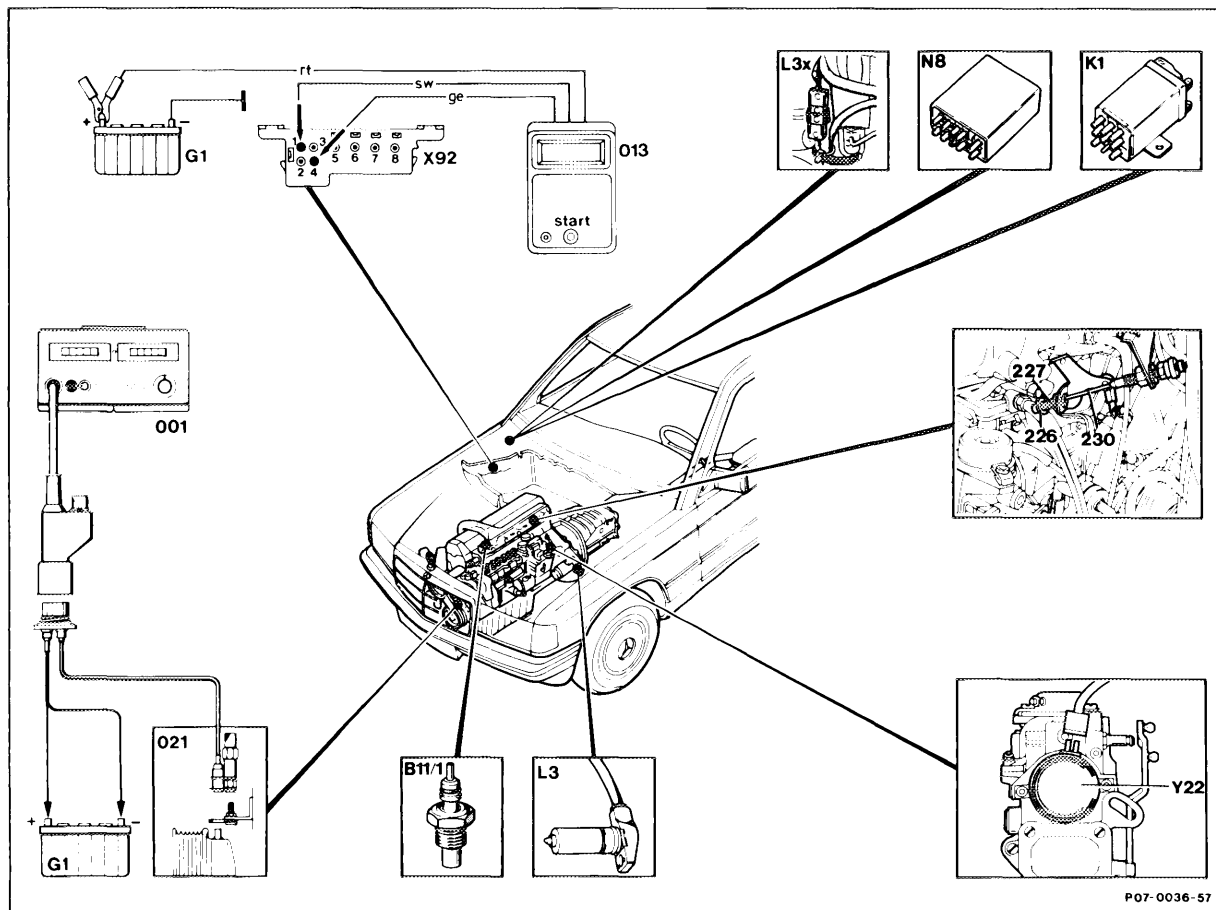


07.1-105 Testing electronic Idle speed control with test connector (X92 and X11/4) - Turbodiesel



P07-0036-57

Digital tester (001) and pulse generator (021)	connect.
Pulse counter (013)	connect to battery (G1) and to test connector (X92).
Accelerator control	check for ease of movement.
Idle stop at Bowden cable (230)	check, the spring plate (226) must be resting against the compression spring (227) free of tension.
Fuse of over-voltage protection	check.
Engine	raise to coolant temperature of approx. 80°C.
Engine	run at idle speed.
Start button of pulse counter (013)	operate for 2 to 4 seconds.
Display	read and note.
Start button	press again, no new display appears if no further fault in system.

Number of pulses indicates whether and which component is faulty, or whether components in the control circuit are defective.

Assignment (X92)

- Jack 1 ground
- Jack 2 TD signal

- Jack 4 pulse output, EDS control unit (N39)

Pulse readout	Component/faulty circuit
1	all functions "in order"
2	engine speed signal "fault"
3	coolant temperature "fault"
6	ELR control loop "fault"

Only short-circuit faults are detected with control units designation "R01". Control units with designation "R02" also detect interrupts. Production breakdate: control unit with "R02", May 1988.



P07-0531-13



P07-0532-13

Pulse readout "2"

Engine speed sensor (L3) to connector (L3x) . . . test, resistance 0.4–2.5 kΩ
 engine idle voltage > 4 V ~.

Pulse readout "3"

Coolant temperature sensor (B11/1) test, specified value + 20 °C 2.2–2.8 kΩ

Pulse readout "6"

2-pin connector of ELR actuator (Y22) detach

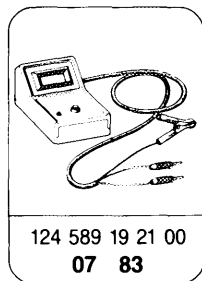
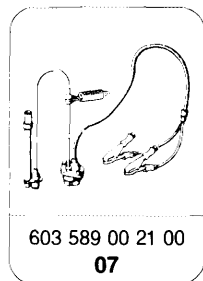
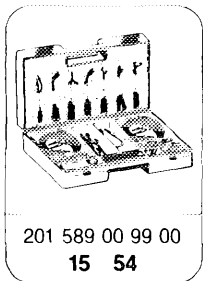
(for at least 3 s) and fit on again. Engine speed increases briefly.

Test idle speed, adjust if necessary.

Test and adjustment values

Engine	Idle speed in rpm with control	Idle speed in rpm without control Plug on actuator detached
602.96	680 ± 20	620 ± 40
603.96/97	630 ± 20	570 ± 40

Special tools

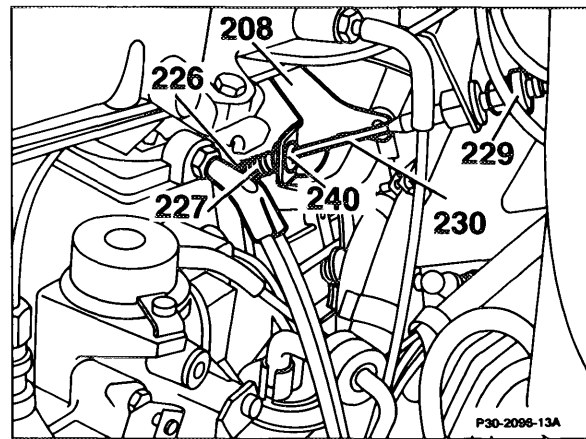


Commercial tools

Multimeter	e.g. Sun, DMM-5
Digital tester	e.g. Bosch, MOT 002.02 Sun, DIT 9000

Check accelerator control for ease of movement.
Check idle stop at Bowden cable (230).

The spring plate (226) of the Bowden cable (230) must be resting against the compression spring (227) free of tension in the idle position.



Test fuse in the over-voltage protection.

Raise engine to coolant temperature of approx.
80°C.

Run engine at idle speed.

Operate start button of pulse counter (013) for
between 2 and 4 seconds.

Check readout on the display of the pulse
counter (013) and note.

Again press start button for between 2 and 4
seconds. If there is no other fault in the system,
no new readout appears.

Rectify noted faults according to test routine or
perform test of components.

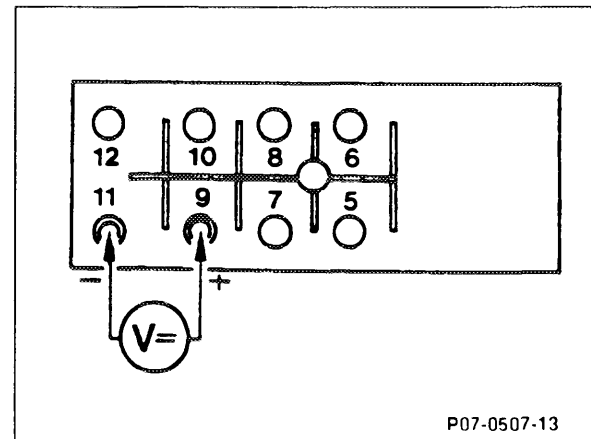
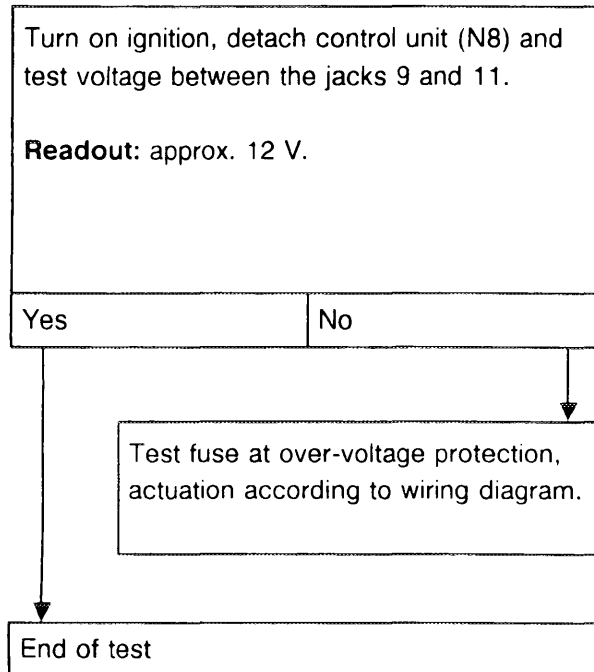
Note regarding pulse readout

Numbers from 1 to 6 appear on the display panel
of the pulse counter.

The number 1 means that no fault has been
detected in the electronic system. All the other
numbers are assigned to a certain fault circuit.

Testing components

Testing over-voltage protection (K1/1)

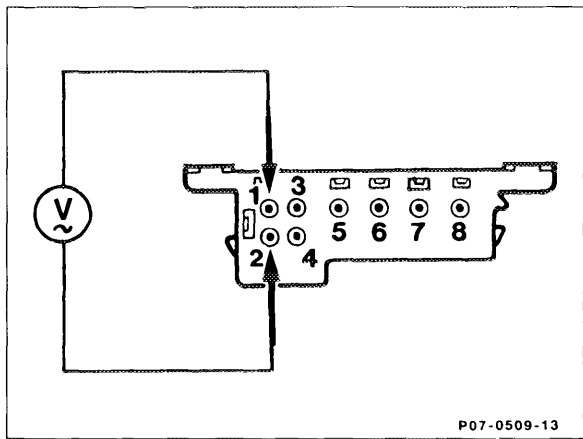


Pulse readout "2"

Testing engine speed signal
 Connect multimeter to the terminal 1 and 2 of the test connector (X92 and X11/4). Press button V~. Run engine at idle.

Specification: >2.8 V~

Yes	No
-----	----

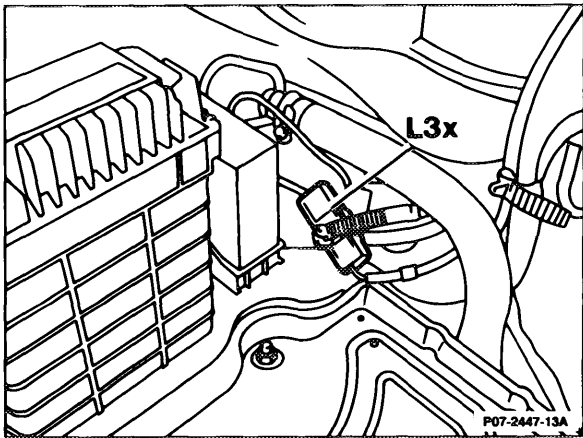


End of test

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

Specification: 0.4–2.5 kΩ

Yes	No
-----	----



Replace engine speed sensor on starter ring gear (L3).

End of test

Multimeter connected as above, press button "V~". Run engine at idle.

Readout: >4 V~

Voltage increases as engine speed rises.

Yes	No
-----	----

Examine engine speed sensor on starter ring gear (L3) for dirt deposits and metal chips, clean if necessary.

Test electric leads from plug connector (L3x) to control unit and on to test connector (X92 or X11/4), replace control unit (N8 or N8/1) if necessary.

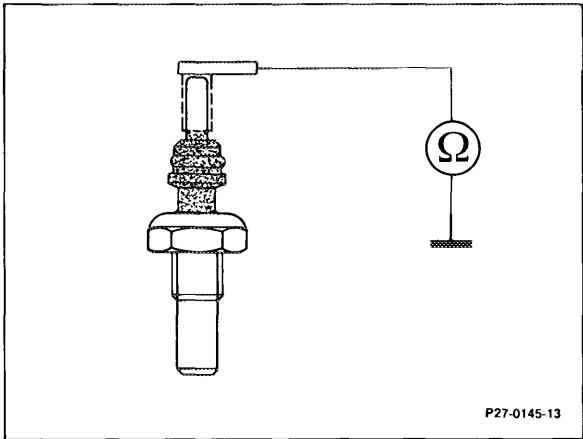
End of test

Pulse read out "3"

Testing coolant temperature sensor (B11/1)
 Engine off. Detach plug on temperature sensor and test resistance to ground. Refer to diagram for specified values. Measure resistance at two temperature measuring points.

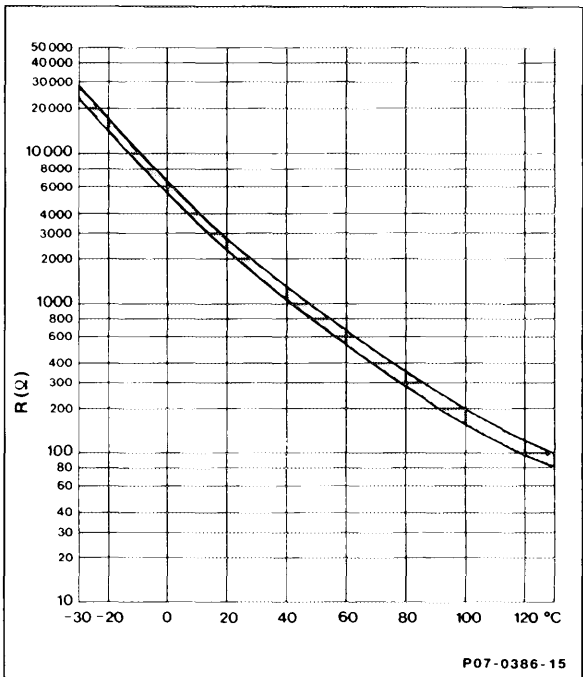
Example:
 + 20 °C = 2.2–2.8 kΩ
 + 80 °C = 290–370 Ω

Yes	No
-----	----



Replace coolant temperature sensor (B11/1).

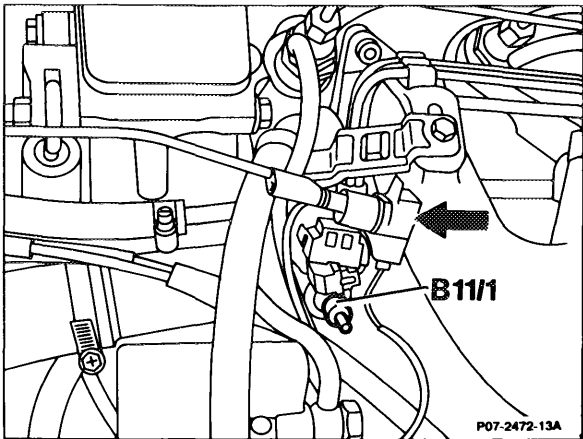
End of test



Test voltage at 1-pin connector (arrow). "Ignition" on.

Readout: approx. 5 Volts

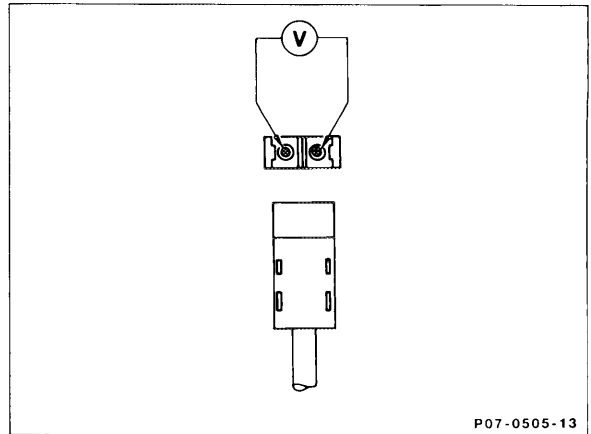
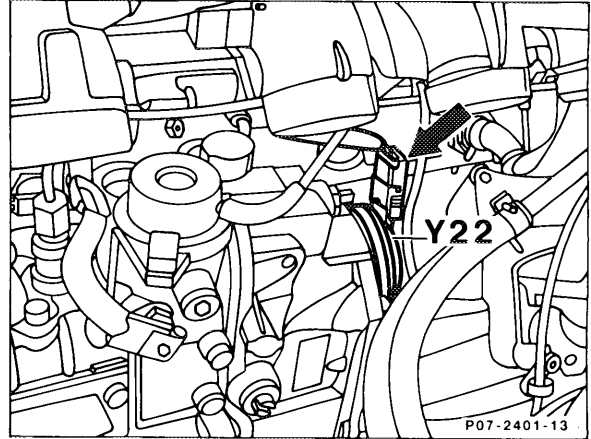
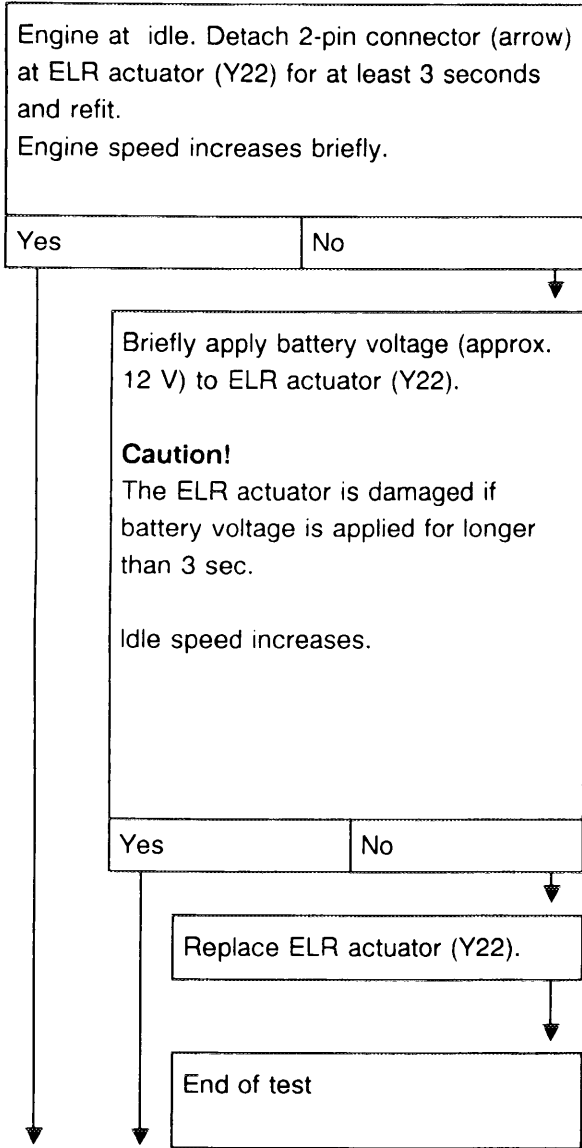
Yes	No
-----	----



Rectify cable interrupt. Replace control unit (N8).

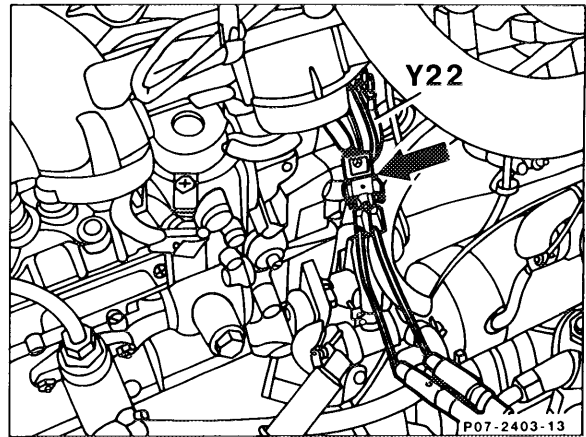
End of test

Pulse readout "6"



Engine at idle. Detach 2-pin connector (arrow) from ELR actuator (Y22). Connect multimeter and press button "V =".

Readout: approx. 12 V



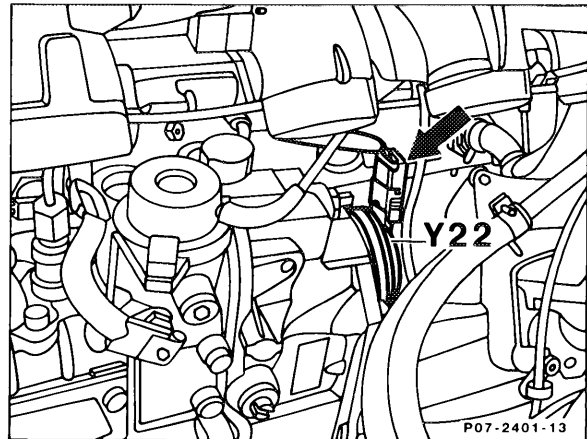
Yes	No
-----	----

Check cables according to wiring diagram. Test fuse of over-voltage protection relay (K1/1).

If the cables are in order, replace control unit (N8 or N8/1).

End of test

Engine at idle. Detach 2-pin connector (arrow) at the ELR actuators (Y22).



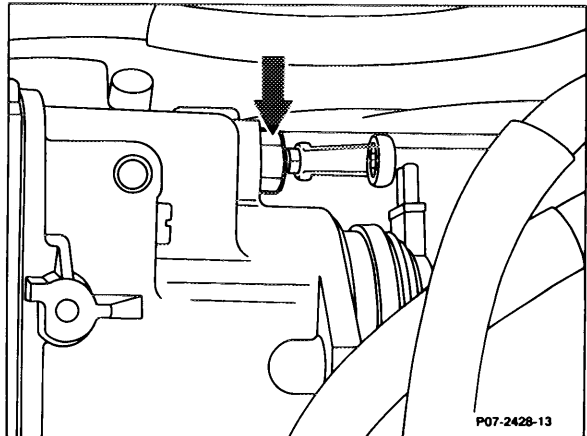
Test idle speed:
Specification:

M602	690 ± 40 rpm	manual transmission
	620 ± 40 rpm	automatic transmission
M603	570 ± 40 rpm	

Yes	No
-----	----

Loosen locking nut and adjust idle speed (arrow).

To the left = higher
To the right = lower



End of test