

B 1 Engine Test, Adjustment



With starting or warm up complaints do not condition engine to operating conditions but proceed according to complaint.

Listing of Test Steps

1	Test equipment	connect/disconnect according to connection diagram
2	Engine control module version ⇒ Ignition: ON	read, only possible using HHT, see Parts Microfiche, group 54.
3	Engine coolant level	check, correct.
4	Engine oil level	check, observe condition of oil.
5	DTC's in Engine control module (HFM-SFI) ⇒ Ignition: ON	read using HHT or impulse counter scan tool.
6	DTC's in EA/CC/ISC control module ⇒ Ignition: ON	read using HHT or impulse counter scan tool.
6.1	DTC's in CC/ISC control module ⇒ Ignition: ON	read using HHT or impulse counter scan tool.
6.2	DTC's in ISC control module ⇒ Ignition: ON	read using HHT or impulse counter scan tool.
7	Throttle control linkage	check throttle valve for free movement and condition. Lubricate bearings, gate levers and ball sockets.
7.1	WOT contact ¹⁾	check using accelerator pedal, adjust (see SMS, Job No. 30 – 1010).
7.2	CTP contact ¹⁾	check, adjust (see SMS, Job No. 30 – 1010).
7.3	Control pressure cable of AT	check, adjust (see SMS, Job No. 30 – 1010).
8	Fuel pressure	check (Test and Adjustment Data, section A).
	└ Relief pressure via valve on gauge.	
9	Engine rpm (at Idle)	check, only possible using HHT (Test and Adjustment Data, section A).
10	Ignition timing ⇒ Engine: at Idle	check (Test and Adjustment Data, section A) (Socket 1 on socket box or TNA signal from data link connector X11/4, socket 10).

¹⁾ Wide open and closed throttle contact only possible using HHT.

B 1 Engine Test, Adjustment

11	Selector lever position ⇒ Engine: at Idle	check ²⁾ .
12	Not applicable for U.S. version vehicles	—
13	AIR pump ⇒ Engine: at Idle	check ²⁾ .
14	Deceleration shut-off ⇒ Engine: Decelerating	check ²⁾ .
15	Injection time ⇒ Engine: at Idle	check ²⁾ .
16	Air mass/pressure ⇒ Engine: at Idle	check ²⁾ .
17	Self-adaptation ⇒ Engine: at Idle/partial load	check ²⁾ .
18	On-off ratio control ⇒ Engine: at Idle	check ²⁾ .
19	Throttle valve angle ⇒ Engine: at Idle	check ²⁾ .
20	O2S voltage	check ²⁾ .
21	Not applicable for U.S. version vehicles	—
22	CTP speed under load	check in TR “D” (with service and parking brake applied) and with all consumers turned on.
23	Battery voltage	check ²⁾ .
24	Ignition fault counter	check ²⁾ .
25	Coil fault counter	check ²⁾ .
26	Coil spark duration	check ²⁾ .
27	Coil spark voltage	check ²⁾ .
28	Knock ignition angle	check ²⁾ .

²⁾ Only possible using HHT (Test and Adjustment Data, section A).

B 1 Engine Test, Adjustment

Connection Diagram – Engine 104 HFM-SFI

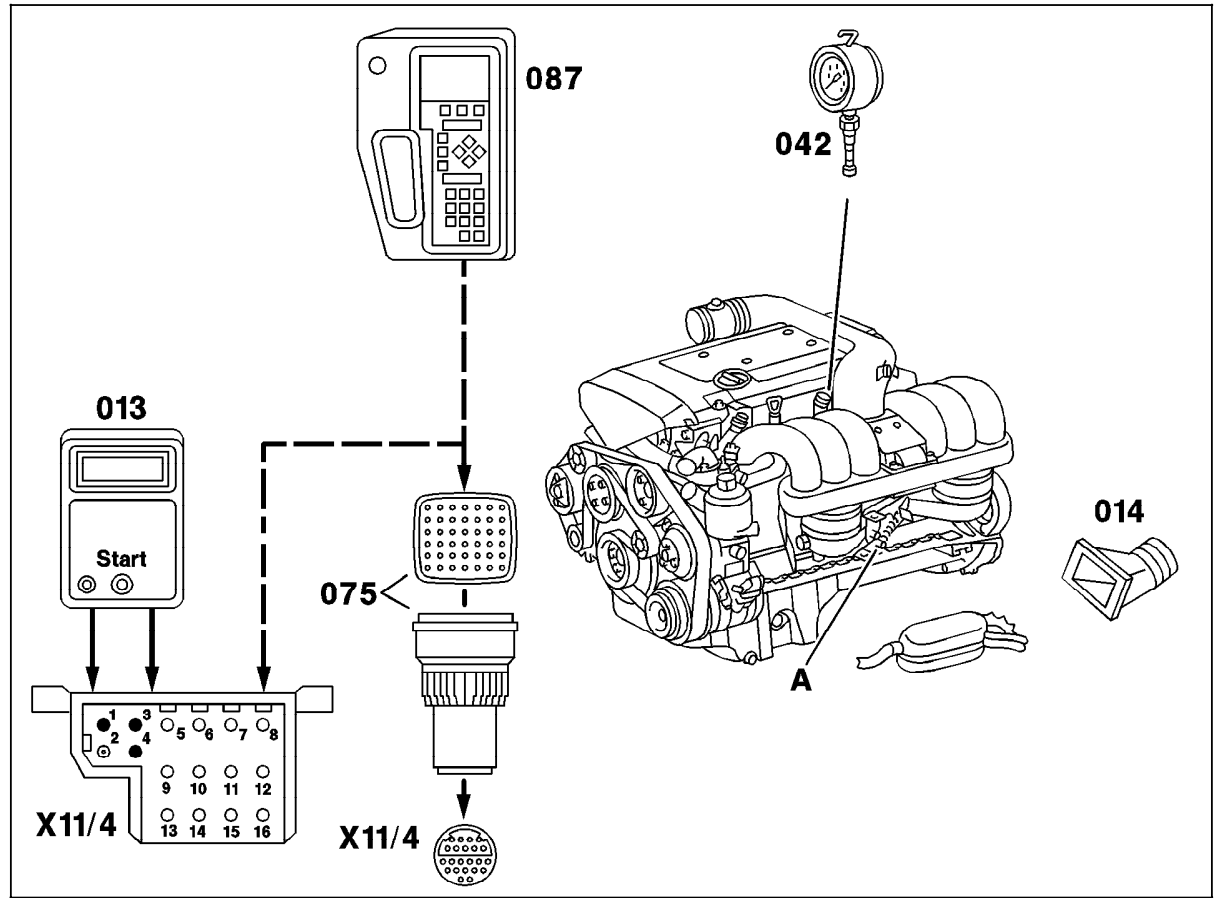


Figure 1

- A Throttle linkage
- X11/4 Data link connector, (DTC readout, 38-pole)
- 013 Impulse counter scan tool
- 014 Exhaust vent hose
- 042 Pressure gauge
- 075 Impulse counter scan tool adapter
- 087 Hand-Held Tester (HHT)

U07-6581-57

B 1 Engine Test, Adjustment

Connection Diagram – Engine 111 HFM-SFI

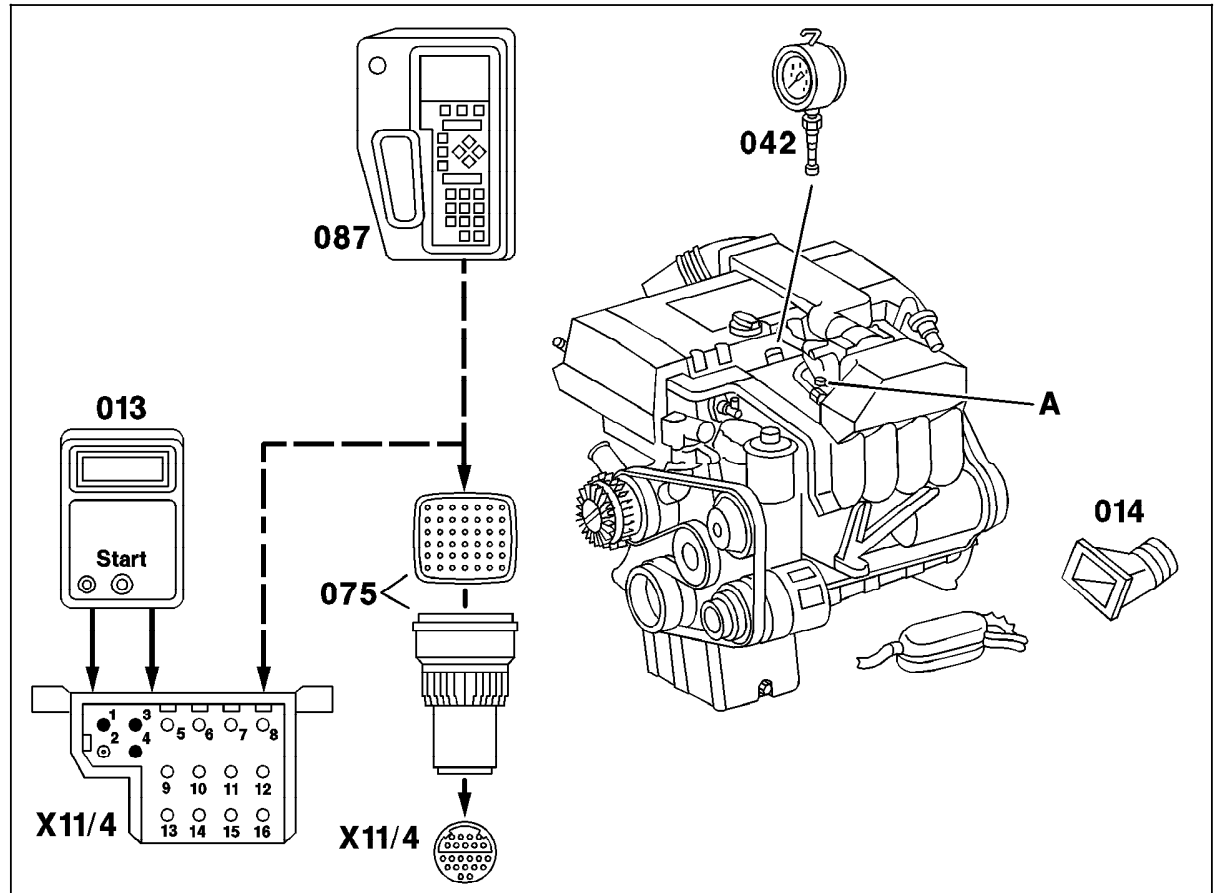


Figure 2

- A Throttle linkage
- X11/4 Data link connector (DTC readout, 16-pole)
- 013 Impulse counter scan tool
- 014 Exhaust vent hose
- 042 Pressure gauge
- 075 Impulse counter scan tool adapter
- 087 Hand-Held Tester (HHT)

U07-6582-57

B 1 Engine Test, Adjustment

Connection Diagram – Impulse Counter Scan Tool/HHT

Impulse counter scan tool

- Black wire (circuit 31, ground) Socket 1
- Red wire (circuit 15, ignition) Socket 16
- Yellow wire (diagnostics HFM-SFI) Socket 8

Hand-Held Tester (HHT)

a) on X11/4, 16-pole

- Black wire (circuit 31, ground) Socket 1
- White wire (circuit 15, ignition) Socket 16
- Red wire (circuit 30) Battery + or X11/4
- Yellow wire (diagnostics HFM-SFI) Socket 8

b) with multiplexer (094) on X11/4, 38-pole

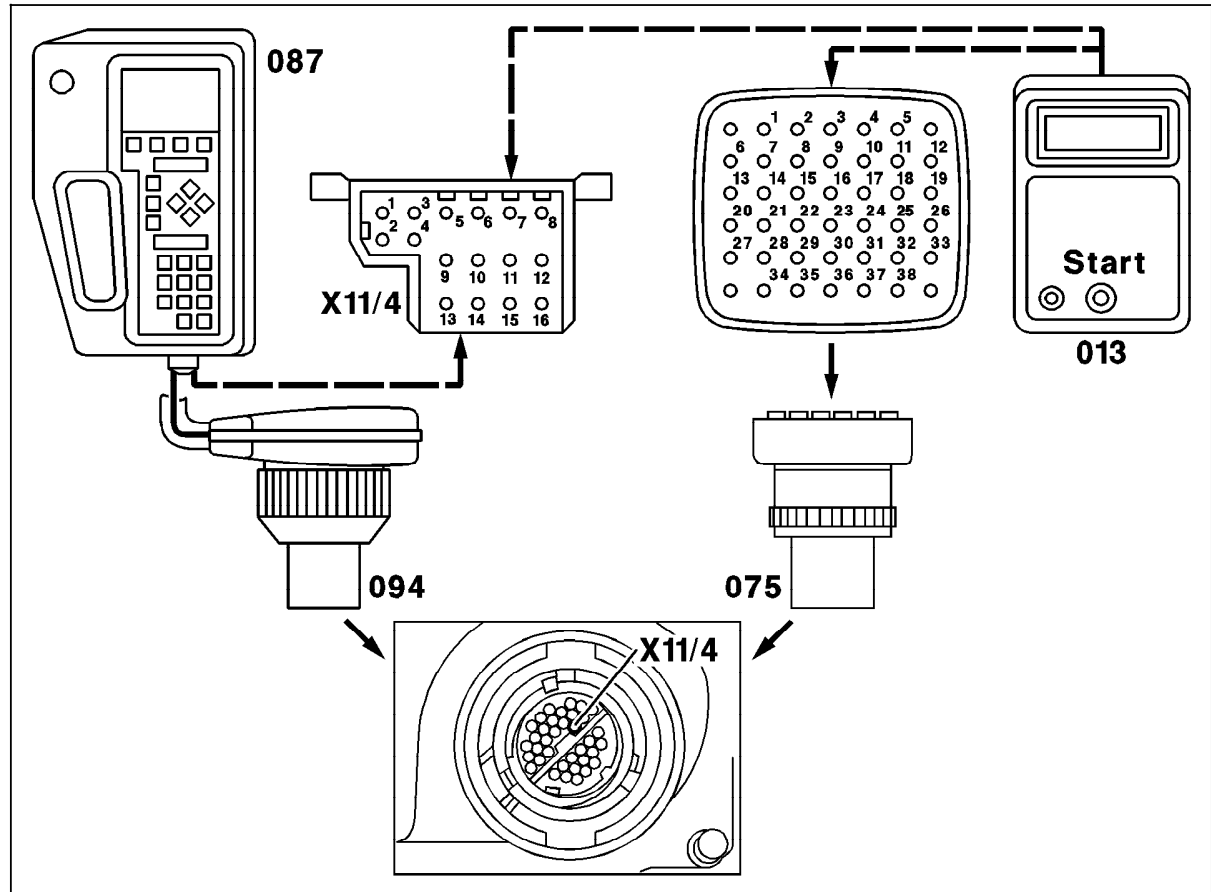


Figure 1

- 013 Impulse counter scan tool
- 075 Impulse counter scan tool adaptor
- 087 Hand-Held Tester (HHT)
- 094 Multiplexer
- X11/4 Data link connector (DTC readout)

P07-6583-57

B 1 Engine Test, Adjustment**Notes Regarding DTC Readout Using Impulse Counter Scan Tool****1. Connect impulse counter scan tool according to diagram.**

The LED "U-Batt" should come on. If not, check the following:

- a) Voltage supply.
- b) Impulse counter scan tool fuse.

2. DTC memory readout

- a) Ignition: **ON**.
- b) Push start button for 2-4 seconds.
- c) Read and record DTC readout.
- d) Push start button again.
- e) Read and record DTC readout.

Repeat steps d) and e) until the first DTC readout reappears.

3. Clearing DTC memory

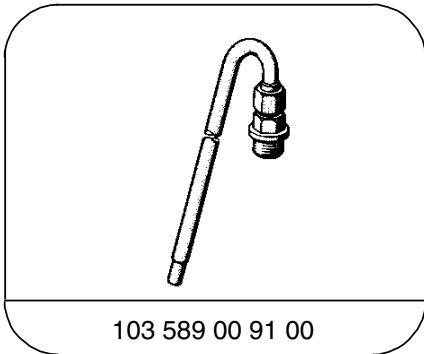
- a) Ignition: **ON**
- b) Press start button for 2-4 seconds (DTC appears).
- c) Push start button 6-8 seconds, thereby clearing the previously displayed malfunction (DTC) from memory.
- d) Repeat steps b) and c) until DTC "I" (no stored DTC's) appears.

4. Resetting and Reactivating the Engine Control Module DTC Memory

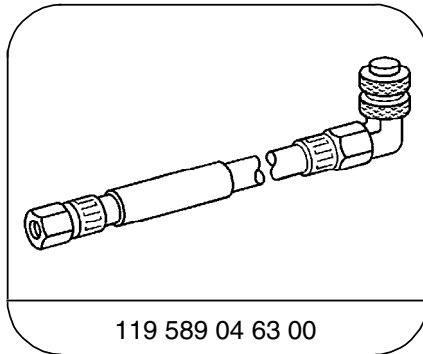
- a) Clear DTC's from memory.
- b) After DTC "I" reappears, press start button for 6-8 seconds.
- c) Turn ignition **OFF** and wait at least 2 seconds.
- d) Turn ignition **ON** and wait at least 10 seconds. Then start engine.

B 1 Engine Test, Adjustment

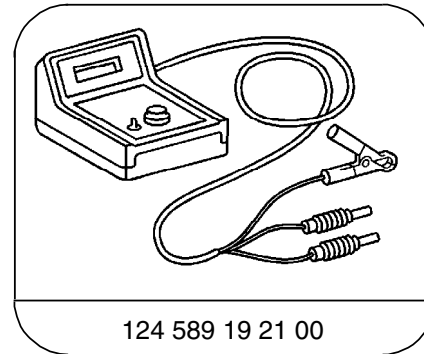
Special Tools



Measuring connection



Pressure hose



Pulse counter

Equipment

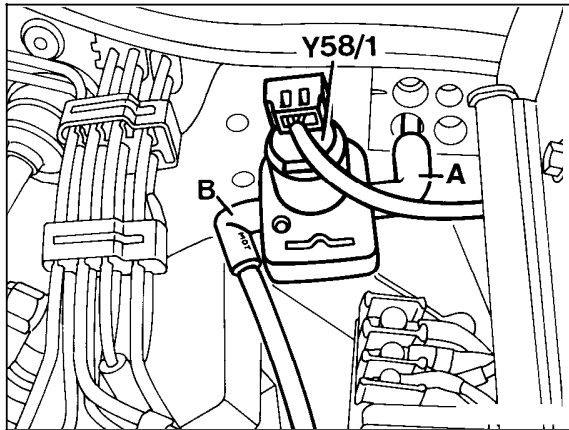
Engine analyzer ¹⁾	Bear DACE (Model 40-960) Sun MEA-1500MB
Hand-Held Tester (HHT)	see applicable Service Information in groups 58 and 99

¹⁾ Available through the MBUSA Standard Equipment Program.

B Test and Adjustment Jobs

Engines 104, 111 HFM-SFI

B 1 Engine Test, Adjustment

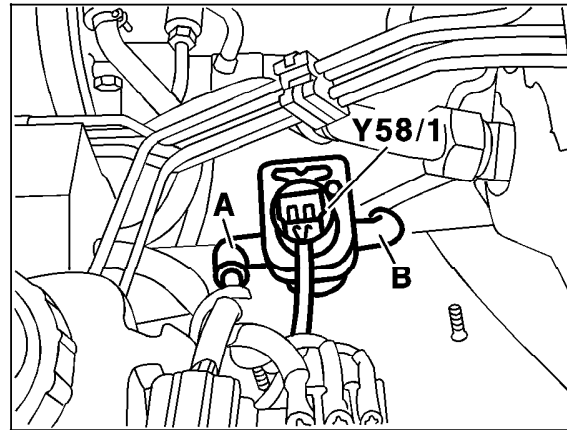


P07-5455-13

Figure 1

Model 124, Engine 104

- Y58/1 Purge control valve
A Purge line to engine
B Purge line to charcoal canister

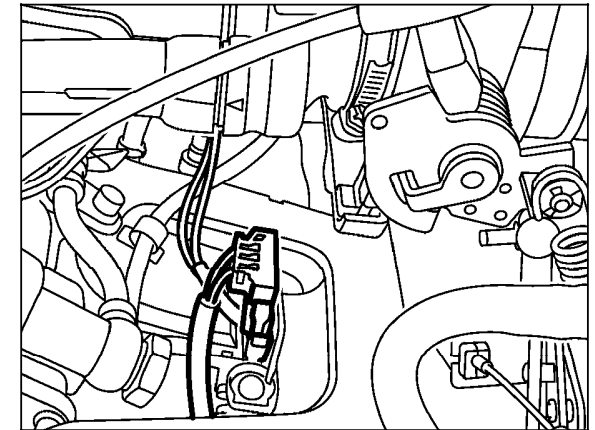


P07-5445-13

Figure 2

Model 202, Engine 111

- X12/3 Terminal block (circuit 30/15 unfused) (3-pole)



P07-6246-13

Figure 3

Model 202, Engine 111

- X26/24 Engine/ignition coils connector (3-pole)