VIN: Vehicle: 5' / F10 / SEDAN / 550iX / N63 / AUTO / USA LL / 2010 / 11

System version: Data version:

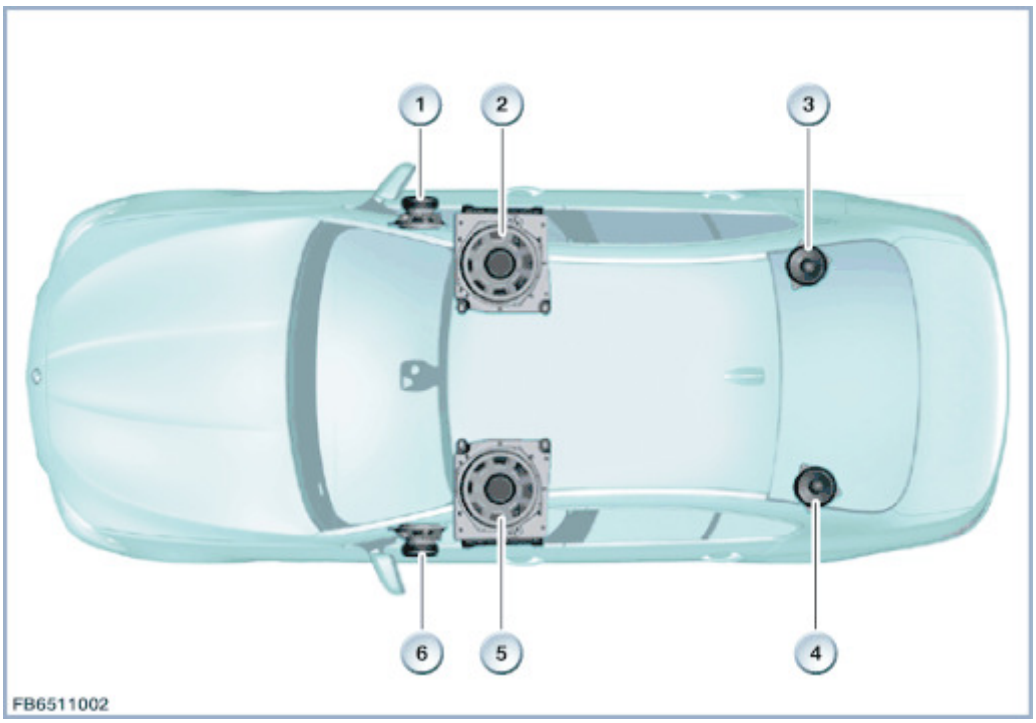
Audio amplifier

Audio playback can be optimised using 2 audio amplifiers:

- Hi-fi amplifier (AMPH)
- Top HiFi amplifier (AMPT)

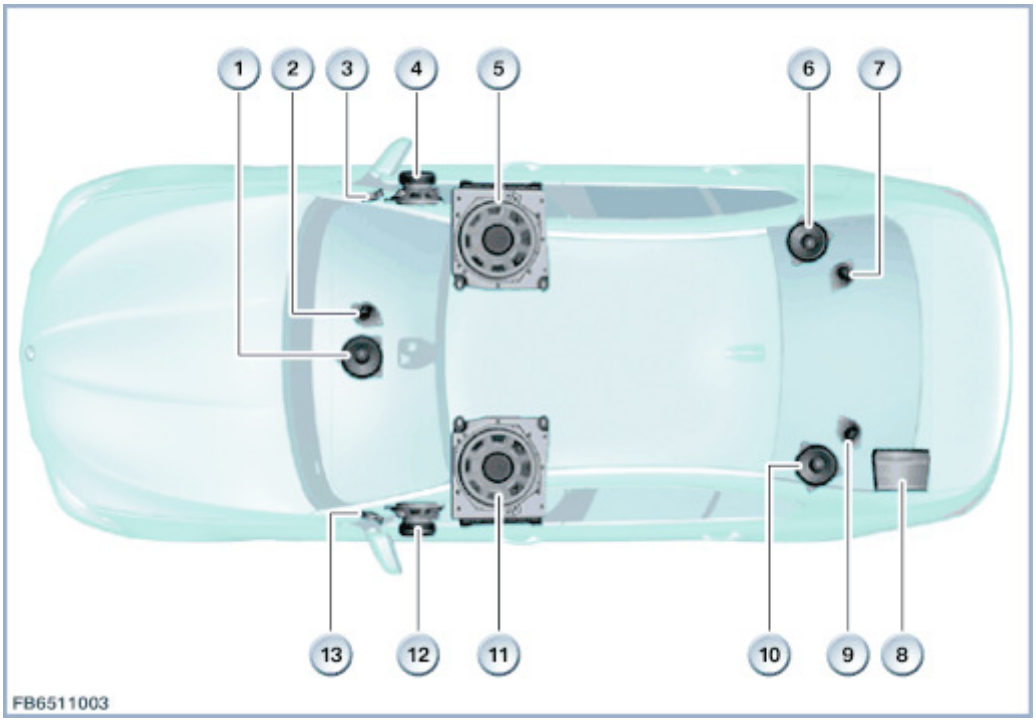
For F10, for example, the following 3 speaker systems are available:

- Stereo system (standard equipment) with 6 speakers



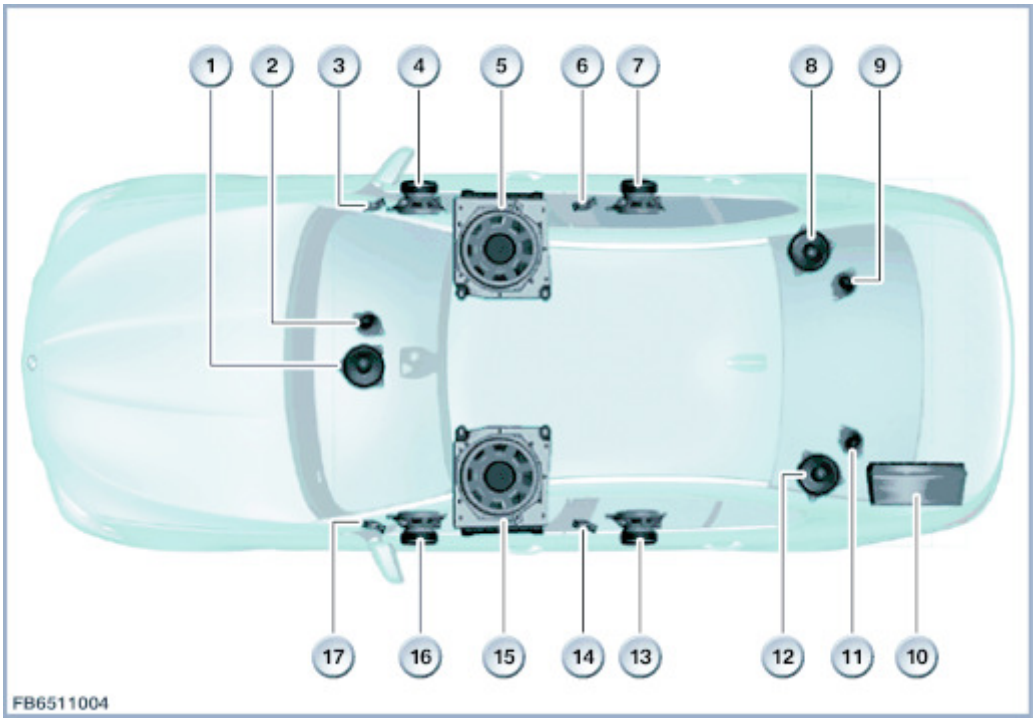
Index	Explanation	Index	Explanation
1	Mid-range speaker, front door, right	2	Bass speaker, front right
3	Mid-range speaker, storage shelf, right	4	Mid-range speaker, storage shelf, left
5	Bass speaker, front left	6	Mid-range speaker, front door, left

- Hi-fi system with 12 speakers



Index	Explanation	Index	Explanation
1	Mid-range speaker, front centre	2	Tweeter, front centre
3	Tweeter, front door, right	4	Mid-range speaker, front door, right
5	Bass speaker, front right	6	Mid-range speaker, storage shelf, right
7	Tweeter, storage shelf, right	8	Hi-fi amplifier (AMPH)
9	Tweeter, storage shelf, left	10	Mid-range speaker, storage shelf, left
11	Bass speaker, front left	12	Mid-range speaker, front door, left
13	Tweeter, front door, left		

- Top HiFi system with 16 speakers



Index	Explanation	Index	Explanation
1	Mid-range speaker, front centre	2	Tweeter, front centre
3	Tweeter, front door, right	4	Mid-range speaker, front door, right
5	Bass speaker, front right	6	Tweeter, rear door, right
7	Mid-range speaker, rear door, right	8	Mid-range speaker, storage shelf, right
9	Tweeter, storage shelf, right	10	Top HiFi amplifier (AMPT)
11	Tweeter, storage shelf, left	12	Mid-range speaker, storage shelf, left
13	Mid-range speaker, rear door, left	14	Tweeter, rear door, left
15	Bass speaker, front left	16	Mid-range speaker, front door, left
17	Tweeter, front door, left		

The active frequency diplexers transmit to the audio amplifier only that frequency range that can be effectively reproduced by the connected speaker. The mid-range speakers and the bass speakers are connected to this audio amplifier. The tweeters are passively connected to the mid-range speakers.

Brief component description

The following components relevant for the Top HiFi amplifier (AMPT) are described:

- Top HiFi amplifier (AMPT)
- Headunit
- Central Information Display (CID)
- Controller (CON)

Top HiFi amplifier

Top HiFi amplifiers are audio amplifiers with partially active frequency diplexers. Active frequency diplexers achieve better acoustic results than passive frequency diplexers.

The Top Hi-Fi amplifier (AMPT) is a control unit on the MOST network which has the following functions:

- Audio amplifier for tweeters and mid-range speakers 4 x 40 watts (alternatively 8 x 45 watts)
- Audio amplifier for bass speakers 2 x 70 watts (alternatively 2 x 125 watts)
- Vehicle-specific equalizing
- Speed-dependent equalizing
- Volume-dependent equalizing

Headunit

In principle, the structure of the headunit corresponds to that of a personal computer. Like a personal computer, the headunit contains the following components:

- Processor
- Main memory
- Hard disk
- Fan

The hard disk in the headunit is used to store the application software and other data.
The following applications are installed on the hard disk:

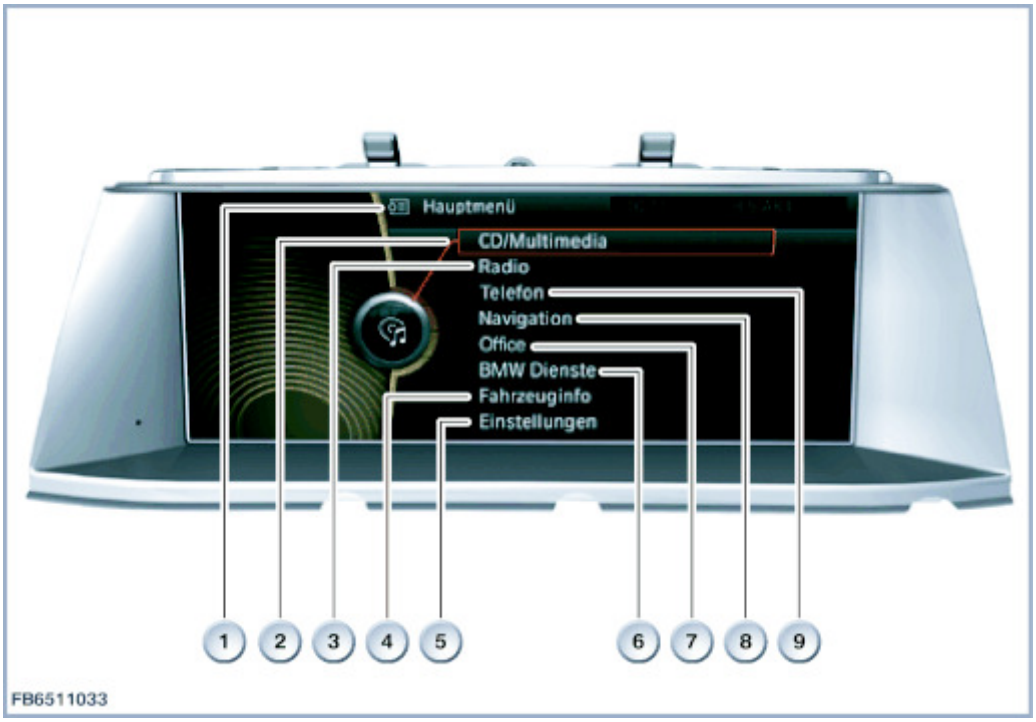
- Music library
  The music collection is based on the audio data stored on the integrated hard disk.
- Music track database
  Software for track search with the help of a database for music tracks (Gracenote®).
- Navigation system (map data) and software (application software)
  Full screen display possible: Zoomable assistance window with map view, journey planner, map data storage on the hard disk.
- Voice processing system
- Contacts (database of addresses)
  The data is used for telephone and navigation, for example.

The headunit is the central control unit for the listed applications. For the purposes of picture signal transmission, the headunit is linked to the Central Information Display (CID). The headunit is also connected to the controller (CON). The controller (CON) is the control panel of the central information display (CID).
The following graphic shows the headunit with central information display (CID) on F01.

Index	Explanation	Index	Explanation
1	Central Information Display (CID)	2	Rotary push button
3	Headunit drive	4	Eject button for DVD and CD
5	Seek tuning button, backwards and forwards	6	Freely programmable favourite button
7	Control panel for integrated automatic heating and air-conditioning system (IHKA)	8	Traffic reports button (TP = Traffic Program, country-specific)
9	Modus button (changeover of audio source)		

Central information display (CID)

The central information display (CID) has different dimensions depending on the specific model and vehicle equipment.
The main menus are arranged for selection in linear manner in lists. The submenus are also placed horizontally one above the other.



Index	Explanation	Index	Explanation
1	Start menu	2	CD / multimedia
3	Radio	4	Vehicle information
5	Settings	6	BMW Services
7	Office	8	Navigation
9	Telephone		

The functions surround sound and the user-programmable equaliser for the audio amplifier are operated from the central information display (CID).

Controller (CON)

There are 7 fixed selector keys around the controller (CON). These 7 selector keys now enable selection of half of all the submenus.
The following submenus can still be selected only from the main menu:

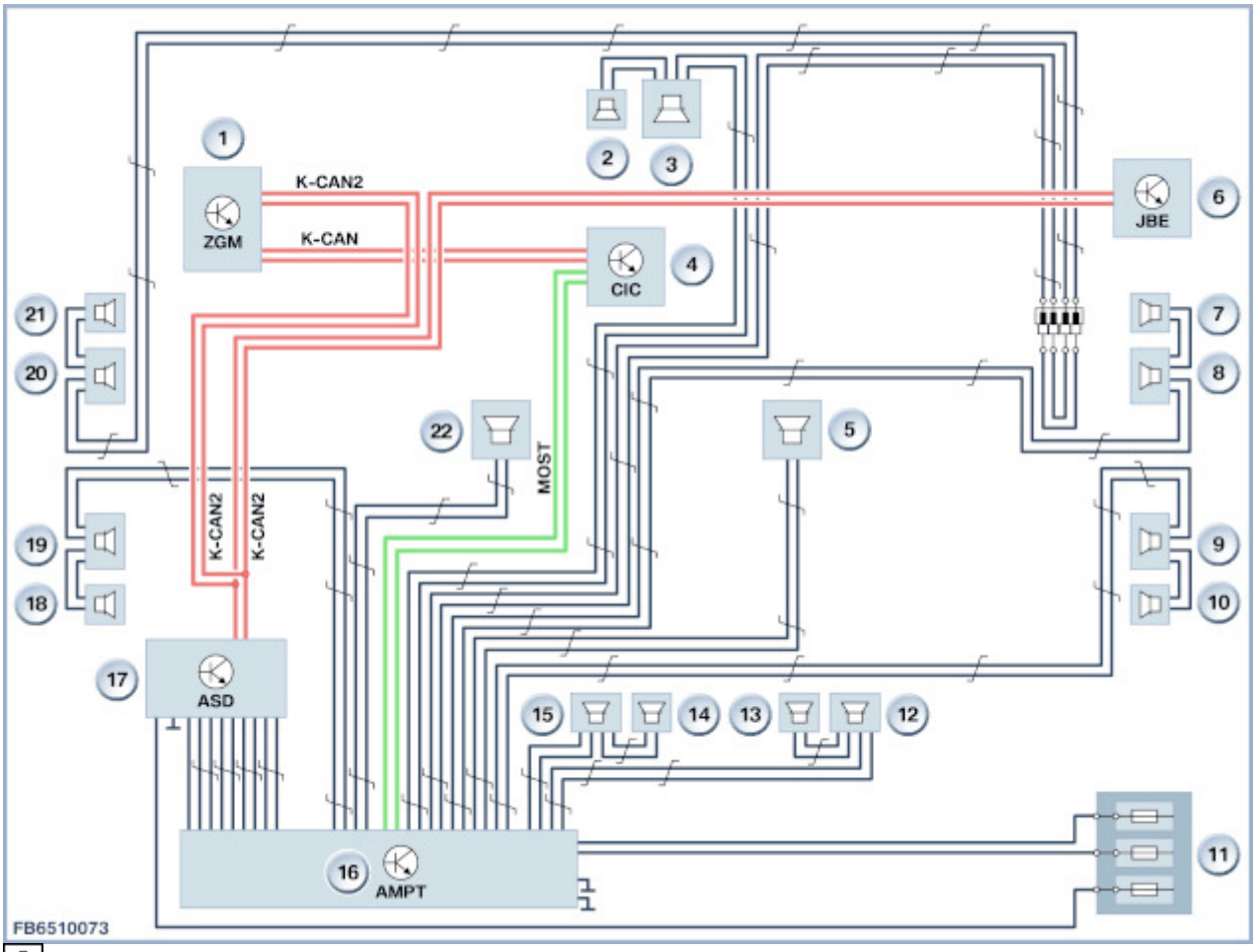
- Contacts
- BMW Services
- Vehicle information
- Settings

Index	Explanation	Index	Explanation
1	Controller (CON)	2	Radio selector button
3	CD selector key, optional media	4	Start menu selector button
5	Telephone selector button	6	Navigation selector button
7	”Options” selector button	8	”Back” selector button

When pressed, the ”Back” button returns the user to the last screen mask.
The ”Option” button enables other settings in the last selected submenu.

System overview

The following graphic shows an example of a system overview of a Top HiFi system.



Index	Explanation	Index	Explanation
1	Central gateway module (ZGM)	2	Tweeter, front centre
3	Mid-range speaker, front centre	4	Headunit
5	Bass speaker, front right	6	Junction Box Electronics (JBE)
7	Tweeter, front door, right	8	Mid-range speaker, front door, right
9	Mid-range speaker, rear door, right	10	Tweeter, rear door, right
11	Rear power distribution box	12	Mid-range speaker, storage shelf, right
13	Tweeter, storage shelf, right	14	Tweeter, storage shelf, left
15	Mid-range speaker, storage shelf, left	16	Top HiFi amplifier (AMPT)
17	Active Sound Design (ASD)	18	Tweeter, rear door, left
19	Mid-range speaker, rear door, left	20	Mid-range speaker, front door, left
21	Tweeter, front door, left	22	Bass speaker, front left

System functions

The following system functions are described for the Top HiFi amplifier (AMPT):

- Electronic power-up
- Electronic power-down

- Undervoltage cutout
- Speed-dependent equalizing
- Surround sound function

Electronic power-up

The audio amplifier is connected to "terminal 30" and GND for voltage supply. The audio amplifier is woken up using the MOST bus. The audio amplifier is active under the following preconditions:

- Control input identifies voltage greater than 9 volts
- Input "terminal 30" detects voltage in excess of the voltage at the control input

Electronic power-down

The audio amplifier is connected to "terminal 30" and GND for voltage supply. The audio amplifier works in an operating voltage range of 9 to 16 volts (alternatively from 7.5 to 16 volts) at the control input.
If the voltage at the control input is lower than 9 volts (alternatively lower than 7.5 volts), the audio amplifier is automatically switched off. This ensures that the audio amplifier does not remain switched on, for example in a parked vehicle.

Undervoltage cutout

As soon as the voltage falls below the operating voltage range, for example during engine start, the audio amplifier is automatically switched off.
Once the switch-on conditions are satisfied, the audio amplifier is automatically switched on again.

Speed-dependent equalizing

In conjunction with the Top Hi-Fi amplifier (AMPT) optional equipment, the headunit provides the 7-band equalizing function.
Depending on the speed signal, the volume of a set tone frequency range is increased in order to counteract noise caused by the vehicle acoustics when the vehicle is in motion. Adaptation is mainly performed in the low audio frequency range.

Surround sound function

The Top Hi-Fi amplifier (AMPT) features a surround sound function which enables improved space acoustics. The surround sound function is particularly effective in the case of ”pure” sound storage (for example in CD mode).
The surround sound function is active after "terminal R” has been switched on. Switch-off can be effected via the controller (CON).

Notice! Surround sound functions are not recommended under certain circumstances!

The surround sound function is not recommended for predominantly voice reproduction or poor radio reception.
We can assume no liability for printing errors or inaccuracies in this document and reserve the right to introduce technical modifications at any time.