

## 4.1 Antenna Systems (AS)

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### 4.1 Model 140 (with Integrated Bumper / Rear Window Antenna System)

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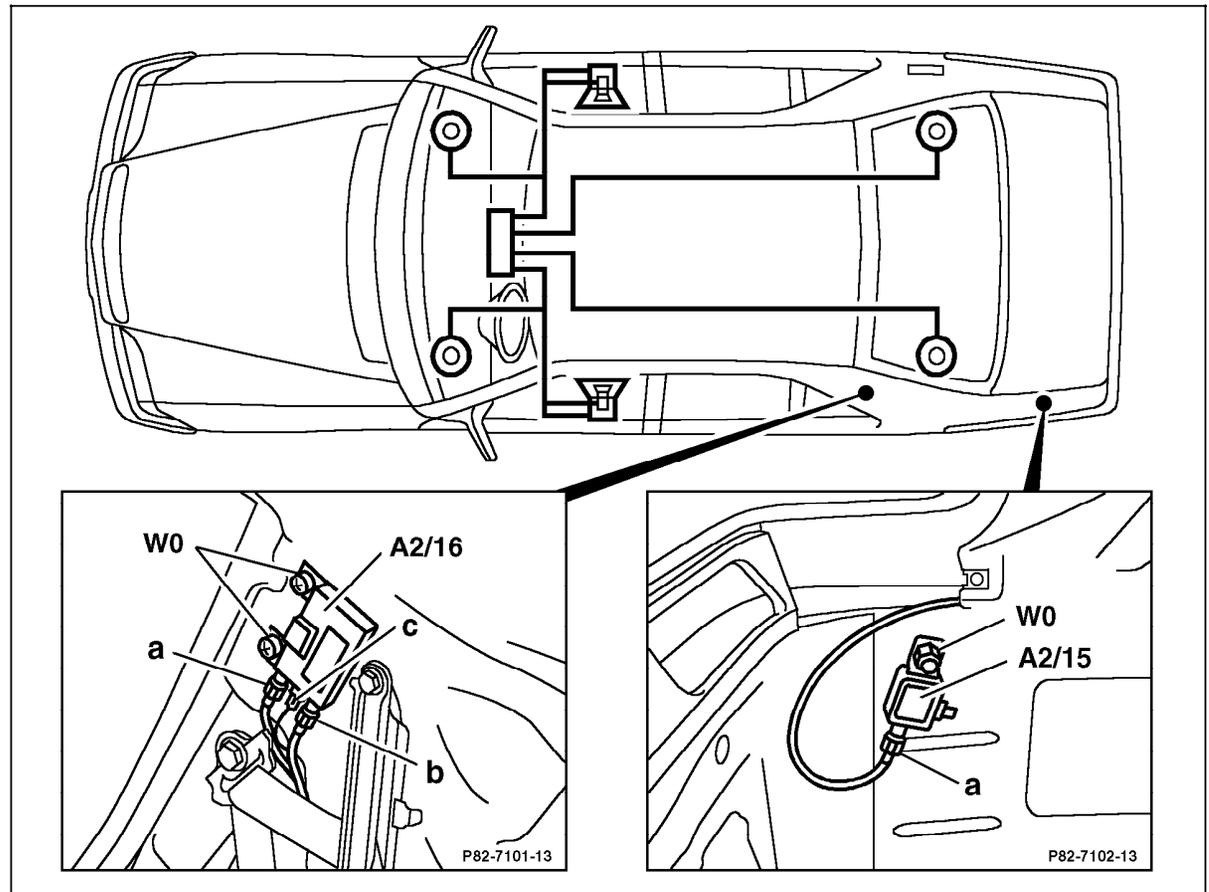
### Diagnosis – Function Test

#### Function Test Explanation

##### Function Test:

- Tune-in a weak radio station (music).
- Set fader, bass, treble and balance to center range (RESET reading in display window).
- Verify reception quality of AM and FM band by performing road test.
- Compare function test results against identical vehicle (with integrated antenna) from dealer stock. Tune-in **same radio station**, ensure that the settings are set to position 0 and perform same road test as above and over **same course**.
- If components are replaced, repeat entire function test.

Electrical Test Program – Component Locations

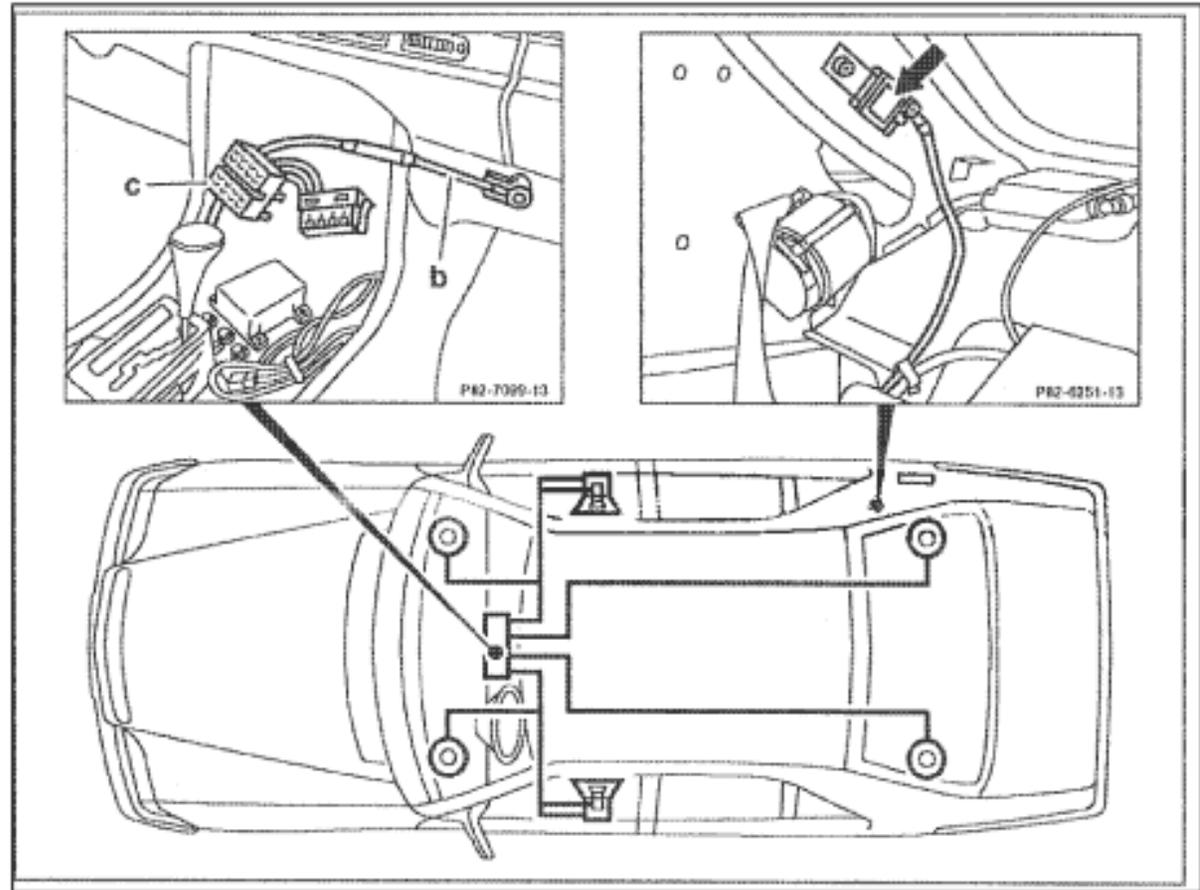


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Figure 1

- A2/15 Bumper FM antenna amplifier
- A2/16 Rear window AM antenna amplifier
- W0 Ground
- a RF antenna cable and voltage supply for A2/15
- b RF antenna cable to radio (A2)
- c Control wire from radio

Electrical Test Program – Component Locations



P82-7100-57

Figure 2

- Arrow Noise suppression capacitor
- b RF antenna cable to radio (A2)
- c Control wire from radio

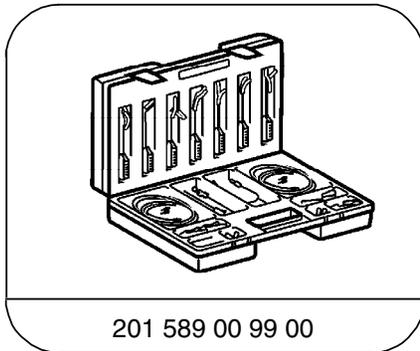
### Electrical Test Program – Preparation for Test

1. Battery voltage 11–14 V.
2. Check fuses.
3. Radio OK.
4. No physical damage to the rear bumper.

#### Electrical wiring diagrams:

Electrical Troubleshooting Manual, Model 170, Group 82

#### Special Tools



201 589 00 99 00  
Electrical connecting set

#### Conventional tools, test equipment

Description	Brand, model, etc.
Digital multimeter <sup>1)</sup>	Fluke models 23, 83, 85, 87

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

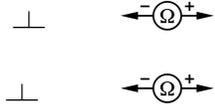
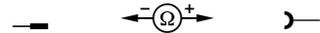
## Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Noise suppression capacitor</b> Function		Ignition: <b>OFF</b> Radio: <b>ON</b> Tune-in a weak AM radio station. Engine: <b>at Idle</b>	No change in reception quality.	Replace noise suppression capacitor on right C-pillar.
2.0	<b>RF antenna cable to radio (A2)</b> Continuity  Short circuit (inner shielding)		Radio: <b>OFF</b> Disconnect antenna cable (b) between A2 and A2/16.	< 10 Ω  ∞ Ω	Wiring.
3.0	<b>RF antenna cable to bumper FM antenna amplifier (A2/15)</b> Continuity  Short circuit (inner shielding)		Radio: <b>OFF</b> Disconnect antenna cable (a) between A2/15 and A2/16.	< 10 Ω  ∞ Ω	Wiring.
4.0	<b>Radio (A2)</b> Voltage supply	W0 ⊥ 	Radio: <b>OFF</b> Disconnect antenna cable (a) from A2/16. Radio : <b>ON</b>	11 – 14 V	Wiring, A2 (see 3.1 23).

## Electrical Test Program – Test

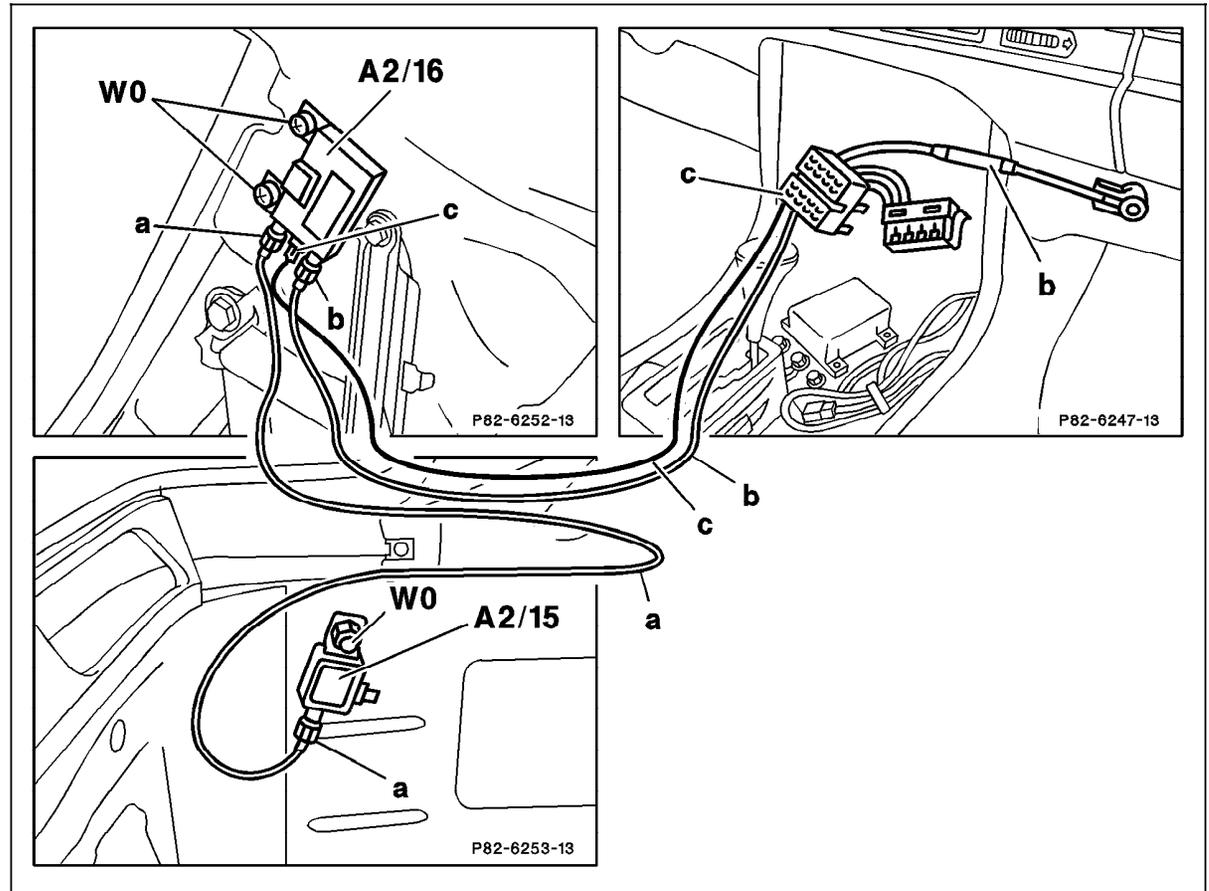
⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	<b>Rear window AM antenna amplifier (A2/16) and bumper FM antenna amplifier (A2/15)</b> Total current draw	A2/16 — ←(A)+→ A2 —	Connect ampmeter between A2/16 and control wire (c) from radio. Radio: <b>ON</b>	52 - 72 mA	⇒5.1  If nominal value is okay, but reception quality is poor: AM band Replace A2/16 and perform 11. If no improvement, replace rear window antenna. FM band ⇒7.0
5.1	Rear window AM antenna amplifier (A2/16) Current draw	A2/16 — ←(A)+→ A2 —	Connect ampmeter between A2/16 and control wire (c) from radio. Disconnect antenna cable (a) from A2/16. Radio: <b>ON</b>	15 - 25 mA	⇒6.0, A2/16, If nominal value is okay: ⇒5.2
5.2	Bumper FM antenna amplifier (A2/15) Current draw	A2/16 — ←(A)+→ A2/16 —	Connect ampmeter between A2/16 and antenna cable (a) from A2/15. Radio: <b>ON</b>  <b>Note:</b> Voltage is supplied via the inner cable of RF cable.	37 - 47 mA	⇒6.0, A2/15

## Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0	<b>Ground</b>	 A2/15 A2/16	Radio : <b>OFF</b> <b>Note:</b> Do not loosen mounting connection on A2/15 or A2/16. Mounting connection also serves as ground.	< 1 Ω	Contact resistance at ground.
7.0	<b>Antenna cable</b> Bumper antenna		Measure between connection on bumper (at solder connection) and pin on A2/15.	< 1 Ω	If nominal value is okay, replace A2/15 and perform 11. If no improvement, replace rear bumper antenna.

Electrical Test Program – Test

Connection diagram



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Figure 1

- A2/15 Bumper FM antenna amplifier
- A2/16 Rear window AM antenna amplifier
- W0 Ground
- a RF antenna cable and voltage supply for A2/15
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- c Control wire from radio