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**HOW TO REDUCE WARRANTY COSTS ON STARTER MOTORS**  
*By Michael Flensburg UK Sales & Marketing Director of Remy Automotive UK Ltd*

Misdiagnosis of starter motor faults causes your business lost time, lost profit, as well as an ever increasing loss of customer confidence. Here at Remy we see that 40% of all starter motor warranty claims are not due to starter motor failures at all. It is in fact something external to the starter which has resulted in the failure. What I would like to do in this article, therefore, is reinforce three key messages on common misdiagnosis of starter motors to you - the readers of PMF - so that you can then to alert your garage customers to each of these:

**Misdiagnosed 'burnt out' starter motor**

After continued attempts of turning the ignition key and the engine is turning over but will not start the conclusion is frequently reached by the technician that the starter motor has failed.

In fact it is likely that during the attempted starting – cranking - that the engine has been getting slower when attempting to turn over. This is obviously due to the battery running down. This condition can have a devastating effect on the starter motor. The effect of low battery voltage and prolonged cranking will draw high current and eventually burn out the motor-low speed / high current. It is then misdiagnosed as a starter motor failure. In some cases even the warranty claim form that we receive shows the failure as “starter motor burnt out” when in fact, the likely cause of the failure is poor battery condition, loose connection, corroded connection etc. The important message here for your garage customers is that **The Starter Motor Does Not Burn Itself Out.**

**Misdiagnosed replacement of starter motor because it 'continues to run'**

Another reason for starter motor warranty returns is when the starter continues to run - stays in mesh - while the engine is running. The tell-tale signs of this condition will be in some cases when a whining noise can be heard and in some cases a burning smell. On removal of the starter motor, the technician will notice that the starter motors armature shaft and pinion will be a blue/straw colour due to overheating. This condition is called “over-run” - high speed / low current. The likely reason for this type of failure is due to a sticking key switch or relay resulting in a permanent electrical feed to the starter motor's solenoid connection - energizing terminal. Again, this is frequently misdiagnosed as a starter motor failure. In some cases even the warranty claim form again shows the reasons for failure as “starter motor burnt/continually runs” when in fact, the likely cause of the failure is due to an external electrical feed to the solenoid. Get the message across to your garage customers that **The Starter Motor Cannot Produce its Own Power.**

**Misdiagnosed replacement of the starter motor when 'it just clicks' when the ignition key is turned but the engine will not start**

The most common misdiagnosis for this is a faulty starter motor. As a result the starter motor is simply replaced by the technician without any further investigation. However it is extremely likely that the replacement starter motor will show the same symptoms as the original unit.

The actual diagnosis can be any of the following – a bad battery or a bad connection to the battery, the main cable connection to the starter motor is loose, broken or corroded or there is poor ground connection.

To correctly diagnose the root cause of the problem the technician should check that the battery is in good condition as well as the connectors. They should also check the main cable to the starter motor as well as the vehicle ground connection. They should note that the clicking or continual clicking sound is from the starter motor's solenoid. This happens when there is low control circuit voltage and because of this, the solenoid contact chatters as there is insufficient voltage to hold the contact in. The important message to your garage customers here is that, as with the other two, **'Just Clicking' Is Not a Reason to Replace a Starter Motor.**