

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



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Drives...and Ford Diesel Starters...!

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

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

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

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

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Ford starters for diesel trucks (F250 thru F550), the common 6669 starter that was used extensively on 7.3L engine was superseded (not by application, but usage) by 6670 used on their not-so popular 6.0L Diesels.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

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

Due to labor time and the fact that these starters (6675 and 6696) are not easiest ones to change, I have not tried to

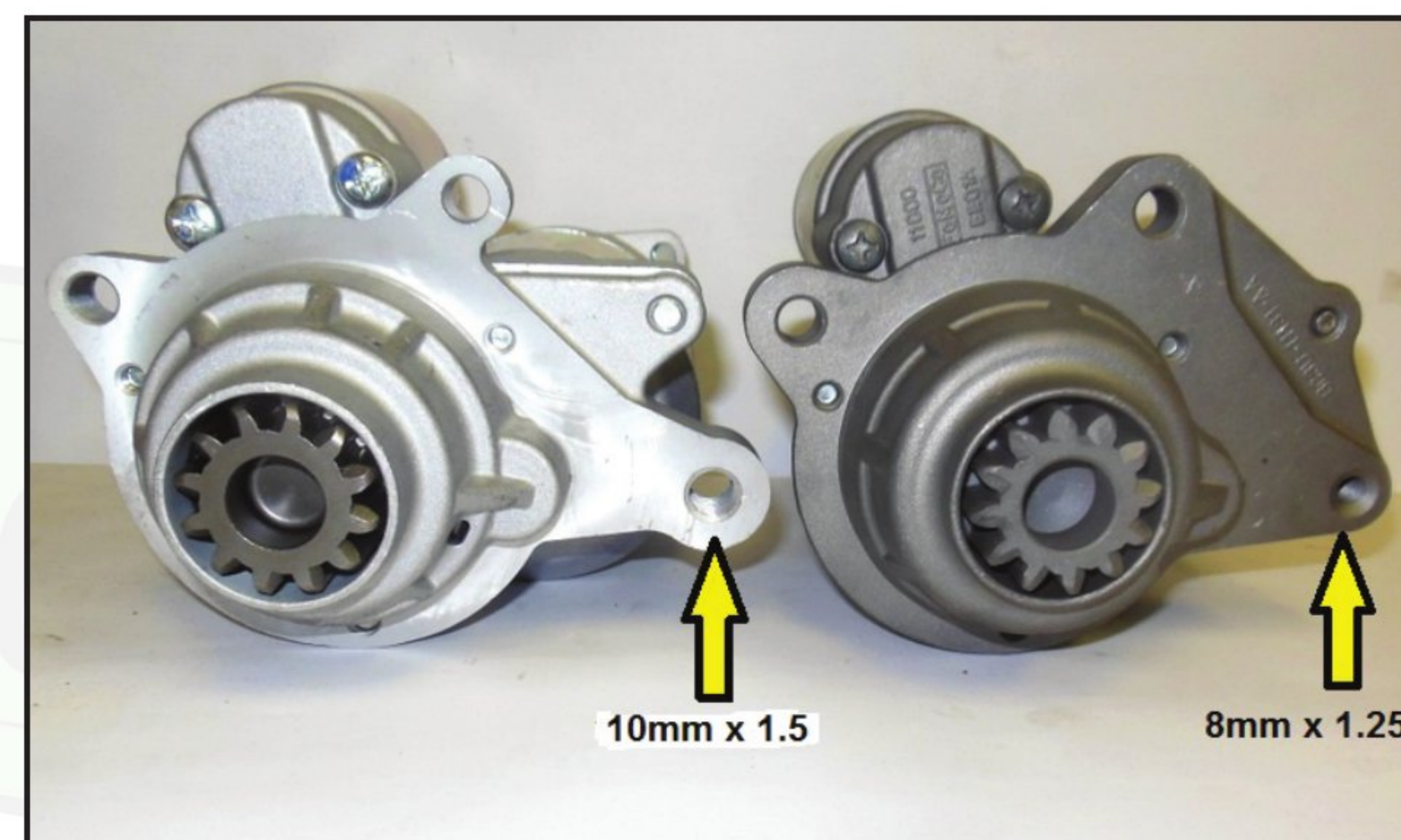


Figure 2 – 6675 and 6696 starters and their threaded mounting hole difference

experiment with them to see if they interchange with the use of appropriate hardware, thus I only warn you of the differences of their mounting bolts.

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

Corrosion and Poor Connections...!

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

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

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

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

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

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



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

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

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

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

Xenon HID Headlights

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

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

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

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

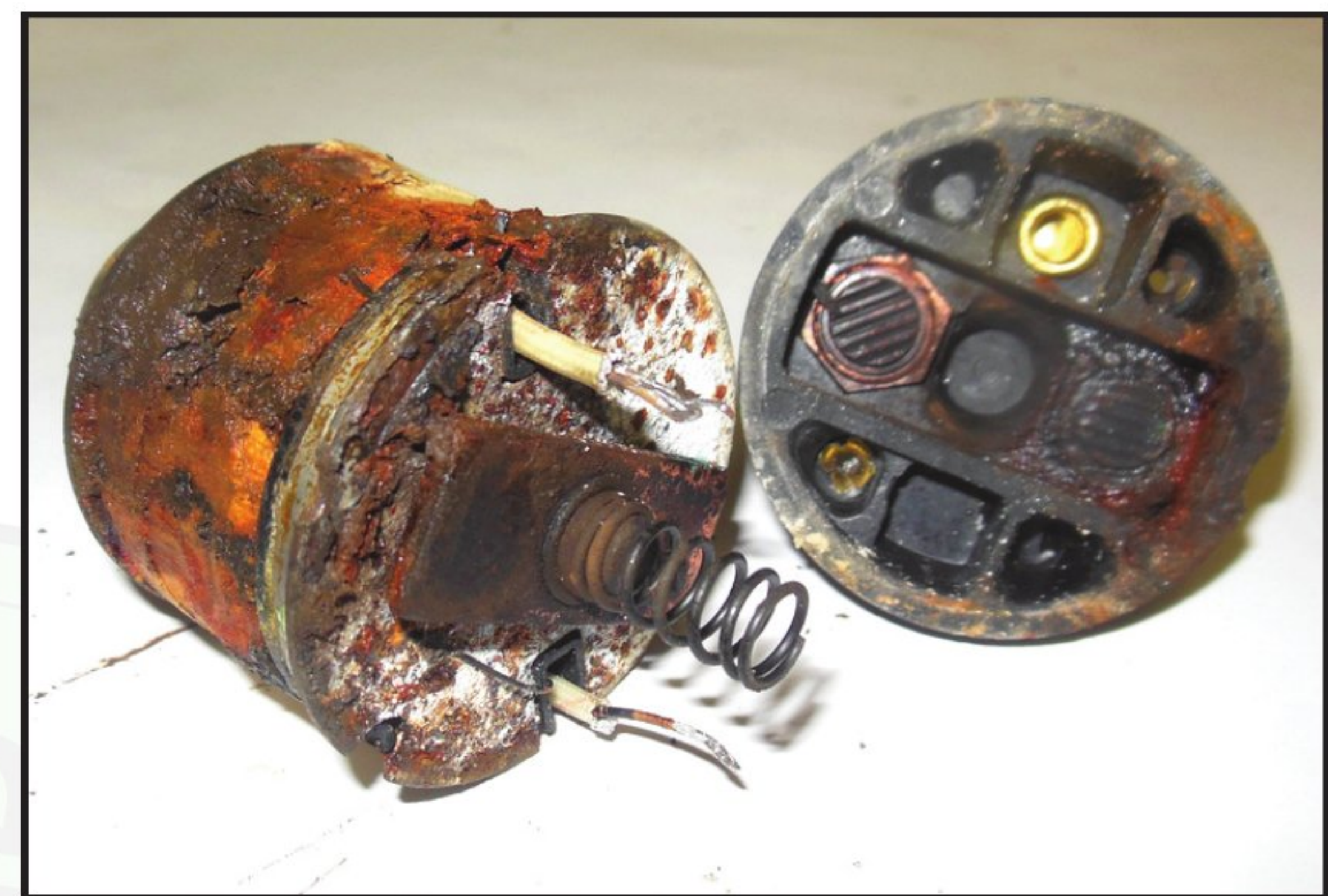


Figure 4 – Inside of a Bosch solenoid that looked very clean on the outside



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



Figure 6 – The HID ballast made by Hella in Germany

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

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

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