5.9 Model 210 (with Bose® Sound System)

Diagnosis – Function Test

Explanation to Function Test

The operation of the radio is described in the radio “Operation Guide“.

For the function test adjust the radio as follows:

- Select a strong radio station (music) or play a cassette or CD.
- Set fader, bass, treble and balance to the center position 0 (RESET or CENTER in display window).
- Carefully listen to each speaker individually in its installed location, to verify proper function (tone).

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Remedy/Test step [1]
Entire speaker system not functioning.	Left/right audio power amplifier (N40/3), Radio (A2).	23 ⇒ 1.0
Left front door speaker group (H4/1) not functioning.	H4/1, N40/3, Radio (A2).	23 ⇒ 3.0 23 ⇒ 1.0
Left rear door speaker (H4/3) not functioning.	H4/3, N40/3, Radio (A2).	23 ⇒ 4.0 23 ⇒ 1.0
Left rear speaker group (H4/7) located in parcel shelf not functioning.	H4/7, N40/3, Radio (A2).	23 ⇒ 5.0 23 ⇒ 1.0
Right front door speaker group (H4/2) not functioning.	H4/2, N40/3, Radio (A2).	23 ⇒ 6.0 23 ⇒ 1.0
Right rear door speaker (H4/4) not functioning.	H4/4, N40/3, Radio (A2).	23 ⇒ 7.0 23 ⇒ 1.0
Right rear speaker (H4/8) not functioning.	H4/8, N40/3, Radio (A2).	23 ⇒ 8.0 23 ⇒ 1.0
Acoustimass® bass module (H4/17) not functioning	H4/17, N40/3, Radio (A2).	23 ⇒ 9.0 23 ⇒ 1.0

[1] Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations

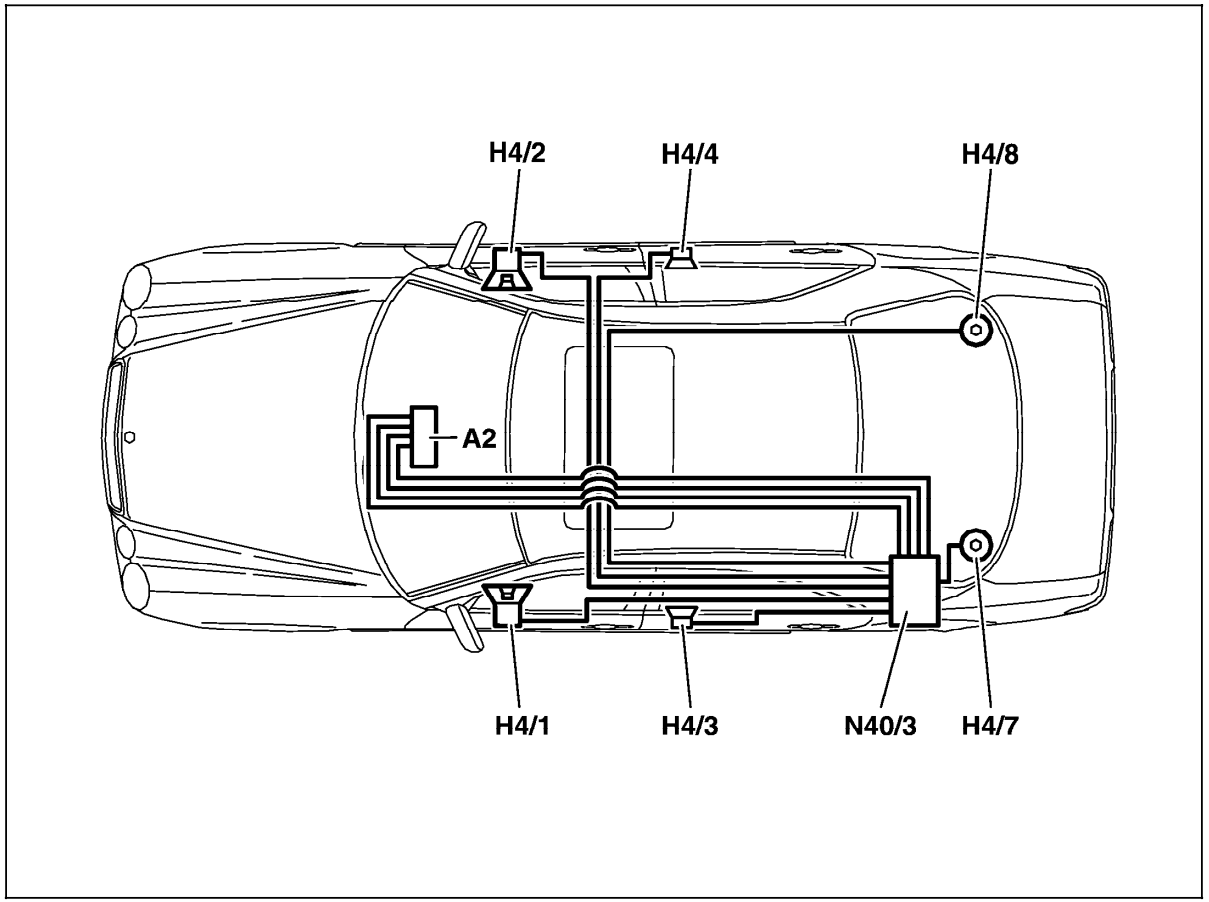

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Figure 1
Model 210.0 with Sound System

A2	Radio
H4/1	Left front dooe speaker group
H4/2	Right front door speaker group
H4/33	Left rear door speaker
H4/4	Right rear door speaker
H4/7	Left rear speaker
H4/8	Right rear speaker
N40/3	Left/right audio power amplifier

Electrical Test Program – Component Locations

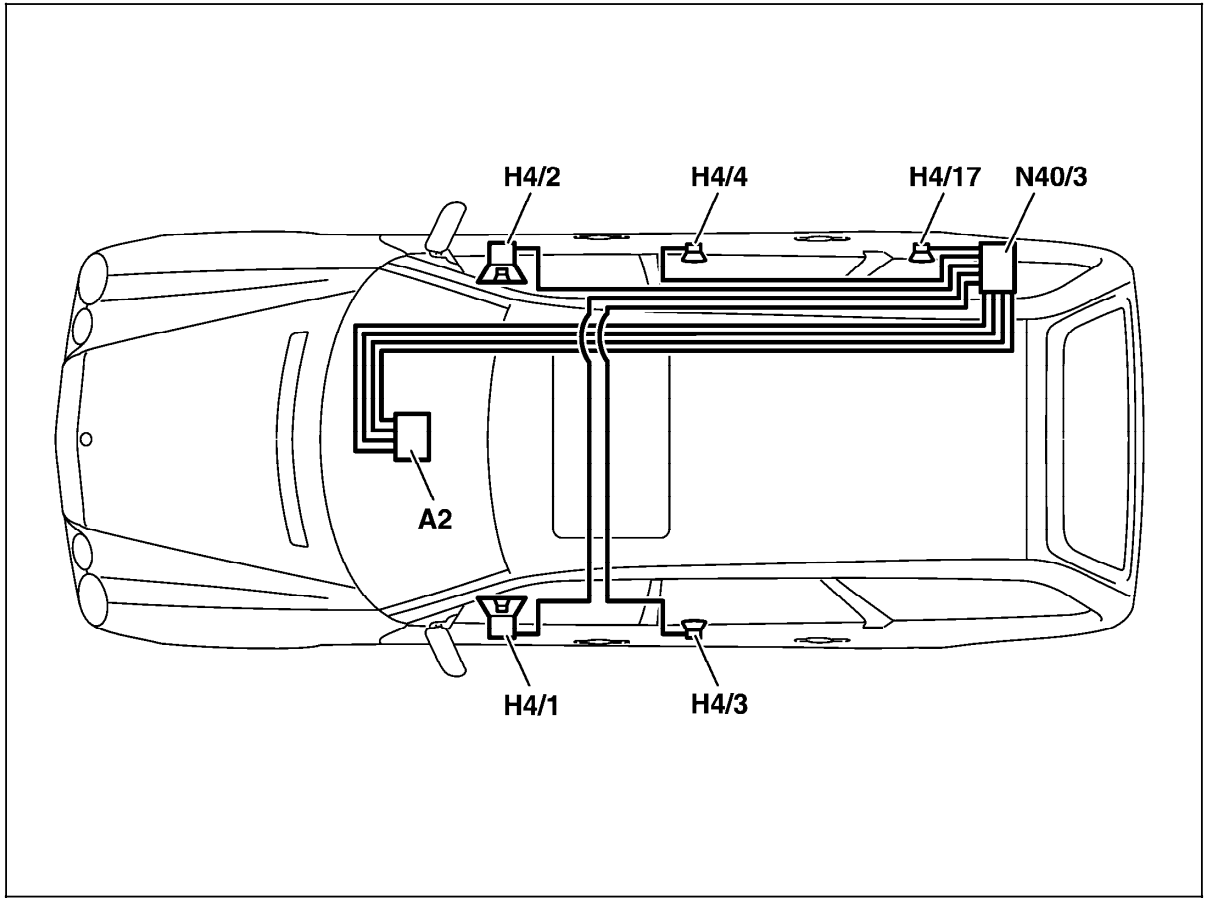

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Figure 2
Model 210.2 with Sound System

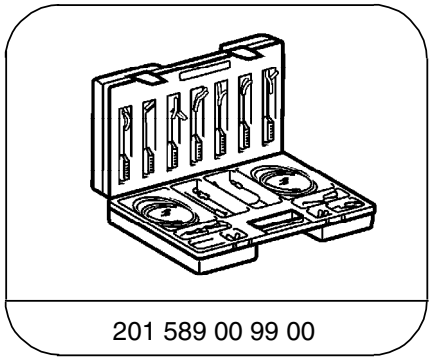
A2	Radio
H4/1	Left front dooe speaker group
H4/2	Right front door speaker group
H4/33	Left rear door speaker
H4/4	Right rear door speaker
H4/17	Acoustimass® bass module
N40/3	Left/right audio power amplifier

Electrical Test Program – Preparation for Test

1. Battery voltage 11–14 V.
2. Check fuses.
3. Radio OK.
4. Speakers for Sound-System installed.

Note:
To prevent damage to the radio and left/right audio power (N40/3) amplifier, the connectors must only be disconnected or reconnected with the ignition **OFF and** radio **OFF**.

Special Tools



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Electrical connecting set

Conventional tools, test equipment

Description	Brand, model, etc.
Multimeter [1)]	Fluke Models 23, 77 III, 83, 85, 87, 88
Signal generator [1)]	SUN DTR-8416

1) Available through the MBUSA Standard Equipment Program.

Electrical wiring diagrams:
Electrical Troubleshooting Manual, Model 210, group 82

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		**Left/right audio power amplifier (N40/3)** Voltage supply	N40/3 9 — (-) (V) (+) — 26	Disconnect connector from N40/3. Radio (A2): **OFF**	11 – 14 V	Fuse F16 in fusebox F4, Fuse in N40/3 (Figure 2), Ground (W6/1 or W7/1), Wiring, Values OK: ⇒ 1.1.
1.1		N40/3 Control voltage from radio (A2)	N40/3 9 — (-) (V) (+) — 8	Disconnect connector from N40/3. Radio (A2): **ON**	11 – 14 V	Wiring, Radio (A2), see – 3.1 23 ⇒ 2.0.
2.0		**N40/3** Speaker signal from radio (A2) Left front: Right front: Left rear: Right rear: (Figure 2)	N40/3 10 — (-) (V) (+) — 18 1 — (-) (V) (+) — 2 3 — (-) (V) (+) — 5 4 — (-) (V) (+) — 6	Disconnect connector from N40/3. Radio (A2): **ON** Adjust volume to maximum.	> 0.2 V Short voltage surges permitted	Wiring, Radio (A2), see – 3.1 23 AD82.60 in WIS

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0		**Speaker group** Left front door (H4/1)	H4/1 9 — Ω — 13 9 — Ω — 21 21 — ~ — 13	Disconnect connector from N40/3. Connect function generator[1] and set a frequency of 100 to 10,000 Hz with a voltage amplitude of 2 V. Radio (A2): **OFF**	 ∞ Ω ∞ Ω The set frequency can be heard via the speakers.	Wiring, H4/1, Values OK: N40/3
4.0		**Speaker** Left rear door (H4/3)	H4/3 15 — Ω — 23 9 — Ω — 15 9 — Ω — 23	Disconnect connector from N40/3. Radio (A2): **OFF**	 1.5 – 2.5 Ω ∞ Ω ∞ Ω	Wiring, H4/3, Values OK: N40/3
5.0		**Speaker group** Left rear (H4/7)	H4/7 12 — Ω — 20 9 — Ω — 12 9 — Ω — 20	Disconnect connector from N40/3. Radio (A2): **OFF**	 1.5 – 2.5 Ω ∞ Ω ∞ Ω	Wiring, H4/7, Values OK: N40/3

[1] Voltage amplitude changes result in volume changes; Frequency changes result in tone changes.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0		**Speaker group** Right front door (H4/2)	H4/2 9 — Ω — 14 9 — Ω — 22 14 — ~ — 22	Disconnect connector from N40/3. Connect function generator[1] and set a frequency of 100 to 10,000 Hz with a voltage amplitude of 2 V. Radio (A2): **OFF**	∞ Ω ∞ Ω The set frequency can be heard via the speakers.	Wiring, H4/2, Values OK: N40/3
7.0		**Speaker** Right rear door (H4/4)	H4/4 17 — Ω — 25 9 — Ω — 17 9 — Ω — 25	Disconnect connector from N40/3. Radio (A2): **OFF**	1.5 – 2.5 Ω ∞ Ω ∞ Ω	Wiring, H4/4, Values OK: N40/3
8.0		**Speaker** Right rear (H4/8)	H4/8 11 — Ω — 19 9 — Ω — 11 9 — Ω — 19	Disconnect connector from N40/3. Radio (A2): **OFF**	1.5 – 2.5 Ω ∞ Ω ∞ Ω	Wiring, H4/8, Values OK: N40/3

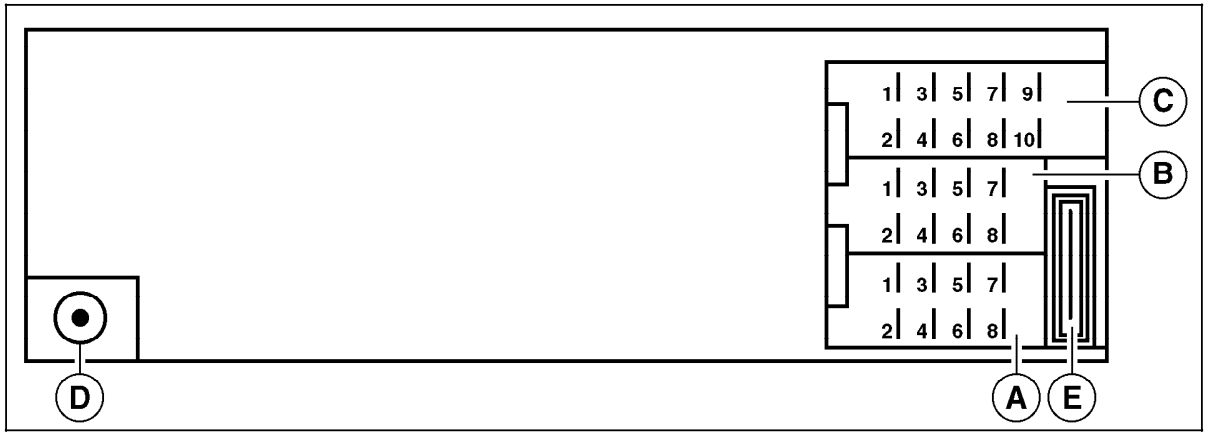
1) Voltage amplitude changes result in volume changes; Frequency changes result in tone changes.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		**Acoustimass® bass module (H4/17)** Model 210.2 Bass module speaker 1	H4/17 11 — Ω — 19 9 — Ω — 11 9 — Ω — 19 Bass module speaker 1 12 — Ω — 20 9 — Ω — 12 9 — Ω — 20	Disconnect connector from N40/3. Radio (A2): **OFF**	0.5 – 1.5 Ω ∞ Ω ∞ Ω 0.5 – 1.5 Ω ∞ Ω ∞ Ω	Wiring, H4/17, Values OK: N40/3

Connections on back of Radio

Figure 1



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A
1 Speed-sensitive volume control
2 Not used
3 Muting by telephone system
4 Permanent plus (circuit 30)
5 Automatic antenna control
6 Illumination (circuit 58)
7 Switched plus (circuit 15)
8 Ground (circuit 31)

B
1 Right rear loudspeaker +
2 Right rear loudspeaker –
3 Right front loudspeaker +
4 Right front loudspeaker –
5 Left front loudspeaker +
6 Left front loudspeaker –
7 Left rear loudspeaker +
8 Left rear loudspeaker –

C Connector for CD changer, coding (via wiring harness)

D Antenna jack

E Fuse

Electrical Test Program – Test

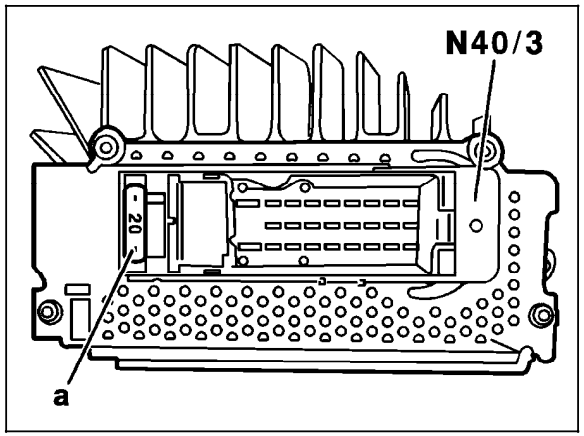

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Figure 2

N40/3 Left/right audio power amplifier

a Fuse