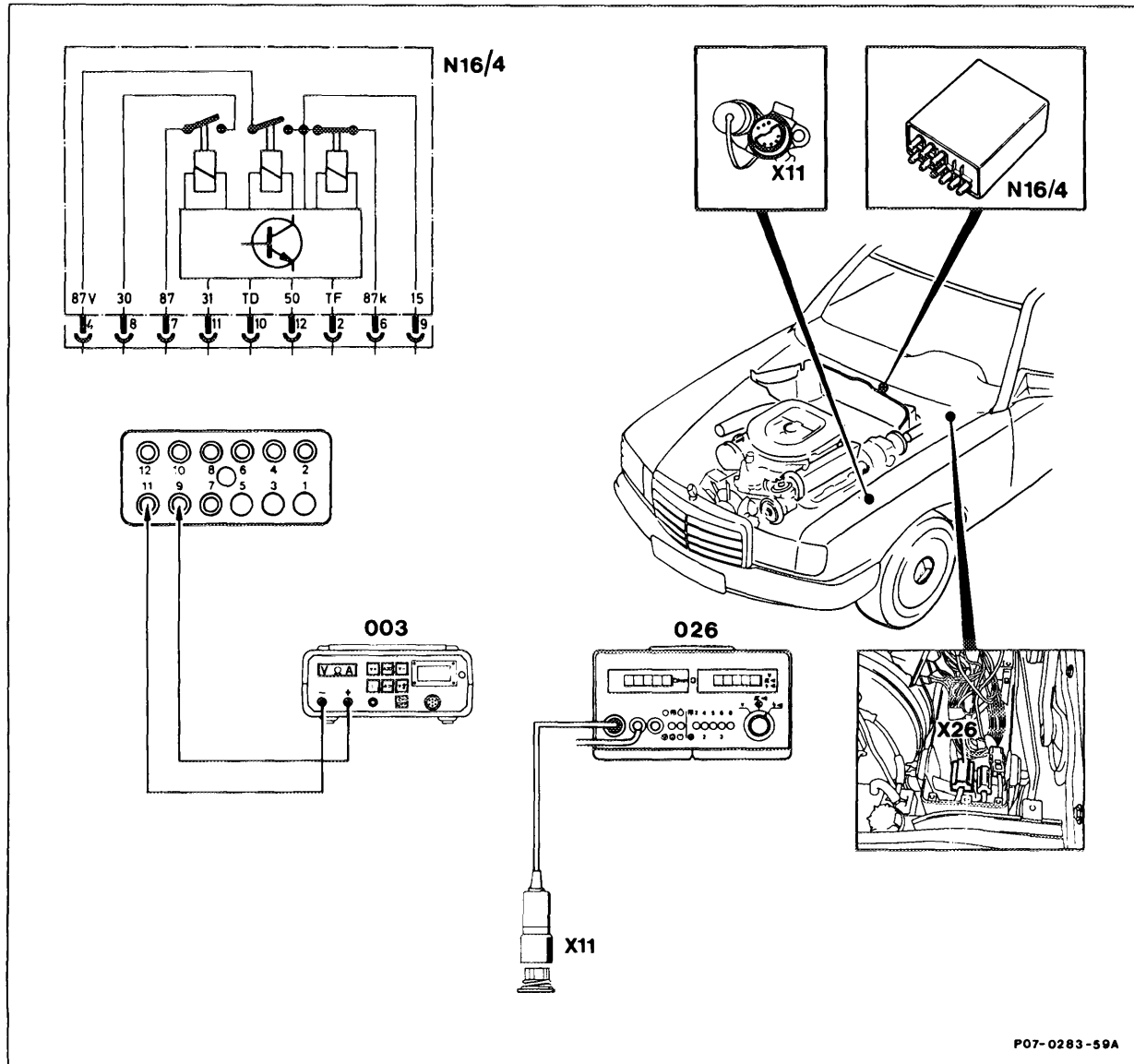


## 07.3-165 Checking fuel pump relay










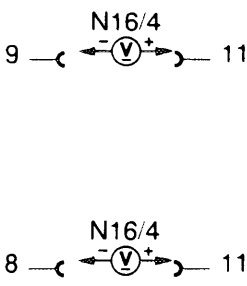
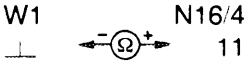
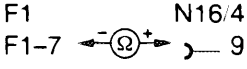
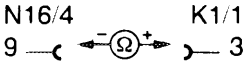
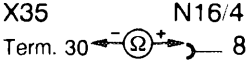
N16/4 Fuel pump relay with kickdown cut-out  
 X11 Diagnostic socket/terminal block (circuit TD)

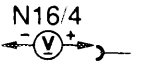
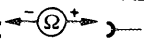

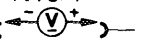
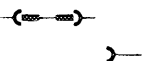
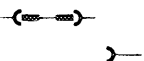
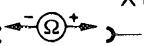

X26 Connector, interior/engine  
 003 Multimeter  
 026 Engine tester

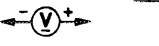


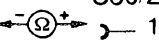
Electrical wiring diagrams (07.3-128).  
 Checking power consumption of fuel pump  
 (07.3-130).

## Testing

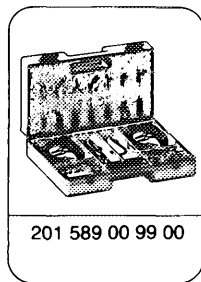
	Multimeter
	Jack
	Plug
	Bridge
	Ground
	Multimeter resistance measuring mode
	Multimeter DC voltage measuring mode

Impulse period display	Test step/ Scope of test	Measuring device/ Test connection	Actuation/ Requirement	Set value/ Function	Possible cause/Remedy
-	1.0 Voltage on fuel pump relay (N16/4)		N16/4 pulled off  Ignition: <b>ON</b>	11-14 V	Open circuit fuse 7, terminal 15 ground connection.
-	1.1 Wiring		Ignition: <b>OFF</b> N16/4 pulled off.	< 1 Ω	Open circuit.
-	1.2 Wiring		Ignition: <b>OFF</b> N16/4 pulled off.	< 1 Ω	Open circuit.
-	1.3 Wiring		Ignition: <b>OFF</b> N16/4, K1/1 pulled off.	< 1 Ω	Open circuit.
-	1.4 Wiring		Ignition: <b>OFF</b> N16/4 pulled off.	< 1 Ω (see Note)	Open circuit.

Impulse period display	Test step/ Scope of test	Measuring device/ Test connection	Actuation/ Requirement	Set value/ Function	Possible cause/Remedy
-	2.0 Starting signal	N16/4 9 —  — 11	Ignition: <b>OFF</b> N16/4 pulled off. Fit green cable or protective plug 102 589 02 21 00  <b>Start engine</b>	10–14 V	Open circuit, ground connection starting signal terminal 50.
-	2.1 Wiring	N16/4 X26 12 —  — 7	Ignition: <b>OFF</b> N16/4, X26 pulled off	< 1 Ω	Open circuit.
-	2.2 Wiring	X26 S16/1 7 —  — 4	Ignition: <b>OFF</b> X26, S16/1 pulled off.	< 1 Ω	Open circuit.
-	3.0 TD/TN signal	N16/4 10 —  — 11   7 —  — 8	N16/4 pulled off  <b>Start engine</b>	6–12 V	Open circuit.
-	3.1 Wiring	N16/4 X11 10 —  — 1	Ignition: <b>OFF</b>	< 1 Ω	Open circuit.
-	3.2 Wiring	X11 N1/2 1 —  — 4	Plug A pulled off (see Fig.)	< 1 Ω	Open circuit.

Impulse period display	Test step/ Scope of test	Measuring device/ Test connection	Actuation/ Requirement	Set value/ Function	Possible cause/Remedy
-	4.0 Kickdown shutoff	X26 9 	Pull off X26 as far as required to connect  9.  <b>Start engine</b>  <b>Increase speed</b> up to approx. 200 rpm before reaching the max. governed speed (approx. 5800 rpm)	11–14 V  Voltage drops	Wiring
-	4.1 Wiring	N16/4 6  X26 9	Ignition: <b>OFF</b> N16/4, X26 pulled off	< 1 Ω	Open circuit.
-	4.2 Wiring	X26 9  S30/2 1	Ignition: <b>OFF</b> X26, S16/7 pulled off	< 1 Ω	Open circuit. Kickdown switch (S16/7) solenoid valve automatic transmission (Y3).
-	5.0 Maximum governed speed	-	<b>Start engine</b> and increase speed	Max. governed speed 6000 ± 50 rpm	Check TD/TN signal (test step 3.0) Renew relay (N16/4).

## Special tool



## Commercially available tools

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Multimeter

e.g. Sun, DMM-5

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Engine tester

e.g. Bosch, MOT 001.03

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## Function

The fuel pump relay has the following functions:

- Brief voltage supply of the fuel pumps when switching on the ignition.
- Voltage supply of the fuel pumps during starting and with running engine. With CAT, additional voltage supply of the oxygen sensor heating.
- Switching off the fuel pumps when reaching the maximum engine speed (speed limitation).
- Switching off the fuel pumps as soon as no more impulses are emitted via terminal TD/TN of the ignition control unit.
- Kickdown shutoff (test see 07.3-167).
- Starting valve activation (test see 07.3-126).

**Note**

On vehicles with ASR the voltage to the fuel pump relay (N16/4, terminal 15) is supplied via the safety circuit from the electronic accelerator pedal (see 30-350 section E).



Terminal 15 is not short-circuit proof to ground (see Checking electronic accelerator 30-365). On some versions the jack 1 (terminal V) on the fuel pump relay coupling is occupied. No plug pin is available for this on the fuel pump relay, which is why it is without function.

**Fuel pump relay (N16/4)**

The function in the fuel pump relay was increased by a separate oxygen sensor heating in two stages:

**1st version up to approx. 12/89**

The fuel pump relay is equipped with an additional plug for the oxygen sensor heater with the designation 87H. This also resulted in a change of the wiring connection on the relay. The activation is the same as before, as the additional plug 87H is connected with the plug of designation 87 by means of a bridge.

**2nd version as of 01/90**

From this time, the bridge between terminals 87 and 87H is no longer required. For this purpose the control electronics in the relay have been changed. The switch-on temperature for the oxygen sensor heating is +20 °C and is determined by the coolant temperature sensor.

**Note**

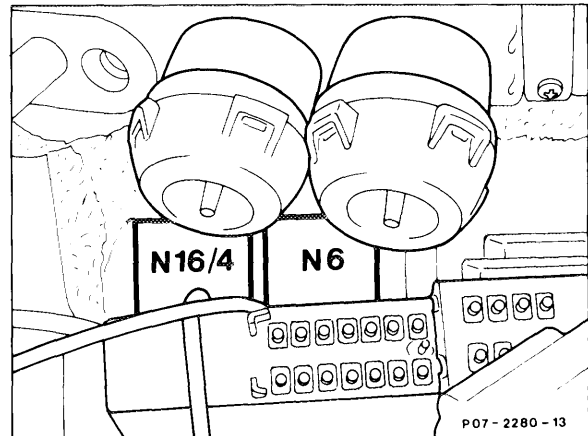
Only the new fuel pump relays are available as parts. This means that on vehicles prior to 09/89 the activation of fuel pump and oxygen sensor heating is still effected by plug 87. The plug 87H remains without function on these vehicles.

**Arrangement****Model 107**

The fuel pump relay N16/4 is arranged behind the glove compartment.

The glove compartment must be removed for tests. Disengage the relay plug holder.

In part of the vehicles it is possible to remove a flap in the glove compartment base.

**Model 126**

The fuel pump relay N16/4 is arranged in the unit compartment left.

