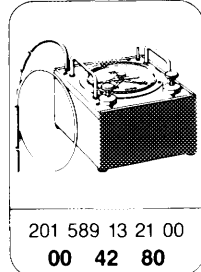
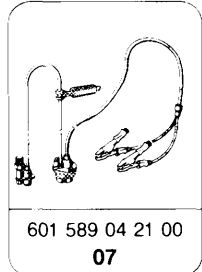
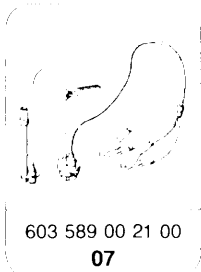


07.1-195 Testing exhaust gas recirculation

A. Performance test

B. Testing individual parts

Special tools



Commercially available tools

Digital tester

Bosch, MOT 001.03

e.g. Sun, DIT 9000

Multimeter

e.g. Sun, DMM-5

Note

Use Y-distributor, part no. 117 078 01 45 for vacuum tester.

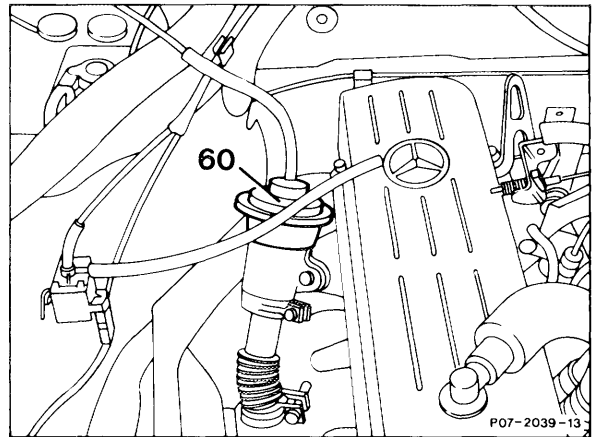
Test condition

Coolant temperature 60–80 °C.

A. Performance test

Testing EGR valve (60) with engine off
 Apply vacuum of approx. 300 mbar to EGR valve. Pull off vacuum line.

EGR valve audibly closes.	EGR valve does not close.
---------------------------	---------------------------

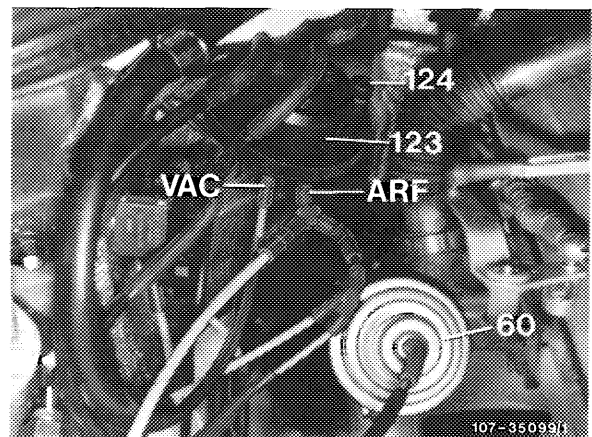


Test individual components
End of test

Testing vacuum amplifier (123) and vacuum adjustment

Connect vacuum tester with Y-distributor to connection "A" and read vacuum value with engine at idle. If the vacuum is above or below the nominal value, adjust vacuum. For this purpose pull off protective cap (124) and adjust with socket wrench insert (4 mm) according to specified Nominal value.

Nominal value: 350 ± 5 mbar.
 as of model year 1986 may not be adjusted.



OK	Not OK
----	--------

Check vacuum supply at connection "C", replace vacuum amplifier if necessary. Check vacuum lines according to vacuum diagram. Check supply vacuum on vacuum pump (07.1-160).

Nominal value: greater than 700 mbar

End of test

Testing vacuum control
 Connect vacuum tester with Y-distributor to EGR valve (60). Check vacuum values and position of vacuum unit (100) and vacuum control flap. Take vacuum readings at the following engine speeds:

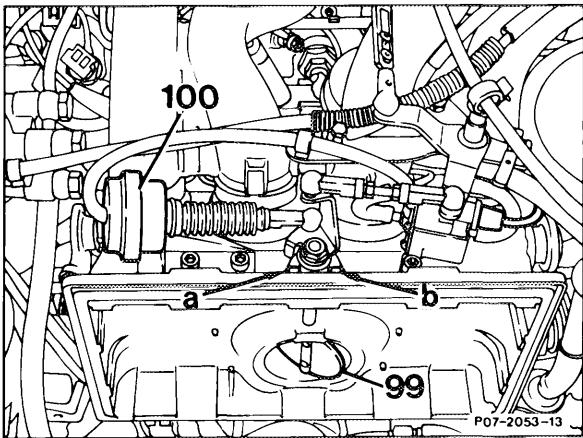
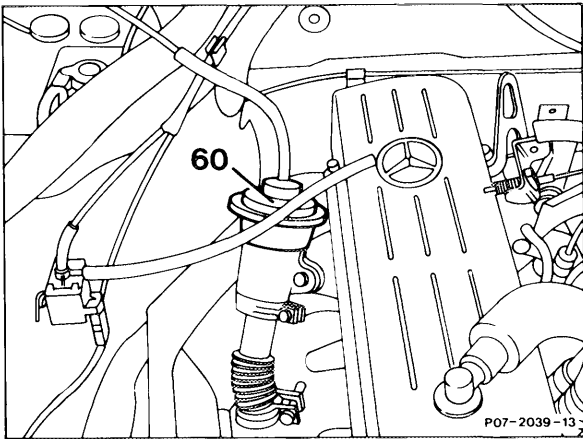
EGR Model Year 1986

rpm	EGR valve mbar	Pressure control flap position
680 ± 20	0	Not activated
1200 ± 50	150 - 350	Fully activated
3000 ± 50	0	Not activated

EGR Model Years 1987 through 1989

rpm	EGR valve mbar	Pressure control flap position
680 ± 20	Approx. 30	Not activated
1000 ± 50	150 - 360	Fully activated
2500 ± 50	150 - 360	Not activated
3000 ± 50	0	Not activated

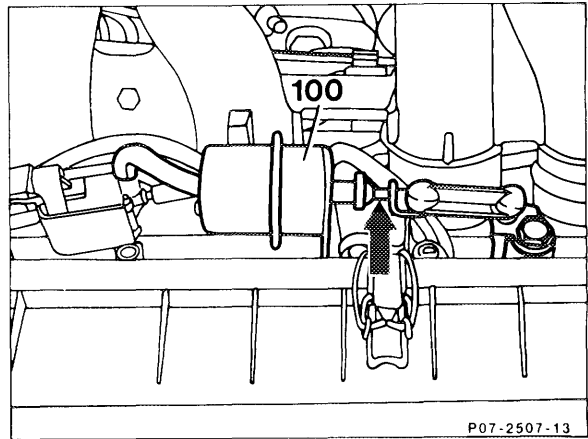
OK	Not OK
----	--------





Check vacuum supply and individual components.

End of test



Piston rod of vacuum unit retracted - pressure control flap closed (arrow).

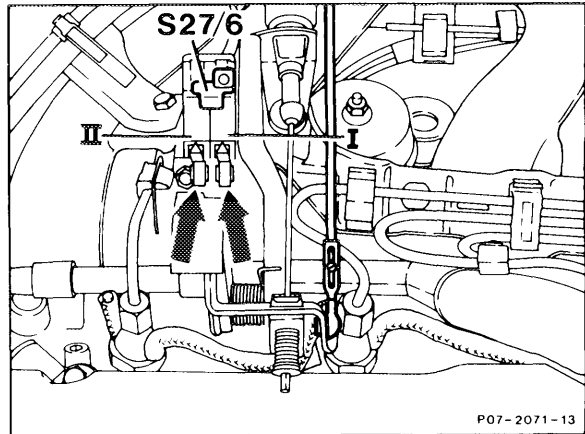
Testing microswitch (S27/6, I + II)
 Connect vacuum tester with Y-distributor to EGR valve (60).

Run engine at 1200 ± 50 rpm (M.Y. 1986).
 Run engine at 1000 ± 30 rpm (M.Y. 1987- 89)

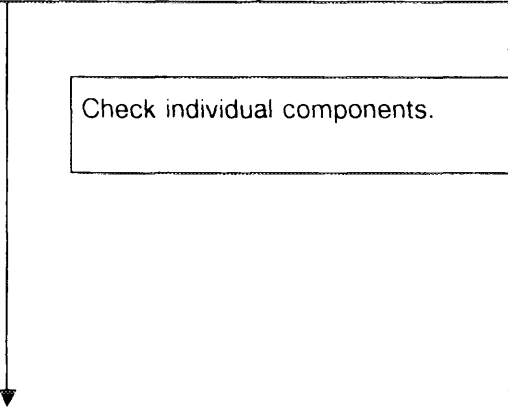
Actuate microswitch (S27/6 I), the vacuum on the EGR valve (60) should drop to 0 mbar. The pressure control flap (in the air filter housing) should move into "not activated" position.

Actuate microswitch (S27/6 II), the pressure control flap (100) in the air filter housing should move into the "not activated" position.

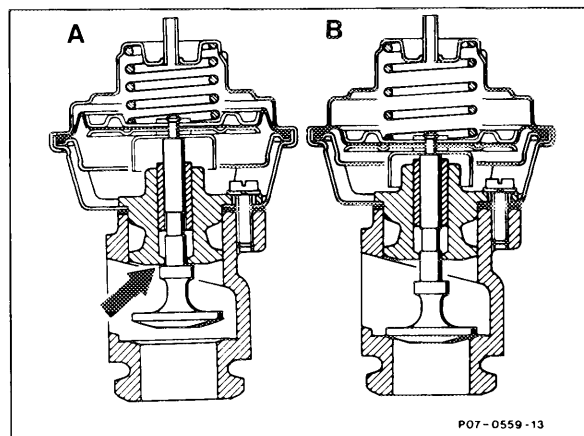
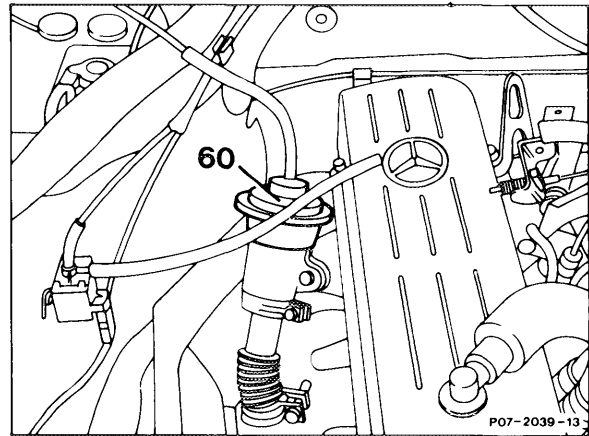
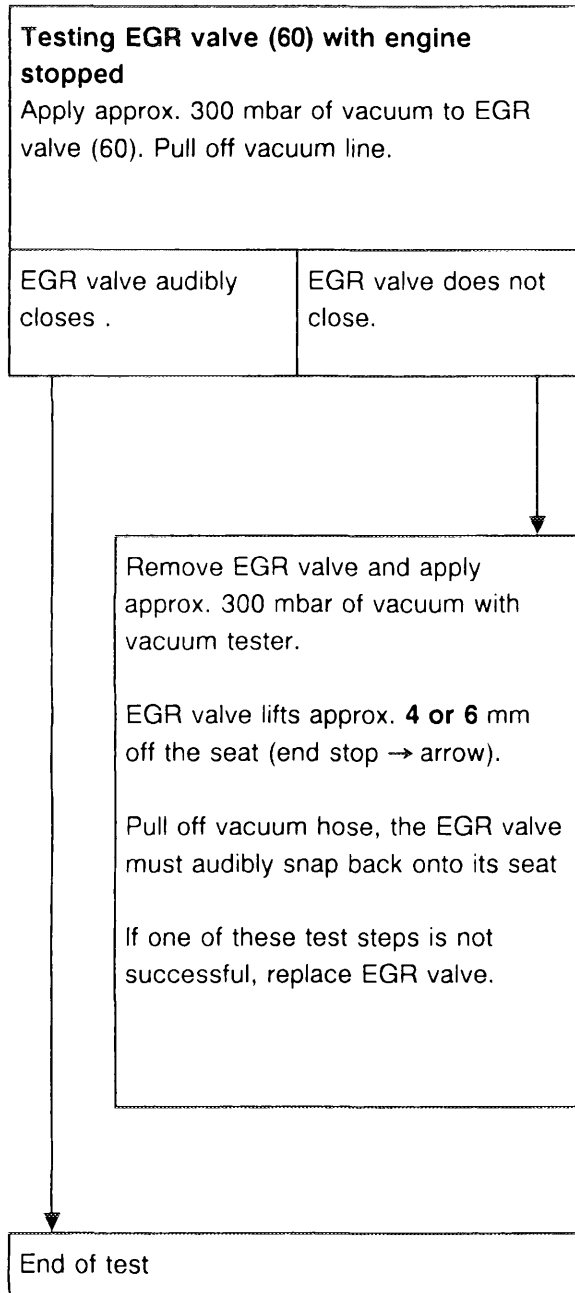
OK	Not OK
----	--------



Check individual components.



B. Testing individual components



A open
B closed

Testing vacuum control valve (65)

Connect vacuum tester with Y-distributor to connection "B" of vacuum amplifier (123) and check vacuum at idle.

Nominal values:

At 680 ± 20 rpm:

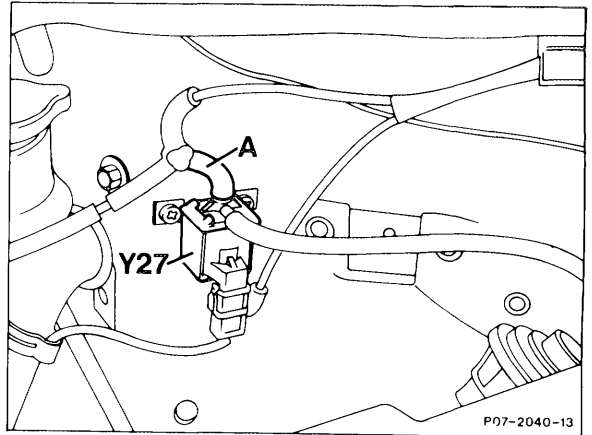
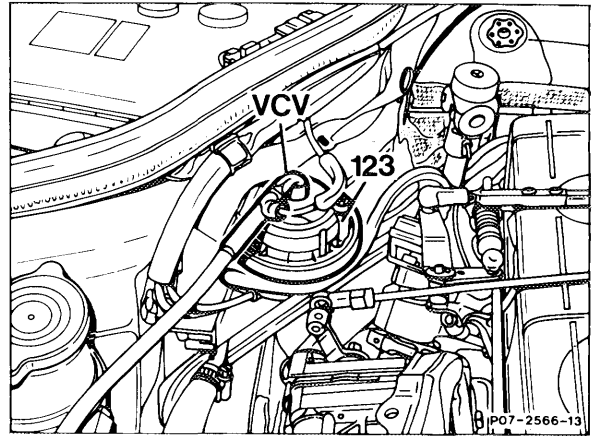
approx. 360-410 mbar (M.Y. 1986-1988)

above 300 mbar (M.Y. 1989)

With engine off and control linkage at full load stop: 0 mbar.

Test values correct.

Test values not in order.

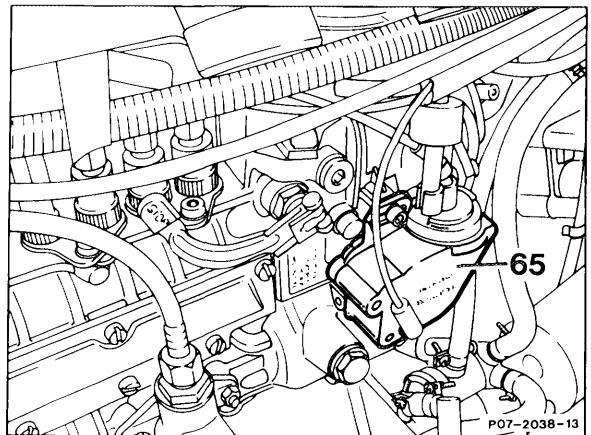


Check vacuum lines according to vacuum diagram.
Check vacuum supply at vacuum pump.

Nominal Value:

greater than 700 mbar

Adjust vacuum control valve (65)
(07.1-170), replace if necessary.



End of test

Testing switchover valves (Y27 and Y28)

Connect voltmeter to connector of switchover valve and measure voltage at 1000 ± 50 rpm for model years 1987 through 1989 and 1200 ± 50 for model year 1986.

Nominal value: approx. 12 V.

OK

Not OK

Check electrical actuation according to wiring diagram, replace EGR control unit (N37 or N37/2) if necessary.

End of test

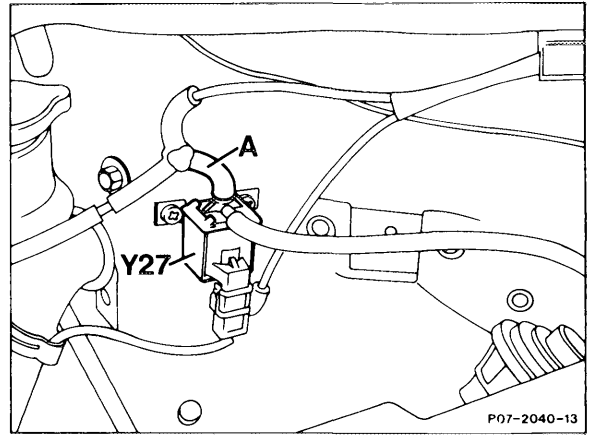
Connect vacuum tester with Y-distributor to connection "C" and check vacuum at 1000 ± 50 rpm (or 1200 ± 50 for 1986, 12 V applied) valves Y27 and Y 28

300-400 mbar

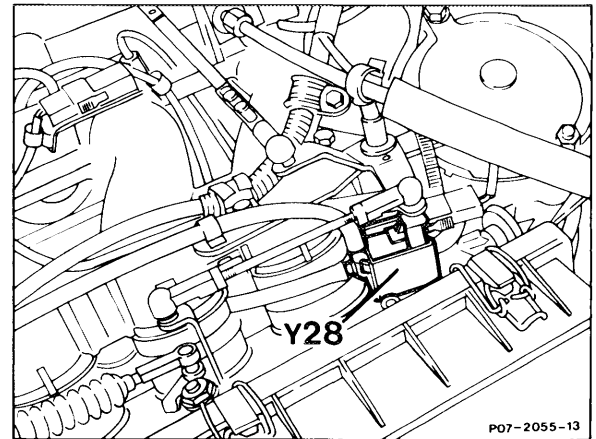
Check engine with mechanical actuation of the pressure control flap at 1000 ± 50 rpm (1200 ± 50 for M.Y. 1986) , applying 12V.

Switchover valve (Y27) 350 – 400 mbar

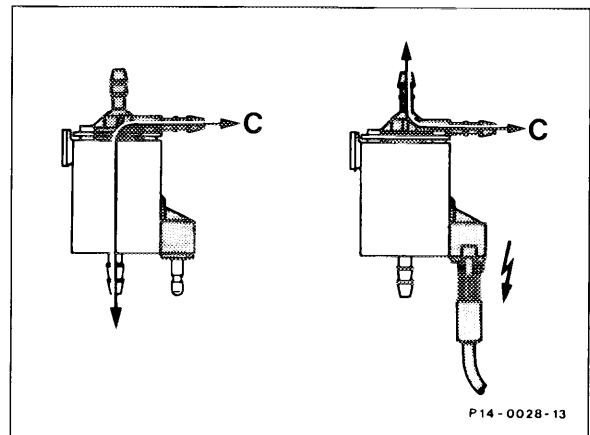
Switchover valve (Y28) > 700 mbar



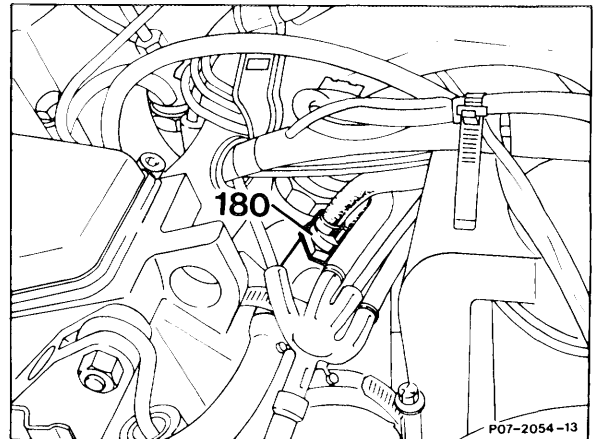
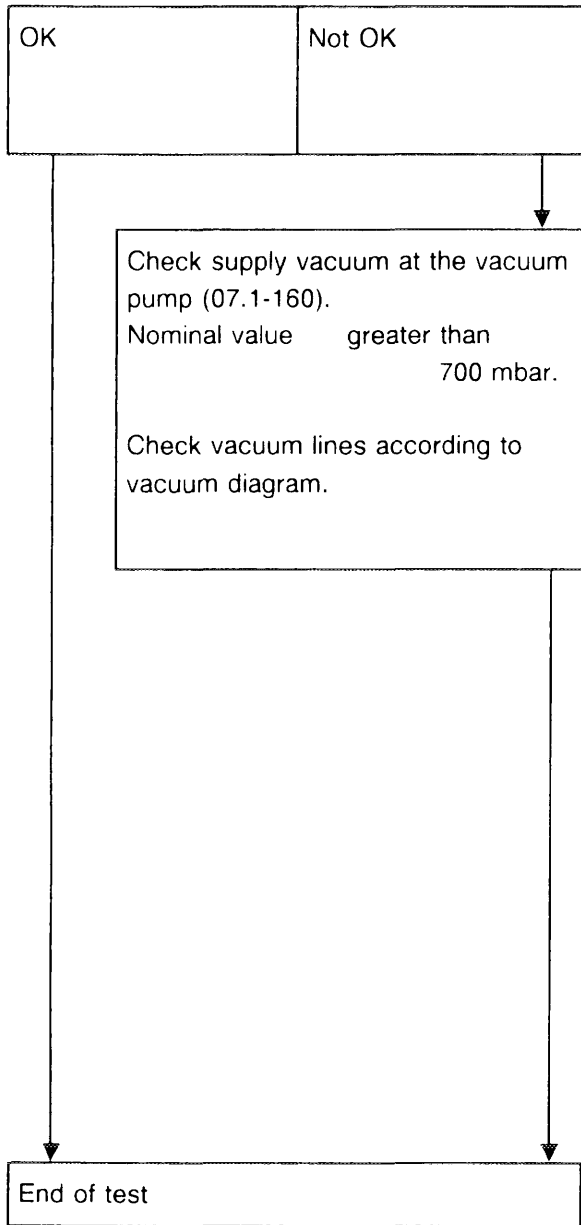
P07-2040-13



P07-2055-13



P14-0028-13



Testing rpm signal

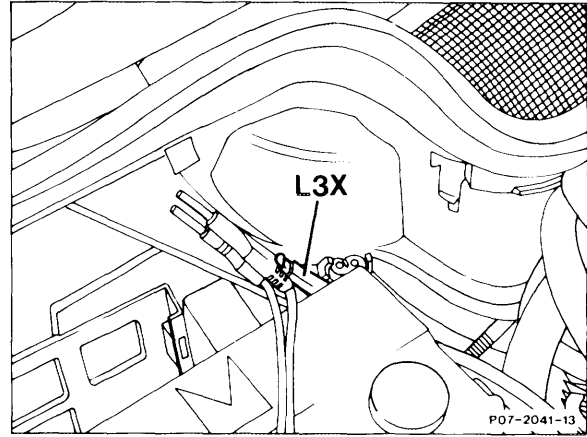
Remove plug connector (L3X). Connect multimeter and press button "V~". Run engine at idle.

Reading: > 1.5 V~
Voltage rises with increasing speed.

OK

Not OK

End of test



Remove starter ring gear speed sensor (L3). Connect multimeter as above and press "Ω" button on multimeter. Check resistance on pins of connector L3X.

Reading: $1.9 \pm 0.2 \text{ k}\Omega$

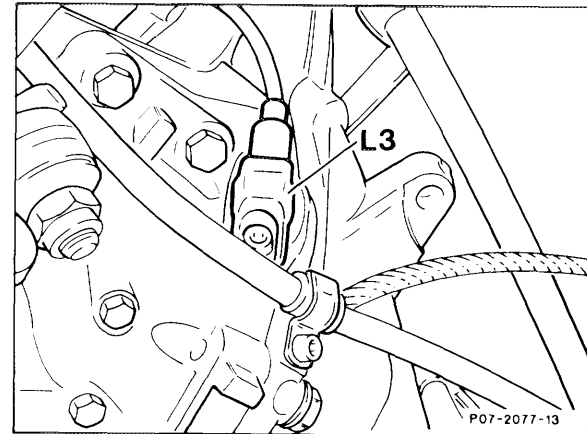
OK

Not OK

Inspect starter ring gear speed sensor (L3) for accumulation of dirt or metal chips, clean or replace if necessary.

Replace starter ring gear speed sensor (L3).

End of test



1) Measured at 20 °C ambient temperature. (The resistance changes by 4% for each 10 °C change in ambient temperature).

Testing activation of temperature switch (S25/9) 97 °C

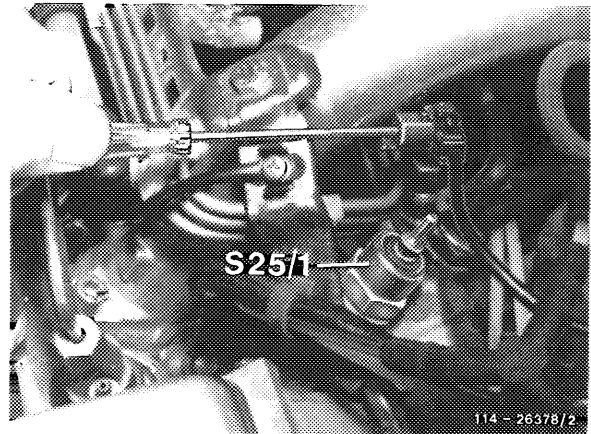
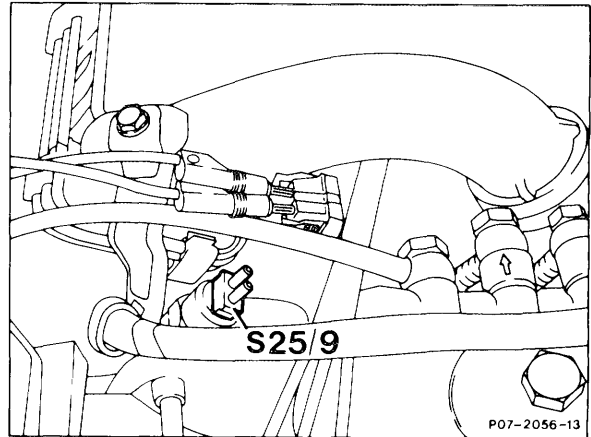
Connect vacuum tester with Y-distributor to EGR valve.

Run engine at 1200 rpm (M.Y. 1986-1988)

Run engine at 1000 rpm. (M.Y. 1989)

Pull plug off temperature switch (S25/1) and bridge 2 terminal connection, except 1-pole version of temperature switch (S25/1), hold the plug against ground (engagement of electronic clutch should be heard).

Vacuum at EGR valve drops to 0 mbar.



OK

Not OK

Check electrical activation according to wiring diagram, replace EGR control unit (N37 or N37 2) if necessary.

End of test

Testing activation of 25 °C temperature switch (S25/7)

Connect vacuum tester with Y-distributor to EGR valve.

Engine temperature above 25 °C

Run engine at 1200 rpm (M.Y. 1986-1988)

Run engine at 1000 rpm (M.Y. 1989)

Pull plug off temperature switch and hold against ground.

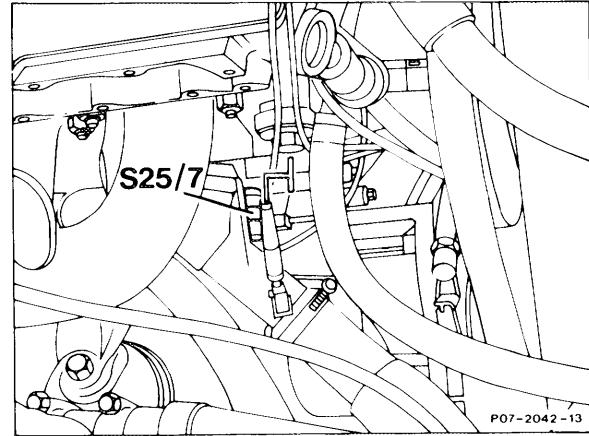
Vacuum at EGR valve drops to 0 mbar.

OK

Not OK

Check electrical activation, according to wiring diagram, replace EGR control unit (N37 or N37/2) if necessary.

End of test



**Testing microswitch (S27/3 and S27/4)
Model Years 1986 through 1988**

Engine off. Pull off connector on microswitch and test for continuity with ohmmeter between pin 2 and 4 or pin 1 and 3.

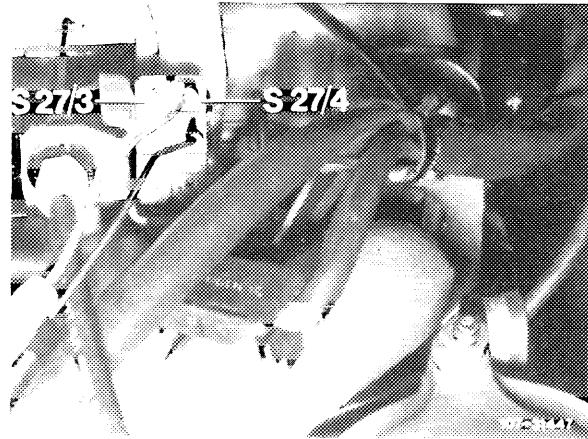
At idle : 0 Ω
At full throttle: ∞ Ω

OK

Not OK

Replace microswitch.

End of test.



**Testing full throttle on microswitch (S27/3)
Model Years 1986 through 1988**

Engine off. Pull connector from microswitch. Test for continuity with ohmmeter between pin 1 and 5.

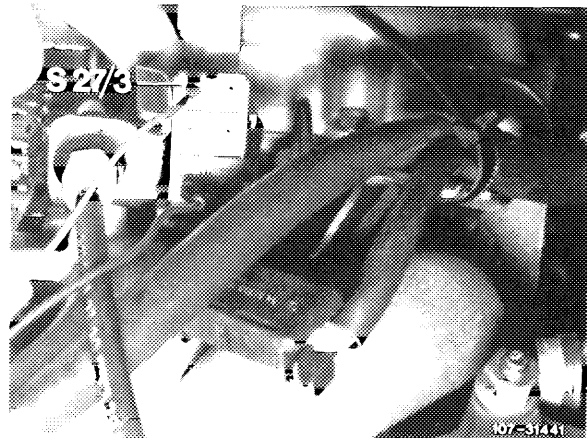
At idle: ∞ Ω
At full throttle: 0 Ω

OK

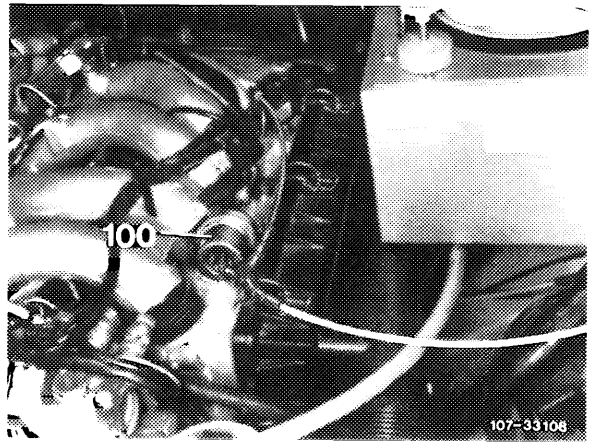
Not OK

Replace microswitch (S27.3).

End of test.



Testing speed shut-off	
Model Years 1986-1988	
Connect vacuum tester with Y-fitting to actuator (100) for vacuum control flap. Drive vehicle on dynamometer or open road in 5th gear or "D" at partial load. Read vacuum at the speeds listed below.	
Model Year 1986	
below 56 ± 5 mph:	approx. 700 mbar
above 56 ± 5 mph:	approx. 0 mbar
Model Years 1987, 1988	
below 54 mph:	approx. 150 mbar
above 54 mph:	approx. 0 mbar
OK	Not OK



↓

Model Year 1986
 Test electrical activation of switchover valve (Y27). For this purpose, connect multimeter to connector (arrow) of switchover valve and repeat test drive.

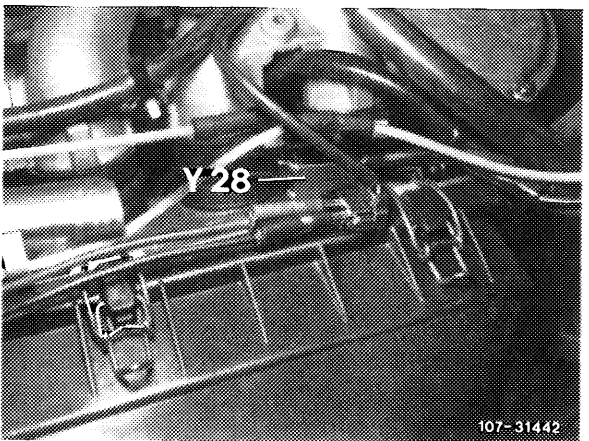
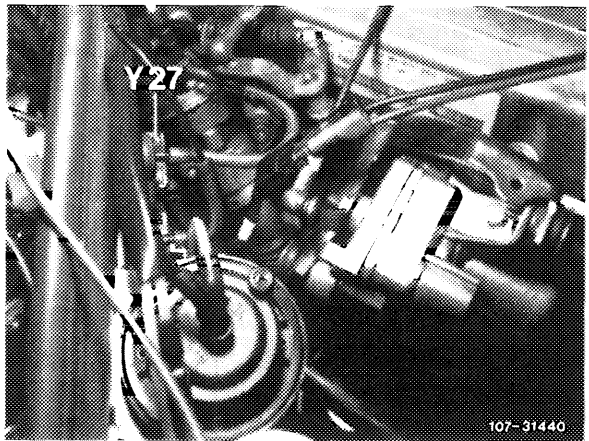
If voltage (approx. 12 V) is indicated at speeds above 56 mph (90 km/h), test electrical activation of switchover valve according to wiring diagram. Replace defective parts, if required.

If there is no voltage, replace switchover valve.

Model Years 1987, 1988
 Test electrical activation of switchover valve (Y28). For this purpose, connect multimeter to plug of switchover valve and repeat test drive.

If voltage (approx. 12 V) is indicated at speeds above 54 mph (87 km/h), test electrical activation of switchover valve according to wiring diagram. Replace defective parts, if required.

If there is no voltage, replace switchover valve.



↓

End of test.

Testing microswitch (S27/6)

Model Year 1989

Engine off. Pull off connector on microswitch (S27/6) and test for continuity with ohmmeter between pin 2 and 4 and/or pin 1 and 3.

At idle : 0 Ω

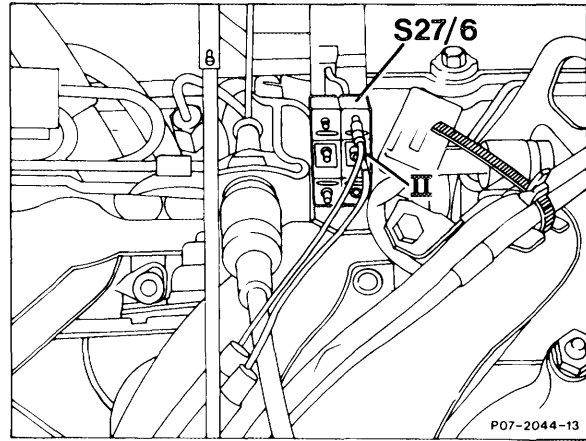
At full throttle: $\infty \Omega$

OK

Not OK

Replace microswitch (S27/6).

End of test.



Testing full load contact on microswitch (S27/6) Model Year 1989

Engine off. Pull off connector on microswitch (S27/6, pos. I). Test for continuity with ohmmeter between pin 1 and 5.

At idle: $\infty \Omega$

At full throttle: 0 Ω

OK

Not OK

Replace microswitch (S27/6).

End of test.

