



Workshop Manual

Audi A4 2008 ➤

Audi A5 Cabriolet 2009 ➤

Audi A5 Coupé 2008 ➤

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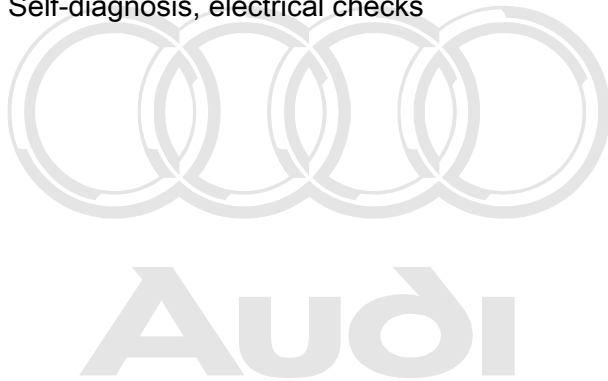
**System description - infotainment and audio output
(MOST)**

Edition 10.2011

List of Workshop Manual Repair Groups

Repair Group

01 - Self-diagnosis, electrical checks



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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01 – Self-diagnosis, electrical checks

1 General information on audio output (MOST)

Energy management

Most control units required for the audio output are connected to the energy management system. This means that the MOST bus is shut down in the event of a poor energy balance in the vehicle. Depending on the condition of the battery, there are various shut-down levels affecting different control units. Audio output is no longer possible once the corresponding shut-down level has been activated.



Note

If there is no »ignition on« signal at terminal 15 and no buttons are pressed on the multimedia system operating unit -E380-, the MOST bus will operate for a limited period only. After this period, an »ignition on« signal must be activated at terminal 15, or the ON/OFF button on the multimedia system operating unit -E380- must be pressed (depending on the operating status of the MOST bus) to continue the audio output.

1.1 Definition of terms

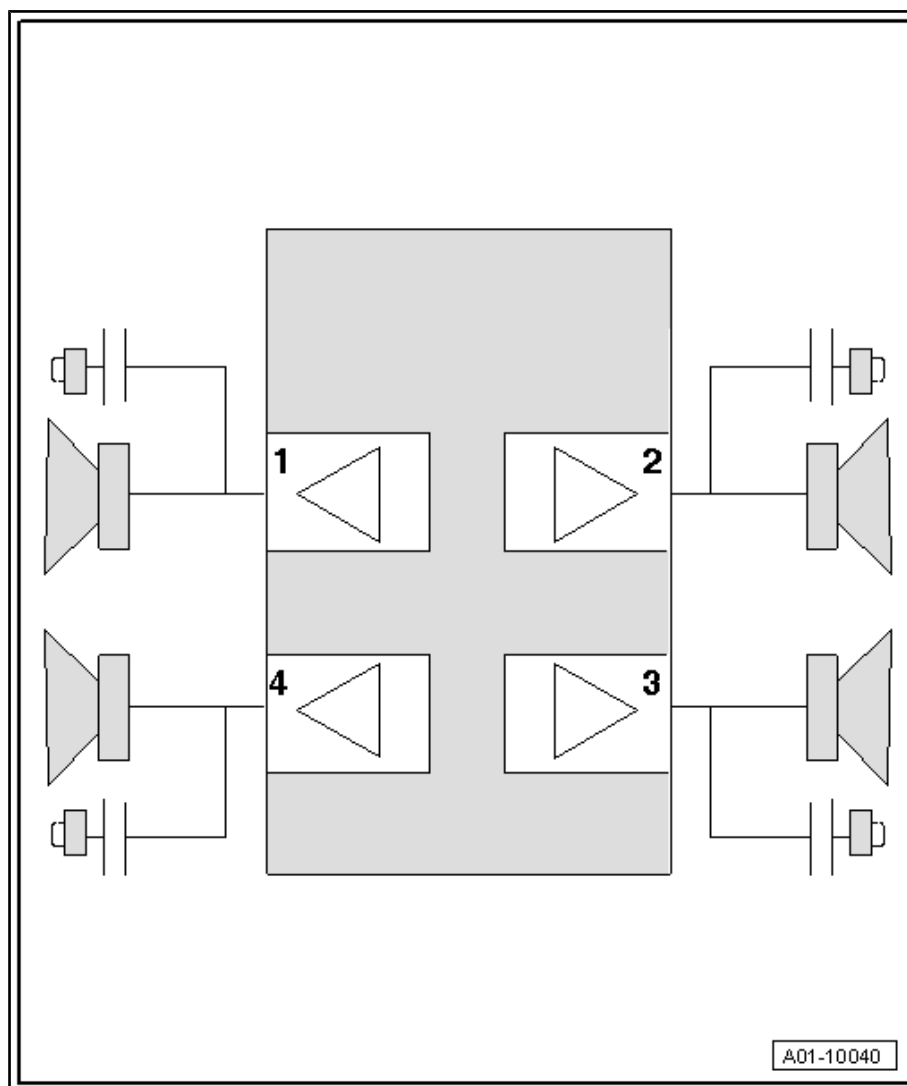
Term	Definition
MMI basic system (MMI2G only)	The system combines various infotainment control units. In contrast to the MMI high system, not all infotainment control units can be installed in an MMI basic system (e.g. TV tuner).
MMI high system (MMI2G only)	The system combines various infotainment control units. In an MMI high system all control units can be installed.
Bus versions	MOST bus ♦ MOST stands for »Media-Oriented Systems Transport« ♦ Optical data transfer via fibre-optic cables ♦ High-speed data transfer
	CAN bus ♦ CAN stands for »Controller Area Network« ♦ Two-wire bus
	LIN bus ♦ LIN stands for »Local Interconnect« ♦ Single-wire bus ♦ Master/slave principle
MMI	The Multi Media Interface (MMI) is an integrated operating concept used by Audi for easy, logical and intuitive operation of on-board car systems and infotainment components. ♦ 2G stands for 2nd generation ♦ 3G stands for 3rd generation

1.2 Technical data

Basic sound amplifier

	MMI2G	MMI3G
Fitting location	Integrated in radio -R-	Integrated in radio -R-
Number of channels	4	4
Number of microphones	0	0
Output	20 watts per channel	--
Surround function	No	No

- Basic sound amplifier



Note

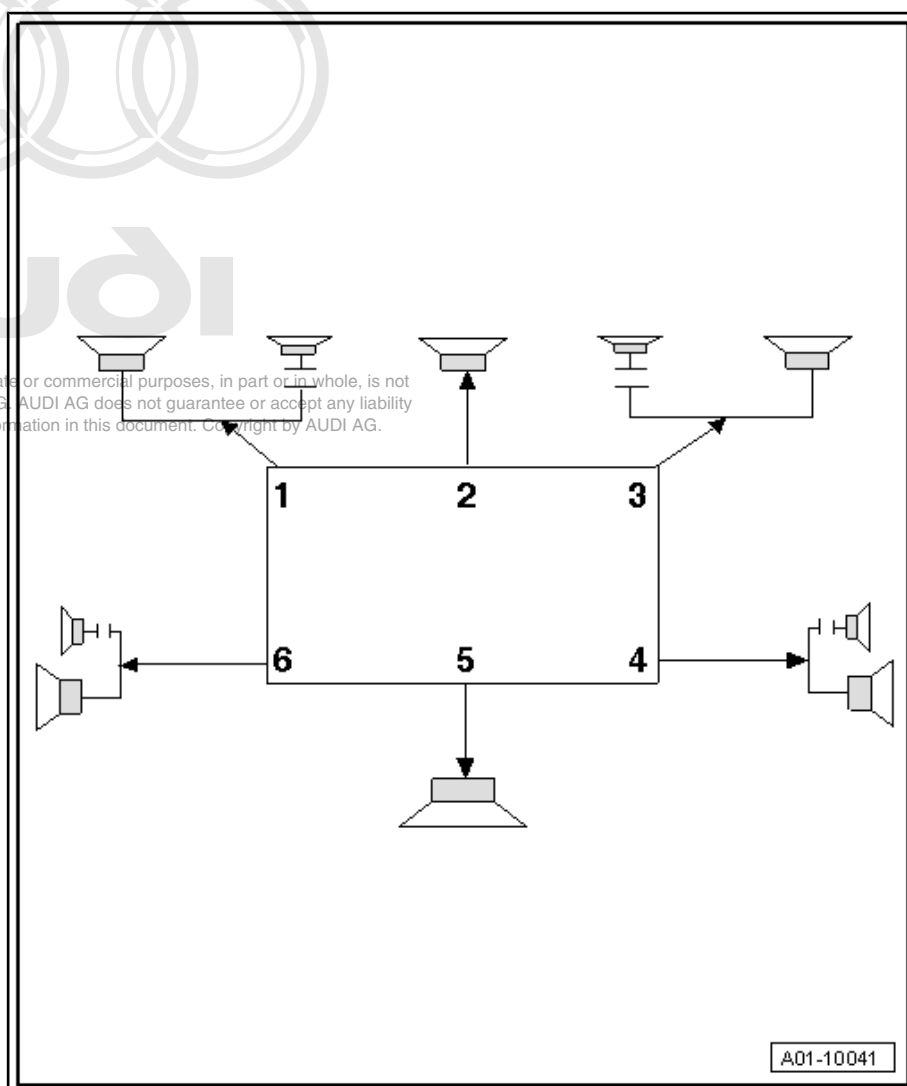
The channel numbers indicate the amount of channels, not the position of the individual channels.

Standard sound amplifier

	MMI2G	MMI3G
Fitting location	External amplifier, digital sound package control unit -J525-	Integrated in radio -R-
Number of channels	6	6
Number of microphones	max. 1 (only in vehicles with speech control system)	0
Output	3 x 20 watts, 3 x 40 watts	--
Surround function	No	No

- Standard sound amplifier

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Note

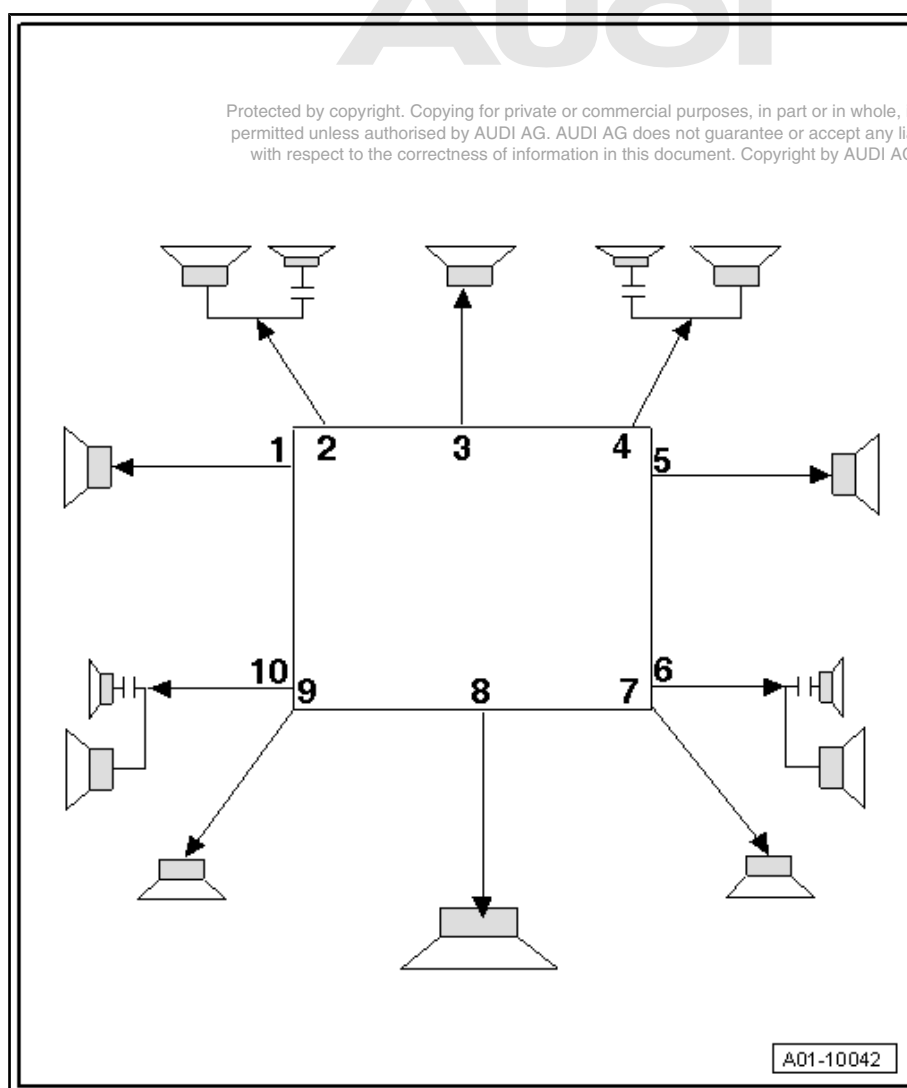
The channel numbers indicate the amount of channels, not the position of the individual channels.



Premium sound amplifier

	MMI2G	MMI3G
Fitting location	External amplifier, digital sound package control unit -J525-	Integrated in radio -R-
Number of channels	10	10
Number of microphones	at least 1 (due to background noise compensation), max. 2 (in vehicles with speech control system)	1 (required for background noise compensation)
Output	4/5 x 25 watts, 4 x 43 watts, 1 x 100 watts	--
Surround function	Yes	Yes

- Premium sound amplifier



Note

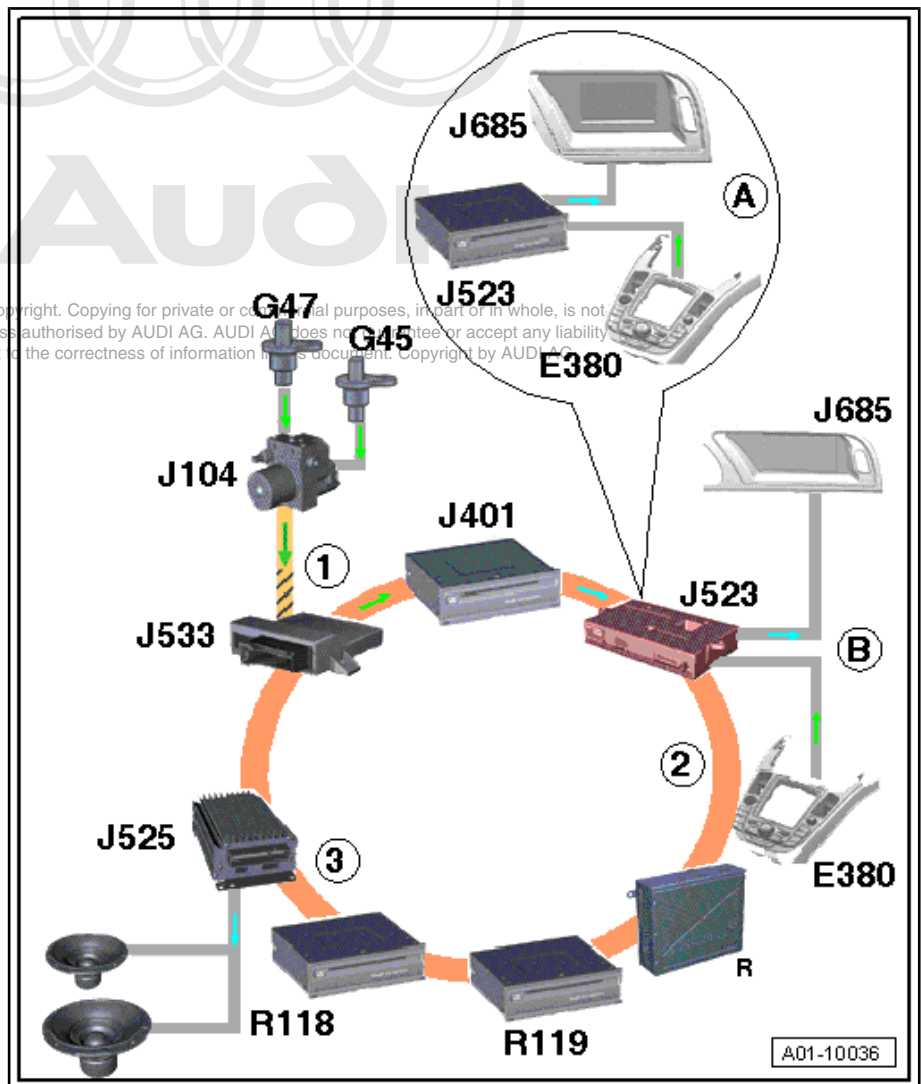
The channel numbers indicate the amount of channels, not the position of the individual channels.

1.3 Components used (MMI2G)

As the individual vehicle systems are networked, a large number of different control units are used for the audio output of the MOST system.

These control units communicate with each other across different types of bus. The data bus diagnostic interface -J533-, which is connected to all the different bus versions, prepares and transmits the data to the corresponding control unit.

- Media player in position 1 - R118-
- Media player in position 2 - R119-
- Radio -R-
- Navigation system with CD drive control unit -J401-
- Control unit for front display and information control panel -J523-
- Multimedia system operating unit -E380-
- Data bus diagnostic interface -J533-
- Digital sound package control unit -J525-
- Internal microphone -R74-



Note

The rear right speed sensor -G44- and rear left speed sensor -G46- are required in addition on vehicles with four-wheel drive.



Note

The control units marked with an »A« are installed in an MMI basic system in place of the control unit for front display and information control panel -J523- and the display unit for control unit for front display and information control panel -J685- fitted in MMI high systems (marked with »B«). In such an MMI basic system the control unit for front display and information control panel -J523- is fitted as the media player in position 1 -R118-. The navigation system with CD drive control unit -J401- and radio -R- are also not needed, since these are already integrated in the control unit for front display and information control panel -J523-.

Note: The following control units can be fitted in the media player positions:

- ◆ CD changer -R41-
- ◆ Connection for external audio sources -R199-
- ◆ MiniDisc player -R153-
- ◆ Control unit for front display and information control panel -J523- (only in basic version)

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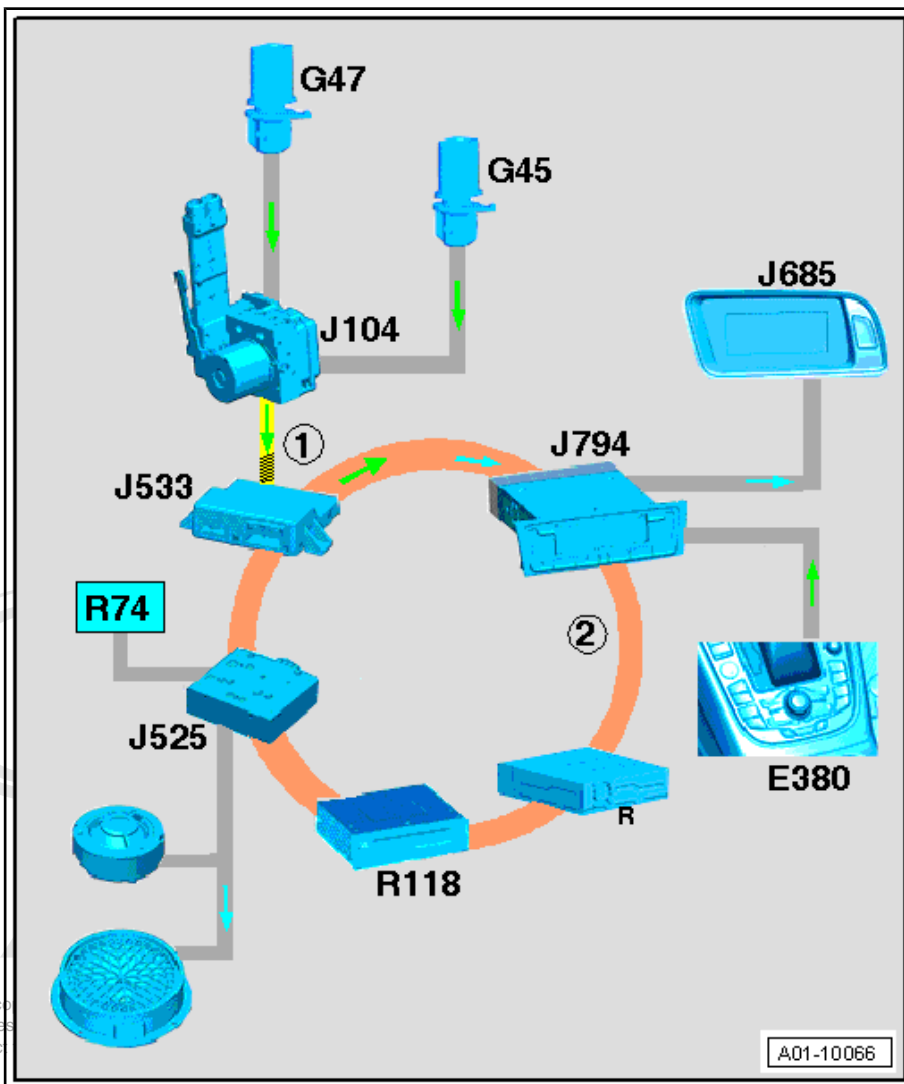
1.4 Components used (MMI3G)

As the individual vehicle systems are networked, a large number of different control units are used for the audio output of the MOST system.

These control units communicate with each other across different types of bus. The data bus diagnostic interface -J533-, which is connected to all the different bus versions, prepares and transmits the data to the corresponding control unit.

- Media player in position 1 - R118-
- Radio -R-
- Control unit 1 for information electronics -J794-
- Multimedia system operating unit -E380-
- Data bus diagnostic interface -J533-
- Digital sound package control unit -J525-
- Internal microphone -R74-
- ABS control unit -J104-
- Front right speed sensor - G45-
- Front left speed sensor -G47-
- 1 - Instrument cluster/running gear CAN
- 2 - MOST bus

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Note

The rear right speed sensor -G44- and rear left speed sensor -G46- are required in addition on vehicles with four-wheel drive.



Note

The illustration shows the layout of a Premium sound system. On the Basic and Standard versions, the sound amplifier is integrated in the radio -R-.

Note: The following control units can be fitted in the media player position:

- ◆ CD changer -R41-
- ◆ DVD changer -R161-

2 Function - Basic audio playback

2.1 General notes, components used

The following components are required for audio playback:

- 1 - An audio source (such as a CD changer -R41- , TV tuner -R78- or an external player connected to the connection for external audio sources -R199-)
- 2 - Digital sound package control unit -J525- / radio -R-
- 3 - Loudspeakers

2.2 Description of audio playback function

Depending on the equipment fitted in the vehicle and the audio source currently selected, the digital audio signal can be generated by various control units.

For example, if the CD changer -R41- has been selected as the active audio source, the changer reads the audio signal from the CD.

This digital audio signal is then transmitted across the MOST bus to the digital sound package control unit -J525- .

In the digital sound package control unit -J525- , the digital audio signal is converted into an analogue signal and then filtered, equalised, amplified and output to the loudspeakers via the different channels.

The mode of output to the different channels depends on the current sound settings; the number of channels varies depending on the sound package.



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If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

3 Function - Sound settings

3.1 General notes, components used

The multimedia system operating unit -E380- , the control unit for front display and information control panel -J523- and the digital sound package control unit -J525- are required for the sound settings function.



Note

The control unit for front display and information control panel -J523- is only installed in vehicles equipped with the MMI2G. On vehicles with an MMI3G, control unit 1 for information electronics -J794- is installed instead of the control unit for front display and information control panel -J523- and handles all of the tasks carried out by that unit.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

3.2 Description of fader function

Via the Fader setting you can adjust the balance between the front and rear loudspeakers.

A balance value is set via the multimedia system operating unit -E380- .

The value is evaluated by the control unit for front display and information control panel -J523- , which is connected to the multimedia system operating unit -E380- via a serial interface, and is then transmitted across the MOST bus to the digital sound package control unit -J525- .

Using the balance value, this control unit adjusts the balance between the front and rear channels and, depending on the value, outputs more or less strongly amplified signals. The balance can be adjusted in such a way that the audio signal is output only to the front or only to the rear loudspeakers.



Note

The control unit for front display and information control panel -J523- is only installed in vehicles equipped with the MMI2G. On vehicles with an MMI3G, control unit 1 for information electronics -J794- is installed instead of the control unit for front display and information control panel -J523- and handles all of the tasks carried out by that unit.



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If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

3.3 Description of balance function

Via the Balance setting you can adjust the balance between the loudspeakers on the right and on the left side of the vehicle.

A balance value is set via the multimedia system operating unit - E380-. The value is evaluated by the control unit for front display and information control panel -J523-, which is connected to the multimedia system operating unit -E380- via a serial interface, and is then transmitted across the MOST bus to the digital sound package control unit -J525-.

Using the balance value, this control unit adjusts the balance between the channels on the right side and the left side and, depending on the value, outputs more or less strongly amplified signals.

The balance can be altered in such a way that the audio signal is no longer output to the loudspeakers on one side of the vehicle.



Note

The control unit for front display and information control panel - J523- is only installed in vehicles equipped with the MMI2G. On vehicles with an MMI3G, control unit 1 for information electronics -J794- is installed instead of the control unit for front display and information control panel -J523- and handles all of the tasks carried out by that unit.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R-.

3.4 Description of position-dependent volume correction / time correction

The listeners inside the vehicle are not seated at equal distance from each loudspeaker.

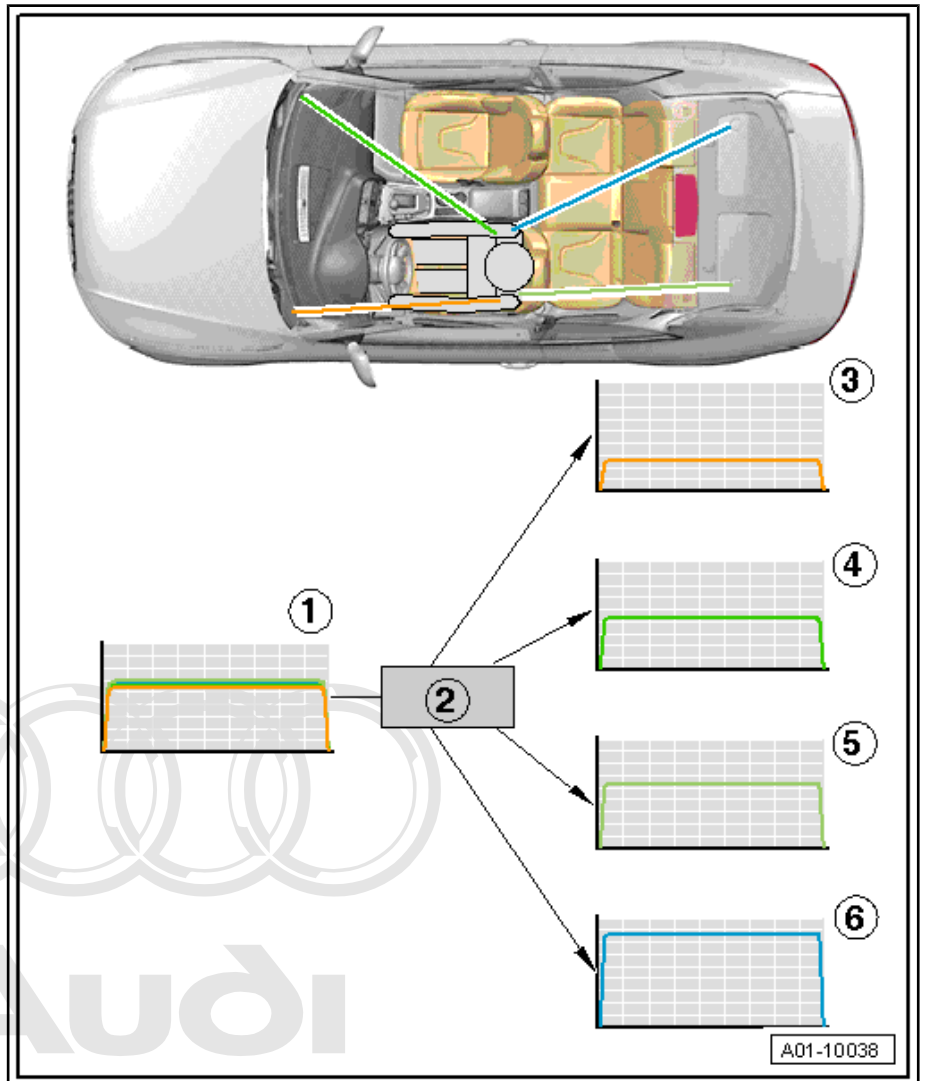
In order to compensate for the different distances between each loudspeaker and the listeners, the digital signal processor corrects the volume and signal timing for each loudspeaker.

The volume correction function increases or reduces the volume of the audio signal output to a loudspeaker.



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- 1 - Input signals to all loudspeakers
- 2 - Digital signal processor
- 3 - Signal strength for loudspeaker 1
- 4 - Signal strength for loudspeaker 2
- 5 - Signal strength for loudspeaker 3
- 6 - Signal strength for loudspeaker 4

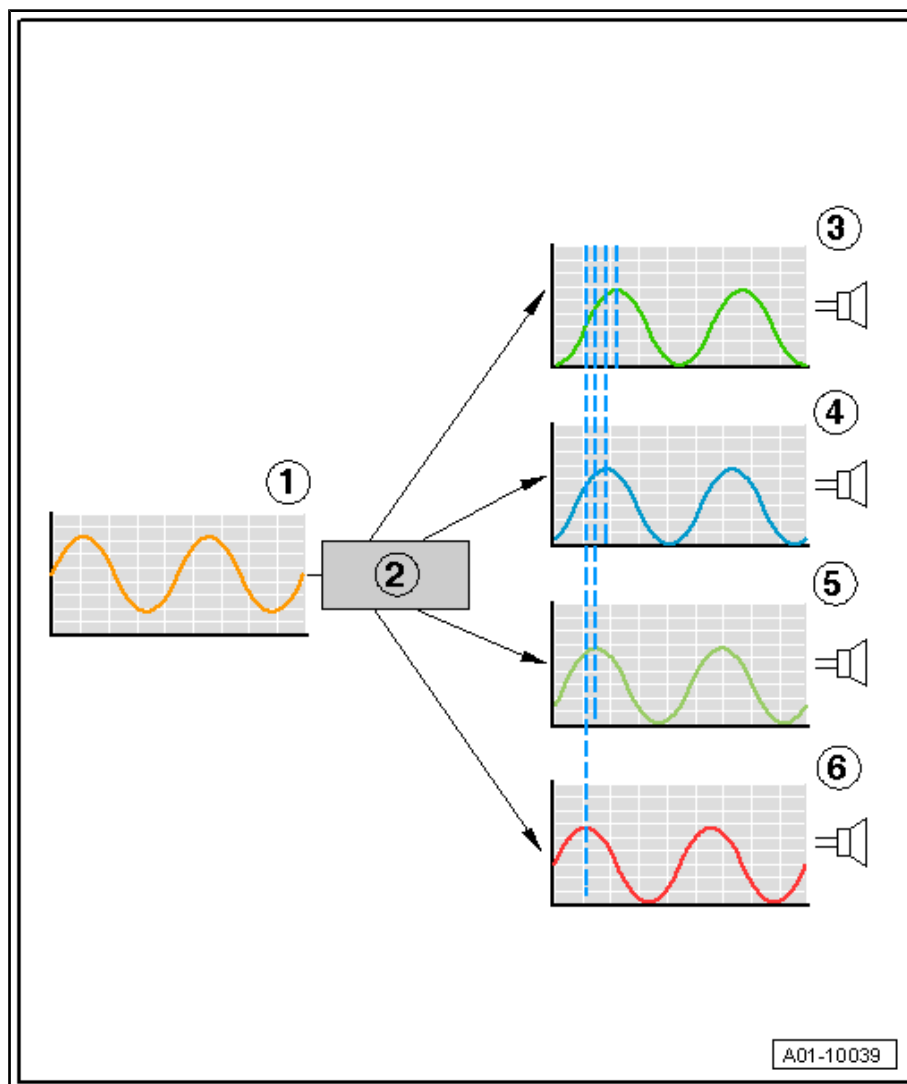


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The time correction function delays the output to a loudspeaker.

This means that signals to loudspeakers further away from the listener are output earlier than signals to nearby loudspeakers (the position of the listener, e.g. "driver" is configurable).

- 1 - Input signals to all loudspeakers
- 2 - Digital signal processor
- 3 - Delay for loudspeaker 1 (closest)
- 4 - Delay for loudspeaker 2
- 5 - Delay for loudspeaker 3
- 6 - Delay for loudspeaker 4 (furthest away)



3.5 Description of frequency response correction

Vehicle interiors do not have optimum acoustic characteristics.

Fabric and leather interiors have different acoustic characteristics. In order to be able to adapt the loudspeaker signals to the vehicle in the best way possible, these characteristics are stored in a data record.

To create optimum acoustics inside the vehicle, the digital signal processor adjusts the frequency response. Frequencies that are muffled by the interior are amplified.

3.6 Description of automatic source volume correction

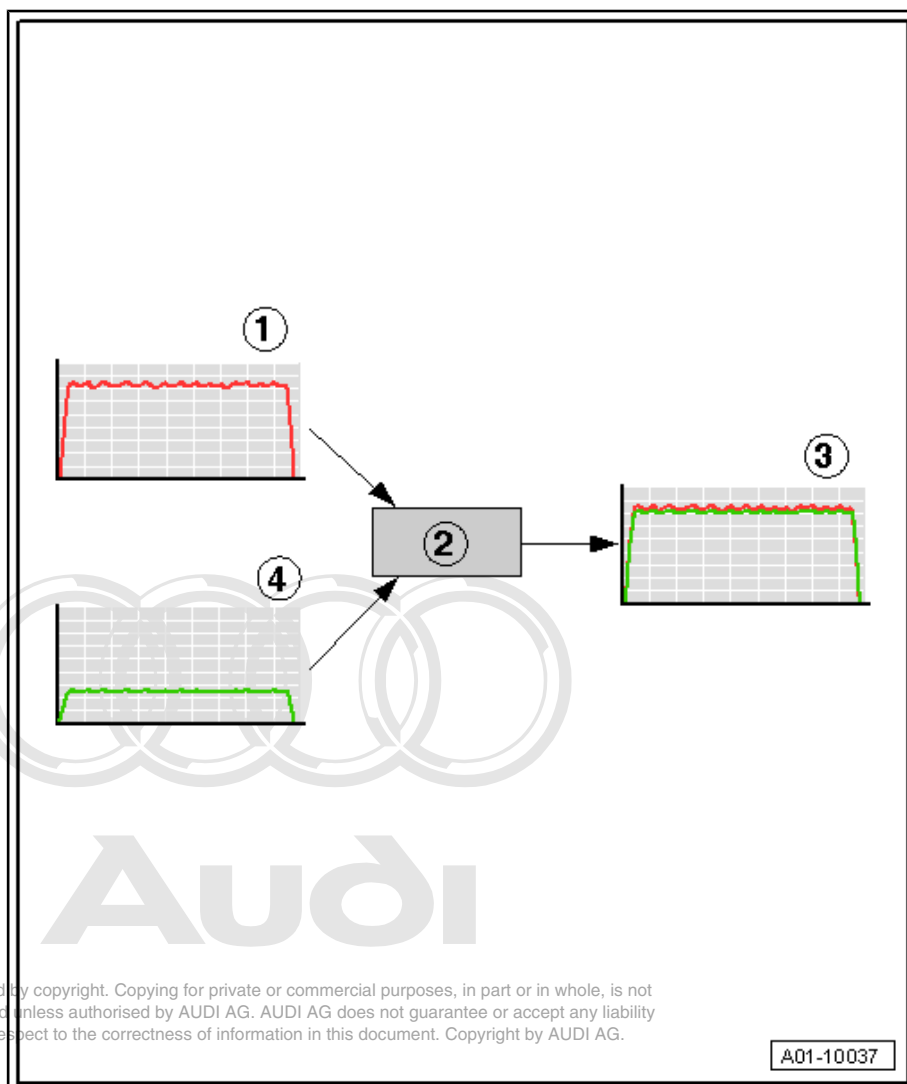
The different audio sources transmit input signals of different strength to the digital sound package control unit -J525- .

This can occur in the case of CDs that have been burnt with different volumes or radio stations that are received with varyingly strong signals.

This means that the output volume would change when a different audio source is selected.

Automatic source volume correction means that the digital signal processor adjusts the signal strength of the different audio sources so that the listener will not hear any change in the volume when, for example, changing the source from CD to radio.

- 1 - Input signal for audio source 1
- 2 - Digital signal processor
- 3 - Adjusted output signal
- 4 - Input signal for audio source 2



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

3.7 Description of Audio during route guidance

During route guidance, the digital signal processor can mix the navigation cue and the audio source (e.g. CD).

Via the multimedia system operating unit -E380- two values can be used to adjust the balance between the volume of the voice guidance and the audio source.

The values are evaluated by the control unit for front display and information control panel -J523- , which is connected to the multimedia system operating unit -E380- via a serial interface, and is

then transmitted across the MOST bus to the digital sound package control unit -J525- .

In the case of an announcement, for example a voice guidance cue, the digital sound package control unit -J525- automatically adjusts the volume. The volume of the audio source is reduced so that the announcement is clearly audible.

The adjusted volume is output via the different channels after taking the other sound settings into account.

The settings for fader and balance and other settings are not changed.



Note

The control unit for front display and information control panel -J523- is only installed in vehicles equipped with the MMI2G. On vehicles with an MMI3G, control unit 1 for information electronics -J794- is installed instead of the control unit for front display and information control panel -J523- and handles all of the tasks carried out by that unit.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

3.8 Description of surround level function

In order to achieve a three-dimensional sound, the signals output to the loudspeakers are delayed in relation to each other in the digital signal processor.

When the surround level option is set to minimum, the audio signal is played in pure stereo, i.e. without any delay.

The more the surround level is raised, the stronger the three-dimensional sound effect becomes.

This effect is achieved by delaying the output signals for the rear loudspeakers in relation to the signals for the front loudspeakers.

The volume of the individual loudspeaker signals, i.e. the signal amplification, remains the same. Consequently, the surround level has no effect on the fader setting.

The multimedia system operating unit -E380- is used to set the surround level.

The value is evaluated by the control unit for front display and information control panel -J523- , which is connected to the multimedia system operating unit -E380- via a serial interface, and is then transmitted across the MOST bus to the digital sound package control unit -J525- .

This value is used to adapt the channels in the digital sound package control unit -J525- .



Note

The control unit for front display and information control panel - J523- is only installed in vehicles equipped with the MMI2G. On vehicles with an MMI3G, control unit 1 for information electronics -J794- is installed instead of the control unit for front display and information control panel -J523- and handles all of the tasks carried out by that unit.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

3.9 Notes for service

The fader function is usually only available in vehicles with front and rear loudspeakers.

Should the fader option nevertheless be available, a wrong fader setting can lead to no audio output on any of the loudspeakers.



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4 Function - adaptive volume control

4.1 General notes, components used

The ABS control unit -J104- , the front left speed sensor -G47- , the front right speed sensor -G45- , the digital sound package control unit -J525- and an audio source are required for the GALA function.

The dynamic noise compensation additionally uses the internal microphone -R74- .



Note

The rear right speed sensor -G44- and rear left speed sensor -G46- are required in addition on vehicles with four-wheel drive.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

4.2 Description of GALA function

The GALA function increases or reduces the volume depending on the road speed.

The ABS control unit -J104- receives a speed signal from the front left speed sensor -G47- and the front right speed sensor -G45- in vehicles with front-wheel drive, and additionally from the rear right speed sensor -G44- and the rear left speed sensor -G46- in vehicles with four-wheel drive. The control unit then evaluates the signal and puts it on the instrument cluster/running gear CAN.

The data bus diagnostic interface -J533- reads out the signal and transmits it onto the fibre-optic MOST bus.

Via the fibre-optic MOST bus the signal reaches the digital sound package control unit -J525- which then adjusts the volume according to the signal value.

The volume is increased at high road speeds and reduced when the vehicle slows down. The volume is always adjusted on the basis of the volume set by the listener, i.e. the volume level will never be lower than the level the listener has set.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .

4.3 Description of dynamic noise compensation

The dynamic noise compensation uses the following values for the adjustment of the volume:

- ◆ Driving speed
- ◆ Speed of fresh air blower
- ◆ Noises measured via a microphone unit in the roof module

◆ Volume normalisation in the MMI

The ABS control unit -J104- receives a speed signal from the front left speed sensor -G47- and the front right speed sensor -G45- in vehicles with front-wheel drive, and additionally from the rear right speed sensor -G44- and the rear left speed sensor -G46- in vehicles with four-wheel drive. The control unit then evaluates the signal and puts it on the instrument cluster/running gear CAN.

The Climatronic control unit -J255- puts the information on the activation of the fresh air blower -V2- on the convenience CAN.

The data bus diagnostic interface -J533- reads out this signal and transmits it across the fibre-optic MOST bus to the digital sound package control unit -J525- .

The background noises are picked up by the internal microphone -R74- , which is installed in the roof module and connected directly to the digital sound package control unit -J525- .
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The level of noise compensation can be set via the multimedia system operating unit -E380- . The entry is evaluated by the control unit for front display and information control panel -J523- and transmitted via fibre-optic bus to the digital sound package control unit -J525- .

Using these values the digital sound package control unit -J525- adjusts the volume inside the vehicle.

The volume of quiet music will be increased to a higher degree than loud music.

The volume is always adjusted on the basis of the volume set by the listener, i.e. the volume level will never be lower than the level the listener has set.



Note

If the basic or standard amplifier version is fitted, the digital sound package control unit -J525- is integrated in the radio -R- .