies introduced the PW Series Solvent Recycling Systems, specifically designed for precision parts cleaning.

The PW series offers full integration with new and existing vapor degreasers, parts washers and ultrasonic cleaning systems. This integration produces consistently-fresh solvent through continuous recycling and recovers 100% of the solvent for reuse.

Precision parts manufacturers benefit from this progressive and environmentally-friendly equipment line, which streamlines the production process. Using consistently clean solvents eliminates repeat runs caused by rejected parts. The PW Series also reduces production costs by virtually eliminating the expense related to the purchase of new solvents and waste disposal.

Available in 15 and 30-gallon sizes, the PW Series delivers a recycled solvent that will meet specification requirements. All models are UL 2208 and CSA certified. The PW Series is fully-automated and features all-metal construction with a dual wall 304 stainless steel processing.

“Since our CBG PW Series Recycler was integrated with our degreaser, our production cleaning process has been greatly improved in numerous ways. With clean production solvent available 24/7, we avoid routine shutdowns to drain our Baron-Blakeslee degreaser and replenish the solvent, which also reduces staff exposure to solvents and repeat runs due to part rejects,” said CBG customer Jody Cook, Facilities Engineer, at Jore Corporation. “The labor time needed to make temperature adjustments is less and the heater coils are no longer tasked to heat saturated solvents. This extends the life span of the coils, while reducing costly repairs and down time. The CBG PW Series has provided an array of benefits throughout our company including improved production quality and efficiency, safety, sustainability and significant savings in solvent and disposal costs.”

TransTec® New Rack & Pinion Seal Kit 80R021

First to the market, the 2008-2014 Cadillac CTS Rack & Pinion Seal Kit. This kit includes common wear items such as the foil and tie rod bumpers to help ensure a more complete rebuild; a new solenoid screen filter (it is recommended that this filter be replaced during rebuild, old filters can contain foreign particles that can contaminate a clean system); and genuine FNST PTFE sealing rings are used to match the OE performance.

Kit 80R021 and Available Bulk Components are in stock and ready for immediate shipment from TransTec.
Auto Electric Corner

IN JEOPARDY?

By: Mohammad Samii sammyselectric@sbcglobal.net

On the ERA website, there was a discussion thread named “Why are online stores eating my lunch?”. The issue was extremely low prices and free shipping via Internet stores, which is causing major concern in our industry. By and large, certain Internet prices are either equal to or even lower than the prices that a typical rebuilder (such as myself) pays when buying from our established industry suppliers. The question of where the Internet stores get products that they can sell for such low prices is another subject of discussion. The fact remains, when inexpensive units can be purchased with free shipping, rebuilding is not going to be a workable option, and thus our trade may be in jeopardy.

To illustrate the issue, I used the example of a Lester 5777 lawn mower starter (Briggs & Stratton). A new replacement starter is available on the web with free shipping for about $32... which is more or less what we rebuilders pay for it. The fact of the matter is, rebuilding this unit and keeping the price at the market value is practically impossible for a small rebuilder. So rebuilding such units is no longer an option when customers can obtain their own.

So where do we go from here? One suggestion perhaps is spending our valuable time on units that are not so readily available. We should concentrate on rebuilding units that our expertise and know-how can come into the play to generate the necessary profits which keep our businesses going. That may sound like a difficult proposition. But the reality is—internet stores are here to stay, and we certainly cannot turn back the clock and do what we did 10 or 20 years ago.

Now, here is a complete turnaround from the scenario above, regarding the operation of these small Briggs & Stratton starters in the field: At times, you will hear complaints of a starter not turning the engine over. It seems that the starter cannot overcome the compression in the cylinder head. This was a subject I wrote about a few years ago in this column. (Thanks to APRA’s Technical Services manager Wes Grueninger, it can easily be searched for in my archived columns on the APRA-Tech site.) In that article, I pointed to a cam mechanism on Briggs engines that slightly opens the valve during cranking to relieve some of the pressure. This mechanism (that reverts to normal after the engine starts) requires precise adjustment of the valves per published specifications.

So when you hear from customers that their new or reman starter still has the same cranking problem, the chances are good that the valves on the engine need to be adjusted to allow proper cranking speed. This is exactly the type of information I provide to my own customers, should the need arise. But I refrain from mentioning it to a person with a web-purchased item!

110V Test Light...!
Testing the insulation integrity of components such as stators, rotors, brush holders and armatures (and making sure that a copper-to-ground short does not exist) requires voltages far above the unit’s 12V or 24V operating voltage.

There are many such hi-voltage and ground-fault testers on the market, with a higher range of voltage for delicate testing. They are great tools to have, and they do prevent a lot of comebacks (units which may not have shown any problems at the final testing stages). When you do not have access to one of these sophisticated hi-voltage testers, you can use this simple idea—take a couple of insulated test leads, run them in series through a 60W lightbulb, and plug it into the wall socket! When the two leads touch, the bulb comes on brightly.

Taking all the precautions to avoid electrical shock, doing all of the testing on an insulated (wooden) bench area, and being very careful not to touch any clips with your bare hands, this simple setup provides great benefits! It has prevented us from going on wild-goose chases so many times that there is not enough room in this article to describe them all. It really works!

We use this system most frequently for testing stators. Regardless of the shape or age of the stator on hand, it is just a quick step to touch one of the test leads to any one of the 3 or 6 stator leads and one test lead to the case. If there is any glow in the lightbulb (which sometimes is followed by actually seeing sparks jumping from a winding to the case) then the decision is immediately made to discard that particular stator as not usable. Testing the same stator with only a 12V source does not reveal the problem, and using this stator is certainly bound to come back in a defective unit, even if it passes the final unit testing.

Rotors are checked for ground in the same way, testing from the slip ring to the body. Any indication in the lightbulb certainly is caused by a grounded rotor, which should be discarded.

Brush holders are also tested with this system. The picture (Figure-1) shows a 42-MT brush holder being tested. You can see how the bright light indicates a deteriorated insulator, which made the light come on—meaning that the brush holder should not be used, regardless of its impeccable appearance, and the fact that it showed no problem when it was tested with a 12V power source.

I would have been reluctant to use such a setup, until 30 years ago, when
I saw a large armature supplier of mine in Chicago (now long gone) was using a 110V setup in his final testing before boxing his armatures. It was then that I set aside my skepticism, and I have been using this technique ever since. So if your local safety codes don’t frown on such an idea, and if you are not running a high-volume production shop with many inexperienced employees, and if you are not in a position to spend big money for a factory-built ground-fault tester—maybe having a 110V test light is the next best thing to the real thing. Just remember your ABC rule...always be careful!

Prestolite Alternator 8SC3157V

Of the industrial and special purpose units that we rebuild, there are some that come from two well-known railroad companies. Their regional service technicians (who are mobile and cover several states) are stationed in my town. They drop off a few units at a time to be rebuilt and picked up later their next time through.

Most of these units are made for special applications for railroad machinery service. For some reason, a great majority of them are 24 volts. The most recent one was a Prestolite 8SC3157V alternator that is rated 175 amps at 24V—meaning that its wattage is equivalent to the same as a 350 amp 12V alternator!

The complaint was an overcharging condition and mechanical noise, so a regulator became suspect. After checking into some breakdowns and part numbers, we found that this regulator had been changed a couple of times. The latest Leece-Neville (Prestolite) number for the regulator was 8RL3136S, which was added to our parts list, along with the necessary bearings and other odds and ends. While tearing down one of the alternators, we saw why the occasional overcharging was taking place. The field brush, which is very close to the alternator frame, had burned through the insulator which was supposed to prevent it from touching the case and full-fielding the alternator (Fig-2). During reassembly, a new piece of thicker insulator was used to prevent the same thing from happening again, and the new updated regulator was also installed to cover other possibilities.

This type of work has been becoming more popular among small custom rebuilders. Many have given up rebuilding typical automotive and light truck units, due to their wide availability in auto parts stores and the fierce competition which has driven prices down. Industrial and special application units are still (to some degree) immune to such pressures, and rebuilders who have this type of customer are still staying busy rebuilding unique units, such as the above alternator. The prices and fairly good profit margins keep a business going by keeping the proverbial “door open”.

Local Interconnect Network (LIN) Part-II

In last month’s column, I explained briefly what a LIN system is, its uses, and some general information about it. In this month’s article, I will explain more details about the system operation.

To understand the LIN, I suggested considering it (or any other vehicle communication for that matter) as a vehicle’s “internal internet”. Since one important classification of any internet is its speed, let’s look at and compare the speed at which the LIN communicates.

The early version of the LIN (also called LIN-1) had a speed of 9600 b/sec. (bits-per-second)—which is to say, in one second of time it can process 9600 bits of information. This comparatively slow speed was later replaced by LIN-2 with 19200 b/sec. This allowed the use of already available off-the-shelf electronics when designing the system to keep the price to a minimum. I am sure that faster LIN systems will become available, if they are not already here.

The practical side of this, as far as an auto-electric technician is concerned, is to know what the LIN looks like, how its operation can be measured, and how a LIN alternator can be tested. Unfortunately, there is not much you can do without a lab-scope, because measuring the voltage at the LIN bus does not give consistent information.

For this purpose, I used a 2014 Toyota RAV-4 which I have easy access to (my wife’s car!) as a test vehicle. The alternator is a Denso 104211-3531 (11778) which has a 7-groove Litens decoupler pulley. (And besides the output cable, there is only one small wire attached to the regulator, which is marked LIN, as shown on the tag in Figure-3.)

Running the engine at idle speed and setting the scope time-base to capture visible signals, what you get is shown in Figure-4. Please notice that the entire screen is only 20 milliseconds of time. You can see the packets of information flowing through the LIN bus. The messages regarding any fault within the alternator, as well as a command to set the voltage are all embedded in this signal.
Asia/Pacific Update

Trans-Pacific Partnership’s (TPP) Impacts on Asia-Pacific Remanufacturing

Chase Williams, editor@duxes.cn
Duxes Shanghai, China

The Trans-Pacific Partnership (TPP) has been a hotly debated free trade agreement which appears poised to come into effect in 2018. Despite mumblings of discontent regarding the benefits on manufacturing jobs for some countries, the TPP was signed on February 4th in Auckland, New Zealand and is now just waiting for the participating Pacific Rim countries to ratify it.

With direct mention of remanufacturing included in the text, the impact the TPP will have on the industry is a question remanufacturers around the world are asking. Speaking with Mr. Tran Ba Cuong, Director of the Multilateral Trade Policy Department of the Ministry of Industry & Trade of Viet Nam.

Viet Nam is a large and quickly developing nation which is increasingly becoming more influential in Asia-Pacific and global trade, both as an exporter and as a potential end market for goods. Like most other Asian countries, remanufacturing isn’t currently provided for under the existing legal framework in Viet Nam. “Before the conclusion of TPP, the term ‘remanufacturing’ didn’t exist,” Mr. Cuong explained. “Normally, before the conclusion, the remanufactured goods were considered as used goods. Some used goods are allowed to be imported into Viet Nam, and some of them which are under the import prohibition list are not allowed to be imported.”

Being categorized as used products is a massive hindrance to the remanufacturing industry on a global scale. Failure in recognition and ambiguity in the associated legislation and unclear policy in this area have limited the expansion of this type of business in the Asia-Pacific region. As Mr. Cuong elaborated, “with the conclusion of the TPP agreement, we now have a strong commitment by Asia-Pacific countries to bring this regulation into their trade laws to provide a clear predictability for traders and remanufacturers in this region and facilitate the regional remanufacturing industry as well as the relevant supporting industries.”

As clearly defined under this historic deal, a remanufactured good:

“Is entirely or partially composed of recovered materials and:
(a) has a similar life expectancy and performs the same as or similar to such a good when new; and
(b) has a factory warranty similar to that applicable to such a good when new.”

The 12 participating TPP countries are Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Viet Nam. Accounting for roughly 40% of the world’s economy, the fact that the TPP addresses remanufacturing at all is a huge win for the industry worldwide.

In developing countries where there is no established reman industry or standards, naturally auto shops engage in various forms of rebuilding and refurbishing independently. What countries like Viet Nam look forward to is attracting foreign direct investment (FDI) which can promote the economy and create jobs in country. “We welcome investment in this very remanufactured industry,” added Mr. Cuong. “That will bring huge benefits for investors and our country as well as environment.” The expanded market access as a result of the TPP is expected to entice export-minded manufacturers to enter Vietnam and set up facilities in various industries.

Whether or not Viet Nam develops into a remanufacturing hub in the coming years is still in question, but it is easy to see the immediate advantages of importing remanufactured goods, particularly heavy machines, engines, parts, and accessories, when this agreement enters into force in Viet Nam. A huge market of nearly 93 million people is likely to draw the attention of investors worldwide looking to enter and establish businesses in this service and manufacturing industry.

For most TPP countries including Viet Nam, the agreement will take effect in 2018. However, Viet Nam has a built in transition period of three years before it permits the import of remanufactured goods. “From January 2021, all the import or export of remanufactured goods including heavy machines, engines, and parts for remanufacturing [with some exceptions as provided for in the agreement] could be imported and exported into and out of Viet Nam with no limitation, subject to the scheduled tariff,” Mr. Cuong clarified. “But from 2018 to 2020, a three-year transition period may still restrict the import or export of remanufactured goods.” This three-year transition period is the maximum right of the government to maintain the restriction on importation of remanufactured goods, but it may eliminate this period faster depending on the situation.
Any time when you read about remanufacturing, the environmental issues are surely brought to attention. With the economy now prioritizing and involving itself with greener business models, remanufacturing is providing productive and effective solutions for both developed and developing nations. “We believe that with some very tightened standard requirements for remanufacturing, the environmental issues could be tightly and strictly controlled by the government,” Mr. Cuong explained of the considerations by Viet Nam and other countries during TPP negotiations. “By allowing the remanufacturing industry to be accepted and operated, there will be more benefits for Viet Nam and other TPP countries. Producing new items and new parts is much more costly and it may cause more environmental concerns rather than remanufacturing them.”

With only 12 participating members of the TPP, the impact this agreement will have on non-members is an interesting area of study and speculation. Mr. Cuong, who took part in the 11th round of Regional Comprehensive Economic Partnership (RCEP), a free trade agreement negotiated by 16 countries with an aim to conclude by the end of 2016, briefly pointed out that though remanufacturing has been proposed by some countries, it seems that this concept is not supported by most RCEP parties including ASEAN and some developing nations. “Some RCEP countries still maintain barriers to remanufactured goods and presently consider them as used goods,” Mr. Cuong added. “This matter should be further negotiated with more non-papers to be submitted and elaborated by those who have concluded TPP like Australia, Japan or New Zealand.” The different level of development among RCEP countries is another obstacle to accepting remanufacturing as parts of the agreement at this stage. If RCEP wishes to move forward with this issue, hopefully it will find a more flexible way to take into account special treatment for some of the least developed countries (LDC) in this group of negotiation.

Still a few years off from implementation, and certainly dependent on its ratification, the TPP is a historic landmark deal projected to have very positive effects on the remanufacturing industry.
Transmission:
If Something Looks WRONG, it Very Well May Be

Originally authored by Dan Frazier of Certified Transmission of Omaha, NE
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Transmission Digest
The Automotive Powertrain Industry Journal

The subject of this article is a 2006 Hyundai Sonata that came into our shop with a no-shift complaint. It was likely in limp-in mode, so in order to get down to the cause of the problem I began with a cursory preliminary inspection. My initial inspection revealed several obvious issues: the MIL didn't self-check, no communication with the PCM/TCM unit, airbag light on, and an oddly flashing cruise lamp. A short road test confirmed the no-shift condition. After getting some diagnostic time approved from the customer, I began my in-depth diagnosis.

Whenever I'm faced with a communication issue, usually the first place I go is verifying power, ground, input and output to the offending modules. A good place to start is checking communication lines at the DLC and checking fuses. And I mean ALL of the fuses. Not that I've ever had a "d'oh!" moment after 30 minutes of checking things, but it happens to the best of us. I quickly found a blown fuse that was labeled B/U lamps. Replacing it blew the new fuse immediately, so I knew I needed to look there first.

Looking at a power-distribution diagram showed that fuse powering the B/U lamp circuit also powers what Hyundai calls pulse generators A and B, or more commonly known as transmission input- and output speed sensors. In addition, the transaxle range switch and the vehicle-speed sensor are also powered through this fuse. All of these components are easily accessible on the top of the transmission, and it didn't take long to find the connector to the pulse generator.

The pulse generator sensor is a Hall-effect sensor with a power and ground, and the output feeds the K-line, or low speed communication circuit.

Here's where the fun began. The vehicle-speed sensor on the transmission doesn't supply vehicle-speed data directly to the PCM. It sends data via the K-line to the BCM, TPMS, ABS, and traction control modules. Vehicle-speed input to the PCM comes from the RF wheel speed sensor, which is basically an ABS sensor, even though the vehicle doesn't have ABS. This is a rather odd but common setup on Hyundai/Kia vehicles. Side note: If you run across one that has an erratic wheel-speed sensor signal due to a cracked tone ring, the rings are available separately from the dealer, are very inexpensive and usually on the shelf.

The K-line also supplies scan-tool communication. When the sensor and connector melted in this case, it grounded the K-line circuit and therefore, no communication. Once I snipped the connector off, communication was restored and I was able to scan for codes. The only code that showed up was a P0700, general transmission fault. I didn't have a code for the pulse generator because it wasn't an input to the PCM/TCM. I still didn't have any communication with the TCM, nor did I have a check engine light or a code for the MIL circuit. Time to dig a little deeper into the problem.

One thing I like about Hyundai/Kia vehicles is that for the most part, they're pretty easy to work on. Also, their electronics seem to be pretty reliable, as is the case with most of their Asian counterparts. They don't seem to have very many intermittent issues like some domestic manufacturers (think TIPM!) and their components are usually either dead or alive.

The PCM/TCM units on this model are next to the air cleaner with the connectors facing up, which makes back-probing circuits a breeze. In about 5 minutes I had the instrument cluster out and knee bolster removed in order to provide access to the fuse/central junction block. I now had easy access to test just about any circuit on the vehicle. With the cluster out, it didn't take long to diagnose the cause of the MIL issue; you can't light up what isn't there. The socket and bulb were missing from the back of the cluster: as seen in Figure 2 below:

These bulbs are not sold separately from the dealer; you have to buy the whole cluster. Moving forward with diagnosis, it didn't take long to verify powers, grounds and data lines to the PCM/TCM, and they all tested OK. The TCM side of the PCM/TCM unit itself was apparently dead.
The hardest part of this diagnosis so far was finding complete information within the wiring diagrams and service information. The pulse generator in the transmission only appears in the power-distribution and computer data-line schematics. If I hadn't already known its function, I would have had a very hard time finding it, and description and operation of that component is virtually nonexistent. The pin and wiring assignment for the DLC is backwards (like a mirror image) and some of the pin assignments and wire colors at the PCM were wrong. This seems to be a somewhat common issue. If you’ve spent much time looking at the OE service information, you would know it can range from very frustrating to downright hilarious. If you see something that looks wrong, it very well may be. Double-check it against another source—it does happen more than infrequently.

As expected, all he wanted to do was make it shift. In fact, he showed up just before closing time with a used PCM/TCM unit in his hand. Installing a used module is usually a crapshoot—I don’t recommend it—but we told him we would give it a try. We ordered a speed sensor, but finding a connector pigtail was a different story. Hyundai/Kia, like Nissan and a few other OEMs, don’t offer connector repair replacements. You would have to buy the whole harness, kind of like the bulb in the cluster. I have sourced those bulbs in the aftermarket before, but wiring pigtailed are slim pickings. We ended up having to send one of our guys to a salvage yard to clip one off of a donor vehicle, and charged accordingly for it.

After our parts arrived and were installed, the Sonata shifted normally, but did set a code—P0630—for VIN programming error. You would’ve never known it because of the missing check-engine light bulb. We possibly could have resolved that issue with a reprogram of the PCM, but as expected, the customer didn’t want to spend any more money than necessary to get it rolling. It was somewhat of a challenge getting through the service information, but turned out to be a fairly easy and profitable job.

The shorted pulse generator created a situation that damaged the TCM electronics, and the vehicle was tampered with to hide the issue. Auction cars are often technical throwaways that somebody didn’t want to deal with. You have to expect the unexpected. A little research and detective work goes a long way in these cases.

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In my rebuilding shop, the customer phrase that I liked to hear most (other than “I’ll be paying in cash”) was, “I want it restored to look and work like OE.” This customer is a “purist”—he wants his vehicle to be as close as possible to the way it was when it rolled off the assembly line. You won’t find a giant stereo, an electric cooling fan or any other modern accessories on his “ride”—nor will he expect you to supply him with a hi-amp conversion alternator to power all of the above “goodies.”

This kind of job can be satisfying and profitable. But it’s important to take control of the conversation at the start. Since the customer is usually the person who will be installing the product(s) that you are restoring—whether this is a “dream job” or a “nightmare job” ultimately depends on HIS abilities. You need to ask him some questions. Doing so will not only provide important info about the unit(s) and the vehicle, but it will help you “size up” the customer’s electrical/mechanical knowledge and skills. Do not quote any prices until after you have had this most important conversation. If the customer answers your questions with confidence and ease, odds are that you will have to do very little extra coaching for this job. Give him a quote based solely on rebuilding the unit(s). But if the customer’s eyes glaze over, and you can tell that he isn’t sure about his answers, be sure to include enough in your quote to compensate you for your time that will be spent explaining electrical basics, proper wiring, polarity, grounding, etc. This can easily add an hour or more to the job.

Let’s assume that the customer just walked in with a Delco-Remy generator and starter in an old milk crate, since this is the most common scenario. Here are some of the questions you need answered in order to ensure a “dream job”:

1. Were these units removed from the vehicle? (It’s not uncommon for classic vehicles to be sold in “pieces”. It is important to know if the parts that the customer has brought in are actually the correct items for his vehicle.)

2. Did the vehicle crank, start and/or charge? (You are trying to find out if the engine is free to turn over.)

3. What voltage battery is in the vehicle? (Most classics probably started life as 6V systems, but along the way it could have been changed to 8V, 12V or even 24V.)

4. Is it a negative or positive ground? (For example, if he answers positive ground, then say, “That means that the battery cable with the “plus” symbol is connected to the engine block, the frame or some other body part—Is that how your vehicle is?” It’s amazing how many times customers get this very basic question wrong. Pin him down for an answer, and be sure to write it on the work order.)

5. If, while asking the above questions, you have determined that the vehicle is 6V, then ask, “Are you certain that the battery cables on your vehicle are sized correctly? 6V battery cables are designed to carry much more current than 12V cables. It’s very common for 6V cables to have been replaced with 12V cables.”

I’m sure that there are more questions that could be included, but by now you know: if the units will actually fit the vehicle, if the engine spins freely (so your rebuilt starter can crank it), the voltage and polarity for the electrical system, and if the battery cables are sized correctly for the job. Also, by now you will have sized up the customer, too, and decided whether to pad your quote for “customer education” time. When it’s finally time to start rebuilding...that is where APRA-Tech can help!
We've got you covered for:

• Employee training—It’s possible that a unit to be rebuilt was actually made before your employee was born! Even if he has never worked on such a unit, the Delco-Remy Training Manuals can provide the necessary knowledge for him to understand how the unit and the electrical system work.

• Teardown and reassembly—Service bulletins specific to each unit provide detailed instructions.

• Parts ID and exploded diagrams—Original part numbers for even the smallest part are available. Exploded diagrams will ensure that the components are re-assembled correctly.

• Parts testing and unit specifications—Service bulletins provide step by step testing procedures along with the correct specifications for the components to ensure that they meet OE standards.

• Assembly—Service bulletins guide you through the assembly process and make sure that all mechanical clearances are correctly adjusted.

• Final testing—Service bulletins give specifications and proper testing procedures for the fully assembled unit.

• Circuit diagrams—In most cases, Delco-Remy manuals show detailed diagrams of each complete electrical system, which may be printed out for your customer, to be sure that he hooks everything up correctly on his vehicle.

We have tracked down almost every Delco-Remy Service Guide, Training Manual and Parts Breakdown that was published from the early 1900s through the mid-1990s. That's almost 100 years of information! We have already put thousands of these items online and are adding more information daily. It's all accessible to APRA members with just a few mouse clicks!

To summarize: Ask the right questions, and let APRA-Tech provide the information you need to be sure that the job is done right!

14 Day Free Trial
The APRA-Tech website is a constantly growing source of technical information pertaining to remanufacturing including: training videos, technical manuals, technical seminars and much more.

A free fourteen-day trial membership is available to non-members at: www.apra.org/?page=14DayFreeTrial

We understand what matters. That’s why every part in every TransTec® kit is designed, manufactured and tested to the highest industry standards and why remanufacturers install more TransTec® power steering kits than all other brands combined. Precision matters.

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From April 20-22, 2016, remanufacturing professionals from all over Europe and even Japan met in Birmingham, UK, for this year’s APRA European Remanufacturing Symposium. The Symposium was aimed at a broad audience of those interested in learning about trending topics in the automotive remanufacturing industry as well as those wishing to discuss the latest technical developments, opportunities and challenges within the sector.

The conference covered commercial, technical and legal aspects and offered exclusive insights into industry leading remanufacturing plants. A variety of networking opportunities were also available, combined with evening entertainment to ensure delegates enjoyed their time in the UK.

Three days of presentations and intense discussions have provided the delegates with the latest information from the industry and have highlighted priorities that should be on everybody’s agenda:

**Reverse Engineering—a key aspect of a successful remanufacturing business**

Reverse Engineering is a crucial factor for successful remanufacturing nowadays and has therefore seen an increasing demand in the automotive industry. However, the ability to apply reverse engineering successfully depends on multiple elements, from the ability to be able to access, measure and understand Can Bus information, to having the right testing equipment up to capable engineers with an understanding of the functionality of the original part and the skills to replicate its characteristic details.

**Universities and Research Institutions—valuable partners for the remanufacturing businesses**

Delegates have shown a high interest in the science and research part of Symposium and all presentations were incredibly well received. This part of the Symposium has demonstrated that academic and industry expertise needs to be fused in order to enhance capacity and innovation in remanufacturing. In addition, it has provided successful methods and examples of how to analyse and improve remanufacturing technologies and processes.

Case studies from the Horizon2020 project called ERN (European Remanufacturing Network) were presented.

A further topic that has perhaps been disregarded in the past sparked the delegates’ interest: Remanufacturing vs. Trademarks, Patents and Product Liability. It’s immensely important for businesses to be on top of these things and a subject that requires regular updating.

**Political relations can create business opportunities for SMEs**

APRA was delighted to have Amanda Milling, MP for Cannock Chase as one of the keynote speakers at the GALA-Dinner. As a Member of Parliament, Amanda has worked with ATP on a variety of projects over the past years and her relation with the company is a perfect example of how local politics can positively influence a business. During her speech she motivated the delegates to get involved with local politicians in order to raise the profile of certain topics. During the dinner she has spoken to several of the delegates and listened to their industry specific concerns, which she has promised to address and discuss at the Houses of Parliaments.

UK remanufacturing businesses can hopefully profit from those efforts in the future and businesses in other European countries can follow ATP’s example.

**Plant visits—ATP Industries Group and Carwood Diesel Injection plant**

APRA members ATP and Carwood invited the delegates to take an exclusive look “behind the scenes” of their industry leading plants in Staffordshire and the Midlands.

ATP’s proven expertise and solid reputation has led to becoming the major remanufacturing partner to a world-wide portfolio of OEM’s and their commitment to delivering continuous high quality is recognised by a wide variety of accreditations and awards. A day after the plant visit, ATP was awarded a 2016 Queen’s Award for Enterprise in the Innovation category.

Delegates were also highly impressed by Carwood’s state-of-the-art Diesel Systems Plant and particularly by its leading edge production assembly clean rooms certified to ISO14644, Class 7. The clean rooms were installed 4 years ago to ensure OE standards are maintained at the highest level with particle contamination limits down to 0.5 microns.

The discussions over the 3-day event have shown, that the remanufacturing industry has changed tremendously over the past decades and still is at an incredible speed. For companies to keep up with the ever changing challenges and stay aware of opportunities to remain successful in this fast paced environment, it is vital to maintain a network within the industry and to receive relevant information. APRA’s objective always was and will be to facilitate these requirements and to support the industry by being the voice of remanufacturing!
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Steve Sayer admits that he has always kindled an affection for early MG sports cars with their sweeping front fenders. A few of the English sports cars passed through his hands before he learned of a 1949 TC model that was available.

The car had been restored in Great Britain before being shipped in 1978 to the United States. The restoration, Sayer says, was somewhat less than ideal.

Sayer purchased the 11 ft., 7.5 in.-long MG in 1987 with, he says, the cutaway doors about to fall off.

At that time the little car was wearing a coat of red paint, which had replaced the original Old English White.

The diminutive MG is only 4 ft, 8-inches wide and rolls on a 7-foot, 10-inch wheelbase. An ash frame supports the steel body.

Beneath the slender engine hood, ventilated on either side by 21 vertical louvers, is a four cylinder, overhead valve engine with twin S.U. carburetors generating 54 horsepower.

The top three gears of the four-speed transmission are fully synchromesh. The shift lever sprouts from the floor near the emergency brake lever.

Although the optimistic speedometer tops out at 105 miles per hour records from more than 60 years ago indicate that 73 miles per hour is a more accurate achievable top speed. When the MG TC was new a timed period from zero to 60 miles per hour was registered in a scant 22.7 seconds.

In the cozy cockpit the passenger–seated on the left side— eyeball to eyeball with the speedometer while the driver is faced with the 6500 RPM tachometer which has no red line.

A pair of electric wipers suspended from the top of the windshield keep the glass clear unless the driver has opted to fold the windshield down over the engine hood. If that is the case the driver has a clear view of the moto-meter radiator cap registering the temperature of the coolant in the engine.

Sayer acquired the MG TC in August 1987 and within three days, he says he had the body off the car. Only 21 months later the restoration was completed and he took his MG TC to its first antique car show.

He chose a green on green combination for his car with an Almond Green exterior. In front of the driver is the four-spoke banjo style steering wheel on a telescopic steering column.

The 4.50x19-inch tires are wrapped around the 48-spoke wheels, which are coated with silver/gray paint. The wheels are secured to the car with chrome plated knock-off hubs.

On the firewall, under the hood, is the 12-volt positive ground battery adjacent to the tool kit and tire changing equipment.

At the front of the bumperless MG TC is the horn and single fog light. Crowning the front fenders are small parking lights. At the other end of the car can be found a single taillight accompanied by one brake light.

“For 1949 hydraulic brakes,” Sayer says, “they work very well.”

The spare tire is mounted vertically against the 61-liter gasoline tank. With the top in the raised position the car stands 4 ft., 5-in. high. The MG is equipped with four side curtains, one for each door and another pair to be fitted into the quarter panel area behind the doors.

Sayer admits to straying from originality during the restoration process. The original 1949 TC dashboards, he explains, were covered in black vinyl. He opted, instead, to finish the curvaceous dashboard like much earlier MG automobiles with unfinished plywood.
The following sessions are included for attendees who purchase a Full Conference Pass.

**Stay Current: APRA Electrical Clinic**
To succeed as an electrical rebuilder/remanufacturer today, it is critical to stay current on the latest trends, threats and opportunities in the market. APRA has you covered with an entire track dedicated to the electrical market; including presentations by Mohammad Sammii and Tom Dunn as well as dedicated topics about the effect of batteries on the remanufacturing process and the most recent information on D&V Electrical Testing equipment.

**Turbocharger Reman: Increased Power and Profit**
The first patent for a turbocharger was issued in 1905, but recently the market share for these parts has surged to 40% of all light vehicles sold in the United States. Certain attributes of turbochargers make them the perfect candidate to grow your remanufacturing business. Come learn the technical information you need to grow or start your turbocharger remanufacturing business.

**Start/Stop Systems: Opportunities and Threats**
Start-Stop Systems, that automatically shut down and restart internal combustion engines, were originally found on hybrids but they are steadily gaining ground with mainstream models. This session will address how these fuel saving systems will create opportunities and threats to electrical remanufacturers.

**Have No Fear: Remanufacturing Mechatronics**
The market for Mechatronics (ABS, instrument clusters, ECMs, Mass Air Sensors, etc) is soaring and so are the remanufacturing opportunities for these high value products. However, the electronic nature of these parts has prevented some remanufacturers from entering this market. Have no fear! This APRA session will reveal how small and large remanufacturers can take advantage of this growing market.

**E-Commerce: Grow Your Reman Business One Click at a Time**
Do not limit the growth of your reman business by relying on local marketing and local customers. Knowing how to profitably utilize Amazon, Alibaba and other similar sites will connect you with potential customers around the US and around the world.

**3-D Printing: Reman's Next Big Thing**
3D Printing seemed like science fiction a few years ago, but is now becoming a reality. The ability to print component parts will allow companies to remanufacture parts even if component parts are unavailable. It may also allow remanufacturers to print component parts on demand to decrease inventory costs or make short run remanufacturing projects profitable.

**Clean Up: Evolving Parts Cleaning Technology**
Cleaning is vital part of all remanufacturing operations. Whatever type of cleaning you currently use, understanding the latest developments in cleaning technology will help you stay ahead and profitable. This session will bring together cleaning industry leaders to help you clean up.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>8:00 AM - 11:00 AM</td>
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<tr>
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<tr>
<td>5:00 PM - 7:00 PM</td>
<td>75th Anniversary Reception</td>
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<tr>
<td>8:30 AM - 9:15 AM</td>
<td>APRA Awards Breakfast and Gavel Passing</td>
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<tr>
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<td>Conference Sessions</td>
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<tr>
<td>12:00 PM - 5:00 PM</td>
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### Hotel Booking Information

Attendees should plan to arrive on Friday, October 28 and depart late Sunday evening or early Monday morning, October 31.

However, attendees who are also planning to visit the AAPEX Show from November 1-3, can extend their stay at the Paris Las Vegas with the APRA rate of $149/night.

Book your stay at the Paris Las Vegas hotel via the APRA website at: [www.apra.org/2016bigRReMaTec](http://www.apra.org/2016bigRReMaTec) or by calling the hotel directly at (702) 946-7000*.

*Please note a $15 service charge fee will be incurred for all reservations made via phone. To avoid this charge, book online.

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**FULL Conference Registration:**
Includes unlimited admittance to the exhibit hall on Saturday & Sunday & ATRA Powertrain Expo on Oct. 29; access to seminar program, Big R/ReMaTecUSA Reception.

**Expo ONLY Registration:**
Includes unlimited admittance to the exhibit hall on Saturday & Sunday & ATRA Powertrain Expo on Oct. 29.

**Big R/ReMaTecUSA Reception:**
Join the Opening Reception from 5:00 PM-7:00 PM. Drinks and light appetizers included.

<table>
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**Payment:**
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Cancellation Policy: Cancellations are subject to a 20% processing fee. No refunds will be made after 09/30/16. No refunds will be made unless written request is received by 09/30/16. Refunds take up to four weeks to process.

Submit registration to: APRA, 7250 Heritage Village Plaza, Suite 201, Gainesville, Virginia 20155 • (703) 968-2772 • Fax: (703) 753-2445 • info@apra.org
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