

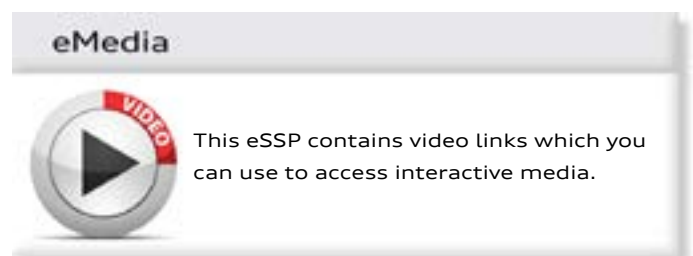


The 2017 Audi Q7 Introduction

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Always check Technical Bulletins and the latest electronic service repair literature for information that may supersede any information included in this booklet.



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This eSelf Study Program teaches a basic knowledge of the design and functions of new models, new automotive components or technologies.

It is not a Repair Manual! All values given are intended as a guideline only.

For maintenance and repair work, always refer to the current technical literature.



Note



Reference

Introduction

Both technically and in terms of the Audi Q7 design, it embodies the spirit of the Audi quattro. The design of the new Audi Q7 is masculine and resolute. Horizontal lines extend above the wheels. They are a subtle homage to the classic quattro models by Audi.

In a growing segment, the Audi Q7 cuts a confident figure with its impressive exterior, superior build quality and its sporty and efficient engine technology.

The new Audi Q7 is an imposing car. Although it is shorter and narrower than its predecessor, the passenger compartment is longer and offers more headroom. 20 years of experience in lightweight design have gone into the development of the new Audi Q7.

Lightweight construction has been applied in all areas, from the electrical system to the luggage compartment floor. The key is the body structure, a new multi-material design involving the use aluminum castings, extruded sections and panels in the front and rear ends as well as the superstructure.

The new Audi Q7 welcomes its passengers with an atmosphere of cultivated elegance and spaciousness. The instrument panel is visually separated from the center console, accentuating the sportiness and lightness of the interior.

Two powerful engines will be available at the introduction of the 2017 Q7: a 3.0l V6 TDI and a 3.0l V6 TFSI. A 2.0l TFSI engine will be offered at a later date. Thanks to intensive refinements, the CO₂ emissions of both engines has been reduced.

Smooth, fast, lightweight and efficient. In the new Audi Q7, a newly developed eight-speed Tiptronic transfers the engine's power to the quattro permanent all-wheel drive system.



Learning objectives of this eSelf Study Program:

This eSelf Study Program describes the design and function of the 2017 Audi Q7. After reading this eSelf-Study Program, you will be able to answer questions on the following topics:

- ▶ New features of the multi-material body structure.
- ▶ New features of the occupant protection system.
- ▶ Engine/transmission combinations.
- ▶ New features of the running gear and suspension.
- ▶ Modifications to the electronics and the driver assistance systems.
- ▶ New features of the electrical system and networking.
- ▶ New features of the climate control system.
- ▶ Modifications and new features of the Infotainment system.

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The new Audi Q7 is a statement of our competence. Its reduced weight and low center of mass make it extremely agile. With a curb weight of only 4398 lb (1995 kg), it weighs 716 lb (325 kg) less than its predecessor.

Although the exterior dimensions are smaller it offers substantially more interior room for passengers and luggage than its predecessor. Its innovative assistance and infotainment systems take the SUV to the front of the pack.

Engines

6-cylinder V engines with turbocharger and start-stop system:

- ▶ 3.0l TFSI - 330 hp (245 kW)
- ▶ 3.0l TDI - 270 hp (200 kW)

Assistance systems

The following systems are optionally available:

- ▶ Rear cross traffic alert
- ▶ ACC stop & go including traffic jam assistant
- ▶ Audi active lane assist
- ▶ Audi pre sense basic, front, rear and city
- ▶ Vehicle exit assist
- ▶ Night vision assist
- ▶ Collision avoidance assist
- ▶ Turn assist

Headlights

Depending on trim level, the Q7 comes with either xenon, LED headlights. The daytime running lights of the LED headlights are shaped like a double arrow.

Climate control

A three-zone climate control system is standard equipment while a four-zone system is optionally available.



Body

Ultra-high-strength parts made of hot-shaped steel form the backbone of the occupant cell. Aluminum castings, extruded sections and panels are used in the front and rear as well as the super-structure. Other components made entirely of aluminum are the doors, the front fenders, the hood and the rear hatch. A two-piece panoramic glass sunroof is standard.

Power transmission

A newly developed eight-speed Tiptronic transfers the engine's power to the quattro all-wheel drive system. Besides automatic mode, the driver can also choose to control the Tiptronic using the standard paddles on the steering wheel or using a selector lever. In both cases, the commands are transmitted entirely electrically.



Displays and operation

Displays appear on the central MMI monitor which raises up from the instrument panel when the system is started. The focal point of the operating system is the MMI center with a full touch surface. The main functions can be accessed using the rotary pushbutton and two rocker switches. Depending on trim level, the Audi Q7 features a fully digital instrument cluster - the Audi virtual cockpit.

Chassis

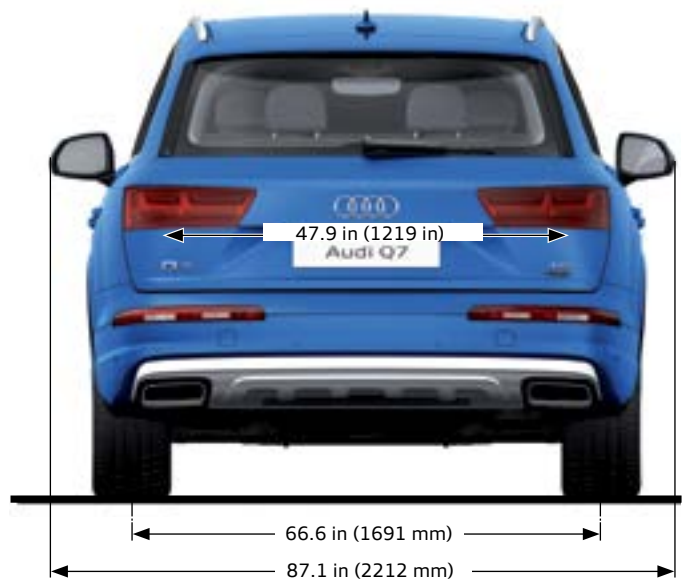
The standard Audi drive select driving dynamics system works together with the adaptive air suspension to offer six modes. The all-wheel steering system with electric drive adjusts the rear wheels by as much as 5 degrees depending on the situation. This increases vehicle agility and reduces the turning radius by up to three feet (one meter).

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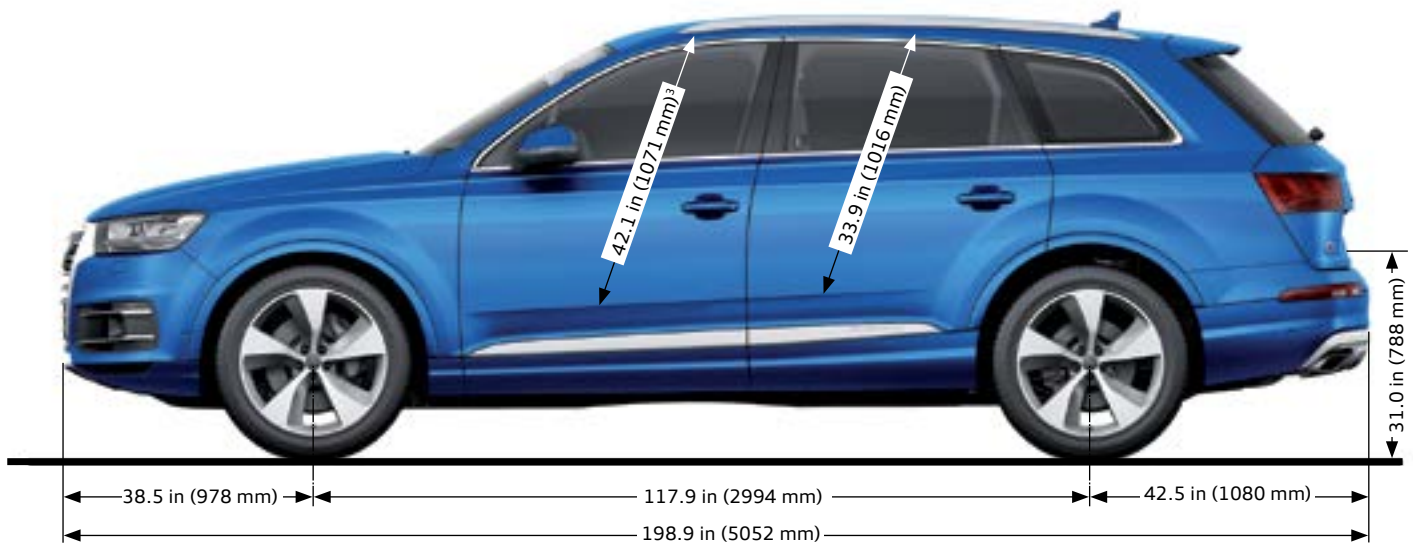
Dimensions



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Exterior dimensions and weights

Length	198.9 in (5052 mm)
Width (not including exterior mirrors)	77.5 in (1968 mm)
Width (including exterior mirrors)	87.1 in (2212 mm)
Height	68.5 in (1741 mm)
Front track width	66.1 in (1679 mm)
Rear track width	66.6 in (1691 mm)
Wheelbase	117.9 in (2994 mm)
Curb weight	4343 lb (1970 kg) ¹⁾
Gross vehicle weight	6041 lb (2740 kg) ²⁾
Drag coefficient c_w	0.32

Inner dimensions and other specifications

Front cabin width	61.8 in (1571 mm) ³⁾
Front headroom	42.2 in (1071 mm) ⁴⁾
Front shoulder width	59.5 in (1512 mm) ⁵⁾
Rear headroom ⁶⁾	39.9/36.1 in (1016/917 mm)
Through-loading width	42.7 in (1086 mm)
Load sill height	31.0 in (788 mm)
Luggage capacity of 5-seater	31.4/73.3 cu ft (890/2075 l) ⁷⁾
Luggage capacity of 7-seater	27.5/69.0 cu ft (770/1955 l) ⁹⁾
Capacity of fuel tank	22.4 gal (85 l)

¹⁾ Applicable to 5-seater with 3.0l TFSI engine

²⁾ A factory installed tow bar increases the maximum gross weight by 220 lb (100 kg)

³⁾ Elbow room width

⁴⁾ Maximum headroom

⁵⁾ Shoulder room width

⁶⁾ 2nd seat row/3rd seat row

⁷⁾ With second row seat backs folded down (without optional equipment)

⁸⁾ With third row seat backs folded down

⁹⁾ With third row seat backs and second row seat backs folded down

All dimensions refer to the unladen weight of the vehicle.

Body

The Audi Q7 is based on the second generation of MLBevo (Modular Longitudinal Platform Evolution). The lightweight body of multi-material construction represents, with its function and weight optimized design, a further example of a highly advanced modern vehicle body. To meet the requirements of an SUV, the components were deliberately selected according to the principle of using the right material in the right place.

The high quality of the selected materials offers not only reduced weight, but also provides the basis for meeting the most stringent vehicle safety standards.

Aluminum components

Aluminum castings, extruded sections and panels are used in the front and rear of the vehicle as well as the super-structure.

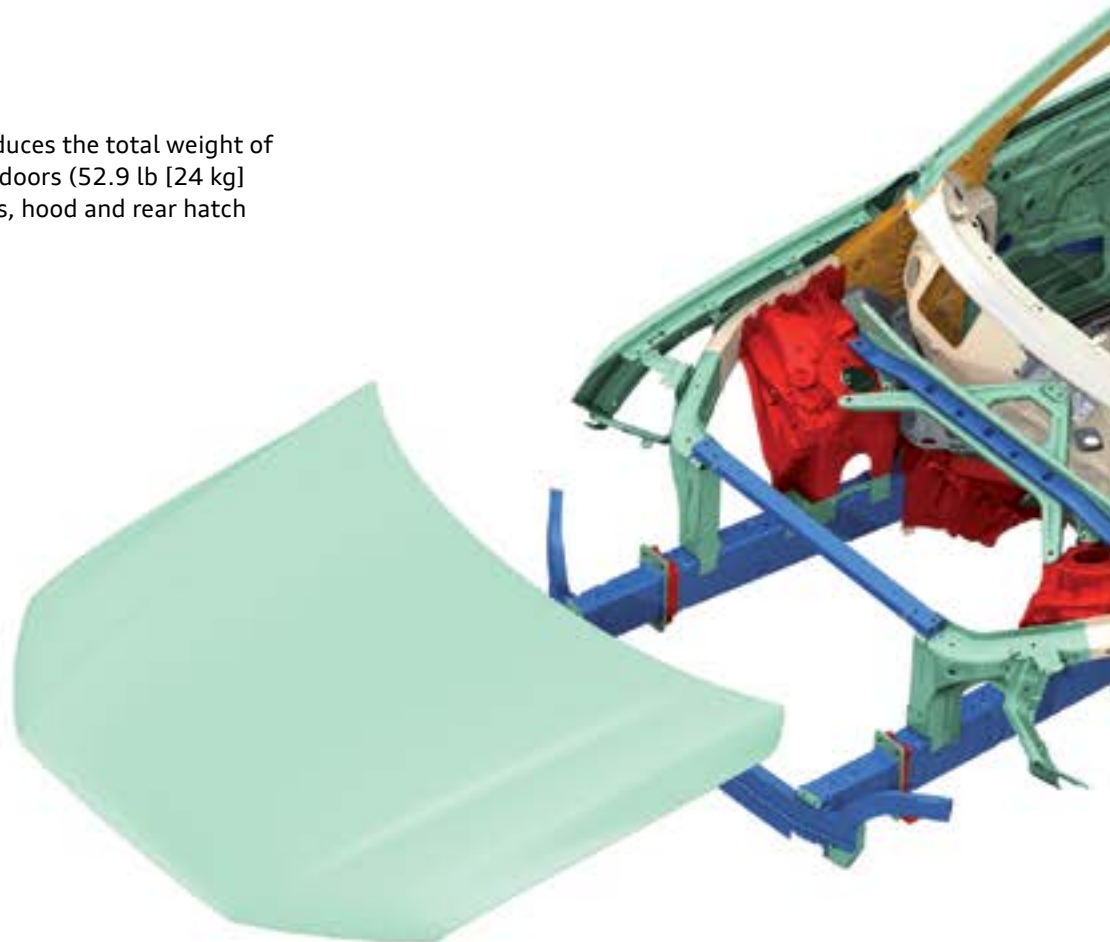
They account for 41% of the body structure and are broken down as follows:

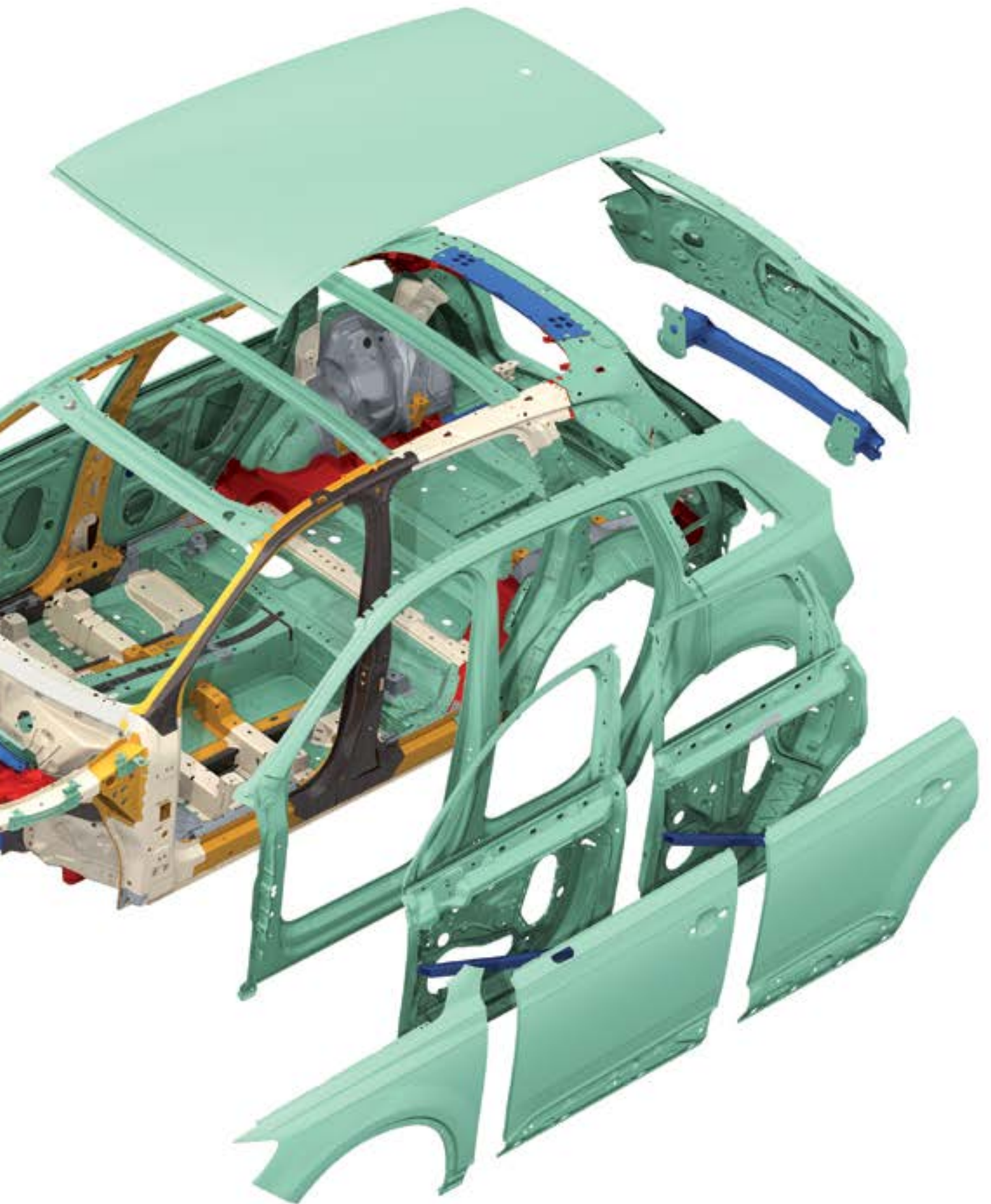
- ▶ 23% sheet aluminum.
- ▶ 15% die-cast aluminum.
- ▶ 3% aluminum profile.

The multi-material construction reduces the total weight of the Q7 body by 156 lb (71 kg). The doors (52.9 lb [24 kg] lighter), as well as the front fenders, hood and rear hatch are made entirely of aluminum.

Key:

- Sheet aluminum
- Die-cast aluminum
- Aluminum section
- Ultra-high strength steel (hot-formed)
- Advanced high strength steel
- High strength steel
- Low strength steel





Ultra-high-strength hot-formed components

The use of ultra-high strength steel materials necessitates, in the event of body repairs, special repair methods adapted to the properties of the materials.

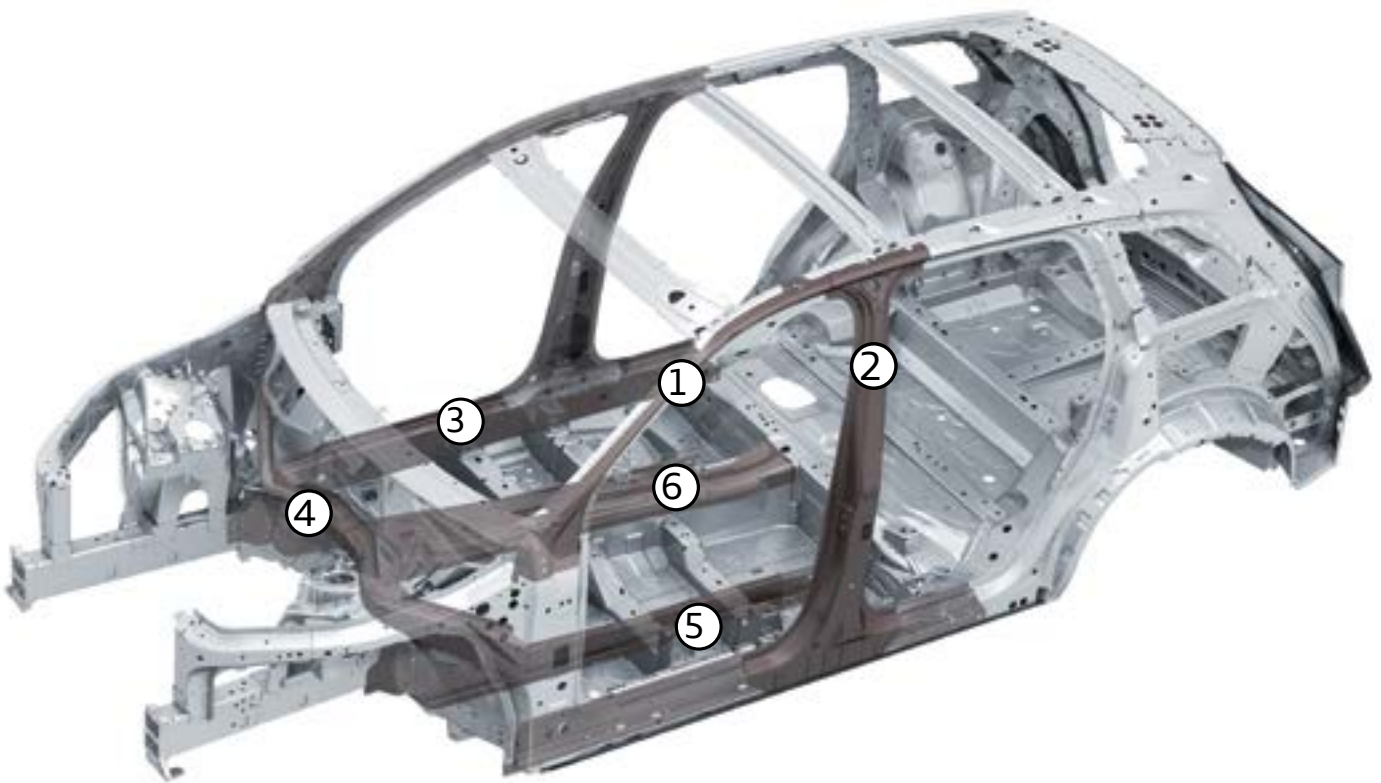
The high heat transfer in the welded areas significantly weakens the strength and structure of the component by altering the microstructure of the material. For this reason, the use of MAG inert gas welding for sectional repair purposes is only permitted on these high quality steels in isolated cases and in precisely defined areas.

Following miscellaneous tests and crash tests, approval was given for two sectional repair areas where MAG welding is allowable in the case of the Audi Q7:

- ① Outer top left /right 'A' pillar
- ② Inside left/right 'B' pillar

The following ultra-high strength hot-formed components have to be completely replaced if damaged:

- ③ Inside left/right sill
- ④ Cross-member of outside left/right bulkhead
- ⑤ End section of left/right cross member 2
- ⑥ Upper tunnel reinforcement



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Joining technology

The key to optimizing the body structure is using "the right materials in the right place". The resulting challenge for the joining technology was to develop, universal and reliable solutions for the large variance in material/thickness combinations in the body.

The body is constructed using the following joining methods:

"Cold" joining methods

- ▶ 2125 punch rivets (semi-hollow rivets).
- ▶ 108 punch rivets (special semi-hollow rivets).
- ▶ 610 flow-drill screws.
- ▶ 58 clinching points.
- ▶ 479 ft (146 m) of adhesive.
- ▶ 14.7 ft (4.5 m) of seaming.

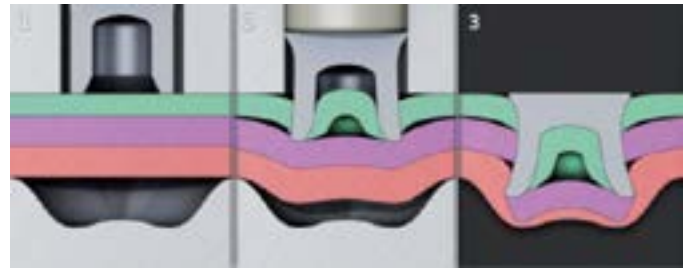
"Hot" joining methods

- ▶ 2579 spot welds.
- ▶ 105 friction elements.
- ▶ 7.5 ft (2.3 m) of TIG weld seams.
- ▶ 6.6 ft (2.0 m) of MAG weld seams.
- ▶ 30.2 ft (9.2 m) of laser-welded seams.

Joining techniques

Punch riveting

Punch riveting with semi-hollow rivets is a method in which non-prepunched workpieces are joined to form two or more layers. The rivet punches through the upper components and then expands into the basic component. The joining of ultra high strength hot-formed components requires a new special semi hollow rivet for the Audi Q7.



632_085

Friction element welding















Friction element welding is used for the first time on the Q7 body. A friction element joins at least two workpieces together. In the case of the Q7, for example, friction elements are used to joint sheet aluminum with ultra-high strength hot-formed sheet steel. The rotating friction element initially penetrates the upper layer of the workpiece (aluminum) and then produces a frictional joint with the basic material (ultra-high strength hot-shaped steel) through the application of frictional heat and high axial pressure. The axial contact pressure is also maintained for a short time after welding the components together in order to homogenize the zones in which the microstructure is changed.



632_086



Joining techniques in overview

Similar types of joints		Mixed design	
Aluminum / aluminum	Steel / steel	Aluminum / steel with R_m of up to 800 MPa	Aluminum / steel with R_m of 800 MPa or higher
 Punch riveting with semi hollow rivets	 Resistance spot welding	 Punch riveting with semi hollow rivets	 Punch riveting with special semi hollow rivets
 Flow-drill screwing	 MAG welding	 Flow-drill screwing	 Friction element welding
 Clinching		 Clinching	 Seaming
 Laser welding			
 TIG welding		 Seaming	

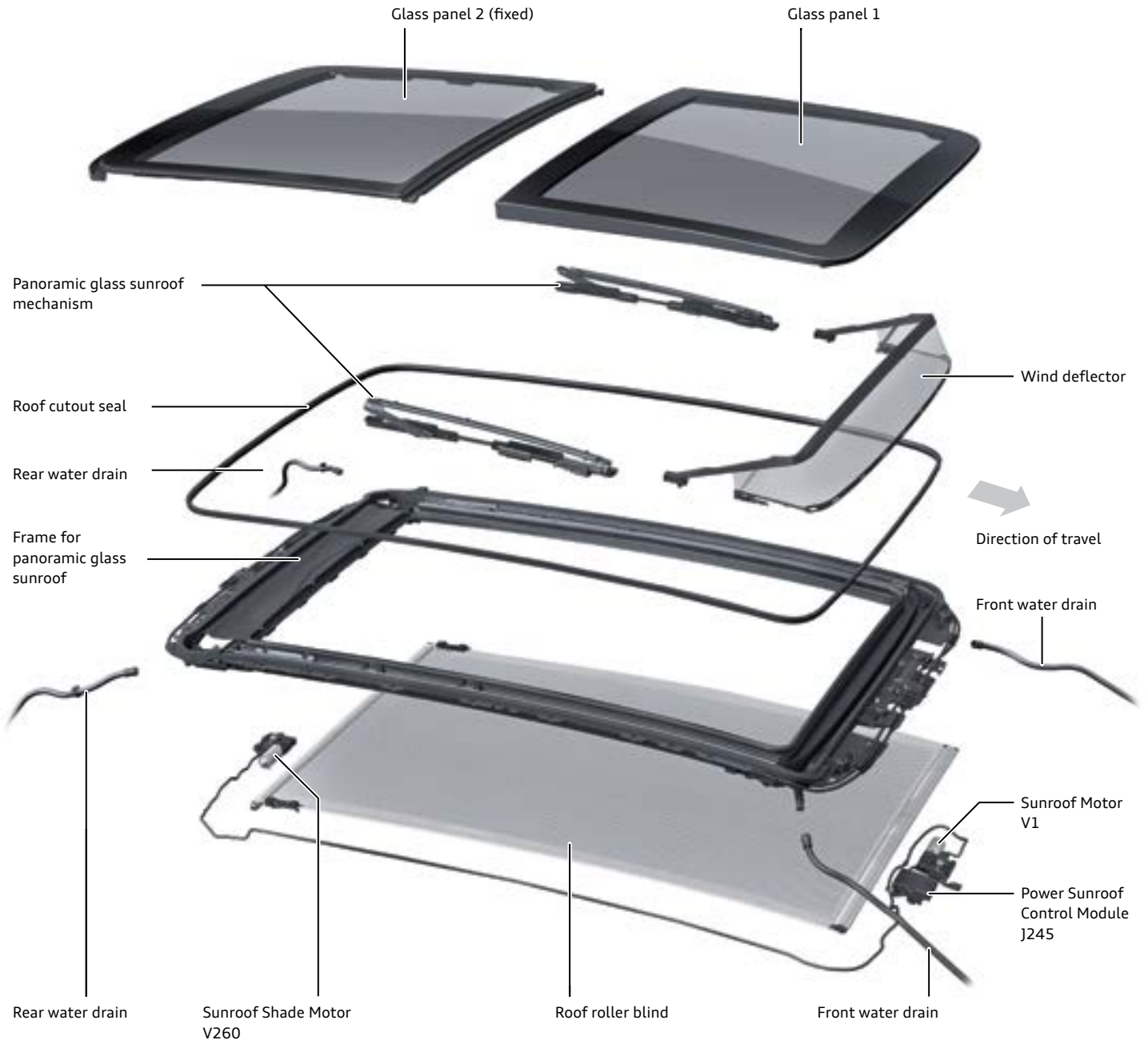
Panoramic glass sunroof

Unlike in the previous model, the panoramic sunroof on the new Audi Q7 is a two-piece design only. The front glass panel is movable and can be tilted or slid back. The rear glass panel is fixed.

This reduces the gross weight of the panoramic glass sunroof by about 22.0 lb (10 kg) while increasing the headroom in the rear passenger compartment.

Reinforced roof elements at the guide rail and above the third row of seats increase body stiffness to such effect that there is no longer any difference in stiffness compared to an Audi Q7 without a panoramic glass sunroof.

A power operated roller blind for both glass panels provides protection against sunlight if needed.



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Note

To ensure proper functioning of the panoramic sunroof after removing/installing/replacing the motor, a Basic Setting Test Plan must be done using the VAS Scan Tool.

Aerodynamics and aeroacoustics

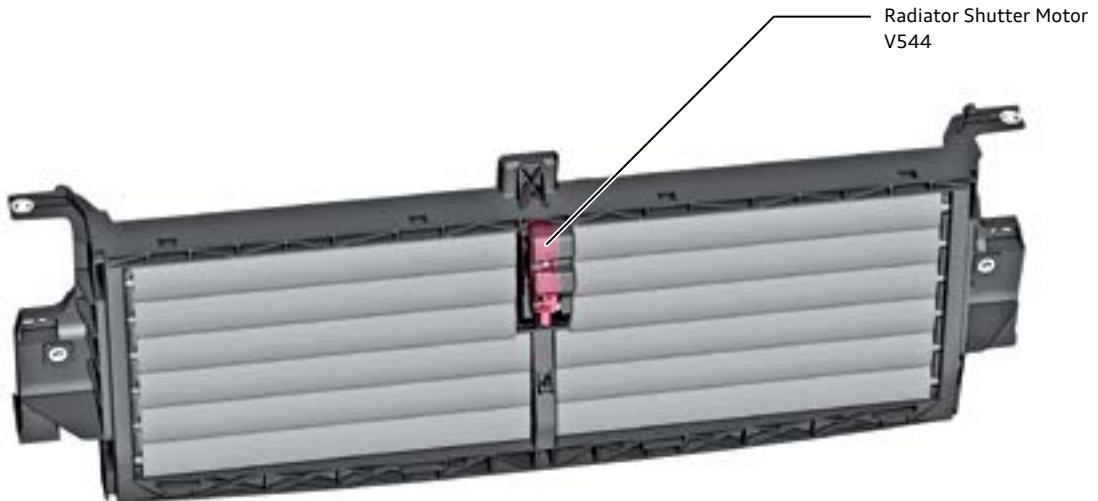
The underbody is almost completely clad and a small spoiler on the rear axle area provides added downforce.

Radiator louver

A radiator louver (shutter) has been installed between the single-frame grille and the upper section of the main radiator. The slats open or close as required to provide better aerodynamic performance.

This measure also allows better fuel economy and lowers CO₂ emissions. The closed louver is also beneficial to the thermal management of the engine.

Radiator louver closed



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Radiator louver open



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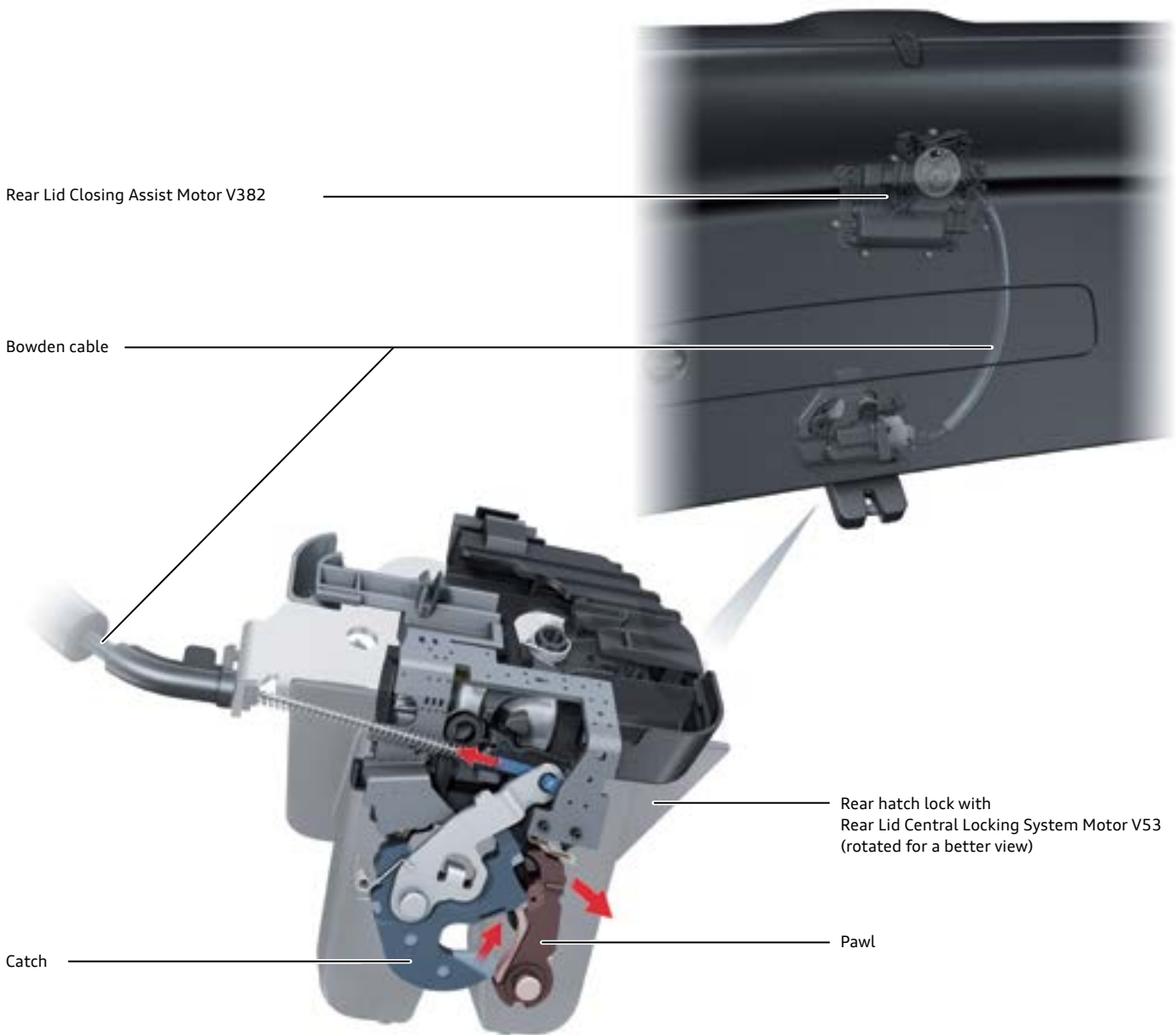
Electric rear hatch

The wrap-around rear hatch embracing the sharply inclined "D" pillars - a typical design element of the Audi Q models - is made entirely of aluminum. An electric rear hatch drive is standard equipment.

The power latching system is new. In the Audi Q7 this function is performed by the rear hatch lock; in other Audi models the striker on the rear bumper mount is used.

When the microswitch in the rear hatch lock indicates that the striker is in the prelock position and the Rear Lid Control Module J605 indicates that the rear hatch is in the "closed" position, an eccentrically mounted cam wheel in Rear Lid Closing Assist Motor V382 pulls the catch in the rear hatch lock further into the fully locked position by means of a Bowden cable - in much the same way as the power closing feature of the door locks.

The end position of the cam wheel is monitored by J605, while the position of the catch is monitored by Comfort System Central Control Module J393 via microswitches.



Seat systems

Depending on seat variant, a seat heater, seat ventilation, pneumatic seat backs, pneumatic lumbar support and a pneumatic massage function could be installed.

The second row seating has three seats all with adjustable seat backs. The second row seats can be moved manually fore and aft up to 4.3 in (110 mm). Third row seating is standard.

Folded down, the seat backs are integrated in the load floor and can be electrically raised or lowered. The switches are located in each 'C' pillar area and in the luggage compartment.

The seats in the second row have a fold-up function for easier entry and exit from the third seat row. The seat back is folded forward, after which the entire seat can be folded vertically. All seats in the second and third rows have LATCH child seat restraints. This means that customers can secure up to six child seats in the Audi Q7.



Individual contour seating

The contour seating option offers the following functions:

- ▶ Electrical seat adjustment.
- ▶ Pneumatic side bolsters in the seat base and back.
- ▶ Pneumatic lumbar support adjustment.
- ▶ Seat heating.
- ▶ Seat ventilation.
- ▶ Massage functionality.
- ▶ Memory function and seat contour customization (each seat contour is assigned to a specific vehicle key).

Seat ventilation is optional for the front seats and for the two outer rear seats in the second row. The seats have an intake system for this purpose.

The front seat ventilation controls communicate with Vehicle Electrical System Control Unit J519 by LIN data bus. The rear seat ventilation controls are connected to Rear A/C Display Control Head E265.

Driver Multi-Contour Seat Control
Module J873

Seat back bolster, pneumatic

Massage cushion, pneumatic

Seat back ventilation

Seat base ventilation



Third row seating

The Audi Q7 is available with a third row of seats. It is a two seat bench with two electric folding backrests.

The head restraints on these seats must fold in when the seats are folded down.

This is done automatically by the kinematic mechanism inside the seat or can be done manually using a pull-tab below the head restraint. After the backrest has been raised, the head restraints must be raised manually. This is done by swivelling them upwards until they lock into place.

Pull-tab for manual fold-down of the head restraint

Right Third Row Backrest Adjustment Locking Latch Motor F525

Bowden cable for automatic fold-down of the head restraint

Right Third Row Backrest Adjustment Locking Latch Motor 2 F544

Right Third Row Seat Backrest Adjustment Motor V361

Left Third Row seat Backrest Adjustment Button E565
Right Third Row Seat Backrest Adjustment Button E549

Left Third Row Button 2 for Backrest Adjustment E801 and Right Third Row Button 2 for Backrest Adjustment E804



Operation

The backrests fold down using the operating buttons in the rear passenger compartment and in the luggage compartment. You must press the buttons until the backrest is completely folded down or unfolded.

An electric motor unlocks and moves each backrest; the end position is monitored by two microswitches. If a backrest has not reached its end position, the backrest warning lamp appears in the DIS and the LEDs in the operating buttons begin to flash.

Operating buttons in the rear passenger compartment



632_031

Operating buttons in the luggage compartment



632_030

Occupant safety



Components

Depending on country version and trim level, the passive occupant protection system in the Audi Q7 may have the following components and systems:

- ▶ Airbag Control Module.
- ▶ Adaptive driver airbag.
- ▶ Adaptive front passenger airbag (front passenger airbag, two-stage version).
- ▶ Front side airbags.
- ▶ Rear side airbags (equipment option).
- ▶ Head airbags.
- ▶ Front airbag crash sensors.
- ▶ Crash sensors for side impact detection in the doors.
- ▶ Crash sensors for side impact detection at the 'C' pillars.
- ▶ Crash sensor for side and longitudinal impact detection.
- ▶ Front inertia-reel safety belts with pyrotechnic belt tensioners.
- ▶ Front inertia-reel safety belts with electrical belt tensioners.
- ▶ Front inertia-reel safety belts with active belt force limiters.
- ▶ Inertia-reel safety belts for second seat row with pyrotechnic belt tensioners, driver and front passenger sides.
- ▶ Inertia-reel safety belts for third seat row with pyrotechnic belt tensioners, driver and front passenger sides).
- ▶ Front lap belt tensioner.
- ▶ Safety belt warning for all seats.
- ▶ Safety occupancy sensor in front passenger seat.
- ▶ Front passenger airbag OFF and ON warning lamp.
- ▶ Driver and front passenger seat position sensors.
- ▶ Battery interrupter circuit.



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Reference

For further information on the active and passive safety features in the Audi Q7, please refer to eSelf Study Program [970363 The 2017 Audi Q7 Occupant Protection and Infotainment System.](#)

Engines

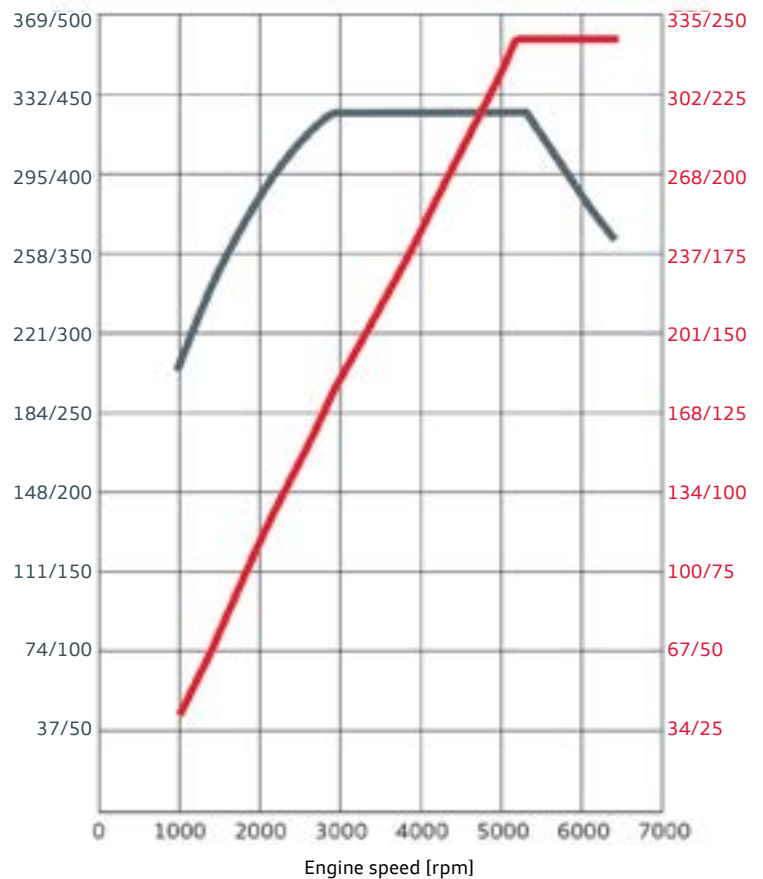
Gasoline Engine

Torque/power curve of 3.0l V6 TFSI engine

- Power output in hp/kW
- Torque in lb/Nm



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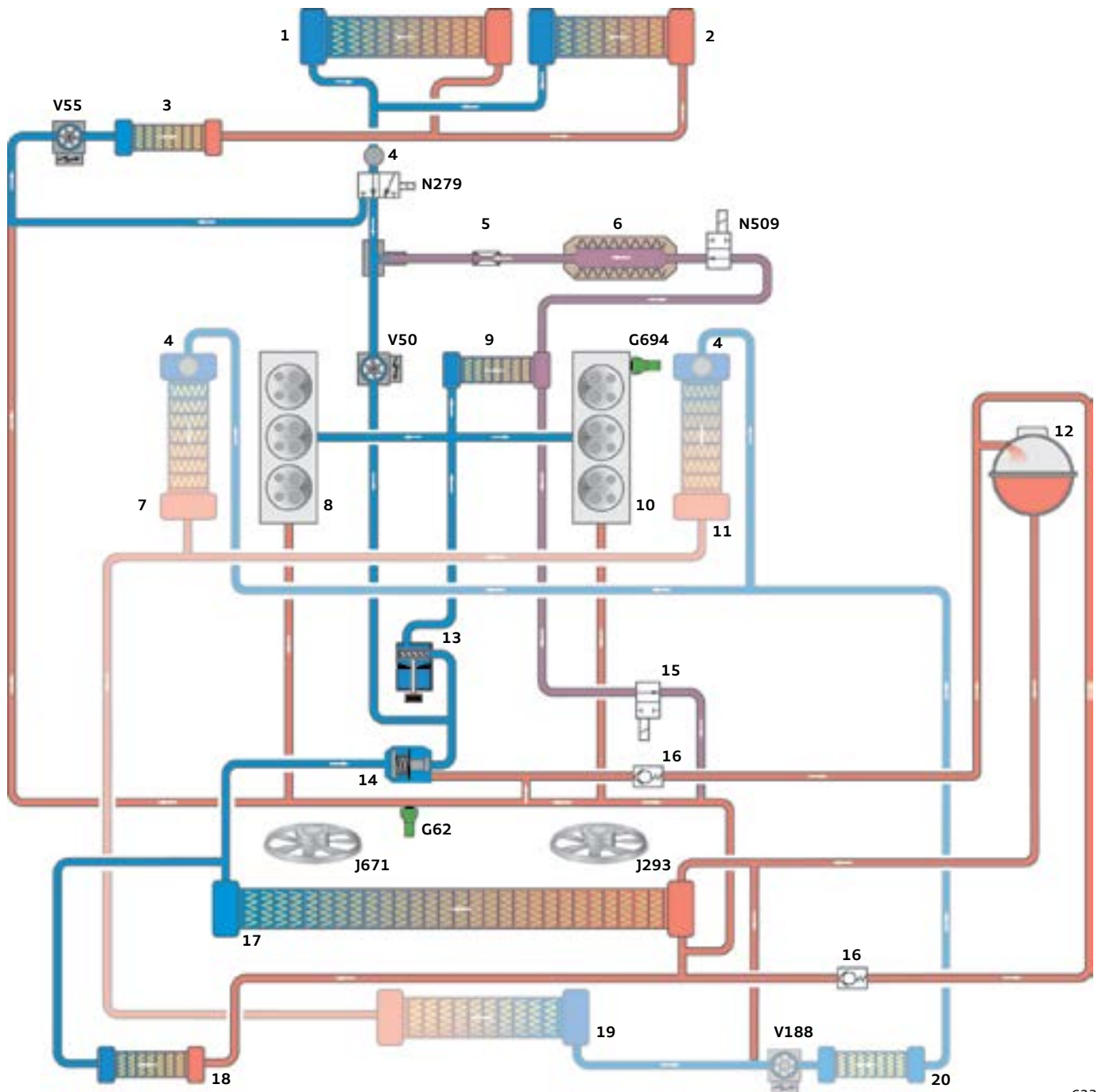
Features	Specifications
Engine code	CREC
Type	6-cylinder V-engine with 90° V angle
Displacement	182.7 cu in (2995 cc)
Stroke	3.5 in (89.0 mm)
Bore	3.3 in (84.5 mm)
Number of valves per cylinder	4
Firing order	1-4-3-6-2-5
Compression ratio	10.8 : 1
Power output	330 hp (245 kW) at 5500-6500 rpm
Torque in	295 lb ft (440 Nm) at 2900 - 5300 rpm
Fuel type	Premium unleaded 91 AKI
Engine management system	Simos
Supercharging	Clutched supercharger (Roots blower)
Lambda control	Two sensors upstream of catalytic converter and two sensors downstream of catalytic converter
Mixture formation	Combined (dual) direct (FSI) and multipoint (MPI) injection
Emission standard	ULEV125



Reference

For further information about the 3.0l V6 TFSI engine, please refer to eSelf Study Program [920323 The Audi 3.0l V6 TFSI Fourth Generation Engine.](#)

Cooling circuit of 3.0l V6 TFSI engine



Key:

- | | | | |
|----|-----------------------------|------|---|
| 1 | Front heater heat exchanger | 18 | Auxiliary radiator |
| 2 | Rear heater heat exchanger | 19 | Front cooler for charge air cooling circuit |
| 3 | Auxiliary heat exchanger | 20 | Left cooler for charge air cooling circuit |
| 4 | Vent screw | | |
| 5 | Flow restrictor | G62 | Engine Coolant Temperature Sensor |
| 6 | ATF cooler | G694 | Engine Temperature Control Sensor |
| 7 | Right charge air cooler | J293 | Radiator Fan Control Module |
| 8 | Cylinder head, bank 1 | J671 | Radiator Fan Control Module 2 |
| 9 | Engine oil cooler | N279 | Heater Coolant Shut-Off Valve |
| 10 | Cylinder head, bank 2 | N509 | Transmission Fluid Cooling Valve |
| 11 | Left charge air cooler | V50 | Coolant Recirculation Pump |
| 12 | Coolant expansion tank | V55 | Recirculation Pump |
| 13 | Switchable coolant pump | V188 | Charge Air Cooling Pump |
| 14 | Coolant thermostat | | |
| 15 | Coolant shutoff valve | | |
| 16 | Non-return valve | | |
| 17 | Radiator | | |
-
- | | |
|--|-------------------------------------|
| — | Cooled coolant |
| — | Cooled coolant (charge air cooling) |
| — | Hot coolant |
| — | Hot coolant (charge air cooling) |

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Diesel engine

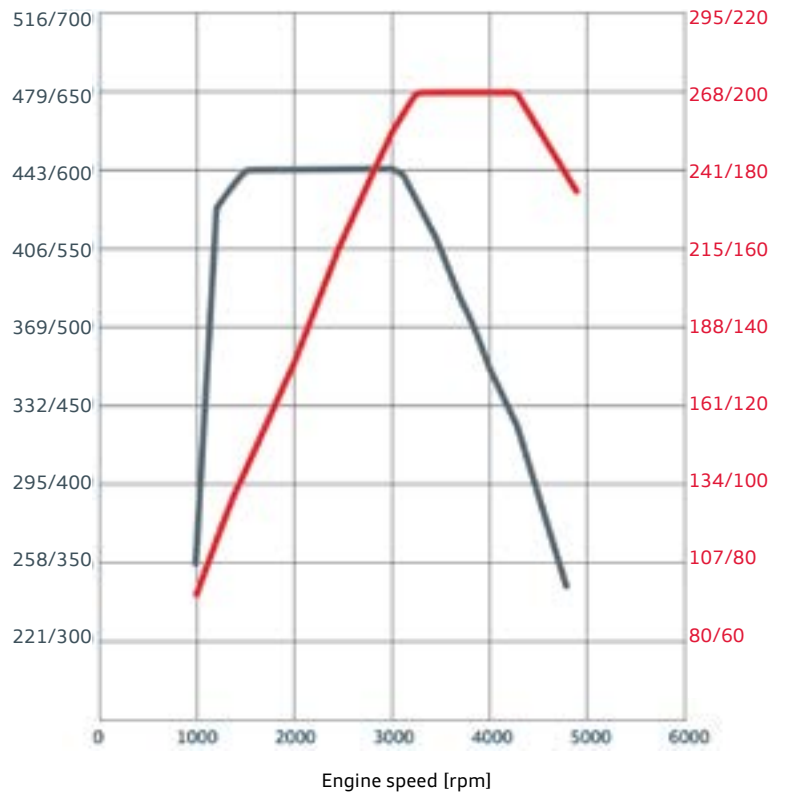
Torque/power curve of 3.0l V6 TDI engine

— Power output in hp/kW

— Torque in lb ft/Nm



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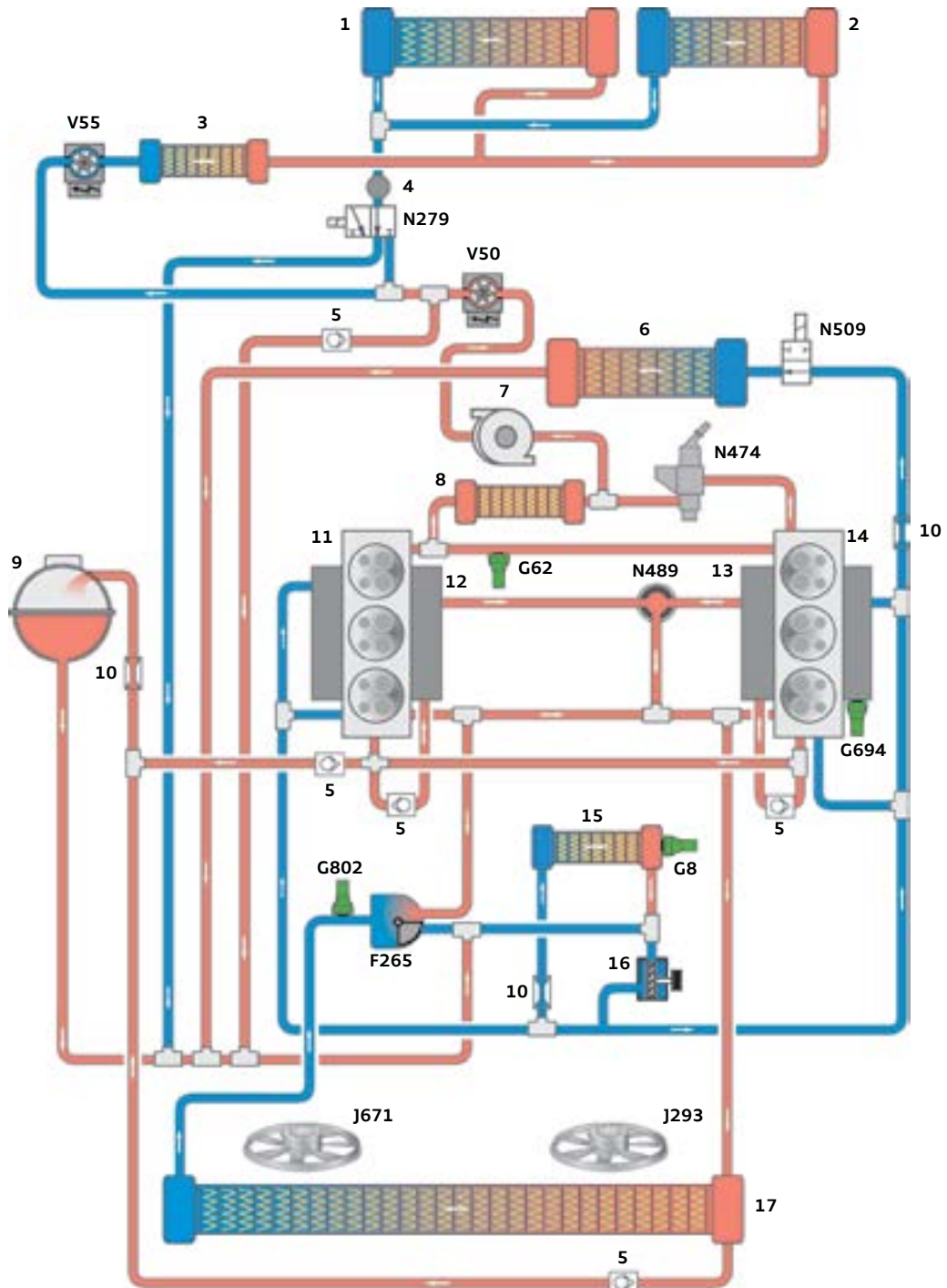


The engine code is, as seen in the direction of travel, located at the front left below the cylinder head on the protruding edge of the engine block.

632_003

Features	Specifications
Engine code	CRTC
Type	6-cylinder V-engine with 90° V angle
Displacement	181.0 cu in (2967 cc)
Stroke	3.9 in (91.4 mm)
Bore	3.3 in (83.0 mm)
Number of valves per cylinder	4
Firing order	1-4-3-6-2-5
Compression ratio	16.0 : 1
Power output	270 hp (200 kW) at 4000 rpm
Torque	442 lb ft (600 Nm) at 1500 - 3000 rpm
Fuel type	ULSD (Ultra Low Sulfur Diesel) with a sulfur content of 15 ppm or less; must meet ASTM D975 Grade 2 S15 specifications
Engine management system	Bosch EDC 17 with start-stop and recuperation
Maximum injection pressure	29007 psi (2000 bar)
Fuel injectors	8-port piezo injectors
Exhaust gas treatment	Oxidizing catalyst, SCR coated diesel particulate filter, particulate sensor, oxygen sensor
Emission standard	ULEV125

Coolant circuit of 3.0l V6 TDI engine



Key:

1	Front heater heat exchanger	F265	Map Controlled Engine Cooling Thermostat
2	Rear heater heat exchanger	G8	Oil Temperature Sensor
3	Auxiliary heat exchanger	G62	Engine Coolant Temperature Sensor
4	Vent screw	G694	Engine Temperature Control Sensor
5	Non-return valve	G802	Coolant Temperature Sensor 2
6	ATF cooler	J293	Radiator Fan Control Module
7	Exhaust turbocharger	J671	Radiator Fan Control Module 2
8	Exhaust gas recirculation cooler	N279	Heater Coolant Shut-Off Valve
9	Coolant expansion tank	N474	Reducing Agent Injector
10	Flow restrictor	N489	Cylinder Head Coolant Valve (rotary valve)
11	Cylinder head, bank 1	N509	Transmission Fluid Cooling Valve
12	Engine block, bank 1	V50	Coolant Recirculation Pump
13	Cylinder head, bank 2	V55	Recirculation Pump
14	Cylinder head, bank 2		
15	Engine oil cooler		
16	Coolant pump		
17	Radiator		

	Cooled coolant
	Cooled coolant (charge air cooling)
	Hot coolant
	Hot coolant (charge air cooling)

632_010

SCR system

Reducing agent tank

The reducing agent tank is manufactured from two half-shells as an injection molding (not as a blow-molded tank). This has the advantage of saving weight.

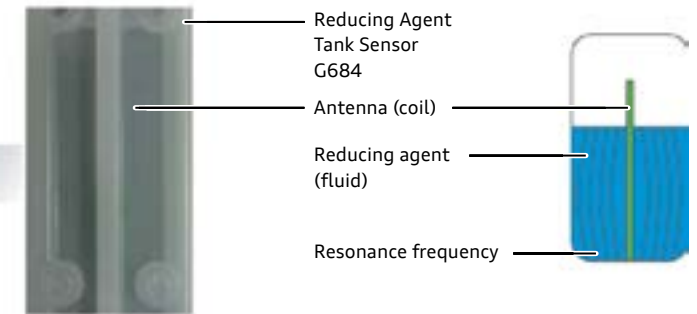
Equalization chamber

To accommodate the filling of reducing agent at a high flow rates, there is an equalization chamber in the upper section of the tank and at the filler neck. Since splashing reducing agent would cause the fuel nozzle to shut off, reducing agent is retained and allowed to settle in the equalization chamber.

Reducing Agent Tank Sensor G684

The tank sensor is an entirely electronic component and does not require float contact points. An antenna (coil) and the reducing agent (capacitive fluid) form an electrical resonant circuit.

A change in the fluid level alters the impedance of the circuit and shifts the resonance frequency (5 MHz – 12 MHz) proportional to the fluid level.



Function

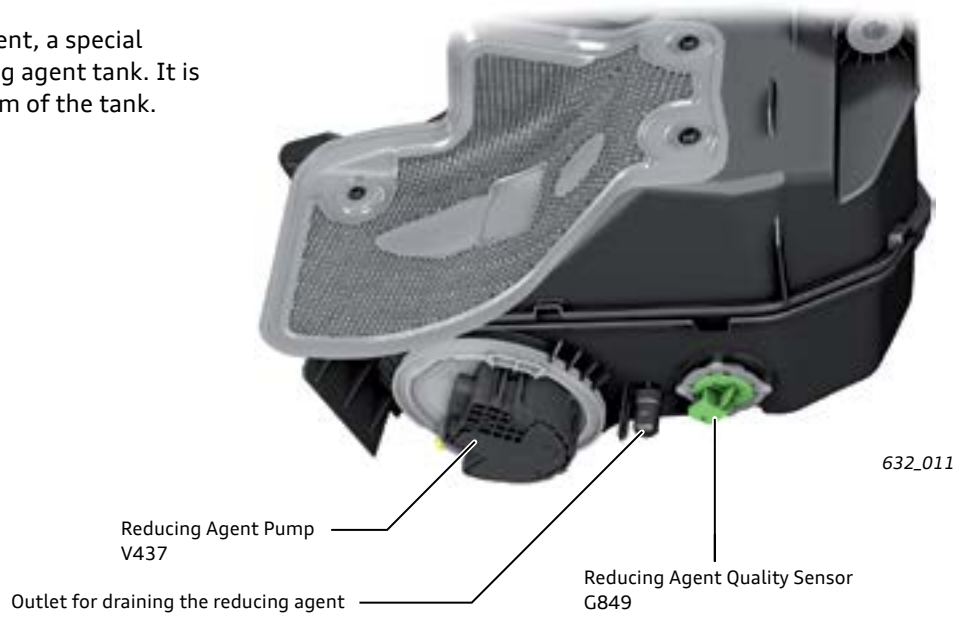
The resonance frequency is determined by a microcontroller by coupling a high frequency signal into the medium and scanning the upper frequency range. It is located at the base of the fluid level sensor. It computes the reducing agent level using a temperature correction function. At the same time, the functioning of the tank heater is checked by determining the temperature.



632_006

Reducing Agent Quality Sensor G849

To monitor the quality of the reducing agent, a special quality sensor is integrated in the reducing agent tank. It is located next to the swirl pot on the bottom of the tank.

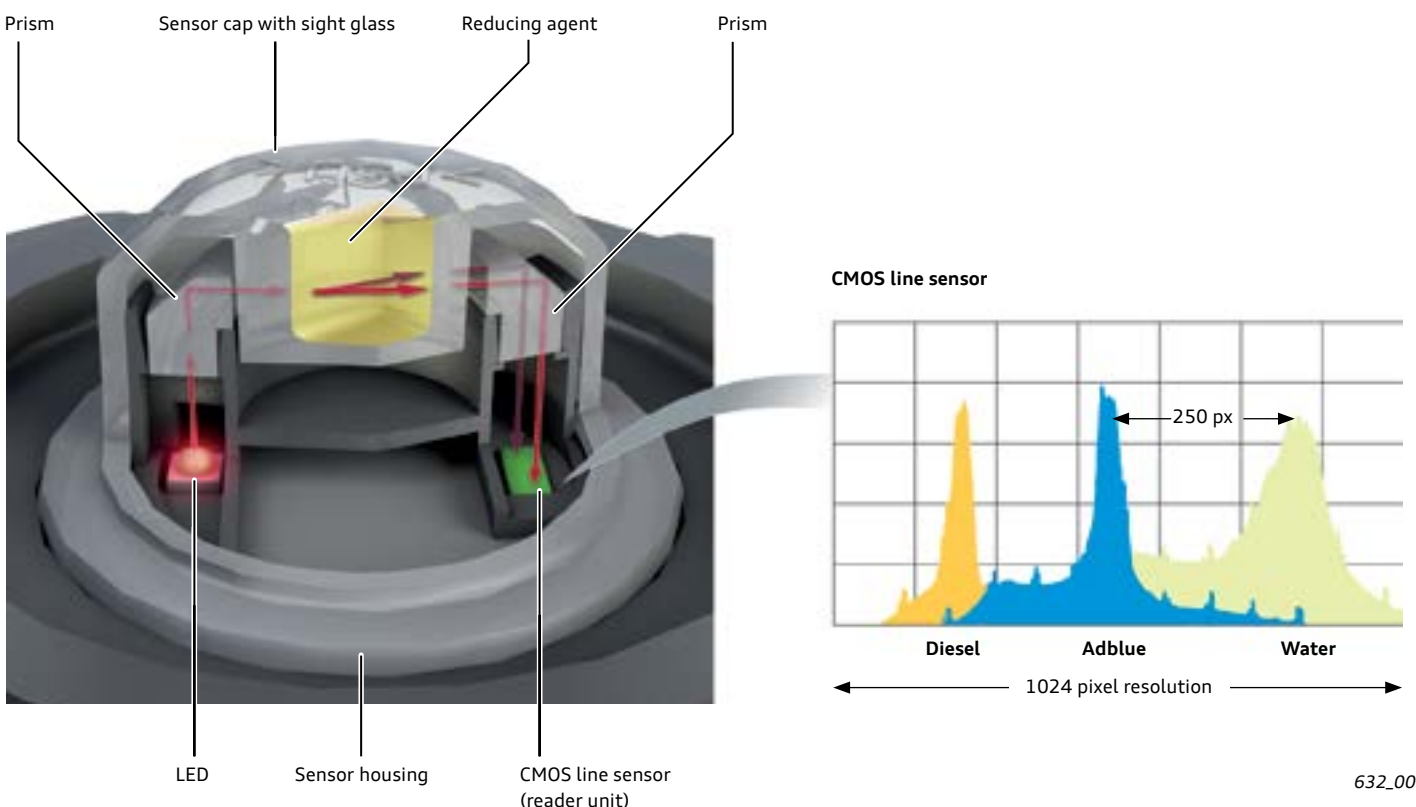


Function

The sensor determines the density of the reducing agent by deflecting the light beam onto a CMOS cell. An LED emits light within a prism and deflects the light beam through the sight glass filled with reducing agent.

If the reducing agent is in good condition, the light beam travels straight through the sight glass and hits an opposing prism. This light beam impinges on a CMOS line sensor with a resolution of 1024 pixels. The impinging light beam is evaluated and assessed in the electronic evaluation unit. The quality of the reducing agent is determined by reducing and increasing the deflection of the light beam impinging on the CMOS line sensor.

If the reducing agent is degraded, contaminated or diluted with water, the light beam is deflected and impinges on the electronic evaluation unit at a different angle. This sets a DTC in Reducing Agent Metering System Control Module J880 and sends a warning message to the driver via the DIS.



632_008

TDI engine cover with integrated air filter

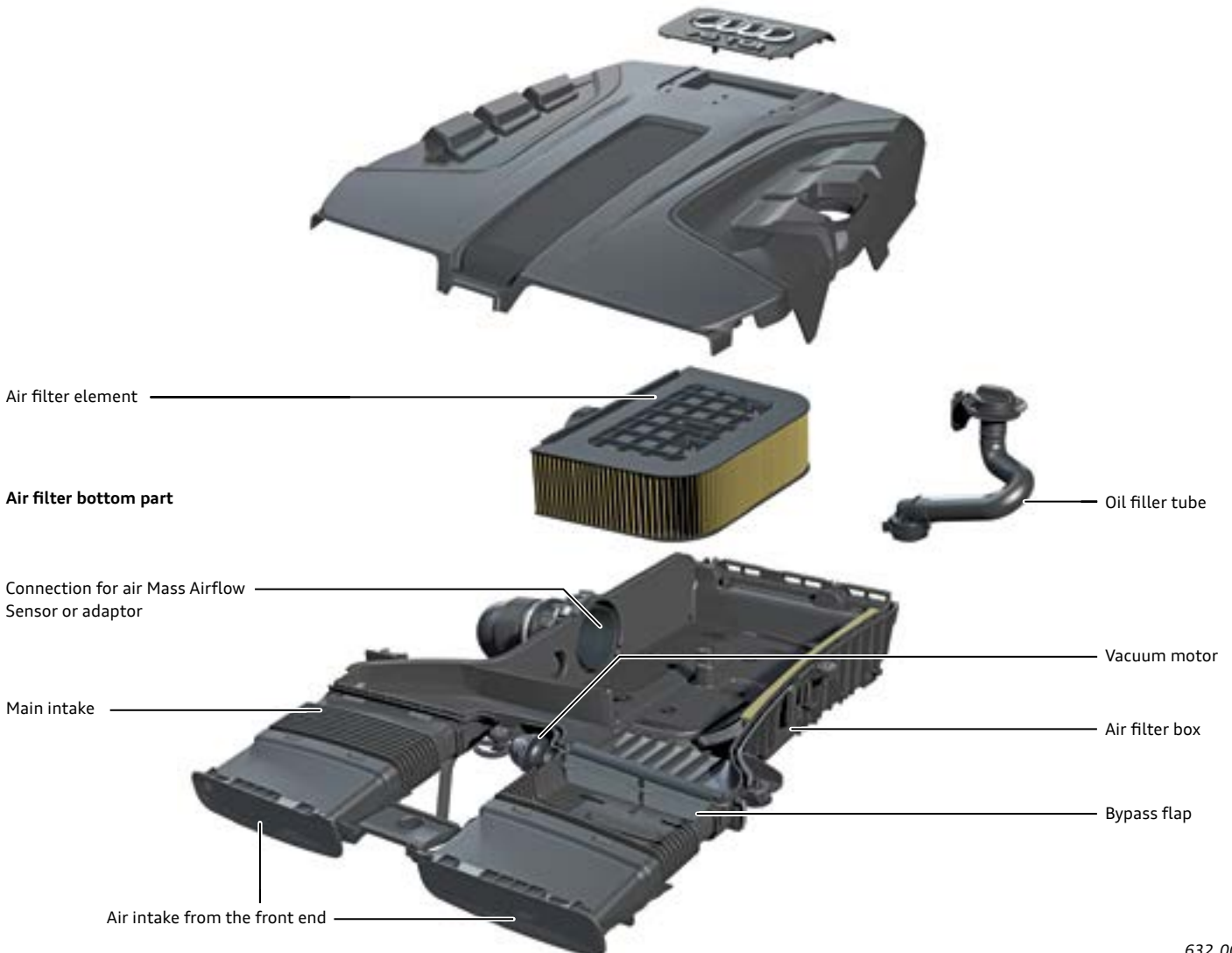
The engine cover also serves as a cover for the air filter. It is a plastic-welded multi-piece construction. The lower section of the cover houses the air filter on the bottom side. It also has attachment points for the Mass Airflow Sensor and oil filler tube.

The air filter housing has two connecting ports on the unfiltered air side. One of the two connecting ports can be sealed with a bypass flap. The bypass flap is vacuum-operated.





The bypass flap is switched by Air Filter Bypass Door Valve N275 (open/close) that is integrated in the air filter. The bypass flap is closed when depressurized. Air filter drainage is through an integrated with multi-outlet water discharge system which allows safe drainage from driving in spray/ rain and during offroad operation on inclines within the permissible operating parameters.

Several criteria influence the position of the bypass flap (see table below):

Acoustics	To reduce drive-by noise and passenger compartment noise, the bypass flap is closed, reducing the orifice cross-section. Signals for engine speed, engine torque, power demand and vehicle speed are supplied by the ECM.
Snow	To ensure low snow/snow free air intake, the flap is opened at an ambient temperature of 41 °F (5 °C), resulting in a lower flow rate at the intake. The ambient temperature signal is supplied by the Climatronic Control Module.
Water spray	To ensure low-spray air intake with no water inlet on the clean air side, the bypass flap is opened as a function of speed, resulting in a lower flow rate at the intake. The signal is supplied by the rain sensor or wiper control unit via the ECM.
Power	Low pressure loss, power increase, reduction in fuel consumption, reduced charge air temperature. The flap is opened upwards of approximately 3500 rpm as a function of power output, necessitating a lower flow rate (additional air). The engine speed and power demand signals are supplied by engine control unit.
Diagnostics	Output check diagnosis (can only be checked at idle); visual inspection of flap circuit.



Engine/transmission combinations

Engines	3.0l TFSI engine (CREC)	3.0l TDI engine (CRTC)
8-speed Automatic gearbox OD5 AL552-8A		
Rear axle drive O2D HL600B		

Breakdown of manufacturer codes:
 for example: AL552-8A

M Manual transmission
A Automatic transmission
L Longitudinal mounting
552 Rated torque capacity

8 Number of speeds
F Front-wheel drive
A quattro all-wheel drive

Power transmission

Overview

The quattro drive concept of the Audi Q7 uses the technology of the Modular Longitudinal Platform with full-time all-wheel drive. This is typified by the 8-speed automatic transmission OD5. It has a front axle drive in front of the torque converter and houses an integrated transfer case.

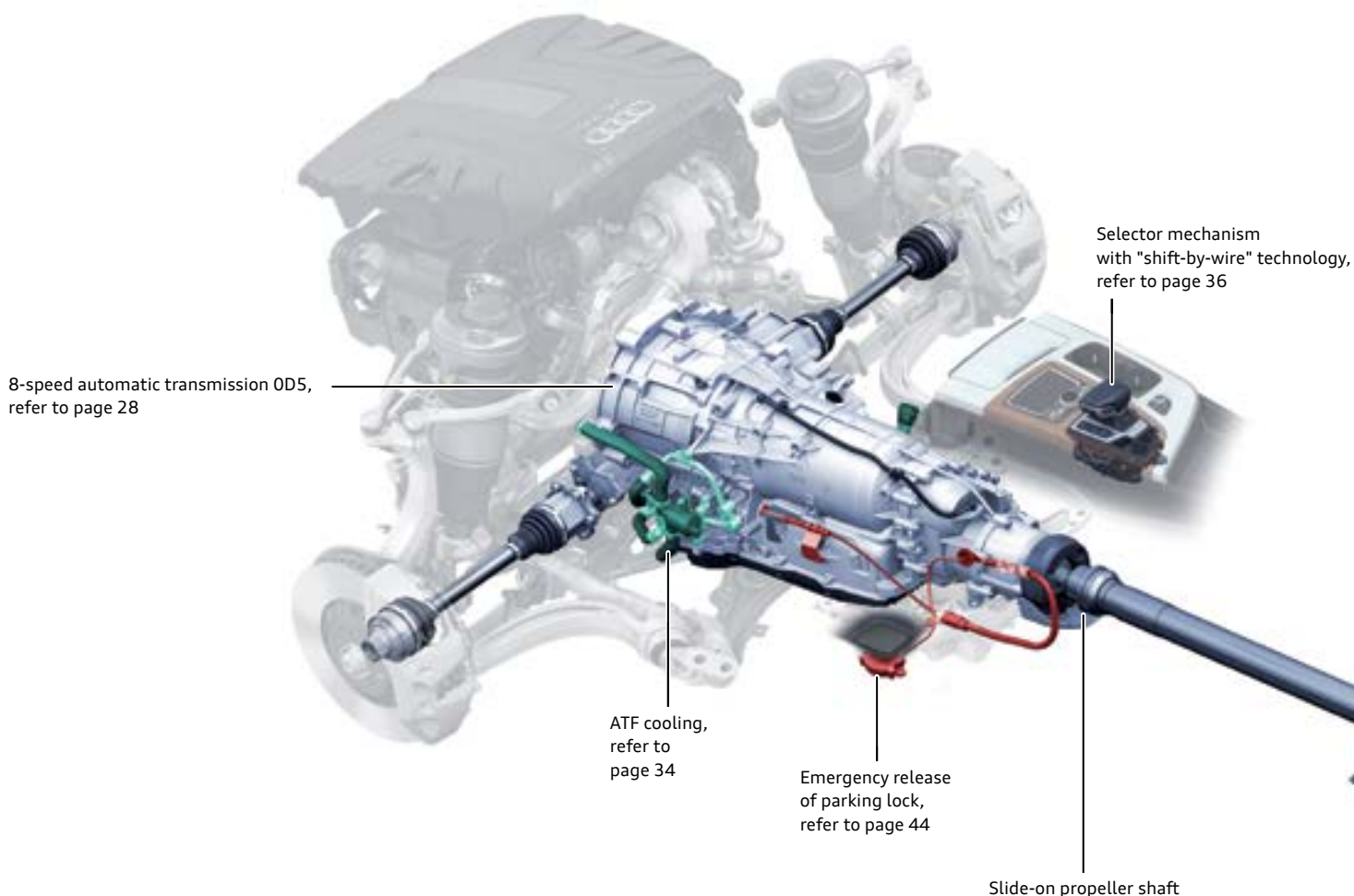
The transfer case has a self-locking center differential with asymmetrical-dynamic torque split and the rear axle drive through the open differential OD2.

This drive concept saves weight compared to the predecessor Audi Q7 and increases efficiency.

The software of the OD5 uses the data from the navigation system to assist the start-stop system and neutral control. The transmission parameters can be selected via Audi drive select. The Transmission Control Module is a participant of the immobilizer system.

The transmission in the Audi Q7 is entirely operated using "shift-by-wire" technology. The selector mechanism and the operating concept are new.

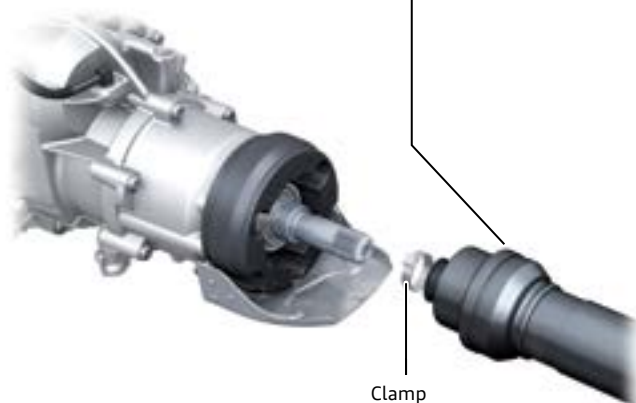
The parking lock is electro-hydraulically actuated and can be released using an emergency release mechanism. The Auto P function provides added operating comfort.



Assembly of the front propeller shaft

The propeller shaft is splined to the transmission.

For more information, please refer to eSelf-Study Program [950103, The 2011 Audi A8 Power Transmission.](#)



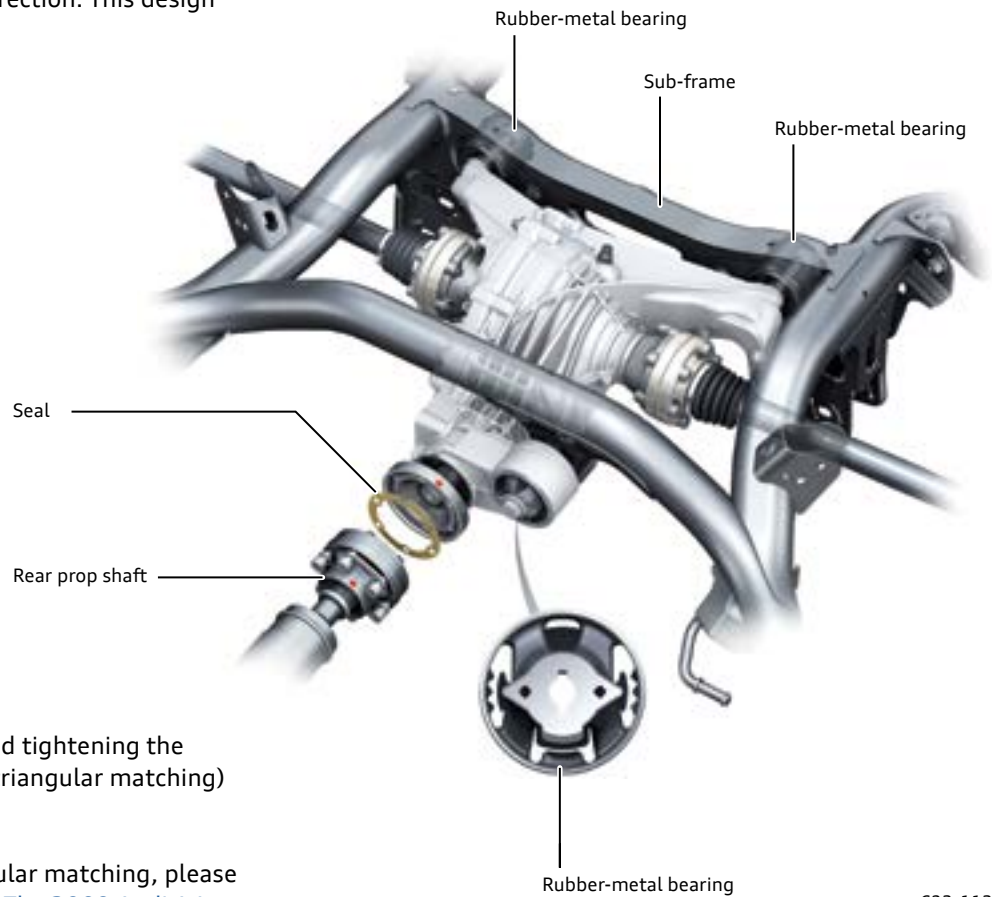
632_111

Rear axle drive OD2

The rear axle drive is derived from the previous OBC rear axle drive. The housing is designed so it can be mounted to the sub-frame by a four-point mounting system.

The front rubber-metal bearing is press-fit to the case and then bolted to the sub-frame. It is supported by an additional bearing which moves in the Z direction. This design provides selective vibration insulation.

The rubber-metal bearings must be installed in the position specified by the repair information.

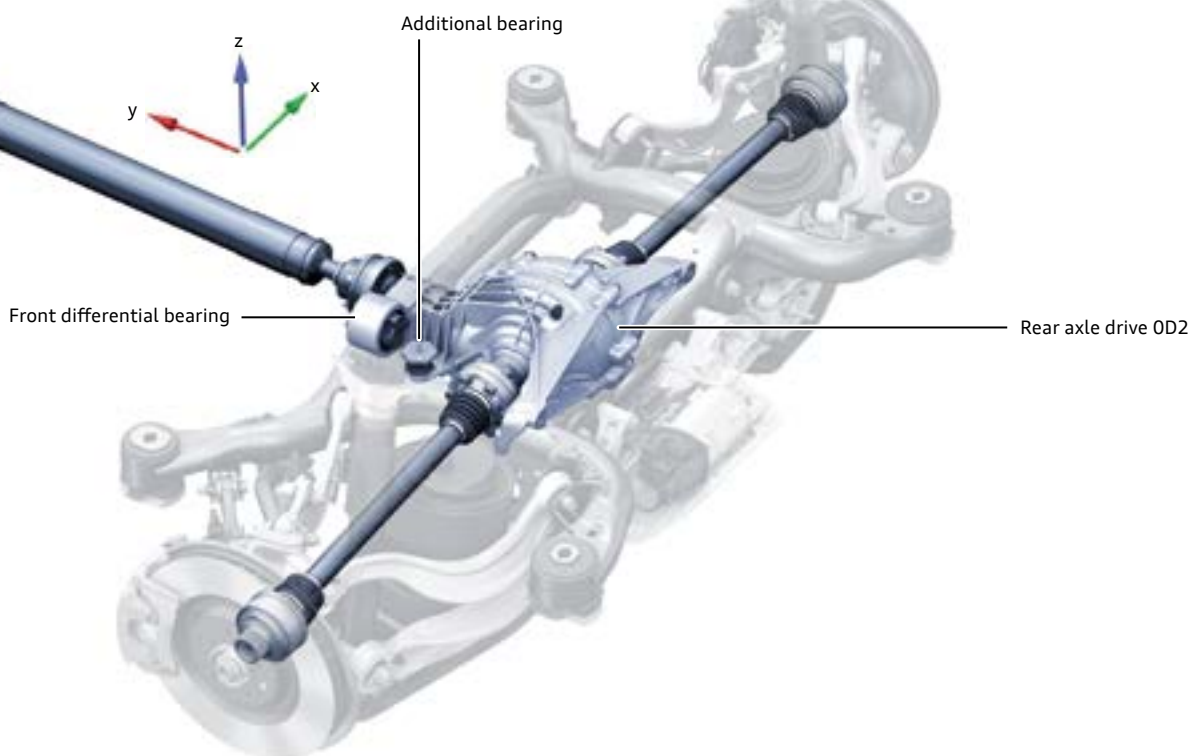


Assembly of the rear prop shaft

The special procedure for attaching and tightening the propeller shaft to the rear axle drive (triangular matching) is described in the workshop manual.

For detailed information about triangular matching, please refer to eSelf-Study Program [991803, The 2009 Audi A4 Vehicle Introduction](#) and the [Audi Service TV program "Audi A5 Power Transmission / Topic Prop Shaft Assembly Concept" of 23.02.2010.](#)

632_112



632_113

Eight speed automatic transmission OD5

The OD5 transmission is based on the OBK transmission first used in the 2011 Audi A8.

It has the internal designation AL-52-8Q. The manufacturer ZF Getriebe GmbH uses the designation 8HP65A. It is rated for up to 516 lb ft (700 Nm) of input torque.

The key new features of the OD5 transmission compared to the OBK are:

- ▶ Twin-damper converter with integrated pendulum-type absorber.
- ▶ Reinforced gear set with revised shift elements, the number of brake discs and clutch plates is dependent on engine version, brake B is now activated by a simplex cylinder, the number of discs of brakes A and B is configured for active disc separation using corrugated springs.
- ▶ Mechatronics with modified hydraulic interfaces and a vehicle plug connection facing in the direction of travel (refer to page 31).

- ▶ Plastic ATF pan with integrated ATF suction filter and an ATF drain plug with bayonet catch in place of a thread (refer to page 33).
- ▶ Combined ventilation of the 3 oil systems, the ATF, the transfer case and the front final drive (refer to page 33).
- ▶ For the first time in a conventional converter-type automatic transmission, the operating software supports the coasting mode (refer to page 47).
- ▶ The neutral control function has been re-configured (refer to page 48).

In addition, as with the OBK transmission, the software of the OD5 transmission uses data from the navigation system and supports the start-stop system.

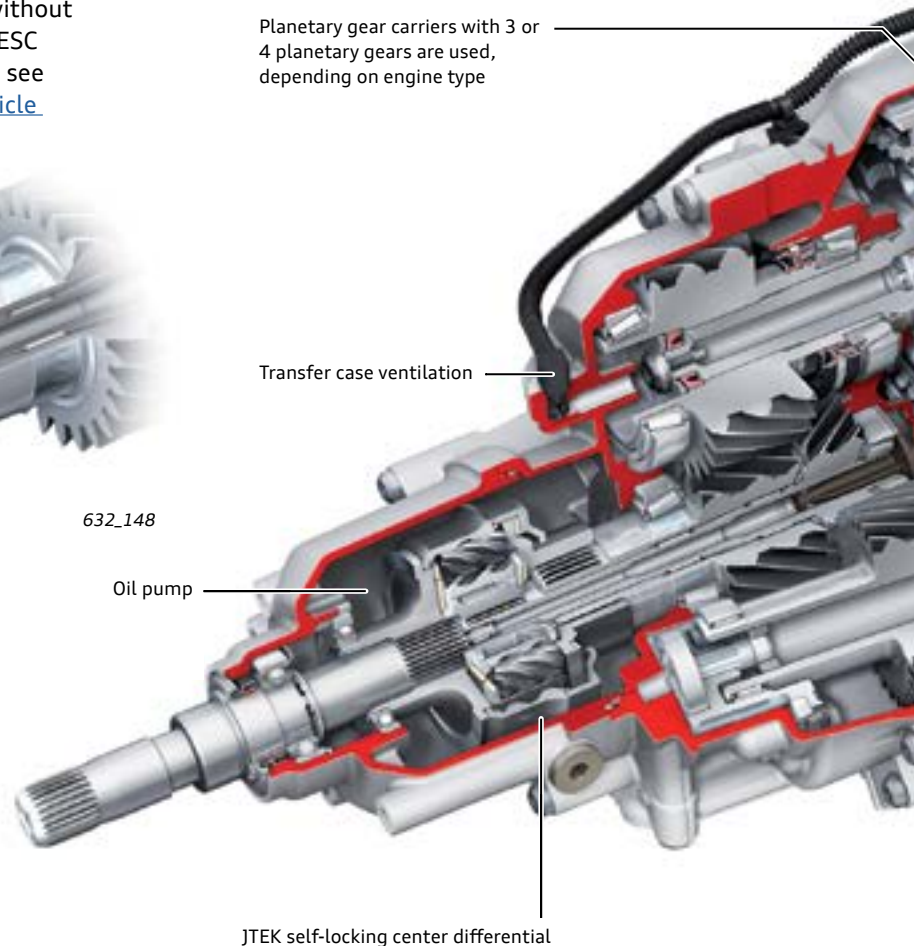
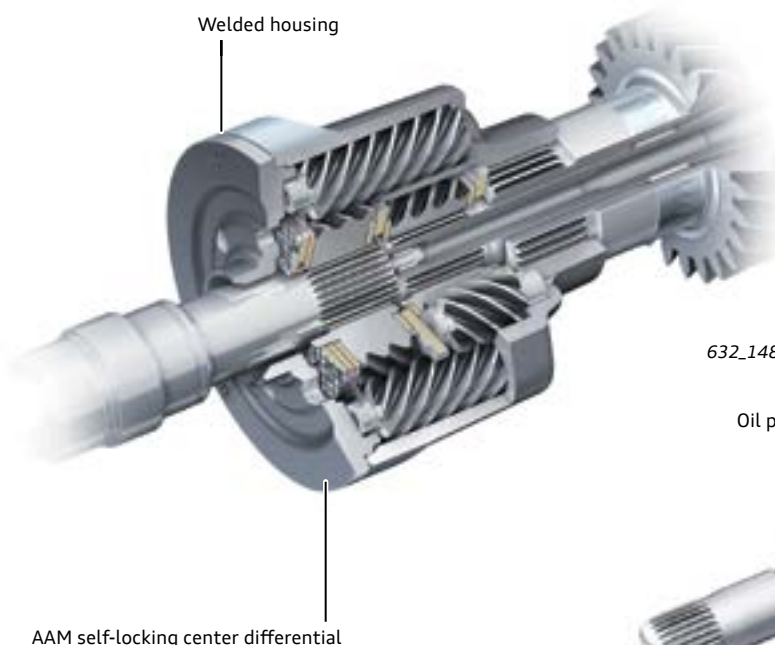
Various driving modes can be selected via Audi drive select. The TCM is a participant of the Immobilizer system. ATF system cooling is regulated by the engine's thermal management system (refer to page 34).

Transfer case

The transfer case of the OD5 transmission can be ordered with a self-locking differential. They are manufactured by either AAM or JTEK.

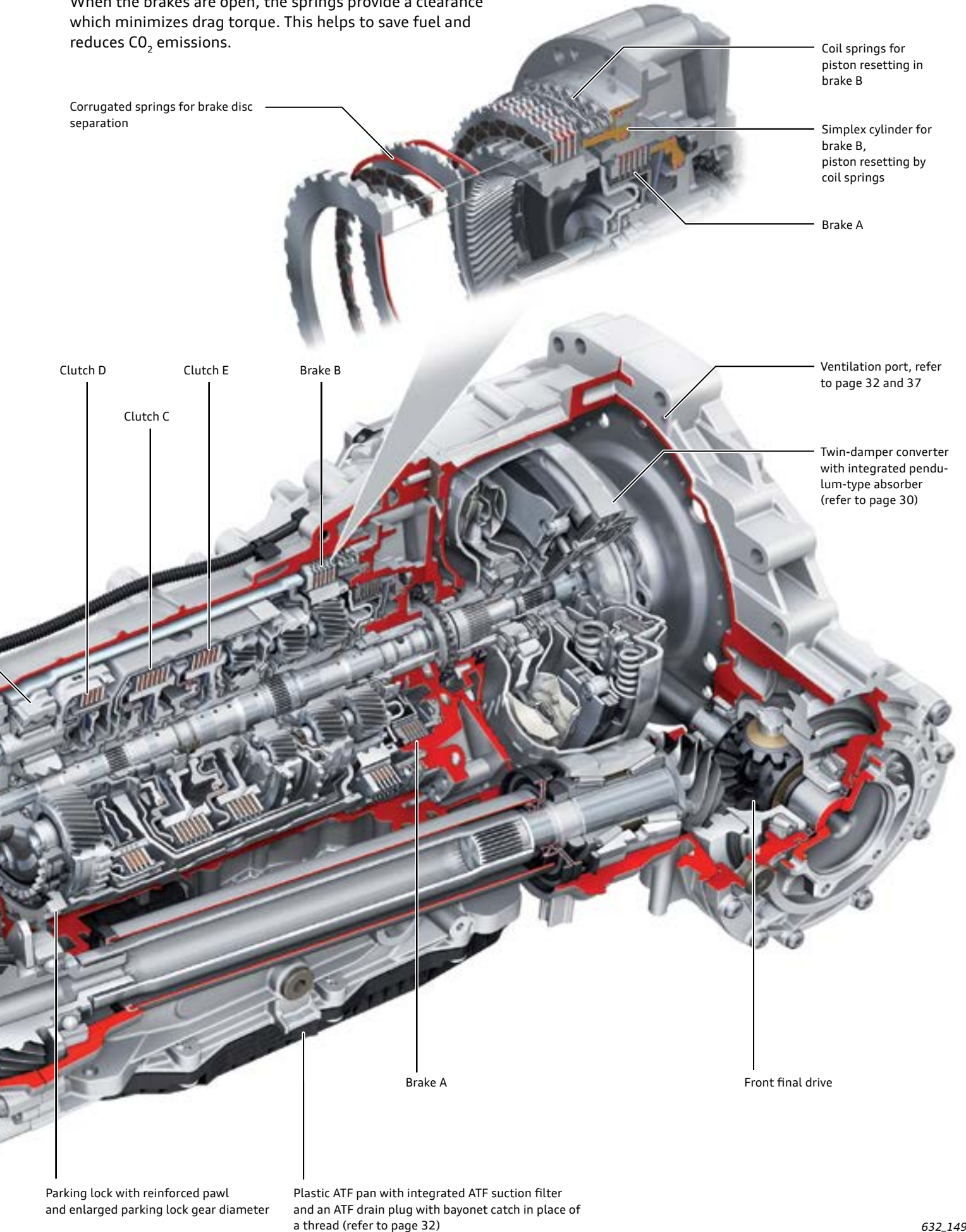
Both differentials have an asymmetric-dynamic torque split and, depending on traction conditions, distribute up to 70% to the front axle or up to 80% to the rear axle without any deceleration or the need for corrective action by ESC. For more information about torque vectoring, please see eSelf-Study Program [990203, The 2012 Audi A7 Vehicle Introduction](#).

The mechanical center differential interacts directly with the torque vectoring system, which improves traction and driving dynamics when cornering at high speeds.



Active brake disc separation in brakes A and B

Brakes A and B have corrugated springs between the discs. When the brakes are open, the springs provide a clearance which minimizes drag torque. This helps to save fuel and reduces CO₂ emissions.



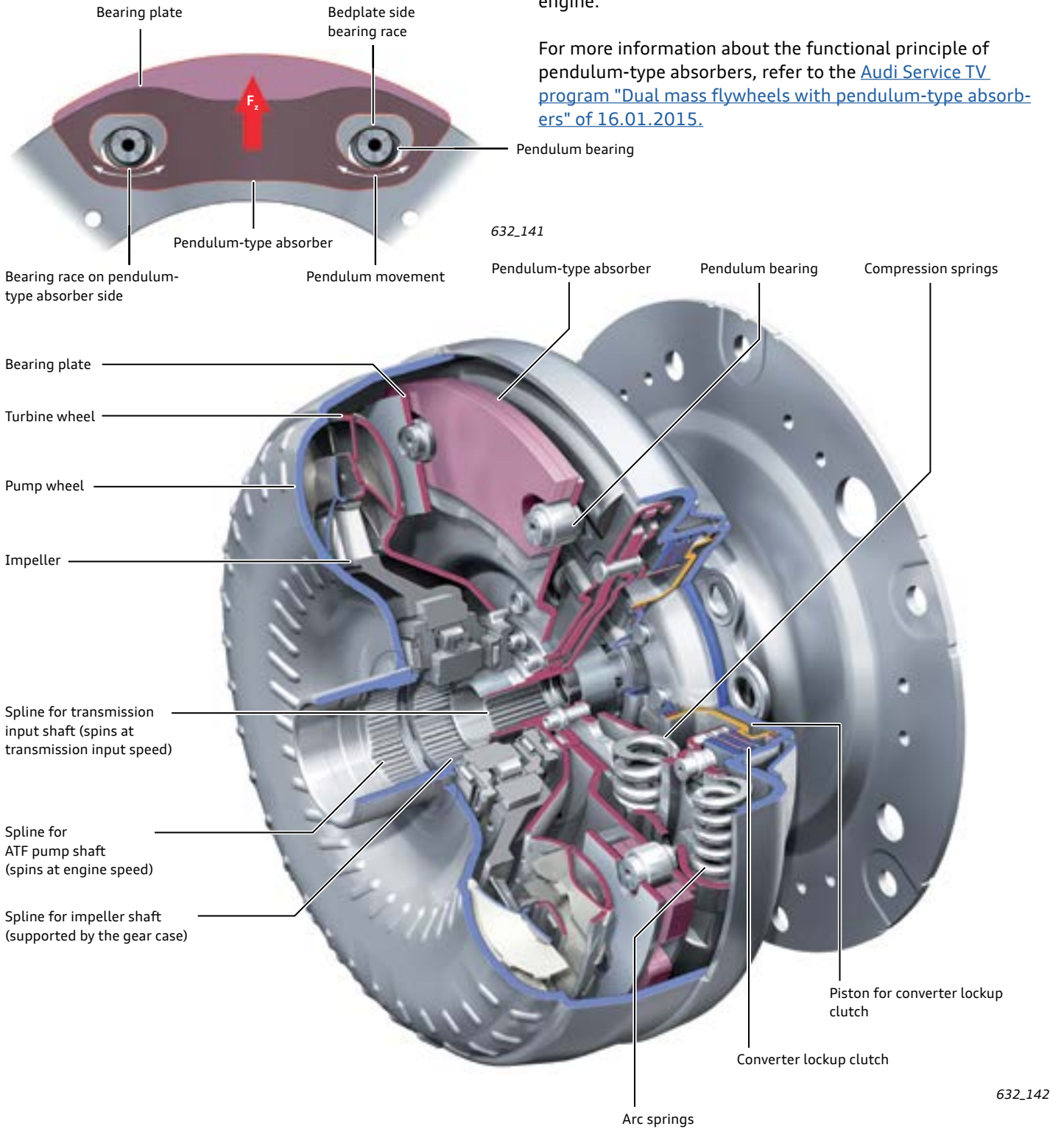
Twin-damper converter with integrated pendulum-type absorber

The torque converter of the is a twin-damper converter with integrated pendulum-type absorber.

This cannot be seen from the exterior, but if the torque converter is rolled or shaken the very loosely mounted pendulum-type absorbers can produce typical rattling noises. This is not an indication of a damaged or faulty converter. Even at low engine speeds, the pendulum masses produced by the centrifugal force are thrust outwards and no longer generate any noise.

The four pendulum masses complement the conventional working principle of the twin-damper converter by damping engine torsional vibration as a function of engine speed. This is achieved through the interaction of centrifugal force (F_z) and the shape of the bearing races. At low engine speed, a low centrifugal force produces more pronounced pendulum movement than a high centrifugal force at high engine speed. The pendulum masses and the shape of the bearing race are adapted to the engine so the pendulum movement counteracts the torsional vibration of the engine.

For more information about the functional principle of pendulum-type absorbers, refer to the [Audi Service TV program "Dual mass flywheels with pendulum-type absorbers" of 16.01.2015.](#)



Key:

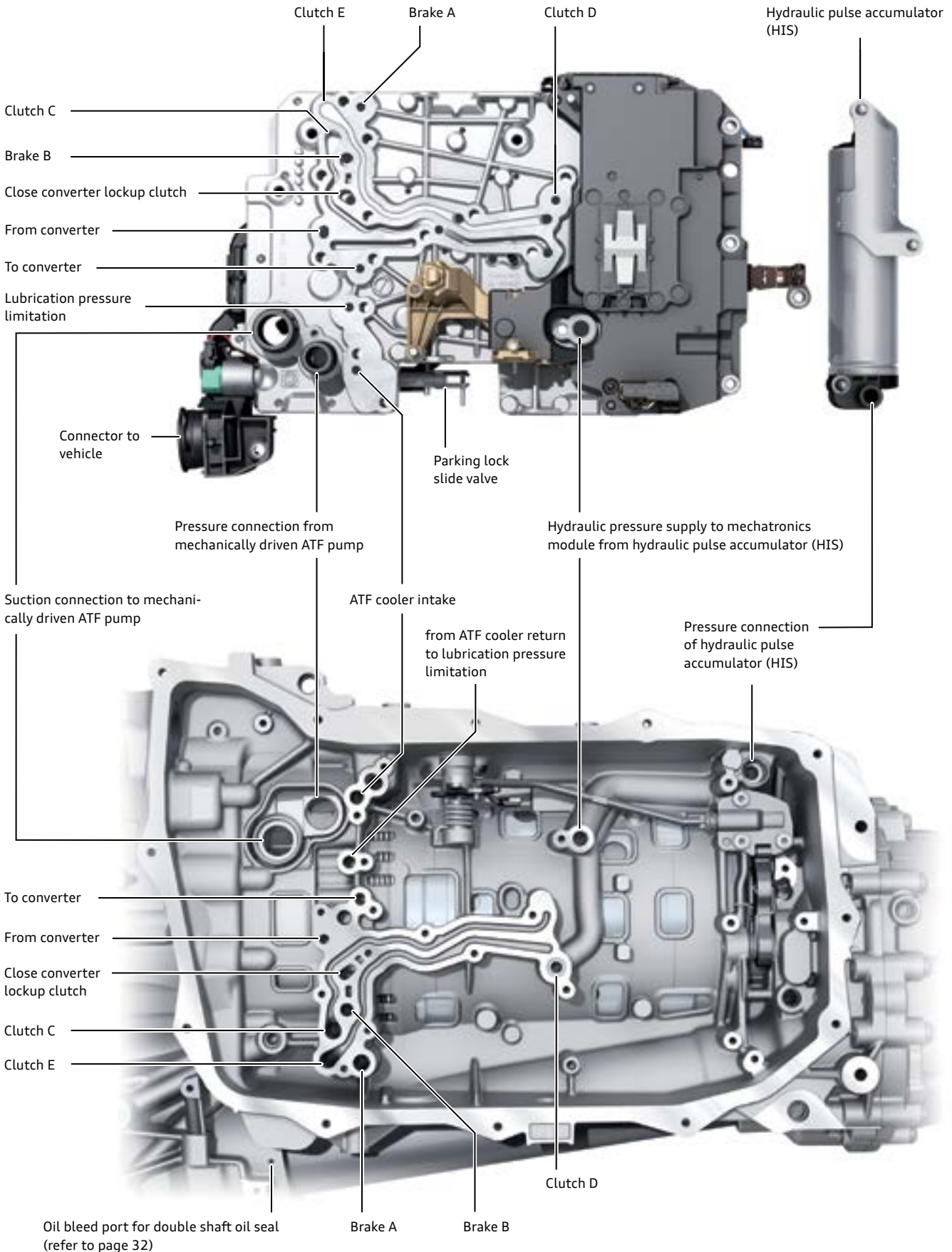
■ The blue-colored sectional edges show the components connected to the internal combustion engine when the converter lockup clutch is open (primary side).

■ The magenta-colored sectional edges show the components connected to the transmission input shaft when the converter lockup clutch is open (secondary side).

Mechatronics module

The Mechatronics module of the OD5 transmission has the ZF designation E26/29. It is an enhanced version of the module used in the OBK transmission of the 2011 Audi A8. The key differences between the two modules are the modified hydraulic interfaces for brake B and the ATF cooler which no faces in the direction of vehicle travel.

The sensors and actuators as well as the design of the hydraulic parking lock and the hydraulic pulse accumulator (HIS) are identical. This means the shift elements are activated the same way. For further information, see eSelf-Study Program [950103, The 2011 Audi A8 Power Transmission.](#)



632_143

632_144

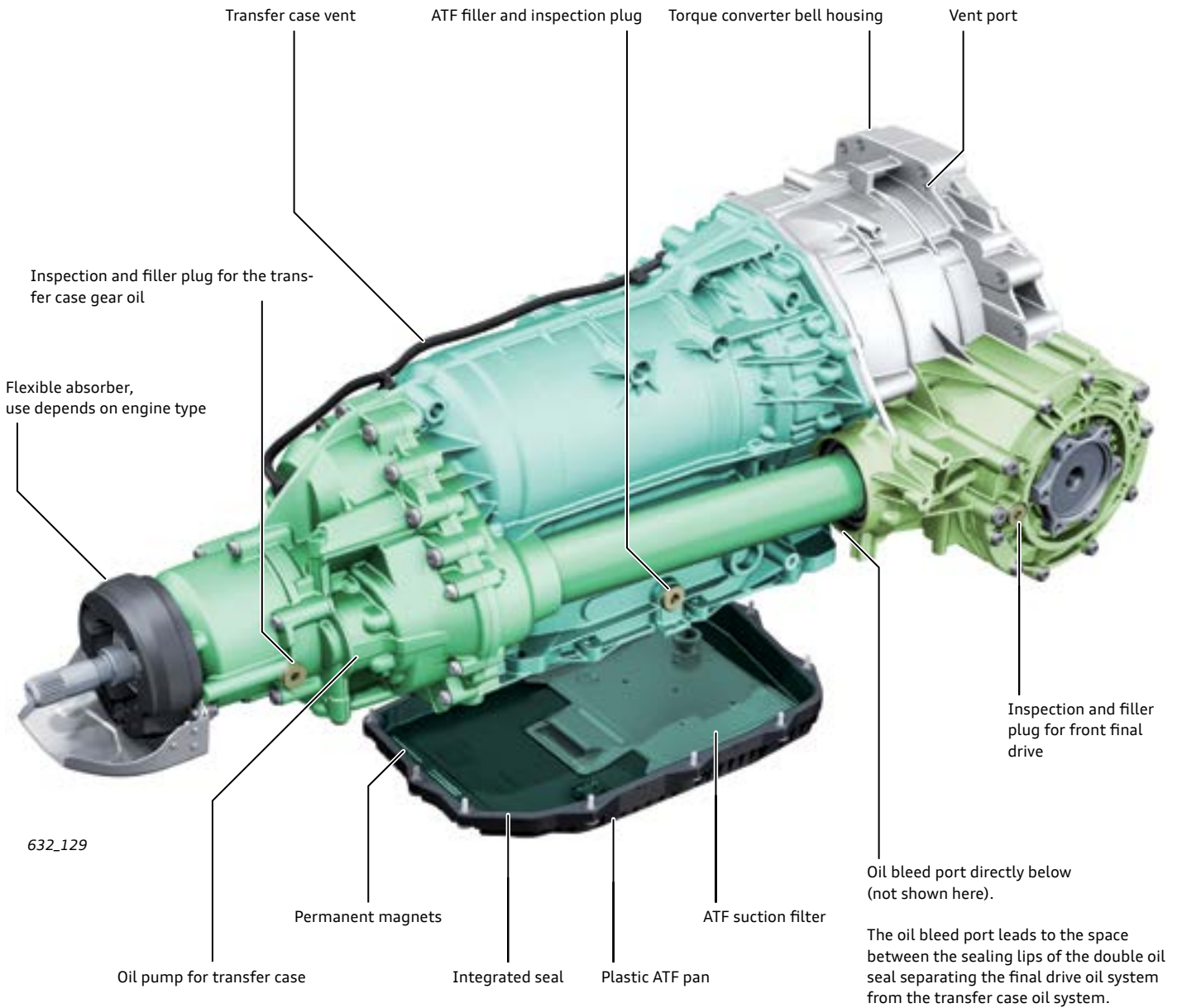
ATF and gear oil systems

The OD5 transmission of the Audi Q7 has three separate lubrication systems:

- ATF system for the planetary gears and the hydraulic control module (lifetime)
- Oil system for the transfer case (gear oil with STURACO¹⁾, lifetime)
- Oil system for front final drive (gear oil without STURACO¹⁾, lifetime)

The plastic ATF pan saves weight. It forms a unit together with the ATF suction filter and must be replaced when replacing the mechatronics module or the hydraulic pulse accumulator. The ATF pan has reinforcing ribs which offer sufficient stability to allow the transmission to be set down flat on the ATF pan.

The ATF drain plug has a bayonet catch in place of the usual thread. **It may not be reused and must be replaced after checking the oil level.**

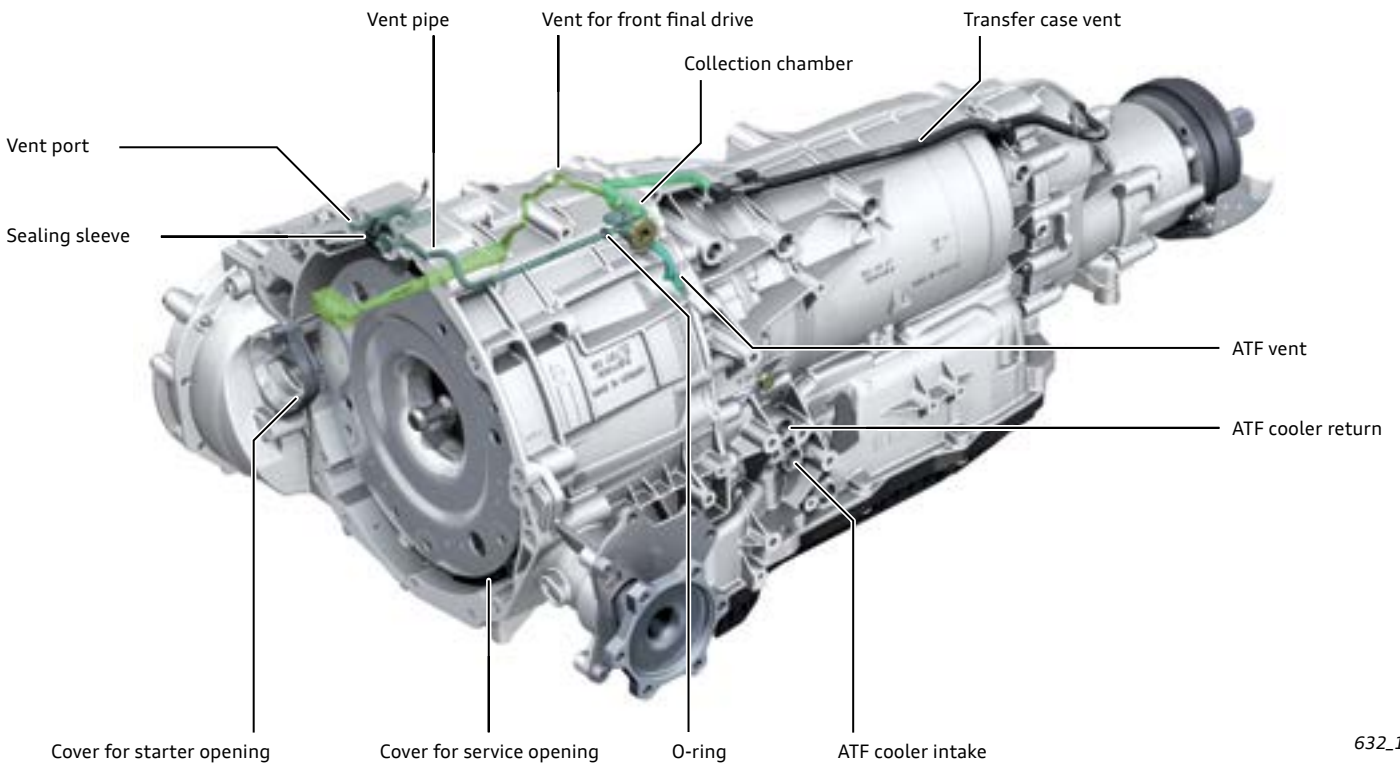


¹⁾ **STURACO** is an oil additive that protects against excessive stresses in the center differential and thus helps to enhance ride comfort. Pay attention to exact assignment of gear oils in accordance with the part numbers in ETKA.

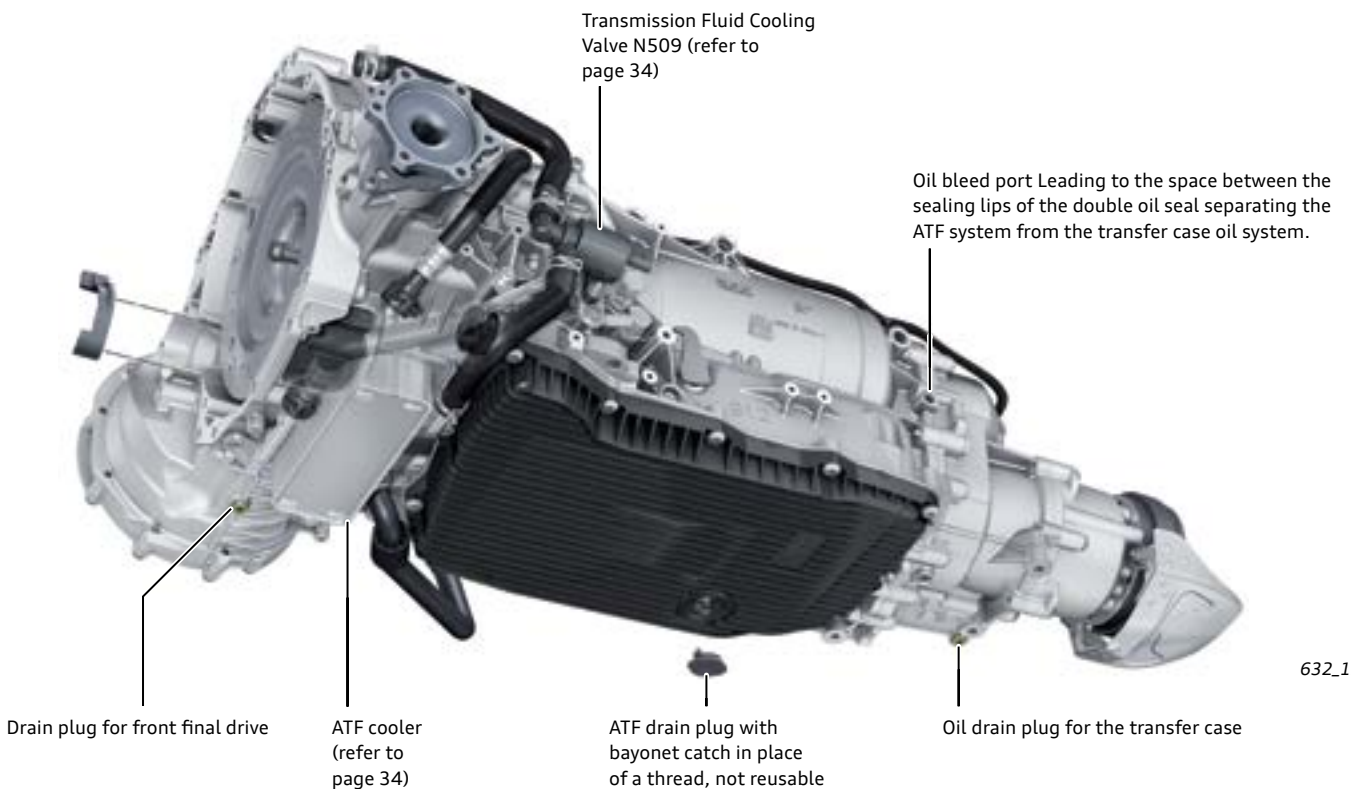
Combined transmission ventilation

The vent pipe leading into the collection chamber is sealed off from the collection chamber by an O-ring. The sealing sleeve prevents the ingress of operating fluids into the converter housing.

The ventilation port in the converter housing provides the necessary pressure equalization after heating or cooling of the transmission. To allow pressure equalization to take place, the ventilation port must be open and unobstructed.



632_130



632_131



Note

When moving or working on a transmission, the gear oil and ATF may mix via the common gear box vent if the transmission is tilted too far. Always follow the instructions given in the electronic repair information.

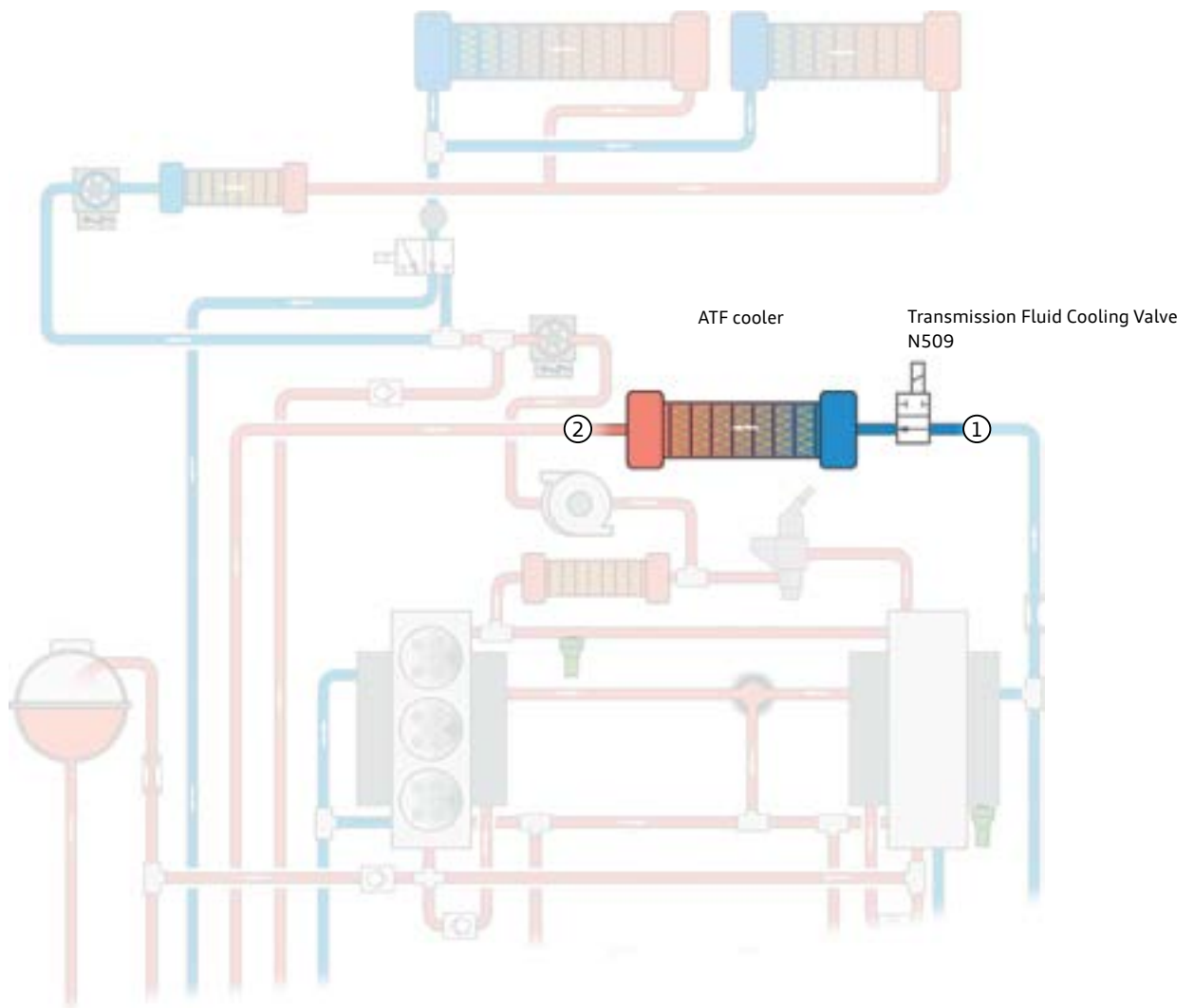
ATF cooling

The ATF cooling system is integrated with the engine coolant circuit. It is controlled by Transmission Fluid Cooling Valve N509. N509 is actuated by Transmission Control Module J217. J217 receives the command to open or close N509 from the ITM software in the ECM.

If the ATF cooler is leaking, coolant (glycol) will mix with the ATF. Even the smallest quantities of coolant in the ATF can have a detrimental effect on the transmission clutches. A glycol test can be done to confirm this condition.

Integration in the coolant circuit

The diagram shows a section of the coolant circuit of the 3.0l V6 TDI engine (refer to page 21).



632_058

Start phase

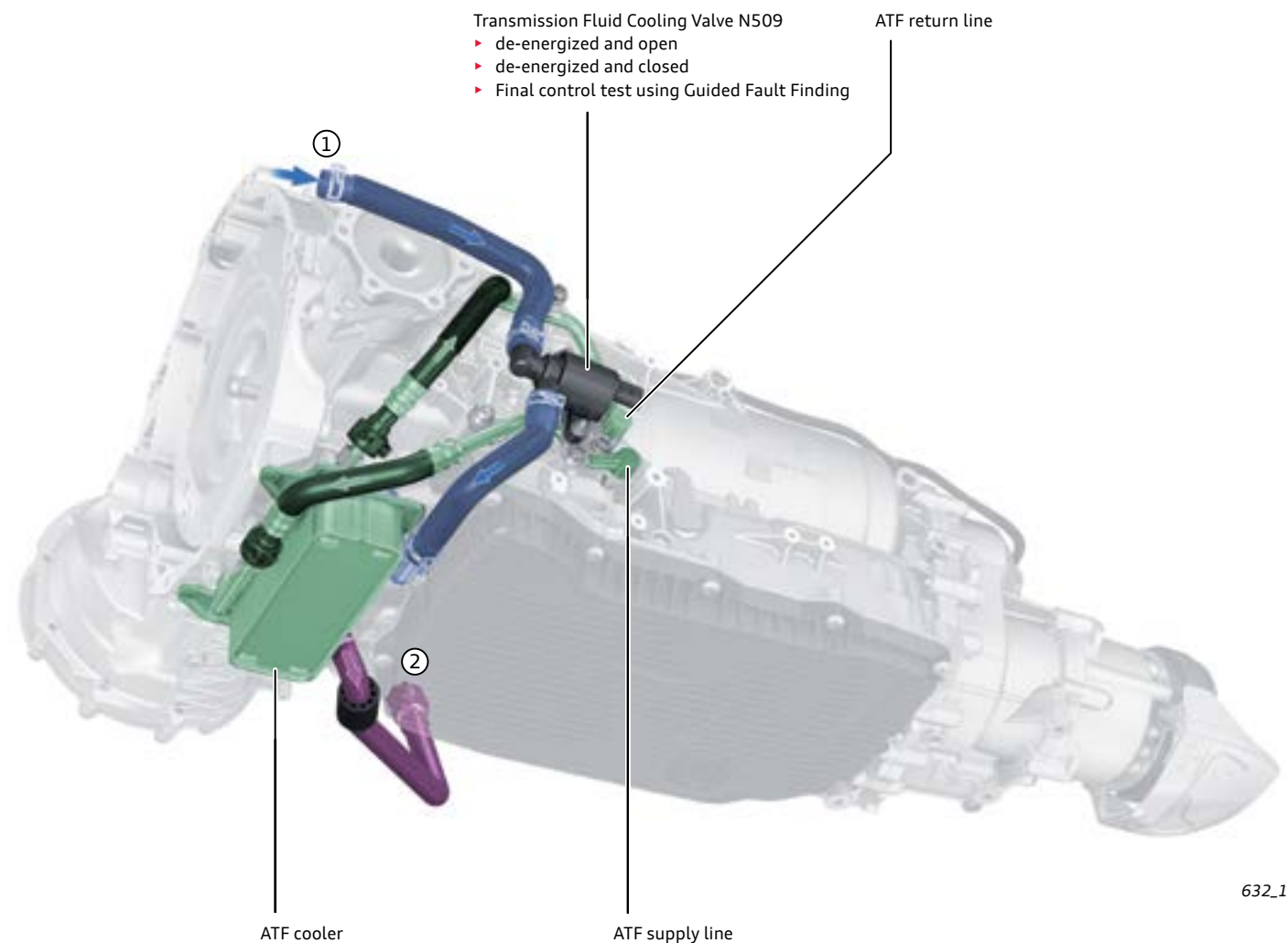
When the engine is cold started, N509 is energized closed. The cooling circuit path for the ATF heat exchanger is blocked. This allows the engine to reach operating temperature more quickly. The ITM software of the ECM decides when N509 is to be re-opened. The criteria are: ambient temperature, engine temperature, engine speed and the heat demand of the Climatronic system.

Heating of the ATF

If the engine has reached operating temperature and there is sufficient heat for the passenger compartment, N509 is opened and the ATF is heated. The lower viscosity ATF now used improves efficiency of the transmission.

Normal operation / cooling of the ATF

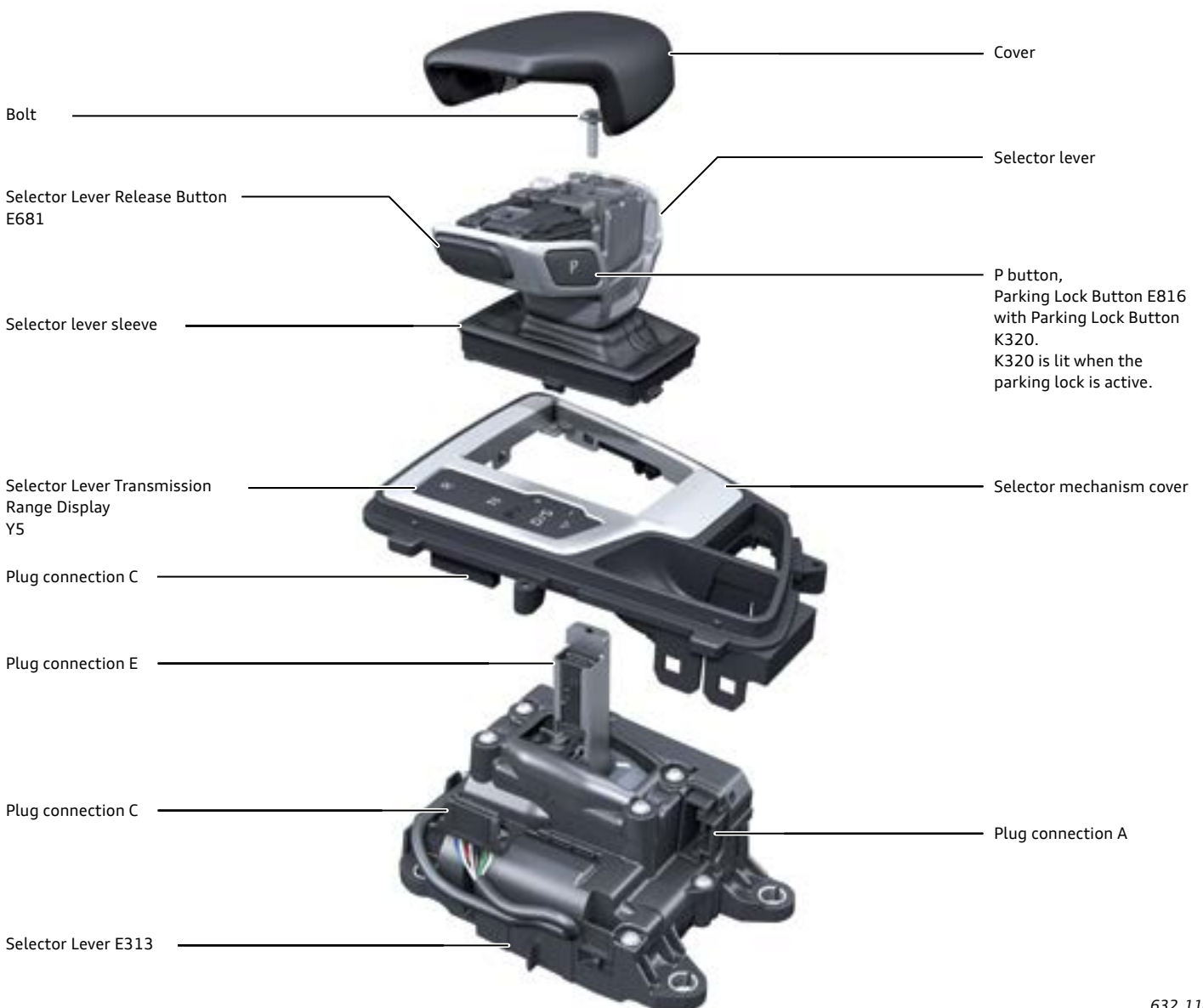
The coolant temperature of the engine is kept between 176 °F and 190 °F (80 °C - 90 °C). This corresponds to the nominal temperature range of the ATF. During normal operation, N509 is de-energized (open) and the ATF temperature is kept at that range.



Selector mechanism

The Audi Q7 uses a “shift-by-wire” operating concept.

- ▶ There is no mechanical connection between the selector lever and the transmission.
- ▶ The driver input is registered by the selector mechanism and transmitted electronically to the transmission without the need for a mechanical fail-safe.
- ▶ The parking lock is operated electro-hydraulically and activated automatically (Auto P function).
- ▶ In the event of a fault, a mechanical emergency release mechanism allows the parking lock to be released to move the vehicle (refer to page 44).
- ▶ Only gears **R**, **N**, **D** and **S** are selected through the automatic gate.
- ▶ The parking lock can only be activated manually using the **P** button. There is no selector lever position for **P**.
- ▶ To operate the Tiptronic function (manual mode **M**), the selector lever must be moved into the Tiptronic gate (this is only possible if gear position **D** or **S** is active).
- ▶ The release button Selector Lever Release Button E681 is integrated in the selector lever and configured for redundancy (refer to function diagram).



Parking Lock Button E816, P button

To manually activate the parking lock, the driver must press the P button. For activation, the vehicle must be traveling less than 0.5 mph (0.1 km/h). To help ensure reliability and facilitate fault diagnosis, the P button assembly has three shift elements.

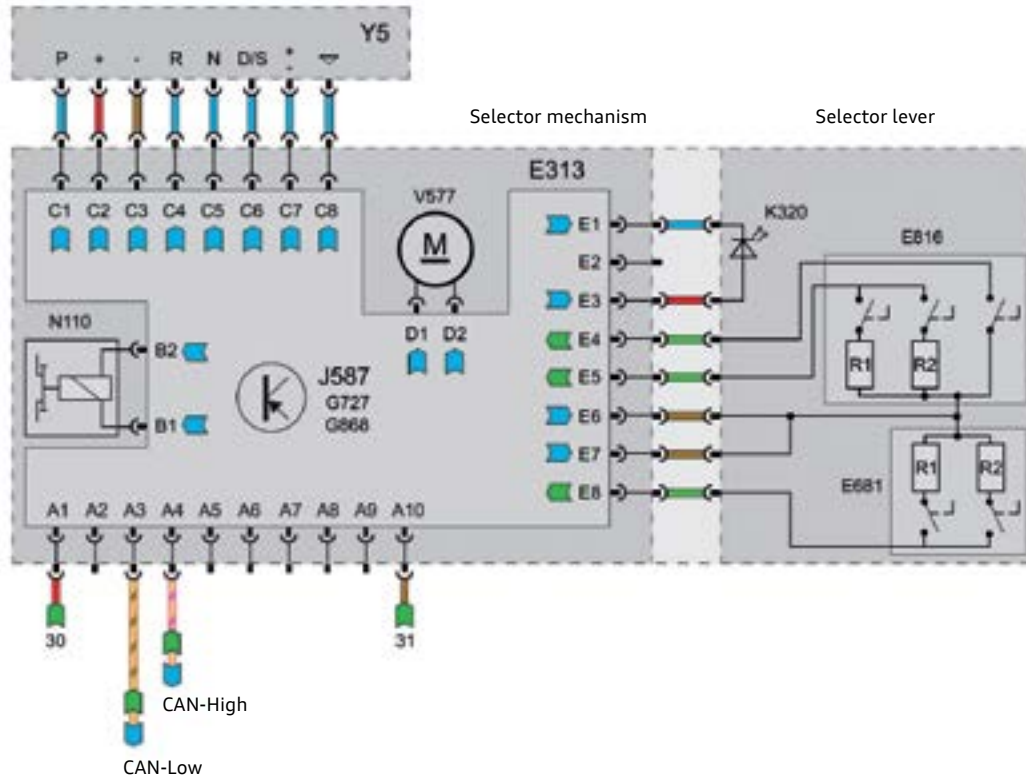
The shift status is indicated to Selector Lever Sensor System Control Module J587 via two interfaces and plug connection E (refer to the diagram). If the P button is defective, a DTC is generated and a message appears in the DIS and the system reverts to the Auto P function when the engine is switched off.

Information flow

The communication path between the selector mechanism and the transmission is: Infotainment CAN > Gateway > FlexRay. The selector lever sensor control module determines the positions of the selector lever as well as the signals of the buttons and transfers the information to the TCM.

The TCM engages the gear corresponding to the driver input and sends this information to the selector lever control module. J587 then activates Shift Lock Solenoid N110, the selector lever position display LEDs and Parking Lock Indicator Lamp K320. When selecting a gear, this information flow causes a short delay until the corresponding gear symbol lights up.

Functional diagram of selector mechanism



632_115

Key:

E313 Selector Lever (selector mechanism)
E681 Selector Lever Release Button
E816 Parking Lock Button
G727 Selector Lever Position Sensor
G868 Transverse Selector Lever Lock Sensor

J587 Selector Lever Sensor System Control Module
K320 Parking Lock Indicator Lamp
N110 Shift Lock Solenoid
V577 Transverse Selector Lever Lock Motor
Y5 Selector Lever Transmission Range Display

VAS 642 001

The Y adapter VAS 642 001 allows measurements to be taken between Selector Lever E313 and Selector Lever Transmission Range Display Y5.



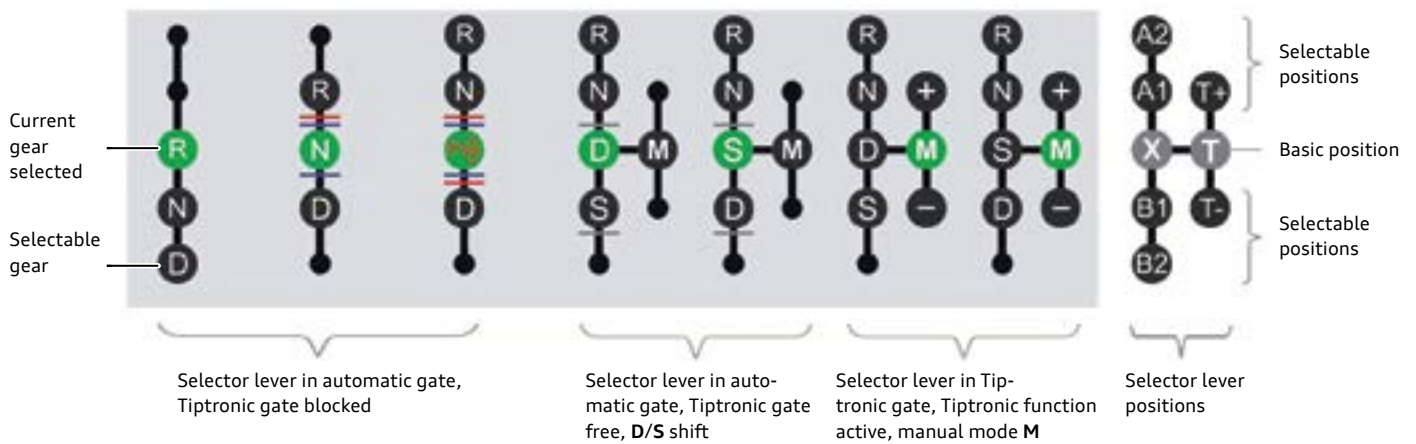
632_116

Display logic

			D				Display in instrument cluster when coasting
			M 1-8	M 1-8			Instrument cluster display during use of Tiptronic in D/S
R	N	P	D 1-8	S 1-8	M 1-8	M 1-8	Instrument cluster display
R	N	P	D/S	D/S	+ -	+ -	Illumination of Selector Lever Transmission Range Display Y5

632_134

Shift diagram



632_117

Key to selector lever lock – longitudinal

Software lock: deactivation by pressing the foot brake

Mechanical locking effect of Shift Lock Solenoid N110: deactivation by pressing the Selector Lever Release Button E681¹⁾

Software lock: deactivation by pressing the Selector Lever Release Button E681¹⁾

Speed-dependent transmission protection function

A change in driving direction from **D** to **R** and vice versa is only possible at a speed below 5.0 mph (8.0 km/h).

The transmission protection function locks out a change in driving direction shifting (1st gear and into R) at speeds above 5.0 mph (8.0 km/h).

¹⁾ In the event of a fault, E681 is considered actuated. The red and grey locks are deactivated and a DTC is entered in the control module. The selector can be moved out of positions P and N by pressing the foot brake.

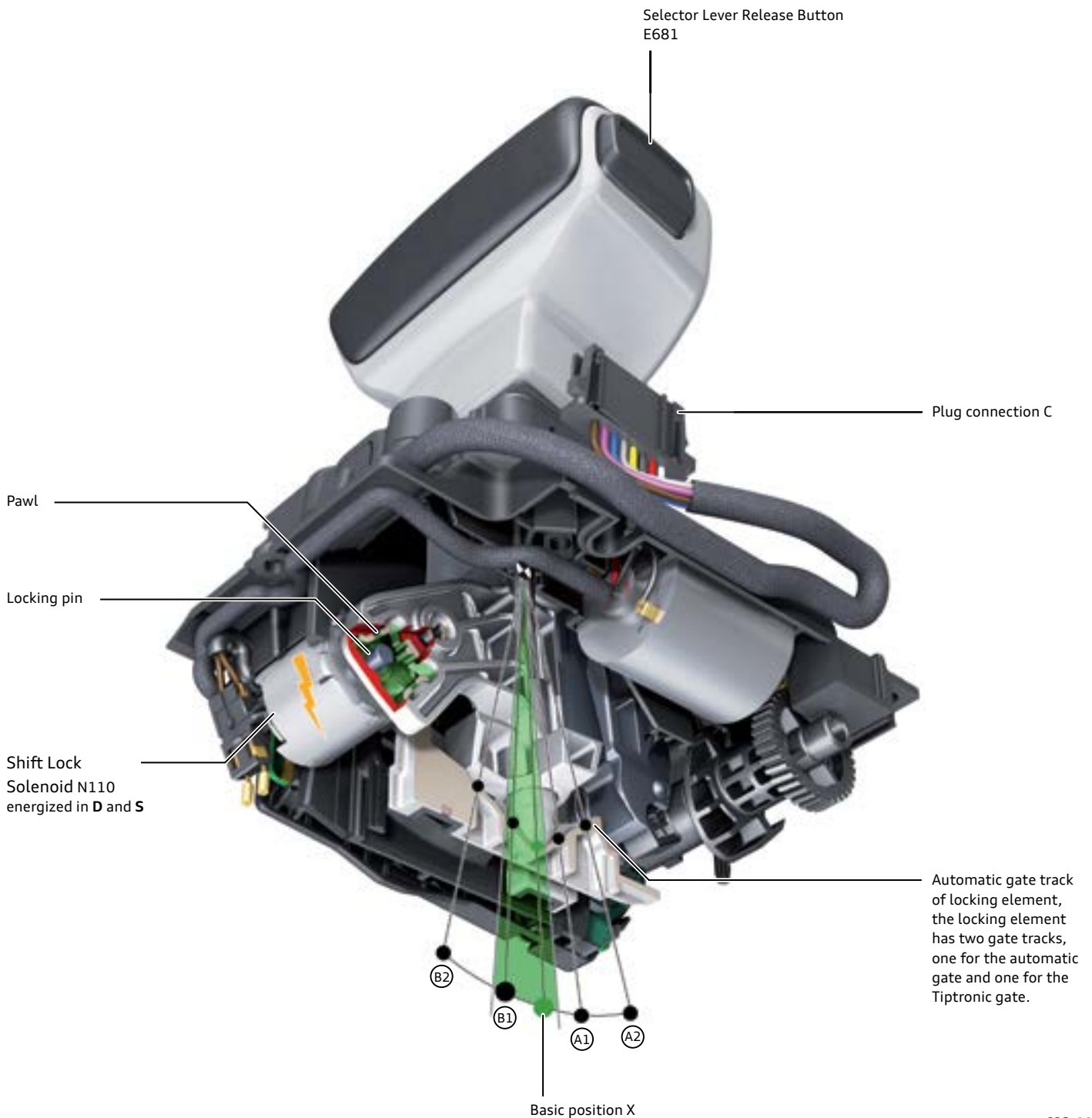
Shift Lock Solenoid N110

The selector lever also serves as an ergonomic hand rest for operating the MMI. To avoid unintentional selector lever operation when operating the MMI, forward movement of the selector lever is blocked in selector positions **D** and **S**.

In selector position **D/S** Shift Lock Solenoid N110 is energized and the locking bolt engages the selector lever locking gate. The selector can now be moved back into position **B1** from the basic position in order to shift from **D** to **S** or from **S** to **D**.

To minimize noise, N110 remains energized after shifting to the Tiptronic gate. The locking effect of the bolt is, however, deactivated because the locking gate swivels away when the selector lever is moved into the Tiptronic gate. The locking effect is reactivated when the selector lever is moved back into the automatic gate.

When the Selector Lever Release Button E681 is pressed, the power supply to N110 is disconnected and the locking effect is deactivated.

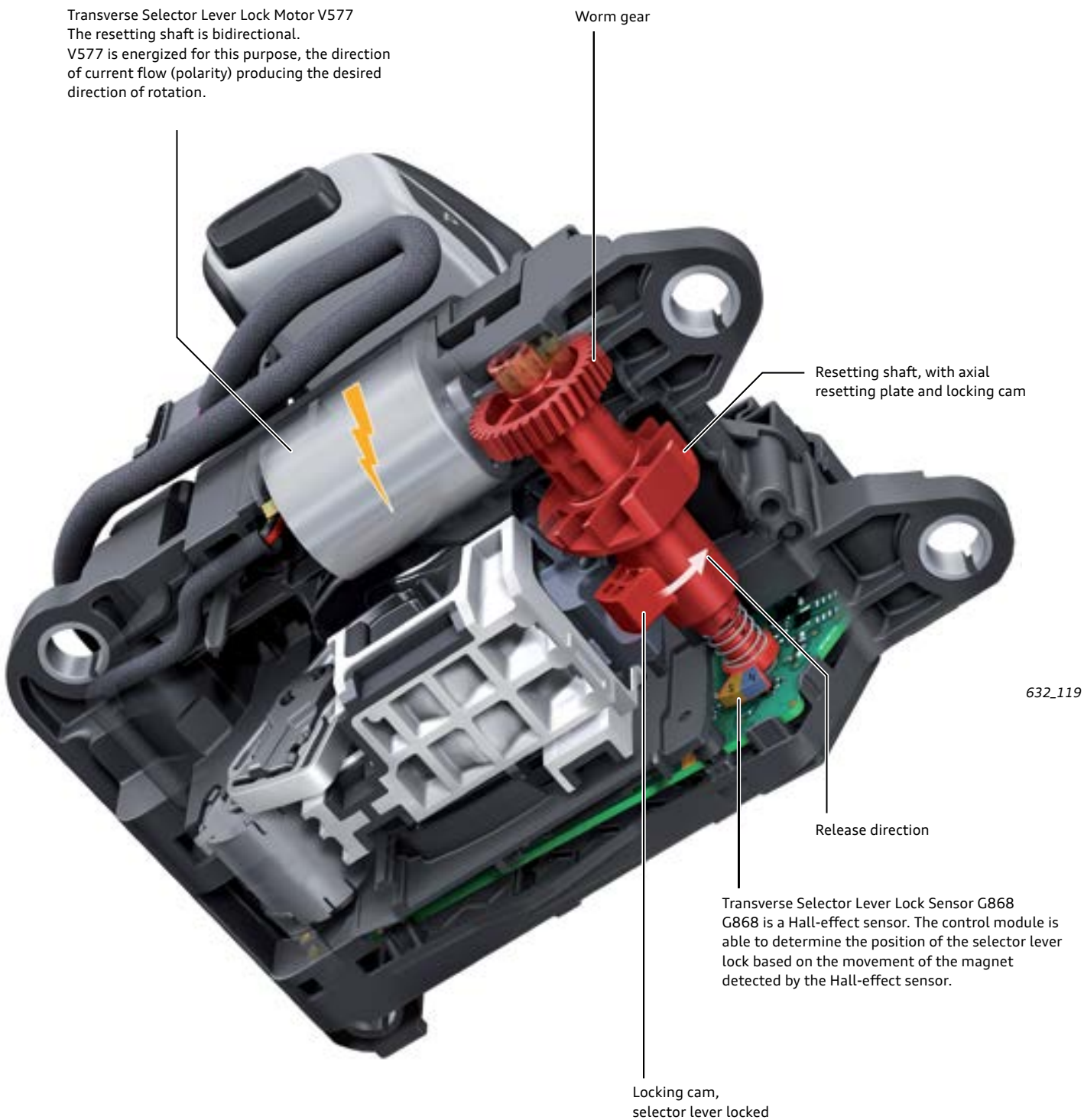


Selector lever lock – transverse

To ensure that the selector lever cannot be inadvertently moved into the Tiptronic gate, it is locked transversely in selector positions **P**, **R** and **N**.

Selector position P/R/N – selector lever – transverse, active

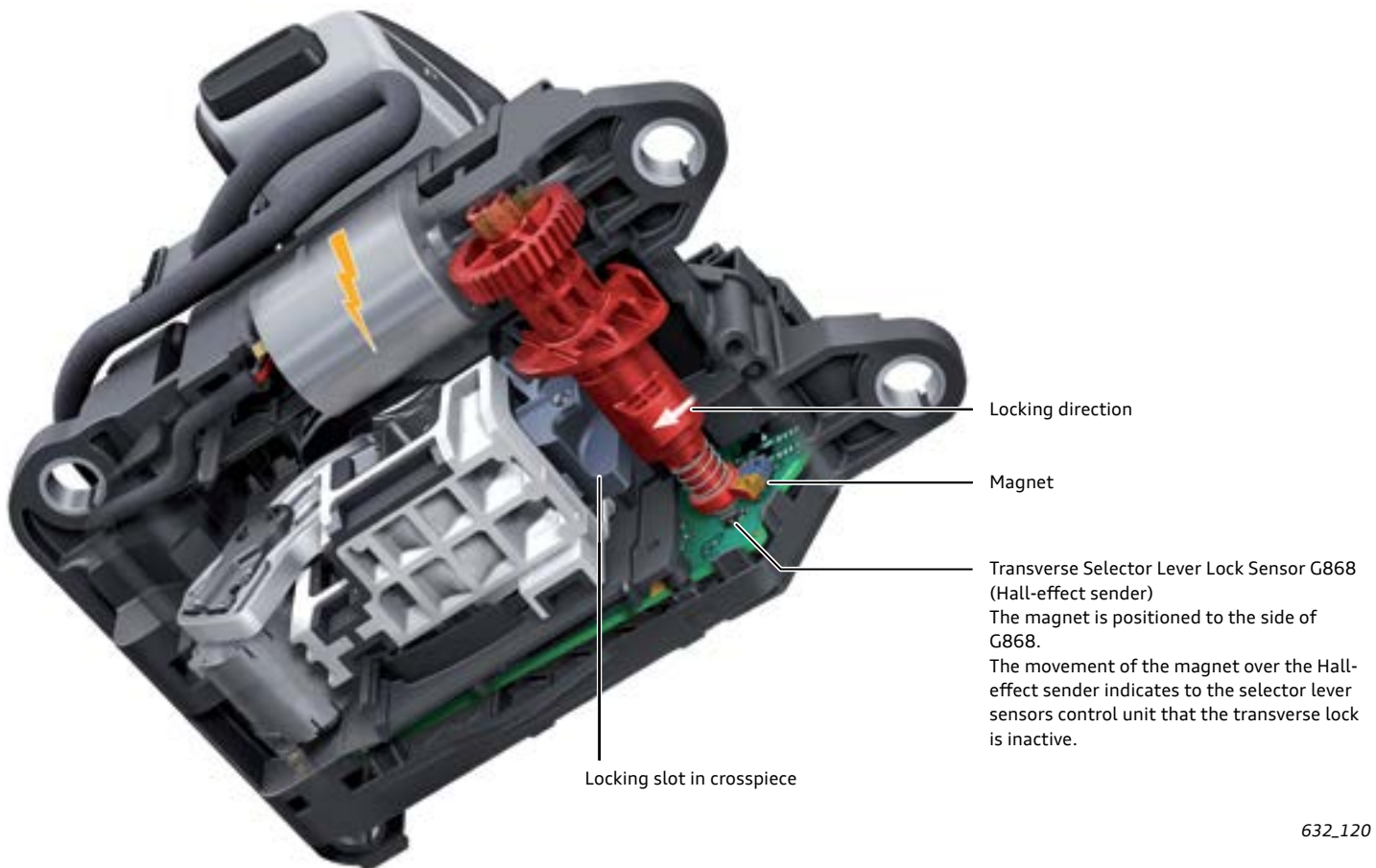
The locking cam is positioned in such a way that it engages the locking slot in the crosspiece in which the selector lever is mounted. The selector lever cannot be moved into the Tiptronic gate.



Selector position D/S –selector lever lock– transverse, inactive

The transverse lock is deactivated in selector position **D** or **S**. The locking cam is rotated out of the locking slot by the worm gear.

The selector lever can now be moved into the Tiptronic gate.



Resetting the selector lever

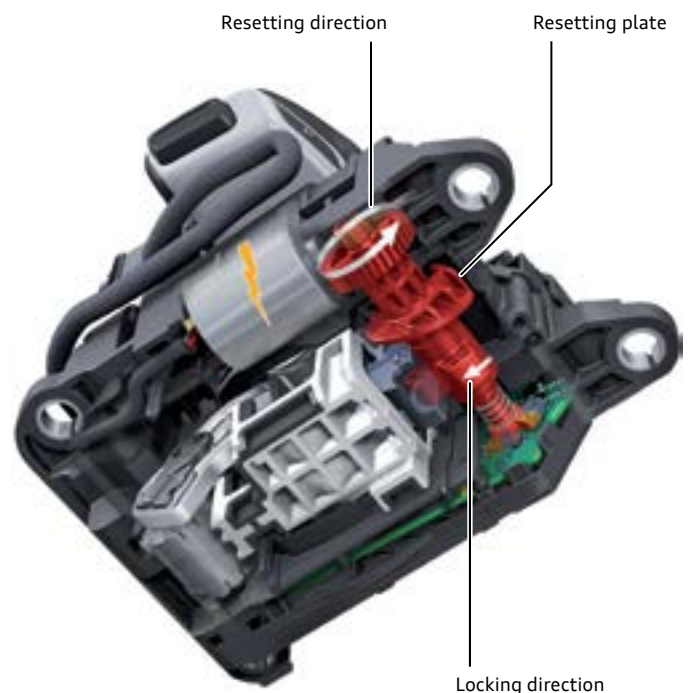
If the selector lever is in the Tiptronic gate when the driver shuts off the engine, it is automatically moved back into the automatic gate. Transverse Selector Lever Lock Motor V577 turns the resetting shaft one full turn in the resetting direction. The resetting plate exerts axial lift on the selector lever and moves it back into the automatic gate.

Selector Lever Position Sensor G727 checks whether the selector lever is in the Tiptronic gate or the automatic gate (refer to page 42). If the selector lever has been moved back into the automatic gate, the selector lever lock motor turns the resetting shaft in the locking direction and locks the selector lever in the transverse direction.

Resetting the selector lever in emergency mode

If the transmission enters emergency mode as a result of a fault and can no longer perform the Tiptronic function, the selector lever is moved back into the automatic gate and locked.

If the selector lever is again moved into the Tiptronic gate in such a situation, it will again be moved back to the automatic gate.



Selector Lever Position Sensor G727

Selector Lever Position Sensor G727 tracks the position of the selector lever. G727 has two sensors: one sensor for the automatic gate and one sensor for the Tiptronic gate.

Selector Lever Sensor System Control Module J587 tracks the position of the selector lever based on the signals from these sensors and sends the information to Transmission Control Module J217.

The TCM determines the desired selector lever positions and sends the information back to Selector Lever Sensor System Control Module J587.

Based on this feedback, the system activates the relevant LEDs in Selector Lever Transmission Range Display Y5, Parking Lock Button E816 and Shift Lock Solenoid N110.

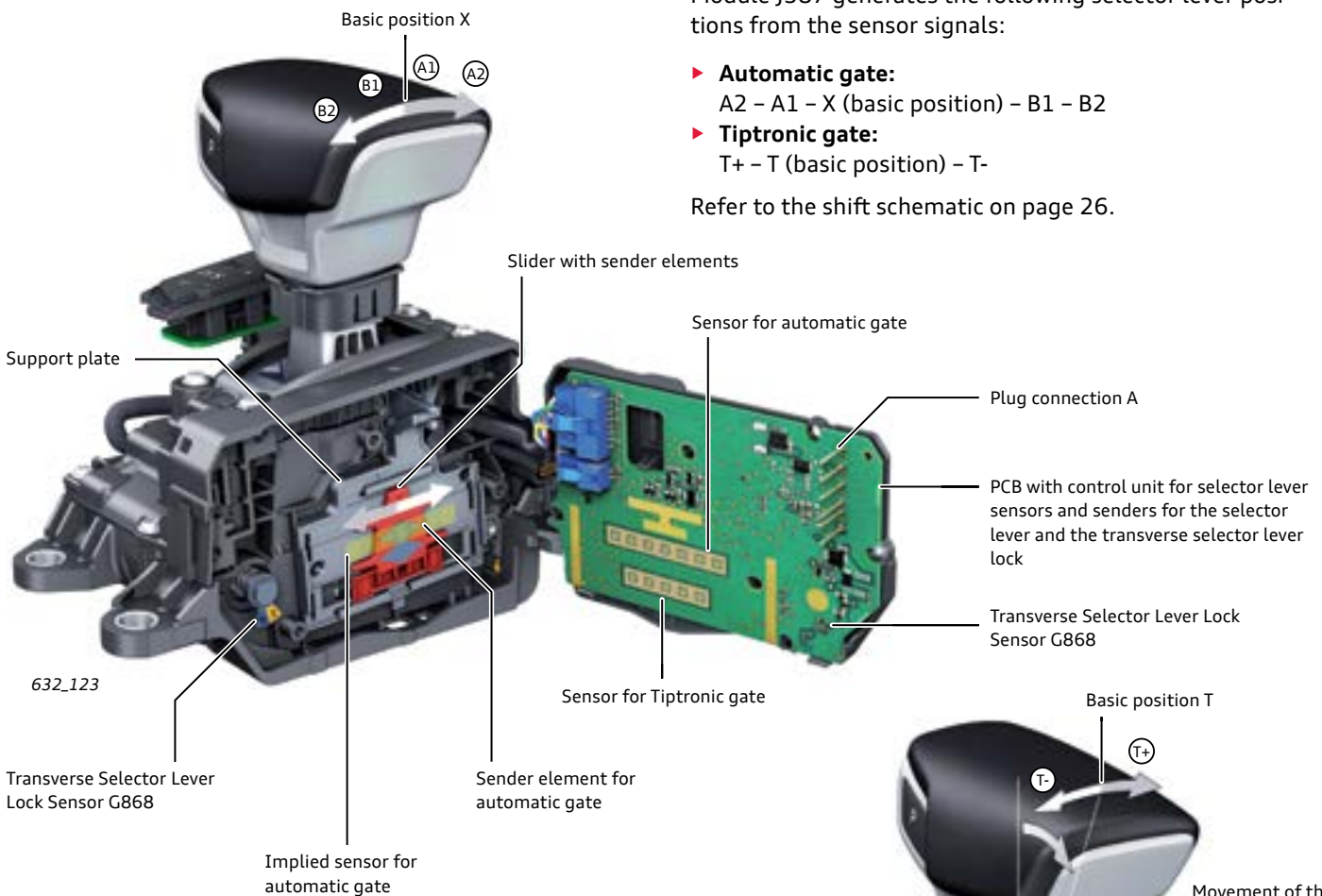
How selector lever positions are detected:

The longitudinal and transverse movements of the selector lever are transmitted to a slider with two diamond-shaped sender elements. The sender elements influence the magnetic flow at both sensors according to the movement of the selector lever. Selector Lever Sensor System Control Module J587 generates the following selector lever positions from the sensor signals:

- ▶ **Automatic gate:**
A2 – A1 – X (basic position) – B1 – B2
- ▶ **Tiptronic gate:**
T+ – T (basic position) – T-

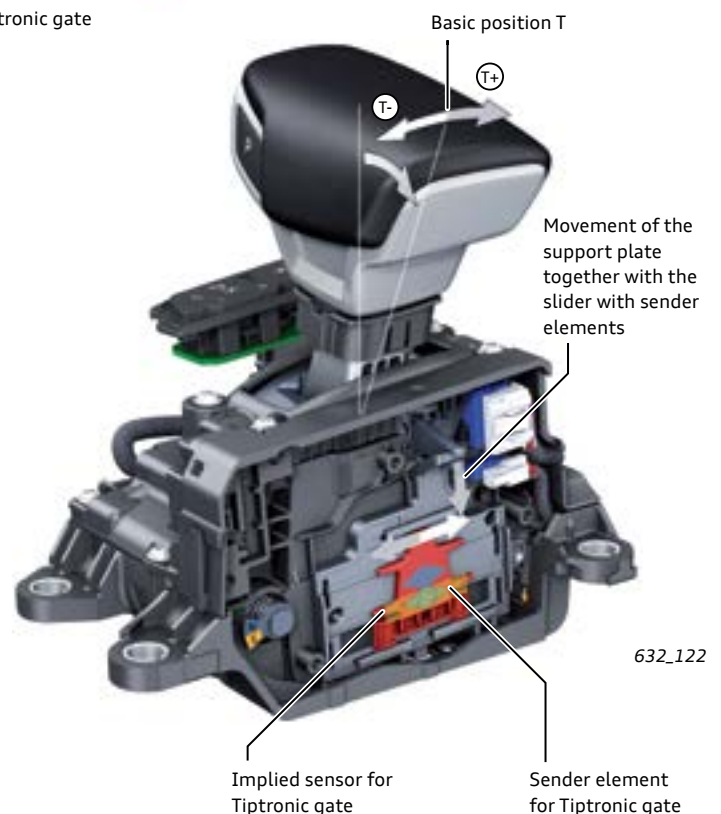
Refer to the shift schematic on page 26.

Selector lever in automatic gate



Selector lever in Tiptronic gate

The movement of the selector lever is limited to one position forwards (T+) and one position back (T-) by the Tiptronic gate track of the locking element (refer to page 39, Fig. 632_118).



Auto-P function

The Auto-P function enables the TCM to engage the transmission parking lock independently and without driver input.

Activating selector position N (P-OFF position)

To be able to move the vehicle without the parking lock, for example in a car wash, automatic engagement of the parking lock can be prevented. A condition for this is that the selector mechanism, the P button and the transmission are functioning properly. If these conditions are not met, the Auto-P function is activated at "ignition off".

To activate selector position N, first it must be selected when the engine is running and then the engine switched off with the selector in N.

In this case, the parking lock is not engaged (P-OFF position). The Auto-P function is suppressed for a limited period of 30 minutes¹⁾.

After 29 minutes¹⁾ a message appears in the DIS indicating that the parking lock will shortly be engaged and after 30 minutes^{1,2)} the parking lock is engaged.

When selector position N is activated and the door is opened, the following messages appear in the DIS:

Shift to P, otherwise vehicle can roll away
Doors do not lock if lever is not in P

An audible warning is given if one of the doors is opened.

In this situation the vehicle cannot be locked from the outside. The vehicle must be secured to stop it from rolling away while in the P-OFF position.

If it is necessary to hold the parking lock in the P-OFF position for a longer period of time, the parking lock emergency release mechanism must be actuated (refer to page 44).

Rocking the vehicle backwards and forwards

A stuck vehicle can be freed by quickly and skillfully rocking it backwards and forwards.

Shifting from D to R and vice versa is always performed via selector position N. To deactivate the selector lever locks in the longitudinal direction, it is normally necessary to apply the brake and push the release button in order to shift from N to D or from N to R (refer to page 38, Fig. 632_117).

Shifting from D to R and vice versa can, therefore, be performed below a speed of 5.0 mph (8.0 km/h)¹⁾ without applying the brake provided that Selector Lever Release Button E681 is pushed and the vehicle is not stationary for longer than 1 second¹⁾ with the selector in N.

The parking lock is engaged automatically if the following conditions are met:

- ▶ Selector position D or R is active.
- ▶ The vehicle is stationary (speed less than 0.6 mph [0.1 km/h])¹⁾.
- ▶ The engine was shut off by turning the ignition off (terminal 15 = off).

Tip shifting in D/S

Manual gear shifts can be performed at any time by operating the steering wheel Tiptronic in selector position D or S. To this end, the TCM switches to manual mode M (Tiptronic mode) for a limited time.

The D/S symbol is lit in the selector lever position display Y5 and the gear indicator M 1 – 8 appears in the instrument cluster.

If the vehicle is in a normal, constant driving state for a period of about 8 seconds¹⁾, the transmission shifts back into selector position D or S.

The countdown from about 8 seconds¹⁾ is stopped in the following cases:

- ▶ Sporty driving style.
- ▶ Cornering.
- ▶ Overrun mode.
- ▶ Selection of another gear with the steering wheel Tiptronic.

The transmission can be immediately switched from manual mode M back to selector position D or S by pressing Tip+ for a period greater than 1 second¹⁾.

Tip shifting in D can be activated or deactivated with the diagnostic tester by selective adaptation (refer to page 49).

Shifting in R

A software lock prevents the driver from engaging reverse at speeds of greater than 5.0 mph (8.0 km/h)¹⁾.

If reverse is selected, an audible signal sounds from the instrument cluster and a large white R appears in the display. Repetitive signalling is suppressed while manoeuvring as long as a forward speed of 5.0 mph (8.0 km/h)¹⁾ is not exceeded.

Diagnostics, actuator test

The electrical components of the selector mechanism can be diagnosed using the VAS Scan Tool under Address Word 81.

Output checks can be done using the VAS Scan Tool for the following components:

- ▶ Selector Lever Transmission Range Display Y5.
- ▶ Shift Lock Solenoid N110.
- ▶ Transverse Selector Lever Lock Motor V577.

¹⁾ The given values provide a guideline and are not binding. They may deviate depending on model version.

²⁾ If a speed signal is detected (v = greater than 0.6 mph [1.0 km/h]), the time is extended accordingly until either a minimum stationary period of 5 minutes is detected or the vehicle battery is discharged.

Emergency parking lock release

The parking lock is operated and released electro-hydraulically during normal operation. The engine must be running in order to release the parking lock, and a sufficient power supply must be available in order to hold the parking lock in the P-OFF position.

The emergency release mechanism holds the parking lock in the P-OFF position longer in order to release the parking lock and should be operated in the following situations:

- ▶ To tow the vehicle.
- ▶ If the parking lock cannot be released electro-hydraulically due to a malfunction.
- ▶ If the vehicle cannot be maneuvered or moved due to low battery voltage.
- ▶ If the engine is not running and it is necessary to move the vehicle.

If it is no longer necessary to hold the parking lock in the P-OFF position, it should be released again and moved back into the P-ON position.

After carrying out assembly work on components of the emergency release mechanism, it must be checked (see note on right).

The parking lock is emergency released using a vibration-damped Bowden cable. The actuating mechanism is located on the driver's side under the floor mat.

Caution! Before actuating the parking lock emergency release mechanism, the vehicle must be secured to prevent it from rolling away.

Emergency releasing the parking lock (P-OFF position)

- ▶ Remove cover.
- ▶ Insert the emergency release wrench insert into the actuating mechanism as shown under position 1 in Fig. 632_124.
- ▶ Turn the socket wrench insert clockwise through 90° (position 2) while pushing it down (position 3 in Fig. 632_126).



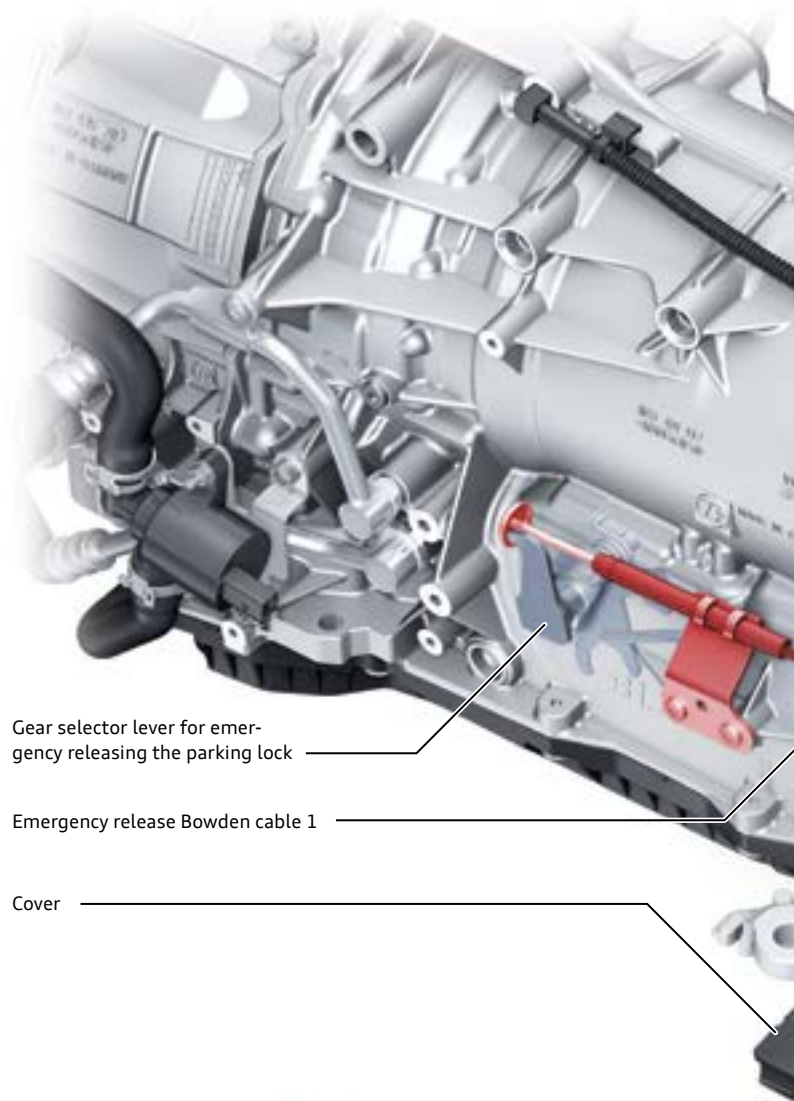
When the parking lock emergency release mechanism is actuated, the yellow transmission MIL and the gear selector position indicator **N** are illuminated in the instrument cluster. The following message is also displayed in the DIS: *"Vehicle may roll away! P cannot be selected. Please apply parking brake."*

Locking the parking lock (P-ON position)

- ▶ Pull the socket wrench insert upwards out of the actuating mechanism (position 4 in Fig. 632_127).

Note: The wrench insert must not be turned back as this will damage the emergency release mechanism.

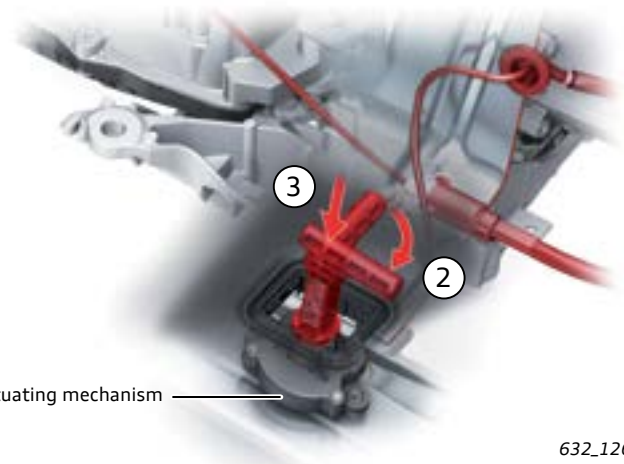
- ▶ Reinstall the cover.



Gear selector lever for emergency releasing the parking lock

Emergency release Bowden cable 1

Cover



Actuating mechanism

632_126



Emergency release wrench insert (in tool kit)

Decoupling lugs

632_127

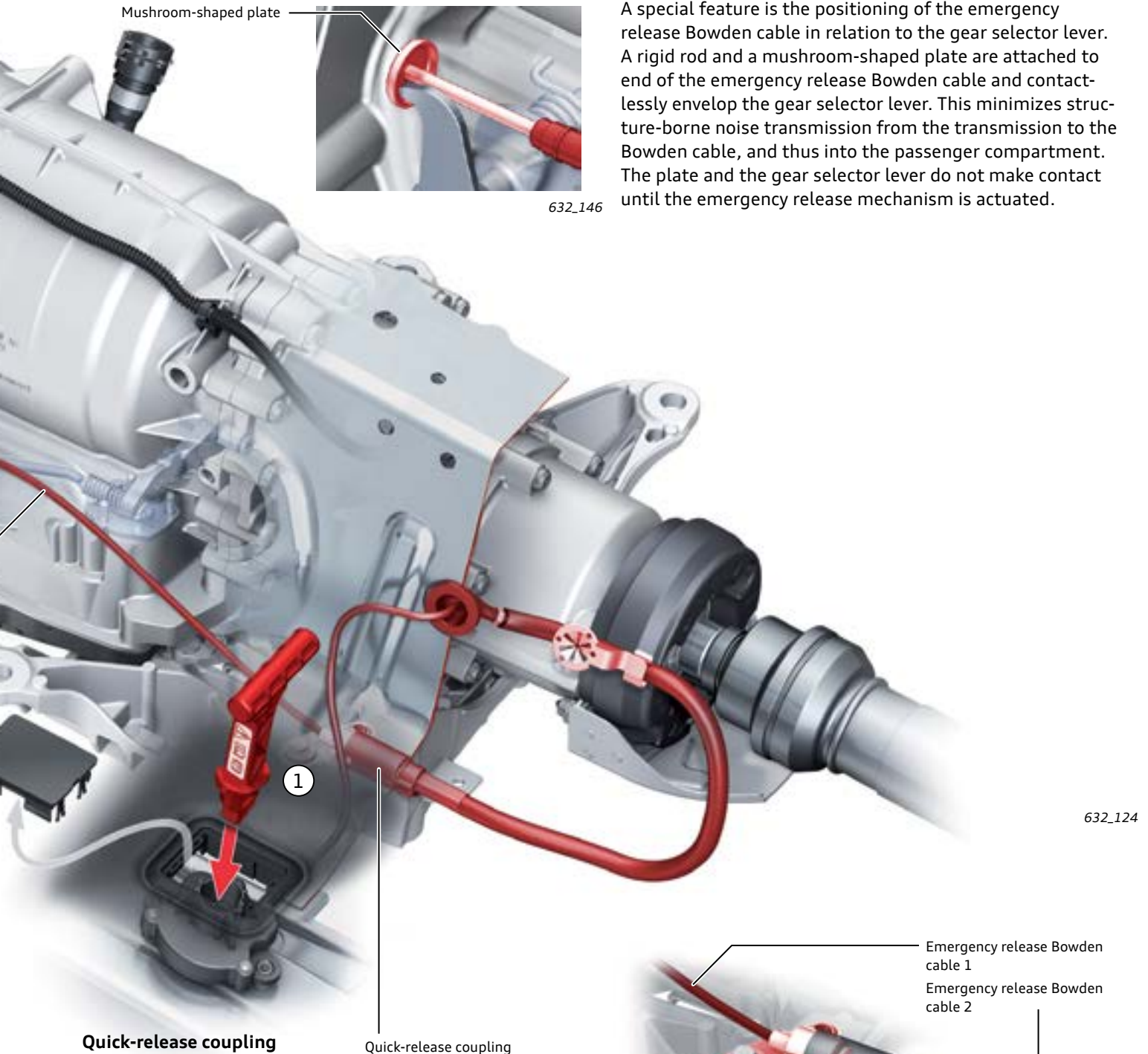
Reduction of structure-borne noise transmission

Mushroom-shaped plate



632_146

A special feature is the positioning of the emergency release Bowden cable in relation to the gear selector lever. A rigid rod and a mushroom-shaped plate are attached to end of the emergency release Bowden cable and contactlessly envelop the gear selector lever. This minimizes structure-borne noise transmission from the transmission to the Bowden cable, and thus into the passenger compartment. The plate and the gear selector lever do not make contact until the emergency release mechanism is actuated.

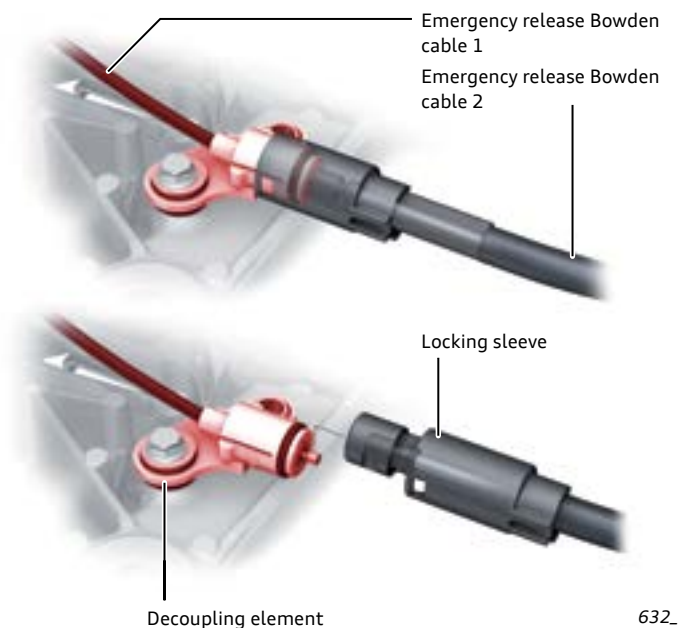


Quick-release coupling

To simplify removing and installing the transmission, the emergency release Bowden cable consists of two parts interconnected by a quick-release coupling.

Note that when the emergency release mechanism is not actuated, the plate of the Bowden cable must not be in contact with the gear selector lever and there must be sufficient clearance (refer to Fig. 632_146 "Reduction of structure-born noise transmission").

Insulating elements in the quick-release coupling bracket and in the actuating mechanism reduce structure-borne noise transmission.



Note

After removing and installing the transmission or carrying out assembly work on components of the emergency release mechanism, a function test must be performed as described in the repair manual.

Transmission functions

Audi drive select

With Audi drive select, it is possible to select between different vehicle setups.

Transmission setups are tailored to the customer's requirements in a country-specific manner. For this reason, only typical differences between the various modes are shown here.

Mode	Transmission setup
offroad (with steel suspension)	In offroad mode the TCM assists driving in rough terrain by using adapted functions. Gear selection follows a fixed shift program without driver type recognition. The gears are held for long as in selector position S . Selector position S is not available, however manual shifting is possible in Tiptronic mode (manual mode M).
lift / offroad (with air suspension)	<p>In Tiptronic mode, automatic upshifting of the transmission is deactivated. The engine runs up to the speed limiter without shifting up in order to prevent undesirable up-and-down shifting.</p> <p>The deactivation of automatic upshifting allows the engine to stop on a hill at full engine speed. Even if brief loss of traction occurs, the gear is held to ensure that full drive torque is available when the wheels regain full traction.</p> <p>The deactivation of automatic upshifting allows the full braking effect of the engine to be utilised when driving downhill. To protect the engine against overspeeding, the transmission shifts up before a defined engine speed is reached.</p>
allroad	The allroad mode does not have any effect on the transmission setup.
comfort	This setup is especially comfort-oriented with soft gear shifts and low engine speeds. As is the case in auto mode, gear selections are made with the assistance of driver type recognition.
auto	<p>Driver type recognition in selector positions D and S: In selector positions D and S a driver type recognition is made on the basis of the driver's driving style. Criteria for driver type recognition include the mode of actuation of the brake and accelerator, the speed of the vehicle as well as transverse and longitudinal acceleration within defined periods. Accordingly, an economical driving style leads to early upshifts and late downshifts. A sporty driving style leads to late upshifts and early downshifts. The driving phases in which the driver adopts an efficient, economical, sporty or manual driving style can be read out using the diagnostic tester.</p> <p>Selector position D: Gearshifts are comfort-oriented and shift point selection is adapted to the driver's driving style with the aid of driver type recognition.</p> <p>Selector position S¹⁾: In Sport mode (sport program), the shift points are sporty and adapted to the performance range of the engine. The shift points are configured with the aid of driver type recognition. The shift times and shift points vary from driving in the normal sport program to a handling course setup with short, noticeable shift cycles.</p>
dynamic	If the dynamic mode is selected, the TCM activates the sport program (selector position S). In dynamic mode, both the Tiptronic functions and selector position D are available. If selector position D is activated before shutting off the engine, selector position (D) is again activated when the engine is subsequently started ¹⁾ . If the driver wishes to have selector position S , he must select it.
individual	In individual mode, the driver can freely select the transmission setup irrespective of other vehicle systems.

¹⁾ Based on the emission class, the drive programs of selector position **D** is always selected when the vehicle is restarted.

Navigation-based gear selection

Provided that suitable data is available from the navigation system (optional and market dependent), the OD5 transmission uses relevant route data for gear selection purposes. The TCM processes information about the route ahead, for example, corner radii or corner length. The TCM also determines whether the vehicle is driving in an urban area or the countryside.

This information reduces shift frequency and makes it easier for the TCM to select or preselect the correct gear. Navigation based gear selection can be activated or deactivated by selective adaptation using the VAS Scan Tool (refer to page 49).

Neutral control

The neutral control system disengages the engine from the transmission when stopping or when the vehicle is stationary. The engine idle torque can be reduced to a minimum because the engine does not have to work against the torque converter.

Neutral control in 1st gear and R

As soon as the ATF pressure supply is ensured after the engine is started, brake A is closed and brake B is moved to the initial friction point. The neutral control system is still not active (selector position **P** or **N**) at this point.

The neutral control system is active if the conditions are met, the driver has applied the brake and selector position **D** or **R** is selected. If selector position **D** is selected, clutch C of 1st gear is not initially closed. If selector position **R** is selected, clutch D of **R** gear is likewise not initially closed.

As soon as the driver releases the brake, brake B and clutch C are closed in selector position **D** (in selector position **R**, brake B and clutch D are closed). Brake B, which is already at the initial friction point, is closed with a steep rise in pressure, while clutches C or D are closed with a gentle rise in pressure. Traction can be comfortably established in this way. The remainder of the start-up operation is performed using the torque converter.

Neutral control when start-stop mode is active

If start-stop mode is active and the command to start the engine is given, the neutral control system is activated to start the engine. To accelerate ATF pressure buildup, the hydraulic pressure accumulator (HIS) assists the closing of brake A and the movement of brake B to the initial friction point.

The remainder of the operation follows the neutral control function described above.

Stopping with the neutral control system

When the vehicle is stopped by applying light pressure to the foot brake, the system normally shifts down from 2nd to 1st gear immediately before the vehicle comes to a stop. As a result, the driver barely notices the 2-1 downshift. To avoid stalling the engine when stopping, the converter lockup clutch is always opened before the transmission input speed reaches the engine idle speed.

With a further reduction in speed, the transmission input speed drops below engine idle speed. The resultant converter slip produces a converter torque which the engine has to compensate by increasing load.

To prevent this converter torque from being produced when converter slip occurs, neutral control is activated in 2nd gear by opening clutch E. If the driver releases the brake when the vehicle is stationary, clutch E is closed for 2nd gear or clutch C for 1st gear depending on the speed of the vehicle.

This helps save fuel and reduces CO₂ emissions. In addition, the engine runs more smoothly and quietly at low idle torque. For this reason, the neutral control system is activated after starting the engine.

Operating conditions

- ▶ Full adaptation of the shift elements (brakes, clutches).
- ▶ ATF temperature greater than approximately 68 °F (20 °C)¹⁾.
- ▶ Gradient less than 4%¹⁾ (the gradient is determined by the longitudinal acceleration sensor of the brake electronics).
- ▶ Selector position **D** or **R**.
- ▶ Accelerator not pressed.
- ▶ Foot brake pressed.

Switch-off conditions

- ▶ Selector position **S**²⁾ or the Tiptronic mode
- ▶ Brake released (unless the vehicle is secured by the electro-mechanical parking brake or hill start assist is active.)
- ▶ Accelerator pressed

Shift matrix

The shift matrix illustrates the activation of the shift elements for gears 1, 2 and **R**. For further information about the shift schematic and the shift matrix of the OD5 transmission, refer to SSP 457, page 28 ff. and 44. The shift operations of transmissions OBK and OBL which are identical to those of the OD5 transmission are described here.

Shift matrix	A	B	C	D	E
R gear					
1st gear					
2nd gear					

632_151

- Brake closed
- Brake at kisspoint
- Clutch closed

The neutral control system can be activated or deactivated with the VAS Scan Tool through selective adaptation (refer to page 38).

¹⁾ The given values provide a guideline and are not binding. They may deviate depending on model version.

²⁾ Neutral control is not activated in selector position **S** in order to allow more direct drive-away. Without neutral control, clutch C or D is immediately closed when selector positions **S** and **R** are selected. This is why traction is noticeable on selection of 1st gear or **R** gear, as is the traction reversal when shifting from 1st gear to **R** gear (or vice versa). This traction reversal is barely noticeable in selector position **D**. Reason: when neutral control is active, clutch C or D is opened and traction cannot be established until the brake has been released.

Start-stop system

The system helps save fuel and reduce CO₂ emission. In start/stop mode, the engine is shut off automatically when the vehicle stops, for example, at traffic lights. The ignition remains "off" during this stop phase. The engine is automatically restarted when required.

The requirements for this are a very short starting time and that the vehicle quickly be ready for drive-away. To enable the OD5 transmission to meet these requirements, it is equipped with a hydraulic pulse accumulator (HIS). The function of the pulse accumulator is described in eSelf-Study Program [950103, The 2011 Audi A8 Power Transmission](#).

Service

Towing

If a vehicle with an OB5 transmission needs towing, the usual restrictions apply:

- ▶ Emergency release the parking lock.
- ▶ Maximum towing speed of 30 mph (50 km/h).
- ▶ Maximum towing distance of 30 m (50 km).
- ▶ Do not tow the vehicle with the front or rear axle raised off the ground.

Diagnostics, basic setting, adaptations, warnings

Diagnostics

The electrical/electronic components as well as the control operations of the OD5 transmission can be diagnosed using the Address Word 02.

Adaptation

The following functions can be activated or deactivated using the adaptation function of the VAS Scan Tool.

- ▶ **Individual selector lever position display:** The gear display for selector lever positions **D** and **S** can be separately shown or hidden in the instrument cluster by adapting the individual selector lever position display. Selector lever position display is always active in manual mode **M** (Tiptronic mode).
- ▶ **Route data:** Navigation data based gear selection can be activated or deactivated using the adaptation function (refer to page 47).
- ▶ **Automatic upshift:** When the automatic upshift function is activated, the transmission shifts to the next higher gear before the engine speed limiter cuts in. If the automatic upshift function is deactivated, the engine runs up to the speed limit without shifting up.
- ▶ **Neutral control:** Navigation based gear selection can be activated or deactivated using this adaptation function (refer to page 48).
- ▶ **Tiptronic selector:** This adaptation function can be used to activate or deactivate tip shifting in **D** or **S** (refer to page 38).

Downhill assist

The downhill assist functions aids the driver on downhill gradients. It is activated in selector positions **D** and **S** when the foot brake is pressed or after the cruise control system is activated.

The transmission selects a gear appropriate to the gradient. Downhill assist attempts to maintain the reduced speed within the bounds of its physical and drive-related limitations.

It may be necessary to additionally correct the vehicle's speed with the foot brake. Downhill assist cuts out again as soon as the gradient lessens or the accelerator is pressed. Downhill assist cannot overcome the physical limitations of the vehicle and therefore cannot maintain a speed in all conditions. The driver must always be ready to apply the brakes!

Reason

When the engine is at standstill, the oil pump is not driven and certain parts of the transmission are not lubricated. Failure to observe the towing conditions can lead to serious damage.

Basic setting

The following adaptation processes can be performed using the basic setting function.

- ▶ Quick adaptation when the vehicle is stationary, for example, after changing the ATF, replacing the brakes/clutches or the mechatronics module.
- ▶ Reset all programmed values, the adaptation values of the clutches can be read and collectively reset. It is not possible to reset individual adaptation values.

Transmission warning lights



If the yellow transmission warning light appears in the instrument cluster, it is normally possible to continue driving the vehicle. Driver information is displayed telling the driver what to do.



If the red transmission warning light appears in the instrument cluster, the driver is instructed to stop the vehicle.

For detailed and current information, please refer to the vehicle Owner's Manual.

Suspension

Overall concept

The suspension also features numerous changes. Both the front and rear axles are five-link designs, replacing the double wishbone axles of the previous model. New elastomer bearings and separate springs and dampers at the rear axle enhance responsiveness.

The new electromechanical power steering with servotronic function provides direct steering response - several of the new driver assistance systems would not be possible without it.

Compared with the previous model, the suspension of the new Audi Q7 is over 220.4 lb (100 kg) lighter. The wheel suspension links for example are now made of aluminum and high-strength steel, the front axle drive shafts are hollow and the pivot bearings are aluminum forgings.

Audi also offers the innovative all-wheel steering as an option.

The Audi Q7 already offers excellent comfort even with the standard steel suspension. Rolling is even smoother with the adaptive air suspension, which is managed by a newly developed central vehicle control module that drives all body control systems.

The new controllers developed by Audi for the air suspension and active damping vary the body height and body comfort as a function of the driving situation.

The Audi Q7 comes as standard with 19-inch wheels and 255/55 R19 111H XL all-season tires. Audi offers additional wheels in sizes up to 21 inches as options.

Large, vented brake discs bring the SUV safely to a stop. They are gripped up front by aluminum six-piston calipers. The electromechanical parking brake, updated with convenient hill hold and startup functions, acts on the rear wheels.

New ESC and ACC generations provide the basis for a number of driver assistance systems.



632_098



Reference

For further information about the chassis and the ACC system, refer to eSelf Study Program [960163 The 2017 Audi Q7 Running Gear and Suspension System](#).

Suspension versions	Features
Standard suspension (1BA) ¹⁾	The standard suspension comes as standard with steel springs and an unregulated damping system.
Suspension with air suspension and electronic damper control (adaptive air suspension, 1BK)	This suspension version is optional.

Axles and wheel alignment

Front axle

The front axle is based on the Modular Longitudinal Platform (MLBevo).

The Audi Q7 adopts the tried and tested five-link axle concept used on other Audi models.



632_077

Rear axle

The rear axle is also based on the Modular Longitudinal Platform (MLBevo). The Audi Q7 features a newly developed five-link axle.

By paying close attention to lightweight design, the weight of the axle has been reduced by 88.1 lb (40 kg) compared with the previous model.



¹⁾ Production control number

Air suspension and electronic damper control

The system is based on systems already in use on other Audi models. A key new feature is Drivetrain Control Module J775. This module houses the software for the air suspension and damping systems.

The system will, in the future, also include control algorithms for other suspension control systems. The rear end of the vehicle can be lowered in order to simplify loading and unloading.



632_079

All-wheel steering

Rear axle steering is being offered optionally on an Audi model for the first time with the Q7. Depending on the speed of the vehicle and the driving situation, the tracking is adjusted dynamically.

The rear axle steering has a beneficial effect on driving dynamics and driving comfort. In general, the control system involves two different steering operations: counter-steering and parallel steering of the front and rear axles.

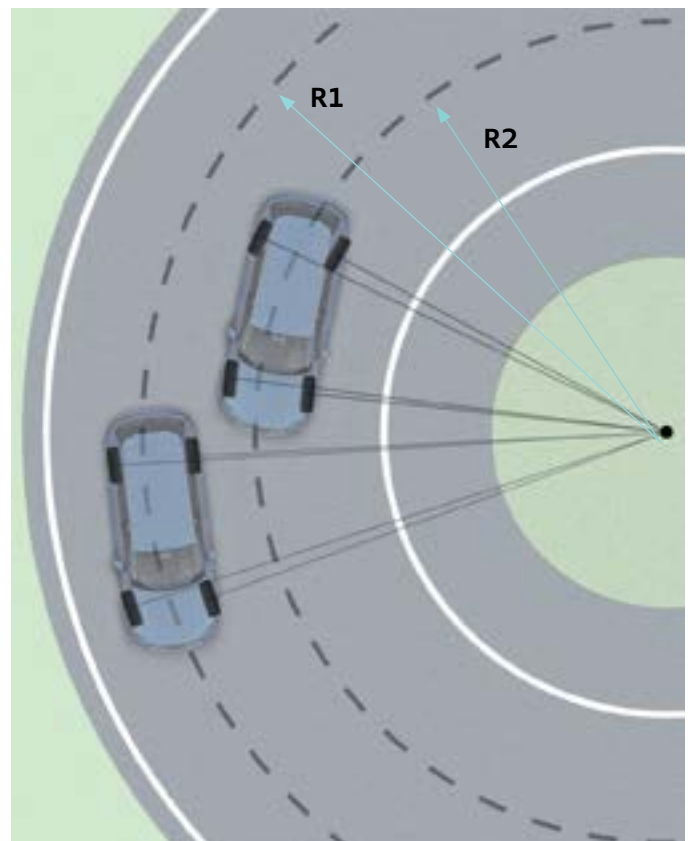


632_099

Counter-steering

One of the key aims for counter-steering the front and rear wheels is to improve handling at low speeds and to reduce the travel envelope of the vehicle. The advantage for the driver is that less steering effort is required given the same curve radius and the same speed. The vehicle is much more maneuverable and agile.

To make full use of the advantages offered by the system, counter-steering is only activated in the low speed range (up to 37.2 mph (60 km/h)). The graphic shows the advantage of rear axle steering using the smallest turning circle as an example. Radius R2, which is achieved using rear axle steering, is much smaller than the radius (R1) achievable with traditional steering.



632_100

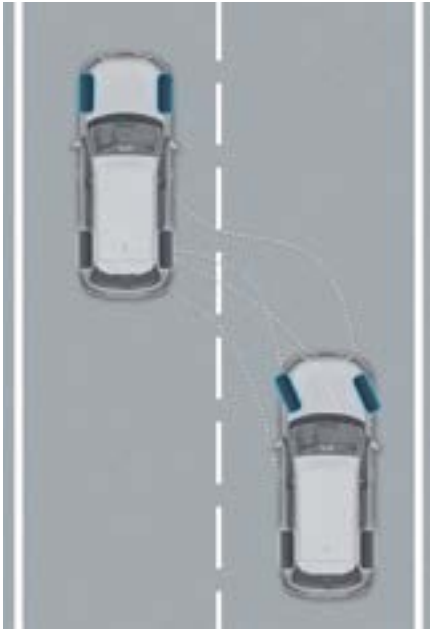
Parallel steering (in same direction)

At higher vehicle speeds, the system responds to the driver's steering inputs by parallel steering the rear wheels.

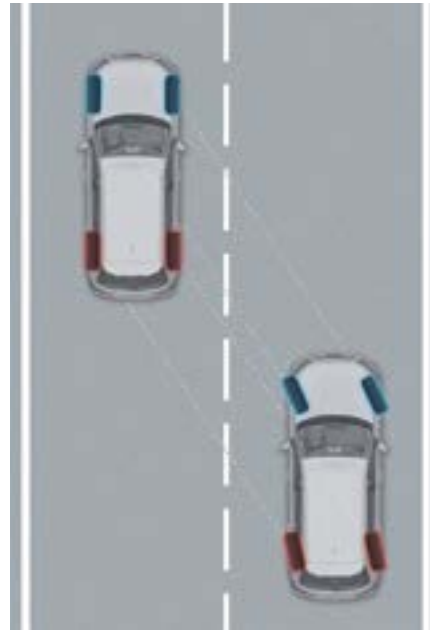
The resulting yaw torque is much lower than in a vehicle with front-steered wheels only. The immediate buildup of lateral (cornering) force at both axles significantly reduces the transition time from the initial steering input to a steady-state condition - a well-known effect which occurs in purely front-steered vehicles.

The change in the direction of travel is initiated much more harmoniously and comfortably and the danger of yaw oscillation is reduced

In addition, the system also limits the yaw rate when the driver takes sudden evasive action through over-proportional parallel steering of the rear wheels, thus increasing driving stability in critical situations.



632_101



632_102

Brake system

The Audi Q7 is equipped with a generously dimensioned brake system which offers a high performance reserve. The front axle wheel brakes have lightweight aluminum calipers and lightweight discs. Increased brake caliper rigidity conveys a direct and sporty braking feel. All brake pads already meet the highest environmental standard (copper free), which will not become a statutory requirement until 2021.

The Audi Q7 is now equipped with the electronic parking brake (EPB). The brake pedal assembly and the brake servo are new developments designed with a strong emphasis on weight saving. The Audi Q7 features the new ESC system (ESP 9) by Robert Bosch AG - a high-performance stability control system.

Fixed brake caliper used on the front axle



632_103

Floating caliper with electro-mechanical parking brake on the rear axle



632_104

Steering system

The Audi Q7 now has electro-mechanical steering (EPS). In terms of design and function, it is identical to the systems used in the Audi A6 and A7 models although special steering maps were developed for the Q7.

A mechanically adjustable steering column is standard and an electrically adjustable steering column is optional.

A newly designed three-spoke multi-function steering wheel is standard.



632_105

Adaptive Cruise Control (ACC)

System overview

The fourth-generation ACC is used for the first time on the Audi Q7. The modified design and extended range of functions provide a significant improvement in driving comfort. System availability has also been increased. For example, a system shut-down due to insufficient sensor vision now takes effect much later than before.

System limitations have been pushed further back by the modified hardware. For example, radar signal reflection (which can lead to misinterpretation when driving through tunnels) has been minimized and is unlikely to cause the system to shut down.

New functions include the system response to stationary vehicles. The measurement data generated by the ACC is an important basis for the following new functions:

- ▶ Predictive efficiency assist.
- ▶ Collision avoidance assist.
- ▶ Turning assist.
- ▶ Traffic jam assist.
- ▶ Distance indicator.
- ▶ Distance warning.

As with previous Audi models, a master/slave concept with two radar units is used on the 2017 Q7. Each unit has its own control module. Data is exchanged via the FlexRay data bus.



Right Adaptive Cruise Control Sensor and Distance Regulation Control Module J428 (master)

Left Adaptive Cruise Control Sensor and Distance Regulation Control Module 2 J850 (slave)

632_087



Reference

For further information about the function of the ACC, please see Self-Study Program [970263, The 2017 Audi Q7 Driver Assistance Systems.](#)

Wheels and tires

The Audi Q7 comes as standard with 19" wheels. The 20" and 21" wheels are optional. The range of tires for the engine versions available at launch extends from 255/60 R18 to 285/40 R21.

19" and 20" tires with run-flat properties and 20" offroad tires with reinforced sidewalls are standard or optional in certain markets.

The "Tire Mobility System" is standard equipment as well as a tool kit and vehicle jack.



	PR Code	Q7 3.0T	Q7 TDI®
A. 8.5" x 19" 5-V-spoke design wheels 255/55 R19 111H XL all-season tires	CH6		
	H79	■	■
B. 9.0" x 20" 10-spoke-star design wheels (Gray/Polished finish) 285/45 R20 112H XL all-season run-flat tires	F06	□	□
	H93	□	□
C. 9.5" x 21" Audi Sport® 5-twin-spoke design wheels 285/40 R21 109Y XL summer performance tires	F50	□	□
	H2Q	□	□
D. 255/55 R19 111H XL all-season run-flat tires (not shown)	H92	□	□

■ = Standard

□ = Optional

Low tire pressure indicator

The second-generation low tire pressure indicator (RKA+) is standard equipment for the Audi Q7. In terms of design and function, operation and driver information as well as service and diagnosis functions, the system is identical to the systems already in use in other Audi vehicles.

Tire pressure monitoring system

A third-generation direct tire pressure monitoring system is optional for the Audi Q7.

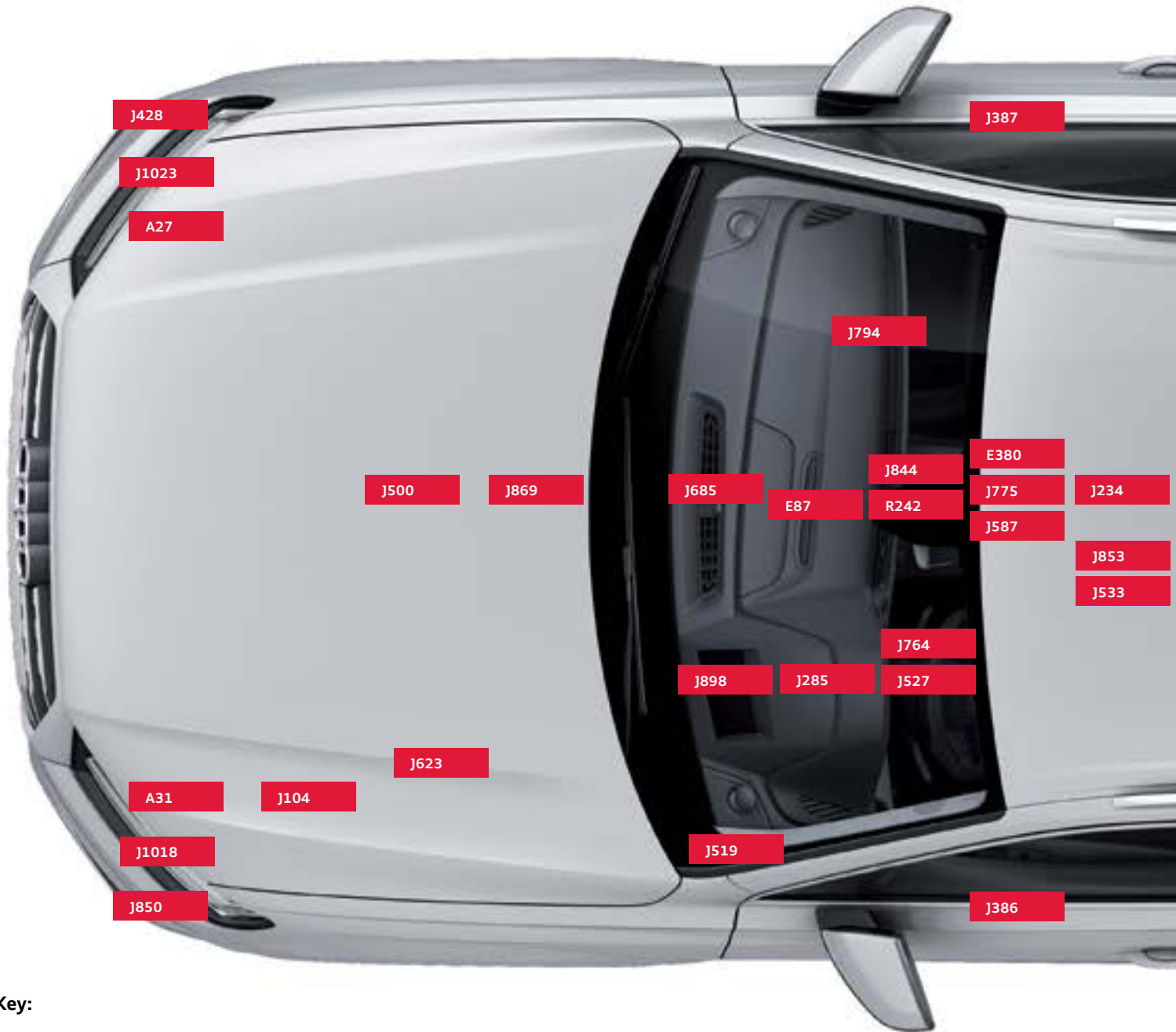


Electrical system

Installation locations of control modules

Some of the control modules shown in the overview are optional and/or country-specific equipment.

Notes on the exact locations of the control modules and their removal and installation instructions can be found in the current service literature.



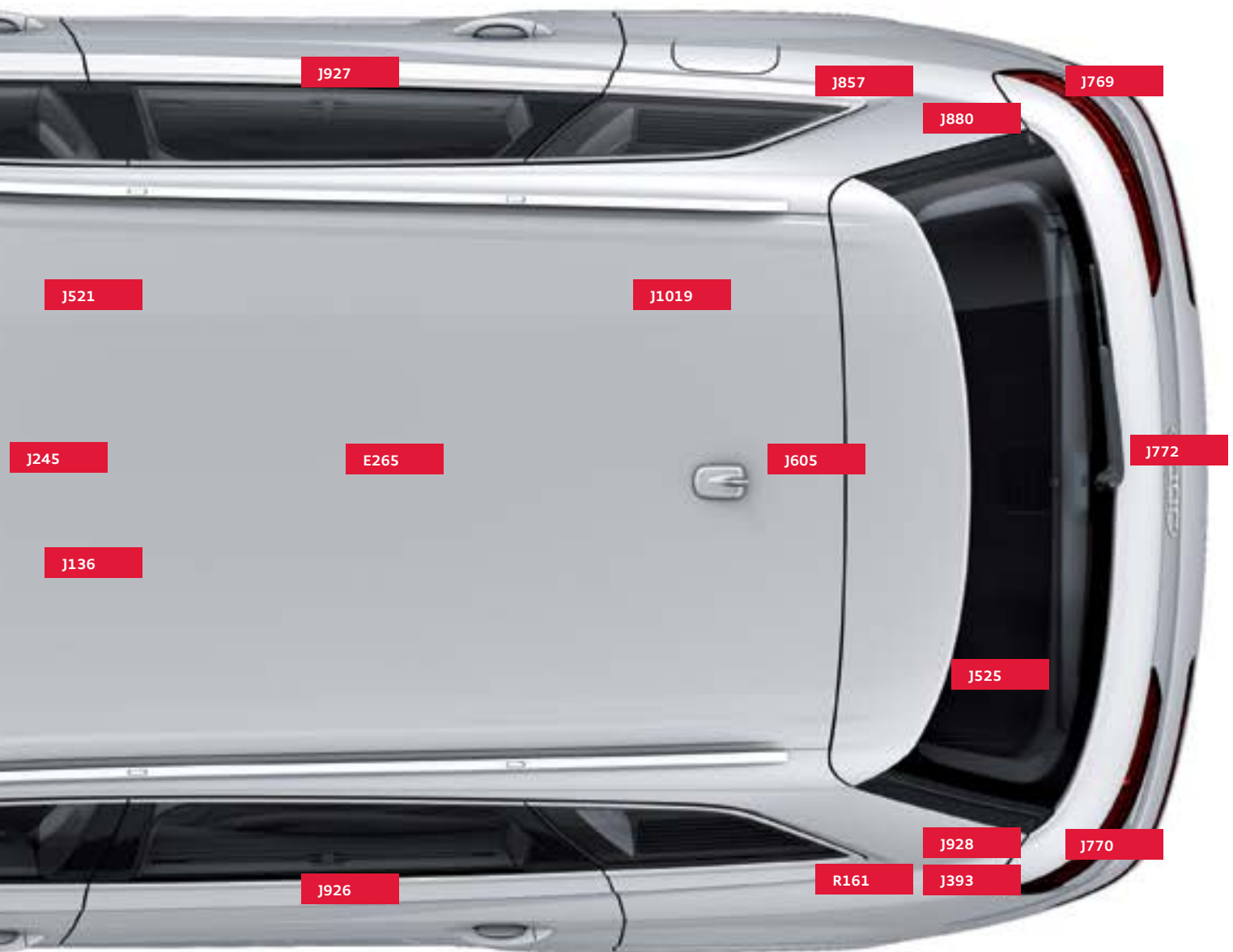
Key:

A27 Right Led Headlamp Power Output Module 1
A31 Left Led Headlamp Power Output Module 1

E87 Front A/C Display Control Head
E265 Rear A/C Display Control Head
E380 Multimedia System Control Head

J104 ABS Control Module
J136 Memory Seat/Steering Column Adjustment Control Module
J234 Airbag Control Module
J245 Power Sunroof Control Module
J285 Instrument Cluster Control Module

J386 Driver Door Control Module
J387 Front Passenger Door Control Module
J393 Comfort System Central Control Module
J428 Distance Regulation Control Module
J500 Power Steering Control Module
J519 Vehicle Electrical System Control Module
J521 Front Passenger Memory Seat Control Module
J525 Digital Sound System Control Module
J527 Steering Column Electronics Control Module



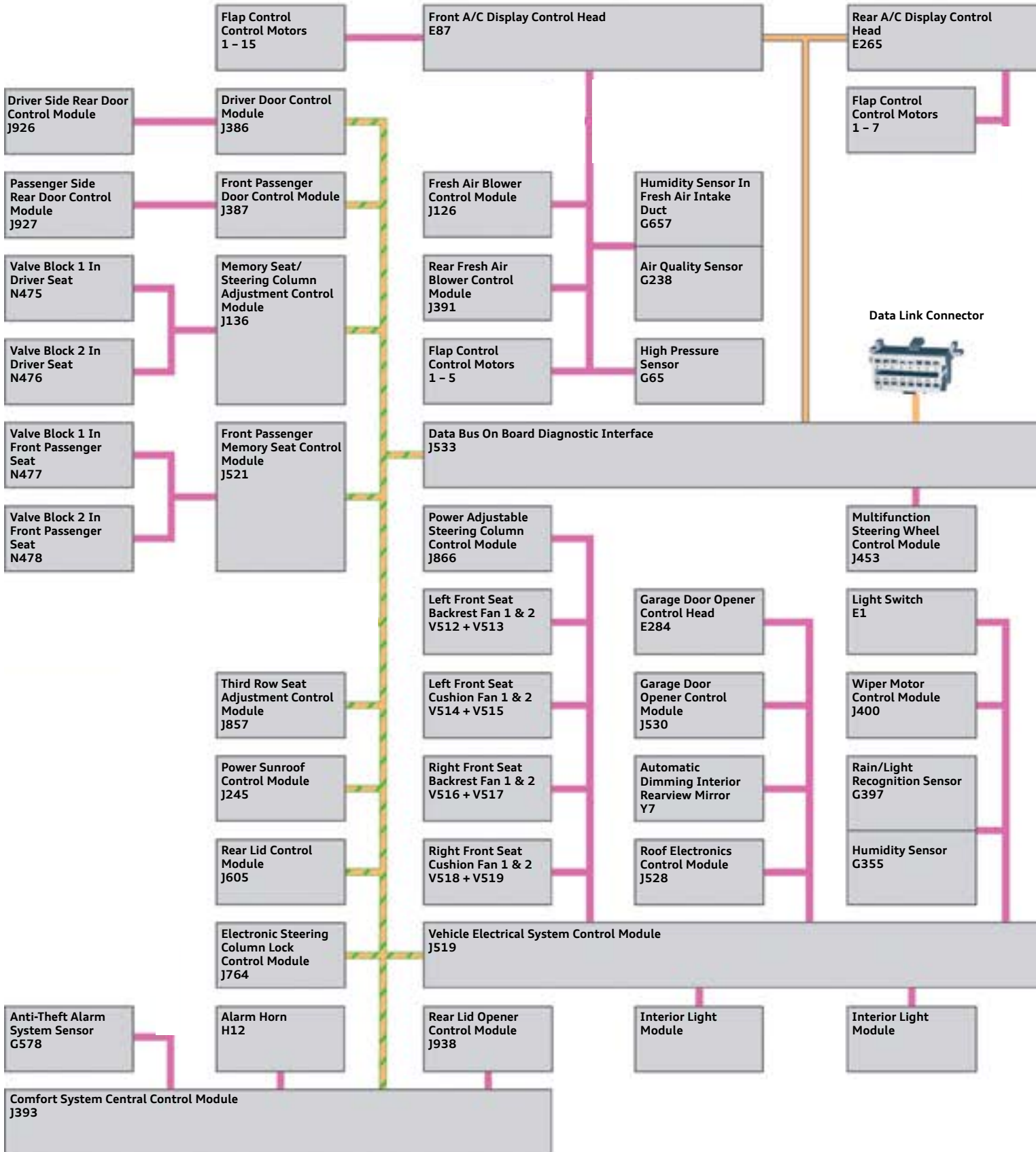
632_132

- | | |
|--|--|
| J533 Data Bus On Board Diagnostic Interface | J857 Third Row Seat Adjustment Control Module |
| J587 Selector Lever Sensor System Control Module | J869 Structure Borne Sound Control Module |
| J605 Rear Lid Control Module | J880 Reducing Agent Metering System Control Module |
| J623 Engine Control Module | J898 Windshield Projection Head Up Display Control Module |
| J685 Front Information Display Control Head | J926 Driver Side Rear Door Control Module |
| J764 Electronic Steering Column Lock Control Module | J927 Passenger Side Rear Door Control Module |
| J769 Lane Change Assistance Control Module | J928 Peripheral Camera Control Module |
| J770 Lane Change Assistance Control Module 2 | J1018 Left Light Control Module |
| J772 Rearview Camera System Control Module | J1019 Rear Axle Steering Control Module |
| J775 Drivetrain Control Module | J1023 Right Light Control Module |
| J794 Information Electronics Control Module 1 | |
| J844 Automatic High Beam Assist Control Module | R161 DVD Changer |
| J850 Distance Regulation Control Module 2 | R242 Driver Assistance Systems Front Camera |
| J853 Night Vision System Control Module | |

Topology

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

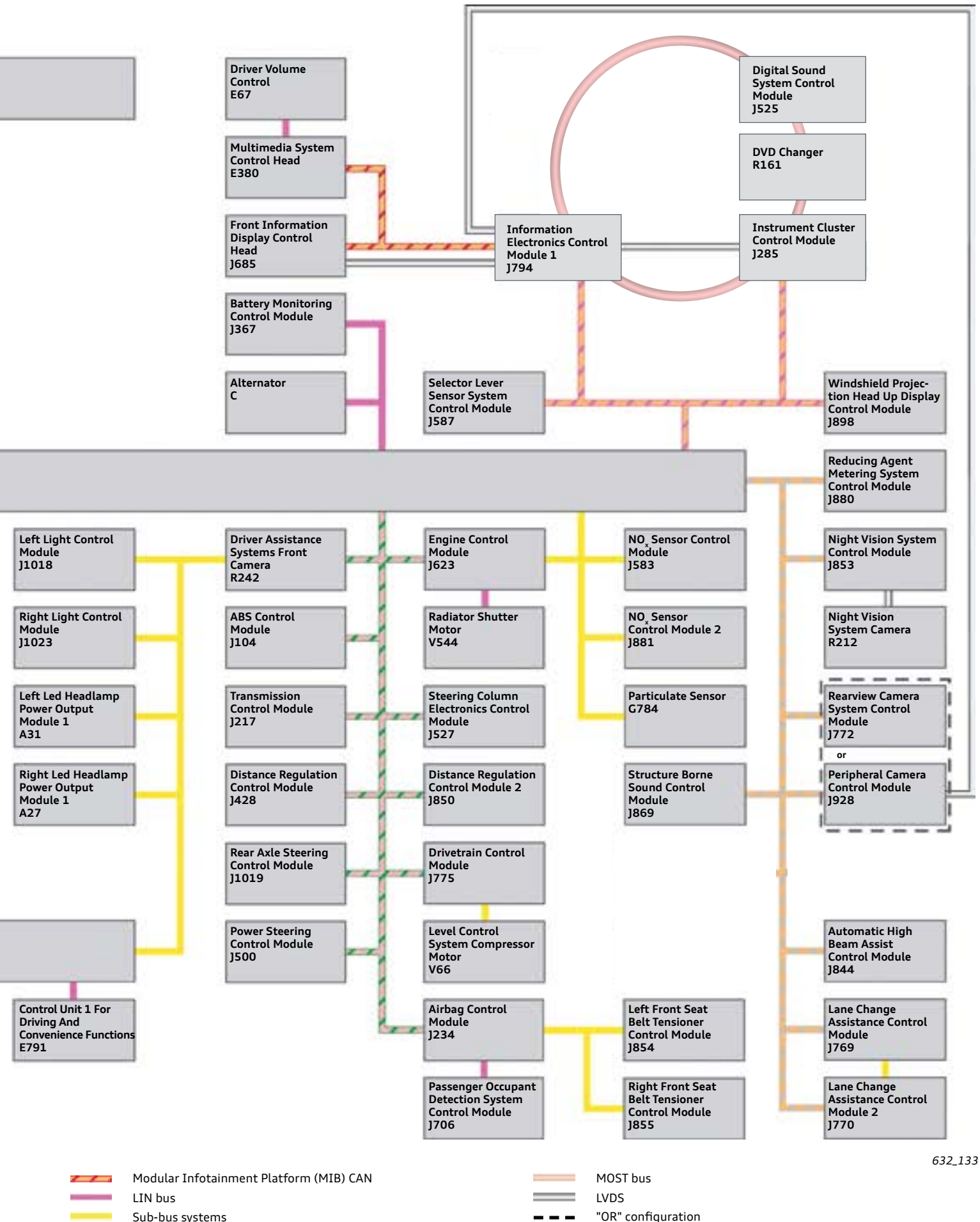
Some of the control modules shown here are optional or country-specific equipment or are due for rollout at a later date.



- Key:**
- Convenience CAN
 - Hybrid CAN
 - Extended CAN

- Infotainment CAN bus
- Diagnostics CAN bus
- Flex Ray

For presentation purposes, the FlexRay topology does not mirror the actual configuration of the control modules. This also applies to the control modules on the MOST bus.



Infotainment

The infotainment systems of the Audi Q7 have been completely revised compared to the previous model. The Audi Q7 features a new operating concept first rolled out in the Audi TT.

Overview of versions

Two versions of the MMI are available on the Audi Q7:

- ▶ MMI Radio plus.
- ▶ MMI Navigation plus.

From a technical point of view, MMI Radio plus is identical to the second-generation MIB Standard.

MMI Navigation plus is a second-generation MIB High system.

MMI Radio plus (I8E)

MMI Navigation plus (I8H)



Standard equipment

7.0" TFT color monitor with 800 x 480 pixel resolution	8.3" TFT color monitor with 1024 x 480 pixel resolution
Without navigation (7Q0)	3D SSD navigation system (7UG)
Operating unit (UJ0)	MMI touch (UJ1)
7" display in the instrument cluster with driver information system (9S7)	7" display in the instrument cluster with driver information system (9S7)
AM/FM radio with phase diversity	AM/FM radio with phase diversity and background tuner
	Jukebox (approx. 11 GB)
CD drive (MP3, WMA, AAC)	DVD drive (audio/video)
1 SDXC card readers	2 SDXC card readers
Audi music interface with 2 USB ports and AUX-in jack (UE7)	Audi music interface with 2 USB ports and AUX-in jack (UE7)
Audi sound system (9VD)	Audi sound system (9VD)
Bluetooth interface (9ZX)	Bluetooth interface (9ZX)
	UMTS/LTE data module (EL3)
	Audi connect (IW3)
Digital radio SDARS (QV3)	Digital radio SDARS (QV3)
Optional equipment	
Provision for Rear Seat Entertainment 9WQ	Provision for Rear Seat Entertainment 9WQ
	Bose Sound System with 3D sound (9VS)
	Bang & Olufsen Advanced Sound System with 3D sound (8RF)
	Audi virtual cockpit (9S8)



Reference

For further information about the infotainment system in the Audi Q7, refer to eSelf Study Program [970363 The 2017 Audi Q7 Occupant Protection and Infotainment System](#).

Climate control

Introduction

The Audi Q7 is equipped as standard with a newly developed three-zone deluxe climate control system. The front control head has two rotary dials for temperature control into which the temperature displays are integrated.

Four-zone deluxe climate control is optional. A display with toggle switches shows the status of selected functions. Touching the toggle switches enlarges the menu for easier legibility and operation.

The front A/C operating and display unit E87 uses fewer buttons and controls, making for intuitive operation of the air conditioning system.

In the four-zone system, the right-hand side of the instrument panel includes an air vent strip which provides indirect and draft-free air flow into the cabin.



Versions

Two climate control versions are available for the Q7: a three-zone system and a deluxe four-zone system.

The front control panel has the component name Front A/C Display Control Head E87 and can be diagnosed using Address Word 08.

The rear A/C control panel is called the Rear A/C Display Control Head E265 and can be diagnosed in four-zone systems under the Address Word 28.

Three-zone deluxe automatic climate control

Three-zone systems come equipped with Rear A/C Display Control Head E265. E265 has only a central temperature display for the rear passenger compartment.

Front A/C control panel

Infrared interior temperature sensor, non-ventilated



632_053

Rear A/C control panel

(Three-zone deluxe automatic air conditioning only; no diagnosis possible using Address Word 28)



632_054

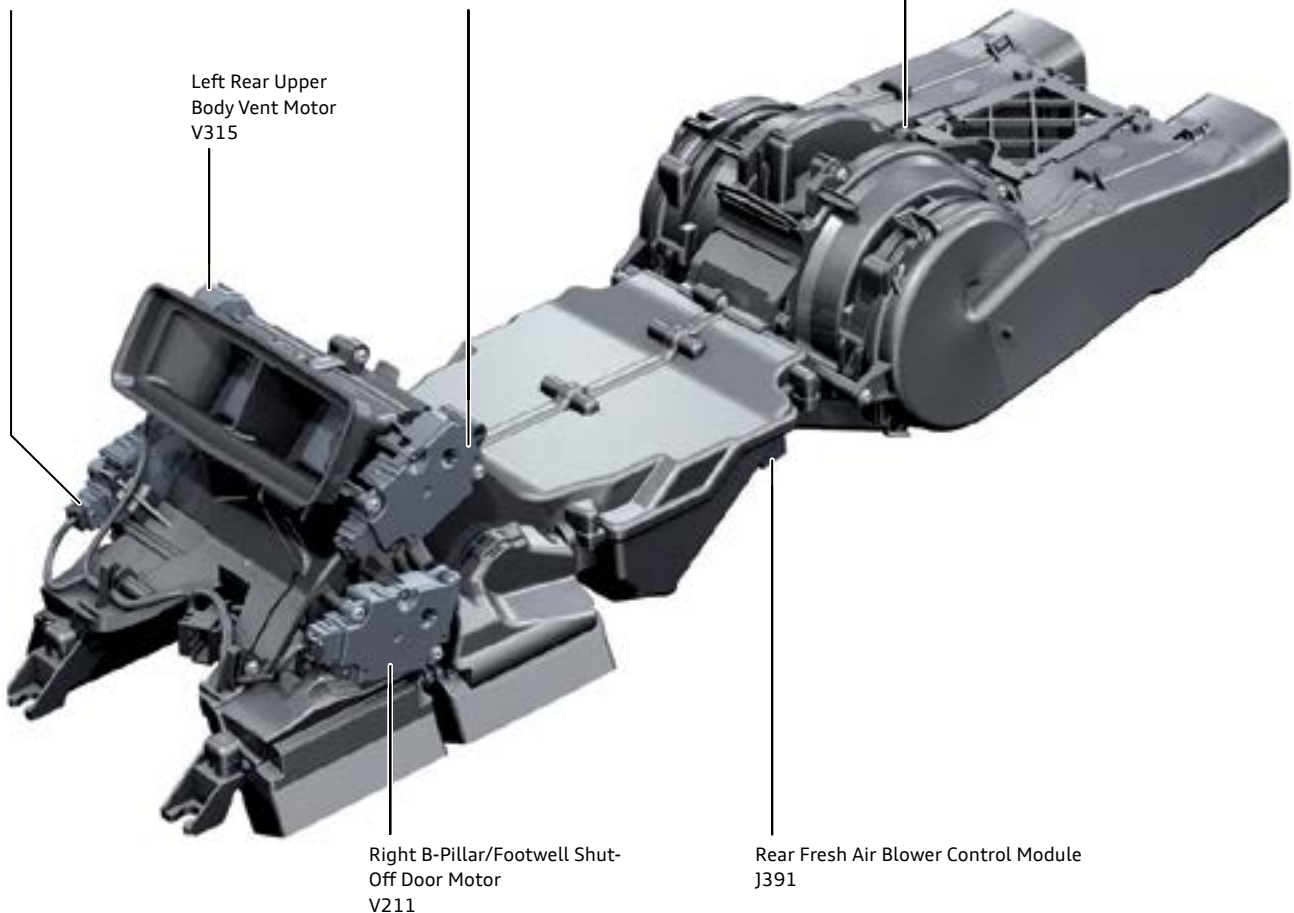
Rear air distributor housing

Left B-Pillar/Footwell Shut-Off Door Motor V212

Left Rear Upper Body Vent Motor V315

Right Rear Upper Body Vent Motor V316

Rear Fresh Air Blower V80



Right B-Pillar/Footwell Shut-Off Door Motor V211

Rear Fresh Air Blower Control Module J391

632_057

Four-zone deluxe automatic air conditioning

Rear A/C Display Control Head E265 with two temperature controls is used for the rear passenger compartment climate control in vehicles with four-zone deluxe automatic air conditioning.

Front A/C control panel

Infrared interior temperature sensor, (no fan used)



632_055

Rear A/C control panel



632_056

Rear heater and air conditioner housing

Left B-Pillar/Footwell Shut-Off Door Motor V212

Left Rear Temperature Control Door Motor V313

Right Rear Temperature Control Door Motor V314

Rear Recirculation Door Motor V421

Left Rear Upper Body Vent Motor V315

Rear Fresh Air Blower V80

Rear Fresh Air Blower Control Module J391

Right B-Pillar/Footwell Shut-Off Door Motor V211

Right Rear Upper Body Vent Motor V316

632_037

Heater and air conditioner housing

The different climate control versions of the Q7 have a different number of control motors. In the four-zone system there are 17 control motors.

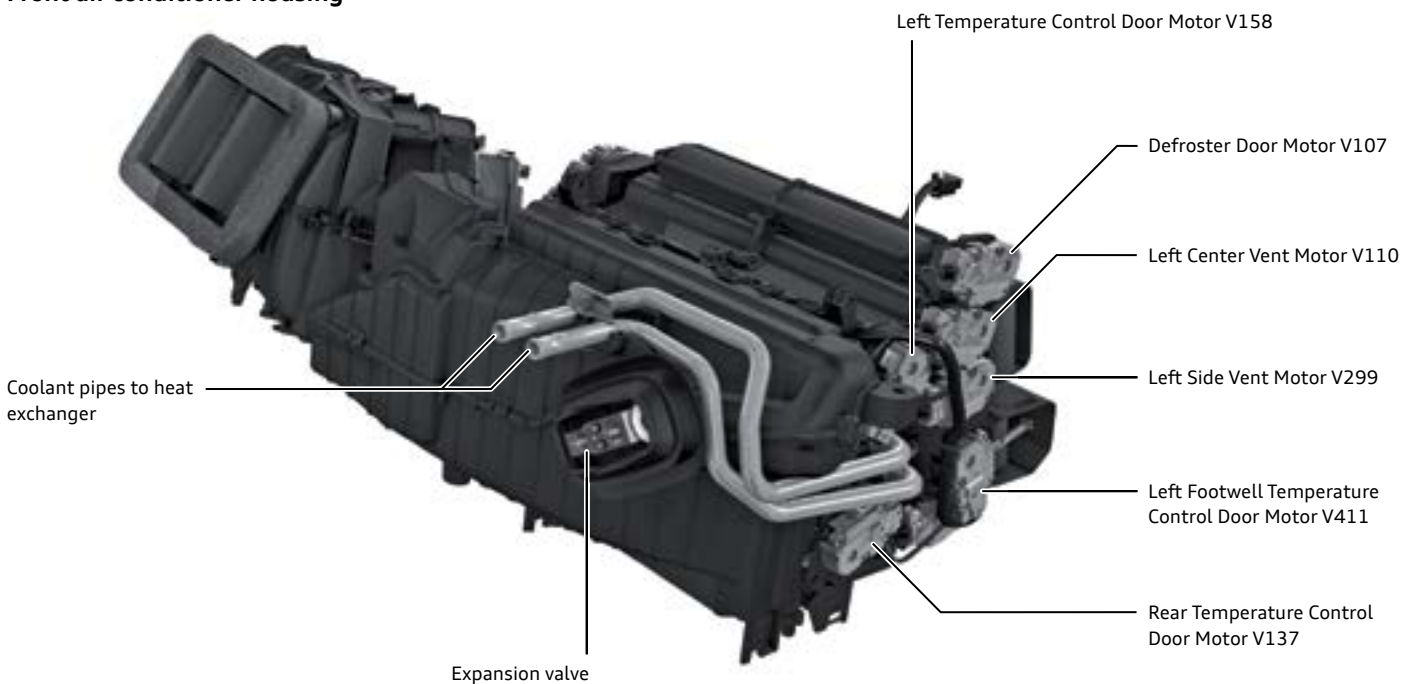
If repair work is needed, the following components of the air conditioner can be removed and replaced without removing the instrument panel:

- ▶ The control motors.
- ▶ The heat exchanger.
- ▶ The Auxiliary Heater Heating Element Z35
- ▶ The Fresh Air Blower V2 and the Fresh Air Blower Control Module J126.

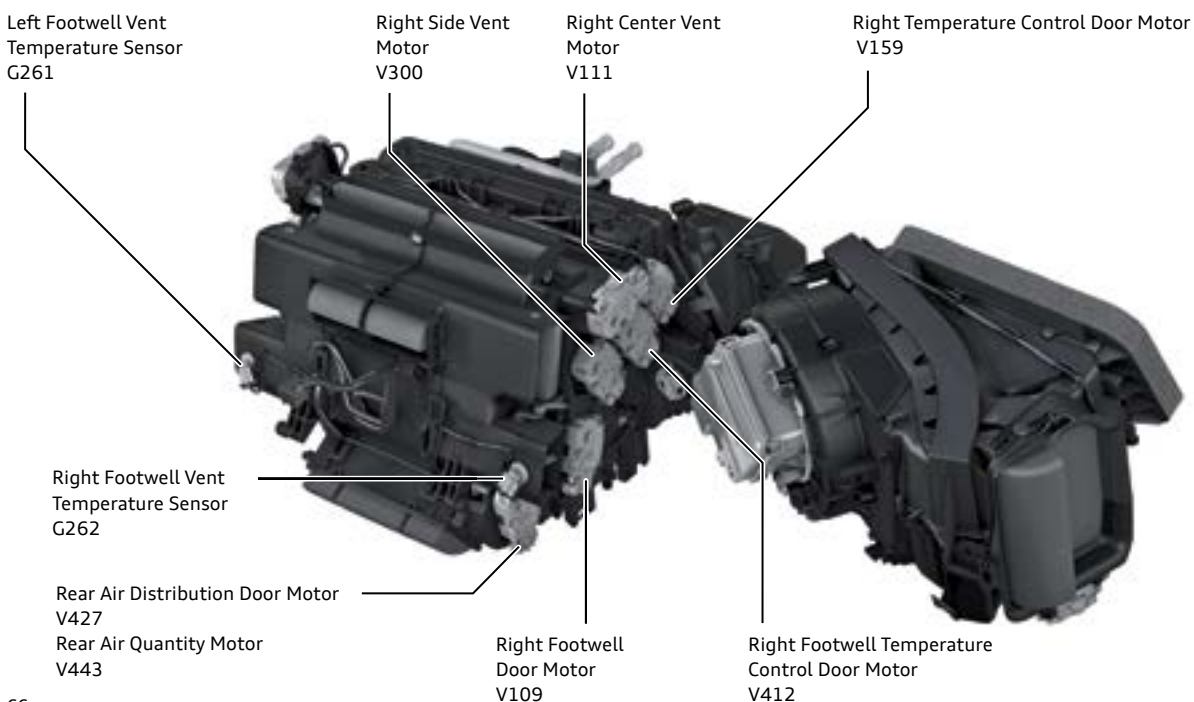
The control motors are all identical and their function is programmed by auto addressing. When replacing the control motors, the basic setting procedure must be carried out.

If repair work is needed, the cables and plugs leading to the control motors and the cable connections to the temperature sensor must not be interchanged because the components could otherwise be incorrectly addressed. Incorrect addressing can lead to complaints regarding the A/C control system, even if this incorrect addressing may not necessarily be identified as a fault by the system.

Front air conditioner housing



632_033

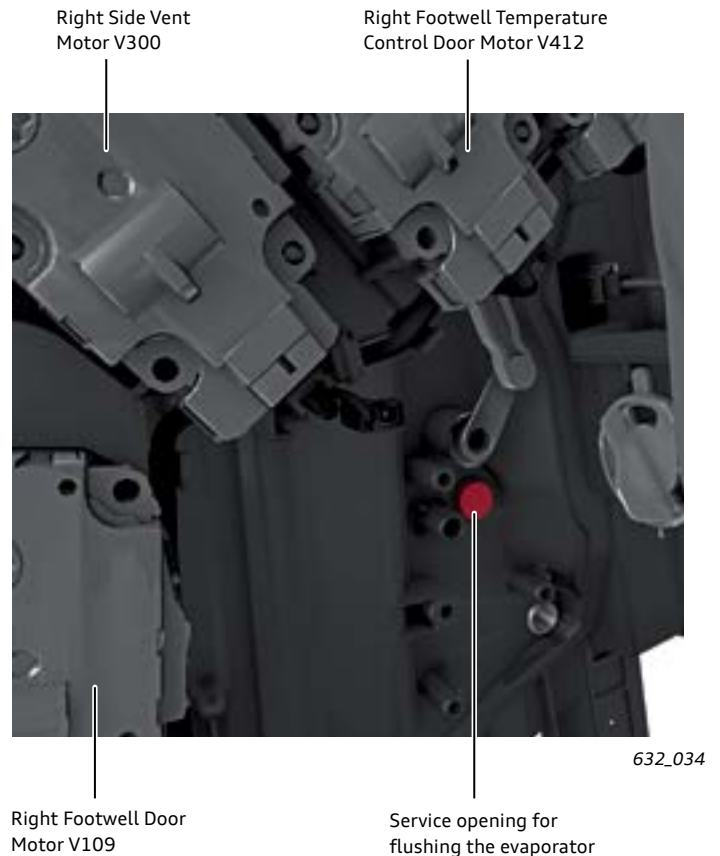


632_032

Cleaning the evaporator

The evaporator can be cleaned with compressed air using VAG 1538 and the corresponding probe.

A service opening must be drilled for this purpose. On completion of cleaning, the service opening can be re-sealed with a plug (refer to Electronic Parts Catalog).



Removing the dust and pollen filter

It can be accessed through the front passenger footwell. To take out the dust and pollen filter, the insulating mat, lower front passenger side dash panel and the shaft cover must first be removed. The dust and pollen filter can then be pulled out.

To reinstall, the filter must be flexed slightly to adapt it to the shape of the filter shaft.



Note

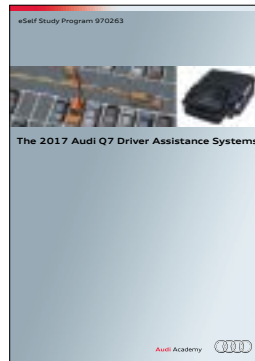
For the exact procedure for replacing the dust and pollen filter, please refer to the electronic service literature.

Self-Study Programs

For more information about the technology of the Audi Q7, please refer to the following eSelf-Study Programs.



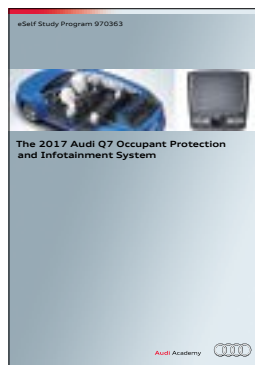
[SSP 920323](#)
[The Audi 3.0L V6 TFSI](#)
[Fourth Generation Engine](#)



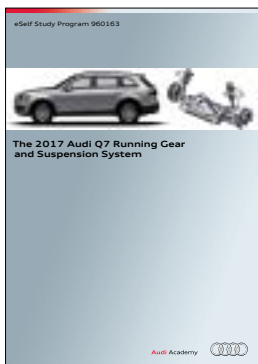
[SSP 970263](#)
[The 2017 Audi Q7](#)
[Driver Assistance Systems](#)



[SSP 970163](#)
[The 2017 Audi Q7](#)
[Onboard Power Supply and](#)
[Networking System](#)



[SSP 970363](#)
[The 2017 Audi Q7 Occupant Protection](#)
[and Infotainment System](#)



[SSP 960163](#)
[The 2017 Audi Q7](#)
[Running Gear and Suspension System](#)

Knowledge assessment

An On-Line Knowledge Assessment (exam) is Available for this eSelf-Study Program.

The Knowledge Assessment is required for Certification credit.

You can find this Knowledge Assessment at:

www.accessaudi.com

From the accessaudi.com Homepage:

- ▶ Click on the “ACADEMY” tab
- ▶ Click on the “Academy site” link
- ▶ Click on the Course Catalog Search and select “990163 - The 2017 Audi Q7 Introduction”

Please submit any questions or inquiries via the Academy CRC Online Support Form which is located under the “Support” tab or the “Contact Us” tab of the Academy CRC.

Thank you for reading this eSelf-Study Program and taking the assessment.

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