

B 2 Idle Test, Adjustment

Listing of Test Steps

1	Test equipment	connect/disconnect.
2.0	Throttle control	check throttle operation and condition.
2.1	Closed throttle stop	check.
3	Ignition timing and vacuum advance	check (see Test and Adjustment Data, Section A).
4	Engine oil temperature	approx. 80 °C.
5	Closed throttle rpm	check
6	Lambda control	check
7	Closed throttle under load	check in transmission range D with all electrical consumers on.

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Connection of Test Equipment Engine 104



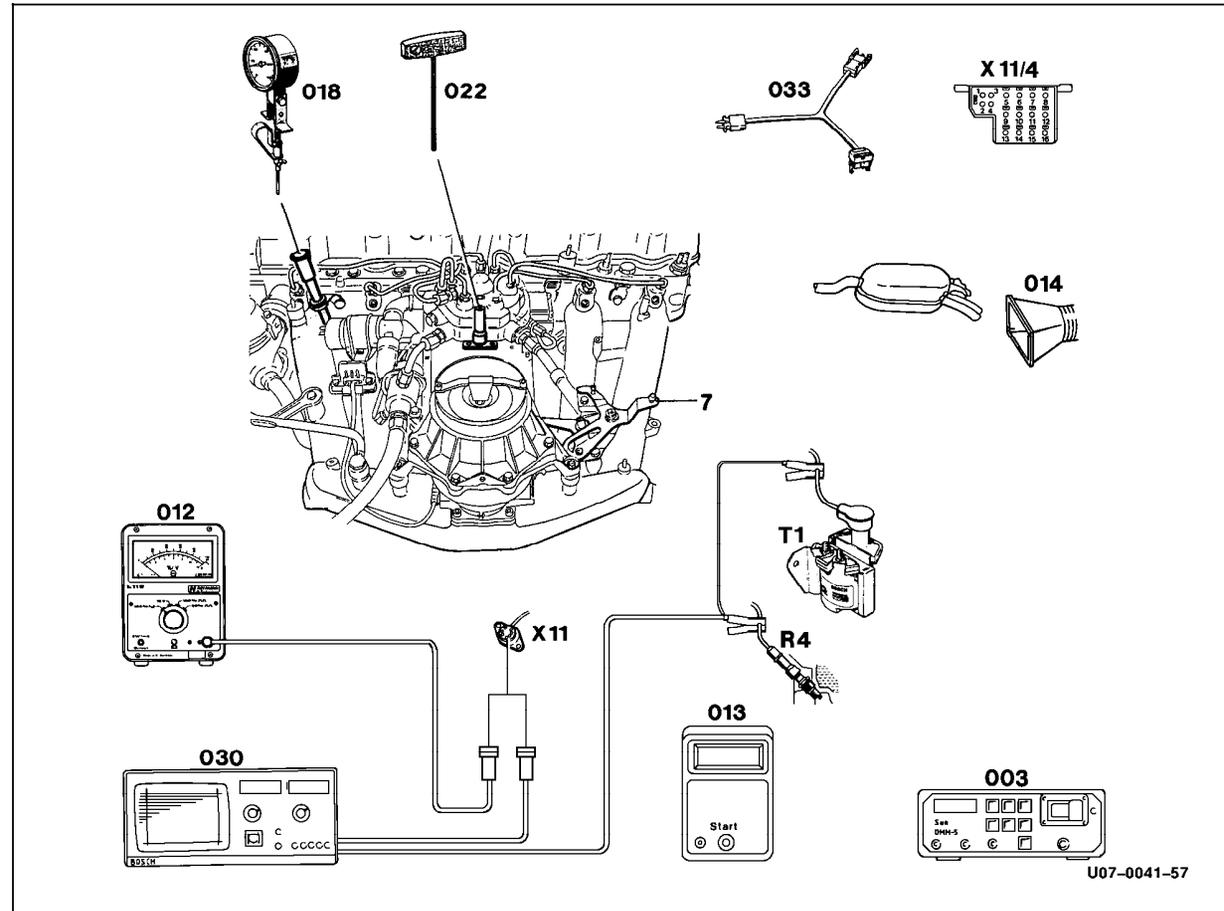
Set engine tester to 6 cylinder position

Fig. 1

- R4 Spark plug (cylinder 1)
- T1 Ignition coil
- X11 Diagnostic socket (9-pole)
- X11/4 Data link connector (DTC readout, 16-pole)
- 7 Throttle linkage
- 003 Digital multimeter
- 012 On-off ratio tester
- 013 Impulse counter scan tool
- 014 Exhaust vent hose
- 018 Oil thermometer
- 022 Hex. socket wrench ¹⁾
- 030 Engine analyzer with oscilloscope
- 033 Test cable

¹⁾ Required only for mixture adjustment when replacing fuel mixture adjustment tower.

Note: Depending on test equipment available, it may be necessary to alternately connect the engine analyzer and on-off ratio tester to diagnostic socket (X11).



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Connection of Test Equipment Engine 119



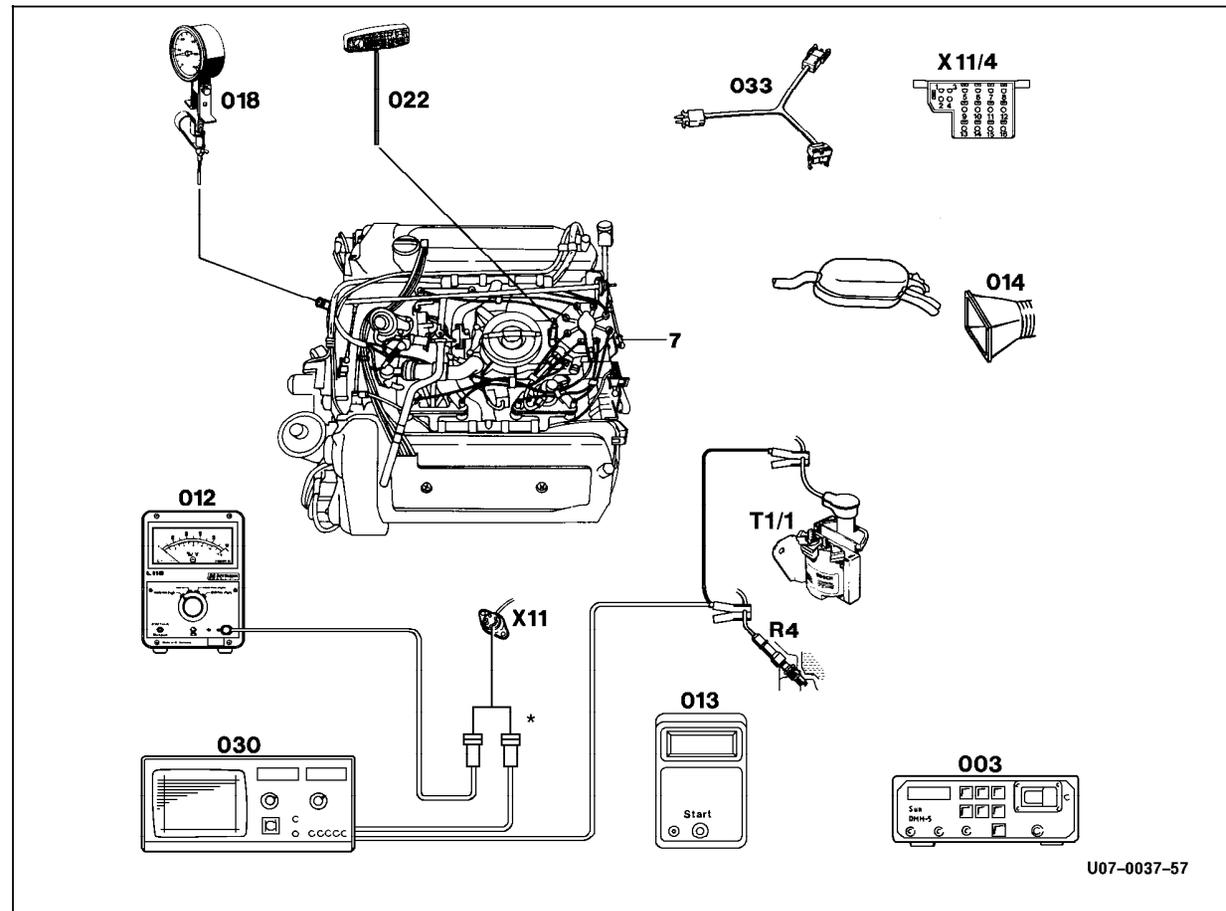
Set engine tester to 4 cylinder position. Only one ignition circuit can be checked at a time.

Fig. 2

- R4 Spark plug (cylinder 1)
- T1/1 Ignition coil 1
- X11 Diagnostic socket (9-pole)
- X11/4 Data link connector (DTC readout, 16-pole)
- 7 Throttle linkage
- 003 Digital multimeter
- 012 On-off ratio tester
- 013 Impulse counter scan tool
- 014 Exhaust vent hose
- 018 Oil thermometer
- 022 Hex. socket wrench ¹⁾
- 030 Engine analyzer with oscilloscope
- 033 Test cable

¹⁾ Required only for mixture adjustment when replacing injection system components.

Note: Depending on test equipment available, it may be necessary to alternately connect the engine analyzer and on-off ratio tester to diagnostic socket (X11).



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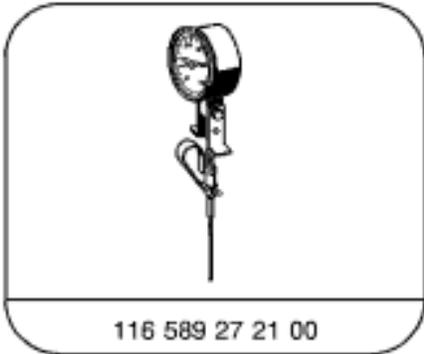
Connection chart for test equipment without diagnostic adapter for two circuit ignition systems

Test equipment version	Cylinder no. setting on test equipment	Type of measurement	Circuit on Diagnostic socket	Trigger clamp on ignition cable	kV-Clamp on ignition cable ignition circuit
SUN MEA-1500MB	4	RPM/ dwell angle of Ignition circuit →	T1/1		
		Timing of Ignition circuit →	T1/1	Cylinder 1	T1/1
		Timing of Ignition circuit →	T1/2	Cylinder 2 ¹⁾	T1/2
		Oscilloscope primary/secondary → and voltage at terminal 15/1 of Ignition coil	T1/1	Cylinder 1 Firing order on oscilloscope 1-4-6-7	T1/1 Firing order on oscilloscope 1-4-6-7
		Oscilloscope primary/secondary → and voltage at terminal 15/1 of Ignition coil	-	Cylinder 5 Firing order on oscilloscope 5-8-3-2	T1/2 Firing order on oscilloscope 5-8-3-2

1) Subtract 90 °CKA from measured value.,
Example: measured: 107 °crankshaft, 107-90= 17 °crankshaft timing

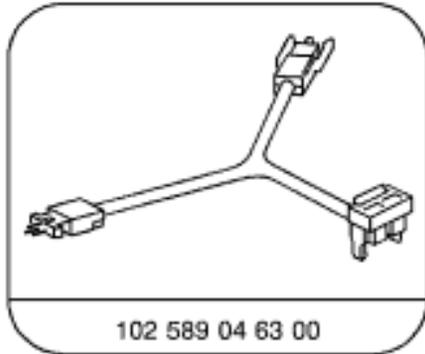
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Special Tools



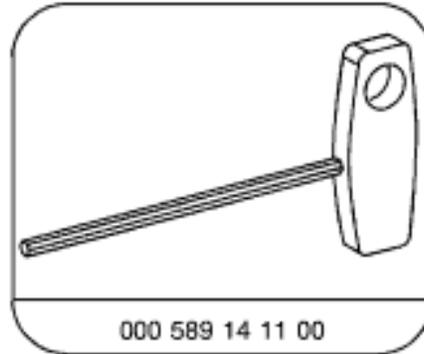
116 589 27 21 00

Oil thermometer



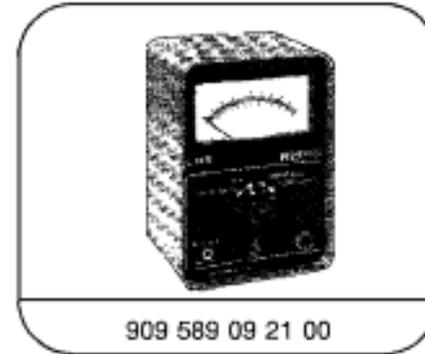
102 589 04 63 00

Test cable



000 589 14 11 00

3 mm screwdriver, 3 mm



909 589 09 21 00

On-off ratio tester

Equipment

Engine analyzer ¹⁾	Bear DACE (Model 40-960) Sun EMT-1019/Master 3 Sun MCM-2110 Sun MEA-1500MB
Digital multimeter ¹⁾	Fluke Models 23, 83, 85, 87

¹⁾ Available through the MBUSA Standard Equipment Program.

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Note:

The Lambda control system test should not be performed on a very hot engine, for example, after a fast drive or after an output test on a dynamometer.

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy
⇒ 1 Connect test equipment according to diagram	Ignition: OFF	–	–
⇒ 2 Check condition of linkage and throttle valve	Operate throttle linkage without ASR: Ignition: OFF with ASR: Ignition: ON	Smooth operation, no binding should be evident.	Lubricate all bearings and ball sockets
⇒ 2.1 Check idle speed position	Engine: Idle	Throttle valve lever must rest against idle stop.	Adjust throttle linkage (SMS Job No. 30-300)
⇒ 3 Check ignition timing and vacuum advance	Engine: Start Check ignition timing at idle Check ignition timing with and without vacuum at specified engine rpm.	Test and adjustment data (section A)	DM, Engines, Volume 2, Section 5.1

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Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy
⇒ 4 Warm engine oil to operating temperature 80° C	Engine rpm: approx. 3000 rpm	Engine oil temperature approx. 80 °C	-
⇒ 5 Check idle rpm	Engine: idle Selector lever in P position, climate control system OFF, engine oil temperature approx. 80° C	Test and adjustment data (section A)	DM, Engines, Volume 2, Section 2.1
⇒ 6 Check Lambda control system ¹⁾	Selector lever in P position, climate control system OFF, Disconnect purge line to throttle valve housing at purge valve and plug. Reconnect line after measurement. Engine oil temperature approx. 80° C. Engine: idle	Test and adjustment data (section A)	DM, Engines, Volume 2, Section 2.1

¹⁾ The fuel mixture adjustment screw is secured against unauthorized adjustment by means of a steel ball in the adjustment tower. After fuel mixture adjustment in the factory, the ball is installed in the adjustment tower using a special tool and **must not be removed**.

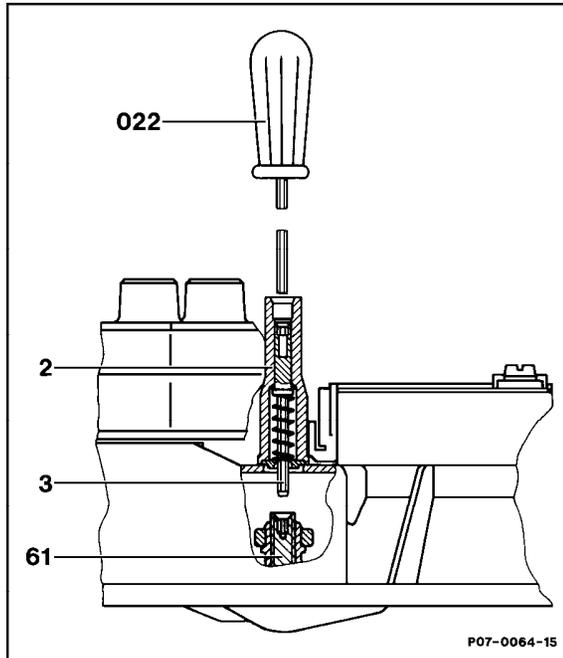
The fuel mixture may only be corrected when replacing a fuel injection system component or when performing an engine repair. To do so, the fuel mixture adjustment tower must be replaced.

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Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy
⇒ 7 Check idle under load	Engine: idle Transmission range D. Switch on all electrical consumers, Turn steering wheel to full lock.	Engine must continue to idle within specified range.	DM, Engines, Volume 2, Section 2.1

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Component location: mixture adjustment, purge valve, purge switchover valve

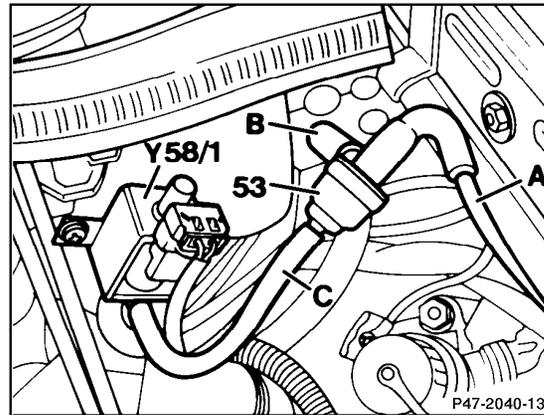


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Figure 3

- 022 Hex socket wrench
- 2 Fuel mixture adjustment tower
- 3 Hex. head
- 61 Fuel mixture adjustment screw

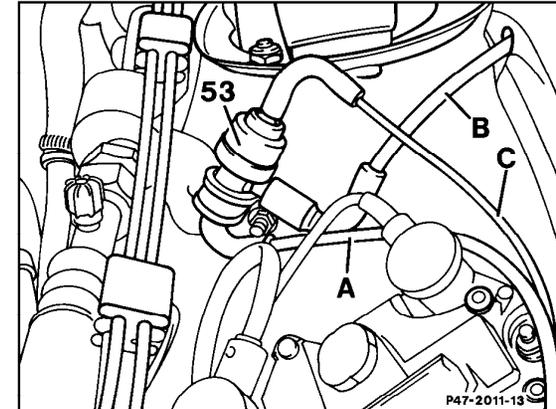
The fuel mixture may only be corrected when replacing a fuel injection system component or when performing an engine repair. To do so, the fuel mixture adjustment tower must be replaced.



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Figure 4

- 53 Purge valve
- Y58/1 Purge switchover valve



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Figure 5

- 53 Purge valve