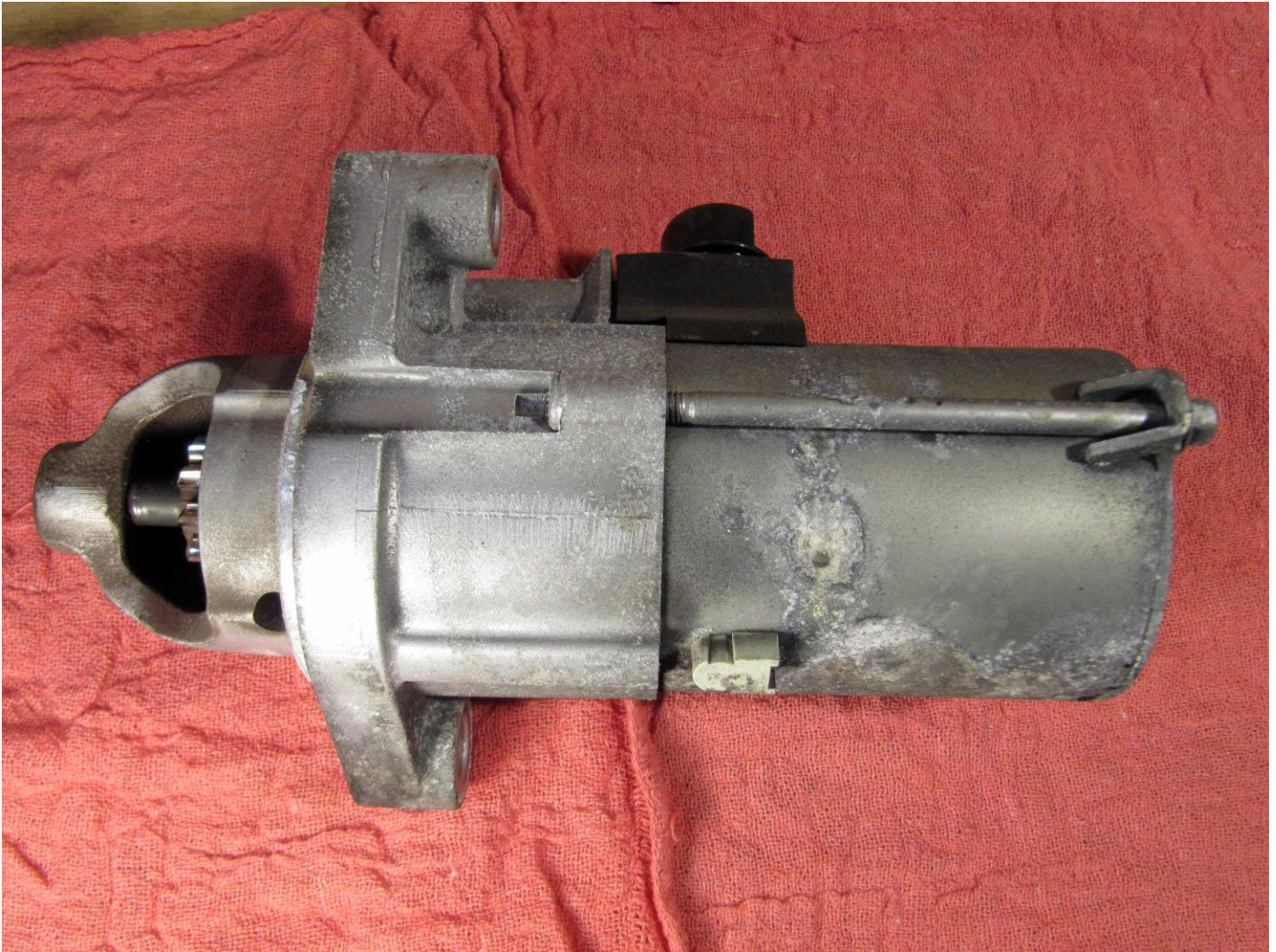


Starter Rebuild DIY Write-Up
2007 Honda Accord SE 4CYL

This write-up documents the rebuilding of a starter for a 2007 Accord 4CYL.
Hopefully it will help you out if you are undertaking the same task for the first time!

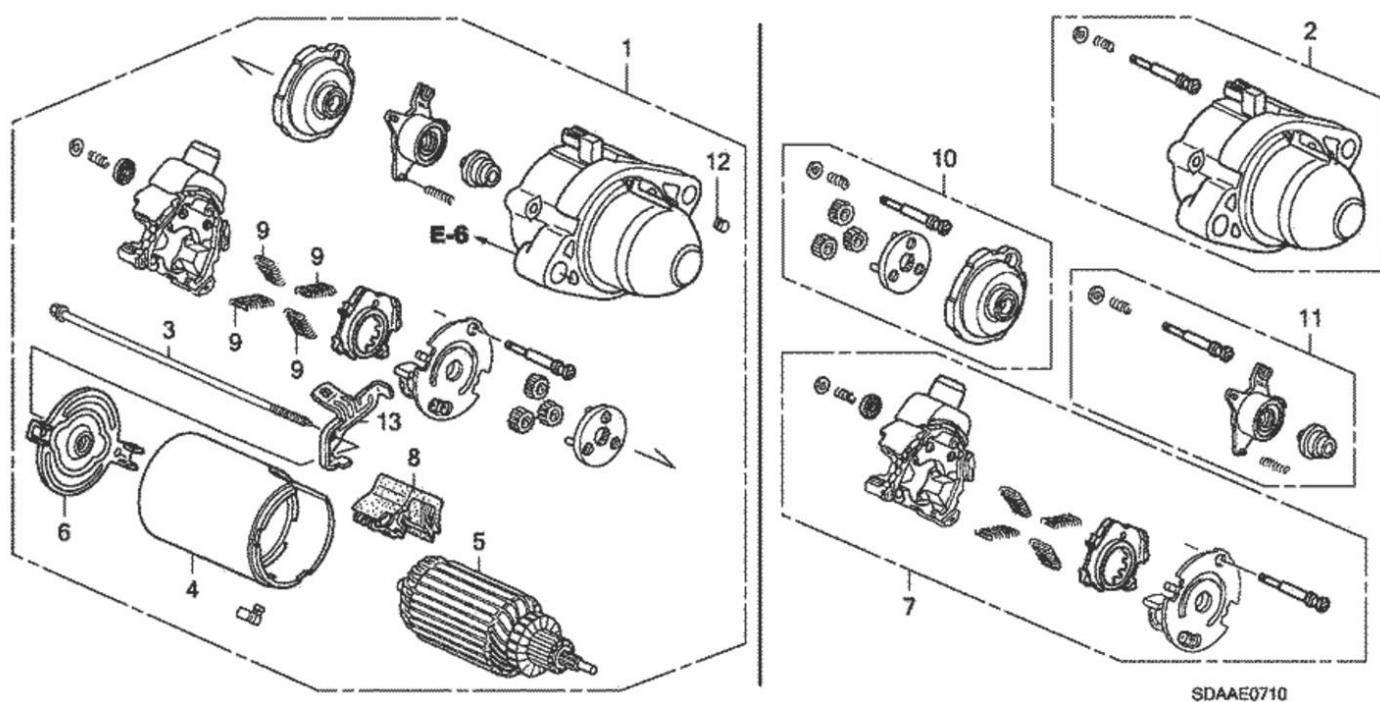


I purchased the following OEM replacement parts:

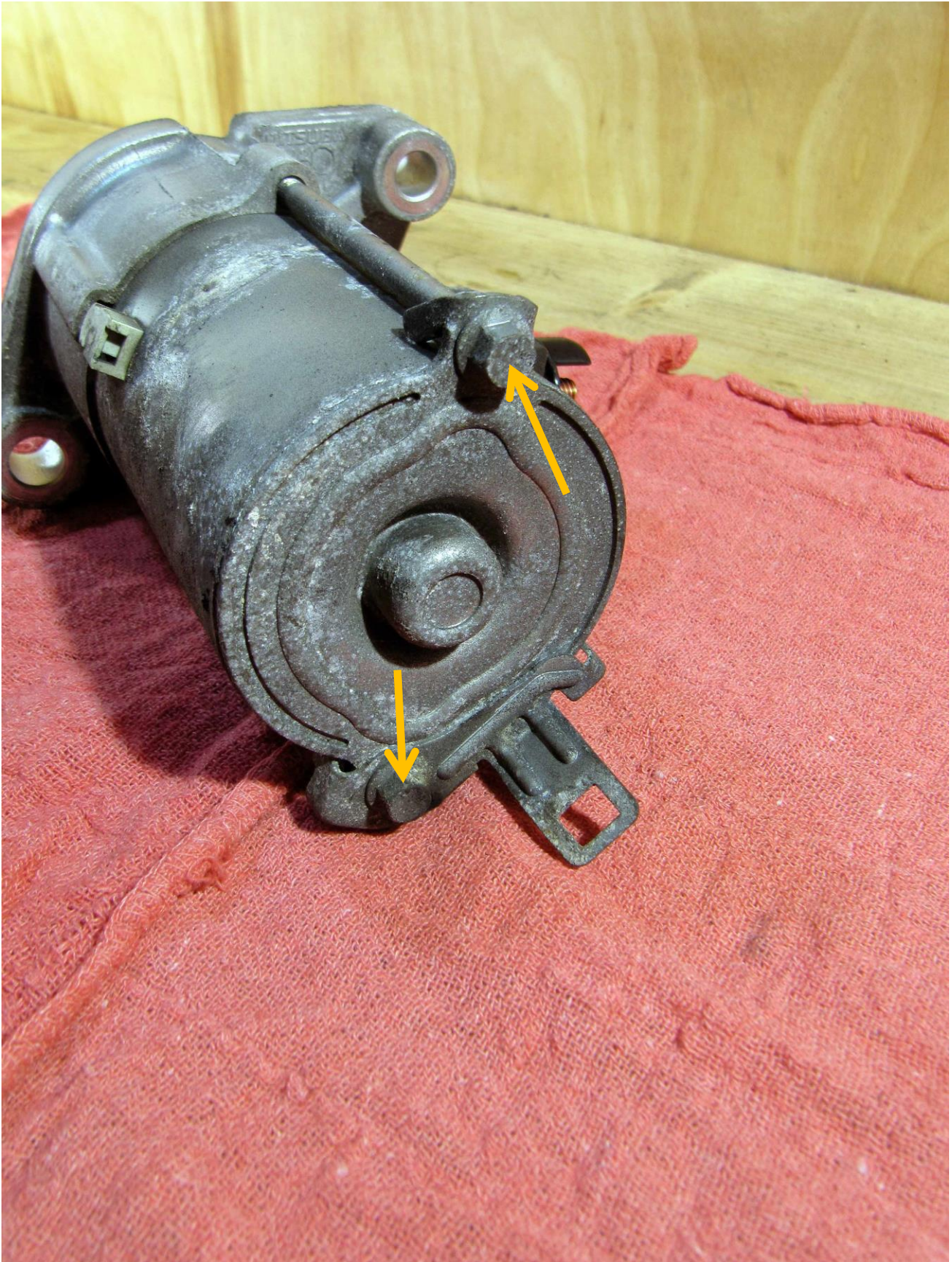
7 – Brush Assembly (this is a wear item and the most important thing to replace probably). Approximately \$29 online.

11 – Plunger Set – Approximately \$6 online. The original plunger set looked fine in my case (with ~350k miles on the starter) so it may not be necessary to replace this but for \$6 is probably worthwhile while you have it all apart anyway.

8 – Switch Cover – Approximately \$1 online. The original was actually in perfect condition so this probably does not have to be replaced.



Begin by removing the two bolts holding the starter together:



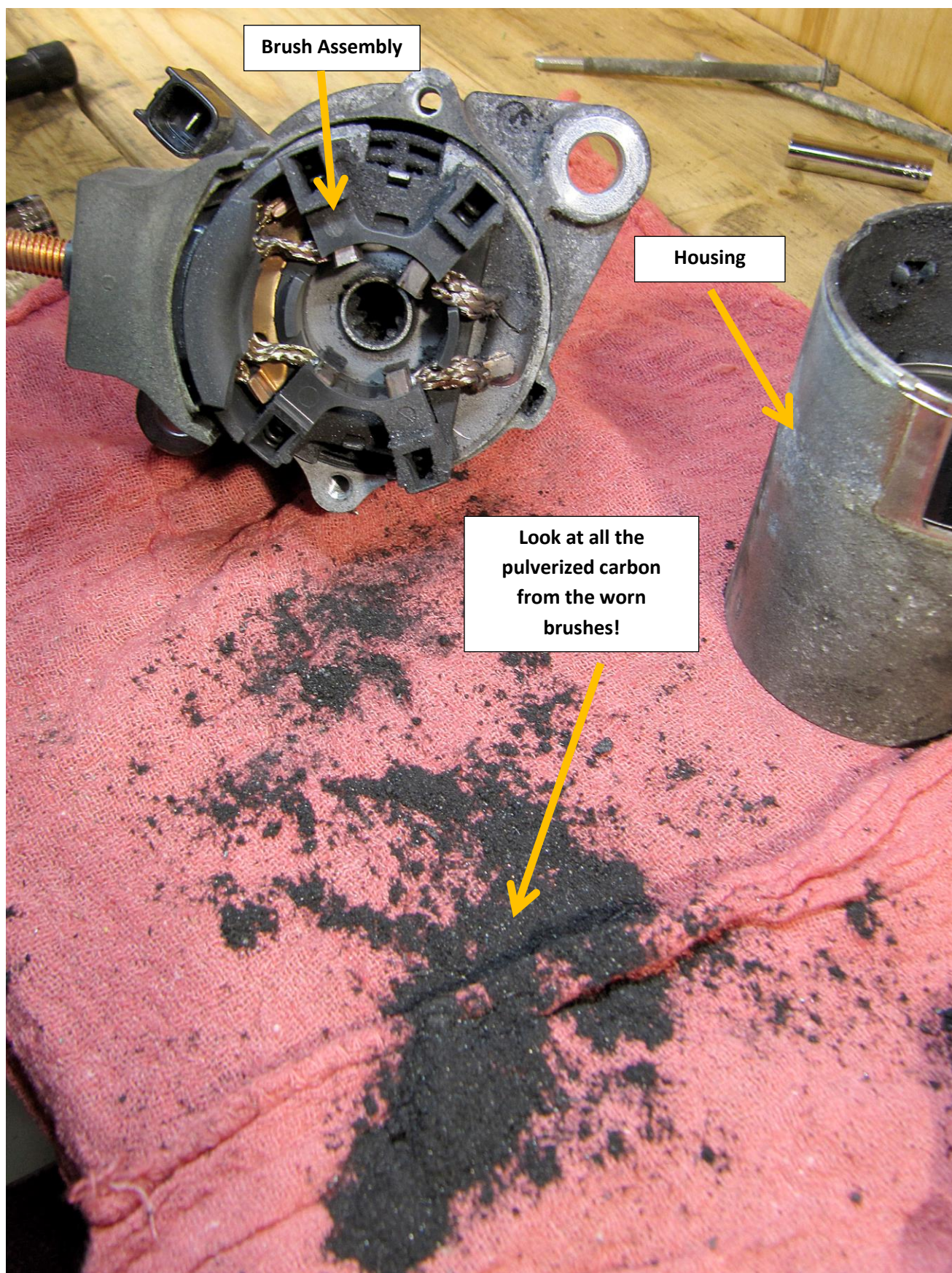
And remove the back cover:



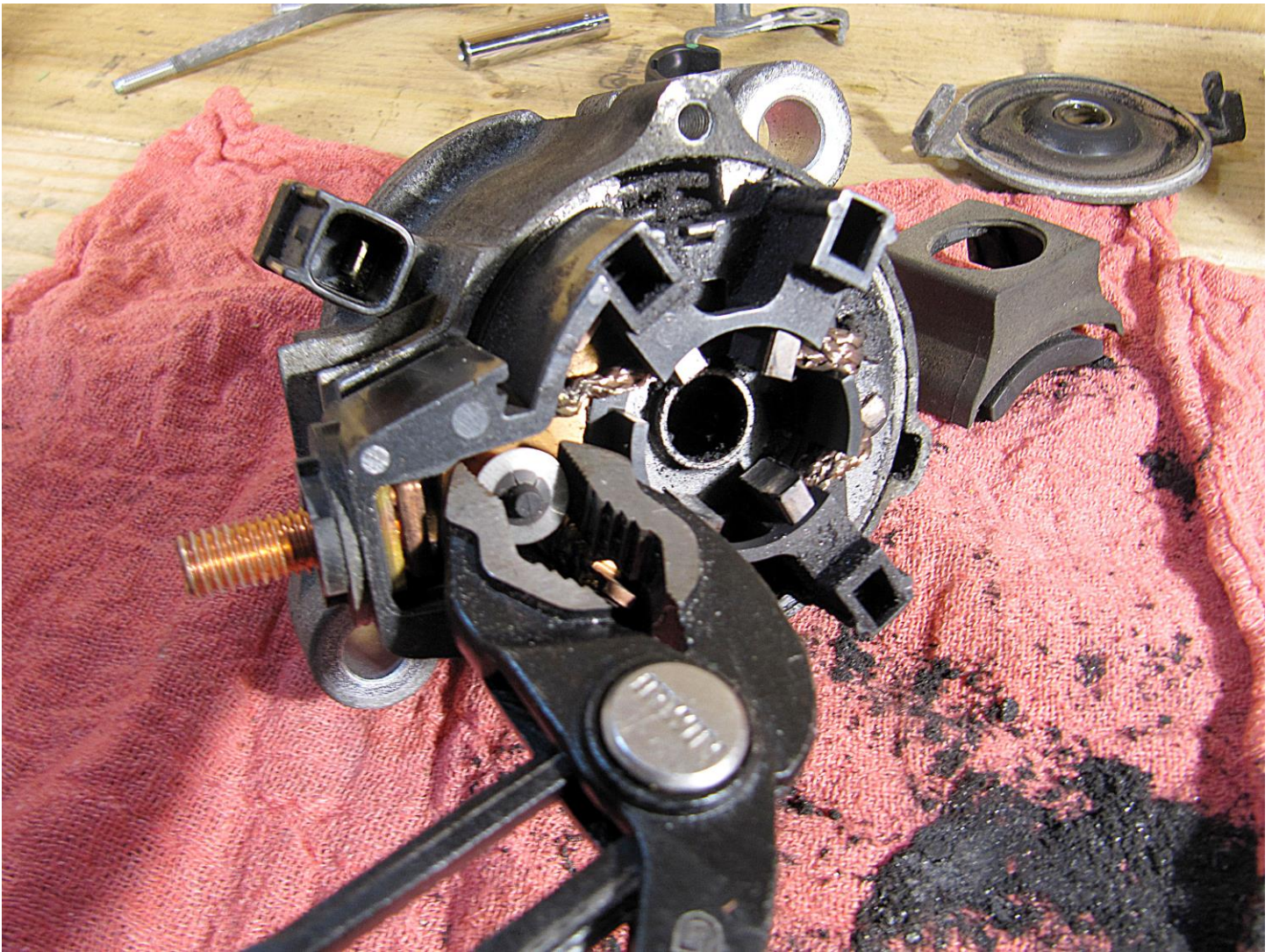
Pull the armature out:



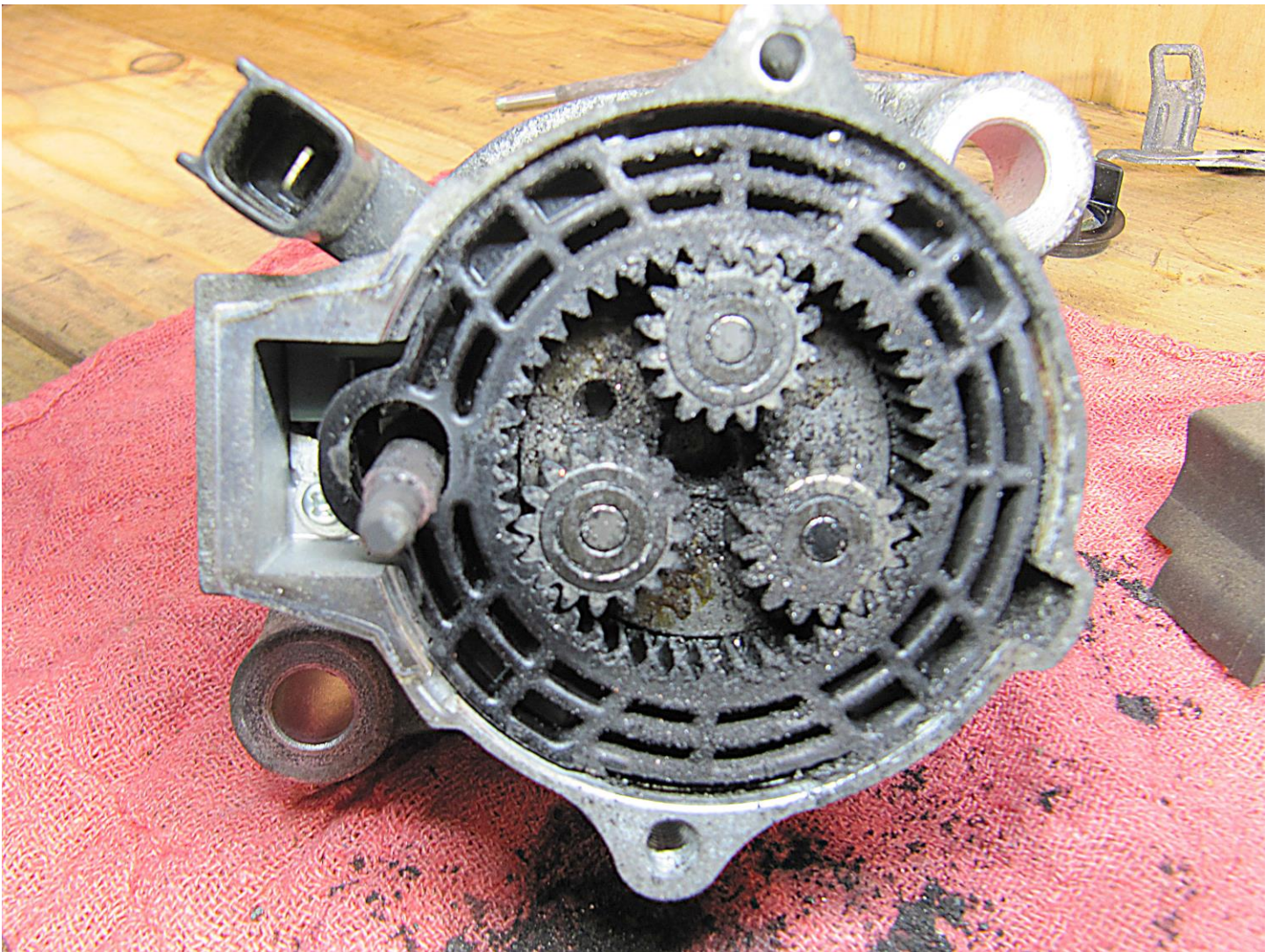
And remove the housing (it may take a few whacks with a rubber/plastic hammer):



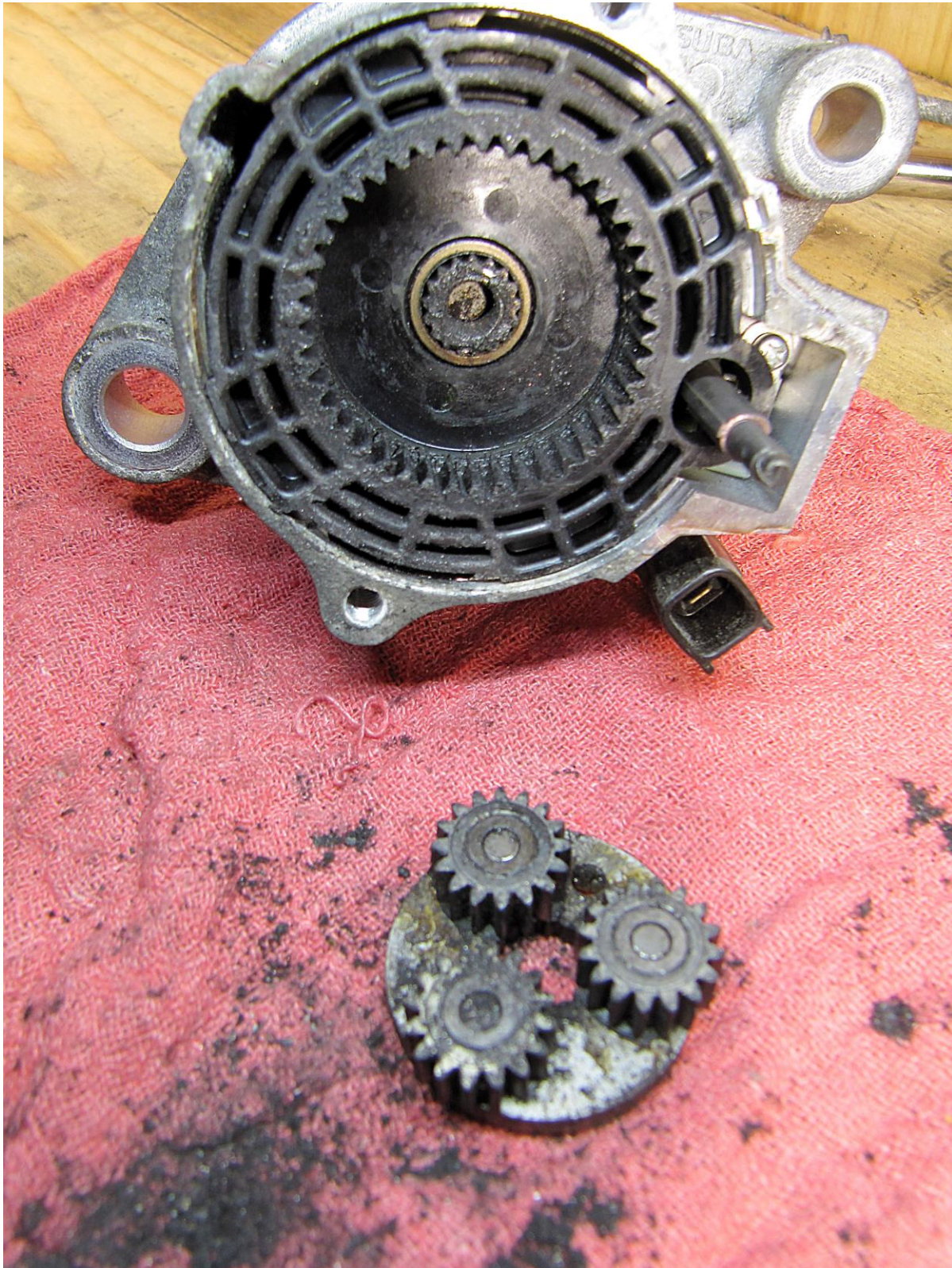
Rip off the metal disk on the end of the plastic plunger rod (don't worry about damaging it or the plastic rod as these are replacement parts that come with the brush set):



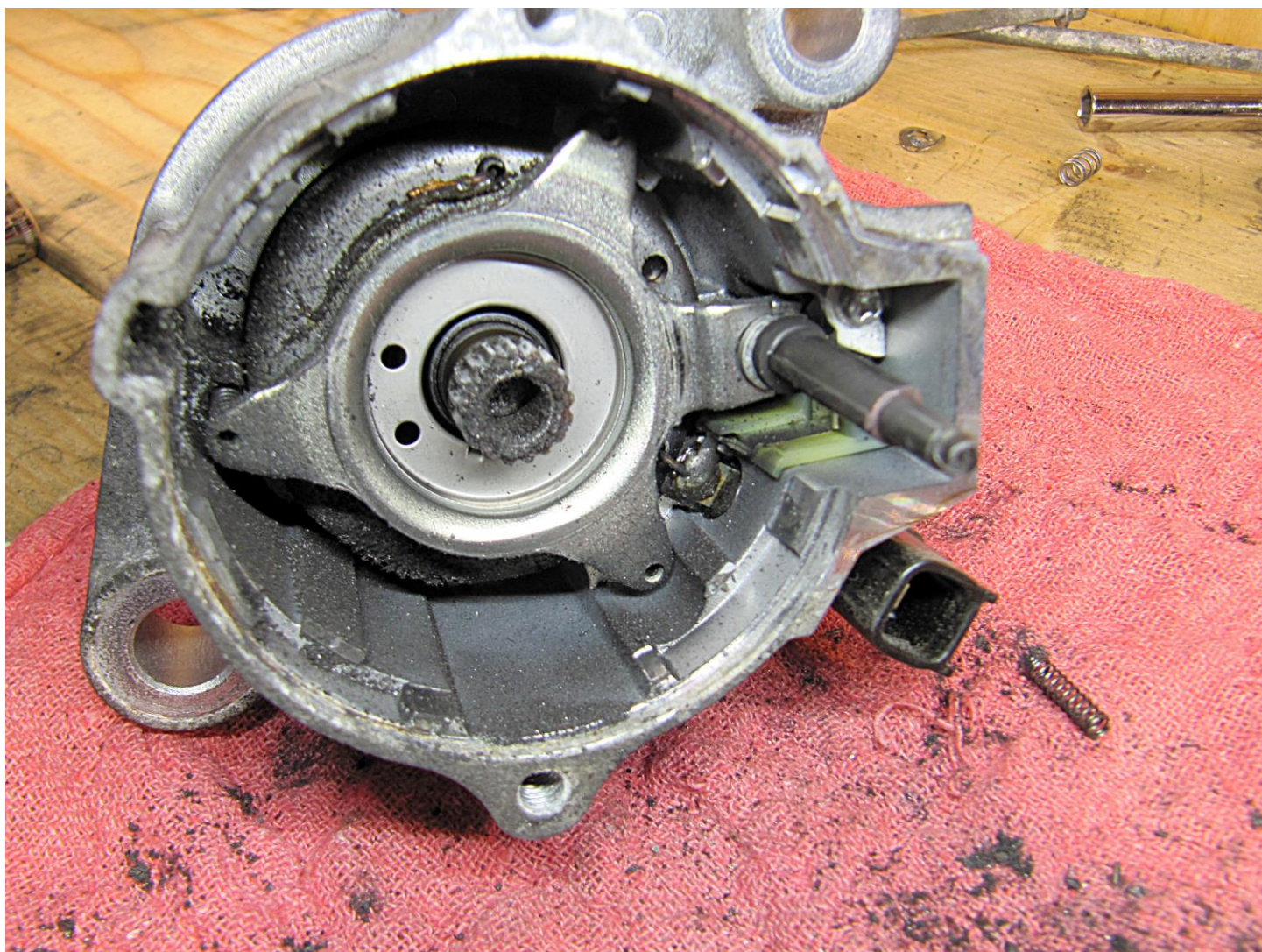
Pull off the brush set to expose the planetary gears:



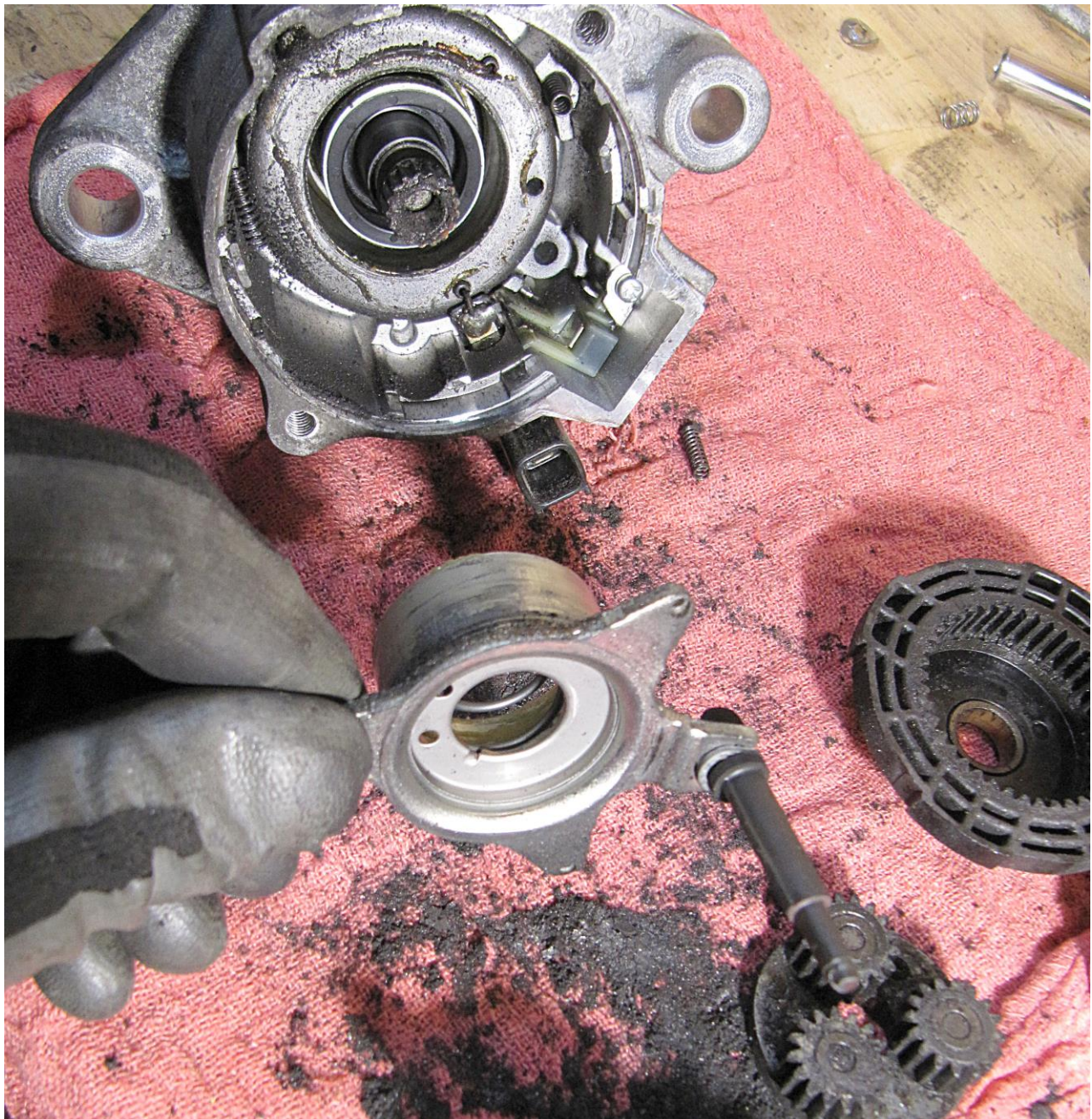
Remove the planetary gears:



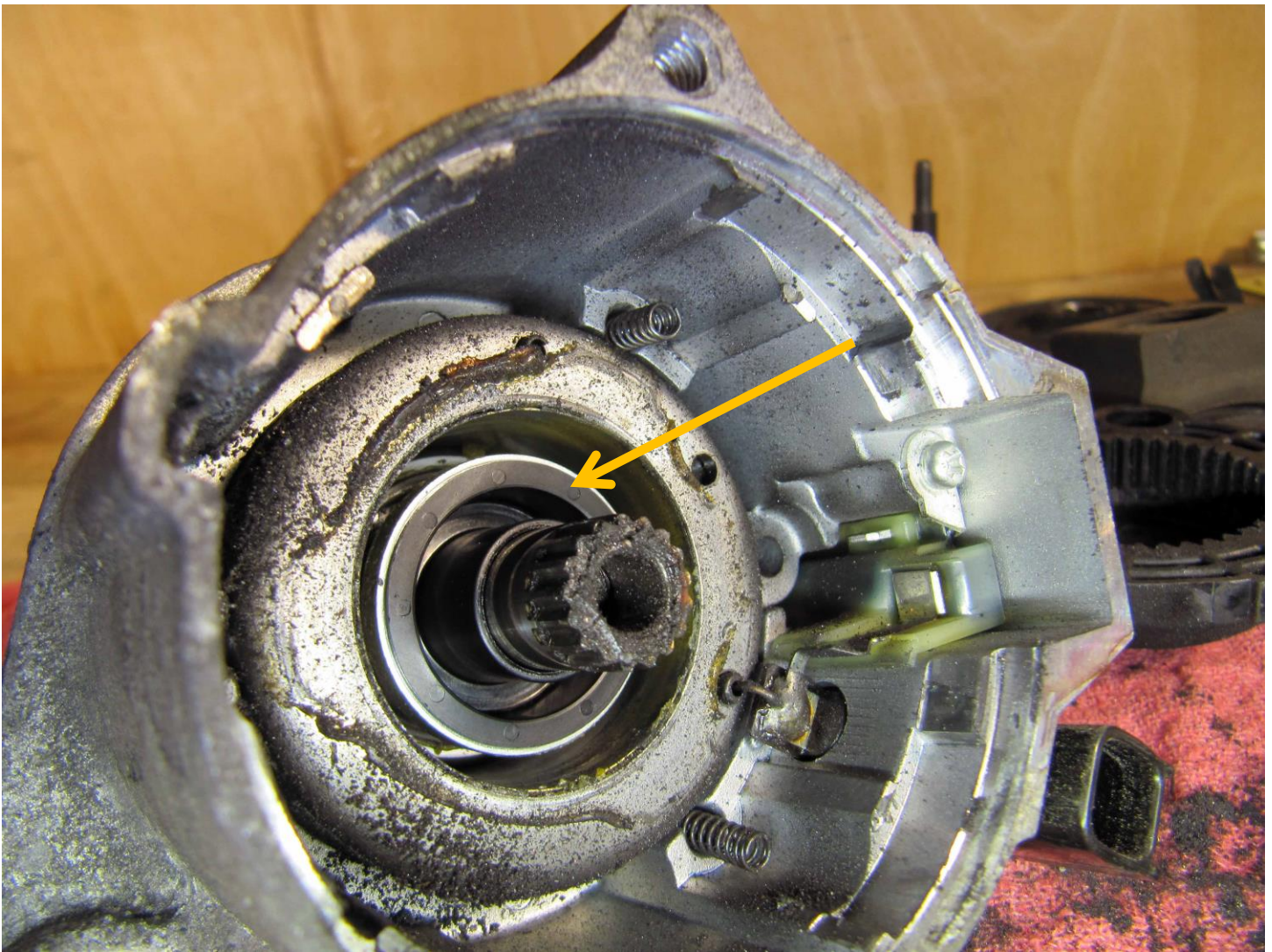
Remove the outer plastic planetary gear ring to expose the plunger set:



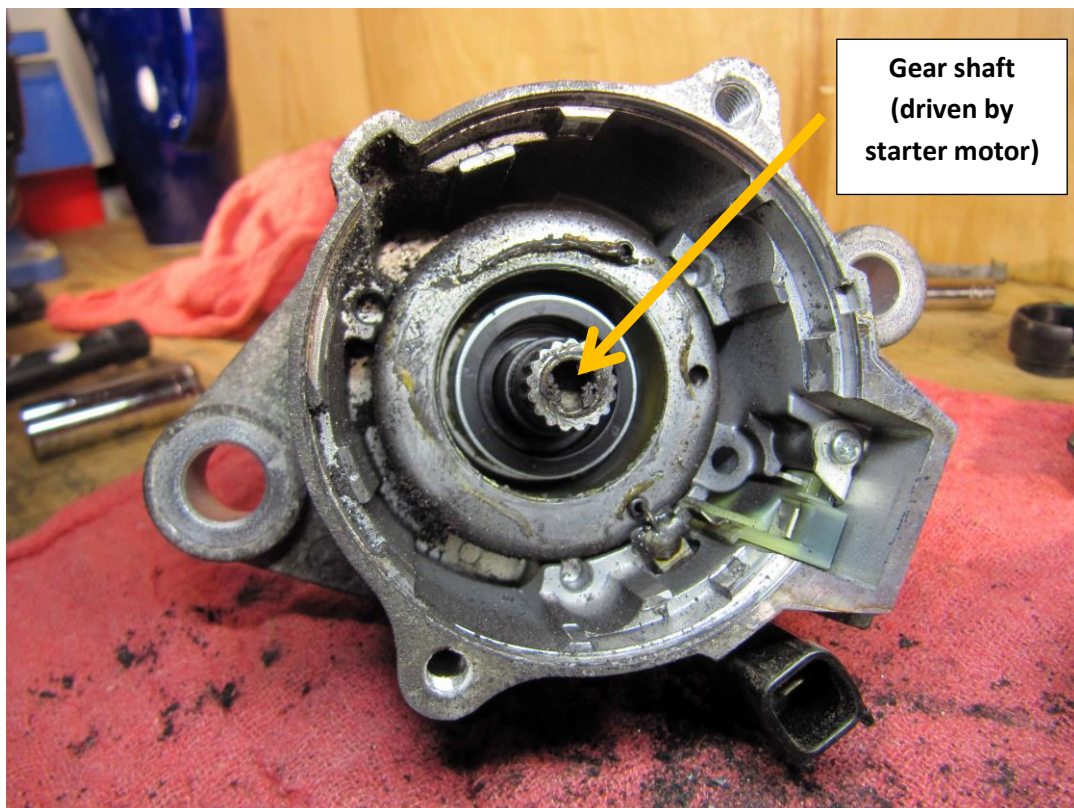
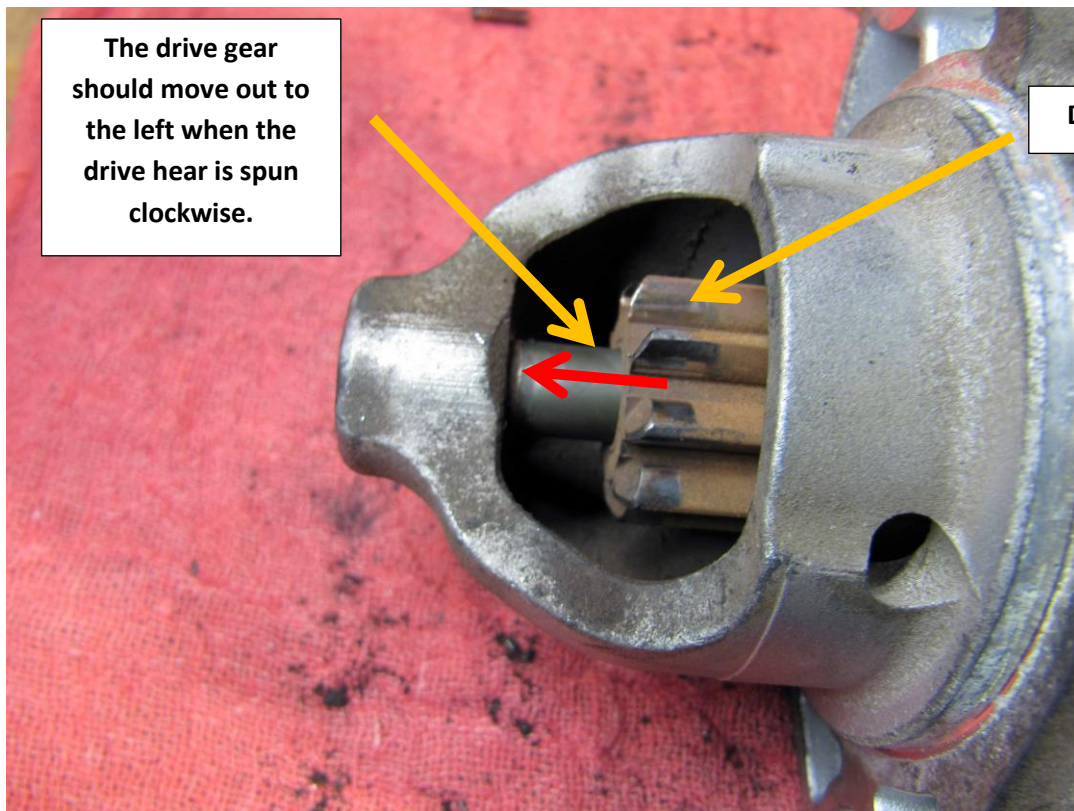
Remove the plunger assembly:



Slide out the inner plunger as well:



To check the over-running clutch (per the service manual), hold the drive gear and turn the gear shaft clockwise. Check that the drive gear comes out to the other end (left in picture below, to engage the flywheel). Hold the drive gear and turn the gear shaft in the opposite (CCW) direction. The gear shaft should rotate freely.



The commutator ring (how the brushes provide power to the armature) was pretty glazed and carboned:



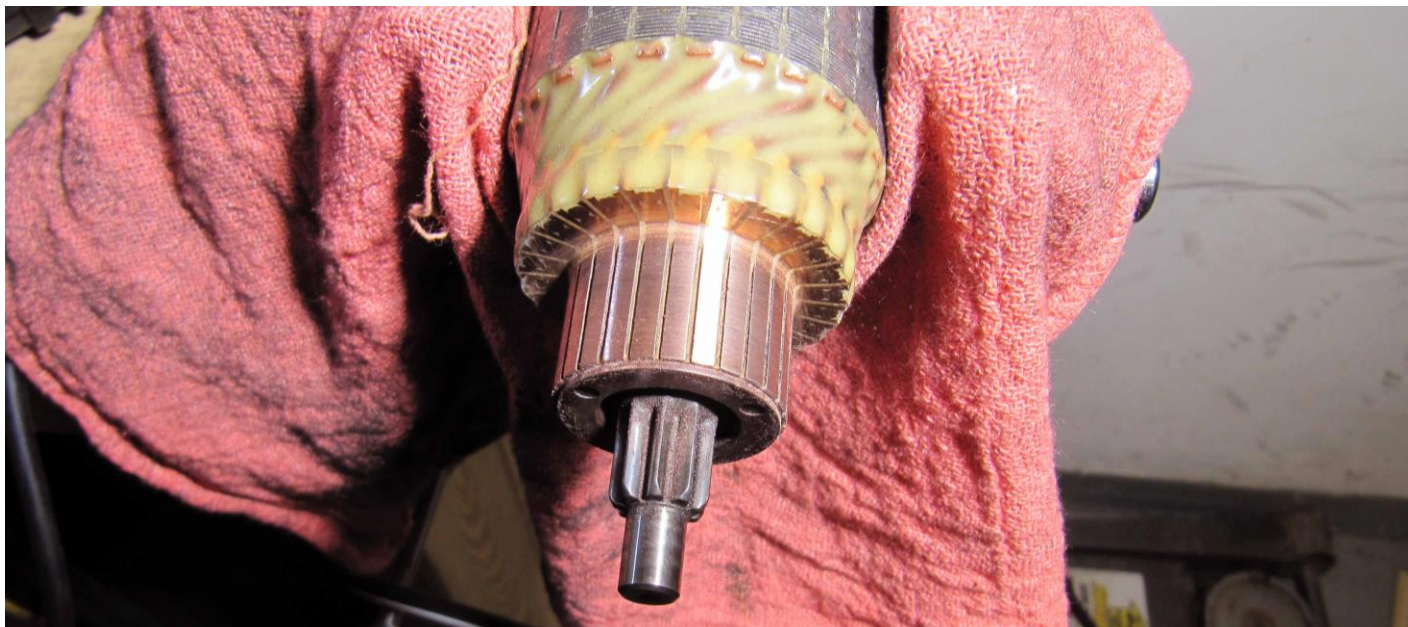
I used sandpaper to refinish the commutator (service manual recommends using #500 or #600). I didn't have any of that handy and lightly used some 180 grit...



I used an Exacto knife blade to clean out the grooves in the mica between the commutator segments. Per the service manual, these grooves should be 0.4mm to 0.5mm deep (service limit 0.15mm). The service manual recommends using a hacksaw blade to undercut the mica if necessary, but that seemed hard since the grooves are so narrow and you don't want to mar up the commutator segments.... The Exacto blade seemed to work well at least to remove the buildup of carbon in the grooves...



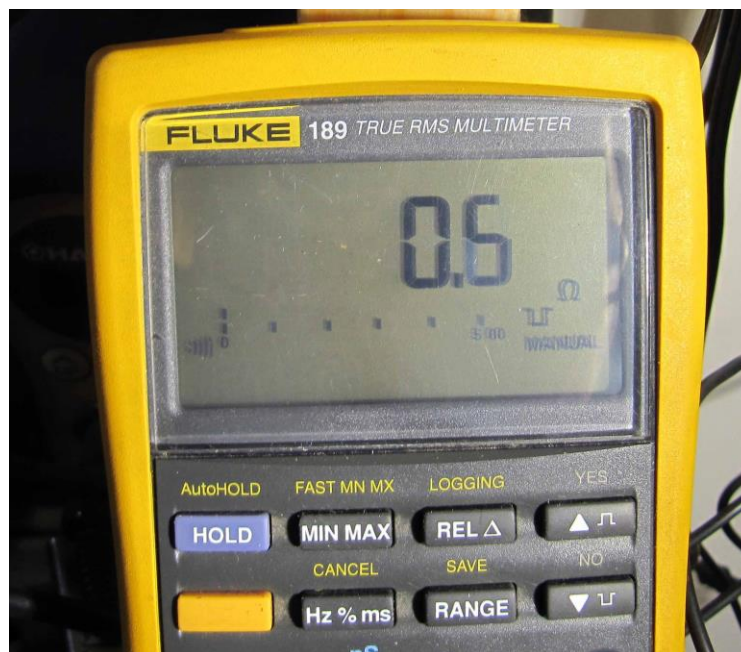
Here is what the cleaned-up commutator ring looked like (as a side note, you can get a brand new OEM armature for \$24, so another option would be to just replace the whole armature).



Note that you want the grooves between commutator segments to be well below the surface of the commutator segments.



If you care to, the service manual documents some basic electrical checks which can be performed to verify the integrity of the armature. First is to check for continuity between commutator segments:



Also, you can check to make sure there is NO continuity (should be very high resistance – open circuit) between the commutator segments and the armature core:



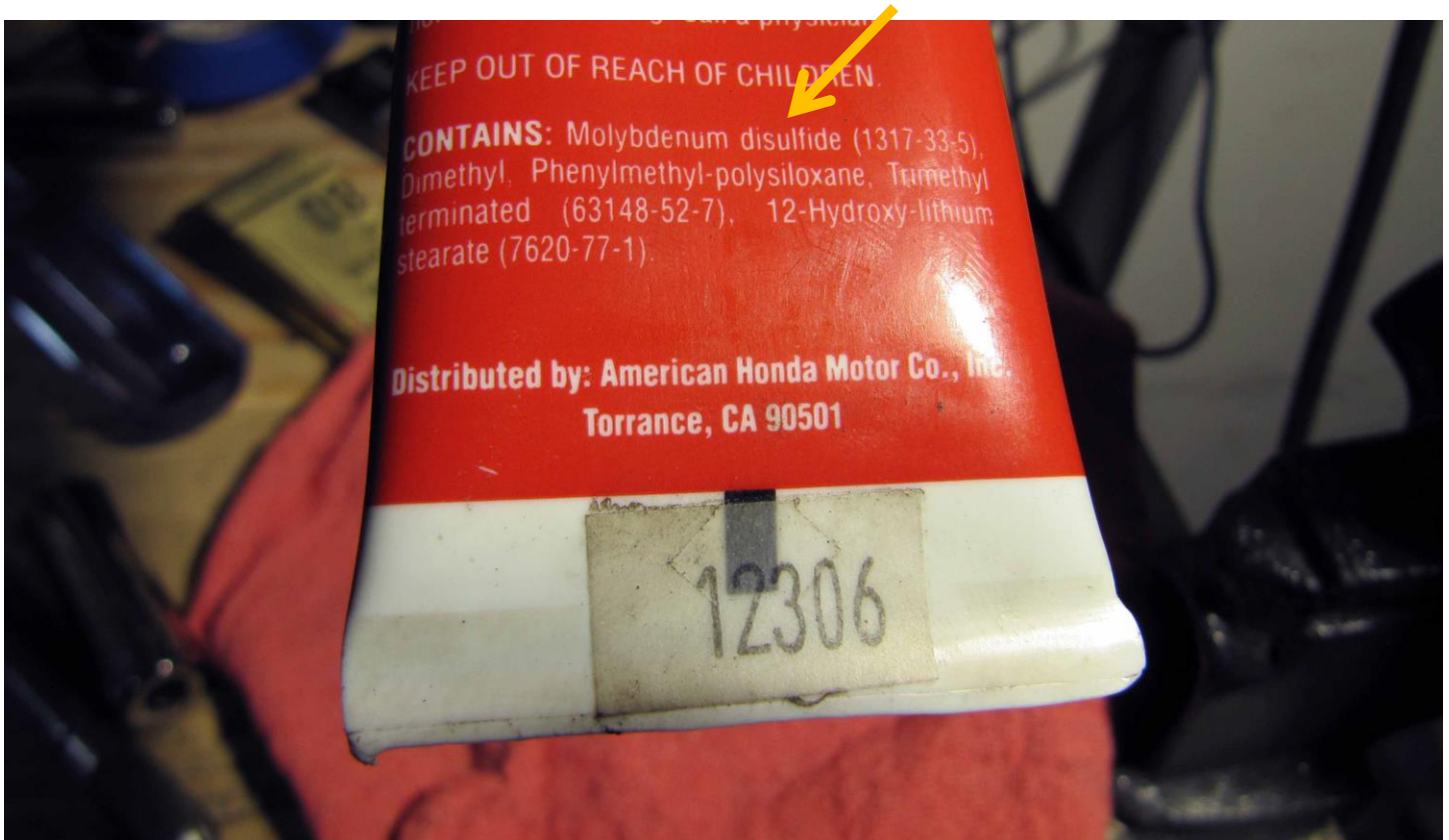
And you can check that there is NO continuity between the commutator segments and the shaft:



Here is the contents of the OEM plunger set:



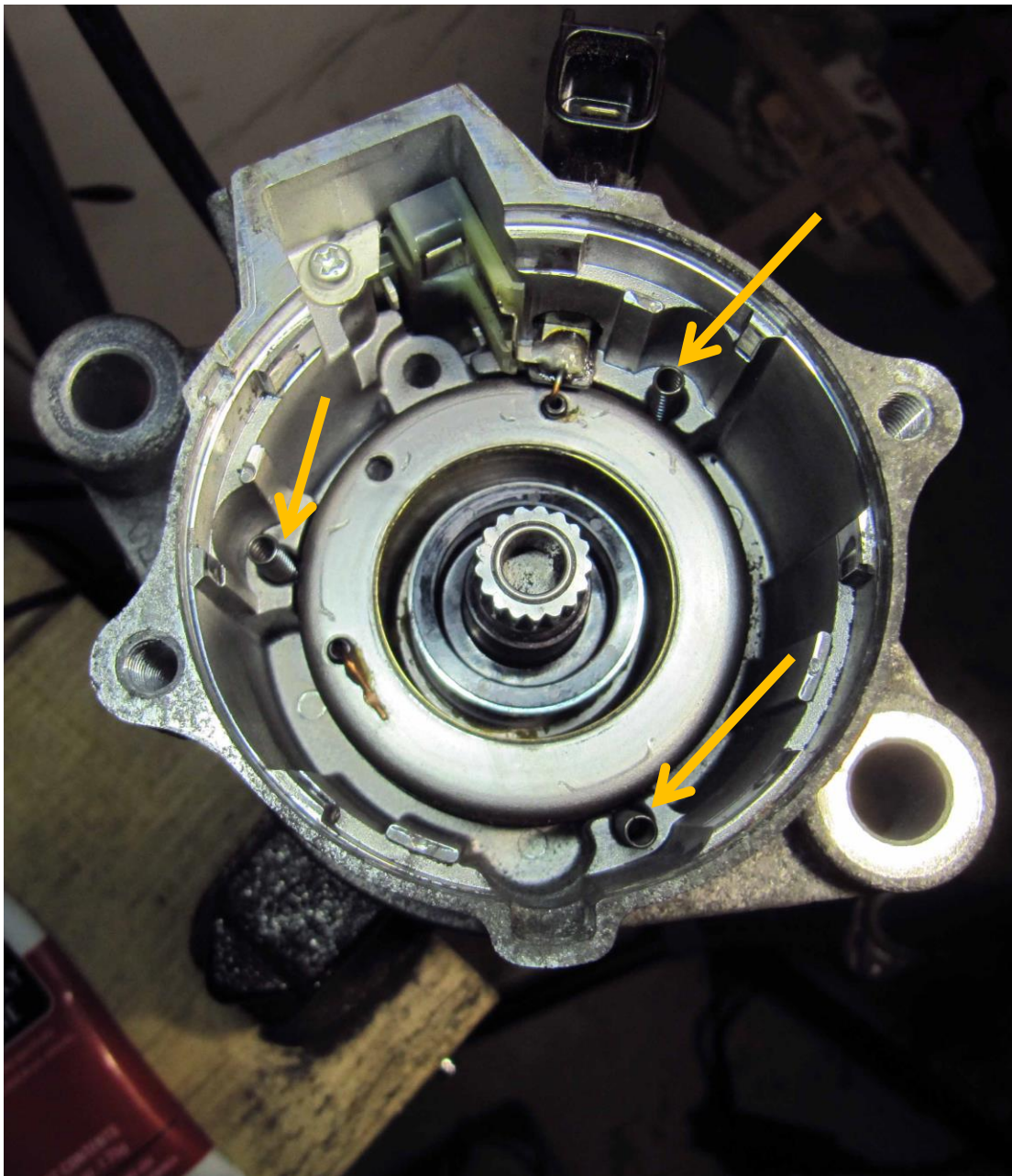
The service manual recommends using molybdenum disulfide for lubrication, so I used the M-77 Assembly Paste:



I cleaned out the end case with a rag and compressed air (didn't want to use brake cleaner or anything because I didn't want to wash out any lubricants up there) and then inserted the plunger after lubricating it:



There are three springs that need to be seated in their sockets:



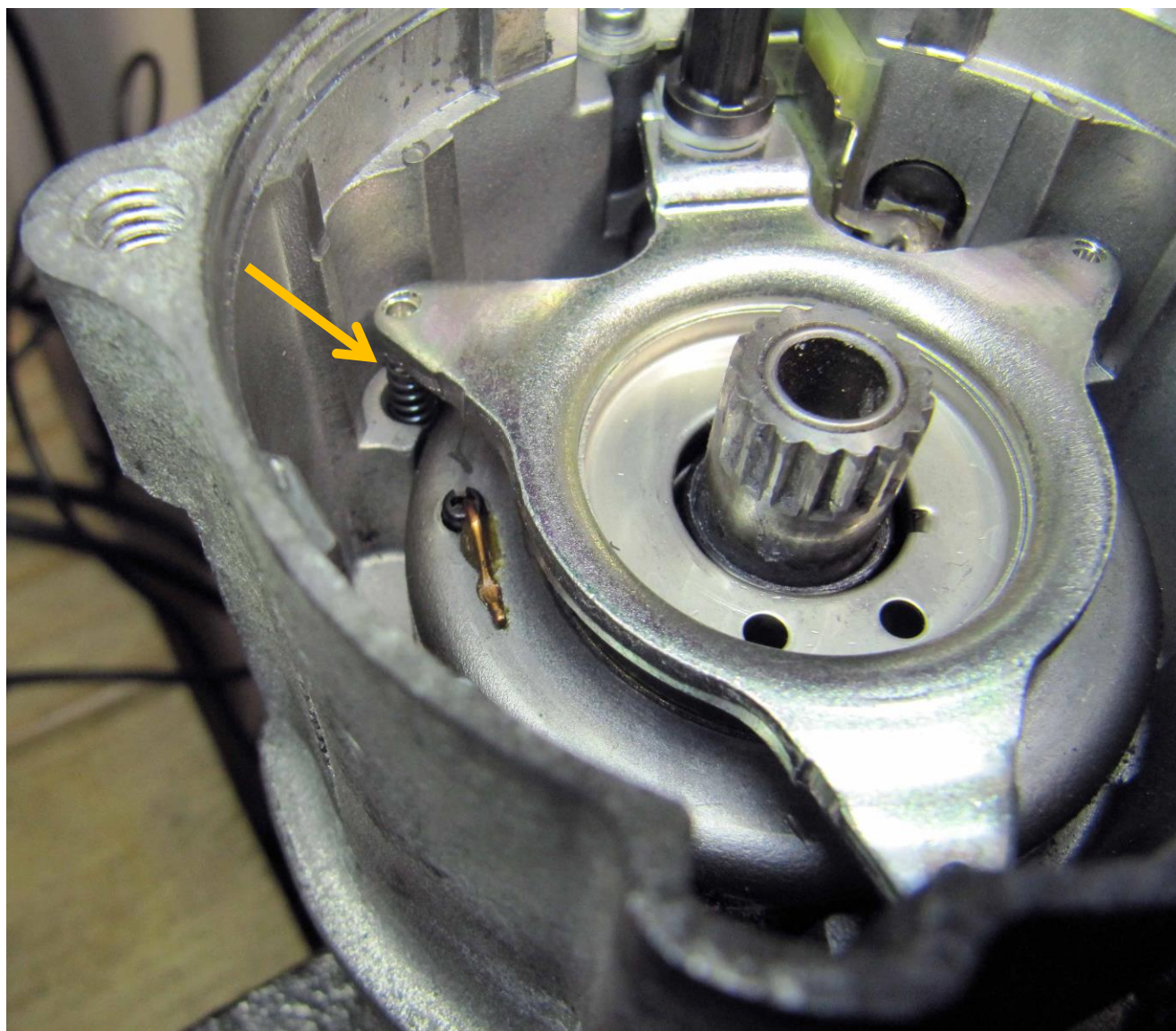
Insert the new plastic shaft onto the plunger assembly:



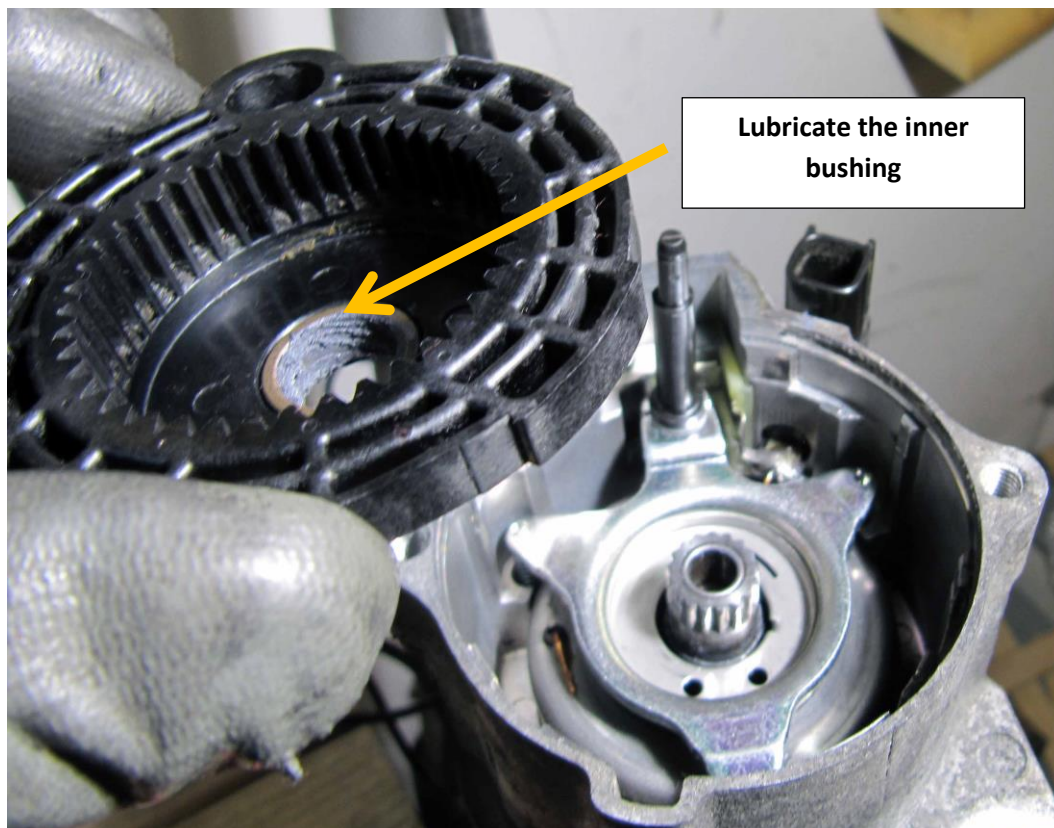
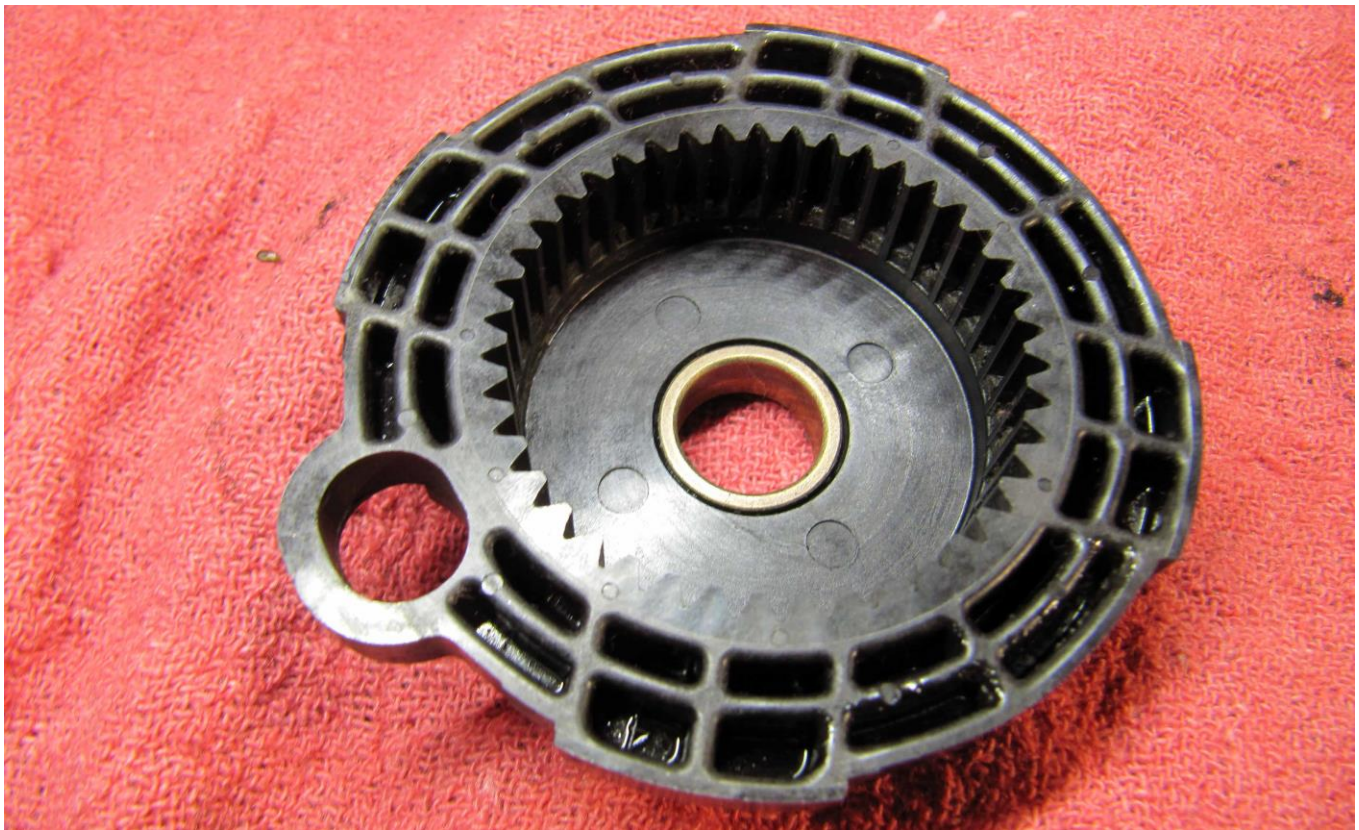
And insert the plunger assembly into the starter head:



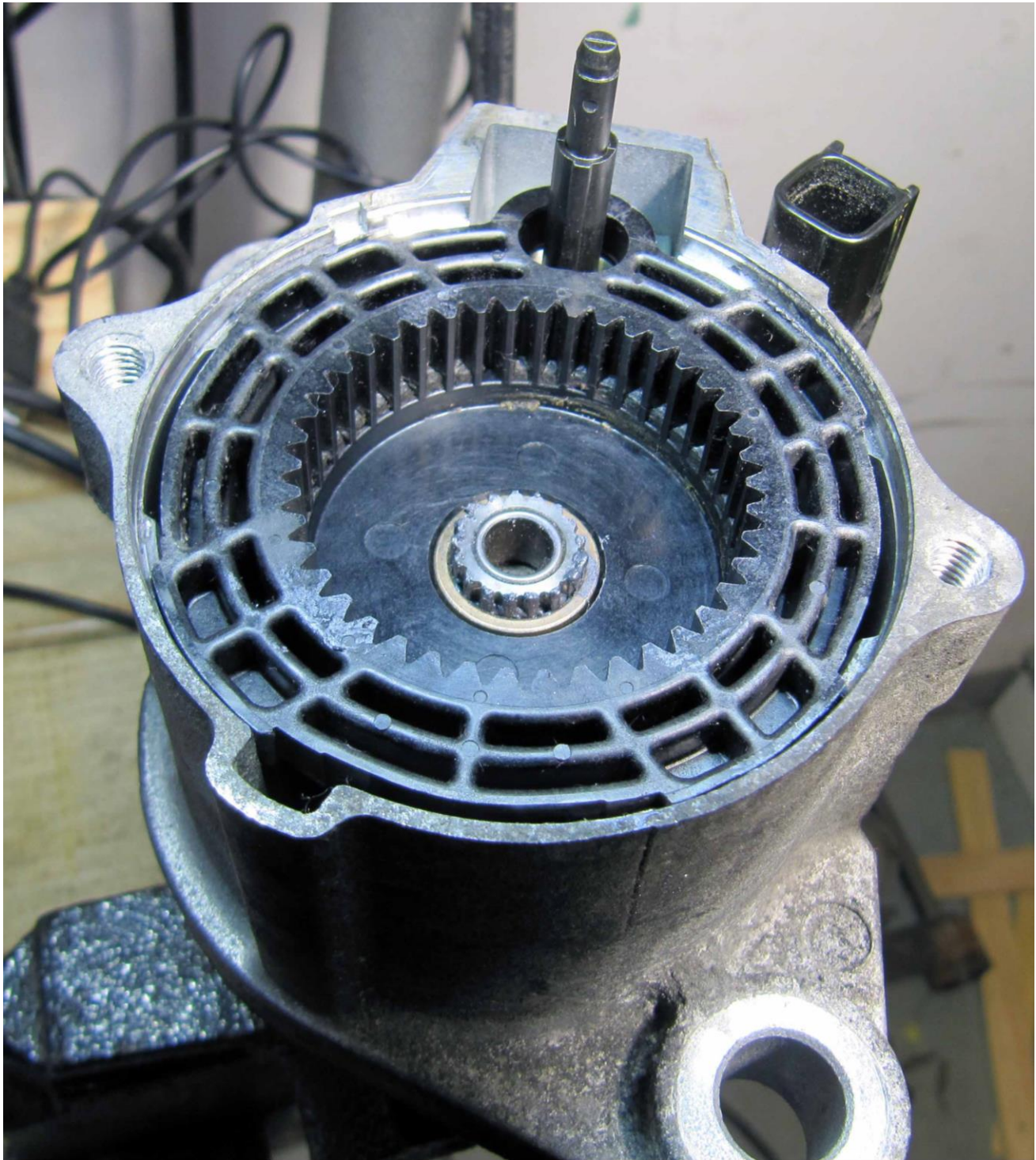
Make sure that the three springs are correctly seated on the plunger assembly (there is a little metal extension on the plunger assembly that should slip into the top of each spring)



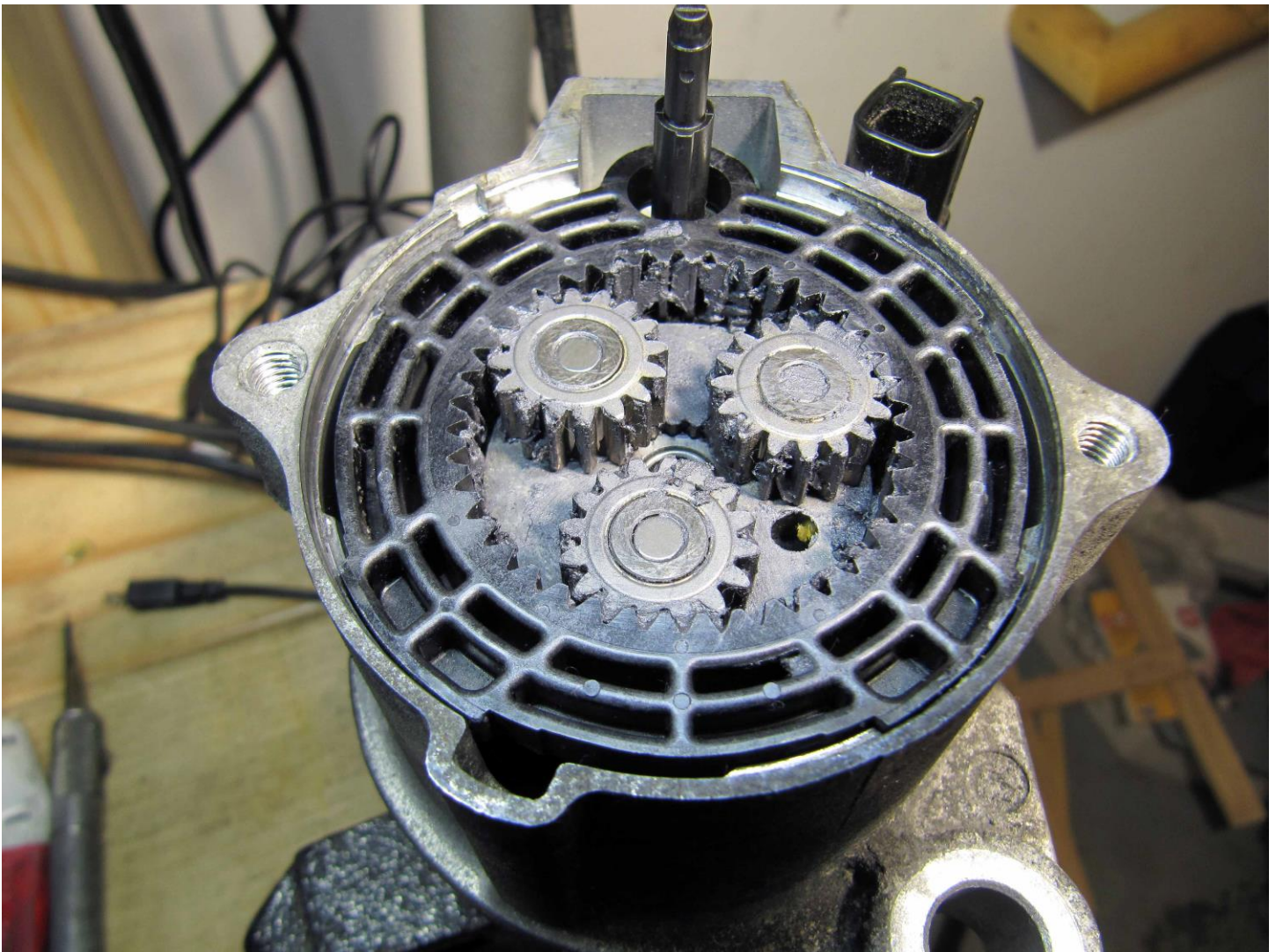
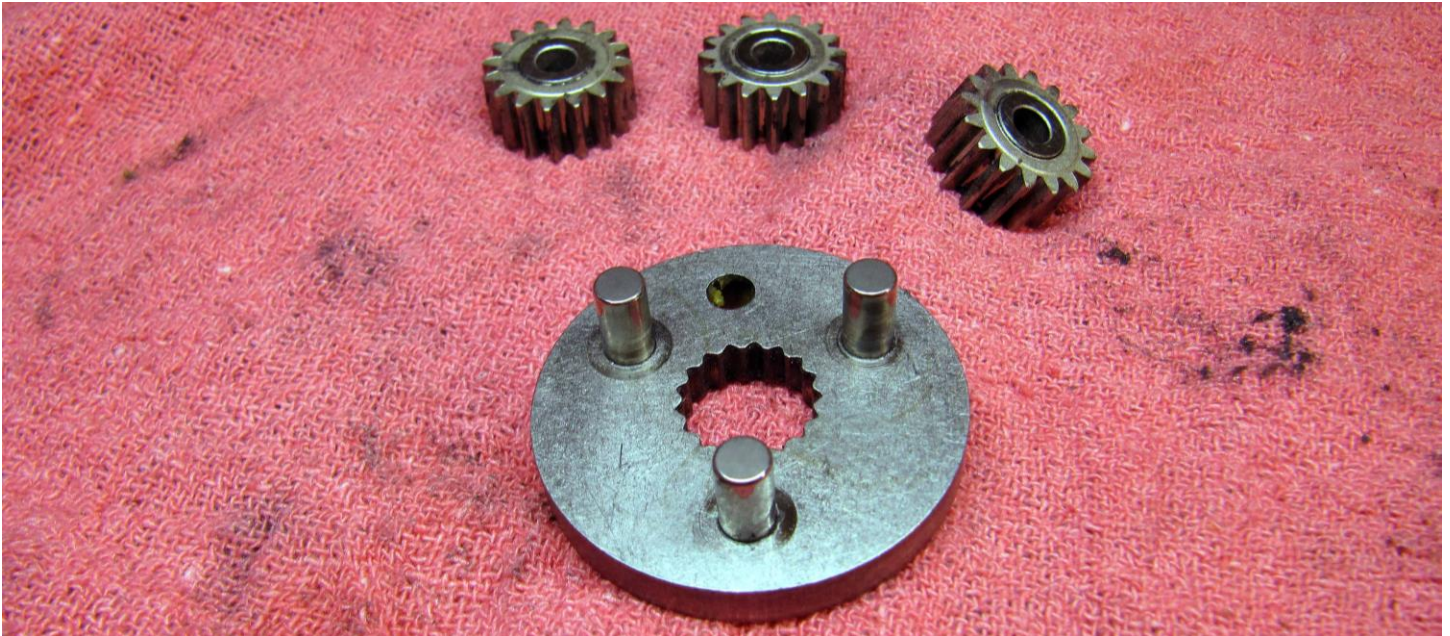
Clean out the outer planetary gear housing and insert it on top of the plunger assembly:



Now, it should look like this:



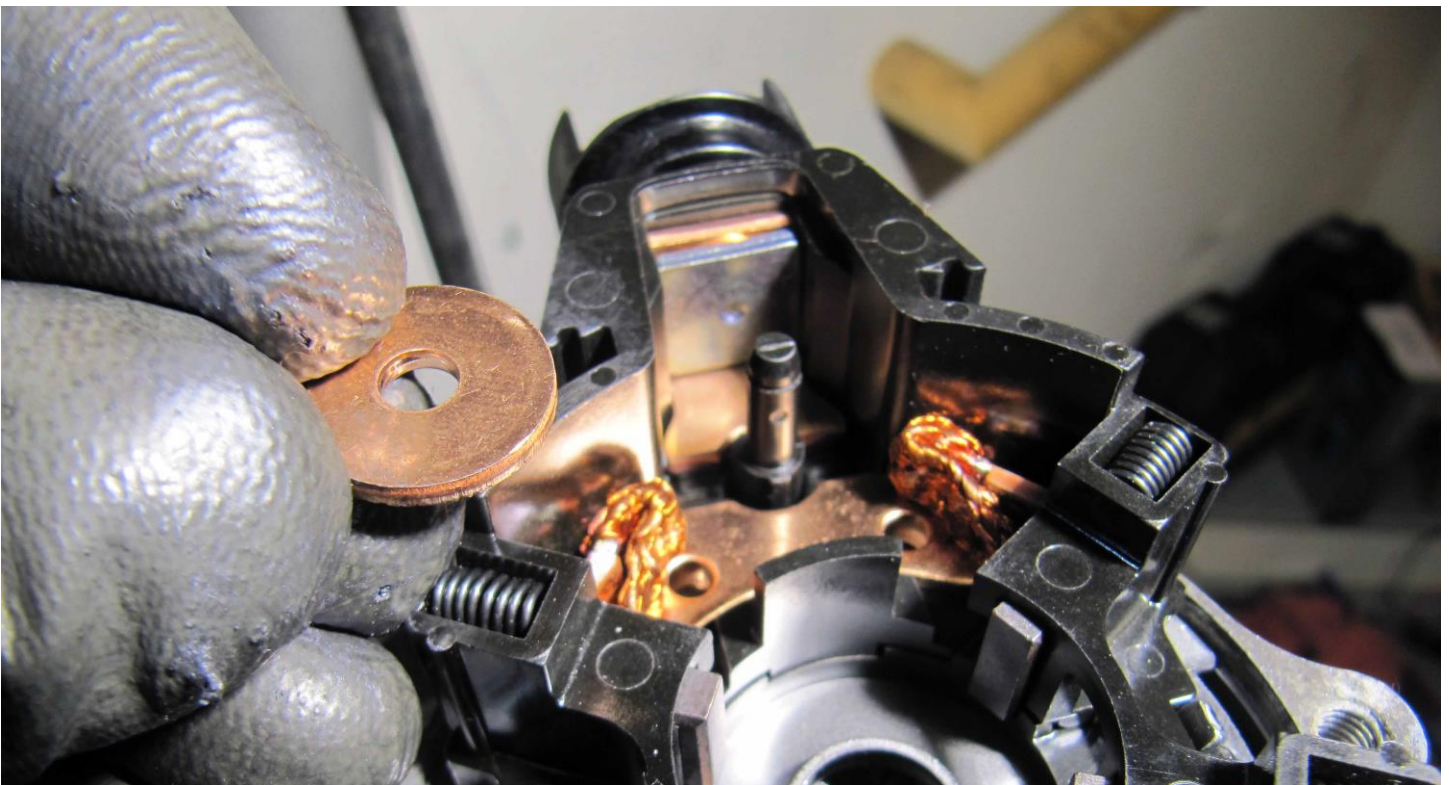
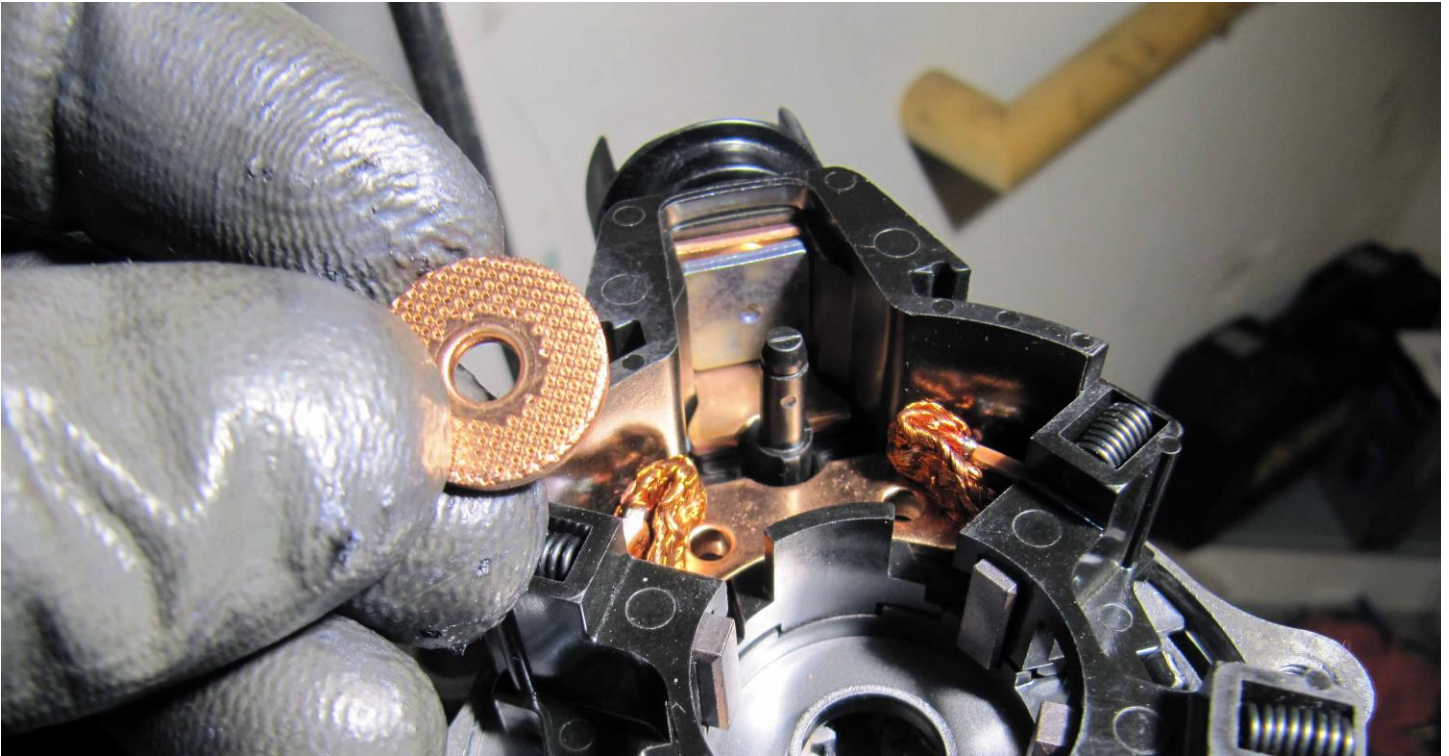
Clean off the planetary gears, apply fresh lubrication and insert them on top of the outer ring:



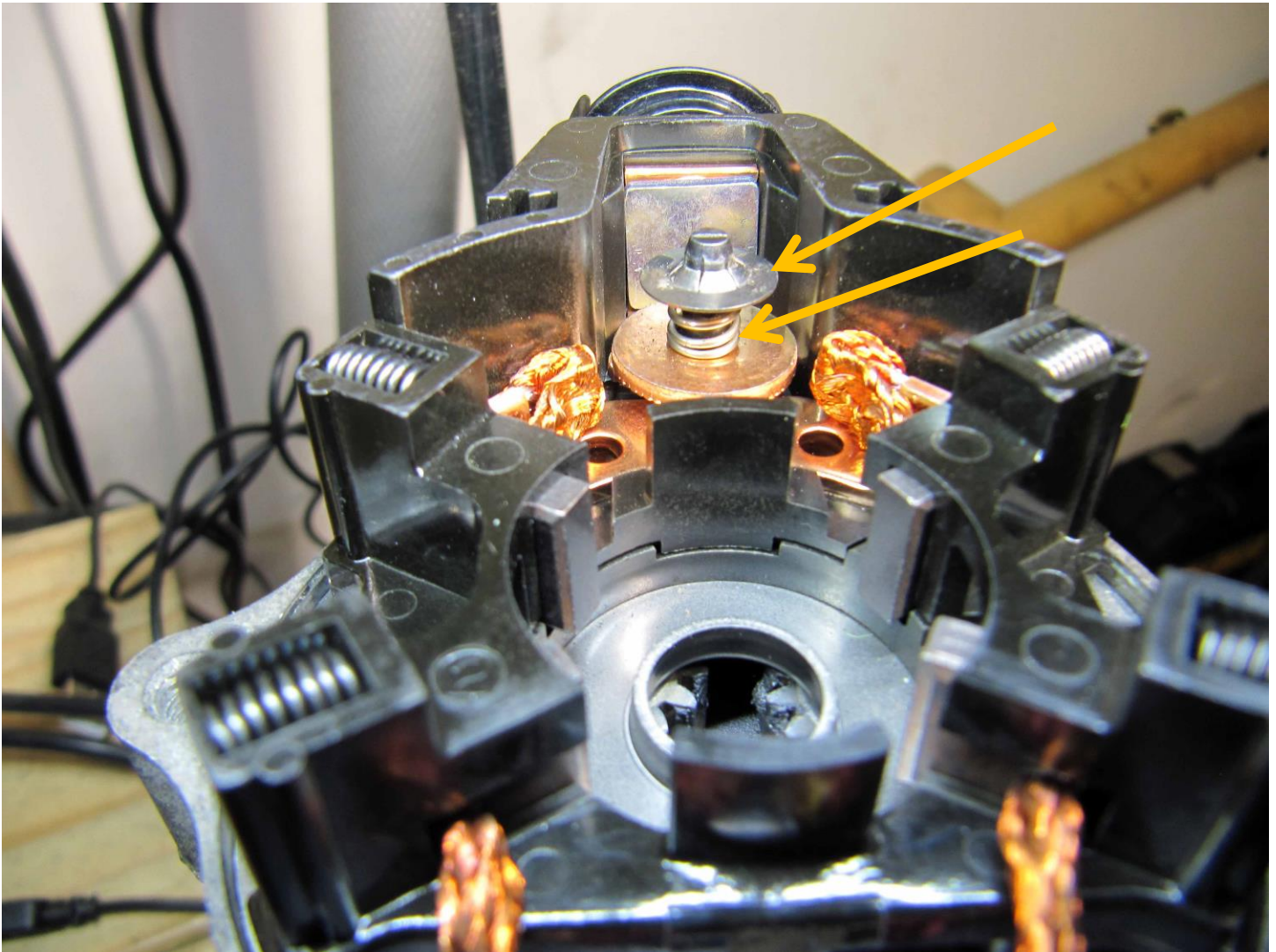
Install the new brush assembly:



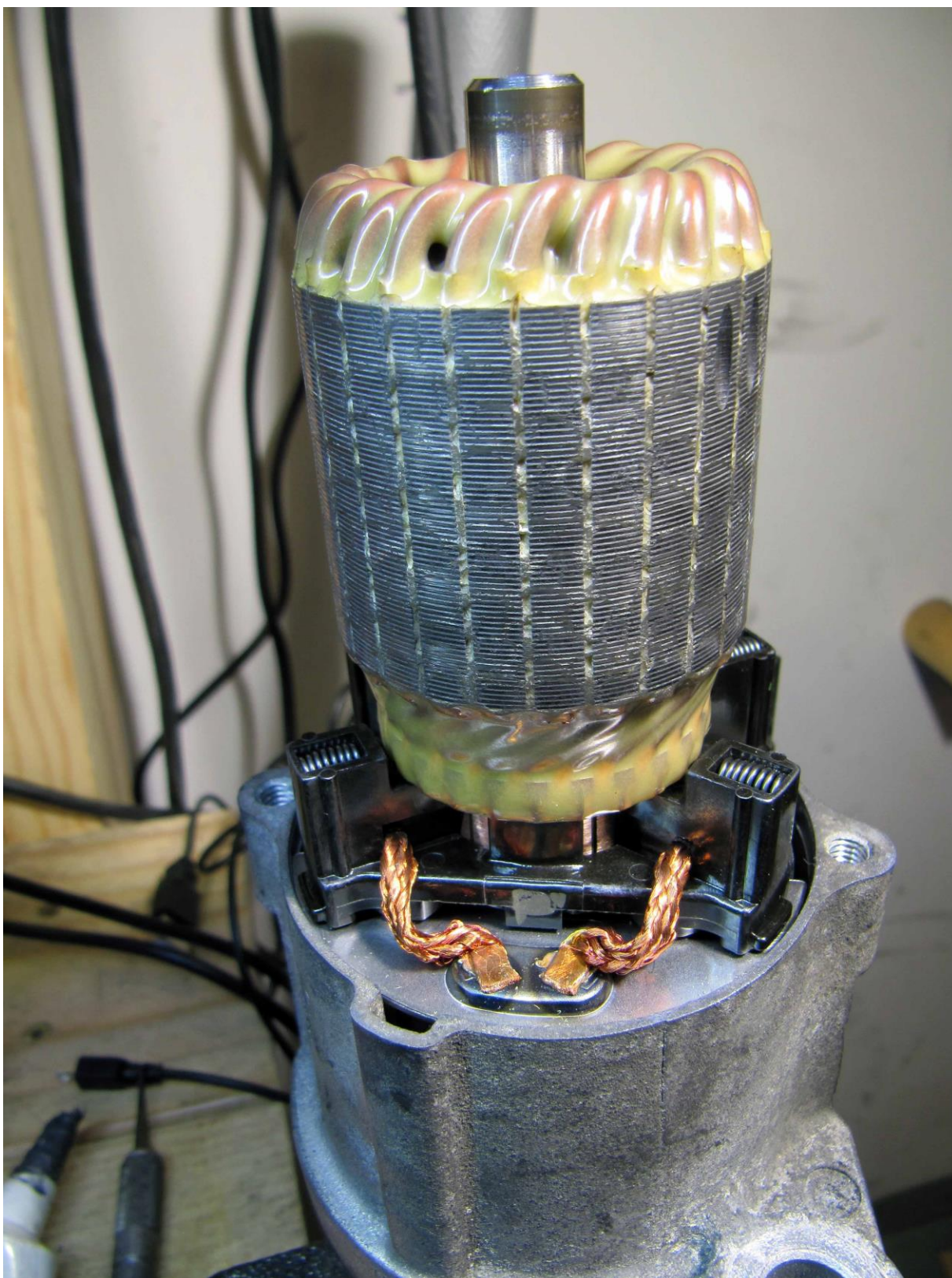
Install the new copper switch contact on the plastic plunger rod. There are two sides, the rough side goes down:



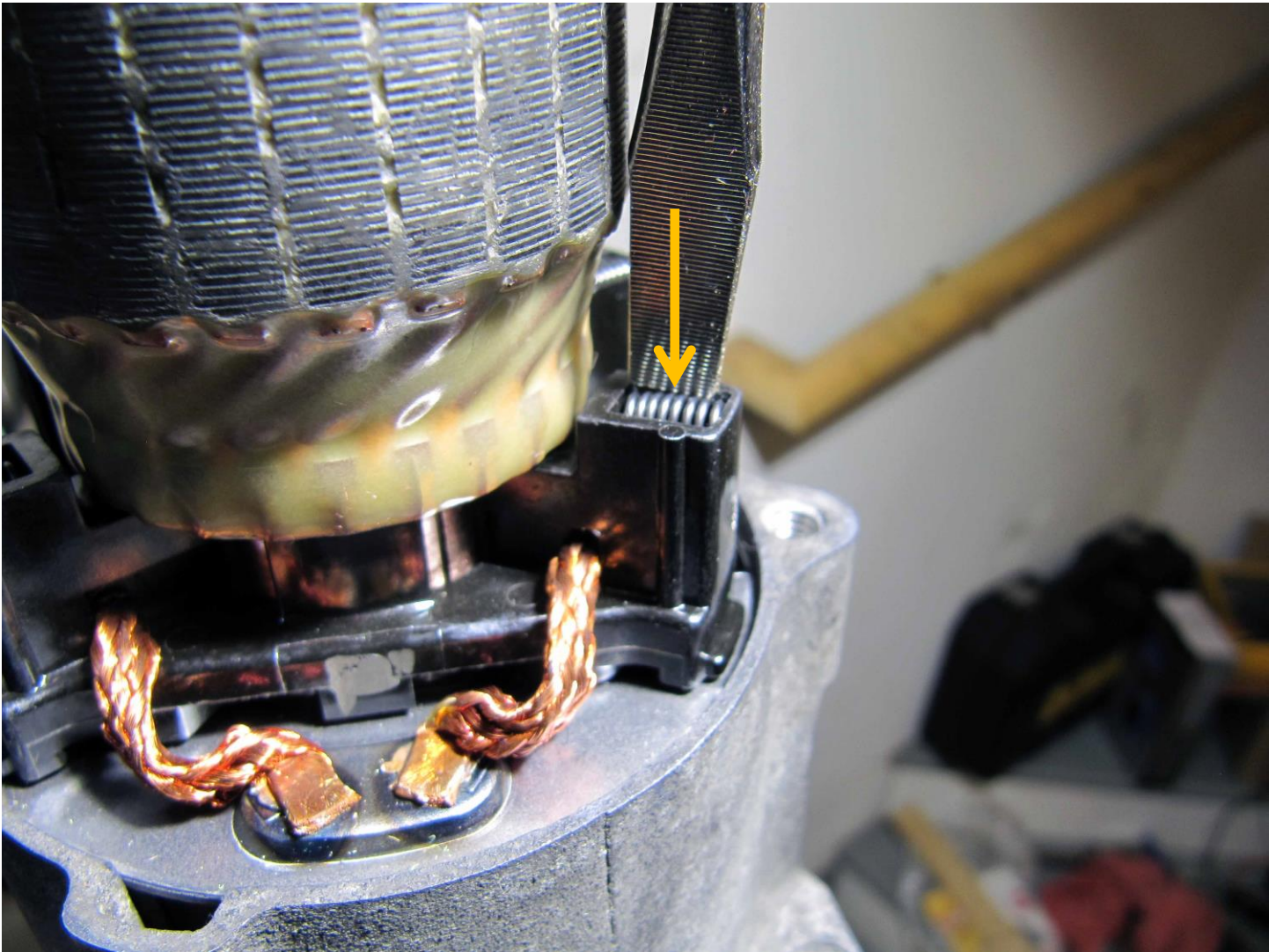
Install the new spring and metal clip on the top of the plastic plunger rod:



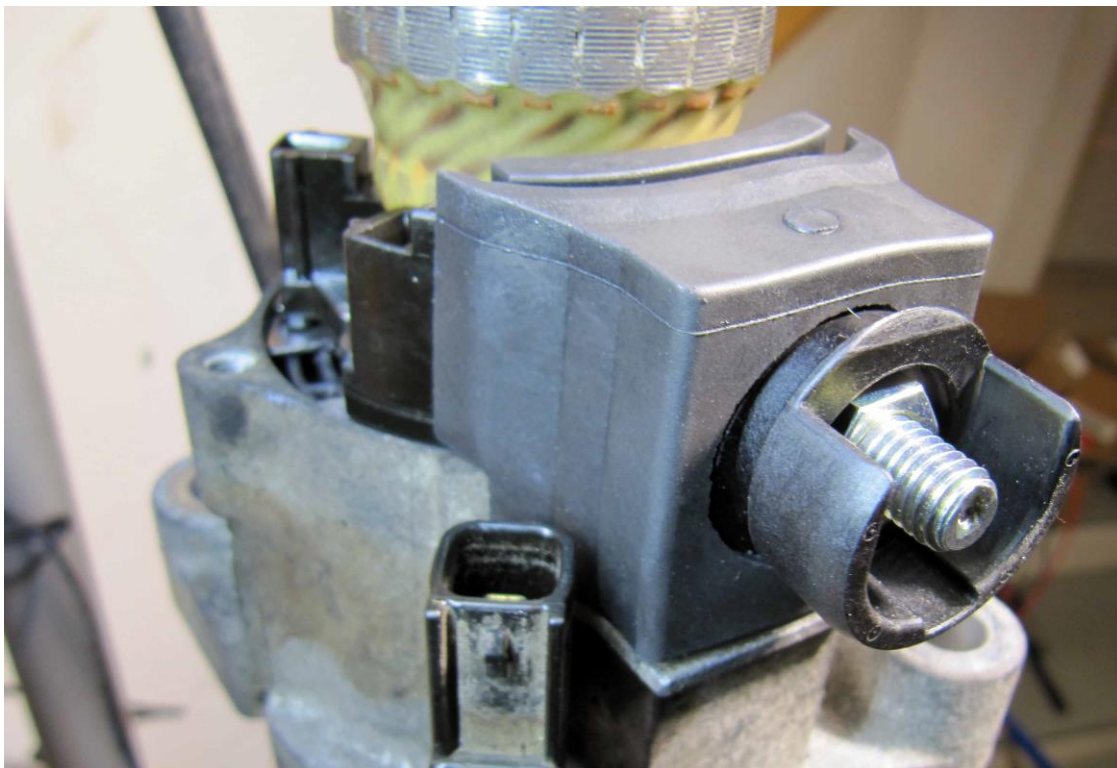
Insert the armature into the brush assembly. You may need to pull back gently on the brush wires so the brushes move back enough to fit it in:



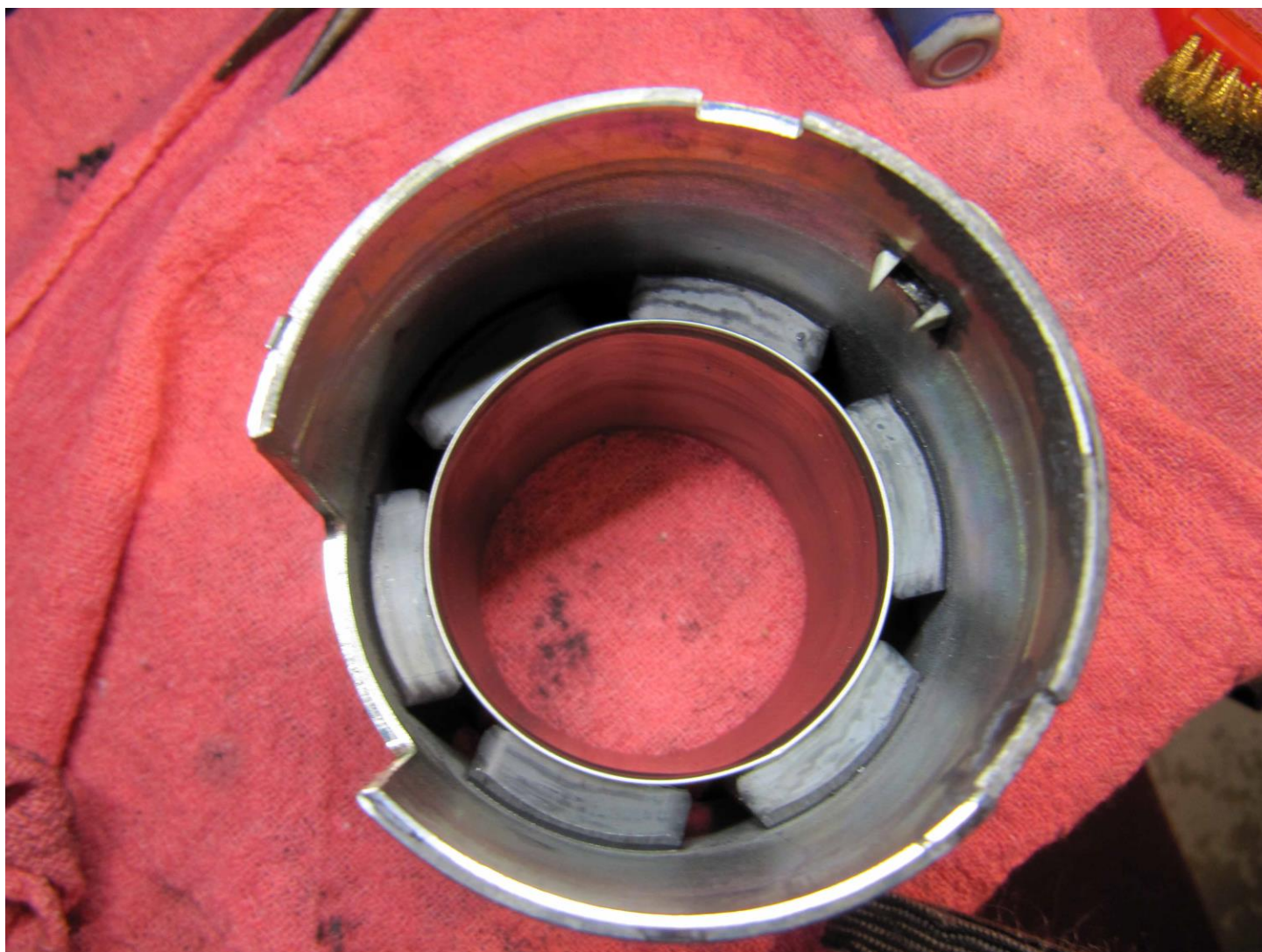
Now, push down on each of the springs until they bottom out. These spring are what force the brushes against the commutator. They are shipped with the springs out of position so that the brushes are retracted allowing the commutator to be inserted. Once the commutator is inserted, you need to push the springs into positions so that the brushes are properly forced out against the commutator:



Reinstall the rubber cover around the power terminal:



Clean out the housing:



The next step requires a little CAUTION! When you insert the housing over the armature, the powerful magnets in the housing are going to attract the armature and pull it up – AND if you are not careful, it will pull the commutator right out of the brushes! And then it is painful because you have already pushed the springs into position so it will be hard to get the commutator back into the brush assembly. TO PREVENT THIS PROBLEM, use a socket and extension to force down HARD on the armature while you slip the housing on to prevent the armature from moving:



Push down on the extension to keep the armature from pulling up when you start putting the housing on (the powerful magnets in the housing are going to try and pull the armature up pretty vigorously so be prepared!)

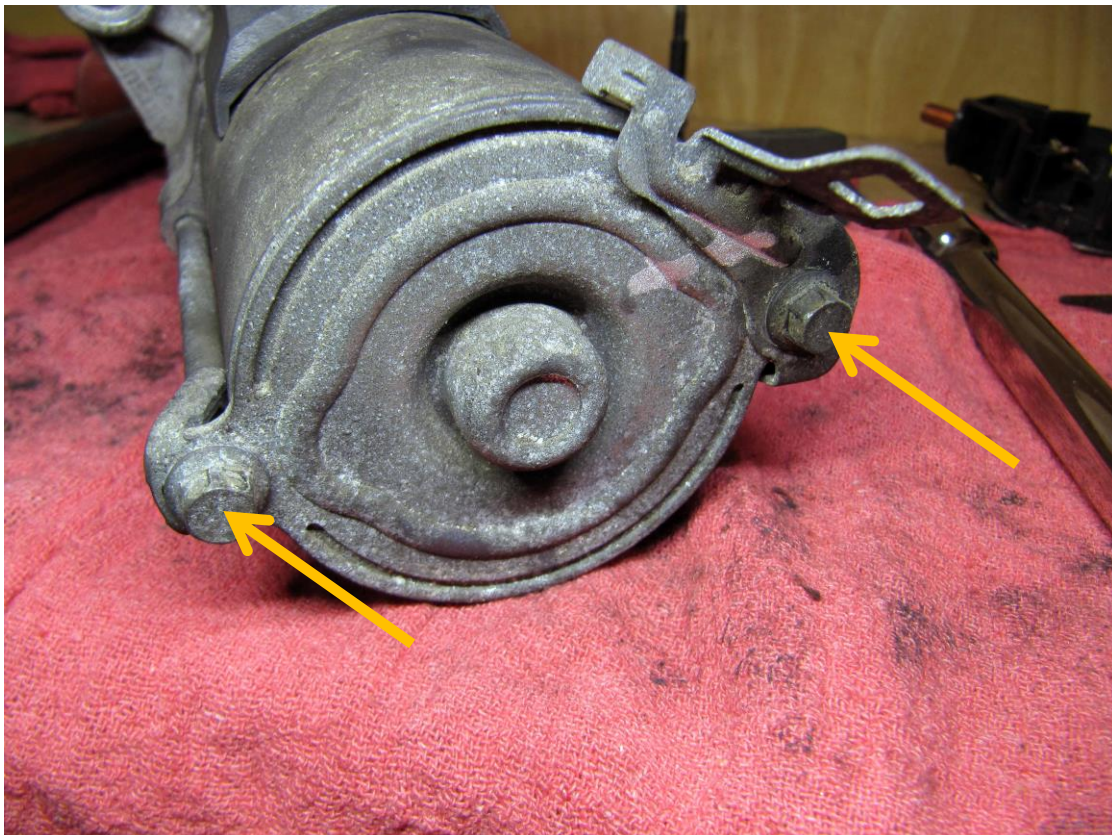
Once the housing is FULLY in place, you can release the force on the socket/extension:



Lubricate the bushing in the end cap:



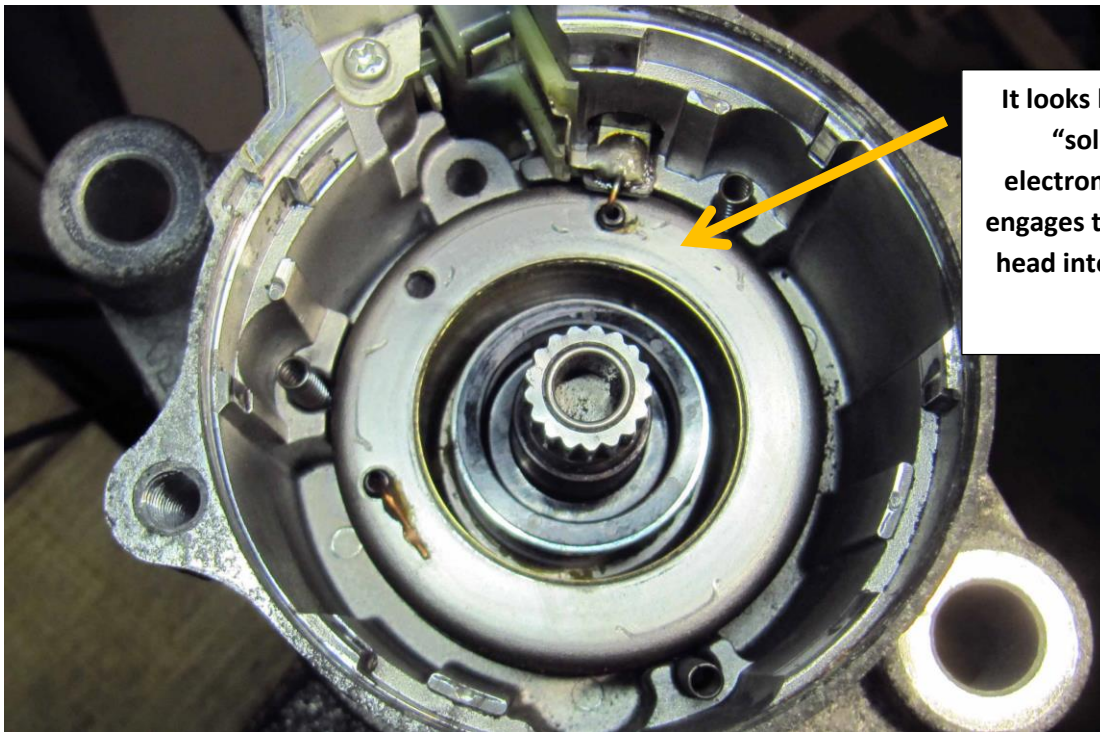
And re-attach the end cap (don't forget the wire holder):



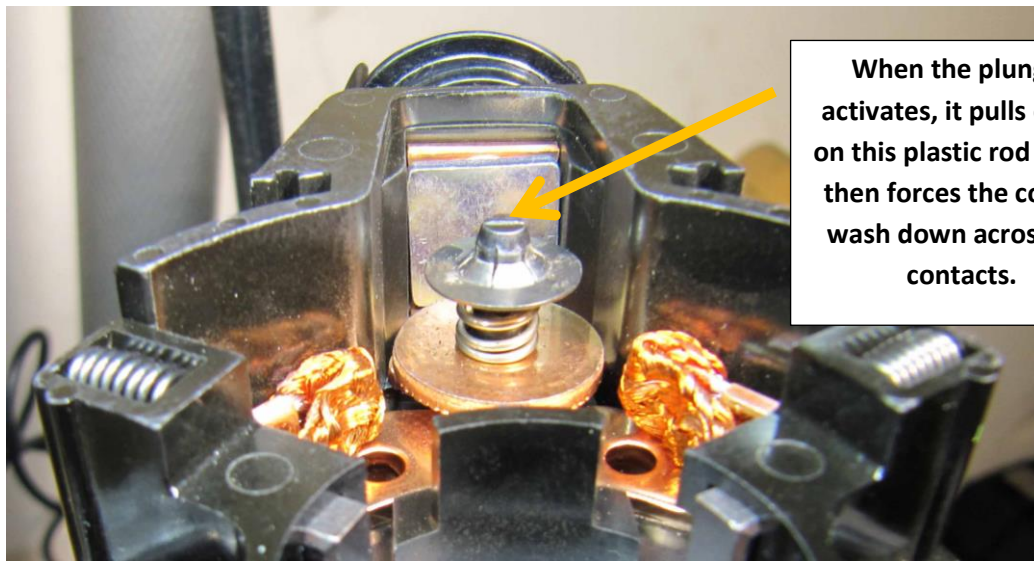
Looks like my rebuild was just in time! The old brushes were down to about 1mm from hitting the attaching wire:



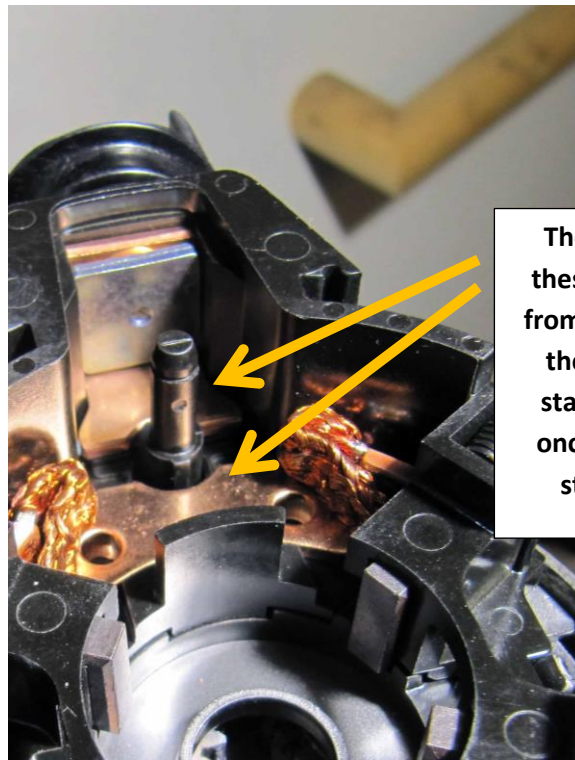
In case you are curious, I think this is how this starter works.... Many (most?) starters have a separate solenoid on the outside of the starter body which extends the starter gear into the flywheel. In this starter, the solenoid appears to be integrated into the body of the starter:



It looks like this is the "solenoid" or electromagnet which engages the starter gear head into the flywheel gear:



When the plunger activates, it pulls down on this plastic rod which then forces the copper wash down across the contacts.



The copper washer shorts across these terminals, connecting power from the primary power terminal to the brushes, which activates the starter motor, allowing it to spin, once the plunger has engaged the starter gear into the flywheel.

Hope this was helpful!