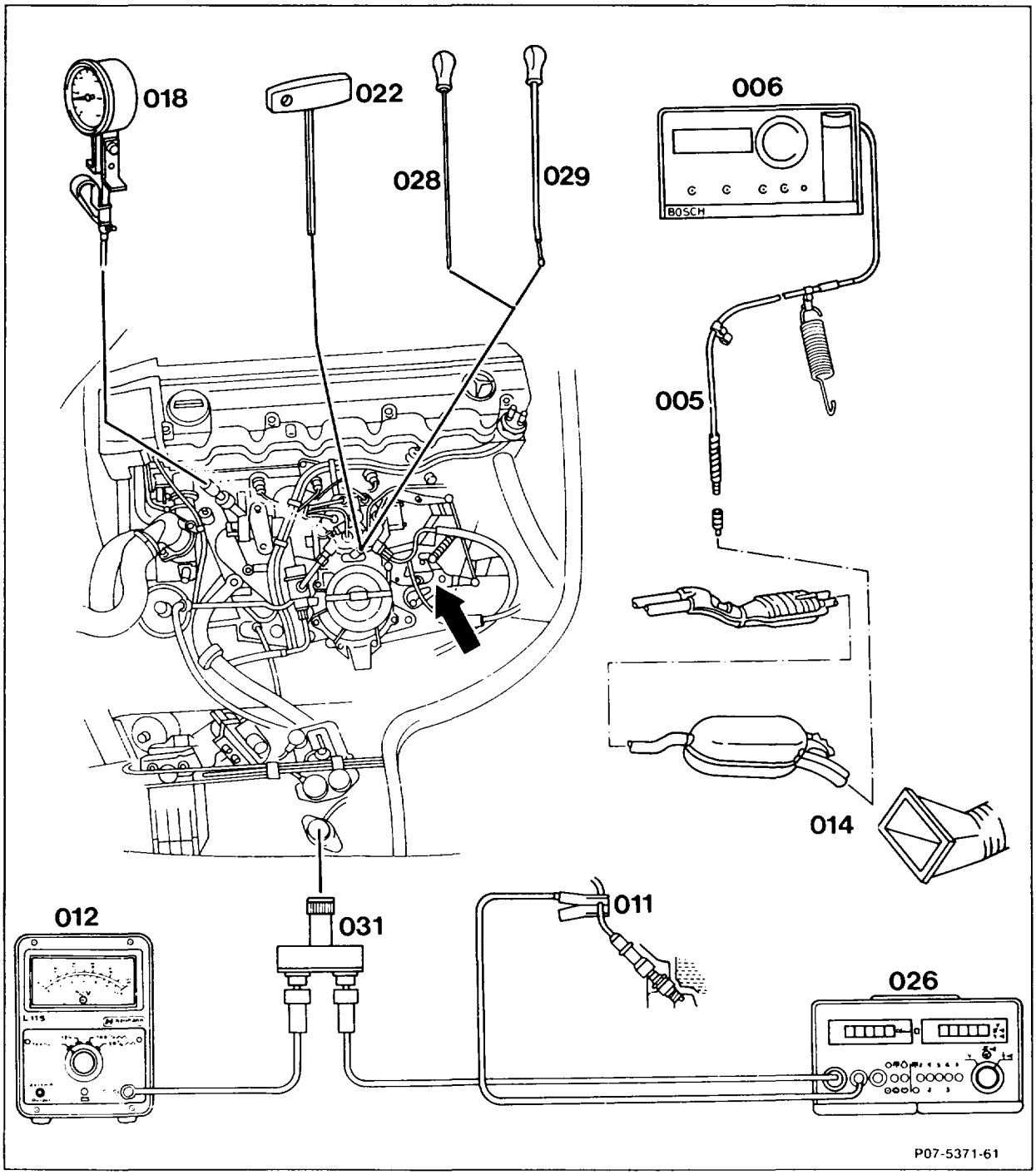
07.3–2053 Testing, adjusting idle speed or special exhaust emissions test (ASU)

Operation no. of operation texts and work units or standard texts and flat rates:
07–2053,
Special exhaust emissions test (ASU): 00–7600.

A. Basic and national versions

(USA see 07.3–5203)



Air conditioner or automatic climate control	switch off.
Selector lever	move into position "D."
Testers	connect: oil remote thermometer (018) 124 589 07 21 00, lambda control tester (012), twin socket (031), exhaust probe (005) 126 589 11 63 00, CO analyzer (006), engine tester (026), trigger clamp (011).
Extraction device (014)	position at exhaust tailpipe.
Accelerator control (arrow)	check for ease of movement and condition.
Ignition timing	test (see table).
Engine oil temperature	approx. 80°C.
Idle speed	test (see table).
Idle emissions level, lambda control	test, adjust (see table). Use special tools, screwdriver (022) 000 589 14 11 00, puller (028) 123 589 05 33 00 and insertion drift (029) 123 589 00 15 00, for adjusting.
Smooth engine running	check. Switch on all ancillaries for this step.

Basic version

Engine	Version	Idle speed		Idle emissions level	Lambda control
		1/min	Control range	% CO	Control range %
103.940 103.941 103.942 103.943	RÜF NV (RÜF)	650–750	35–45% 21–27° ∡	1 ± 0.5	–
	KAT			≤ 0.5 [2])	[1])
103.980	Std.	600–700		1 ± 0.5	–
	Std. KAT			1 ± 0.5 < 1.5 [2])	
103.981	RÜF NV (RÜF)			1 ± 0.5	
	KAT			≤ 0.5 [2])	[1])
103.982 103.983 103.985	RÜF NV (RÜF)	up to 5/90: 600–700 as of 6/90: 650–750		1 ± 0.5	–
	KAT			≤ 0.5 [2])	[1])
103.984	RÜF	650–750		1 ± 0.5	–
	KAT			≤ 0.5 [2])	[1])

[1]) Test lambda control at 2500/min and read off average value. Detach regeneration line at regeneration valve for this step and close. Compare this reading with the idle speed reading. The average value at idle speed must not differ by more than ± 10 from the reading obtained at 2500/min.

[2]) When performing special exhaust emissions test (ASU).

National version (AUS) 1986–1991 silver identification plate

Engine	Version	Idle speed		Idle emissions level	Lambda control
		1/min	Control range	% CO	Control range %
103.94	(AUS)	700 ± 50	35–45% 21–27° ∡	–	[1])
103.98		650 ± 50			

[1]) Test lambda control at 2500/min and read off average value. Detach regeneration line at regeneration valve for this step and close. Compare this reading with the idle speed reading. The average value at idle speed must not differ by more than ± 10 from the reading obtained at 2500/min.

National version

- (CH) **up to 1986** information plate green
- (CH) **1986, 1987** information plate green
- (CH) **KAT 1986, 1987** information plate light green
- (CH) **KAT as of 1988** no information plate, instead engine data setting plate
- (S) **1986, 1987** information plate blue
- (S) **KAT ab 1986** information plate light blue

Engine	Version	Idle speed		Idle emissions level	Lambda control
		1/min	Control range	% CO	Control range %
103.94	(CH) KAT (S) KAT	700 ± 50	35–45% 21–27° ∡	≤ 0.5	[1]
103.98 except 103.984	(CH) (S)	780 ± 50		0.6 ± 0.3	–
	(CH) KAT (S) KAT	650 ± 50; as of 06/90 750 ± 50		≤ 0.5	[1]
103.984	(CH) KAT (S) KAT	700 ± 50			

[1] Test lambda control at 2500/min and read off average value. Detach regeneration line at regeneration valve for this step and close. Compare this reading with the idle speed reading. The average value at idle speed must not differ by more than ± 10 from the reading obtained at 2500/min.

National version (J) 1986–1990 information plate in Japanese

Engine	Version	Idle speed		Idle emissions level	Lambda control
		1/min	Control range	% CO	Control range %
103.94	(J)	700 ± 50	35–45%	–	[1]
103.98		650 ± 50			

[1] Test lambda control at 2500/min and read off average value. Detach regeneration line at regeneration valve for this step and close. Compare this reading with the idle speed reading. The average value at idle speed must not differ by more than ± 10 from the reading obtained at 2500/min.

EZL ignition timing point

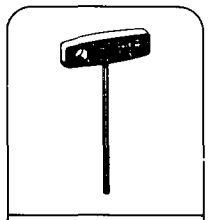
Engine	EZL ignition control unit	Engine speed 1/min	Ignition timing point in ° CA before TDC		
			Resistance trimming plug position or fuel type	Without vacuum	With vacuum
Basic version KAT/RÜF and (CH) (S) KAT					
103.940 103.941 103.942 103.943	003 545 95 32 003 545 96 32 005 545 84 32 005 545 86 32 006 545 73 32 006 545 75 32 008 545 61 32 008 545 63 32 011 545 88 32 011 545 89 32	3200	S	25–29	40–44
			N	19–23	
			S and N	7–11	7–11
103.980	003 545 14 32 003 545 15 32	3200	1/ Premium leaded	23–27	39–43
		Idle speed		8–13	8–13
		3200	3/ Premium unleaded	19–23	39–43
		Idle speed		8–13	8–13
103.981 103.983 103.985	004 545 44 32 004 545 46 32 005 545 85 32 005 545 87 32 006 545 74 32 006 545 76 32 007 545 86 32 007 545 87 32 008 545 62 32 008 545 64 32	3200	S	27–31	40–44
			N	21–25	40–44
		Idle speed	S and N	6–11	6–11
103.982	004 545 44 32 004 545 46 32 005 545 85 32 005 545 87 32 006 545 74 32 006 545 76 32				
103.984	007 545 86 32 007 545 87 32				
National version (CH) 1986, (S) 1986 [1])					
103.981 103.983	004 545 69 32 005 545 49 32 005 545 88 32	3200	S	29–33	40–44
			N	23–27	
		Idle speed	S and N	OT ±2	OT ±2

[1]) For (CH) KAT, (S) KAT, same values as basic version KAT.

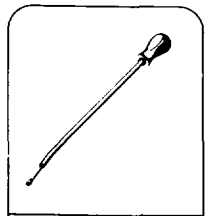
EZL ignition timing point

Engine	EZL ignition control unit	Engine speed 1/min	Ignition timing point in ° CA before TDC		
			Resistance trimming plug position or fuel type	Without vacuum	With vacuum
National version (AUS)					
103.940 103.942	005 545 84 32 005 545 86 32 006 545 73 32 006 545 75 32 008 545 61 32 008 545 63 32	3200	Reference resistor 220 Ω	19–23	40–44
		Idle speed		7–11	7–11
103.981 103.983	004 545 44 32 004 545 46 32 005 545 85 32 005 545 87 32 006 545 74 32 006 545 76 32 008 545 62 32 008 545 64 32	3200	Reference resistor 220 Ω	21–25	40–44
		Idle speed		6–11	6–11
National version (J)					
103.940 103.942	005 545 84 32 005 545 86 32 006 545 73 32 006 545 75 32 008 545 61 32 008 545 63 32	3200	Reference resistor 750 Ω	25–29	40–44
		Idle speed		7–11	7–11
103.981 103.983 103.985	004 545 44 32 004 545 46 32 005 545 85 32 005 545 87 32 006 545 74 32 006 545 76 32 008 545 62 32 008 545 64 32	3200	Reference resistor 750 Ω	27–31	40–44
		Idle speed		6–11	6–11

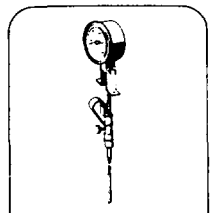
Special tools



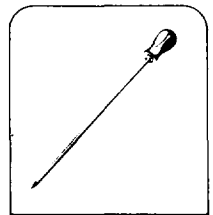
000 589 14 11 00
07



123 589 00 15 00
07



124 589 07 21 00
18



123 589 05 33 00
07

Commercially available tools and testers (see Workshop Equipment Manual)

Designation	e.g. Make, order no.
Twin socket	Hermann, ECD 53
Engine tester (engine speed, dwell angle, ignition angle)	Bosch, MOT 001.03
Lambda control tester	Hermann, L 115
CO analyzer	

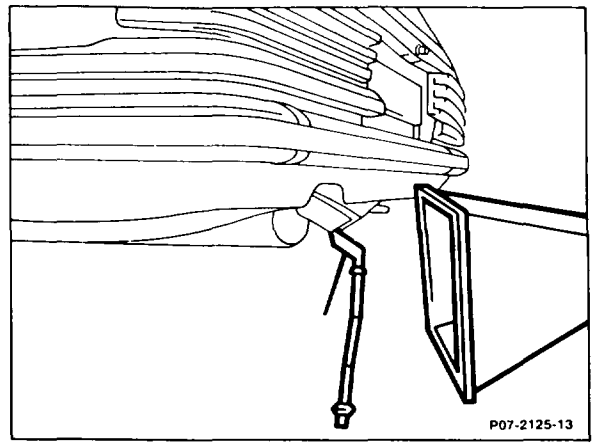
Test and adjust lambda control with a lambda control tester. If no lambda control tester is available, a dwell angle tester can be used.
Idle speed must not be set when the engine is too hot, e.g. immediately after driving sharply or after measuring engine output on the dynamometer.

Testing, adjusting

1 Switch off air conditioner or automatic climate control. Move selector lever into position "P."

2 Connect testers:
oil remote thermometer (018) 124 589 07 21 00,
lambda control tester (012),
twin socket (031),
engine tester (026),
trigger clamp (011),
exhaust probe (005) 126 589 11 63 00,
CO analyzer (006).

3 Position extraction device (014) at exhaust tailpipe.



4 Check ease of movement and condition of accelerator control.

5 Test ignition timing (see table).

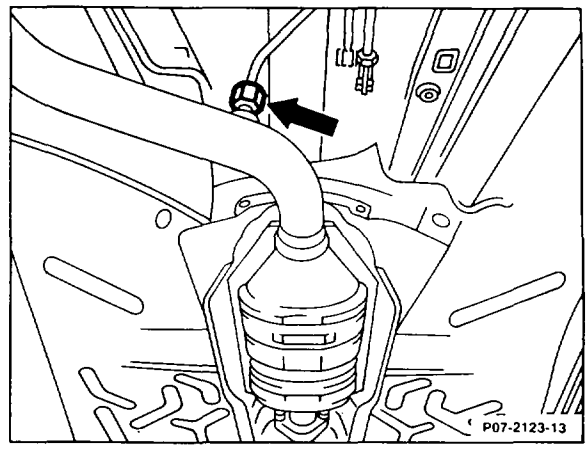
6 Run engine until oil temperature is about 80°C.

7 Test idle speed (see table).

Note
On engine with electronic idle speed control, idle speed can no longer be adjusted. If idle speed differs, perform test program (07.3–2006).

8 Test idle speed emissions level (see table); adjust if necessary (see step 10).

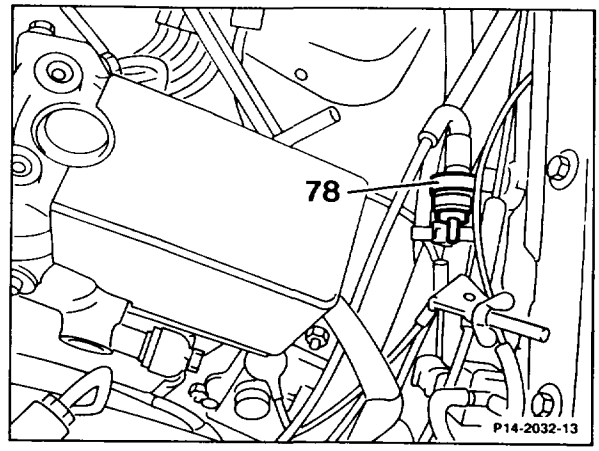
Note
The measuring point for the open-loop catalytic converter is located upstream of the catalytic converter (arrow).



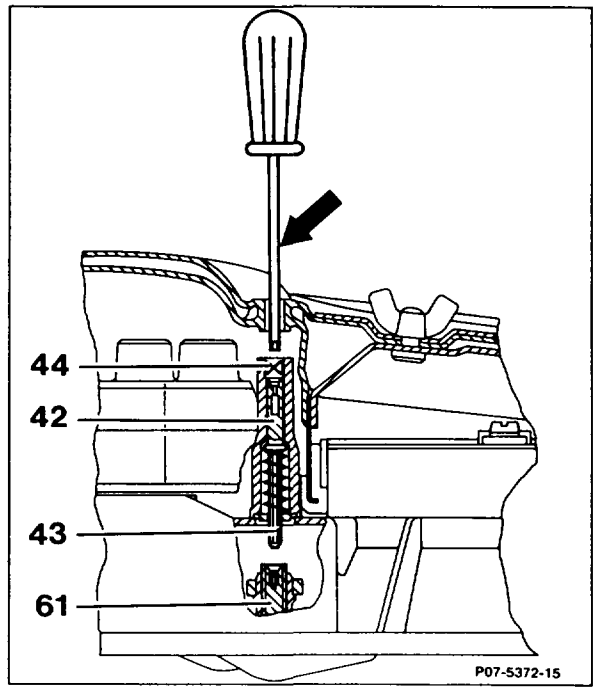
9 Test lambda control.

Note
The readout must fluctuate during the measurement. If a constant readout is displayed, there is a fault in the lambda control, e.g. oxygen sensor disconnected.
See "Testing electrical components of KE injection system" (07.3–0121) for troubleshooting schedule.

Detach regeneration line to throttle valve assembly at regeneration valve (78) and seal. Connect tester to diagnostic socket. Press 100% button (M). Test on/off ratio at 2500/min and read off average value. Compare this reading with the idle speed value. The average value at idle speed must not differ by more than ± 10 from the reading obtained at 2500/min.
Adjust lambda control (see step 10).



10 Adjust idle speed emissions level or lambda control. To do this, remove anti-tamper plug (44) with the puller. Press on the adjusting device (42) with a screwdriver (arrow) inserted through the recess on the top of the air cleaner. Press the adjusting device down with the screwdriver against the spring force, turn slightly until the hexagon head (43) engages in the mixture regulatig screw (61):
Turning to left = leaner – on/off ratio rises.
Turning to right = richer – on/off ratio drops.



Briefly accelerate and test idle speed emissions level or lambda control; adjust if necessary. After adjusting, insert a blue anti-tamper plug (44), part no. 000 997 59 86, with the insertion drift.

11 Re-connect regeneration line (only if lambda control fitted).

12 Check smooth engine running by engaging selector lever in Drive mode, switching on air conditioner/automatic climate control, turning power steering to full lock. The engine must continue to run smoothly.