

## Spark Plug replacement on VW 2.0L engine with AEG code

This document is an attempt to describe and illustrate to some extent the process of replacing the spark plugs on a Volkswagen 2.0L engine with AEG engine code. This document in no way guarantees success and the author shall not be held responsible for any damage that is inflicted on your vehicle. Use this document merely as a guide.

With that said lets begin! At the time when this document was written, my 1999.5 VW New Jetta GL has 56,xxx miles on the odometer. As I suspected, the spark plugs have never been replaced and a new set of plugs is way overdue.

### **PARTS NEEDED:**

1. Spark Plug Boot Tool



2. 4 **NKG BKUR6ET-10** Spark Plugs. It has a triple ground diode. It is pregapped.



3. Spark Plug socket + 10" extension + elbow joint + ratchet



4. Various bits and screwdrivers

## **PREPARING FOR THE WORK:**

1. Remove the engine cover. It simple and it is not covered in this document.
2. Locate the 4 plug wires and have a good look around them. The left-most and the right-most spark plug wires are the easier ones. The middle two plug wires are the harder ones.
3. The hardest part of the process is removing the plug wire boots. Especially the middle two.

## **REMOVING THE PLUG WIRE BOOTS:**

### **Step 1:**

Locate the throttle cable. The cable is held in place by two plastic clips which are attached to the intake manifold. Un-clip the throttle cable and let loose. This will minimize the chance of breaking the clips while working on the spark plugs:

This is the for upper clip ----->



This is for the lower clip ----->



**Step 2 (plug #4):**

Slide the boot wire boot tool down plug wire #4 (the right-most one) till it has fully encased the plug boot. Slightly twist the tool clockwise till it locks on its little teeth. Carefully pull towards you making sure that you don't grab anything else but the boot of the plug wire.

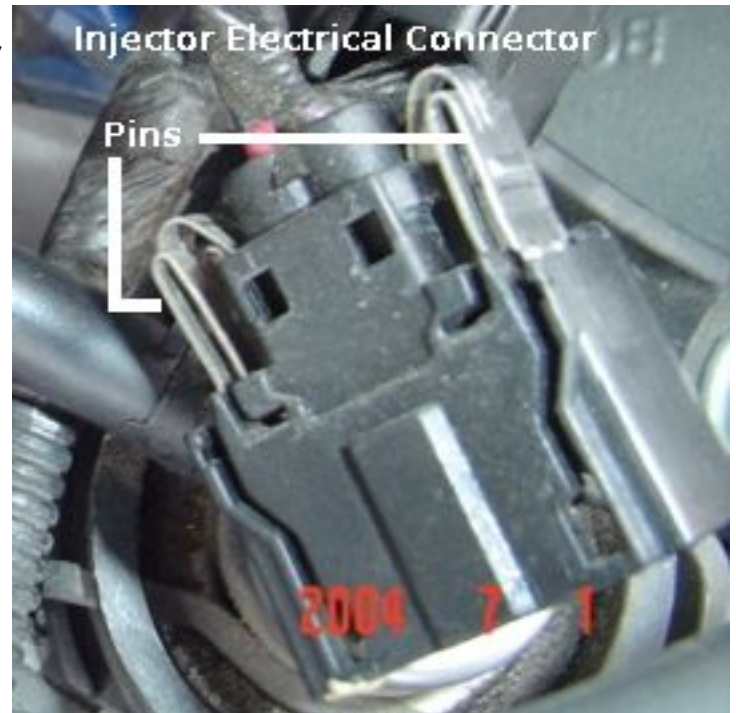
If you have compressed air in a metal can, use it to blow away any dust and grime away from the spark plug seat. This will prevent dirt entering the cylinder once the actual spark plug is removed.

Use the plug socket with the extension to unscrew the spark plug. If you used the correct socket, the socket itself will grab the spark plug and you will be able to pull it out very easily. Replace the spark plug with a new one. Use the boot tool again to reinstall the plug wire.

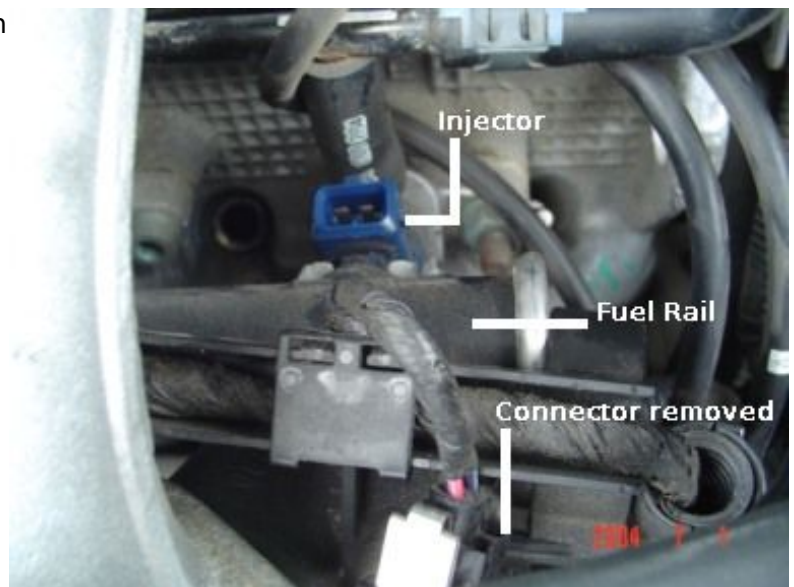
**Step 3 (plug #3):**

This is little bit more complicated. In order to slide the boot tool down till it grabs the wire boot completely, you will need to unplug the electrical connector of the 4<sup>th</sup> injector and loosen the little plastic cable rail that sits on top of the fuel rail. **NOTE: you don't need to do anything to the fuel rail itself.**

Here is how the fuel injector electrical connector looks like. It has two metal pins that you need to squeeze by hand until you hear 2 clicks, one click per pin. This is a good indicator that the electrical connector has been freed from the actual injector. Then you simply pop it off.



Here is how the unplugged injector looks like. With the electrical connector out of the way, you can easily slide the boot tool down the plug wire and remove the plug wires.



Here is how the plug socket tool slides down to the spark plug. You can clearly see that it is pretty tight as it is now with the injector unplugged.



**STEP 4** (plug #2):

This is the other "hard" to get to plug boot. It is on the left, passenger side of the intake manifold. Again, you would have to unplug the electrical connector that goes for fuel injector 1 to make room for the boot tool. Since here you will have bit less space I recommend unclipping the little cable rail that sits on top of the fuel rail. It is like a guide for all the wires that go in the injectors.

Unplug this connector to allow more movement of the cable rail.



Unclip the cable rail from the fuel pressure regulator and wiggle it way. This will give you extra space for the boot tool. Here is how it looks:



Once you have made way for the boot tool, carefully remove the plug wire boot and remove the spark plug. Here is how close the spark plug socket went in between the injector and the intake manifold:



**STEP 5** (plug #1):

This is the left-most spark plug. It is very easy to get to and should not cause you any trouble. There is plenty of space to work with.

### **STEP 6:**

Reassemble everything back the way it was. Make sure all the fuel injectors are plugged in and seated properly. Make sure none of the plug wires is touching the intake manifold or other parts of the engine that get heated. Make sure the plug wires are guided with the little clips properly. Check to see if the main connector on step 4 is reconnected.

### **STEP 7:**

After you made sure everything is fine and dandy, turn you ignition key on without starting the engine and let it sit like that for 10 seconds. Start your engine and see how it works. If all is fine go to...

### **STEP 8:**

Reinstall the engine cover, collect all your tools and have a beer!

### **ADDITIONAL INFO:**

According to the Bentley Manual, the spark plugs must be changed every 20K miles. Here is how a 56K mile spark plug looks like compared to a brand new one:

You can clearly see the burnt on deposits on the ground diodes. Also, note how the middle diode is shorter than the newer one. The middle diode is supposed to be round. On my old spark plugs, the wear was so obvious that the middle diode was more triangular rather than round. This increased the spark plug gap causing weak sparking and poor engine performance and increased fuel consumption.

