
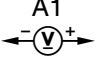

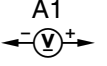

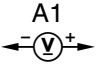

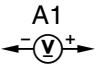

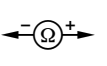

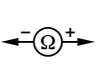



1.8 Instrument Cluster (IC) (with Digital Odometer)

Model 129

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		Instrument cluster (A1) Voltage supply circuit 30	11 —   12 (2) (2)	Remove A1, Disconnect connector 2	11 – 14 V	Wiring, ⇒ 1.1
1.1		Voltage supply Circuit 15, unfused	10 —   1 (1) (1)	Remove A1, Disconnect connector 1 Ignition: ON	11 – 14 V	Wiring, ⇒ 1.2
1.2		Voltage supply Circuit 15, fused	10 —   5 (1) (1)	Remove A1, Disconnect connector 1 Ignition: ON	11 – 14 V	Wiring, Values OK: A1
2.0		Instrument cluster (A1) Illumination	10 —   8 (1) (1)	Remove A1, Disconnect connector 1 Ignition: ON Turn on parking lights.	11 – 14 V	Wiring, Rotary light switch (S1), Short circuit in circuit 58d (output from A1).
3.0		Instrument cluster (A1) Data line from traction system control module (N47) ETS or ASR: ESP:	N47 7 —   14 A1 9 —   14	Remove A1, Disconnect connector 2	≤ 5 Ω	Wiring, Values OK: N47, D.M., Chassis and Drivetrain, Vol. 3, 9.1 23 or D.M., Chassis and Drivetrain, Vol. 3, 10.1 23

Electrical Test Program – Test (vehicles with ESP or as of 09/95)


⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	1	Fuel level gauge (A1p2)		Activate test mode 1 (see Figure 1)	Analog fuel gauge reading ≈ digital readout	A1, ⇒ 4.1
4.1	6 – 9	Fuel level gauge (A1p2)		Activate test modes 6 – 9	see Figures 2 – 13	A1, ⇒ 4.2
4.2		Wires and connections or fuel level sensor (B4)		Ignition: OFF Disconnect connector at B4, Connect resistance substitution unit. Ignition: ON Resistance substitution unit setting: $70 \pm 3 \Omega$ $62 \pm 1 \Omega$ $53 \pm 2 \Omega$ $37 \pm 2 \Omega$ $21 \pm 2 \Omega$ $5 \pm 2 \Omega$ Note: Before changing each resistance value, the ignition must be turned off and then turned on again.	Display in A1p2: ≈ 0 ¹⁾ $\approx \text{Res.}$ ¹⁾ $\approx 1/4$ $\approx 1/2$ $\approx 3/4$ $\approx 1/1$	Wiring, Values OK: B4

¹⁾ Fuel reserve indicator lamp lights up.


Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	2	Fuel consumption indicator (A1p10)		Engine: at Idle Activate test mode 2 Increase engine rpm	With increasing rpm, the consumption in l/h increases. Note: The readout is only visible on the digital display. The analog reading shows 0.	⇒ 5.1
5.1	6 – 8	A1p10		Activate test modes 6 – 8	see Figures 2 – 13	A1, ⇒ 5.2

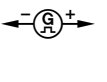
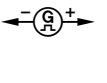
Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.2	2	Fuel consumption signal from HFM-SFI control module (N3/4) or ME-SFI engine control module (N3/10 or N3/12) with HFM-SFI: with ME-SFI:	W16  N3/4 7 (1) N3/10 or N3/12 58 (1)	Ignition: OFF Disconnect HFM-SFI (N3/4) or ME-SFI (N3/10 or N3/12) control modules (Figures 15 to 19). Connect signal generator (Figure 20) and set to a voltage amplitude of approx. 10 V. Connect wire for rpm signal as follows: HFM-SFI N3/4 socket 7 to socket 18. ME-SFI N3/10 or N3/12 socket 58 to socket 56 Ignition: ON Activate test mode 2.	LH-SFI/ HFM-SFI 25 HZ ≈ 5 l/h 50 HZ ≈ 10 l/h 75 HZ ≈ 15 l/h 100 HZ ≈ 20 l/h Note: The readout is only visible on the digital display. The analog reading shows 0.	Wiring, A1, Values OK: N3/4 Engines, Volume 2 – 1.1 23 N3/10 or N3/12: Engines, Volume 4 – 9.5 23 or – 9.6 23 Note: If no plausible values are indicated while driving and the speedometer is in order: A1
6.0	3	Engine oil pressure gauge (A1p3)		Engine: at Idle Activate test mode 3. Increase engine rpm	Analog reading ≈ digital readout. The oil pressure increases with increasing engine rpm.	A1 ⇒ 6.1



Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.1	6 – 7	Oil pressure gauge (A1p3)		Activate test modes 6 – 7	see Figures 2 and 7	A1, ⇒ 6.2
6.2		Wires and connections or oil pressure sensor (B5)		Ignition: OFF Disconnect connector at B5. Connect resistance substitution unit. Engine: at Idle Resistance substitution unit setting: <div style="text-align: right;"> 13 Ω 40 Ω 90 Ω 150 Ω </div> Note: Before changing each resistance value, the ignition must be turned off and then turned on again.	Display in A1p3: <div style="text-align: right;"> ≈ 0 ≈ 1 ≈ 2 ≈ 3 </div>	Wiring, A1, Values OK: check oil pressure (see SMS Engine, Mechanical), B5
7.0	4	Tachometer (A1p5)		Engine: at Idle Activate test mode 4, increase engine rpm	Analog tachometer reading ≈ digital readout	A1, ⇒ 7.1



Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.1		<p>Tachometer (A1p5) with HFM-SFI:</p> <p>with ME-SFI:</p>	<p>W16  N3/4 18 (1)</p> <p>W16  N3/10 or N3/12 56 (1)</p>	<p>Disconnect plug on HFM-SFI (N3/4) or ME-SFI (N3/10 or N3/12) (Figures 15 to 19). Connect signal generator and set to a voltage amplitude of approx. 10 V (Figure 17). Ignition: ON</p>	<p>Engine 104, 120 Readout: 50 Hz ≈ 1000 rpm 194 Hz ≈ 4000 rpm</p> <p>Engine 119 Readout: 70 Hz ≈ 1000 rpm 270 Hz ≈ 4000 rpm</p>	<p>Wiring, A1, Values OK on HFM-SFI engine: N3/4</p> <p>Values OK on ME-SFI engine: N3/10 or N3/12</p>
8.0	5	Low engine oil level indicator lamp (A1e12)		<p>Oil level correct. Engine: at Idle Activate test mode 5. Readout in odometer:</p> <p>0 ≈ oil level OK 1 ≈ oil level not OK</p>		<p>Wiring, Oil level switch (S43)</p>

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		Electronic speedometer (A1p8) Vehicles with ESP and vehicles with ASR or ETS as of 06/94: 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 or Vol. 3, 10.1 23	W16  N47	Disconnect connector from traction system control module (N47) (Figures 11, 12 or 13). Connect signal generator and set to a voltage amplitude of approx. 2 V . Ignition: ON	With increasing frequency the speed on the speedometer increases.	Wiring, A1 Values OK: N47-1 or N47-2, D.M., Chassis and Drivetrain, Vol. 3 – 9.1 23, N47-5, D.M., Chassis and Drivetrain, Vol. 3 – 10.1 23
10.0		Outside temperature display (A1p4)	1—  X67 — 2	Disconnect 2-pole connector X67 (Figure 10). Connect resistance substitution unit. Ignition: ON Resistance substitution unit setting: 53 kΩ 9.8 kΩ 1 kΩ	Display in A1p4: ≈ – 30 °C ≈ 0 °C ≈ + 50 °C	Wiring, A1, ⇒ 10.1

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

⇒	Mode	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
10.1	6	Outside temperature indicator temperature sensor (B14)		Ignition: ON Activate test mode 6. 53 kΩ 9.8 kΩ 3.7 kΩ 1.6 kΩ	Readout in odometer: ≈ – 30 °C ≈ 0 °C ≈ 20 °C ≈ 40 °C	B14
11.0		ECT gauge (A1p1)	W11—  B13 	Disconnect plug on ECT gauge sensor (B13). Connect resistance substitution unit. Ignition: ON Resistance substitution unit setting: 110 Ω 67 Ω 38 Ω 20 Ω	Display in A1p1: ≈ 60 °C ≈ 80 °C ≈ 100 °C ≈ 120 °C	Wiring, Values OK; B13, A1

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

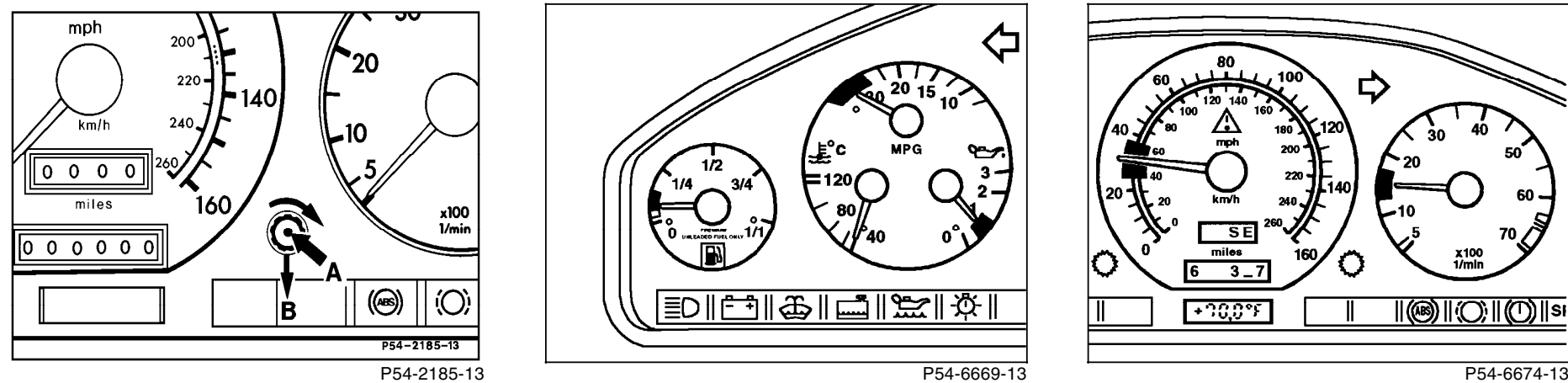


Figure 1

Activation of test mode

Figure 2

Activation of instruments

1st quarter: Fuel tank
Fuel consumption
Oil pressure

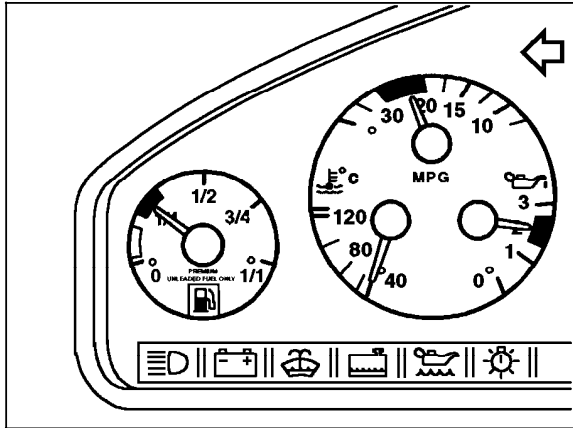
Figure 3

Activation of instruments

1st quarter: Speedometer, Tachometer

1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

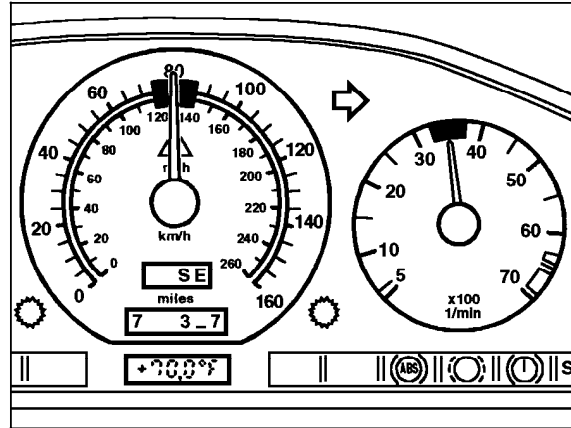


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Figure 4

Activation of instruments

2nd quarter: Fuel tank
Fuel consumption
Oil pressure

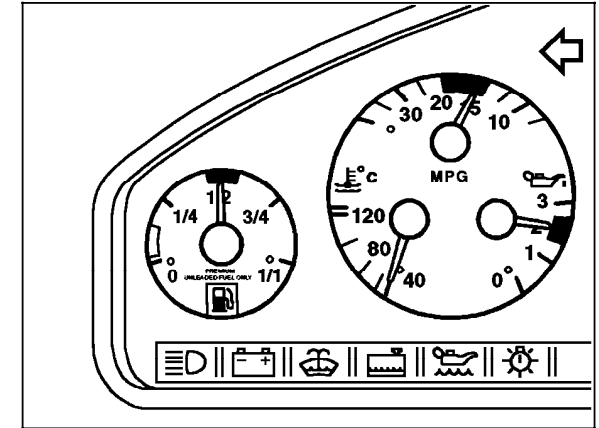


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Figure 5

Activation of instruments

2nd quarter: Speedometer, Tachometer



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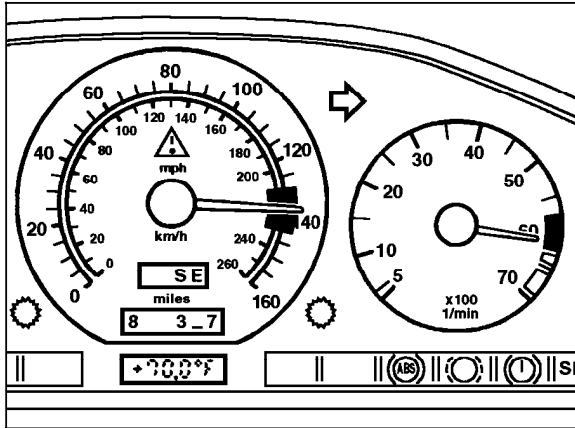
Figure 6

Activation of instruments

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

1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

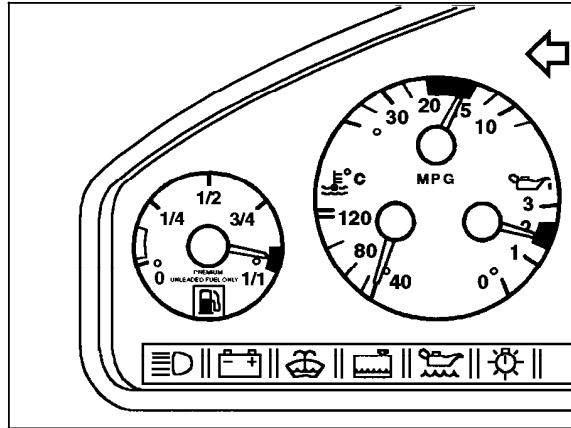


P54-6676-13

Figure 7

Activation of instruments

3rd quarter: Speedometer, Tachometer



P54-6672-13

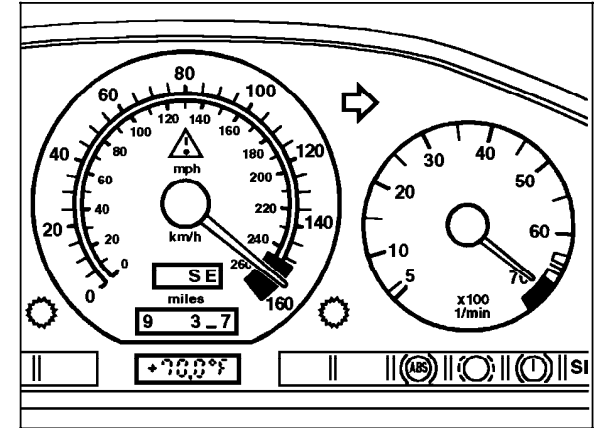
Figure 8

Activation of instruments

2nd quarter: Oil pressure

3rd quarter: Fuel consumption

4th quarter: Fuel tank



P54-6677-13

Figure 9

Activation of instruments

4th quarter: Speedometer, Tachometer

1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

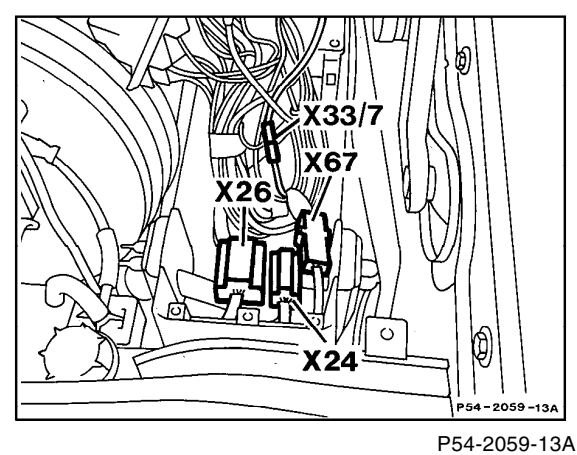


Figure 10

X767 Outside temperature indicator connector (2-pole)

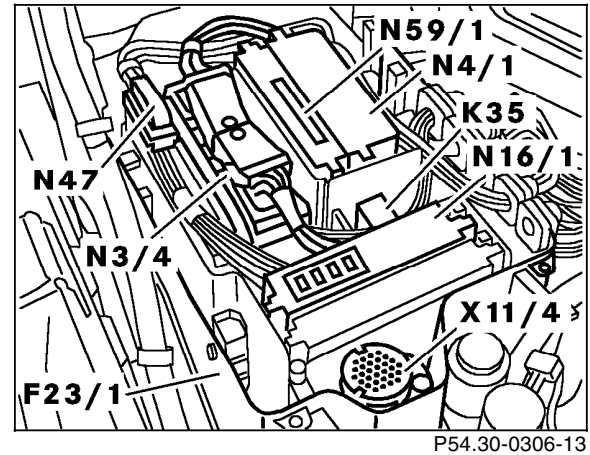


Figure 11

N3/4 Engine control module (HFM-SFI)
N47 Traction system control module

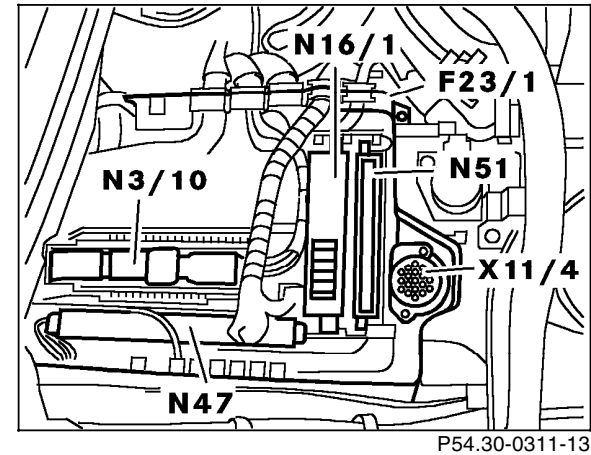


Figure 12

N3/10 Engine control module (ME-SFI)
N47 Traction system control module

1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

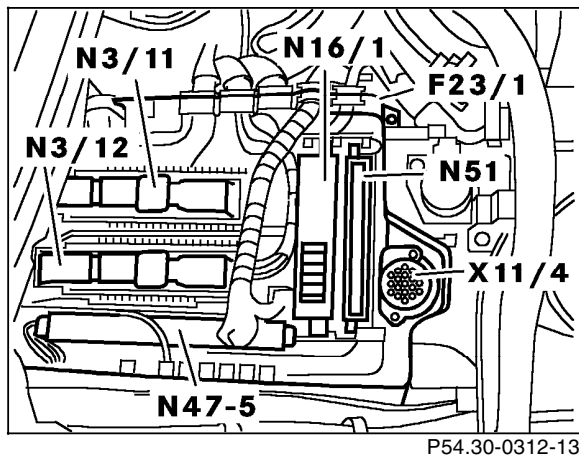


Figure 13

- N3/11 Left engine control module (ME-SFI)
- N3/12 Right engine control module (ME-SFI)
- N47-5 ESP/SPS control module

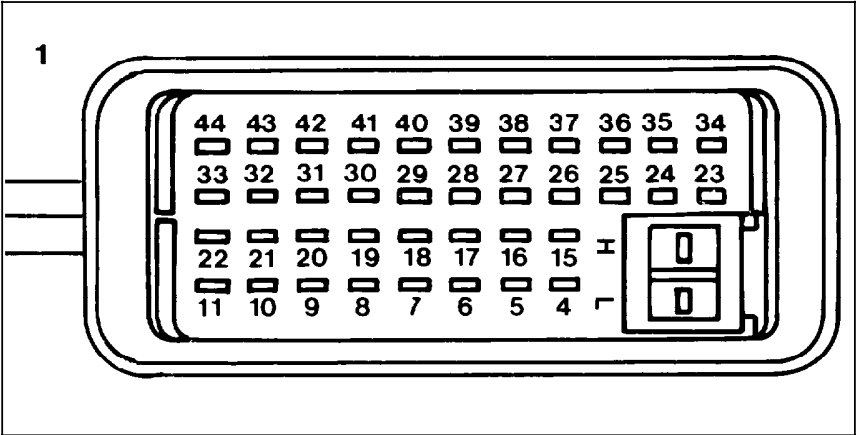
1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

Figure 14

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

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



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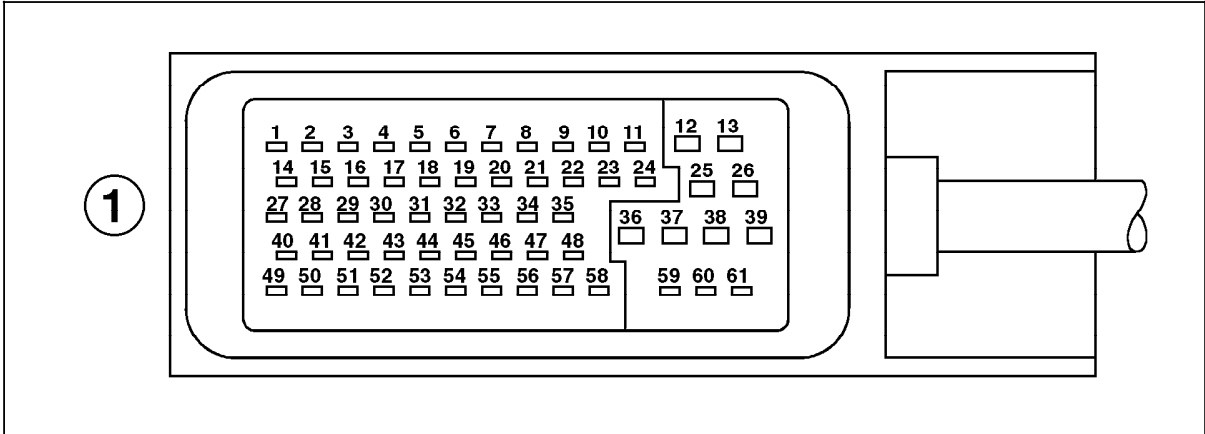
1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Test (vehicles with ESP or as of 09/95)

Figure 15

Engine control module (N3/10) (ME-SFI)
connector “1”

56 Engine rpm output signal (TN-signal)
58 Fuel consumption signal



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1.8 Instrument Cluster (IC) (with Digital Odometer)

Electrical Test Program – Component Locations

Connection Diagram – Signal Generator

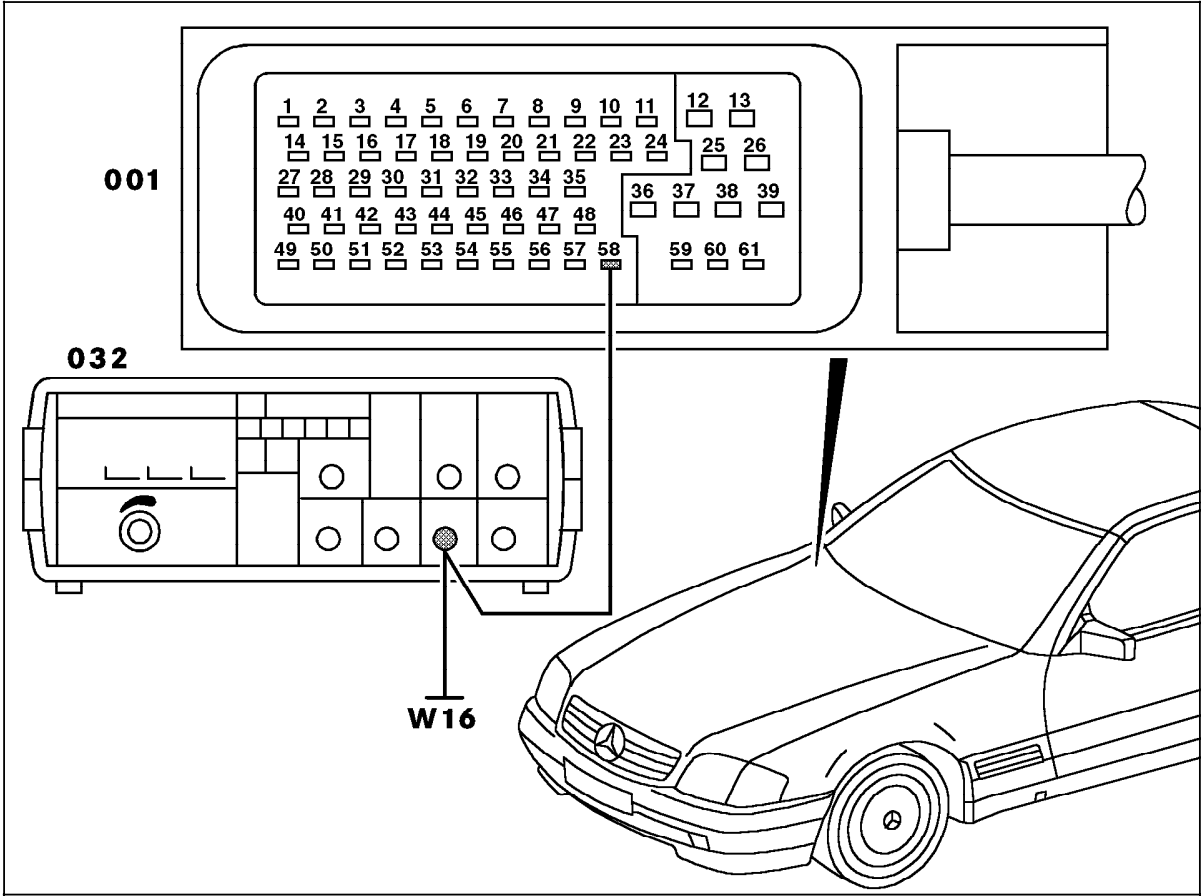


Figure 16

- 001 ME-SFI control module connector "1"
- 032 Signal generator
- W16 Ground (component compartment)

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