

Flex Fuel Kit

Installation Guide — VW Mk7 Golf GTI & Golf R

This guide covers installing the EQT flex fuel kit on the **Volkswagen Mk7 Golf GTI and Golf R**. It walks you through installing the ethanol content sensor included in your kit. The process involves splicing the sensor into the low-pressure fuel feed line using the supplied quick-disconnect fittings, adding the sensor signal wire to the ECU connector, and connecting the sensor's switched power and ground in the engine bay. Once installed, the sensor reports real-time ethanol content so a flex-fuel-capable tune can adjust fueling and timing for any blend in the tank.

IMPORTANT SAFETY NOTICE — READ BEFORE YOU BEGIN

This installation involves opening the fuel system and modifying ECU and fuse box wiring. **It should be performed by a qualified, professional technician.** This guide is provided as a suggested procedure only. Vehicles, model years and kit revisions vary, and this guide is not a substitute for professional training, factory service information, or sound judgment. If you are not confident in any step, stop and have the work completed by a professional. Equilibrium Tuning is not responsible for damage, injury, or loss resulting from the installation or use of this product or guide.

Working with fuel

- Gasoline and ethanol blends are extremely flammable, and their vapors can ignite from a spark, a hot surface, or static discharge. Work outdoors or in a well-ventilated area, away from open flames, pilot lights, grinders, and anything that sparks. No smoking.
- Keep a fire extinguisher rated for fuel fires (Class B or ABC) within arm's reach for the entire job.
- Work only on a cool engine. Fuel lines can stay pressurized after the engine is shut off, so expect fuel to spray when a line is opened.
- Wear safety glasses and fuel-resistant nitrile gloves. Fuel irritates skin and is especially harmful to eyes.
- Wipe up spills immediately. Store fuel-soaked rags in a sealed metal container until they can be disposed of properly. Never leave them in a pile.

Working with electrical systems

- Disconnect the negative battery terminal before starting and keep it isolated until the installation is complete.
- Keep tools away from the battery positive terminal and fuse box bus bars. A wrench bridging power to ground can cause severe burns, melted wiring, or a fire.
- Touch bare chassis metal before handling ECU or module connectors to discharge static electricity. Never force a terminal or probe into a connector cavity.
- Confirm every power source with a multimeter or test light before making a connection.

Tools & Materials Needed

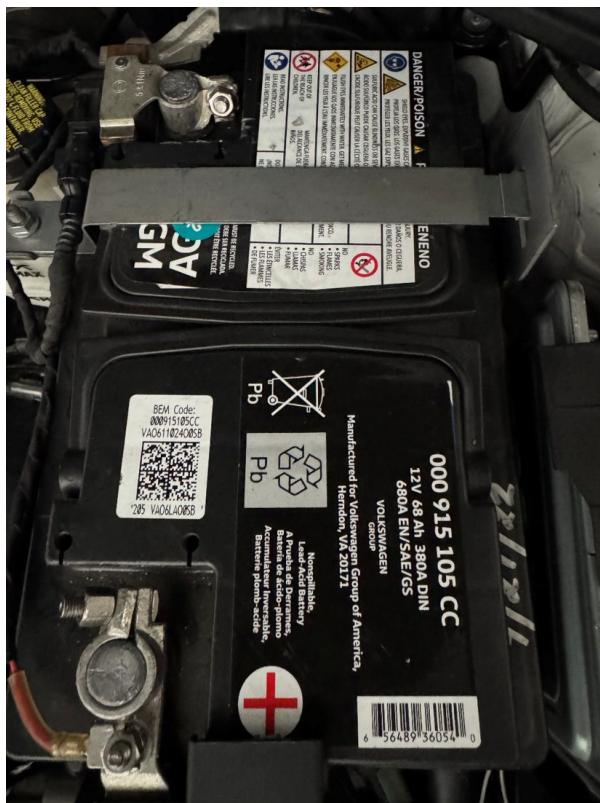
- Flex fuel kit: ethanol sensor, bracketry, quick-disconnect fittings, harness, pinch clamps and ECU pin guide
- Hose clamp pliers or standard pliers (for the spring clamp at the high pressure fuel pump)
- Pinch clamp (ear clamp) pliers
- Hose cutter or a new, sharp razor blade
- Paint marker
- Needle nose pliers
- Small flat screwdriver or pick
- Side cutters and zip ties
- Socket set and ratchet
- Multimeter or 12V test light
- Plenty of shop rags
- Safety glasses, nitrile gloves and a fire extinguisher

STEP 1

Disconnect the Battery

With the ignition off and the key out of the vehicle, loosen the nut on the **negative (-) battery terminal** and lift the terminal off the post. Place a rag over the post and tuck the terminal away so it cannot spring back and make contact while you work.

Disconnect the battery before you open the fuel system. This removes any chance of the fuel pump priming while the line is open, and it protects the ECU and fuse box while you work on the wiring later.



STEP 2

Disconnect the Fuel Line at the High Pressure Fuel Pump

Locate the low-pressure fuel feed line where it connects to the **cap of the high pressure fuel pump (HPFP)**. The line is held on with a **spring hose clamp**. Squeeze the clamp's tabs with pliers and slide it back along the hose, away from the fitting. Then gently twist the hose to break it loose and pull it off the cap. Disconnecting here relieves residual pressure in the feed line and gives you slack to reposition the line during the install.

Have plenty of rags ready before you pull the hose off. Wrap a rag around the connection to catch fuel, and keep your face away from the fitting. Point the open end of the line downward into a rag.

**! CAUTION**

The line may still be under pressure even after sitting. Work the hose off slowly with a rag wrapped around the fitting and wear eye protection. Clean up any spilled fuel on the engine before continuing.

STEP 3**Remove the Coolant Reservoir Hose Clip**

On the coolant reservoir, find the **black plastic clip** that holds the fuel line and the neighboring hose. Unclip the two hoses from it, then release the clip from its housing on the reservoir and remove it completely.

This clip is **not reused**. The ethanol sensor bracket mounts in its place.



STEP 4

Install the Sensor Bracket and Mark the First Cut

Slide the **ethanol sensor bracket** into the location on the coolant reservoir where the black clip was previously installed, and tighten the **thumb screw** to secure it.

With the bracket and sensor in place, use a paint marker to mark where the **first cut** goes on the fuel line (the green mark in the photo).

Check the **right-angle fitting** that connects to the fuel line near the firewall. It needs to be rotated as shown so it clears the bracket. Rotate it now and confirm the clearance, so the line is not kinked or preloaded after the sensor is installed.



✓ TIP

Cut the line squarely with a hose cutter or a new razor blade. Do not use a saw or side cutters. An angled or crushed cut will not seal properly on the fitting's barb.

STEP 5

Install the First Quick-Disconnect Fitting

Slide a supplied **pinch clamp** over the cut end of the fuel line, then push the line onto the quick-disconnect fitting's barb. Push it all the way on until it bottoms out against the fitting shoulder so the hose covers every ridge of the barb.

Position the clamp over the barb, just behind the last ridge, and not on the bare hose past the end. Close the clamp fully with pinch clamp pliers. The ear should be completely crimped and closed.

**! CAUTION**

Pinch clamps are single-use. If you need to reposition the hose, cut the clamp off and use a new one. Do not reuse a clamp or substitute a worm-gear clamp, which can cut into the fuel line.

STEP 6**Mark the Second Cut**

With the first side connected, route the remaining fuel line exactly the way you want it to sit in the finished install. Keep the bends smooth, with no kinks or tight radii, and clear of moving parts and hot surfaces.

Once you are happy with the routing, mark the **second cut** where the line meets the other quick-disconnect fitting. Marking it in its final position means everything lines up without the hose being stretched or pushed into a sharp bend.



✓ TIP

Measure twice and cut once. You can always trim a little more off, but you cannot add length back. If in doubt, leave the line slightly long.

STEP 7

Remove the Sleeve and Install the Second Fitting

The fuel line has an outer hard plastic sleeve that makes it stiff. Near the second connection, carefully cut and remove this sleeve to make the line more flexible so it can bend into position.

Take your time and use shallow cuts. Score the sleeve lightly, then peel it away. The rubber fuel line underneath must not be nicked or cut. Inspect it closely when the sleeve is off.

Make the second cut, slide on a new supplied pinch clamp, push the line fully onto the quick-disconnect fitting, and crimp the clamp just as you did on the first side.

**! CAUTION**

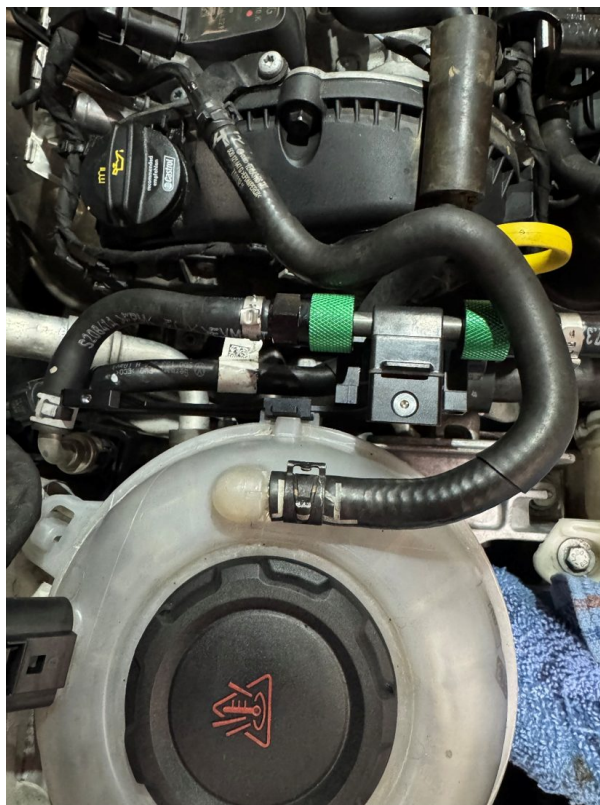
If the inner fuel line gets nicked or scored while you remove the sleeve, do not use it. A damaged fuel line can fail and leak under pressure. Replace that section before continuing.

STEP 8**Final Fuel Line and Hose Routing**

The radiator hose can sit **above** or **below** the fuel line, depending on your preference. Either way, confirm that:

- The fuel line and sensor are not rubbing against the radiator hose, bracket edges or other components.
- Nothing touches the belt drive, the exhaust side of the engine or other hot surfaces.
- The bracket thumb screw is tight and the sensor does not hang from the fuel line.

Secure loose sections with zip ties where needed so nothing can vibrate into contact with anything else.

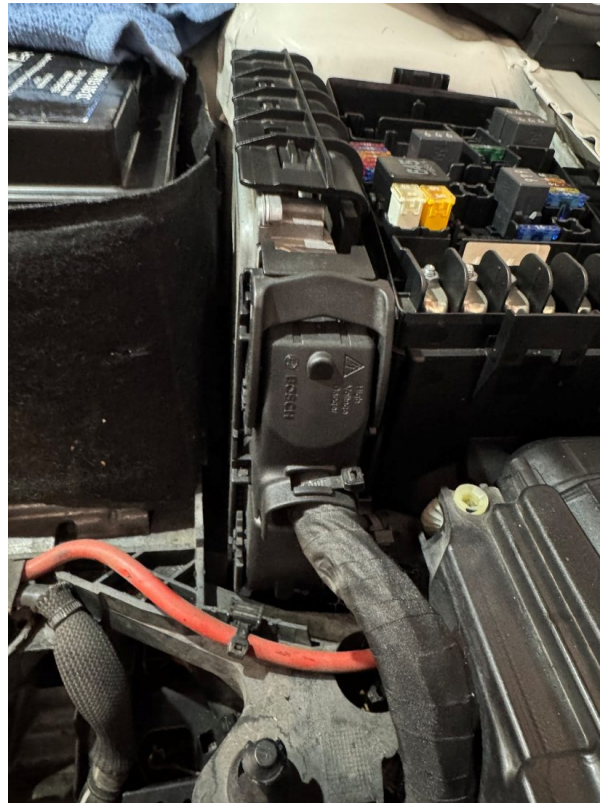


STEP 9

Disconnect the Top ECU Connector

Locate the ECU and its **top connector**. Lift the locking tab to release the connector, then pull the connector straight off the ECU. Pull on the connector body, never on the wires.

Before you reach in, touch bare chassis metal to discharge any static.

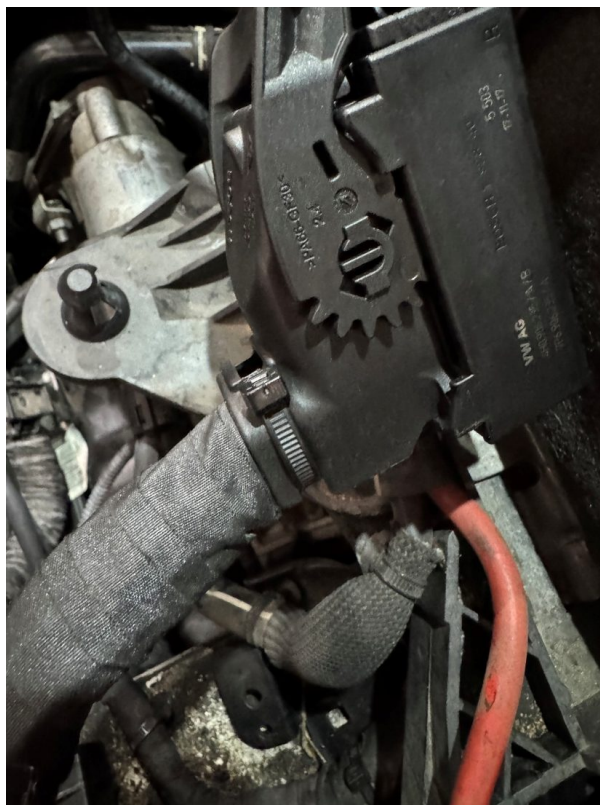


STEP 10

Open the ECU Connector

To reach the pin cavities, the connector has to be partly taken apart. Work gently. These plastic parts are reused and can crack if they are forced.

1. Cut the zip tie that holds the wire loom to the connector. Cut carefully so you do not nick any wires.
2. Gently pry off the plastic covering on the connector.
3. Gently pry the **purple retaining clip** away and remove it completely. This clip locks the terminals in place, and a new terminal cannot seat while it is installed.





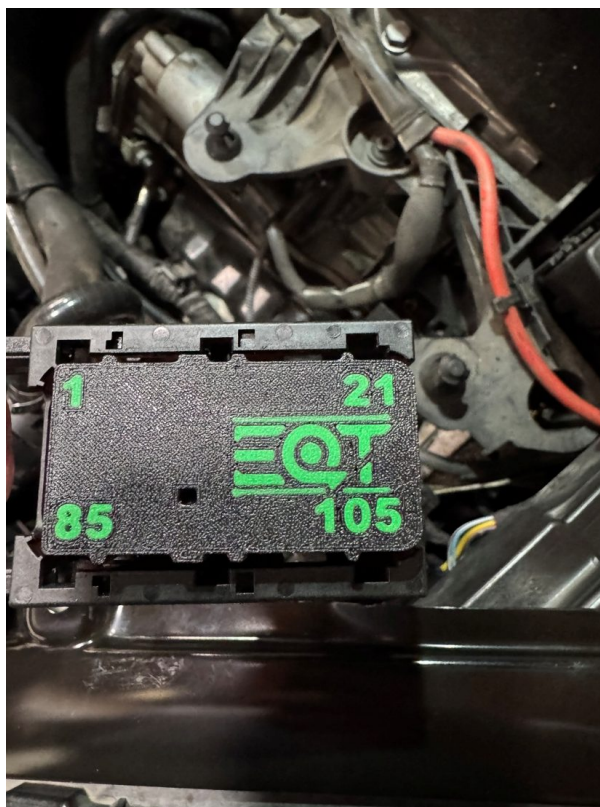
STEP 11

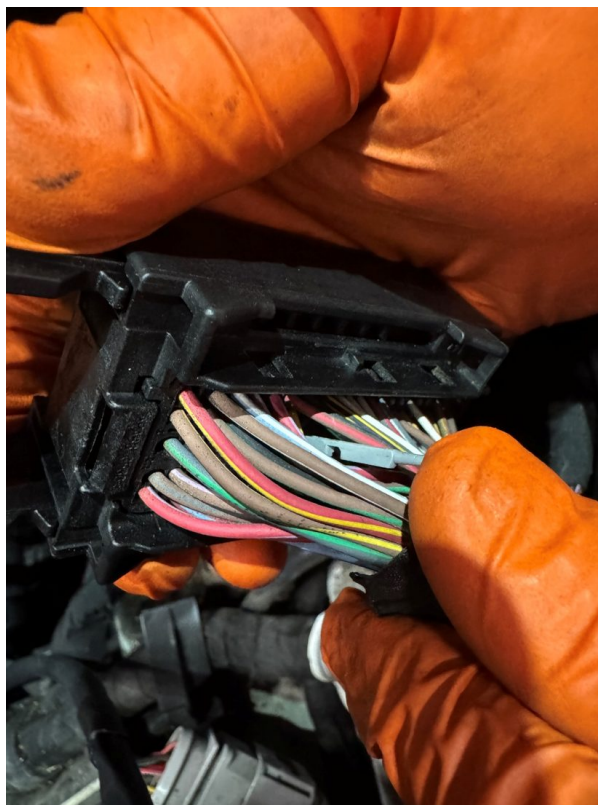
Install the Gray Signal Wire in Position 71

The **gray wire** from the kit harness is the sensor signal wire, and it goes in **position 71**. Place the supplied **pin guide** on the connector to find the correct cavity. The guide is labeled with the corner positions (1, 21, 85 and 105). Use those as reference points, then **count the pin openings on the back of the connector** to find position 71.

Position 71 is sealed with a **gray plug**. Remove the plug with needle nose pliers. The gray wire installs into this open cavity.

Insert the gray wire's terminal into position 71 from the back of the connector, with the terminal oriented the same way as the terminals next to it. Push it in until you feel it **click**, then give the wire a light tug to confirm it is locked.



**! CAUTION**

Count the position twice before inserting the terminal. A wire in the wrong cavity can damage the ECU or cause a no-start, and removing a seated terminal can damage the connector housing. If the terminal does not slide in smoothly, stop and check its orientation. Do not force it.

STEP 12**Reassemble and Reconnect the ECU Connector**

Reinstall the **purple retaining clip**. It should slide fully home with light pressure. If it will not seat, one of the terminals is not fully clicked in. Find it and fix it before you continue.

Snap the plastic covering back on, secure the wire loom with a new zip tie, and plug the connector back into the ECU. Close the locking tab until it latches. A connector that is not fully locked can cause a no-start or a string of fault codes.

STEP 13

Open the Fuse Box

Remove the **front panel** of the fuse box by gently prying the tab on the bottom (circled) and lifting the panel up.

Next, lift the **internal fuse box** out of its casing by gently prying the retaining tabs while lifting upward. There are **6 tabs** in total, circled in the photo. Release them a few at a time and work around the box. Do not pull hard on one corner.







! CAUTION

The battery positive feed and bus bars are behind this panel. Even with the battery disconnected, keep metal tools clear of them.

STEP 14

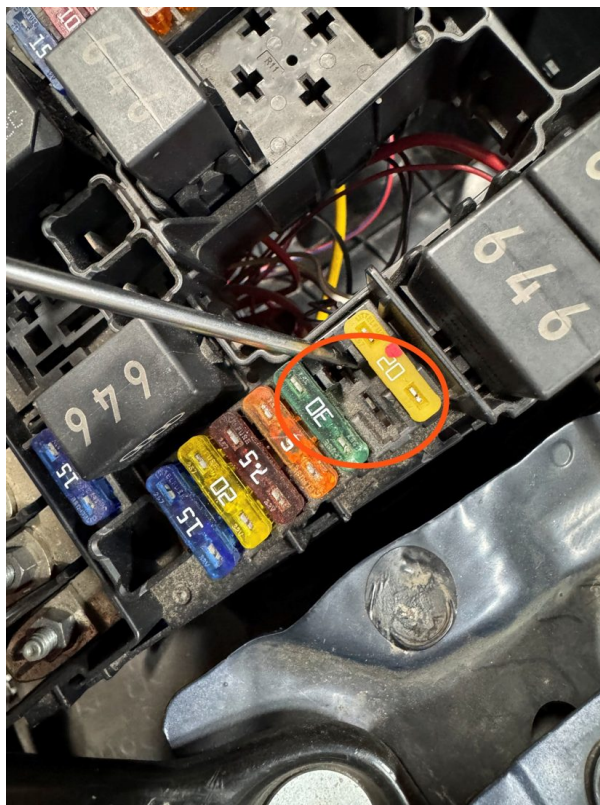
Connect the Purple Power Wire

Route the **purple power wire** in from the front of the fuse box panel, then insert it into an **empty fuse slot that has power only when the key is on** (switched ignition power). The slot circled in the photo is one option.

Verify the slot before you commit to it. Temporarily reconnect the battery and use a test light or multimeter:

- **Ignition ON:** the slot should read about 12V.
- **Ignition OFF:** the slot should read 0V. If it is still live with the ignition off, it is constant power. Choose a different slot, or the sensor will stay powered and slowly drain the battery.

Disconnect the battery again after testing. Seat the wire in the slot you chose, then lower the internal fuse box back into its casing until all 6 tabs click. Check that no wires are pinched. Reinstall the front panel.



STEP 15

Connect the Ground Wire

Install the **grounding eye terminal** on the grounding point on the frame rail between the transmission and the radiator (circled).

A good ground is essential for an accurate sensor reading. Make sure the eye terminal sits flat against clean metal with no paint, rust or dirt under it. If you are sharing an existing ground bolt, stack the eye terminal with the existing grounds and tighten the bolt securely without over-tightening it.



STEP 16

Connect the Ethanol Sensor

Plug the harness connector into the ethanol sensor until the locking tab **clicks**, then tug the connector lightly to confirm it is latched. Secure the harness along its route with zip ties, away from hot surfaces, sharp edges and moving parts.



Installation Complete

Reconnect the low-pressure fuel line to the high pressure fuel pump cap. Push the hose fully onto the fitting, then squeeze the **spring hose clamp** and slide it back into its original position over the fitting. Make sure the clamp sits fully on the fitting and is not caught on the end of the hose. Reinstall any panels or covers that were removed, remove all rags and tools from the engine bay, and reconnect the negative battery terminal.

Check for fuel leaks before driving:

- Turn the ignition on without starting the engine to prime the fuel system. Cycle the key on and off 2 or 3 times to build full pressure.
- With a flashlight, inspect both quick-disconnect fittings, both pinch clamps and the HPFP hose clamp. Wipe each joint with a clean paper towel. Any wetness or fuel smell means there is a leak.
- If everything is dry, start the engine, let it idle and inspect every joint again.
- After the first drive, once the engine bay is hot, check one more time.

If you find any leak, shut the engine off immediately and correct it before driving. Finally, confirm with your tuner that your calibration is set up to read the ethanol sensor, and check that the ethanol content reading looks plausible for the fuel in your tank.