

Technical Corner What have you done to your car lately?

Changing the oil of a Metzger engine, by Greg Martell

This article is intended to show enthusiasts how easy it is to change the oil and filter in a Porsche Metzger engine. These engines are the flat sixes that Porsche has used in their GT3s from 2000 up to 2012 and in their Turbo 911s from 2001 to 2008. This engine not only is one of the most reliable engines ever produced by Porsche, it also has the kind of racing pedigree that other companies can only dream about. This engine powered the Porsche GT1 in the 24H of Le Mans and more recently the 911 Cup cars and RSR cars. Also, sadly, it is the last water cooled engine to have a true dry sump lubrication system. So, let's start with the basics:

Safety

Safety is our main concern, so please be aware that serious injury could occur if care is not taken while changing the oil. This procedure involves lifting the vehicle from the ground and draining hot oil. Protective gear such as gloves, goggles, and a long sleeve shirt must be used at all times. Also, when lifting any vehicle from the ground precautions must be taken; never work under a vehicle using a floor jack as a stand. Never lift a vehicle on an inclined surface. Please refer to your owner's manual for detailed information on how to properly lift your particular vehicle.

Required tools, parts, and supplies

- 19 mm socket for oil tank drain plug
- 15 mm socket for crankcase drain plug
- 27 mm wrench or adjustable wrench (to counter-torque the oil tank bolt)
- Ratchet
- 3" extension
- Torque wrench
- Oil filter wrench
- 8 mm Allen (hex) wrench
- Lift, ramps, or jack stands. Enough to lift the engine an extra 4" from the ground.
- 1 oil filter (P/N 996-107-225-53). This filter includes a 71.5 mm rubber O-ring for the filter housing cover.
- 1 oil tank copper crush washer (P/N 900-123-010-20)
- 1 crankcase aluminum crush washer (P/N 900-123-118-30)
- 1 10 mm O-ring for oil filter housing end (P/N 999-707-465-40)
- 2 washers for the Turbo's oil reservoirs
- 8-9 qts of oil



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Getting started

Porsche recommends warming up the engine before changing the oil. This ensures that the oil will flow out of the engine easier and quicker; so basically drive around the block a few times. Park the car on a flat surface and raise it using the jack points as described in the vehicle's owner's manual. I built my own ramps using wood, it makes the job a lot easier. Open the engine lid and locate the oil filter assembly. Using the oil filter wrench, carefully remove the filter assembly from the filter housing. Remove the leftover oil from the housing (Fig. 1) using either a vacuum pump or lots of paper towels. I use paper towels; just make sure that NOTHING falls inside! Now remove the old filter from the filter assembly (Fig. 2), and remove and replace the two O-rings (71.5 mm and 10 mm) from the filter element holder. Your new assembly should look like the one shown in Figure 3. Make sure you press the filter all the way in the assembly before installing in the car. Now put your new assembly to the side (do not install it just yet). The next step will be to drain the old oil from the engine.



Figure 1. Oil filter has been removed.



Figure 2. Oil filter assembly.

Draining the old oil

Start by removing the 19 mm drain plug on the oil tank (arrow at lower right in Fig. 4). Have a container ready as oil will gush out of it very quickly. Make sure your container can hold at least 8 qts or you'll have a mess to deal with. Counter-torque the oil tank with the 27 mm wrench while removing the 19 mm plug from the tank.

Next remove the 15 mm crankcase drain plug (arrow at left in Fig. 4). You should expect about 1 qt of oil from the crankcase. Also remove the turbo reservoir hex bolts (8 mm), these should contain about 2-3 oz of oil each. Porsche recommends draining the oil for 25 mins. I like to "flush" the system by adding some clean oil to the oil filter housing and tank while having the crankcase and the tank open. This will flush the engine with clean oil, but it is a personal choice.



Figure 3. Filter assembly with new filter element.

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Adding the new oil

Start by installing the 19 mm oil tank plug; replace the copper crush washer and torque to 44 ft-lb. Install the crankcase plug; replace the aluminum crush washer and torque to 52 ft-lb. Close the plugs at each turbo; replace the crush washers and torque to 22 ft-lb.

Now that the bottom end of the car is closed, lets move to the top. Install the filter assembly and torque to 19 ft-lb. Slowly add about 7.5 qts of oil using a funnel (Fig. 5).

When finished, start the engine and watch the oil pressure gauge. It might read 0 for a second, but as soon as the pump starts pumping oil it should read 4-5 bar. Let the engine warm up to operating

temperature and check the oil level with the onboard computer display. The level should never exceed the 7th segment. If it does, you have to stop the engine and drain some oil from the crankcase. Each segment in the display is approximately 1/8 qt. If the engine needs more oil, add it conservatively to avoid overfilling.

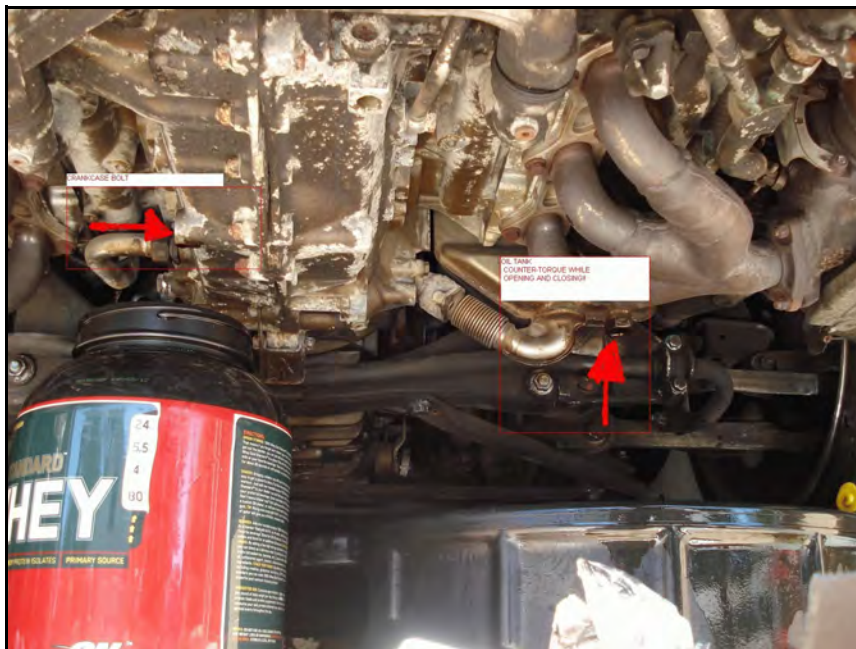


Figure 4. Locations of the crankcase drain plug (arrow at left) and oil tank drain plug (arrow at right).



Figure 5. Use a funnel to add oil.

When the oil level reads full, check for leaks. The used oil should be disposed following federal/local regulations. I usually take it to the closest automotive store; most of them recycle motor oil.

The procedure is identical for a GT2 and almost identical for a GT3. The only difference is the Turbo draining procedure (a GT3 has no turbos).

Now it is time to enjoy your Porsche!

Disclaimer

The procedures described herein are neither expressed nor implied guarantee that damage to the engine or personal injury will not occur as a result. Engine maintenance is performed at the owner's risk, and neither the author nor the Porsche Club of America shall be held liable for damage to a vehicle or any type of personal injury. Always consult a professional and your owner's manual before attempting any repairs on your vehicle!