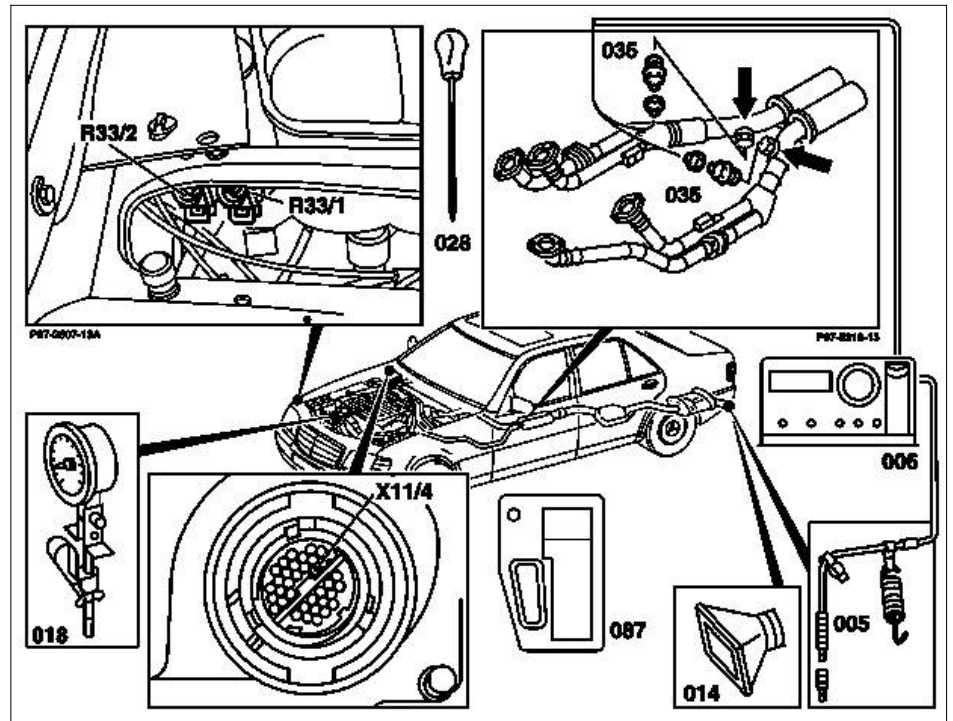


ENGINE 104.990, 119.97, 120 except CODE (491) USA version

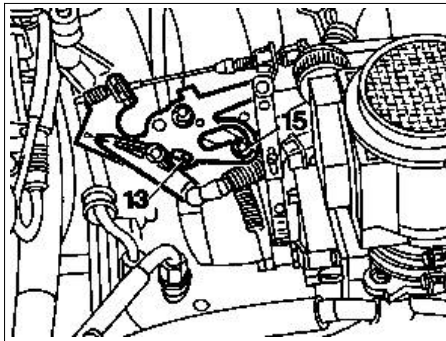
Shown on engine 120

Connection diagram of testers

- 005 Exhaust probe engine 104, 119
- 006 CO analyzer
- 014 Inlet funnel
- 018 Oil remote thermometer
- 028 Extractor
- 035 Exhaust test connection engine 120
- 087 Hand-Held Tester (HHT)
- R33/1 CO potentiometer engine 120
- R33/2 CO potentiometer engine 120
- X11/4 Data link connector (DTC signal), 38 pin



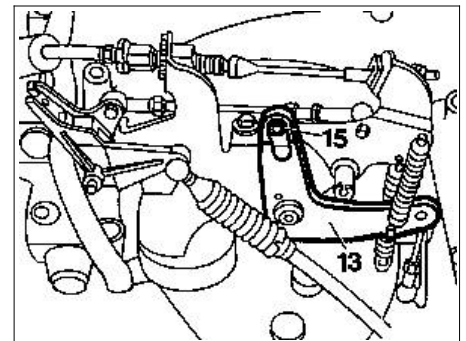
P07.0207-15A P07.0216-15



Engine 104 with fulcrum lever

- 13 Fulcrum lever
- 15 Roller

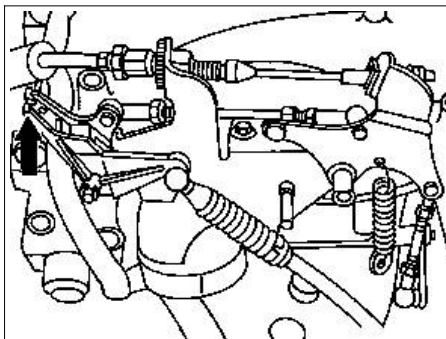
P30.10-0010-01



Engine 119 with fulcrum lever

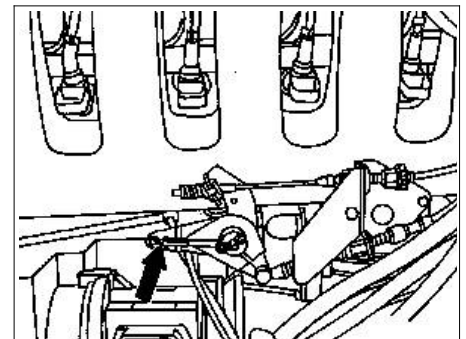
- 13 Fulcrum lever
- 15 Roller

P30.10-0011-01



Engine 119 without fulcrum lever

P30.10-0012-01



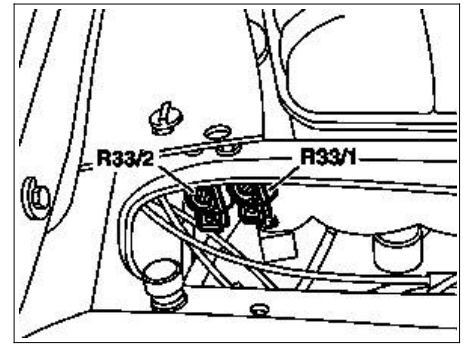
Engine 120 without fulcrum lever

P30.10-0013-01

Shown on engine 120


R33/1 CO potentiometer

R33/2 CO potentiometer



P07.41-0005-01

	Inspecting		
<p>⚠ Danger!</p>	<p>Risk of accident as a result of vehicle starting off when engine running. Risk of injury as a result of bruises and burns if you insert your hands into engine when it is being started or when it is running.</p>	<p>Secure vehicle to prevent it starting off. Wear closed and close-fitting work clothes. Do not grasp hot or rotating parts.</p>	<p>AS00.00-Z-0005-01A</p>
<p>⚠ Danger!</p>	<p>Hazard from touching parts conducting high voltages</p>	<p>Do not touch parts conveying high voltages. Persons who are provided with electronic implants (e.g. heart pacemakers) must not carry out any work on the ignition system.</p>	<p>AS15.10-Z-0001-01A</p>
<p>ⓘ</p>	<p>Notes on avoiding damage to ignition system</p>	<p>Engine 104, 119, 120 with LH-SFI fuel injection system</p>	<p>AH15.10-P-0002-01F</p>
<p>1</p>	<p>Connect testers</p>	<p>ⓘ Ignition: OFF</p>	
<p>2</p> <p>+ - - -</p> <p>ⓘ</p>	<p>Inspect throttle control linkage</p> <p>On models with ASR (CODE 471)</p>	<p>To determine whether throttle valve lever is resting against CTP stop (stop audible)</p> <p>with fulcrum lever, engine 104, 119: The roller (15) should be making contact in the fulcrum lever (13) free of stress.</p> <p>without fulcrum lever, engine 119, 120: The tips (arrow) at angled lever and throttle control lever should be positioned exactly opposite If complaint exists ↓ set throttle control linkage</p> <p>Engine 104 Engine 119 Engine 120.980/981 Engine 120.982/983</p> <p>Ignition switched on: do not operate throttle control linkage in engine compartment otherwise faults are detected as implausible and stored in electronic accelerator control module.</p>	<p>ra30lh1041010x AR30.10-P-1010EB AR30.10-P-1010F AR30.10-P-1010FA</p>
<p>3</p> <p>+ - - -</p>	<p>Test ignition angle</p>	<p>Selector lever position: P AC compressor: OFF If complaint exists (subject to separate repair order) ↓ test DI electronic ignition system</p> <p>Engines 104, 119</p> <p>Engine 120</p>	<p>*BE15.12-P-1001-01B</p> <p>dh0502pm20023x dh0502pm20024x dh0503pm20023x dh0503pm20024x</p>
<p>4</p> <p>+ - - -</p>	<p>Test idle speed</p>	<p>Engine: idle speed Selector lever position: P AC compressor: OFF Engine oil temperature: approx. 80 °C If complaint exists ↓ test electronic accelerator/cruise control/ idle speed control</p> <p>Engines 104, 119 accelerator pedal Engines 104, 119 cruise control Engine 120 accelerator pedal Engine 120 cruise control</p>	<p>*BE07.41-P-1001-01A</p> <p>dh0602pm00023x dh0602pm30024x dh0603pm00023x dh0603pm30024x</p>

		test cruise control/idle speed control test idle speed control	dh0701pm30023x dh0702pm00023x
5.1	Test idle speed emission value	<p>Engine: idle speed Selector lever position: P AC compressor: OFF Engine oil temperature: approx. 80 °C</p> <p>On engines 104, 119, measure idle speed emission value at end of exhaust</p> <p>On engine 120, measure idle speed ignition value upstream of front muffler</p> <p>To connect the two test connections (35) 103 589 00 91 00, unscrew plugs (arrows). Measure cylinder banks separately.</p>	
5.2	Adjust idle speed emission value	<p> Use extractor to pull anti-tamper plugs out of the CO potentiometers (R33 and R33/1, R33/2). Installation position of R33 is the same as that of R33/1.</p> <p>Engine 104, 119 Adjust idle speed emission value with adjusting screw at CO potentiometer (R33/1).</p> <p>Engine 120 Adjust with adjusting screw at each CO potentiometer (R33/1, R33/2) of the banks of cylinders.</p> <p>Turning to the left =leaner Turning to the right =richer</p> <p>After each adjustment, briefly blip throttle and check once again. After adjusting, install a blue anti-tamper plug, part no. 002 997 16 86.</p>	<p>*123589053300</p> <p>*BE07.41-P-1001-02A</p>
6	Inspect smooth engine running	<p>Parking brake: apply Engine: idle speed Selector lever position: D All components: ON Engine should continue to run smoothly</p>	

Test data of engine speeds (LH-SFI)

Number	Designation	Engine 104 LH-SFI without TWC	Engine 119 LH-SFI without TWC
BE07.41-P-1001-01A	Idle speed Selector lever position "P"/"N", rpm coolant temperature > 20°C	650-750	600-750

Test data of engine speeds (LH-SFI)

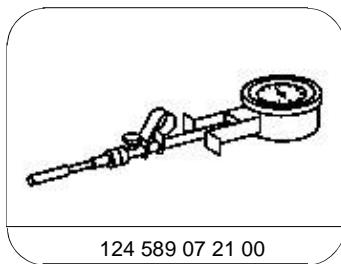
Number	Designation	Engine 120 LH-SFI without TWC
BE07.41-P-1001-01A	Idle speed Selector lever position "P"/"N", rpm coolant temperature > 20°C	600-750

Test data of emission control (LH-SFI)

Number	Designation	Engine 104 LH-SFI without TWC	Engine 119 LH-SFI without TWC	Engine 120 LH-SFI without TWC
BE07.41-P-1001-02A	Idle speed emission value	%CO 1.0±0.5	1.5±0.5	1.5±0.5

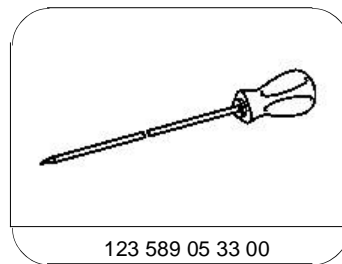
Test data of ignition angle

Number	Designation	Engine 104 LH-SFI without TWC	Engine 119 LH-SFI without TWC	Engine 120 LH-SFI without TWC
BE15.12-P-1001-01B	Ignition angle at idle speed with vacuum	°CKA BTDC 8±2	14-18	5-15



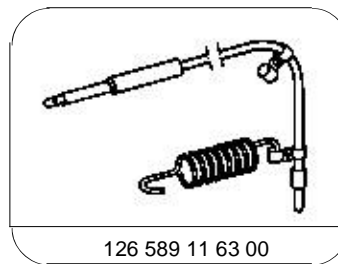
124 589 07 21 00

Remote thermometer



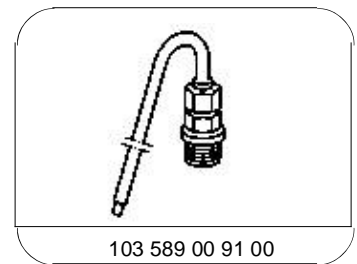
123 589 05 33 00

Extractor



126 589 11 63 00

Exhaust probe



103 589 00 91 00

Test connection

Commercially available tools

Number	Designation	
WH58.30-Z-1004-13A	CO tester	
WH58.30-Z-1036-13A	Handheld tester (HHT)	651 100 01 99
WH58.30-Z-1047-13A	Test cable (HHT) 4-pin	651 100 50 99