

Fuel Filter change on W251165, R350 with gas engine

First be aware that this is a significant job. The Canadian service chart for the R-Class states that the fuel filter is to be changed every 105,000km or 5 years. Surprisingly, the service DVD states that the fuel filter is designed to last 250,000km!!! I don't know if Mercedes Canada recommends this to generate revenue (can't believe that fuel is dirtier in Canada), but I decided to do the job anyway when I hit 5 years (only 60,000 km though). On my E class, the recommendation is 15 years or 240,000km and the system is very similar...

Job is similar on ML and GL. Honestly; don't do this as preventive maintenance before 10 years or 200,000km...

Before you start the job, you will need the following:

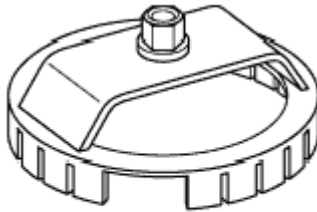
- Fuel filter assembly, including left fuel sensor and 3 pipes and wire to connect to the fuel pump assembly on the right side.
- 2 sealing rings (one for the fuel filter, and one for the fuel pump that you need to open and close to connect the 3 pipes).
- A hot air blower
- Sealing ring removal tool
- Quick connect fuel line disconnect pliers
- Sealing compound
- Make sure you're in a well ventilated area.



VERY IMPORTANT: make sure you're low on fuel. If you're 3/4 empty or less, this should be fine. I was all the way down to the reserve, and did not get annoyed with fuel much.

Notes on the tools required

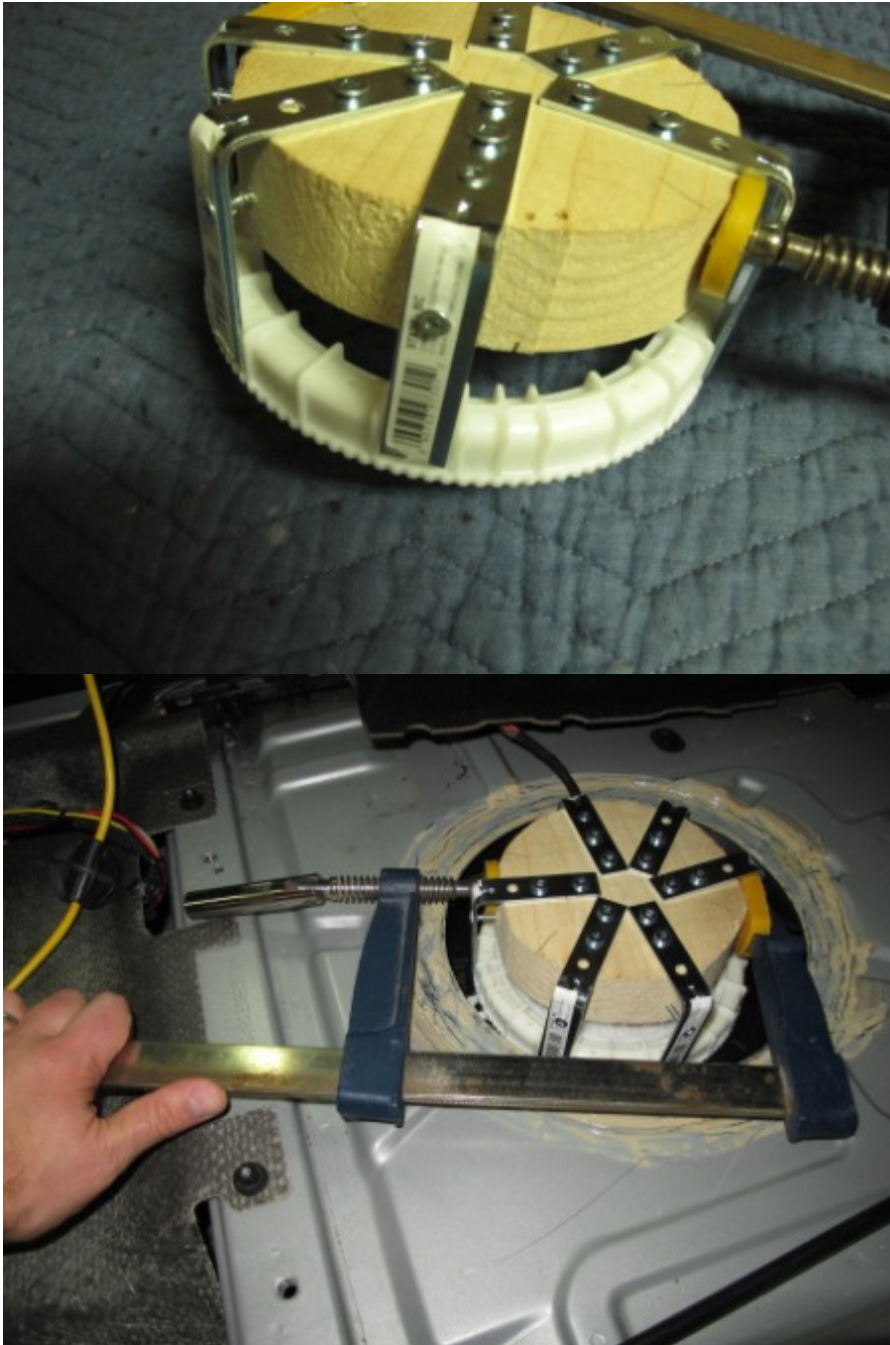
Apart from the usual tools required to work with a german car, you will need 2 parts if you want to be able to do this job. The most important one is the special clamp used to loosen or tighten the sealing rings. The Mercedes part number is 164 589 01 07 00 and looks like this:



164 589 01 07 00

Claw-type wrench

I did not have the tool, and lost hours trying to loosen the rings. The tool costs 100\$ and is absolutely necessary. Since I did the job during the Christmas break, I could not order it so I ended up having to build something. See the following pics!!! It did work at the end, but it was tedious. My tool fairly easily loosened the rings, but tightening them was really difficult. Once I was done, my own special tool was all loose and useless. Even if it worked at the end, if I had to do the job again, I'd purchase the special tool.



The other difficult step is to disconnect the quick-connect fuel line that connects to the top of the fuel filter assembly. Without the proper fuel line pliers, you'll likely damage the fuel line and have to replace it. The service DVD does not specify a part number, but 163 589 00 37 00 is a tool that works and looks like this:

Klann Fuel Line Pliers Mercedes M-Class. Klann has improved the design of these pliers by adding a special bend for easier access to the quick coupler. These are around 9 inches (230mm) long overall. With black plastic comfort handles. Chrome plated jaws. These are for the same job as Mercedes factory tool 163-589-00-37-00. Also good for VW-Audi, Fiat, and Opel, needing this type of pliers.

163 589 00 37 00

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Step by step procedure.

If you have everything that you need, it will take you 7 to 10 hours. If you haven't removed seats and trims before, you will lose a bit of time figuring out.

- Remove the second row seats.
- Remove the rear-door step trims
- Remove the 3rd row seats (very easy, 4 bolts each)
- Remove the rear floor carpet assembly

*** Service DVD does not state to remove the 3rd row seats and carpet. It says to bend the carpet, but believe me, you'll damage the carpet (which is a stiff assembly with sound proofing) and the carpet will really be in the way all the time, plus you might spill fuel on it. It takes an extra 20 minutes to remove the 3rd row seats and carpet and it is really worth the time.

- You then need to do the most boring and difficult part of this job, removing the 2 access caps. They are glued in body sealant, and this is a very stiff and strong bonding material. Use a hot air gun to warm small sections of the cap at a time, and insert some kind of a flat blade under the cap to cut the sealant all around. It took me about 1 hour per cap. Be careful with the blade not to damage the fuel line atop the fuel filter on the left side, and electrical connector atop the fuel filter on the right side. See the following picture to see the layout of the fuel line and electrical connector.



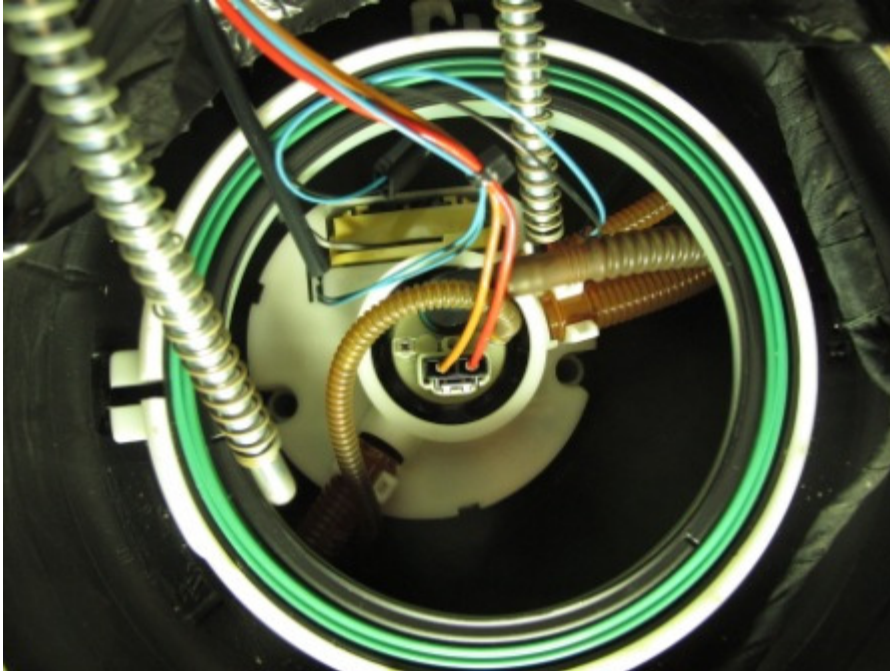
When you use the hot air gun for 2 hours, you'll be happy you removed the rear carpet. Also make sure you use something to raise the remaining carpet strips on the outer edge of the caps. See a small piece of 2x4 on the picture above to keep it raised. You will likely bend the caps a bit whilst removing them. No worry, they're very easy to rectify with a hammer once removed.

***when I did the job, I also had the front seats and center carpet removed (I had to route DVD video cables). The center carpet will likely be in the way, make sure to raise it not to damage it.

- Once the caps are removed, use the hot air to remove the excess sealant around the access holes, and also clean the caps (straighten them first with a hammer on a flat surface). You'll have to put them back, so remove enough sealant so the caps sit properly on the holes. This job really stinks. The picture below shows a cap freshly removed on the left, and the one that I cleaned on the right. The service DVD says to replace the caps, but at 90\$ each, just put them back. I asked my dealer and they never replace them.



- The top of fuel filter and pump are probably dirty. Clean thoroughly and dry. Use a shop vac to remove water and soap to ensure no contaminant can enter the tank once you open it.
- Shop vac most of the working area to make sure nothing falls in the tank.
- Notice the MIN-MAX markings embossed in the fuel tank. They indicate the tightening range of the sealing rings. Also notice what seems to be the matching indicator on the white top ring. Mine were barely to MIN. You'll see why when you close them!!!
- Disconnect the car battery. VERY IMPORTANT.
- Disconnect the connector atop the fuel pump (right)
- Disconnect the fuel line atop the fuel filter (easy to say but difficult, get the pliers!). Some fuel will spill (not much), so have a rag handy. Once disconnected, protect the fuel line from contaminants (small plastic bag with a tie wrap).
- Loosen and remove the sealing rings. Get the tool! You need to break or bend out of the way the plastic ratchet pins that prevent the ring from loosening itself.
- Open the fuel pump (right) side first. Disconnect the 2 electrical connectors from the fuel pump cap. Put the cap aside. You need to disconnect the cap so you can remove the old sealing ring lower part and green rubber ring. Make a good mental note of the wiring routing with respect to the 2 posts with the springs. Good time to take a picture actually.



- Look at your new part, and you'll quickly understand which are the 3 pipes and 1 wire that you have to disconnect from the fuel pump side. Disconnect the 3 pipes and connector, and tie them with a rope that you will use to pull back the new pipes.
- Put some plastic bag (garbage bag is perfect) across the door step on the left side and pretty much everywhere around the fuel filter hole. Some fuel will spill when you remove the filter.
- Pull out the fuel filter assembly, and make sure the rope that you attached follows. For this step, if you can get some help, it will help prevent spilling fuel. You'll need to tilt the fuel filter assembly to make it float pass through the hole, and this will spill some fuel. Have rags handy.
- Once the fuel filter and pipes are removed, cut the rope so you have a lead to pull the new pipes through. Prepare a 5 gallon bucket to drop the old fuel filter once removed. It will be full of fuel.
- **DO NOT SKIP THIS.** Remove the old lower part of the sealing ring and green rubber ring on the fuel filter side. Put the new ones.
- Attach the pipes and connector of the new filter to your rope. Pull the pipes through. You might need some help here, and need to wiggle a fair bit from the fuel filter side, and pull the rope from the fuel pump side. Once the pipes are routed, position the fuel filter assembly in place and put the top ring. The fuel filter assembly is vertically spring loaded, so you need to push it down. Just slightly engage the upper ring, do not close it until you're done on the fuel pump side.
- Disconnect the rope and connect the 3 pipes on the fuel pump side.
- Put the new lower part of the sealing ring and the new green rubber ring.
- Make the 2 connections on the fuel pump cap. Ensure you have adequate wire routing with respect to the 2 posts with springs.
- Properly position the fuel pump, insert the cap and push in place. Slightly engage the upper ring.

- Take a moment to think and make sure you got every done right. Once confident, tighten the 2 rings. Just hope you got the special tool at this point. Notice the MIN-MAX markers. You need to get the top ring indicator at least to MIN. I barely made it to MIN on the fuel pump side, and I could not achieve it on the fuel filter side. I'm missing an inch. What happened is that the entire fuel filter assembly, including the lower ring, started to rotate. NOT GOOD. You must make sure that the lower ring sits in the grooves, otherwise the pump and/or filter will not be oriented properly. Whilst you tighten, make sure not to damage the dangling fuel line and electrical connector.
- Connect the fuel pump connector and fuel line atop the fuel filter.
- Connect the battery and test the pump before closing the caps. Put the key to ON and wait 1 minute. Start the car. Mine did not start the first time, but started on the second attempt. I left it run for 2 minutes and concluded that everything is fine. You can actually hear the fuel flow across the pump and filter.
- If for any reason you need to re-open the fuel tank, be aware that the sealing rings are single use, and should be replaced after being tightened once.
- Close the 2 access caps. I could not purchase body sealant, so I use high quality silicone. It will make the job easier if I have to open this again... Inconveniently, I had to let it dry/cure for 3 days before putting the carpet back.
- You probably scratched the floor paint quite a bit whilst removing the caps, so use touch up paint to avoid any rust in the future.
- I put a 6-mil polyethylene atop the service caps so as to avoid any of the fresh sealant from bonding to the carpet.
- Install carpet, seats, and trims.
- You will have to get SRS faults cleared at a dealer. Removing the second row seats triggers 4 faults that can only be erased with SDS.
- Since you disconnected the battery, you also need to synchronize the windows and sunroof as per user manual.
- Go fill up since you were probably low on gas.

- With all the money saved, take your wife out for a great meal to make up for all the time you had to spend doing this 😊