

## 1.14 Instrument Cluster (IC)

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Models 208, 210 (as of 03/97)  
with Flexible Service System (FSS)

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## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Diagnosis – Function Test

#### Bulb test

- Turn the ignition key to position “2”. All malfunction indicator/warning lamps must illuminate.
- Start engine. At engine RPM > 480 all indicator/warning lamps should go off, indicating that all systems monitored are O.K.
- Independent of engine running the following should go off:  
After 4 seconds, the SRS MIL.  
After 6 seconds, the safety belt warning indicator.



Should the malfunction indicator/warning lamps remain illuminated and/or come on while in operation, the corresponding system must be checked and/or the fluid level corrected as necessary.

#### Warning buzzer

- Exterior lamps and parking brake warning
- Ignition key in ignition switch warning
- Safety belt warning for 6 seconds  
(the warning buzzer will cease if safety belt buckle is latched).
- Oil level too low



#### Indicator instruments

The indicator instruments must reflect the actual operating conditions.

#### Photo transistor (models 202, 208 and 210)

With a flash light pointed at the Instrument Cluster's Photo Transistor, the LCD displays (outside temperature, trip odometer, odometer and electronic clock) will illuminate brighter.



#### Instrument cluster with multi-functional display

If the operational problem occurs (worn brake pads, insufficient engine coolant level, failed exterior lamp etc.) or the system (such as: ABS or SRS) fails a warning message will be displayed in place of the outside temperature, trip odometer, odometer and electronic clock. Based on the severity of the problem, the display will be red or orange in color. Additionally, a warning tone will sound.

#### Flexible Service System (FSS)

- Remaining mileage or time until the next service due can be activated as follows:  
Turn the ignition key to position 2. Press twice the trip odometer reset button within 1 sec. The tool symbol and the remaining mileage or time will be displayed for 10 sec.

- Oil level display (engines M112 and M113) can be activated as follows:  
Turn the ignition key to position 2. Wait 10 seconds until the oil can symbol and message "oil level?" comes up and then press the trip odometer reset button twice within 1 second. The message will be displayed whether the oil level is OK or not.



Function test, diagnosis and coding can be accomplished using the Hand Held Tester (HHT).

## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Diagnosis – Diagnostic Trouble Code (DTC) Memory



#### Note regarding HHT:

The Instrument Cluster (IC) and the functions of the Flexible Service System (FSS) can be tested using the HHT, the following functions are available:

1. Control module version
2. Diagnostic Trouble Code (DTC) Memory
3. Actual values
4. Activation
5. Version Coding

By pressing the continue key on the HHT, additional information can be recalled for test steps 2, 3 and 5.



#### Note regarding version coding:

The following HHT options are available during version coding:

1. Read out of version code and transfer of IC and FSS information to a new instrument cluster.

2. Read out/change of version code:
  - Motor version
  - Country version
  - Fuel tank version
  - Optional equipment, etc.

2. Setting of:
  1. Oil changes (FSS)
  2. Mileage (forward/backward)
  3. Mistakenly deleted oil changes resetting (FSS)
  4. Flexible Service System
  5. Time setting with battery terminal removed
  6. Setting warning for oil level at minimum



#### Note

Prior to the replacement of a defective instrument cluster, readout and store IC data in the HHT. After installing the instrument cluster download the previously stored values back into the new instrument cluster.

If the readout of the stored version coding is not possible, the download must be performed manually (by utilizing the HHT menu).

If substituting a new instrument cluster for testing, do not set the mileage as it cannot be set back later.

## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
Entire instrument cluster (A1) not functioning.	Power supply, Instrument cluster (A1)	Model 129: 23 ⇒ 1.0 Model 140: 24 ⇒ 1.0 Model 170: 25 ⇒ 1.0 Model 202, 208, 210: 26 ⇒ 1.0
Warning lamps/Indicator lamps are not functioning.	Power supply, Instrument cluster (A1)	Model 129: 23 ⇒ 1.0 Model 140: 24 ⇒ 1.0 Model 170: 25 ⇒ 1.0 Model 202, 208, 210: 26 ⇒ 1.0
Communication between HHT and instrument cluster not possible.	Wiring, Instrument cluster (A1)	Model 129: 23 ⇒ 2.0 Model 140: 24 ⇒ 2.0 Model 170: 25 ⇒ 2.0 Model 202, 208, 210: 26 ⇒ 2.0
Low engine coolant level (ECL) indicator lamp (A1e11), low windshield washer fluid level indicator lamp (A1e13) illuminated - does not function.	ECL switch (S41) Windshield washer fluid level switch (S42) Wiring Instrument cluster (A1)	Model 129: 23 ⇒ 3.0 Model 140: 24 ⇒ 3.0 Model 170: 25 ⇒ 3.0 Model 202, 208, 210: 26 ⇒ 3.0
Warning lamps/Indicator lamps (brake fluid level, parking brake, brake pad wear, ABS, ETS, ASR, ESP) illuminate simultaneously and speedometer needle rests at the bottom stop.	Traction system control module (N47)	DM, Chassis and Drivetrain, Volume 3, Section 9 and 10 WIS
Tachometer needle, ECT needle remain at rest on the bottom stop. Engine oil low level warning lamp illuminates.	Injection control module (N3)	DM, Diesel Engines, Volume 1.1

<sup>1)</sup> Observe Preparation for Test, see 22.

## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
Warning lamps/Indicator lamps (brake fluid level, parking brake, brake pad wear, oil level, ABS, ETS, ASR, ESP) illuminate simultaneously and tachometer speedometer needle rests at the bottom stop.	CAN Bus disruption	Model 129: 23 ⇒ 4.0 Model 140: 24 ⇒ 4.0 Model 170: 25 ⇒ 4.0 Model 202, 208, 210: 26 ⇒ 4.0

<sup>1)</sup> Observe Preparation for Test, see 22.



#### Note regarding diagnosis:

To narrow the search for the possible fault, the diagnostic chart indicates how the warning lamps or indicators are activated and controlled by a particular system.

If the warning lamps or indicators are displayed for more systems simultaneously, it is almost always the evidence of the faulty CAN Bus.

The A/C system can also be affected by the faulty CAN Bus since the A/C control module receives CAN data over the K1 and K2 information bus from the Instrument Cluster interface.

(For more information on Instrument Cluster refer to the green microfiche, Function Description Instrument Cluster (KI) in SMS or refer to WIS)



Following warning lamps/indicators receive the information via CAN Bus from Traction systems control module (N47):

- Odometer, trip odometer
- Electronic speedometer
- Low brake fluid level/parking brake indicator (only parking signal is sent via CAN Bus)
- Warning lamp brake pad wear
- ABS indicator
- ETS, ASR, ESP indicator
- Warning lamp ETS, ASR, ESP

#### Note:

On vehicles with multi-functional Instrument Clusters additionally a message appears in the display area.

## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Diagnosis – Complaint Related Diagnostic Chart



Following warning lamps/indicators receive the information via CAN Bus from Injection systems control module (N3):

- Tachometer
- Low oil level warning lamp
- Coolant temperature
- Preglow indicator (diesel only)
- Fuel reserve warning lamp (if a fuel system leak is detected or fuel filler cap is not closed tightly while the engine is running, the warning lamp (A1e4) will blink. Not correcting the problem will cause the "Check Engine" lamp to illuminate).
- Flexible Service System (FSS)
  - Oil quality
  - Oil level
  - Oil temperature
  - Engine speed, coolant temperature

#### Note:

On vehicles with multi-functional Instrument Clusters additionally a message appears in the display area.



Instrument cluster receives direct information for the following warning lamps/indicators:

- Outside temperature display
- Fuel gauge
- Oil pressure gauge (models 129 and 140 only)
- Turn signal indicator left
- Turn signal indicator right
- High beam indicator
- Fuel reserve warning lamp
- Low level brake fluid/parking brake warning lamp (only low level brake fluid direct)
- Windshield washer fluid low level warning lamp
- Coolant low level warning lamp
- Battery charging control/warning lamp
- Seat belt warning lamp
- Safety belt/rear seat back latch warning lamp
- Glow plug failure warning lamp
- Hydraulic oil low level warning lamp (model 210 only)
- ADS, suspension warning lamp
- Turn signal audio device
- Seat belt warning buzzer
- Lights on warning buzzer
- Key in ignition warning buzzer
- Retractable hardtop warning buzzer (model 170 only)
- Steering lock warning lamp

## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

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### Diagnosis – Complaint Related Diagnostic Chart



The Instrument Cluster sends/receives data via the K - information bus to the A/C control module.

The following signals are send via K1 serial information bus from IC to the A/C control module:

- Outside temperature
- Coolant temperature
- Vehicle speed
- Terminal 58d signal (illumination)
- Engine speed
- °F/°C switch over
- Full throttle cut-off (diesel)
- Acceleration recognition (gasoline)
- A/C compressor emergency cut-off (engine control module sends the signal via CAN bus to the K1 bus)
- A/C compressor switch off at acceleration (engine control module sends the signal via CAN bus to the K1 bus)

The following signals are send via K2 serial information bus from the A/C control module to the Instrument cluster:

- Refrigerant pressure
- Engine Idle speed increase

# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

Models 129, 140, 170, 202, 208, 210

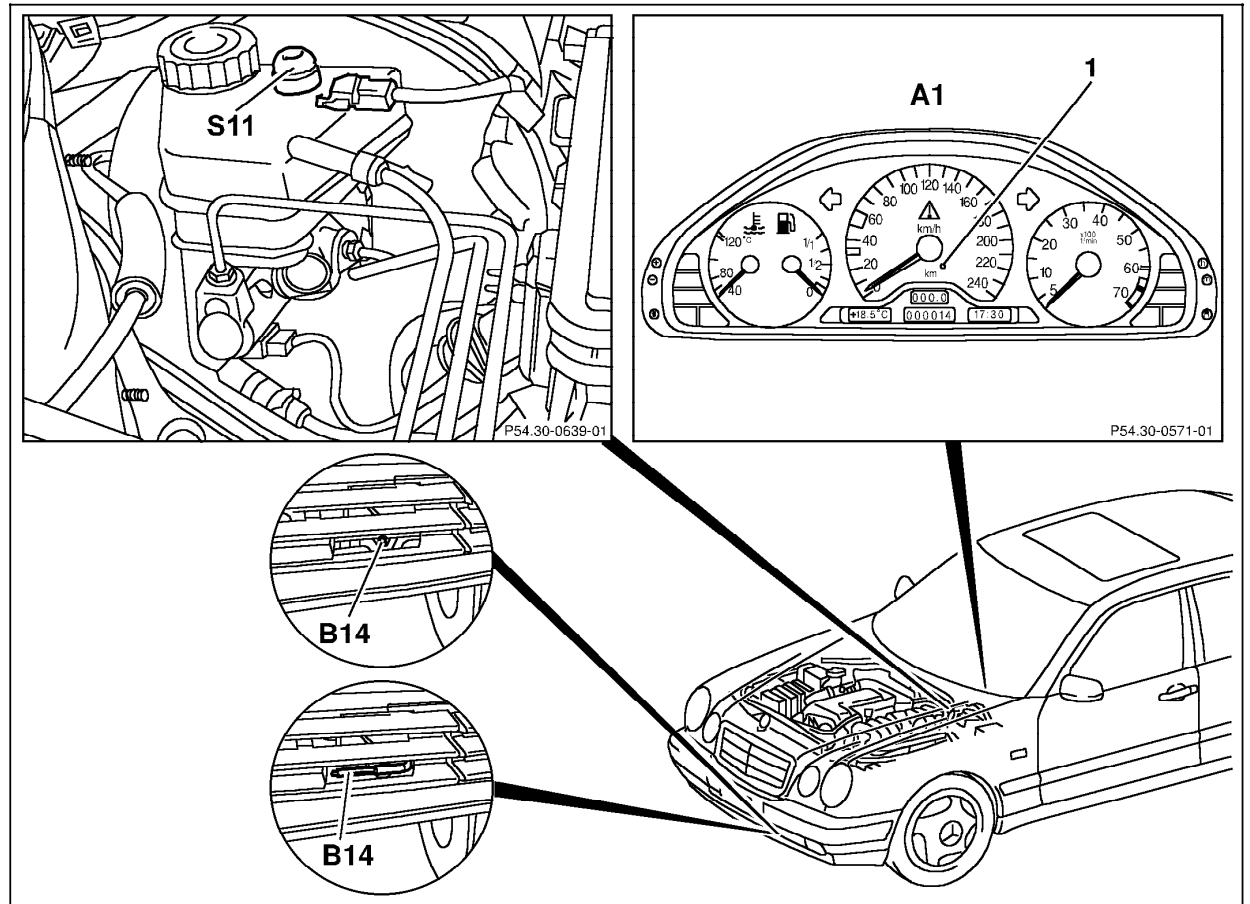


Figure 1

- 1 Phototransistor (Model 202, 208, 210)
- A1 Instrument Cluster (IC) view of multi-functional Instrument Cluster
- B14 Temperature sensor for outside temperature indicator (one or the other version installed)
- S11 Brake fluid level switch

P54.30-0635-06



# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

### Model 129

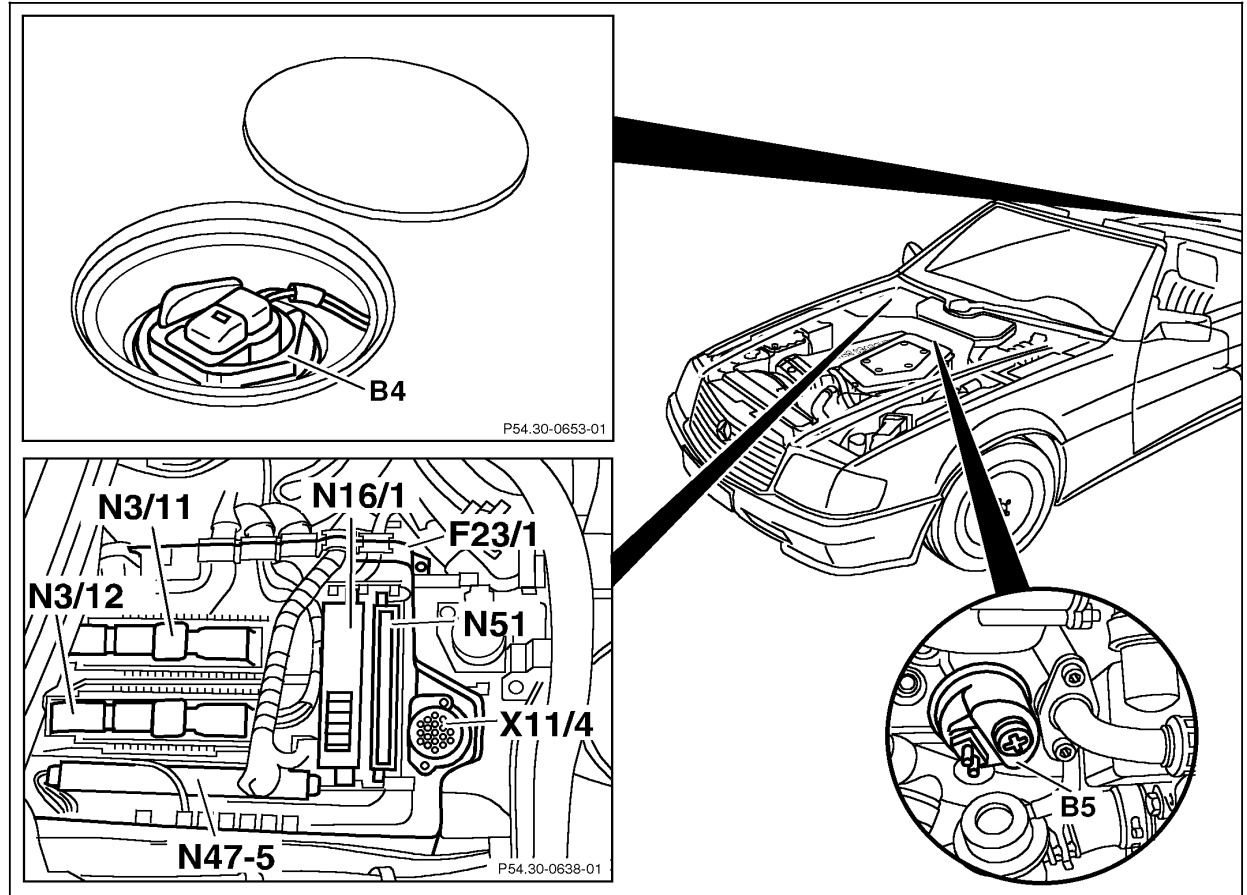


Figure 2

- B4 Fuel level sensor
- B5 Oil pressure sensor  
(Engine 119: right front;  
engine 104, 120: left rear)
- F23/1 Control module box
- N3/11 Left engine control module (ME-SFI) (12-cylinder)
- N3/12 Right engine control module (ME-SFI) (12-cylinder)
- N16/1 Base module
- N47-5 ESP - SPS control module
- N51 ADS control module
- X11/4 Data link connector

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## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Electrical Test Program – Component Locations

#### Model 140

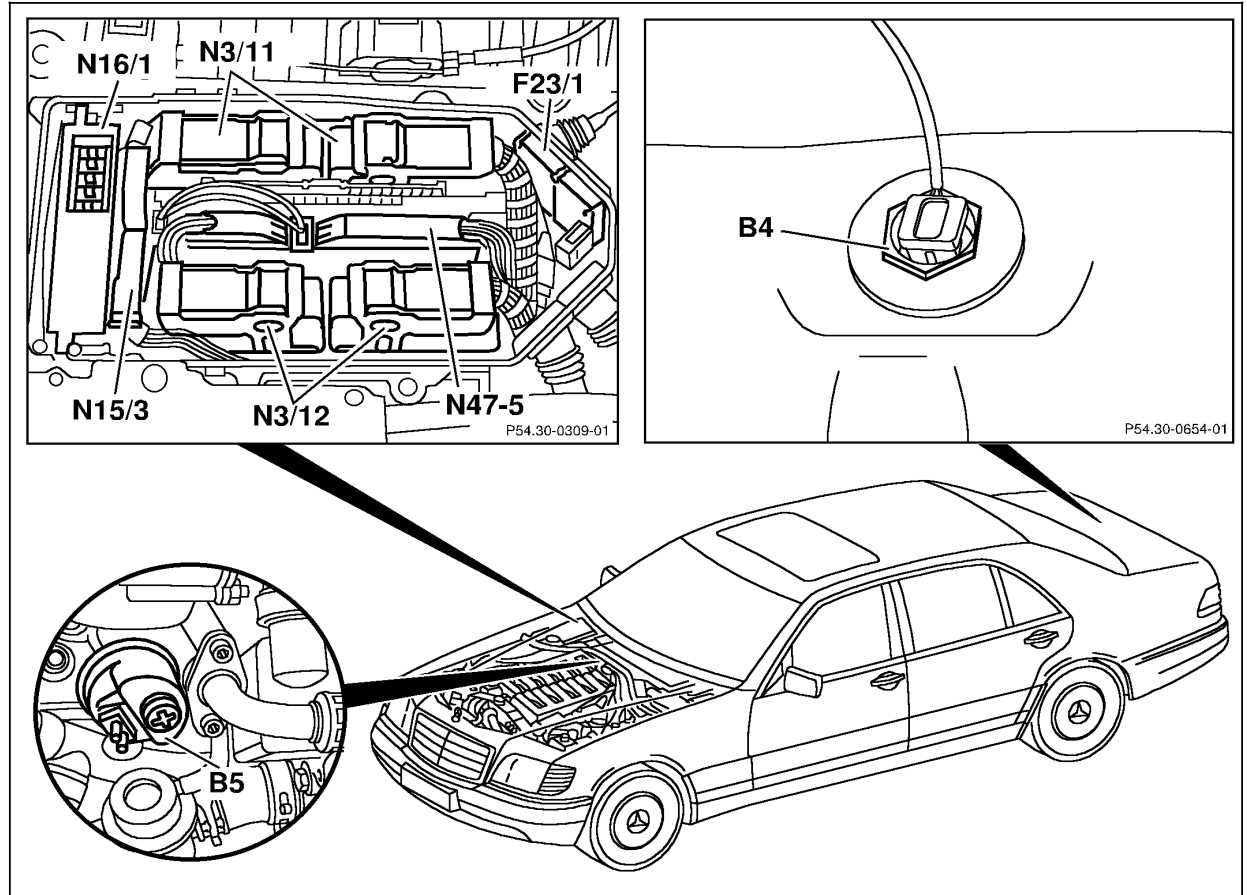


Figure 3

- B4 Fuel level sensor
- B5 Oil pressure sensor  
(Engine 119: right front;  
engine 104, 120: left rear)
- F23/1 Control module box
- N3/11 Left engine control module (ME-SFI) (12-cylinder)
- N3/12 Right engine control module (ME-SFI) (12-cylinder)
- N15/3 Transmission control module
- N16/1 Base module
- N47-5 ESP - SPS control module

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

### Model 170

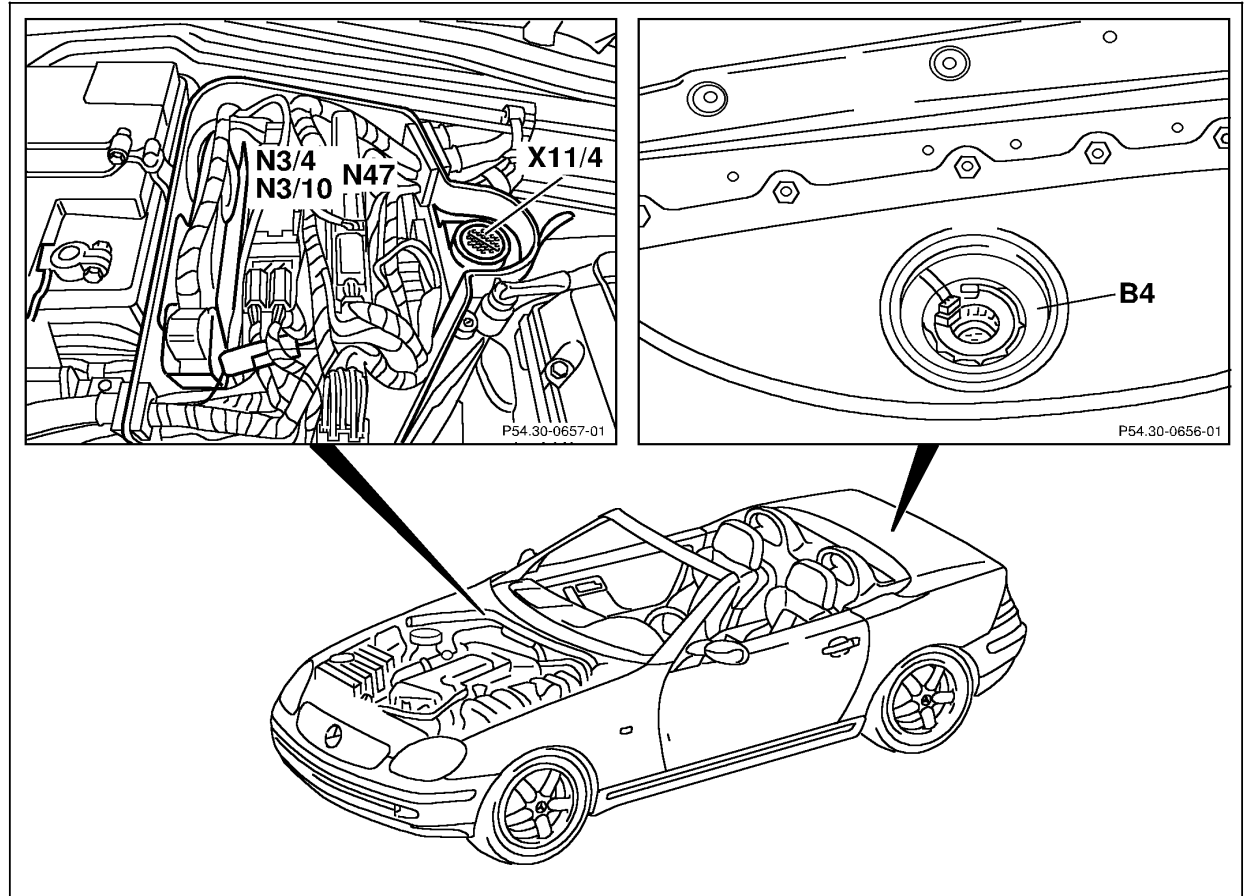


Figure 4

- B4 Fuel level sensor
- N3/10 Engine control module (ME-SFI)
- N47 Traction systems control module
- X11/4 Data link connector

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

Model 170

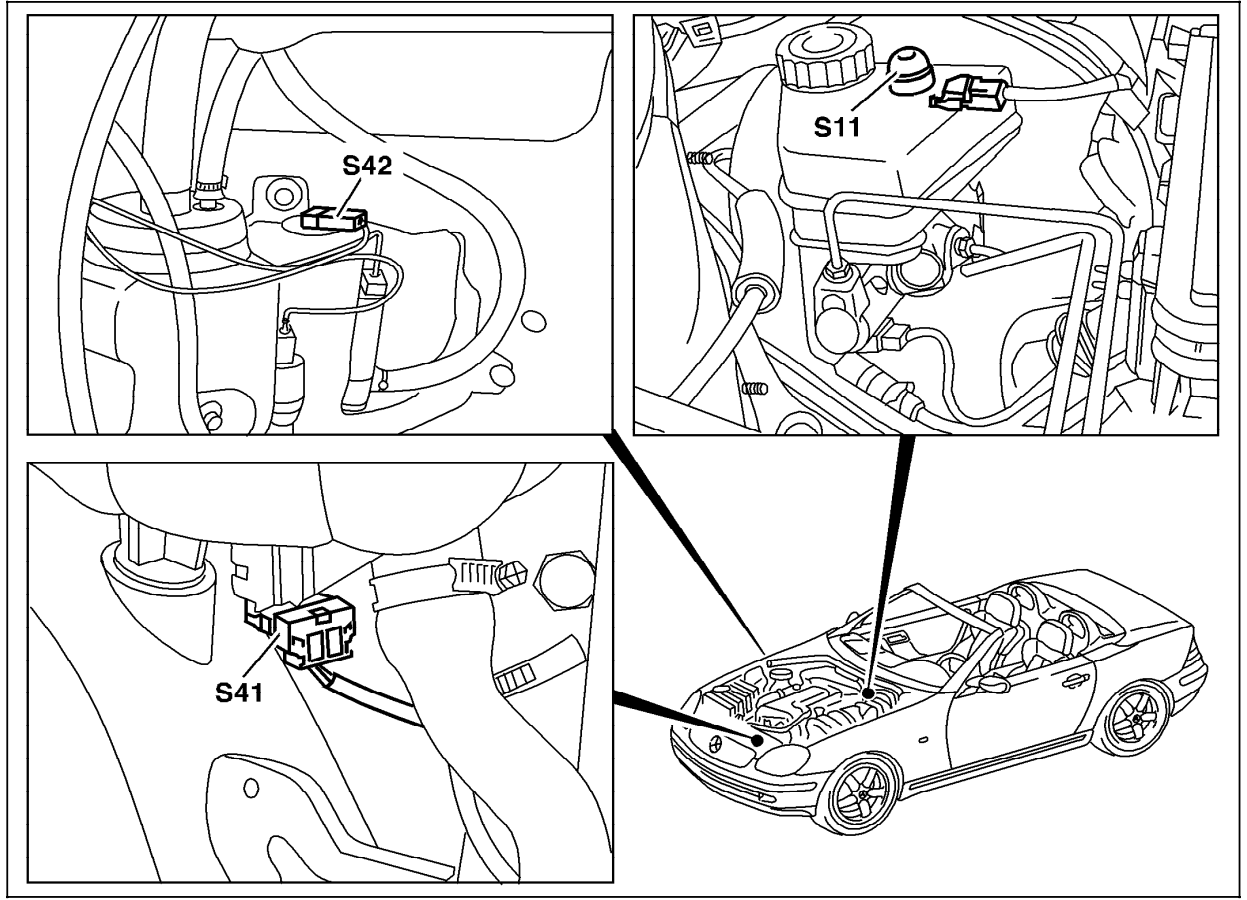


Figure 5

- S11 Brake fluid level switch
- S41 ECL switch
- S42 Windshield washer fluid level switch

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

### Model 202

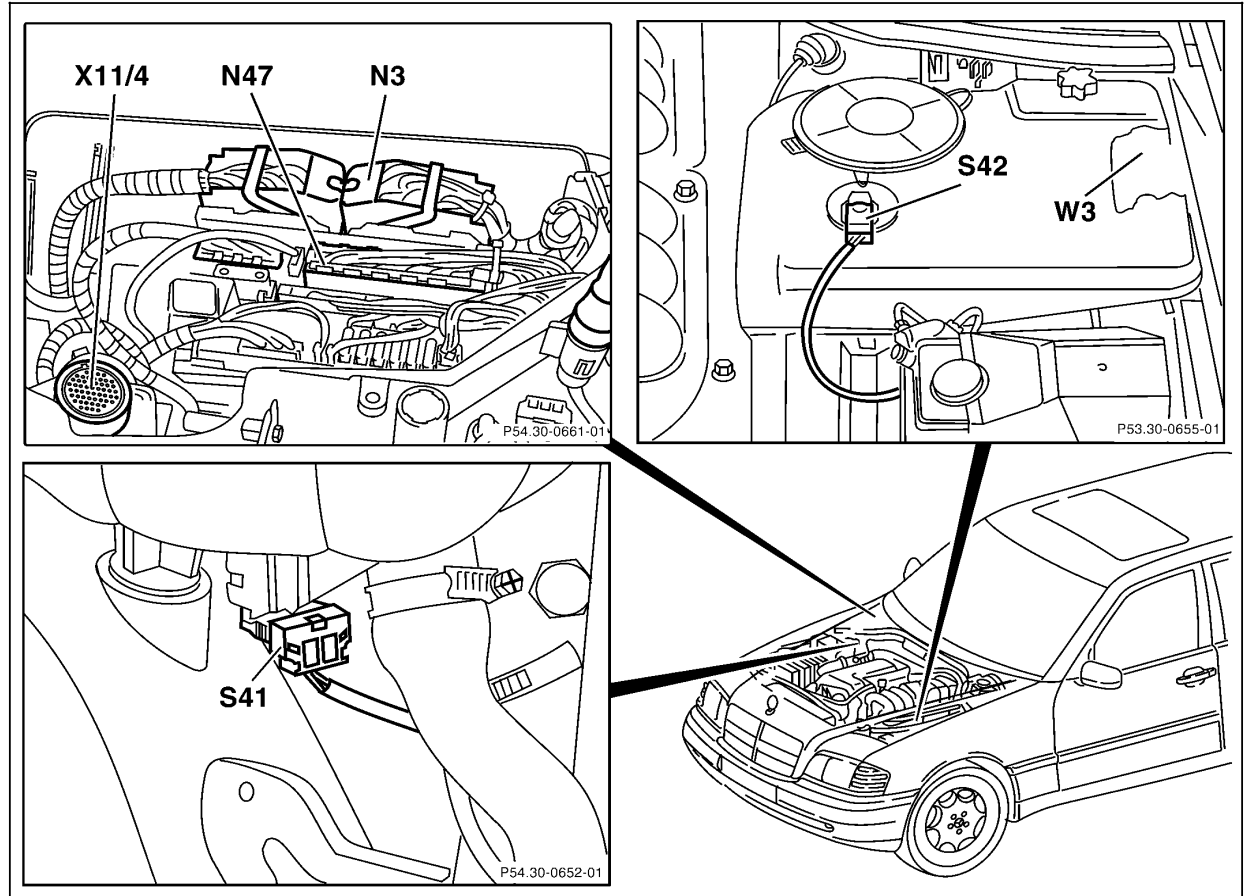


Figure 6

- N3 Engine control module
- N47 Traction systems control module
- S41 ECL switch
- S42 Windshield washer fluid level switch
- W3 Ground (left front wheel well housing at ignition coil)
- X11/4 Data link connector

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

Model 202

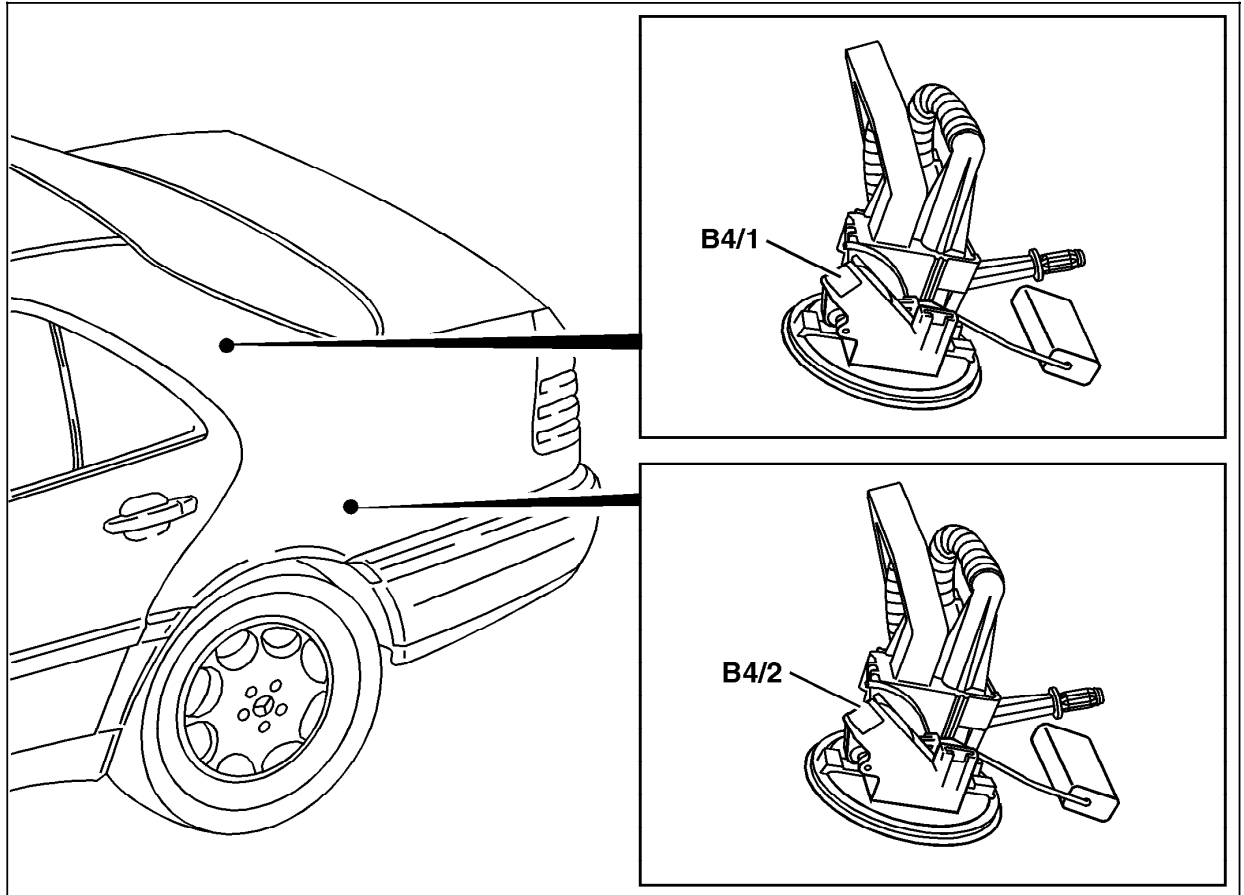


Figure 7

- B4/1 Left fuel level sensor
- B4/1 Right fuel level sensor



The fuel sensors are accessible from underneath of the vehicle.

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

Model 208

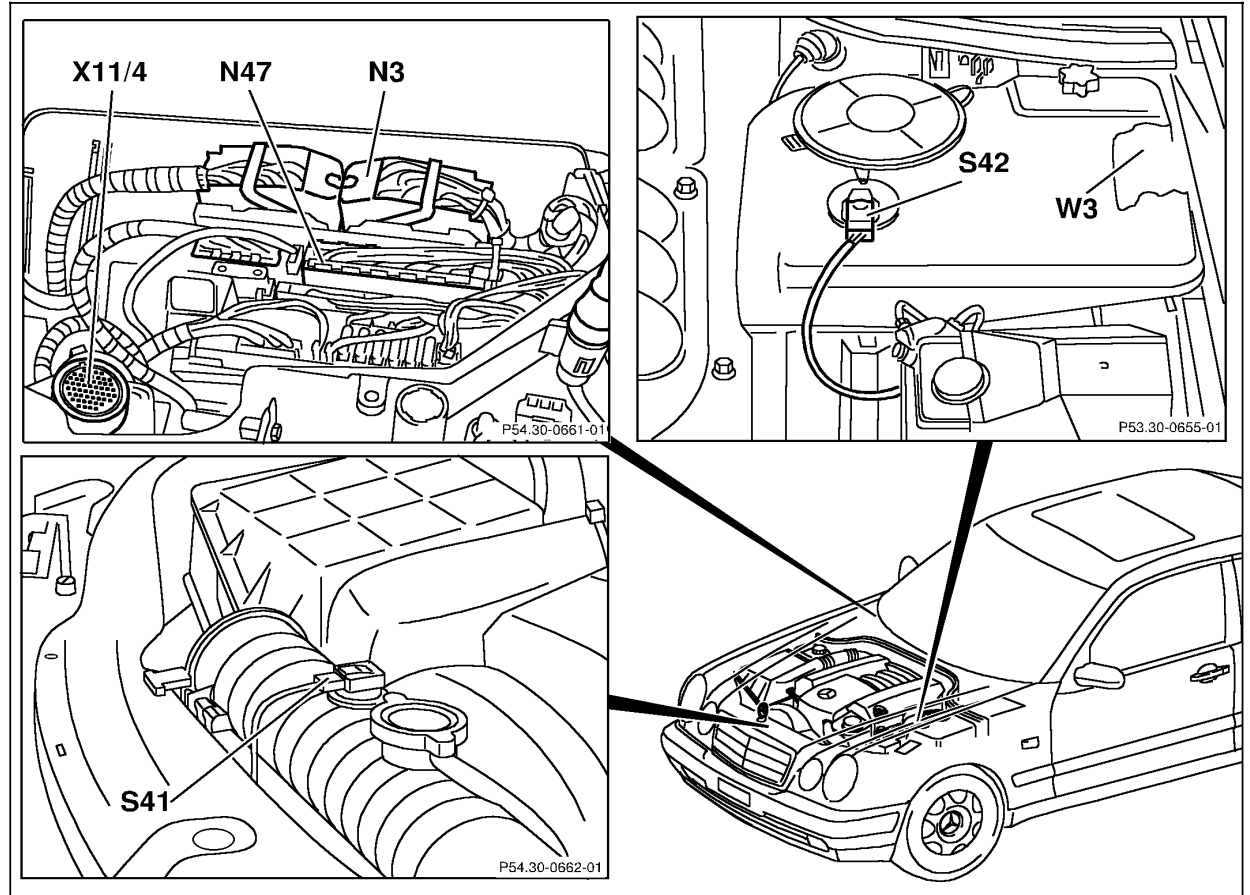


Figure 8

- N3 Engine control module
- N47 Traction systems control module
- S41 ECL switch
- S42 Windshield washer fluid level switch
- W3 Ground (left front wheel well housing at ignition coil)
- X11/4 Data link connector

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

Model 210

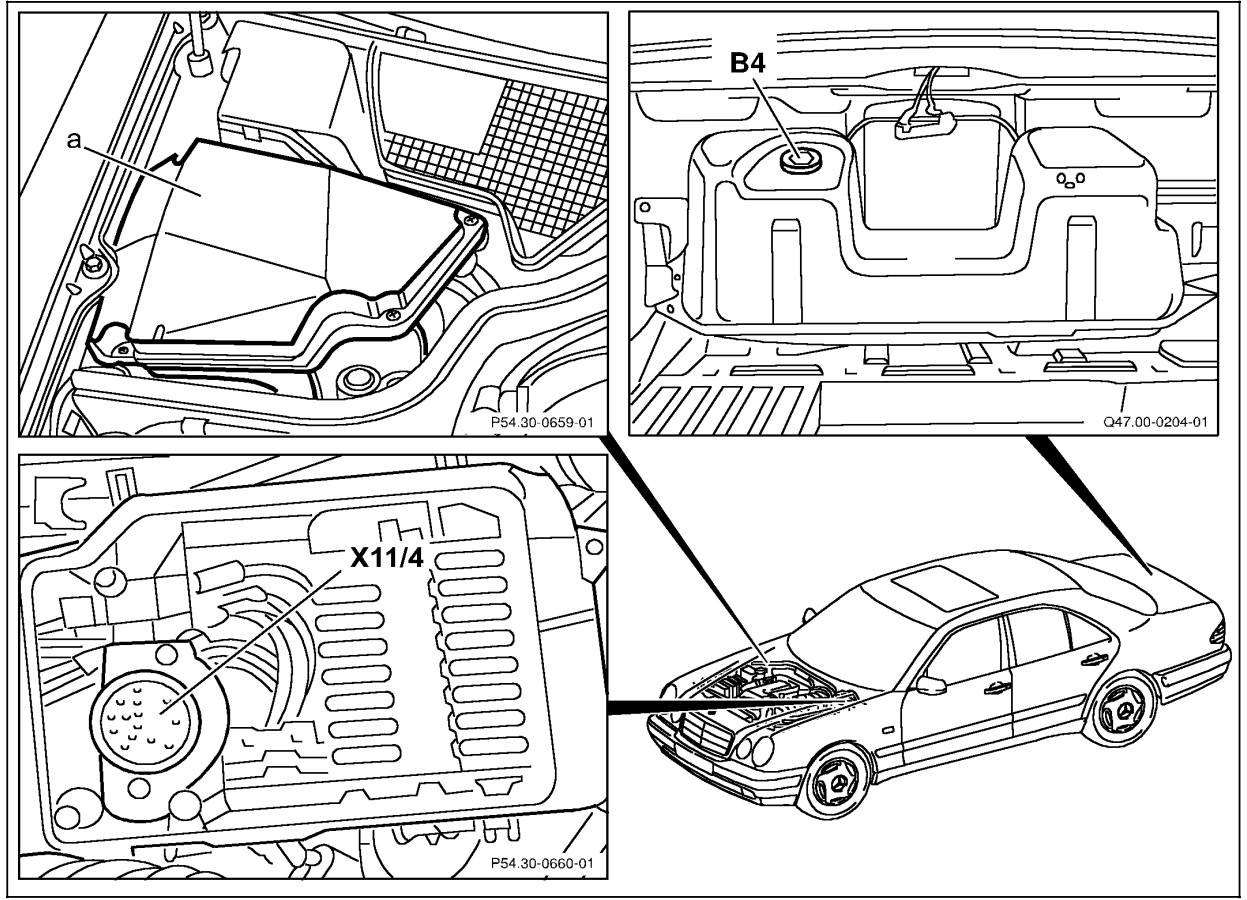


Figure 9

- B4 Fuel level sensor
- X11/4 Data link connector (DTC readout)
- a Control module box

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# 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

## Electrical Test Program – Component Locations

Model 210

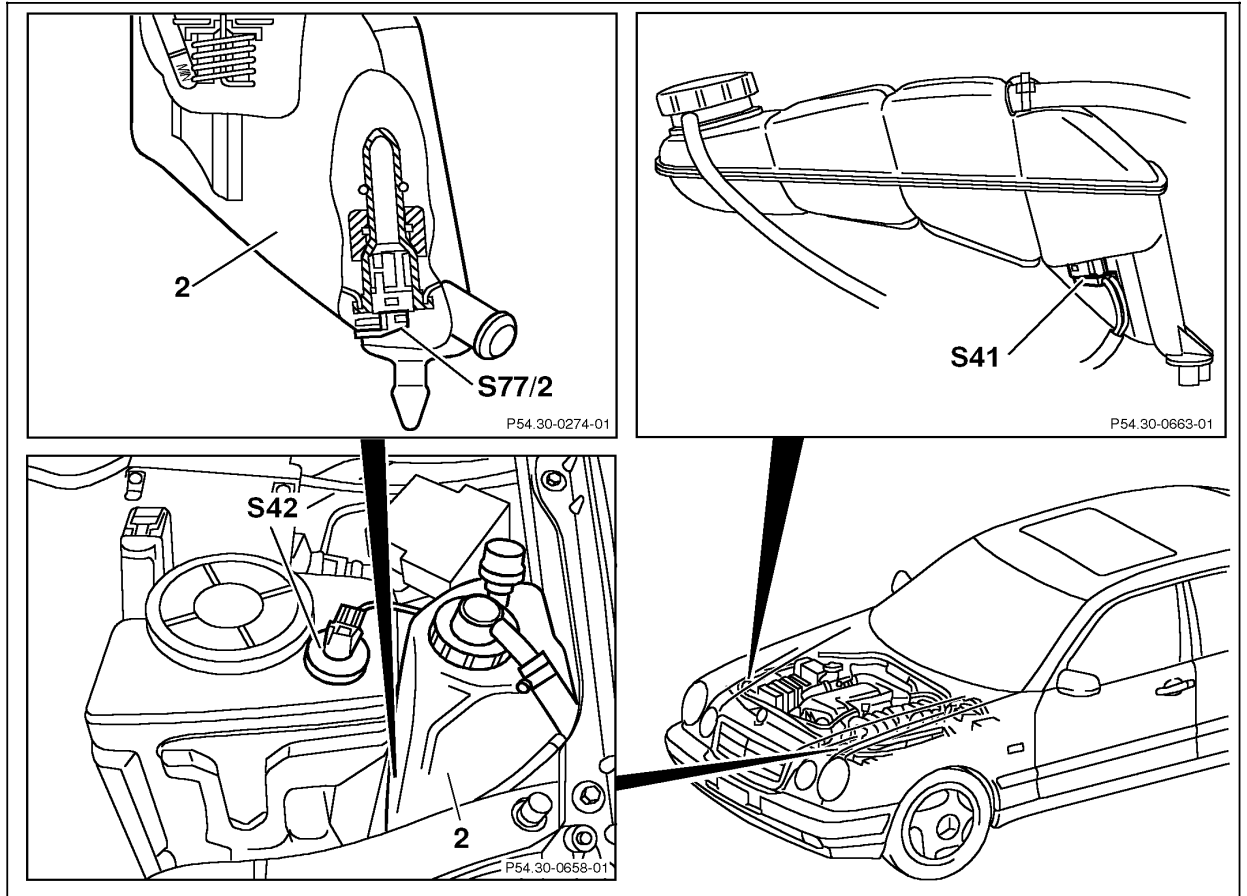


Figure 10

- 2 Power steering and leveling system hydraulic fluid container
- S41 ECL switch
- S42 Windshield washer fluid level switch
- S77/2 Hydraulic fluid level switch

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## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Electric Test Program – Preparation for Test

1. Battery voltage 11 – 14 V.
2. Check fuses.
3. Systems and fluid levels in order.

#### Electrical wiring diagrams:

See Electric Troubleshooting Manuals, group 54



#### Caution:

To prevent damage to the control modules, the connectors on the control modules must only be removed or installed with the ignition **OFF**.

#### Conventional tools, test equipment

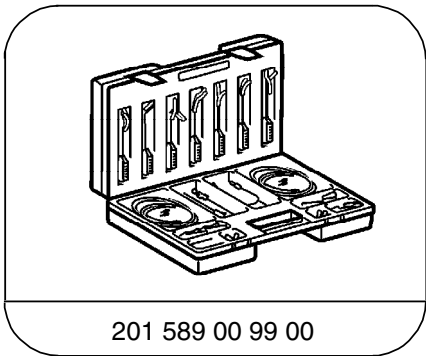
Description	Brand, model, etc.
Multimeter <sup>1)</sup>	Sun DMM-5 Fluke models <sup>1)</sup> 23, 77 III, 87, 88

<sup>1)</sup> Available through the MBUSA Standard Service Equipment Program.

## 1.14 Instrument Cluster (IC) Models 129, 140, 170, 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

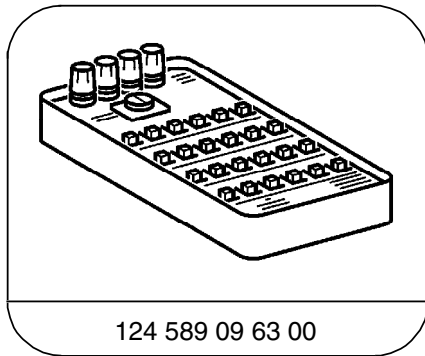
### Electrical Test Program – Preparation for Test

#### Special Tools



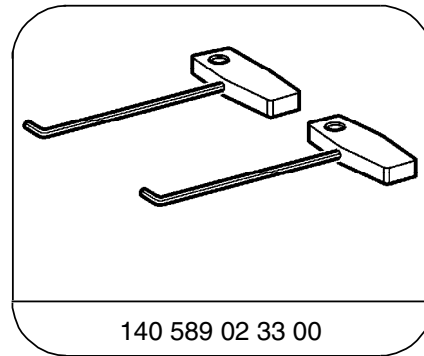
201 589 00 99 00

Electrical connecting set



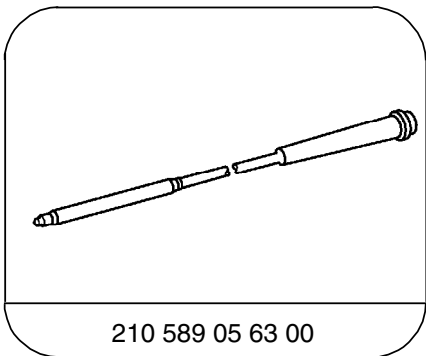
124 589 09 63 00

Ohm decade



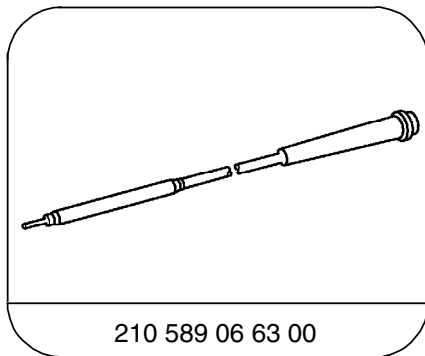
140 589 02 33 00

Extraction hook



210 589 05 63 00

Adapter cable



210 589 06 63 00

Adapter cable

Electrical Test Program – Test Model

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Instrument cluster (A1)</b> Voltage supply Terminal 30	<p>3 —  — A1 (1A.3) ←  → 11 (1A.11)</p> <p>12 —  — A1 (1A.12) ←  → 11 (1A.11)</p>	Ignition: <b>OFF</b> Remove A1 Disconnect connector 1 (30-pin)	11 – 14 V	Fuse 14 in fuse and relay box (F1), Wiring, ⇒ 1.1
1.1	Voltage supply Terminal 15, fused	<p>3 —  — A1 (1A.3) ←  → 9 (1A.9)</p>	Ignition: <b>ON</b>	11 – 14 V	Fuse 10 in fuse and relay box (F1), Wiring, A1
2.0	<b>HHT interface</b> Connection between A1 and data link connector (X11/4)	<p>X11/4 15 —  — A1 ←  → 11 (1B.11)</p>	Ignition: <b>OFF</b> Remove A1, Disconnect connector 1 (30-pin)	5 Ω	Wiring.
3.0	<b>ECL and windshield washer level:</b> ECL level switch (S41), windshield washer level switch (S42) and wiring	<p>6 —  — A1 (1B.6) ←  → 4 (1B.4)</p>	Ignition: <b>OFF</b> Coolant level and windshield washer fluid level: OK Remove instrument cluster (A1) Disconnect connector 1 (30 pin).	233 - 297 Ω	Wiring ⇒ 3.1 Values O.K.: A1

## 1.14 Instrument Cluster (IC)

Model 129 (as of 6/97) with FSS

### Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.1	ECL switch (S41)	<p>S41 1 — 2</p>	Ignition: <b>OFF</b> Remove expansion tank Disconnect connector at ECL switch (S41). Coolant level OK	102 - 120 Ω	S41 Values O.K.: ⇒ 3.2
3.2	Windshield washer fluid level switch (S42)	<p>S42 1 — 2</p>	Ignition: <b>OFF</b> Disconnect connector at S42. Washer fluid level OK	145 - 185 Ω	S42
4.0	<b>CAN bus data lines</b> Resistance	<p>A1 1 — 10 (1B.9) (1B.10)</p>	Ignition: <b>OFF</b> Disconnect connector 1 (All control modules are connected to CAN)	around 60 Ω	CAN: -//-, □ □ - N47 N3 Values O.K.: ⇒ 4.1
4.1	CAN bus data lines Voltage Low-data line	<p>A1 9 — 9 (1B.9)</p>	Ignition: <b>ON</b>	around 2.3 V	N47 N3 Values O.K.: ⇒ 4.2
4.2	CAN bus data lines Voltage High-data line	<p>A1 10 — 10 (1B.10)</p>	Ignition: <b>ON</b>	around 2.6 V	N47 N3

## 1.14 Instrument Cluster (IC)

Model 129 (as of 6/97) with FSS

### Electrical Test Program – Test

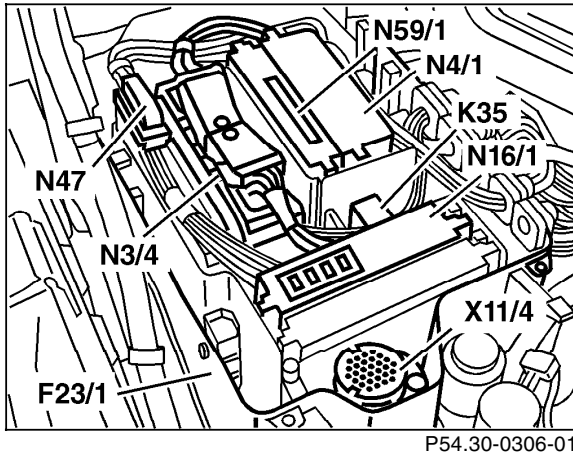


Figure 1 6 Cylinder models

F23/1	Control module box
K35	O2S 2 (after TWC) heater relay module
N3/10	Engine control module (ME - SFI)
N16/1	Base module (BM)
N47	Traction systems control module
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector

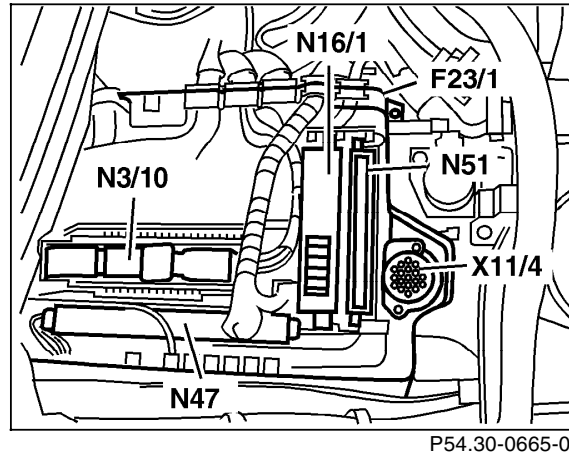


Figure 2 8 Cylinder models

F23/1	Control module box
N3/10	Engine control module (ME-SFI)
N16/1	Base module (BM)
N47	Traction systems control module
N51	ADS control module
X11/4	Data link connector

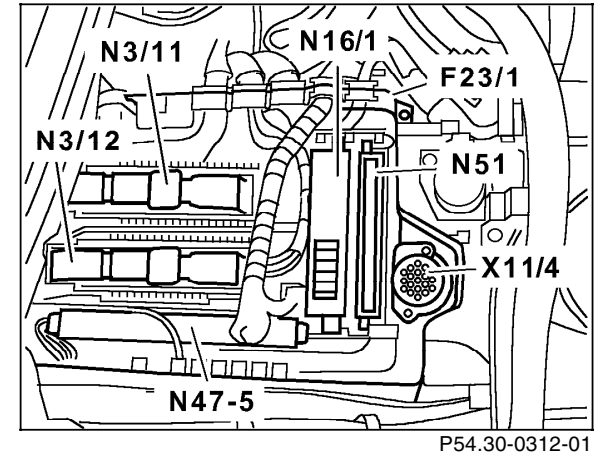


Figure 3 12 Cylinder models

F23/1	Control module box
N3/11	Left engine control module (ME-SFI)
N3/12	Right engine control module (ME-SFI)
N16/1	Base module (BM)
N47-5	ESP/SPS control module
N51	ADS control module
X11/4	Data link connector

Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Instrument cluster (A1)</b> Voltage supply Terminal 30	<p>3 —  (1A.3)         — 11 (1A.11)</p> <p>12 —  (1A.12)         — 11 (1A.11)</p>	Ignition: <b>OFF</b> Remove instrument cluster (A1) Disconnect connector 1 (30-pin)	11 – 14 V	Fuse 17 in fuse and relay box (F3), Wiring, ⇒ 1.1
1.1	Voltage supply Terminal 15	<p>3 —  (1A.3)         — 9 (1A.9)</p>	Ignition: <b>ON</b>	11 – 14 V	Fuse 24 in fuse and relay box (F3), Wiring, A1
2.0	<b>HHT interface</b> Connection between A1 and data link connector (X11/4)	<p>X11/4 15 —          — 11 (1B.11)</p>	Ignition: <b>OFF</b> Remove A1, Disconnect connector 1 (30-pin)	5 Ω	Wiring.
3.0	<b>ECL and windshield washer level:</b> ECL level switch (S41), windshield washer level switch (S42) and wiring	<p>6 —  (1B.6)         — 4 (1B.4)</p>	Ignition: <b>OFF</b> Coolant level and windshield washer fluid level: OK Remove A1 Disconnect connector 1 (30 pin)	233 - 297 Ω	Wiring ⇒ 3.1 Values O.K.: A1

Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.1	ECL switch (S41)	<p>S41 1 — 2</p>	Ignition: <b>OFF</b> Remove expansion tank Disconnect connector at S41. Coolant level OK	102 - 120 Ω	S41 Values O.K.: ⇒ 3.2
3.2	Windshield washer fluid level switch (S42)	<p>S42 1 — 2</p>	Ignition: <b>OFF</b> Disconnect connector at S42. Washer fluid level OK	145 - 185 Ω	S42
4.0	<b>CAN bus data lines</b> Resistance	<p>A1 9 — 10 (1B.9) (1B.10)</p>	Ignition: <b>OFF</b> Disconnect connector 1 (All control modules are connected to CAN)	around 60 Ω	CAN: —//—, □ □— N47 N3 Values O.K.: ⇒ 4.1
4.1	CAN bus data lines Voltage Low-data line	<p>A1 9 (1B.9)</p>	Ignition: <b>ON</b>	around 2.3 V	N47 N3 Values O.K.: ⇒ 4.2
4.2	CAN bus data lines Voltage High-data line	<p>A1 10 (1B.10)</p>	Ignition: <b>ON</b>	around 2.6 V	N47 N3



Electrical Test Program – Test

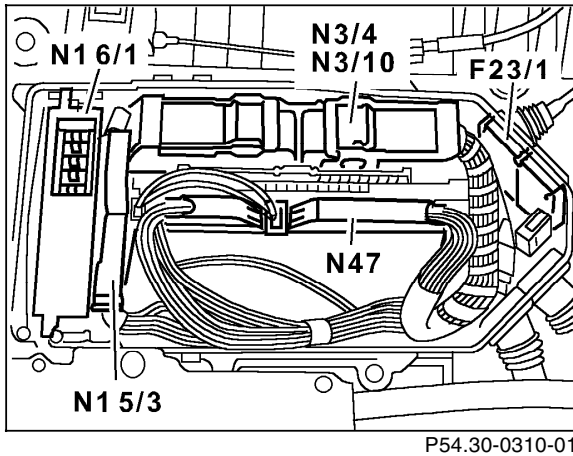


Figure 1 6/8 Cylinder models

- F23/1 Control module box
- N3/10 Engine control module (ME - SFI)
- N15/3 Transmission control module
- N16/1 Base module (BM)
- N47 Traction systems control module

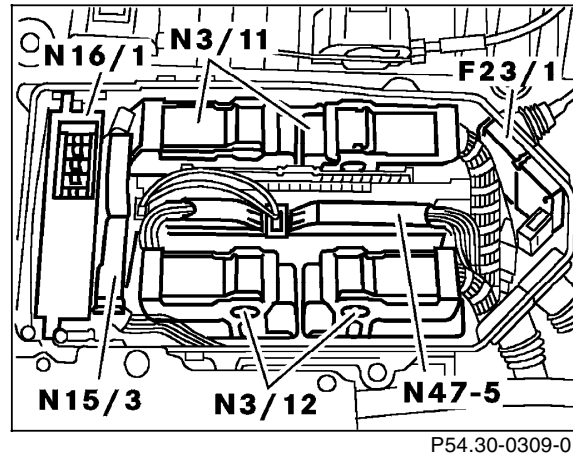












Figure 2 12 Cylinder models

- F23/1 Control module box
- N3/11 Left engine control module (ME-SFI)
- N3/12 Right engine control module (ME-SFI)
- N15/3 Transmission control module
- N16/1 Base module (BM)
- N47/5 ESP/SPS control module






Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Instrument cluster (A1)</b> Voltage supply Terminal 30	<p>A1</p> <p>3 —  ←  → 11 (1A.3) (1A.11)</p> <p>12 —  ←  → 11 (1A.12) (1A.11)</p>	Ignition: <b>OFF</b> Remove Instrument cluster (A1) Disconnect connector 1 (30-pin)	11 – 14 V	Fuse 34 in fuse and relay box (F1), Wiring, ⇒ 1.1
1.1	Voltage supply Terminal 15	<p>A1</p> <p>3 —  ←  → 9 (1A.3) (1A.9)</p>	Ignition: <b>ON</b>	11 – 14 V	Fuse 37 in fuse and relay box (F1), Wiring, A1
2.0	<b>HHT interface</b> Connection between A1 and data link connector (X11/4)	<p>A1</p> <p>X11/4 15 —  ←  → 11 (1B.11)</p>	Ignition: <b>OFF</b> Remove A1, Disconnect connector 1 (30-pin)	5 Ω	Wiring.
3.0	<b>ECL and windshield washer level:</b> ECL level switch (S41), windshield washer level switch (S42) and wiring	<p>A1</p> <p>12 —  ←  → 4 (1B.12) (1B.4)</p>	Ignition: <b>OFF</b> Coolant level and windshield washer fluid level: OK Remove A1 Disconnect connector 1 (30 pin).	233 - 297 Ω	Wiring ⇒ 3.1 Values O.K.: A1

## 1.14 Instrument Cluster (IC)

Model 170 (as of 6/97) with FSS

### Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.1	ECL switch (S41) Resistance	1 —  — 2	Ignition: <b>OFF</b> Remove expansion tank Disconnect connector at S41 Coolant level OK	102 - 120 Ω	S41 Values O.K.: ⇒ 3.2
3.2	Windshield washer fluid level switch (S42) Resistance	1 —  — 2	Ignition: <b>OFF</b> Disconnect connector at S42 Washer fluid level OK	145 - 185 Ω	S42
4.0	<b>CAN bus data lines</b> Resistance	9 —  — 10 (1B.9) (1B.10)	Ignition: <b>OFF</b> Disconnect connector 1 (All control modules are connected to CAN)	around 60 Ω	CAN: -//-, □ □ - N47 N3 Values O.K.: ⇒ 4.1
4.1	CAN bus data lines Voltage Low-data line	⊥ —  — 2 A1 (2B.1)	Ignition: <b>ON</b>	around 2.3 V	N47 N3 Values O.K.: ⇒ 4.2
4.2	CAN bus data lines Voltage High-data line	⊥ —  — 2 A1 (2B.20)	Ignition: <b>ON</b>	around 2.6 V	N47 N3

## 1.14 Instrument Cluster (IC)

Models 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

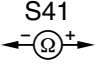
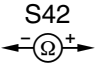
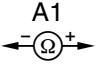
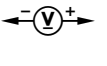
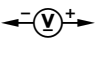
### Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Instrument cluster (A1)</b> Voltage supply Terminal 30		Ignition: <b>OFF</b> Remove instrument cluster (A1) Disconnect connector 1 (30-pin)	11 – 14 V	Model 202: fuse 30 Model 208: fuse 26 Model 210: fuse 4 in fuse and relay box (F1), Wiring, ⇒ 1.1
1.1	Voltage supply Terminal 15		Ignition: <b>ON</b>	11 – 14 V	Model 202: fuse 19 Model 208: fuse 19 Model 210: fuse 7 in fuse and relay box (F1), Wiring, A1
2.0	<b>HHT interface</b> Connection between A1 and data link connector (X11/4)		Ignition: <b>OFF</b> Remove A1, Disconnect connector 1 (30-pin)	5 Ω	Wiring.
3.0	<b>ECL and windshield washer level:</b> ECL level switch (S41), windshield washer level switch (S42) and wiring		Ignition: <b>OFF</b> Coolant level and windshield washer fluid level: OK Remove instrument cluster (A1) Disconnect connector 1 (30 pin).	233 - 297 Ω	Wiring ⇒ 3.1 Values O.K.: A1

## 1.14 Instrument Cluster (IC)

Models 202 (as of 6/97), Models 208, 210 (as of 3/97) with FSS

### Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.1	ECL switch (S41) Resistance	1 —  — 2	Ignition: <b>OFF</b> Remove expansion tank Disconnect connector at S41. Coolant level OK	102 - 120 Ω	S41 Values O.K.: ⇒ 3.2
3.2	Windshield washer fluid level switch (S42) Resistance	1 —  — 2	Ignition: <b>OFF</b> Disconnect connector at S42. Washer fluid level OK	145 - 185 Ω	S42
4.0	<b>CAN bus data lines</b> Resistance	1 —  — 2 (2B.1) (2B.20)	Ignition: <b>OFF</b> Disconnect connector 1 (All control modules are connected to CAN)	around 60 Ω	CAN: —//—, □ □— N47 N3 Values O.K.: ⇒ 4.1
4.1	CAN bus data lines Voltage Low-data line	 A1 2 (2B.1)	Ignition: <b>ON</b>	around 2.3 V	N47 N3 Values O.K.: ⇒ 4.2
4.2	CAN bus data lines Voltage High-data line	 A1 2 (2B.20)	Ignition: <b>ON</b>	around 2.6 V	N47 N3