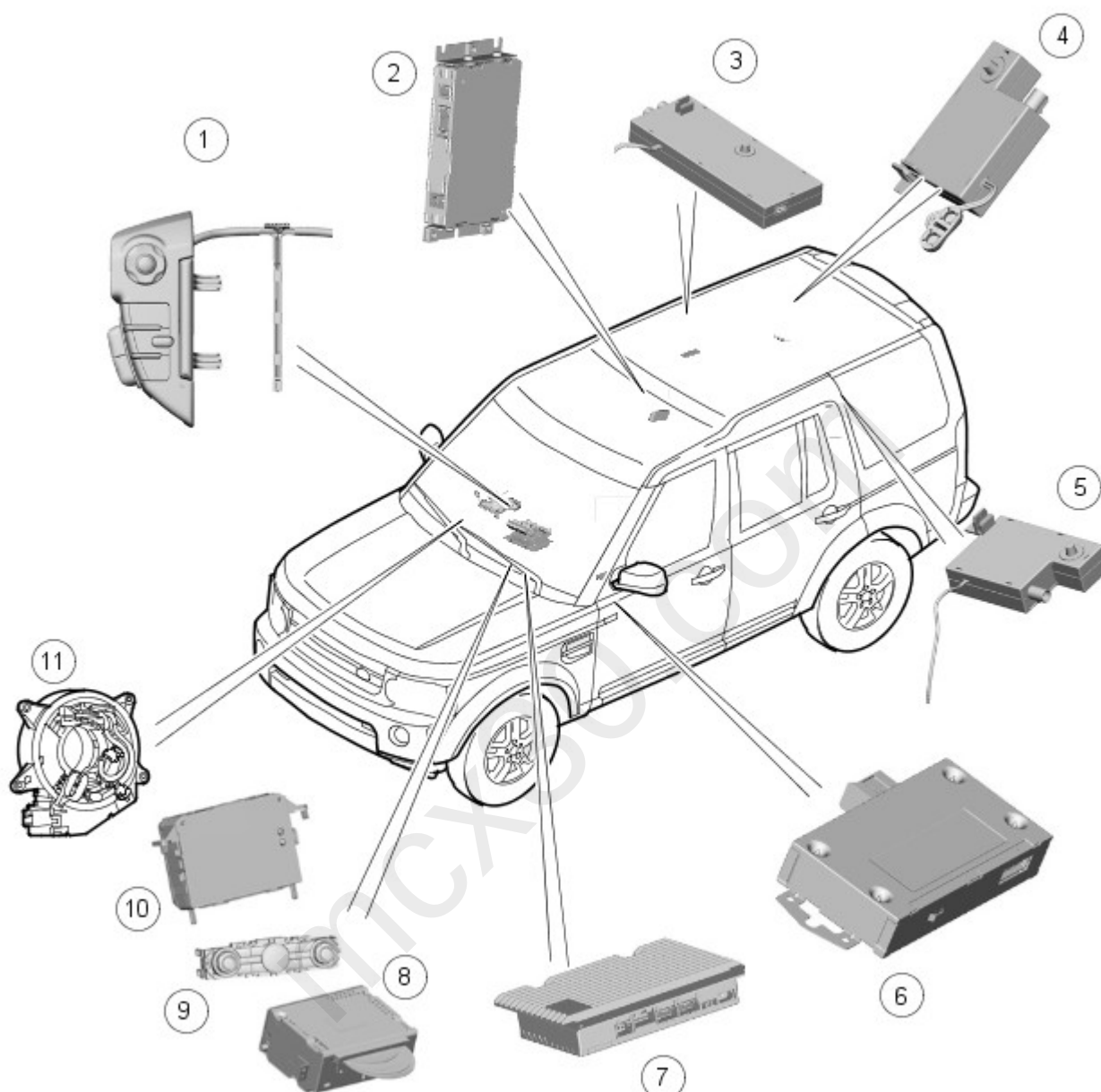


Information and Entertainment System - Audio System

Description and Operation

LOW / MID LINE AUDIO SYSTEM - COMPONENT LOCATION

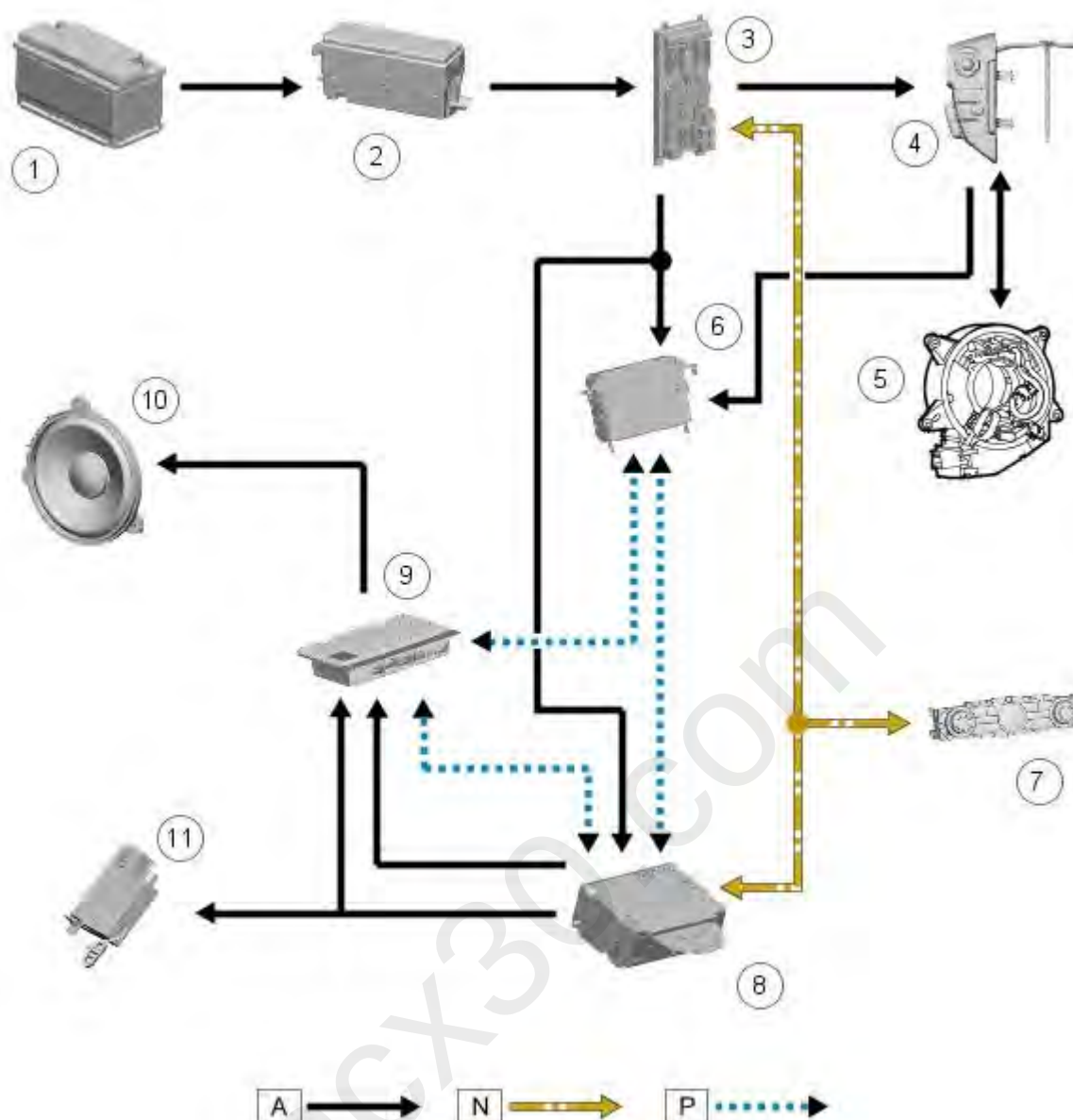


E132315

Item	Part Number	Description
1	-	Audio control switches
2	-	DAB/SDARS tuner module
3	-	AM (amplitude modulation)/FM (frequency modulation) diversity antenna amplifier
4	-	FM antenna amplifier
5	-	DAB antenna amplifier
6	-	Portable audio module interface
7	-	Power amplifier
8	-	Head Unit (HU)
9	-	Lower integrated control panel
10	-	Display
11	-	Clock spring

HEAD UNIT - AUDIO CONTROL DIAGRAM

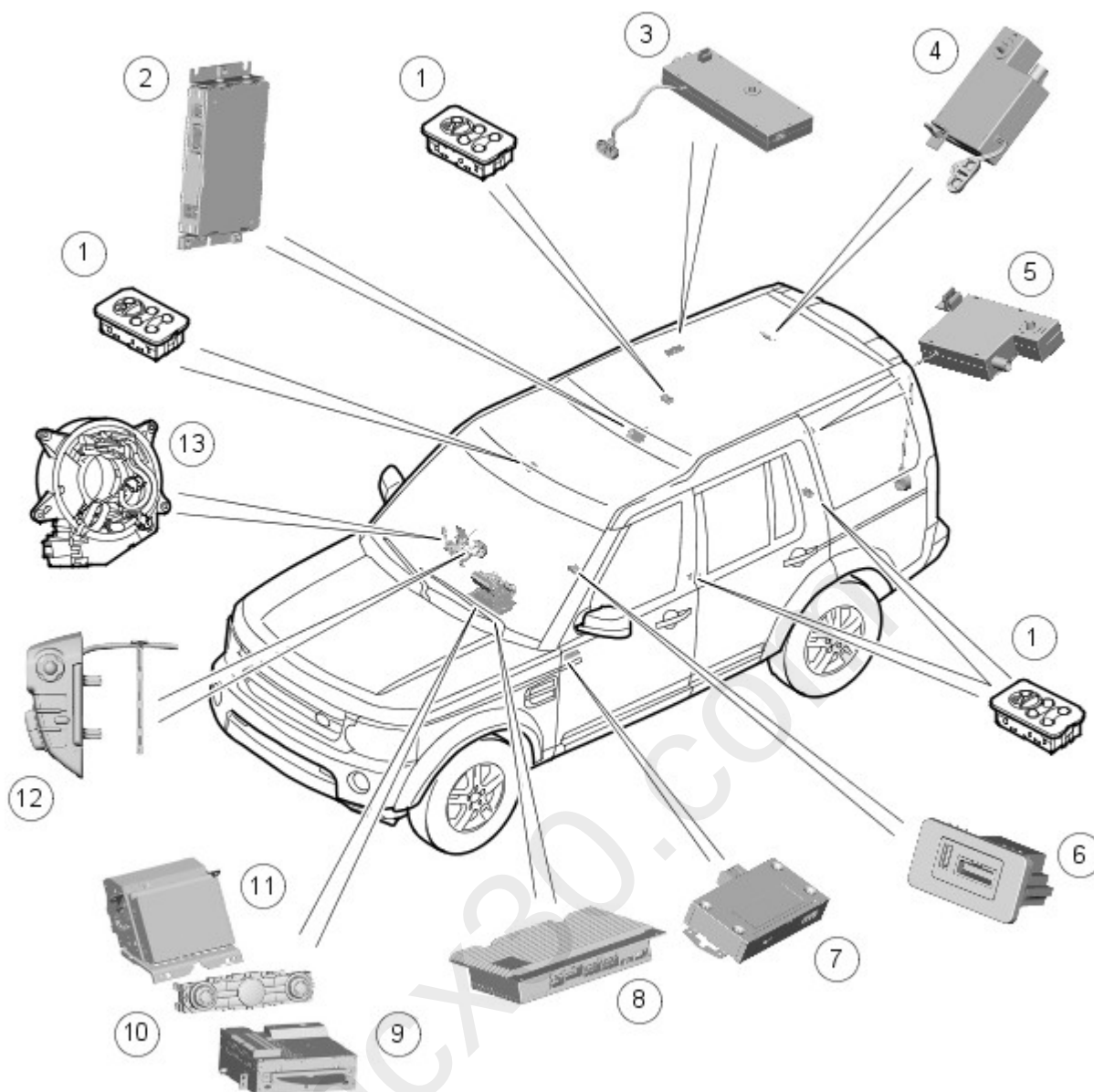
• NOTE: **A** = Hardwired; **N** = Medium Speed CAN; **P** = MOST



E132375

Item	Part Number	Description
1	-	Battery
2	-	BJB (battery junction box)
3	-	CJB (central junction box)
4	-	Audio control switches
5	-	Clock spring
6	-	Display
7	-	Lower integrated control panel
8	-	Head Unit (HU)
9	-	Power amplifier
10	-	Speakers
11	-	AM/FM antenna amplifier

HIGH LINE AUDIO SYSTEM - COMPONENT LOCATION

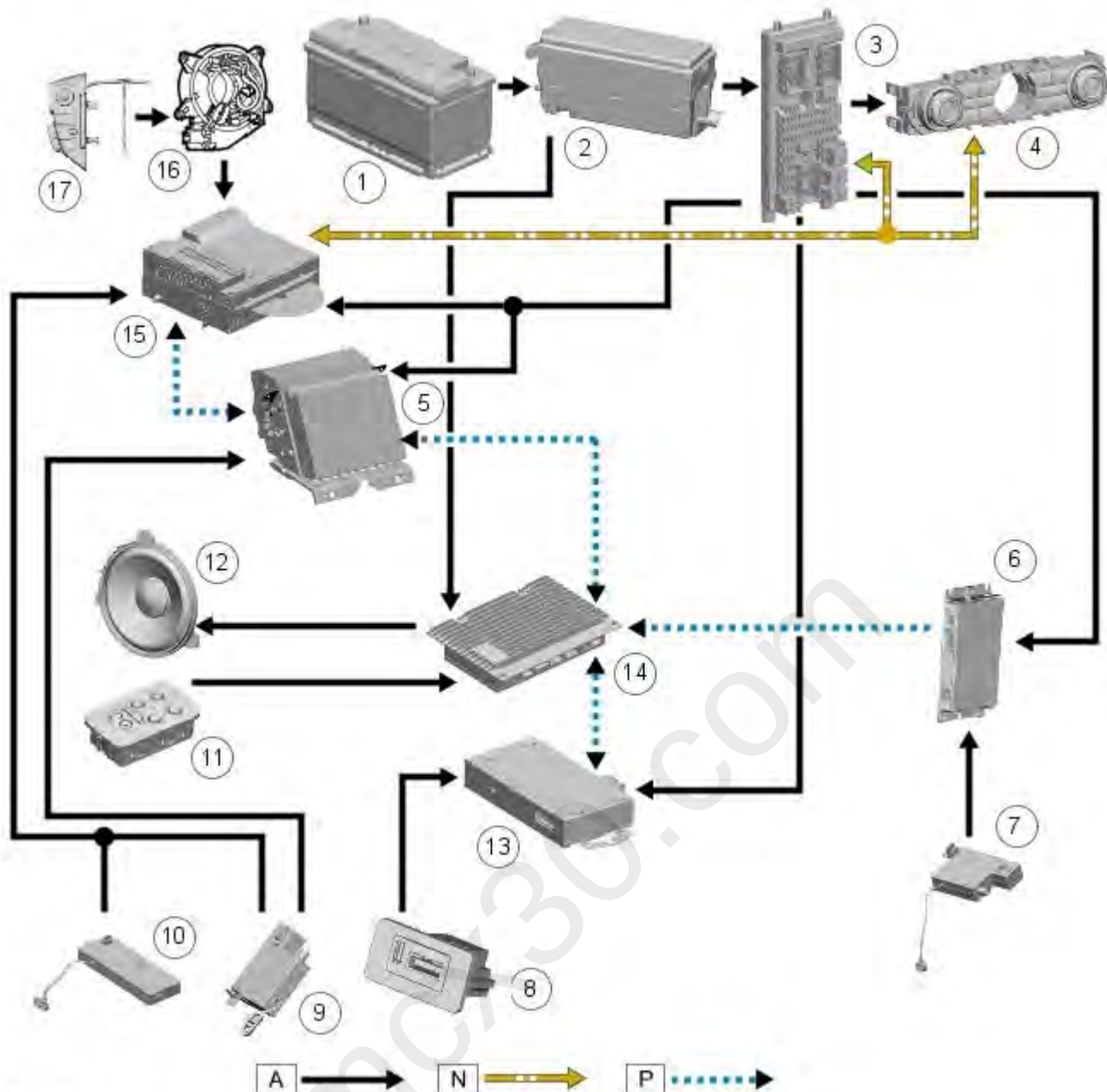


E132311

Item	Part Number	Description
1	-	Row two/three remote audio controls
2	-	DAB/SDARS tuner module
3	-	AM/FM diversity antenna amplifier
4	-	FM antenna amplifier
5	-	DAB antenna amplifier
6	-	Portable audio interface consol
7	-	Portable audio interface module
8	-	Power amplifier
9	-	Head Unit (HU)
10	-	Lower integrated control panel
11	-	Touch screen display
12	-	Audio control switches
13	-	Clock spring

HEAD UNIT (HU) - AUDIO CONTROL DIAGRAM

• NOTE: **A** = Hardwired; **N** = Medium Speed CAN; **P** = MOST



E132374

Item	Part Number	Description
1	-	Battery
2	-	BJB
3	-	CJB
4	-	Lower integrated control panel
5	-	Touch screen display
6	-	DAB/SDARS tuner module
7	-	DAB antenna amplifier
8	-	Portable audio interface consol
9	-	FM antenna amplifier
10	-	AM/FM diversity antenna amplifier
11	-	Row two/three remote audio controls
12	-	Speakers
13	-	Portable audio interface module
14	-	Power amplifier
15	-	Head Unit (HU)
16	-	Clock spring
17	-	Audio control switches

COMPONENT DESCRIPTION

Head Units

The audio systems have three levels: low line, mid line and high line versions. All the audio systems (low, mid, high) are based around a head unit which communicates on the Media Orientated System Transport (MOST) ring and the medium

speed controller area network (CAN) bus.

Low/Mid Line Head Unit



E121832

The Head Unit (HU) is located in the instrument panel and incorporates the following systems:

- HD Radio (where fitted)
- Bluetooth® receiver (telephone and audio streaming)
- 40 Gb Hard drive
- USB controller (front)
- Audio AUX
- CD player

The low line HU contains the following functionality:

- Radio tuner
- Single disc compact disc (CD) player
- Amplifier

The HU communicates with other vehicle systems on the CAN bus.

Transit Mode

Transit mode is used to reduce the vehicle battery current drain whilst the vehicle is being stored or transported. Transit mode is entered/exited via a CAN signal from T4. In transit mode the following circuits will be disabled:

- Amplifiers
- Aux and phone call
- Clock
- Antenna power
- light emitting diode (LED) illumination

In transit mode the CAN port and the ON/OFF switch are the only circuits that are left active.

The CAN port is left open to allow the EXIT from transit mode signal to be received. The ON/OFF switch is left active to allow feedback to the driver via the HU liquid crystal display (LCD), that the unit is in Transit mode should the driver attempt to power up the HU. This will only occur when the vehicle engine is running and the battery is above 12.3 Volts.

Radio Function

The radio tuner is located in the head unit. The radio is capable of receiving AM and FM waveband and can store 18 FM pre-sets and 12 amplitude modulation (AM) pre-sets. The AM presets are stored as follows:

European AM Preset Storage

- 6 MW
- 6 MWa
- 6 LW
- 6LWa

NAS AM Preset Storage

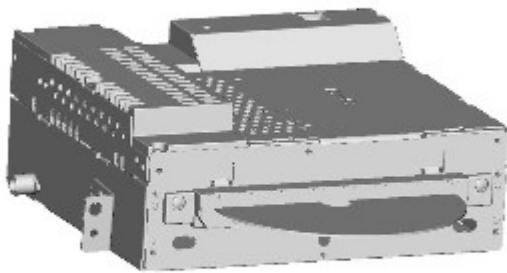
- 6 MW1
- 6 MW2
- 6 MWa

CD Function

The HU includes single play CD player. The CD player has all the usual functions of a CD player:

- CD play
- Previous/next track
- Shuffle tracks
- Load/eject CD
- Scan
- Repeat

High Line Head Unit



E132910

The high line HU contains the following functionality:

- Radio tuner.
- CD player (Six disc in dash changer).
- Integrated telephone control.
- Auxiliary input (for any device featuring a 3.5mm jack plug output).

The HU is woken up by CAN bus activity and is not woken up from the ignition aux position.

The HU is the Bus Master for the MOST system and contains the timing master for the MOST system.

Tuner

The HU incorporates a AM/frequency modulation (FM) tuner which allows for 18 FM pre-sets and 12 AM (6 MW and 6 LW) pre-set stations to be stored in the HU memory. The radio tuner also incorporates the following radio functions:

- Auto tune
- Traffic announcements (TA)
- radio data system (RDS) EON function
- Seek station
- Tune up/down

CD Player

The CD player is a 6 disc in dash mounted device. The CD multi changer is capable of playing commercial CDs, CDRs, CDRWs and MP3 discs.

Random Play

The Random feature only works on the CD, which has been selected. The Random feature plays all the tracks on the selected CD in a random order. All the tracks on that disc will be played before a new random sequence is played. If a new CD is selected while in random mode, the random mode will be cancelled and play will commence from track 1.

Repeat

The Repeat feature allows the current track to be repeated in an endless loop, when selected by the user.

MP3

The CD player has the capability to play MP3 files. The MP3 discs follow a format of folders and files within the folder. It is also possible to place all the files in the root directory on the CD.

The random and repeat features follow the normal CD random and repeat feature functions.

Scan

Scan allows the user to play the first 10 seconds of each track on the CDs in the unit.

Automatic Volume Control-AVC

The AVC feature is designed to adjust output volume to compensate for the rising level noise of the vehicle as the vehicle travels faster.

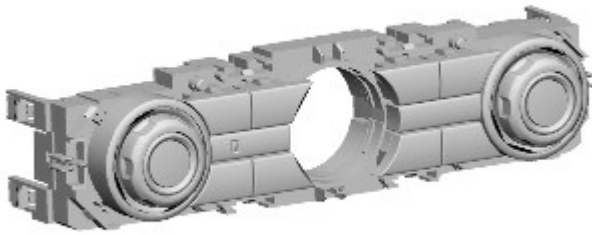
There are 10 settings for AVC, where 0 = off, 1 is the lowest setting (minimum volume change with speed and 9 the maximum).

The vehicle speed signal is used to enable the HU to calculate the volume adjustment required. The vehicle speed signal is received over the CAN from the anti-lock brake system (ABS) control module. The signal is an average of the four wheel speed sensor signals.

Control of the AVC is carried out by the audio amplifier.

Should an invalid speed signal be received the AVC will not alter the output volume.

ICP (Integrated Control Panel)

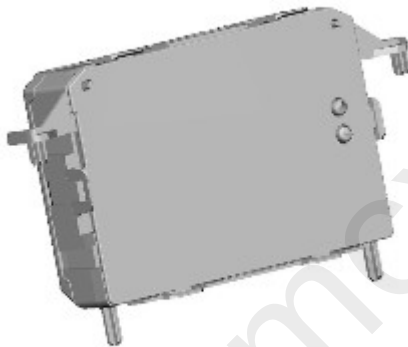


E131563

The ICP duplicates many of the touch-screen audio user control features. Any volume setting made whilst in audio, TV, phone, navigation or voice activation mode will be memorized for that system. The ICP communicates with the IAM on the medium speed CAN (controller area network) . The IAM converts control/command signals from the ICP and then distributes the information onto the MOST system to the audio system and other information and entertainment systems. No configuration procedure is required if the ICP is replaced. There is no option to calibrate the ICP using the Land Rover approved diagnostic equipment.

Touch Screen Displays

Low/mid line display



E132909

High line display



E131562

The Touch Screen Display (TSD) is located in the center of the instrument panel and is the driver control interface for the infotainment system. The TSD is connected to the MOST ring and communicates with the other components in the audio/infotainment system.

The TSD also provides driver display and control of the audio system, telephone, the rear view camera, proximity cameras, the Traffic Message Channel (TMC) and the navigation system.

The RSE and other systems are operated by 'virtual' buttons displayed on the touch screen.

Care should be taken with the TSD to ensure its correct operation

- The screen should be cleaned with a lightly, water moistened cloth. Do not use chemical agents or domestic products to clean the screen or any part of the surround.
- Only use your finger to operate the touch screen. Ensure you only use one finger to avoid incorrect entries.
- A short light press of the touch screen is sufficient. Excessive pressure can damage the screen.

Remote Audio Controls



E48224

The second and third row seat passenger can use standard headphones to listen to audio from any of the sources fitted to the vehicle. These include:

- Television
- Compact Disc (CD)
- Radio
- DVD
- AUX Input

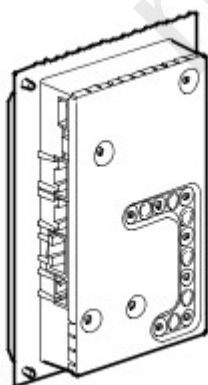
There are four remote audio control modules, two in the rear doors incorporating the rear window switches and two in the rear load space each side of the third row seats.

The remote audio control modules allow the user to select which source to listen to. The remote controls cannot override what the driver has selected to listen to. If the driver is listening to a CD the rear passenger cannot control the CD player.

The remote audio control modules allow the user to alter the volume in the head phones, change track/disc up/down or repeat on a CD, change pre-set radio stations or tune up/down on the radio and television.

AMPLIFIERS

Harman Kardon High Line/Logic 7 Amplifier



E47726

The audio system has three amplification options:

- Internal amplification
- Harman Kardon
- Harman Kardon Logic 7

The amplifier is located under the right-hand (RH) front seat and is connected to the audio system via the MOST bus.

Speaker Connector C0491 for Harman Kardon Amplifier

Pin No	Description	Input / Output
1	left-hand (LH) rear door speaker -	-
2	RH rear door speaker -	-

Pin No	Description	Input / Output
3	Not used	-
4	Not used	-
5	LH front door speaker -	-
6	RH front door speaker -	-
7	Subwoofer left -	-
8	Subwoofer right -	-
9	LH rear door speaker +	Output
10	RH rear door speaker +	Output
11	Not used	-
12	Not used	-
13	LH front door speaker +	Output
14	RH front door speaker +	Output
15	Subwoofer left +	Output
16	Subwoofer right +	Output

Speaker Connector C0491 for Harman Kardon Logic 7 Amplifier

Pin No	Description	Input / Output
1	LH rear door speaker -	-
2	RH rear door speaker -	-
3	LH front bass speaker -	-
4	RH front bass speaker -	-
5	Rear surround left -	-
6	Rear surround right -	-
7	Subwoofer left -	-
8	Subwoofer right -	-
9	LH rear door speaker +	Output
10	RH rear door speaker +	Output
11	LH front bass speaker +	Output
12	RH front bass speaker +	Output
13	Rear surround left +	Output
14	Rear surround right +	Output
15	Subwoofer left +	Output
16	Subwoofer right +	Output

Speaker Connector C0492 for Harman Kardon Amplifier

Pin No	Description	Input / Output
1	Not used	
2	Not used	
3	Not used	
4	Not used	
5	Headphone module 1 left channel	Output
6	Headphone module 1 right channel	Output
7	Headphone module 2 right channel	Output
8	Headphone module 2 left channel	Output
9	Not used	-
10	Not used	-
11	Not used	-
12	Not used	-
13	Not used	-
14	Not used	-
15	Headphone module 1 left ground	-
16	Headphone module 1 right ground	-
17	Headphone module 2 left ground	-
18	Headphone module 2 right ground	-
19	Not used	-
20	Not used	-

Speaker Connector C0493 for Harman Kardon Amplifier

Pin No	Description	Input / Output
1	Headphone module 3 left channel	Output
2	Headphone module 3 right channel	Output
3	Headphone module 4 left channel	Output
4	Headphone module 4 right channel	Output
5	Headphone module 1 control signal	Output
6	Headphone module 2 control signal	Output
7	Headphone module 3 control signal	Output
8	Headphone module 4 control signal	Output
9	Not used	-
10	Not used	-
11	Headphone module 3 left ground	-
12	Headphone module 3 right ground	-
13	Headphone module 4 left ground	-
14	Headphone module 4 right ground	-
15	Headphone module 1 control ground	-
16	Headphone module 2 control ground	-
17	Headphone module 3 control ground	-
18	Headphone module 4 control ground	-

Pin No	Description	Input / Output
19	Not used	-
20	Not used	-

Speaker Connector C0492 for Harman Kardon Logic 7 Amplifier

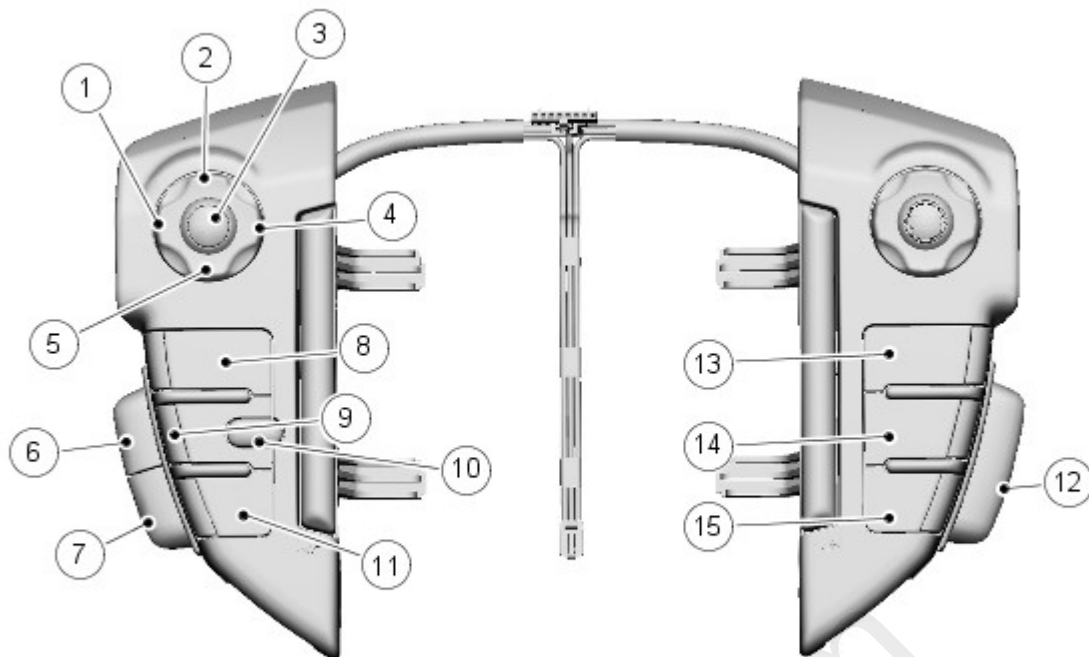
Pin No	Description	Input / Output
1	LH front mid/high range speaker -	-
2	RH front mid/high range speaker -	-
3	Center fill speaker -	-
4	Not used	-
5	Headphone module 1 left channel	Output
6	Headphone module 1 right channel	Output
7	Headphone module 2 left channel	Output
8	Headphone module 2 right channel	Output
9	Not used	-
10	Not used	-
11	LH front mid/high range speaker +	Output
12	RH front mid/high range speaker +	Output
13	Center fill speaker +	Output
14	Not used	-
15	Headphone module 1 left channel ground	-
16	Headphone module 1 right ground	-
17	Headphone module 2 left ground	-
18	Headphone module 2 right ground	-
19	Not used	-
20	Not used	-

Speaker Connector C0493 for Harman Kardon Logic 7 Amplifier

Pin No	Description	Input / Output
1	Headphone module 3 left channel	Output
2	Headphone module 3 right channel	Output
3	Headphone module 4 left channel	Output
4	Headphone module 4 right channel	Output
5	Headphone module 1 control signal	Output
6	Headphone module 2 control signal	Output
7	Headphone module 3 control signal	Output
8	Headphone module 4 control signal	Output
9	Not used	-
10	Not used	-
11	Headphone module 3 left channel ground	-
12	Headphone module 3 right channel ground	-
13	Headphone module 4 left channel ground	-
14	Headphone module 4 right channel	-
15	Headphone module 1 control ground	-
16	Headphone module 2 control ground	-
17	Headphone module 3 control ground	-
18	Headphone module 4 control ground	-
19	Not used	-
20	Not used	-

STEERING WHEEL CONTROLS

Steering Wheel Audio Controls



E132140

Item	Part Number	Description
1	-	Search down
2	-	Volume up
3	-	Mode select
4	-	Search up
5	-	Volume down
6	-	Gap decrease
7	-	Gap increase
8	-	Set or increase the speed
9	-	Resume set speed
10	-	Cancels without erasing memorised speed
11	-	Decrease the speed
12	-	Heated steering wheel
13	-	Answer call/dial switch
14	-	End/reject call switch
15	-	Voice control

The HU can be remotely controlled via steering wheel mounted controls. The steering wheel controls are mounted to the right hand side of the steering wheel.

The switches are a resistive ladder type. The HU supplies a reference voltage to the switches, which then return an altered voltage to the HU depending on which switch is pressed.

The controls allow the user to adjust the volume, change CD tracks/radio pre-sets, answer and end a phone call (where a phone is fitted) and use the voice recognition system.

SATELLITE DIGITAL AUDIO RADIO SERVICE (SDARS NAS only)

The SDARS systems operate in the S-Band frequency range (2.3 GHz) and, as a result of the use of satellite transmission have the ability to provide CD quality audio broadcasts over very large areas (typically continents). SDARS service providers transmit a signal from their up-link facility (which is the original point of transmission of data, voice or other information through an antenna system) to a satellite where the signal is then down linked to both the terrestrial repeater network and the individual SDARS car radios. The radio switches between the satellite signal and the repeater signal depending on the strength of the signal at any given time.

Land Rover will be using the Sirius Satellite Radio service provider in the USA.

The Sirius SDARS systems comprise:

- Satellites
- Ground repeaters
- Up-link ground stations
- Radio receiver systems

The Sirius SDARS system uses three satellites on an inclined elliptical orbit. This ensures that each satellite spends approximately 16 hours a day over the continent of the USA, with at least one satellite over the country at any one time.

The satellites beam their signals down to the ground where the signal is picked up by receivers or is transmitted to repeater stations to cover built up areas where the signal is obscured.

TRAFFIC MESSAGE CHANNEL (TMC)

The TMC system is a European only system whereby traffic information is received by the TMC tuner and used by the navigation computer to recalculate the route being used to avoid the traffic disruption. This system information is broadcast on the RDS data carriers.

mcx30.com

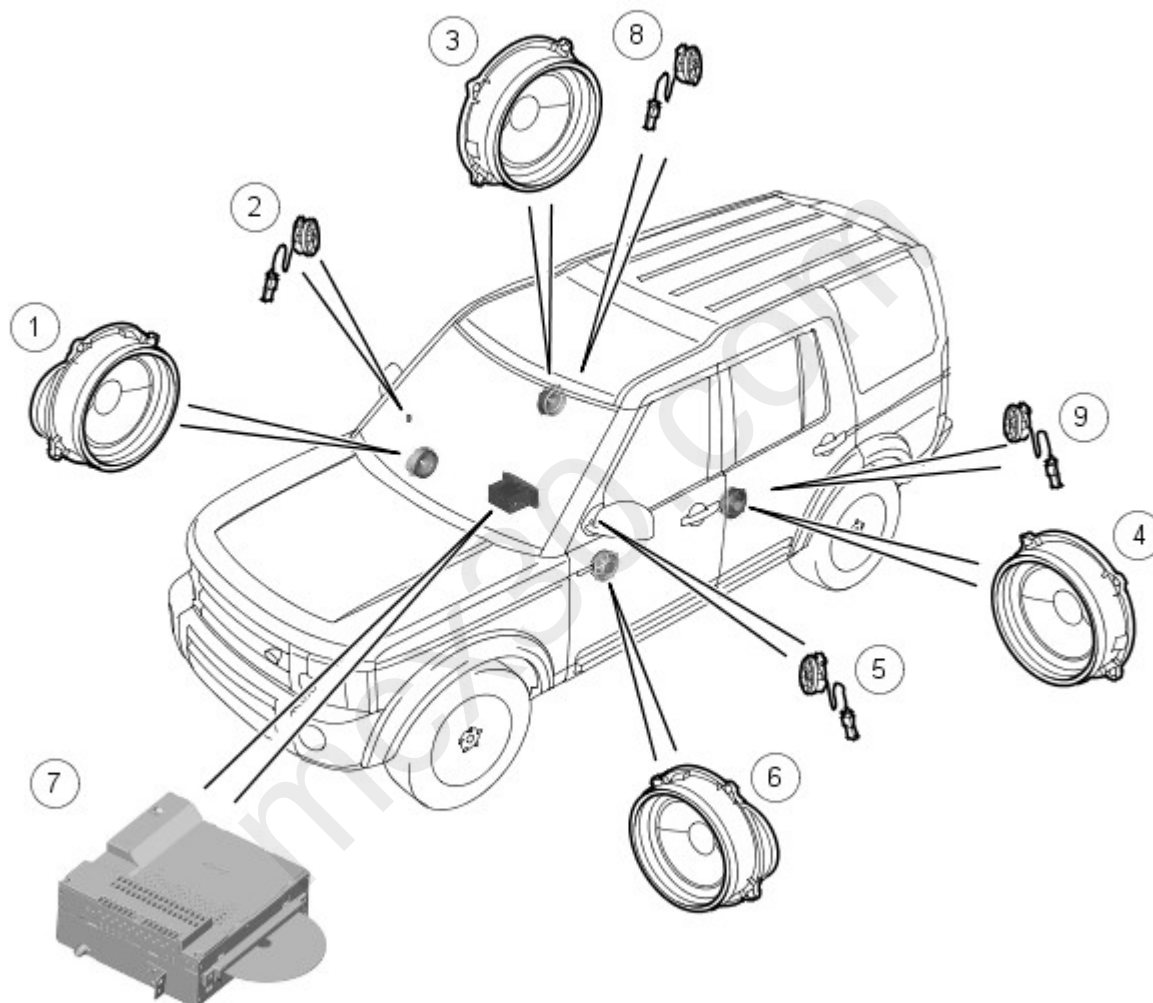
Information and Entertainment System - Speakers

Description and Operation

The speaker configuration depends on the level of audio and head unit fitted to the vehicle. The following details the speaker configuration and control for each system.

LOW LINE AUDIO SYSTEM

Low Line Audio System Speaker Component Location

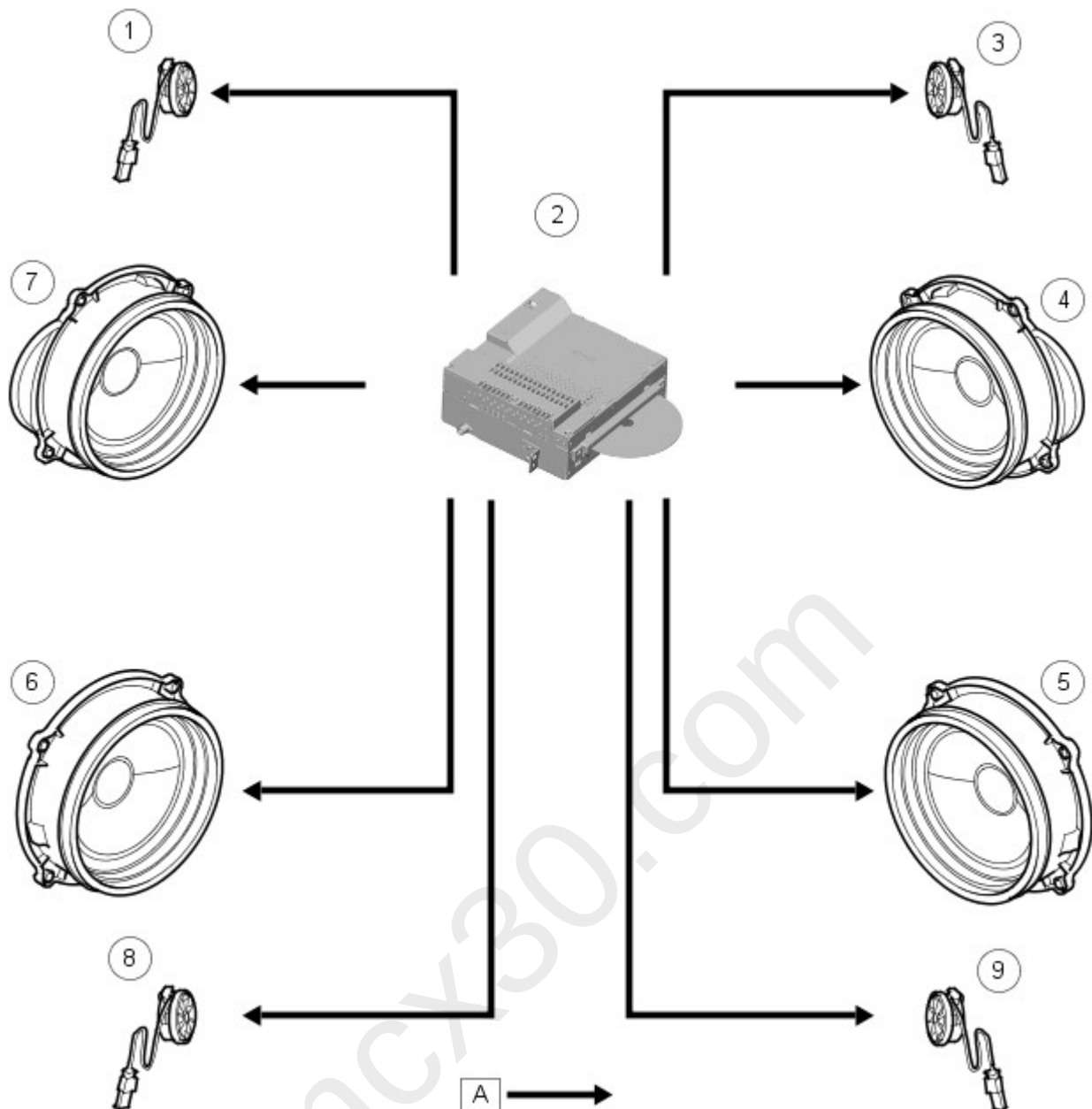


E132119

Item	Part Number	Description
1	70451	Front RH door mid/bass speaker
2	-	Front RH door tweeter
3	-	Rear RH door full range speaker
4	-	Rear LH door full range speaker
5	-	Front LH door tweeter
6	-	Front LH door mid/bass speaker
7	-	Head unit
8	-	Rear RH door tweeter
9	-	Rear LH door tweeter

Low Line Audio System Speaker Control Diagram

• NOTE: A= Hardwired



E132120

Item	Part Number	Description
1	-	Front LH tweeter
2	-	Head unit
3	-	Front RH tweeter
4	-	Front RH mid/bass speaker
5	-	Rear RH full range speaker
6	-	Rear LH full range speaker
7	-	Front LH mid/bass speaker
8	-	Rear LH tweeter
9	-	Rear RH tweeter

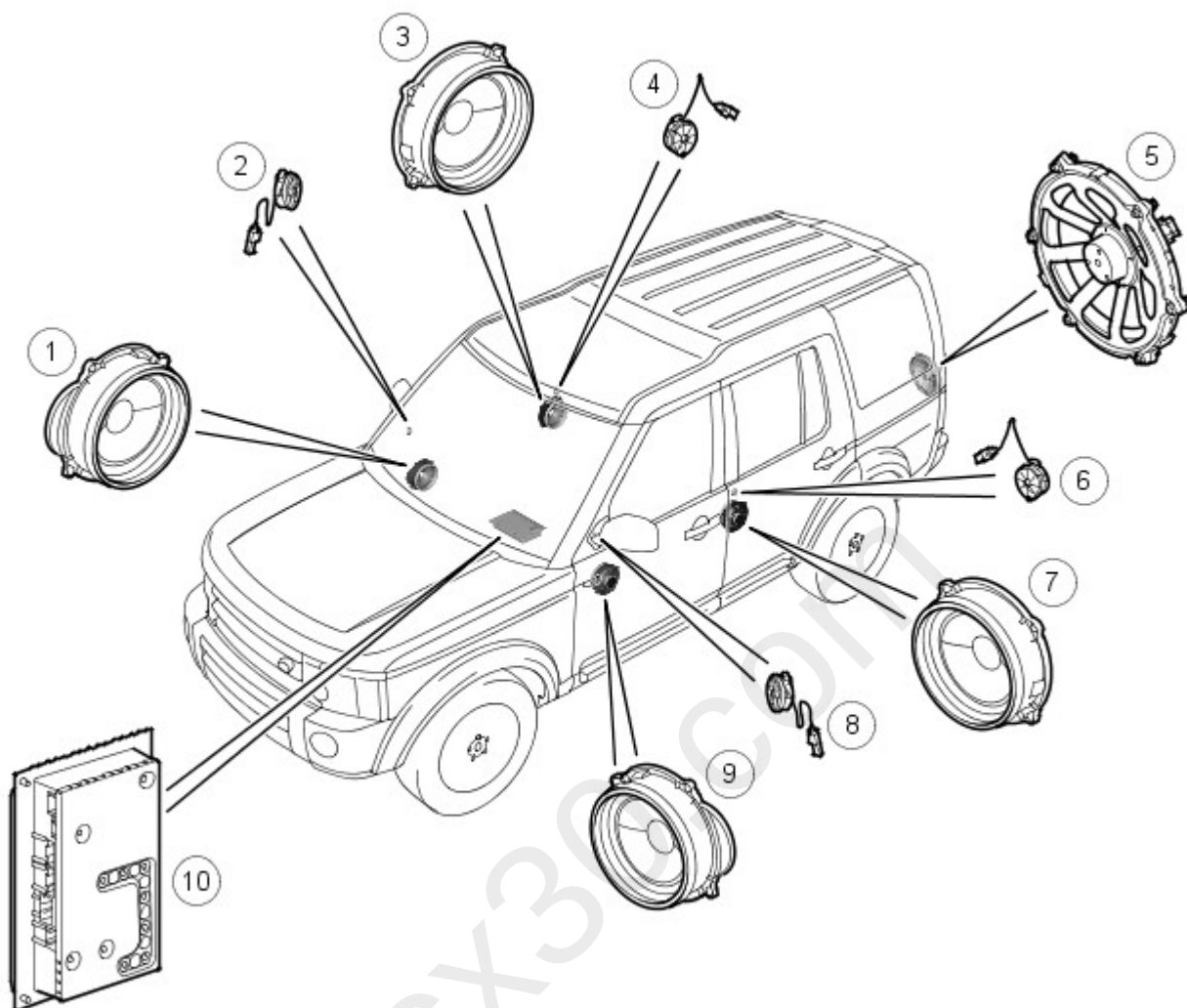
The low line audio speaker system is driven directly from the audio head unit.
For additional information, refer to: [Audio System](#) (415-01B Information and Entertainment System, Description and Operation).

.The system comprises:

- Head unit
- Two front door mounted mid/bass speakers (one per side)
- Two front door mounted tweeters (one per side)
- Two rear door mounted full range speakers (one per side)
- Two rear door mounted tweeters (one per side)

HIGH LINE-HARMAN /KARDON AUDIO SYSTEM

High line-Harman/Kardon Audio System Speaker Component Location

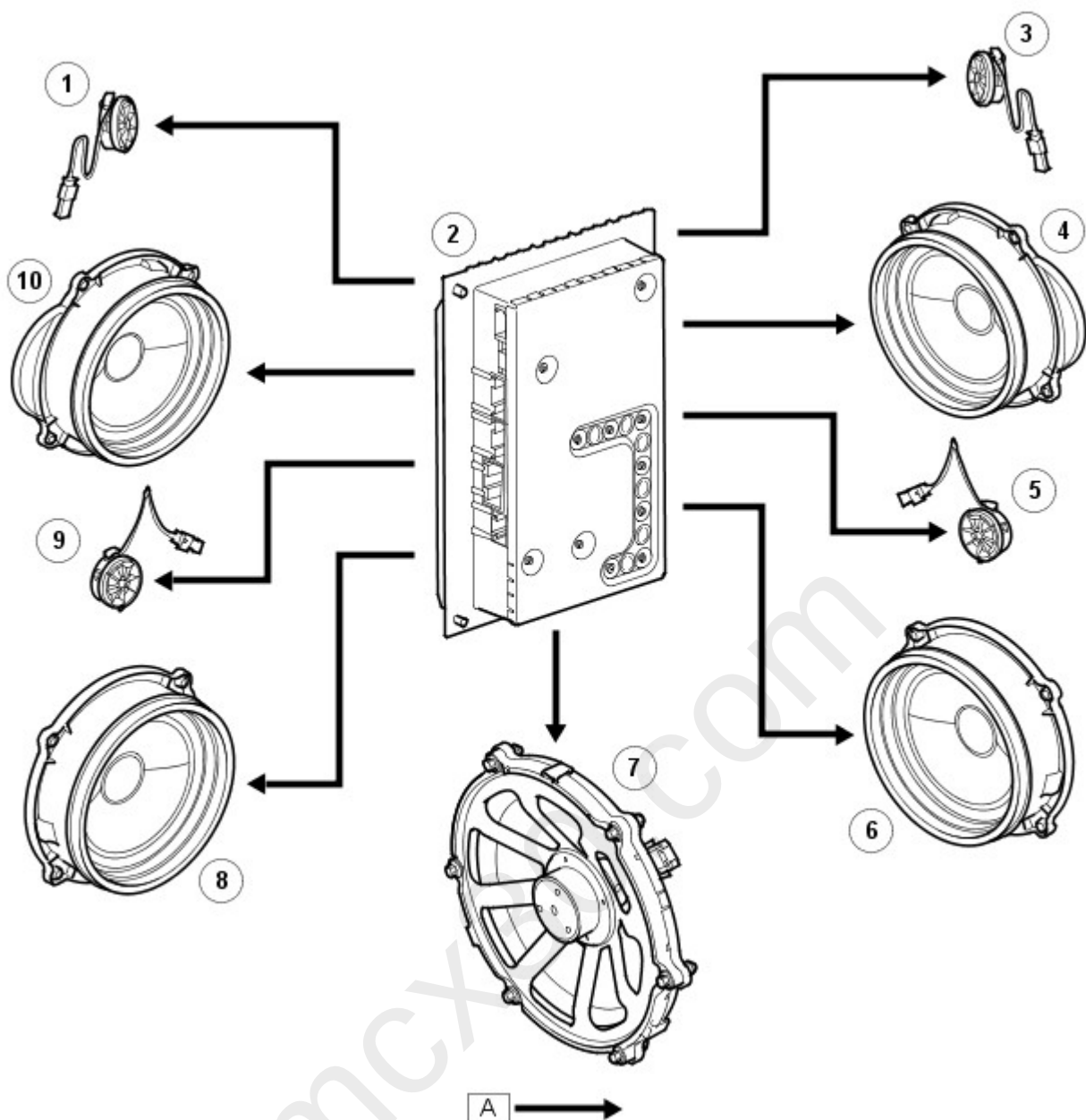


E49743

Item	Part Number	Description
1	-	Front RH mid/bass speaker
2	-	Front RH tweeter
3	-	Rear RH mid/bass range
4	-	Rear RH tweeter
5	-	Sub-woofer
6	-	Rear LH tweeter
7	-	Rear LH mid/bass range
8	-	Front LH tweeter
9	-	Front LH mid/bass speaker
10	-	High line amplifier

High line-Harman/Kardon Audio System Speaker Control Diagram

• NOTE: A= Hardwired



E48353

Item	Part Number	Description
1	-	Front LH tweeter
2	-	High line amplifier
3	-	Front RH tweeter
4	-	Front RH mid/bass speaker
5	-	Rear RH tweeter
6	-	Rear RH mid/bass speaker
7	-	Sub-woofer
8	-	Rear LH mid/bass speaker
9	-	Rear LH tweeter
10	-	Front LH mid/bass speaker

The High line-Harman/Kardon audio speaker system is driven by an amplifier located under the RH front seat. The amplifier is controlled by the Integrated Head Unit (IHU) on the MOST bus and supplies 6x50 watts output, giving a total system power rating of 300 watts

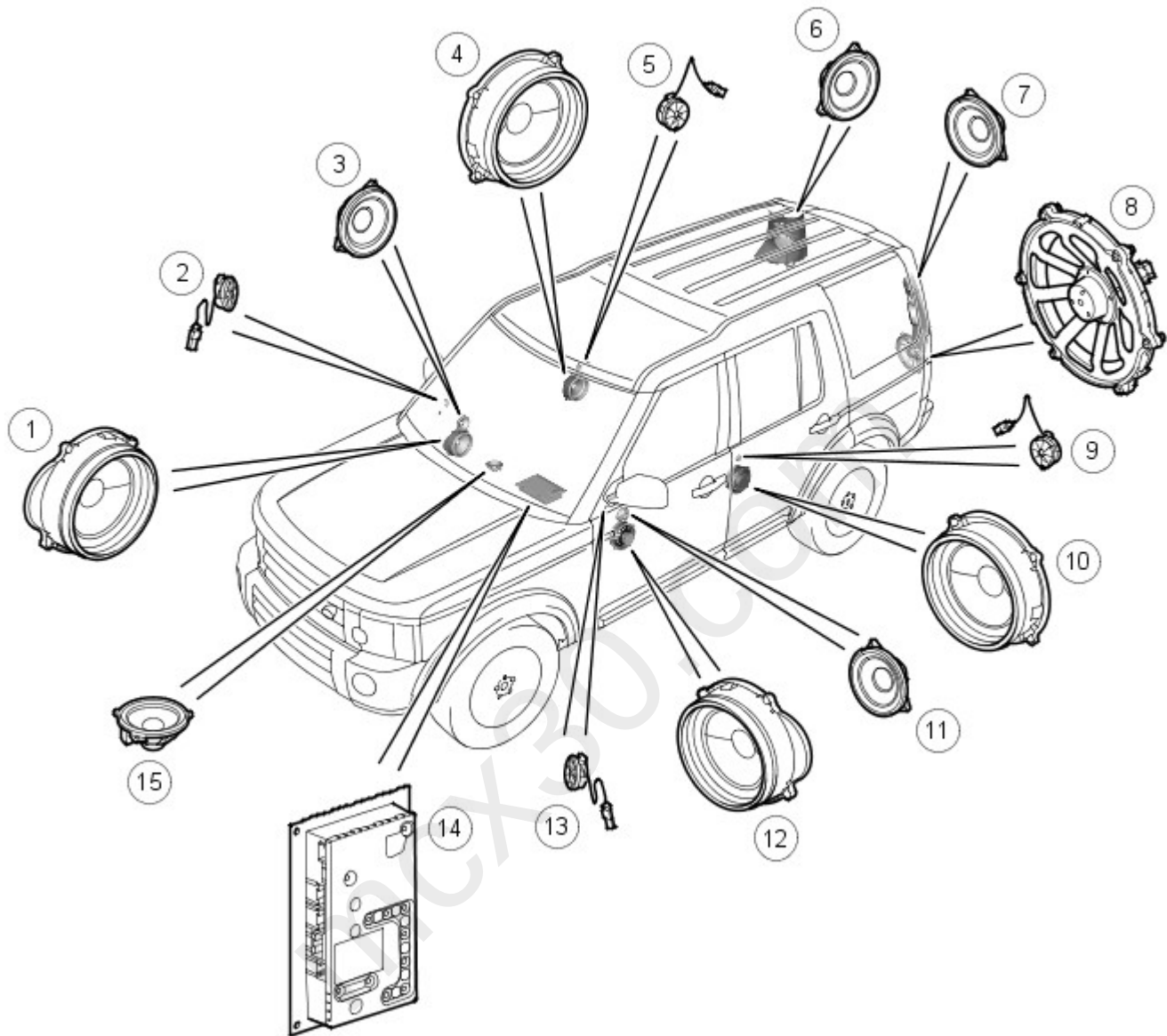
For additional information, refer to: [Audio System](#) (415-01B Information and Entertainment System, Description and Operation).

. The system comprises:

- Integrated Head Unit (IHU) Head unit.
- Two front door mounted mid/bass range speakers (one per side).
- Two front door mounted tweeters (one per side).
- Two rear door mounted mid/bass range speakers (one per side).
- Two rear door mounted tweeters (one per side).
- A sub-woofer located in the lower tailgate.
- An audio amplifier located under the front RH seat.

PREMIUM AUDIO SYSTEM - HARMAN/KARDON LOGIC7

Premium Audio - Harman/Kardon LOGIC7 Audio System Speaker Component Location

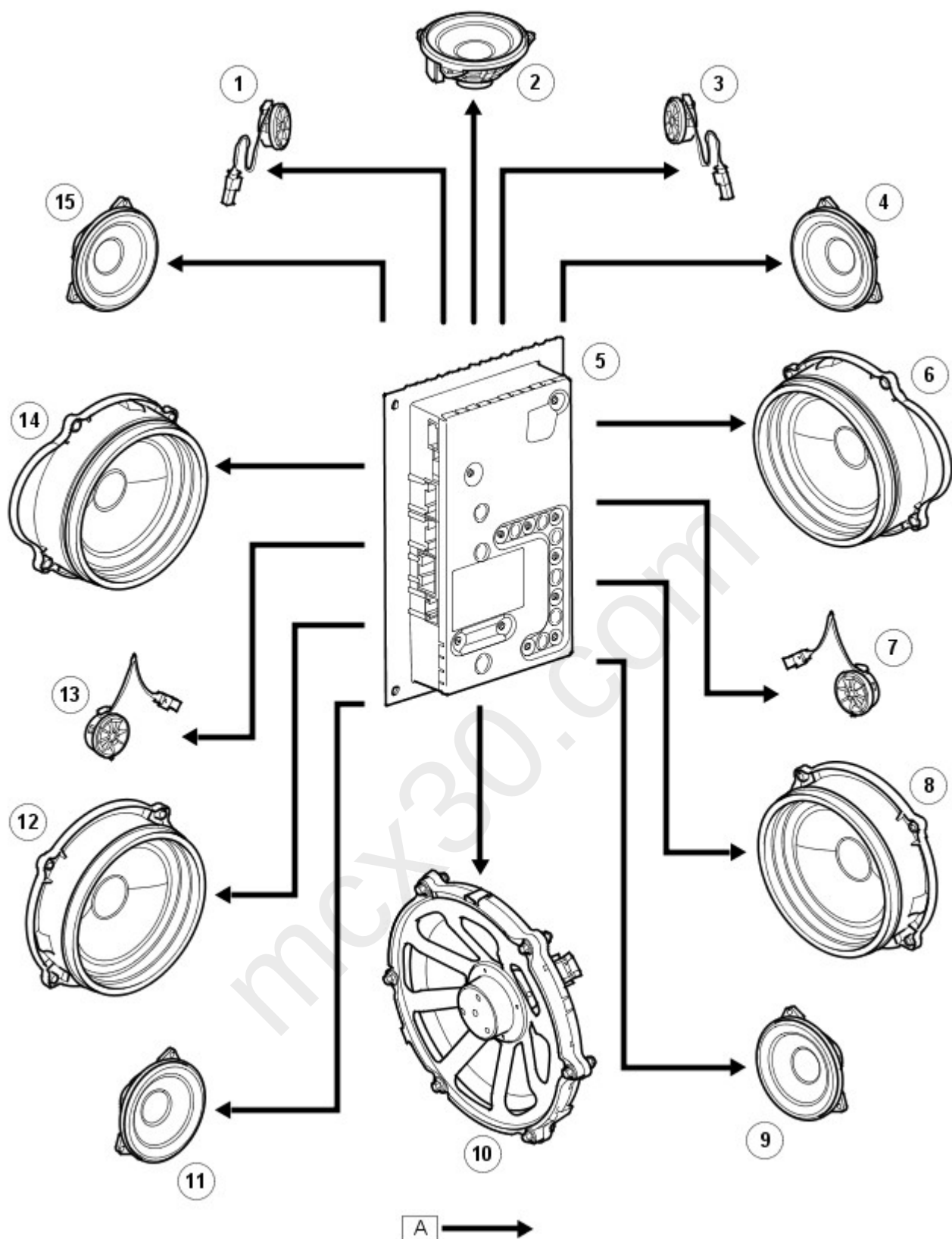


E49744

Item	Part Number	Description
1	-	Front RH bass speaker
2	-	Front RH tweeter
3	-	Front RH mid range speaker
4	-	Rear RH mid/bass speaker
5	-	Rear RH tweeter
6	-	Rear RH surround speaker
7	-	Rear LH surround speaker
8	-	Sub-woofer
9	-	Rear LH tweeter
10	-	Rear LH mid/bass speaker
11	-	Front LH mid range speaker
12	-	Front LH bass speaker
13	-	Front LH tweeter
14	-	Premium amplifier
15	-	Front centre fill speaker

Premium Audio - Harman/Kardon LOGIC7 Audio System Speaker Control Diagram

• NOTE: A= Hardwired



E48354

Item	Part Number	Description
1	-	Front LH tweeter
2	-	Front centre fill speaker
3	-	Front RH tweeter
4	-	Front RH mid range speaker
5	-	Premium amplifier
6	-	Front RH bass speaker
7	-	Rear RH tweeter
8	-	Rear RH mid/bass range speaker
9	-	Rear RH surround speaker
10	-	Sub-woofer
11	-	Rear LH surround speaker

12	-	Rear LH mid/bass range speaker
13	-	Rear LH tweeter
14	-	Front LH bass speaker
15	-	Front LH mid range speaker

The Premium Audio - Harman/Kardon LOGIC7 audio speaker system is driven by an amplifier located under the RH front seat. The amplifier is controlled by the Integrated Head Unit (IHU) on the MOST bus and supplies 12x50 watts output, giving a total system power rating of 600 watts. The system comprises:

- Integrated Head Unit (IHU) Head unit
- Two front door mounted mid range speakers (one per side)
- Two front door mounted bass speakers (one per side)
- Two front door mounted tweeters (one per side)
- Two rear door mounted mid/bass range speakers (one per side)
- Two rear door mounted tweeters (one per side)
- A sub-woofer located in the lower tailgate
- Two rear surround speakers in the E post (one per side)
- One centre fill speaker located in the centre of the instrument panel
- Premium amplifier

mcx30.com