


## Electrical Test Program – Test (vehicles up to 08/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		<b>Instrument cluster (A1)</b> Voltage supply circuit 30	<p>11 —(2) ← A1 → 12 (2)</p>	Remove A1, Disconnect connector 2	11 – 14 V	Wiring, ⇒ 1.1
1.1		Voltage supply Circuit 15, unfused	<p>10 —(1) ← A1 → 1 (1)</p>	Remove A1, Disconnect connector 1 Ignition: <b>ON</b>	11 – 14 V	Wiring, ⇒ 1.2
1.2		Voltage supply Circuit 15, fused	<p>10 —(1) ← A1 → 5 (1)</p>	Remove A1, Disconnect connector 1 Ignition: <b>ON</b>	11 – 14 V	Wiring, Values OK: A1
2.0		<b>Instrument cluster (A1)</b> Illumination	<p>10 —(1) ← A1 → 8 (1)</p>	Remove A1, Disconnect connector 1 Ignition: <b>ON</b> Turn on parking lights.	11 – 14 V	Wiring, Exterior lamp switch (S1), Short circuit in circuit 58d (output from A1).
3.0	1	<b>Fuel level gauge (A1p2)</b>		Activate test mode 1 (see Figure 1).	Analog fuel gauge reading ≈ digital readout	A1, ⇒ 3.1

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3.1	6 – 9	Fuel level gauge (A1p2)		Activate test modes 6 – 9	see Figures 2 – 9	A1, ⇒ 3.2
3.2		Wires and connections or fuel level sensor (B4)	 <p style="text-align: center;">B4</p>	Ignition: <b>OFF</b> Disconnect connector at B4. Connect resistance substitution unit. Ignition: <b>ON</b> <b>Resistance substitution unit setting:</b> $87 \pm 2 \Omega$ $77 \pm 1 \Omega$ $68 \pm 3 \Omega$ $48 \pm 3 \Omega$ $27 \pm 3 \Omega$ $7 \pm 2 \Omega$  <b>Note:</b> Before changing each resistance value, the ignition must be turned off and then turned on again.	<b>Display in A1p2:</b> $\approx 0$ <sup>1)</sup> $\approx \text{Res.}$ <sup>1)</sup> $\approx 1/4$ $\approx 1/2$ $\approx 3/4$ $\approx 1/1$	Wiring, Values OK: B4

<sup>1)</sup> Fuel reserve indicator lamp lights up.



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⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.3	1	Programming fuel tank version in trip odometer		Ignition: <b>ON</b> Activate test mode 1	5E= Standard fuel tank 5R=Fuel tank with pass-through (non-U.S.)	Set fuel tank version to 5E by depressing reset button for trip odometer.
4.0	2	<b>Fuel consumption indicator (A1p10)</b>		Engine: <b>at Idle</b> Activate test mode 2 Increase engine rpm	With increasing rpm, the consumption in l/h increases.  <b>Note:</b> The readout is only visible on the digital display. The analog reading shows 0.	⇒ 4.1
4.1	6 – 8	A1p10		Activate test modes 6 – 8	see Figures 2 – 9	A1, ⇒ 4.2



Electrical Test Program – Test (vehicles up to 08/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.2	2	Fuel consumption signal from LH-SFI control module (N3/1 or N3/3) or HFM-SFI engine control module (N3/4) or EDS control module (N39)	<p><b>LH-SFI</b></p> <p>N3/1 or N3/3 N16/1 13 (1)</p> <p>←(A)→</p> <p>W3/3</p> <p>←(A)→</p> <p><b>HFM-SFI</b></p> <p>N3/4 18 (1)</p> <p>←(A)→</p> <p>W3/3</p> <p>←(A)→</p> <p><b>EDS</b></p> <p>N16/1 13 (1)</p> <p>←(A)→</p> <p>W3/3</p> <p>←(A)→</p>	<p>Ignition: <b>OFF</b></p> <p>Disconnect N3/1, N3/3, N3/4 or N39 (Figures 10, 11, 15 and 16); for LH-SFI and EDS: remove N16/1. Connect signal generator (Figures 18, 19) and set to a voltage amplitude of approx. 10 V.</p> <p>Activate test mode 2.</p> <p>Connect wire for rpm signal as follows:</p> <p><b>LH-SFI</b></p> <p>First bridge N16/1 socket 13 to N3/1 or N3/3 socket 9, then connect to signal generator (Figure 19).</p> <p><b>HFM-SFI</b></p> <p>First bridge N3/4 socket 18 to N3/4 socket 7 (Figure 16) then connect to signal generator.</p> <p><b>EDS</b></p> <p>First bridge N16/1 socket 13 to N39 socket 13 then connect to signal generator (Figure 18).</p> <p>Ignition: <b>ON</b></p>	<p><b>LH-SFI/ HFM-SFI</b></p> <p>25 Hz ≈ 5 50 Hz ≈ 10 75 Hz ≈ 15 100 Hz ≈ 20</p> <p><b>EDS</b></p> <p>850 Hz ≈ 85 900 Hz ≈ 90 950 Hz ≈ 95 1000 Hz ≈ 100</p> <p><b>Note:</b> The readout is only visible on the digital display. The analog reading shows 0.</p>	<p>Wiring, A1, Values OK: N3/1, N3/3, N3/4, N16/1 (for LH-SFI or EDS) or N39 Engines, Volume 2 – 1.1 23 or – 3.1 23 or – 3.2 23</p> <p><b>Note:</b> If no plausible values are indicated while driving and the speedometer is in order: Check instrument cluster (A1)</p>




Electrical Test Program – Test (vehicles up to 08/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	3	Engine oil pressure gauge (A1p3)		Engine: <b>at Idle</b> Activate test mode 3. Increase engine rpm	Analog reading ≈ digital readout. The oil pressure increases with increasing engine rpm.	A1, ⇒ 5.1
5.1	6 – 7	Oil pressure gauge (A1p3)		Activate test modes 6 – 7	see Figures 2 – 9	A1, ⇒ 5.2
5.2		Wires and connections or oil pressure sensor (B5)	1—  B5  —2	Ignition: <b>OFF</b> Disconnect connector at B5. Connect resistance substitution unit. Engine: <b>at Idle</b> <b>Resistance substitution unit setting:</b> 13 Ω 40 Ω 90 Ω 150 Ω	<b>Display in A1p3:</b> ≈ 0 ≈ 1 ≈ 2 ≈ 3	Wiring, A1, Values OK: check oil pressure (see SMS Engine, Mechanical), B5

Electrical Test Program – Test (vehicles up to 08/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0	4	<b>Tachometer (A1p5)</b>		Engine: <b>at Idle</b> Activate test mode 4, increase engine rpm	Analog tachometer reading ≈ digital readout	A1, ⇒ 6.1
6.1		Tachometer (A1p5) <b>with LH-SFI or EDS:</b>	W3/3  N16/1 13	Disconnect plug on N16/1 or N3/4 (Figures 10, 11, 15 and 16). Connect signal generator and set to a voltage amplitude of approx. 10 V (Figure 17). Ignition: <b>ON</b>	<b>Engine 104, 120</b> Readout: 50 Hz ≈ 1000 rpm 194 Hz ≈ 4000 rpm	Wiring, A1, Values OK on LH-SFI or EDS engine: N16/1 D.M., Chassis and Drivetrain, Volume 1 – 1.1 23
		<b>with HFM-SFI:</b>	W3/3  N3/4 18 (1)		<b>Engine 119</b> Readout: 70 Hz ≈ 1000 rpm 270 Hz ≈ 4000 rpm	Values OK on HFM-SFI engine: N3/4
					<b>Engine 603</b> Readout: 2400 Hz ≈ 1000 rpm 9600 Hz ≈ 4000 rpm	



Electrical Test Program – Test (vehicles up to 08/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	5	<b>Low engine oil level indicator lamp (A1e12)</b>		Oil level correct. Engine: <b>at Idle</b> Activate test mode 5. Refer to section 11 <b>Readout in odometer:</b>	Digital readout: 0.5 ≈ indicator lamp: <b>OFF</b> Oil level OK 1.5 ≈ indicator lamp: <b>ON</b> Oil level not OK	Wiring, Oil level switch (S43).
8.0		<b>Electronic speedometer (A1p8)</b>  <b>Vehicles with ASR/SPS or ETS/SPS as of 06/94:</b> Left front axle VSS sensor (L6/1) connected to ASR/SPS or ETS/SPS control module (N47-1 or N47-2). See D.M., Chassis and Drivetrain, Vol. 3, 9.1 23	<b>ABS</b> W3/3  N30 3 (1)  <b>ABS/ASR</b> W3/3  N30/1 36 (1)  <b>ASR/SPS</b> or <b>ETS/SPS</b> W3/3  N47-1 N47-2	Remove N30 or N30/1, N47-1 or N47-2 (Figure 10, 11 or 15). Connect signal generator and set to a voltage amplitude of approx. 10 V (Figure 17). Ignition: <b>ON</b>	With increasing frequency the speed value on the speedometer increases.	Wiring, A1  Values OK: N30 or N30/1, D.M., Chassis and Drivetrain, Volume 2 – 5.2 23 or 6.2 23.  N47-1 or N47-2, D.M., Chassis and Drivetrain, Volume 3 – 9.1 23





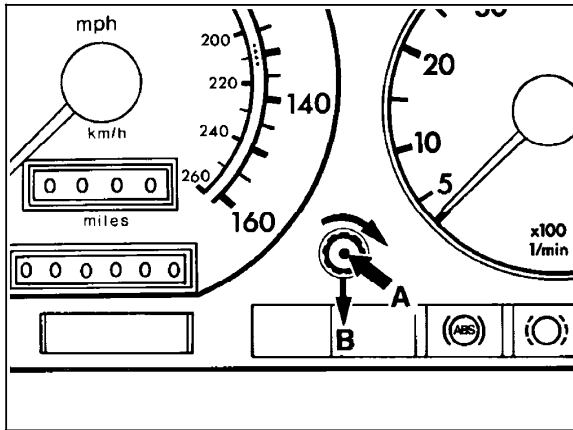
## Electrical Test Program – Test (vehicles up to 08/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
10.0		<b>ECT gauge (A1p1)</b>	Gasoline engine W11—  B13 Diesel engine W11—  B13	Disconnect plug on ECT gauge sensor (B13). Connect resistance substitution unit. Ignition: <b>ON</b> <b>Resistance substitution unit setting:</b> 110 Ω 67 Ω 38 Ω 20 Ω	<b>Display in A1p1:</b> ≈ 60 °C ≈ 80 °C ≈ 100 °C ≈ 120 °C	Wiring, A1, Values OK: B13

# 1.10 Instrument Cluster (IC) (with Digital Odometer)

Model 140

## Electrical Test Program – Test (vehicles up to 08/95)

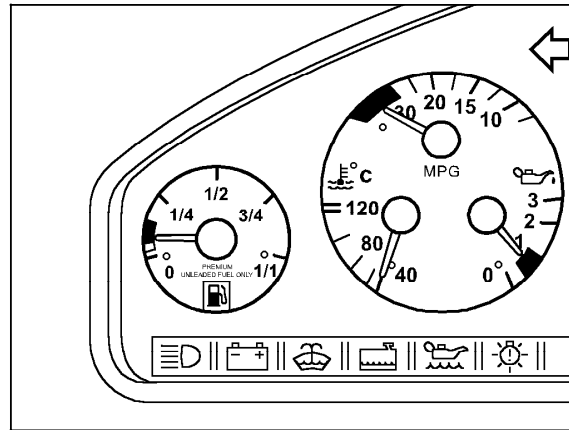


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Figure 1

Activation of test mode

- A Clock synchronization - center of knob
- B Clock adjustment - outside of knob

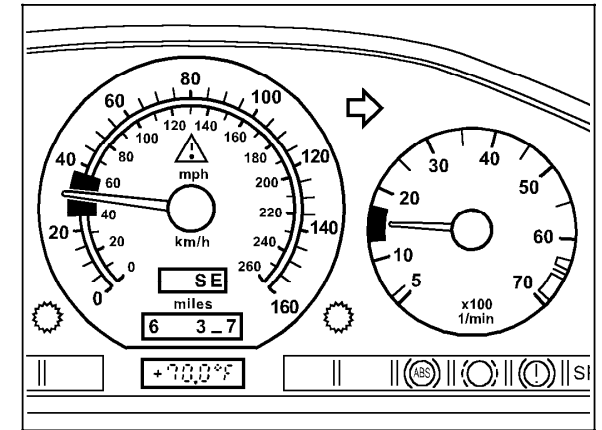


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Figure 2

Activation of instruments

- 1st quarter: Fuel tank
- Fuel consumption
- Oil pressure



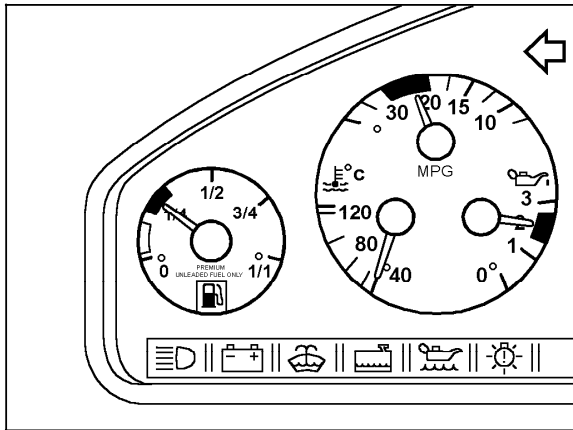
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Figure 3

Activation of instruments

- 1st quarter: Speedometer, Tachometer

Electrical Test Program – Test (vehicles up to 08/95)

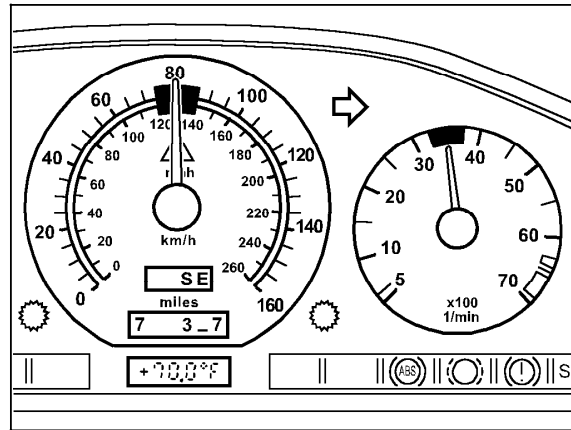


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Figure 4

Activation of instruments

- 2nd quarter: Fuel tank
- Fuel consumption
- Oil pressure

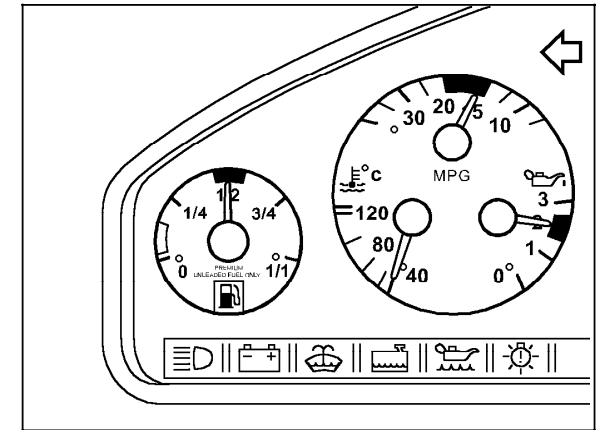


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Figure 5

Activation of instruments

- 2nd quarter: Speedometer, Tachometer



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Figure 6

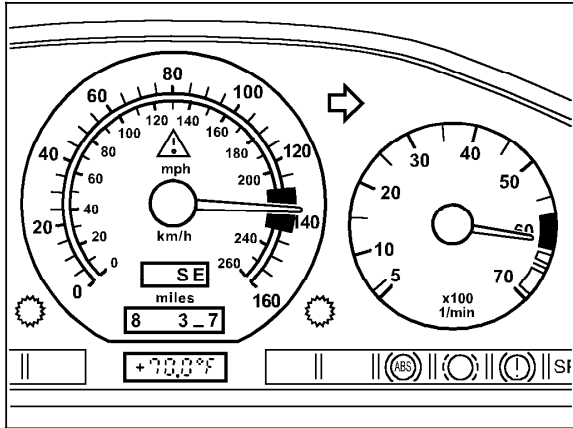
Activation of instruments

- 2nd quarter: Oil pressure
- 3rd quarter: Fuel tank
- Fuel consumption

## 1.10 Instrument Cluster (IC) (with Digital Odometer)

Model 140

### Electrical Test Program – Test (vehicles up to 08/95)

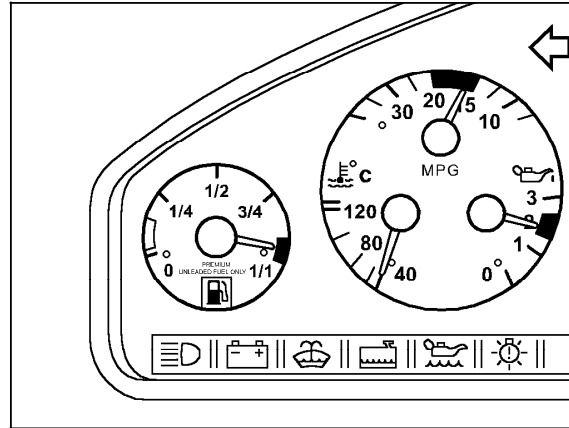


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Figure 7

Activation of instruments

3rd quarter: Speedometer, Tachometer

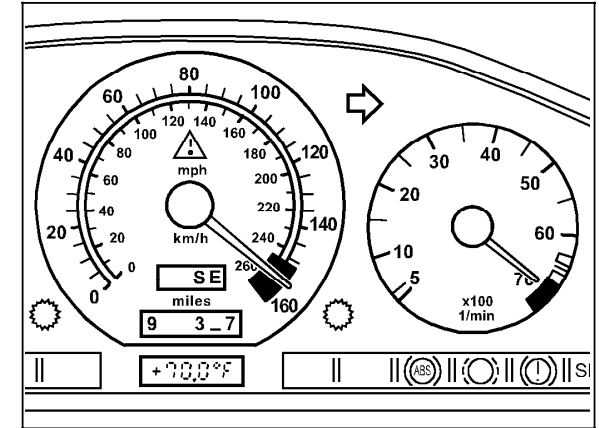


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Figure 8

Activation of instruments

2nd quarter: Oil pressure  
3rd quarter: Fuel consumption  
4th quarter: Fuel tank



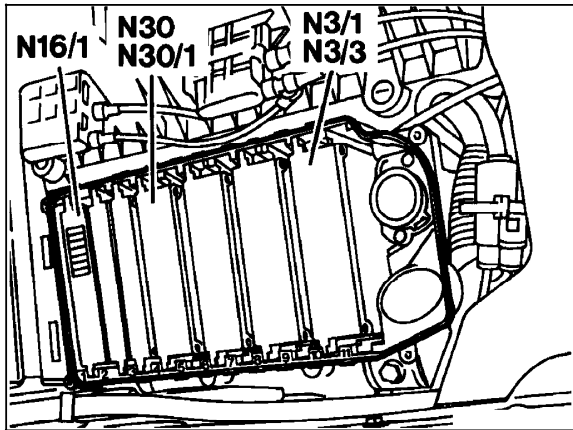
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Figure 9

Activation of instruments

4th quarter: Speedometer, Tachometer

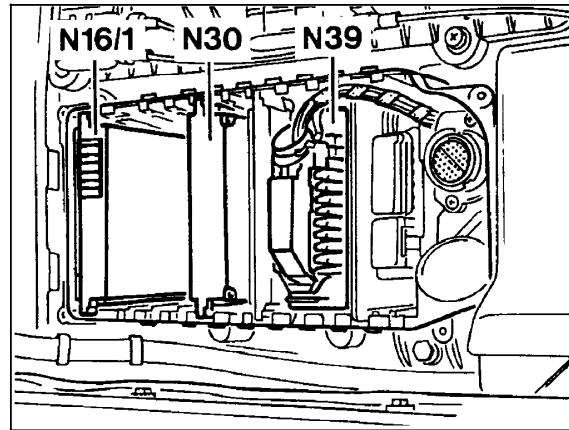
## Electrical Test Program – Test (vehicles up to 08/95)



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Figure 10  
Module box on vehicles with LH-SFI engine

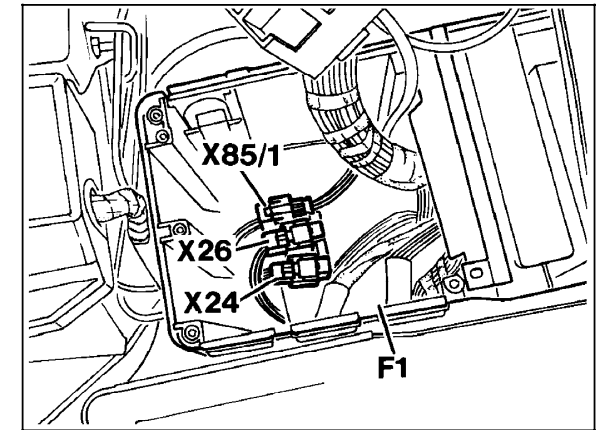
- N3/1 LH-SFI control module
- N3/3 Right LH-SFI control module
- N16/1 Base module
- N30 ABS control module
- N30/1 ASR control module



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Figure 11  
Module box on vehicles with Diesel engine

- N16/1 Base module
- N30 ABS control module
- N39 EDS control module

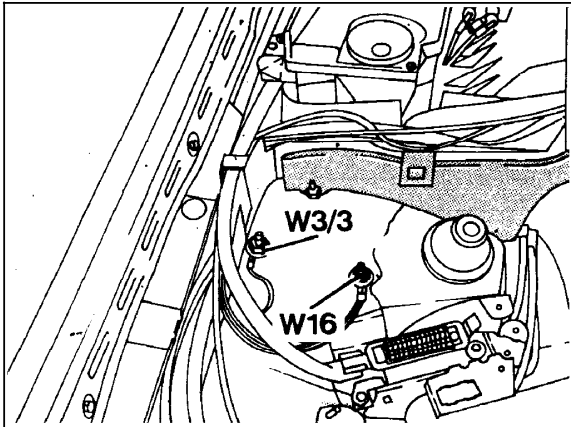


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Figure 12

- F1 Fuse and relay box
- X24 Headlamp harness connector
- X26 Interior/engine connector
- X85/1 A/C harness/engine harness connector

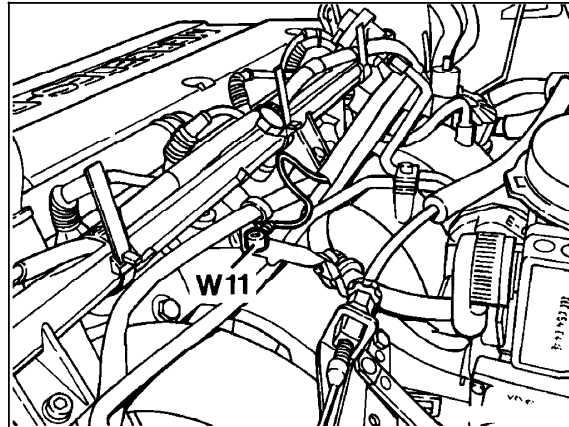
Electrical Test Program – Test (vehicles up to 08/95)



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Figure 13

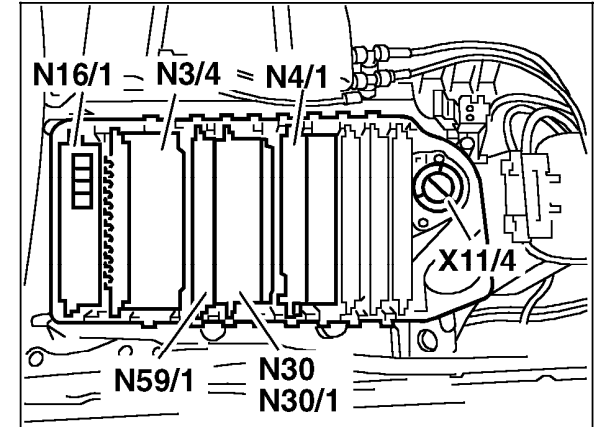
W3/3 Ground (left front wheel well housing - DI)



P54.30-0845-01

Figure 14

W11 Ground (engine - connection point for ground wires)



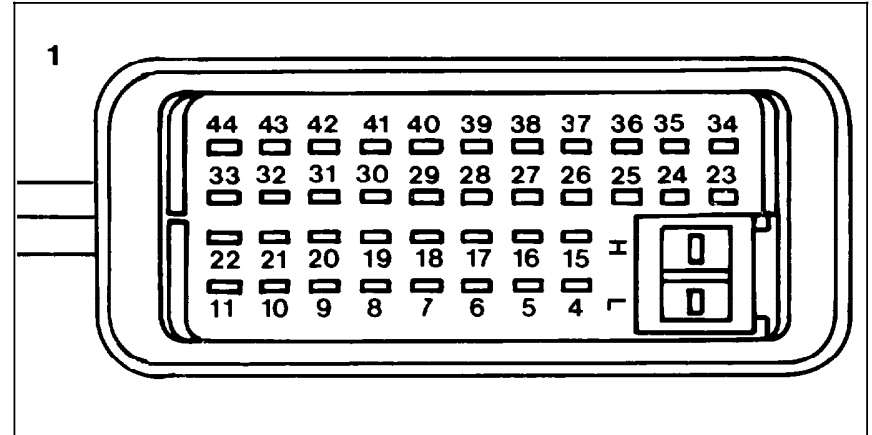
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Figure 15

Module box on vehicles with HFM-SFI engine

- N3/4 Engine control module (HFM-SFI)
- N4/1 EA/CC/ISC control module
- N16/1 Base module (BM)
- N30 ABS control module
- N30/1 ASR control module
- N59/1 Diagnostic module (OBD II)
- X11/4 Data link connector (DTC readout)

Electrical Test Program – Test (vehicles up to 08/95)



P07-5936-33

Figure 16

Engine control module (N3/4) (HFM-SFI)  
connector "1"

- 7 Fuel consumption signal
- 18 Engine rpm output signal (TN-signal)

Electrical Test Program – Test (vehicles up to 08/95)

Connection Diagram – Signal Generator

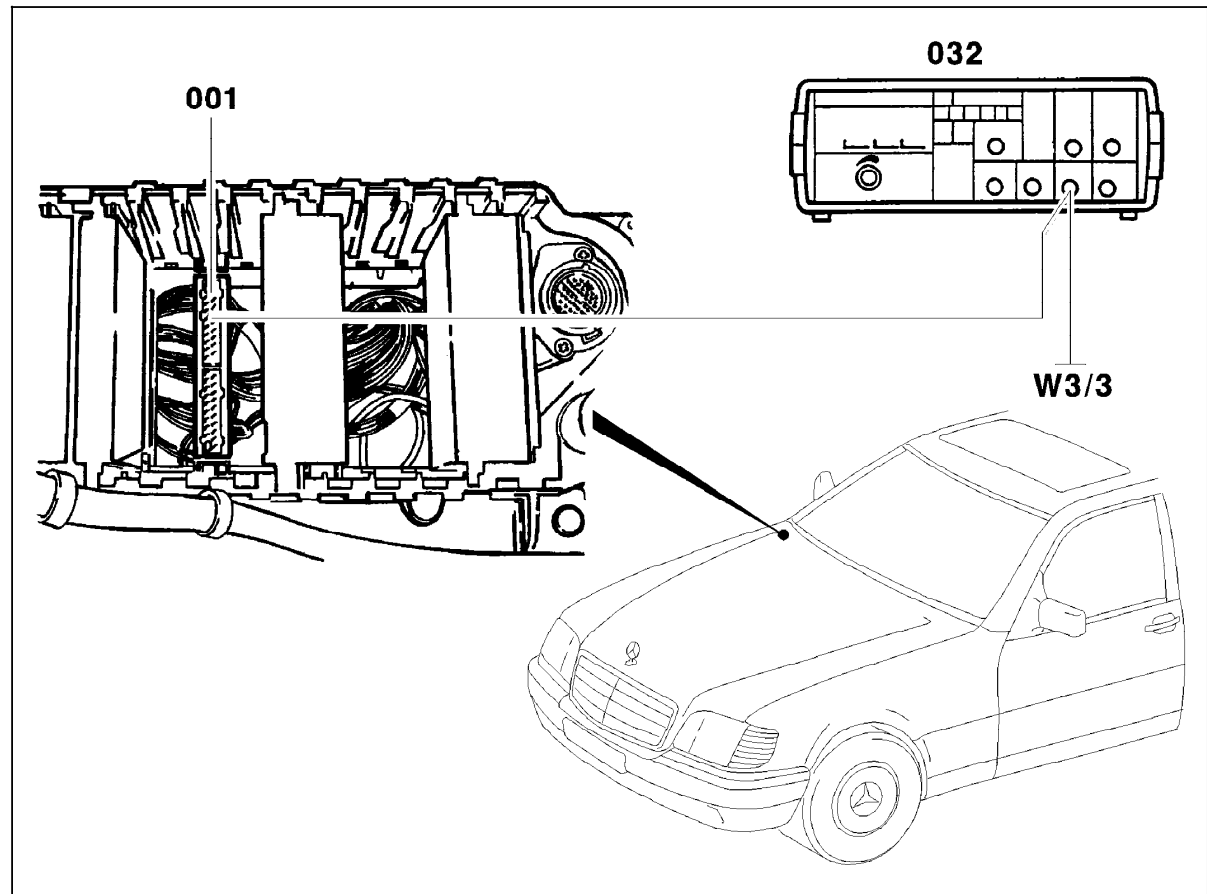


Figure 17

- 001 ABS control module connector
- 032 Signal generator
- W3/3 Ground (right front wheel well housing - DI)

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## Electrical Test Program – Test (vehicles up to 08/95)

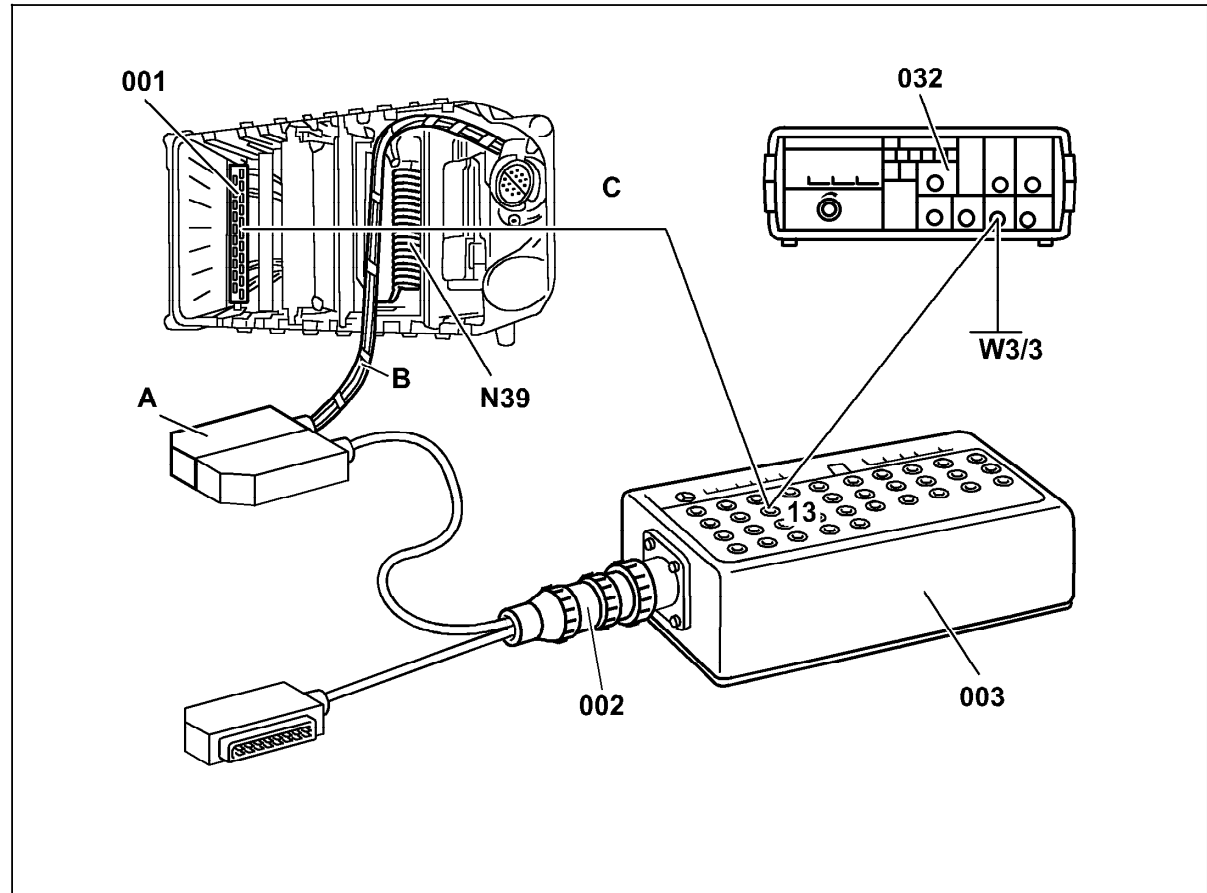
### Connection Diagram – Signal Generator, socket box for vehicles with diesel engine Fuel consumption test

**Note:**

When testing vehicles with EDS (diesel), connect the socket box (003, Figure 18) and test cable (002) to the EDS control module connector (A), **DO NOT** connect the test harness (002) to the EDS control module.

Figure 18

- A EDS control module (N39) connector
- B Engine harness (located in the control module box)
- C Bridge from socket box socket 13 (fuel consumption signal from N39) to base module N16/1 socket 13 (engine RPM signal [TN])
- N39 EDS control module
- W3/3 Ground (right front wheel well housing)
- 001 Base module (N16/1) connector
- 002 25-pole test cable 124 589 33 63 00
- 003 35-pole socket box 124 589 00 21 00
- 032 Signal generator



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Electrical Test Program – Test (vehicles up to 08/95)

Connection Diagram – Signal Generator, for vehicles with LH engine  
Fuel consumption test

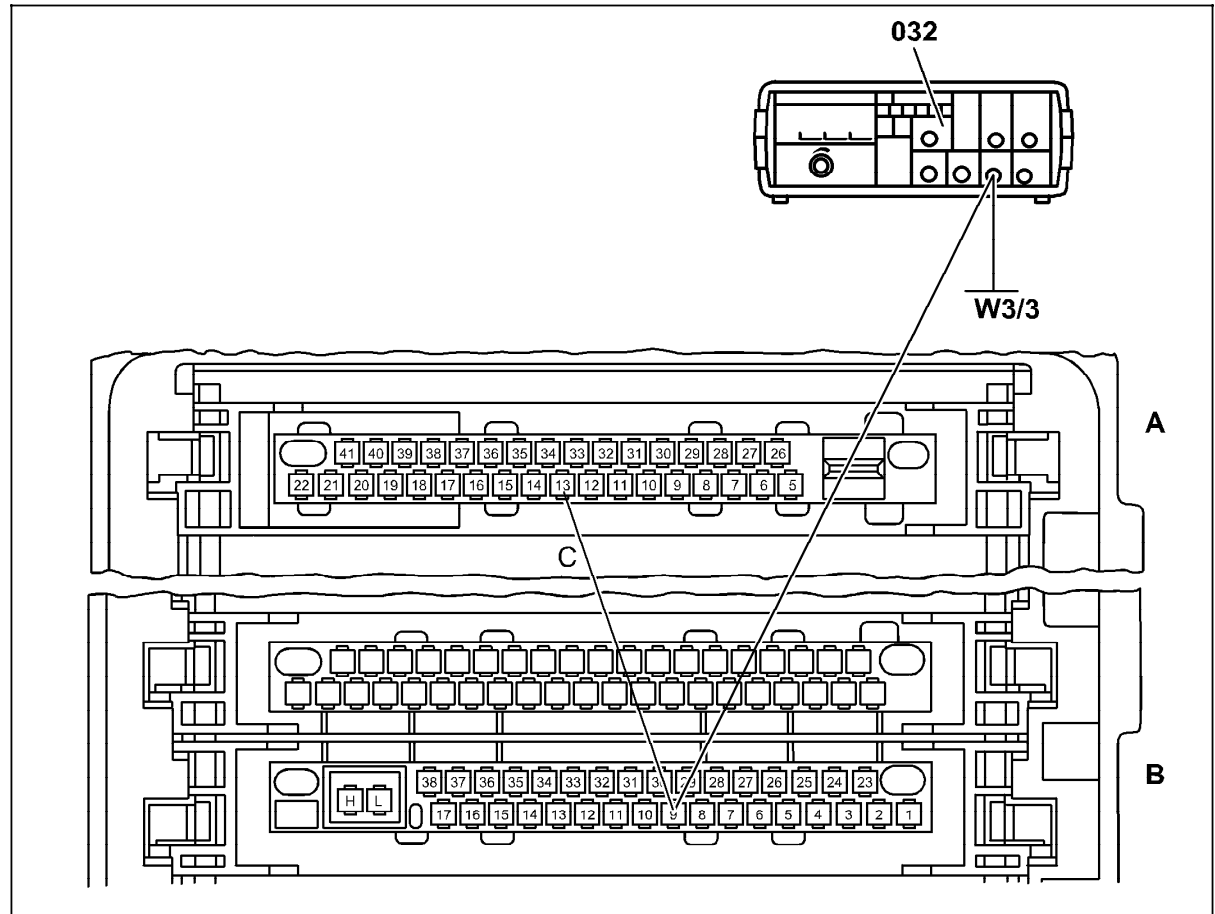


Figure 19

- A Base module (N16/1) connector
- B N3/1 or N3/3: engine control module (LH-SFI) connector "1"
- C Bridge from N16/1 connector, socket 13 (RPM signal [TN]) to N3/1 or N3/3 connector, socket 9 fuel consumption signal
- 032 Signal generator
- W3/3 Ground (right front wheel well housing - DI)

P54.30-0613-06