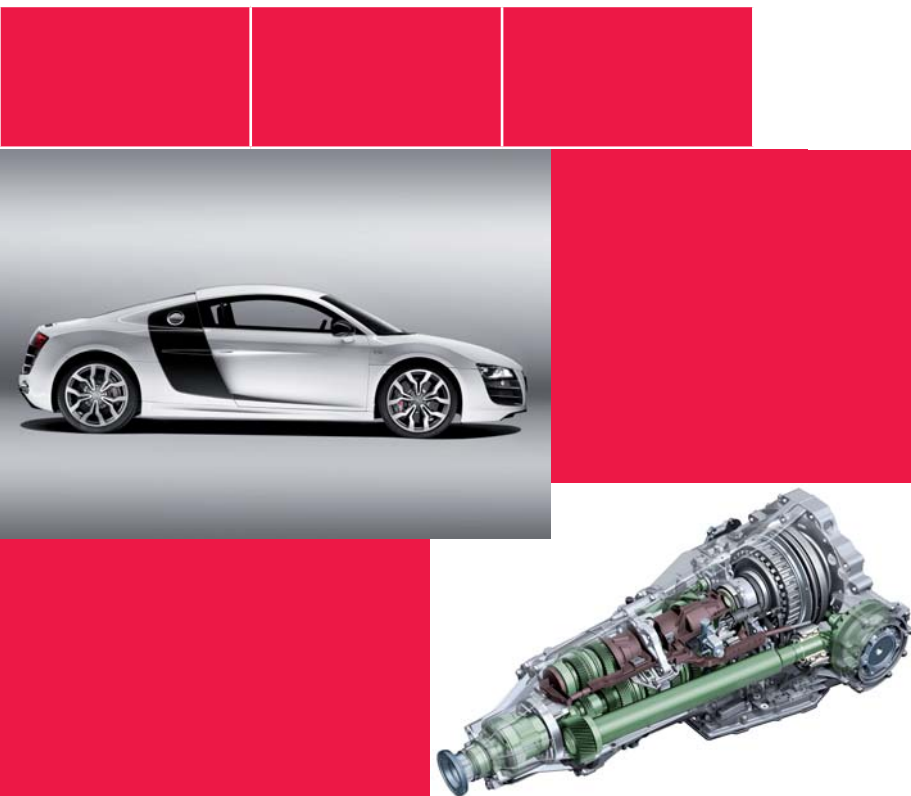




Service Training



Audi New Technology 2009 – 2010

Self-Study Program 990193

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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.

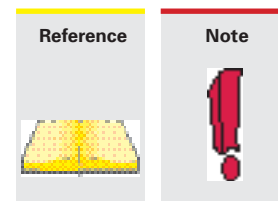
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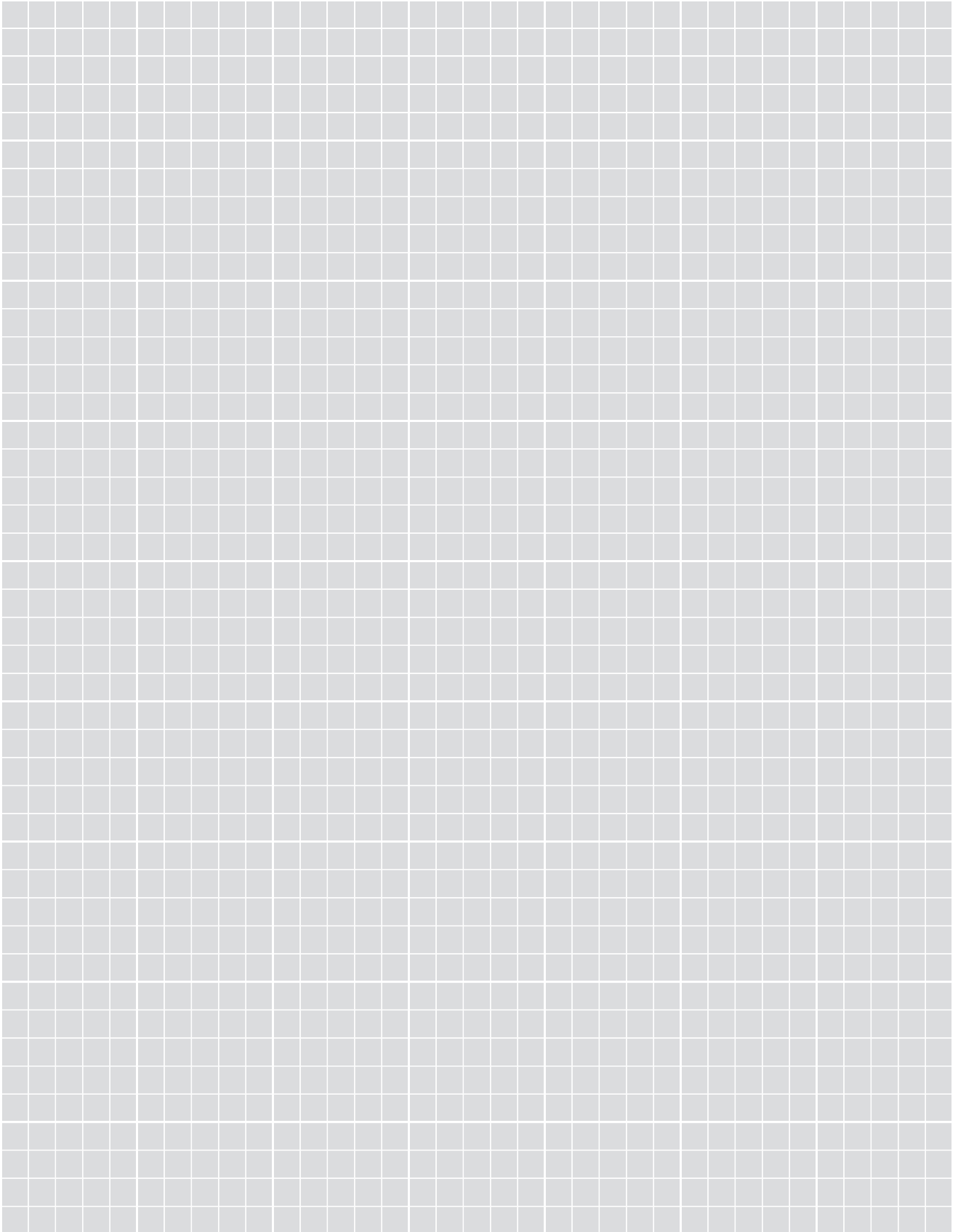
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The Self-Study Program provides introductory information regarding the design and function of new models, automotive components or technologies.

The Self-Study Program is not a Repair Manual!
All values given are intended as a guideline only.
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.





R8 with 5.2L V10 FSI Engine

Audi continues to build on its leadership position in the high-performance sports car segment with the R8 5.2L V10 FSI quattro. The top-of-the-line model of the R8 model series was developed jointly with quattro GmbH. Its ten-cylinder engine develops 525 hp (386 kW) which is capable of delivering breathtaking performance.

Audi technologies such as quattro permanent all wheel drive, lightweight aluminum body (ASF) and innovative all-LED lights propel the R8 5.2L V10 to the top of its competitive field.



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At a glance:

Engine

- Newly developed V10 with 5.2 liters displacement, FSI direct injection and dry sump lubrication
- Superior performance 525 hp (386 kW) and 390 lb ft (530 Nm) of torque

Power train

- Six-speed manual transmission; optional sequential R tronic with paddle shifters on steering wheel and "Launch Control" function
- quattro permanent all wheel drive with rear-wheel bias

Chassis

- Dual aluminum wishbone suspension
- High-performance brakes, optional with ceramic discs
- 19-inch wheels
- Audi magnetic ride adaptive suspension

Body and design

- Lightweight, extremely rigid aluminum ASF body weighs only 436 lb (210 Kg)
- Spacious interior and high level of everyday utility
- Exterior and interior design with distinctive new elements
- All-LED lights as standard

R8 with 5.2L V10 FSI Engine

Technical Specifications

Engine:

Type	Naturally aspirated 5.2 liter V10 spark ignition engine with FSI, 90° cylinder angle, 4-valve per cylinder, double overhead camshafts (DOHC), intake manifold with charge movement flaps
rpm	8700 rpm
Arrangement	Mid-mounted, longitudinal
Bore	3.33 in (84.5 mm)
Stroke	3.65 in (92.8 mm)
Displacement	317.6 cu in (5,204 ccm)
Compression ratio	12.5 : 1
Fuel requirement	Premium unleaded
Horsepower	525 hp (386 kW) @ 8000 rpm
Torque	391 lb ft (530 Nm) @ 6500 rpm

Engine design:

Cylinder block	Aluminum alloy incorporating silicon crystals
Connecting rods	Forged steel / large ends cracked
Pistons	Aluminum
Crankcase	High strength aluminum alloy casting
Crankshaft	Forged steel, 5 main bearings
Cylinder head	Aluminum alloy casting
Valve train	Chain-driven DOHC, continuous intake and exhaust camshaft adjustment
Firing order	1-6-5-10-2-7-3-8-4-9
Cooling system	Water-cooled, thermostatically controlled radiator fan
Lubrication system	Dry sump oil system
Fuel injection	FSI
Emission system	Two metal primary catalytic converters, two metal main catalytic converters, four heated oxygen sensors, secondary air injection system
Fuel	Super Plus ROZ 98 (Premium unleaded — 9 AKI)

Electrical system:

Battery	110 amp/hour
Alternator	14.0 volts 190 amp

Drive train:

Transmission	6-speed manual with launch control / optional R tronic with launch control		
Type	<u>Manual</u>	<u>R tronic</u>	
Gear ratios:	1st	4.373	4.373
	2nd	2.709	2.709
	3rd	1.925	1.925
	4th	1.502	1.502
	5th	1.239	1.239
	6th	1.035	1.035
	Reverse	3.713	3.713
	Final drive	3.077	3.077
Center differential	Viscous clutch		

Steering:

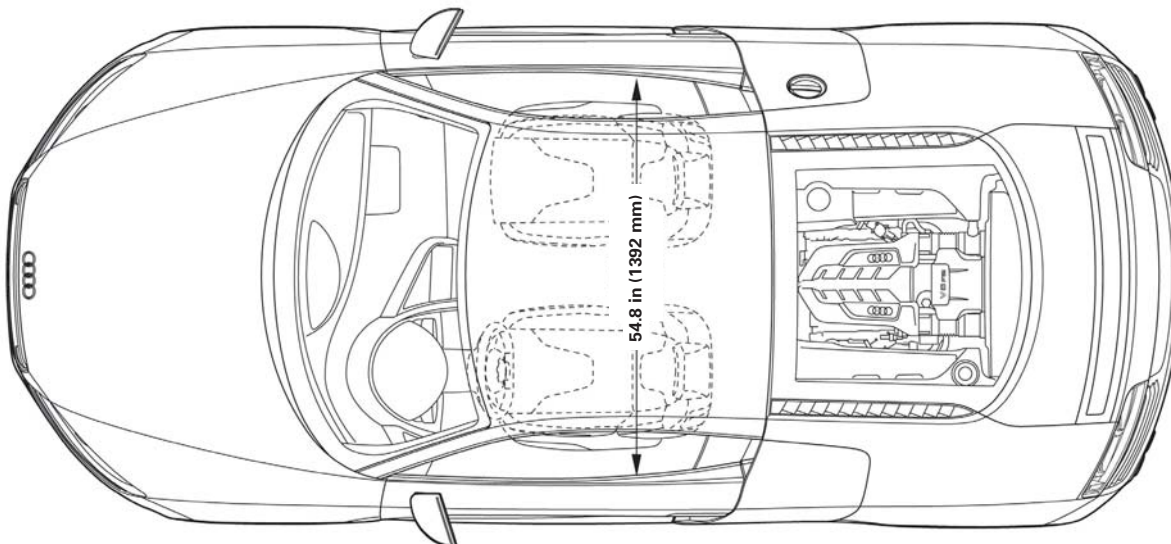
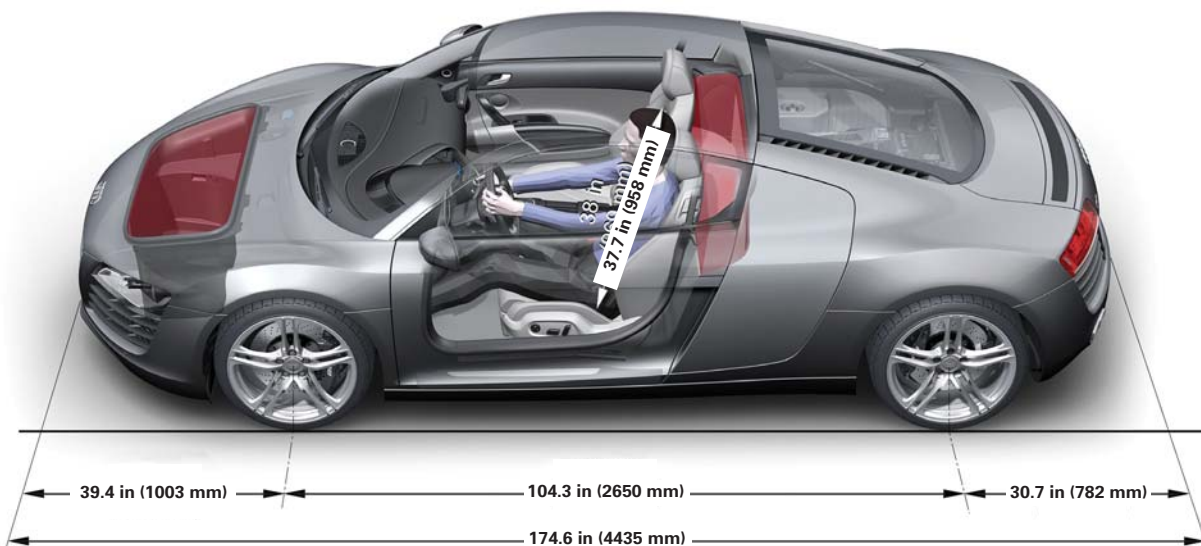
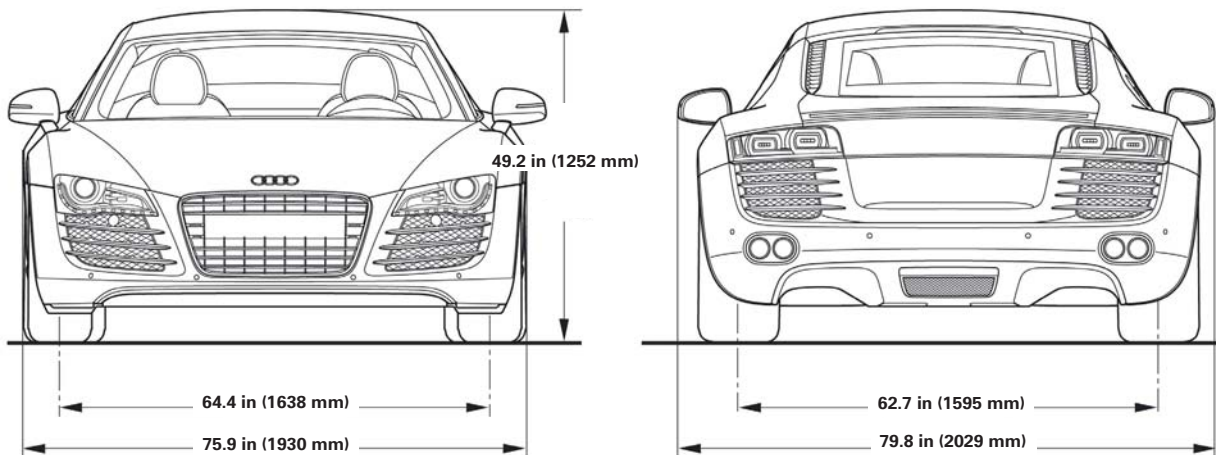
Type	Hydraulically assisted rack-and-pinion
Ratio	17.3
Turning circle (curb to curb)	38.7 ft (11.8 m)

R8 with 5.2L V10 FSI Engine

Suspension:		
Front	Double aluminum wishbone	
Rear	Double aluminum wishbone	
Brakes:		
Service brake: Discs/calipers	Disc brakes, internally vented / eight piston calipers at front, 4 piston calipers at rear	
Front	14.4 in (365 mm)	
Rear	14.4 in (365 mm)	
Parking brake	Mechanically actuated at the rear wheels	
Wheels (standard only):		
Size	Front: 8.5J x 19, Rear: 11J x 19 Alloy	
Tire (standard only):		
Size	Front: 235/35 91Y, Rear: 295/30 100Y	
Body:		
Material	Multi-step anti-corrosion protection	
Corrosion protection	Audi Space Frame (ASF)	
Capacity:		
Engine oil	12.7 qt (12.0L)	
Fuel tank	23.8 gal (90L)	
Reserve	2.6 gal (10L)	
Cooling system	5.3 gal (24.0l)	
Exterior dimensions:	<i>[see next page]</i>	
Interior dimensions:		
Seating capacity	2	
EPA class	n/a	
Head room	n/a	
Shoulder room	n/a	
Leg room	n/a	
Interior volume (EPA)	n/a	
Luggage capacity trunk / behind seats	3.5 cu ft (100L) / 3.18 cu ft (90L)	
Performance:		
	5.2 FSI quattro - manual	5.2 FSI quattro - R tronic
0 - 60 mph	3.7 seconds	3.7 seconds
0 - 100 km/h	3.9 seconds	3.9 seconds
0 - 200 km/h	12.0 seconds	12.0 seconds
Top speed	196 mph (316 km/h)	196 mph (316 km/h)
Lateral acceleration	1.2 g	
Fuel economy (EPA estimate):		
	Manual	R-tronic
City	12.0 mpg	13.0 mpg
Highway	20.0 mpg	20.0 mpg
Combined	15.0 mpg	15.0 mpg

R8 with 5.2L V10 FSI Engine

Dimensions



R8 with 5.2L V10 FSI Engine

Like the R8 4.2L, the R8 5.2L V10, uses an Audi Space Frame of aluminum and ultra-light magnesium. It is produced largely by hand in the Neckarsulm manufacturing plant of quattro GmbH.

Maximum precision and the use of the most advanced joining techniques are employed. This includes: 325 ft (99 meters) of welding seams, 782 rivets, and 308 self-tapping screws that hold the body together.

A fully automatic measuring system checks the dimensions of every body with precision in the one-tenth of a millimeter range.



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