

How To Unsolder The ECU Chip In A 95 GTI VR6

NOTE: *This is what I did to unsolder my chip & solder in a socket, but if you follow these instructions and you screw up your ECU, don't blame me.*

NOTE 2: *PRACTICE! PRACTICE! PRACTICE! The ECU costs \$900.00 to replace. Practice all your de-soldering & soldering moves on something before doing it to your ECU for real! I practiced on the board of an old 2400 baud modem, which has chips with pins similar to the VR6 ECU chip.*

Equipment/supplies needed:

- Soldering iron: I have a Weller soldering unit whose power is variable from 0-40W. I used around 20-30W during the de-soldering process, and 40W when soldering in the socket
- 1/16" or 1/8" soldering braid: soldering braid is a flat braid of fine copper wires. It is used to wick away molten solder. To use it, put it on the solder to be removed, press the tip of the soldering iron onto the braid and hold until the solder melts and is wicked into the braid.

OR

A "desoldering tool": supposedly you can buy this at Radio Shack. I could not find one locally so I didn't use it. It's supposedly a soldering iron w/ a built-in suction device which allows you to melt the solder & suck it away all in one operation. If you can find this, I think it will make unsoldering the chip **MUCH** easier.

OR

A "solder sucker": a vacuum bulb thingy that will suck the solder away as you are melting it.

- Rosin core solder: get as fine a solder as you can. I used a very fine solder, which I think made it easier to control the amount of solder being put down.
- A 28 pin socket. When buying the socket, bring your chip & test to make sure it fits. Buy as high quality a socket as you can find.

Procedure:

- First remove the ECM. [Follow these instructions.](#)
- Use the solder braid and soldering iron to melt & wick away solder from the OEM chip's pins. Since the board is fairly thick, you will need to work on both sides of the board to get all the solder out. A clean hole should resemble a hole, and have no solder in it. Alternate between pins at either end of the chip, and stop if the chip gets so hot that you can't hold a finger on it indefinitely. This process took me 2+ hours.
- **BEFORE YOU REMOVE THE CHIP:** make a mark on the board at the end of the chip that has the semi-circular "notch"; that will remind you which way to put the the socket in (the socket has the same notch as the chip). Don't be like me and put the socket in with the notch at the wrong end!
- Once all the holes are clean, insert a flat blade screwdriver under the chip, and lever the chip out. First twist the handle, using the width of the screwdriver blade as the lever. When the chip is loosened, rock the screwdriver back and forth lengthwise to lever the chip out.
- Use the solder braid to thoroughly clean the board around the holes and the holes themselves.
- Insert the socket, match up its notch with the mark on the board.
- Working on the underside of the board, heat up each pin on the socket for 6-7 seconds then apply the solder. The solder should melt immediately and be sucked down into the pin's hole. Stop when the

solder doesn't go down anymore. Do **NOT** put too much solder in, as it will flow out the other side and onto the other side of the board and make contacts where it shouldn't. Using too much solder can also cause the solder to overflow the hole on this side of the board and run into adjacent contacts.

A3 Volkswagen ECM Identification, Removal, and Disassembly By [Uwe Ross](#) 9. Nov.97

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Finding the ECM

The ECM is located in the "gutter" under the passenger side half of the black plastic rain shield at the base of the windshield. To remove the rain shield, you'll need a Philips head screwdriver, and something the pry with.

Looking at the rainshield, you'll notice that 7 black plastic fasteners that secure it. You only need to remove 4 of these. Start with the fastener closest to the passenger side A-pillar. This one just unscrews. Set it aside.

The other three are a bit funky. You'll find yourself getting absolutely nowhere if you simply try to unscrew them. The secret is to pry up on them while unscrewing at the same time. The screw will only come out about 1/4", and then it's all pry. The screw is captive in an expanding plastic clip; you'll see what I mean after you get the first one out.

After you get all three of these fasteners out (you might do some cursing the first time you do this), find the clip that holds the two halves of the rainshield together in the very center. Slide the clip towards the passenger side of the car, it will remain attached to the piece of the rainshield you are about to remove. Be careful here, at least one person has reported breaking the piece that the clip slides over upon re-installion by being "ham-handed".

Lastly, remove the rubber gasket that attaches the front of the rain shield to front lip of the cowl gutter by pulling straight up on it starting at the passenger side end.

Now pull the passenger side half of the rainshield out; this takes a little wiggling, pull mostly towards the front of the car.

Your ECM is now visible. If you're getting ready to order a chip, you need to write down the ECM part number; it's on a label that should be easily visible. The part number on mine is 021 906 259 AA.

Reinstalling the rain shield is the reverse of removal. When reinstalling the three funky fasteners, note that the plugs are rectangular, as are the holes they go into. Orient them properly in the holes. You may need to squeeze the "wings" together a little to get them started, then push down on the "screws" using your Philips head screwdriver. No twisting action is necessary.

Removing the ECM

It may be prudent to disconnect the battery (at its negative post) before proceeding. I've pulled my ECU at least three times without doing so, but if you leave the battery connected and smoke something, don't say I didn't warn you.

In order to remove the ECU from the car, first disconnect the wiring harness. The end of harness' connector closest to the back of the car has a sliding latch. Slide the latch towards the back of the car and the connector will almost unplug itself.

Remove the bolt on the driver's side of the ECM mounting bracket using a 10mm wrench.

Loosen the nut at the passenger's side of the bracket using a 10mm wrench; it is not necessary to remove this nut.

Slide the ECM slightly towards the passenger side so that the slot in the bracket comes out from under the nut and the remaining plastic fastener towards the rear of the bracket come loose.

The ECM can now be removed from the car. I find it easiest to slide it along inside the gutter towards the HVAC intake where there's a little more room to pull it out.

Opening up the ECM

In theory, this is best done in a "static controlled" environment, especially in the winter or in a low humidity situation. If in doubt, ground yourself and the metal end of the ECM to a water pipe using a couple of pieces of wire. I don't normally do this, but again, don't say I didn't tell you.

The ECM has two ends, the end that the harness connector was plugged into is made of aluminum, while the other end is plain plastic with a filtered "breather" protruding from it..

Remove the two Philips-head screws that hold the mounting bracket to the aluminum end.

Remove the four T10 or T15 screws that hold the aluminum end to the plastic case using an appropriate Torx driver or wrench.

You can now gently remove the plastic housing from the aluminum end. It may be necessary to pry a little with a knife blade where the aluminum meets the plastic housing. The circuit board will stay attached to the aluminum end.

Swapping Chips

Refer to your chip vendor's instructions here. Some ECMs have a DIP-style chip in a socket, some have a PLCC-style chip. The PLCC type is easiest to remove with a special tool designed just for that purpose, it is available from Radio Shack, p/n 276-2101 for under \$10.

In any case, pay particularly close attention to the orientation of the chip. DIP chips have a small U-shaped notch on one end; PLCC chips have a bevel along one edge. Putting your new chip in wrong can ruin it.

Reassembling the ECM

This is simply a matter of sliding the board back into the case and reinstalling the four Torx screws and the two Philips screws. However, it is possible to put the board in upside down. Put the board in so that the chip socket faces the top of the housing that has the identifying part-number label on it.

Reinstalling the ECM

Re-secure the ECM to its mounts using a 10mm wrench.

Slide the latch on the harness connector all the way to it's "unlatched" position. Bring the harness connector into contact with the mating connector on the ECM, then slide the connector latch towards the front of the car to secure it.

At this point, I always start the car up (just to make sure) before reinstalling the rain shield. If the car starts, you know the chip is in properly and working, and the harness connector is connected.

Reinstall the rainshield.

General Maintenance (while you're "In There")

If your car is more than a year old, it couldn't hurt to remove both halves of the rainshield and clean out any debris that's accumulated under it. Pay special attention to the drain on each end. If these drains are allowed to become clogged with debris, your HVAC system could become flooded with water and on some older VWs, the ECM could also get soaked, although the A3 cars seem to be less prone to that. If you park your car outside a lot and if it spends any time under trees in the fall, it's a good idea to pull the rainshield for a cleaning at least once a year.

Previous VWs had problems with corrosion of the harness connectors; this would lead to all kinds of flaky symptoms. It's not a bad idea to treat the connector pins at the ECM to some anti-corrosive spray. Do not use WD-40 or Silicon Spray. WD-40 will actually attract moisture after it's been in place for a while and worsen corrosion. Avoid using Silicon Spray under the hood at all times, if the engine inhales the spray, it can ruin your Oxygen Sensor(s). I like [ACF-50](#); a product made for the aircraft industry.

Disclaimer

I developed these instructions using my 1997 GTI-VR6. They are probably applicable to all A3 VWs, i.e. 1993-1998 Golf, GTI, and Jetta. However, I cannot be held responsible for any errors or omissions. If you have any suggestions how to improve these instructions, [send me some e-mail](#).