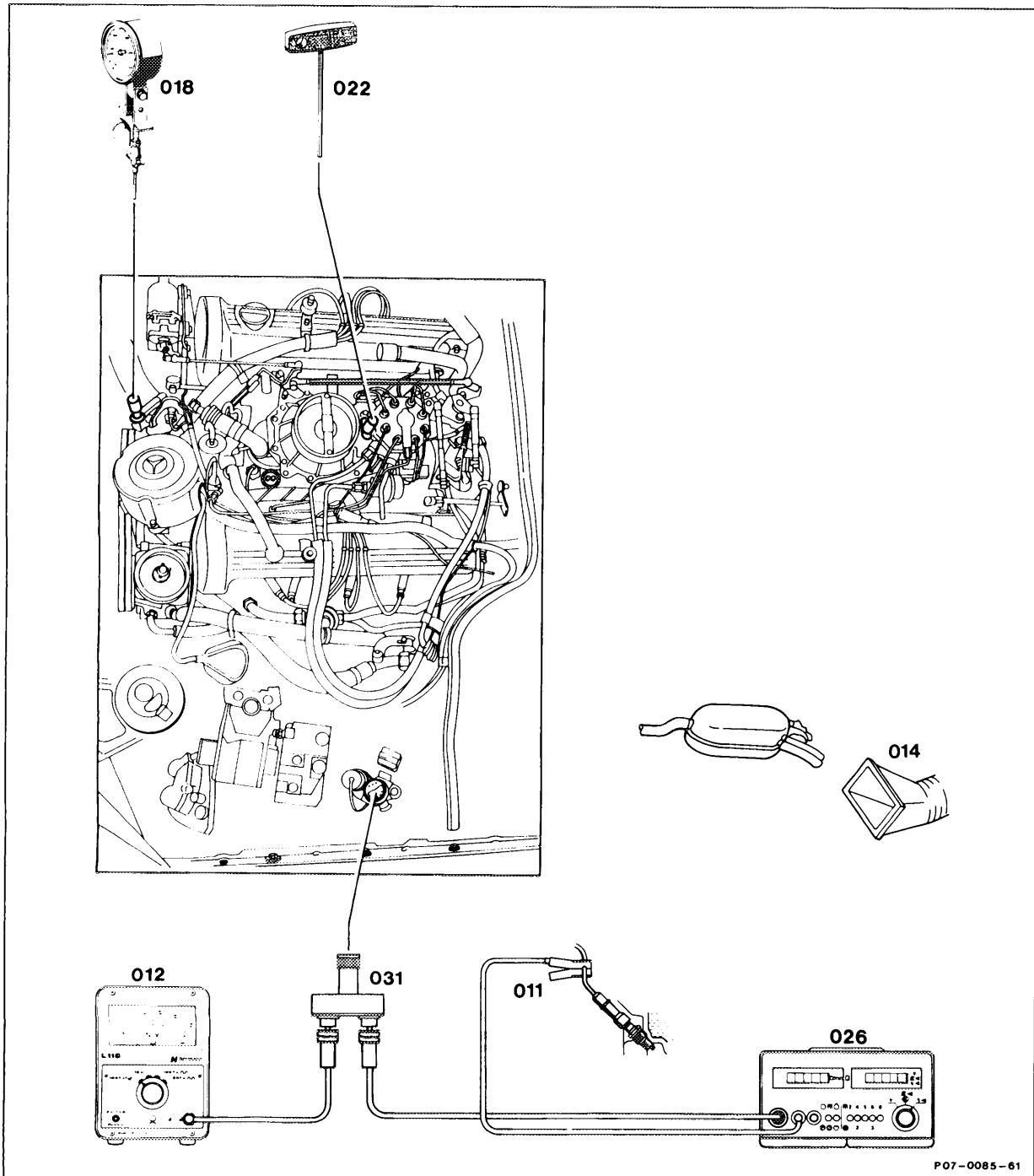



07.3-105 Testing on/off ratio



P07-0085-61

A/C or automatic climate control switch off.
 Selector lever move into position "P".

Testers	connect: Telethermometer (018) 124 589 07 21 00, Lambda control tester (012), Twin outlet (031), Engine tester (026), Trigger clamp (011).
Extraction device (014)	position at exhaust tail pipe.
Accelerator control	check for condition and ease of movement.
Firing point	test (refer to table).
Engine oil temperature	approx. 80 °C.
Idle speed	test (refer to table).
Lambda control	test (refer to table).
	
	Any re-adjustment which may be necessary may only be performed when renewing a component of the injection system or during repairs to the engine.
	Pay attention to note.
	Install repair kit 102 070 01 74.
Test engine running	Switch on all ancillaries for this step.

Idle speed, lambda control

Engine	Model Year	Compression ratio ε	Idle speed		Lambda control
			rpm	Control range mA	
116.965 117.967 117.968	eff. 1986	9.0	650 $\begin{matrix} + 100 \\ - 50 \end{matrix}$	700 – 1000	1) 2)

1) **1986/87**

Test lambda control at 2500 rpm and take average reading. Detach purge line at electric switchover valve for this step and seal. Compare this reading with idle speed level. The average at idle speed must be greater than 5, but not more than 15, than the level measured at 2500 rpm.

2) **Starting 1988**

Test lambda control at 2500 rpm and take average reading. Detach purge line at electric switchover valve for this step and seal. Compare this reading with idle speed level. The average at idle speed must not vary by more than ± 10 from the level measured at 2500 rpm.

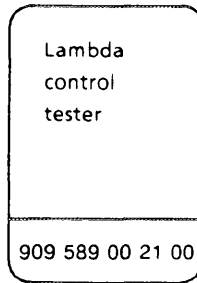
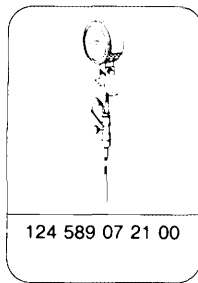
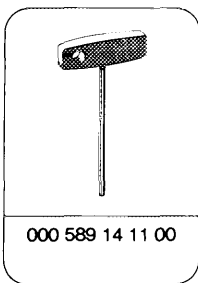
Note

California starting 1988 with "On Board Diagnostics". "CHECK ENGINE" indicator lamp must not light up. Switch over CIS-E control unit (N3) to on/off ratio output first of all.

Electronic ignition firing point

Engine	Model Year	Compression ratio ϵ	Electronic ignition control unit Part No. optionally	Engine speed in rpm	Resistance trimming plug	Firing point in °CA BTDC	
						w/o vacuum	with vacuum
116.965	eff. 1986	9.0	003 545 91 32	3500	Reference resistor 750 Ω	28 - 32	41 - 45
			003 545 92 32	Idle speed		3 - 7	10 - 14
117.967			004 545 53 32	3500		24 - 28	40 - 44
117.968			004 545 55 32	Idle speed		3 - 7	10 - 14

Special tools



Commercial testers

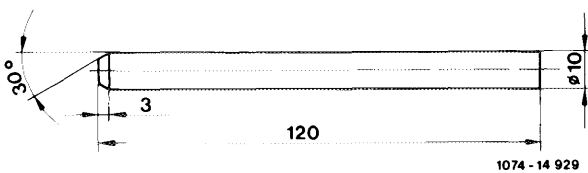
Engine tester (engine speed, dwell angle, ignition angle)

e. g. Bosch, MOT 001.03
Sun, Hermann

Twin outlet

e. g. Hermann, ECD 53

Shop-made tool



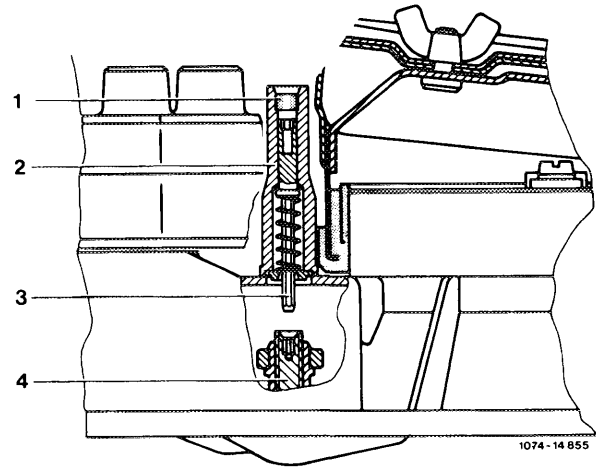
Slugging mandrel for steel tamper proof lock

Note

The adjusting device (2) for the fuel/air mixture setting is protected against unauthorized adjustment with a steel tamper proof lock (1).

This tamper proof lock is knocked into place with a special tool in the factory after the fuel/air mixture is set and **must not be removed in the service shops.**

The fuel/air mixture setting may only be adjusted when renewing a component of the injection system (e. g. fuel distributor) or when performing repairs to the engine. In this case, the adjusting device (2) must be renewed.



- 1 Steel tamper proof lock
- 2 Adjusting device
- 3 Hex head
- 4 Mixture adjusting screw

The lambda control must not be tested when the engine is hot, e. g. immediately after driving sharply or after measuring engine output on the dynamometer.

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

2 Connect testers:

Telethermometer (018) 124 589 07 21 00

Lambda control tester (012)

Twin outlet (031)

Engine tester (026)

Trigger clamp (011)

3 Position extraction device (014) at exhaust tail pipe.

4 Check accelerator control for condition and ease of movement.

5 Test firing point (refer to table).

6 Run engine until oil temperature approx. 80 °C.

7 Test idle speed (refer to table).

Note

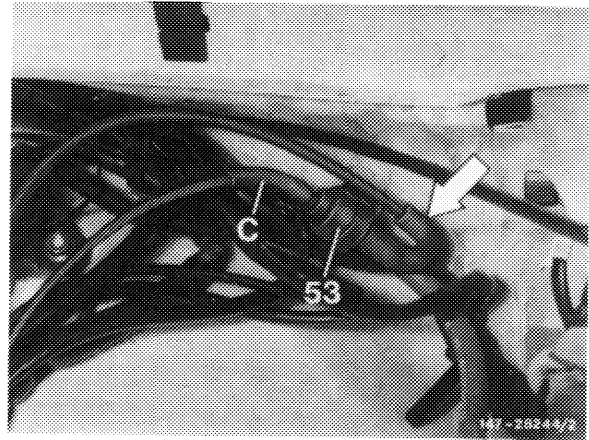
If idle speed varies, test electronic idle speed control (07.3-112).

8 Test lambda control (refer to table).

Detach purge line (arrow) to throttle valve assembly at purge valve (53) and seal.
Press 100 % IR button on lambda control tester

Note

The reading must fluctuate during the measurement. If a constant reading is indicated, there is a fault in the lambda control, e. g. O₂ sensor faulty. Refer to "Testing electrical components of CIS-E injection system" (07.3-121) for troubleshooting table.



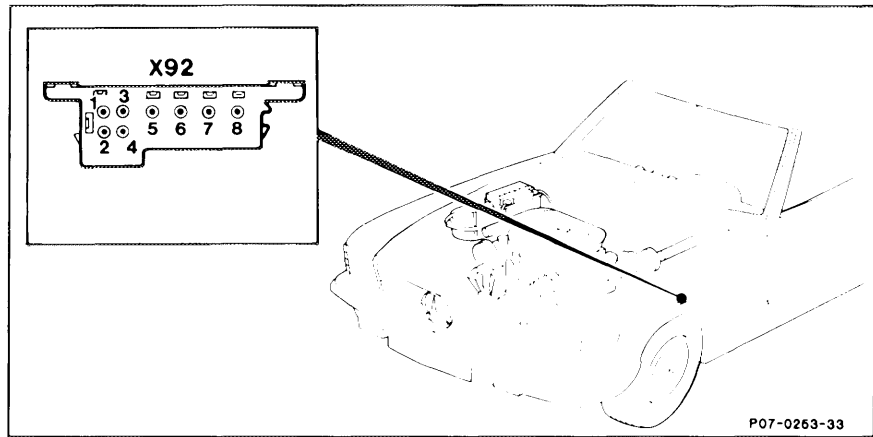
California only, starting 1988

Operate push button switch (2) on test connector (X92) for between 2 and 4 seconds. LED (4) flashes once (no fault stored in system).

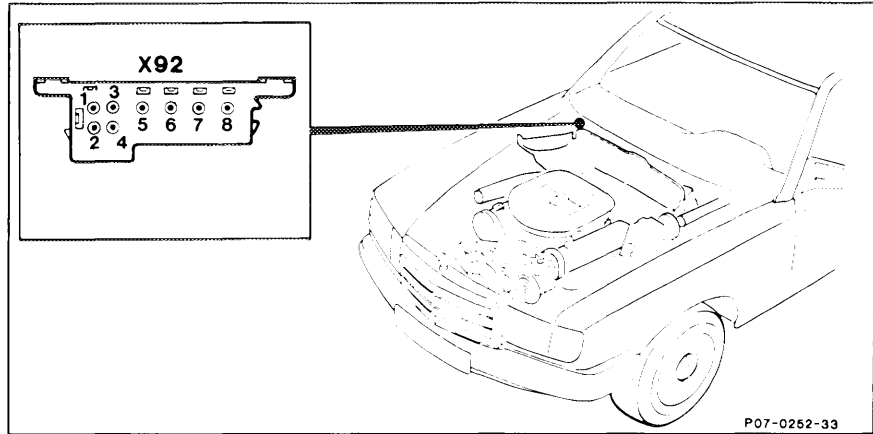
Press push button switch (2) a second time for between 2 and 4 seconds. CIS-E control unit is switched over to on/off ratio output. LED shows a steady light.

Note

"CHECK ENGINE" indicator lamp does not light up.



Model 107



Model 126

9 Set lambda control.

If, after performing repairs to the engine or replacing a part of the CIS-E injection system, it is necessary to set the on/off ratio, proceed as follows:

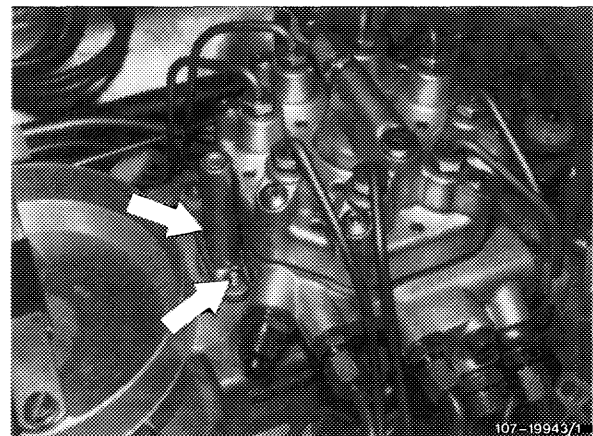
Remove air filter.

Strike shear-off bolts (arrow) in the middle with a chisel punch and drill a hole approx. 6 – 8 mm deep with a 2.5 mm twist drill.



Do not drill through bolts as the metal chips may cause engine damage. Thoroughly remove metal chips with a cleaning rag.

Unscrew shear-off bolts with left hand twist drill.



Install new repair kit, Part No. 102 070 01 74 by tightening bolts until head shears off.

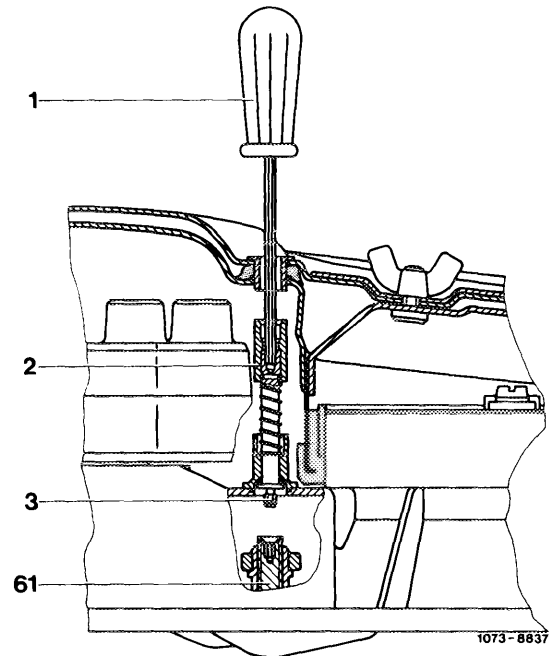
Fit on air filter.

Start engine.

Push the screwdriver (1) through the recess in the top section of the air filter onto the adjusting device (2).

Push the adjusting device down with the screwdriver against the spring force, turn it slightly until the hex head (3) engages in the mixture adjusting screw (61).

Turn to the left for a leaner mixture – on/off ratio increases
Turn to the right for a richer mixture – on/off ratio drops

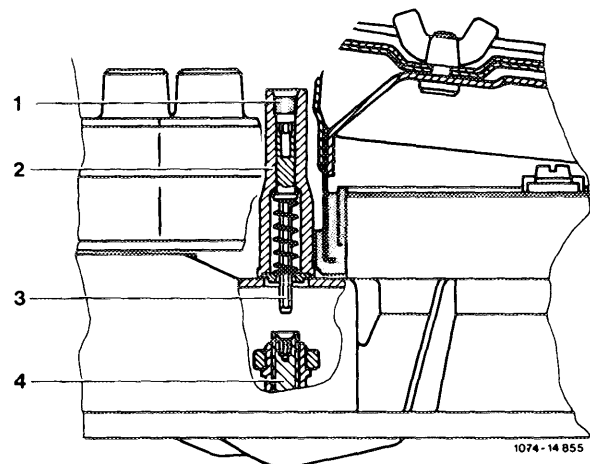


After each adjustment, depress accelerator pedal briefly and test for variations between 2500 rpm and idle speed; reset if necessary.

Switch off engine.

Remove air filter.

Knock in steel tamper proof lock (1) with shop-made slugging tool with the chamfered side so that the surface of the tamper proof lock is flush with, or slightly deeper than, the bottom edge of the taper of the adjusting device (2).



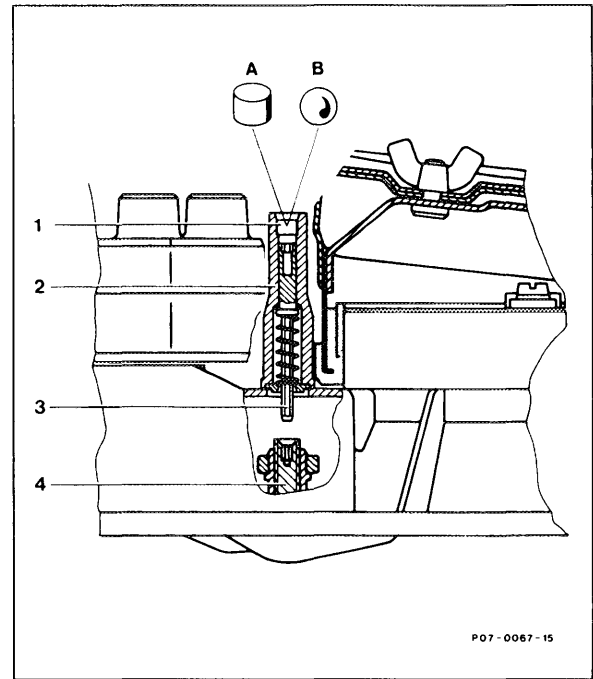
- 1 Steel tamper proof lock
- 2 Adjusting device
- 3 Hex head
- 4 Mixture adjusting screw

Note

Starting January 1989 the steel tamper proof lock (1) is designed as a steel ball (B). Formerly, steel cylinder (A).

Standard implementation: January 1989

Model	Vehicle Ident End No.
107	A 097816
126	A 458731



Install air filter.

Reconnect purge line.

10 Test engine running by moving selector lever into Drive position, switching on air conditioning/ automatic climate control, turning power steering to full lock. Engine must run smoothly. If necessary, test electronic idle speed control (07.3-112).