

Replacing Thermostat in W203

During cold days of winter, I was getting a check engine light on my 2006 C280. When I checked the code with a scanner it showed P0128 (Coolant Temperature Below Thermostat Regulating Temperature).

This means my thermostat has failed. The thermostat stayed open when it failed. So, during startup the coolant temperature cannot reach 85°C as it keeps circulating to radiator. After some predetermined time, the computer generates the Check Engine code P0128. Normally, the closed thermostat blocks the coolant in the engine block and lets it heat up to 85°C. When the coolant temperature reaches above 85°C, it opens the thermostat and the water circulates through radiator to maintain temp around 85°C. You can drive your car with a failed open thermostat for few days. Your gas mileage may suffer a bit but not the end of the world.



Keep notes of what you remove and where you removed it from.

Total parts cost ~ \$150 (\$126 for thermostat +\$17 antifreeze + \$1 distilled water). Total time to do the job 2 to 3 hours. Add \$60 if you want to change the serpentine belt.

I drained the coolant as well. I purchased one gallon from MB dealer (\$17) and bought 1 gallon distilled water from local grocery store. You don't have to replace the coolant if not needed. I had 65,000 miles so I changed it.

Coolant Drain:

To drain coolant, remove the cap from coolant tank in the engine compartment. You need to open the plastic panel (guard) underneath the engine. Remove 8 screws (8mm) from the front panel. It is reachable if you are an average build guy. If not, put your car on ramps and remove the front panel. I avoid getting under the car when it is on ramps. After removing front 8 screws, the panel will hang and open from front giving enough opening to access the radiator drain plug (see Red knob below). Leave a container to collect the coolant under the knob. Now open the Red knob a few turns and you will see coolant coming out. Remember; do not try to remove the knob. Just open few turns and it opens the drain valve. Once coolant is completely drained you are ready for thermostat. I did not bother removing coolant from the engine block. Engine block may contain about ½ gallon of coolant. Not a big deal. Total is about 2 gallons. I did not think it is that significant.

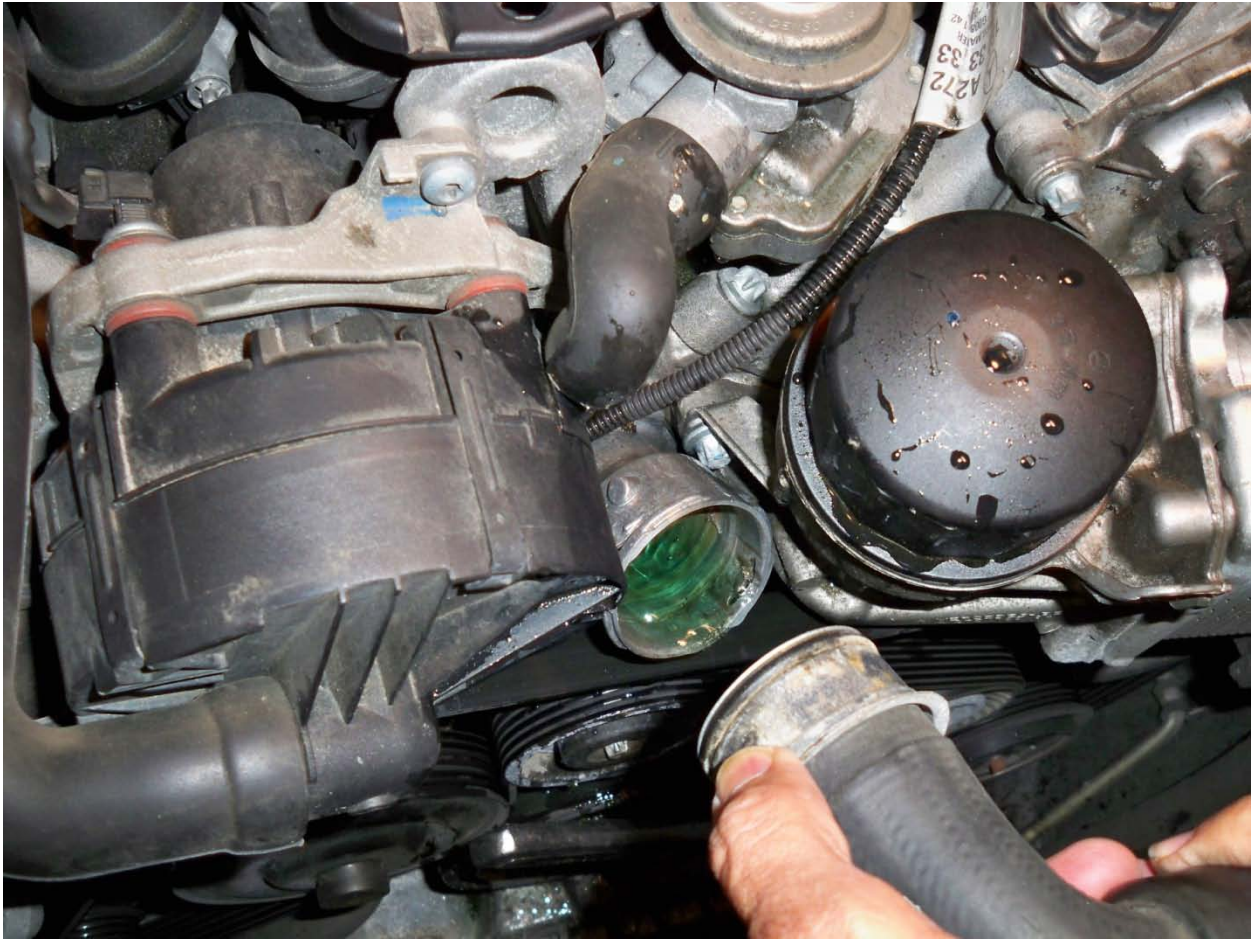


Remove the Thermostat:

As shown in the picture the thermostat is located on front side of the engine.

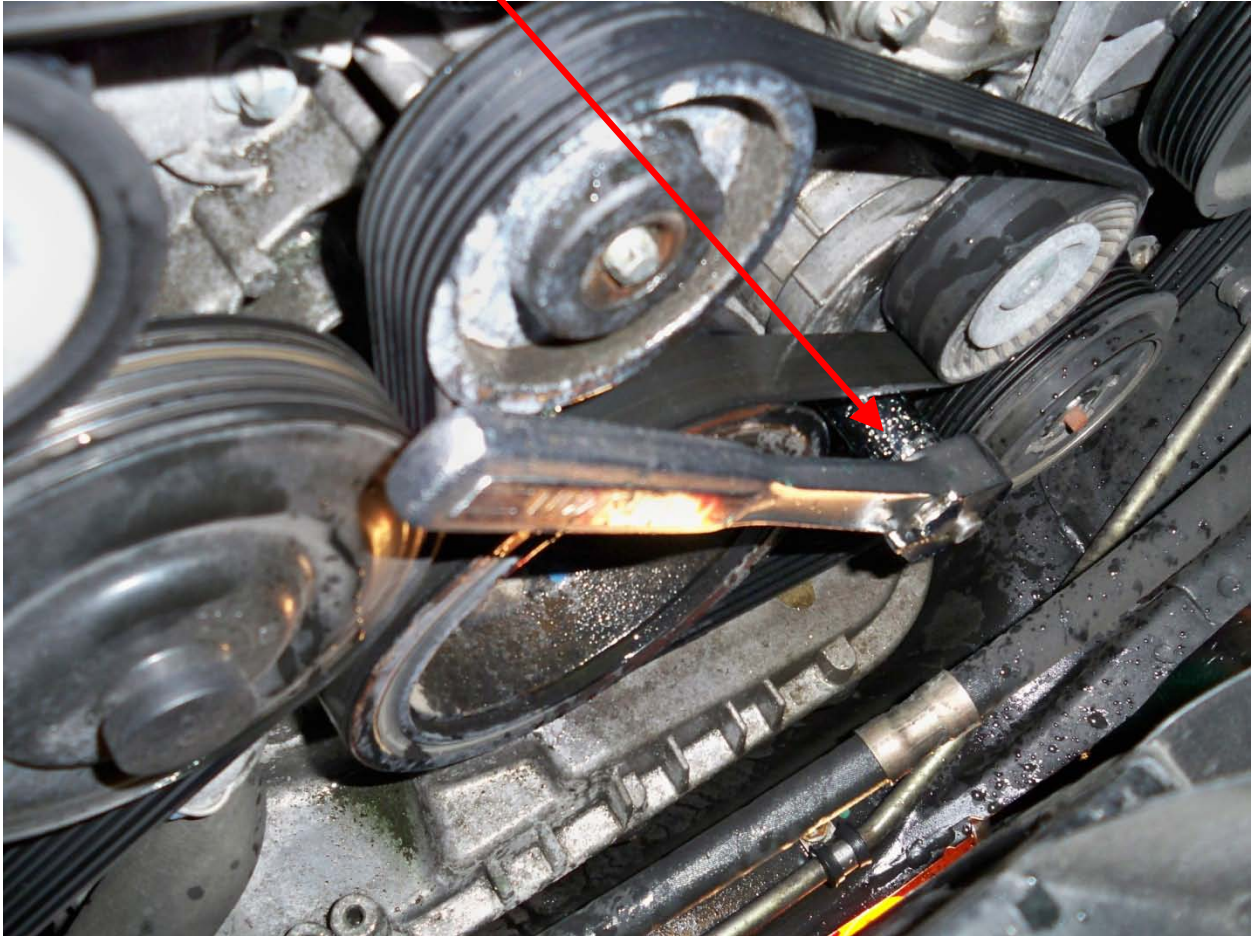


To remove the hose just slide the clip out on the hose connector. No need to remove the clip. The clip holds the hose on to the thermostat. Once the clip is released, you can pull the hose out from the thermostat body. May need some force to remove. See picture below.



Remove the Belt:

There is a hex head bolt (17mm) underneath the Tensioner pulley. Use this bolt to release tension on the belt. As shown in the picture below, you need a 17 mm socket. Push the ratchet handle counterclockwise to reduce tension on the belt. Now remove the belt from the tensioner and other pulleys.



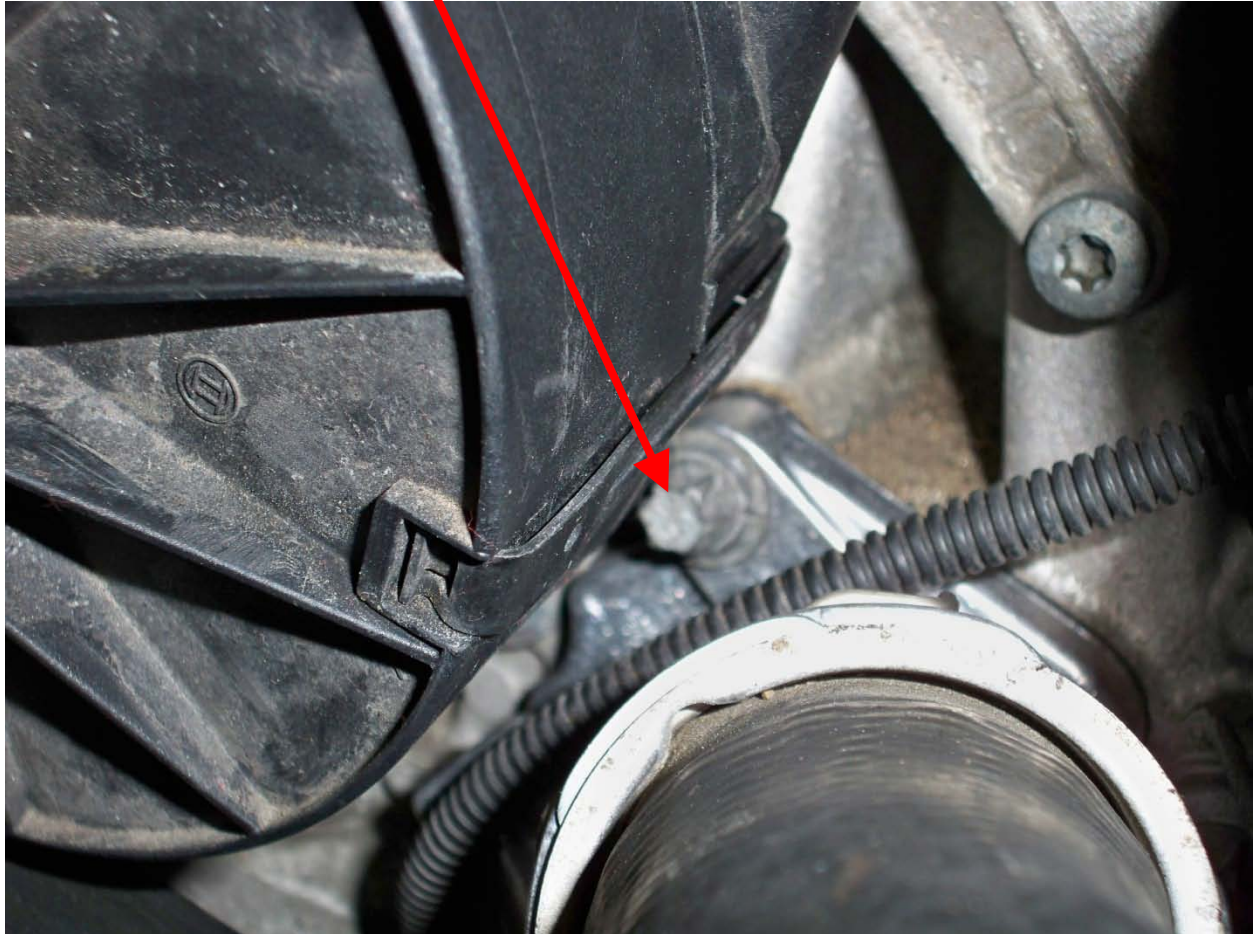
You will need to remove this guide pulley to access thermostat mounting lower bolt. Use an E10 Torx socket (available at Sears Craftsman \$40 for complete set) to remove the pulley.





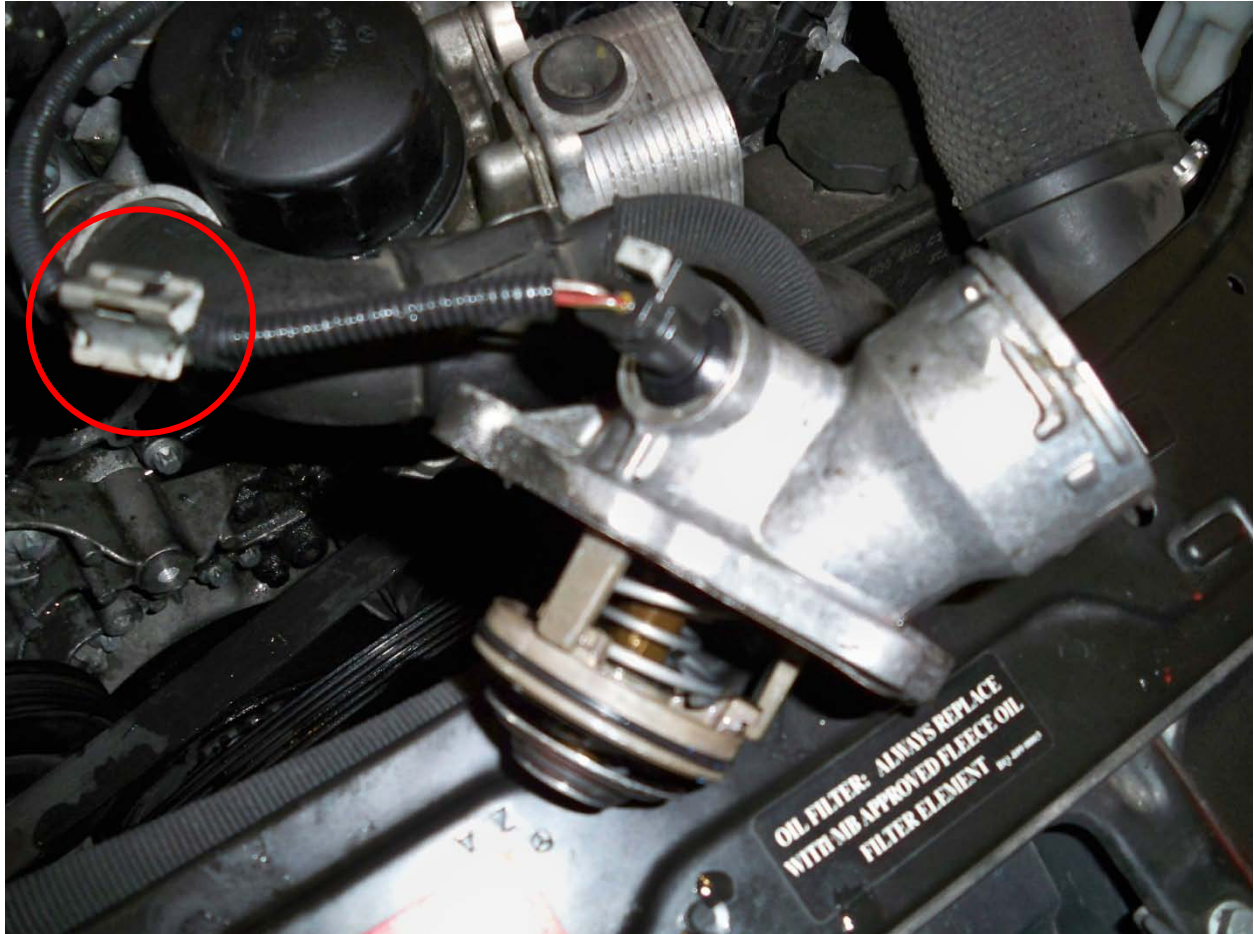
Now you are ready to remove the thermostat. Remove the two Torx screws holding the thermostat. One on the top is little tricky to reach as it is behind the air unit. Push the air unit a little if you need to get access to the torx screw.

Bottom mounting screw is behind the guide pulley you just removed.



Once the screws are removed, you just need to pull out the thermostat. Pry gently by putting the screw driver in the mouth of the thermostat and it should come off. Do not pry it against the engine surface.

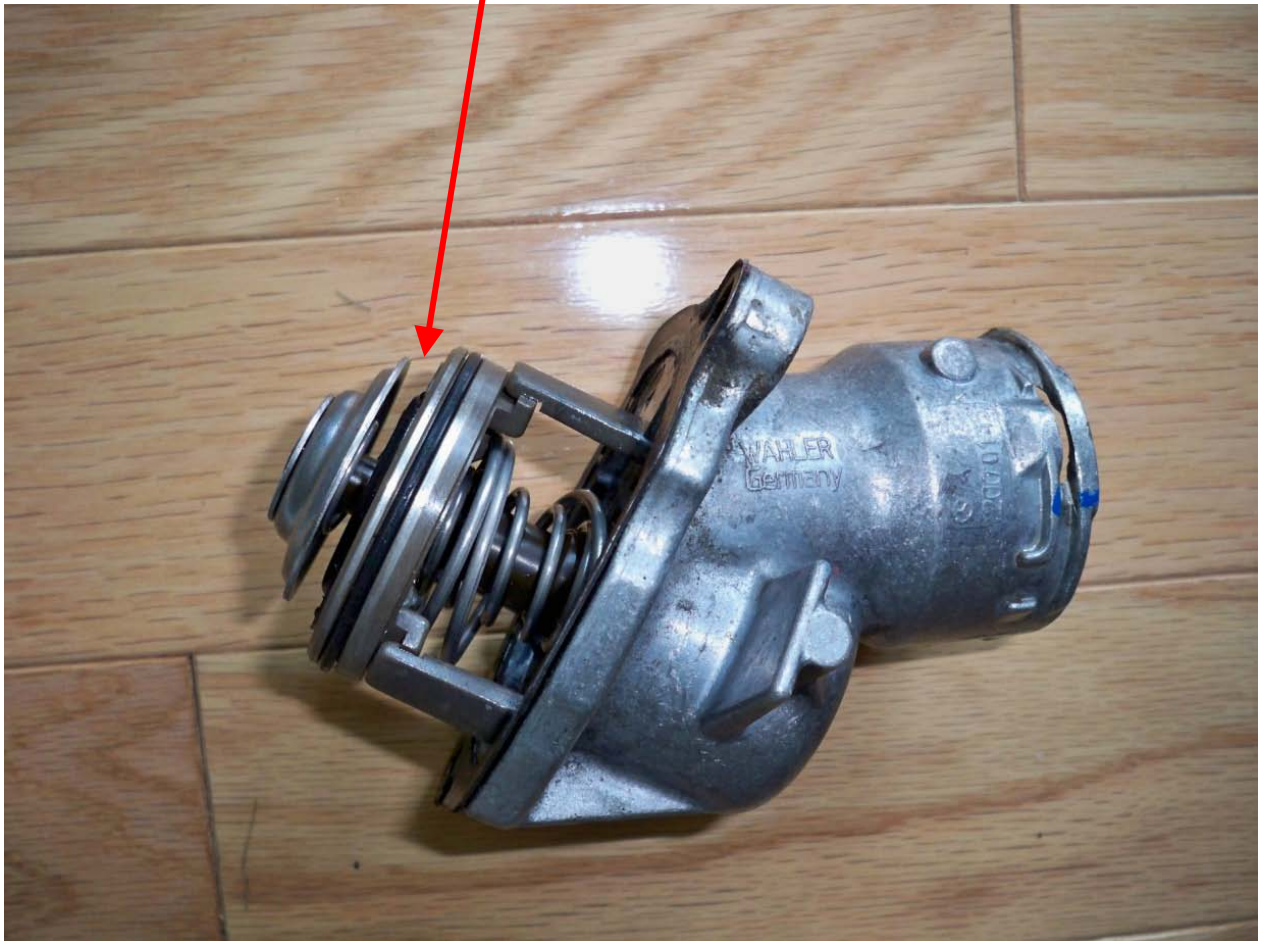
Once the thermostat is free from body, you need to remove the cable connector. The cable is secured by a clip mounted on the engine body. You can pull the clip out of the mounting. It is a snap type you can easily remove it and put it back. Make a note of the clip position before removing it. Picture below shows clip removed. Removing clip gives you more slack on the cable to remove the connector from the thermostat.



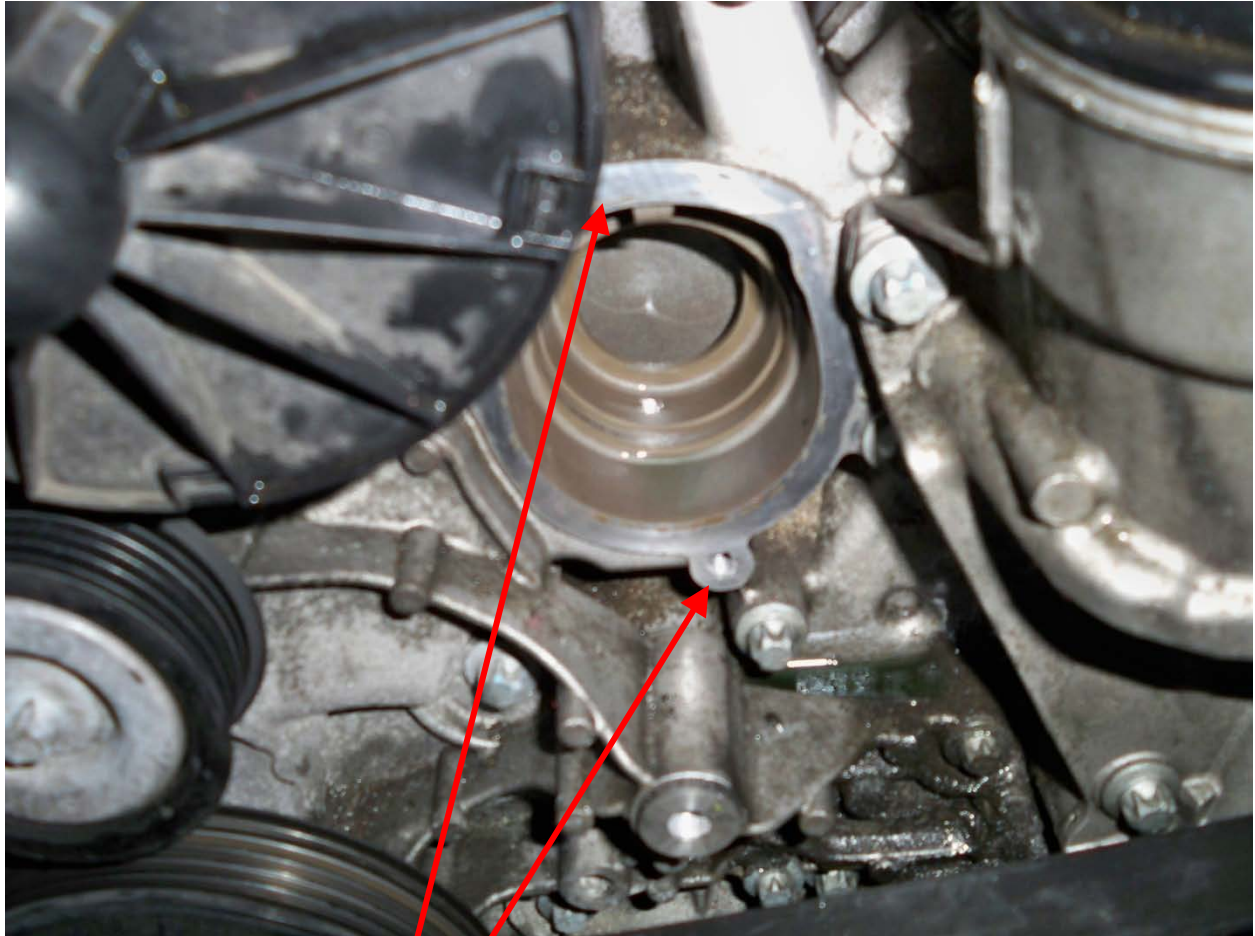
You can remove the cable connector by sliding the gray tab to up position and then pry the connector to remove it from the thermostat. The picture below shows the connector tab pulled up.



Here is the failed thermostat. Notice it stays open. It should be closed and only open when the temperature reaches above 85°C.



Clean engine area from where the thermostat is removed. Careful not to scratch the surface.



Installation:

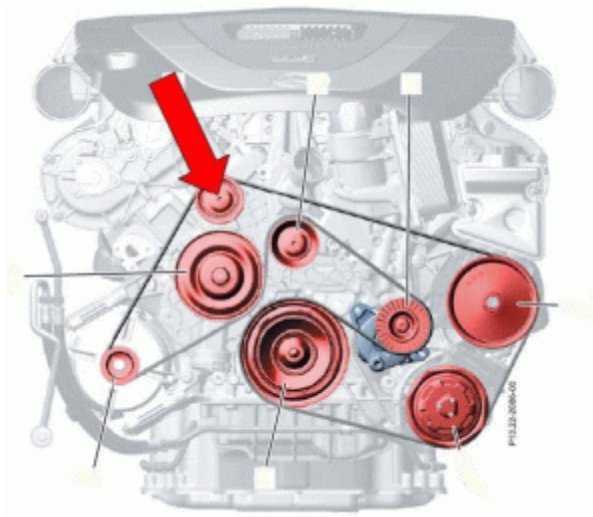
Mount new thermostat using 2 torx screws (Make sure the gasket fits properly). Someone mentioned in other posts the required torque is 14Nm (10 lb-ft).

Connect the cable to the thermostat. Make sure you push the tab back in to position.

Clip the cable to the engine body.

Mount the guide pulley in front of the thermostat.

Mount the belt. Replace with new one if needed. (Using the 17mm socket, move the tensioner pulley counterclockwise to mount the belt). Make sure belt grips are aligned properly with pulleys. Here is the belt diagram.



Turn the Radiator drain knob clockwise to close the drain valve.

Connect the radiator hose to the thermostat (Make sure it snaps in). Slide the hose clip to lock it in position.

Fill the coolant tank with coolant mix (50% antifreeze+ 50% distilled water). Adjust level as necessary. Put the cap on the coolant tank.

Put the plastic guard underneath the engine back using 8 screws.

Start the car and check to see if there is any leak.

While engine running, keep an eye on the coolant level in the tank. Fill as required.

Let the engine run for a while. You will see that the temperature gauge rises up to 85°C and then stays around 85°C.

That is all to it.