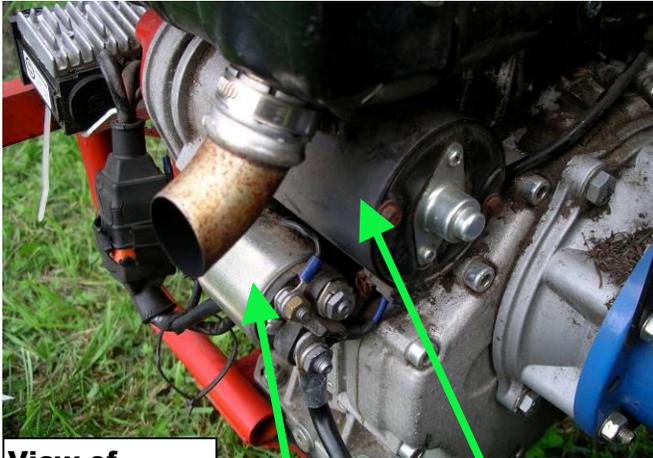


# LOMBARDINI—KOHLER DIESEL STARTER MOTOR / SOLENOID REPAIR & CLEANING when

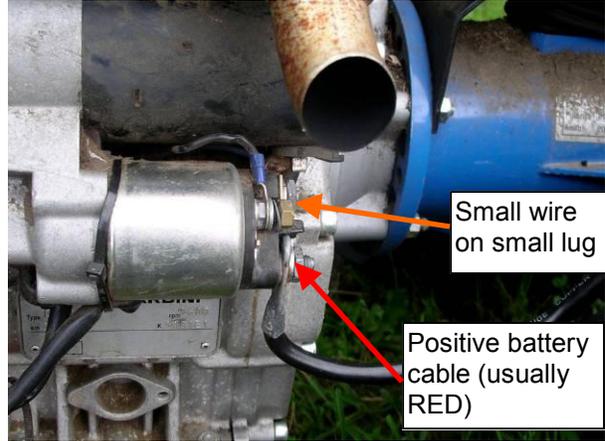
solenoid fills up with dirt due to dusty working conditions, starter will not engage. Frequently, users find that they can “make the starter work” by tapping on it with a hammer, wrench, etc...continuing this practice will lead to a costly repair. The following instructions show how to service your own starter motor solenoid. Prepared by EARTH TOOLS, 502-484-3988, [www.earthtoolsbcs.com](http://www.earthtoolsbcs.com)



**View of starter motor & solenoid**

**Solenoid**

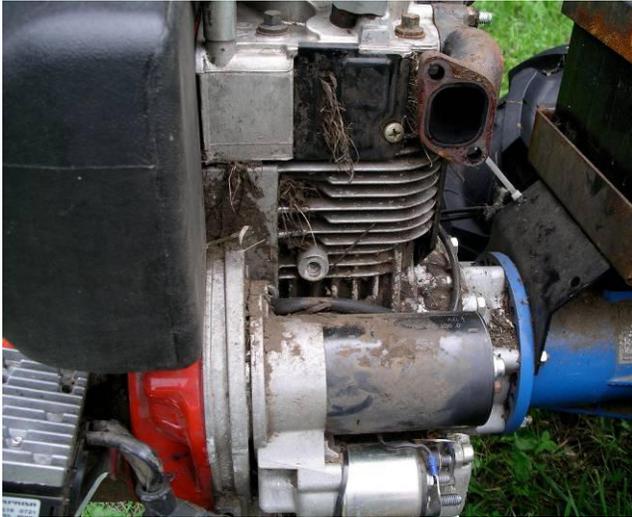
**Starter motor**



Small wire on small lug

Positive battery cable (usually RED)

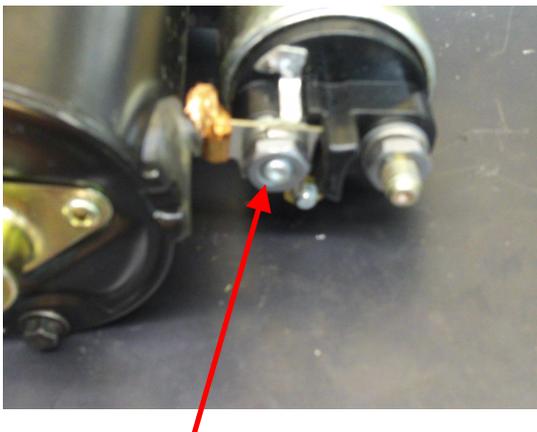
FIRST, Disconnect Negative cable from battery, then disconnect positive cable and small wire from Solenoid (make notes or markings, so you know where to put them back later!!)



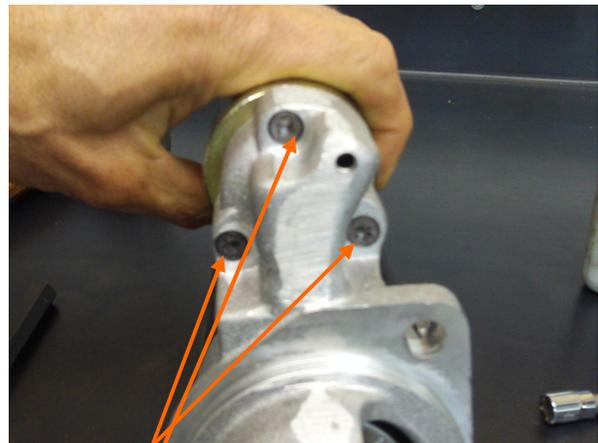
The starter motor will have to be removed from the engine. If you don't have a long enough 8mm Allen wrench to reach in behind the muffler, you can remove the muffler, as seen here. (this is also a good time to clean out the junk behind there!)



Starter motor & solenoid removed from engine. You can cut this wire-tie, which is just holding the wiring harness to the side of the solenoid. Replace with a new one when reassembling, or use electrical tape.



Next, remove the nut holding the starter motor power wire (braided copper wire) to the solenoid. Slide the wire terminal off the lug on the solenoid.



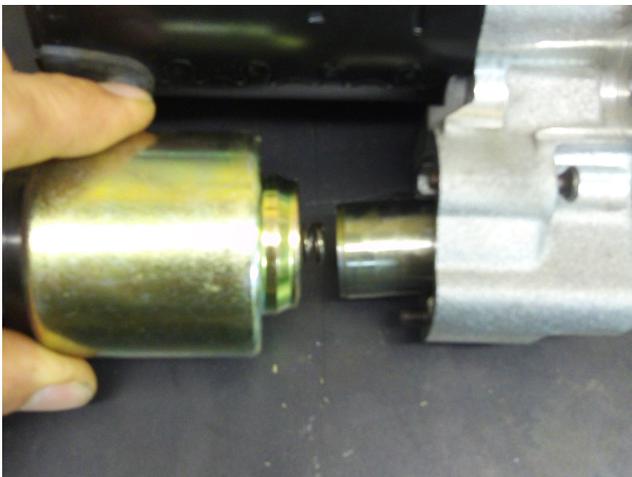
Remove the 3 T-25 Torx-head bolts holding the solenoid onto the starter. MAKE SURE the heads are well cleaned out, or you will strip them!! We do carry replacements...part # “FAST 5x35 Flush head Allen”



Removing solenoid from starter. If solenoid plunger is "stuck" inside outer barrel of solenoid, it may not slide off easily. You can wiggle it around and rotate it slightly to get it slid off. Note the dirt that is coming out of this one....



A LOT of dirt coming out of this one. I have seen over one-eighth of a cup of dirt inside one of these things. This particular solenoid was badly stuck, and the owner had "tapped" on it to get it to work for so long that the electromagnet in the solenoid barrel was FRIED. The following pictures show a new solenoid. IF YOU HAVE TO TAP IT, TIME TO CLEAN IT!!!



Solenoid barrel slid off of plunger. Note there is a spring in there too...if the plunger is not "stuck" inside the barrel, there will be a bit of spring-pressure pushing them apart initially, after you take the screws out.



Solenoid Plunger. This is hooked to the top of a lever, and when the electromagnet inside the walls of the barrel is activated (by turning the key to the "start" position), the plunger is pulled, which moves the starter motor "Bendix" (or pinion) gear OUT via this lever to engage with the engine flywheel. Also, when the plunger is fully pulled back, it connects internally the two "large" wire lugs on the back of the solenoid barrel housing: the positive from the battery, and the starter motor Power wire. This makes the starter motor TURN, now that the gear is engaged.



Solenoid Barrel. Clean out everything with compressed air, or if not available, use a brush, rags, Q-tips, whatever. You can apply a dry lubricant (such as graphite) when reassembling the plunger into the barrel...or put it together dry. DO NOT use a grease or other "wet" lubricant, as it will attract dirt!! AND...remember to put the spring back in!!!



Re-install screws to hold solenoid onto starter, and re-assemble everything in reverse order. Make sure you put solenoid onto starter in correct position...yes, the 3 screws are equally-spaced, so you CAN get it wrong!