

# Volkswagen Cabriolet

## K-Jetronic Injection System Relay Guide

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### Rev Limiters

#### Factory Relays:

- Relays 059D, E, and F are functionally all the same; each letter simply superseded the previous version, with E appearing to have been a North America-only relay.
- There is conflicting information about whether relays 059D, E, F are high rev or no rev limit. Considering rev limit is a safety feature, and many (if not all) of those without a relay rev limiter had rev limit distributor rotors (which no fuel injected Cabriolet came with), this guide is erring on the side of all of these relays having a rev limiter, which ranges from around 6300 to 8000 rpm, depending on the relay.
- Relays 059G and H have lower rev limits than their predecessors, which coincides with the introduction of hydraulic lifter cylinder heads.
- You will find that the 059G and 059H relays (in aftermarket form) are what most parts stores are selling as replacements for D, E, F, because Volkswagen itself superseded F with G, potentially out of safety concerns.

#### Aftermarket Relays:

- Rev limits are manufacturer-specific and are listed where available. If rev limits are not listed, the presumed rev limit would be between 6000 and 7000 RPM.

### Notes

- All K-Jetronic fuel pump relays for 1983-1993 Cabriolets (and first generation Jettas) are interchangeable.** For example, if your original relay is 321906059D, you can replace it with 321906059G and vice versa. Therefore, replacement relays listed and shown on pages 3-4 are not year-specific. The VW suffix is listed under some aftermarket relays for cross-reference purposes only.
  - All of the above relays, except 059F, utilize a 555 timer to activate the fuel pump(s) for 2-3 seconds; if no coil signal, the relay cuts power to the pump(s).
- Factory relays may differ slightly in their manufacturer markings from what your car has/had. All will have the white number stamped on top, from 1983-1993.
- Equivalent Audi numbers: 443907385A, 443907385G, 443907385H
- Discontinued aftermarket relays:
  - JP Group #1199207600
  - Topran #107259015 / Hella #4RP 008 189-061 (059H)
- "Inrush current of a fuel pump is 5x - 7x the run current." This means that a Cabriolet's inrush current can be upwards of 50 amps. Given that Kracker has a published inrush max load of 70 amps, it is recommended that you find one of the Kracker relays listed below. The other relays do not specify whether their max amp rating is for inductive line load or inrush load.
  - An inductive load needs a flyback diode.
- Relay terminal designations:
  - 1, 31b = Ignition coil, ignition distributor – low voltage RPM pulsed ground signal (same as the tachometer signal)
  - 15 = Switched 12V from ignition switch
  - 30 = 12V input from battery (+) terminal
  - 31 = Ground from battery (-) terminal, or chassis
  - 87 = 12V output to fuel pump(s)

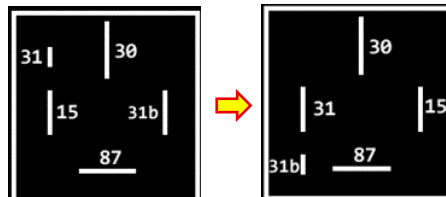
## Factory-Installed Fuel Pump Relay | 1979-1982

Engines	Part Number	Cover - Side	Circuit Board		Cover - Top	Pin Layout
 1.6L EG 1.6L EJ 1.7L EN	321-906-059C  Rev limit: 7000+ Line load: 10A inductive		 Image Unavailable	 Image Unavailable		





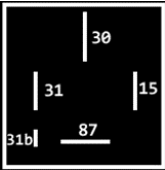




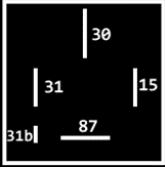




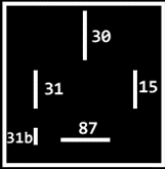




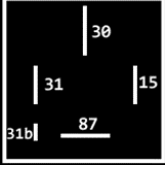




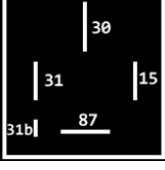
## Replacement Fuel Pump Relays | 1979-1982

Brand	Part Number	Cover - Side	Circuit Board		Pin Layout
 <small>KAEHLER Automotive-Equipment</small>	3.300.100  Rev limit: ? Inductive load: 10A  <span style="background-color: red; color: white; padding: 2px;">DISCONTINUED</span>		 Image Unavailable	 Image Unavailable	
 <small>KRÄCKER</small>	89 6321 000  Rev limit: ? Inductive load: 10A  <span style="background-color: red; color: white; padding: 2px;">DISCONTINUED</span>		 Image Unavailable	 Image Unavailable	
 <small>HELLA</small>	4RP 009 118-011  Rev limit: ? Inductive load: ?  <span style="background-color: red; color: white; padding: 2px;">DISCONTINUED</span>		 Image Unavailable	 Image Unavailable	
<span style="color: green;">NorX Electronics</span>	433906059 321906059C  <span style="background-color: yellow;">Made in and ships from Hungary</span> <span style="background-color: red; color: white; padding: 2px;">Does not contain integrated fuse</span>		 Image Unavailable	 Image Unavailable	





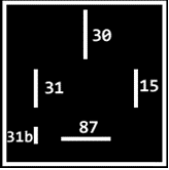




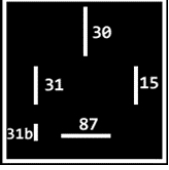




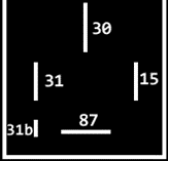

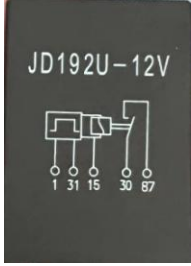
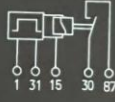


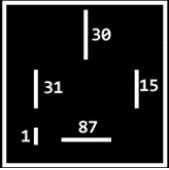




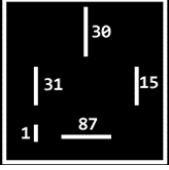




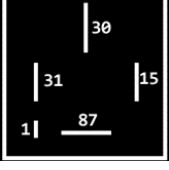
Due to this relay now being unavailable, an option is to buy one of the 1983-1993 relays below and rewire your existing relay socket to match. Be sure to add a 15A fuse to the terminal 30 wire.







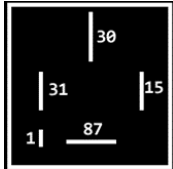




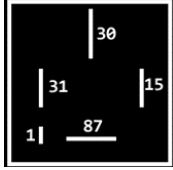




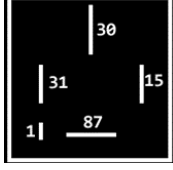



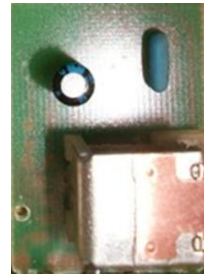
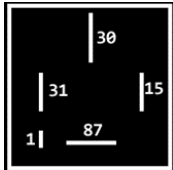



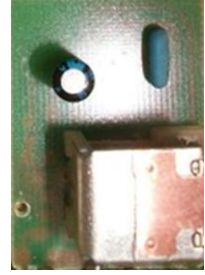
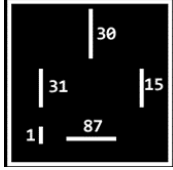



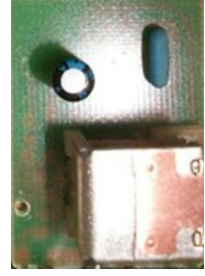
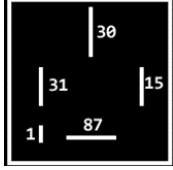
# Factory-Installed Fuel Pump Relays | 1983-1993





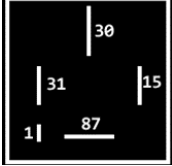




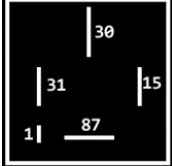




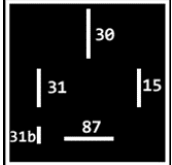




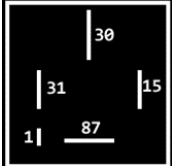





Engines	Part Number	Cover - Side	Circuit Board		Cover - Top	Pin Layout
<b>1983 – 1985</b>						
 1.7L EN 1.8L DX 1.8L JH 1.8L JJ 1.8L KT	321-906-059D  Rev limit: 7000+ Line load: 10A inductive		 Image Unavailable	 Image Unavailable	2	
<b>1986 – 1987</b>						
 1.8L JH	321-906-059E  Rev limit: 6600				2	
 1.8L DX 1.8L JH 1.8L KT	321-906-059F  Rev limit: 8000 40A ⚠ no pump prime				63	
<b>1988 – 1993</b>						
 1.8L JH	321-906-059G  Rev limit: 6500 40A			 Image Unavailable	62	
 1.8L DX 1.8L JH 1.8L KT	321-906-059F  Rev limit: 8000 40A ⚠ no pump prime				63	

# Replacement Fuel Pump Relays | 1983-1993

Brand	Part Number	Cover - Side	Circuit Board		Pin Layout
	24.1400.20 (059D, E, F) <b>RECOMMENDED</b>  Rev limit: 8220 Line load: 15A inductive Max inrush load: 70A	 KRÄCKER AG 24. 1400.20 Kraftstoffpumpenrelais mit Drehzahlbegrenzung 12V Made in Germany >PA66-GF30<			
	24.1400.30 (059G, H) <b>RECOMMENDED</b>  Rev limit: 6540 Line load: 15A inductive Max inrush load: 70A	 KRÄCKER AG 24. 1400.30 Kraftstoffpumpenrelais mit Drehzahlbegrenzung 12V Made in Germany >PA66-GF30<			
	24.1400.40 (059G, H) <b>RECOMMENDED</b>  Rev limit: 6300 Line load: 15A inductive Max inrush load: 70A	 KRÄCKER AG 24. 1400.40 Kraftstoffpumpenrelais mit Drehzahlbegrenzung 12V Made in Germany >PA66-GF30<			
 Also sold under Intermotor & BWD brands	STD: RY197 BWD: R3023 <b>NOT RECOMMENDED</b> Old stock relay sold by <a href="http://RockAuto.com">RockAuto.com</a> Rev limit: reports of cutting out at 3000 Max load: 30A	 JD192U-12V 			
 Also sold under Intermotor, BWD, NAPA & Carquest brands	RY197 RY-197 <b>RECOMMENDED</b>  Rev limit: ? Max load: 30A	 TU-12490-24  22242			
 Repackaged Standard Motors relay	19204 RLYA634 <b>RECOMMENDED</b>  Rev limit: ? Max load: 30A	 TU-12490-24  22334			

1983-1993 continued

Brand	Part Number	Cover Side	Circuit Board		Pin Layout
	4RP 008 189-081 (059D, E, F)  Rev limit: 8000 Max load: 30A		 Image Unavailable	 Image Unavailable	
	4RP 008 189-091 (059G)  Rev limit: ? Max load: 40A			 Image Unavailable	
 Manufactured by Hella	103420755 (059D, E, F)  Rev limit: 8000 Max load: 30A		 Image Unavailable	 Image Unavailable	
	3.300.230 (059H) <b>NOT RECOMMENDED</b> See page 7  Rev limit: 6600 Max load: 30A				
	3.300.220 (059G) <b>NOT RECOMMENDED</b> See page 7  Rev limit: ? Max load: 30A				
	3.300.210 (059D, E, F) <b>NOT RECOMMENDED</b> See page 7  Rev limit: ? Max load: 30A				

1983-1993 continued					
Brand	Part Number	Cover Side	Circuit Board		Pin Layout
	4634 or 4812 (321906059F, 321906059H, 443907385)  Rev limit: ? Max load: ?				
 Manufactured by Hitachi	132022 or 132023  Rev limit: ? Max load: ?				
 Also sold under Airtex brand	1R1003 (repackaged KAE) (059D, E, F) <b>NOT RECOMMENDED</b> See page 7  Rev limit: ? Max load: 30A				
 Also sold under Airtex brand	1R1243 (stamped with 65) (059H)  Rev limit: ? Max load: 30A				
	935VG0090	<i>Repackaged Hella relay</i>			
	V15-71-0014	<i>Repackaged KAE and Kracker relays; which one you get depends on supplier</i>			
	75614033	<i>Repackaged Kracker relay</i>			
	R3023	<i>Repackaged Standard Motors relay</i> Note: Rock Auto shows this as being a KAE and has shipped KAE inside a BWD box.			
	600494	<i>Repackaged KAE</i>			


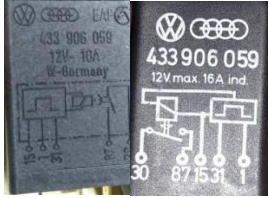


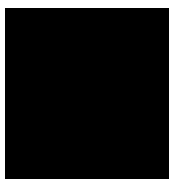
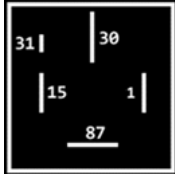
*Relay 059G & Hella 091 circuit board images courtesy of Jon C.*

# Fuel Pump Relay - Westmoreland Rabbits





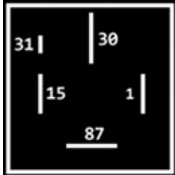




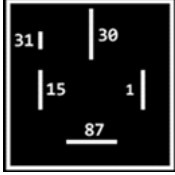




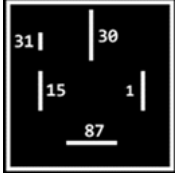
USA-Built Rabbits ONLY. Does NOT apply to ANY Cabriolets or first generation Jettas.

Since this guide has been linked to for USA-built Rabbits, below is fuel pump relay info for those cars. The Westmoreland Rabbit hatchback and Rabbit Truck utilize a Chrysler relay panel and an Audi 4000/5000 fuel pump relay:

## Factory-installed Fuel Pump Relay

Engines	Part Number	Cover - Side	Circuit Board		Cover - Top	Pin Layout
1981 - 1984						
 1.7L EN 1.8L JH	433-906-059  Rev limit: ? Line load: ?		 Image Unavailable	 Image Unavailable		

## Replacement Fuel Pump Relays

Brand	Part Number	Cover - Side	Circuit Board		Pin Layout
	75614031		 Image Unavailable	 Image Unavailable	
	3.300.300 Or 3.300.400		 Image Unavailable	 Image Unavailable	
	24.1000.10		 Image Unavailable	 Image Unavailable	

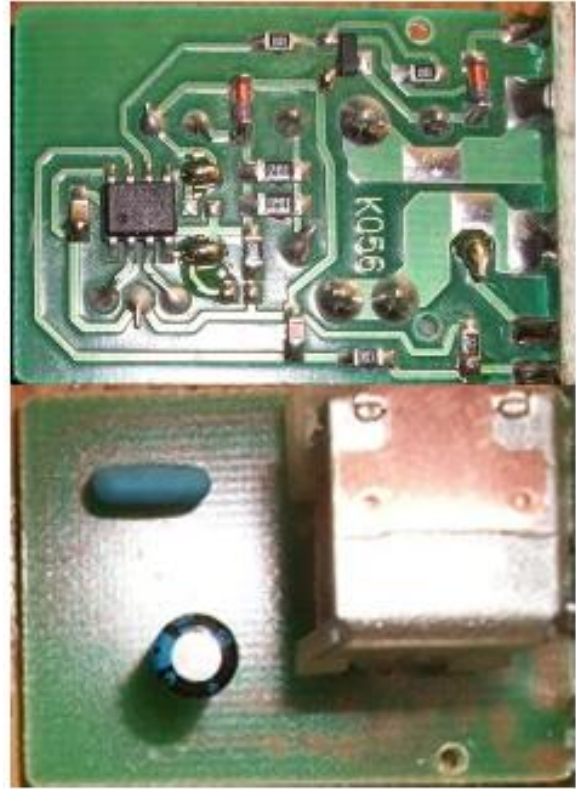
Any of the relays on page 2, but will have an added fuse that the original did not.

# ! Warning !

All KAE (Kaehler) fuel pump relays for 1983-1993 K-Jetronic Cabriolets & first generation Jettas are being manufactured with the incorrect circuit board. **For North American owners, it is highly recommended that you not waste your money and time buying KAE relays. If you bought and/or recently installed a KAE relay and your car doesn't start, or will not stay running after start-up, or has issues at speed, remove your KAE relay and check the circuit board:**



K055

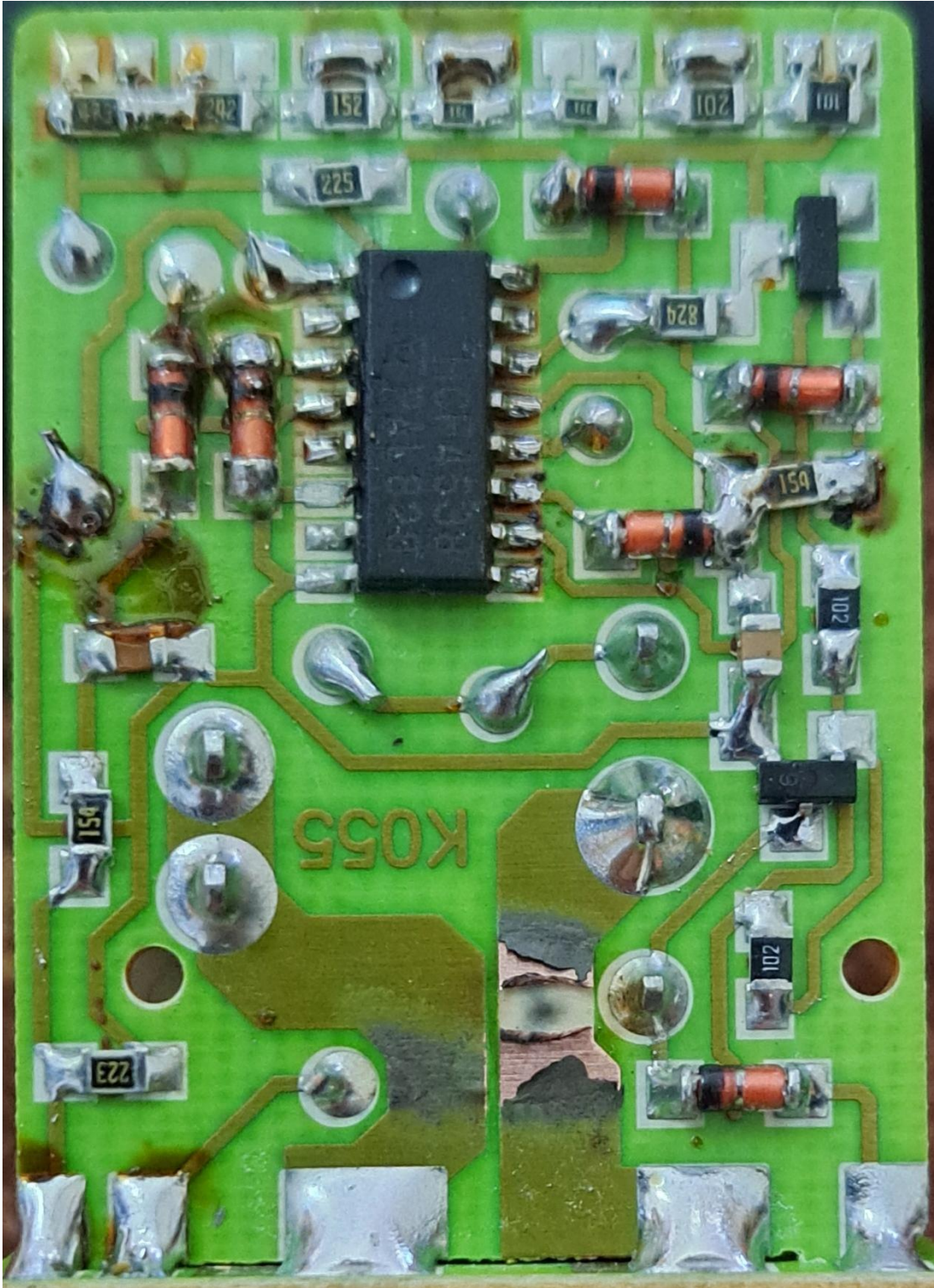


K056

**If the car is having running issues, also closely check the circuit board for damage: cracked solder, melted solder, burn marks, broken copper tracks, burned diodes, etc., all of which can be seen on the next page.**


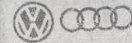


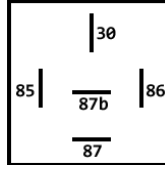
# Example of a burned-up fuel pump relay

KAE 3.300.230





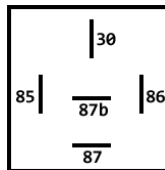




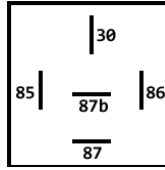




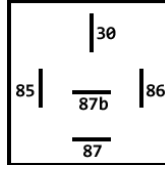


# Fuel Injection Power Supply/Lambda Relay

## Factory-installed Lambda Relay | 1979-1993


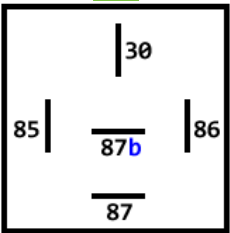

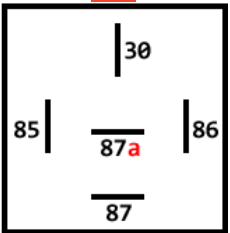

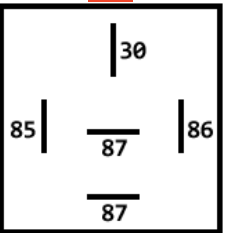

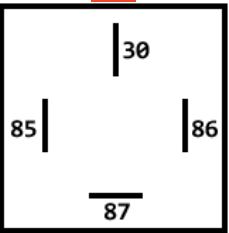
Engines	Part Number	Cover - Side	Circuit Board		Cover - Top	Pin Layout
 All, with lambda control	171-906-381 431-951-253C	 171906381 Germany	 Image Unavailable	 Image Unavailable	26	

## Replacement Lambda Relays | 1979-1993

Brand	Part Number	Cover - Side	Circuit Board		Pin Layout
 <b>BOSCH</b>	0332015006		 Image Unavailable	 Image Unavailable	
	ECH AR289		 Image Unavailable	 Image Unavailable	
	7M0-951-253		 Image Unavailable	 Image Unavailable	

### IMPORTANT NOTE

The lambda relay **MUST** have the correct pin layout:

 	 	 	 
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