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## **The Audi R8 GT Spyder: even more performance**

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**The equipment and data specified in this document refer to the model range offered in Germany. Subject to change without notice; errors and omissions excepted.**

## Summary

### **Aggressive power and Audi ultra – the Audi R8 GT Spyder**

**Even lighter, even more powerful, even more captivating: The Audi R8 GT Spyder delivers breathtaking performance. The open-top flagship version of the high-performance sports car develops 412 kW (560 hp) and – thanks to Audi ultra – has trimmed a full 85 kilograms (187.39 lb) from an already low weight. The R8 GT Spyder accelerates from zero to 100 km/h (62.14 mph) in 3.8 seconds and reaches a top speed of 317 km/h (196.97 mph).**

One year ago, Audi unveiled the R8 GT in coupe form as the new flagship model of the R8 model line. It wasn't long before all 333 units in the limited series were sold out. Now the open-top version of the high-performance sports car is being launched, with production again capped at 333 units. Each car sports a tag with its individual number on the gear lever knob.

The Audi ultra lightweight technology is the key to the R8 GT Spyder's weight of just 1,640 kilograms (3,615.58 lb). That's 85 kilograms (187.39 lb) less than its technical basis, the R8 Spyder 5.2 FSI quattro. The Audi Space Frame (ASF) body, consisting of cast nodes, extruded sections and aluminum panels, accounts for just 214 kilograms (471.79 lb) of the total weight. The body is assembled predominantly by hand in the R8 workshop at the Neckarsulm plant. Final assembly of the car takes place in the same way.

The engine frame is made of ultra-light magnesium; the long cover over the soft-top compartment and the large side panels at the rear are made of carbon fiber-reinforced polymer (CFRP). CFRP is also used for the modified front spoiler, the fixed rear spoiler and the new rear bumper. Together, these components provide a weight saving of 5.5 kilograms (12.13 lb).

Visual modifications accentuate the styling of the R8 GT Spyder. These include add-on parts in contrasting titanium gray, a front splitter with a dual lip, flics at the sides of the front bumper, red GT badges, round exhaust tailpipes, an enlarged diffuser and dark LED tail lights in a clear-glass design. Audi offers an optional windshield frame in matt CFRP.

Audi engineers also trimmed weight from the technical components in the area of the transmission, wheels and brakes. In the interior, the bucket seats alone, with their chassis of glass fiber-reinforced polymer (GFRP), saved 31.5 kilograms (*69.45 lb*) of weight.

In classic Audi fashion, the R8 GT Spyder features a lightweight fabric soft top that is extremely quiet and fully suitable for highway cruising. Its electrohydraulic drive brings it up or down in 19 seconds, even at speeds up to 50 km/h (*31.07 mph*). The extendible glass rear window is nestled in the bulkhead, separate from the soft top. Integrated in the bulkhead is a rollover protection system comprising two pretensioned plates.

### **Prodigious power: the drivetrain**

The performance offered by the new top-of-the-line model in the R8 family is formidable. The 5.2-liter V10 with an aluminum crankcase draws its fuel from an FSI direct injection system. Dry-sump lubrication ensures a reliable supply of oil even under maximum lateral or straight-line acceleration.

With its modified electronic management, the long-stroke engine produces 540 Nm (*398.28 lb-ft*) of torque at 6,500 rpm, and its peak output is 412 kW (560 hp). Each unit of horsepower has only 2.93 kilograms (*6.46 lb*) to move. The R8 GT Spyder catapults from zero to 100 km/h (*62.14 mph*) in 3.8 seconds and reaches a top speed of 317 km/h (*196.97 mph*). In every situation, the engine impresses with its thrust and bite – and that unmistakable sound of an Audi ten-cylinder.

The R8 GT Spyder comes standard with an automated six-speed R tronic transmission with two fully automatic modes. In the additional manual mode, the driver can shift gears using the paddles on the steering wheel or by flicking the joystick. At high load and revs, gear changes take only one-tenth of a second. The launch control program manages the starting sprint with high engine speed and precision-control of the tire slip.

The quattro permanent all-wheel drive has a strong rear-wheel bias, granted by the axle load distribution. If the situation calls for it, the system sends additional torque to the front axle. In tandem with the limited slip differential at the rear, it provides an added measure of traction, stability and cornering speed, giving it a strong lead over the rear-wheel-drive competition.

The suspension, too, is unrivaled in its performance. Aluminum double wishbones locate the wheels, and the rack-and-pinion power steering provides intimate contact with the road. Taut tuning lowers the body by approximately 10 millimeters (*0.39 in*). The open high-performance sports car has 19-inch wheels, with 235/35 tires up front and 295/30 tires at the rear. The large, lightweight carbon-fiber ceramic brake discs decelerate the car with supreme ease. The ESP stabilization program has a sport mode and can also be deactivated entirely.

### **Pure comfort: the interior and equipment**

Great attention to detail is evident in the materials and workmanship inside the car. The salient aspect of the controls is their logically structured design. The open two-seater offers a roomy interior, and its front end can accommodate up to 100 liters (*3.53 cu. ft*) of cargo. The rear bulkhead houses three storage compartments.

The interior is black and can be adorned with stitching in a choice of titanium gray or crimson for added refinement. Alcantara upholstery comes standard – on the sport steering wheel and windshield frame, too.

Audi also offers leather in Fine Nappa quality. Numerous details – including white dials and R8 GT logos – provide classy accents. The distinctive R8 “monoposto,” a large arch encircling the driver’s cockpit, is made of matt CFRP.

Audi ultra requires no sacrifice on the part of R8 GT Spyder owners. The standard equipment includes LED headlights, LED tail lights, an automatic air conditioning system, the navigation system plus, an alarm system and the driver information system with a built-in lap timer.

Audi also offers a sophisticated sound system from Bang & Olufsen and a Bluetooth interface including a seatbelt microphone for carrying on a phone conversation conveniently. Options specific to the R8 GT include bucket seats with a carbon-fiber composite chassis, matt CFRP applications and embroidered logos on the seat upholstery.

The R8 GT Spyder will have a base price in Germany of 207,800 euros.

## At a glance

### **The Audi R8 GT Spyder**

#### **Body**

- Audi ultra, vehicle curb weight just 1,640 kilograms (3615.58 lb), weight reduced by 85 kilograms (187.39 lb) versus its technical basis
- Aluminum body based on ASF technology, weighing 214 kilograms (471.79 lb) and providing excellent stiffness
- Numerous add-on parts made of carbon fiber-reinforced polymer (CFRP)
- Lightweight electrohydraulic soft top weighing only about 42 kilograms (92.59 lb)
- High-intensity, high-efficiency LED headlights as standard

#### **Engine**

- Naturally aspirated 5.2-liter V10 mid-mounted engine with FSI gasoline direct injection and dry-sump lubrication
- Excellent output: 412 kW (560 hp), 540 Nm (398.28 lb-ft) of torque
- Impressive performance figures: 0 – 100 km/h (0 – 62 mph) in 3.8 seconds, top speed 317 km/h (196.97 mph)

#### **Drivetrain**

- Sequential-shift six-speed R tronic with launch control program
- quattro permanent all-wheel drive with a heavily rear-biased power distribution

#### **Chassis**

- Double-wishbone aluminum suspension borrowed from motorsport
- Large carbon-fiber ceramic brake discs
- 19-inch wheels for high lateral acceleration and strong grip

#### **Interior and equipment**

- Sport bucket seats with GFRP chassis, CFRP option also available
- Roomy interior, exemplary ergonomics and top-quality workmanship
- Standard navigation system plus and automatic air conditioning system
- Innovative seatbelt microphone and other equipment and trim features available on request

Full version

## **The Audi R8 GT Spyder: Top performance with Audi ultra**

**Audi unveils a second limited edition of its R8 high-performance sports car – hot on the heels of the fixed-roof R8 GT comes the R8 GT Spyder. The output of its 5.2-liter V10 has been increased to 412 kW (560 hp); the weight of the vehicle has been reduced by 85 kilograms (187.39 lb). The R8 GT Spyder accelerates from zero to 100 km/h (62.14 mph) in 3.8 seconds and reaches a top speed of 317 km/h (196.97 mph).**

The Audi R8 is a born winner. In its very first season, the R8 LMS won 23 runs and three champion titles, followed by four more titles and 41 race victories in 2010. The production models landed the “World Performance Car” award on two occasions – the R8 in 2008 and the R8 5.2 FSI quattro in 2010. Most recently, the high-performance sports car clinched category wins in *Auto Zeitung* magazine’s “Auto Trophy” awards and in the *auto motor und sport* “Best Cars of 2011” reader survey.

Approximately one year ago, Audi unveiled the R8 GT as the model line’s new flagship model. It wasn’t long before all 333 units in the limited series were sold out. Now the open-top body version is being launched, with production again capped at 333 units. Each one sports a tag with its individual number on the gear lever knob.

### **Body and convertible top**

The production R8 Spyder is already a shining example of Audi ultra: featuring an Audi Space Frame (ASF) design, its aluminum body tips the scales at just 216 kilograms (476.20 lb). The strength of the body provides the basis for the car’s precise handling, while also delivering high vibrational comfort and superior crash safety. The open body is tops in its segment in terms of lightweight quality – the relationship between weight, size and torsional stiffness.

The body-in-white consists of three semi-finished components: aluminum extruded sections comprise 75 percent; vacuum-cast nodes 8 percent. The aluminum panels that close and brace the skeleton make up the remaining 17 percent.

The body is assembled largely by hand, with the utmost precision, in the workshop at the Audi Neckarsulm plant. The open structure features special reinforcements in the area of the sills, the center tunnel, the rear bulkhead, the floor and both the A and B pillars. Ultra-light magnesium is used for the engine frame. The components are joined by 107 meters (*351.05 ft*) of weld seams, 814 punch rivets and 188 self-tapping screws.

The cover over the soft-top compartment and the side panels on the R8 Spyder are made of carbon fiber-reinforced polymer (CFRP), an excellent lightweight material for low-volume use. These components are made using resin transfer molding (RTM), a method that is faster and more energy-efficient than conventional production in an autoclave. The ultra-lightweight ASF body is a key reason the R8 Spyder 5.2 FSI production car weighs only 1,725 kilograms (*3802.97 lb*) (in the R tronic version).

The R8 GT Spyder weighs in at just 1,640 kilograms (*3,615.58 lb*), a full 85 kilograms (*187.39 lb*) less than the R8 Spyder 5.2 FSI quattro. The engineers at quattro GmbH accomplished this feat with an approach that targeted all areas of the vehicle. They even found a way to lighten the ASF body: by using thinner sheet metal and additional cutouts, they were able to trim 2.4 kilograms (*5.29 lb*) from the aluminum hatch over the 100 liter (*3.53 cu. ft*) luggage compartment at the front of the car.

The new front spoiler, the special fixed rear spoiler and the modified rear bumper combined bring the weight down by another 5.5 kilograms (*12.13 lb*). The aerodynamic paneling on the underbody is made of thinner sheet metal, for a saving of 1 kilogram (*2.20 lb*). The heat shields at the rear of the car are also lighter – by 1.1 kilogram (*2.43 lb*).

The engineers also shaved off every expendable gram from the technical components. In the area surrounding the transmission, they reduced the weight by 3.5 kilograms (*7.72 lb*), and by dispensing with absorber masses on the brakes and propshaft, they were able to do away with another 3.6 kilograms (*7.94 lb*). The exclusive 19-inch alloy wheels accounted for another 4.3 kilograms (*9.48 lb*) of weight loss. Reduced features in the luggage compartment provided a saving of 5.5 kilograms (*12.13 lb*). The damping materials in the engine compartment and other areas of the body removed another 11.2 kilograms (*24.69 lb*).

The development engineers also achieved considerable weight savings in the interior. The new, lightweight carpet lightens the car by 7.9 kilograms (*17.42 lb*). The bucket seats, which can be adjusted longitudinally, feature a chassis made of glass fiber-reinforced polymer (GFRP) for a saving of 31.5 kilograms (*69.45 lb*). A wealth of additional specific measures round out the Audi ultra lightweight design package.

The Audi R8 GT Spyder has a convertible top made of fabric. Weighing only about 42 kilograms (*92.59 lb*), it keeps the vehicle's weight and center of gravity low. The soft top fits harmoniously into the design line when up. It tapers off to two long, slim fins and can be brought up or down within 19 seconds, even at speeds up to 50 km/h (*31.07 mph*). The soft top has an electrohydraulic drive. When returning to the stowed position, the 1.7 square meters (*18.30 sq. ft*) of fabric folds in a Z-shape into its storage compartment over the engine; as it does so, the CFRP compartment lid moves on two seven-joint hinges.

The outer skin of the top is a textile fabric. A headliner covers the frame, which is made primarily of die-cast magnesium and aluminum. The soft top is quiet and fully suitable for high-speed cruising. The heated glass window, which is separate from the top, is nestled in the bulkhead between the passenger compartment and the engine compartment. It can be raised and lowered at the press of a switch, with the soft top up or down. An additional wind deflector comes standard. It keeps the interior nearly free of drafts at speeds of up to around 200 km/h (*124.27 mph*).

The top forms a single unit with its rear-window module, the storage compartment, the cover and the rollover protection system – two strong, spring-loaded sections. This lends additional stiffness to the ASF body. Full-size airbags stand at the ready in the event of a head-on collision. In a rear-end collision, the integral head restraint system reduces the risk of whiplash injuries. Integrated in the bulkhead is a rollover protection system comprising two pretensioned plates.

## **Exterior design**

The design of the Audi R8 GT is an expression of its highly concentrated power. The new range-topping model in the series is a sculpture measuring 4.43 meters (14.53 ft) long, 1.90 meters (6.23 ft) wide, and just 1.23 meters (4.04 ft) high, with a wheelbase of 2.65 meters (8.69 ft). The exterior has undergone numerous changes that further accentuate the styling, lower the weight and improve the aerodynamics. The R8 GT Spyder generates even more downforce when driven fast than the production model – without an appreciable increase in drag coefficient (0.37) or frontal area (1.99 m<sup>2</sup>) (21.42 sq. ft).

The frame of the single-frame grille, its struts and the slats in the air intakes are matt titanium gray; the grille is painted matt black. The splitter under the bumper has a double lip and is made of CFRP. Slender, elegantly curved flics at the sides of the front bumper, also made of carbon fiber composite material, increase the downforce on the front axle. The standard LED headlights use light-emitting diodes for all lighting functions. They produce bright, homogeneous light, have a long service life, low energy consumption, and an unmistakable look.

The GT badges on the sides are anodized red, and the side sills have been widened. Audi also offers a windshield frame in CFRP. The exterior mirrors with integrated LED turn signals are now smaller; their base is made of aluminum. The 19-inch alloy wheels have an exclusive five twin-spoke Y design in a titanium look finish.

The modifications to the rear are particularly noticeable, beginning with the fixed spoiler of carbon fiber-reinforced polymer. Round exhaust tailpipes and ventilation slots for the rear wheel arches are integrated in the bumper, also made of carbon fiber composite. The enlarged diffuser too is of CFRP; the license plate trim and the slats are finished in matt titanium gray. The LED tail lights have dark-colored housings with covers of clear glass. Audi offers the R8 GT Spyder in the colors Glacier White, metallic; Phantom Black, pearl effect; Sphere Blue and Suzuka Gray, matt effect.

## **Drivetrain**

The redeveloped naturally-aspirated 5.2-liter V10 in the R8 GT Spyder endows the open-top high-performance sports car with excellent performance. The sprint from zero to 100 km/h (*62.14 mph*) is possible in 3.8 seconds; from zero to 200 km/h (*124.27 mph*) takes just 11.5 seconds. And acceleration remains brisk until the top speed of 317 km/h (*196.97 mph*) is reached.

Changes to the engine management coaxed an additional 26 kW (35 hp) from the ten-cylinder, which now develops 412 kW (560 hp) from a displacement of 5,204 cc. The latter is achieved at an engine speed of 8,000 rpm. The maximum engine speed is 8,700 rpm, and the torque curve reaches its peak of 540 Nm (*398.28 lb-ft*) at 6,500 rpm. The V10 achieves a specific output of 79.2 kW (107.6 hp), giving the R8 GT Spyder a power-to-weight ratio of 3.98 kilograms (*8.77 lb*) per kW, or 2.93 kilograms (*6.46 lb*) per hp.

The handcrafted long-stroke engine (bore x stroke 84.5 x 92.8 millimeters [*3.33 x 3.65 in*]) features a cylinder angle of 90 degrees. Its crankcase is made of a lightweight, yet extremely strong, aluminum-silicon alloy. A frame for the bottom bearing bridges of the crankshaft further enhances its rigidity. The V10, whose cylinder head covers are painted red, weighs only 258 kilograms (*568.79 lb*). The dry-sump lubrication system with its highly efficient pump module allows the engine to be installed low. It also ensures a reliable supply of oil to the engine even under extreme lateral acceleration.

The crankshaft is a common pin construction. With this design, the connecting rods of the opposing pistons engage a common crankpin, resulting in alternating firing intervals of 54 and 90 degrees. This rhythm gives the V10 its fascinating sound. Two flaps in the exhaust system modulate its volume and tone depending on load and engine speed.

The 5.2-liter FSI consumes an average of 14.2 liters of fuel per 100 km (*16.56 US mpg*). The fuel is direct-injected into the combustion chambers at pressures below 120 bar. The swirling mixture cools the cylinder walls, allowing a compression ratio of 12.5:1. A variable intake manifold and the continuous adjustment of the chain-driven camshafts ensure complete charging. Flaps in the intake ports induce a tumbling motion in the inflowing air, thus further optimizing the mixture formation.

Gear changes in the R8 GT Spyder are performed via the standard R tronic sequential manual transmission. The electrohydraulic clutch and gearshift unit receives its commands by wire, in other words, electronically. It changes the six gears at lightning speed – in approximately one-tenth of a second at high load and engine speed – even faster than in the production Spyder. The double-plate clutch is only 215 millimeters (*8.46 in*) in diameter, fitting for the low installation position of the engine.

The R tronic management offers three operating modes – an automatic mode with Sport and Normal characteristics, and two manual programs. In the manual programs, the driver changes gears using the joystick on the center tunnel or the two paddles on the steering wheel. For spectacular starts, there is launch control – a program that manages full-on acceleration with high engine speed and minimum tire slip.

Power flows from the R tronic via a propshaft to the quattro permanent all-wheel drive. Its centerpiece is a viscous coupling at the front differential. The viscous coupling comprises a package of round disks that rotate in a viscous fluid and are geared in an alternating pattern: for every one that is connected to the propshaft via the housing, the one next to it is connected to the output shaft leading to the front axle.

Under normal driving conditions, the viscous coupling distributes the power between the front and rear axles in a 15:85 ratio. This harmonizes perfectly with the 43:57 weight distribution in the R8 GT Spyder. The high-performance sports car is rear-biased, providing a key added measure of grip, stability and cornering speed compared with its rear-wheel-drive rivals.

If slip occurs at the rear axle, the disks in the coupling rotate at different speeds; the oil becomes more viscous as a result of its internal friction. By picking up the other clutch disk of each pair, greater torque is transferred to the shaft leading toward the front axle – within a matter of milliseconds, the coupling is able to divert another 15 percent of the power to the front. A mechanical limited slip differential at the rear axle further increases the traction. It provides up to 25 percent lockup when accelerating and up to 40 percent on the overrun.

## **Chassis**

The Audi R8 GT Spyder chassis is in keeping with the classic construction from motorsport, with aluminum double wishbones serving as the suspension. The hydraulic rack-and-pinion power steering provides a sensitive, highly responsive connection to the road and is direct, with a steering ratio of 16.3:1. The tuning, optimized for the racing circuit, lowers the body by approximately 10 millimeters (*0.39 in*). Higher camber rates at all wheels make the handling more agile than on the production model.

The 19-inch forged wheels have different rim widths, with 8.5 J x 19 format up front and 11 J x 19 at the rear. The tires are 235/35 and 295/30, respectively. A tire pressure indicator is standard. Audi will install 305/30 tires at the rear on request. Individualists can opt for other wheel designs, and for racing enthusiasts, Sport Cup tires are available.

The standard package for the Audi R8 GT Spyder includes the internally ventilated and drilled carbon-fiber ceramic brake disks. Altogether they weigh around nine kilograms (*19.84 lb*) less than the steel disks from the standard version, with the same format. In terms of stability and service life, they deliver equally convincing results.

The disks measure 380 millimeters ( *14.96 in*) up front and 356 millimeters ( *14.02 in*) at the rear. Elastic elements connect the friction rings with the stainless steel caps. The lightweight aluminum brake calipers – with six pistons up front – are anodized red and bear “Audi ceramic” badges.

The ESP stabilization program in the R8 GT Spyder is specially tuned. The driver can select a sport mode that allows easily controlled oversteer when accelerating out of a corner. The system can be deactivated entirely for a trip to the race track. The Audi R8 GT Spyder achieves extremely high lateral acceleration and is dynamic, precise and stable in its handling.

### **Interior and equipment**

Thanks to Audi ultra, weight is lowered and dynamics increased, without sacrificing comfort. The R8 GT Spyder leaves the assembly line outfitted with a rich array of standard equipment: LED headlights and tail lights, an automatic air conditioning system, electric windows, the navigation system plus with MMI operating logic and seven active speakers, the driver information system with a built-in lap timer, a parking system, hill hold assist and an anti-theft alarm system.

As always with Audi, the interior is a fascinating study of superlative fit and finish. The materials, carefully selected and applied, indulge the senses with their fine look and feel; the controls are clearly structured and logical. The monoposto – a large arch encircling the cockpit – is made of matt CFRP; the cabin is spacious.

The interior is a sporty black. The flat-bottomed steering wheel, the windshield frame, the knee pad, the handbrake lever and the bucket seats are all covered in Alcantara; contrasting stitching in a choice of titanium gray or crimson provides accents. The rear bulkhead accommodates an LED-illuminated storage box with three compartments.

The scales on the dial instruments are white, including gauges for the oil temperature and on-board voltage. The custom-designed selector lever, which bears the vehicle’s serial number, is made of CFRP and aluminum; the center tunnel and the door liners are trimmed in the body color.

The door sills have matt aluminum sill panels. Just like the steering wheel, selector lever and instruments, they are adorned with the R8 GT logo. The pedals and the footrest feature a gleaming aluminum-look finish.

Audi offers a wealth of exclusive options for the R8 GT Spyder. Exterior options include alternative wheel designs, a body-color front splitter and a matt CFRP engine compartment cover. Additional CFRP trims and leather-covered controls are available as interior options. Others include floor mats with the R8 GT logo, CFRP door sill panels illuminated in red, a leather multifunction steering wheel, cruise control and seatbelts in titanium gray or crimson.

On request, Audi will install seats with CFRP shells, which are even lighter than the GFRP shells. Classic power-adjustable, heated sport seats are available as alternatives. Embroidered R8 GT logos are available for the standard Alcantara upholstery as well as for the optional version in Fine Nappa leather.

Another option is the Bluetooth interface with seatbelt microphone (for black seatbelts). The seatbelt microphone makes it possible to carry on a phone conversation conveniently, even when driving with the top down. Integrated into each of the two belts are three small microphones; a fourth is mounted on the windshield frame. Audi offers an optional surround-sound system from Bang & Olufsen with 465 watts of power and 12 speakers, a CD changer and the Audi music interface.

Sales of the R8 GT Spyder will begin in August 2011. Its base price in Germany will be 207,800 euros.