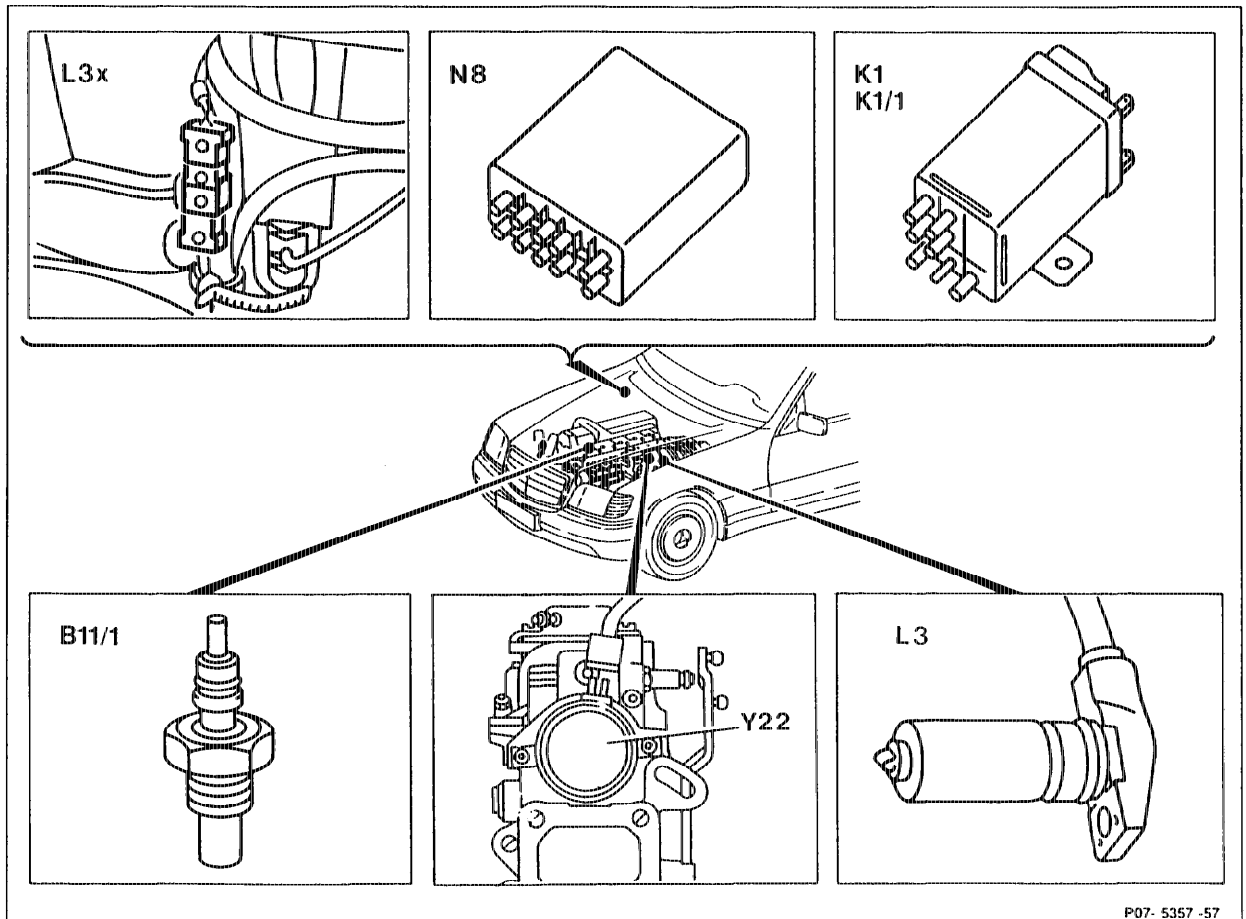


07.1-2006 Testing electronic idle speed control

Preceding work:
Testing, adjusting idle speed (07-2053).

Operation no. of operation texts and work units or standard texts
and flat rates: 07-2006

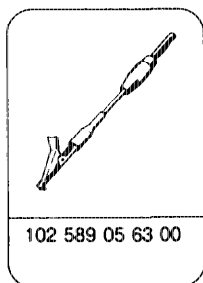
Engine 603.96 Standard without test coupling (X92 or X11/4)



Overvoltage protection relay (K1 or K1/1) and fuse	test. Measure voltage between contacts 9 and 11 of control unit coupling. Specification approx. 12 V.
Double coupling of actuator (Y22)	unplug and plug in again (at least for 3 s), engine speed increases briefly.
Engine speed sensor (L3) at coupling (L3x)	test. Resistance 0.4-2.5 k Ω , engine idling voltage > 4 V~.
Coolant temperature sensor (B11/1)	test. Specification: +20° C, 2.2-2.8 k Ω .

Electrical operation of actuator (Y22) test. Engine idling. Specification approx. 12 V.

Special tools



Commercially available testers

Designation	e. g. make, order no.
Multimeter	Sun, DMM-5
Digital tester	Bosch, MOT 002.01 Sun, DIT 9000

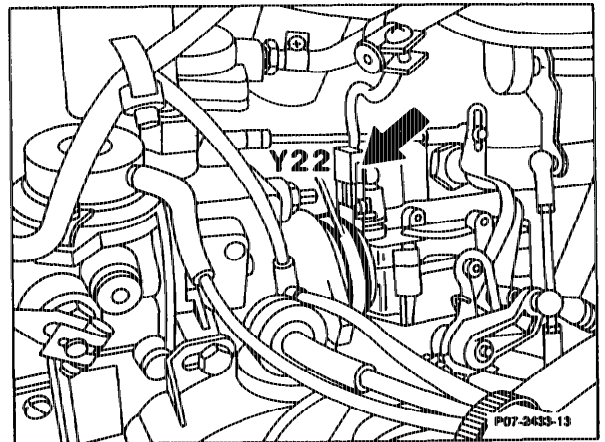
Note

For wiring diagrams see Op. No.
07.1-0400

Function test

Engine idling. Unplug 2-pin coupling (arrow) from ELR actuator (Y22) for at least 3 seconds and plug in again. Engine speed increases briefly.

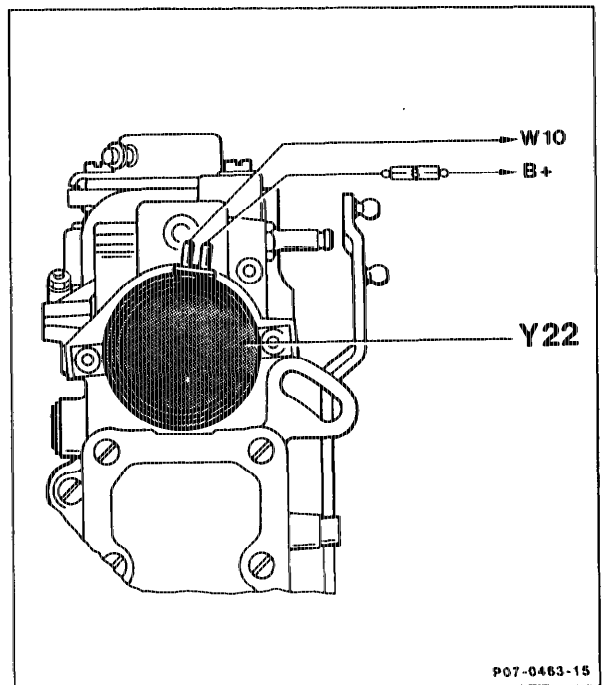
Yes	No
-----	----



Briefly apply battery voltage (approx. 12 V) to ELR actuator (Y22). Idle speed increases.

⚠
If battery voltage applied for longer than 3 seconds, ELR actuator (Y22) will be damaged.

Yes	No
-----	----



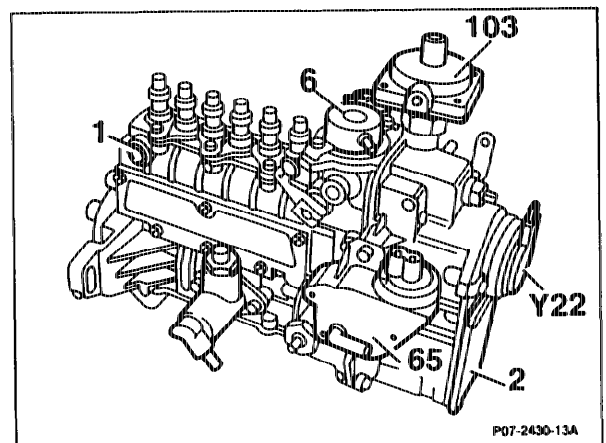
Test components

Replace ELR actuator (Y22).

Engine idling. Unplug 2-pin coupling at ELR actuator (Y22). Test idle speed.

Specification: 570 ± 40/min.

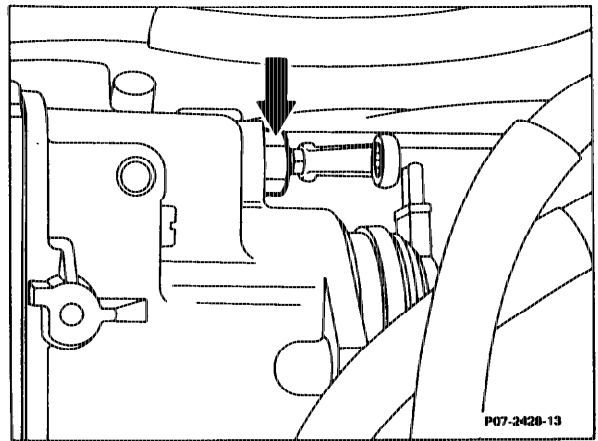
Yes	No
-----	----



End of test

Set idle speed by
 slackening locking
 nut (arrow).

to the left = higher
 to the right =
 lower



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End of test

Testing components

Testing overvoltage protection relay (K1/1)

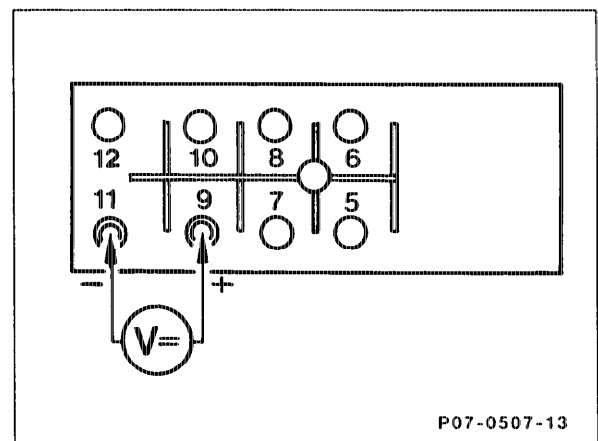
Switch on ignition. Unplug control unit (N8)
 and test voltage between contacts 9 and 11.

Readout: approx. 12 V.

Yes	No
-----	----

Test fuse at overvoltage protection.
 Actuation in accordance with wiring
 diagram.

End of test



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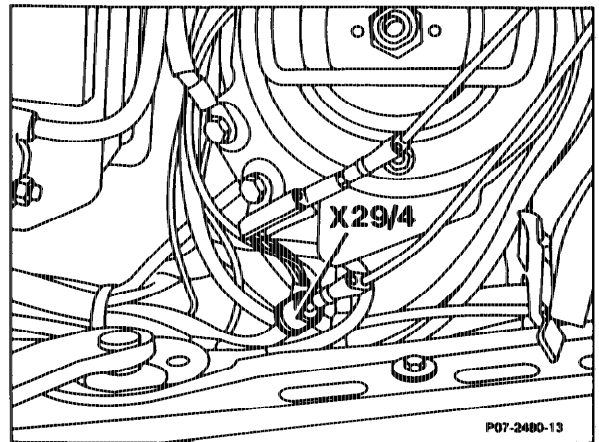
Testing engine speed signal

Connect multimeter to test coupling (X29/4). Set multimeter to V~. Run engine at idling speed.

Specification: > 2.8 V~

Yes	No
-----	----

End of test



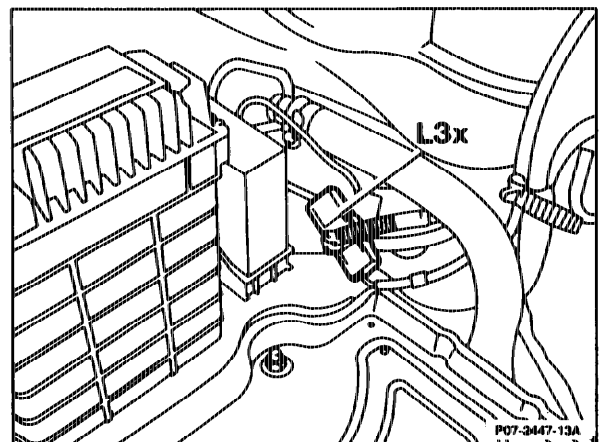
Engine switched off. Unplug connector (L3x). Connect multimeter to speed sensor plug connection (L3x) and press "Ω" button. Test resistance.

Readout: 0.4–2.5 kΩ

Yes	No
-----	----

Replace starter ring gear speed sensor (L3).

End of test



Multimeter connected as above. Press "V~" button. Run engine at idling speed.

Readout: > 4 V~
Voltage rises as engine speed rises.

Yes	No
-----	----

Check starter ring gear speed sensor for fouling and metal swarf. Clean if necessary.

End of test

Testing coolant temperature sensor (B11/1)

Engine switched off. Unplug connector at coolant temperature sensor and test resistance to ground.
For specifications see diagram.
Measure resistance at two temperature measuring points.

Example:

+ 20 °C = 2.2–2.8 kΩ

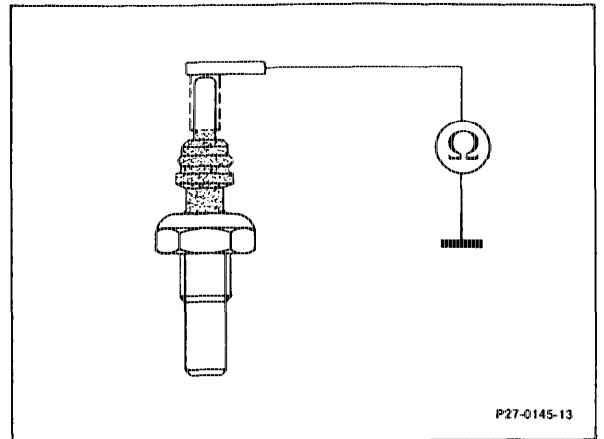
+ 80 °C = 290–370 Ω

Yes

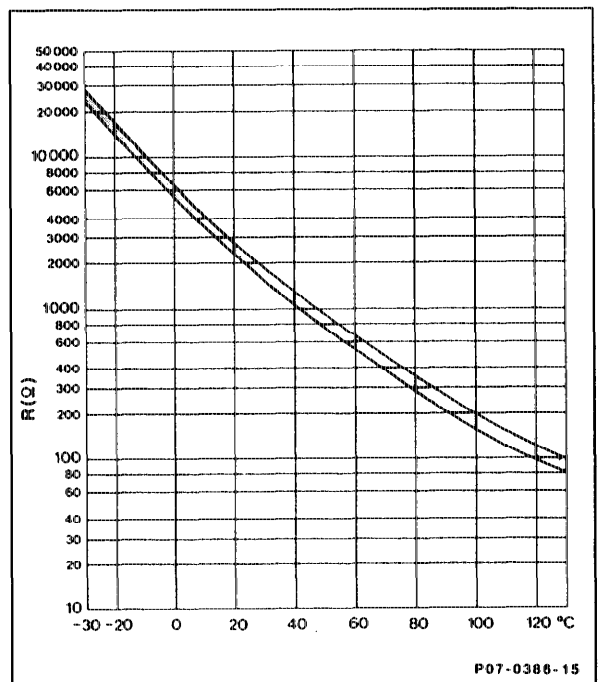
No

Replace coolant temperature sensor.

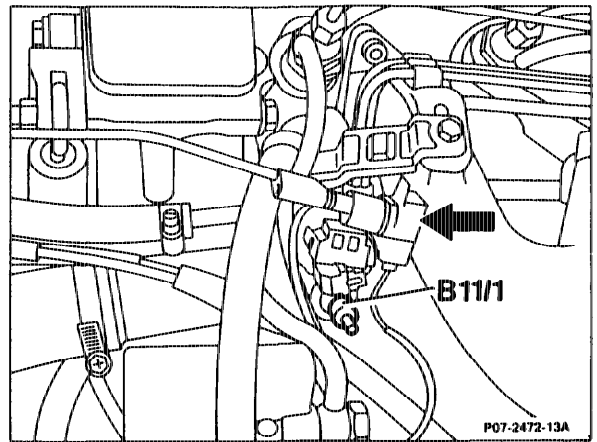
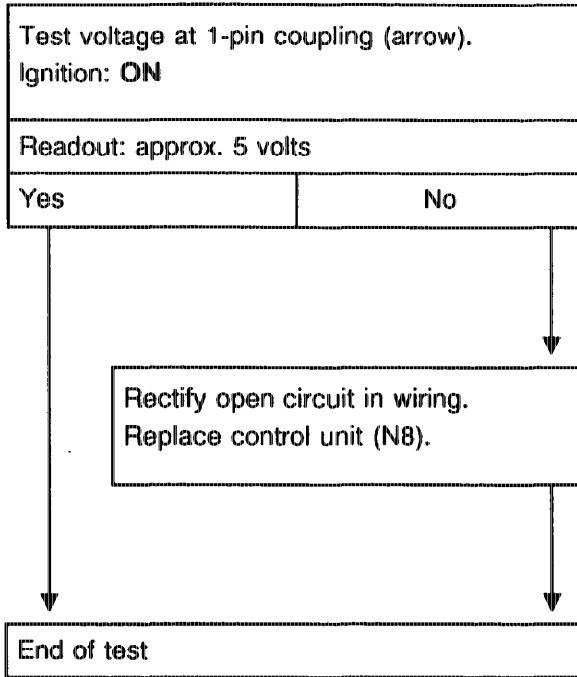
End of test



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P07-0386-15



Testing electrical operation of actuator

