



## Audi A6 Avant '12

Avant is the name on the best estates!

That slogan, originally created for the A4 Avant, is more than just a tag line for Audi. We are driven by the ambition to combine modern technology with outstanding ease of use and distinctive design with versatile adaptability.

The Audi A6 Avant '12 meets the most exacting demand.

With a wealth of innovative technical highlights, the Audi A6 Avant '12 occupies the leading position in its sector and offers owners the ultimate in safety, functionality and driver experience.

In addition, a weight saving of around 15 % has been achieved in the bodywork of the Audi A6 Avant '12 in order to reduce CO<sub>2</sub> emissions without sacrificing driver experience, safety or comfort. That saving results from the use of aluminium composite construction instead of conventional steel construction. Aluminium composite construction results in greater agility, more driving pleasure, greater comfort and increased efficiency.

The Audi A6 Avant '12 offers a large variety of modern systems from bodywork to electronic aids and conveniences that have been combined into a coherent unit with the typical Audi precision and attention to detail, as illustrated by the following aspects.

**Powertrain:** Higher performance combined with more economical consumption compared with the previous model or S tronic – innovative double-clutch seven-speed transmission.

**Safety:** New safety concept with Audi pre sense.

**Suspension and steering:** Audi drive select including efficiency mode or dynamic steering.

**Driver assistance systems:** Audi adaptive cruise control with Stop&Go function including pre sense front, parking assistance with surrounding area display and reversing camera or head-up display.

**Air conditioning:** Automatic climate control with 4 zones or comfort seat with air conditioning and massage functions.

**Electronic aids and conveniences:** Virtual pedal or electric load space cover.

**Lighting systems:** Modulating headlight beam height adjustment or full LED headlights.

**Information and entertainment:** Bang & Olufsen Advanced Sound System with ultra-efficient speaker technology or Bluetooth online car phone.

It is clear just from that brief outline of the Audi A6 Avant '12 technology that this new model will be a major challenge for the Service Department. Mastering the technology and, in so doing, delighting our customers is the aim for all of us. So enjoy working through this self-study programme and getting to know the Audi A6 Avant '12.



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The self-study programme describes the fundamentals of the design and function of new vehicle models, new automotive components or new technologies.

**It is not a repair manual! Any figures quoted merely serve the purpose of facilitating understanding and relate to the version of data valid at the time the SSP was produced.**

For details of servicing and repair operations, it is imperative that you refer to the latest technical literature.



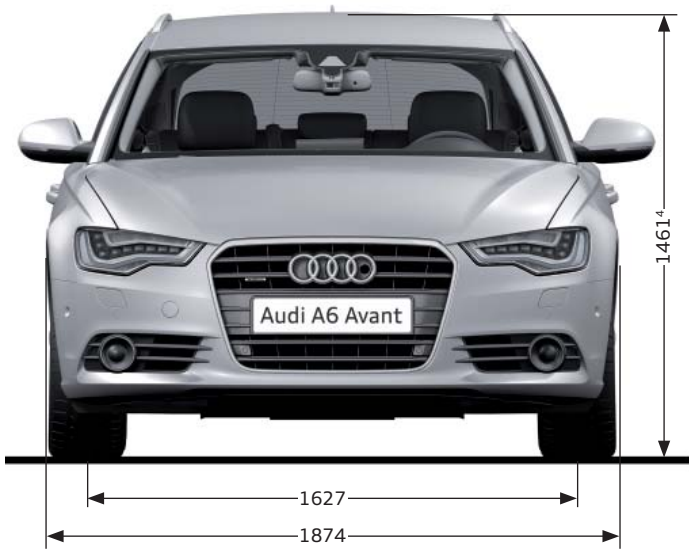
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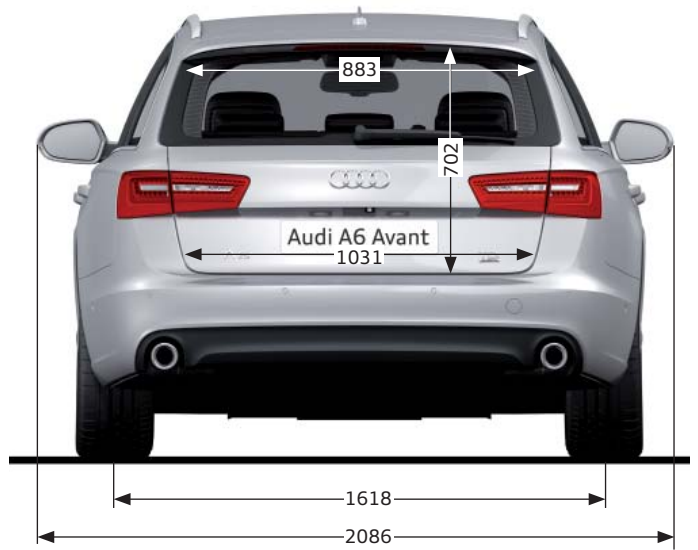
Reference

# Introduction

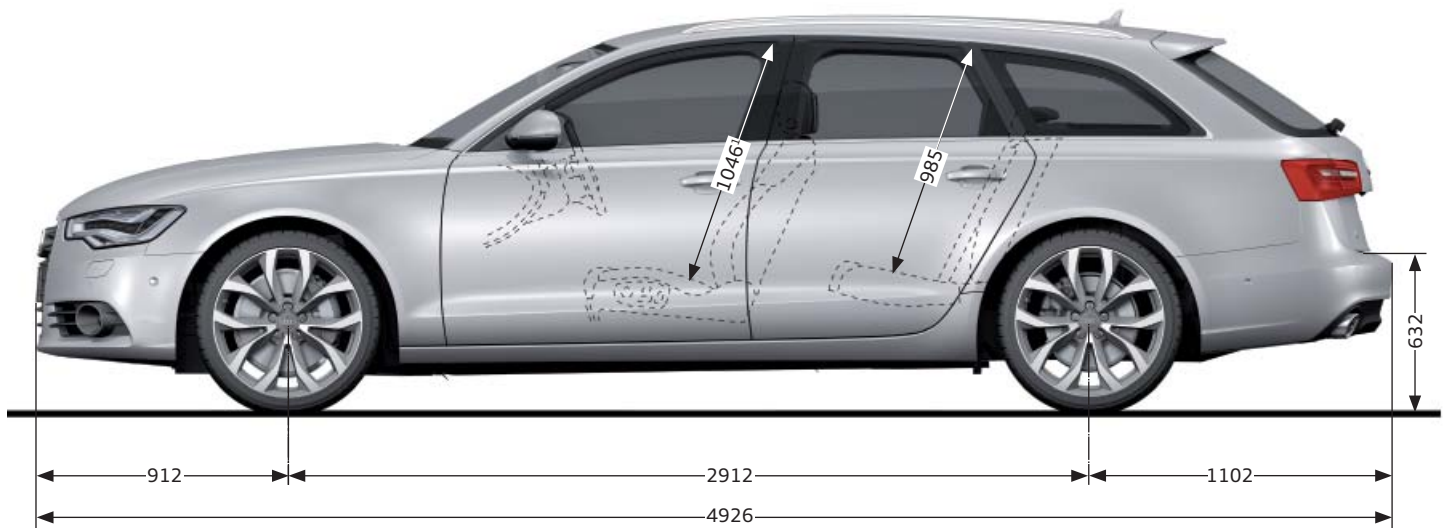
## In brief



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603\_104

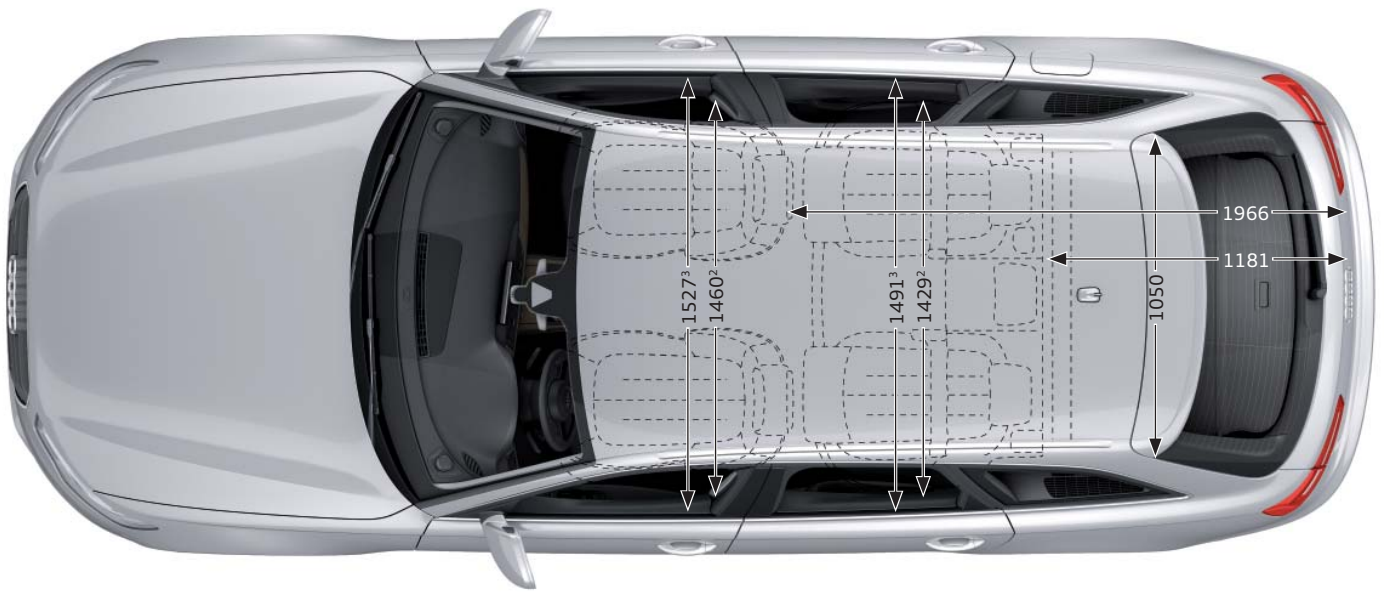
<sup>1)</sup> Maximum headroom

<sup>2)</sup> Shoulder room

<sup>3)</sup> Elbow room

<sup>4)</sup> Including roof aerial, the vehicle height is 1482 mm.

All dimensions quoted in millimetres.



603\_105

<b>Length</b> in mm	4926	<b>Interior width, front</b> in mm	1527
<b>Width</b> in mm	2086	<b>Interior width, rear</b> in mm	1491
<b>Height</b> in mm	1482 <sup>1)</sup>	<b>Headroom, front</b> in mm	1046
<b>Track, front</b> in mm	1627	<b>Headroom, rear</b> in mm	985
<b>Track, rear</b> in mm	1618	<b>Clear loading width</b> in mm	1050
<b>Wheelbase</b> in mm	2912	<b>Load space lip height</b> in mm	632
<b>Trailer load</b> in kg with brake and a gradient of 8 %	1700 <sup>2)</sup> / 1900 <sup>3)</sup>	<b>Load space volume</b> in l	565 / 1680 <sup>4)</sup>
<b>Kerb weight</b> in kg	1630 <sup>2)</sup> / 1790 <sup>3)</sup>	<b>Tank capacity</b> in l	65 / 75 <sup>5)</sup>
<b>Permissible gross weight</b> in kg	2260 <sup>2)</sup> / 2420 <sup>3)</sup>	<b>Drag coefficient <math>c_w</math></b>	0.30

<sup>1)</sup> Height excluding roof aerial 1461 mm

<sup>2)</sup> 2.0l TFSI multitronic

<sup>3)</sup> 3.0l TDI S-tronic quattro

<sup>4)</sup> With rear seat folded down

<sup>5)</sup> Optional

# Body

## Overview

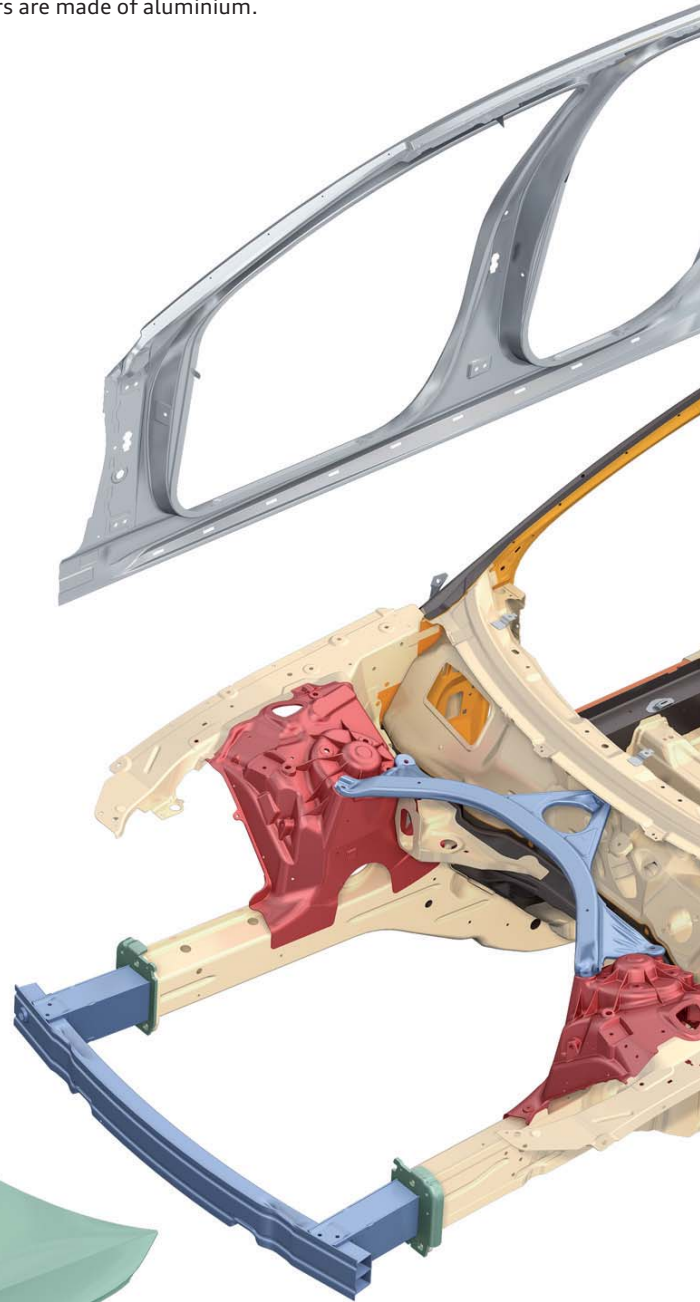
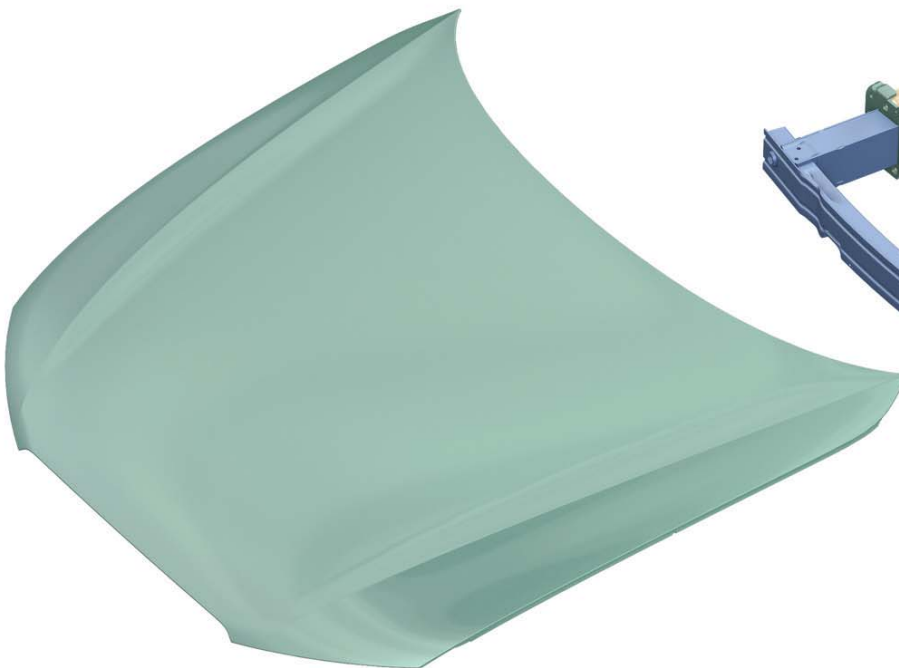
The body of the Audi A6 Avant '12 is based on the same platform as the Audi A7 Sportback and the Audi A6 '11, which use the composite construction method. The composite construction method uses high-strength sheet steel in combination with cast aluminium components.

Similarly, all attached components such as wings, bonnet, doors, tailgate, strut tower brace and front and rear bumper cross-members are made of aluminium.









## Body structure

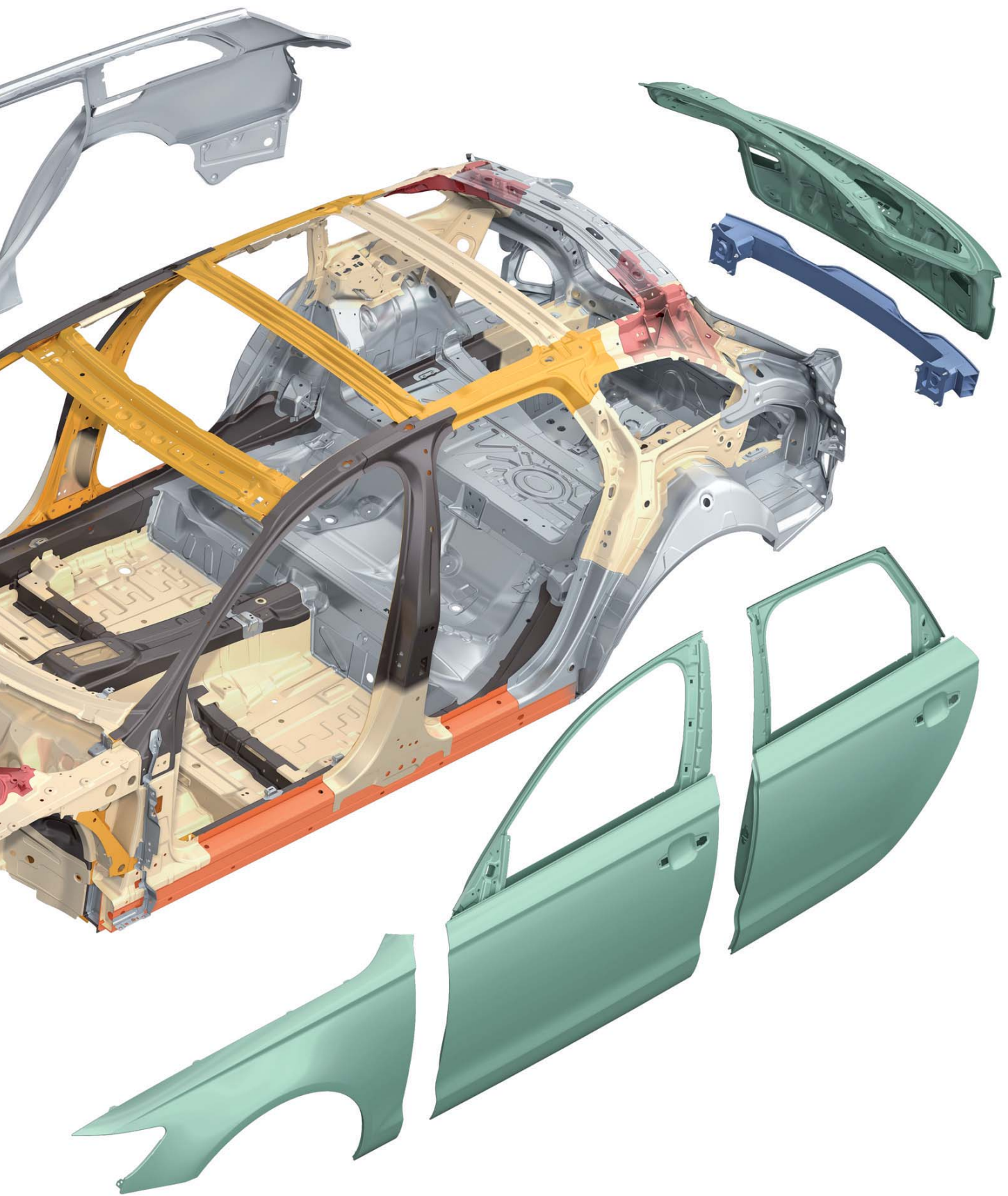
Ultra-high strength, hot-formed components are used in the

- ▶ Front side member reinforcement
- ▶ Bulkhead (tunnel arch)
- ▶ A-pillar
- ▶ B-pillar
- ▶ Sill panel
- ▶ Front seat cross-member
- ▶ Tunnel reinforcing
- ▶ Rear side-member areas.



### Legend:

	Mild steels		Ultra-high-strength steels (hot-formed)
	High-strength steels		Sheet aluminium components
	Modern high-strength steels		Cast aluminium components
	Ultra-high-strength steels		Extruded aluminium sections



603\_063



**Reference**

More information on the suspension strut mountings, B-pillars and chassis side-members can be found in Self-study Programme 478, "Audi A7 Sportback".

# Occupant protection

## Overview

The occupant safety system on the Audi A6 Avant '12 is comparable with that on the Audi A7 Sportback and Audi A6 '11 in terms of equipment and function. Obviously, the individual components have been adapted to the circumstances in the Audi A6 Avant '12.

More detailed information on the occupant safety system and its components can be found in Self-study Programmes 484, "Audi A7 Sportback Occupant Safety, Information & Entertainment, Air Conditioning" and 486 "Audi A6 '11".

The graphic shown in this section is an illustrative example provided as an aid to understanding.



## Additional equipment

The vehicle can optionally be equipped with rear side airbags and/or a keyswitch for deactivating the front passenger airbag with accompanying warning lamp.

Due to the varying demands and legal requirements on car manufacturers across the markets, the equipment fitted may vary.



### Reference

More detailed information on the occupant safety system and its components can be found in Self-study Programmes 484, "Audi A7 Sportback Occupant Safety, Information & Entertainment, Air Conditioning" and 486 "Audi A6 '11".



## Components

The occupant safety system in the Audi A6 Avant '12 is made up of the following components and systems:

- ▶ Airbag control unit
- ▶ Adaptive driver and front passenger airbags
- ▶ Front side airbags
- ▶ Head airbags
- ▶ Crash sensors for front airbag
- ▶ Crash sensors in the doors for side impact detection
- ▶ Crash sensors in the C-pillars for side impact detection
- ▶ Front inertia-reel seat belts with pyrotechnic belt tensioners and active belt force limiters
- ▶ Battery terminal disconnecter
- ▶ Seat belt warning for all seats
- ▶ Seat belt switches on all seats
- ▶ Seat occupancy detector in front passenger seat
- ▶ Seat position detectors for driver and front passenger



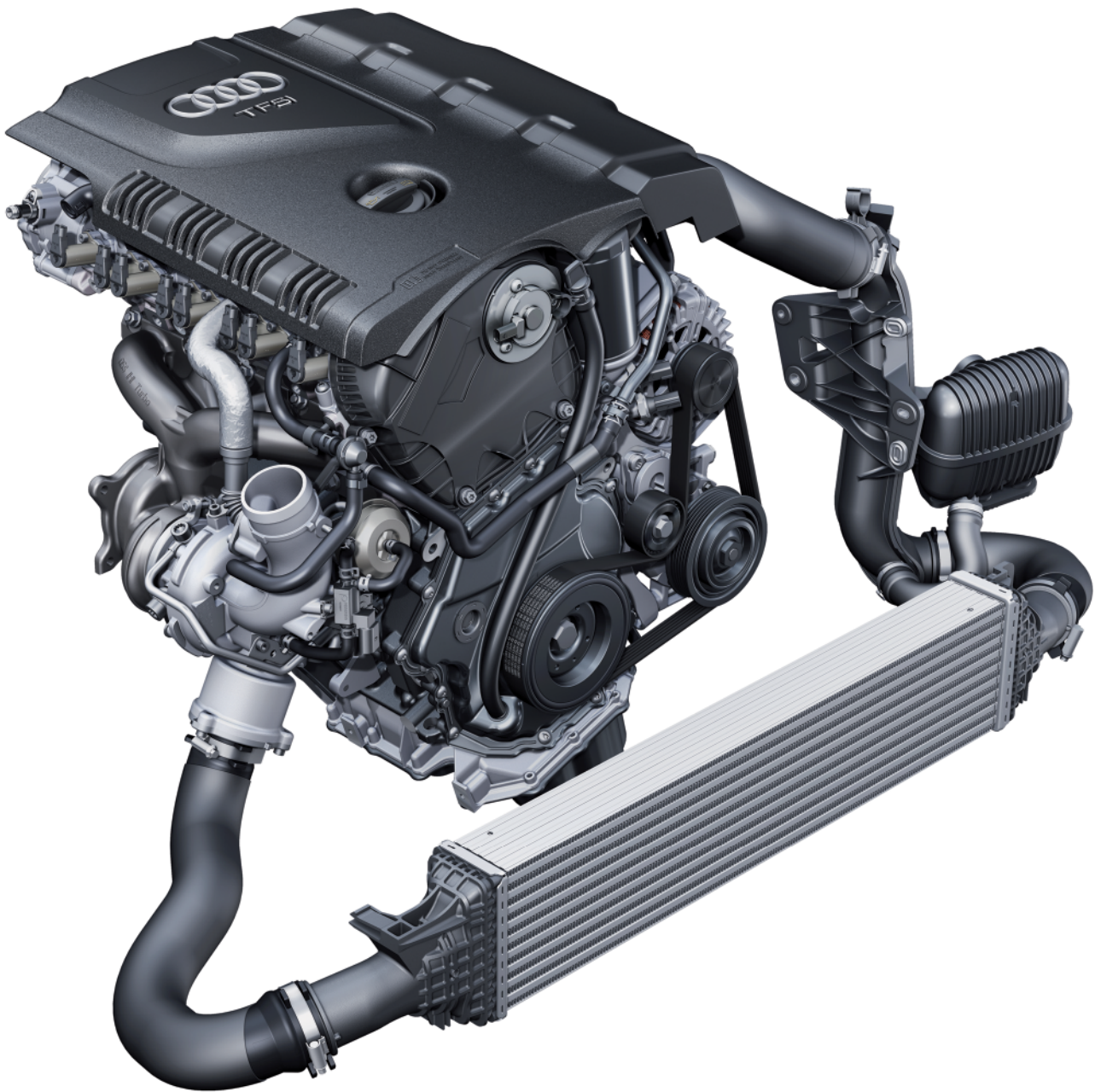
# Engines

## Petrol engines

### The 2.0l TFSI engine

#### Technical features

- ▶ Charging by exhaust turbocharger
- ▶ Start-stop system and recuperation
- ▶ Four-valve cylinder head with a camshaft phaser on the intake side and Audi Valvelift System on the exhaust side
- ▶ Adapted belt drive (minus the power steering pump)
- ▶ Engine management by timing chain
- ▶ Intake manifold with flaps
- ▶ Volume-controlled oil pump
- ▶ Improved high-pressure injectors



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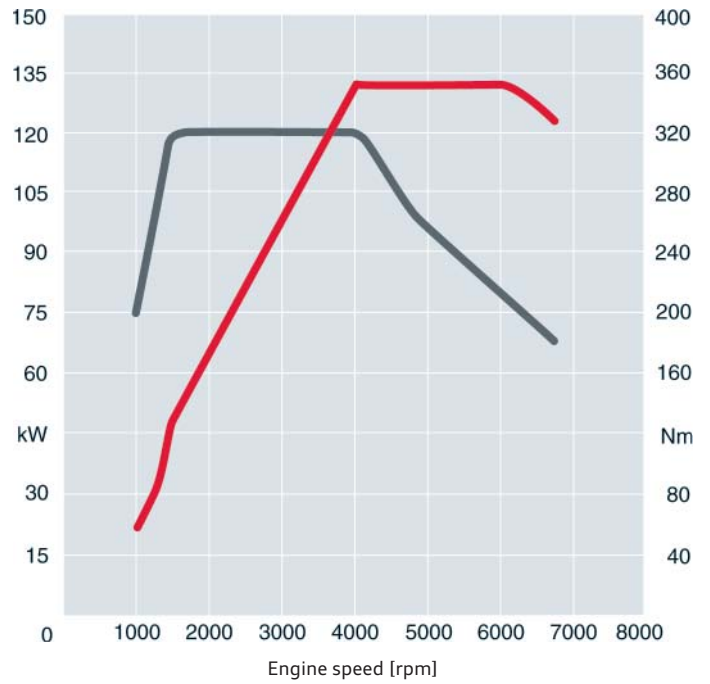
#### Reference

For more information on the design and function of the 2.0l TFSI engine, refer to Self-study Programme 436, "Changes to the 4-cylinder TFSI Engine with Chain-driven Valvegear".

## Specifications

### Torque-power curve

— Power in kW  
— Torque in Nm



603\_003

<b>Engine code</b>	<b>CDNB</b>
<b>Type</b>	Four-cylinder inline engine
<b>Displacement</b> in cm <sup>3</sup>	1984
<b>Power output</b> in kW (bhp) at rpm	132 (180) at 4,000 - 6,000
<b>Torque</b> in Nm at rpm	320 at 1,500 - 3,900
<b>Number of valves per cylinder</b>	4
<b>Bore</b> in mm	82.5
<b>Stroke</b> in mm	92.8
<b>Compression ratio</b>	9.6 : 1
<b>Powertrain type</b>	<ul style="list-style-type: none"> <li>▶ Front wheel drive</li> <li>▶ multitronic with front wheel drive</li> </ul>
<b>Engine management</b>	Bosch MED 17.1
<b>Fuel</b>	Premium unleaded (sulphur-free) 95 RON
<b>Emissions standard</b>	EU V
<b>CO<sub>2</sub> emission</b> in g/km	149 (front wheel drive)

## 3.0l V6 TFSI engine

### Technical features

- ▶ Charging by Roots blower
- ▶ Thermal management with active coolant pump
- ▶ Start-stop system and recuperation
- ▶ Mixed friction can occur during restarts due to the start-stop function so the bearing bushes are coated with an additional wear-resistant layer
- ▶ Friction-reduced chain gear with:
  - ▶ modified camshafts
  - ▶ reduced-leakage camshaft positioner
- ▶ Dual-stage volume-controlled oil pump
- ▶ Chain tensioners designed for reduced oil flow
- ▶ Structure-honed cylinders to reduce oil consumption and wear
- ▶ Reduced prestress on the third piston ring land
- ▶ Adapted belt drive (minus the power steering pump)
- ▶ Flow-enhanced high pressure injectors
- ▶ Reduced valve spring forces

## 2.8l V6 FSI engine

### Technical features

- ▶ Thermal management with active coolant pump
- ▶ Start-stop system and recuperation
- ▶ Mixed friction can occur during restarts due to the start-stop function so the bearing bushes are coated with an additional wear-resistant layer
- ▶ Friction-reduced chain gear with:
  - ▶ modified camshafts
  - ▶ reduced-leakage camshaft positioner
- ▶ Dual-stage volume-controlled oil pump
- ▶ Chain tensioners designed for reduced oil flow
- ▶ Structure-honed cylinders to reduce oil consumption and wear
- ▶ Reduced prestress on the third piston ring land
- ▶ Adapted belt drive (minus the power steering pump)
- ▶ Flow-enhanced high pressure injectors



603\_004



603\_005



### Reference

For more information on the design and function of the 3.0l V6 TFS engine with Roots Supercharger, refer to Self-study Programme 437, "Audi 3.0l V6 TFS Engine with Roots Supercharger" and on the 2.8l V6 FSI engine in Self-study Programme 411, "Audi 2.8l and 3.2l V6 FSI Engine with Audi Valvelift System".

## Specifications

### Torque-power curve

#### 3.0l V6 TFSI engine with engine code CGWB

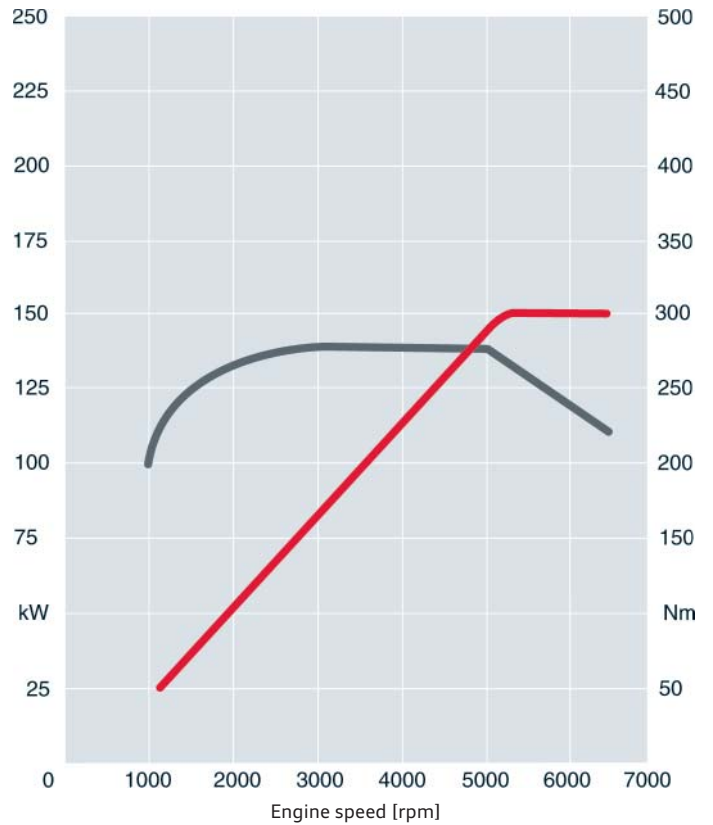
— Power in kW  
— Torque in Nm



603\_006

#### 2.8l V6 TFSI engine with engine code CHVA

— Power in kW  
— Torque in Nm



603\_007

Engine code	CGWB	CHVA
Type	Six cylinder V engine with 90° V angle	Six cylinder V engine with 90° V angle
Displacement in cm <sup>3</sup>	2995	2773
Power output in kW (bhp) at rpm	220 (300) at 5,250 - 6,500	150 (204) at 5,250 - 6,500
Torque in Nm at rpm	440 at 2,900 - 4,500	280 at 3,000 - 5,000
Number of valves per cylinder	4	4
Bore in mm	84.5	84.5
Stroke in mm	89	82.4
Compression ratio	10.5 : 1	12 : 1
Powertrain type	S tronic quattro	<ul style="list-style-type: none"> <li>▶ Front wheel drive</li> <li>▶ multitronic with front wheel drive</li> <li>▶ S tronic quattro</li> </ul>
Engine management	Simos 8	Simos 8.1
Fuel	Premium unleaded (sulphur-free) 95 RON	Premium unleaded (sulphur-free) 95 RON
Emissions standard	EU V	EU V
CO <sub>2</sub> emission in g/km	190	187

# Diesel engines

## 2.0l TDI engine

### Technical features

- ▶ Common-rail fuel injection with turbocharger
- ▶ Electromagnetic injectors
- ▶ Engine management by timing chain
- ▶ Injection system with injection pressures of up to 1800 bar
- ▶ Two balancer shafts
- ▶ Adapted belt drive (minus the power steering pump)
- ▶ 4-port 2-way valve in cooling system
- ▶ Electrical exhaust gas recirculation valve
- ▶ Low temperature EGR cooling
- ▶ Particulate filter with separate, integrated oxidising catalytic converter
- ▶ Start-stop system and recuperation



603\_008



### Reference

For more information on the design and function of the 2.0l TDI engine, refer to Self-study Programme 420, "The 2.0l TDI Engine with Common-rail Injection System" and Self-study Programme 442, "The 1.6l TDI Engine with Common-rail Injection System".

## Specifications

### Torque-power curve

— Power in kW  
— Torque in Nm



603\_009

<b>Engine code</b>	CGLC
<b>Type</b>	Four-cylinder inline engine
<b>Displacement</b> in cm <sup>3</sup>	1968
<b>Power output</b> in kW (bhp) at rpm	130 (177) at 4200
<b>Torque</b> in Nm at rpm	380 at 1,750 - 2,500
<b>Number of valves per cylinder</b>	4
<b>Bore</b> in mm	81.0
<b>Stroke</b> in mm	95.5
<b>Compression ratio</b>	16.5 : 1
<b>Powertrain type</b>	<ul style="list-style-type: none"> <li>▶ Front wheel drive</li> <li>▶ multitronic with front wheel drive</li> </ul>
<b>Engine management</b>	Bosch EDC 17 CR
<b>Fuel</b>	Diesel to EN 590
<b>Maximum injection pressure</b> in bar	1800
<b>Emissions standard</b>	EU V
<b>CO<sub>2</sub> emission</b> in g/km	129

## 3.0l V6 TDI engine (2nd generation)

### Technical features

- ▶ Common-rail fuel injection with turbocharger
- ▶ Dual-flow superposed intake manifold with only one central swirl flap in lieu of the previous six swirl flaps
- ▶ Piezoelectric injection system with injection pressures up to 2000 bar
- ▶ Dual-piston high pressure pump (CP4.2)
- ▶ High pressure fuel pump driven by auxiliaries chain
- ▶ Chain drive reduced from four to two simplex chains
- ▶ Oil circuit with dual-stage flow controlled vane cell pump
- ▶ Cooling system in the form of cylinder head and cylinder block coolant circulation system
- ▶ Compact, modular-design exhaust recirculation (EGR valve, EGR cooler and bypass valve integrated in module)
- ▶ Active EGR cooler without thermostat control and auxiliary coolant pump
- ▶ Advanced particulate filter regeneration with three post-injections and aluminium titanate as new diesel particulate filter substrate



603\_010



### Reference

For more information on the design and function of the 3.0l V6 TDI engine, refer to Self-study Programme 479, "Audi 3.0l V6 TDI Engine (2nd Generation)".



## Specifications

### Torque-power curve

#### Engine with code CDUC

— Power in kW  
— Torque in Nm



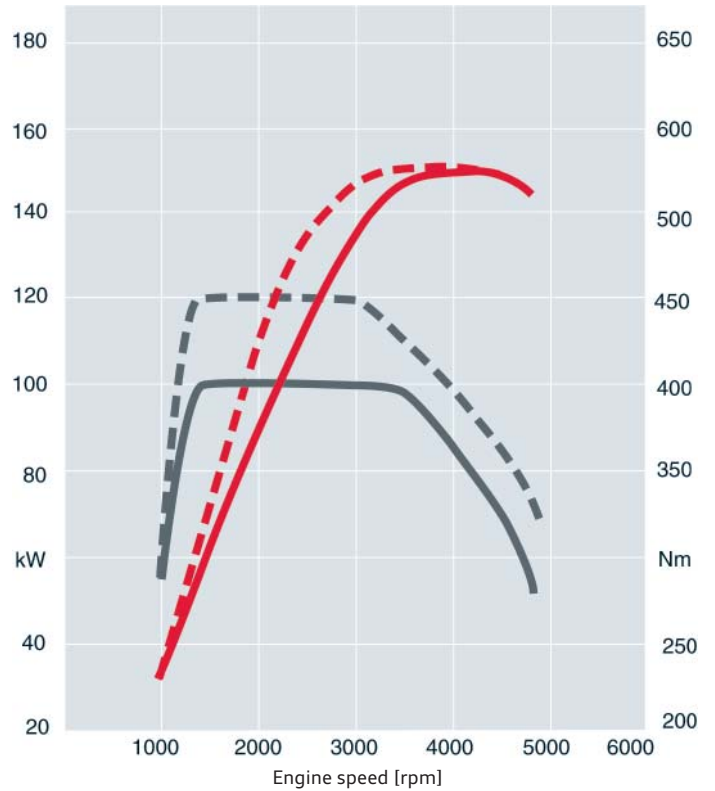
603\_011

#### Engine with code CLAB

— Power in kW  
— Torque in Nm

#### Engine with code CLAA

- - - Power in kW  
- - - Torque in Nm



603\_012

Engine code	CDUC	CLAB, CLAA
<b>Type</b>	Six cylinder V engine with 90° V angle	Six cylinder V engine with 90° V angle
<b>Displacement</b> in cm <sup>3</sup>	2967	2967
<b>Power output</b> in kW (bhp) at rpm	180 (245) at 4,000 - 4,500	150 (204) at 3,750 - 4,500 (front-wheel drive) 150 (204) at 3,250 - 4,500 (quattro)
<b>Torque</b> in Nm at rpm	500 at 1,400 - 3,250	400 at 1,250 - 3,500 (front-wheel drive) 450 at 1,250 - 3,000 (quattro)
<b>Number of valves per cylinder</b>	4	4
<b>Bore</b> in mm	83	83
<b>Stroke</b> in mm	91.4	91.4
<b>Compression ratio</b>	16.8 : 1	16.8 : 1
<b>Powertrain type</b>	S tronic quattro	<ul style="list-style-type: none"> <li>▶ Front wheel drive</li> <li>▶ multitronic with front wheel drive</li> <li>▶ S tronic quattro</li> </ul>
<b>Engine management</b>	Bosch EDC 17	Bosch EDC 17
<b>Fuel</b>	Diesel to EN 590	Diesel to EN 590
<b>Maximum injection pressure</b> in bar	1800	2000
<b>Emissions standard</b>	EU V	EU V
<b>CO<sub>2</sub> emission</b> in g/km	158	137 (front wheel drive) 149 (quattro)

## 3.0l V6 TDI Biturbo engine

### Technical features

- ▶ Common-rail fuel injection with turbocharger
- ▶ Dual-flow superposed intake manifold with only one central swirl flap in lieu of the previous six swirl flaps
- ▶ Piezo-electric injection system with injection pressure of 2000 bar
- ▶ Dual-piston high pressure pump (CP4.2) with high delivery volume
- ▶ High pressure fuel pump driven by auxiliaries chain
- ▶ Chain drive reduced from four to two simplex chains
- ▶ Oil circulation system with two-stage controlled-flow vane pump with large delivery volume and flange-mounted vacuum pump
- ▶ Cooling system with split circuits for cylinder head and cylinder block
- ▶ Compact, modular-design exhaust recirculation (EGR valve, switchable EGR cooler and bypass valve integrated in module)
- ▶ Advanced particulate filter regeneration with up to five post-injection phases and aluminium titanate as diesel particulate filter substrate
- ▶ Two-stage turbocharger system



603\_013



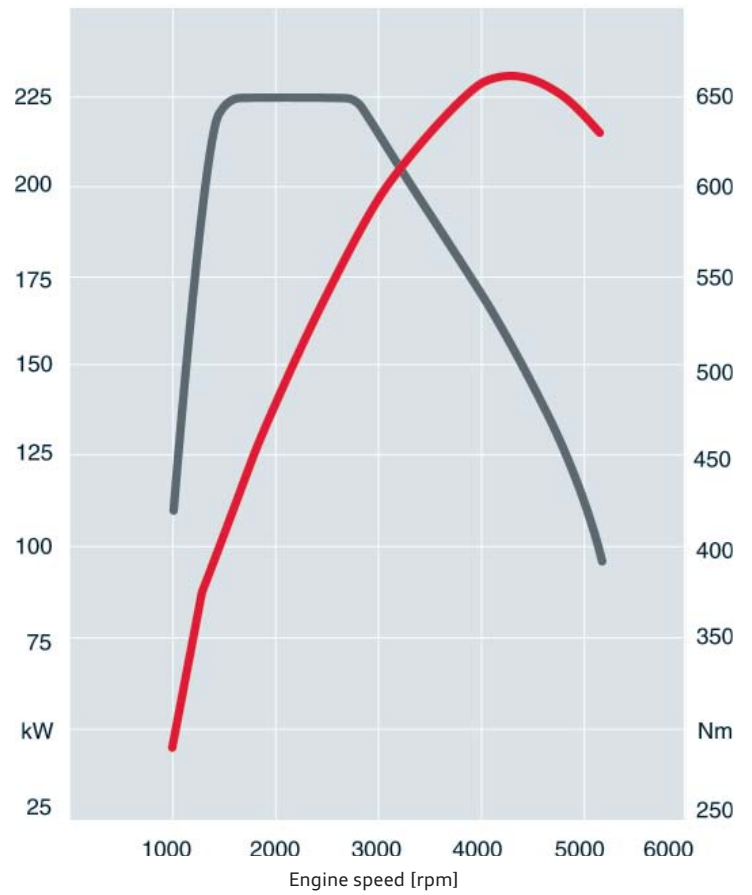
### Reference

For more information on the design and function of the 3.0l V6 TDI Biturbo engine, refer to Self-study Programme 604, "Audi 3.0l V6 TDI Biturbo Engine".

## Specifications

### Torque-power curve

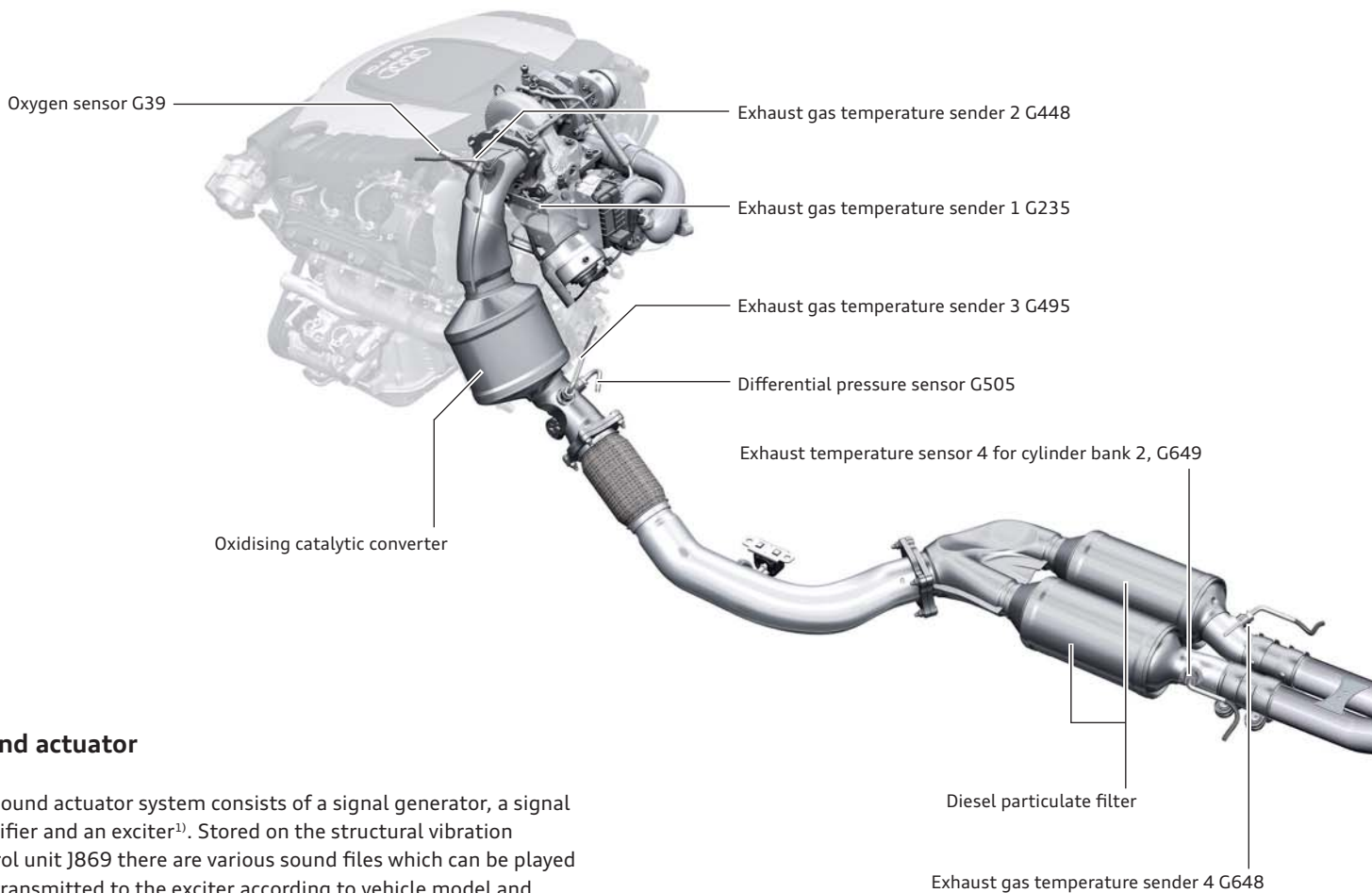
- Power in kW
- Torque in Nm



603\_014

<b>Engine code</b>	<b>CGQB</b>
<b>Type</b>	Six cylinder V engine with 90° V angle
<b>Displacement</b> in cm <sup>3</sup>	2967
<b>Power output</b> in kW at rpm	230 at 4250
<b>Torque</b> in Nm at rpm	650 at 1,500 - 2,750
<b>Number of valves per cylinder</b>	4
<b>Cylinder separation</b> in mm	90
<b>Firing order</b>	1-4-3-6-2-5
<b>Bore</b> in mm	83
<b>Stroke</b> in mm	91.4
<b>Compression ratio</b>	16.0 : 1
<b>Engine management</b>	Bosch CRS 3.3
<b>Fuel</b>	Diesel to EN 590
<b>Maximum injection pressure</b> in bar	2000
<b>Emissions standard</b>	EU V
<b>CO<sub>2</sub> emission</b> in g/km	169

## Exhaust system on vehicles with 3.0l V6 TDI Biturbo engine



### Sound actuator

The sound actuator system consists of a signal generator, a signal amplifier and an exciter<sup>1)</sup>. Stored on the structural vibration control unit J869 there are various sound files which can be played and transmitted to the exciter according to vehicle model and operating data (engine speed and load, vehicle speed).

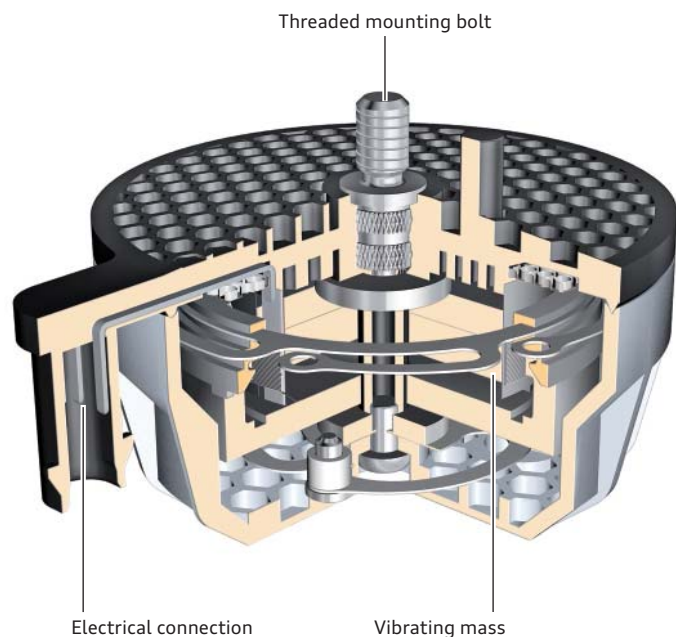
The exciter generates the structure borne noise. That is then carried into the passenger compartment through the bodywork and the windscreen. The exciter is fitted centrally to the base of the windscreen by means of a special fixing; it is the system's "tuning fork".

Different models and engines require different excitation to create a balanced engine note. The information about the engine fitted and the body type is read from the CAN data bus (Powertrain CAN). The structural vibration control unit J869 automatically detects in which vehicle it is fitted.

<sup>1)</sup> An exciter, also called a structural vibration converter or body-shaker, is basically a speaker without a speaker cone. That function is performed by the windscreen, which directs the sound into the vehicle interior.

It consists essentially of three components: the vibrating mass, the socket for electrical connection to the structural vibration control unit J869, and the mounting bolt for fixing it to the mounting surface.

### Cutaway view of exciter<sup>1)</sup>



603\_086



### Reference

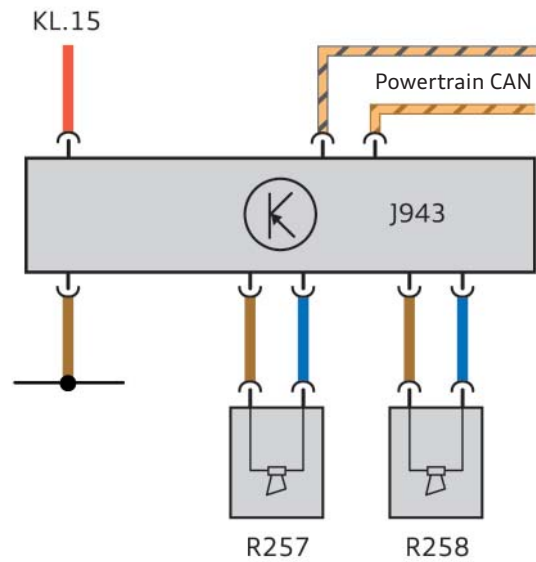
More information on the sound actuator system can be found in Self-study Programme 491, "Audi 1.4l TFSI Engine with Twin Turbochargers".

## Active-sound exhaust system

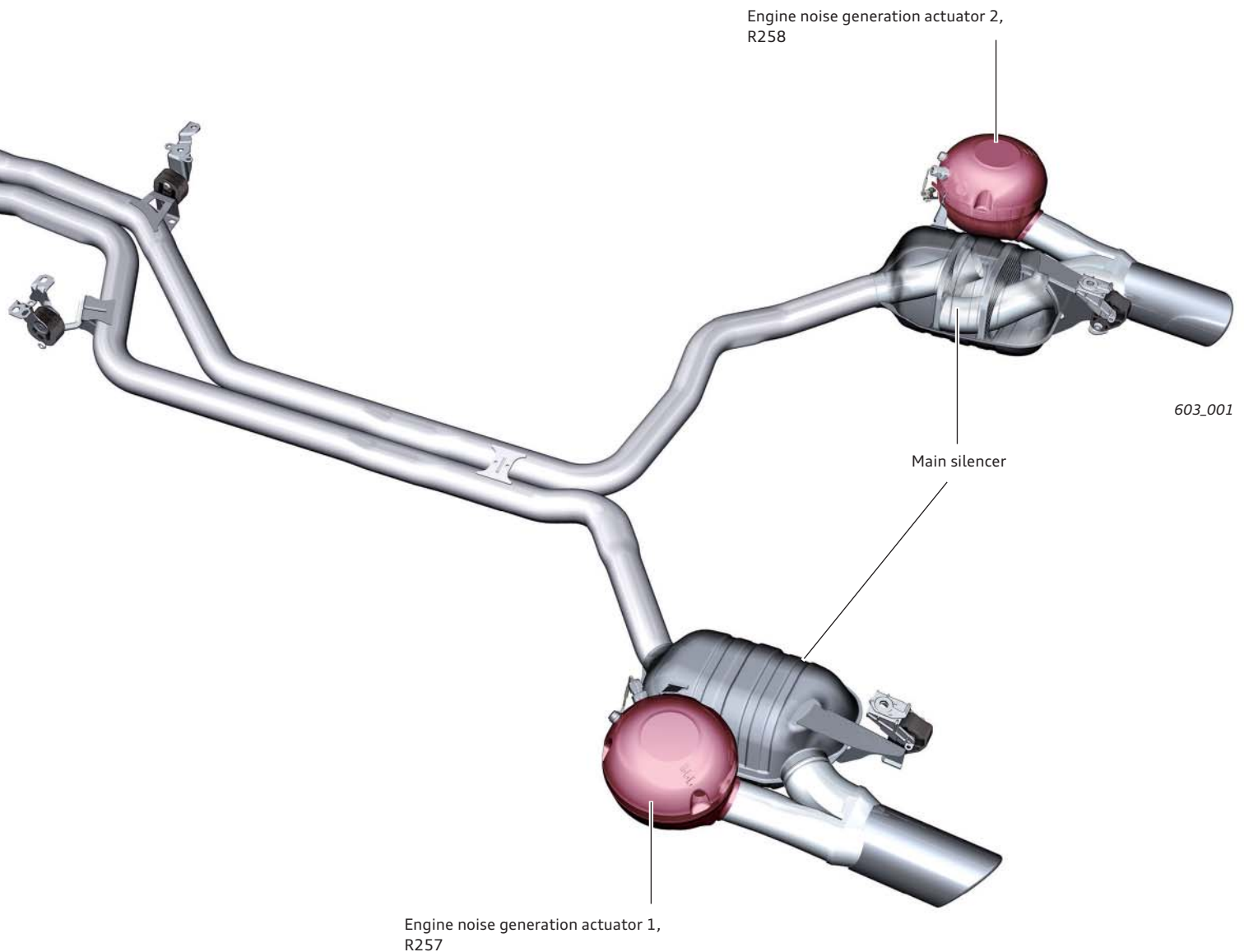
The active-sound exhaust system comprises an exhaust system with attached speaker housings, an engine noise generation control unit, J493, and the actuators R257 and R258 that are operated by the control unit. The control unit receives vehicle data (engine speed, engine load, vehicle model, road speed) from the CAN bus (Powertrain CAN). The actuators generate sound waves according to the data-map based control unit commands.

The sound module is formed by additional speaker housings on the main silencers, which connect directly to the tailpipes. The signal generator, which is fitted in the engine noise generation control unit J943, produces a range of vibrations dependent on the engine operating mode. That signal spectrum is amplified into a power signal by the engine noise generation control unit J943 and converted into sound waves by the actuator.

The active sound system is capable of generating certain frequencies (engine harmonics) in order to produce a desired sound pattern (sound design). In contrast with conventional exhaust systems with passive silencers, the exhaust sound can be adapted to the vehicle and the driving situation via Audi drive select.



603\_100



603\_001



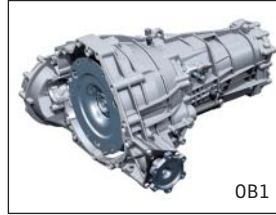
### Note

On vehicles with an active-sound exhaust system, the tailpipes must not be sealed over to test for leaks or be pressurised with compressed air as doing so could destroy the speaker diaphragms.

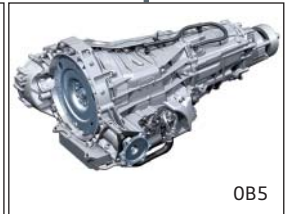
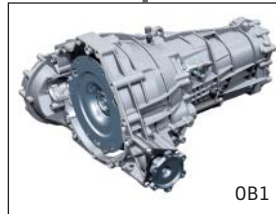
# Engine/gearbox combinations

## Petrol engines

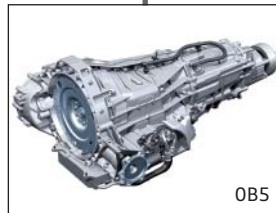
### 2.0l R4 TFSI engine



### 2.8l V6 FSI engine



### 3.0l V6 TFSI engine

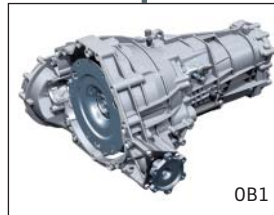


#### Gearbox designations:

- OB1 6-speed manual gearbox
- OB5 7-speed double-clutch transmission - S tronic
- OBK 8-speed automatic transmission
- 0AW multitronic

## Diesel engines

### 2.0l R4 TDI engine

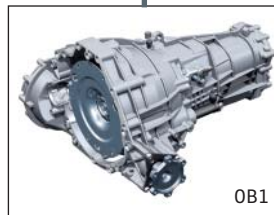


OB1



OAW

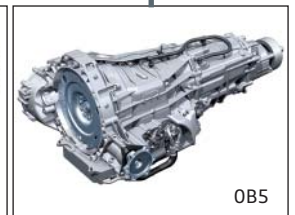
### 3.0l V6 TDI engine (2nd generation)



OB1

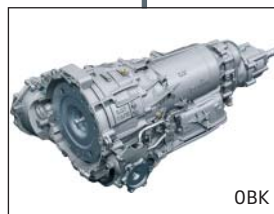


OAW



OB5

### 3.0l V6 TDI Biturbo engine



OBK

# Power transmission

## Overview

The Audi A6 Avant '12 is another model in the C7 series on which the power transmission concept with the forward-shifted differential from the B8 series is used. Other features of the concept are the method of connecting the prop shaft to the gearbox and the rear differential and various weight-saving measures (see reference below).

Dynamic handling is assisted by independently selective wheel torque control. Information on this can be found in SSP 478 and the Audi iTV programme "Audi RS5 Power Transmission Part 2" of 23/09/2010.

The automatic transmissions are incorporated in the engine's innovative temperature management system. It controls the ATF operating temperature and thus increases its efficiency. For information on the innovative temperature management system, please refer to SSP 486.

With the automatic transmissions, use of the navigation system's predictive route data is possible, see SSP 457.



603\_089

## multitronic OAW

multitronic OAW is available for vehicles with front-wheel drive. A sports program and a tiptronic mode with eight fixed transmission ratios provide for a sports-style driving experience. These can be changed with the paddles on the steering wheel or with the selector lever. The start-stop system is supported as standard. The clutch pressure supply system, the hydraulic control unit and the gearbox software have been optimised for this purpose.

**The OAW multitronic gearbox will be combined with the following engines:**

- ▶ 2.0l R4 TFSI engine
- ▶ 2.0l R4 TDI engine
- ▶ 2.8l V6 FSI engine
- ▶ 3.0l V6 TDI engine

## Rear-axle transmission

### Standard:

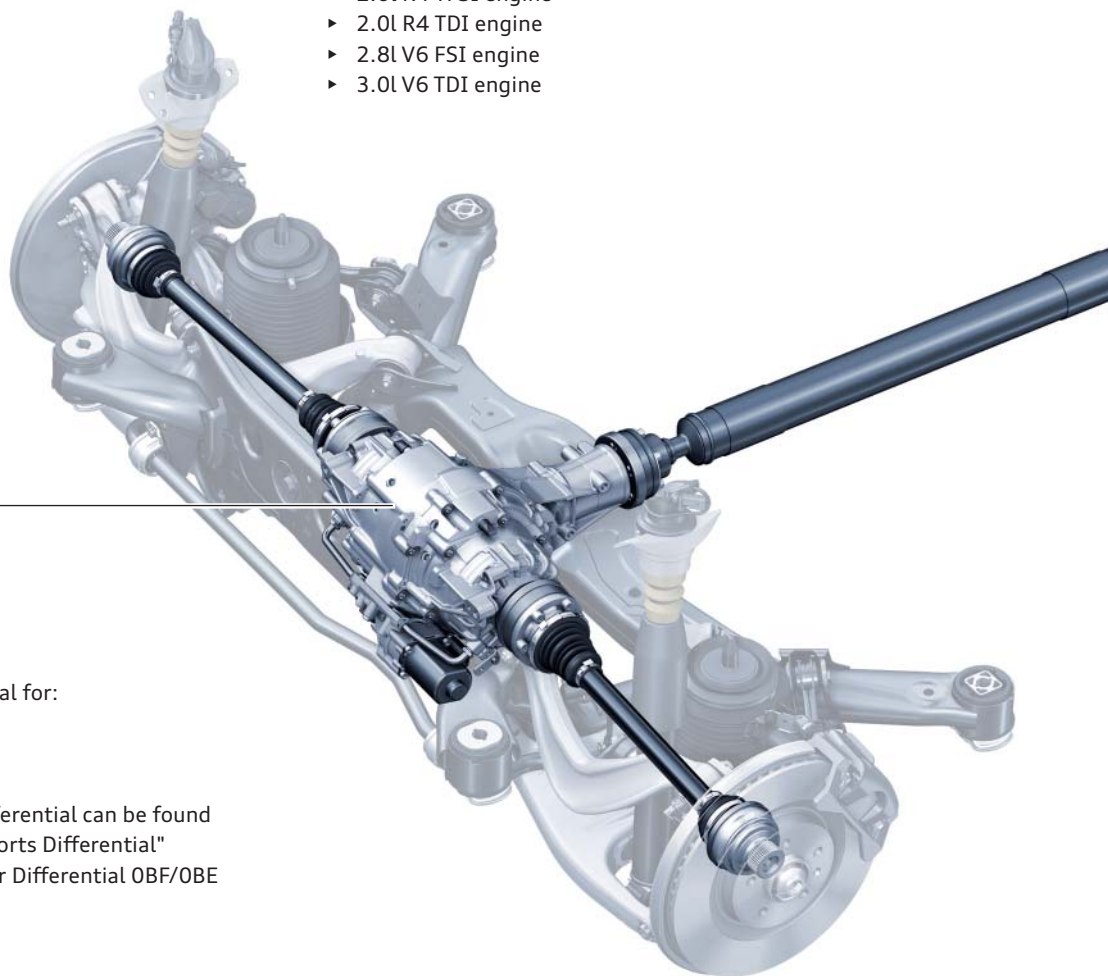
Rear axle differential OBC

### Optional:

Rear axle drive OBF with sport differential for:

- ▶ 3.0l V6 TFSI engine
- ▶ 3.0l V6 TDI engine

More information on the OBF sports differential can be found in the iTV tutorial "Audi quattro with Sports Differential" Parts 1, 2, 3 and 4, and in SSP 476 "Rear Differential OBF/OBE Sports Differential."



### Reference

The power transmission concept used on the B8 series (Type 8K/8T/8F) was carried over to the C7 series (Type 4G-) on introduction of the Audi A7 Sportback. Information on this can be found in SSP 392 and 409 and the Audi iTV programme "Audi A5 Power Transmission Part " of 23/02/2010. Information on the "socket-mount prop shaft" can be found in SSP 478 and the Audi iTV programme "Audi A8 Power Transmission Part 2" of 02/09/2010. That information also applies to the Audi A6 Avant '12 and forms the basic knowledge on those topics.

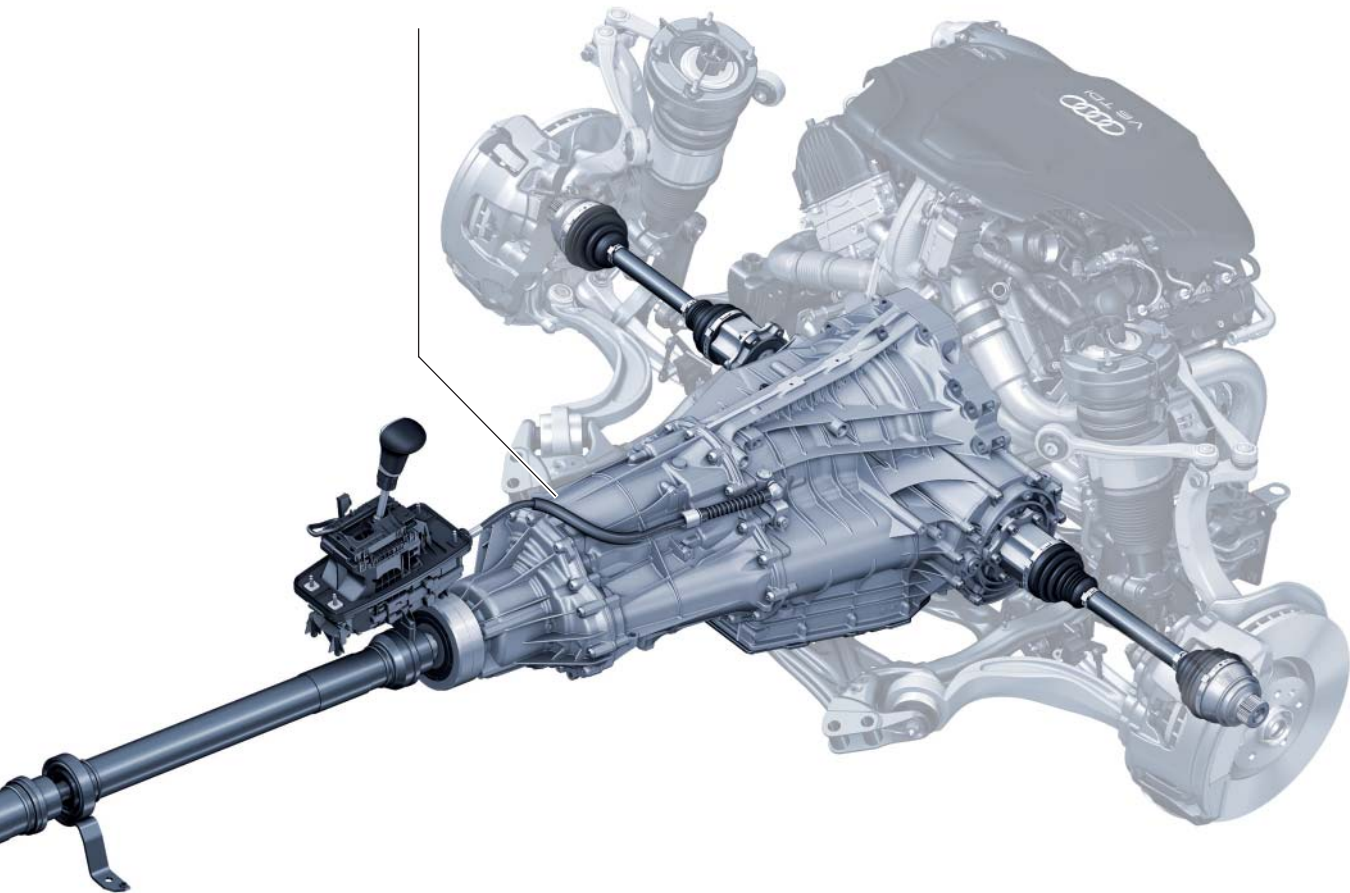


## S tronic 7-speed double-clutch transmission OB5

The 7-speed double-clutch gearbox was first introduced in 2008 on the Audi Q8. This is explained in detail in SSP 429. The gearbox used on the Audi A6 Avant '12 is the same as the one on the version of the Audi A7 Sportback described in SSP 478. The start-stop system is now supported as standard. The software has been optimised for that purpose.

The OB5 S tronic 7-speed manual gearbox is paired with the following engines:

- ▶ 2.8l V6 FSI engine
- ▶ 3.0l V6 TFSI engine
- ▶ 3.0l V6 TDI engine



603\_090



603\_091



603\_092

## 8-speed automatic transmission OBK

The OBK 8-speed automatic transmission is used in combination with engines that are capable of delivering torque levels over 550 Nm. The start-stop system is supported by means of a hydraulic pressure accumulator. Details of it can be obtained from SSP 457.

The OBK 8-speed automatic transmission is used together with the following engine:

- ▶ 3.0l V6 TDI Biturbo engine

## 6-speed manual gearbox OB1

The OB1 six-speed manual gearbox is used with engines with a torque rating of up to 400 Nm. The start-stop system is supported as standard. The gear detection sensor G604 that the system requires is described in SSP 486 "Audi A6 '11".

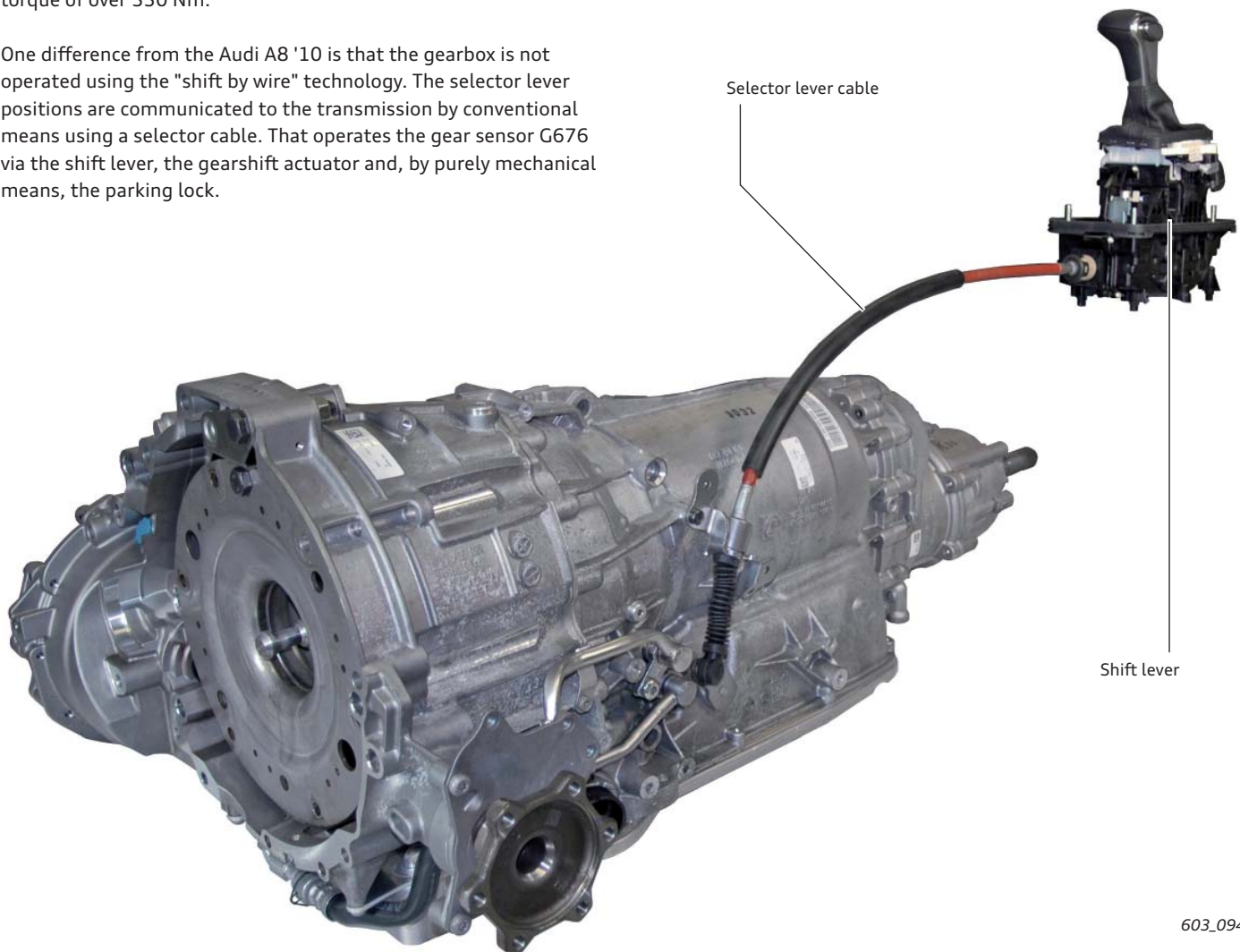
The 6-speed manual gearbox OB1 is combined with the following engines:

- ▶ 2.0l R4 TFSI engine
- ▶ 2.0l R4 TDI engine
- ▶ 2.8l V6 FSI engine
- ▶ 3.0l V6 TDI engine

## 8-speed automatic transmission 0BK

The 0BK transmission has been familiar since the launch of the Audi A8 '10 (Series D4) and is described in SSP 457. In the C7 series it is used in combination with the engines with a maximum torque of over 550 Nm.

One difference from the Audi A8 '10 is that the gearbox is not operated using the "shift by wire" technology. The selector lever positions are communicated to the transmission by conventional means using a selector cable. That operates the gear sensor G676 via the shift lever, the gearshift actuator and, by purely mechanical means, the parking lock.



603\_094

## Selector mechanism

The selector mechanism on the Audi A6 Avant '12 is largely the same as that used from model year 2006 on the Audi A6 '05. The same mechanism can also be found on the Audi A4, Audi A5 and Audi Q5 from model year 2008 and on the Audi A7 Sportback. A detailed description can be found in SSP 409 starting on page 34.

There is a difference from the selector mechanism described in SSP 409 in terms of the operating logic. Changing transmission mode from D to S (or from S to D) is effected by pressing the selector lever backwards once from the position D/S. Afterwards, the selector lever always springs back to the position D/S. This operating logic is identical to that on the Audi A6 '11 and the Audi A7 Sportback.

When the lever is pressed backwards from position D/S, the selector lever sensor J587 sends the sports-mode toggle signal to the transmission control unit. In response, the system switches to sports mode or back to normal drive mode D, see Figure 603\_097.

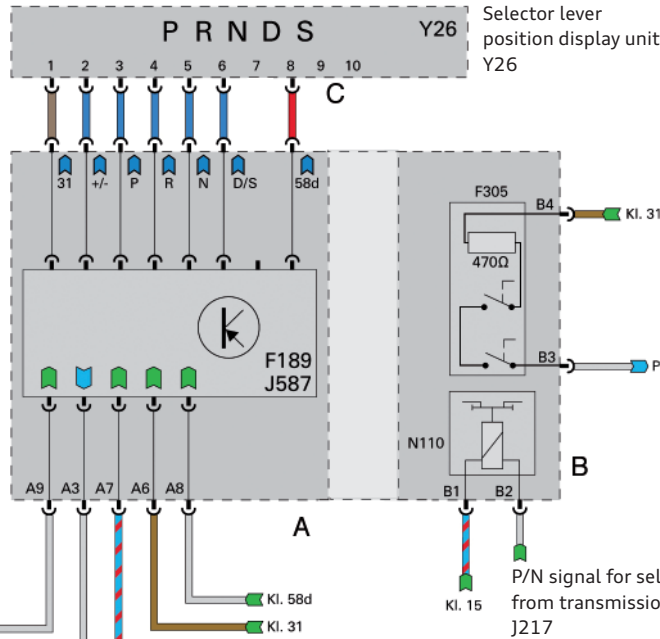


603\_093

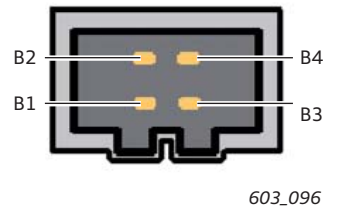
# Selector lever sensor J587

## Pin assignment for connector C

Pin 1	Terminal 31
Pin 2	LEDs +/-
Pin 3	LED P
Pin 4	LED R
Pin 5	LED N
Pin 6	LED D/S
Pin 7	----
Pin 8	Terminal 58d
Pin 9	----
Pin 10	----



## Pin assignment for connector B

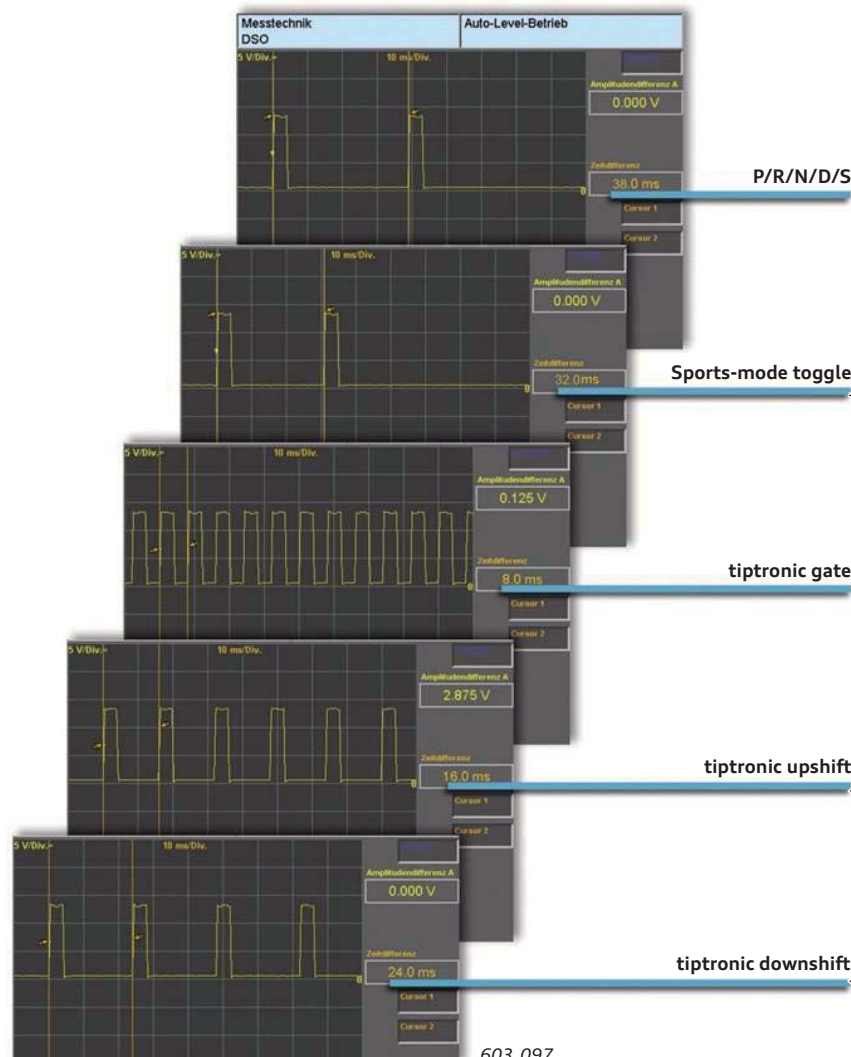


P/R/N/D/S signal from transmission control unit  
 tiptronic and sports-mode toggle signal to transmission control unit

603\_095

More information on the selector lever sensor J587 can be obtained from Self-study Programme 367 starting on page 66.

## DSO<sup>1)</sup> traces of signals from selector lever sensor J587



### Testing equipment:

- ▶ V.A.G 1598/54
- ▶ V.A.G 1598/42
- ▶ Vehicle diagnostic tester with DSO<sup>1)</sup>

### Testing conditions:

- ▶ "Ignition on"

### DSO<sup>1)</sup> connection:

- ▶ Black tester probe on Pin 6<sup>2)</sup>
- ▶ Red tester probe on Pin 3<sup>2)</sup>

Signal output only as long as selector lever is pulled backwards.

Signal output only as long as selector lever is held in tiptronic upshift/downshift position.

<sup>1)</sup> Digital memory oscilloscope

<sup>2)</sup> Pin on tester adaptor V.A.G 1598/42

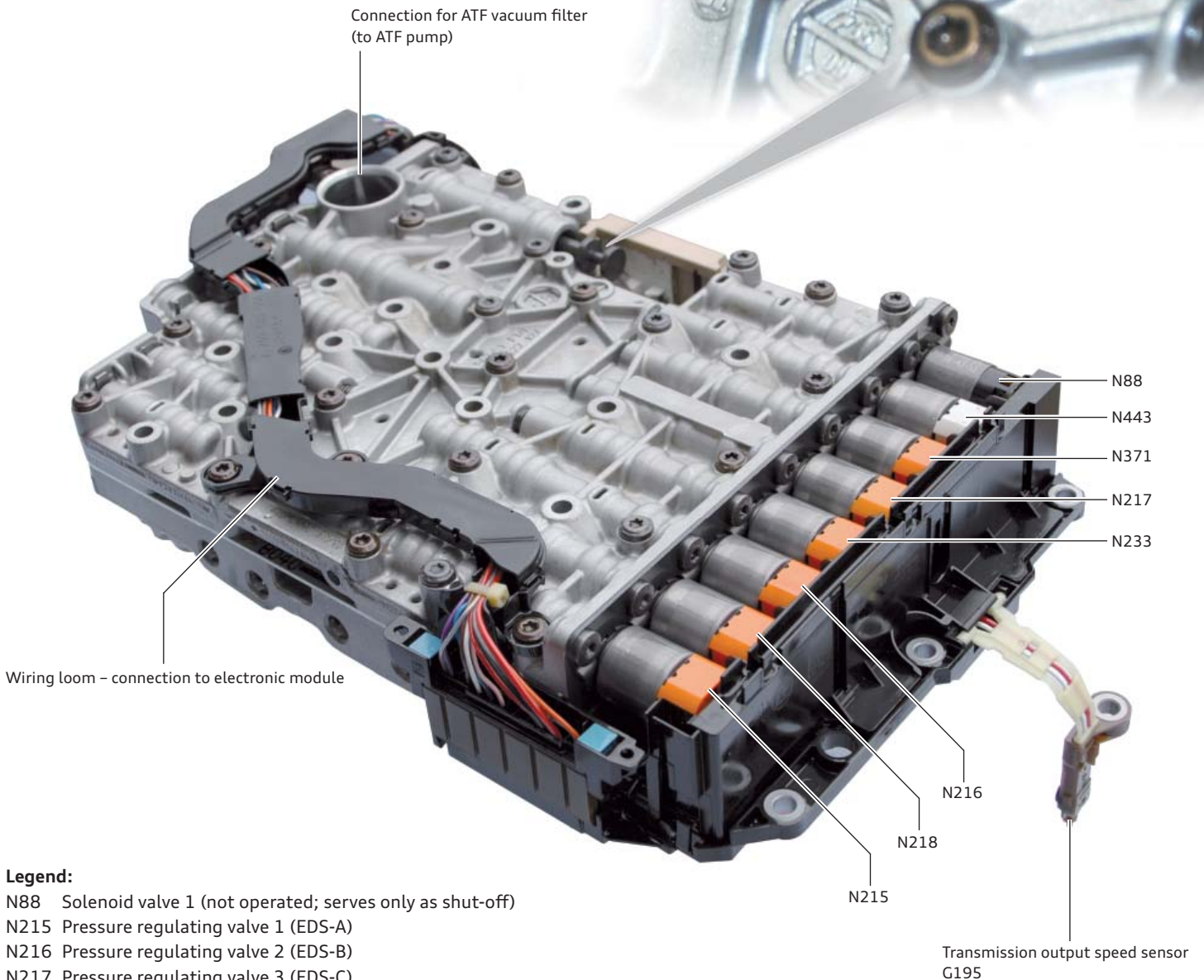
603\_097

## Mechatronics (E26/4)

The mechatronic technology (E26/4) is extensively explained by the description of the mechatronics (E26/6) in Self-study Programme 457 "Audi A8 '10 Power Transmission". The use of a selector lever cable instead of the "shift by wire" technology involves the following changes:

- ▶ The parking lock is operated by the selector lever cable.
- ▶ Solenoid valve N88 has no function within the mechatronic system.
- ▶ Selector lever positions P, R, N and D are detected by the gear sensor G676.
- ▶ The gearshift actuator controls the hydraulic pressure to the hydraulic valves and ensures the neutral position.

### View of underside



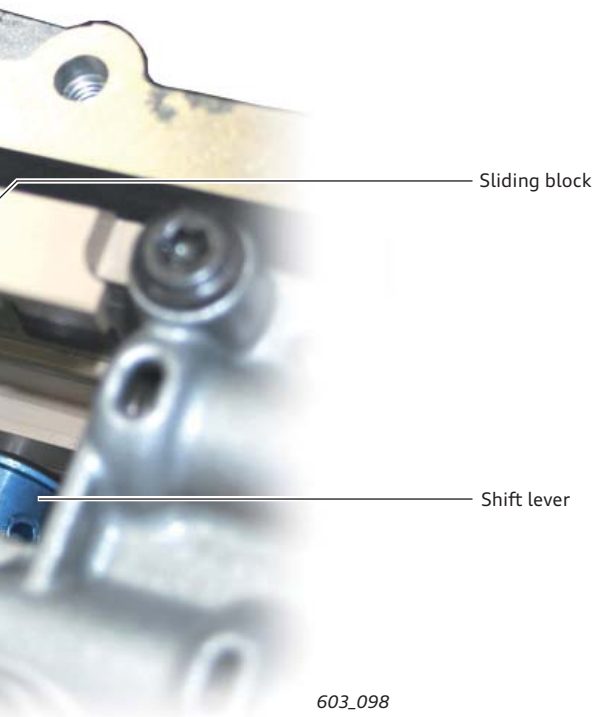
## Gear sensor G676

The sensor is part off the electronic module and is operated by the shift lever. A magnet in the sensor's sliding block switches four Hall-effect sensors (A/B/C/D) according to the selector lever position. The signals from the Hall-effect sensors are analysed and thus provide the transmission control unit with information about selector lever positions P, R, N and D.

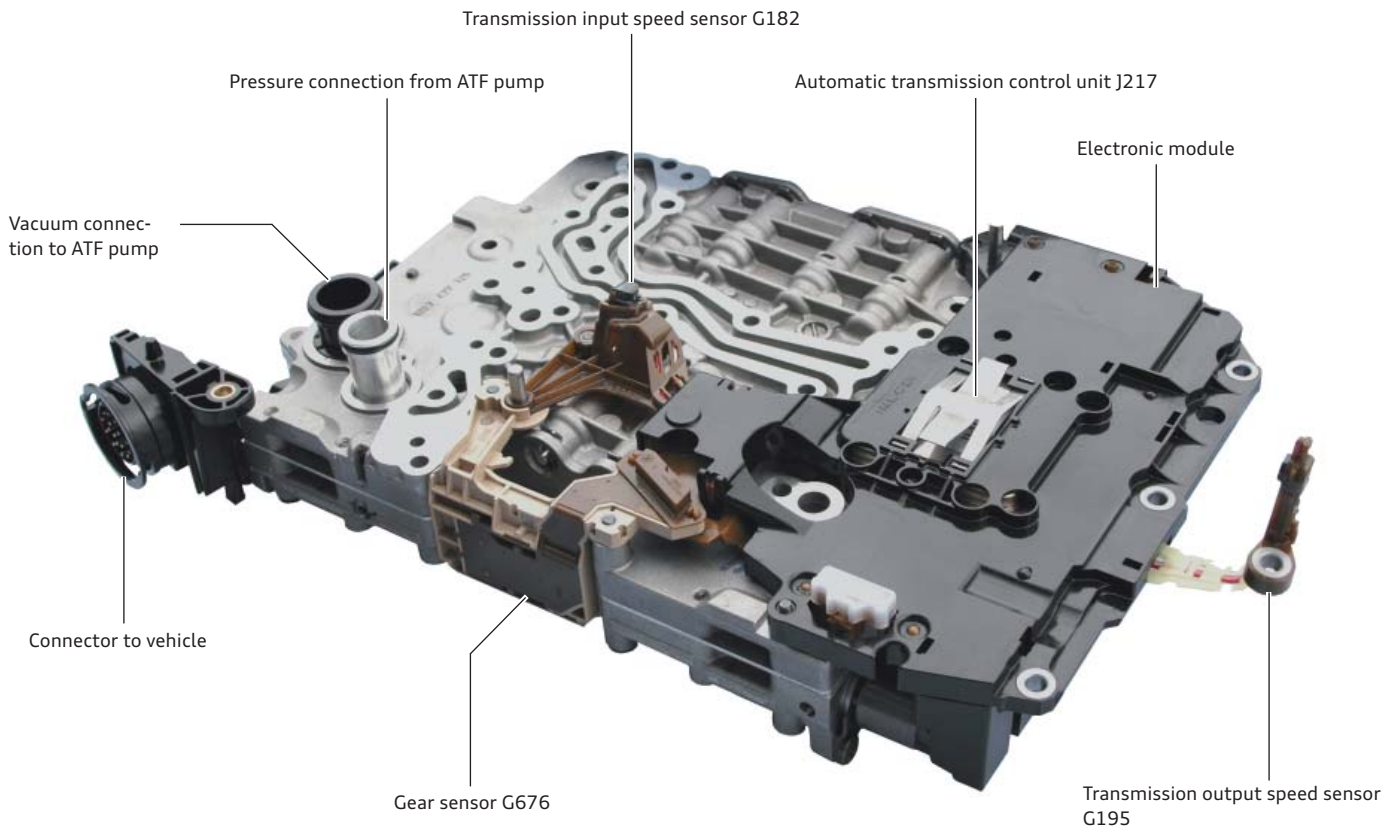
Changing from D to S or S to D is signalled to the transmission control unit by the selector lever sensor J587, see page 27.

## Gearshift actuator

The gearshift actuator is operated by the shift lever. In transmission modes R, D and S it controls the hydraulic pressure to the valves and depressurisation in transmission modes N and P.



## View from above



603\_099



### Note

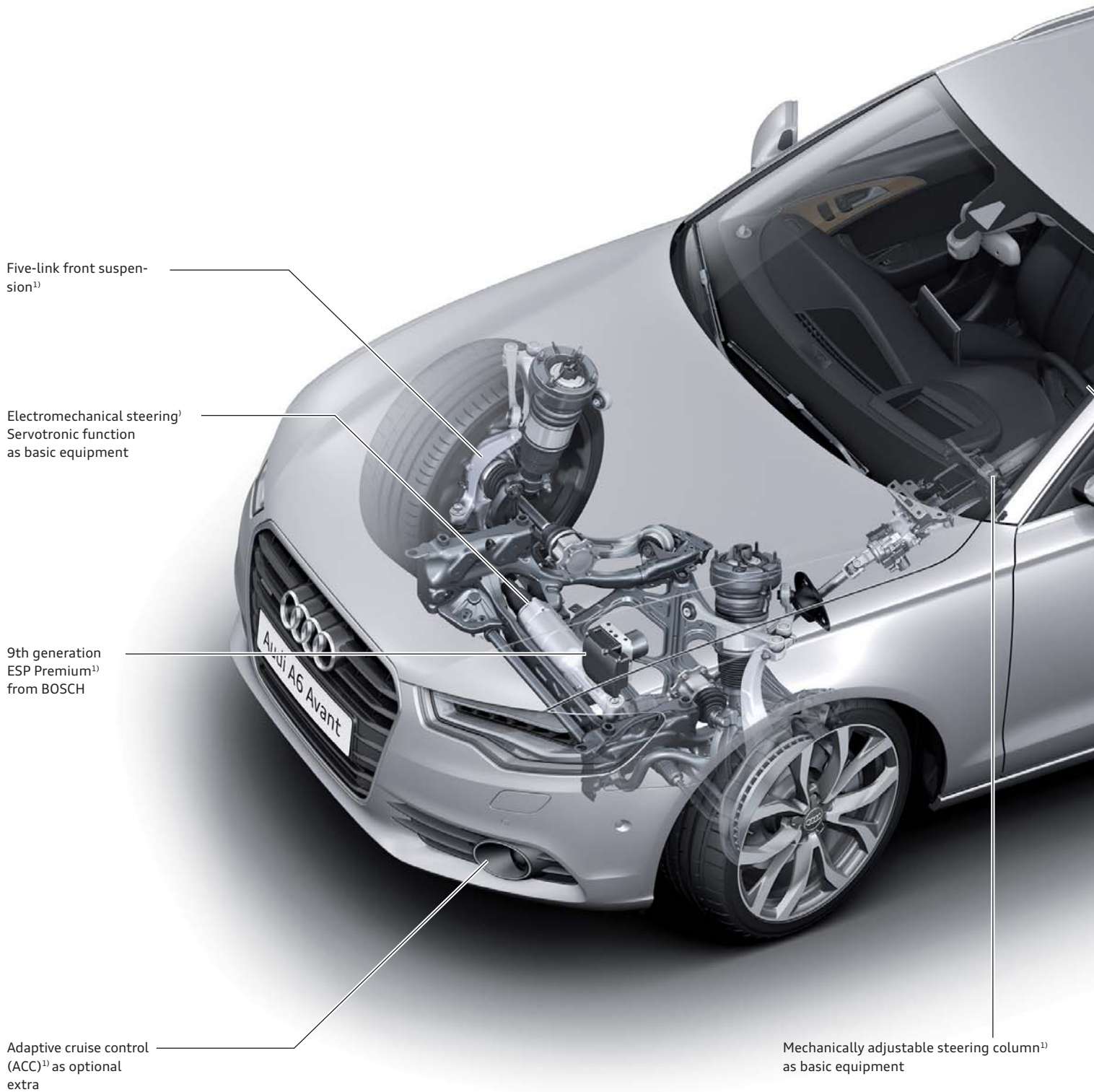
When fitting the mechatronic unit, it is essential to ensure that the shift lever engages properly in the slots of the sliding block and the gearshift actuator, see Figure 603\_098.

# Chassis

## Overview

The Audi A6 Avant '12 suspension and steering is essentially the same as on the A6 saloon, see also Self-study Programme 486 "Audi A6 '11". That also applies to the suspension variations and their trim settings.

Adaptive air suspension is also offered as an option on the Audi A6 Avant '12. The procedure for wheel alignment testing and adjustment and the adjustment points provided for doing so are the same as on the Audi A4 '08, A7 Sportback and A8 '10.



Five-link front suspension<sup>1)</sup>

Electromechanical steering<sup>1)</sup>  
Servotronic function  
as basic equipment

9th generation  
ESP Premium<sup>1)</sup>  
from BOSCH

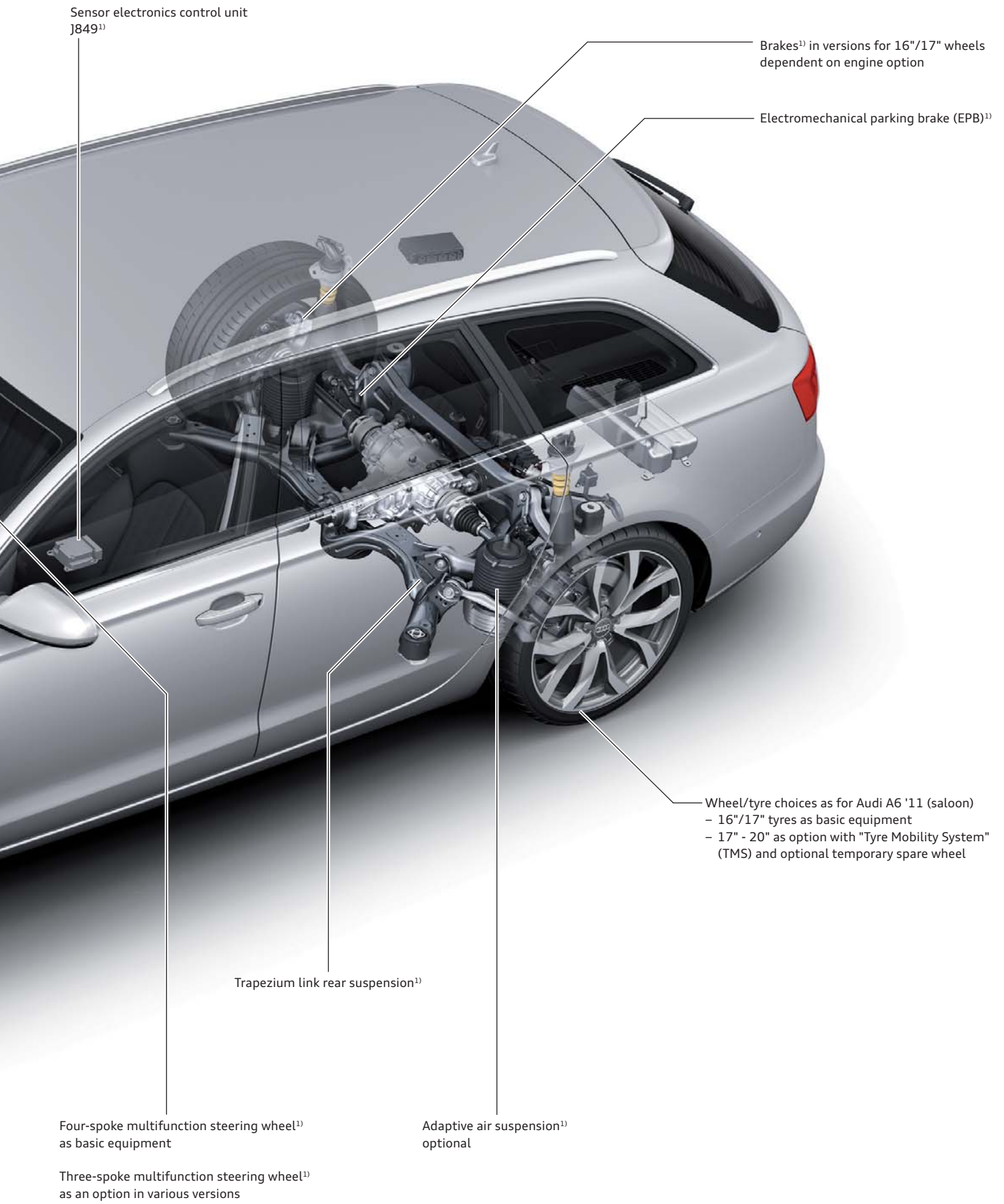
Adaptive cruise control  
(ACC)<sup>1)</sup> as optional  
extra

Mechanically adjustable steering column<sup>1)</sup>  
as basic equipment

Electrically adjustable steering column<sup>1)</sup>  
as an option

Dynamic steering<sup>1)</sup>  
as an option

<sup>1)</sup> Design and function same as fitted on Audi A6 '11 (saloon) and A7 Sportback.



Sensor electronics control unit J849<sup>1)</sup>

Brakes<sup>1)</sup> in versions for 16"/17" wheels dependent on engine option

Electromechanical parking brake (EPB)<sup>1)</sup>

Wheel/tyre choices as for Audi A6 '11 (saloon)  
- 16"/17" tyres as basic equipment  
- 17" - 20" as option with "Tyre Mobility System" (TMS) and optional temporary spare wheel

Trapezium link rear suspension<sup>1)</sup>

Four-spoke multifunction steering wheel<sup>1)</sup> as basic equipment

Adaptive air suspension<sup>1)</sup> optional

Three-spoke multifunction steering wheel<sup>1)</sup> as an option in various versions

# Electrical system

## Control units

The A6 Avant '12 goes into series production in autumn 2011 as a further model in the C7 series. The electrical system within the C7 series is identical, i.e. information about it can be found in Self-study Programmes 481, 482, 483 and 486. Differences from the A7 Sportback and the A6 '11 are described in this SSP.

The Audi A6 Avant '12 introduces several control units that are also carried over to the A7 Sportback and A6 '11 models. Those control units are listed below with a short description. For more information on the individual control units, please refer to the relevant sections/relevant SSPs.

### Tailgate control unit J938

Summary	
<b>Designation</b>	Tailgate control unit J938
<b>Installation position</b>	In rear bumper trim
<b>Tasks</b>	Analysing capacitive sensor signals Implementing the virtual pedal function and communicating with the central comfort/convenience systems control unit J393
<b>Bus device</b>	LIN slave of central control unit for comfort/convenience systems, J393
<b>Diagnostic address</b>	None. Readings and diagnosis via central comfort/convenience systems control unit J393
<b>Detailed information</b>	In this SSP starting on page 36.



603\_106

### Structural vibration control unit J869

Summary	
<b>Designation</b>	Structural vibration control unit J869
<b>Installation position</b>	In the cowl panel
<b>Tasks</b>	Generating engine noise in vehicle interior using structural vibration actuator R214
<b>Bus device</b>	Bus device on Powertrain CAN
<b>Diagnostic address</b>	A9
<b>Detailed information</b>	In SSP 491 "Audi 1.4l TFSI Engine with Twin Turbochargers".

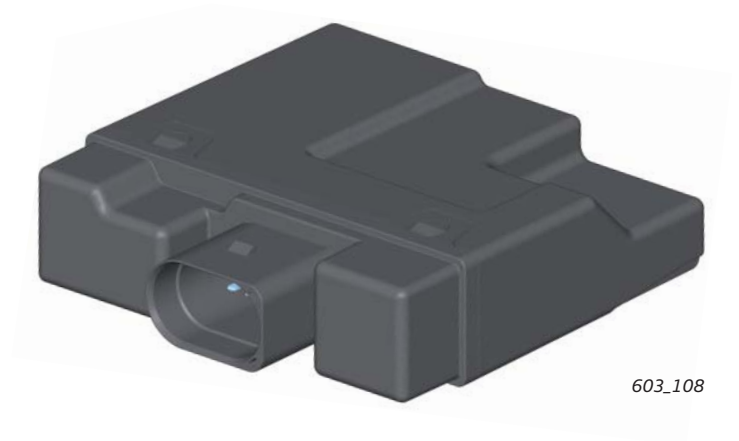


603\_107



## Engine noise control unit J943

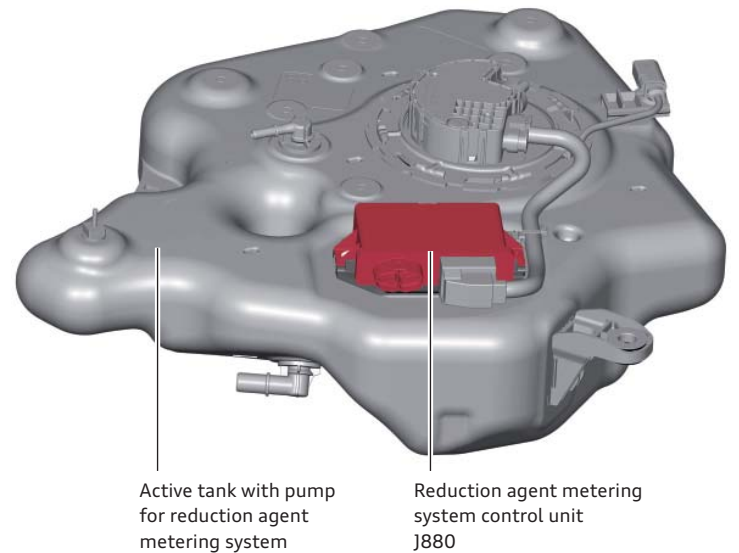
Summary	
<b>Designation</b>	Engine noise control unit J943
<b>Installation position</b>	At the back of the boot on the right
<b>Tasks</b>	Generating a sports-style sound from the exhaust system using actuators R257 and R258 on the rear silencers
<b>Bus device</b>	Bus device on Powertrain CAN
<b>Diagnostic address</b>	C0
<b>Detailed information</b>	In this SSP starting on page 21.



603\_108

## Reduction agent metering system control unit J880

Summary	
<b>Designation</b>	Reduction agent metering system control unit J880
<b>Installation position</b>	On the active tank
<b>Tasks</b>	Controlling reducing agent injection to minimise nitrogen oxide emissions
<b>Bus device</b>	Bus device on Powertrain CAN
<b>Diagnostic address</b>	AC
<b>Detailed information</b>	In SSP 428 "3.0 V6 TDI Engine with Ultra Low Emission System".



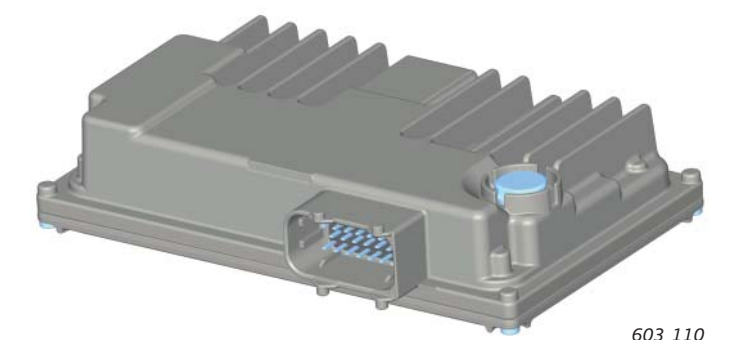
Active tank with pump for reduction agent metering system

Reduction agent metering system control unit J880

603\_109

## Electrohydraulic engine mounting control unit J247

Summary	
<b>Designation</b>	Electrohydraulic engine mounting control unit J247
<b>Installation position</b>	Under front right wing
<b>Tasks</b>	Controlling the active engine mountings to reduce engine vibration, especially during the cylinder shut-down phase
<b>Bus device</b>	Device on Extended CAN bus
<b>Diagnostic address</b>	BA
<b>Detailed information</b>	System first introduced on eight-cylinder engine; more detailed description of system in relevant SSP.



603\_110

# Virtual pedal

## Introduction

The Audi A6 Avant '12 is the first Audi model to offer the new "virtual pedal" function.

The virtual pedal enables automatic opening of the tailgate without having to touch a control on the vehicle or take the vehicle key out of your pocket. Automatic opening of the tailgate is initiated by a kicking action with your foot under the rear bumper.

The virtual pedal represents a substantial gain in user convenience, for example if someone wants to open the tailgate when their hands are full with shopping bags.

The A6 Avant '12 is automatically equipped with the virtual pedal if the following optional equipment is fitted:

- ▶ Advanced key and
- ▶ Electrically operated tailgate

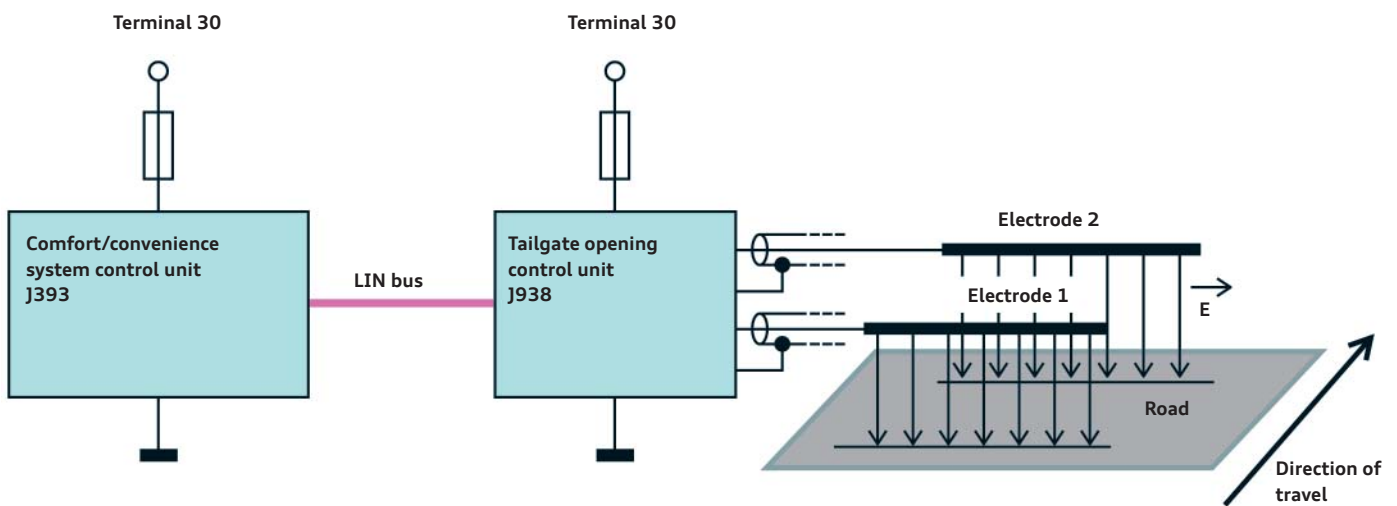
The optional Advanced Key is required to identify an authorised vehicle key after the kicking action is performed. The key must be within the area surrounding the tailgate.

The electrically operated tailgate option ensures that the tailgate opens fully after the kicking action is performed.

## Electrical design and components

To identify a kicking action, two electrodes are fitted in the rear bumper trim. They work as capacitive sensors.

The two electrodes are connected to the tailgate opening control unit J938. The control unit J938 is a LIN slave of the comfort/convenience systems control unit J393.



603\_064

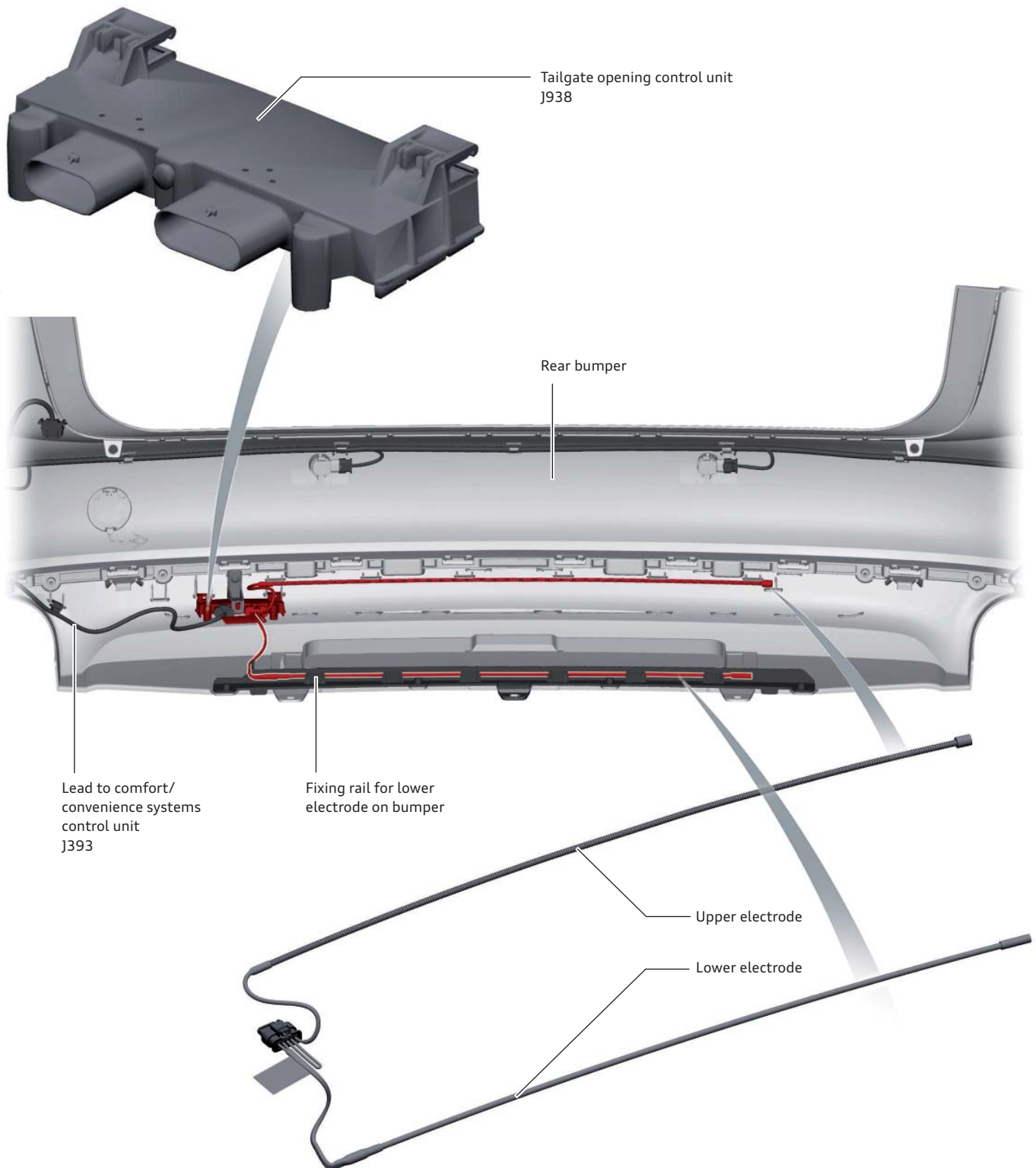


### Note

The "virtual pedal" function is also referred to as "gesture-controlled tailgate opening".

## Components and locations

The individual components for the "virtual pedal" system are located in the rear bumper. The tailgate opening control unit J938 is clipped into a holder that is screwed to the bumper.



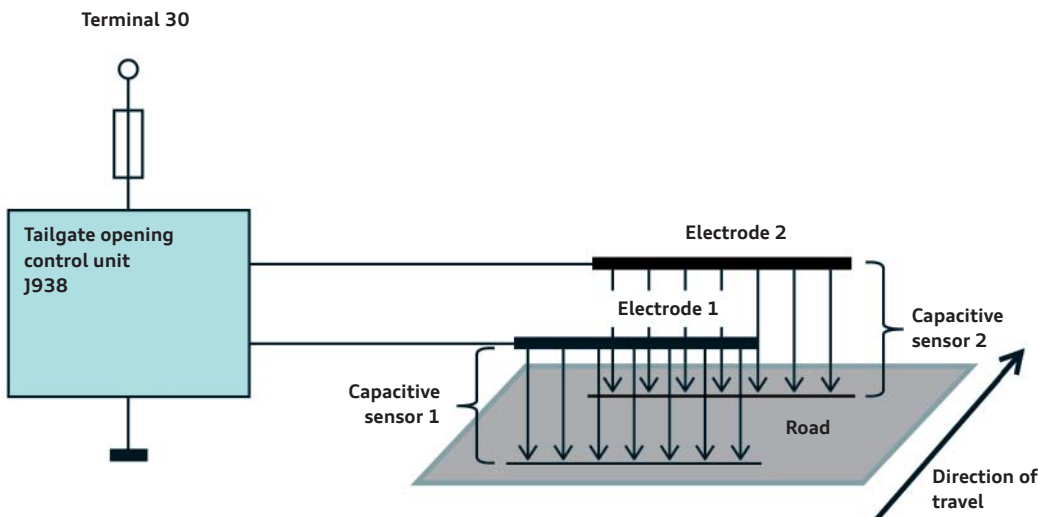
## Detection of kicking action using two electrodes

The kicking action off the foot is detected by two capacitive sensors the signals from which are read by the tailgate opening control unit J938. The tailgate opening control unit continuously measures the capacitance of the two sensors. A capacitive sensor is a capacitor, which is a component consisting of two capacitor plates. In this case, each of the sensor electrodes forms one capacitor plate. The ground on which the vehicle is standing forms the second capacitor plate. When the capacitor is charged, there is an electrical field between the two plates.

The capacitance of a capacitor depends substantially on the medium that is between the two capacitor plates. In electrical engineering, that medium is called the dielectric. In the case of the virtual pedal, the medium concerned is air. If someone moves their foot between the two capacitor plates, the medium between the plates changes and, consequently, the capacitance of the capacitor. That change in capacitance is detected by the tailgate opening control unit J938 by continuous measurement.

Someone moving their foot under the bumper firstly causes the capacitance of the first capacitive sensor (Electrode 1) to increase. Then the capacitance of the second capacitive sensor (Electrode 2) increases as well. As soon as the person withdraws his/her foot, the capacitance of the second sensor drops back to its original level. The same then happens with capacitive sensor 1.

The kicking action must be fit within a specified time frame. The time frame is used to distinguish the kicking action of a foot from other motion sequences. If the kicking action is performed too slowly or too quickly, the system will not initiate a scan for a vehicle key and the tailgate will not be opened.



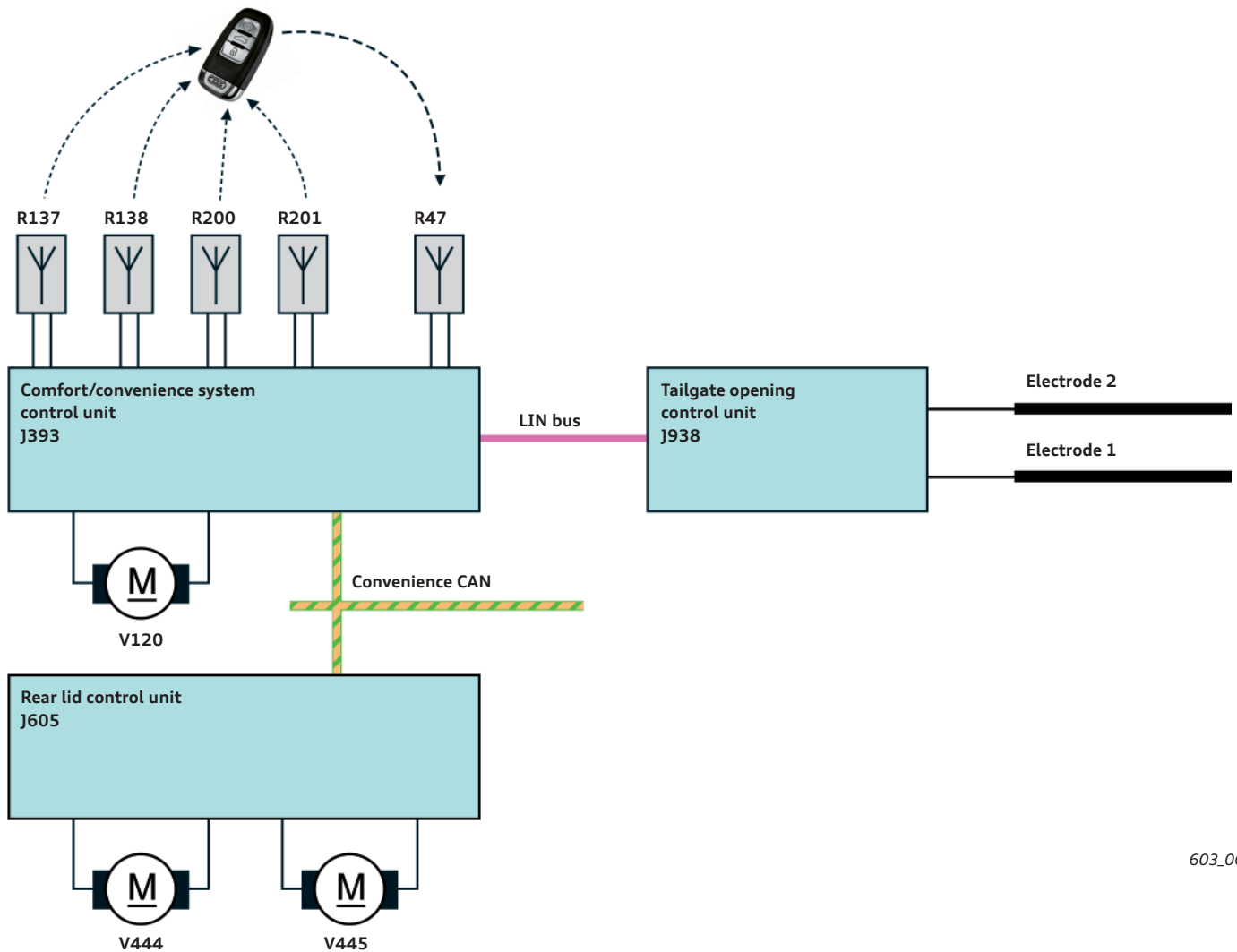
603\_065



### Note

The precondition for opening the tailgate by means of a kicking action is that the ignition is switched off.

## Tailgate opening sequence using the virtual pedal



603\_066

### Legend:

J393 Comfort/convenience system control unit

J605 Tailgate control unit

J938 Tailgate opening control unit

R47 Central locking aerial

R137 Luggage compartment aerial for access and start authorisation

R138 Interior aerial 1 for access and start authorisation

R200 Left aerial for access and start authorisation

R201 Right aerial for access and start authorisation

V120 Tailgate lock motor

V444 Tailgate motor 1

V445 Tailgate motor 2

The sequence is described for an Audi A6 Avant '12. The vehicle's ignition is switched off and the tailgate is closed.

1. A kicking action is performed below the rear bumper.
2. The tailgate opening control unit J938 detects the kicking action by means of its two electrodes and sends the information to the comfort/convenience systems control unit J393.
3. The comfort/convenience systems control unit starts a key scan using its keyless aerials.
4. The vehicle key receives the signals from the various aerials and sends a message to the comfort/convenience systems control unit J393.
5. Control unit J393 receives the message via the central locking aerial R47.
6. Control unit J393 analyses the message and detects that there is an authorised key in the vicinity of the vehicle rear.
7. Control unit J393 operates the motor V120 for unlocking and opening the tailgate.
8. Control unit J393 sends a CAN message instructing the tailgate control unit J605 to open the tailgate.
9. Control unit J605 operates its two electric motors V444 and V445 and opens the tailgate.

## Exterior lighting

### Headlight

On the Audi A6 Avant '12, the same headlight options are offered as on the Audi A6 '11.

- ▶ Halogen headlights
- ▶ Bi-xenon headlights
- ▶ LED headlights

Information on the headlights, the light functions and headlight beam height adjustment can be found in SSP 486, Audi A6 '11.



603\_073

### Tail lights

The tail light clusters on the Audi A6 Avant '12 basically come in two versions.

- ▶ Basic tail light cluster
- ▶ LED tail light cluster

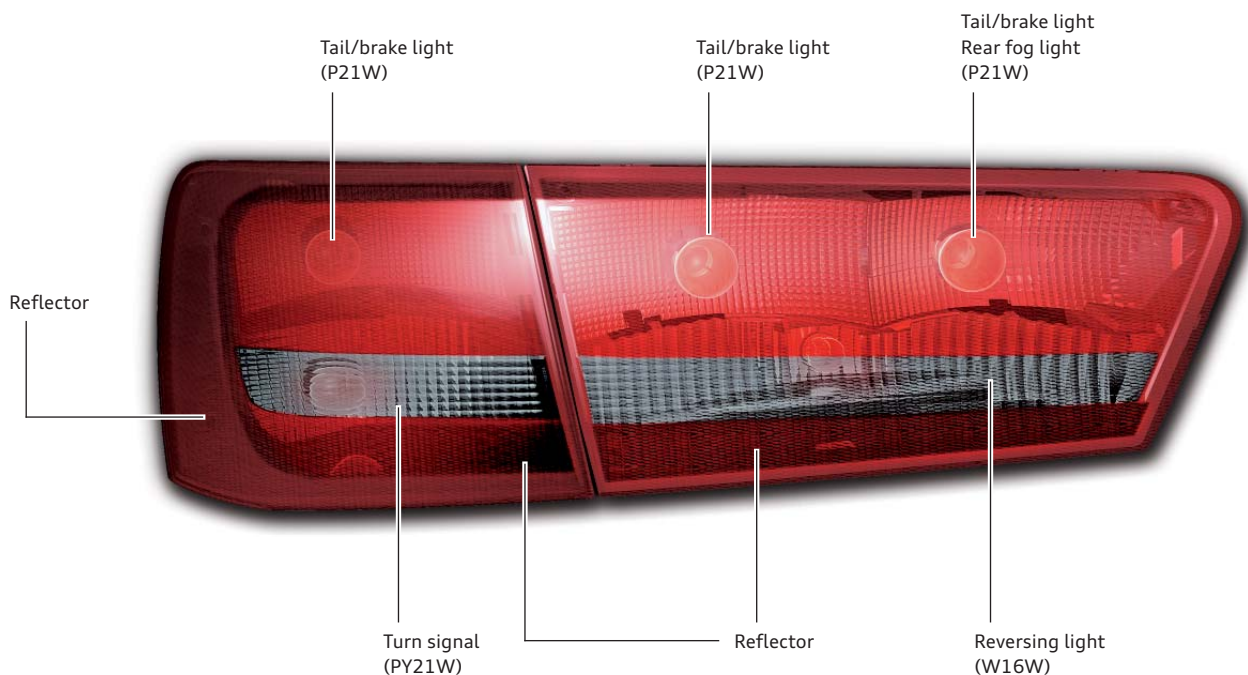
They are made up of two parts on each side of the vehicle. One half of the light cluster is incorporated in the side panel and the other half in the tailgate.

#### Basic tail light cluster

The three 21-watt bulbs in the top section of the tail light clusters are used for the tail lights and the brake lights on the Audi A6 Avant '12.

That distinguishes the A6 Avant '12 from the A6 '11 on which only one 21-watt bulb (in the side-panel light) was used for the brake light.

When the rear fog light is on, the centre bulb on the Audi A6 Avant '12 is only used for the tail light function.

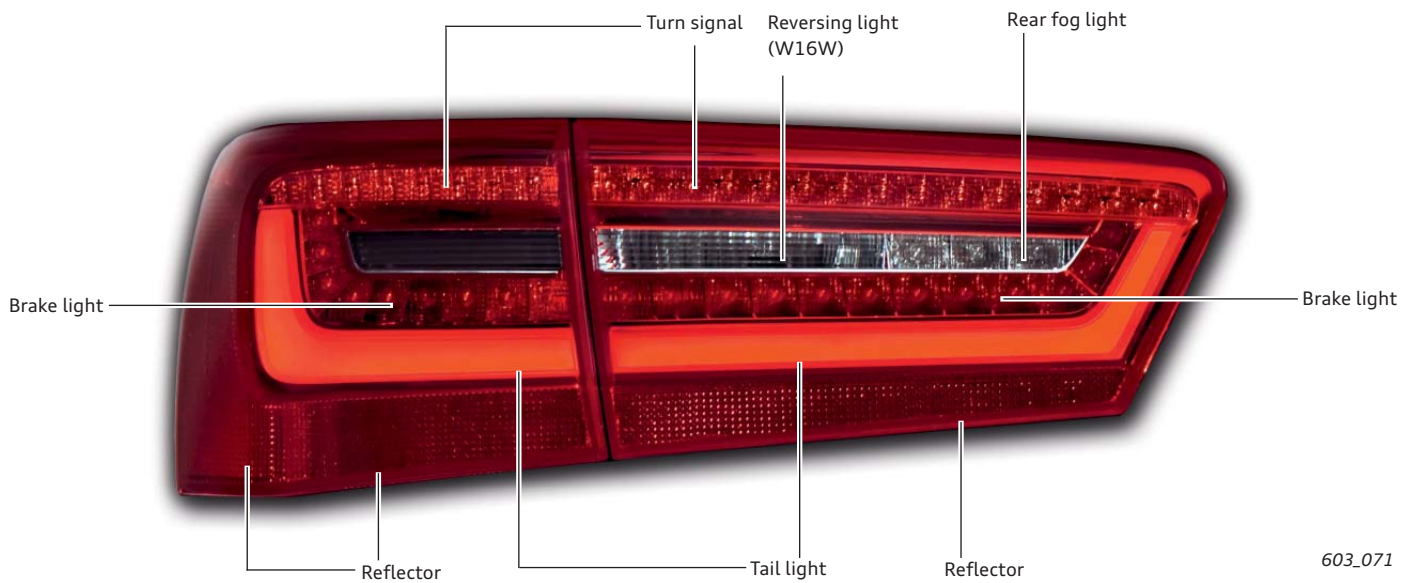


603\_072

## LED tail light cluster

The LED taillight clusters on the A6 Avant '12 are very similar to those on the A6 '11. All functions are implemented by means of LED technology. The only exception is the reversing light (one 16-watt bulb on each side of the vehicle). On the A6 Avant '12, those 16-watt bulbs are housed in the tailgate lights. By comparison: On the A6 '11, the reversing light and the rear fog light comprise one bulb each on each side of the vehicle and the reversing light is housed in the side panel lights.

The tail light clusters are operated by the central comfort/convenience systems control unit J393. LEDs or electronics of the tail lights cannot be replaced. Only the 16-watt bulbs can be replaced.



603\_071

## High-level brake light

The third brake light is integrated in the rear spoiler, assists brake light function by means of 18 LEDs and is controlled by the central comfort/convenience systems control unit J393. Individual components of the third brake light cannot be replaced. If it fails, the item must be replaced as a complete unit, which requires removal of the rear spoiler.



603\_074

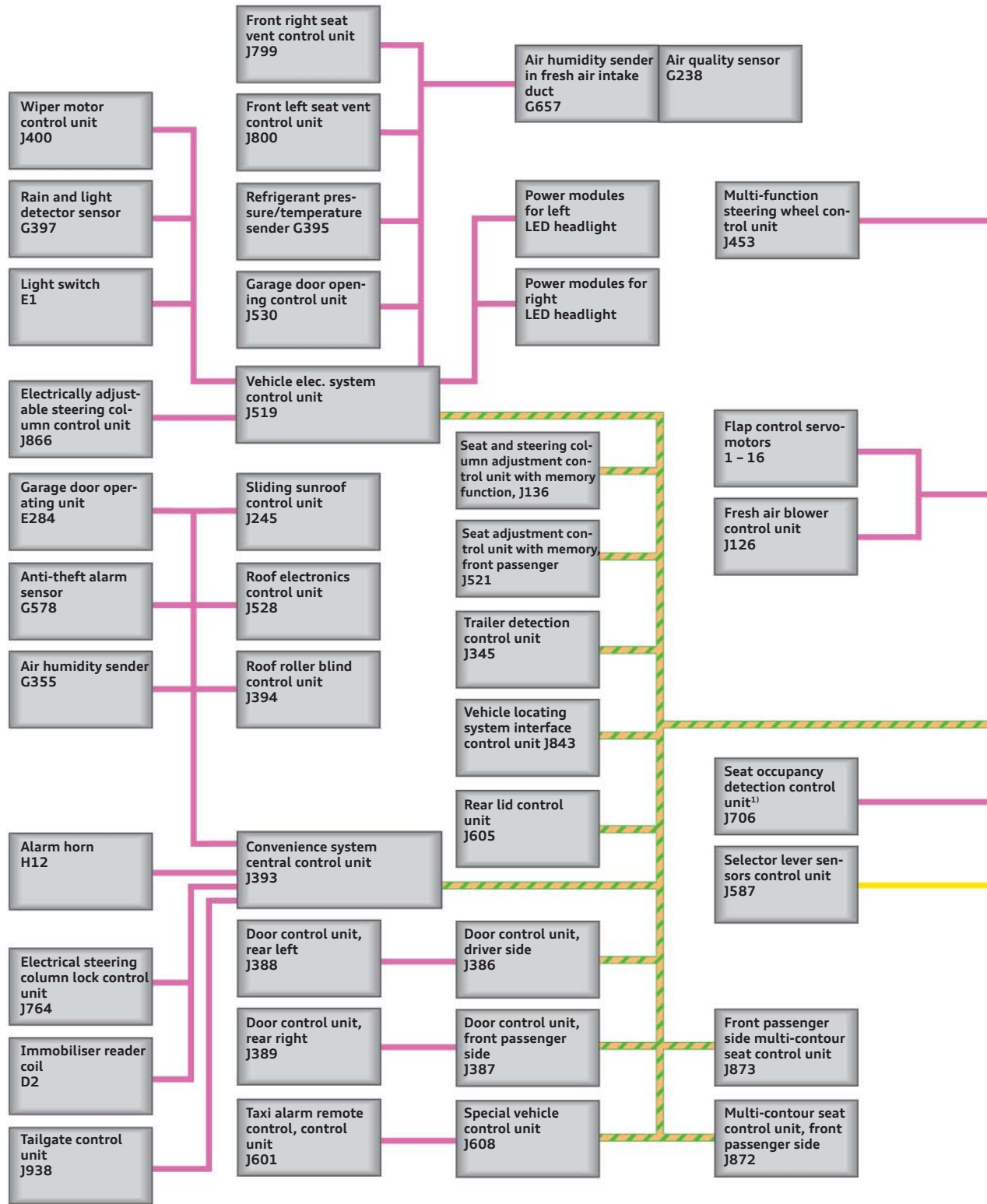
## Number plate light

With the launch of the A6 Avant '12, the number plate lights with 5-watt bulbs have been discontinued and replaced by a number plate light that uses LED technology. It is now fitted on all C7 series models regardless of tail-light version. The two number plate lights are clipped into the tailgate panel, each have two LEDs, and, like the taillights, are operated by the central comfort/convenience systems control unit J393.



603\_075

# Topology



## Legend:

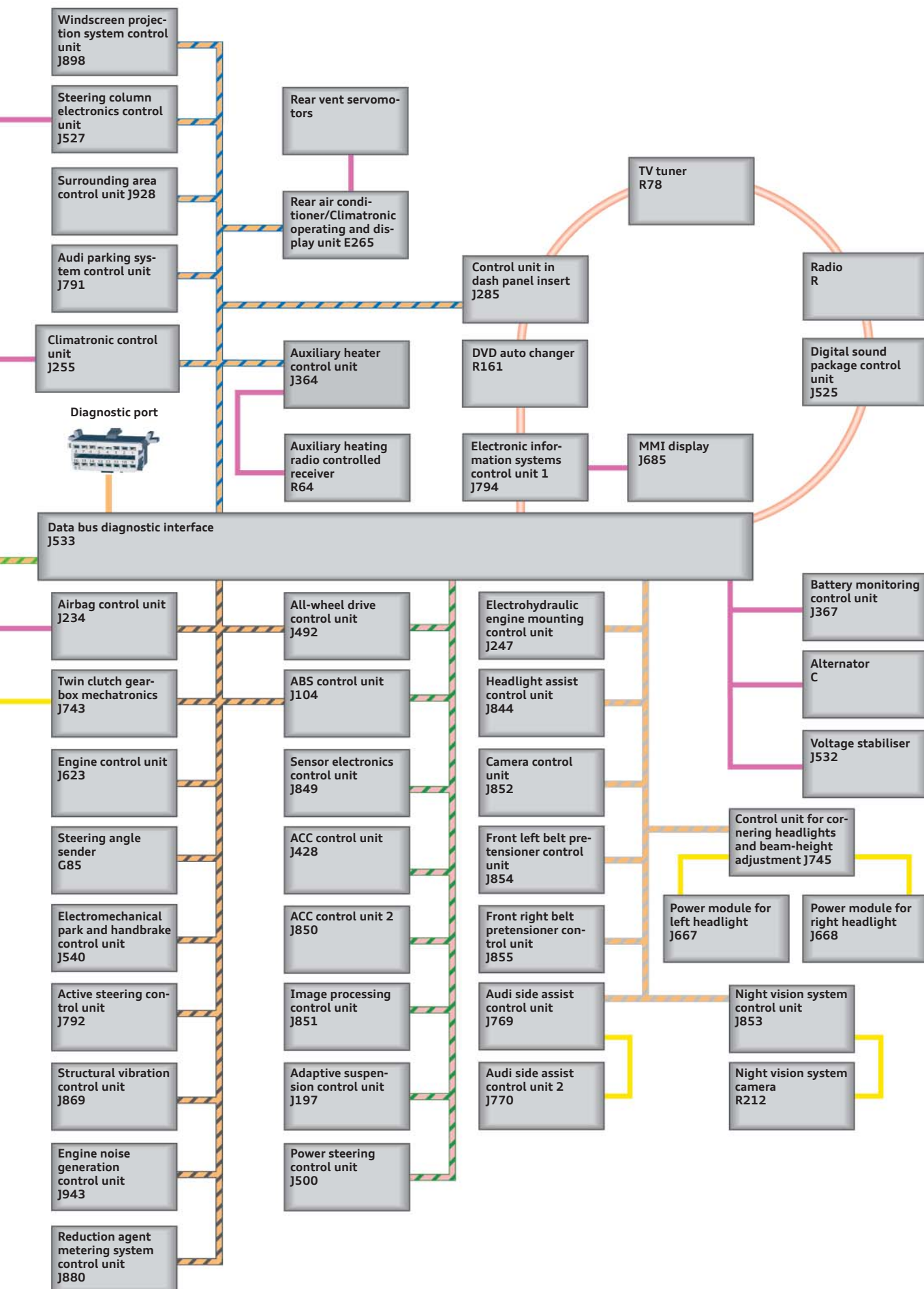
- Powertrain CAN
- Convenience CAN
- Extended CAN bus

- Display and operation CAN
- Diagnostics CAN
- FlexRay

- MOST bus
- LIN bus
- Sub-bus systems

<sup>1)</sup> Only specific markets





# Air conditioning

## Overview

The air conditioning systems on the Audi A6 Avant '12 heat, cool and dehumidify the air in the vehicle interior. They are based on the air conditioning systems on the Audi A6 '11.

### Automatic climate control



603\_082

#### Equipment and technical details of automatic climate control

- ▶ Two climate control zones
- ▶ Key recognition for fan setting and air distribution
- ▶ Automatic mode
- ▶ Manual air recirculation mode
- ▶ Rear window heater
- ▶ Seat heating (option)
- ▶ A/C modes

### A/C modes

The power of the air flow can be set to gentle/"eco", "medium" and "intensive". The "eco" setting sets the automatic climate control to an economy-orientated mode. In efficiency driving mode, the A/C mode "eco" is automatically selected.

However, it is possible to manually deselect "eco" mode when efficiency mode is active. For example, the customer can switch to A/C mode "medium". When doing so, all other efficiency settings remain active.

### efficiency mode

On the Audi A6 Avant '12, the customer can select efficiency mode via Audi drive select on the MMI. That sets the air conditioning system to an operating mode optimised for economical fuel consumption and the A/C mode "eco" is automatically activated. When A/C mode "eco" is activated, the air conditioning system switches to a range optimised for low-energy consumption within temperature thresholds that are acceptable for the vehicle occupants.

The Audi A6 Avant '12 is offered with two different air conditioning systems – automatic climate control and enhanced automatic climate control.

### Enhanced automatic climate control



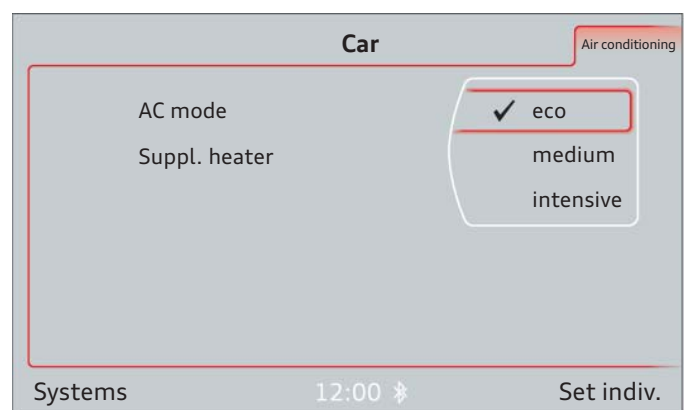
603\_083



603\_084

#### Equipment and technical details of enhanced automatic climate control

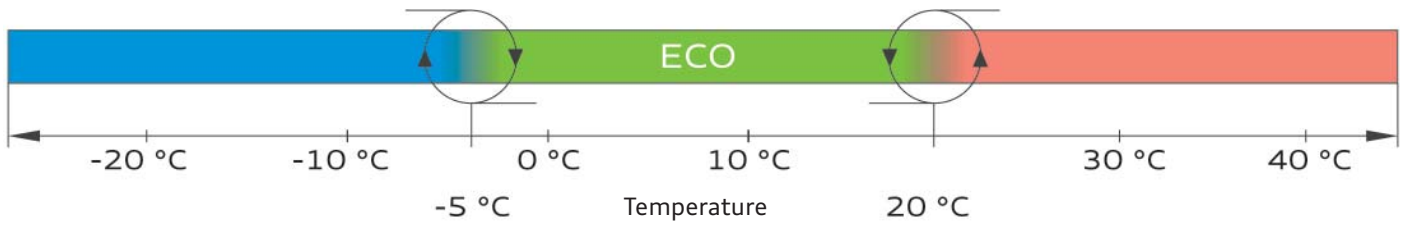
- ▶ Four climate control zones
- ▶ Two A/C control panels
- ▶ Full key recognition
- ▶ Automatic mode
- ▶ Automatic air recirculation
- ▶ Rear window heater
- ▶ Seat heating with three settings (option)
- ▶ Seat ventilation with three settings (option)
- ▶ A/C modes
- ▶ Residual heat function
- ▶ Synchronisation of all four climate control zones



603\_085

The air conditioning system operates at reduced output. Within the temperature limits of approx. -5 °C to +20 °C, the system attempts to achieve the interior temperature desired by the vehicle occupant without resorting to the supplementary heater or with the supplementary heater at reduced output, or as the case may be, at reduced compressor output or with the compressor switched off altogether.

## Effects of AC settings when efficiency mode is activated



Standard settings at low temperatures	A/C mode "eco"	Standard settings at high temperatures
<ul style="list-style-type: none"> <li>▶ Supplementary heater activated</li> <li>▶ Compressor inactive</li> <li>▶ Stop &amp; Go system has limitations due to air conditioning system</li> </ul>	<ul style="list-style-type: none"> <li>▶ Supplementary heater may be inactive</li> <li>▶ Compressor may be inactive</li> <li>▶ Stop &amp; Go system has more extensive limitations due to air conditioning system (longer stop phases)</li> </ul>	<ul style="list-style-type: none"> <li>▶ Supplementary heater deactivated</li> <li>▶ Compressor active</li> <li>▶ Stop &amp; Go system has limitations due to air conditioning system</li> </ul>

## Auxiliary heater and ventilation

The auxiliary heater/ventilation heats and ventilates the vehicle interior and can be switched on when the engine is switched off as well as when the vehicle is being driven. The auxiliary heater is made by Eberspächer and is based on the Eberspächer Hydronic II model.

The same auxiliary heater is used on various Audi models such as the Audi A8 '10 and the B8 series (e.g. Audi A4 '08).

## Setting options

### Option 1: Switching on/off immediately

The auxiliary heater/ventilation can be switched on/off immediately. The vehicle switches the auxiliary heater or ventilation on depending on the ambient temperature and the temperature setting.

### Option 2: Setting the timer

The remote control can be used to set a timer and so program a time by which the vehicle is to have reached the desired temperature. The remote control can only be used to program Timer 1. The system decides when to switch on the auxiliary heater or ventilation based on the set temperature and the ambient temperature. Three different timers can be activated via the MMI.

## Fault messages

In the event of a fault, various fault symbols may be displayed when the remote control is switched on.

Symbol	Meaning
	There is a system fault on the auxiliary heater. The fault can be localised and rectified by an Audi service agent.
	The auxiliary heater cannot be switched on because there is insufficient fuel.
	The auxiliary heater cannot be switched on because the charge level of the vehicle battery is too low.
	The vehicle is outside the range of the remote control.



603\_081



### Note

Despite the auxiliary heaters being identical, a remote control for an Audi A6 Avant '12 cannot be taught to work with an Audi A4 '08 auxiliary heater. Nor is the reverse possible.

# Infotainment

## Overview of versions

There is a wide choice of innovative multimedia solutions available on the Audi A6 Avant '12. Buyers can choose between two radio systems and two navigation systems.

From a technical viewpoint, two information and entertainment systems are once again used on the Audi A6 Avant '12: The Radio Media Center (RMC) and the MMI 3rd Generation plus (MMI 3G Plus). The MMI systems radio, radio plus and navigation are based on the Radio Media Center (RMC) basic information/entertainment system. The MMI Navigation plus is part of the MMI 3G plus, which first appeared on the Audi A8 '10.

The following table shows the main equipment features and optional equipment.

### MMI Radio (Europe only)



### MMI Radio plus



#### Basic equipment

6.5" TFT colour display with 400 x 240 pixels	6.5" TFT colour display
Remote control panel with 6 station keys	Remote control panel
	Driver information system
AM/FM radio with phase diversity	AM/FM radio with phase diversity
	Digital satellite radio (Canada only)
TP memo (while driving)	TP memo (while driving)
CD drive (MP3, WMA, AAC)	CD drive (MP3, WMA, AAC)
	Two SD card readers
	AUX In (not applicable)
Basic sound system (4 x 20 watts)	Audi sound system (4 x 20 watts)
	Bluetooth interface
	Speech dialogue system

#### Options

	Universal mobile phone interface
	Audi music interface
	Digital radio (DAB/DAB+) (optional)
	CD changer (MP3)
	BOSE Surround Sound System
	Driver information system (optional)
	Provision for Rear Seat Entertainment



#### Reference

More information on the MMI Navigation plus can be found in the Self-study Programmes 456 "Audi A8 '10" and 484 "Audi A7 Sportback Passenger Safety, Information, Entertainment and Climate Control".



#### Note

In countries in which Bluetooth is not approved, there are no functions that use it available on Audi vehicles.

## MMI Navigation

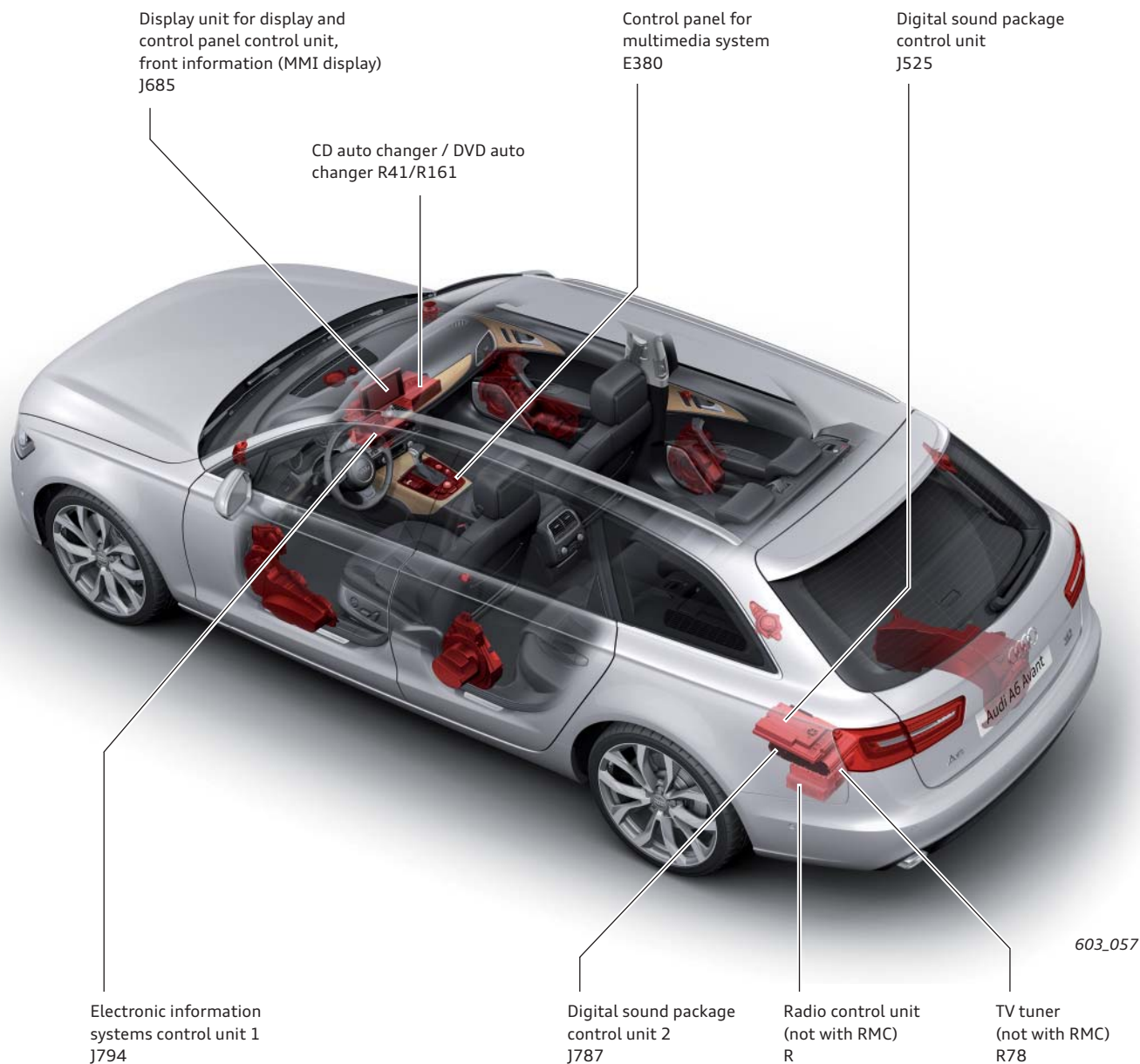
## MMI Navigation plus



Display with 400 x 240 pixels	6.5" TFT colour display with 400 x 240 pixels	8.0" TFT colour display with 800 x 480 pixels
Control panel with 6 station keys	Remote control panel with 6 station keys	MMI touch
Driver information system with monochrome screen	Driver information system with monochrome screen	Driver information system with 7" colour screen in instrument cluster
AM/FM radio with phase diversity	2D navigation system with SD card	3D hard drive navigation system
AM/FM radio with phase diversity	AM/FM radio with phase diversity	AM/FM radio with phase diversity and background tuner
Digital satellite radio SDARS (available in USA and Canada only)	Digital satellite radio SDARS (available in USA and Canada only)	Digital satellite radio SDARS (available in USA and Canada only)
TP memo (while driving)	TP memo (while driving)	TP memo
CD drive (MP3, WMA, AAC)	CD drive (MP3, WMA, AAC)	DVD drive (audio/video, MP3, AAC, WMA, MPEG4)
Two SD card readers	Two SD card readers	Two SD card readers
Jukebox with approx. 20 GB of memory	Jukebox with approx. 20 GB of memory	Jukebox with approx. 20 GB of memory
AUX In (not applicable to AMI)	AUX In (not applicable to AMI)	AUX In (not applicable to AMI)
Audi sound system (180 watts)	Audi sound system (180 watts)	Audi sound system (180 watts)
Bluetooth interface (9ZX)	Bluetooth interface (9ZX)	Bluetooth interface (9ZX)
Speech dialogue system	Speech dialogue system	Premium speech dialogue system
Universal mobile phone prewiring (9ZF)	Universal mobile phone prewiring (9ZF)	Universal mobile phone prewiring (9ZF)
Bluetooth car phone BTA (BTA online inc. online services and WLAN hotspot dependent on market)	Bluetooth car phone BTA (BTA online inc. online services and WLAN hotspot dependent on market)	Bluetooth car phone BTA (BTA online inc. online services and WLAN hotspot dependent on market)
Handset for BTA	Handset for BTA	Handset for BTA
Audi music interface	Audi music interface	Audi music interface
Digital radio (DAB/DAB+/DMB)	Digital radio (DAB/DAB+/DMB)	Digital radio (DAB/DAB+/DMB)
CD changer (MP3)	CD changer (MP3)	CD changer (MP3)
DVD auto changer	DVD auto changer	DVD auto changer
BOSE Surround Sound	BOSE Surround Sound	BOSE Surround Sound
Bang & Olufsen Advanced Sound System	Bang & Olufsen Advanced Sound System	Bang & Olufsen Advanced Sound System
Driver information system with 7" colour screen in instrument cluster	Driver information system with 7" colour screen in instrument cluster	Driver information system with 7" colour screen in instrument cluster
TV tuner	TV tuner	TV tuner
Provision for Rear Seat Entertainment (9WQ)	Provision for Rear Seat Entertainment (9WQ)	Provision for Rear Seat Entertainment (9WQ)

## Installation locations of the control units

The information/entertainment control units are fitted in various locations on the Audi A6 Avant '12. The following graphic shows all possible control units that can be fitted on the Audi A6 Avant '12 with MMI Navigation plus.



## Radio Media Center (RMC)

### MMI Radio (RMC)

The MMI radio on the Audi A6 Avant '12 is part of the Radio Media Center (RMC) information/entertainment platform. In design and function it is identical with the unit on the Audi A7 Sportback.

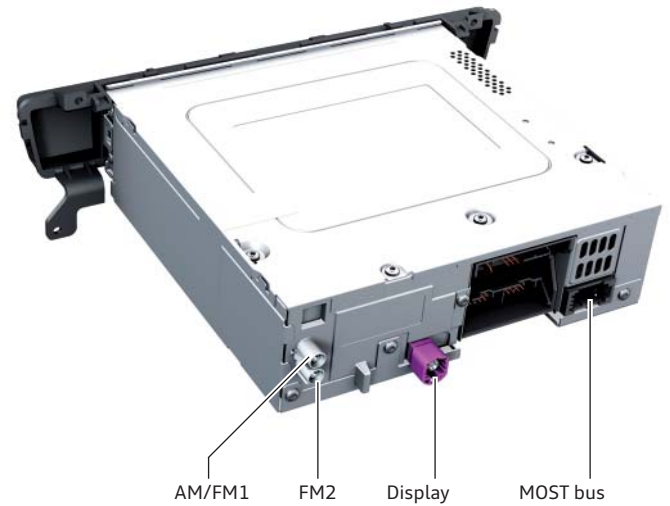
The MMI Radio on the Audi A6 Avant '12 has the following features:

- ▶ 6.5" colour screen with 400 x 240 pixels
- ▶ Offset control panel with six user-programmable station buttons
- ▶ A radio twin tuner with FM phase diversity and an AM single tuner for medium wave (MW) and long wave (LW) in Europe
- ▶ A single CD drive
- ▶ An integrated amplifier providing 4 x 20 watts
- ▶ Car menu



Front panel of J794 for MMI Radio

603\_018



Front panel of J794 for MMI Radio

603\_025

### MMI Radio plus (RMC)

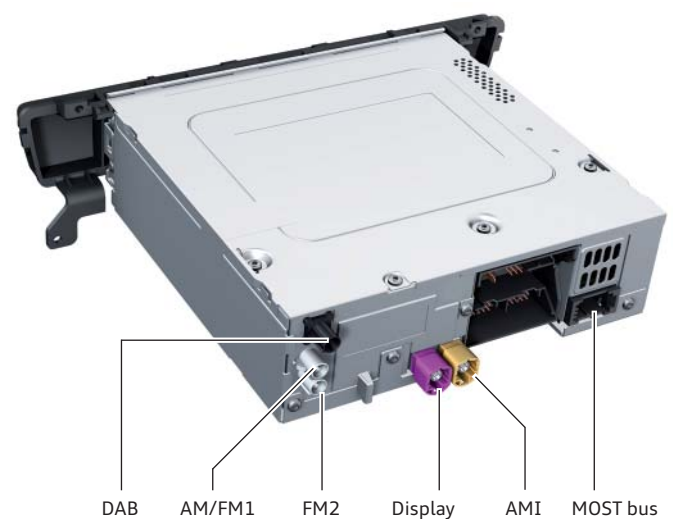
Compared to MMI Radio, MMI Radio plus has the following different and/or additional features:

- ▶ Two SD card readers (SDHC up to 32 GB)
- ▶ Integrated 6-channel amplifier for Audi Sound providing 180 watts
- ▶ Bluetooth interface for HFP and A2DP
- ▶ Speech dialogue system
- ▶ Driver information system with monochrome screen in instrument cluster
- ▶ Digital satellite radio (USA and Canada only)
- ▶ AUX-In on centre console
- ▶ Possibility for additional equipment such as DAB, etc.



Front panel of J794 for MMI Radio plus

603\_020



Back panel of J794 for MMI Radio plus

603\_026



#### Reference

More information on the Radio Media Center can be obtained from Self-study Programme 477 "Audi A1".

## MMI Navigation (RMC)

The information/entertainment system MMI Navigation offers the navigation function in addition to the MMI Radio functions. The navigation map data is stored on an SD card. For Europe, for example, it is an 8-GB SDHC card. Navigation is only possible with the map data SD card inserted.

The navigation system has a two-dimensional map display. It can also show the map in bird's-eye view. To do so, the setting must be changed to 3D map. Other highlights of the navigation system include manoeuvre lists and detailed intersection maps. The information is shown on the display using the split-screen method.

## Voice interactive system (RMC)

The voice interactive system supports various languages. In order to set the desired language a separate language CD was required in the past with the Radio Media Center. It had to be inserted in the electronic information systems control unit 1, J794, in order to upload the language data. To simplify that process, the current RMC electronic information systems control unit 1, J794, has a larger internal memory. It already has the languages for the relevant sales region stored on it. Changing the language now takes place automatically after the relevant MMI menu option is selected and applies to the display language and the voice interactive system.

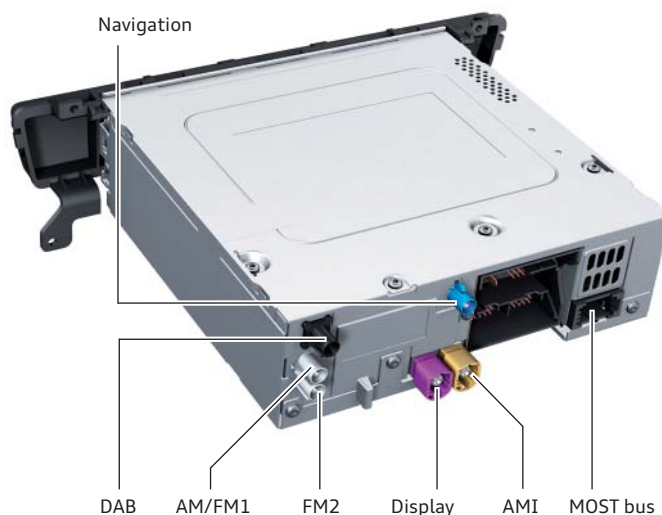
Different languages are stored according to sales region. The following languages are supported in the North America region, for example:

- ▶ English
- ▶ French
- ▶ Spanish



Front panel of J794 for MMI Navigation

603\_020



Back panel of J794 for MMI Navigation

603\_027



### Note

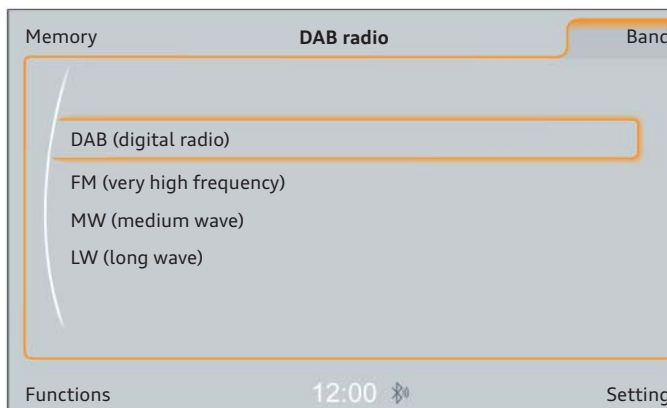
The MMI must be set to the normal language for the country during the hand-over service.

## New features of RMC DAB radio tuner

The function "digital radio tuner" offered with RMC systems now supports the following standards:

- ▶ DAB
- ▶ DAB+
- ▶ DAB+DMB Audio (Digital Multimedia Broadcasting)

DAB+ and DMB Audio are extended versions of the DAB standard. These technologies enable the transmission of more radio stations with supplementary data (e.g. traffic information) due to greater audio compression compared with DAB. Therefore, DAB+ and DMB Audio enable more radio stations/station components within a channel (ensemble) and thus more efficient use of resources.



Menu option on RMC with DAB

603\_028



## MMI Navigation plus

The MMI Navigation plus is the same as the system on the Audi A8 '10 and Audi A7 Sportback. It is the MMI 3rd generation plus (MMI 3G Plus).

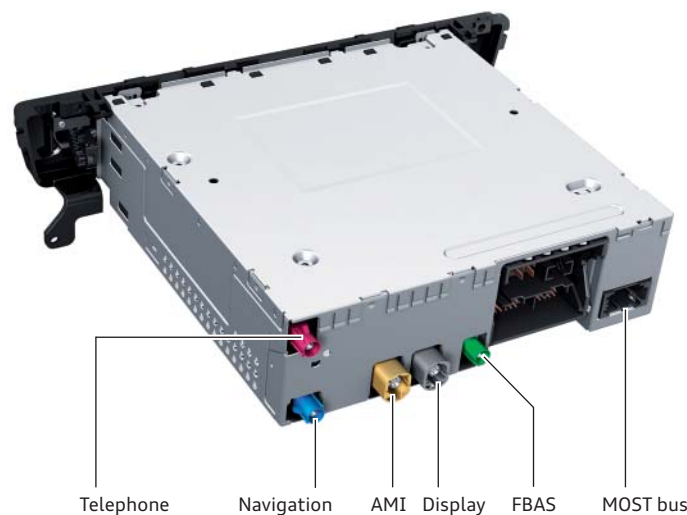
The system is distinguished by the following features:

- ▶ 60 GB hard drive with approx. 20 GB for Jukebox
- ▶ 3D navigation system with 3D city plans
- ▶ DVD drive
- ▶ Two SD card readers (SDHC cards up to 32 GB)
- ▶ Premium speech dialogue system
- ▶ Radio control unit with phase diversity
- ▶ Six-channel amplifier (integrated in radio control unit)
- ▶ 8-inch TFT screen with 800 x 480 pixels
- ▶ MMI touch
- ▶ Audi music interface (optional)
  - ▶ Bluetooth interface for
    - ▶ hands-free set
    - ▶ audio streaming
- ▶ Digital satellite radio tuner (USA and Canada only)



Front panel of J794 for MMI Navigation plus

603\_024



Back panel of J794 for MMI Navigation plus

603\_029

## New features of MMI Navigation plus with web-enabled Bluetooth car phone

### Audi online traffic information (in some parts of Europe)

With the MMI Navigation plus with the optional web-enabled Bluetooth car phone, not only does the navigation map show traffic information but on many roads the actual current traffic flow is also indicated. That makes computing the route and arrival time more reliable.

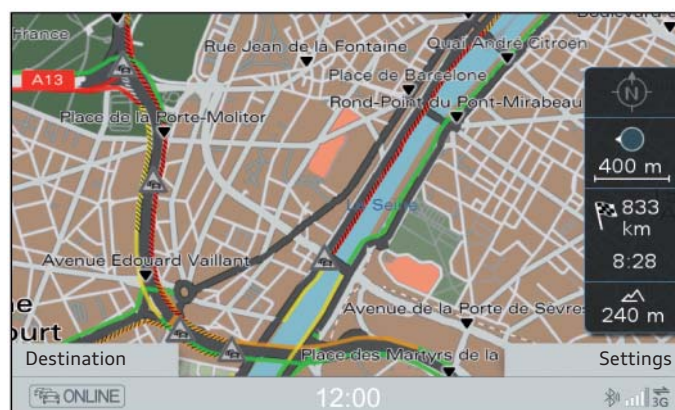
### Google online search using voice interactive system (some parts of Europe)

The voice interactive system of the MMI Navigation plus with web-enabled Bluetooth car phone has been extended by an additional input facility. Using the voice command "Online destinations" it is now possible to search for any destination without taking your hands off the steering wheel. This is an extension of the input facility for the existing online destination search that currently uses Google on the internet.

### Access to mobile phone address book when Bluetooth car phone is active

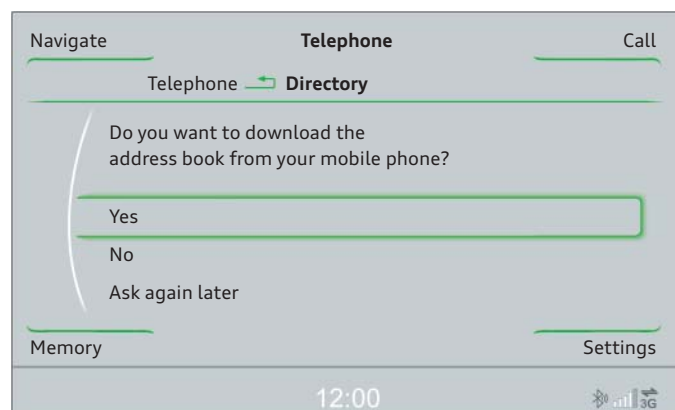
When using the Bluetooth car phone, the phone numbers from the SIM card inserted<sup>1)</sup> can still be used. A new addition is the ability to use the address book of a mobile phone connected via Bluetooth.

Thus the user can use all the contacts on his/her mobile phone without it having to support the SIM access profile.



Navigation display with Audi online traffic information

603\_030



Display for address book download

603\_031

<sup>1)</sup> In the SIM card slot of the electronic information systems control unit 1, J794

## Audi online traffic information (in some parts of Europe)

Getting to your destination quickly taking the shortest route possible and not using fuel unnecessarily – those are probably the most important criteria placed on a navigation system by any user. With the new **Audi online traffic information** function, Audi meets that demand better than ever.

In the past, traffic information was mainly communicated via radio stations, which involved technically related limitations regarding the transmission speed and the maximum number of bulletins. In addition, the immediacy and accuracy of the reports sometimes left something to be desired. Another disadvantage was that cross-border information was only available to a limited degree. The effect was that, for instance, the dynamic route guidance might direct the vehicle almost right up to the location of a traffic hold up before changing route. And that could mean a major detour. However, if the relevant information is available at the start of the journey, a more suitable route can be worked out from the outset.

With the introduction of **Audi online traffic information**, the driver has access to extremely up-to-date traffic reports which can also be supplemented by traffic flow data. In order to enable easy orientation for the driver, the electronic information systems control unit 1, J794, converts the information into coloured lines shown alongside the relevant roads on the map. When route guidance is active, that data is taken into account for route computation. For that purpose, a data connection to the server is established via the internal telephone module and the data transferred from the internet in encrypted form.

Where does the traffic flow data come from?

The data for calculating the traffic flow is generated from a large number of navigation devices and applications (mobile navigation devices, smartphones, etc.) that are in vehicles. Such devices cyclically transmit their current location and speed of travel. The transmission of such data is entirely anonymous – no personal data is sent. In addition, data from a variety of fleet management systems is included in the computations.

What other data is used?

In addition to the traffic flow data, reports and traffic bulletins from a large variety of public and private sources are used.



Navigation display with **Audi online traffic information**

603\_030



Cross-border display of traffic information

603\_046

Who produces that data?

The traffic data for **Audi online traffic information** is collated and prepared by INRIX. INRIX receives data from several million terminal devices for that purpose.

In order to provide every vehicle with the data relevant to route guidance, the reports are prepared individually for every vehicle and transmitted to it on the basis of location, route and destination.








### Note

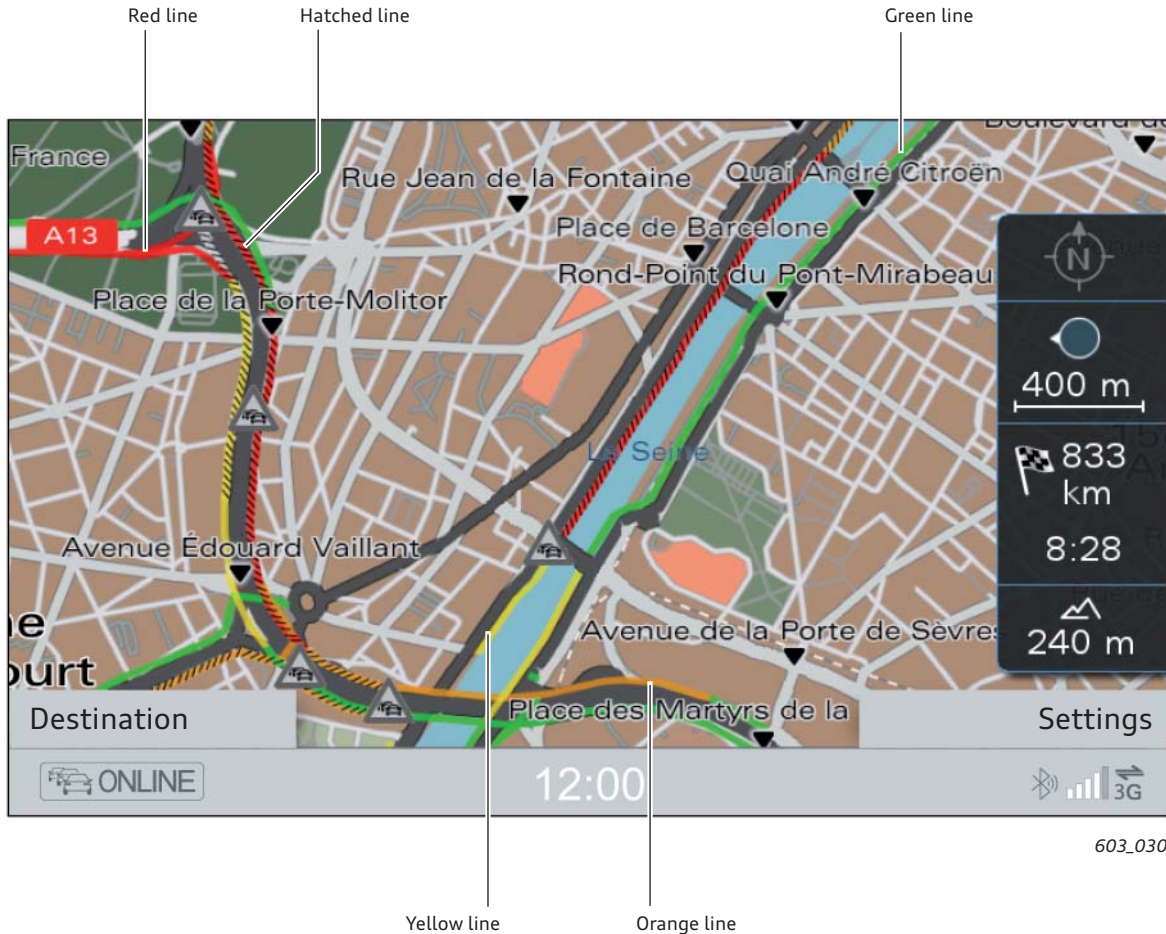
**Audi online traffic information** is automatically available if the optional equipment MMI Navigation plus and web-enabled Bluetooth car phone are fitted. On market launch of the Audi A6 Avant '12, the function will be available in Belgium, Germany, France, Italy, the Netherlands, Austria and Switzerland.

How is the data displayed in the vehicle?

The way in which the data is displayed is designed to distract the driver as little as possible. Therefore, a visual representation based on the use of four colours has been chosen. The colours have been chosen so that the driver can understand their meaning without studying the instruction manual.

If there is a traffic report available for a section of road, all the lines regardless of colour are hatched for the length of the section affected by the traffic incident.

Colour/ structure	Traffic flow and information
	Traffic flowing freely
	Heavy traffic
	Slow-moving traffic
	Stationary traffic
	Traffic report



603\_030

What data does the vehicle receive?

A vehicle that has activated **Audi online traffic information** receives data according to location. As it moves further away from a location, the data volume gradually decreases. Roughly, the data density is divided into three circles:

- ▶ Inner circle: all available data, regardless of road type
- ▶ Middle circle: all data relating to motorways and major roads
- ▶ Outer circle: only danger warnings and road closures

In addition, the following data is shown when route guidance is active:

- ▶ All available data along the route in the direction of travel and in the opposite direction
- ▶ All relevant data at the destination

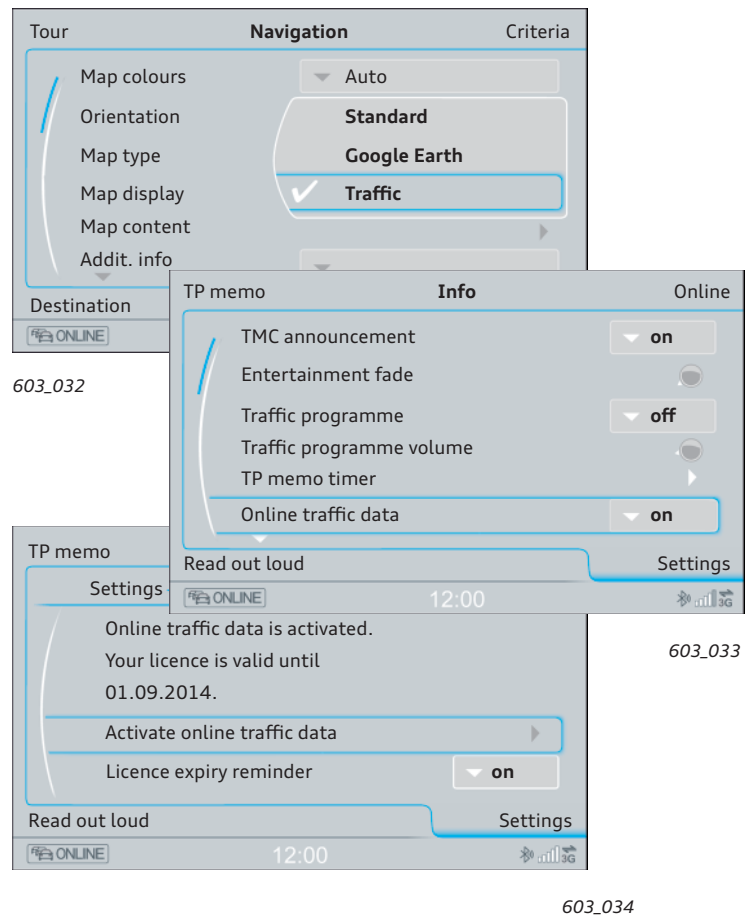
What data does the vehicle send?

The vehicle cyclically transmits its location and speed of travel data and its identification data. However, the data cannot be read from outside. Personal data is not stored.

When is the data displayed?

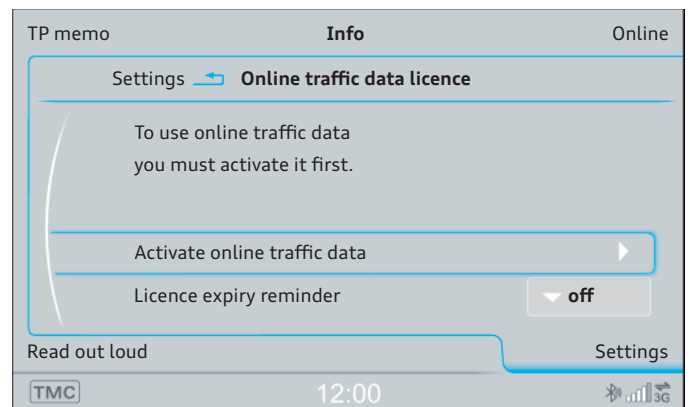
To display **Audi online traffic information**, the following conditions must be met:

- ▶ Bluetooth car phone active (SIM card in J794 or mobile phone connected via SAP)
- ▶ Data services configured (web-enabled SIM card)
- ▶ Map display set to "Traffic" on Navigation menu option Settings
- ▶ Online traffic data set to "on" on Info menu option Settings
- ▶ Licence activated under Online traffic data licence on Info menu option Settings



How is the licence fee collected?

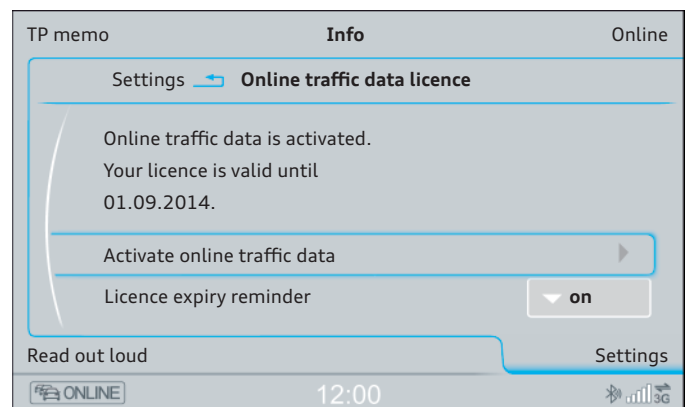
When customer buys a model with **Audi online traffic information**, the licence fee for the first three years is included in the purchase price. The licence period starts from the activation date on hand-over of the vehicle to the customer. The licence expiry date is shown under Online traffic data licence on the Info menu option Settings. If the user wishes to renew the licence, it can be purchased from Audi Service.



Display of licence activation menu

Is data protection guaranteed?

Data protection is guaranteed, of course. In the process of data communication, Audi does not receive any information about the location of the vehicle, and the provider, i.e. INRIX, does not receive any personal data relating to the vehicle. However, the data cannot be read from outside. Personal data is not stored.



Display of licence term

## Google online search using voice interactive system (Europe only)

The new function Google online search via voice interactive system enables user-defined text searching without taking your hands off the steering wheel. The function Online destinations currently provided by Google has been a permanent feature of the MMI Navigation plus with web-enabled Bluetooth car phone since the Audi A8 '10. It is now also controllable by voice command. For the Online destinations function, Google searches the internet for the places of interest desired by the user.

There are two different input options for selecting an online destination.

1. The user wishes to search for places near the present location, the destination or another location.

The user enters the voice command "Online destinations" and is given a choice of:

- ▶ Google nearby places search for present location
- ▶ Google nearby places search for destination
- ▶ Google nearby places for different location

The user then says the number of the desired option and, when prompted, the desired place of interest (e.g. "flower shop"). If the search is to be performed for a different location, then the name of the place must also be stated when prompted by the voice control system.

Online destinations function then searches for relevant places near to the current location with the aid of Google.

Afterwards, a choice of possible places is shown (see Figure 603\_038). In addition, the current distance (as the crow flies) to each place is shown.

Now the user is prompted by the voice control system to say the number of the desired place of interest.

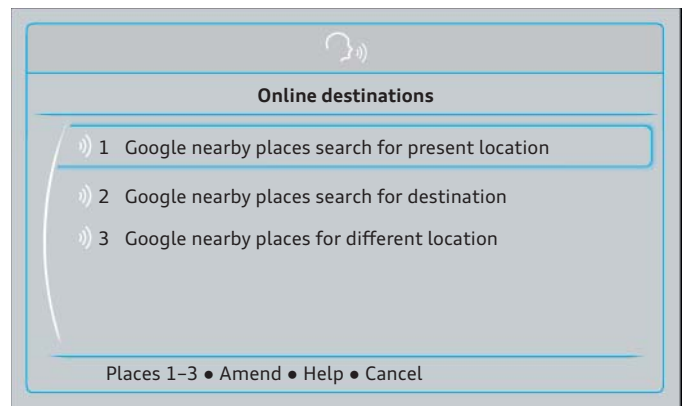
If none of places listed is suitable, more places can be shown by speaking the voice command "Next page".

The selected place of interest can then be adopted as a destination for the navigation system and route guidance to that location started immediately.

2. The user wishes to search directly for the present location.

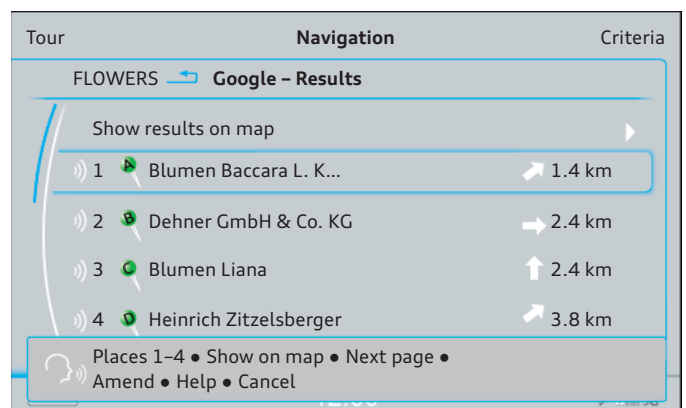
Exclusively for an online search for places of interest near the present location, the user can use the short voice command "Online destination" followed by the type of place to be searched for in the same sentence.

As an example, let us take a user wanting to buy roses for his wife. He must say the following all at once after pressing the voice input button: "Online destination flower shop".



Search location menu

603\_037



Online destinations menu

603\_038



### Notes

To use the Online destinations function, there must be a data connection established. AUDI recommends the use of a flat-rate data service. AUDI has no influence whatsoever over the places of interest shown. They are provided directly by Google.

## Access to mobile phone address book when Bluetooth car phone is active

The Bluetooth car phone supports the display of the address book of a mobile phone connected via Bluetooth. It is possible even if the telephone module (UMTS/GSM) is active. Thus the user has the option of using his/her car phone and mobile phone address book even if the mobile phone does not support the SIM access profile.

The requirements for simultaneous use of car phone (internal telephone module) and mobile phone address book are:

- ▶ SIM card inserted in card reader of electronic information systems control unit 1, J794
- and
- ▶ mobile phone connected via Bluetooth.

Up to two different profiles are then automatically created for the same SIM card. Each profile has the following features:

### Profile 1:

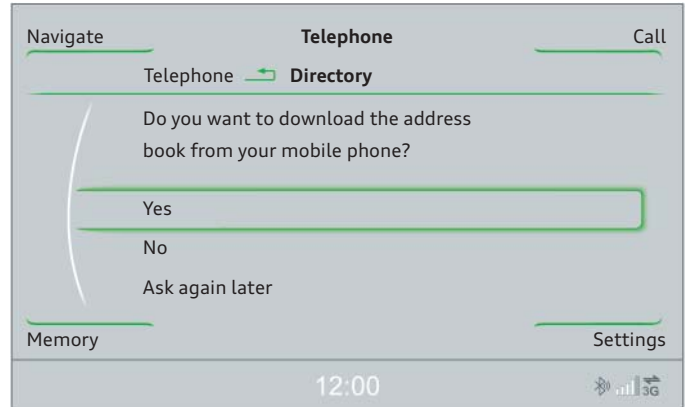
- ▶ No mobile phone connected via Bluetooth
- ▶ The phone book on the SIM card is used.
- ▶ The vehicle's Bluetooth name is used as the profile name.

### Profile 2:

- ▶ Mobile phone connected via Bluetooth
- ▶ The mobile phone address book is used.
- ▶ The SIM card phone book is no longer displayed.
- ▶ The connected mobile phone's Bluetooth name is used as the profile name.

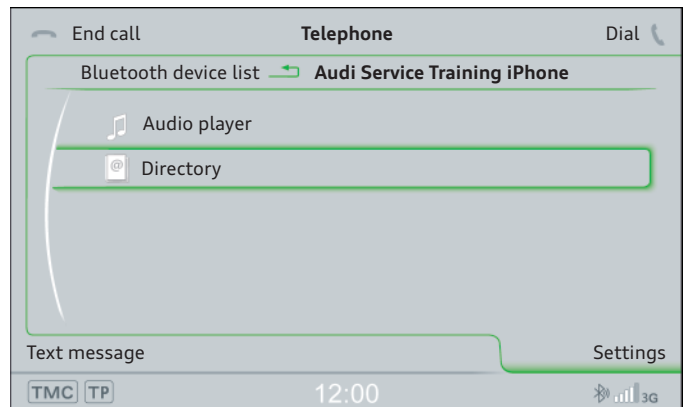
To transfer the address book from the mobile phone to the MMI, the Bluetooth profile PbAP (Phonebook Access Profile) or SyncML is used.

SyncML (Synchronization Markup Language) is a standard for data synchronisation between two devices. SyncML is not fixed to a particular transmission medium (e.g. Bluetooth).



Display for possible address book download

603\_039



Option menu for address book linking

603\_040

## Sound systems

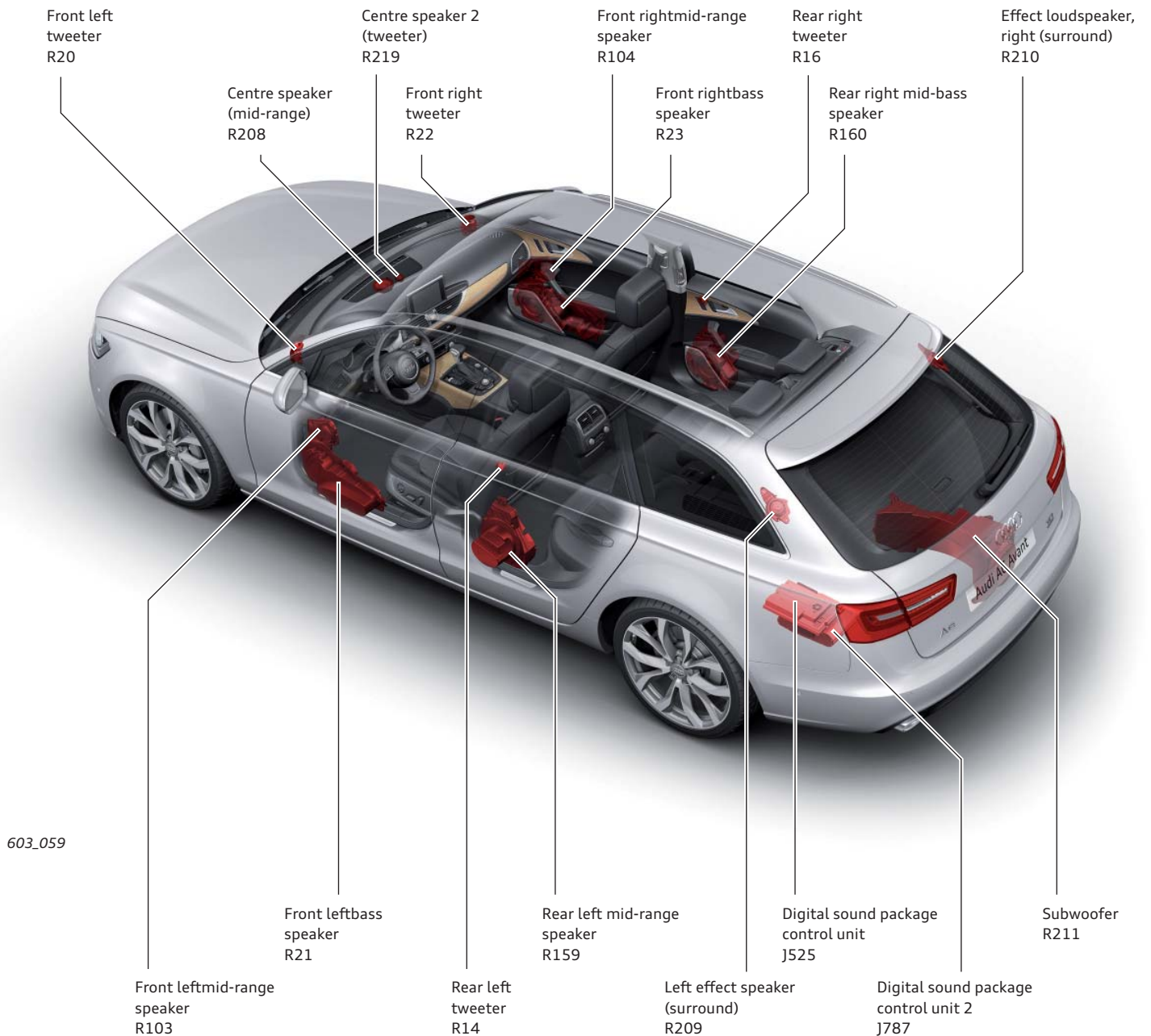
The sound systems on the Audi A6 Avant '12 are comparable in terms of equipment and function with those on the Audi A7 Sportback. However, they have been adapted to suit the interior of the Audi A6 Avant '12.

The Audi A6 Avant '12 has eight speakers even with the basic sound system. With the Audi sound system occupants can enjoy improved audio quality due to greater power output. The eight speakers are assisted by a subwoofer at the back and a centre speaker at the front. The Audi Sound System has a total power output of 180 watts.

For the discerning listener, the BOSE Surround Sound System provides genuine 5.1 surround sound. The 630 watts total power output delivered by the BOSE digital amplifier is shared between 14 speakers.

With the Bang & Olufsen Advanced Sound System, occupants in an Audi A6 Avant '12 can experience concert-hall sound quality. The system has two audio amplifiers which distribute the total output of 1300 watts to 15 speakers.

### Audi A6 Avant '12 with Bang & Olufsen Sound System



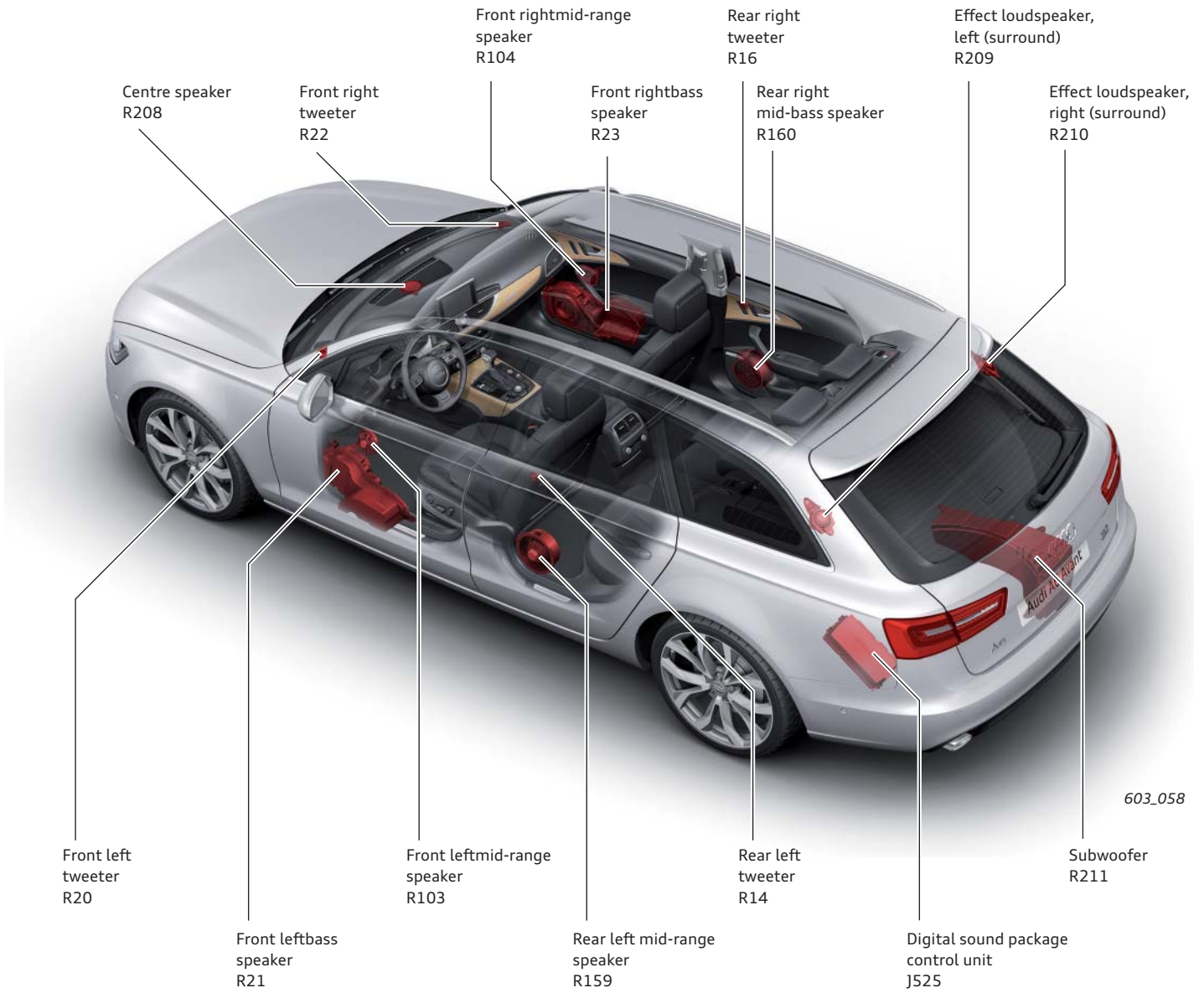
603\_059



#### Note

The 5.1 surround sound can only be reproduced when playing back a suitable DVD.

**Audi A6 Avant '12 with BOSE Surround Sound**



**Aerials overview**

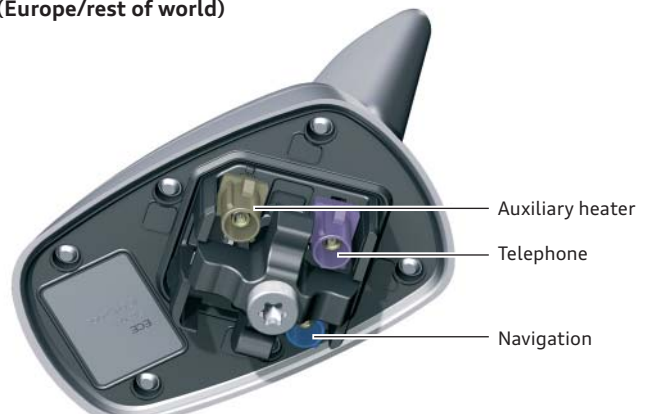
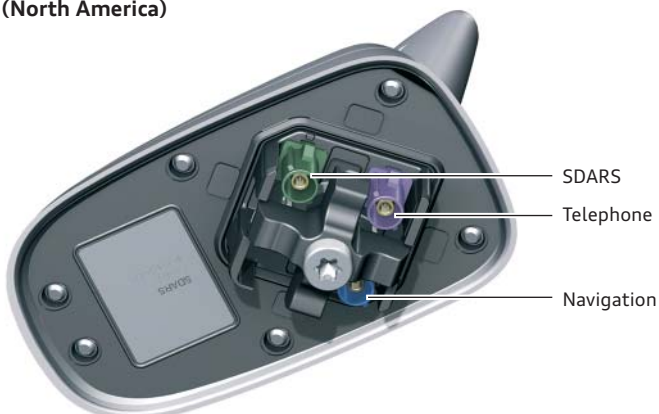
The aerials on the Audi A6 Avant '12 are integrated in the following vehicle components:

- ▶ Roof aerial
- ▶ Rear window
- ▶ Left side window

The aerial system is equipped with several amplifiers the vehicle connections for which are adapted to the equipment fitted. Thus, only the connections required are present. The amplifiers also differ according to whether the vehicle has insulating glass or not.

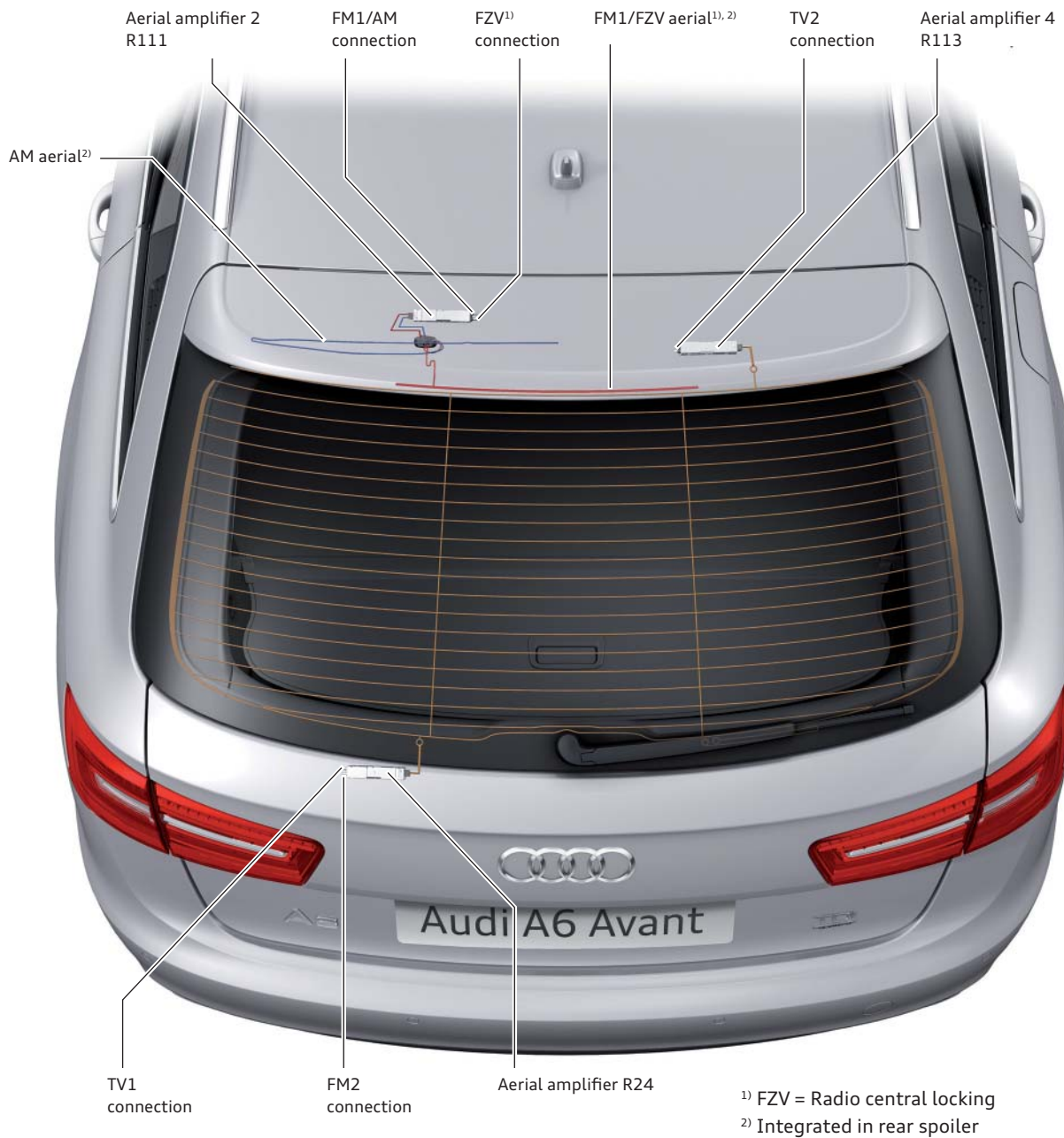
**Roof aerial R216 (North America)**

**Roof aerial R216 (Europe/rest of world)**





## Overview of rear window aerials with boosters



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## Overview of aerials in left side window



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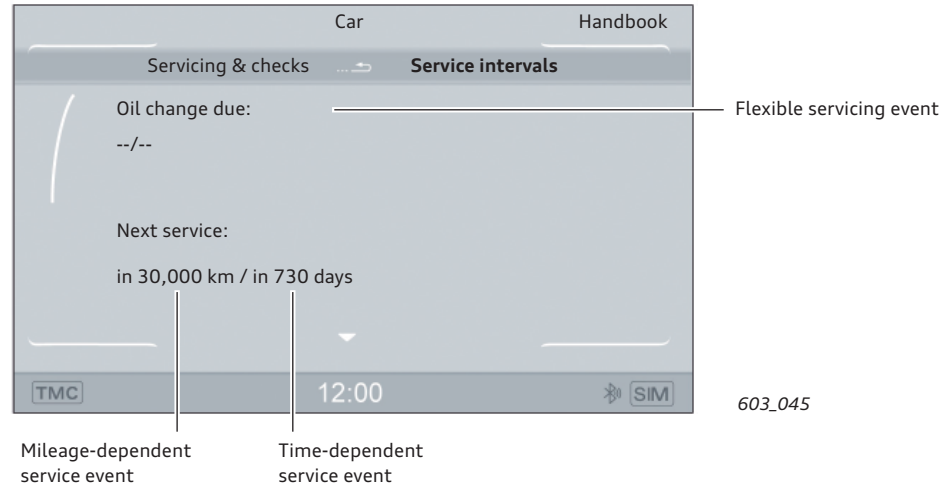
# Service

## Inspection and maintenance

The following servicing work is displayed separately:

- ▶ Oil change service
- ▶ Mileage-related service events
- ▶ Time-related service events

Example of a service interval display in the MMI



On new vehicles, no indication initially appears in the oil change due box (flexible service event). A servicing interval computed from the driving profile and engine load is displayed after approx. 500 km have been covered. The message "Oil change due" then changes to "Next oil change".

The value in the field for the mileage-based servicing events now displays 30,000 km for new vehicles and counts down in increments of 100 km.

The value in the field for the time-based servicing events is now 730 days (2 years) for new vehicles and is updated on a daily basis (upwards of a total mileage of approx. 500 km).

## Overview of service intervals

Audi A6 Avant '12 3.0l V6 TDI Biturbo engine 230 kW	
Oil change interval	Max. 30,000 km / 2 years (depending on market)
Service interval	30,000 km / 2 years
Dust and pollen filter	30,000 km / 2 years
Brake fluid	The first change is after 3 years (depending on market), then every 2 years
Air filter	90,000 km
Fuel filter	60,000 km
Timing drive chain	Lifetime
<b>Gear oils</b>	
▶ 8-speed automatic transmission	
▶ ATF <sup>1)</sup>	Lifetime
▶ MTF <sup>2)</sup>	Lifetime

<sup>1)</sup> ATF = Automatic Transmission Fluid

<sup>2)</sup> MTF = Manual Transmission Fluid



### Note

The specifications in the current service literature always apply.

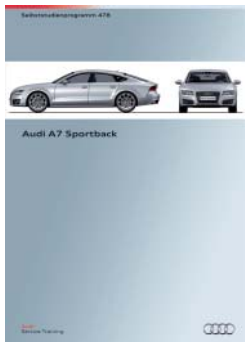


### Reference

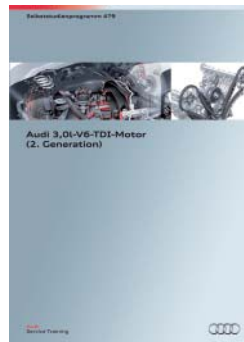
More information on the service intervals not detailed here can be found in Self-study Programme 486" Audi A6 '11".

## Self-study programmes

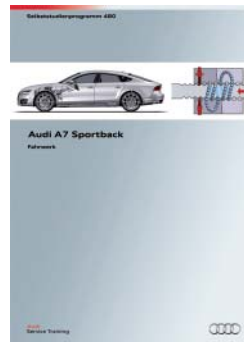
More information on the technology in the Audi A6 Avant '12 can be found in the following self-study programmes.



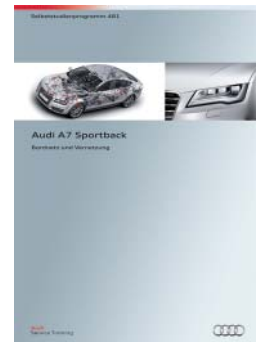
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**SSP 478 Audi A7 Sportback**, order number: A10.5S00.71.20

**SSP 479 Audi 3.0l V6 TDI engine (second generation)**, order number: A10.5S00.72.20

**SSP 480 Audi A7 Sportback Chassis**, order number: A10.5S00.73.20

**SSP 481 Audi A7 Sportback Onboard Power Supply and Networking**, order number: A10.5S00.74.20



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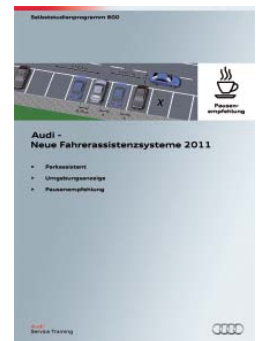
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603\_111

**SSP 482 Audi A7 Sportback Head-up Display and Speed Limit Indicator**, order number: A10.5S00.75.20

**SSP 483 Audi A7 Sportback Convenience Electronics and Audi active lane assist**, order number: A10.5S00.76.20

**SSP 484 Audi A7 Sportback Occupant Protection, Infotainment and Air Conditioning**, order number: A10.5S00.77.20

**SSP 486 Audi A6 '11**, order number: A11.5S00.80.20

**SSP 600 Audi - New Driver Assistance Systems 2011**, order number: A11.5S00.84.20

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