

Test condition	Observe
A. Compressor cutoff if the electromagnetic coupling of the refrigerant compressor is not switched on .	Check, test steps 1 to 6
B. Switching off of the electromagnetic coupling of the refrigerant compressor via the compressor cutoff control unit (N6)	Check, items 1 to 5

Conventional tester


Multimeter

e.g. Sun, DMM 5

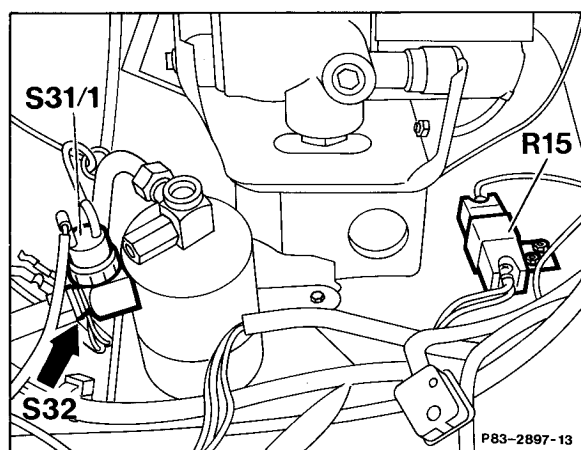
Test condition

A precondition for the test is that the activation of the refrigerant compressor functions properly.

Checking the activation

Switch on ignition, press function button  and engage temperature selector wheel in "MIN".

Connect voltmeter to plus and check both pressure switch (S31/1) connections for battery voltage. If both connections do not show any voltage, check the activation of the refrigerant compressor (see Checking electric components of the automatic climate control, test step 21, job No. 83-604).



If voltage is measured only at one connection, check high pressure of the air conditioner. At a pressure > 3 bar, renew pressure switch (S31/1). At a pressure < 2 bar, check air conditioner, recycling, check system for leaks and replenish (maintenance manual).

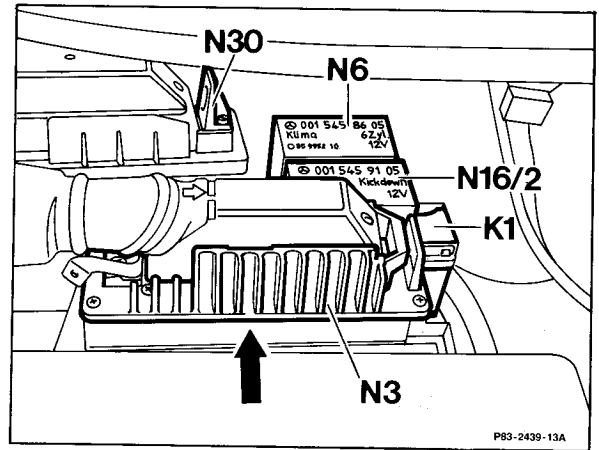
A. Checking compressor cutoff if the electromagnetic coupling of the refrigerant compressor is not switched on.

Test step 1
 Check voltage supply for control unit compressor cutoff (N6).

Pull control unit (N6) off the 12-pole coupling. Connect voltmeter to terminal 5 (+) and terminal 1 (-) of the 12-pole coupling.

Nominal value: battery voltage

Yes	No
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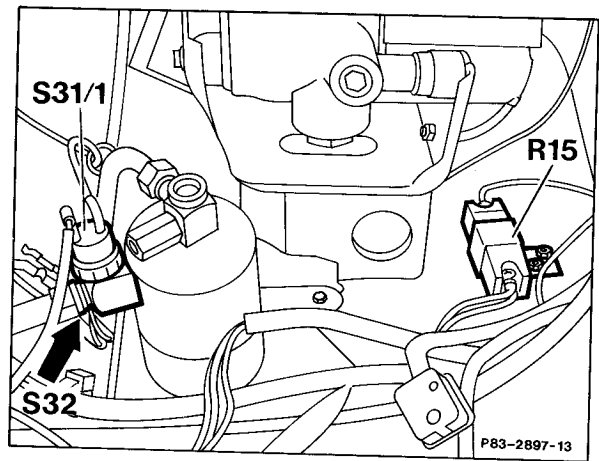
Check cable harness according to the wiring diagrams, repair if required.

Test step 2
 Check control voltage for the refrigerant compressor from the pressure switch refrigerant compressor (S31/1) to the control unit (N6).

Connect voltmeter to terminal 5 (+) and 10 (-) of the 12-pole coupling.

Nominal value: battery voltage

Yes	No
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Check cable harness from terminal 10 to pressure switch (S31/1), repair if required.

Test step 3

Check electromagnetic coupling of the refrigerant compressor and supply cable.

Bridge terminals 5 and 7 on the 12-pole coupling. Briefly start engine and check if the refrigerant compressor is operating.

Yes

No

Check electromagnetic coupling of the refrigerant compressor, renew if required or repair supply cable to the refrigerant compressor.

Test step 4

Check speed sensor refrigerant compressor (L4).

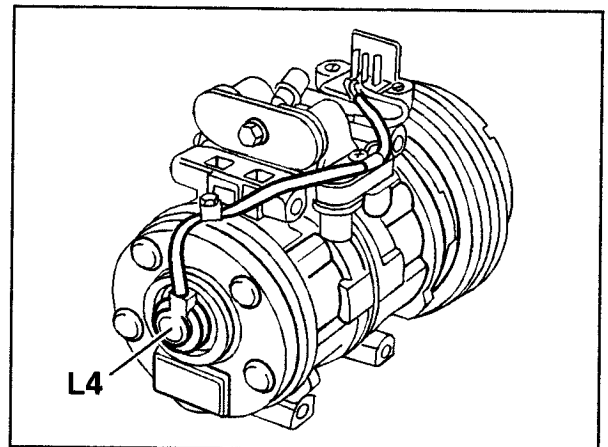
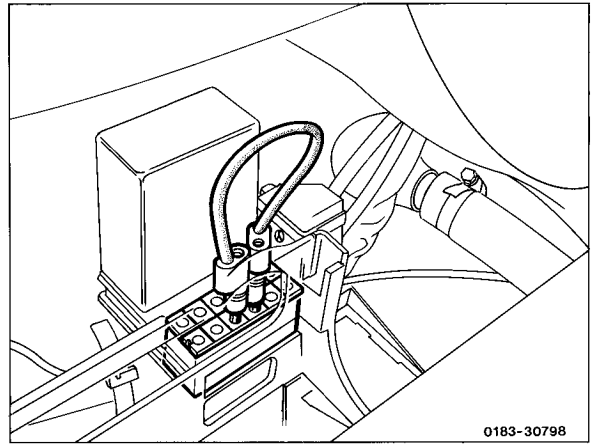
Connect voltmeter to terminals 9 and 11 of the 12-pole coupling and adjust voltmeter to alternating voltage ~. Terminals 5 and 7 of the 12-pole coupling remain bridged. Allow engine to run at idle speed (approx. 750/min).

Nominal value: at least 0.3 V AC

Yes

No

Stop engine and check resistance of the speed sensor (L4) on terminals 9 and 11. Nominal value: 530 to 650 Ω , renew speed sensor if required.



Test step 5

Vehicles with gasoline engine:

Check speed signal (TD).

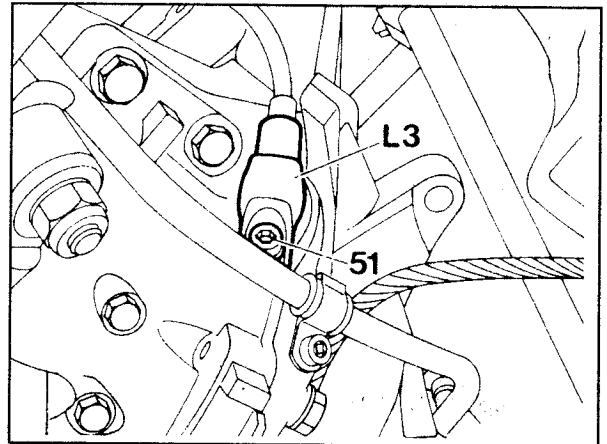
Connect voltmeter to terminals 1 (-) and 2 (+) of the 12-pole coupling and set the voltmeter to **direct voltage**. Run engine at idle speed (approx. 750/min).

Nominal value: approx. 8.5 V.

Vehicles with diesel engine:

Check speed sensor (L3) on the starter ring gear or check speed signal. Connect voltmeter to terminals 1 and 2 of the 12-pole coupling and set voltmeter to alternating voltage. Run engine at idle speed (approx. 750/min).

Nominal value: > 4 V AC with rising speed, rising voltage (with ELR < 3 V AC)



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Yes

No

Vehicles with gasoline engine:

Remove interruption to the cable connector of the diagnostic socket.

Vehicles with diesel engine:

Switch off engine and check resistance of the speed sensor (L3) on terminals 1 and 2.

Nominal value: $1.9 \pm 0.2 \text{ k}\Omega$, if required.

Renew speed sensor (L3).

Thereafter, check cable to the speed sensor (L3) on terminals 1 and 2 for ground short. To do so, separate the 2-pole plug connection on the speed sensor (L3).

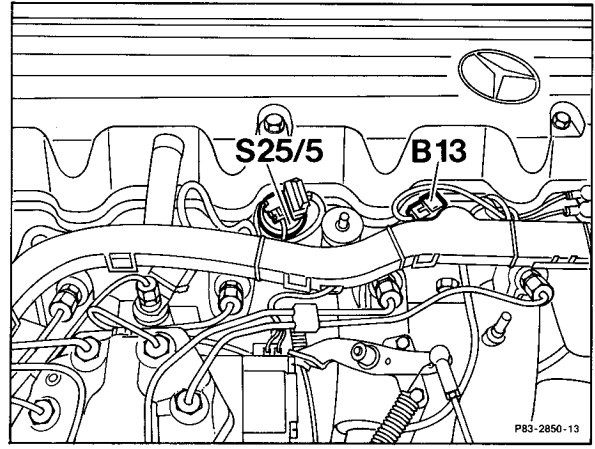
Nominal value: $\infty \Omega$, rectify ground short if required.

Test step 6

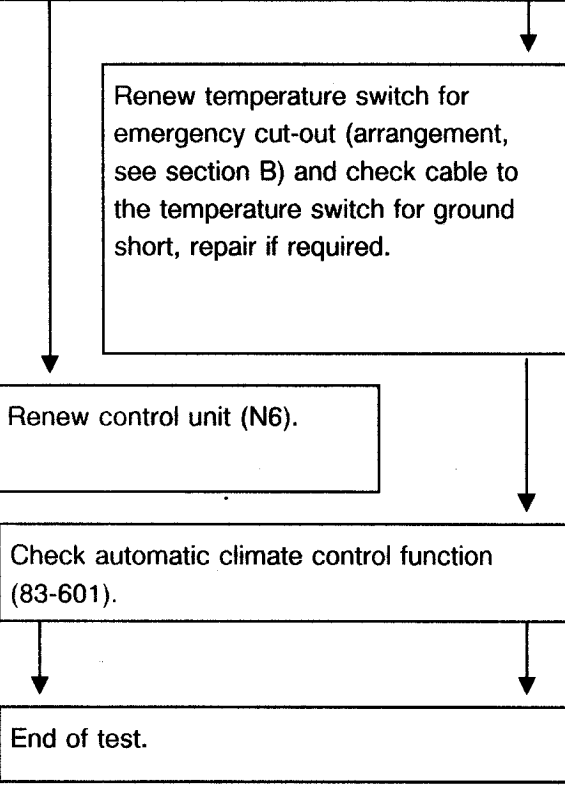
On vehicles up to 08/87, check emergency cut-out temperature switch for ground short, except on vehicles with engine 102 without RÜF/KAT and engine 601

Connect voltmeter to terminal 5 (+) and terminal 12 (-) of the 12-pole coupling.

Nominal value: < 1 volt



Yes	No
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B. Checking the cut-out of the electromagnetic coupling of the refrigerant compressor via the compressor cut-out control unit (N6).

Test step 1

Checking cut-out due to a slipping poly-V-belt.

Run engine at idle speed.

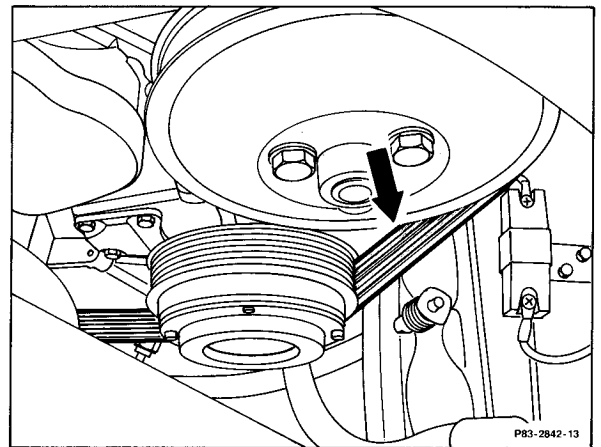
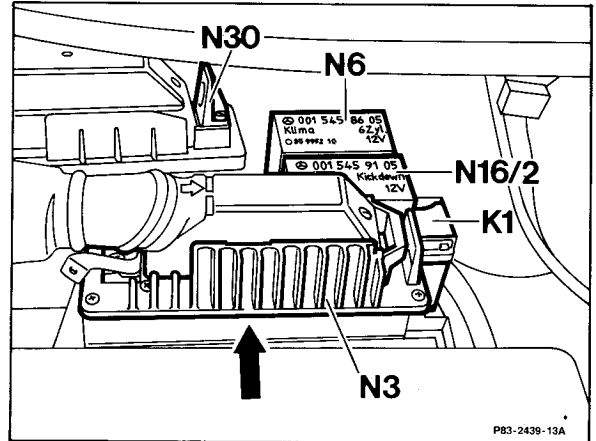
Press function selection button , engage selector wheel in the position "MAX" and switch on the fresh/recirculated air switch.

Spray a jet of water between the V-belt and the belt pulley of the electromagnetic coupling of the refrigerant compressor until the refrigerant compressor is switched off, while intermittently accelerating the engine.

Desired function: Refrigerant compressor is switched off.

Yes

No



Note

After the refrigerant compressor has been switched off, the refrigerant compressor will only be switched on again after the engine has been switched off and restarted.

Renew control unit (N6).

Test step 2

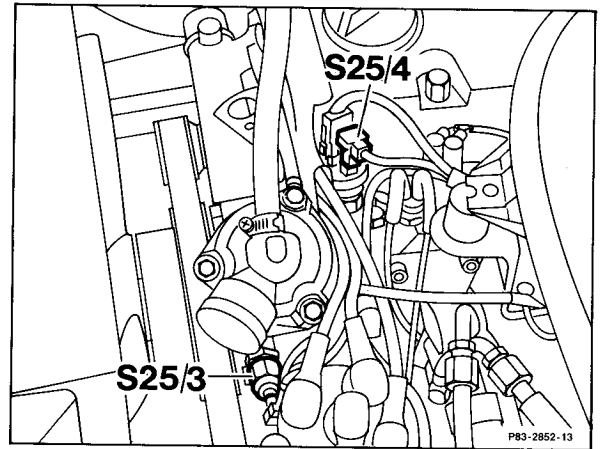
Check cut-out by temperature switch.
On vehicles from 09/85 to 08/87, except with engine 102 without RÜF/KAT and engine 601, again start the engine and pull 1-pole coupling off the temperature switch (S25/3, S25/5 and S25/11) and connect to ground.

Desired function: Refrigerant compressor is switched off.

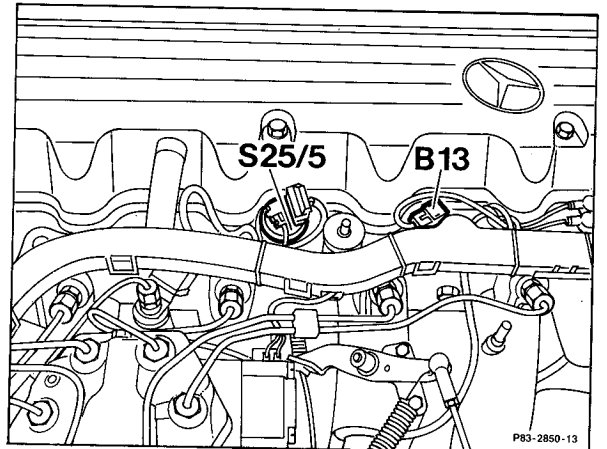
Yes

No

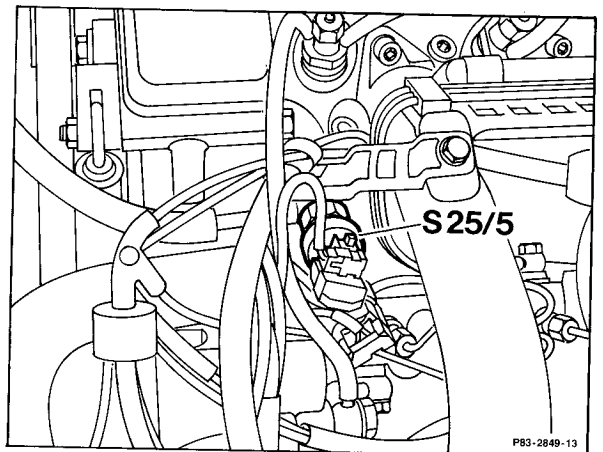
Renew control unit (N6) and check cable to the temperature switch for interruption, repair if required.



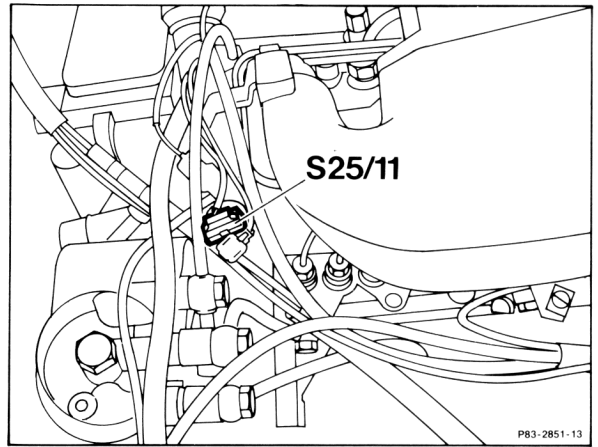
Engine 102 RUF/KAT
S25/3 Temperature switch 110°C up to 09/87



Engine T03
S25/5 Temperature switch 105/115°C



Engines 602 and 603 except for 102
S25/5 Temperature switch 105/115°C



Engine 603 TURBO
S25/5 Temperature switch 105/115°C

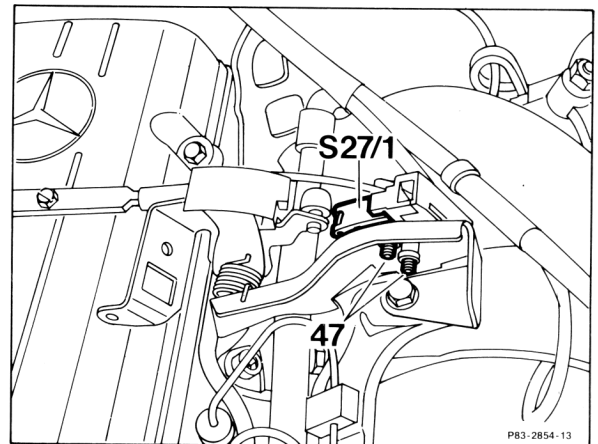
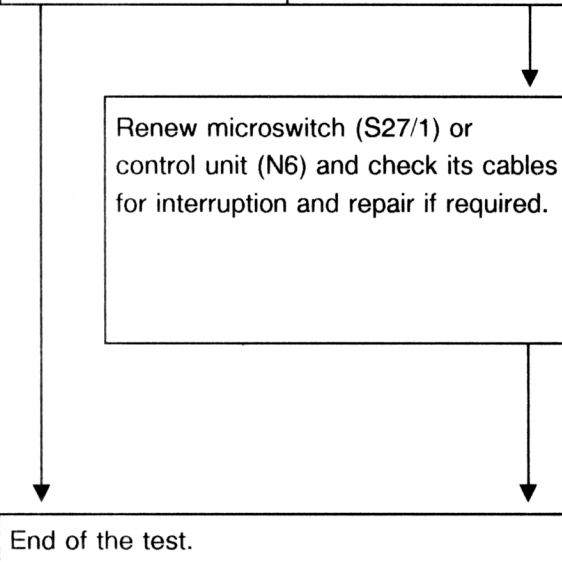
Test step 3

Checking cut-out by microswitch (S27/1) on vehicles with diesel engine and automatic transmission.

Run engine at idle speed. Observe electromagnetic coupling of the refrigerant compressor and accelerate briefly.

Desired function: The electromagnetic coupling must remain switched off up to 2150/min and should be switched on thereafter.

Yes	No
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Model 124.1/3 except TURBO
S27/1 Microswitch compressor cut-out

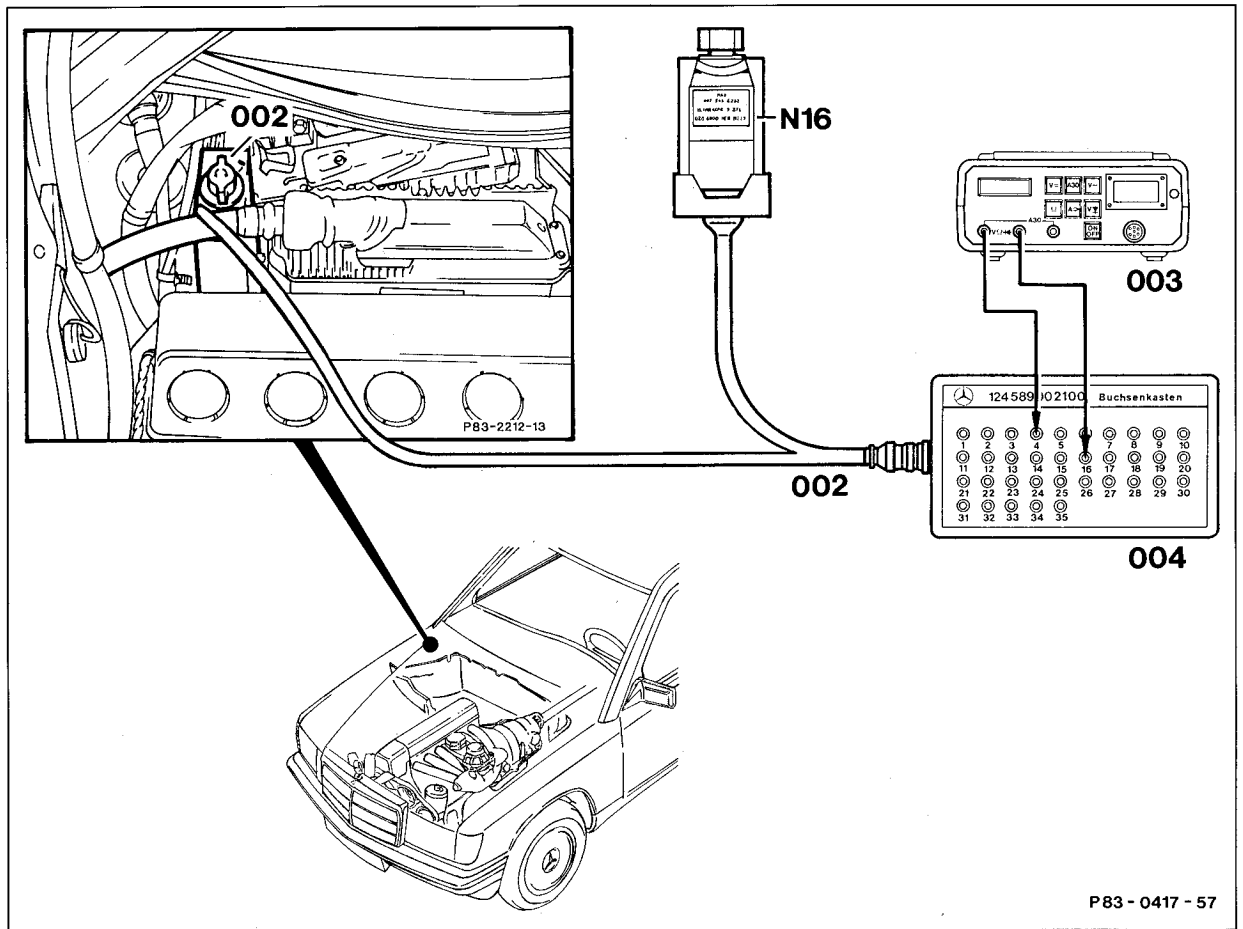


Model 124.1/3 TURBO
S27/1 Microswitch compressor cut-out

C. Checking the cut-out of the electromagnetic coupling of the refrigerant compressor via the engine unit control unit (MAS).

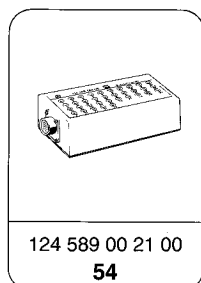
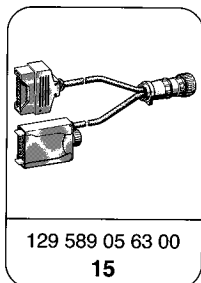
Socket box connection diagram



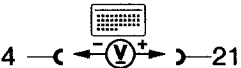


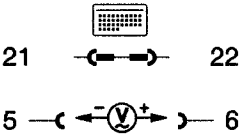
Disconnect control unit (N16) and intermediate contact test cable set (002).



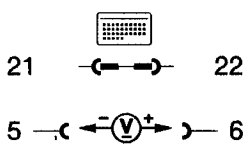



- 002 Test cable
- 003 Multimeter
- 004 Socket box
- N16 Engine unit control unit (MAS)

Special tools

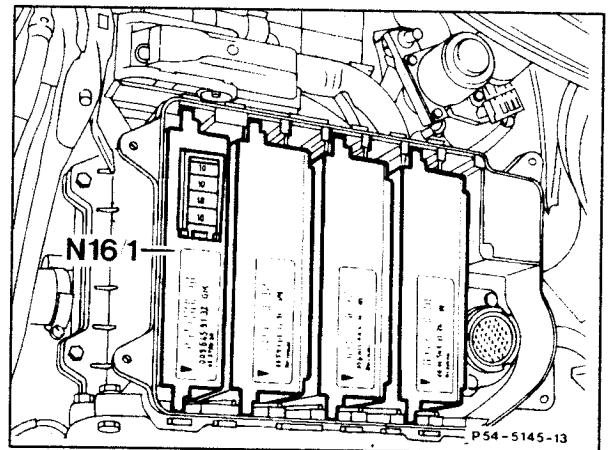


Test step/ fault code	Scope of test	Measuring instrument  / test connection 	Operation Requirement	Nominal value	Possible cause/remedy
1	Voltage supply for engine unit control unit (MAS)		Ignition: On	> 10 V	Fuse (2) defective. Cable from engine unit control unit (N16) to fuse (2) via plug connection (X26).
2	Ground control from pushbutton control unit		Switch on ignition and refrigerant compressor with the function selector 	> 10 V	Cable from pushbutton control unit (N19/1) to MAS (N16) via plug connection (X26) via pressure switch (S31/1).
3	Electro-magnetic coupling of refrigerant compressor (A9k1)		Engine at idle	Refrigerant compressor must operate	Electromagnetic coupling defective. Cable from MAS to electromagnetic coupling (A9k1)

Test step/ fault code	Scope of test	Measuring instrument  / test connection 	Operation Requirement	Nominal value	Possible cause/remedy
4	Refrigerant compressor speed sensor (A9/1)		Engine at idle (approx. 750 min)	$> 0.3 \text{ V} \sim$	Speed sensor defective (resistance of speed sensor: 530-650 Ω or approx. 810 Ω). Cable from MAS to speed sensor (A9/1). Refrigerant compressor defective
5	Check TD or TN speed signal		Engine at idle (approx. 750 min)	$> 0.3 \text{ V} \sim$	Cable from control unit (EZL) to MAS (N16)

D. Checking the cutoff of the electromagnetic coupling of the refrigerant compressor via the base module (GM)

On models 124.034/036, the compressor cuts off via the base module (N16/1). Checking the compressor cutoff is included in Checking the base module (see chassis diagnosis manual).



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