

## 15-711 Testing preglow system with afterglow function - Turbodiesel

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**Models 124, 201 with Engines 602.961, effective Model Year 1989, 602.962, 603.96, effective Model Year 1989**

### Commercial Tool

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Multimeter

e.g. Sun, DMM-5

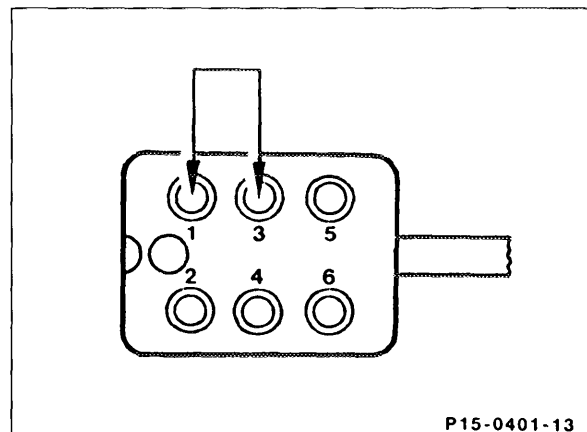
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### Testing Bulb and Its Wiring

If the following problem occurs:

Preglow indicator lamp does not light up when the preglow system is switched on, despite being able to start engine.

Detach 6-pin connector from preglow time relay, turn key into position "2", bridge contacts 1 and 3 of the connector. If the preglow indicator lamp does not light up, test bulb or replace if necessary.



If the bulb is in order, test black cable from connector contact 3 of the preglow time relay to the preglow indicator lamp for open circuit.

Rectify open circuit.

If the preglow indicator lamp lights up, the preglow time relay is defective. Replace preglow time relay.

Lamp shows a steady light.

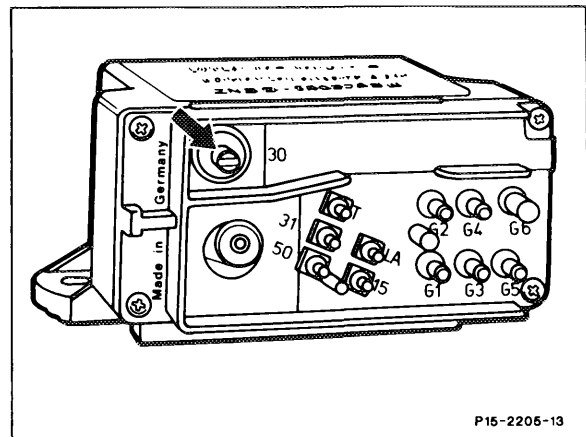
Fault: preglow time relay defective (relay sticking).

### Testing Main Circuit of Preglow System for Interruption

If the following problem occurs:

Preglow indicator lamp does not light up, engine cannot be started.

With the multimeter set to the Volts range, test the voltage at terminal 30 of the preglow time relay to ground (arrow).



If no voltage is indicated, test 4 mm<sup>2</sup> red cable from terminal block (X35) terminal 30 to the preglow time relay terminal 30 for open circuit. Rectify open circuit.

If no fault has been detected to this point, test voltage at contact 1 of the 6-pin connector of the preglow time relay to ground.

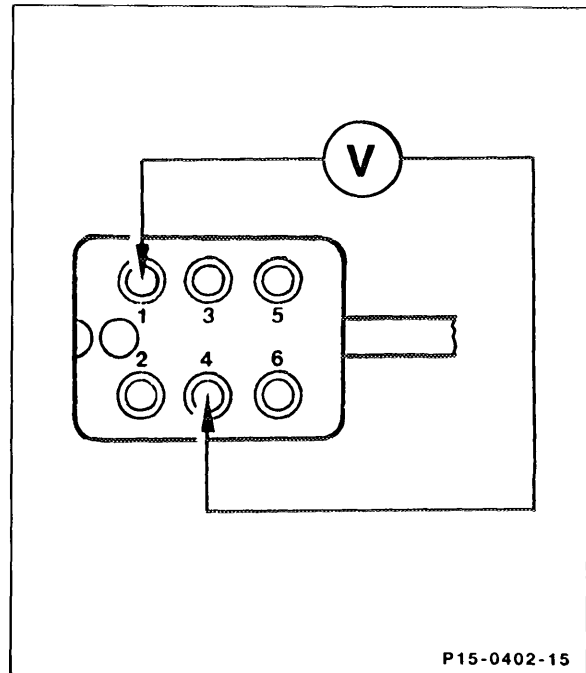
### Model 201

If no voltage is indicated when the preglow system is switched on, test red/black cable from the electrical centre connector S contact 4 to the connector contact 1 of the preglow time relay for open circuit or rectify open circuit.

### Model 124

Test pink/red cable from fuse 7 (unprotected side) through plug connection of engine wiring harness to the connector contact 1 of the preglow time relay for open circuit. Rectify open circuit.

If voltage is indicated, connect multimeter Volts range to contact 1 (terminal 15) and contact 4 (terminal 31) and test voltage. If no voltage is indicated, test brown cable from contact 4 to ground for open circuit. Rectify open circuit. If no fault has been detected to this point, the preglow time relay is defective. Replace preglow time relay.



### Testing Glow Plugs and Their Wiring

If the following problems occur:

- Preglow indicator lamp does not light up when switching on
- Lights up for approx. 1 min. when driving
- Engine is difficult to start

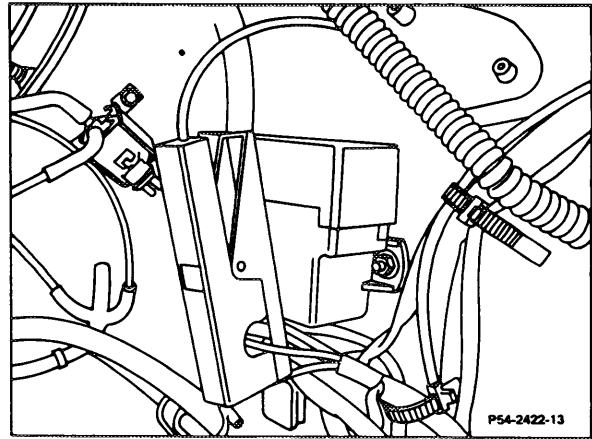
there may be an open circuit in one or more glow plugs or in the cables to the glow plugs.

Test current consumption of the glow plugs with multimeter set to Amperes range and with D.C. clamp. The clamp is placed over the individual cables at the preglow time relay for the step.

- Cylinder 1 = 2.5 black/blue
- Cylinder 2 = 2.5 black/violet
- Cylinder 3 = 2.5 black/red
- Cylinder 4 = 2.5 black/yellow
- Cylinder 5 = 2.5 black/green
- Cylinder 6 = 2.5 black/white

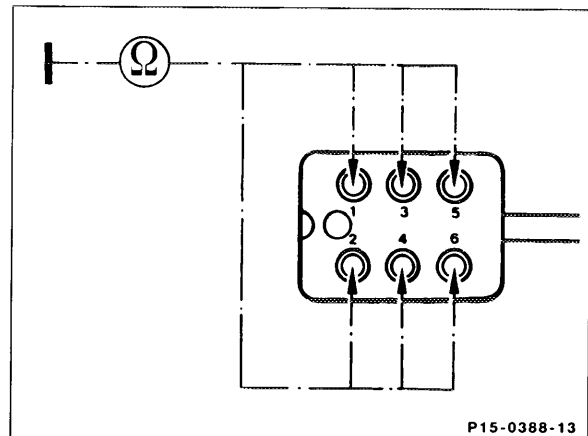
Turn key in the steering lock to position "2", the current consumption of each glow plug must be 14-16 A after 10-12 seconds.

If the reading is higher than 16 A, replace glow plug. If the reading is less than 14 A, test glow plug cable for open circuit.



Detach 6-pin connector from preglow time relay for testing for open circuit. With the multimeter set to Ohms range, measure in turn the resistance to ground (engine block) at

- c 1 Connector = glow plug cylinder 1
- c 2 Connector = glow plug cylinder 2
- c 3 Connector = glow plug cylinder 3
- c 4 Connector = glow plug cylinder 4
- c 5 Connector = glow plug cylinder 5
- c 6 Connector = glow plug cylinder 6



If infinite resistance is measured, there is an open circuit in the respective glow plug or in the lead or the connection. Rectify open circuit in the lead or replace glow plug.

### Safeguarding Preglow Circuit

An electronic short-circuit safeguard is installed in the preglow time relay. The circuit is interrupted if a short-circuit develops in the glow plugs or in the cables.

### The relay is again operational

- once the short-circuit has been rectified and
- the key turned back to position "0".

### Testing temperature sensor with wiring

Preglow time until preglow indicator lamp goes out is too short or too long (refer to table). Detach plug on preglow time relay and test F resistance to ground F with multimeter set to Ohms range.

Specification at +25 °C 2442  $\Omega$   $\pm$  170  $\Omega$   
at +180 °C 291  $\Omega$   $\pm$  16  $\Omega$

If specified value is achieved:

Replace temperature sensor. If resistance  $\infty$   $\Omega$  is indicated: rectify open circuit in cable. If resistance  $< 1$   $\Omega$  is indicated: rectify short-circuit in cable.

