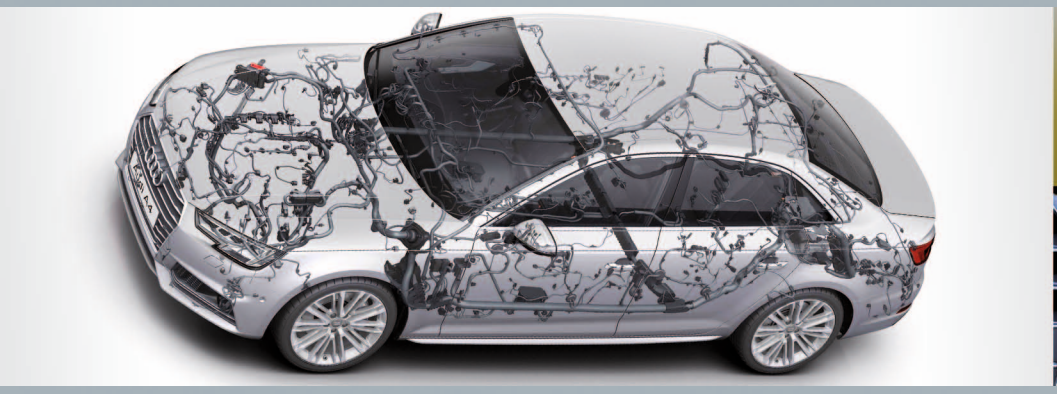
Self Study Programme
999646AG





Audi A4 (Type 8W)
Vehicle electrics and electronics

The material in this Self Study Program (SSP) may contain technical information or reference vehicle systems and configurations which are not available in the Canadian market.

Please ensure you reference ElsaPro for the most current technical information and repair procedures.

Audi
Service Training

The Audi A4 (type 8W) is the second representative of the **MLBevo** (Modular Longitudinal Platform evolution) after the Audi Q7 (type 4M). A fully equipped Audi A4 (type 8W) has around 90 control units on board, many of which exchange data with one another. Such close co-operation would not be possible without an entirely new electronics architecture compared with the Audi A4 (type 8K) – especially when it comes to the driver assistance systems.

The new FlexRay bus system in the Audi A4 networks multiple control units and ensures that data is transmitted extremely quickly and securely. The key components are the engine, the automatic gearbox, the central suspension control unit, the Electronic Stability Control (ESC) system, the power steering control unit, the Stop&Go adaptive cruise control system including traffic jam assist, the video camera and the airbag control unit which manages the safety systems.
There are further data networks in addition to the FlexRay bus. CAN bus systems (CAN = controller area network) integrate the air conditioning system and several assistance systems such as Audi side assist and the surround cameras.

They also facilitate communication between the comfort/convenience control units, the infotainment modules and central display and operating components such as the MMI and Audi virtual cockpit.
So-called LIN buses (LIN = local interconnect network) complement the CAN buses by serving less complex subscriber systems such as the interior lighting.
The Bang & Olufsen Sound System with 3D sound uses a MOST bus (MOST = media oriented systems transport). As in other Audi models, the Audi A4 now also has aluminium high-current wires with diameters of 16 mm^2, 35 mm^2 and 50 mm^2.
However, the Audi A4 is the first Audi to use aluminium wires with diameters of 2.5 mm^2, 4 mm^2 and 6 mm^2. Thanks to these modifications, the electronics in the new Audi mid-range models contribute to a lightweight design. The weight of the vehicle in this area has been reduced by 6 kg compared with the previous model.



646_002

Learning objectives of this self study programme:

Once you have completed this self study programme you will be able to answer the following questions:

- Where are the fuse and relay panels located in the Audi A4?
- In what locations are electrical components fitted on the car?
- Which bus systems are used in the Audi A4?
- What are the tasks of the control units in the car?
- What are the versions of the exterior lighting, and how are the individual light functions implemented?
- What are the changes with regard to headlight range adjustment and calibration of the Audi Matrix LED headlights?

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The self study programme teaches a basic understanding of the design and mode of operation of new models, new automotive components or new technologies.
It is not a repair manual! Figures are given for explanatory purposes only and refer to the data valid at the time of preparation of the SSP.
This content is not updated.
For further information about maintenance and repair work, always refer to the current technical literature.

Note

Reference

Voltage supply

Car battery

The car battery in the Audi A4 (type 8W) is housed centrally in the spare wheel well. The main fuse panel and the battery isolation igniter N253 are located at the positive terminal of the car battery. In the event of a crash, N253 disconnects the main battery lead.

The battery monitoring control unit J367 is located at the negative terminal of the car battery. This control unit, also known as the battery data module (BDM), combines with the earth lead to form a unit.



646_081

The following car batteries are used in the Audi A4:

Standard batteries	EFB battery	AGM car batteries
95 Ah/450 A	79 Ah/420 A	58 Ah/340 A
110 Ah/520 A	93 Ah/520 A	68 Ah/380 A
		75 Ah/420 A
		92 Ah/520 A
		105 Ah/580 A

EFB battery

An EFB (**E**nhanced **F**looded **B**attery) battery is a heavy-duty wet-cell battery. The positive plate inside the car battery is coated with an additional polyester scrim which provides the active mass of the car battery with additional stability on the plate. The deep-cycle resistance of these car batteries is higher than that of conventional batteries. An EFB battery is charged in exactly the same way as a standard car battery.

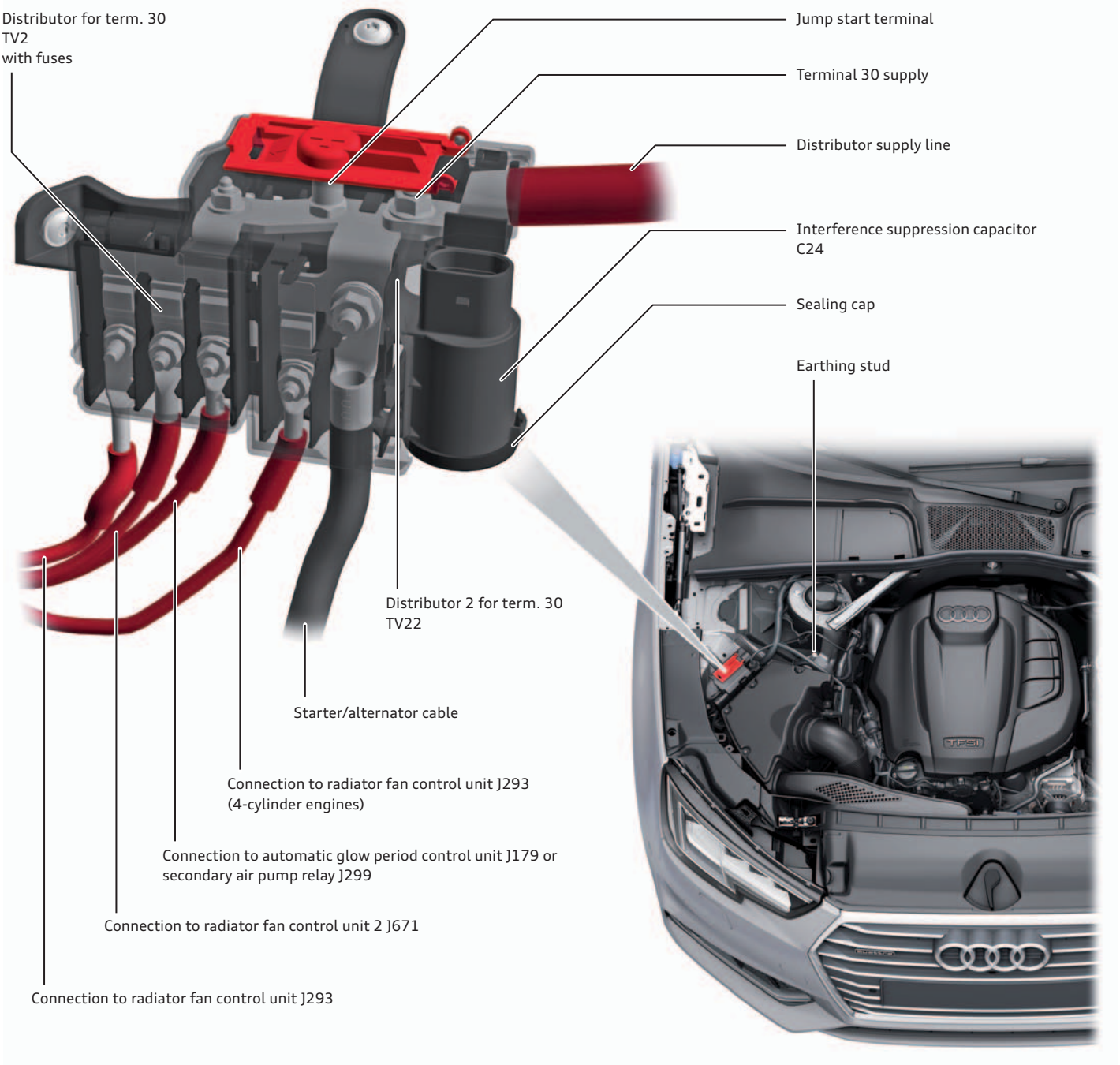
AGM car battery

AGM (**A**bsorbent **G**lass **M**at) car batteries have a glass microfibre material inside in which the electrolyte is held. In addition to having higher deep-cycle resistance, the AGM car battery is noted for its leak-proof design. This is of course very important for installation of the battery inside the car. When charging, it is important to follow the charger's operating instructions and, if required, to program the charger for AGM car batteries.

Jump start terminal

The jump start terminal (positive terminal) is located in the engine bay on the right-hand side of the vehicle, adjacent to the air filter box, under the red plastic cover. The earthing stud (negative terminal) is connected directly to the body fore of the right suspension strut tower.

These terminals should also be used for charging the car battery in the showroom or for diagnostics in the workshop.



646_082

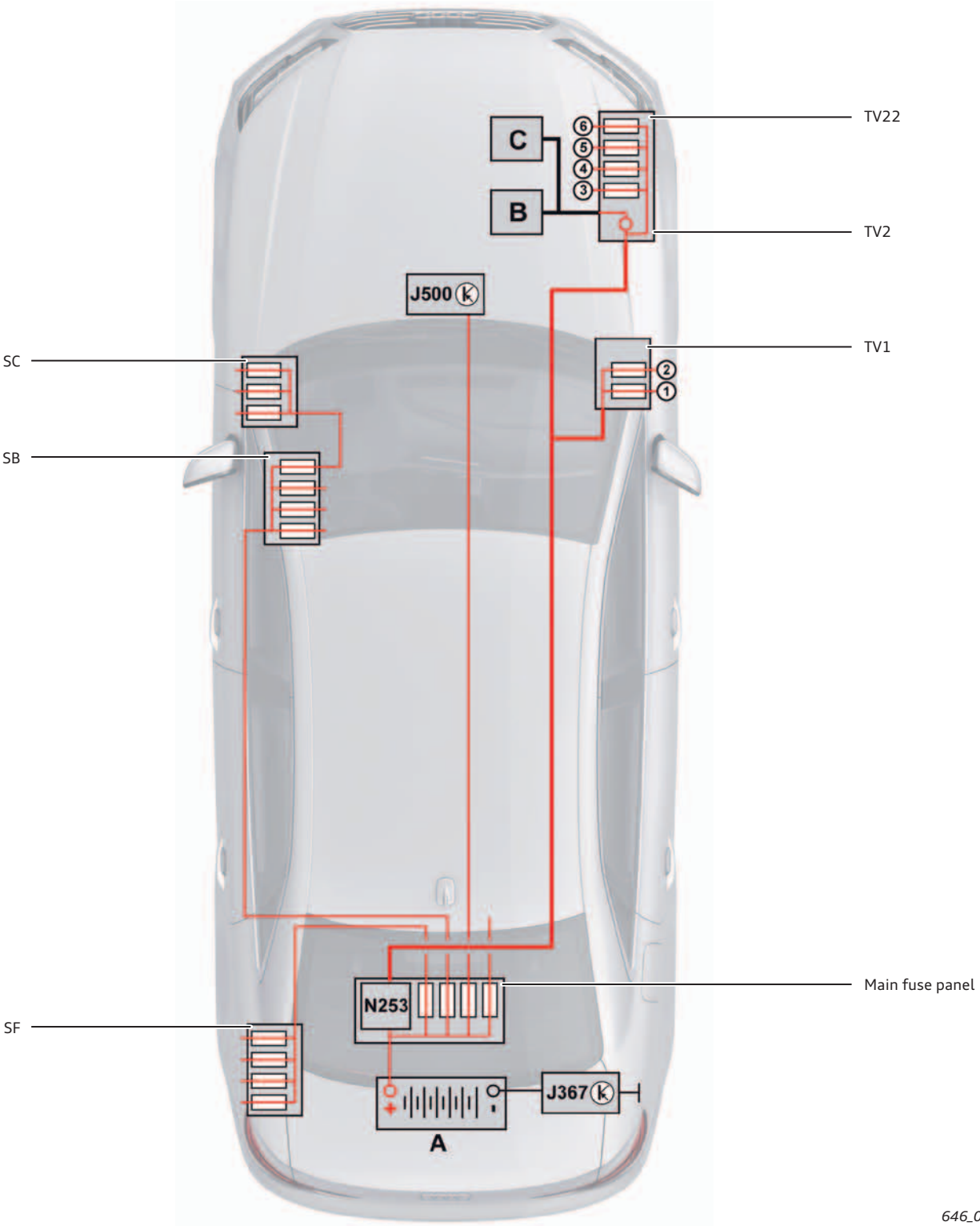
The actual jump start terminal is on the terminal 30 distributor TV22 to which the interference suppression capacitor C24 is also attached. The red 70-mm² cable supplies the distributor. The 3 fuses on the distributor for term. 30 TV2 protect the radiator fan, the glow plugs and the secondary air pump.

The black 70 mm² wire leads from distributor 2 for term. 30 TV22 to the starter. A further wire leads from here to the three-phase AC motor. In 4-cylinder models, the power supply of the radiator fan control unit J293 is located adjacent to the wire leading to the starter/3-phase AC motor.

Supply structure

The following diagram summarises the supply structure of the Audi A4. This is a schematic diagram.

For exact details of fuse assignment and the cable routing, please refer to the applicable service literature.



646_083

Key:

1 Connection to auxiliary air heater stage 1
2 Connection to auxiliary air heater stages 2+3
3 Connection to radiator fan control unit J293 (4-cylinder engines)
4 Connection to automatic glow period control unit J179 or secondary air pump relay J299
5 Connection to radiator fan control unit 2 J671
6 Connection to radiator fan control unit J293

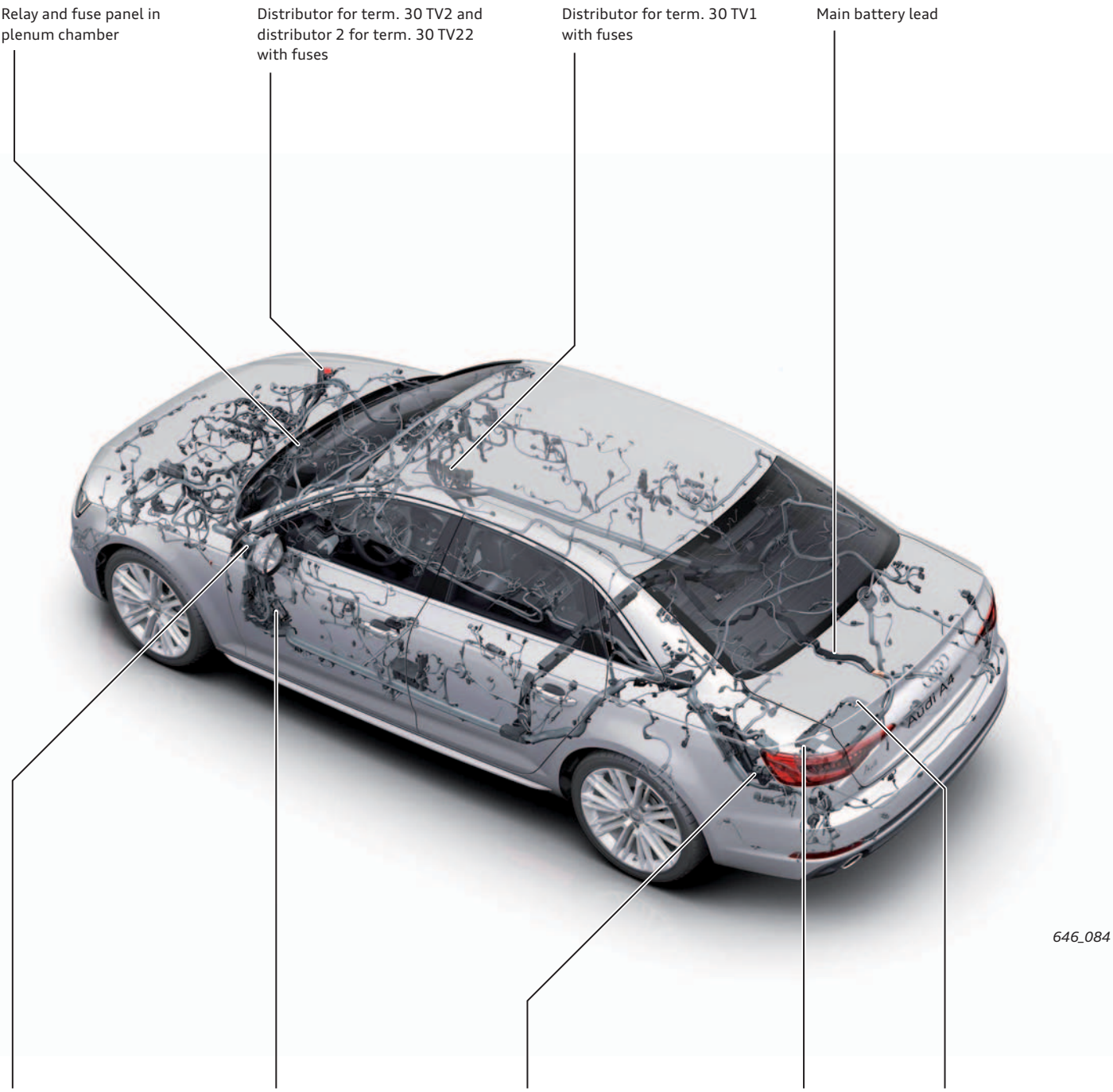
A Battery
B Starter motor
C Alternator

J367 Battery monitor control unit
J500 Power steering control unit
N253 Battery isolation igniter
SB Fuse panel B, on the footrest
SC Fuse panel C, on the dash panel
SF Fuse panel F, in luggage compartment on L/H side
TV1 Fuse and relay box at base of right A-post
TV2 Distributor for term. 30
TV22 Distributor 2 for term. 30

Fuses and relays

The fuses on the main fuse panel as well as distributors TV1 and TV22 are labelled only "S" in the current flow diagram. This also applies to other individual fuses distributed throughout the car.

Fuses "SB", "SC" and "SF" can also be accessed by the driver on the relevant fuse panels and therefore are also described in the Owner's Manual.



Aluminium wires

Main battery lead

Audi has been using aluminium electrical wires for some time now. The Audi A4 (type 8W) makes no exception. The battery main lead in the Audi A4 is made of aluminium, like the Audi A8 (type 4H) where this was used for the first time. This lead begins at the main fuse panel as a flexible round cable. On the right hand-side of the luggage compartment well, it is welded onto a flexurally rigid aluminium ribbon cable.

This ribbon cable runs along the right-hand side of the vehicle through the rear section of the vehicle and under the rear seat, terminating in the heel panel area. Here it is welded onto a round cable which continues along the inside of the right-hand sill and through the engine bulkhead to the jump starting terminal in the engine bay.
If faulty, the aluminium main battery lead can only be replaced completely. There is no provision for repair work.

Wiring harness

A new feature of Audi vehicles, beginning with the Audi A4 (type 8W), is the use of aluminium wires with diameters of 2.5 mm^2, 4 mm^2 and 6 mm^2 in certain areas of the wiring harness.

This helps save weight in the electrical system. Copper wires with diameters from 1.5 mm^2 to 6 mm^2 are also used, particularly in areas in which wires are subject to movement, e.g. on the bonnet.

Repairing aluminium wires

A new tool was developed for the repair of aluminium wires – the wires harness repair kit for aluminium wires VAS 631 001.
In addition to a crimping pliers, this repair kit includes a wire stripper and a special crimp connector including heat shrink tubing for wire diameters of 2.5 mm^2, 4 mm^2 and 6 mm^2.

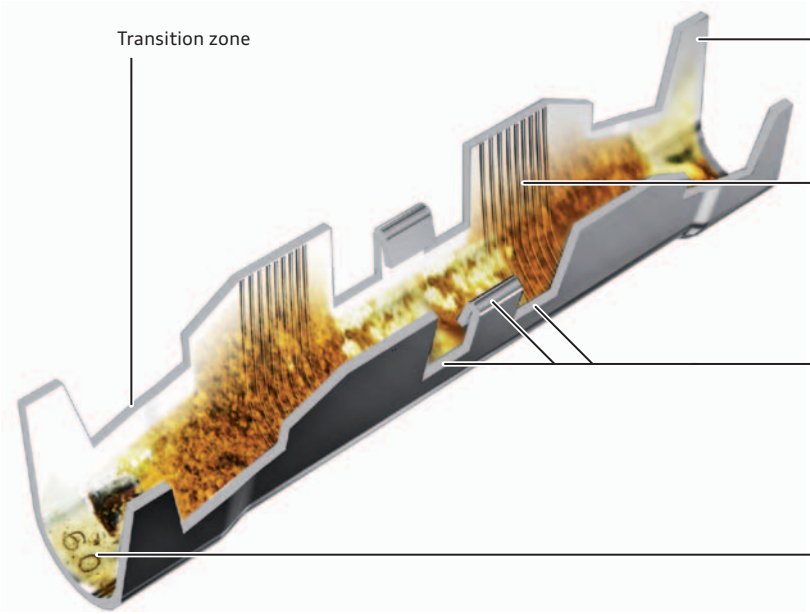
As before, copper wires can be repaired using the wiring harness repair kit VAS 1978B. Cut wires can be reconnected using crimp connectors. Repair wires with industrial manufactured contacts are also available.



646_087

Special crimp connectors are used for the repair of aluminium wires. These connectors ensure strain resistant connection of the aluminium wires. The supplied heat shrink tubing reliably protects the joints against moisture.

A cut aluminium wire can be reconnected using this crimp connector. If it is necessary to attach a new section of wires, the copper repair wires from repair kit VAS 1978A can be used.



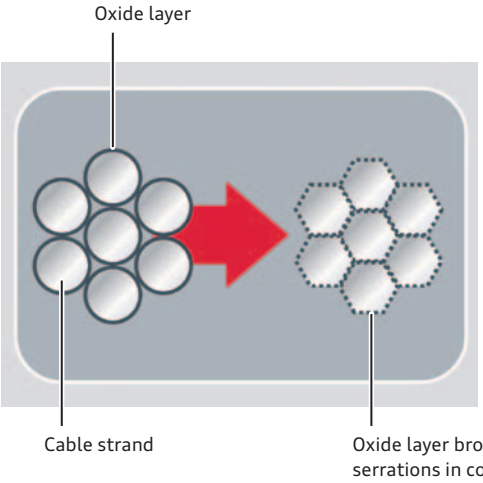
646_088

Challenges in repairing aluminium wires:

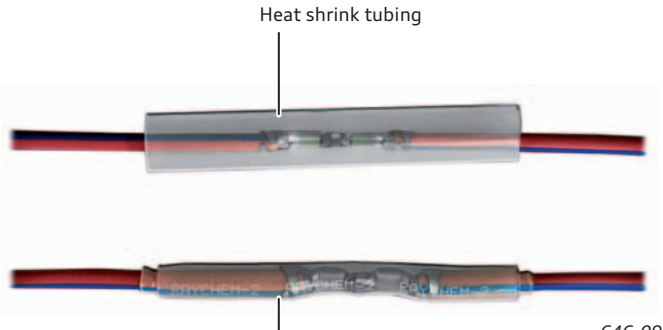
1. The crimp connector must provide a strain resistant connection.
2. The joint must be sealed.

To achieve a strain resistant connection with the aluminium wires, the oxide layers on the individual strands of the aluminium wires must be broken. This is achieved by the serrations in the crimp connectors. These serrations are also coated with an additive to provide better corrosion protection.

As copper repair wires are used, there is an aluminium wire on one side of the connector and a copper wire on the other side. To prevent electrochemical corrosion, the joint must be reliably protected against corrosion. The heat shrink tubing supplied with the crimp connector is used for this purpose.



646_089



646_090

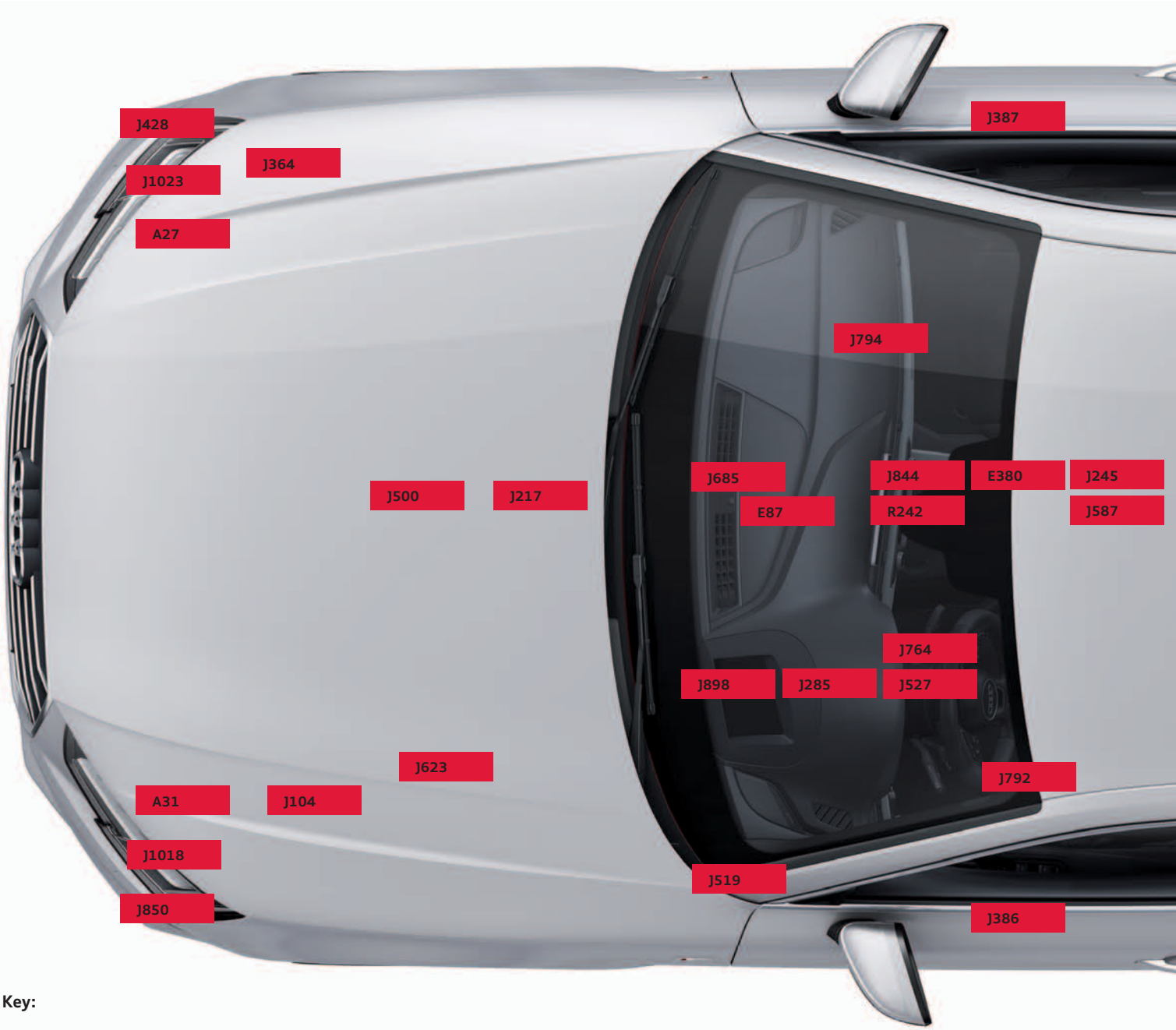
Reference
For a detailed description of how to repair aluminium wires, please refer to the Workshop Manual.

Networking

Installation locations of the control units

Some of the control units shown in the overview are optional and/or country-specific equipment.
For the sake of clarity, not all control units fitted in the vehicle can be shown here.

Refer to the current service literature for details of control unit installation positions as well as instructions for installation and removal.

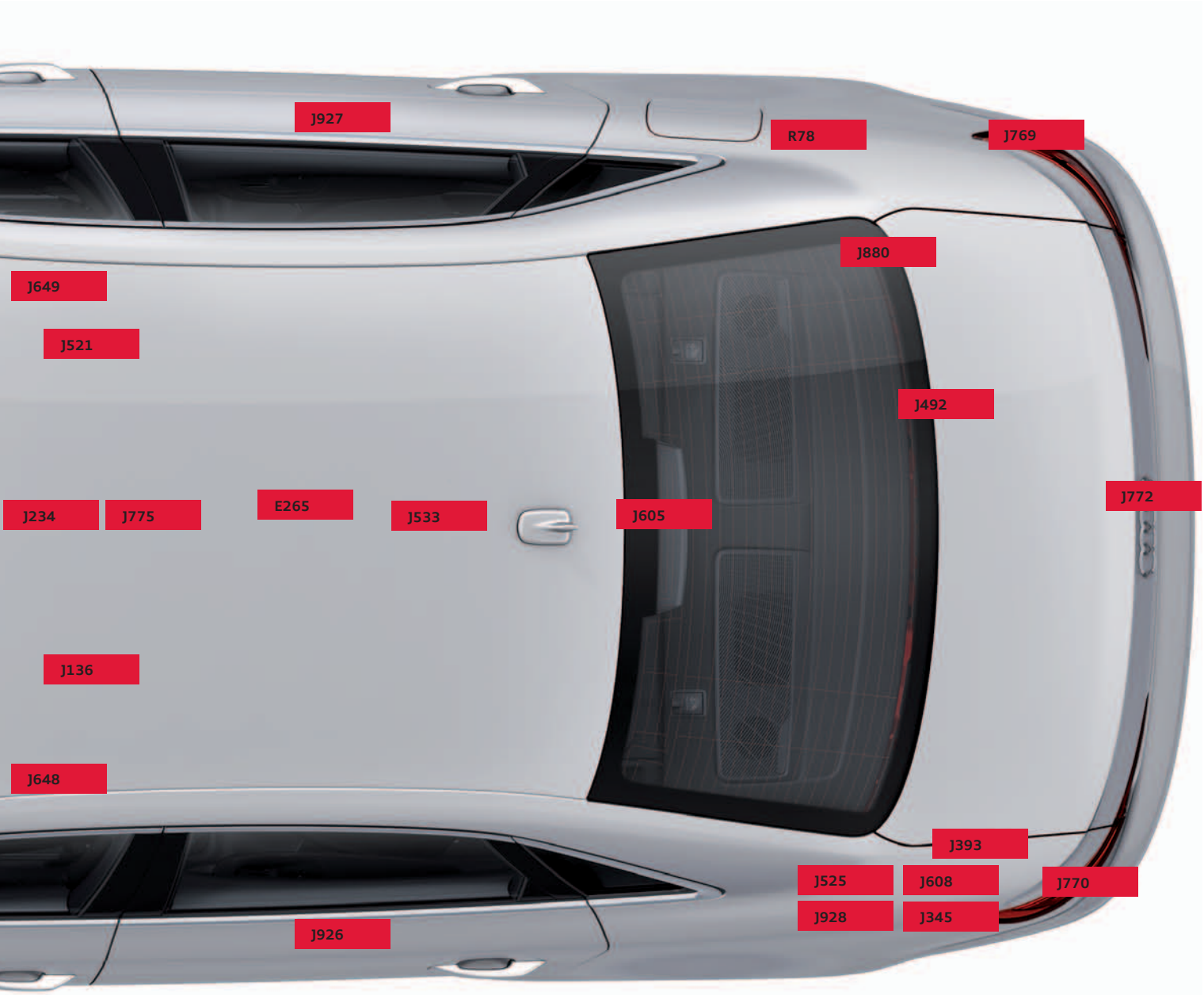


Key:

A27 Right LED headlight power module 1
A31 Left LED headlight power module 1

E87 Front air conditioner/Climatronic operating and display unit
E265 Rear air conditioner/Climatronic operating and display unit
E380 Multimedia system operating unit

J104 ABS control unit
J136 Seat and steering column adjustment control unit with memory
J217 Automatic gearbox control unit
J234 Airbag control unit
J245 Sliding sunroof control unit
J285 Instrument panel control unit
J345 Trailer detector control unit
J364 Auxiliary heating control unit
J386 Driver side door control unit
J387 Front pass. side door control unit
J393 Central control unit for comfort/convenience system
J428 ACC control unit
J492 All-wheel drive control unit
J500 Power steering control unit
J519 Electrical system control unit
J521 Control unit for pass. seat adjustment with memory function
J525 Digital sound package control unit
J527 Steering column electronics control unit
J533 Data bus diagnostic interface
J587 Selector lever sensors control unit



646_010

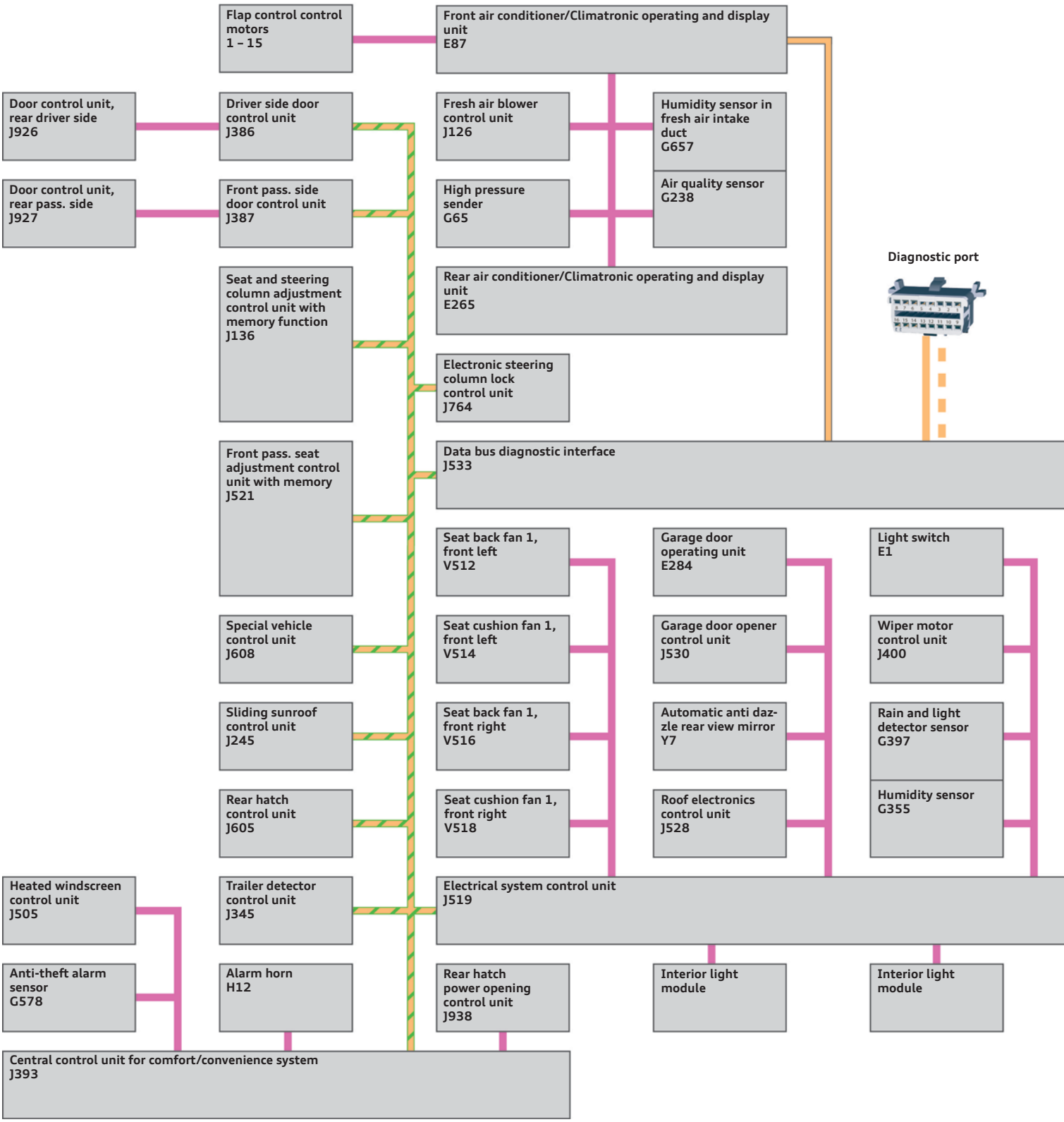
J605 Rear hatch control unit
J608 Control unit for special vehicles
J623 Engine control unit
J648 Control unit for rear left information display and operating unit
J649 Control unit for rear right information display and operating unit
J685 MMI display
J764 Electrical steering column lock control unit
J769 Audi lane assist control unit
J770 Audi lane assist control unit 2
J772 Rear-view camera system control unit
J775 Suspension control unit
J792 Control unit for active steering
J794 Information electronics control unit 1
J844 Main beam assist control unit
J850 ACC control unit 2
J880 Reducing agent metering system control unit
J898 Control unit for windscreen projection J898 (head-up display)
J926 Door control unit, rear driver side
J927 Door control unit, rear pass. side
J928 Surround camera control unit
J1018 Control unit for light control, left
J1018 Control unit for light control, right

R78 TV tuner
R242 Front camera for driver assistance systems

Topology

The topology shows all control units with connectivity to the bus systems.

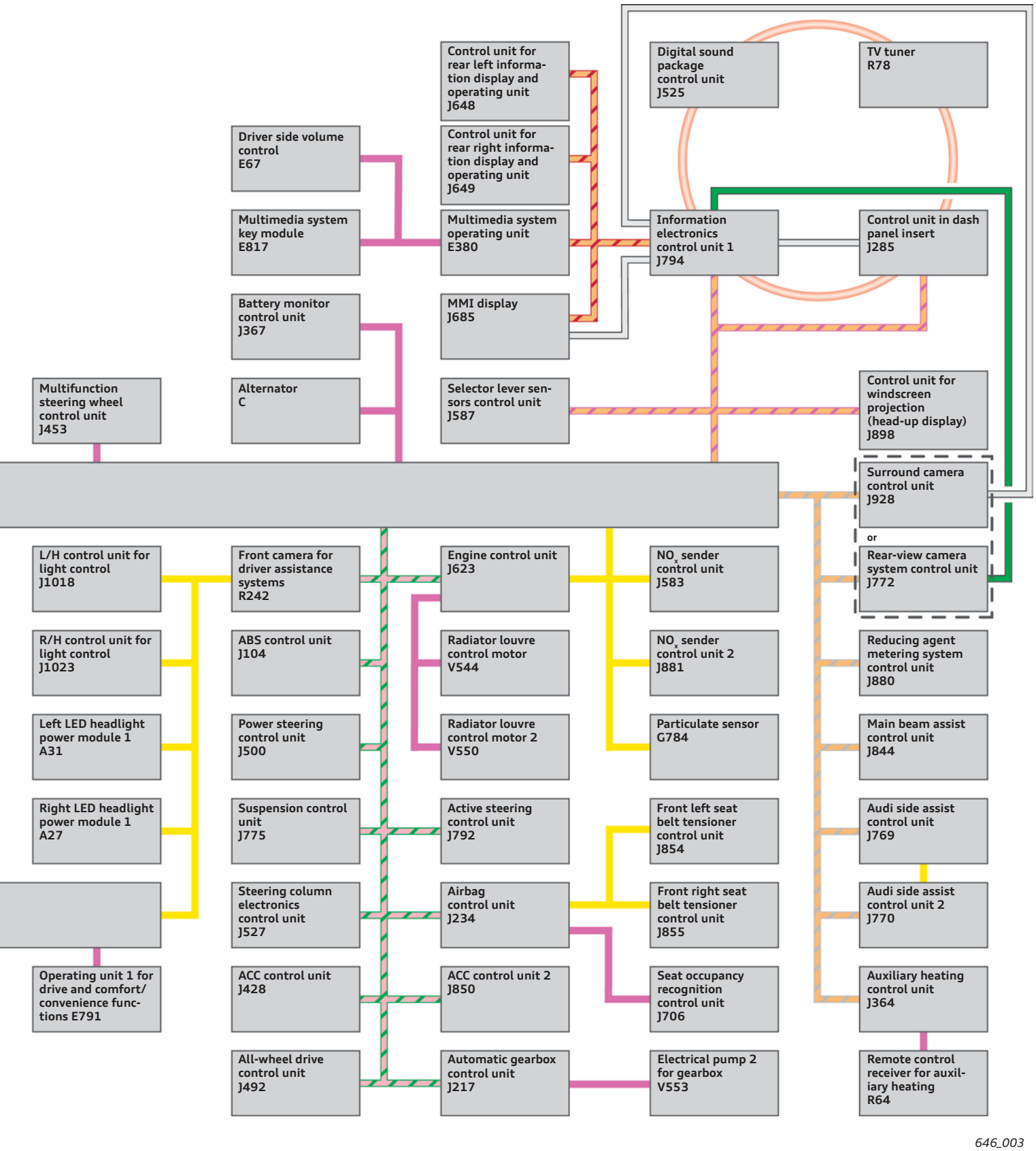
Some of the control units shown here are optional or country-specific equipment or are scheduled for rollout at a later date.



Key:

- Convenience CAN
- Hybrid CAN
- Extended CAN
- Infotainment CAN
- Diagnostics CAN
- FlexRay
- Modular Infotainment Platform (MIB) CAN
- LIN bus

For presentation reasons, the FlexRay topology does not mirror the actual configuration of the control units. This also applies to the control units connected to the MOST bus.



646_003

Sub-bus systems
MOST bus
LVDS
FBAS
"OR" configuration
Ethernet port for diagnose interface VAS 6154

Bus systems used on the Audi A4

Bus system	Cable colour	Configuration	Max. data transfer rate	Property
Hybrid CAN		Electrical two-wire bus system	500 kbit/s	not single wire capable
Convenience CAN		Electrical two-wire bus system	500 kbit/s	not single wire capable
Extended CAN		Electrical two-wire bus system	500 kbit/s	not single wire capable
Infotainment CAN		Electrical two-wire bus system	500 kbit/s	not single wire capable
Modular Infotainment Platform (MIB) CAN		Electrical two-wire bus system	500 kbit/s	not single wire capable
Diagnostics CAN		Electrical two-wire bus system	500 kbit/s	not single wire capable
FlexRay		Electrical two-wire bus system	10 Mbit/s	not single wire capable
MOST bus		Fibre-optic bus system	150 Mbit/s	Ring structure: an open circuit will result in total system failure
LIN bus		Electrical single-wire bus system	20 kbit/s	single wire capable
Sub-bus system		Electrical two-wire bus system	500 kbit/s	not single wire capable
LVDS		Electrical two-wire bus system	approx. 200 Mbit/s	not single wire capable
FBAS		Electrical single-wire bus system	approx. 80 Mbit/s	single wire capable

The network diagram on page 12 provides a schematic overview of the communication paths between the control units in the Audi A4. As a further member of the MLBevo family, the Audi A4 (type 8W) cannot deny its close affinity to the Audi Q7 (type 4M) in the area of control unit networking. The bus systems used in the Audi A4 are identical to those of the Audi Q7 (type 4M).

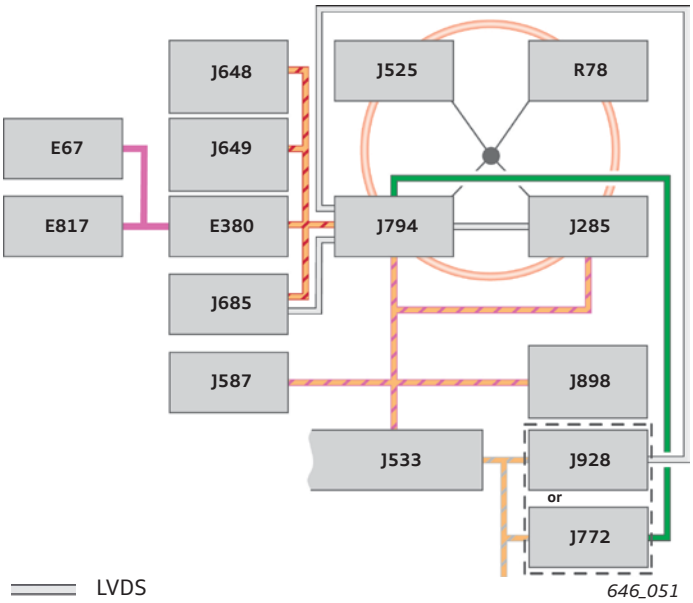
If we compare the Audi A4 (type 8W) with the Audi A4 (Typ 8K), new features in the area of data transmission are the FlexRay, MOST150 and LVDS buses.
In spite of the many similarities with the Audi Q7 (type 4M), there are a few differences that are not exclusively equipment-specific. For this reason, the topologies in the areas of infotainment and FlexRay are described below.

Infotainment topology

In the Audi A4 up to 4 control units are integrated in the MOST ring in the following order:

- Information electronics control unit 1 J794
- Control unit in dash panel insert J285
- TV tuner R78
- Digital sound package control unit J525

If we compare this with the Audi Q7 (type 4M), the difference is that the DVD changer is absent from the MOST ring in the Audi A4. Volume control E67 is configured as the LIN slave on the control panel E380. In models with manual gearbox, the operator control module for multimedia system E817 is additionally connected. Control units J648 and J649 have been added to the MIB CAN and will be also be featured in the Audi Q7 (type 4M) after the launch of the Audi A4.



Key:

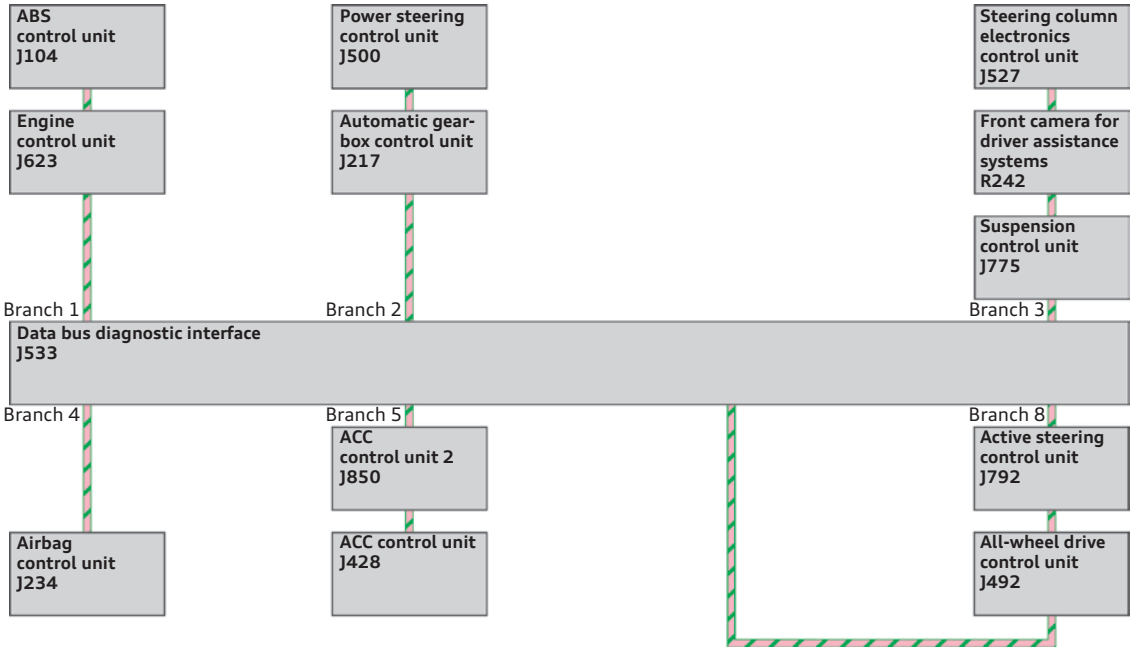
- Infotainment CAN
- Modular Infotainment Platform (MIB) CAN
- LIN bus
- MOST bus
- LVDS
- FBAS
- Ring break diagnostics line
- "OR" configuration

Reference
For further information and general descriptions of the MOST150 and FlexRay buses, refer to Self Study Programme 634 "Audi Q7 (type 4M) Onboard Power Supply and Networking".

FlexRay topology

The data bus diagnostic interface J533 is the controller for the FlexRay bus. All FlexRay control units are connected to J533 via various branches. In this configuration J533 is referred to as the "active hub" or "active node". If only one control unit is connected to a branch, this is referred to as a "point to point" connection.

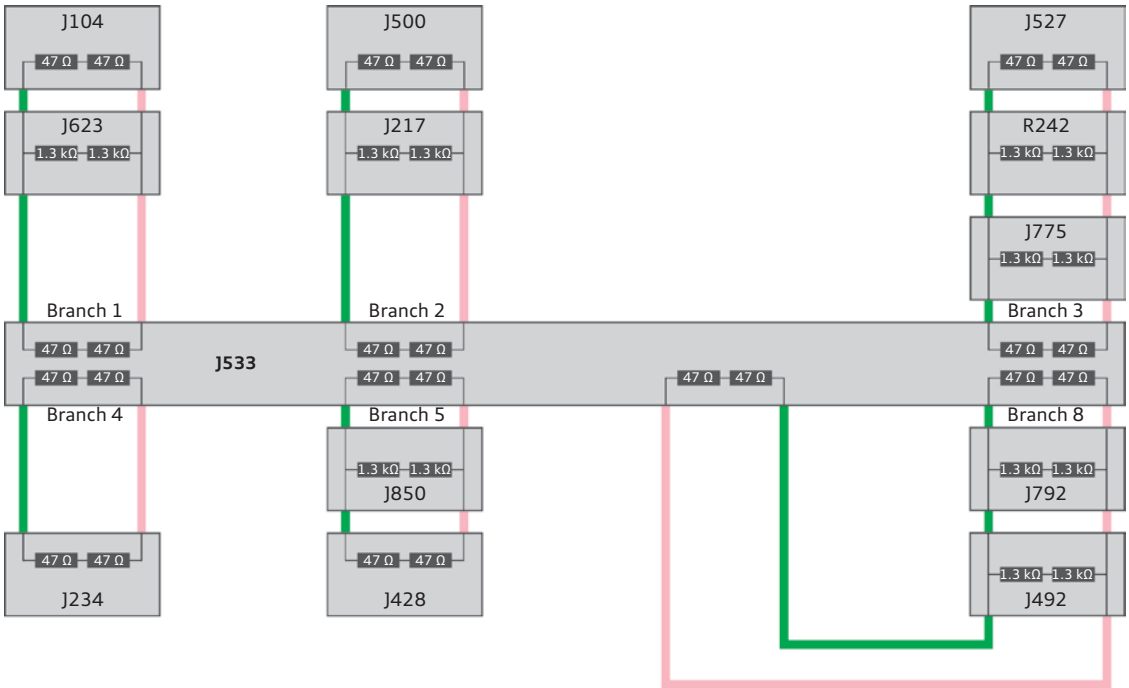
A configuration in which more than one control unit is connected to a branch is known as a "daisy chain connection".
In the Audi A4 six branches are used: branches 1 – 5 and branch 8. The pins of branches 6 and 7 are reserved in the current version of J533, but are still not assigned.
The following figure is a schematic diagram showing how the control units are connected.



646_052

The next figure shows the actual situation. In configuring of the control units, a distinction is made between the bus positive cable (pink) and the bus negative cable (green).
Two resistors each having a resistance of 47 Ω (94 Ω in total) are always connected at the beginning and end of a branch. Each of the so-called "centre control units" has two resistors with a resistance of 1.3 Ω, i.e. 2.6 Ω in total.

A control unit from the vehicle's standard specification is always connected at the end of a branch. This ensures that there is a resistance of 94 Ω at the end of each branch. Two optional control units, which are integrated in other models as "centre control units", are connected to branch 8 in the Audi A4. The FlexRay line is, therefore, routed back to the data bus diagnostic interface J533. The resistance here is 94 Ω - the value required for the termination of branch 8.



646_053

Control units

Brief descriptions

Electrical system control unit



646_012

Connector C (54-pin)
to cockpit wiring harness

Connectors A and B (each 73-pin)
to vehicle / engine bay

Designation	Electrical system control unit J519 / also referred to as BCM1 (Body Control Module 1)
Equipment	Always fitted
Installation location	On A post, L/H side, above bonnet release lever (installation location is always on the L/H side, even in RHD models)
Tasks	Exterior lighting master
	Interior lighting master
	Diagnostic gateway for the light control units
	A/C functions ▸ Activation of seat heater and front seat ventilation ▸ Activation of air conditioning compressor without regulating valve N280 and solenoid coupling for air conditioning system N25

	Integration functions
	▸ Parking
	  ▸ Parking aid
	  ▸ Park assist steering
	  ▸ Activation of front and rear acoustic signal generators
	▸ Ambient lighting
	  ▸ Activation and supply of LIN interior light modules
	▸ Headlight range adjustment
	  ▸ Calculation of headlight range adjustment
	  ▸ Activation of headlight range adjustment via the left and right control units for light control J1018 and J1023.
	  ▸ Read-in of the signals from the inclination sensor via the CAN line

	Other functions
	▸ Reading (senders/sensors/switches)
	  ▸ Ambient temperature
	  ▸ New engine coolant, windscreen washer fluid, brake fluid
	  ▸ Brake pad wear
	  ▸ Bonnet contact
	  ▸ Seater heater temperature
	▸ Activation (actuators/control elements)
	  ▸ Relay for sockets
	  ▸ Signal horn
	  ▸ Headlight washer system
	  ▸ Windscreen washer pump (dual pump)
	  ▸ Heating the windscreen washer jets
	  ▸ Seat heater, front

Diagnostic address	09

Data bus communication	▸ Convenience CAN subscribers
	▸ J519 is the LIN master for
	  ▸ LIN 1: Light switch E1, wiper motor control unit J400, combined sensor – rain and light detection sensor G397 and humidity sensor G355
	  ▸ LIN 2: Garage door operating unit E284, garage door operation control unit J530, automatic anti dazzle rear view mirror Y7, roof electronics control unit J528
	  ▸ LIN 3: Front left seat back fan 1 V512, front left seat cushion fan V514, front right seat back fan 1 V516, front right seat cushion fan V518
	  ▸ LIN 4: Operating unit 1 for drive and comfort/convenience functions E791
	  ▸ LIN 5: Interior light module
	  ▸ LIN 6: Interior light module
	▸ Communicates via a sub-bus system with the L/H and R/H control units for light control J1018 and J1023 and left and right LED headlight power modules 1 A31 and A27

Special feature	Fault finding notes: J519 has duplicated pins at the LIN slave connection. For example, LIN 1 is distributed to 3 pins (A22, A23,C50), which, however, are connected internally within the control unit. This means that the control units connected to pin A23 and C50 are also affected in the event of a short circuit to positive or negative at pin A22 and vice versa.

Gateway

Designation	Data bus diagnostic interface J533
Equipment	Always fitted
Installation location	Under the rear seat, on the floor pan
Tasks	▸ Network system gateway ▸ Controller for FlexRay bus ▸ Diagnostic master ▸ Energy management control unit ▸ Interface for various connect services
Diagnostic address	19
Data bus communication	▸ Hybrid CAN, convenience CAN, Infotainment CAN, CAN-Extended and FlexRay user ▸ LIN master of battery monitor control unit J367 and alternator C ▸ LIN master for multifunction steering wheel control unit J453[1)]
Special features	▸ Not a user of the Modular Infotainment Platform (MIB) CAN ▸ Not a user of the MOST bus ▸ Additional variant as "connected gateway"



646_011

Data bus diagnostic interface J533

[1)] Optional equipment

Central control unit for comfort/convenience system

Designation	Central control unit for comfort/convenience system J393 / also referred to as BCM2 (Body Control Module 2)
Equipment	Always fitted
Installation location	In luggage compartment on L/H side, behind luggage compartment side trim, under fuse and relay panel (installation location is always on L/H side, even in RHD models)
Tasks	Central locking system master
	Integration functions ▸ Terminal management system ▸ Entry and start authorisation ▸ Immobiliser (master) ▸ Anti-theft alarm system

	Other functions
	▸ Reading (senders/sensors/switches)
	  ▸ Brake light switch
	  ▸ Ignition starter button
	  ▸ P signal
	  ▸ Soft touch button on rear hatch
	  ▸ Rear hatch contacts (prelock and full lock)
	  ▸ Rear window breakage sensor
	  ▸ Capacitive sensors of door handles
	  ▸ Entry and start authorisation aerials
	  ▸ Fuel tank sender
	  ▸ Inclination sensors for headlight range adjustment
	  ▸ Hall effect sensor, rear roller blind
	▸ Activation (actuators/control elements)
	  ▸ Rear hatch lock motor
	  ▸ Luggage compartment release
	  ▸ Fuel tank flap lock
	  ▸ Rear roller blind motor (Avant only)
	  ▸ Terminal 15 relay
	  ▸ Heated rear window relay
	  ▸ Rear wiper motor (Avant only)
	  ▸ Supply voltage, rear hatch power opening control unit
	  ▸ Luggage compartment lights
	  ▸ Rear lighting

Diagnostic address	46

Data bus communication	▸ Convenience CAN subscribers
	▸ J393 is the LIN master for:
	  ▸ LIN 1: Control unit for windscreen heater J505, antitheft alarm system sensor G578
	  ▸ LIN 2: Alarm horn H12
	  ▸ LIN 3: Rear hatch power opening control unit J938

Special features	▸ J393 is the immobiliser system master in the Audi A4 ▸ Central locking aerial is integrated in the control unit PCB



Central control unit for comfort/convenience system J393

646_013

Door control unit

Designation	Driver side door control unit J386
Equipment	Always fitted
Installation location	In driver's door
Tasks	Controlling the electrical and electronic components in and on the driver's door ▸ Reading (senders/sensors/switches) ▸ Switches/buttons, e.g. for window lifters, rear hatch release, electrical child lock button, electrical door mirror, central locking, seat memory etc. ▸ Activation (actuators/control elements) ▸ Lights and components in and on the door trim, locking and safe motor, turn signals in door mirror
Diagnostic address	42
Data bus communication	▸ Convenience CAN subscribers ▸ LIN master for door control unit, rear driver side J926
Special feature	The door control unit, rear driver side J926 has its own address code "BB" although it is a LIN slave of J386.



646_014

Designation	Front passenger side door control unit J387
Equipment	Always fitted
Installation location	In front passenger's door
Tasks	Controlling the electrical and electronic components in and on the front passenger's door ▸ Reading (senders/sensors/switches) ▸ Switches/buttons, e.g. for window lifters, rear hatch release, electrical child lock button, electrical door mirror, central locking, seat memory etc. ▸ Activation (actuators/control elements) ▸ Lights and components in and on the door trim, locking and safe motor, turn signals in door mirror
Diagnostic address	52
Data bus communication	▸ Convenience CAN subscribers ▸ LIN master for door control unit, rear passenger side J927
Special feature	The door control unit, rear passenger side J927 has its own address code "BC" although it is a LIN slave of J387.

Seat adjustment

Designation	Seat and steering column adjustment control unit with memory J136
Equipment	Optional equipment (PR no.: PV3)
Installation location	Below the driver's seat
Tasks	Activation (actuators/control elements) ▸ Seat adjustment (memory function)
Diagnostic address	36
Data bus communication	Convenience CAN subscribers
Special feature	Contrary to what the name of the control unit in the "mummy list" would suggest, an electrical steering wheel lock is not available in the Audi A4.



Seat and steering column adjustment control unit with memory function
J136

646_015

Designation	Control unit for passenger seat adjustment with memory function J521
Equipment	Optional equipment (PR no.: PV3)
Installation location	Below the front passenger seat (not shown)
Tasks	Activation (actuators/control elements) ▸ Seat adjustment (memory function)
Diagnostic address	06
Data bus communication	Convenience CAN subscribers

Trailer detector

Designation	Trailer detector control unit J345
Equipment	Optional equipment (PR no.: 1D9)
Installation location	In luggage compartment, L/H side, behind luggage compartment side trim
Tasks	Interconnects the in-car electrics and the trailer electrics ▸ Reading (senders/sensors/switches) ▸ Brake light switch ▸ Tow bar release button ▸ Activation (actuators/control elements) ▸ Tow bar warning lamp ▸ Tow bar lowering motor
Diagnostic address	69
Data bus communication	Convenience CAN subscribers
Special feature	Although the tow bar can be unlocked via a switch in the left luggage compartment trim, it must be moved into its end position by hand until it audibly engages.



Trailer detector control unit J345

646_016

Steering column lock control unit

Designation	Electronic steering column lock control unit J764
Equipment	▸ Always installed in vehicles with a manual gearbox ▸ In the case of vehicles with an automatic gearbox, installation is country-dependent
Installation location	On steering column
Task	Locking and unlocking the steering column
Diagnostic address	2B
Data bus communication	Convenience CAN subscribers
Special features	▸ Immobiliser user ▸ Can be replaced separately from the steering column



Electronic steering column lock control unit J764

646_017

Sliding sunroof control unit

Designation	Sliding sunroof control unit J245
Equipment	Optional equipment (PR no.: 3FU)
Installation location	On sliding sunroof frame at front
Tasks	Controlling the functions of the panoramic glass sunroof ▸ Reading (senders/sensors/switches) ▸ Controller for sliding sunroof adjustment ▸ Activation (actuators/control elements) ▸ Motors for sliding sunroof V1 and sliding sunroof roller blind V260
Diagnostic address	CA
Data bus communication	Convenience CAN subscribers



Sliding sunroof control unit J245

646_018

Rear hatch control unit

Designation	Rear hatch control unit J605
Equipment	For Avant only
Installation location	On roof cross member, rear centre
Tasks	Controlling the functions of the electrical rear hatch ▸ Reading (senders/sensors/switches) ▸ Button for closing the rear hatch ▸ Activation (actuators/control elements) ▸ Rear hatch drive motors ▸ Luggage compartment cover motor[1)]
Diagnostic address	6D
Data bus communication	Convenience CAN subscribers
Special feature	The rear hatch control unit activates the rear parking aid speaker.



Rear hatch control unit J605

646_019

[1)] Optional "electrical luggage compartment cover" (PR no.: PKC)

Interface control unit

Designation	Special vehicle control unit J608
Equipment	Optional equipment (PR no.: e.g.: F4X paramedic version, F4G police version etc.)
Installation location	In luggage compartment, L/H side, behind luggage compartment side trim
Task	J608 serves as an interface between special installations, e.g. for paramedics, police, fire service etc., and the vehicle electrics
Diagnostic address	3D
Data bus communication	Convenience CAN subscribers



646_085

Instrument cluster

Designation	Control unit in dash panel insert J285
Equipment	▸ Always fitted ▸ Optional Audi virtual cockpit (PR no.: 9S8)
Installation location	In dash panel
Task	Display of information relevant to the driver
Diagnostic address	17
Data bus communication	▸ Infotainment CAN bus user ▸ MOST subscriber ▸ Connected by LVDS bus to information electronics control unit 1 J794 (image transfer for navigation display in instrument cluster).
Special feature	The instrument cluster in the Audi A4 is not integrated in the immobiliser.



646_020

Control unit in dash panel insert
J285



646_086

Control unit in dash panel insert
J285
(Audi vitual cockpit)

ACC adaptive cruise control

Designation	ACC control unit J428
Equipment	Optional equipment: ▸ ACC with Stop&Go including traffic jam assist (PR no.: 8T8) ▸ ACC distance indicator (PR no.: 8T3)
Installation location	On lock carrier, front right, behind front bumper cover
Tasks	▸ Radar scanning of traffic (distance and speed) ▸ Controlling speed and distance ▸ Distance display and distance warnings (only if ACC is deactivated)
Diagnostic address	13
Data bus communication	FlexRay subscriber
Special features	▸ ACC Stop&Go with integrated traffic jam assistant ▸ Distance display and distance warning – display of distance in instrument cluster in seconds ▸ Function master for ACC control unit 2 J850



Designation	ACC control unit 2 J850
Equipment	Optional equipment
Installation location	On lock carrier, front left, behind front bumper cover
Task	Radar scanning of traffic (distance and speed)
Diagnostic address	8B
Data bus communication	FlexRay subscriber
Special feature	ACC control unit 2 is a slave of the ACC control unit J428 and, based on its function, could also be referred to as a sensor.

Main beam assist

Designation	Main beam assist control unit J844
Equipment	Optional equipment (PR no.: 8G1)
Installation location	In rear view mirror
Task	Automatic activation and deactivation of main beam in response to oncoming traffic
Diagnostic address	20
Data bus communication	Extended CAN subscriber
Special features	▸ J844 can only change over the dipped/main beam headlights. The front camera for driver assistance systems R242 is required for Audi matrix LED headlights. ▸ Only installed if the customer has ordered main beam assist without further assistance systems, such as Audi active Lane Assist or traffic sign recognition.

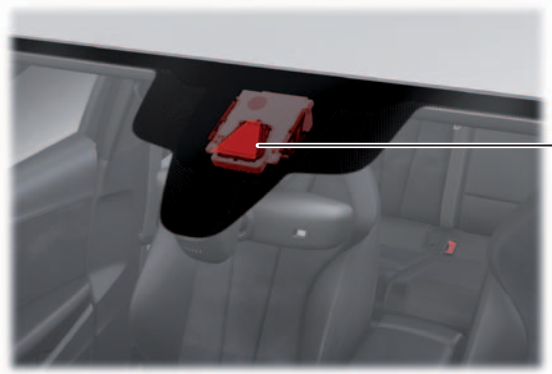


Main beam assist control unit J844

646_022

Front camera

Designation	Front camera for driver assistance systems R242
Equipment	Optional equipment
Installation location	On windscreen above base of rear view mirror
Tasks	Imaging of traffic, traffic signs and lane markers for ▸ Audi active lane assist (lane departure warning system) ▸ Main beam assist ▸ Road sign recognition ▸ ACC Stop&Go ▸ Audi pre sense ▸ Evasion assist ▸ Matrix Beam headlight
Diagnostic address	A5
Data bus communication	▸ FlexRay subscriber ▸ R242 is connected to the light control units via a sub-bus system.
Special features	▸ Forms a functional unit in combination with image processing control unit ▸ The Audi Matrix LED headlights are also calibrated using the front camera for driver assistance systems R242.



Front camera for driver assistance systems R242

646_023

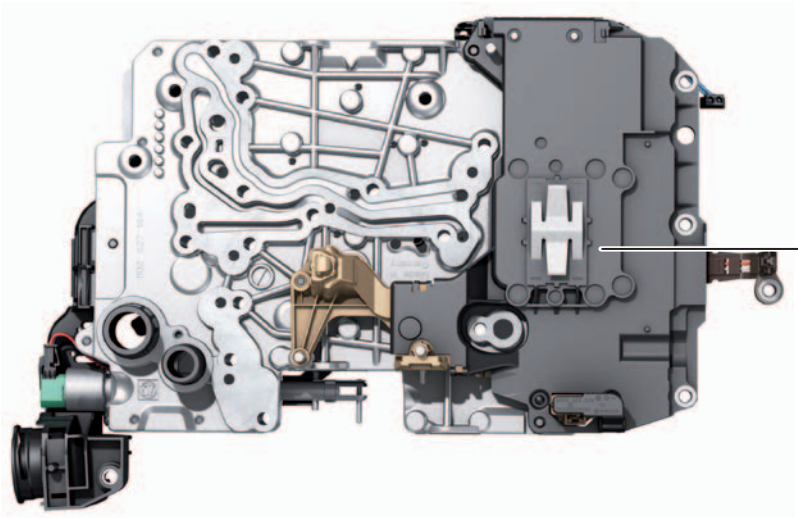
Automatic gearbox

Designation	Automatic gearbox control unit J217
Equipment	Installed in combination with: ▸ 7-speed dual clutch gearbox 0CK/0CL – S tronic (PR no.: G1C/G1D) ▸ 8-speed automatic gearbox 0D5 – tiptronic (PR no.: G1G)
Installation location	Component part of mechatronic unit J743 of automatic gearbox
Task	Controlling and monitoring the engagement and disengagement operations of the automatic gearbox
Diagnostic address	02
Data bus communication	▸ FlexRay subscriber ▸ LIN master for electrical pump 2 for gearbox V553 (in conjunction with 7-speed S tronic)
Special feature	Immobiliser user



Automatic gearbox control unit
J217
(7-speed dual clutch gearbox 0CK/0CL)

646_047



Automatic gearbox control unit
J217
(8-speed automatic gearbox 0D5)

646_024

Reference
For further information about the automatic gearboxes, refer to Self Study Programme 644 "Audi A4 (type 8W)".

Selector mechanism

Designation	Selector lever sensors control unit J587
Equipment	Installed in combination with: ▸ 7-speed dual clutch gearbox 0CK/0CL – S tronic (PR no.: G1C/G1D) ▸ 8-speed automatic gearbox 0D5 – tiptronic (PR no.: G1G)
Installation location	Within the selector mechanism
Tasks	Operating the automatic gearbox, e.g. transmitting drive positions, controlling the mechanical selector lever locks, transmitting selector lever tiptronic commands and resetting the selector lever in the automatic gate.
Diagnostic address	81
Data bus communication	Infotainment CAN bus user
Special features	▸ J587 can only be replacded together with the selector mechanism. ▸ The selector mechanism is not mechanically connected to the automatic gearbox.



Selector lever sensors control unit J587

646_025

Reference
For further information about the selector mechanism, refer to Self Study Programme 644 "Audi A4 (type 8W)".

Rear final drive 0D3 – sport differentia

Designation	All-wheel drive control unit J492
Equipment	Optional equipment (PR no.: GH2)
Installation location	In luggage compartment
Task	Controls the torque of the sport differential's multi-plate clutch
Diagnostic address	22
Data bus communication	FlexRay subscriber
Special features	▸ Special procedures must be followed when replacing the control unit. ▸ The driving dynamics control system is integrated in the suspension control unit J775, and no longer in the all-wheel drive control unit J492. All that control unit J492 does is execute the commands issued by J775.



All-wheel drive control unit J492

646_026

Steering column electronics

Designation	Steering column electronics control unit J527
Equipment	Always fitted
Installation location	On steering column
Task	Connects the steering column stalk and the electrical components in the steering wheel to the vehicle's electronics.
Diagnostic address	16
Data bus communication	FlexRay subscriber
Special feature	In conjunction with the multifunction steering wheel, it transfers the LIN signals from the data bus diagnostic interface J533 (master) to the multifunction steering wheel control unit J453 (slave).



Steering column electronics control unit J527

646_027

Airbag

Designation	Airbag control unit J234
Equipment	Always fitted
Installation location	Under centre console, front, on centre tunnel
Tasks	▸ Deployment of airbags, seat belt pretensioners and battery isolation igniter ▸ Audi pre sense ▸ Deployment of the pedestrian protection system
Diagnostic address	15
Data bus communication	▸ FlexRay subscriber ▸ Is connected to the front left (J854) and front right (J855) seat belt pretensioner control units via a sub-bus system. ▸ LIN master for seat occupancy recognition control unit J706 (for North American market only)
Special feature	Inertial sensors for ESC



Airbag control unit J234

646_028

Engine control unit

Designation	Engine control unit J623
Equipment	Always fitted
Installation location	In engine bay, L/H side, in front of plenum chamber
Tasks	▸ Controlling the engine characteristic ▸ Activation of starter relays J906 and J907 ▸ Function master for start-stop system
Diagnostic address	01
Data bus communication	▸ FlexRay subscriber ▸ J623 is connected to NO_x senders and the particulate sensor (diesel engine) via a sub-bus system. ▸ LIN master for radiator lourvre control motors 1 and 2 V544 and V550
Special features	▸ Immobiliser user ▸ Control unit with new plug-in connections. Has a total of 315 pins. New test adapter VAS 6606/23 for test box VAS 6606



Engine control unit
J623

646_030

Start-stop system

As with all Audi models with start-stop system, the engine control unit J623 is the coordinator for the start-stop function in the Audi A4.
The Audi A4 (type 8W) is equipped with a start-stop system in Version 2.0, which was first used in the Audi Q7 (type 4M).

For a history of the start-stop system and a detailed description of Version 2.0, refer to SSP 634 "Audi Q7 (type 4M) Onboard Power Supply and Networking".

Operating unit 1 for drive and comfort/convenience functions E791



646_080

Start-stop mode button
E693

SCR system

Designation	Reducing agent metering system control unit J880
Equipment	Always installed in diesel models
Installation location	On the underside of the SCR tank
Task	Controlling the injection of reduction agent for reduction of the nitrous oxides in the exhaust gases
Diagnostic address	AC
Data bus communication	Extended CAN subscriber
Special feature	The control unit is identical in all diesel models. The size of the reduction agent tank can vary: standard SCR tank capaciity 12 l; "extended range" SCR tank capacity 24 l[1].



Reducing agent metering system control unit J880

646_031

Front A/C control panel

Designation	Front air conditioner/Climatronic operating and display unit E87
Equipment	Always fitted ▸ Automatic air conditioning (PR no.: 9AK) ▸ Automatic air conditioning (PR no.: 9AQ)
Installation location	In centre of dash panel
Tasks	Controlling: ▸ Temperature ▸ Fan speed ▸ Air flow distribution
Diagnostic address	08
Data bus communication	▸ Hybrid CAN user ▸ E87 is the LIN master for ▸ LIN 1: Control motors for flap activation 1 – 15 ▸ LIN 2: Rear air conditioner/Climatronic operating and display unit E265, fresh air blower control unit J126, humidity sensor in fresh air intake duct G657, air quality sensor G238, high pressure sensor G65
Special feature	Although the seat seating and seat ventilation switches are integrated in and read in by operating unit E87, the electrical system control unit J519 is responsible for their activation.



Front air conditioner/Climatronic operating and display unit
E87
(figure shows deluxe automatic air conditioning system)

646_029

[1] Optional equipment

Head-up display

Designation	Control unit for windscreen projection (head-up display) J898
Equipment	Optional equipment (PR no.: KS1)
Installation location	In dash panel, directly in front of instrument cluster
Task	Controlling all optical, mechanical and electrical components of the head-up display
Diagnostic address	82
Data bus communication	Infotainment CAN bus user
Special features	▸ The control units can only be replaced complete with the other components of the head-up display. ▸ To replace the head-up display, the windscreen must be removed. ▸ When replacing the windscreen, please note: the head-up display requires a special screen (with wedge-shaped foil).



646_032

Control unit for windscreen projection (head-up display) J898

Rear-view camera

Designation	Rear view camera system control unit J772
Equipment	Optional equipment (PR no.: KA2)
Installation location	In handle (soft touch) on rear hatch
Task	Processing and transfer of images from the area behind the vehicle to the information electronics control unit 1 J794
Diagnostic address	6C
Data bus communication	Extended CAN subscriber
Special feature	Control unit, camera and wiring harness form a unit (as shown)



Rear-view camera system control unit J772
(with built-in camera)

646_033

Surround cameras

Designation	Surround camera control unit J928
Equipment	Optional equipment, available in combination with: ▸ Parking aid plus (PR no.: 7X2) ▸ Park assist (PR no.: 7X5)
Installation location	In luggage compartment, L/H side, behind luggage compartment side trim
Task	The control unit reads in the data from the 4 surround-view cameras and generates images mapping the area around the vehicle.
Diagnostic address	6C
Data bus communication	▸ Extended CAN subscriber ▸ Image transfer to instrument cluster by LVDS



Surround camera control unit J928

646_034

Auxiliary heating

Designation	Auxiliary heater control unit J364
Equipment	Optional equipment (PR no.: 9M9)
Installation location	In front wheel arch, R/H side, on side member
Tasks	▸ Reading (senders/sensors/switches) ▸ Temperature sensor, flame monitor ▸ Switch-on signals of auxiliary heating radio receiver ▸ Activation (actuators/control elements) ▸ Fuel metering pump, combustion air blower ▸ Heater glow plug, heating element for fuel preheating ▸ Coolant circulation pump, heater coolant shut-off valve
Diagnostic address	18
Data bus communication	▸ Extended CAN subscriber ▸ LIN master for auxiliary heating radio receiver R64
Special feature	Control unit integrated in heater

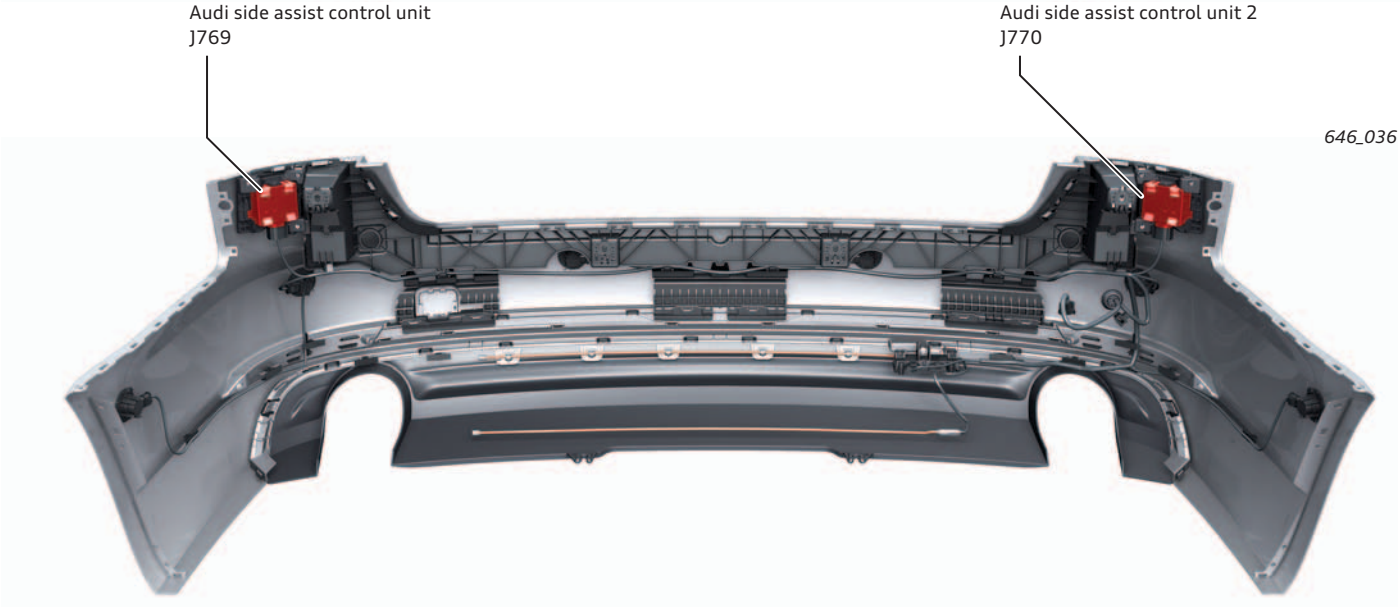


646_035

Audi side assist

Designation	Audi side assist control unit J769 (master) Audi lane assist control unit 2 J770 (slave)
Equipment	Optional equipment (PR no.: 7Y1)
Installation location	In rear bumper cover, left and right
Tasks	Radar monitoring system for the detection of vehicles (cycles and automobiles) in the area to the rear and side of the vehicle for ▸ Audi pre sense rear including Audi side assist ▸ Rear cross traffic assist ▸ Exit warning
Diagnostic address	▸ 3C – J769 (master) ▸ CF – J770 (slave)
Data bus communication	▸ Extended CAN subscriber ▸ Both control units are also interconnected by a sub-bus system.
Special feature	The control unit is integrated in the bumper cover. The system has to be calibrated after removal and installation.





Electronic Stability Control (ESC)

Designation	ABS control unit J104
Equipment	Always fitted
Installation location	In engine bay, L/H side
Tasks	Controlling: ▸ Anti lock braking system (ABS) ▸ Electronic Stability Control (ESC) ▸ Traction Control System (TCS) ▸ Electronic Differential Lock (EDL) ▸ Torque vectoring ▸ Multicollision brake ▸ Electro-mechanical parking brake (EPB)
Diagnostic address	03
Data bus communication	FlexRay subscriber
Special features	▸ The control unit camn be replaced separately from the valve block. ESD protective mat VAS 6613 must be used. ▸ The electro-mechanical parking brake is integrated in the ABS control unit. Address word 53 is no longer used for electro-mechanical parking brake.



646_037

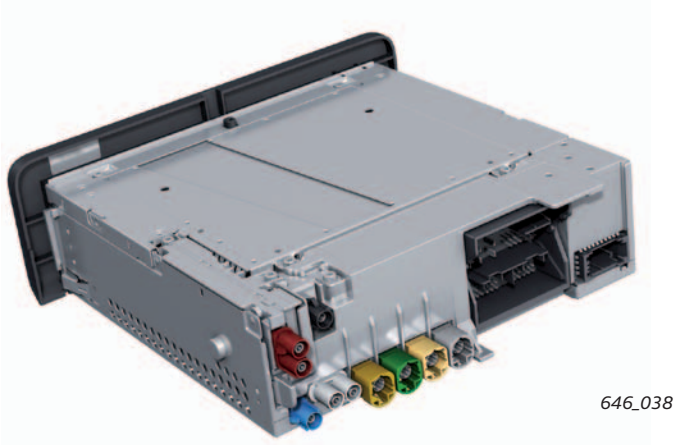
ABS control unit
J104

Information electronics

Designation	Information electronics control unit 1 J794
Equipment	Always fitted
Installation location	In glove compartment
Task	Controlling the infotainment systems
Diagnostic address	5F
Data bus communication	▸ Infotainment CAN bus user ▸ MOST subscriber ▸ J794 is connected to the MMI display J685 and the multimedia system operating unit E380 via the Modular Infotainment System (MIB) CAN.
Special features	▸ J794 is the system manager and the ring break diagnostics master for the MOST bus. ▸ J794 is connected to the dash panel insert control unit J285 and the MMI display J685 via LVDS bus (image transfer for navigation display in instrument cluster or MMI display).



Information electronics control unit 1
J794

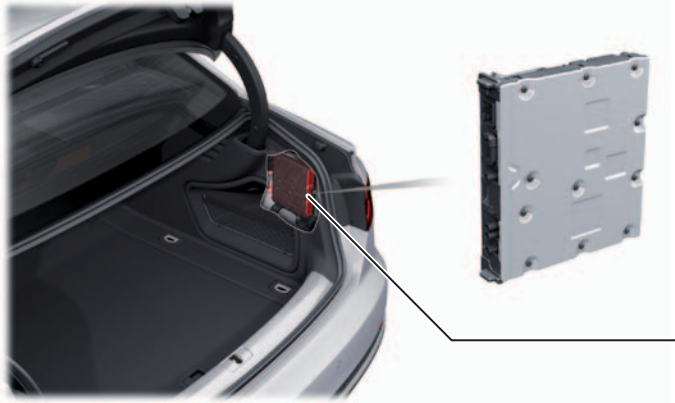


646_038

Information electronics control unit 1
J794
(back)

TV tuner

Designation	TV tuner R78
Equipment	Optional equipment (PR no.: QV1)
Installation location	In luggage compartment, R/H side, behind luggage compartment side trim
Task	TV reception
Diagnostic address	57
Data bus communication	MOST subscriber



646_039

Sound amplifie

Designation	Digital sound package control unit J525
Equipment	Optional equipment (PR no.: 9VS)
Installation location	In luggage compartment, L/H side, behind luggage compartment side trim
Task	Activation of up to 19 speakers
Diagnostic address	47
Data bus communication	MOST subscriber



646_040

Digital sound package control unit J525

Rear Seat Entertainment (Audi tablet)

Designation	Control unit for rear left information display and operating unit J648
Equipment	Optional equipment (PR no.: 9WE or 9WF)
Installation location	In the driver seat backrest
Task	Interface between the Audi tablet for Rear Seat Entertainment, rear left and the vehicle electronics
Diagnostic address	5E
Data bus communication	Modular Infotainment System CAN subscriber



646_041

Designation	Control unit for rear right information display and operating unit J649
Equipment	Optional equipment (PR no.: 9WE or 9WF)
Installation location	In the front passenger seat backrest
Task	Interface between the Audi tablet for Rear Seat Entertainment, rear right and the vehicle electronics
Diagnostic address	4E
Data bus communication	Modular Infotainment System CAN subscriber

Suspension control unit

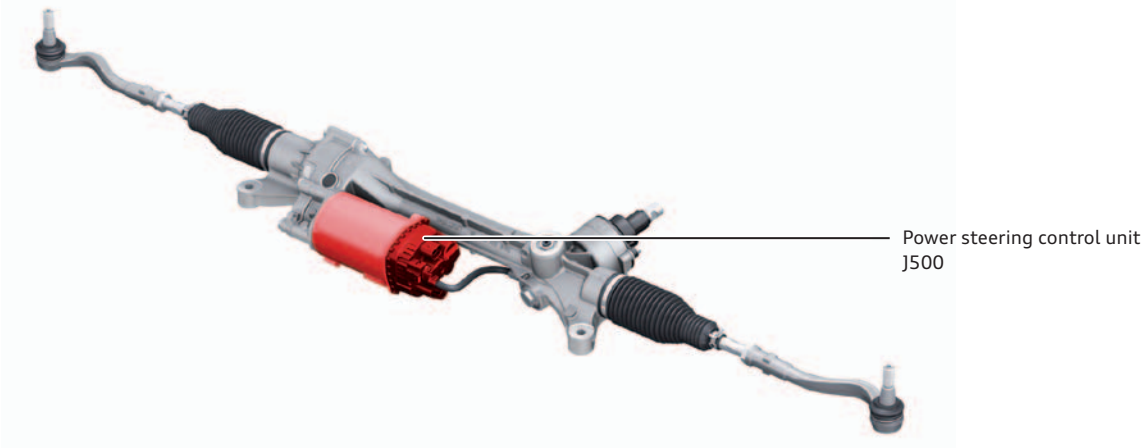
Designation	Suspension control unit J775
Equipment	Optional equipment
Installation location	Under centre console, front, on centre tunnel
Tasks	Wheel damping control ▸ Reading (senders/sensors/switches) ▸ Level control system sensor (4 pcs.) ▸ Activation (actuators/control elements) ▸ Damper adjustment valve (4 pce.)
Diagnostic address	74
Data bus communication	FlexRay subscriber
Special feature	The suspension control unit J775 is responsible for driving dynamics control. In models with a sport differential, J775 sends the commands to the all-wheel drive control unit J492, where these commands are put into action.



646_042

Power steering

Designation	Power steering control unit J500
Equipment	Always fitted
Installation location	Connected to the steering gear.
Tasks	Controlling: ▸ power steering ▸ Servotronic speed-responsive power steering ▸ Corrective steering inputs in conjunction with Audi active lane assist, park assist, evasion assist and trailer assist ▸ Corrective steering inputs in conjunction with ESC
Diagnostic address	44
Data bus communication	FlexRay subscriber
Special feature	The control unit with power steering motor can only be replaced together with the steering gear.



646_043

Dynamic steering

Designation	Active steering control unit J792
Equipment	Optional equipment (PR no.: 1N8)
Installation location	In driver's side footwell, under the floor covering

Tasks	▸ Calculating the superimposition angle required to implement the variable steering ratio.
	▸ Correcting the calculated superimposition angle of the stabilising function through ESC intervention.
	▸ Reading (senders/sensors/switches)
	  ▸ Index sensor
	  ▸ Motor position sensor
	▸ Activation (actuators/control elements)
	  ▸ Dynamic steering actuator
	  ▸ Dynamic steering lock

Diagnostic address	1B
Data bus communication	FlexRay subscriber
Special features	Basic setting is necessary after: ▸ replacement by a new or different active steering control unit J792 ▸ replacement by a new or different steering column ▸ replacement by a new or different steering angle sensor G85 or recalibration ▸ Changing the wheel alignment values ▸ Disconnecting the actuator from the steering column or the actuator from the steering gear



646_044

Active steering control unit J792

Exterior lighting

Headlight variants

In the case of the Audi A4, a distinction is made between the following headlight versions:

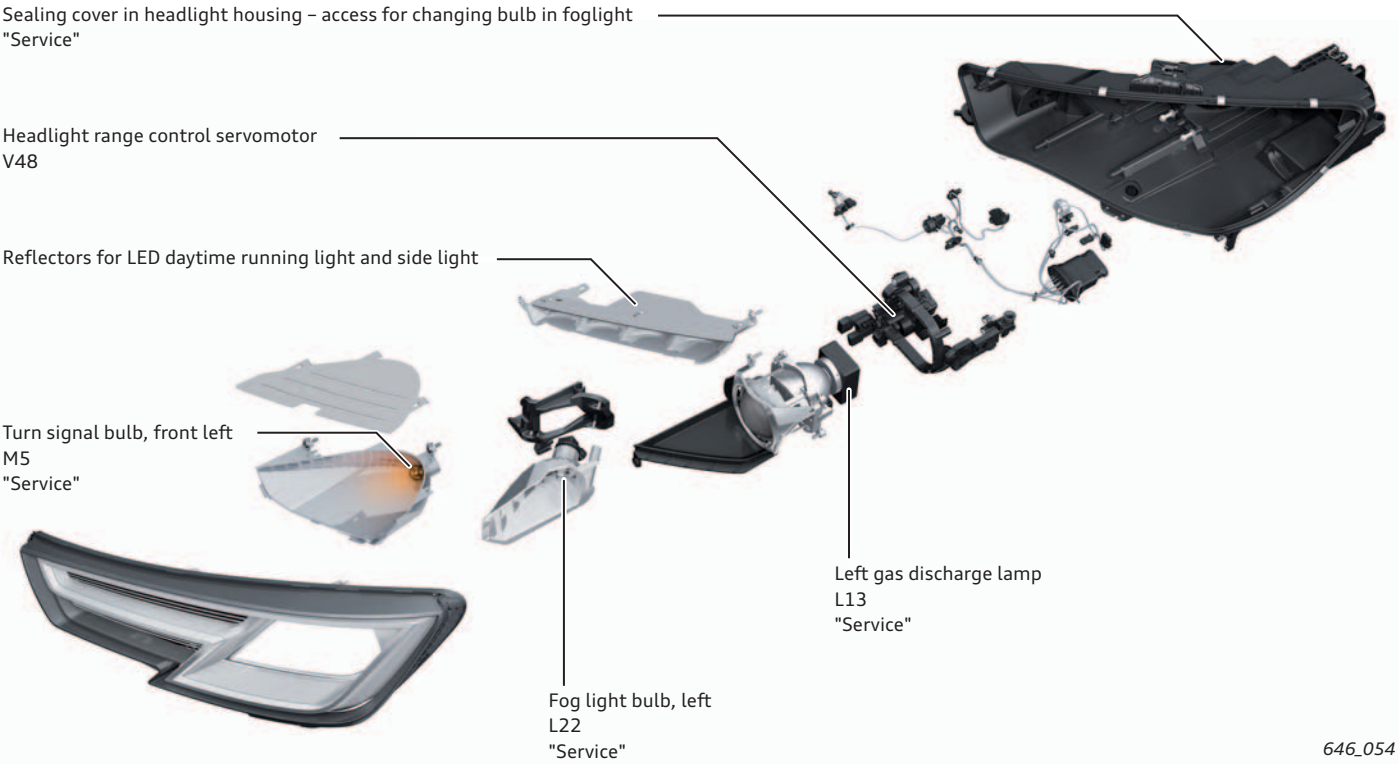
- Xenon headlight (ECE[1)] and SAE[2)])
- LED headlight (ECE[1)] and SAE[2)])
- Audi Matrix LED headlight (ECE[1)])

To remove headlights, the bumper cover must be taken off beforehand. The headlights are connected to the vehicle body by means of adjusting elements. Thus, it is possible to align the headlights exactly with the other body parts. Before the headlight can be removed from the vehicle, the headlight washer nozzle must be unclipped from the headlight.

In the event of damage to the upper and inner headlight attachments, repair tabs can be attached to the headlight housing. The parts marked "Service" in the exploded-view diagrams of the headlights on the following pages can be replaced individually in the event of damage.
For information as well as the corresponding spare part numbers, please refer to the workshop manual or the electronic parts catalogue.

Xenon headlight

The figure shows the le t headlight in the ECE[1)] version.



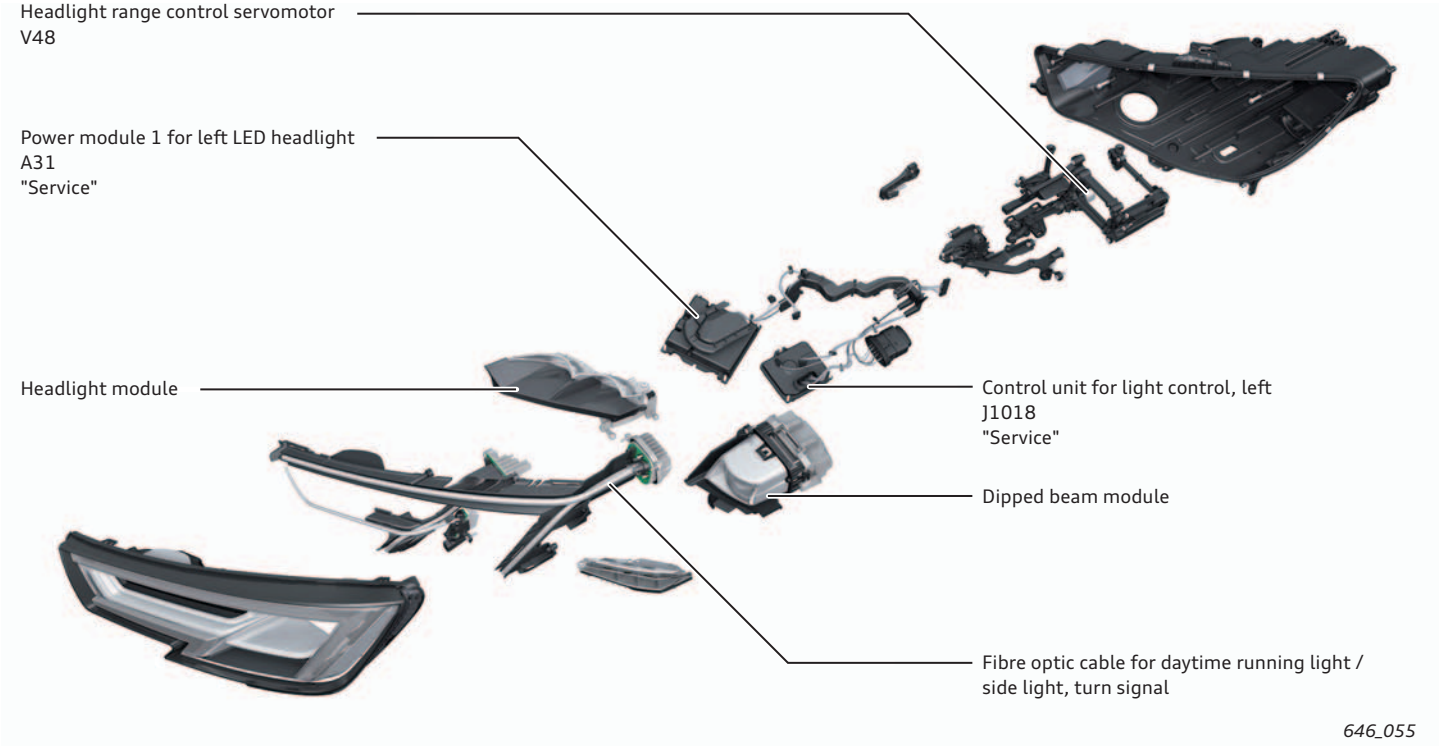
[1)] ECE = for European market

[2)] SAE = for North American Region

Note
"Fog light bulb L22" (for the all-weather light function) can be accessed via a cover on the back of the headlight housing and can be replaced after the headlight has been installed.

LED headlights

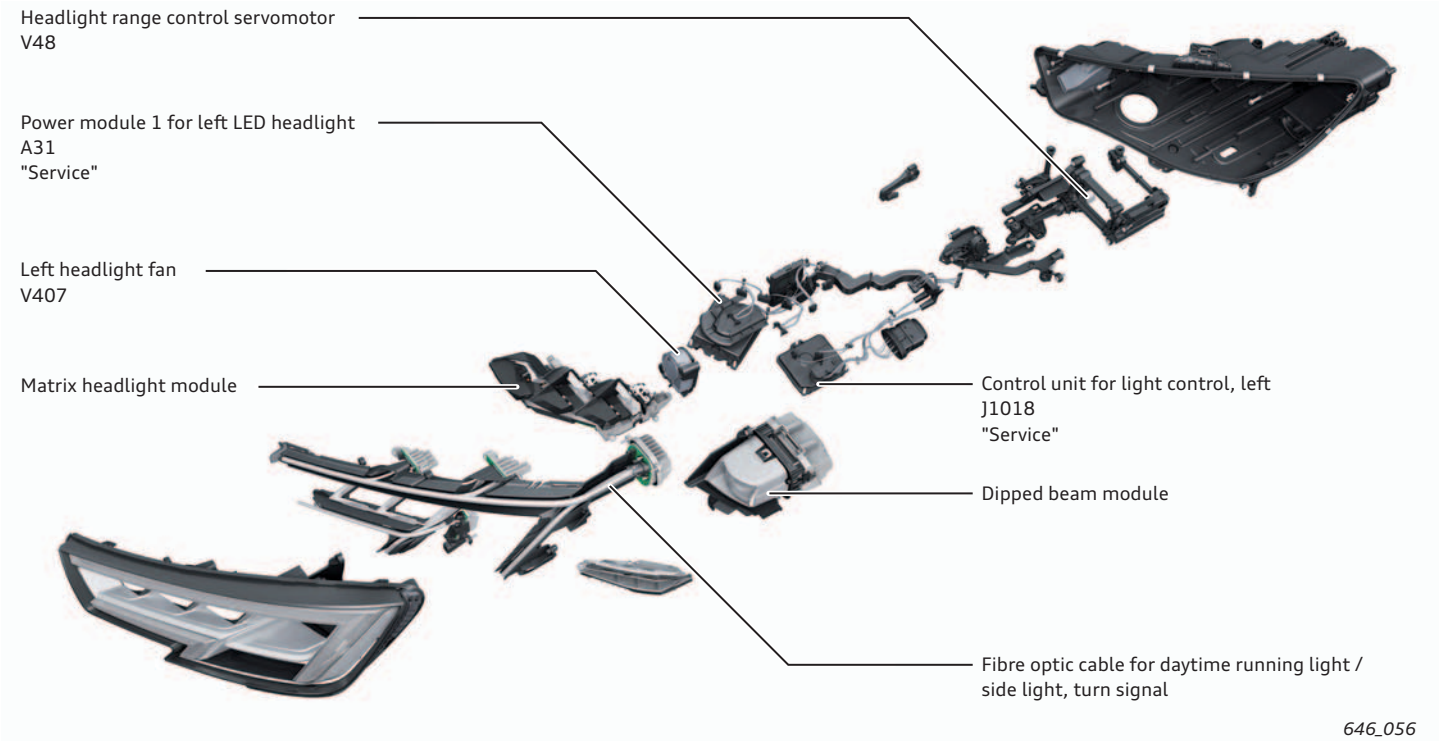
The figure shows the le t headlight in the ECE[1] version.



646_055

Audi Matrix LED headlight

The figure shows the le t headlight.



646_056

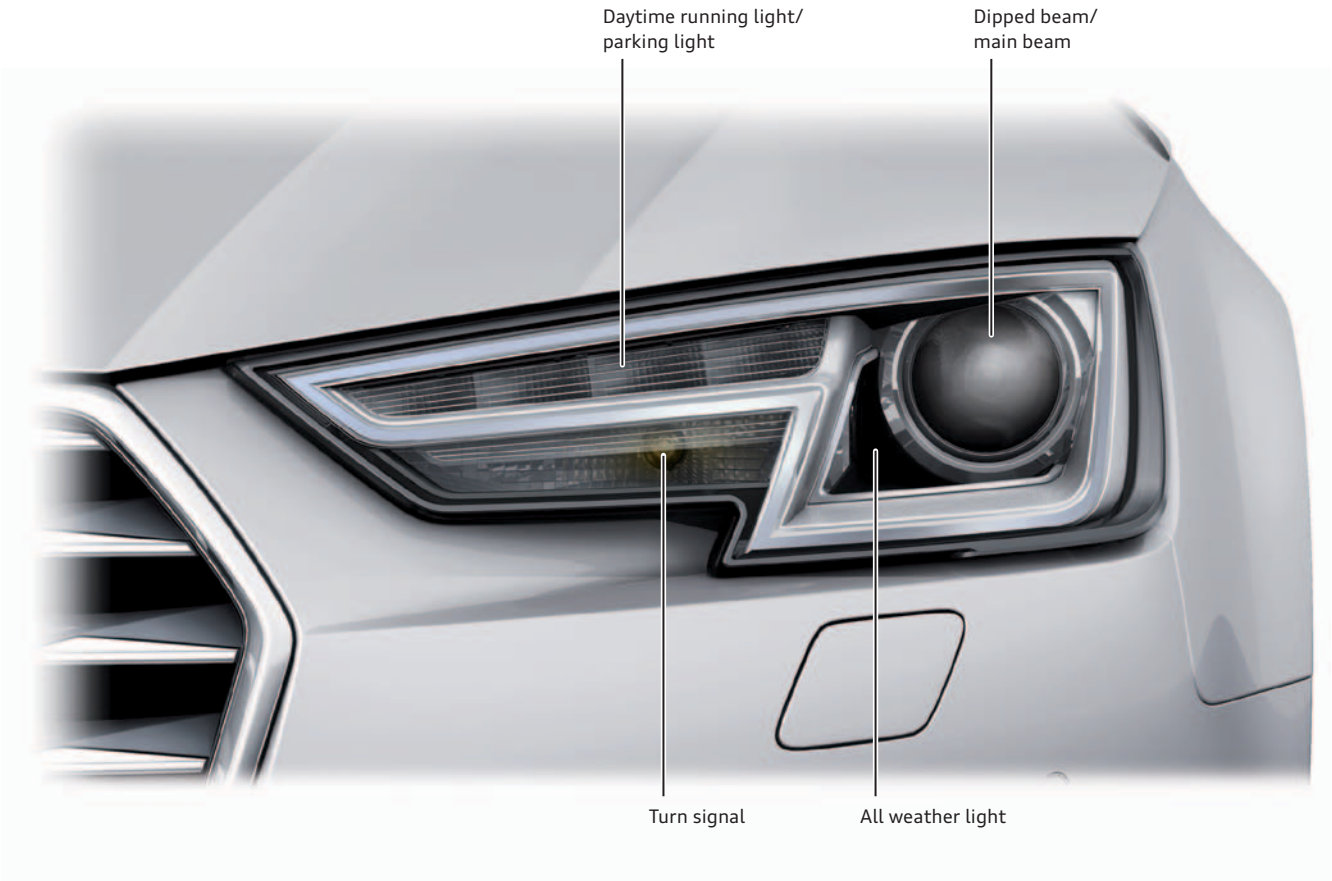
[1] ECE = for European market

[2] SAE = for North American Region

Reference
For information on parts replaceable by service centres and the corresponding spare part numbers, please refer to the workshop manual or the electronic parts catalogue.

Xenon headlight

The figure shows the L/H headlight in the EC [1] version.



Light functions	Type of bulb used	Power
Daytime running light	4 LEDs	5 watts
Side light	Parking light is dimmed if light function is active	
Dipped beam	Gas discharge lamp D5S	25 watts
Motorway light (only ECE[1])	Raises dipped beam by means of headlight range adjustment	
Main beam	Changes over dipped beam using shutter	
All weather light	Bulb H8	35 watts
Turn signal	Bulb PSY24W	24 watts
Sidemarker (SAE only[2])	1 LED	0.5 watts

Special features of the light functions

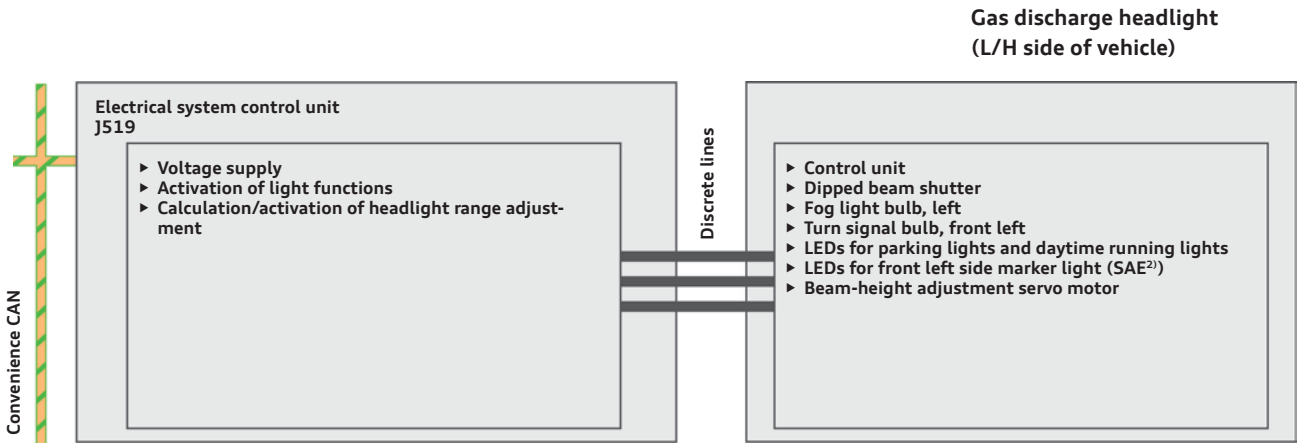
The daytime running lights in the ECE[1] version are dimmed for the duration of the turn signaling cycle (in the SAE[2] version they are switched off). The all-weather light in both versions is deactivated during the turn signalling cycle as soon as the vehicle exceeds a speed of 40 kph.

The left and right dipped beam shutter motors V294 and V295 are used for switching between dipped beam and main beam. The LEDs for the side light function and the dipped beam function of the gas discharge lamp are used for the Coming Home / Leaving Home function.

[1] ECE = for European market

[2] SAE = for North American Region

Schematic diagram of the activation mechanism



646_058

Activation

If the vehicle is equipped with xenon headlights, the electrical system control unit J519 is responsible for power supply as well as for activating all bulbs in the headlight. J519 also activates the dipped beam shutter and the headlight range adjustment control motor.

Headlight range adjustment

The gas discharge headlight has automatic static headlight range adjustment. This means that changes in headlight range are compensated by loading of the vehicle. However, changes caused by rolling movements of the vehicle under acceleration and braking are not compensated.
The electrical system control unit receives information on ride height from either the central control unit for comfort/convenience system J393 or, if installed, the suspension control unit J775.

Service

The basic setting of the headlight range adjustment function is configured in the electrical system control unit J519. The foglamp bulb can be replaced with the headlights fitted. This bulb can be accessed via a cover on the back of the headlight housing. The headlight must be removed in order to replace the gas discharge lamp or the turn signal lamp.

Adaptation for driving on the opposite side of the road

It is not necessary to adapt the headlights. No further action is needed in order to meet the statutory requirements.

Optional equipment

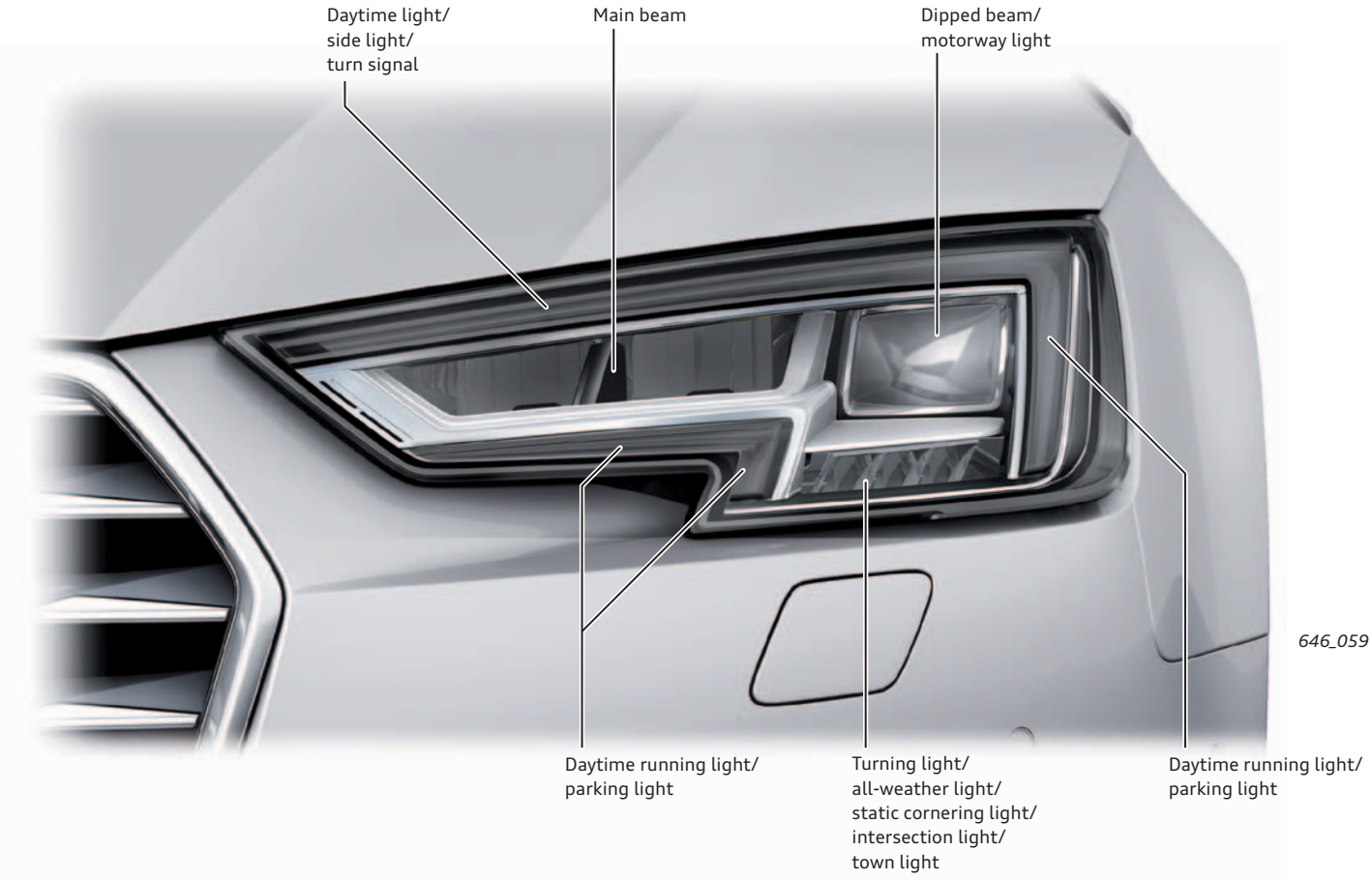
The xenon headlight can be combined with main beam assist (PR no.: 8G1) as well as a headlight washer system (PR no.: 8X1).

[1] ECE = for European market

[2] SAE = for North American Region

LED headlight

The figure shows the L/H headlight in the EC [1] version.



Light functions	Type of bulb used	Power
Daytime running light	7 LEDs with plastic optical fibres	18 watts
Side light	Parking light is dimmed if light function is active	
Dipped beam	11 LEDs	20 watts
Motorway light	Raises dipped beam by means of headlight range adjustment	
Main beam	6 LEDs	20 watts
All weather light	3 LEDs	10 watts
Turning light	0 – 40 kph, turn signal responsive	
Static cornering light	0 – 70 kph, steering angle responsive	
Intersection light (only ECE[1])	Turning light on both sides and dipped beam	
Town light (only ECE[1])	Dimmed turning light on both sides and dimmed dipped beam	
Turn signal	8 LEDs	18 watts
Sidemarker (SAE only[2])	1 LED	0.5 watts

Special features of the light functions

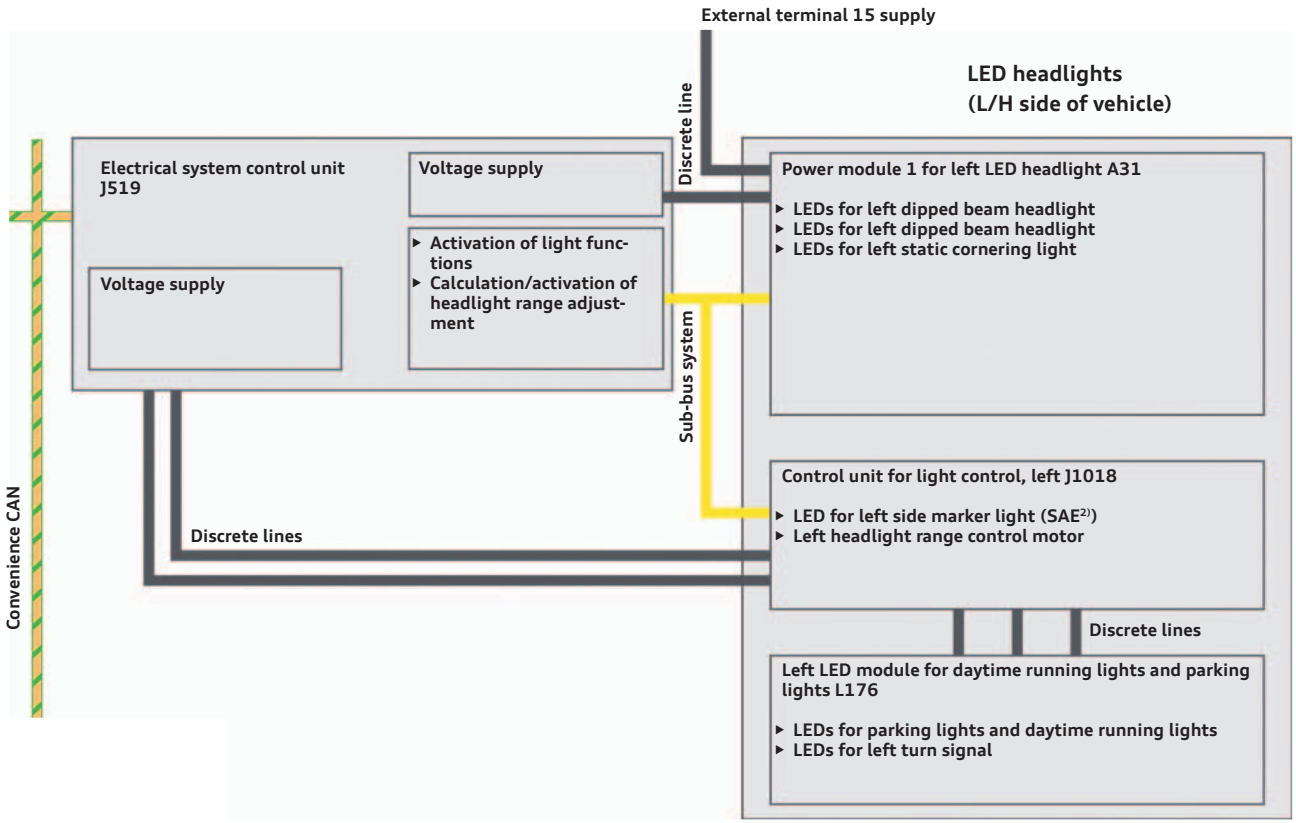
The "upper" daytime running light is dimmed for the duration of the turn signalling cycle. The "lower" daytime running light is dimmed to side light level. This applies to both the ECE[1] version and the SAE[2] version. The all-weather light, the intersection light and the town light are not affected by turn signal operation.

The LEDs for the side light function and the dipped beam function are used for the Coming Home / Leaving Home function.

[1] ECE = for European market

[2] SAE = for North American Region

Schematic diagram of the activation mechanism



646_060

Activation

If the car has LED headlights, the electrical system control unit J519 supplies voltage to power modules 1 for left/right LED headlight A31/A27 and the left/right control units for light control J1018/J1023. J519 also communicates with these control units via a sub-bus system.

Power modules 1 for left/right LED headlight A31/A27 are responsible for activating the LEDs for dipped beam, main beam and static cornering light (turning light). The control units have self diagnostic capability and can be accessed using address codes D6/ D7.

The left/right control units for light control J1018/J1023 are responsible for the parking light/daytime running light, turn signals, side marker light (SAE[2)]) and the headlight range adjustment servomotor. The control units have self diagnostic capability and can be accessed using address codes 29/39.

Headlight range adjustment

The LED headlight has automatic dynamic headlight range adjustment. Changes in the range of the headlight beam due to loading of the vehicle as well as braking and accelerating are compensated. The electrical system control unit receives information on ride height from either the central control unit for comfort/convenience system J393 or, if installed, the suspension control unit J775.

Service

The basic setting of the headlight range adjustment function is configured in the electrical system control unit J519. LED headlight bulbs cannot be replaced. Only the outer control units can be replaced individually after removing the headlights.

Adaptation for driving on the opposite side of the road

It is not necessary to adapt the headlights. No further action is needed in order to meet the statutory requirements.

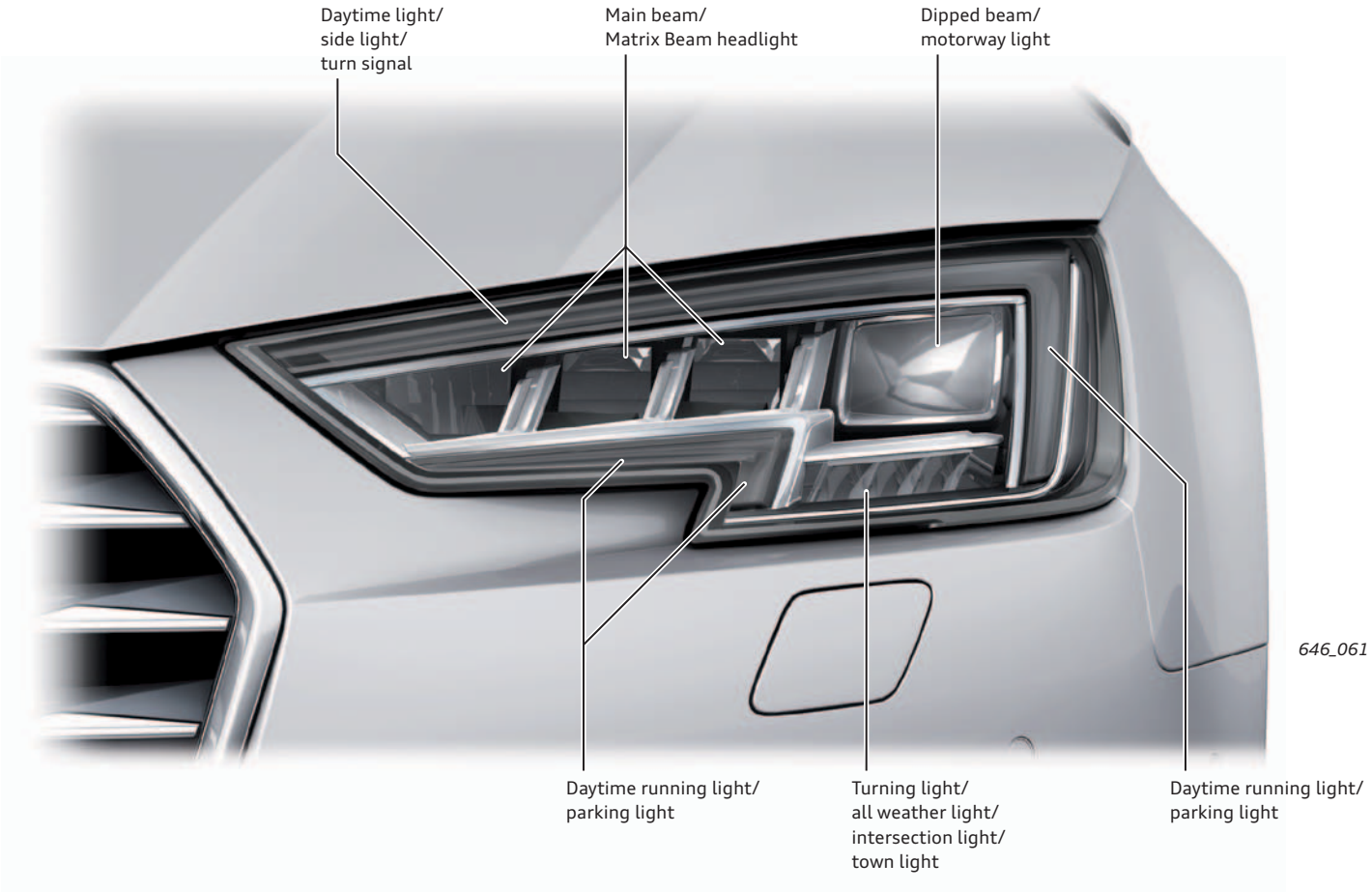
Optional equipment

The LED headlight can be combined with main beam assist (PR no.: 8G1) as well as a headlight washer system (PR no.: 8X1).

[1)] ECE = for European market

[2)] SAE = for North American Region

Audi Matrix LED headlight



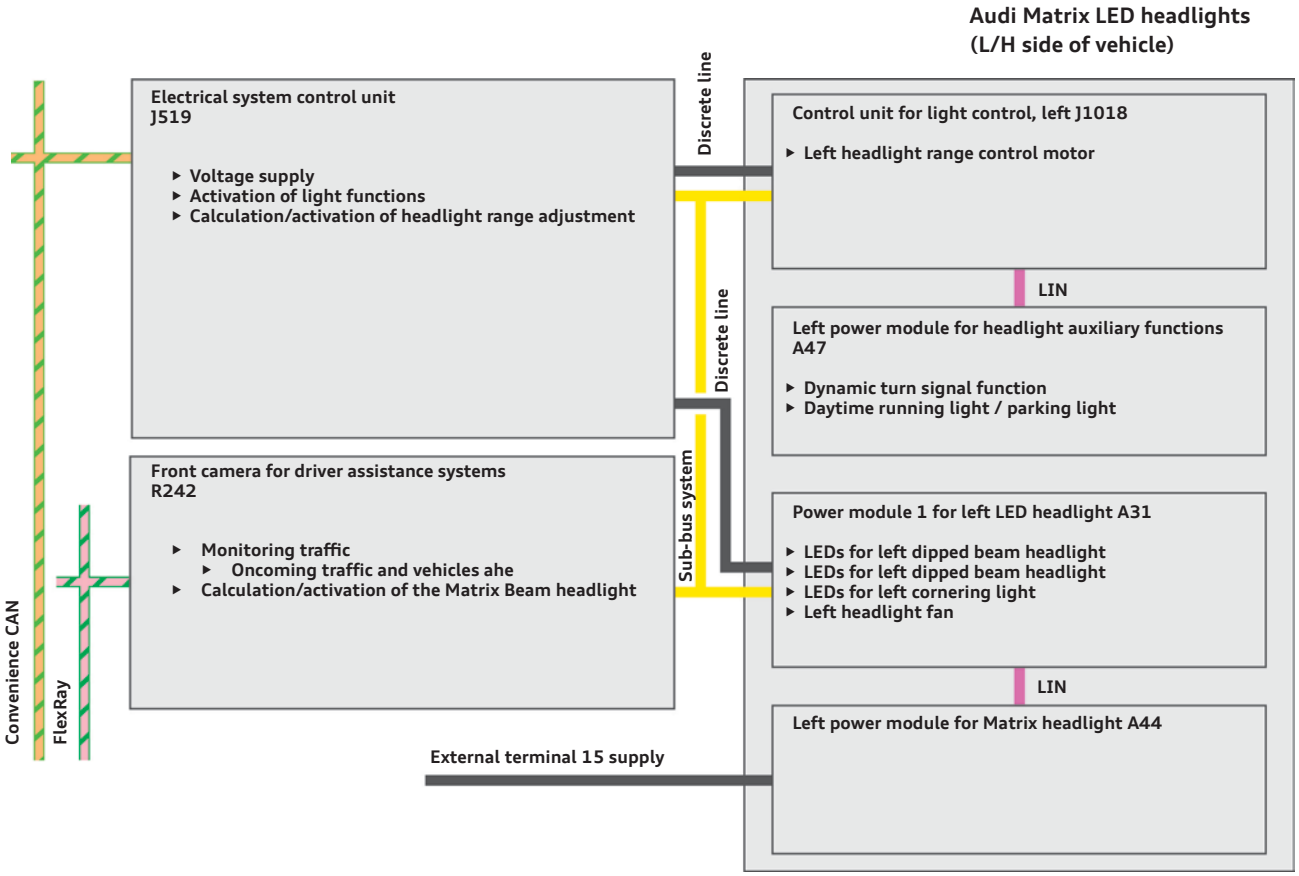
Light functions	Type of bulb used	Power
Daytime running light	7 LEDs with plastic optical fibres	18 watts
Side light	Parking light is dimmed if light function is active	
Dipped beam	11 LEDs	20 watts
Motorway light	Raises dipped beam by means of headlight range adjustment	
Matrix Beam headlight	12 LEDs	29 watts
Turning light	3 LEDs	10 watts
All weather light	Dimmed turning light on both sides and dimmed dipped beam	
Intersection lights	Turning light on both sides and dipped beam	
Town light	Dimmed turning light on both sides and dimmed dipped beam	
Turn signal (dynamic)	9 LEDs	18 watts

Special features of the light functions

The "upper" daytime running light is dimmed for the duration of the turn signalling cycle. The "lower" daytime running light is dimmed to side light level. The Audi Matrix LED headlight supports the dynamic turn signal function. The all-weather light, the intersection light and the town light are not affected by turn signal operation.

The LEDs for the side light function and the dipped beam function are used for the Coming Home / Leaving Home function.
The Audi Matrix LED headlight is not available in the North American Region.

Schematic diagram of the activation mechanism



646_062

Activation

If the car has Audi Matrix headlights, the electrical system control unit J519 supplies voltage to power modules 1 for left/right LED headlight A31/A27 and the left/right control units for light control J1018/J1023. J519 also communicates with these control units via a sub-bus system.

Power modules 1 for left/right LED headlight A31/A27 are responsible for activating the LEDs for dipped beam, main beam and static cornering light (turning light) and the headlight fan. In addition, they are connected to the LED modules for the Matrix Beam headlight via a LIN line. The control units have self diagnostic capability and can be accessed using address codes D6/D7.

The left/right control units for light control J1018/J1023 are responsible for the parking light/daytime running light and the headlight range adjustment servomotor. The control units have self diagnostic capability and can be accessed using address codes 29/39. The LED module for the dynamic turn signal function is activated via a LIN line.
The decision whether dynamic or conventional flashing is required is sent from the electrical system control unit J519 to the left/right control units for light control J1018/J1023 via the sub-bus line.

Headlight range adjustment

The Audi Matrix LED headlight supports automatic dynamic headlight range adjustment. Changes in the range of the headlight beam due to loading of the vehicle as well as braking and accelerating are compensated.
The electrical system control unit receives information on ride height from either the central control unit for comfort/convenience system J393 or, if installed, the suspension control unit J775.

Service

The basic setting of the headlight range adjustment function is configured in the electrical system control unit J519. Matrix LED headlight bulbs cannot be replaced. Only the outer control units can be replaced individually.

Adaptation for driving on the opposite side of the road

It is not necessary to adapt the headlights. No further action is needed in order to meet the statutory requirements.

[1] ECE = for European market

[2] SAE = for North American Region

Dynamic turn signal function

The dynamic turn signal function is implemented in the Audi A4 (type 8W) both for the lighting of the ECE[1)] version and the SAE[2)] version.

The LEDs illuminate in a sweeping motion from the inside outwards. The flashing LEDs all switch off simultaneously.



646_074

Activation

The electrical system control unit J519 instructs the headlights and the central control unit for comfort/convenience system J393 to activate the turn signal function. J393 thereupon activates the LEDs for the turn signal function in the tail lights. An electronic module in the headlights or in the tail lights is responsible for sequential activation of the LEDs.
Since sequential flashing is not desirable with all turn signal functions, the electrical system control unit J519 informs the headlights via a sub-bus system whether conventional or sequential flashing is required. The tail lights are supplied with the information from the central control unit for comfort/convenience system J393 via a discrete line.

Conventional flashing is used, for example, to indicate a crash/collision or an emergency or as a hazard warning after heavy braking.
The dynamic turn signal function, on the other hand, is used when indicating direction and when the hazard warning lights are manually activated, as well as for central locking acknowledgement and after confirmation of successful programming.

Equipment

The dynamic turn signal function is implemented in the front end of an Audi A4 with Audi Matrix LED headlights as well as in conjunction with all LED tail light versions.

[1)] ECE = for European market

[2)] SAE = for North American Region

Tail lights

In the Audi A4 (type 8W) the rear light functions are distributed to the tail lights in the body side panels and the tail lights in the rear hatch. This statement applies equally to the Audi A4 saloon and the Audi A4 Avant. However, the various light functions are distributed differently in the saloon and in the Avant (refer to tables).

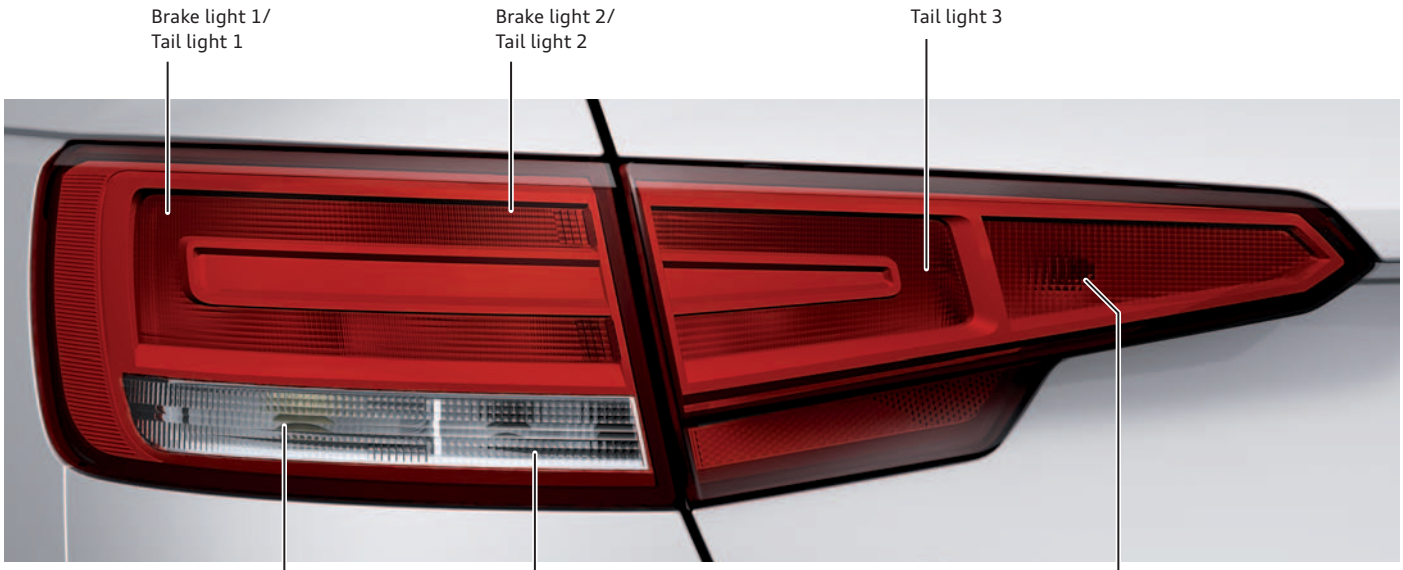
A distinction is made between the following versions of the tail lights:

- ECE basic tail light[1)]
- LED tail lights (ECE[1)] and SAE[2)])

The tail lights are activated irrespective of variant by the central control unit for comfort/convenience system J393.

Basic tail light (PR no.: 8SA)

The figure shows the L/H basic tail light of the Audi A4 saloon.



646_071

Light functions	Saloon		Avant	
	Bulb/lamp	Power	Bulb/lamp	Power
Brake light 1	P21W[3)]	21 watts	W16W[3)]	16 watts
Tail light 1	25 % activation[3)]	approx. 5 watts	28 % activation[3)]	approx. 4.5 watts
Brake light 2	P21W[3)]	21 watts	W16W[3)]	16 watts
Tail light 2	32 % activation[3)]	approx. 7 watts	28 % activation[3)]	approx. 4.5 watts
Turn signal	PY21W[3)]	21 watts	PY21W[3)]	21 watts
Reversing light	W16W[3)]	16 watts	W16W[4)]	16 watts
Tail light 3	W16W[4)] – 28 % activation	approx. 4.5 watts	W16W[4)] – 42 % activation	approx. 7 watts
Rear fog light[5)]	H21W[4)]	21 watts	H21W[4)]	21 watts

Special features of the light functions

The tail lights are also activated if the vehicle is equipped with a Coming Home / Leaving Home function. The basic tail light does not support the dynamic turn signal function. In the case of the tail lights on the saloon model, the rear fog light is deactivated when the rear hatch is open. In the case of the tail lights on the Avant model, the reversing light is also deactivated.

Service

To replace the bulbs/lamps in the tail lights, the light in question must be removed. This applies to both the tail lights in the body side panels and the tail lights in the rear hatch. All bulbs can be replaced.

[1)] ECE = for European market

[2)] SAE = for North American Region

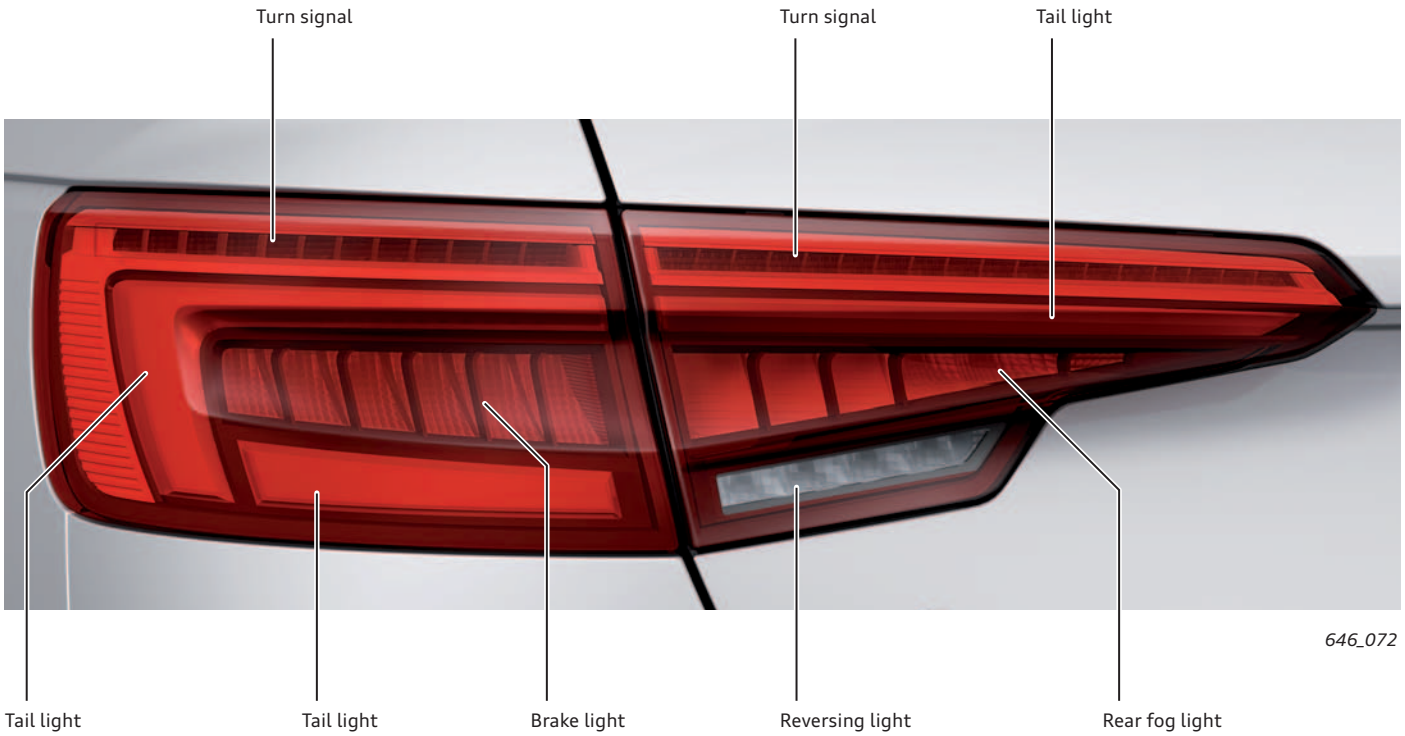
[3)] Tail lights in the body side panels

[4)] Tail lights in the rear hatch

[5)] One side only (L/H side only in RHD models, R/H side only in LHD models)

LED tail light (PR no.: 8SP)

The figure shows the L/H LED tail light of the saloon model in the ECE[1] version.



Light functions	Saloon[1]		Avant[1]	
	Bulb/lamp	Power	Bulb/lamp	Power
Turn signal (dynamic)[3]	12 LEDs	10 watts	12 LEDs	11 watts
Tail light[3]	33 LEDs	10 watts	30 LEDs	8 watts
Brake light[3]	6 LEDs	6 watts	9 LEDs	8 watts
Turn signal (dynamic)[4]	18 LEDs	20 watts	15 LEDs	14 watts
Reversing light[4]	4 LEDs	6 watts	2 LEDs	7 watts
Tail light[4]	15 LEDs	4 watts	18 LEDs	4 watts
Rear fog light[4], [5]	2 LEDs	4 watts	2 LEDs	4 watts

Special features of the light functions

The tail lights are also activated if the vehicle is equipped with a Coming Home / Leaving Home function. Light functions are not deactivated when the rear hatch is open.
The LED tail light supports the dynamic turn signal function.

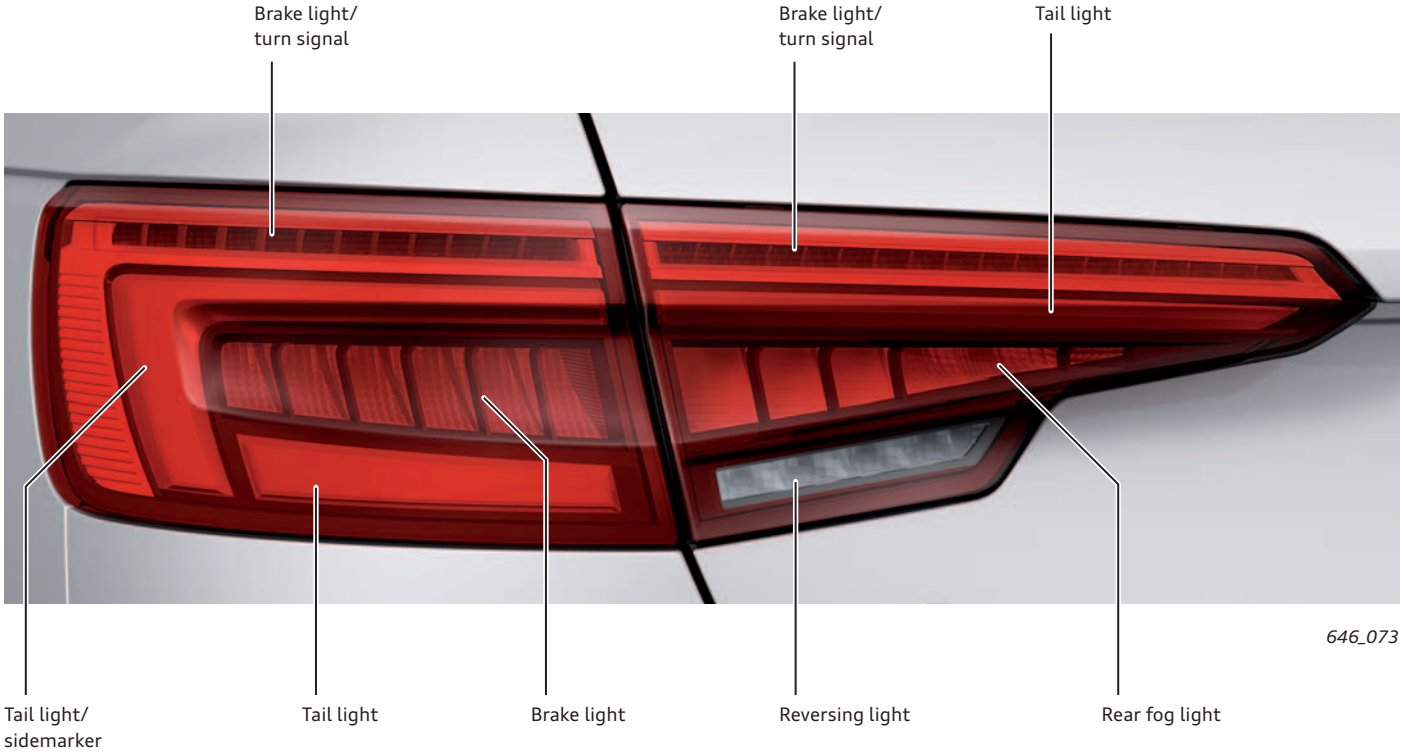
Service

No bulbs/lamps can be replaced in the LED tail light. In the event of a fault, the complete lamp must be replaced.

[1] ECE = for European market
[2] SAE = for North American Region
[3] Tail lights in the body side panels
[4] Tail lights in the rear hatch
[5] One side only (L/H side only in LHD models, R/H side only in RHD models)

LED tail light (PR no.: 8SK)

The figure shows the L/H LED tail light of the saloon model in the SAE[2] version.



Light functions	Saloon[2]		Avant[2]	
	Bulb/lamp	Power	Bulb/lamp	Power
Brake light/turn signal (dynamic)[3]	12 LEDs	10 watts	12 LEDs	14 watts
Tail light[3]	33 LEDs	10 watts	30 LEDs	8 watts
Brake light[3]	6 LEDs	6 watts	9 LEDs	14 watts
Turn signal (dynamic)[4]	18 LEDs	8 watts	15 LEDs	9 watts
Reversing light[4]	4 LEDs	6 watts	2 LEDs	7 watts
Tail light[4]	15 LEDs	4 watts	18 LEDs	5 watts
Rear fog light[4, 5]	2 LEDs	4 watts	2 LEDs	4 watts

Special features of the light functions

The tail lights are also activated if the vehicle is equipped with a Coming Home / Leaving Home function. Light functions are not deactivated when the rear hatch is open. If the tail light is activated and the brake light is simultaneously active, the LEDs for the brake light/turn signal in the rear hatch lamp are deactivated. If the tail light is activated and the turn signal is simultaneously active, the LEDs for the brake light/turn signal in the rear hatch lamp are also active. Amber-coloured LEDs are used for the turn signal in the SAE[2] version, while yellow LEDs are used in the ECE[1] version.

In the case of the Audi A4, the dynamic turn signal function is also supported in the SAE[2] version. In this version, the LEDs for the turn signal/brake light are briefly activated in a dimmed manner when the turn signals are activated. After that, the LEDs for the turn signal function are dynamically activated in an alternate fashion to produce the dynamic effect.

Service

No bulbs/lamps can be replaced in the LED tail light. In the event of a fault, the complete lamp must be replaced.

[1] ECE = for European market

[2] SAE = for North American Region

[3] Tail lights in the body side panels

[4] Tail lights in the rear hatch

[5] One side only (L/H side only in LHD models, R/H side only in RHD models)

High-level brake lights / number plate lights

Activation

As with the number plate light, the high-level brake light is activated by the central control unit for comfort/convenience system J393.

The high-level brake light and the number plate lights stay activated even the when luggage compartment flap is open.

High-level brake lights

Audi A4 saloon

The high-level brake light of the saloon model is located inside the vehicle behind the rear window. 18 LEDs with a power output of 4 watts support the brake light function.
In the event of a fault, the complete high-level brake light must be replaced.

If the Audi A4 saloon has so-called "privacy" glazing, 18 LEDs with a power output of 11 watts are used to compensate for the light absorbed by the tinted glass.



Audi A4 Avant

In the Avant model, the high-level brake light is integrated in the rear spoiler. The 18 LEDs have a power output of 4 watts.

In the event of a fault, the complete high-level brake light must be replaced.



Number plate lights

The number plate lights on the Audi A4 use LED technology irrespective of tail light version. Each of the 2 number plate lights is clipped into the luggage compartment flap panel and has 2 LEDs.



Audi drive select

Functional characteristics

The Audi A4 is equipped with Audi drive select.
With Audi drive select, it is possible to modify the vehicle characteristic. The mode can be changed when the car is stationary or while driving. Condition: "Terminal 15 on".

In the Audi A4 (type 8W), the driver can select between the following drive modes:

- efficiency
- comfort
- auto
- dynamic
- individual

In any case, the power steering and the engine characteristic are affected.
Audi drive select also affects the following equipment:

- Automatic gearbox
- Sport differential
- Air conditioning system
- Cornering light
- Ambient lighting
- Dynamic steering
- Damper control
- Cruise control system
- unit 2
- Audi pre sense basic / pre sense city
- Start-stop system

Displays and operation

The Audi drive select system can be configured either using the Audi drive select button in operating unit 1 for drive and comfort/convenience functions E791 in the centre console or using the multimedia system operating unit E380.

Depending on the equipment specification, the drive mode can also be selected on the multifunction steering wheel. In the Audi A4, the options menu is displayed on the MMI screen or in the instrument cluster.



646_078

Operating unit 1 for drive and comfort/convenience functions E791



Multimedia system control panel E380

646_079

Audi drive select function

The following systems are, among others, influenced by drive select:

System	Vehicle characteristic
Engine and automatic gearbox	Depending on mode, the engine and automatic gearbox react to accelerator inputs in a more spontaneous or more balanced way. In the sporty **dynamic** mode, the gear shift points are adjusted to higher up the rev band. When the vehicle is running in **efficien** mode, on the other hand, the shift points (automatic gearbox) are adjusted to lower down the rev band in order to save fuel.
Steering	The steering can be adapted with the regard to steering assistance. A distinction is made here between 3 characteristics ranging from comfortable (**comfort**) and balanced (**auto**) to sporty (**dynamic**).
Dynamic steering	The following applies to models with dynamic steering: To minimise steering effort for the driver, the steering ratio is adjusted to the speed at which the vehicle is travelling. At higher speeds, the steering is configured for less sensitivity in order to improve handling. At lower speeds, the steering is more direct in order to minimise steering effort for the driver during manoeuvring, for example. In addition, the dynamic steering system provides a more agile steering response at low and medium speeds.
Damper control	Audi drive select allows the damper control system to be configured for sporty (**dynamic**), comfort-oriented (**comfort**) or balanced (**auto**) response.
Cornering light	The cornering light adapts the main beam to the curvature of the corner in a speed-responsive manner. The swivelling action of the lights and beam strength are also adapted to the mode.
Air conditioning system	The air conditioning system is only affected in **efficien** mode, when it operates in a highly fuel-efficient way.
Cruise control system	The cruise control system is only affected in **efficien** mode, when it operates in a highly fuel-efficient way.
Adaptive cruise control (ACC)	Depending on drive select mode, the acceleration response options range from comfortable (**comfort**) to sporty (**dynamic**). Accordingly, the adaptive cruise control also reacts to the driving style of the driver in front in a more balanced or more spontaneous way. The **efficien** mode chooses a set-up for maximum economy.
Sport differential	In **comfort** mode, activation of the sport differential is kept at a minimum. Primarily, load-change reactions are effectively damped so that the car has a very balanced response. In **auto** mode, the sport differential is configured for optimal handling dynamics. The car steers very responsively through corners. In **dynamic** mode, the sport differential is at its most noticeable. The dynamic handling has distinctly sports feel.

Functional features

- The vehicle remembers the last selected mode and the **individual** mode configuration when it is restarted.
- To active the newly selected mode for the engine, too, the accelerator must be briefly released (idle position) or briefly pushed down into the full throttle position.
- To activate the newly selected mode for the steering as well, the steering wheel must also be moved into the straight-ahead position (zero position).
- On some models, maximum speed is only achieved in **auto** and **dynamic** modes.
- The following applies to models with an automatic gearbox: In **dynamic** mode, gearbox position **S** is automatically selected. In **efficien** mode, gearbox position **E** is automatically selected.
- The **efficien** mode is unavailable when towing a trailer.
- The following applies to models with a manual gearbox: if the accelerator is pressed down fully beyond the point of resistance at full throttle in **efficien** mode, engine power output is automatically adjusted to provide maximum acceleration.
- The start-stop system is generally activated when the vehicle is running in **efficien** mode.

Vehicle electronics

Interior lighting

As with the Audi Q7 (type 4M), the interior lighting in the Audi A4 (type 8W) subdivided into 3 production numbers depending on trim level:

- QQ0 basic interior lighting package
- QQ1 lighting package
- QQ2 background lighting

QQ0
Glove compartment lighting, luggage compartment lighting
The glove compartment lighting in the Audi A4 (type 8W) is the only lighting which uses conventional bulbs/lamps.

QQ1
Vanity lights, footwell lights, cupholder light, centre console background lighting, entry light, door panel lighting in the door trims and door inner handle lighting
White light and LED technology are exclusively used as light sources.

QQ2
Contour lighting in the door trim, door pocket lighting.
The LEDs are coloured. 30 light colours are available. The door pocket lighting in the Audi A4 (type 8W) is non-capacitive. An exception is the LED in the door inner handle which lights up in white only.

The list of interior lighting features with the various production numbers always includes the equipment with lower production numbers.

The background lighting QQ2 is controlled by a background lighting module. The background lighting module is a software function and is integrated in the electrical system control unit J519.

J519 is the RGB master. RGB denotes the colours red, green and blue. The colour profiles are produced by additive mixing of these colours. In the case of additive colour mixing, the human eye is able to discern multiple wavelengths simultaneously and in quick succession, but the different colours cannot be resolved and appear as a single colour to the eye.

Apron lighting

In the Audi A4 (type 8W), the apron lighting is provided by 2 LEDs per door. These LEDs also function as door handle lights. In the new Audi A4 Avant, a single light is integrated in the rear hatch as apron lighting and illuminates the area in front of the luggage compartment when the rear hatch is open.



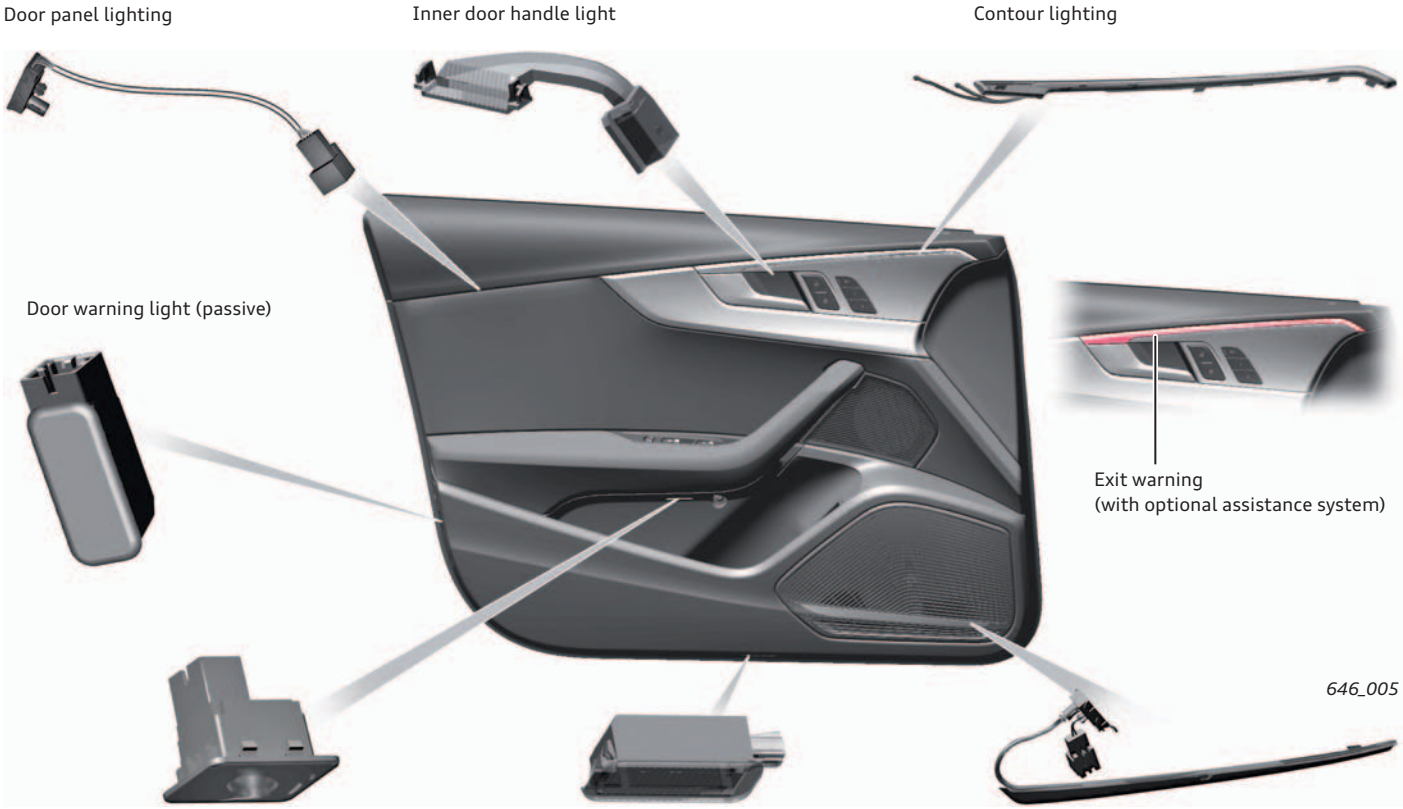
646_004

Interior door trim lighting

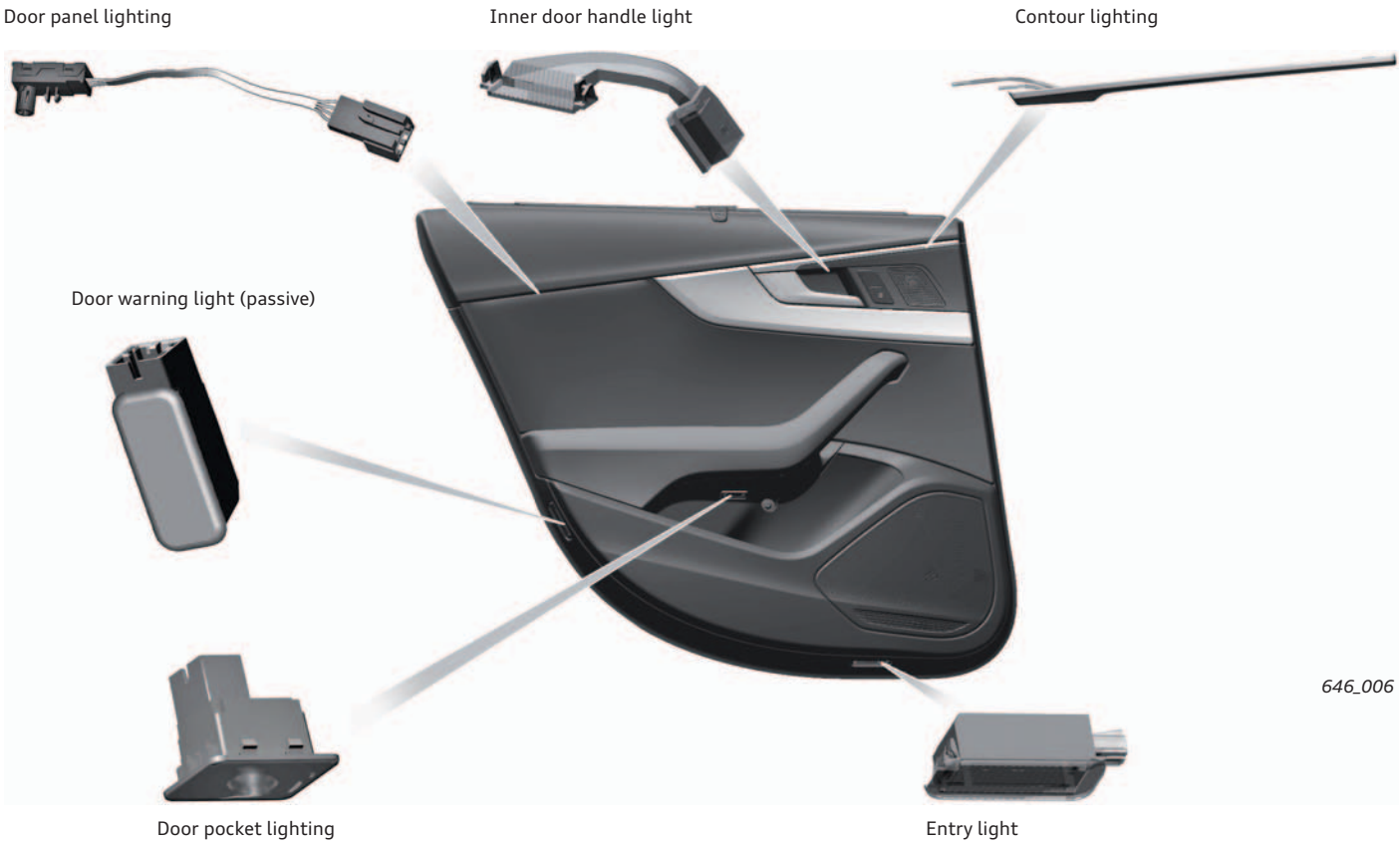
Background lighting as shown using the door trims as an example – the door warning light is passive, but may use a conventional bulb/lamp depending on country.

In the case of the exterior lighting, the apron lighting is integrated in all 4 door handles in conjunction with PR nos. QQ1 and QQ2. Unlike the Audi Q7 (type 4M), the door pocket lighting is not capacitively controlled.

Front door trim



Rear door trim



Function and control unit architecture

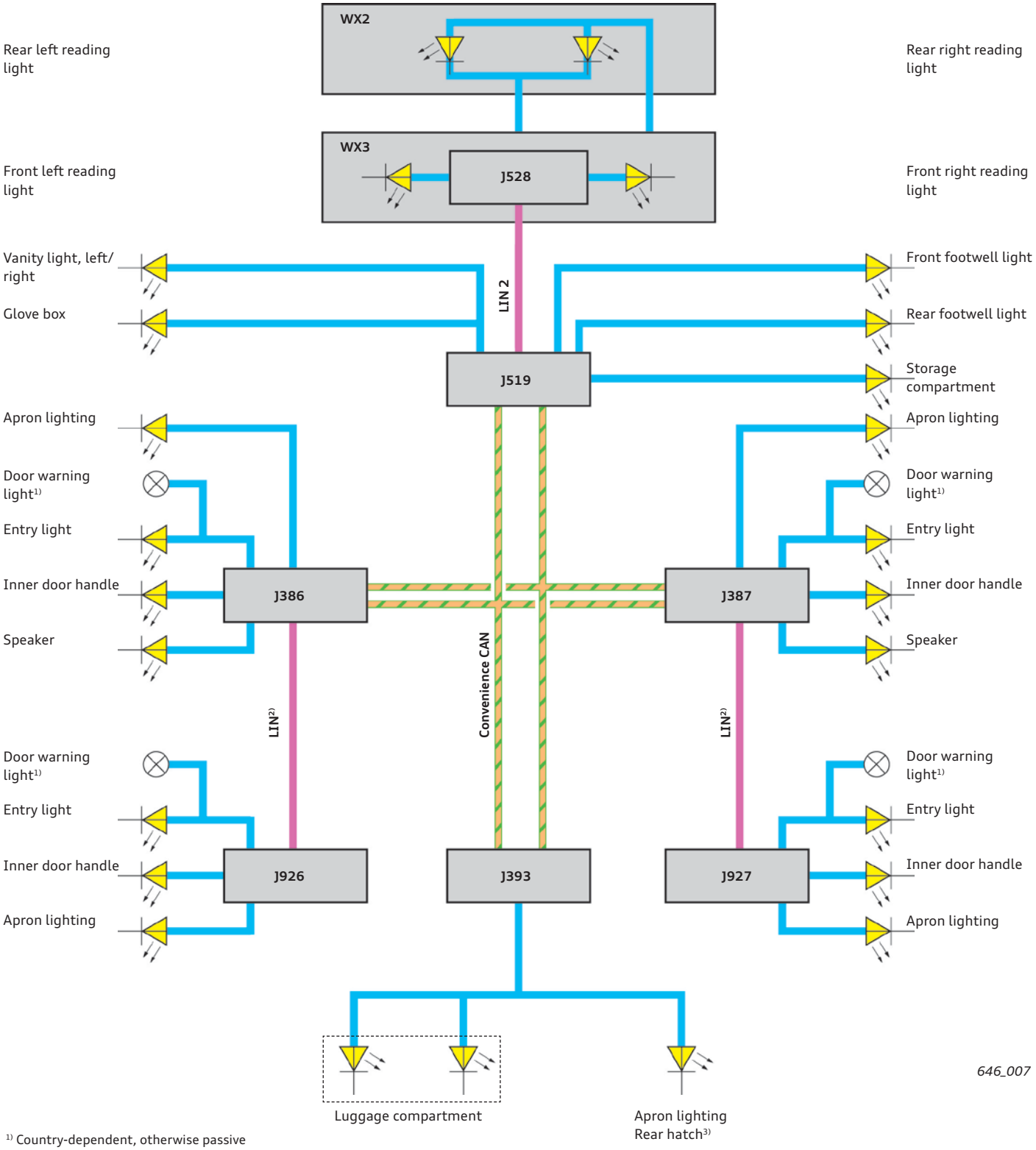
Interior and background lighting

The LEDs of the interior and background lighting are controlled by various control units which are networked with one another via the convenience CAN. These are:

- Electrical system control unit J519
- Central control unit for comfort/convenience system J393
- Driver side door control unit J386
- Front pass. side door control unit J387

The following control units connected by LIN bus are also used:

- Door control unit, rear driver side J926
- Rear passenger side door control unit J927
- Roof electronics control unit J528
  - Front overhead module WX3
  - Interior light, rear centre WX2



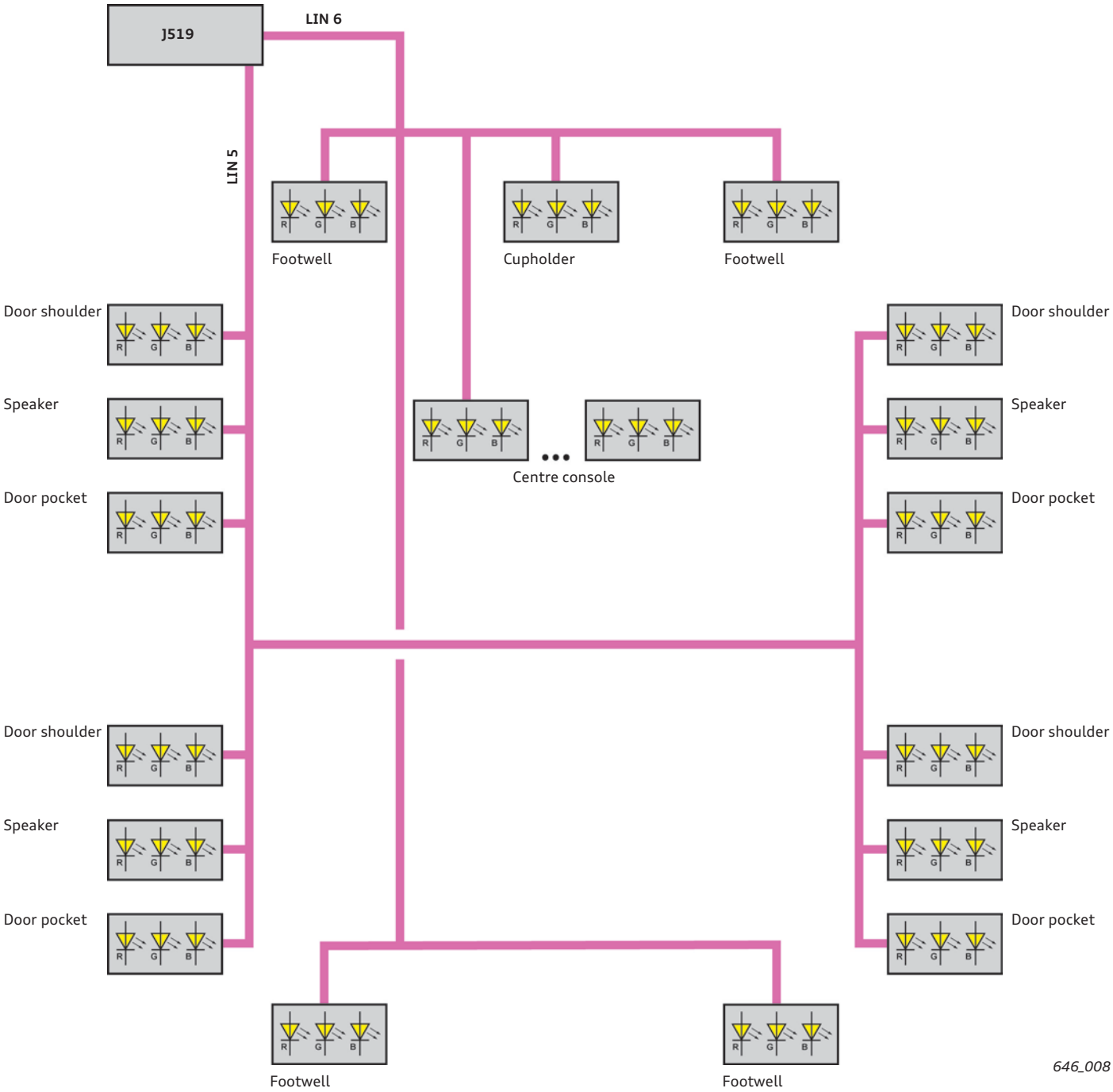
1) Country-dependent, otherwise passive

2) Door control unit LIN bus

3) Audi A4 Avant only

RGB components

The RGB components of the background lighting are controlled by the electrical system control unit J519. The individual LEDs or optical fibres are supplied via 2 LIN bus lines.

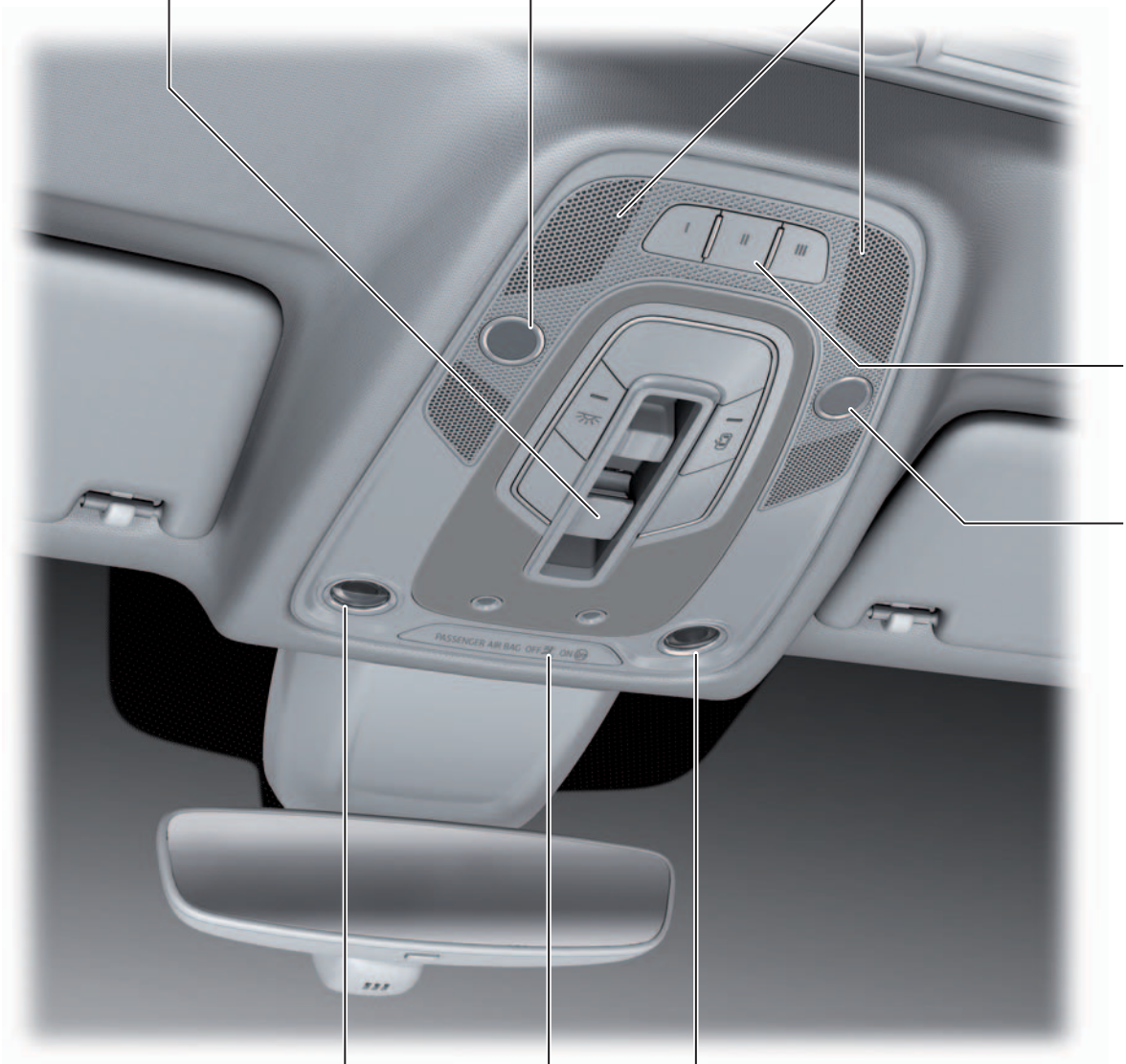


Overhead module

The overhead module is used to activate and read in the following components:

- Roof electronics control unit J528
- Sliding sunroof operating button
- Garage door operating unit E284
- Front interior lights
- Hands-free telephone microphone
- Front passenger airbag OFF warning lamp K145

The interior lights are capacitive, i.e. they are controlled by touch. The interior lights use LED technology.
The roof electronics control unit J528 is a LIN subscriber of the electrical system control unit J519.

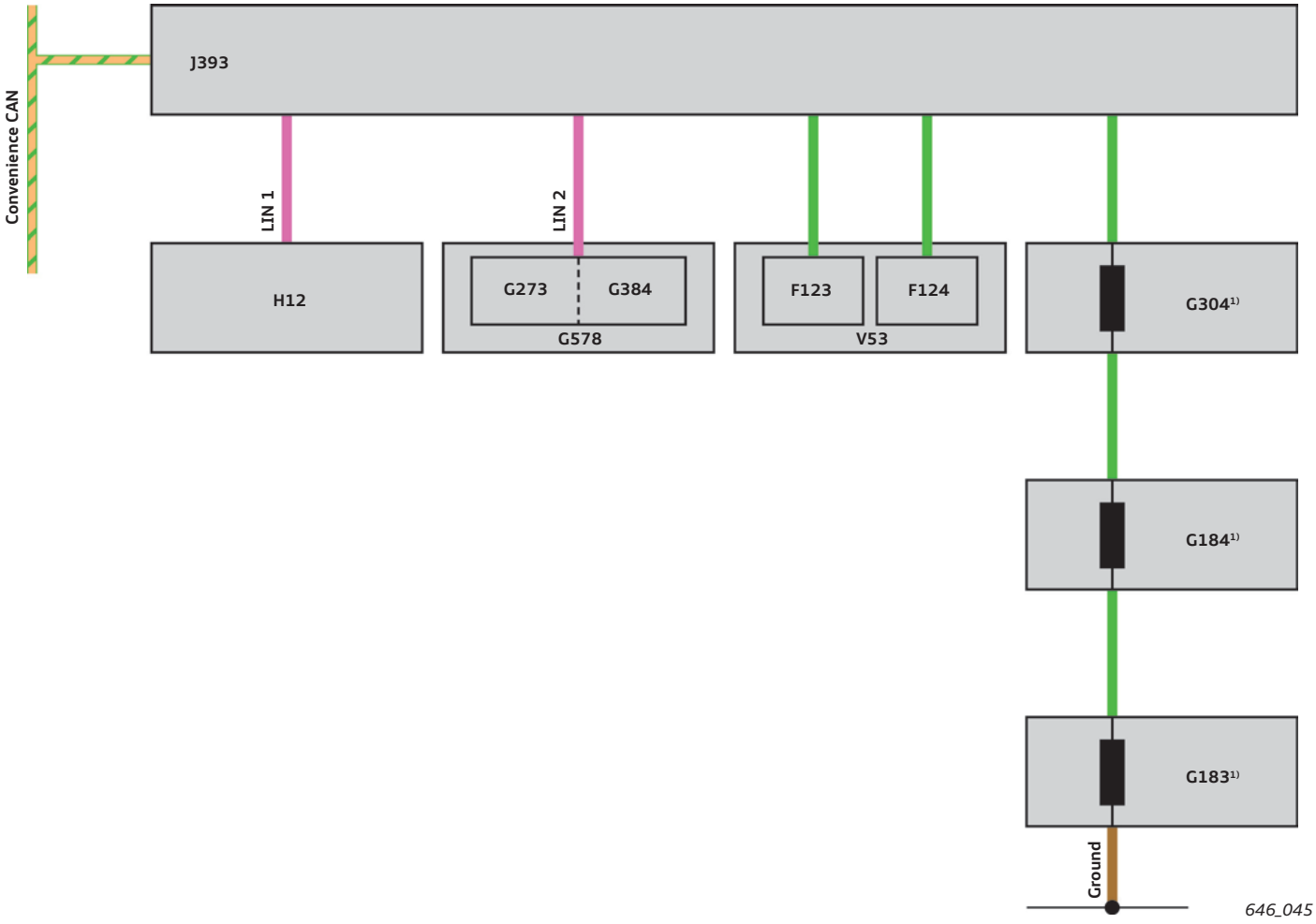


Anti-theft alarm

The anti-theft alarm of the Audi A4 (type 8W) is largely identical to the systems used in current Audi models.
The windows in the rear compartment of the Audi A4 Avant are also equipped with glass breakage sensors.

The anti-theft alarm sensor G578, which comprises the interior monitoring sensor G273 and the vehicle inclination sensor G384, and the alarm horn H12 are LIN bus subscribers of the central comfort/convenience system control unit J393. G578 and H12 are connected to J393 via different LIN bus lines.

A new feature of the Audi A4 and its derivatives is that the alarm (if activated) trips if the vehicle control units are accessed via the diagnostic connector T16 or via the on-board diagnostics (OBD).



Key:

F123 Rear hatch contact switch for anti-theft alarm
F124 Key contact switch in lock cylinder, anti-theft alarm system, central locking system
G183 Glass breakage sensor for rear left side window
G184 Glass breakage sensor for rear right side window
G273 Interior monitoring sensor
G304 Glass breakage sensor for rear window
G384 Vehicle inclination sensor
G578 Sensor for anti-theft alarm system
H12 Alarm horn
J393 Central control unit for comfort/convenience system
V53 Central locking motor in rear hatch

[1)] Audi A4 Avant only

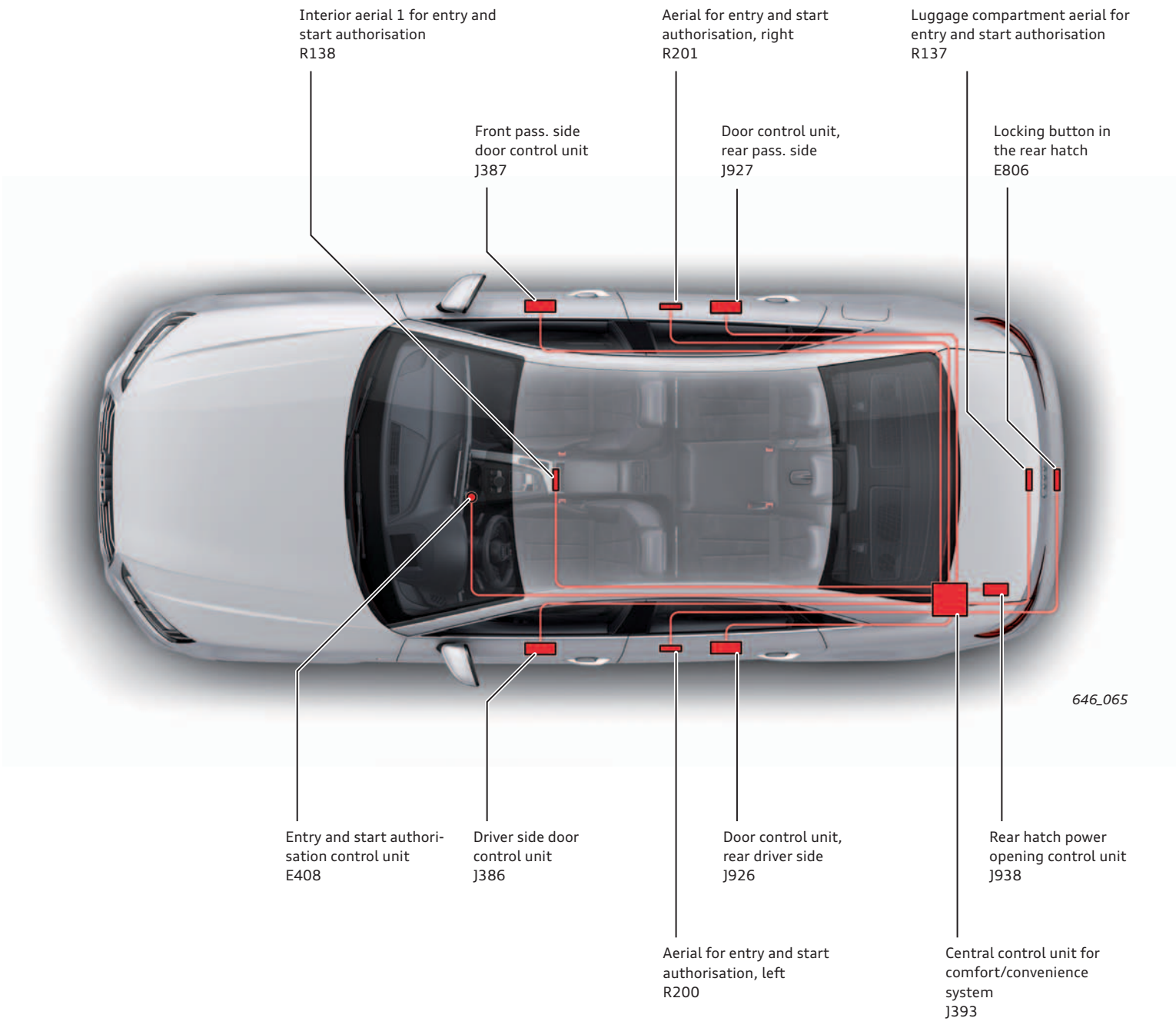
Central locking

The vehicle can be centrally locked and unlocked in various ways:

- Using the remote control key
- Via the sensors in the door handles (advanced key)
- Manually via the locking cylinder in the driver's door
- Using the inner central locking switch (door trim)

In the case of the Audi A4, the door handle sensors are used for locking and unlocking with the advanced key. The door handle sensors are not deactivated after 72 h. This is no longer necessary due to the very low static current.

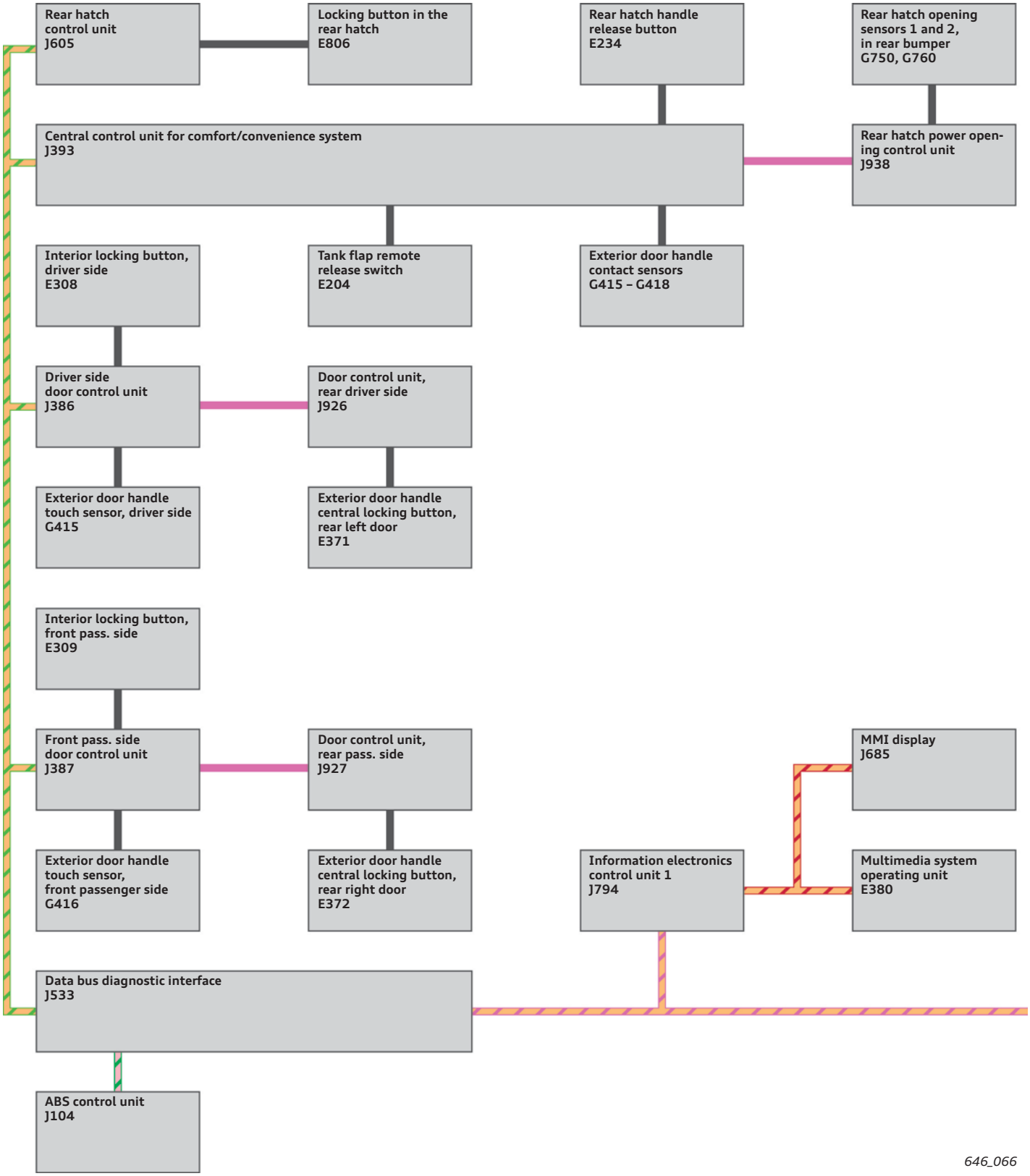
Components



System overview

The system overview shows the theoretical maximum specification. The ABS control unit J104 receives the vehicle speed signal required for the Autolock function via the central control unit for comfort/convenience system J393.

All personalised settings are visualised on the MMI display J685. The exterior door handle contact sensors in all 4 doors are connected directly to the central control unit for comfort/convenience system J393.



646_066

Key:

- Convenience CAN
- Infotainment CAN
- Modular Infotainment Platform (MIB) CAN
- FlexRay
- LIN bus
- Discrete cable

Sensor-controlled luggage compartment release

The "sensor-controlled luggage compartment release" option is only available in combination with the "advanced key" option. A further requirement for opening and closing the rear hatch is that the car key is within the detection range of the luggage compartment aerial for entry and start authorisation R137.

The rear hatch of the Audi A4 can only be opened with a foot gesture.

The rear hatch of the Audi A4 Avant can be opened or closed with a foot gesture.
The vehicle is not locked when the rear hatch is closed with a foot gesture.

There are also twin buttons in the luggage compartment: one button for closing the rear hatch only and one button for locking the vehicle. In addition, the driver can close the rear hatch using either the button in the door or the advanced key (hold down).

Starting scenario

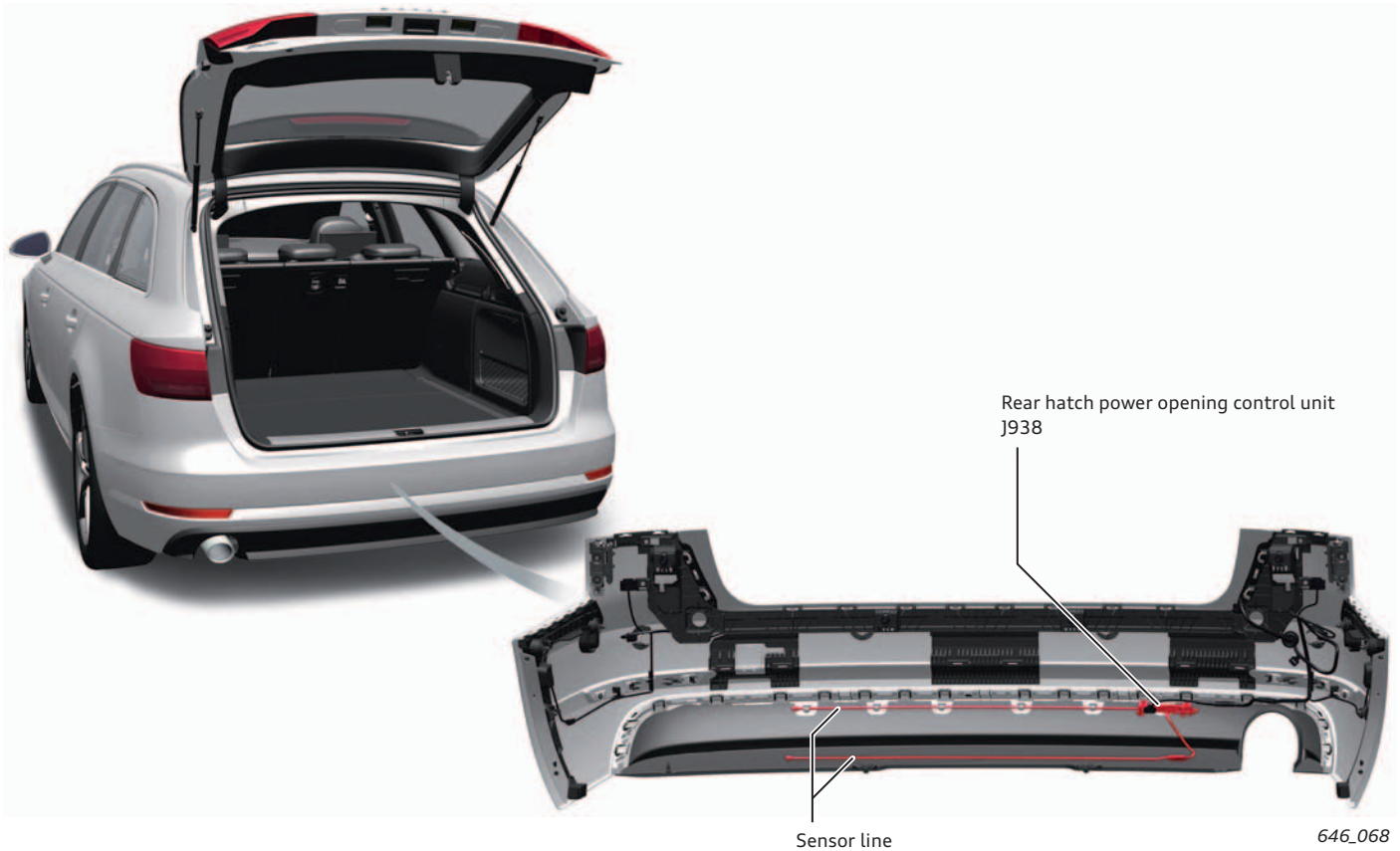
Stand about 20 cm behind the rear end of the vehicle and then perform a simple swipe of the foot and shin as closely as possible to the bumper. The shin must be within the upper range of the sensor and the foot within the lower range of the sensor. Quickly retract the foot and shin so that both are outside the range of the sensor.
Closing of the rear hatch is annunciated by a warning signal and can be interrupted by repeating the movement described above.



646_067

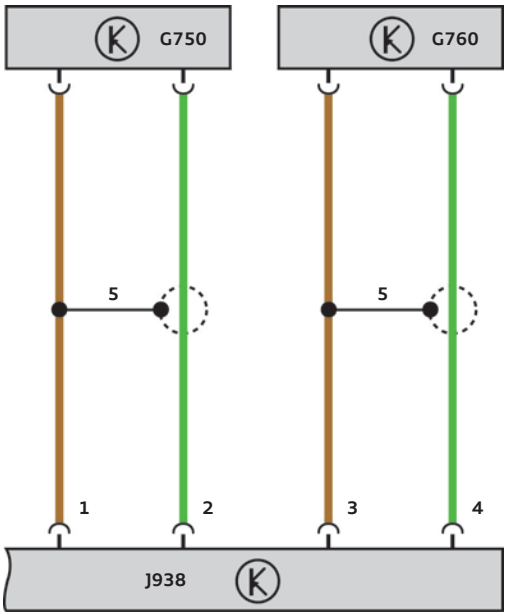
Design

The sensor line of the sensor-controlled luggage compartment release system consists of 2 coaxial wires.



646_068

Activation



646_070

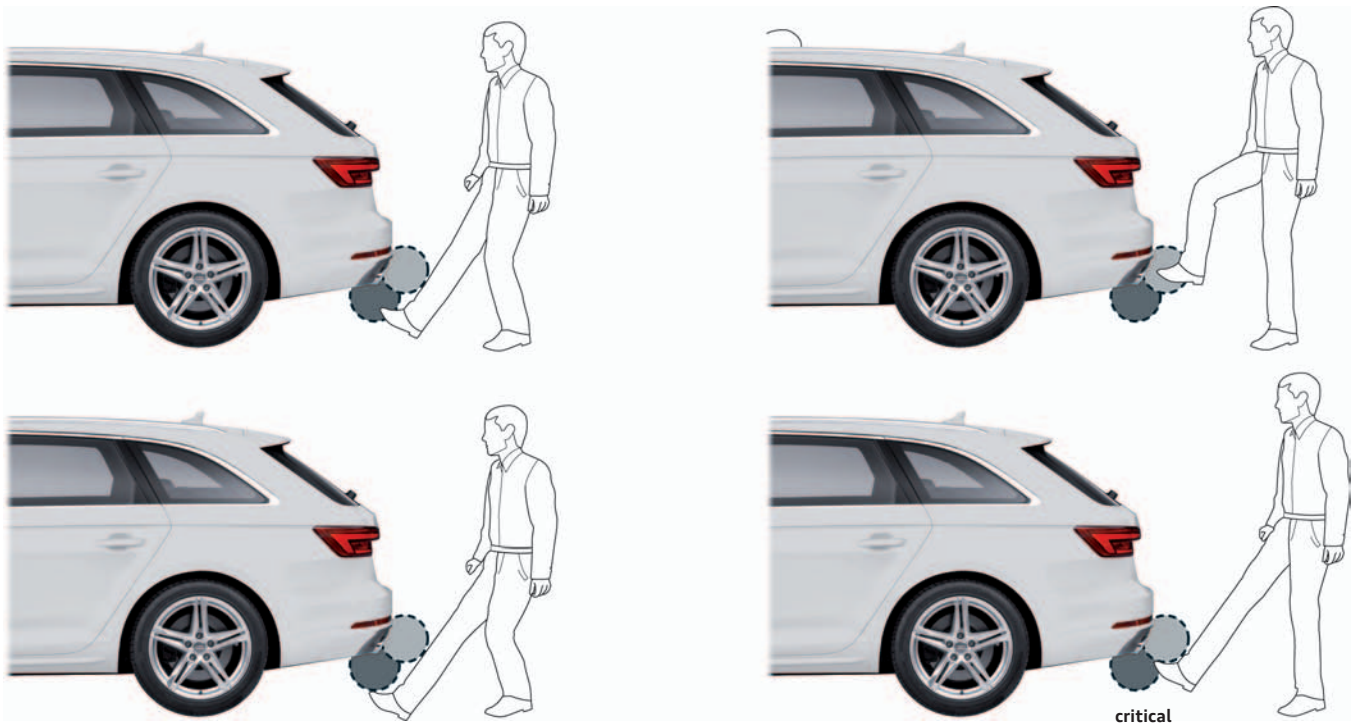
Key:

G750 Rear hatch power opening sender, in rear bumper
G760 Rear hatch power opening sender 2, in rear bumper
J938 Rear hatch power opening control unit
1 Sensor -, G750
2 Sensor +, G750
3 Sensor -, G760
4 Sensor +, G760
5 Shield

Potential operating errors

Potential operating errors usually occur when the system fails to detect both sensor lines (induction loops).

The leg must be reliably detectable by both grey detection areas.



646_069

Other possible errors

The sensor-controlled rear hatch is not available or only available to a limited extent in the following situations (examples):

- If the rear bumper is very dirty.
- If the rear bumper is wetted with salty water, e.g. after driving on gritted roads.
- If the luggage compartment lid is closed or opened directly beforehand.

Garage door opener (HomeLink)

Installation locations

The garage door opener control unit J530 is attached to the vehicle body at the rear left by means of a bracket specific to the Audi A4. The control unit itself is a carry-over part from the Audi Q7 (type 4M).

The garage door opener programming aerial R278 for programming the handheld garage door sensor terminates inside the Audi A4 (within the cable duct in the rear right heel panel area).

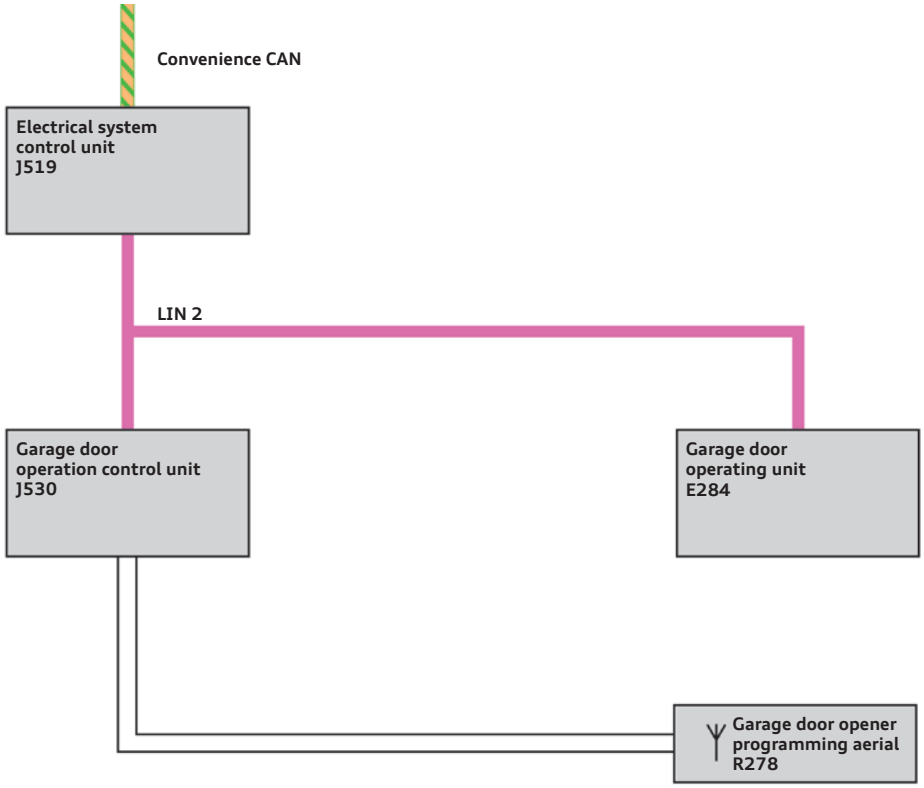


646_046

System architecture

The electrical system control unit J519 the master control unit for garage door operation control unit J530. The control unit J530 communicates with control unit J519 via LIN bus (LIN 2). The same applies to the garage door operating unit E284 (integrated in overhead module).

The garage door opener programming aerial R278 is connected to garage door operation control unit J530. The garage door opener programming aerial R278 is configured as a dipole antenna.



646_048

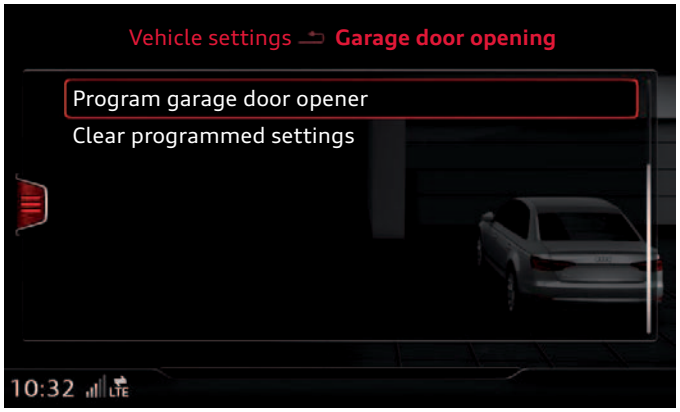
Programming process

As with the Audi Q7 (type 4M), there are two different processes for programming both garage door opener systems for the new Audi A4:

- a fixed code system
- a rolling code system

Both programing processes are MMI-controlled. The individual steps are visualised on the MMI screen.

The two code systems are handled differently. A programmed fixed code system is ready for use straight after programming. In the case of a rolling code system, on the other hand, the garage door and the in-car HomeLink system, for example, still need to be synchronised.



646_049

Service measurement data / diagnostic tester

The last 3 programming cycles of the sensor can be read out by service personnel via the data blocks.
These 3 data blocks provide the mechanic with the following information relating to the last 3 programing cycles:

- Frequency
- Manufacturer
- Fault status and modulation
- Programming timeout
- User abort
- Speed information
- Aerial
- Status
- Channel

Other data blocks provide the mechanic with information about the current country code and the system supply voltage.

Note
It is recommended that two persons perform the adaption process, e.g. to synchronise the garage door drive with the HomeLink system, as there is usually only a very small window available for synchronisation, e.g. between the garage door opener and the garage door itself.

Note
Individual buttons can be reprogrammed using the menu navigation. This overwrites the previously stored value.
All programmed channels can be deleted with menu assistance.
Programming can be aborted at any time using the BACK button.

Head-up display

Warnings, selected information from assistance systems and navigation instructions can be projected onto the windscreen via the head-up display (control unit for windscreen projection J898).

This information is displayed within the driver's field of vision. The virtual image is only visible to the driver within a limited region of the windscreen. The driver is able to discern a virtual image at a distance of approximately 2.1 m (image viewing distance).

The control unit for windscreen projection J898 can be invoked via the diagnostic tester using diagnostic code 82. J898 is integrated in the vehicle electrics via the infotainment CAN.
The head-up display is attached to the module cross-member by means of an adjustable bracket.



646_063



646_064

Example of a display on the head-up display

Operating and setting options for customers

- Switching the head-up display on/off
- Individual height adjustment of the projected image (on the windscreen projection button E736, in the rotary light switch module)
- Selection of information to be displayed (via MMI menu)
- Adjustment of display brightness level (via MMI menu)
- Image rotation to align the display with the horizontal (via MMI menu)

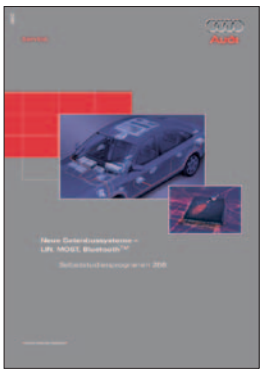
Setting options for service partners:

The control unit for windscreen projection J898 can be calibrated. Calibration is necessary under the following conditions:

- The control unit for windscreen projection J898 has been replaced.
- The windscreen has been removed and installed or replaced.
- The event memory contains the entry NO or INCORRECT BASIC SETTING / ADAPTION.

Self study programmes

For more information about the technology of the Audi A4, please refer to the following self study programmes.



SSP 286 New Data Bus Systems – LIN, MOST, Bluetooth™

Order number: 000.2811.06.20



SSP 459 Audi A8'10 Onboard power supply and networking

Order number: A10.5S00.63.20



SSP 634 Audi Q7 (type 4M) Onboard power supply and networking

Order number: A15.5S01.19.20



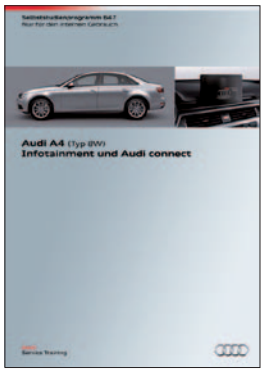
SSP 638 Audi Q7 (type 4M) Convenience electronics

Order number: A15.5S01.25.20



SSP 644 Audi A4 (type 8W)

Order number: A15.5S01.28.20



SSP 647 Audi A4 (type 8W) Infotainment and Audi connect

Order number: A15.5S01.29.20

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AUDI AG
D-85045 Ingolstadt
Technical status 07/15

Printed in Germany
A15.5S01.31.20