

Mercedes-Benz OM603.9xx Starter Motor Replacement



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Since you will be under 4,700 lbs of metal, plastic, leather, etc., you will need to exercise extraordinary care and caution. Always backup your jackstands with a failsafe, including but not limited to a tire or floor jack in case your vehicle involuntarily shifts. It is your responsibility to ensure your setup meets any required safety standards.

You will also be dealing with a car battery, which can create enough of an arc to melt metal and cause grave injury to yourself. Always disconnect the NEGATIVE terminal of your battery and set the cable aside, covering the terminal with a non-conductive metal. Wires have “memory” and they always want to drift back to where they were before, so be sure to secure the negative terminal wire. This is my suggestion and there may be other, safer ways of accomplishing this.

If you have *any* doubt of your ability to safely complete this project, *do not do it*. Please exercise common sense and have a qualified mechanic or dealership replace the starter motor, using their practices and procedures. Your life is not worth the two hours of shop labor you will save.

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Introduction

I’m documenting the replacement of the starter motor on my 300SDL because I didn’t find anything that specifically dealt with changing a starter on an OM603 engine in the archives. I don’t have any pictures, so you’ll need to use your imagination. Trying to take pictures while holding a heavy object on my back was not going to happen.

In a nutshell, this is an extremely easy project; the hardest part is holding the ~15 lb motor whilst on my back. I rate this project the same difficulty as doing an oil change, especially if you jack up your car to do so. This applies to all OM603.xxx engines in the W126 chassis and the procedure is similar for the ’87 W124s. It also appears to be the same for the M103 motors. The bottom line is that I took a job that previously cost me over \$500 for my mechanic to do and turned it into a \$225 project.

Just for some comparison between what is posted on the site about the older vehicles and the OM603xx. On the OM616 and OM617 motors, the starter is located on the passenger side, underneath the exhaust manifold. On the turbocharged motors, it’s clear that it’s not an easy

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prospect to get to the starter. From what I read, it seems like at best, that one needs to remove portions of the exhaust and other not fun things.

Procedure

The starter is on the driver's side, situated almost directly below the oil filter. The procedure in the factory manual shows four steps – which is about all it takes. Here is what I did:

- I disconnected the negative lead from the battery (I don't like sparks!) This is VERY important since potentially lethal amounts of current pass through the starter.
- I also reached down and disconnected the two wires from the solenoid. The bigger wire needs a 13mm socket to remove the nut and the smaller (ignition signal) will probably require a Phillips head driver. I was sure not to tear the rubber boot as I was pulling it back to expose the connections to the starter. Do this before jacking up the car.
** Note: This is a good opportunity to add a relay – more at the bottom.
- Ideally, for me I would drive the car up on ramps. However, if the starter motor isn't working, it's not really possible to do so, for obvious reasons. I jacked the car up using jack stands on each side and kept the floor jack positioned under with slight tension against it and the underframe. This is important since you will need to turn the wheels to the right to make getting the motor out easier. Of course, I did this on level concrete, left the car in park, set the parking brake and chocked the rear wheels.
- From underneath the car, I unbolted the two 17mm bolts. A couple of words about this:
 - I used a deep 17mm socket in lieu of an extension. I could see no need to have the 18-24" extension that may be needed on other cars.
 - You will need a wrench with a long handle or breaker. A torque wrench will also do.
 - I disconnected the spring from the accelerator linkage since the linkage got in the way. I had to push the linkage up a little to get the socket in. (Make sure you connect the spring when you are done!)
 - The two bolts have to go quite a way before being undone. My suggestion is to unscrew them in roughly equal increments, so one is not all the way in while the other is out. I was ABSOLUTELY SURE to support the starter with my free hand. Since I needed to reuse the bolts, I put them in an easily accessible place.
- Once I had the starter freed from the car, it was a little tricky to get it out – especially given that a 15 lb weight feels much heavier when on one's back. I ultimately worked it out in the space between the Pitman arm, the drag link ("center tie rod") and the guide arm. It's a very tight squeeze, but it went out. (If the motor was any larger, it would not have worked like this). I noticed how the motor went out, because the replacement goes back in the exact same way – and there is only one way it will go in. I found it does not go through the top without disconnecting many lines, which I was too lazy to do.
- Make sure your replacement motor matches the old one. If it's a Bosch, the motor itself will say "Made in Spain" while the solenoid will say "Made in Germany." The starter motor should have the same part number, while the solenoid may differ – it did on mine, but worked nonetheless. Check that the exposed gear spins in the same direction on both.
- Putting the new (or rebuilt) motor was not too difficult. There really is only one way it can fit in to the engine block, but you may have to work it a little to get it in. Ultimately, the edge of the starter MUST be flush with the edge of the pocket on the engine and you should be able to put the bolts through in and start tightening them. There is only one way to do it right,

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and though it is not hard, DO IT. I held the motor while I started threading the bolts. I noticed the bolts went in much more easily while I was holding the motor flush against the engine block.

- From there, as they say in the Factory and Haynes manuals, installation is the reverse of removal. Make sure you clip the spring for the accelerator pedal, or you may find a little surprise when you take your foot off the accelerator.
- I used this opportunity to clean all the electric terminals – I'd hate to spend another \$200 to replace a starter motor when the only issue was corroded connections!
- Before you forget, make arrangements to ship your old motor back for a core refund. Do NOT ship the motor back without the RMA# and the correct location to where it needs to be sent.

As a bonus, I added a relay to the wire coming from the ignition switch (the small one). Bosch makes a kit for this and my word of advice is to make sure there is a 15 amp fuse between the battery and the relay. The way it works is that rather than have the current to actuate the solenoid (and therefore the starter) go through the ignition switch and Outer Mongolia, the relay acts like a remote switch, giving the current far less distance to travel, and much less resistance. This significantly reduces the chance of the starter motor unexpectedly not starting, as well as providing more robust starts. The only thing the wiring from the ignition switch has to do is to switch on the relay. This is also a great upgrade for headlights.

You can purchase the Bosch WR-1 Relay wiring kit (pictured below), or make your own. Documenting the wiring is beyond the scope of this pamphlet



Bosch WR-1 Starter Motor Relay Kit
(\$20 as of January 2008)