Service Training

The 2008 Audi R8
Vehicle Introduction

Self-Study Program 99B703

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

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The Self-Study Program teaches the design and function of new vehicle models, automotive components or technologies.

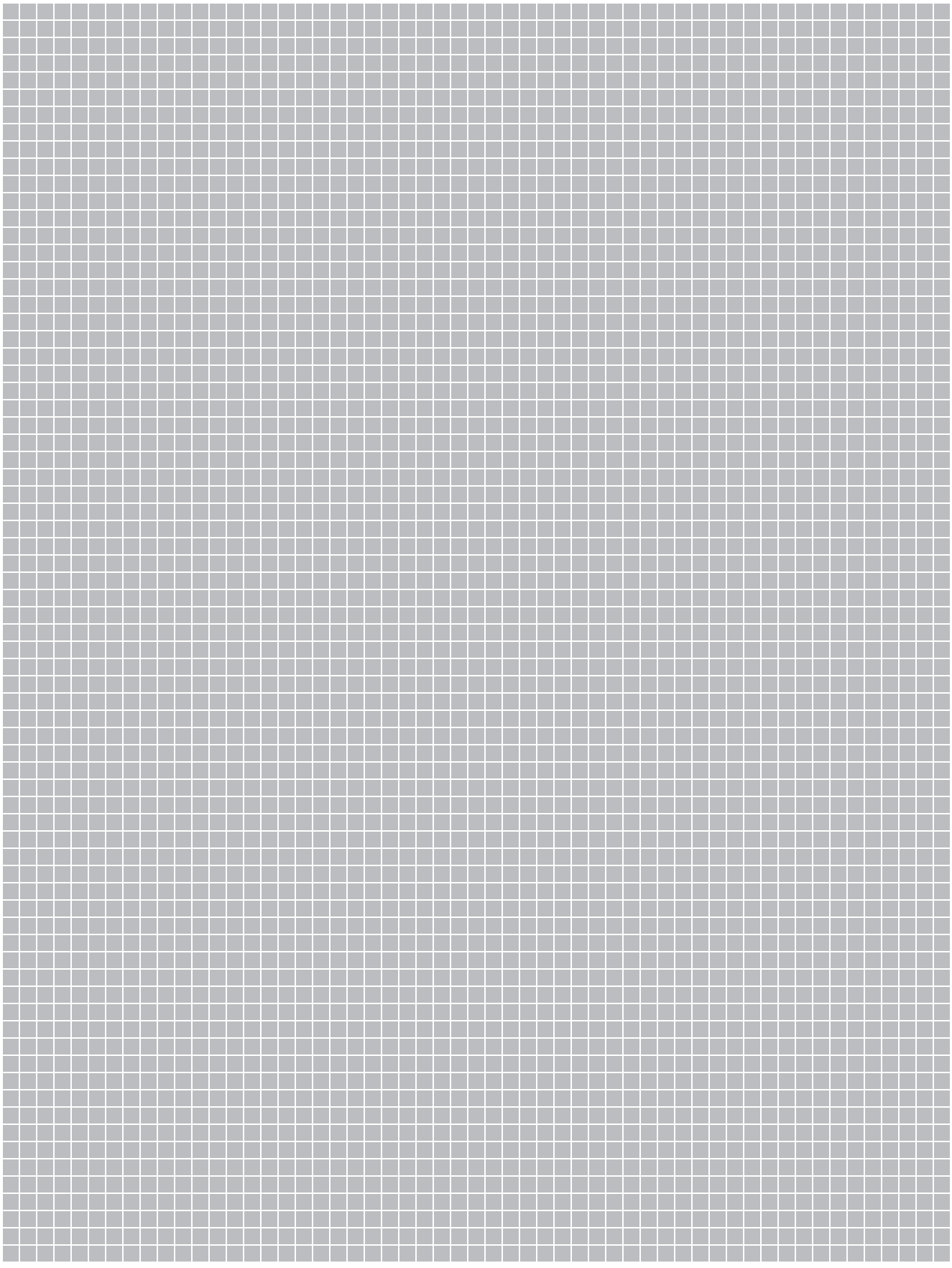
The Self-Study Program is not a Repair Manual!
The values given are intended as a guideline only and refer to the software version valid at the time of publication of the SSP.

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

Reference

Note

Notes



Audi R8 Overview

Audi made motor sport history with the Audi R8 race car - a formula that stirred the enthusiasm of people throughout the world. This vehicle has now found its way into production in the Audi R8 high-performance sports car. Among many other attributes, the Audi R8 accelerates from 0-60 MPH in 4.4 seconds, has no electronically governed top speed, is designed with an optimized front-to-rear weight distribution of 44:56, and has very high directional stability.

Some main features of the Audi R8 include the following:

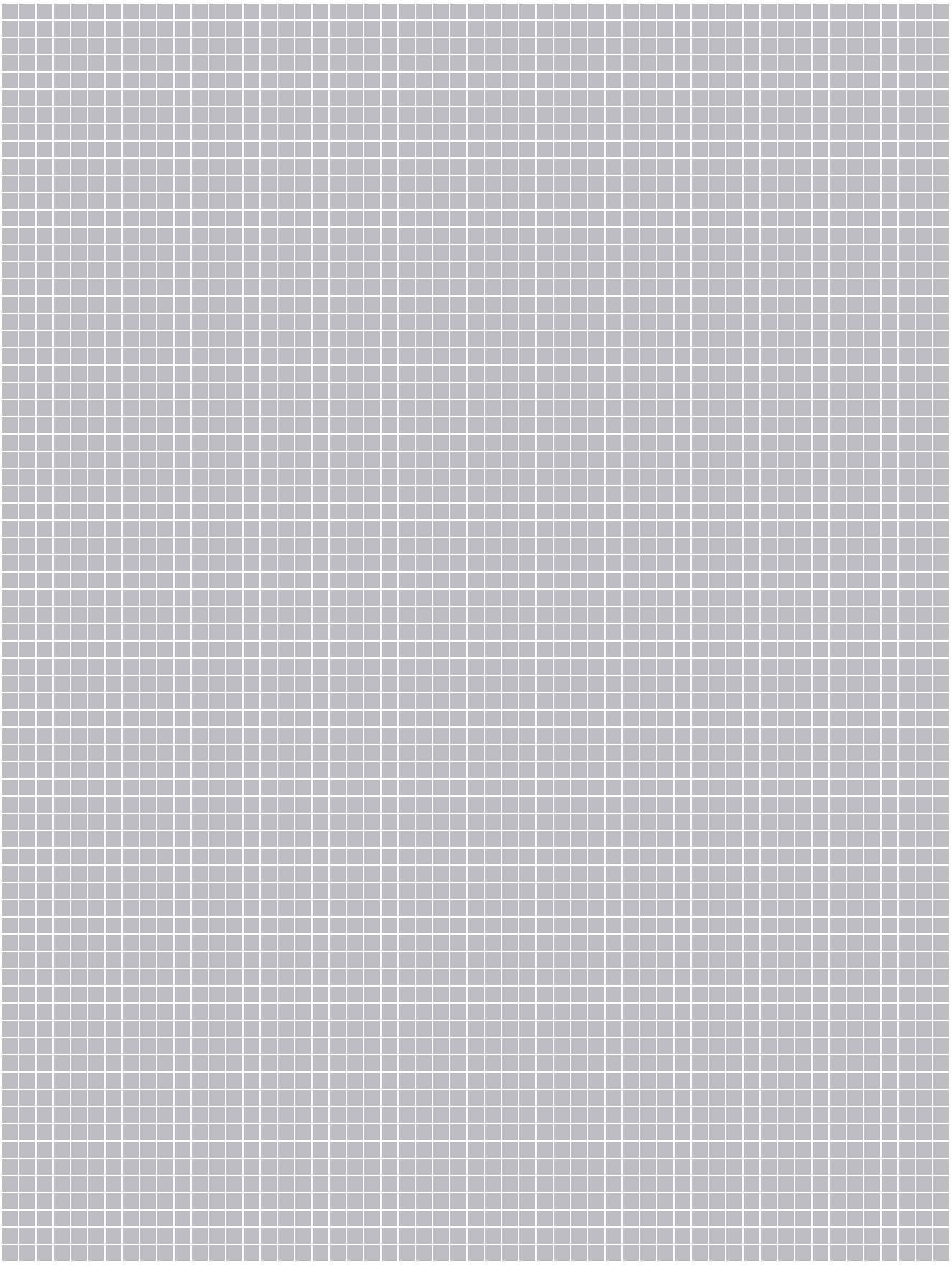
- Audi Space Frame ASF.
- 4.2L FSI High-Revving Engine.
- R-tronic Transmission.
- Front Viscous Coupling.
- Limited Slip Differential.
- Audi Magnetic Ride.
- Hi-Performance Brakes.

Audi Neckarsulm

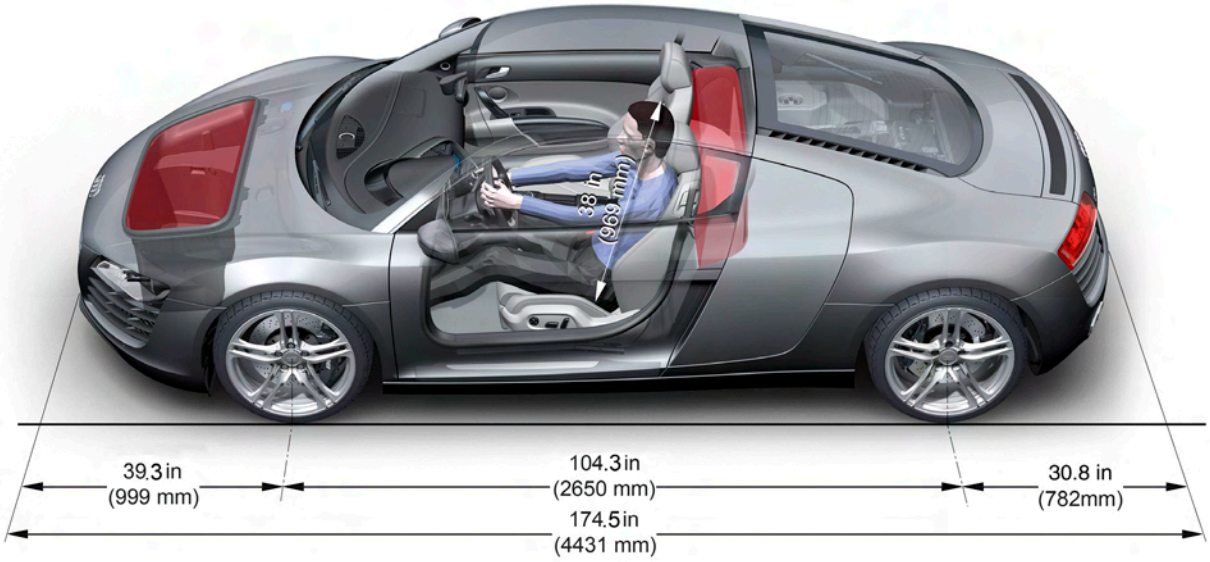
The Audi R8 is assembled in Neckarsulm, Germany. Vehicles are produced largely by hand with a small-scale production of 20 vehicles per day.

Over 250 employees with a high level of workforce qualification, skill, and in-depth experience work at the R8 production facility. More than 39 million dollars were invested in the site.

Notes



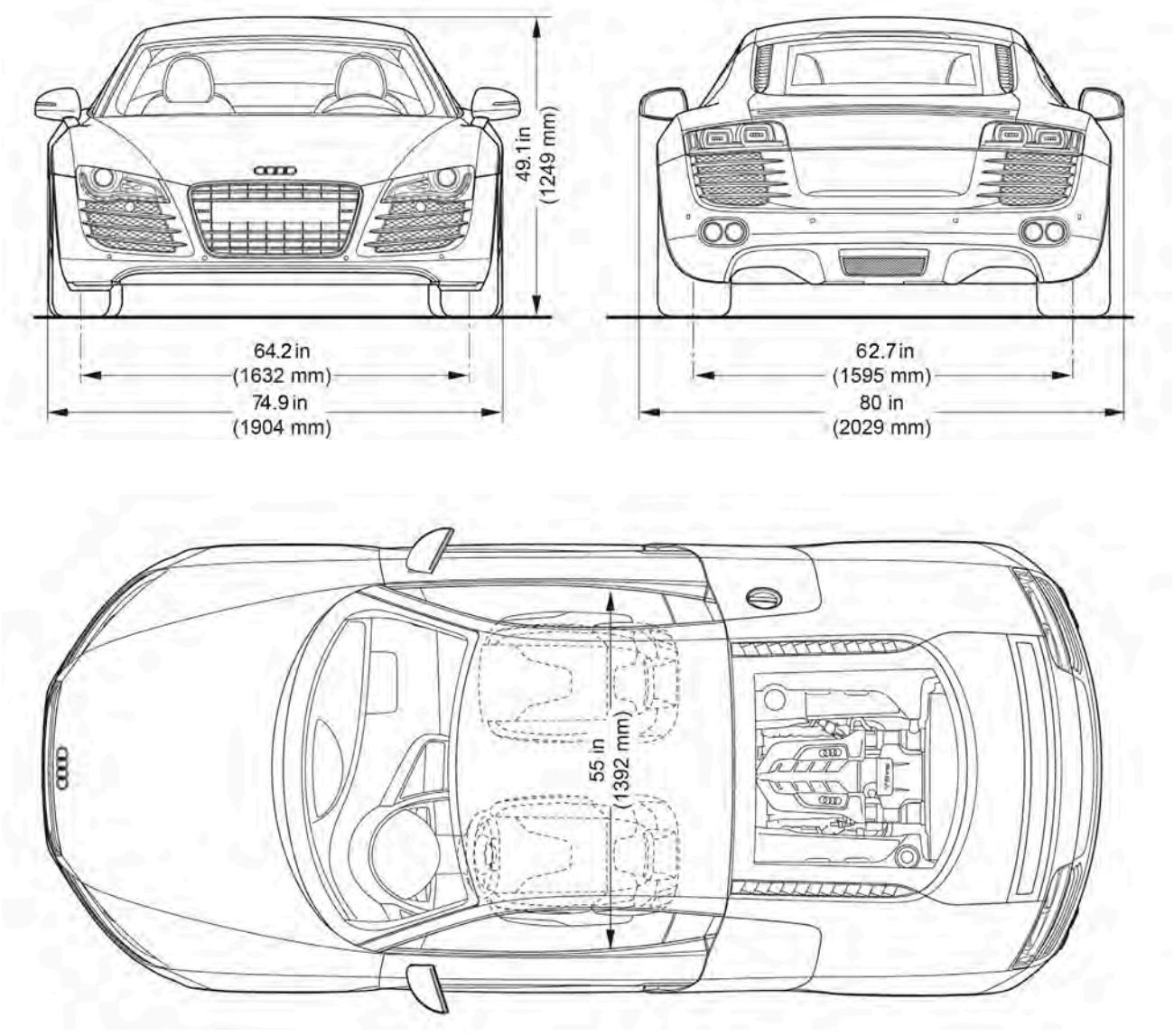
Dimensional Overview



The luggage compartment of the Audi R8 accommodates almost 3.5 cu. ft. (DIN) and approximately 3.2 cu. ft. (DIN) of additional space is provided behind the seats.

Weights

Unladen Weight	3605 lb (1635 kg) - with Manual Transmission 3616 lb (1640 kg) - with R-tronic Transmission
Permissible Laden Weight	4101 lb (1860 kg) - with Manual Transmission 4112 lb (1865 kg) - with R-tronic Transmission
Turning Circle Diameter	37.8 ft (11.80 m)
Fuel Tank	24 Gallons
Motor Oil Quantity	15 qt (14.2 l) (Including Filter Replacement)

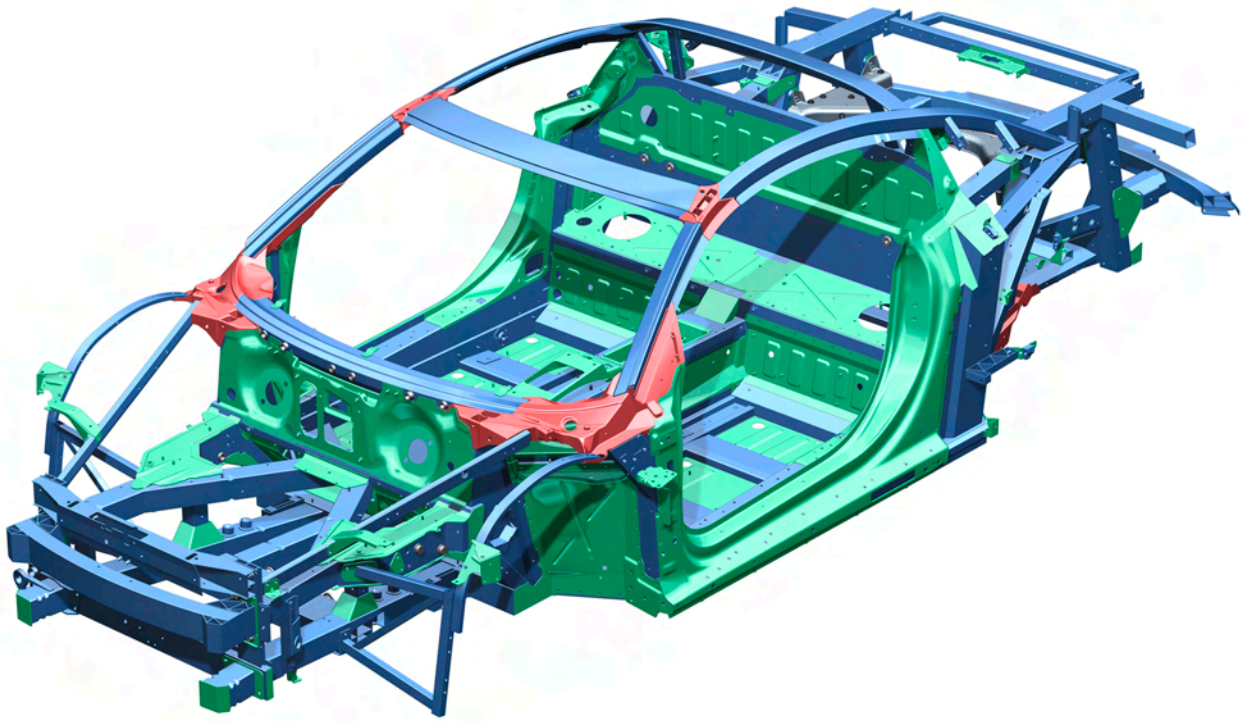


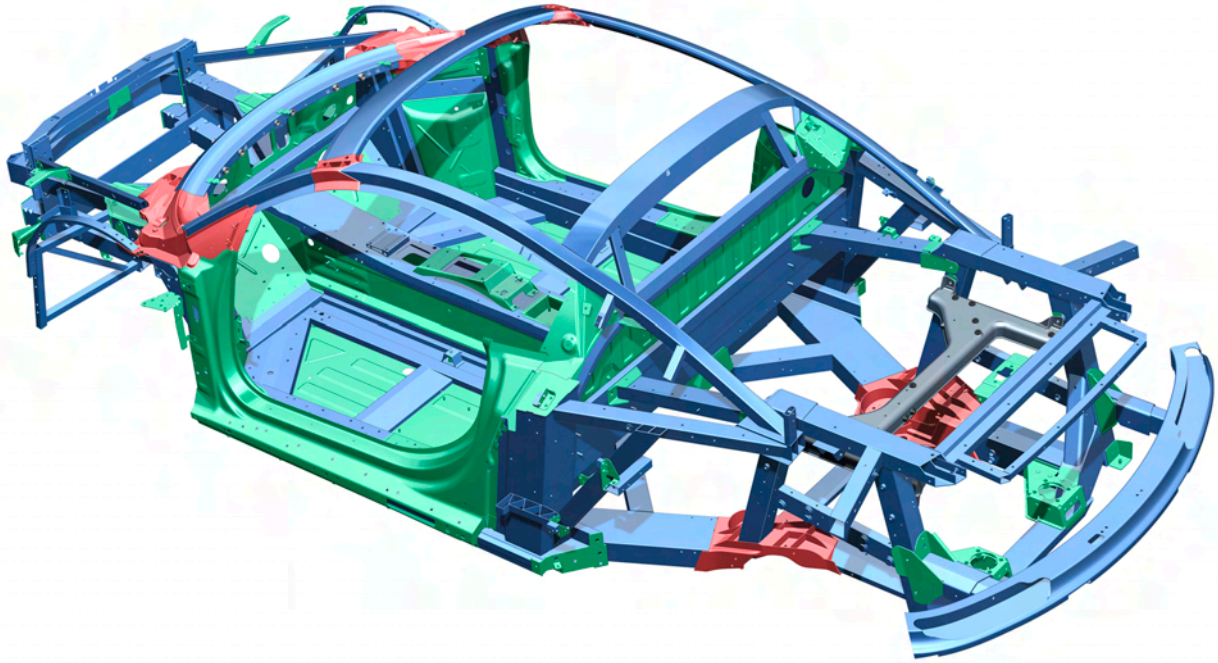
Body	Dimensions
Length	174 in (4431 mm)
Width	74.9 in (1904 mm)
Height	49.1 in (1249 mm)
Wheelbase	104 in (2650 mm)
Front Track Width	64.2 in (1632 mm)
Rear Track Width	62.7 in (1558 mm)

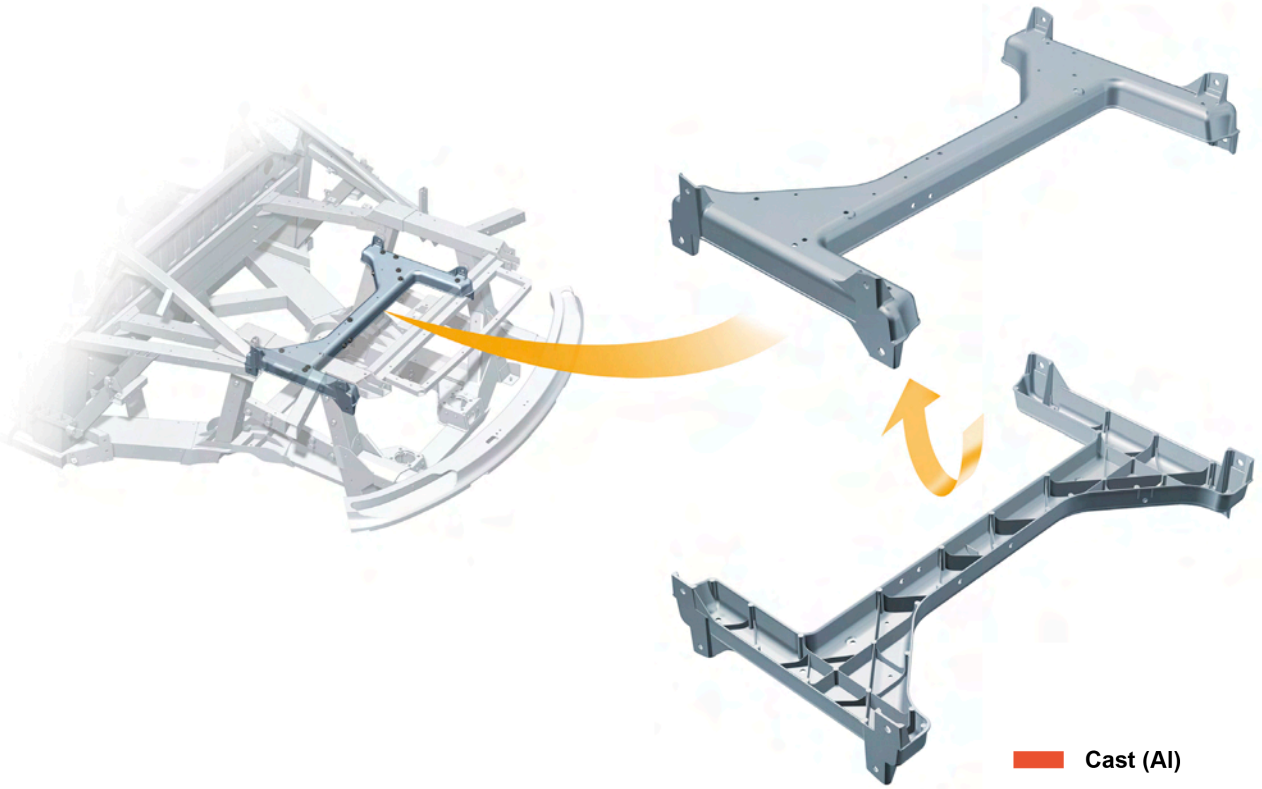
Audi Space Frame (ASF)

The body design of the R8 incorporates Audi Space Frame technology; the result is an extremely rigid, lightweight aluminum body offering the following benefits:

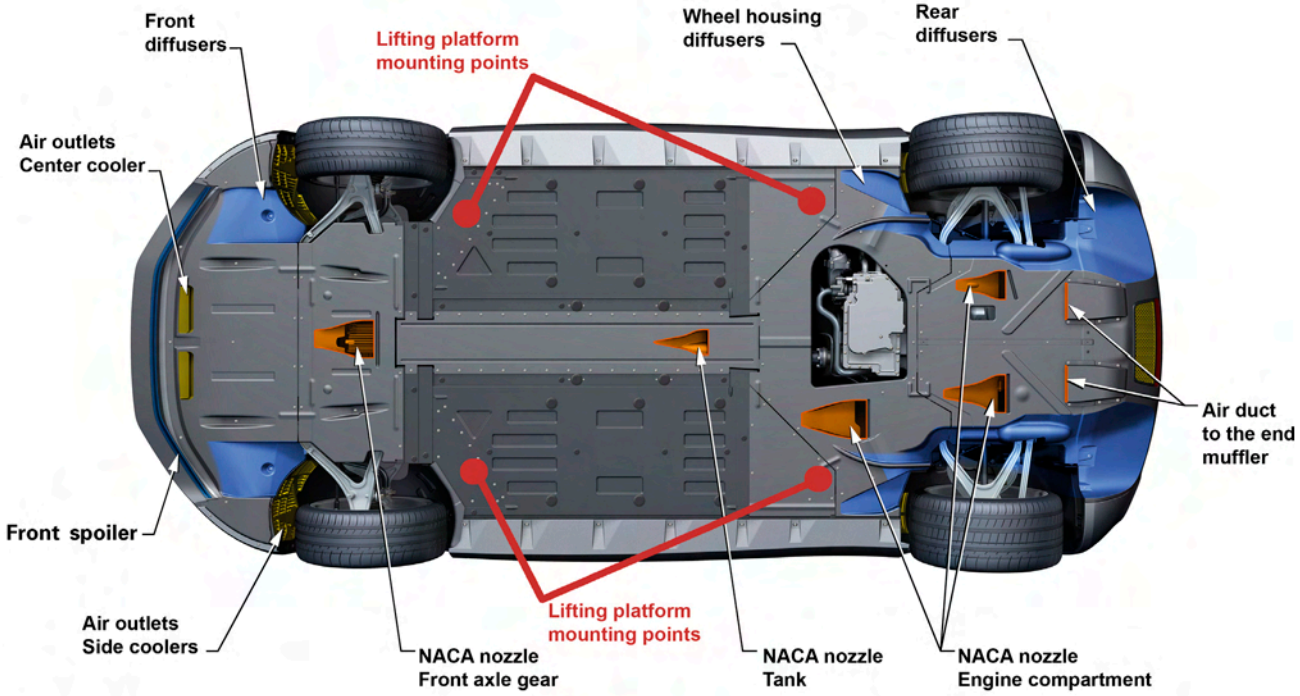
- Significant Weight Reduction.
- High Strength.
- High Static and Dynamic Torsional Rigidity.






Cast (Al)
Profiles (Al)
Sheet Metal (Al)
Magnesium

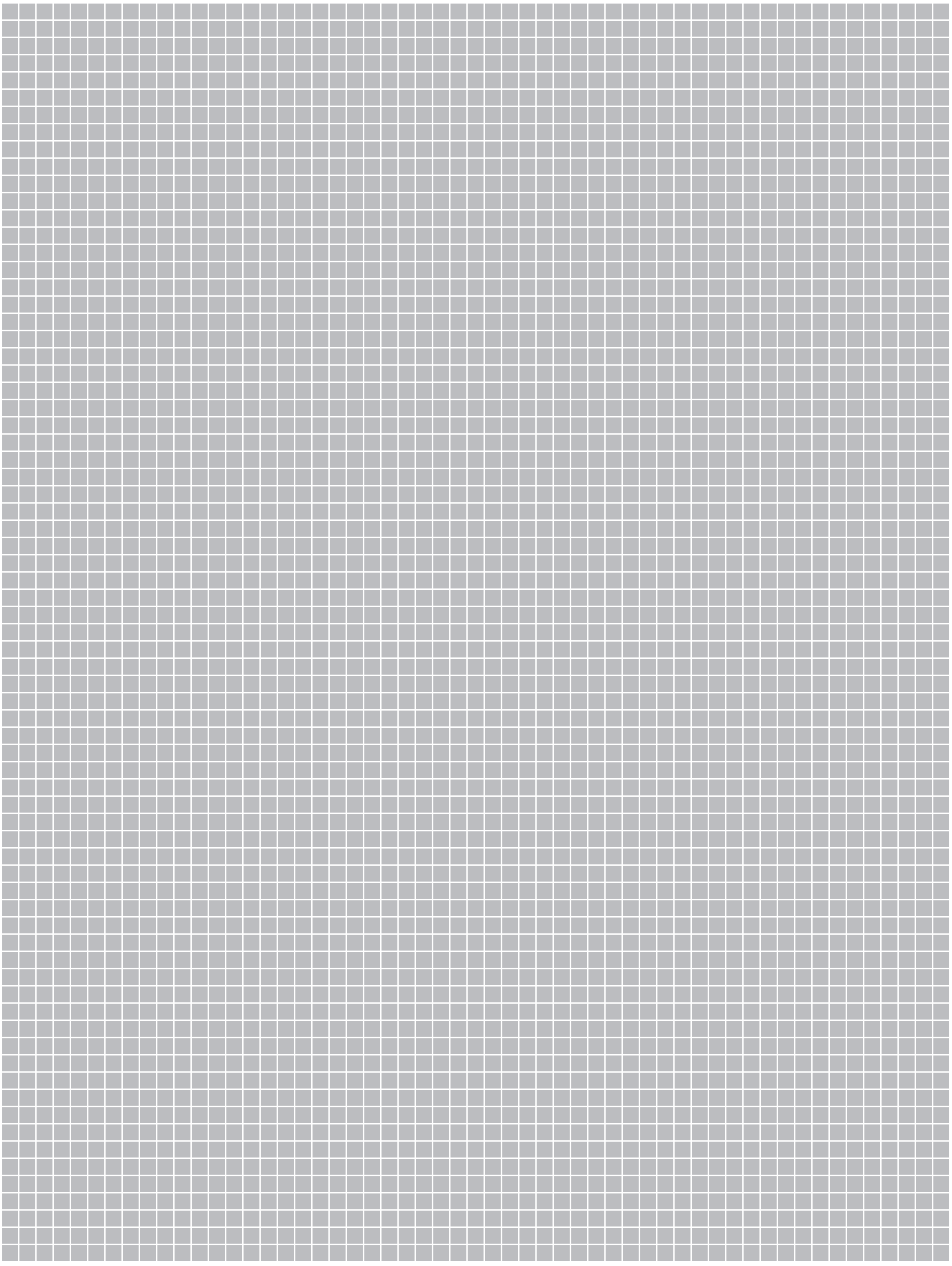
Underbody



Always use the lifting position mounting points specified above. Do not position jack or lift at any other point. Numerous ventilation points ensure sufficient cooling of the engine and other components.

The diffusers at front and rear enhance driving stability. An intact underbody is essential for correct function of the Audi R8.

Notes

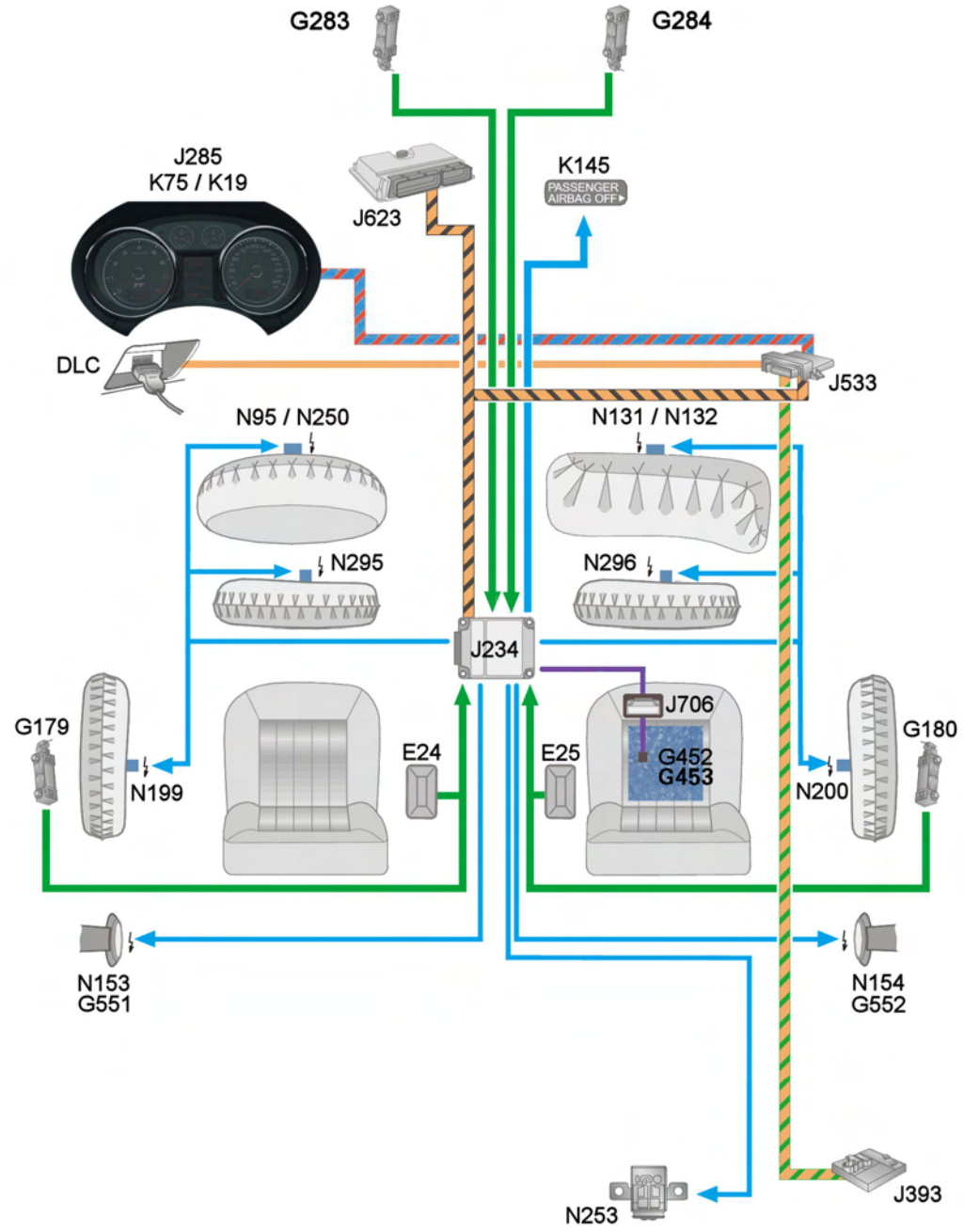


Occupant Protection System in the Audi R8

The Audi R8 is a high-end luxury sports car. The occupant protection system is in keeping with vehicle driving dynamics and occupant safety needs.

The occupant protection system of the Audi R8 includes the following components and systems:

– Airbag Control Module.
– Front Dual-Stage Airbags.
– Side Airbags.
– Knee Airbags.
– Front Crash Sensors.
– Side Crash Sensors.
– Safety Belt Tensioners and Belt Force Limiters.
– Audi Backguard.
– Battery Interrupt Igniter.
– Safety Belt Switch.
– Latch Child Seat Fixture.
– Passive Occupant Detection System (PODS).



E24 – Driver's Safety Belt Switch
E25 – Front Passenger's Safety Belt Switch
G179 – Driver's Side Airbag Crash Sensor
G180 – Front Passenger's Side Airbag Crash Sensor
G283 – Driver's Front Airbag Crash Sensor
G284 – Front Passenger's Front Airbag Crash Sensor
G452 – Seat Occupied Recognition Pressure Sensor
G453 – Seat Occupied Recognition Safety Belt Force Sensor
G551 – Driver's Belt Force Limiter
G552 – Front Passenger's Belt Force Limiter
J234 – Airbag Control Module
J285 – Instrument Cluster Control Module
J393 – Comfort System Central Control Module
J533 – Data Bus On Board Diagnostic Interface
J623 – Engine Control Module (ECM)
J706 – Seat Occupied Recognition Control Module
K19 – Safety Belt Warning Lamp
K75 – Airbag Malfunction Indicator Lamp (MIL)
K145 – Front Passenger's Airbag Disabled Indicator Lamp
N95 – Driver's Airbag Igniter
N131 – Front Passenger's Airbag Igniter 1
N132 – Front Passenger's Airbag Igniter 2
N153 – Driver's Safety Belt Tensioner Igniter 1
N154 – Front Passenger's Safety Belt Tensioner Igniter 1
N199 – Driver's Side Airbag Igniter
N200 – Front Passenger's Side Airbag Igniter
N250 – Driver's Airbag Igniter 2
N253 – Battery Interrupt Igniter
N295 – Driver's Knee Airbag Igniter
N296 – Front Passenger's Knee Airbag Igniter

Airbag Control Module J234

The electronics integrated into the Airbag Control Module detect and evaluate vehicle acceleration and deceleration in order to identify a vehicle collision. In addition to internal sensors in the control module, external sensors are also used to detect vehicle acceleration and deceleration during a collision.

J234 recognizes a collision only from the information provided by the sensors, deciding when and which safety components to activate once all sensor information has been evaluated. Front, side and rear impact collisions can be recognized by J234.

Another purpose of J234 is to activate the corresponding restraint systems (safety belt tensioner or safety belt tensioner and airbag), depending on the type and severity of the impact, and to report the crash event to other vehicle systems.

J234 has the following main tasks:

- Crash Recognition (Front, Side, Rear).
- Defined Triggering of Safety Belt Tensioners, Airbags and Battery Interrupt.
- Defined Triggering of the Second Front Airbag Stage.
- Evaluation of All Input Information.
- Continuous Monitoring of the Entire Airbag System.
- Independent Power Supply with a Capacitor for a Defined Period of Time (Approximately 150 ms).
- Fault Display by a Failure Warning Lamp.
- Reporting of a Crash Event to Other System Components through the Powertrain CAN-Bus or Discrete Crash Output (Conventional Wiring).
- Activation of the Safety Belt Warning Lamp.

For information on which components must be replaced after an accident, please refer to the appropriate repair manual.

J234 can only be replaced using a VAS scan tool with online capabilities, using the Guided Fault Finding or Guided Functions.

J234 must be coded and adapted according to the respective vehicle. If the coding and/or adaptation is not performed properly, malfunctions could occur in other vehicle systems, for example, in the ESP.

Data Transfer

Airbag Control Module J234 is a member of the Powertrain CAN-bus.

J234 relays information over the Powertrain CAN-bus:
– Activation of Airbag Malfunction Indicator Lamp K75.
– Activation of the Safety Belt Warning System.
– Diagnostic Data.
– Crash Signal.
– ESP Data.
– Passenger's Front Airbag Active / Inactive Status.

J234 evaluates the following information from the data bus:
– Dimming for the Passenger's Airbag Disabled Indicator Lamp.

The information that a crash has occurred is transmitted on the CAN-bus to other control modules to unlock the vehicle doors, shut OFF the fuel pump, and activate the emergency flasher system.

Airbag Malfunction Indicator Lamp K75

K75 is located in Instrument Cluster Control Module J285 and is illuminated via the CAN-bus.

Rear Impact Recognition

During a rear impact collision, the vehicle is strongly accelerated in the driving direction.

Crash sensors in J234 and Crash Sensors G283 and G284 recognize this vehicle acceleration and send their signals to J234.

If the signals exceed a specified value, the pyrotechnic safety belt tensioners the battery interrupt igniter are activated.

Reference
For more information about the Occupant Protection System, refer to the 2008 Audi TT Vehicle Introduction, Self Study Program 991703.

Technical Features

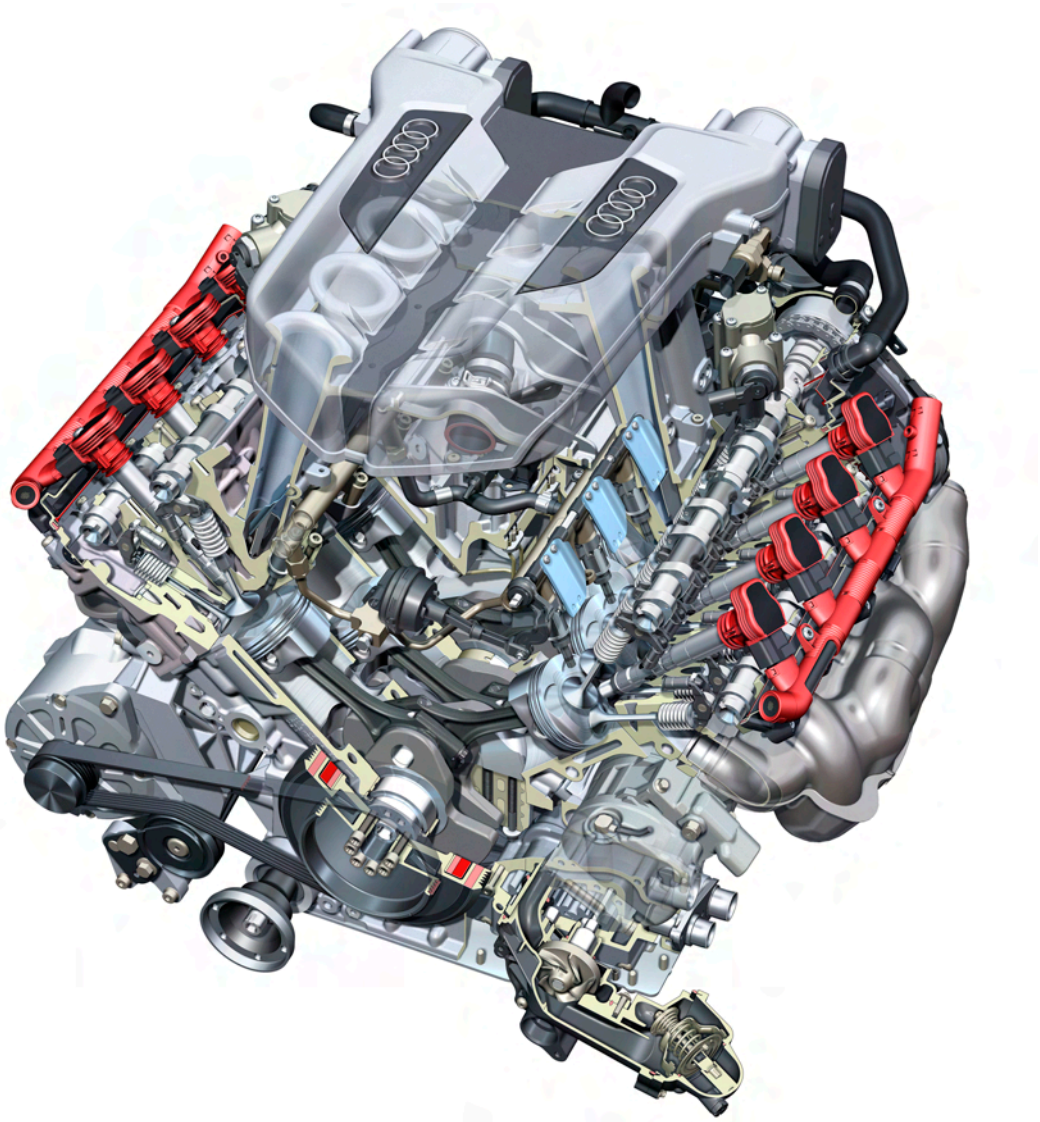
The following are some commonalities between the RS4 engine and the R8 engine:

- Fuel Straight Injection.
- Roller Cam Rocker Arms with Hydraulic Lifters.
- Chain Drives for Camshafts and Accessories.
- Variable Camshaft Adjustment for Intake and Exhaust Camshafts.

Main features which are unique to the R8 engine include the following systems:

- Dry Sump Lubrication.
- Crankcase Ventilation.
- Cooling.
- Air Intake.
- Exhaust.

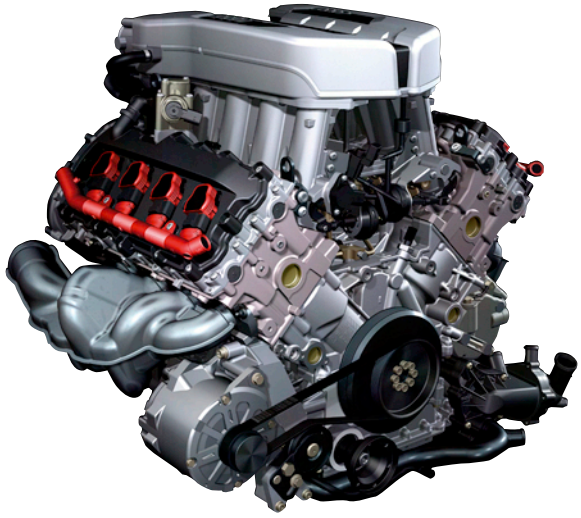
4.2L V8 FSI Engine



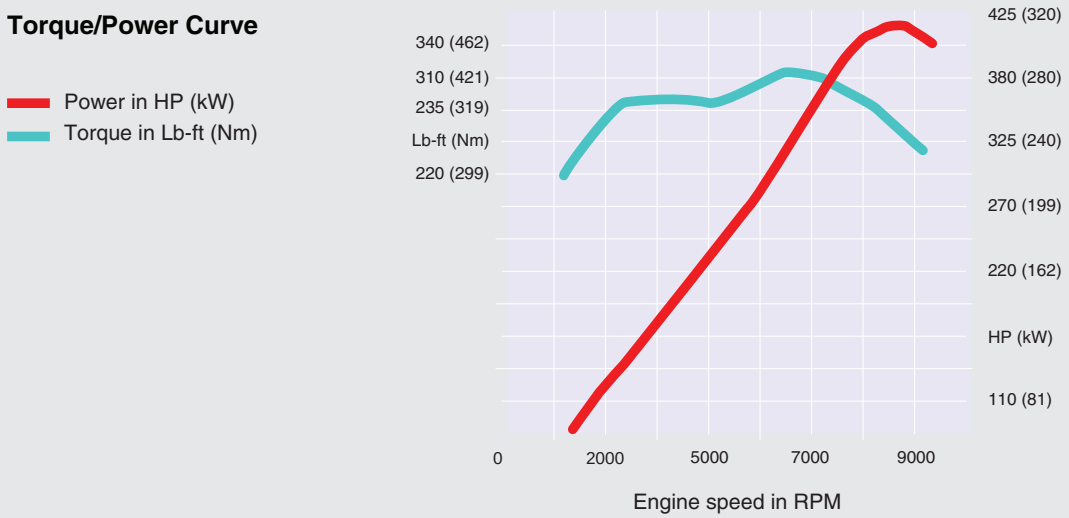
4.2L V8 FSI Engine

Technical Data

Reference
For more detailed information about the 4.2L FSI engine, refer to the Audi 4.2-liter V8 FSI Engine, Self-Study Program 924603.



Torque/Power Curve

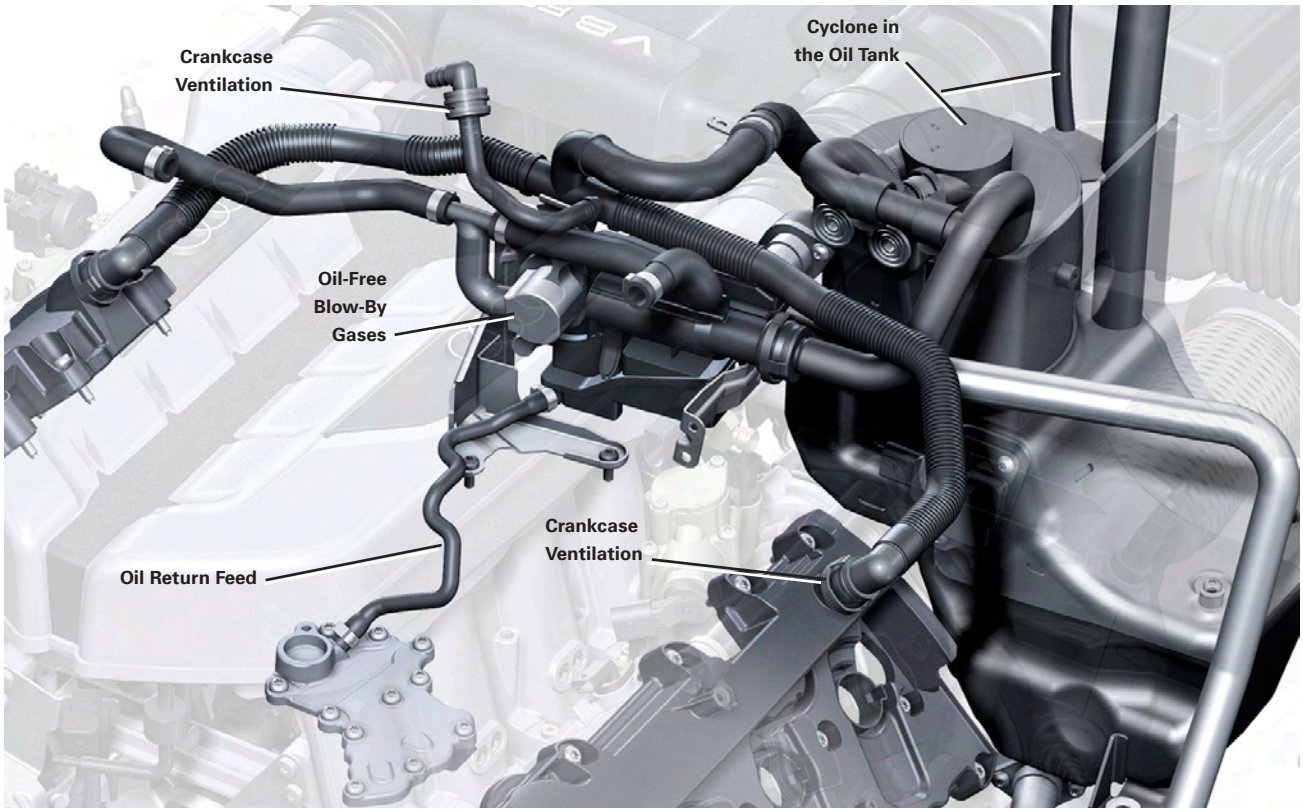


Specifications	
Engine ID Letters	BYH
Type	V8 Engine with 90° V Angle
Cylinder Capacity in cm3	4163
Power in Hp (kW)	420 (309) at 7800 rpm
Torque in Lb-ft (Nm)	317 (430) at 4500-6000 rpm
Bore in Inches (mm)	3.3 (84.5)
Stroke in Inches (mm)	3.7 (92.8)
Compression	12.5:1
Cylinder Spacing in Inches (mm)	3.5 (90)
Ignition Sequence	1-5-4-8-6-3-7-2
Engine Weight in lbs (kg)	491
Engine Management	Bosch MED 9.1
Exhaust Gas Recirculation	Internal
Exhaust Gas Cleaning	3-Way Catalytic Converter, Secondary Air System
Emission Standard	EU IV / LEV II

Crankcase Ventilation

The crankcase is ventilated through both cylinder heads. A large settling chamber is located in the oil tank. The tank acts as a gravity oil separator. A fine oil separator is connected with plastic hoses behind the oil tank.

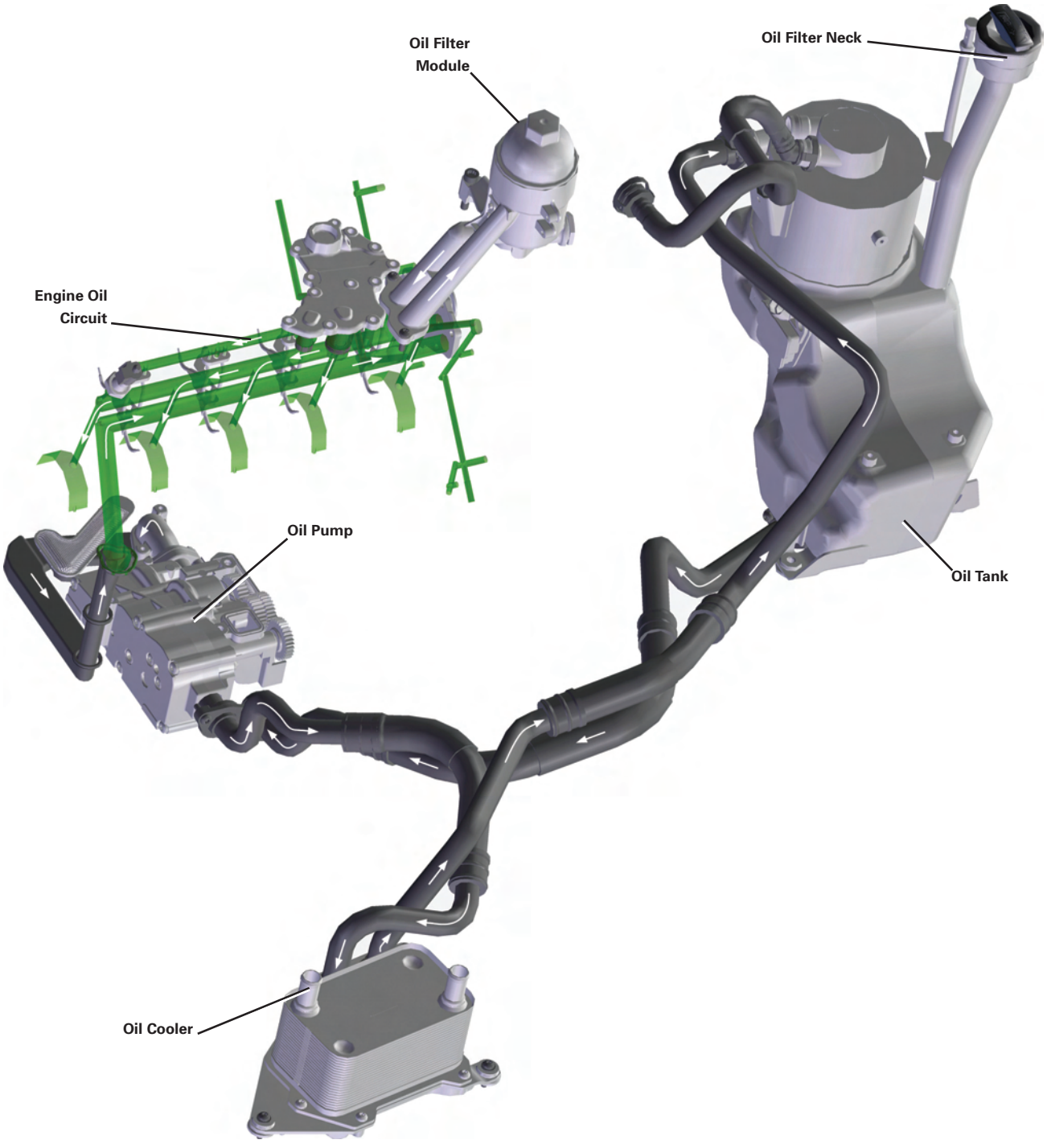
When blow-by gas has passed through the fine oil separator, oil-free gas can then be delivered to the intake downstream of the throttle. Separated oil is returned through the oil return line.



Oil System

The R8 engine uses a dry sump lubrication system. This system includes an external oil pump, cooler, and tank. There are a few advantages of having an external pump: the engine is placed lower in the vehicle because the oil pan is smaller, oil starvation does not occur, and the pump can be replaced much more easily than one of a wet sump system.

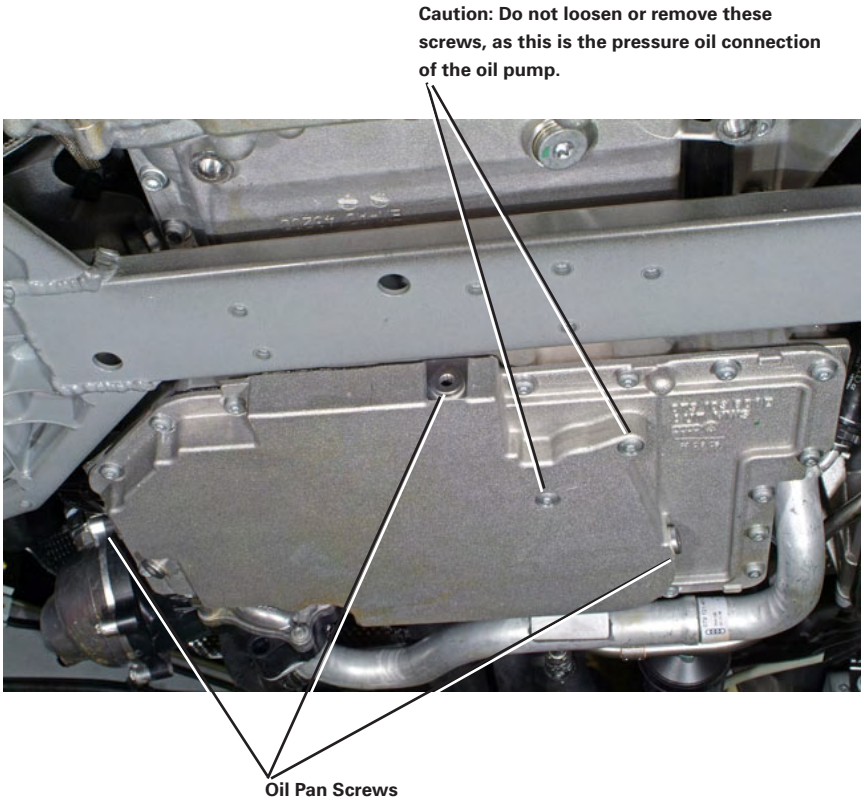
The oil filter module is easily accessible, positioned in the inner V of the engine. The filter insert can be easily replaced without special tools.

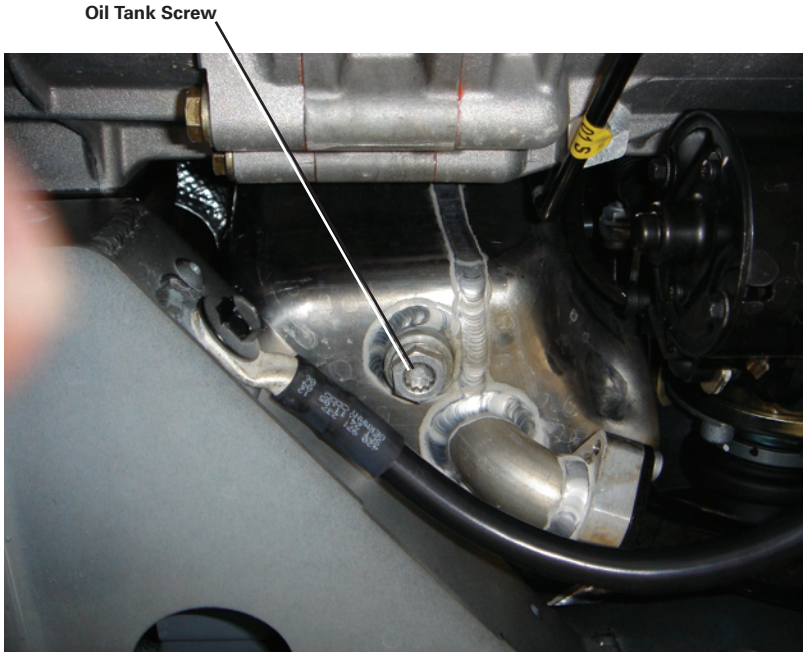


Service

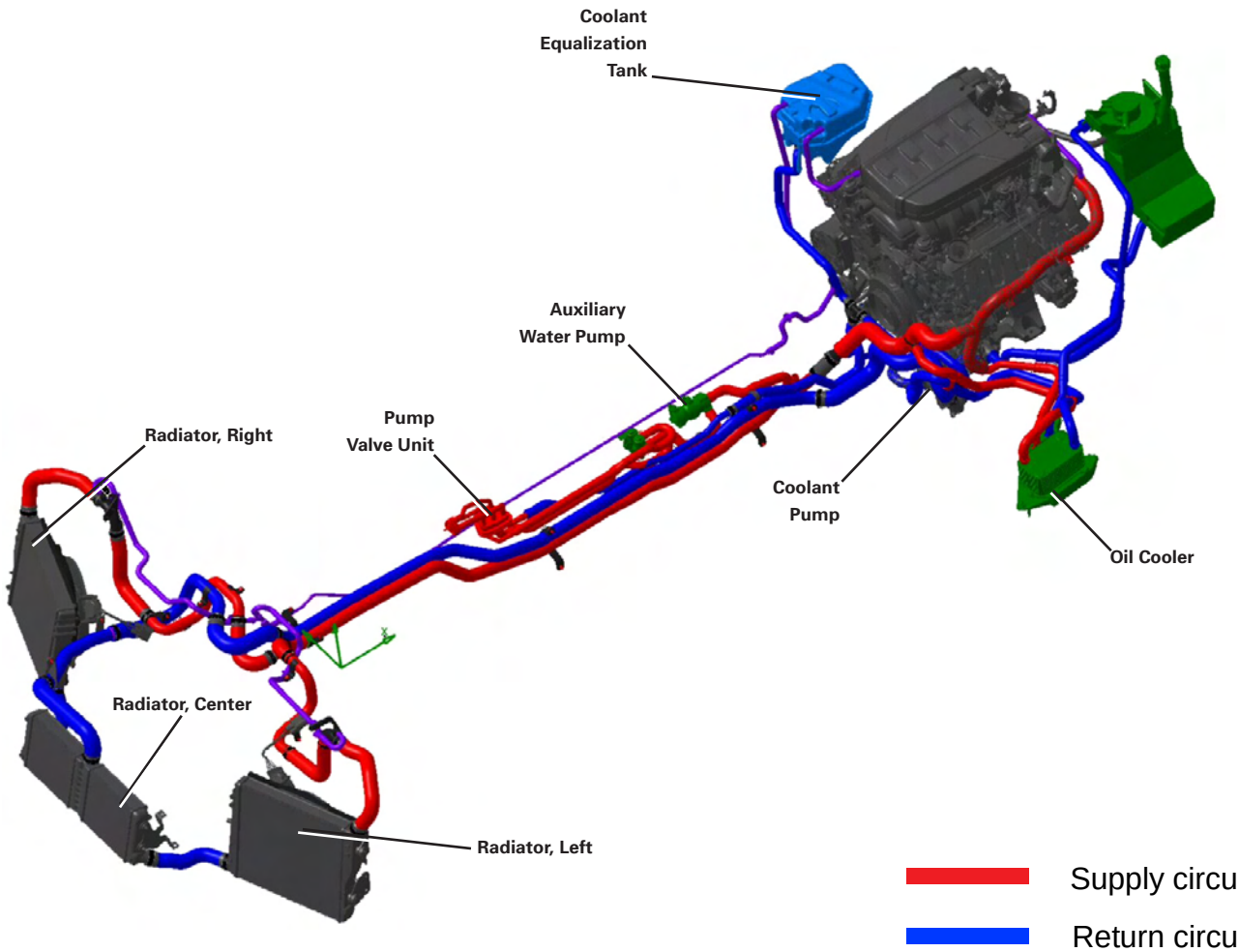
There are four screws which must be removed in order to drain the oil from the engine; three from the oil pan, one from the oil tank.

Do not loosen the two screws specified in the illustration below.





Cooling System

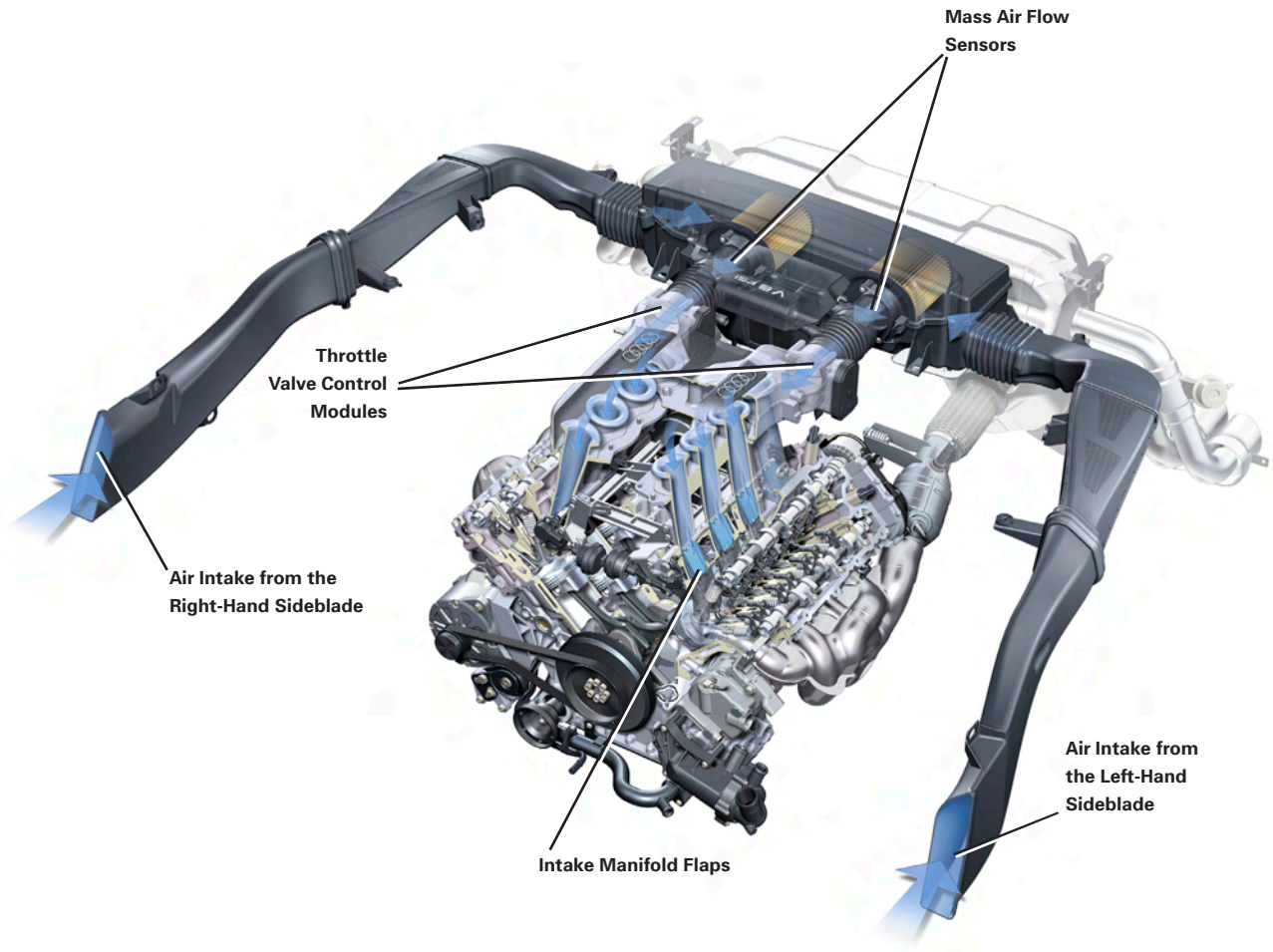


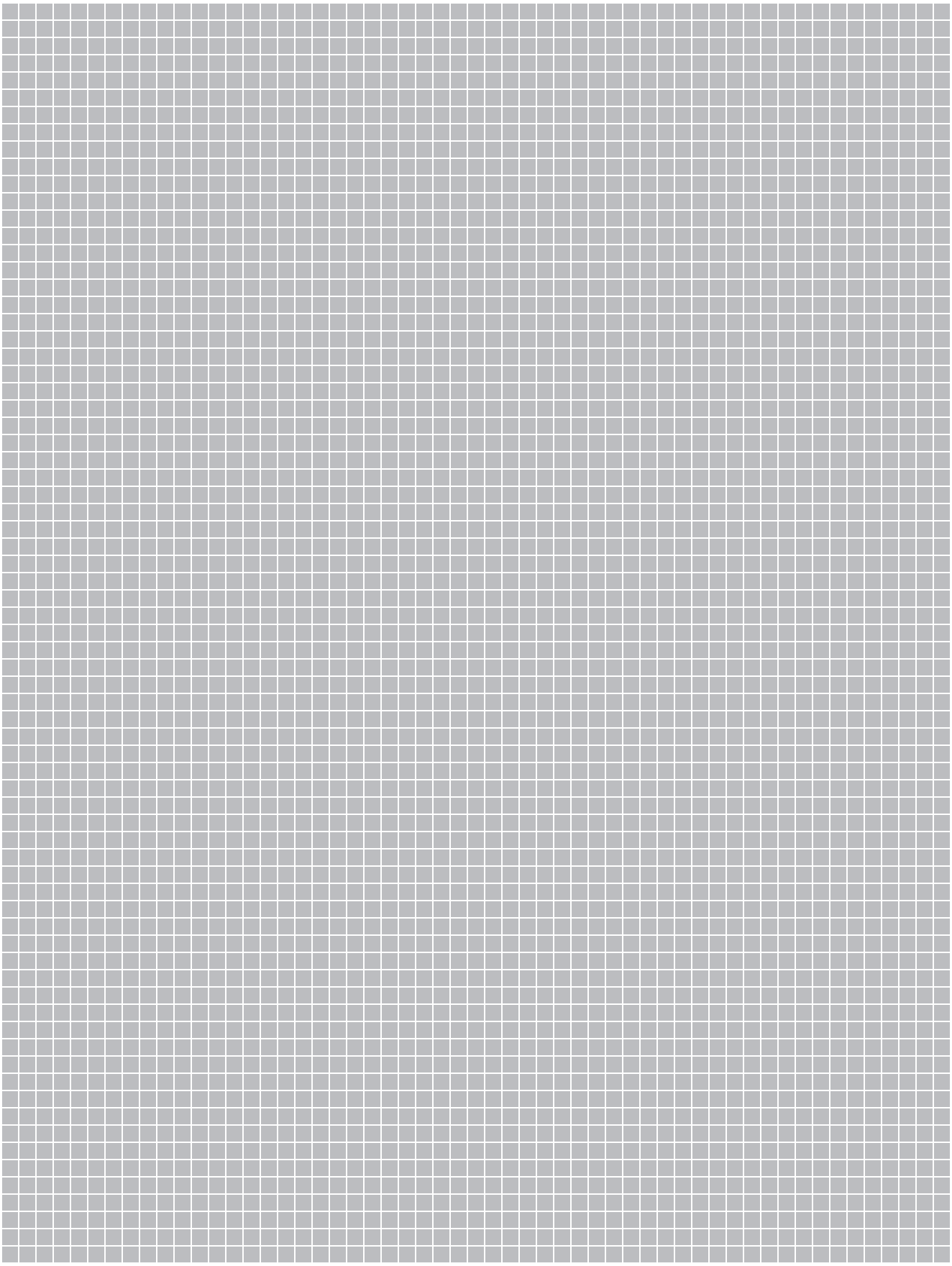
Air Intake

The air intake system of the R8 engine begins at both the right and left sideblades.

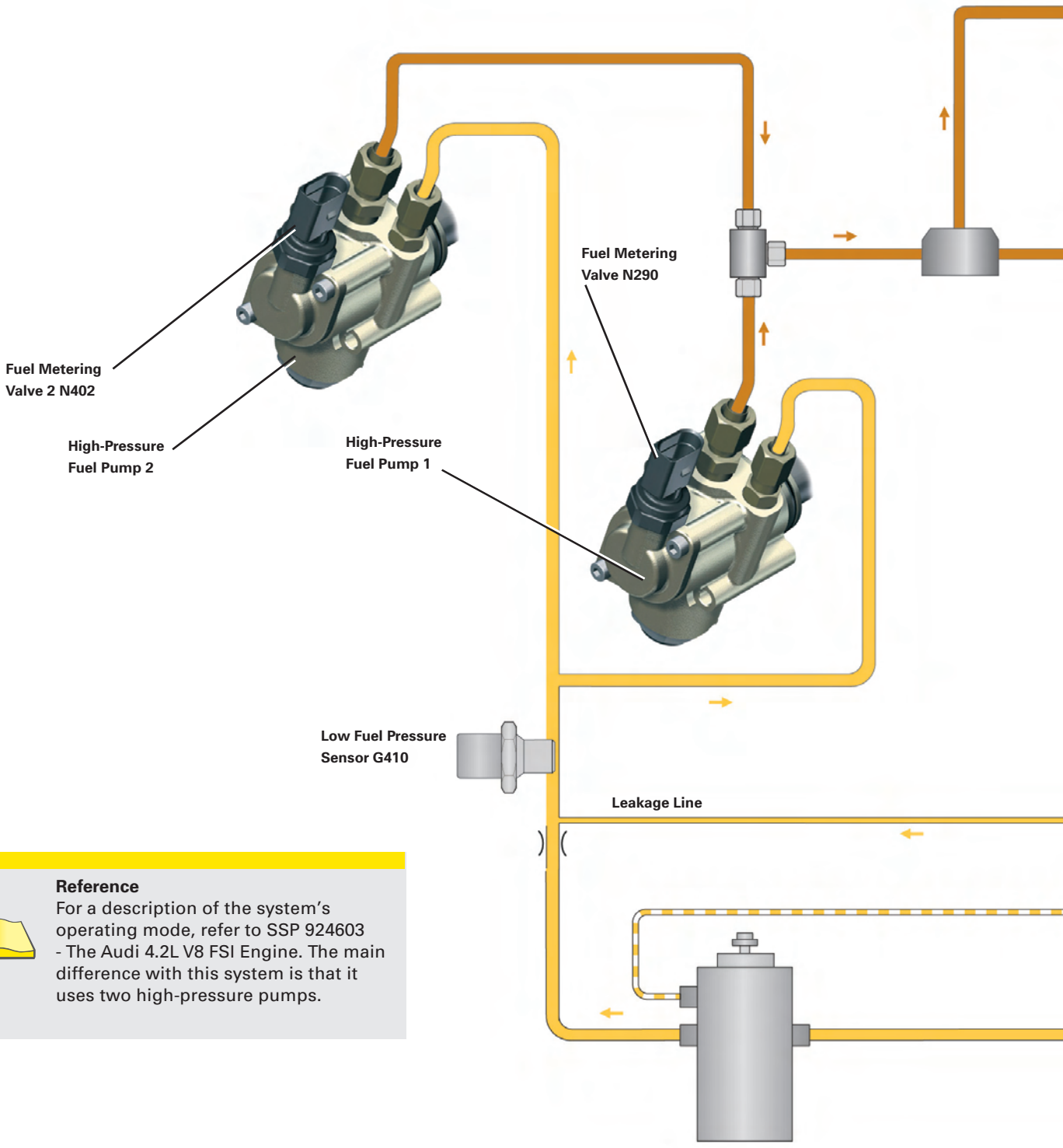
From there air rushes through both air filters, both Mass Air Flow (MAF) sensors, both throttles, and the single length runners; past the manifold flaps; and into the combustion chambers.

Audi R8 Intake System

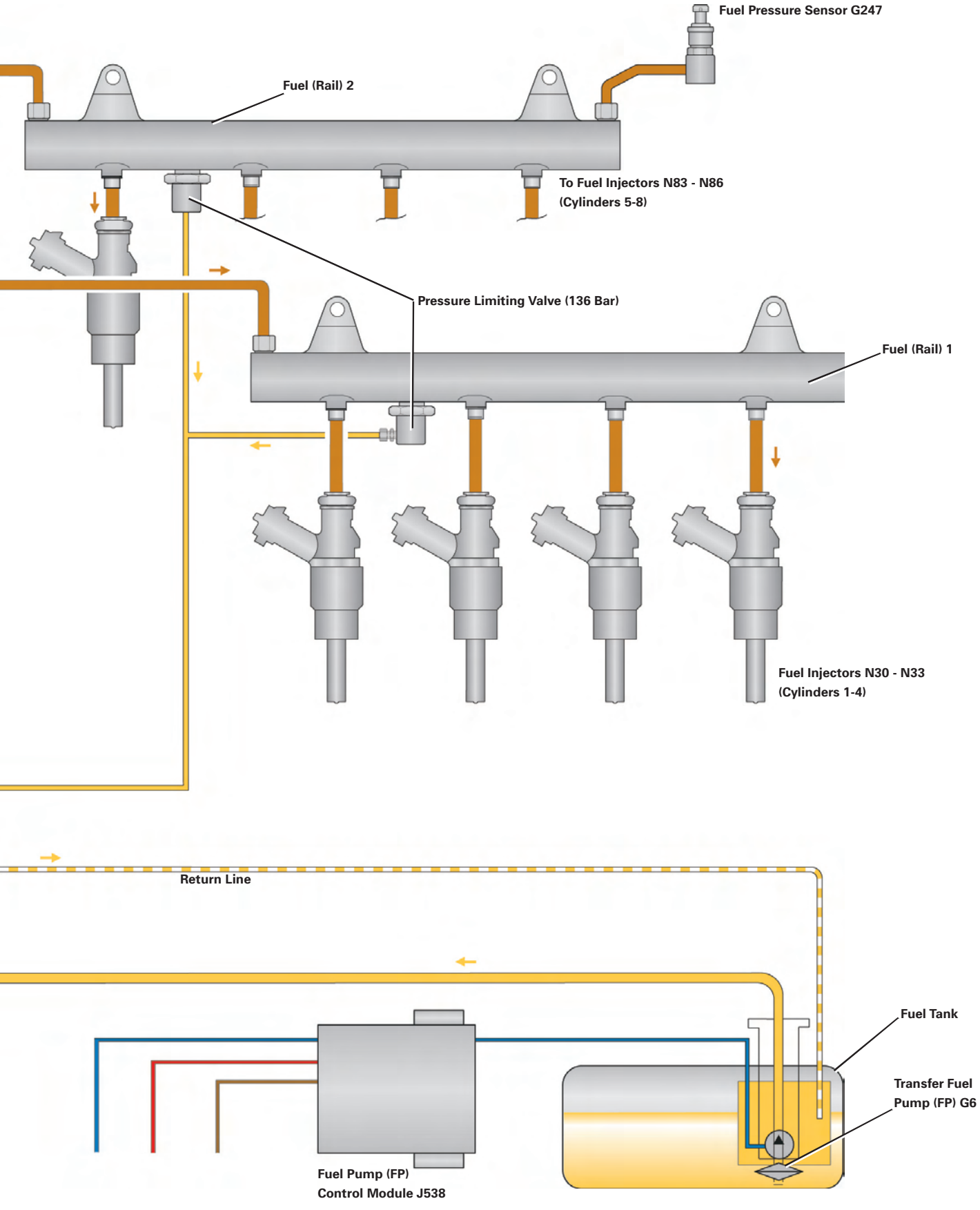




Fuel System



Reference
For a description of the system's operating mode, refer to SSP 924603 - The Audi 4.2L V8 FSI Engine. The main difference with this system is that it uses two high-pressure pumps.

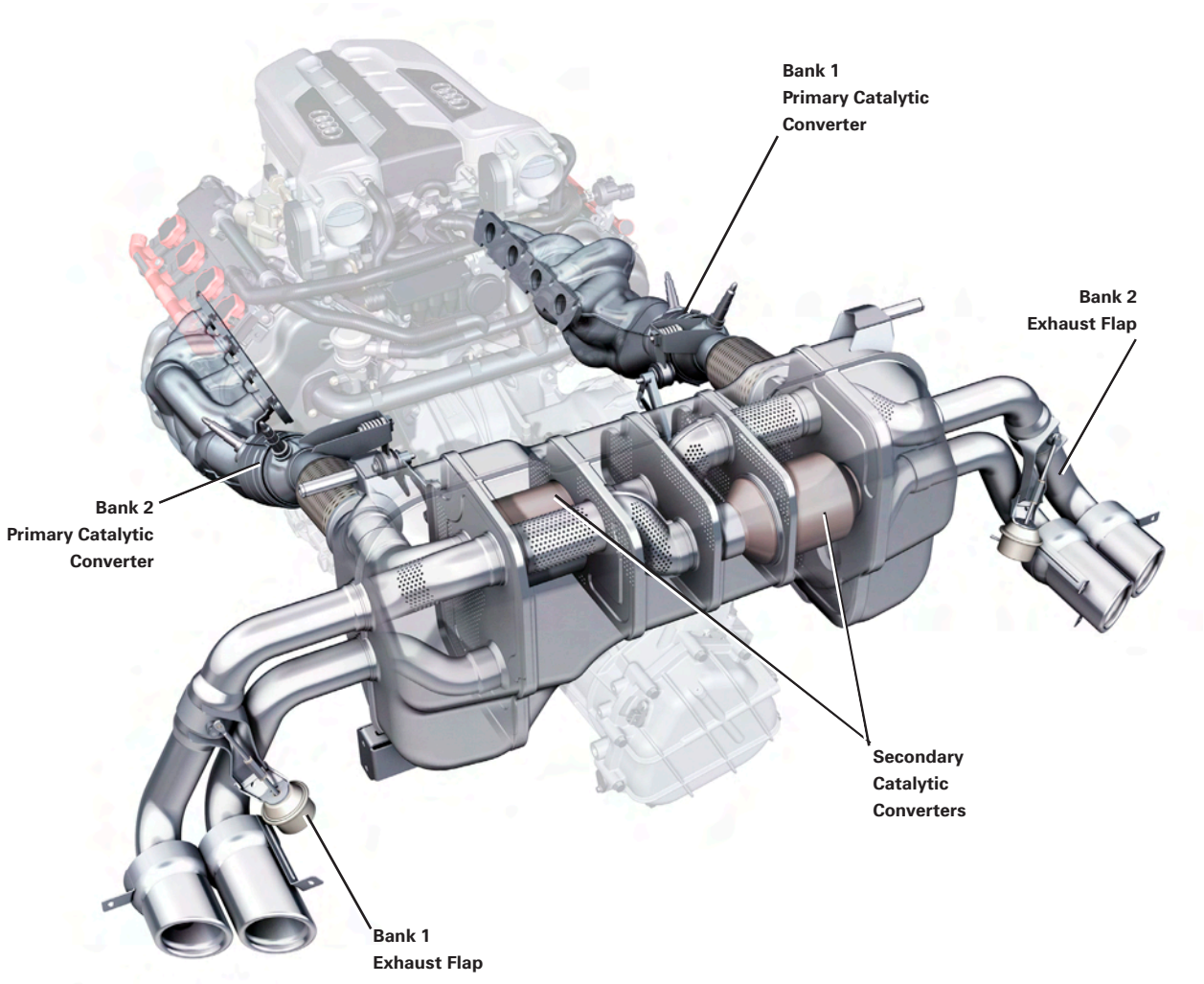

Fuel Pressure Sensor G247
Fuel (Rail) 2
To Fuel Injectors N83 - N86
(Cylinders 5-8)
Pressure Limiting Valve (136 Bar)
Fuel (Rail) 1
Fuel Injectors N30 - N33
(Cylinders 1-4)
Return Line
Fuel Tank
Transfer Fuel
Pump (FP) G6
Fuel Pump (FP)
Control Module J538

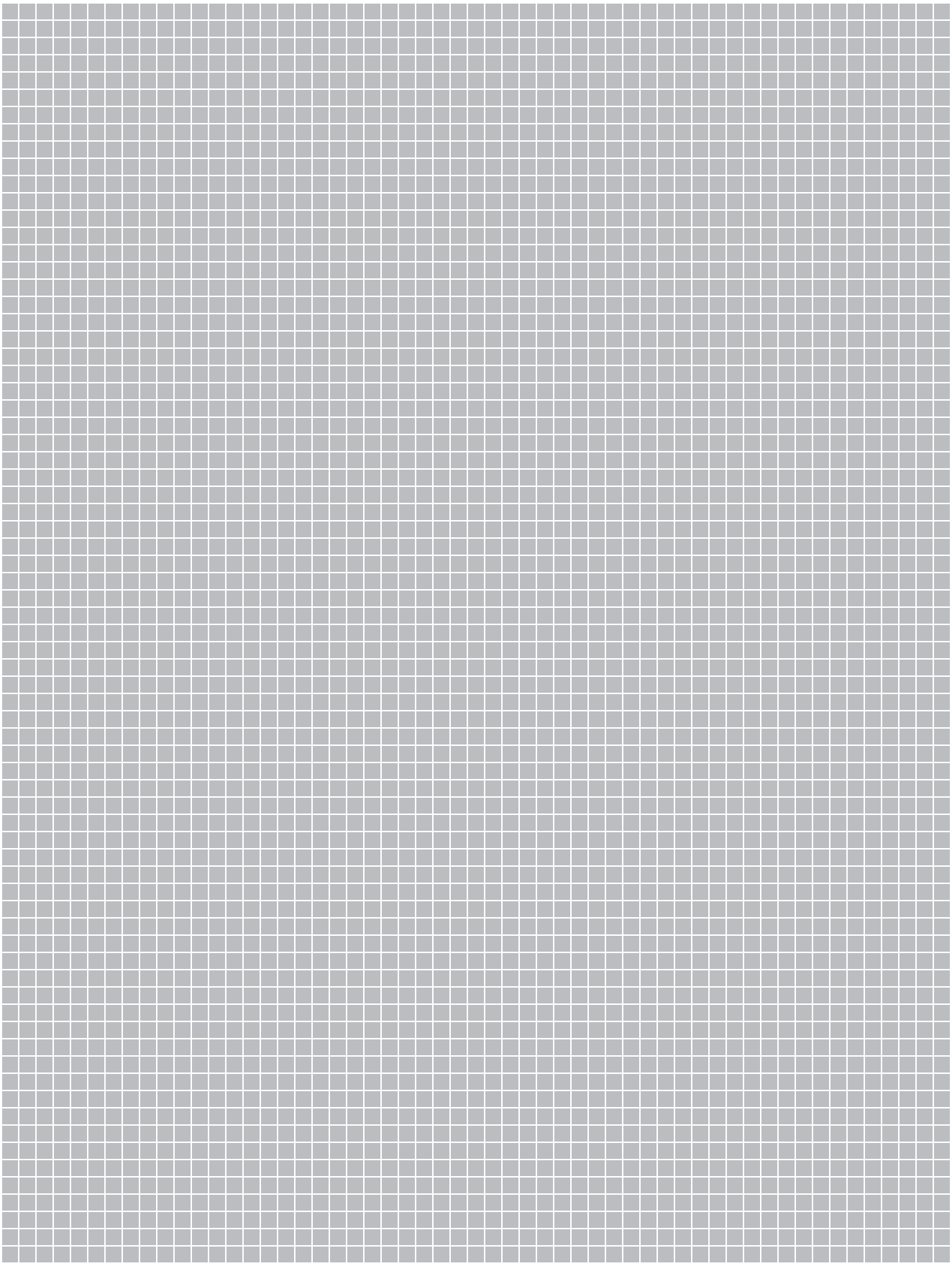
Exhaust System

The Audi R8 has a very unique downstream exhaust design. During the development of the exhaust system, special emphasis was placed on optimizing flow resistance. The rear exhaust incorporates both post converters and mufflers in the same assembly.

Another new aspect of this system is that the exhaust from both banks enter the assembly from their respective sides but then cross over through assembly and exit from the opposite side they entered.

Audi R8 Exhaust System





Engine Management System Overview

Sensors

Mass Air Flow (MAF) Sensor G70
Intake Air Temperature (IAT) Sensor G42

Throttle Position (TP) Sensor G79
Accelerator Pedal Position Sensor 2 G185

Engine Speed (RPM) Sensor G28

Knock Sensors (KS) 1+2 G61, G66

Fuel Pressure Sensor G247

Camshaft Position (CMP) Sensor G40
Camshaft Position (CMP) Sensor 3 G300

Throttle Valve Control Module J338
Throttle Drive Angle Sensors 1+2 for Electronic Power Control (EPC) G187, G188

Clutch Pedal Switch F36
Clutch Pedal Starter Interlock Switch F194

Engine Coolant Temperature (ECT) Sensor G62

Low Fuel Pressure Sensor G410

Intake Manifold Runner Position Sensor G336

Heated Oxygen Sensor (HO2S) G39
Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130

Brake Booster Pressure Sensor G294

Brake Light Switch F
Brake Pedal Switch F47

Additional signals:

Cruise Control System On / Off
Terminal 50
Door Contact Wake-Up from Comfort System Central Control Module J393

Camshaft Position (CMP) Sensor 2 G163
Camshaft Position (CMP) Sensor 4 G301

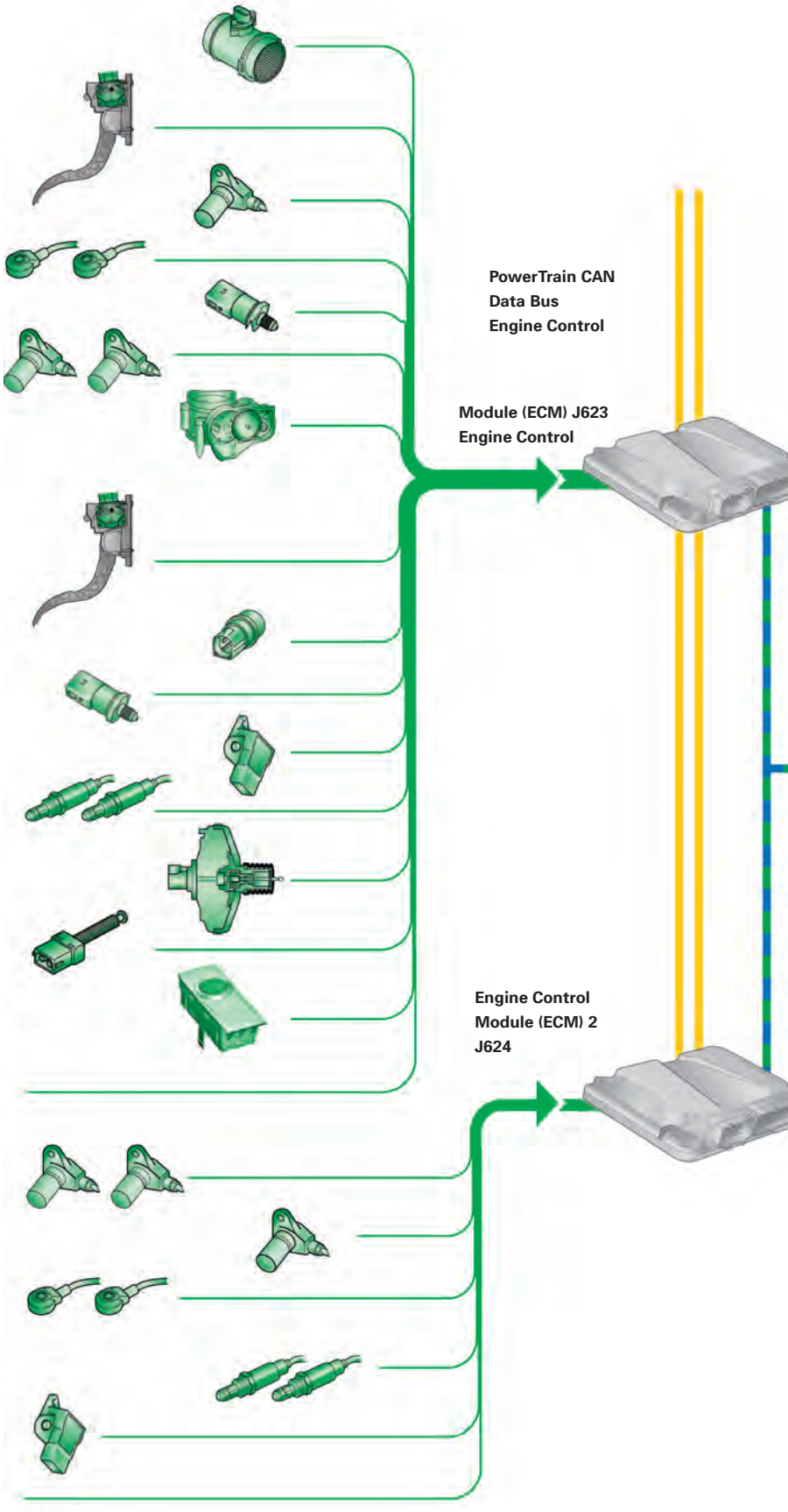
Engine Speed (RPM) Sensor G28

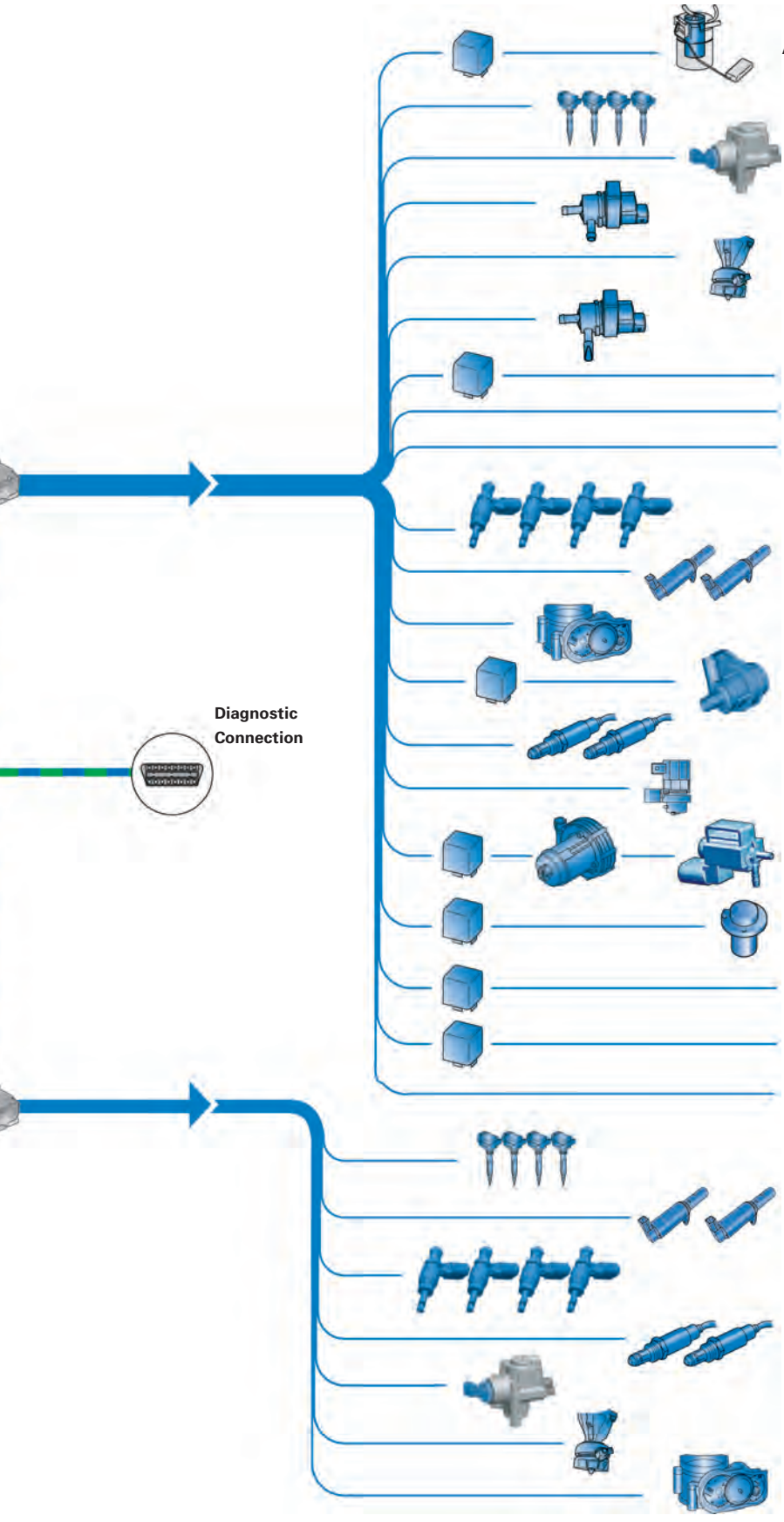
Knock Sensors 3+4 G198, G199
Heated Oxygen Sensor (HO2S) 2 G108
Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131

Intake Manifold Runner Position Sensor 2 G512

Additional signals:

Door Contact Wake-Up from Comfort System Central Control Module J393





Diagnostic Connection

Actuators

Fuel Pump Control Module J538
Transfer Fuel Pump (FP) G6

Ignition Coils 1-4 with Power Output Stage
N70, N127, N291, N292

Fuel Metering Valve N290

Evaporative Emission (EVAP) Canister Purge Regulator Valve N80

Right Electro-Hydraulic Engine Mount Solenoid Valve N145

Intake Manifold Runner Control (IMRC) Valve N316

Starter Relay J53, Starter Relay 2 J695
Exhaust Flap Valve 1 N321
Leak Detection Pump (LDP) V144

Fuel Injectors, Cylinders 1-4 N30-N33

Camshaft Adjustment Valve 1 N205
Camshaft Adjustment Valve 1 (exhaust) N318

Throttle Valve Control Module J338
Throttle Drive (for Electronic Power Control (EPC)) G186

Coolant Circulation Pump Relay J151
After-Run Coolant Pump V51

Oxygen Sensor (O2S) Heater Z19
Oxygen Sensor (O2S) 1 (behind Three Way Catalytic Converter (TWC)) Heater Z29

Intake Air Switch-Over Valve N335

Secondary Air Injection (AIR) Pump Relay J299
Secondary Air Injection (AIR) Pump Motor V101
Secondary Air Injection (AIR) Solenoid Valve N112

Brake Booster Relay J569
Brake System Vacuum Pump V192

Engine Component Power Supply Relay J757

Motronic Engine Control Module (ECM) Power Supply Relay J271

Additional signals:

Engine speed
Coolant Fan Control (FC) Control Modules 1 + 2 J293, J671
Ignition Coils 5-8 with Power Output Stage N323-N326

Camshaft Adjustment Valve 2 N208
Camshaft Adjustment Valve 2 (exhaust) N319

Cylinders 5-8 Fuel Injectors N83-N86

Oxygen Sensor (O2S) 2 Heater Z28
Oxygen Sensor (O2S) 2 (behind Three Way Catalytic Converter (TWC)) Heater Z30

Fuel Metering Valve 2 N402

Left Electro-Hydraulic Engine Mount Solenoid Valve N144

Throttle Valve Control Module J338

Control Module Communications

The Engine Control Module J623 (ECM, master) computes and controls the signals from the actuators for cylinder bank 1.

Most sensors are connected to the ECM.

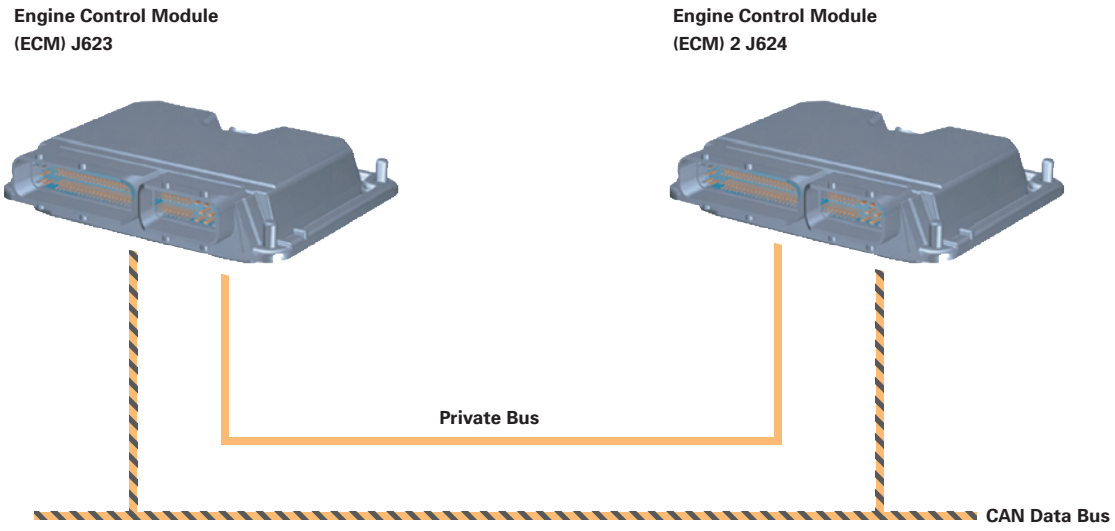
Both control modules are connected to the CAN data bus; the slave control module is used as a receiver only.

The load signals required to compute and control the signals for the actuators of cylinder bank 2 are transmitted via private bus.

The slave control module acts as the misfire detector for each of the eight cylinders. It also processes the signal from the Engine Speed (RPM) Sensor G28.

Master and slave control modules are identical in design and have the same part number. A voltage code in the control module determines whether the control module in the master or the slave.

If battery positive is applied to the encoding pin, the control module is the master.



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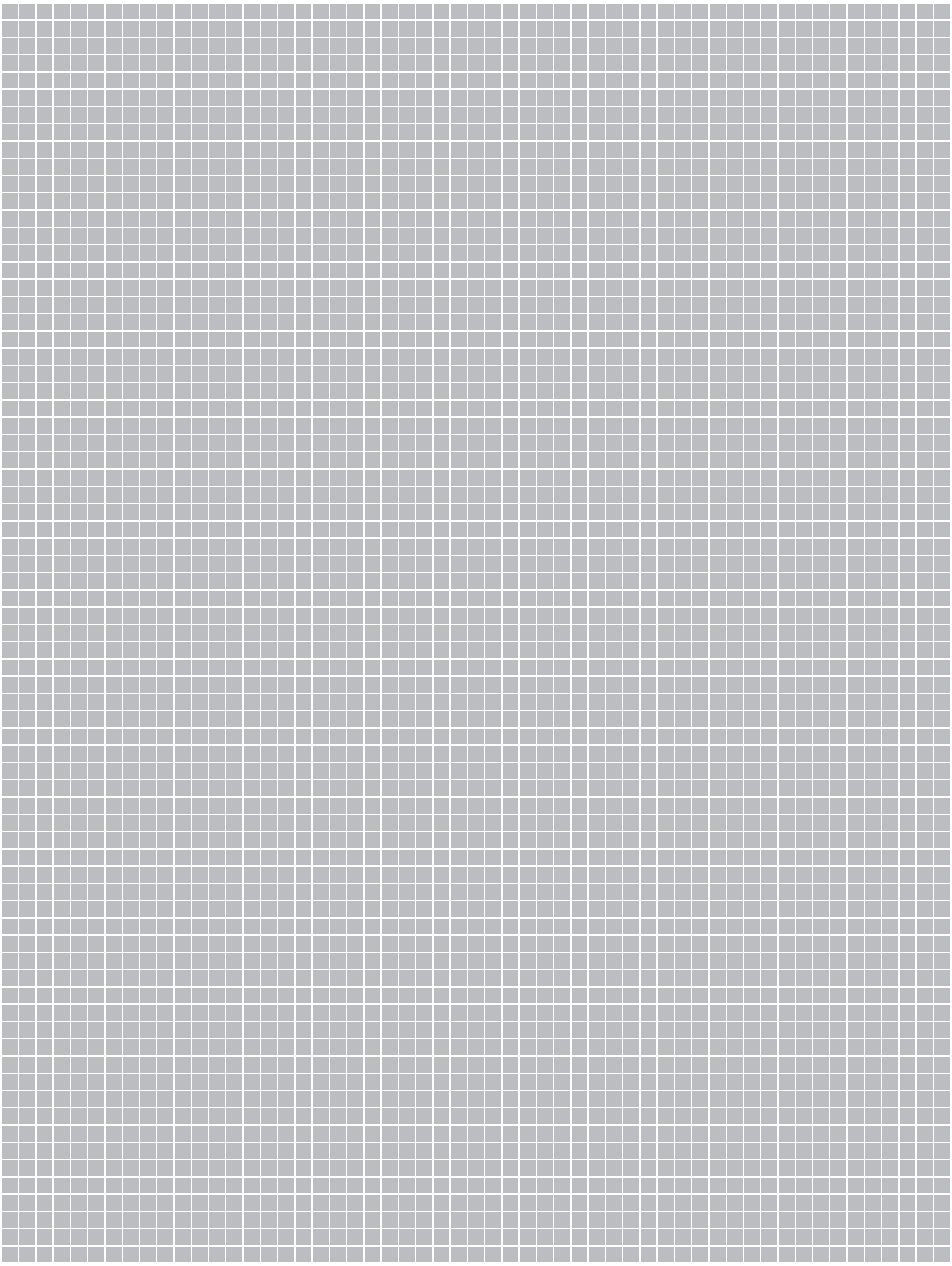
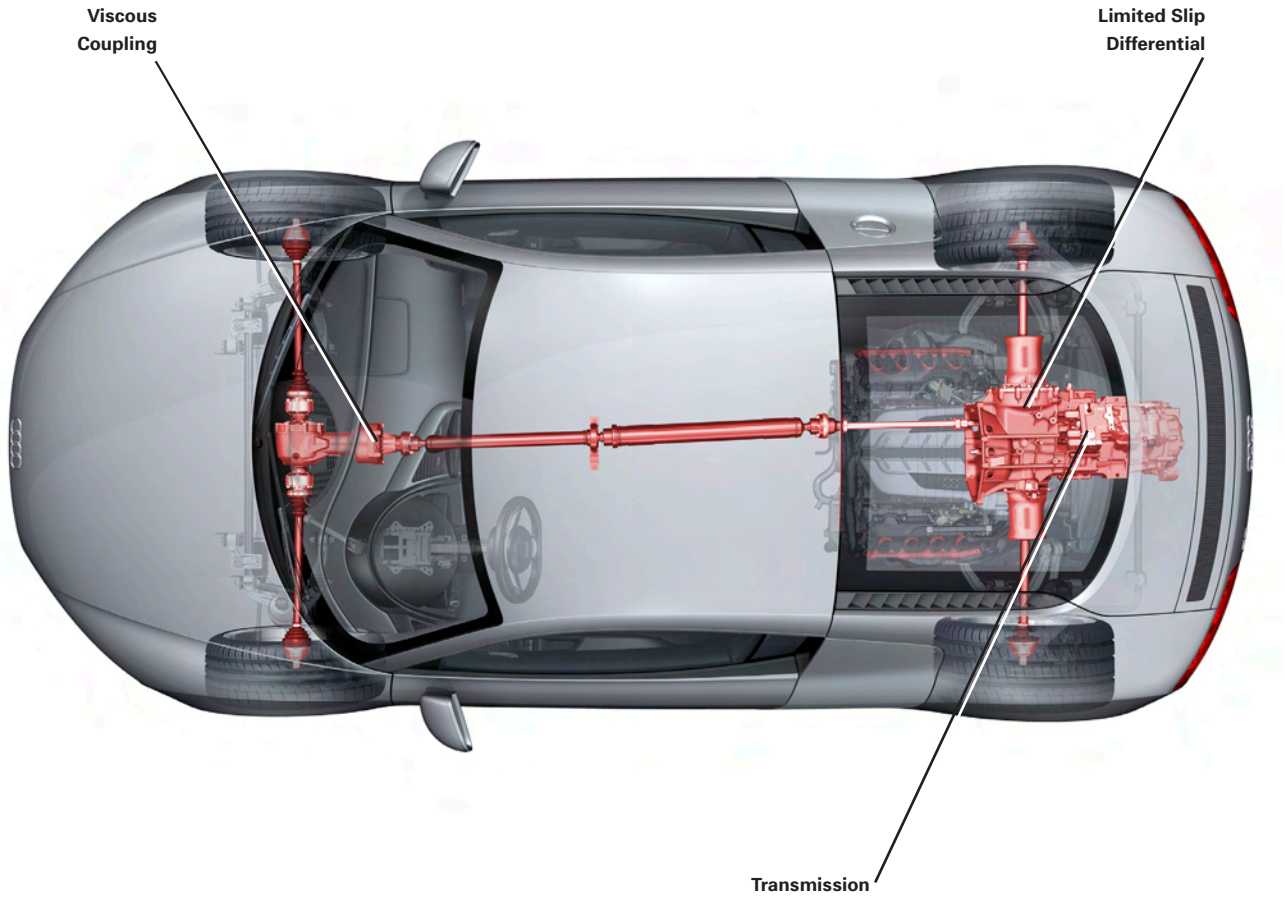


Transmission and Driveline

The Audi R8 is equipped a 6-speed transmission (manual or R-tronic) which delivers a torque output of up to 443 Lb-ft (600 Nm). Both transmissions use a double-disc dry clutch. The clutch assembly (pressure plate and discs) can only be replaced as a single unit due to balancing and riveting. Clutch control has some variation between the two transmission versions.

The difference between the two is the manual system uses a clutch pedal, clutch master cylinder, and lines to the slave cylinder; however, the R-tronic system uses an electro-hydraulic unit (controlled by Transmission Control Module J217) which replaces the clutch pedal and the clutch master cylinder.

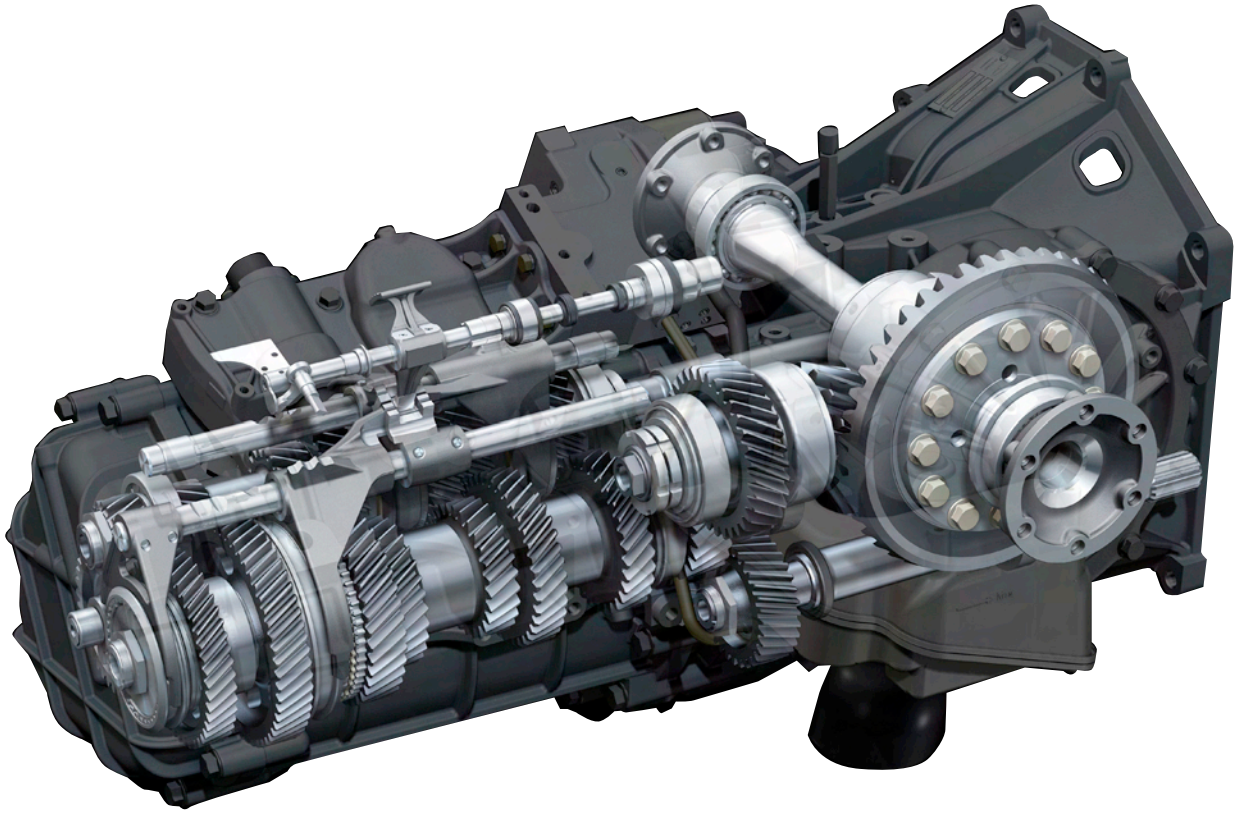
The R8 driveline includes a limited slip differential and a viscous clutch.



Transmissions

The manual and R-tronic units are fully synchronized 6-speed transmissions, are internally identical, and have a torque output of up to 443 Lb-ft (600 Nm).

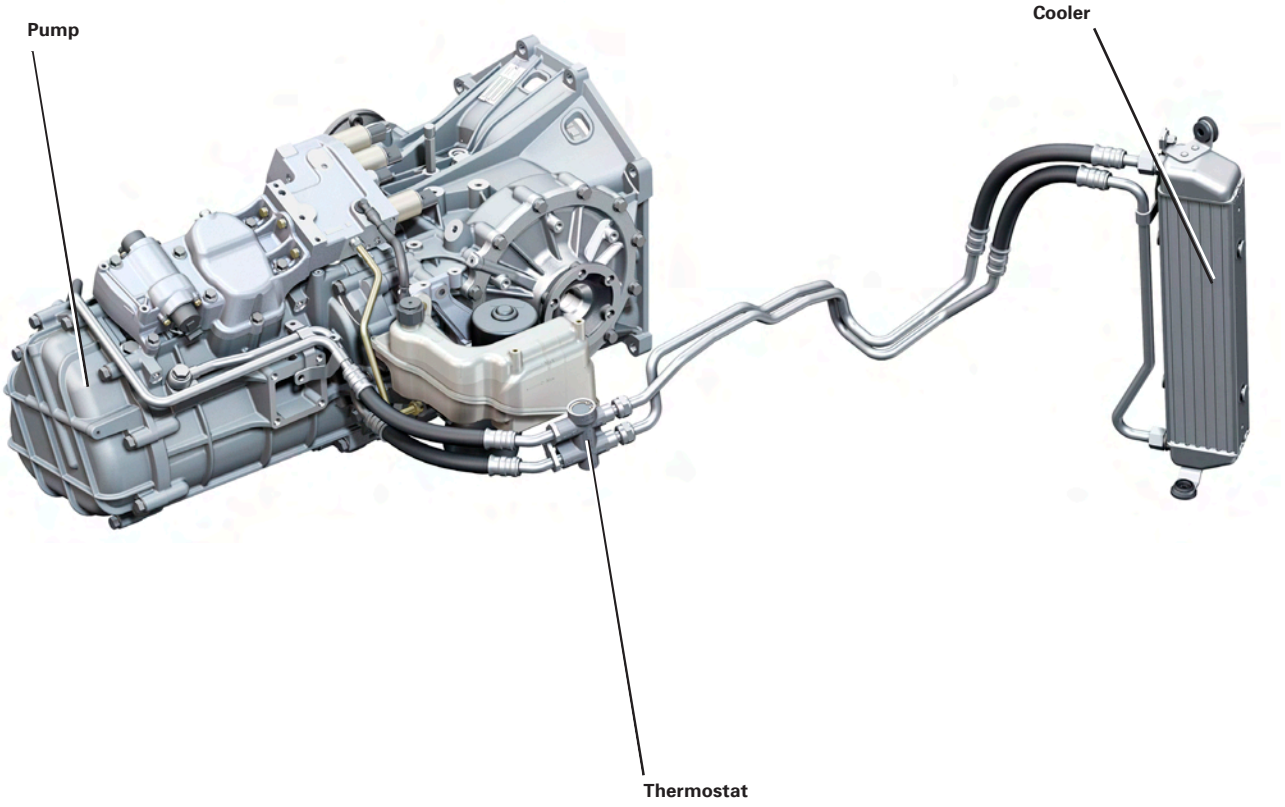
The gear oil of the transmission requires no regular maintenance. Either transmission can be removed and installed without removing the engine.



Transmission Cooling System

The manual and R-tronic transmissions use a thermostatically controlled cooling system. The system is comprised of a pump, thermostat, and cooler.

Transmission cooling system capacity is 4.2 qt (4.0L). Approximately 3.7 qt (3.5L) is circulated in the transmission while 0.53 qt (0.5L) is in the cooler.

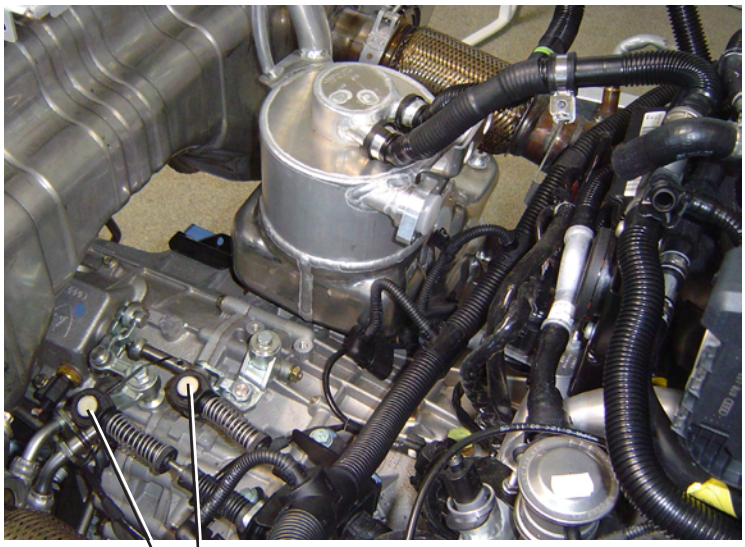


Manual Shift

On manual transmission vehicles, shifting is done through a cable operated linkage system after pushing the clutch pedal. As with all current Audi models equipped with manual transmissions, the clutch pedal must be depressed when starting the engine.

The shifter is connected to the transmission by two Bowden cables. The length of the cables can be adjusted by means of two quick-release fasteners. The cables are spring loaded for easy length adjustment.

Manual Transmission Shift Gate



Spring Loaded Cable Adjusters

R-tronic Shift

The gears in the R-tronic transmission shift without a mechanical connection to the selector lever. Transmission Control Module (TCM) J217 drives electro-hydraulic valves inside a hydraulic unit according to the signals received. The shift control selector lever has two stable fixed-lock positions: left and right.

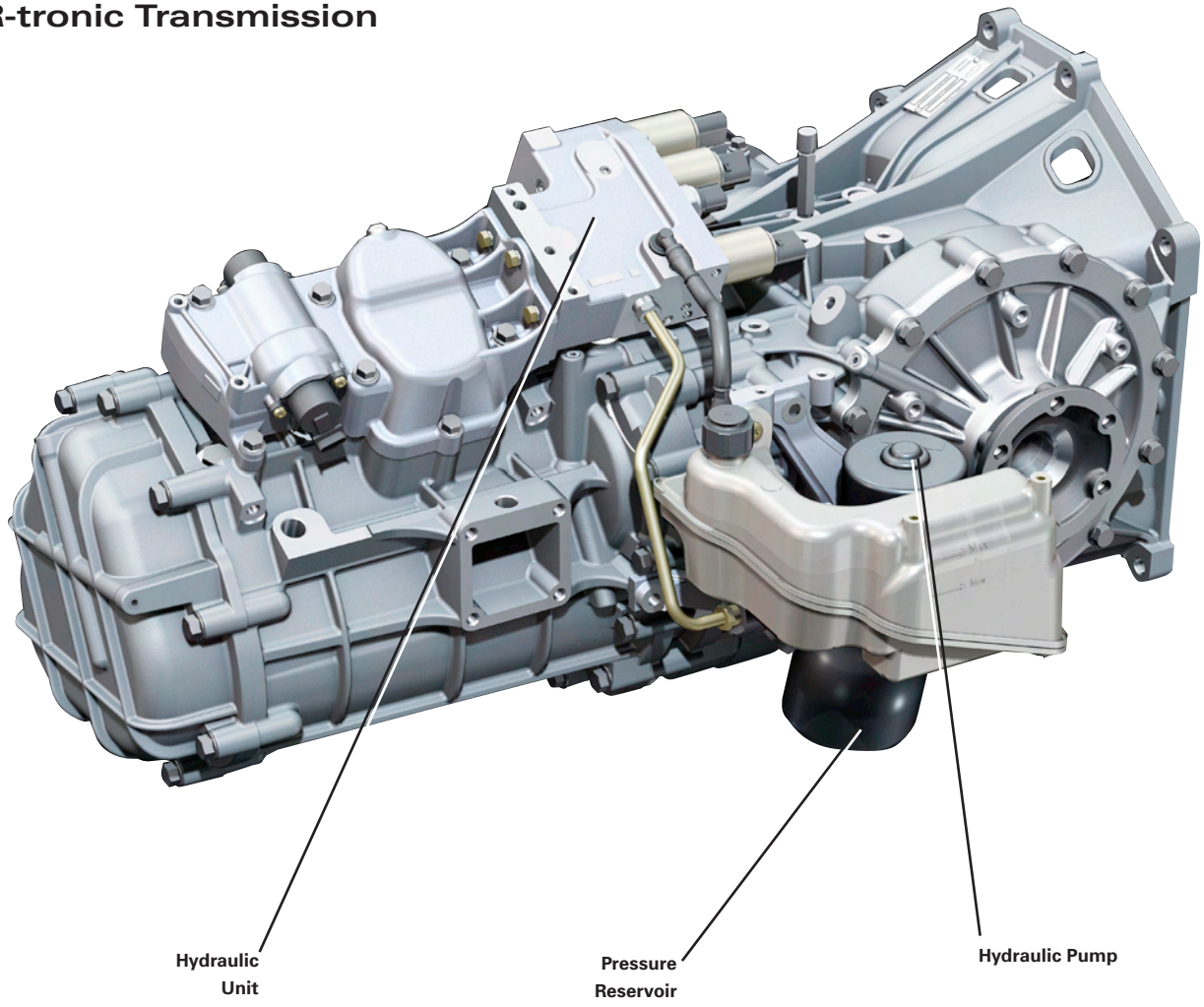
From the left position, the Automatic mode as well as upshifting and downshifting can be selected by tapping the lever accordingly (A, +, or -). From the right position, reverse can be selected. In order to shift into reverse, the engine should be at idle when at a stop with the brake pedal pressed while tapping the lever to the R position.

The transmission shifts into neutral whenever the lever is moved from one fixed lock position to the other fixed lock position.

The Sport function (S mode) is selected by pressing the Sport button located next to the selector lever. Selecting the S mode in the Audi R8 allows for even more sportily tuned driving and shifting characteristics; shifting speed is reduced, and the shifting point is set at a higher engine speed range.

R-tronic Transmission Shift Control Selector

R-tronic Transmission



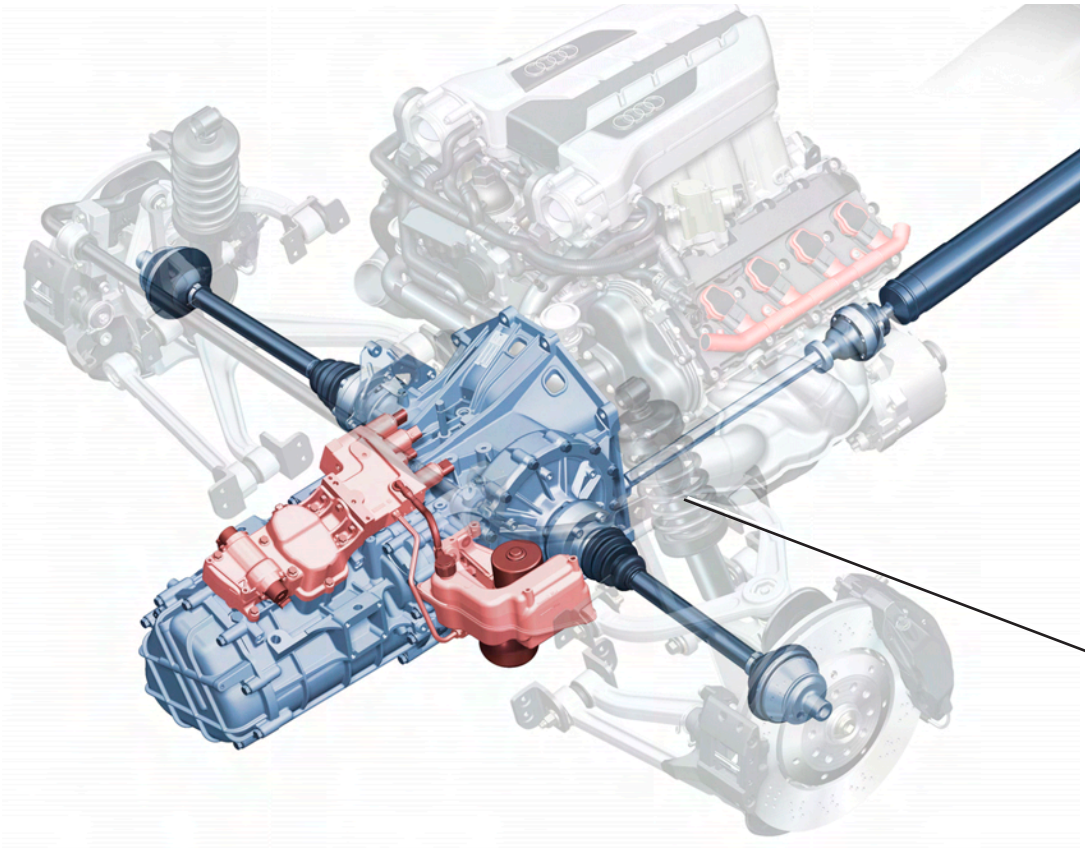
The R-tronic transmission has an electro-hydraulic unit which is located on top and a pressure reservoir and hydraulic pump which are on the right side. The hydraulic unit contains four valves for shifting gears, two gear detection sensors, and a pressure sensor. The gears are shifted and the clutch is controlled by an electro-hydraulic system in the R-tronic. The system uses a hydraulic circuit with a system pressure of 40 to 50 bar.

A pump driven by an electric motor runs for a few seconds after about three gear changes or after one minute of idling. The pump is almost inaudible while the engine is running. If the car has not been driven for a long period of time and the system pressure has dropped below 580 psi (40 bar), the transmission hydraulic pump and the fuel pump automatically turn on when the driver's door is opened.

Rear Differential

The mid-engine design of the R8 required a new quattro drive concept. The transmission and rear differential are mounted longitudinally behind the engine. Power flows from the engine to the transmission through a double-disc dry clutch assembly. Power to the rear wheels is delivered through an asymmetric limited slip differential.

The limited-slip differential helps optimize balanced handling. The locking ratio is 25 percent during acceleration and 45 percent while coasting. This design helps avoid abrupt load reversal reactions which may occur if the driver switches from accelerating to braking during a cornering maneuver.

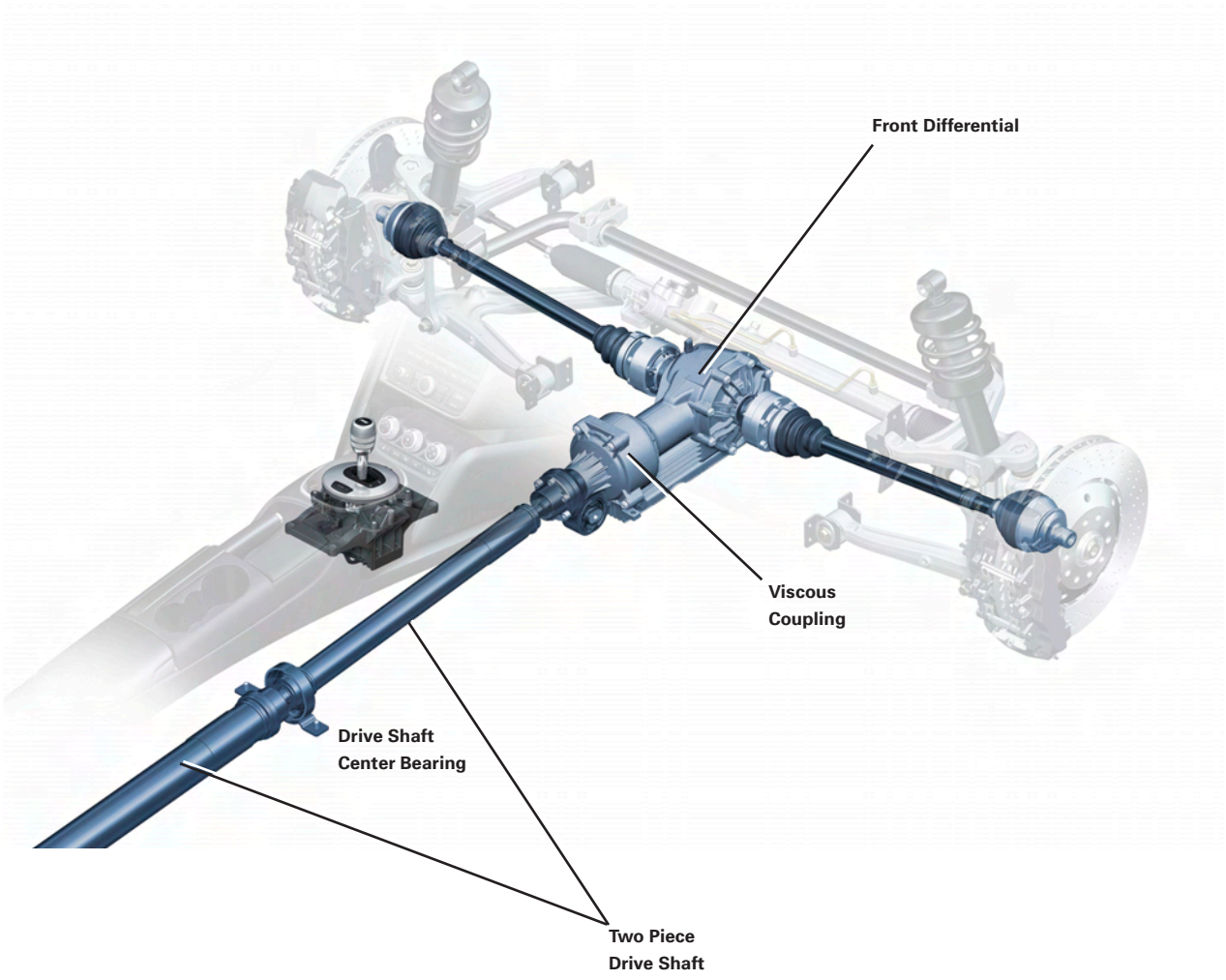


Asymmetric Limited Slip Rear Differential

Viscous Coupling

Power to the front wheels is through a two-piece, center bearing supported driveshaft. The driveshaft runs from the transmission through the engine oil pan to the front differential. From there, a viscous coupling distributes power between the rear and front wheels.

The system was adapted to the mid-engine layout, with its ideal axle load distribution of 44:56 percent. The viscous coupling directs between 10 and 35 percent of the engine power to the front wheels.



Overview

The Audi R8 has four-link independent suspension at both sets of wheels. High performance shock absorbers contribute to the agile handling and sporty road dynamics of the R8.

The anti-lock brake system incorporates electronic brake-force distribution and hydraulic brake assist. The R8 is equipped with large 8-piston fixed caliper brakes at the front and 4-piston fixed-caliper brakes at the rear.

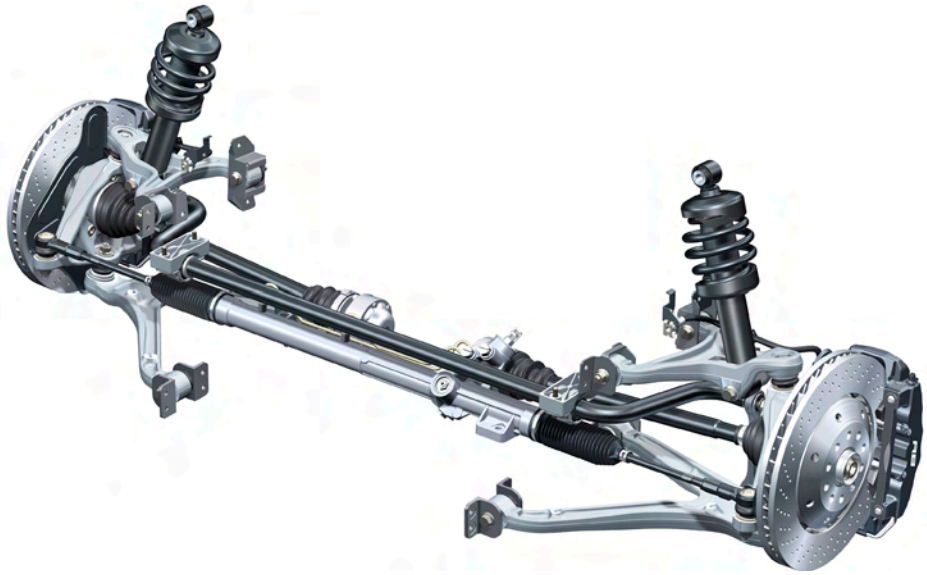
The Audi magnetic ride adaptive damping system allows the suspension settings to be individually preconfigured between Normal and Sport. The system benefits include continuous damping, short response time, and continuous real-time regulation.

Tire pressure changes are directly displayed in the driver information system as part of the tire pressure monitoring system. One sensor on each wheel constantly monitors the tire pressure.

Front Axle

The front axle of the Audi R8 includes the following:

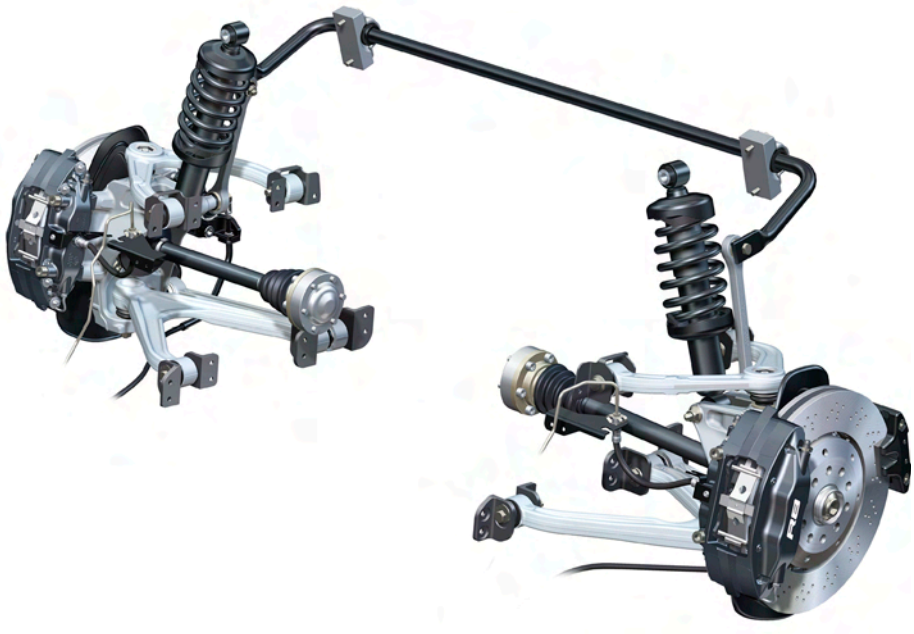
- Double Transverse Control Arm Axle.
- Steel Springs with Hydraulic Shock Absorbers.
- Hydraulic Rack and Pinion Steering.
- Alloy Wheels 8.5 J x 19.
- Tires 235/35.



Rear Axle

The rear axle includes the following:

- Double Transverse Control Arm Axle.
- Steel Springs with Hydraulic Shock Absorbers.
- Alloy Wheels 11 J x 19.
- Tires 295/30.



Brake System

Unique Components

Unique brake components for the Audi R8 include 8-piston, 4-pad front calipers; 4-piston, 2-pad rear calipers; and separate mechanically activated parking brake calipers.

Front and rear rotors are of a two-piece design and are cross-drilled for ventilation. The Audi R8 has an ESP wet braking feature: slight, intermittent disc movement wipes off water from rotors.

Front Brake

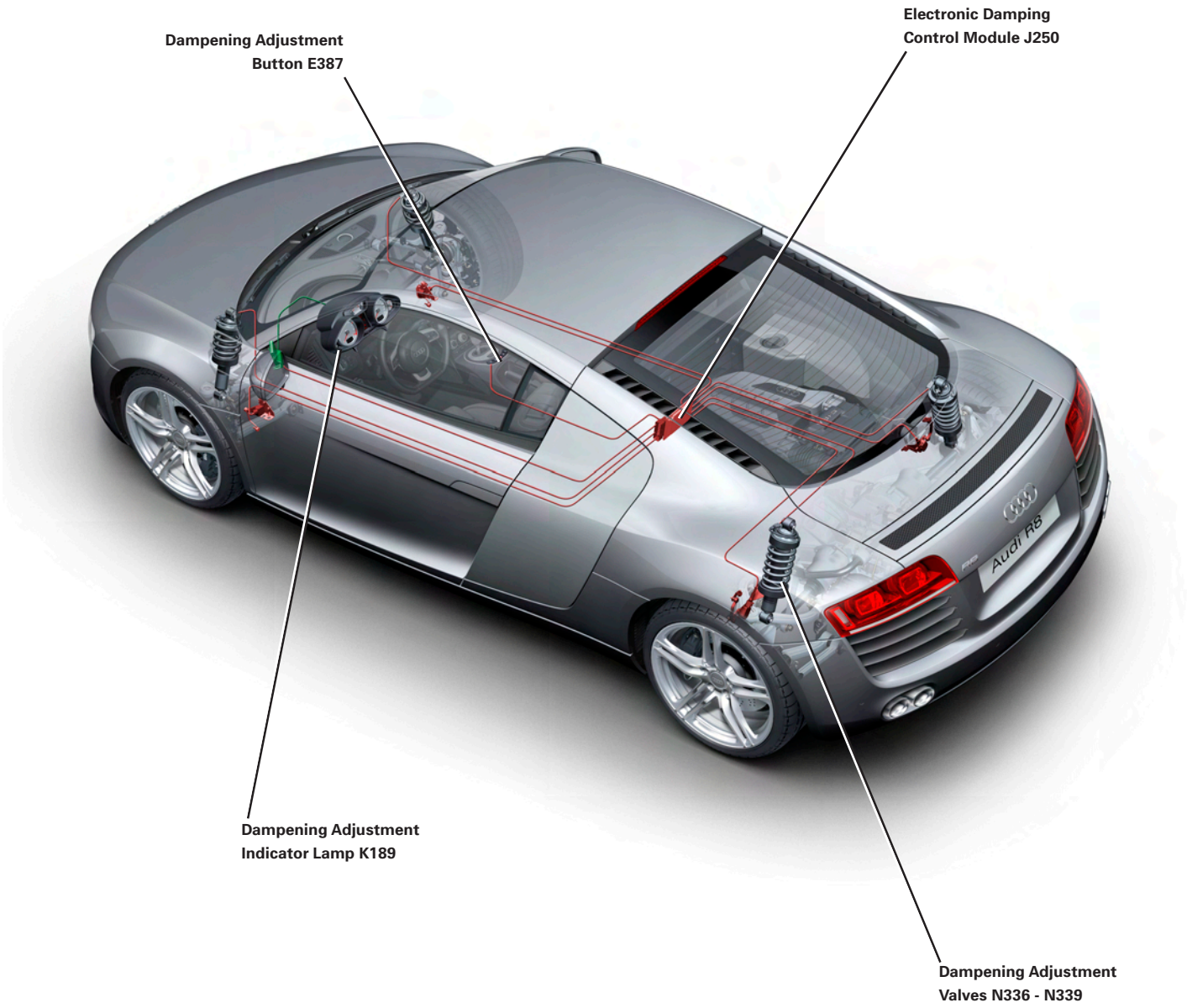
Rear Brake

Audi Magnetic Ride

The Audi R8 utilizes “Audi magnetic ride,” a new semi-active suspension system with magneto-rheologically controlled dampers. The sport mode can be activated and deactivated at the touch of a button.

Audi magnetic ride improves driving dynamics and driving comfort for the following reasons:

– Reduced Body Movement (Pitch and Roll).
– Optimized Vibration Behavior.
– Optimized Road-Holding.
– Optimized Handling.

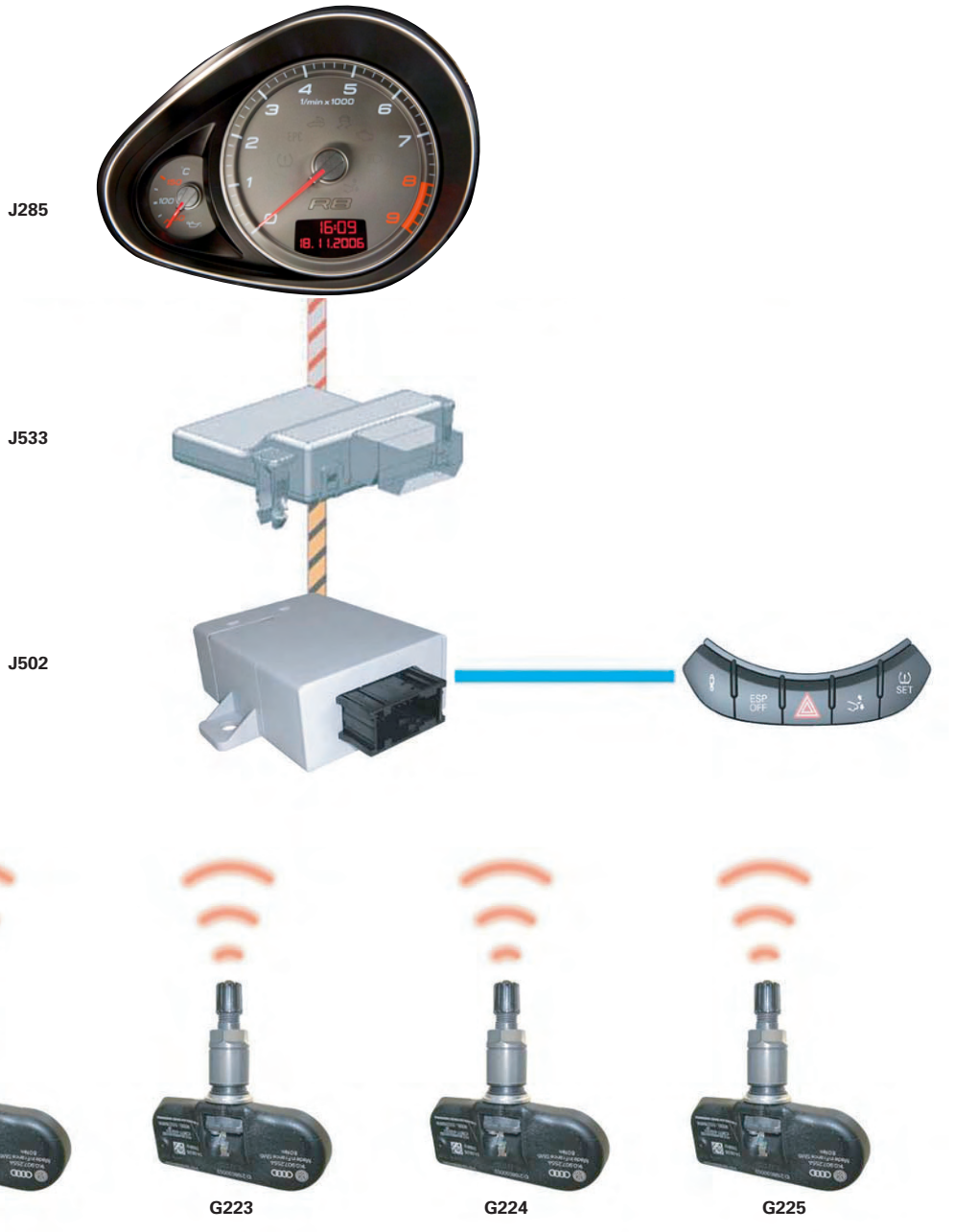


Reference
For details of the design and function of the Audi Magnetic Ride, see The 2008 Audi TT Running Gear, Self-Study Program 993703.

Tire Pressure Monitoring System

The Audi R8 uses a revised version of the system used on the Audi A6. It is a direct pressure measuring system with tire pressure sensors in the wheels.

Reference
For more detailed information about the tire pressure monitoring system, see The 2008 Audi TT Running Gear, Self-Study Program 993703.

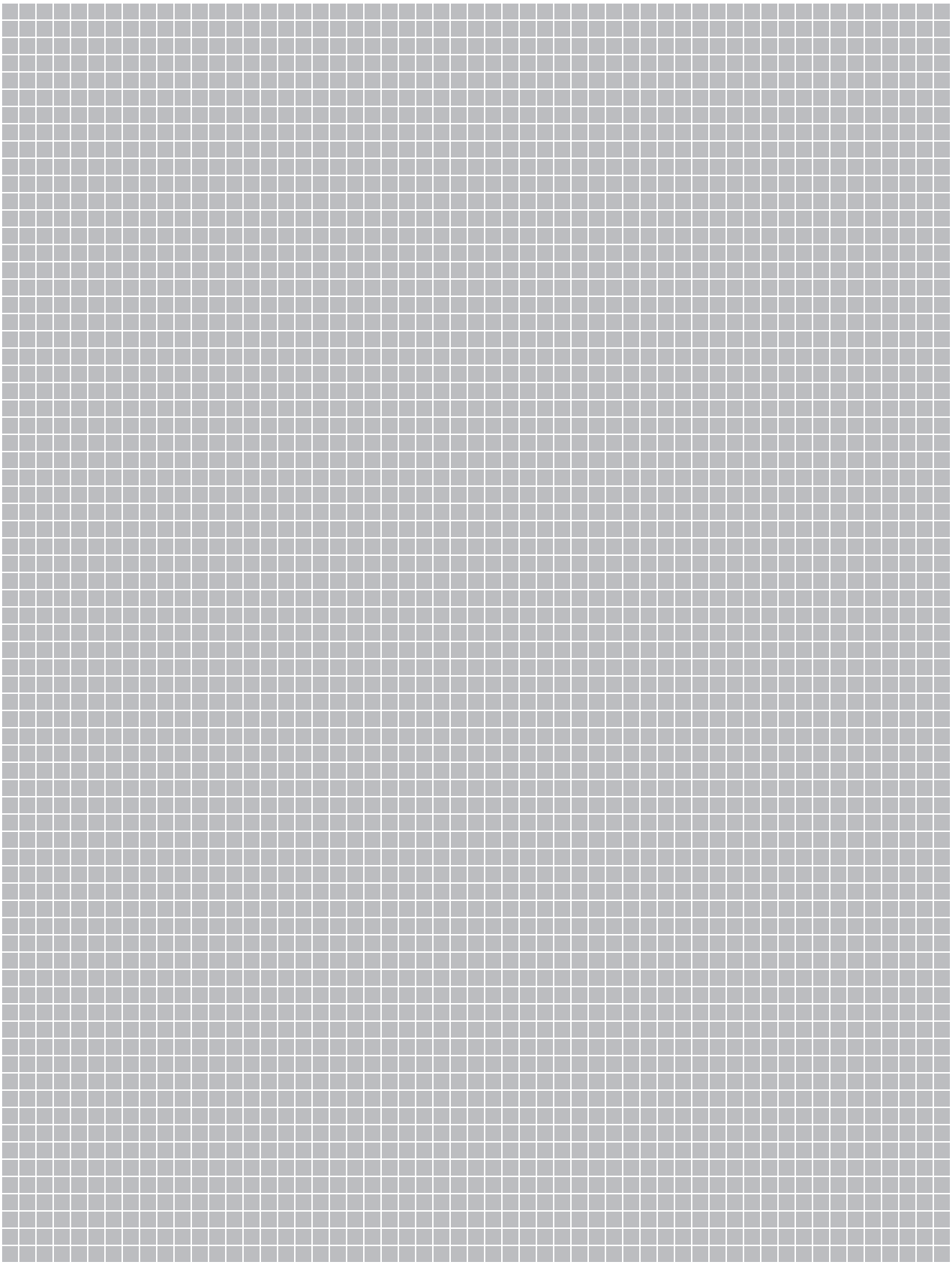


J285	Instrument Cluster Control Module	
J533	Data Bus On Board Diagnostic Interface	
J502	Tire Pressure Monitoring Control Module	
E492	Tire Pressure Monitoring Display Button	
G222-225	Tire Pressure Monitoring Sensors	

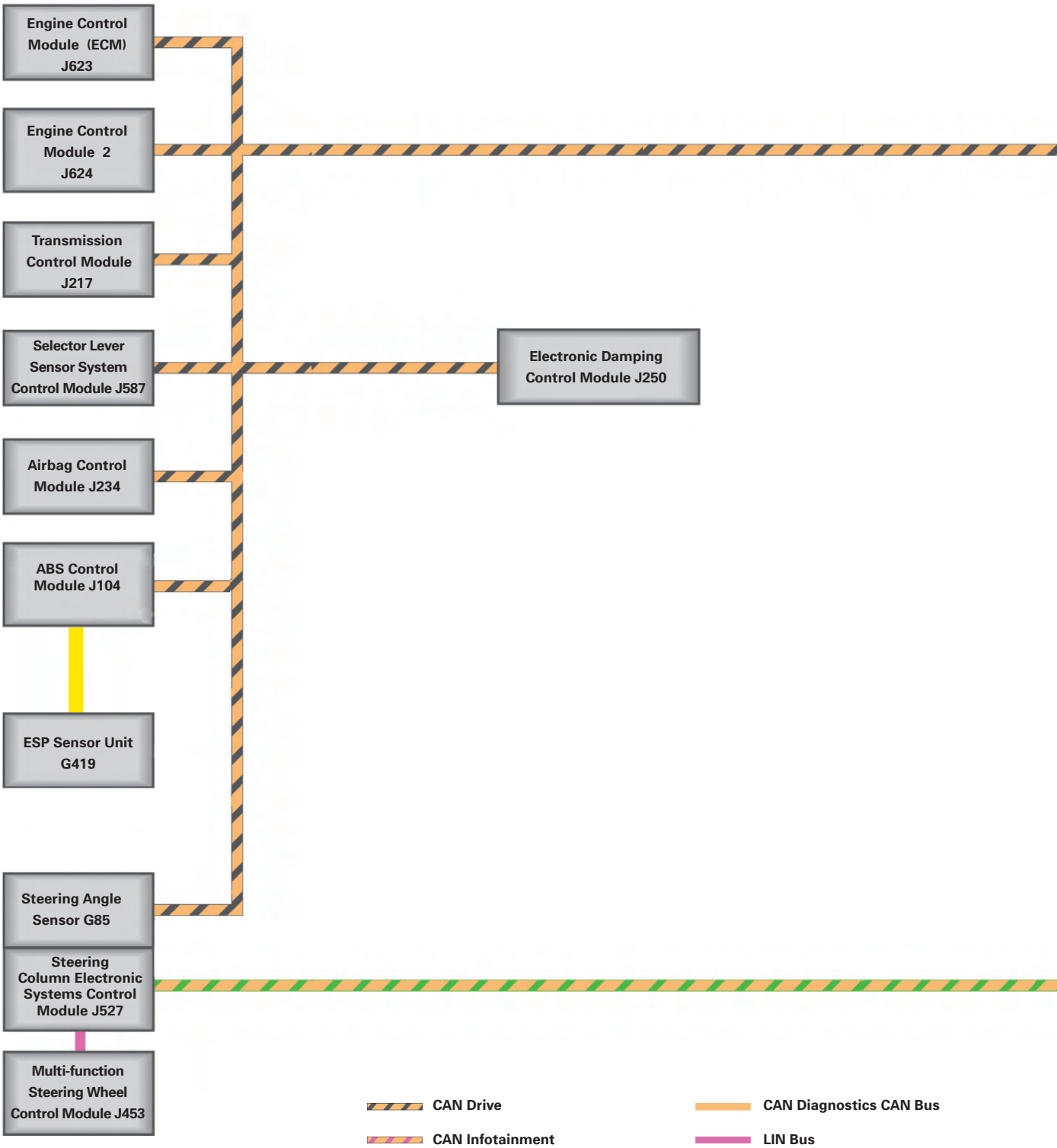
Instrument Cluster CAN

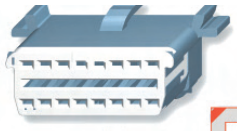
Powertrain CAN

Notes



Topology and Networking





Data Link Connector

Instrument Cluster Control Module J285

Diagnostic Interface For Data Bus J533

Telephone Transceiver R36

Satellite Radio R146

Digital Sound System Control Module J525

Driver's Door Control Module J386

Passenger's Door Control Module J387

Parking Aid Control Module J446

Fresh Air Blower Control Module J126

Radio R

Climatronic Control Module J255

A/C Pressure/Temperature Sensor G395

Radio/Navigation Display Unit Control Module J503

Anti-Theft Alarm Sensor G578

CD Changer R41

Comfort System Central Control Module J393

Alarm Horn H12

Vehicle Electrical System Control Module J519

Wiper Motor Control Module J400

Passenger's Windshield Wiper Motor Control Module J584

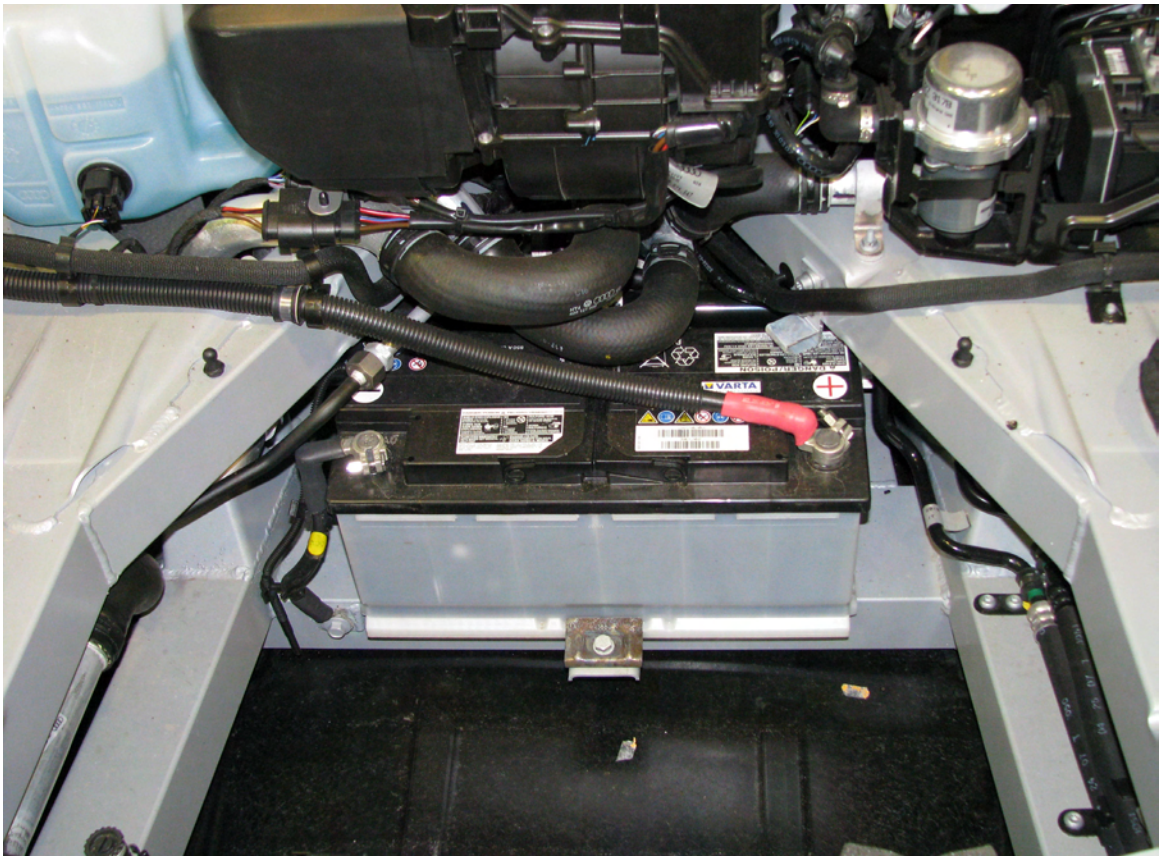
Tire Pressure Monitoring Control Module J502

Rain/Light Recognition Sensor G397

Battery

In the Audi R8, the battery is located at the front in the luggage compartment, behind the luggage compartment cover. The battery terminals are accessible by removing the battery compartment cover.

To remove the battery, it is necessary to remove the luggage compartment well cover and then the luggage compartment well itself. The R8 does not have any special jump start points.



Fuses and Relays

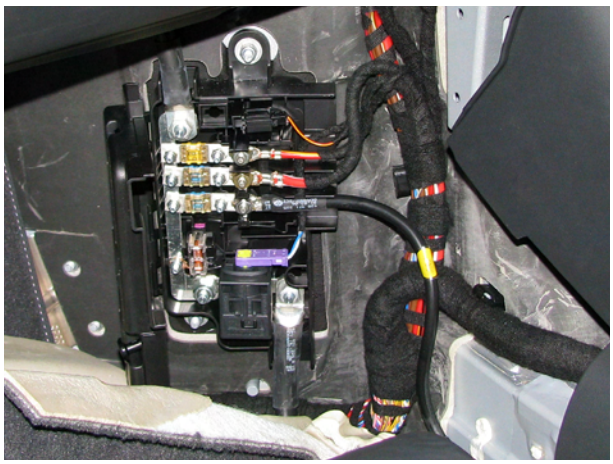
Fuse Locations

- 2 Main Fuse Panels (Right A-Pillar Footwell)
- Fuse Box (Passenger Footwell)
- Additional Fuse Panel (Under Right Rear Window Shelf)

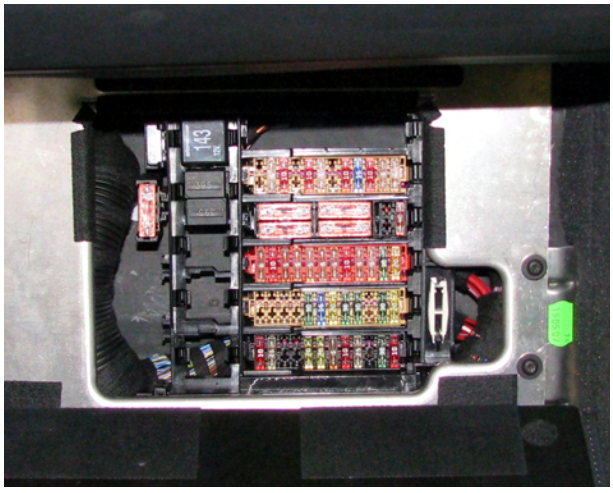
Relay Locations

- Vehicle Electrical System Control Module (Front Passenger Footwell)
- Additional Relay Panel (Right Rear Window Shelf)

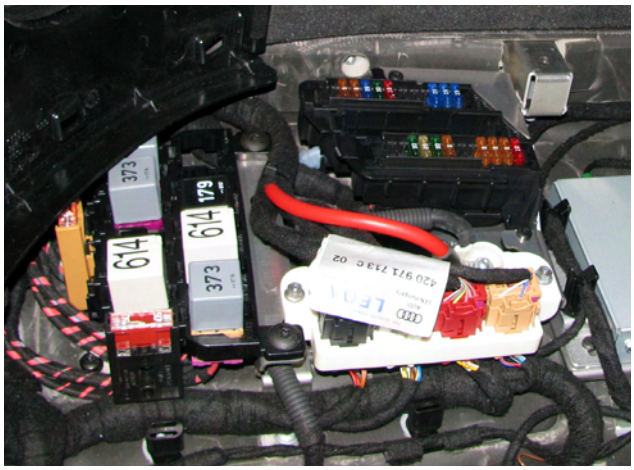
Main Fuse Panel - SD



Fuse Box - B



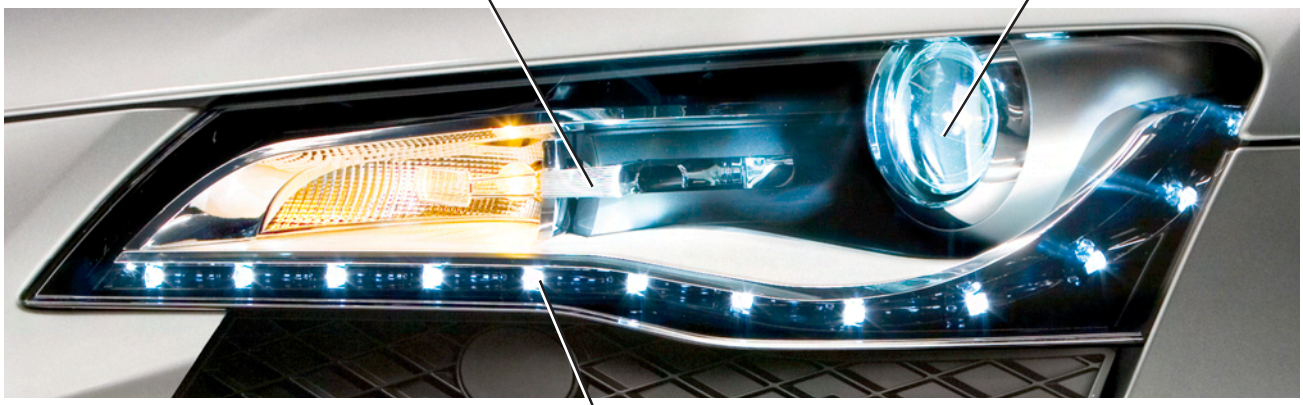
Additional Fuse Panel - C



Front Lights

The Audi R8 is equipped with Bi-xenon headlights. Twelve LEDs run as daytime running lights or dimmed as a navigation light. PWM dimming turns the daytime running lights into a navigation light.

A 24-watt filament bulb (P24W Silver Vision) is used for the indicator light. To replace the bulb, it is necessary to remove the headlight.



Rear Lights

The tail lights, brake lights, and indicators of the Audi R8 are equipped with LEDs. The tail lights use 40 LEDs. The LEDs are lit more intensely during braking. (The third brake light is an LED strip installed in the roof.)

The reverse light is equipped with a conventional 21-watt halogen lamp. The reverse lights can be replaced when the tail light assembly has been removed.

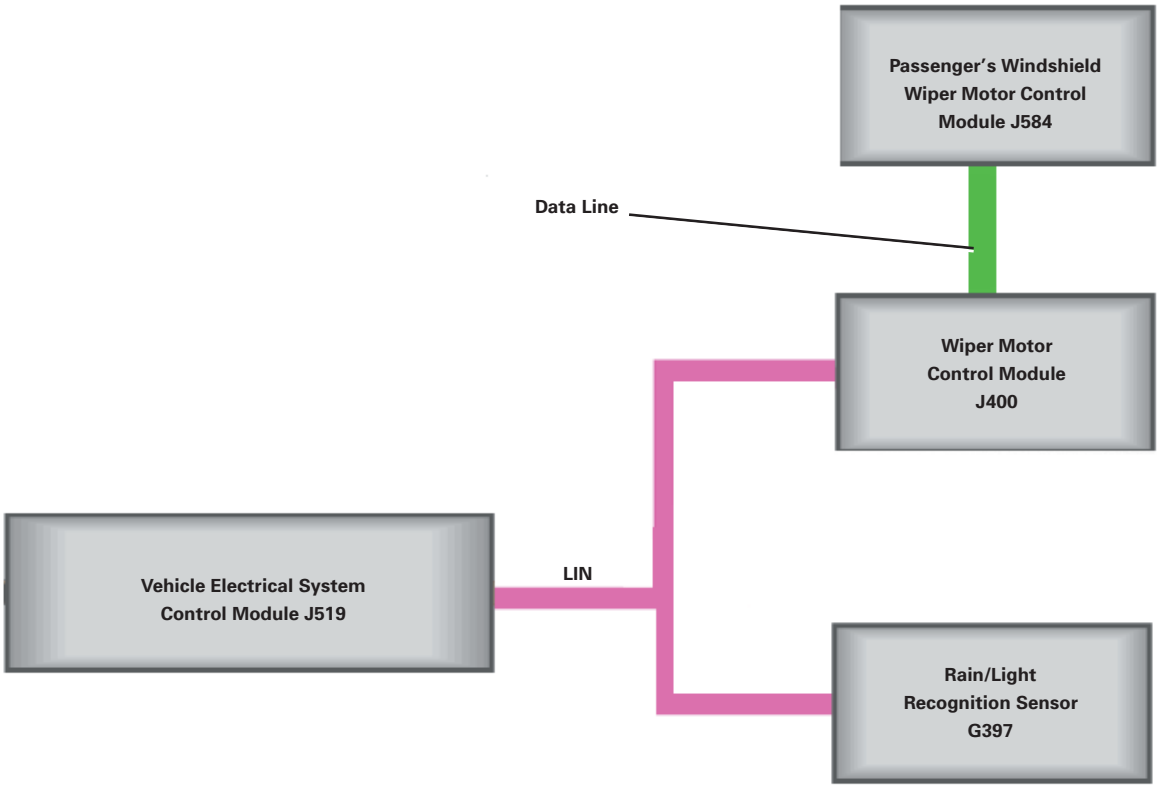
Wiper System

The wiper system consists of two wiper motors with integrated electronics.

Onboard supply control module J519 is part of the Comfort CAN within the vehicle network. It takes over the function of the LIN master for the control module of wiper motor J400. This control module regulates the wiper processes and controls front passenger side wiper motor control module J584.

The wiper control modules are integrated into the wiper motors.

The wipers can be put into the service position using the "Set" menu item in the extended comfort menu. This position can also be used in winter when covering the front window to protect it from icing up.



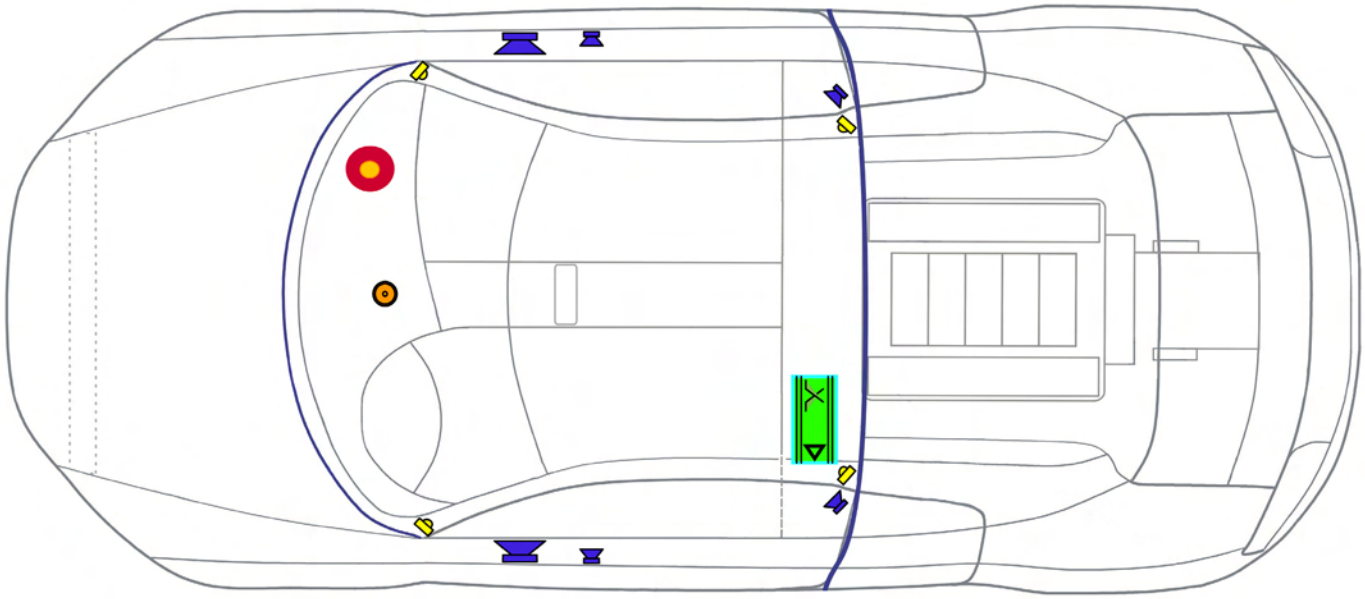
Infotainment

Standard Audi Sound 140W (5 chan

- 4 loudspeakers in the doors
- 2 tweeters in a mirror triangle
- Center

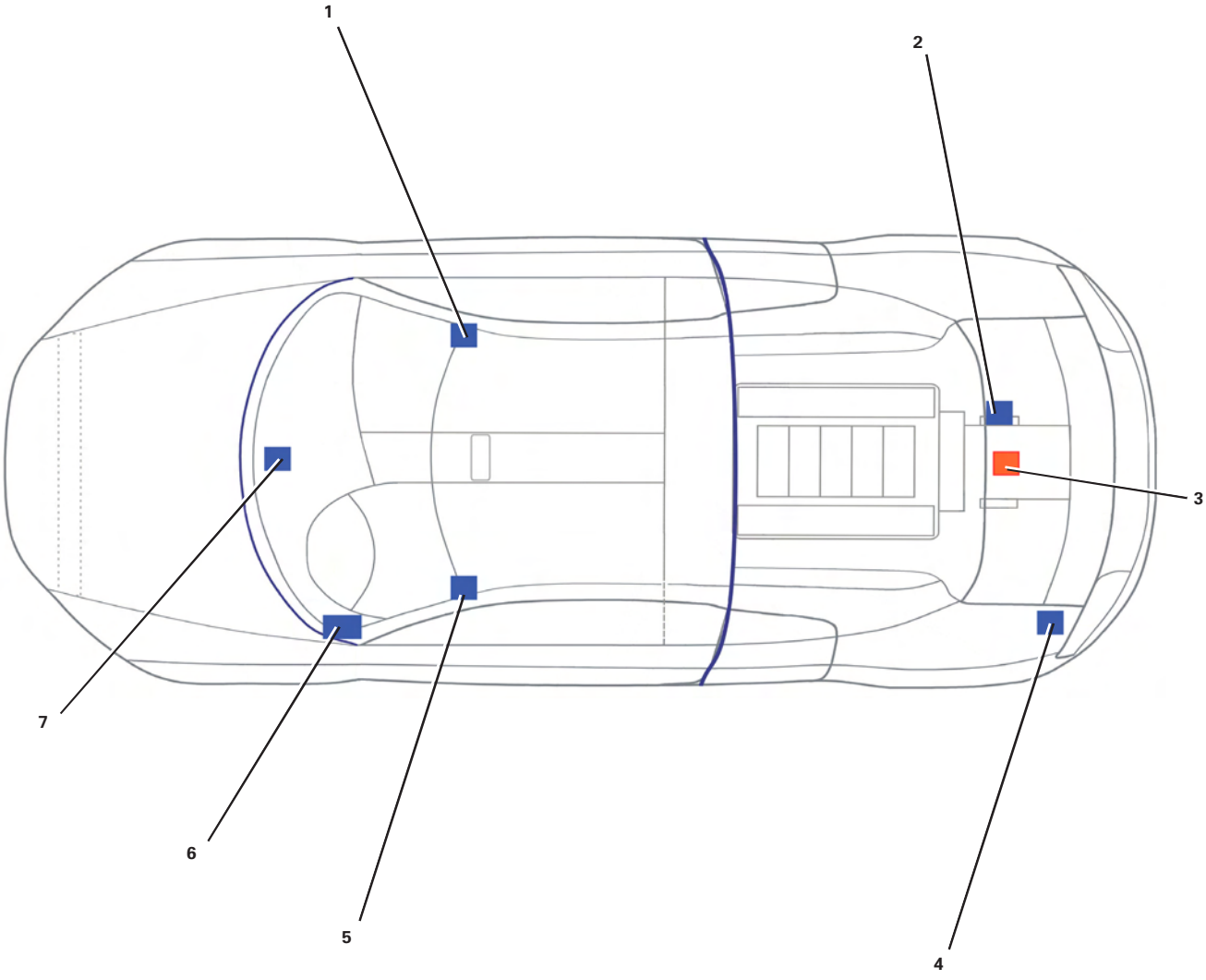
Optional Bang & Olufsen Sound 465W (10 channels)

- 4 loudspeakers in the doors
- 2 tweeters in a mirror triangle
- 2 loudspeakers and 2 tweeters at rear
- Center
- Subwoofer



Infotainment Antennas

1. Antenna Amplifier R112 / FM2
2. Satellite Antenna R170 / SDARS
3. Antenna for Radio and Telephone R51
4. Antenna Amplifier R24 / AM / FM1
5. Antenna Amplifier R111 / FZV
6. Control Device for Antenna Selection J515
7. Navigation Antenna R50



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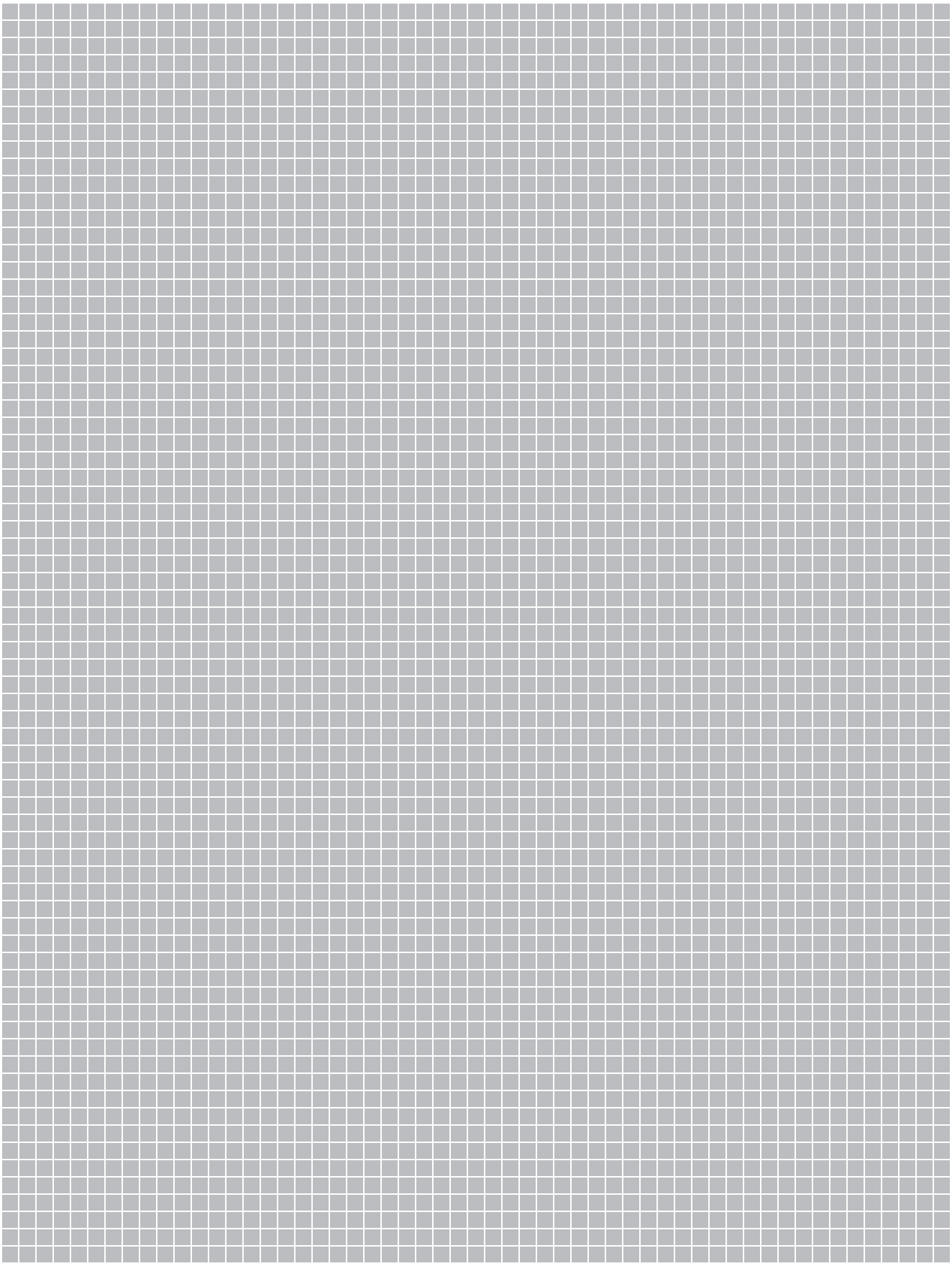


Overview

The Audi R8's automatic air conditioning system is configured as a single-zone air conditioning system. The R8 has only one climate zone with no temperature differential between the driver and passenger sides.

Climate Control Module J255 has a rotary knob for temperature selection, but no digital display. The system has an air recirculation function, which can be activated either by the occupants or automatically as soon as the "ON" conditions for air recirculation have been met.

Note

The Audi R8 does not have an Air Quality Sensor G238.

Climatronic Control Module J255

The setpoint for the temperature flap is set using the "Temperature" rotary knob. The rotary knob is infinitely variable and activates the "Maximum Cool" function in the lowest setting and the "Maximum Heat" function in the highest setting.

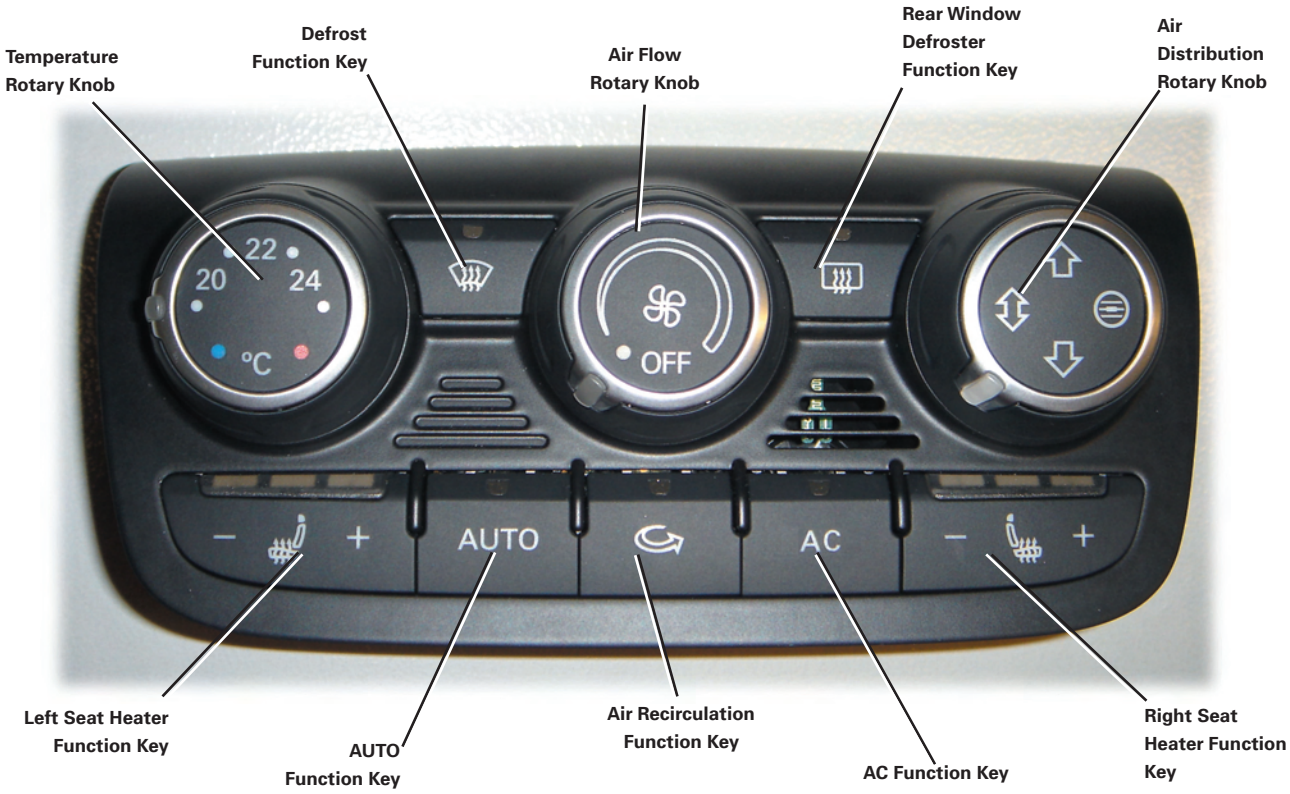
Automatic mode of the air conditioning system can be deactivated with the "Air Flow" or "Air Distribution" rotary knob or by pressing the DEFROST or AC button.

The air conditioner compressor can be switched ON or OFF by pressing the AC button. The system is active without cooling function when the air conditioner compressor is OFF.

The seat heater is optional equipment with the Audi R8. The three heater settings can be set by pressing the function keys.

In setting 0 the seat heater is OFF. Setting 0 cannot be selected directly from setting 3 — it can only be activated by pressing the "Minus" key several times.

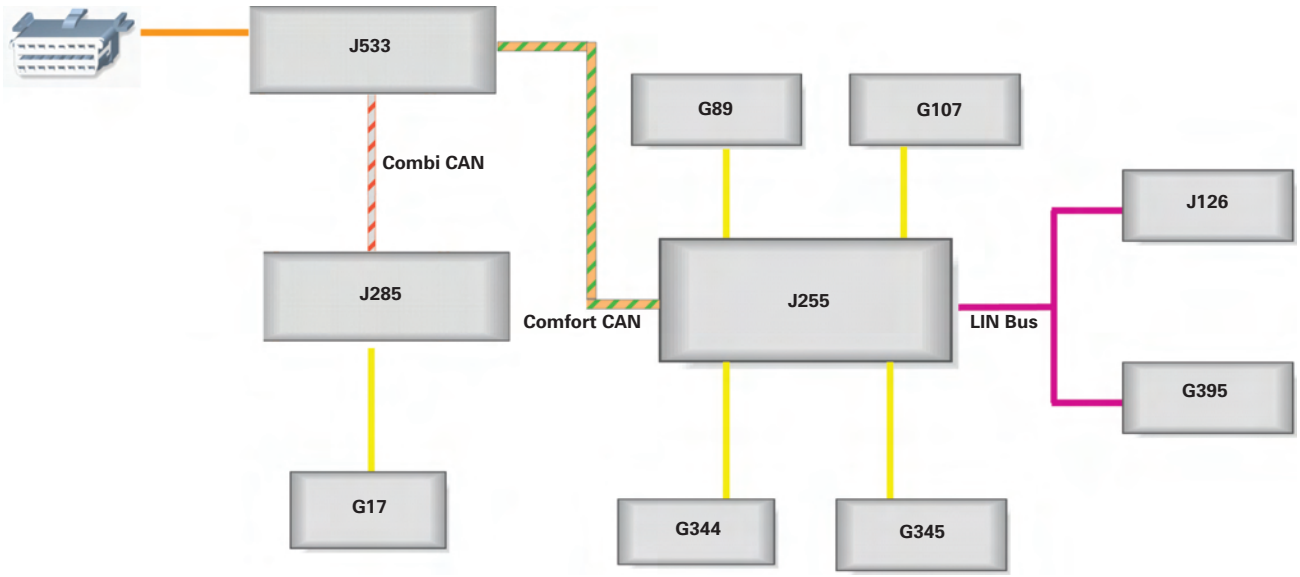
The function keys are backlit, with currently "active" functions indicated by integrated LEDs. Instrument Cluster Control Module J285 provides the dimming signals terminal 58d for the function LEDs and terminal 58s for the key backlighting through the CAN bus. The LEDs of the function buttons and the button backlighting cannot be switched individually.

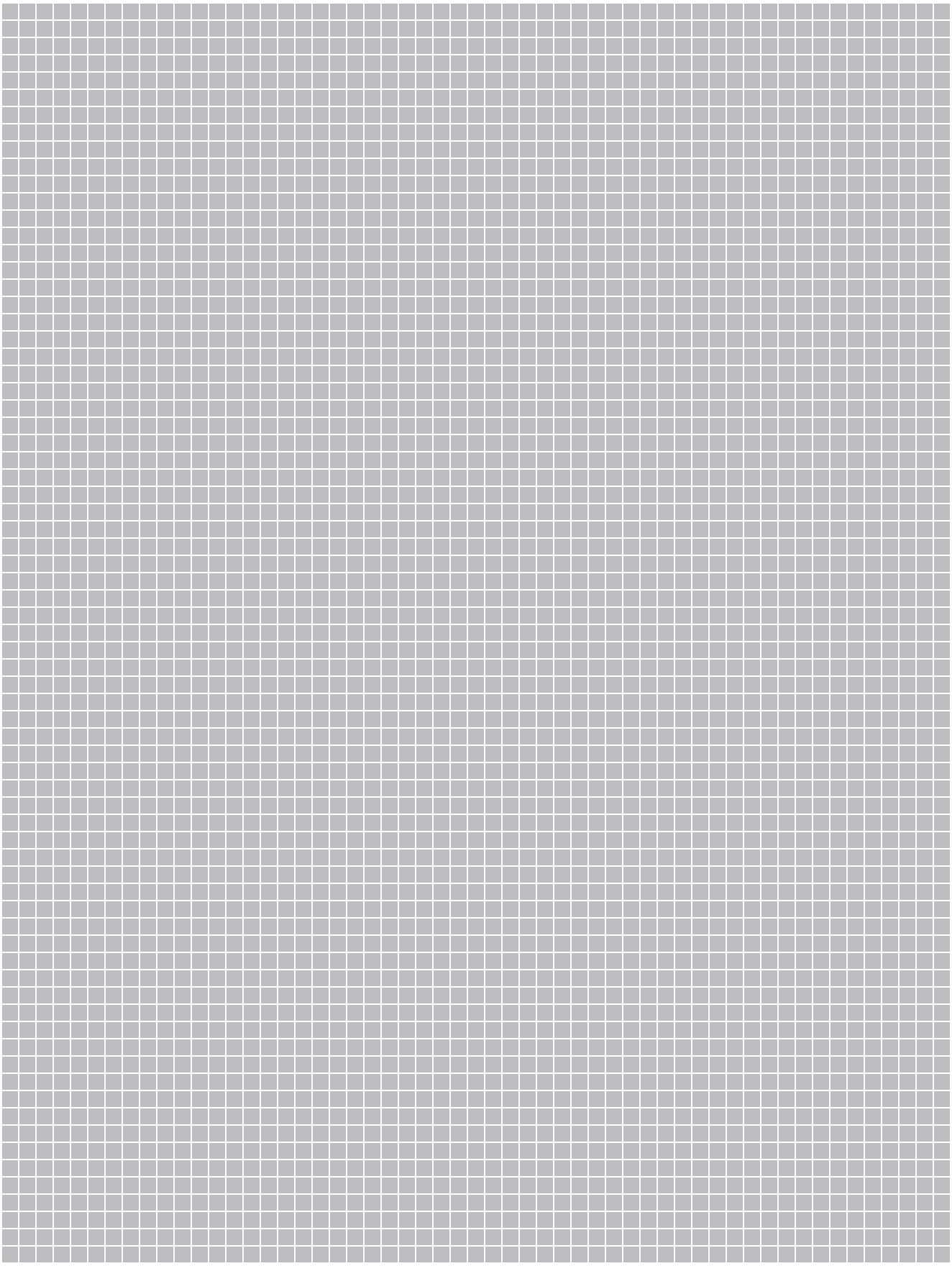


System Communication

Various sensors provide input to Climatronic Control Module J255. Outside Air Temperature Sensor G17 is located in front of the condenser on the right side of the vehicle. The sensor signal is evaluated by Instrument Cluster Control Module J285. The signal is then sent to other control modules, as well as Climatronic Control Module J255 via the comfort CAN system. The temperature value of the sensor is recalculated in Climatronic Control Module J255 since the actual value is not always measured due to the location of Outside Air Temperature Sensor G17. Dash panel temperature sensor G56 is received by Climatronic Control Module J255, and the sensor is part of the module.

Data is transferred between Fresh Air Blower Control Module J126 and Climatronic Control Module J255 using the LIN data bus system of the air conditioning system. A/C Pressure/Temperature Sensor G395 also transfers data to Climatronic Control Module J255 using the LIN data bus. The following sensors use discrete wire communication to Climatronic Control Module J255: Fresh Air Intake Duct Temperature Sensor G89 (located in the air intake unit), Sunlight Photo Sensor G107 (used to take into account when actuators are operated), and Seat Temperature Sensors G344 (left) and G345 (right).





SSP 991703 - The 2008 Audi TT Vehicle Introduction

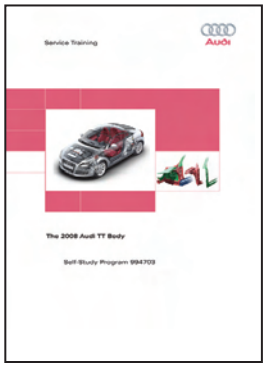
– Body
– Occupant Protection
– Engine
– Suspension System
– Electrical System
– Air Conditioning
– Infotainment

SSP 993703 The 2008 Audi TT Running Gear

– Axles
– Brake System
– Steering System
– Audi Magnetic Ride
– Other Features

SSP 994703 The 2008 Audi TT Body

– Audi Space Frame (ASF)
– Joining Techniques and Production Processes
– Vehicle Safety Concept
– Dimensions



SSP 921603 - The Audi 4.2L V8 Engine

– Engine Mechanical
– Oil Circulation System
– Cooling System
– Air Circulation System
– Fuel System
– Exhaust System
-– Engine Management

Knowledge Assessment

An on-line Knowledge Assessment (exam) is available for this SSP.

The Knowledge Assessment may or may not be required for Certification.

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 ”CRC Certification” Link

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