

Volkswagen Cabriolet

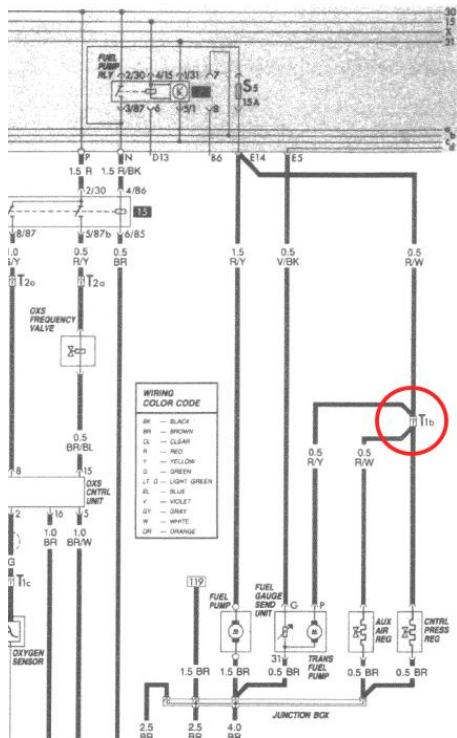
DIY Guide: Splitting Fuse 5 Circuit

Purpose: To split the fuel system electrical circuit. The fuel pump(s) remain wired as-is, while the control pressure regulator (CPR, also known as the warm-up regulator, or WUR), auxiliary air regulator (AAR), and/or O2 sensor (3-wire, if equipped) are moved to their own power circuit.

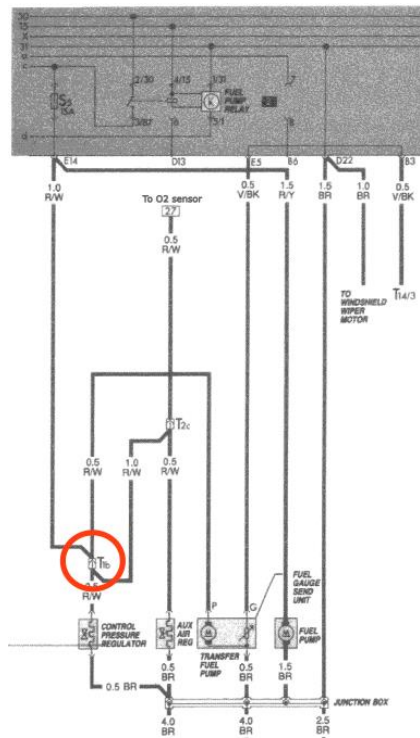
Reasons: This takes some of the load off the fuel pump relay, in an effort to reduce relay fatigue and overheating, while providing full 12V to all components (lessens voltage drop). This is especially helpful for those cars residing in hot environments and/or for those cars that see fuel pump relays burn up.

This guide requires minor modification to your relay panel – no wires are cut and it is 100% reversible. **⚠ Please read the entire guide carefully before beginning.** ⚠ If you are uncomfortable making this alteration, do not proceed. This guide does not detail how to strip/crimp/heat shrink wires; if you do not know how perform this task, do not proceed, or consult an automotive electrical technician for assistance.

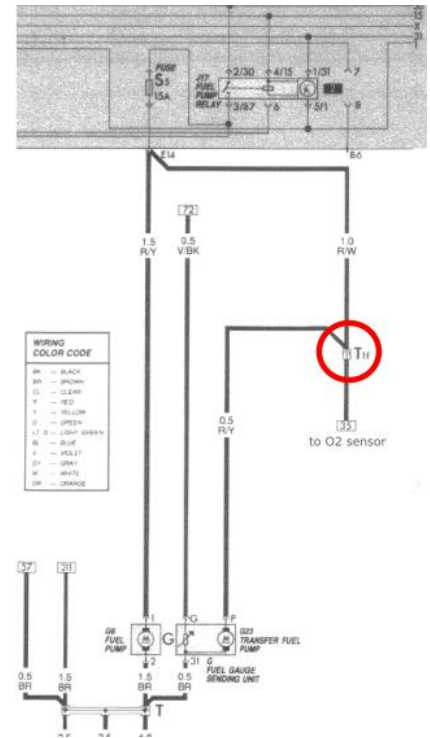
This minor modification will be disconnecting the **T1b** (K-Jetronic) or **T1f** (Digifant) connector (circled in red below) behind the relay panel and supplying switched battery voltage to the CPR, AAR, and/or heated O2 sensor via a separate, fused relay.



1979 to June 1987 K-Jetronic
1-wire O2 sensor



July 1987 to 1993 K-Jetronic
3-wire O2 sensor



1990 to 1993 Digifant I & II
3-wire O2 sensor

Tools

Philips screwdriver

Volt meter

Plastic trim removal tool, small plastic putty knife, Popsicle stick, or similar non-metallic tool (optional, if G2 is difficult to disconnect)

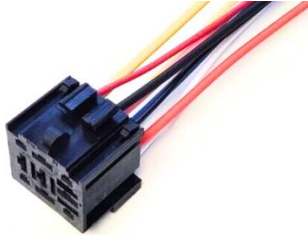
Wire stripper

Wire crimper(s)

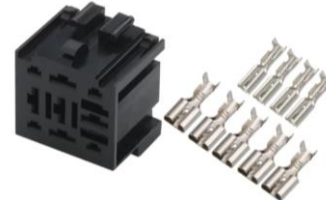
Heat gun, or hair dryer for heat shrink (optional)

Parts

Pre-wired relay block, part #161937501B



Relay block with locking pins (part #161937501B) and 14 gauge wire



or

(Yes, the part number is the same for both versions. The pre-wired version is harder to come by. The block without wires comes with terminals that are open barrel, which will require an open barrel crimper for proper installation.)

4-pin relay **with** fuse



(Remove the metal mounting tab, if equipped.)

1-wire O2 sensor: 10 amp fuse

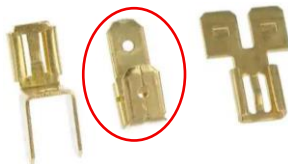


or

3-wire O2 sensor: 15 amp fuse



Piggyback splitter (Dorman #85412), available at select auto parts stores



Comes as package of three; you need just the center version

Piggyback spade connector (Jandorf #60880), available at select hardware stores



Only one needed

or

* Digifant with manual transmission: Piggyback adapter is not needed *

3 female spade connectors
(2 if using a piggyback)



or

3 female fully insulated spade connectors
(2 if using a piggyback)



1 male spade connector



Heat shrink tubes



(Not required, but highly recommended)

Instructions

Note: Not all steps contain photos. Before beginning, if desired: Go for a drive, getting the car up to operating temperature, and make note of the fuel pump relay's temperature (use a digital volt meter with temperature option, or infrared gun).

Step 1

Replace the new relay's 30-amp fuse with:

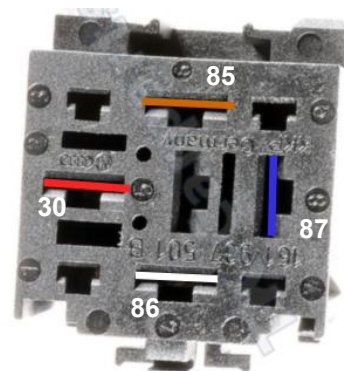
- Cars with 1-wire O2 sensor, or without O2 sensor: **10-amp** fuse
- Cars with 3-wire O2 sensor: **15-amp** fuse

Step 2

Create your wiring harness (if using pre-wired relay block, simply cut & crimp standard connectors on the corresponding terminal wire ends as noted below). You can use any wire color you desire, however, the example images below show the following:

- Terminal **30**: **red wire**
 - Length: 6 inches (15 cm)
 - Standard female spade connector covered with heat shrink
 - Open barrel, locking female spade connector
 - Battery 12V into the relay
- Terminal **87**: **blue wire**
 - Length: 6 inches (15 cm)
 - Standard male spade connector with heat shrink
 - Open barrel, locking female spade connector
 - Battery 12V out of the relay to components when activated
- Terminal **85**: **brown wire**
 - Length: 10 inches (25 cm)
 - Standard female spade connector covered with heat shrink
 - Open barrel, locking female spade connector
 - Relay ground
- Terminal **86**: **white wire**
 - Length: 10 inches (25 cm)
 - Standard female spade connector covered with heat shrink & splitter (or piggyback, if that's what you have)
 - Open barrel, locking female spade connector
 - Relay switched 12V (trigger wire)

If not using pre-wired block: Insert locking spade connectors into corresponding relay block locations. You should hear a <click> when fully inserted. Give each wire a tug to ensure they are, in fact, locked into place.



If you are new to open barrel connectors, buy a small handful at your local hardware store to practice with after watching YouTube videos on the technique. Your crimps should resemble the below example:

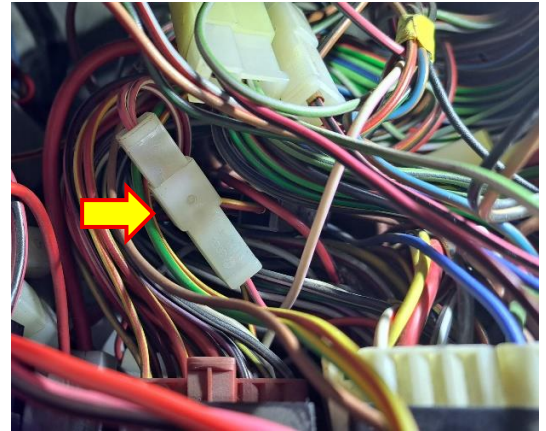
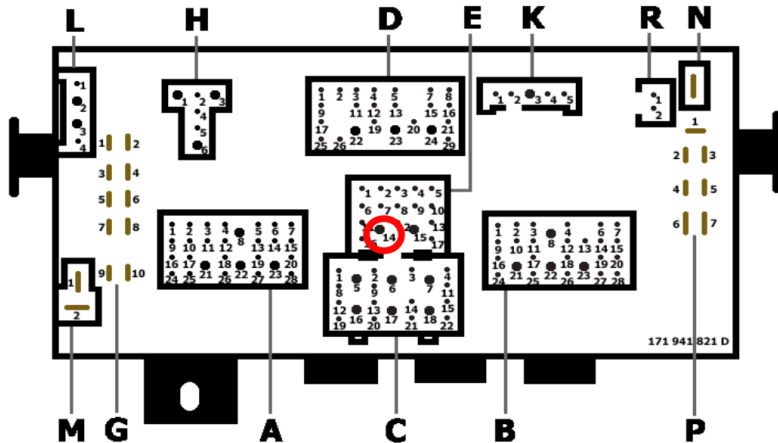


Step 3

Using Philips screwdriver, remove relay panel retaining screw. Carefully lift the panel up and out of the cradle brackets. Carefully drop the panel so that you can access the back of it, as well as the ground trees/stars (up and behind the panel bracket).

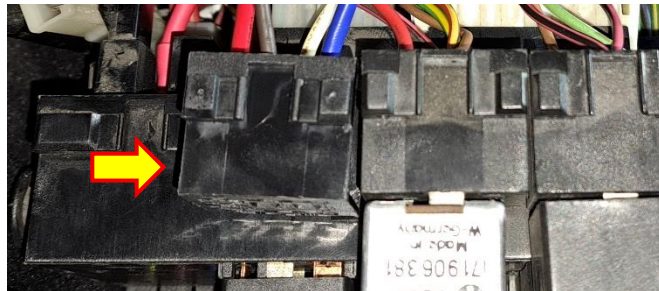
Step 4

Locate the red/yellow and red/white wires from pin **E14**; follow them to find the **T1b/T1f** connector, which will have two red/white wires on one end, and a red/white wire with red/yellow wire on the other end (look for it on the panel's left side). **Note:** This will be difficult. If you need to use pliers, or other metal tool to assist in the separation, ⚠️ **disconnect the battery first!**



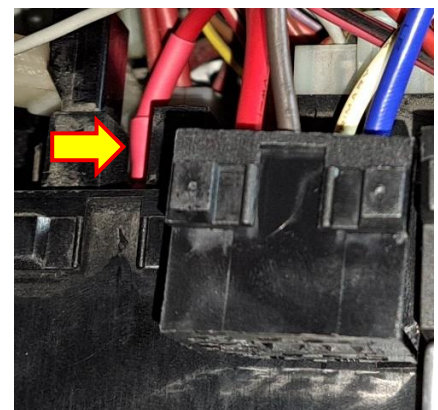
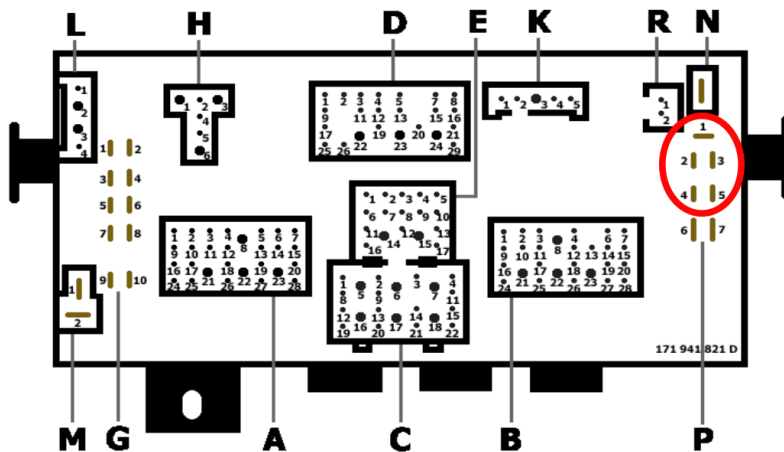
Step 5

Slide the new relay block into an empty spot at the top of the relay panel (wires to the rear), on the left side.



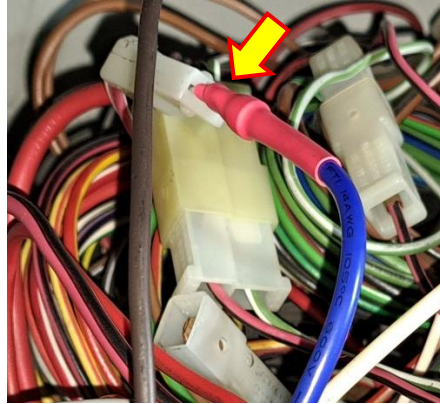
Step 6

Connect **relay terminal 30** female spade connector onto an empty **P** terminal on the panel (positions 1 through 5 only).



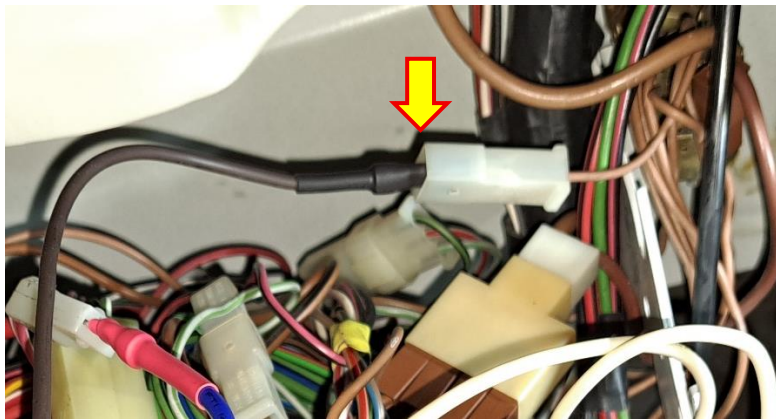
Step 7

Connect **relay terminal 87** male spade connector into the T1b/T1f red/white wires' female connector.



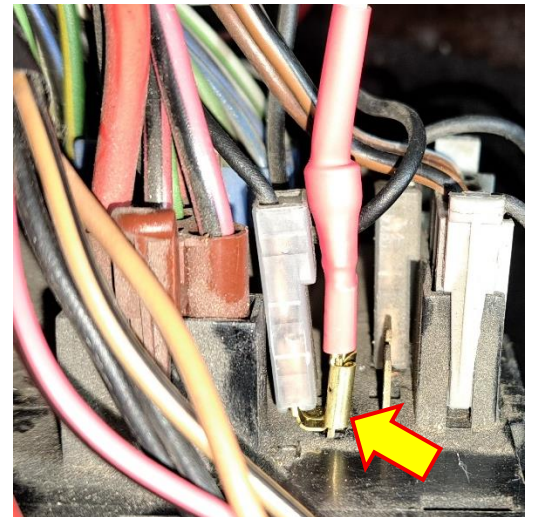
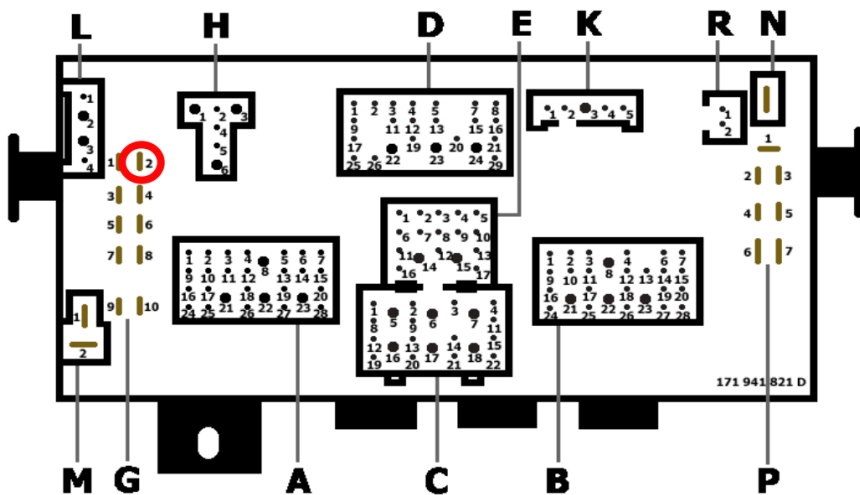
Step 8

Connect **relay terminal 85** female spade connector onto an empty ground terminal on either of the two ground trees/stars up and behind the panel. Shown below: There may be an unused floating brown ground wire with an empty male connector inside a white plastic cover, which you can connect to instead (easier to reach).



Step 9

Disconnect the black wire from panel terminal **G2** and connect it to your new relay terminal 86 splitter/piggyback. Connect this splitter/piggyback to terminal **G2** with the piggyback facing the H harness receptacle. ⚠️ Ensure no part of this adapter is touching, or could potentially touch, G1 if unused!).



Step 10

Connect new relay to new relay block.

Step 11

If you disconnected the battery, reconnect it.

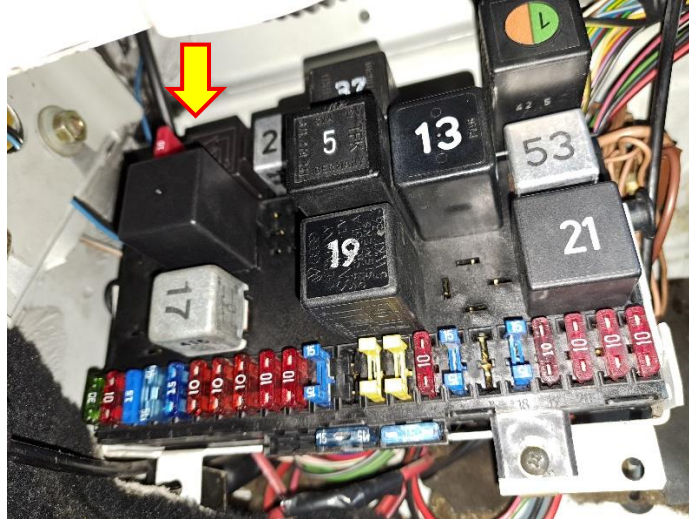
To verify a correct installation: Unplug the CPR and connect a volt meter to the female harness connector and set the meter to 20VDC (if needed). Turn the ignition key to ON. You should hear the fuel pumps prime for about 2 seconds then turn off, and you should see battery voltage on your meter. If desired, unplug the AAR and check its harness as well.



(This battery was actually 12.6V; the old meter pictured reads low.)

Step 12

If Step 11 is passed, carefully reinstall the relay panel into its cradle brackets, ensuring no wires are getting pinched. Reinstall retaining screw. New relay looks factory-installed (yellow arrow)... and should've been!



Step 13

Turn ignition key to OFF. Reconnect the CPR and AAR. Fire up the engine, close the hood, and go for a test drive, getting the car up to operating temperature. If desired, make note of the fuel pump relay's temperature. You should see a drop from your initial reading. The 1986 Cabriolet in this guide saw the following on a 65° F (18° C) day:

- ✓ Before the modification: 115° F (46° C)
- ✓ After the modification: 82° F (28° C)

Success! 🎉

**** You are responsible for working on your car. Cabby-Info.com, KamzKreationz, VAG, VWoA, or anyone else are not responsible if anything goes wrong while you are working on, in and under your car! Use this information at your own risk! ****