

## 07.3–165 Checking fuel pump relay with electronic rpm control (breakaway speed)

Job No. of flat rates or standard texts and flat rates data 07–5792.

### Versions and regulating (breakaway) speeds

Engine	MB part No.	Breakaway speed 1/min	Kickdown 1/min	Remarks
--------	-------------	--------------------------	-------------------	---------

#### Standard version

116.960 116.961	001 545 04 05 001 545 16 05	6600 ± 50	—	—
117.960 117.961	001 545 05 05 001 545 17 05	5950 ± 50		
116.962 116.963 117.962 117.963	001 545 34 05	5950 ± 50	5750 ± 50	with kickdown shutoff
116.963 NV KAT (closed-loop)	001 545 53 05	5500 ± 50	5300 ± 50	with kickdown shutoff

#### 1981

116.960 116.961	001 545 05 05 001 545 17 05	5950 ± 50	—	—
--------------------	--------------------------------	-----------	---	---

#### 1982–1985

#### 1983–1985

116.962 116.963	001 545 49 05	5950 ± 50	5750 ± 50	with kickdown shutoff
--------------------	---------------	-----------	-----------	--------------------------

#### 1981

116.960 116.961	001 545 06 05 001 545 15 05	5300 ± 50	—	—
--------------------	--------------------------------	-----------	---	---

#### 1982

116.962 116.963	001 545 36 05	5300 ± 50	5100 ± 50	with kickdown shutoff
--------------------	---------------	-----------	-----------	--------------------------

#### 1983–1985

116	001 545 53 05	5500 ± 50	5300 ± 50	with kickdown shutoff
-----	---------------	-----------	-----------	--------------------------

## Conventional testers

---

Voltmeter, revolution counter

---

### Note

---

The fuel pump relay is controlled via ignition impulses.  
The impulse number is computed as follows:

$$\frac{\text{Rpm} \times \text{number of cylinders}}{2}$$

### Example:

Breakaway of pump relay 001 545 07 05 for engine 110.98 (6650 ± 50/min) starts at approx. 19 950 impulses per minute; breakaway of relay 001 545 04 05 (6600 ± 50/min) for engine 116.96 will not start before 26 400 impulses. If these relays are mixed up, the engine 110 may rev up and breakaway for engine 116.96 would start too soon, even though the relay shows almost similar breakaway speeds.

## Layout of fuel pump relay

---

### Model 107

#### Lefthand steering

At the right inside vehicle behind glove box. For repair jobs, remove glove box and lining.

#### Righthand steering

At the right inside vehicle above pedals. For repairs, remove lining.

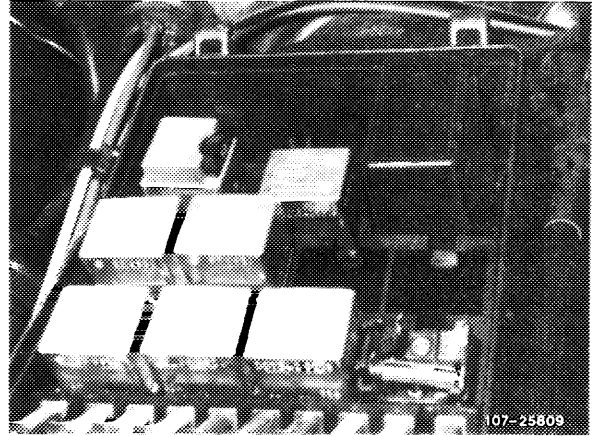


107-25808

## Model 126

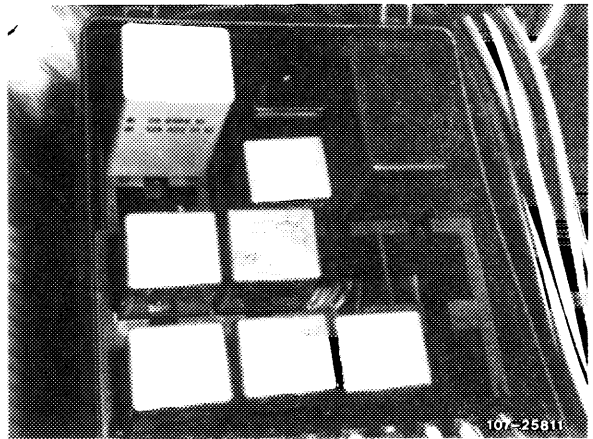
### Lefthand steering

At the left in fuse box.



### Righthand steering

At the right in fuse box.



## Testing

### Test condition

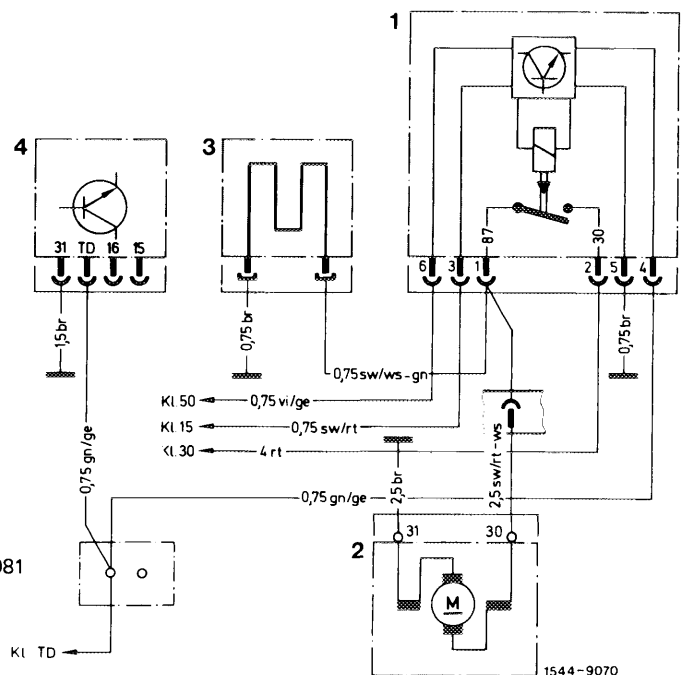
Battery charged at least 60 %.

**Note:** For wiring diagram and test sequence for mixture control unit with safety switch refer to repair instructions engine 116 (3.5) and 117 (4.5).

### A. Prior to September 1981

Wiring diagram prior to September 1981

- 1 Fuel pump relay
- 2 Fuel pump
- 3 Warm-up compensator
- 4 TCI switching unit



### Checking activation of fuel pump relay

Remove fuel pump relay.  
Connect negative cable of voltmeter to vehicle ground. Measure voltage with positive cable of voltmeter on jack 2 of coupling.

approx. 12 volts

0 volt

Check line (terminal 30, red) to cable connector of engine harness for interruption.

Repair interruption.

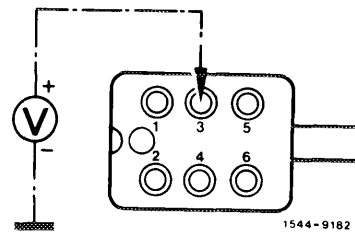
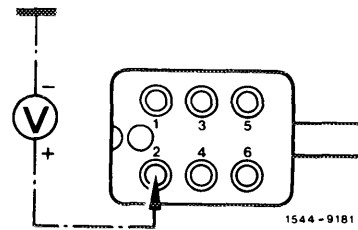
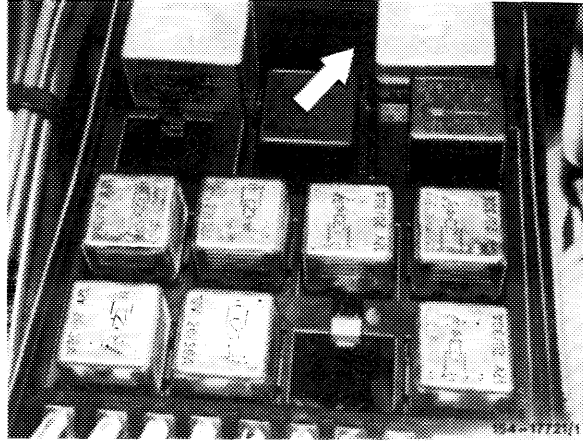
Switch on ignition.  
Measure voltage on jack 3 of coupling with positive cable of voltmeter.

approx. 12 volts

0 volt

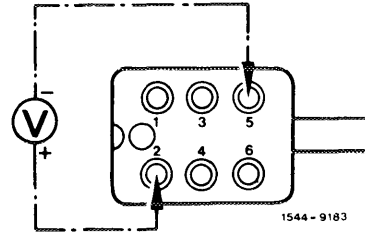
Test line (terminal 15, black/red) to ignition starter switch for interruption.

Repair interruption.



Connect positive cable of voltmeter to jack 2 and negative cable of voltmeter to jack 5 of coupling and measure voltage.

approx. 12 volts	0 volt
------------------	--------



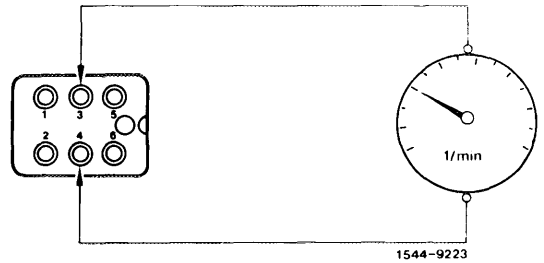
Test line (terminal 31, brown) to grounding point for interruption.

Repair interruption.

Connect revolution counter to jack 3 and jack 4 of coupling.

Actuate starter.

approx. 200/min.	0/min
------------------	-------



Test line (terminal TD, green/yellow) to TCI switching unit for interruption.

If line is in order, renew switching unit.

### Checking function of fuel pump relay

Connect negative cable of voltmeter to vehicle ground. Plug fuel pump relay on coupling in such a manner that the voltage can be measured with positive cable of voltmeter. Actuate starter for this purpose.

approx. 12 volts

0 volt

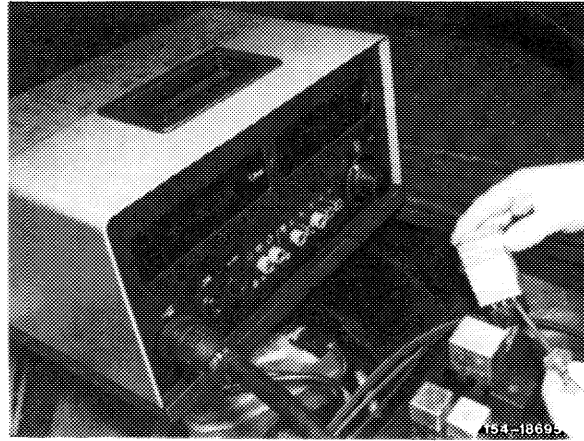
Renew fuel pump relay.

Run engine at idle.

Engine running.

Engine not running.

Renew fuel pump relay.



If the engine is not regulated (breakaway speed) after attaining engine max. speed, renew fuel pump relay.

The respective breakaway speed is punched into fuel pump relay.

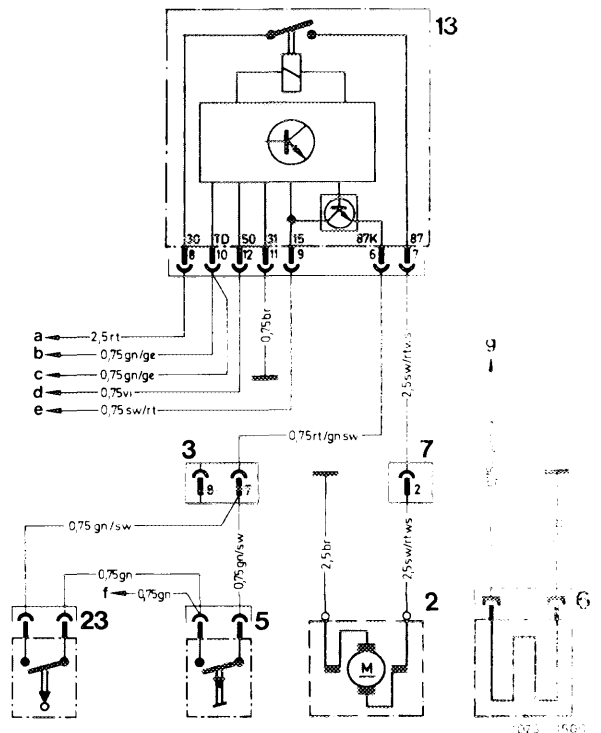
End of test

## B. Starting September 1981

Wiring diagram starting September 1981

- 2 Fuel pump
- 3 Coupling, 8-pole
- 5 Kickdown switch
- 6 Warm-up regulator
- 7 Coupling, tail lamp wiring harness
- 13 Fuel pump relay
- 23 Switch selector lever position "B"
- a Lug terminal 30
- b Cable connector terminal TD
- c Control unit of electronic idle speed control
- d Cable connector engine terminal 50
- e Fuse capsule terminal 15
- f Access fuse 14
- g Magnetic valve automatic transmission
- Model 107: Coupling, tail lamp wiring harness (7)
- 14-pole, jack 2
- Model 126: fuel pump relay (13)
- Terminal 87, jack 7

Line colors  
 br = brown  
 ge = yellow  
 gn = green  
 rt = red  
 sw = black  
 vi = purple  
 ws = white

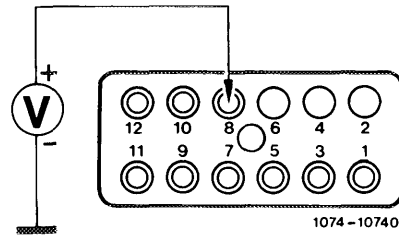
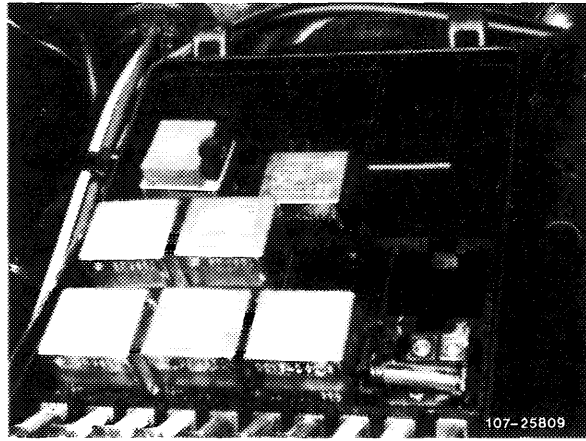


### Testing activation of fuel pump relay

Remove fuel pump relay.  
 Connect negative cable (black) of voltmeter to vehicle ground. Measure voltage with positive cable (red) of voltmeter on jack 8 (terminal 30) of coupling.

approx. 12 volts

0 volt

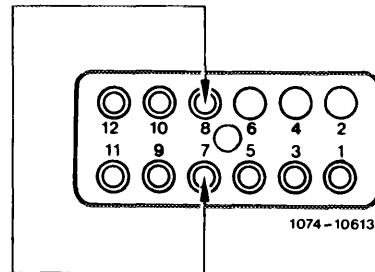


With jack 7 and 8 bridged, the fuel pump should run.

Repair interruption according to wiring diagram.

If not

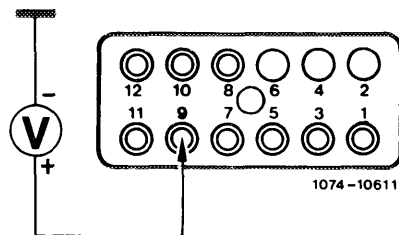
End of test



Switch on ignition.  
 Measure voltage with positive cable (red) of voltmeter on jack 9 (terminal 15) of coupling.

approx. 12 volts

0 volt





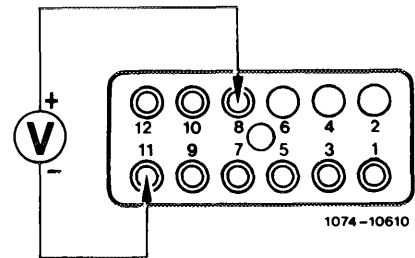
Repair interruption according to wiring diagram.

End of test

Connect positive cable (red) of voltmeter to jack 8 (terminal 30) and negative cable (black) of voltmeter to jack 11 (terminal 31) of coupling and measure voltage.

approx. 12 volts

0 volt



Repair interruption according to wiring diagram.

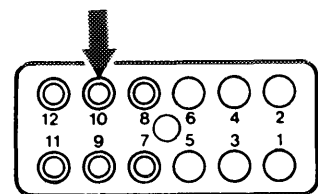
End of test

Connect engine tester. Connect dwell angle measuring cable to jack 10 (terminal TD).

Operate starter. Dwell angle 7–34°.

Yes

No



Test line (terminal TD, green/yellow) to TCI switching unit for interruption.

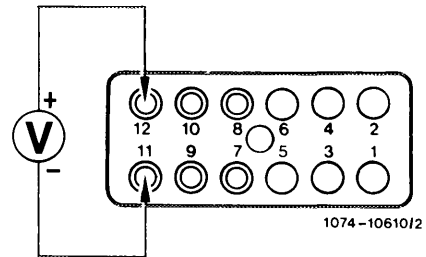
Test ignition system, if required.

End of test

Connect positive cable (red) of voltmeter to jack 12 (terminal 50) and negative cable (black) of voltmeter to jack 11 (terminal 31) of coupling and measure voltage. Operate starter for this purpose.

approx. 12 volts

0 volt

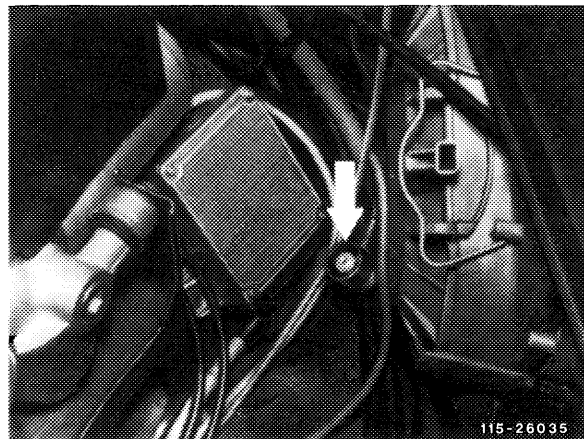


Repair interruption according to wiring diagram.

End of test

Check kickdown shutoff. With engine running, the 8-pole coupling (arrow) terminal 7 is energized. Voltage should drop at 200/min prior to breakaway speed.

No



---

Renew relay.

---

End of test



If all tests are in order and the fuel pump activation is still at fault, renew relay.

If there is no breakaway after the engine max. speed has been attained, renew fuel pump relay.

The respective breakaway speed is punched into fuel pump relay.

End of test