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Audi RS Q3 – first RS model in the Q series

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Short version

First RS model in the Q series – the Audi RS Q3

The Audi RS Q3 is the first RS model in the successful Q family from Audi – it combines a high level of everyday utility with dynamic driving performance. The standard sprint from 0 to 100 km/h takes 5.2 seconds, and its top speed is electronically governed at 250 km/h. The 2.5-litre five-cylinder turbo engine produces a full 228 kW of power, yet its combined fuel consumption is just 8.8 litres fuel per 100 kilometres.

The RS Q3 transfers the Audi performance philosophy to the compact SUV segment, creating a new performance category. The compact high-performance SUV rolls off the assembly line in the Spanish city of Martorell. It is the fourth RS model to be launched on the market this year from quattro GmbH, the high-performance subsidiary of AUDI AG.

The sporty RS philosophy is embodied in all of the RS Q3 details. Under the hood of the RS Q3 is the high-performance 2.5 TFSI engine, which has won numerous prestigious awards. Since 2010, the five cylinder engine has been named “International Engine of the Year” in its class four years in a row by an international panel of automotive journalists. The turbocharged direct-injection engine produces a peak power of 228 kW from 2480 cc of displacement and provides 420 Nm of torque, which is available between 1500 and 5200 rpm. These performance figures for the RS Q3 are best-in-class.

The Audi RS Q3 accelerates from a standstill to 100 km/h in 5.2 seconds, and its maximum speed is electronically governed at 250 km/h. Efficiency technologies such as a standard start-stop system and a regulated oil pump contribute to its low combined fuel consumption of 8.8 litres fuel per 100 kilometres (206 g CO₂/km). The standard Audi drive select performance system, which offers three operating modes, lets drivers modify the characteristics of the accelerator pedal and steering. The engine sound is also modified.

A compact seven-speed S tronic is used to transmit the engine’s power. With the dual clutch transmission, drivers can have the gears shift automatically in the D and S programs, or they can shift manually – using the steering

wheel paddles or the RS-specific gear shift lever. The hydraulically activated and electronically controlled multi-plate coupling is the central component of the permanent quattro all-wheel drive system. In regular driving operation, it transfers the greatest share of the drive torque to the front wheels; if necessary, it can redistribute some or all of these forces to the rear wheels at lightning speed.

The Audi RS Q3 impresses with dynamic and stable handling without compromising on comfort. The electromechanical rack and pinion steering system gives the driver tight, precise feedback. The parking brake is also actuated electromechanically. The rear wheels each have a four-link suspension. The RS sport suspension lowers the body 25 millimetres

The front brake discs are engineered in a weight-saving wave design. They are 365 millimetres in diameter and are pressed by black painted eight-piston brake calipers bearing the RS logo. The electronic stabilisation control system (ESC) has a Sport mode and can also be completely deactivated.

Distinctive design details

Visual highlights demonstrate the special status of the Audi RS Q3. The most prominent are the RS bumper, quattro logo in the central air intake, aluminium roof rails, the long roof spoiler, the diffuser in the rear apron and the large, elliptical exhaust tailpipe. Two styling packages let customers further customise their compact high-performance SUV.

This dynamic style is echoed in the car's interior. The sport seats with embossed with RS Q3 logos are upholstered in black fine Nappa leather with contrasting stitching in rock grey. The instrument cluster has grey dials with white numbers and red needles, and the multifunction steering wheel has a flattened bottom. A special RS menu of the driver information system's colour display shows the charge pressure, oil temperature and a lap timer.

At a glance:

The Audi RS Q3

Engine

- Five cylinder TFSI with 2480 cc displacement, max. charge pressure 1.2 bar
- maximum power 228 kW at 5200 to 6700 rpm, maximum torque 420 Nm from 1500 to 5200 rpm

- 0 to 100 km/h in 5.2 seconds, top speed electronically governed at 250 km/h
- NEDC fuel consumption is just 8.8 litres/100 kilometres (206 g CO₂ /km)
- Start-stop system and regulated oil pump are standard
- Sonorous sound, RS exhaust system with flap control

Drivetrain

- Seven-speed S tronic with steering wheel paddles, compact three-shaft layout, long gear ratio for seventh gear
- quattro drivetrain with electronically controlled multi-plate coupling

Chassis

- Audi drive select dynamic handling system is standard with three driving profiles
- High-performance brake system, with wave discs in front and eight-piston calipers
- Electronic stabilisation control (ESC) with Sport mode and disabling feature
- RS chassis with body lowered 25 mm
- 19-inch wheels are standard, 20-inch wheels optional

Design

- Dynamic design details such as RS bumpers, roof spoiler and diffuser
- Matt aluminium styling package and black gloss package are optional

Interior and equipment and trim

- Exclusive interior, black headlining and black upholstery
- Front sport seats with embossed RS logos are standard, steering wheel has flattened bottom
- Specially designed instruments, lap timer and charge pressure indicator in the driver information system
- Options include carbon inlays, fine Nappa leather with diamond-patterned stitching in rock grey and Bose surround sound system
- Highly advanced driver assistance systems are offered

Full version

First RS model in the Q model series – The Audi RS Q3

Practical talent for everyday driving with the dynamic performance of a sports car – the compact Audi RS Q3 combines these strengths, creating a new class in the SUV segment. With a power of 228 kW, it completes the standard sprint to 100 km/h in 5.2 seconds. It brings the RS philosophy of Audi to the segment of compact high-performance SUVs – with a combined fuel consumption of just 8.8 litres per 100 kilometres

The Audi RS Q3 is produced at the Martorell plant in Spain. It is the fourth RS model from quattro GmbH, the high-performance subsidiary of AUDI AG; it will be launched on the market in 2013. The RS family grows to a total of eight members with this vehicle.

The engine

Turbocharged gasoline engines have been a core Audi technology for over 30 years – so the high-performance engine in the RS Q3, developed by quattro GmbH, continues a great tradition. The long-stroke engine (bore x stroke: 82.5 x 92.8 millimetres) develops 228 kW of power from 2480 cc displacement. It is available from 5200 to 6700 rpm. Its peak torque of 420 Nm is available between 1500 and 5200 rpm. These performance figures for the RS Q3 are best-in-class. An international panel of automotive experts named the five cylinder engine, which also powers the Audi TT RS and the RS 3 Sportback, “International Engine of the Year” in its class four years in a row since 2010.

The five cylinder engine has a firing interval of 144 degrees and a firing order of one-two-four-five-three, alternately between directly adjacent cylinders and cylinders that are far apart. This produces the distinctive rhythm and sonorous sound, which is also generated by the air induction and exhaust systems. A specially designed torsional vibration damper at the front end of the crankshaft compensates for free moments of the engine.

The cylinder spacing of the 2.5 TFSI measures 88 millimetres, and the outer main bearings are offset inward – with a length of just 494 mm, the five-cylinder engine is well-suited for transverse mounting in the RS Q3. Its

weight of only 183 kilograms has a positive effect on its axle weight distribution, which is 58 per cent in front and 42 per cent at the rear.

The material that is used for the crankcase is vermicular graphite cast iron – like the material that used in the large TDI engines. It combines excellent strength with low weight, and Audi is the first carmaker to ever use it for a gasoline engine. Specific reinforcements of the main bearing seat and the main bearing cover result in higher load-bearing capacity of the engine block.

The pistons are made of cast aluminium. Each piston with rings and pins weighs just 492 grams. Just like the forged connecting rods, they are engineered to withstand high stresses. Minimal asymmetries that were designed in, and slightly angled box walls increase their strength. In the cylinder head, which is cast from a high heat resistant aluminium alloy, sodium-cooled exhaust valves and hardened valve seat rings are used. The two chain-driven camshafts can each be adjusted up to 42 degrees.

A pressure sensor on the intake manifold senses engine load for the control module of the injection system – a very exact measurement method. Pneumatically actuated flaps mix the incoming air to attain a desirable rotational flow. The common rail system injects the gasoline into this cylindrical “tumble”. In the combustion chamber, the fuel tumbles intensively, cooling the walls – and this type of direct injection reduces the risk of knock in combustion. This enables a high 10:1 compression ratio, which leads to good efficiency.

The turbocharger: 335 litres – of air per second

A large turbocharger is at work in the Audi RS Q3. Its compression wheel has a diameter of 64 millimetres. At full load, it can theoretically compress 335 litre of air per second, and its maximum relative charge pressure is 1.2 bar. Its housing has a separate oil supply and a cooling system that runs with its own water pump. The intercooler, which reduces the temperature of the compressed air, attains an efficiency of over 80 per cent.

The intake and exhaust manifolds are precisely tuned to the package in the Audi RS Q3. In the exhaust system, between the final muffler and the exhaust exit, two separate tailpipes pass through the large elliptical trim

panel. In normal operation, exhaust gas only flows through one of them. However, when the driver chooses the dynamic mode in the Audi drive select system, or sets the selector lever of the S tronic to S, an electrically activated flap opens flow to the second tailpipe. This gives the sporty five cylinder an even fuller sound.

With an unladen weight of 1,655 kg (without driver), the Audi RS Q3 attains very impressive driving performance figures. It sprints from 0 to 100 km/h in 5.2 seconds and reaches a top speed that is electronically governed at 250 km/h. At the same time, the compact high-performance SUV appeals with its good fuel economy – in the NEDC cycle it only needs 8.8 litres of fuel to cover 100 kilometres. The efficiency technologies of the strong five-cylinder engine include a demand-regulated oil pump and a standard start-stop system.

Drivetrain

The Audi RS Q3 drives off the assembly line with a seven-speed S tronic. The dual clutch transmission, designed with a compact three-shaft layout, is distinguished by a high level of efficiency and widely spaced gearing. Its lower gears have short gear ratios, while the seventh gear has a fuel-saving long gear ratio. Just like the engine, the S tronic is temperature-controlled by an auxiliary cooler at the front.

The specially designed RS selector lever and the steering wheel paddles are used to control the seven-speed S tronic. In addition to manual shifting, there are the automatic operating modes D and S. The launch control system manages maximum acceleration from a standstill with higher engine revs and defined tire slip.

The seven-speed S tronic comprises two transmission units. Two plate clutches serve the gears. The large K1 clutch on the outside directs the torque via a solid shaft to the gear wheels for gears one, three, five and seven. A hollow shaft rotates around the solid shaft. It joins to the smaller K2 clutch on the inside. It acts on the gear wheels of gears two, four and six as well as on the reverse gear.

Both transmission structures are continually active, but only one of them is connected to the engine at any one time. For example, when the driver

accelerates in third gear, fourth gear is already engaged in the second transmission section. The shifting process takes place as the clutch changes – K1 opens and K2 closes. This only takes a few hundredths of a second, and it happens quickly and gently without any perceptible interruption of propulsive power.

Like every Audi RS model, the RS Q3 comes with quattro permanent all-wheel drive. Its centrepiece is a multi-plate clutch with electronic control that is hydraulically actuated. It is mounted at the rear differential to further improve the already good axle load distribution. This is also why the starter battery is installed under the luggage compartment floor.

A set of plates running in an oil bath within the clutch housing can be pressed together variably by regulating the hydraulic pressure. The electronic control unit continually analyses the driving conditions. In normal operation, a majority of the drive torque flows to the front wheels. When the front wheels reach their calculated grip limit, a ring-piston pump builds up the oil pressure, redirecting drive torque entirely or partially to the rear wheels, even before any slip occurs. The torque is redistributed variably and takes just a few milliseconds.

In the RS Q3 too, the quattro permanent all-wheel drive delivers the capabilities that Audi is known for – a plus in traction, fuller acceleration, dynamic handling, driving safety and directional stability. The compact high-performance SUV retains its sporty, safe and stable performance at any speed and in all weather conditions.

Chassis

The sophisticated technical concept of the Audi RS Q3 demonstrates its strength in the chassis as well. The front wheel suspension, whose track width is 1,571 millimetres is a MacPherson design with lower wishbones made of forged aluminium. Made of the same material is the sub frame for the suspension, which is rigidly screw-fastened to the body.

Since the electromechanical rack and pinion steering system only consumes energy while turning, its operation is highly efficient. It has a direct steering ratio of 16.4:1, and the steering boost gradually decreases with increasing speed. The driver can control its characteristics via Audi drive select by

selecting comfort, auto or dynamic. The steering is networked with the optional Audi active lane assist lane departure system.

The four-link rear suspension – track width 1,577 millimetres – can react to longitudinal and lateral forces separately. The longitudinal links absorb drivetrain and braking forces, while their mounts, designed to be soft, provide good ride comfort. For even better vehicle dynamics, the three transverse links per wheel are rigidly joined to the subframe, and their elastic-kinematics are adapted to the character of the sporty top model. All links are made of high-strength steel. Anti-roll bars are used in the front and rear suspensions.

At the rear suspension of the RS Q3, the shock absorbers and coil springs act separately from one another. The sport suspension lowers the vehicle body by 25 millimetres. Developers honed the set-up to perfection in comprehensive tests, which included fast circuits on the North Loop of the Nürburgring.

Powerful brakes are at work behind the large wheels. The four discs are internally ventilated. At the rear wheels, the discs are 310 millimetres in diameter, and at the front wheels 365 millimetres. To direct heat away most effectively, the front friction rings are perforated. The wave design of the discs with their wave-shaped outer contours reduces their weight by 0.5 kilograms each. Steel pins join the steel rings to the aluminium brake disc chamber. Black (optional: red) painted eight-piston aluminium calipers trimmed with RS logos grip the front discs.

Electronic stabilisation control (ESC) has a Sport mode and can also be completely deactivated. The electromechanical parking brake and hill hold assist are standard in the Audi RS Q3, and a hill descent assistant is available as an option.

Body and exterior design

The body of the RS Q3 creates a foundation for the vehicle's high build quality, sporty handling, acoustic comfort and safety. Many areas of the passenger cell consist of form-hardened steels with extremely high strength. They provide for high static and dynamic rigidity.

Rugged, powerful and sporty – the compact SUV is 4,410 millimetres long and 1,841 millimetres wide, but only 1,580 millimetres high (without roof antenna). The wheelbase measures 2,603 millimetres. The coupé-like roof line and the sharply sloped D-pillars give the vehicle a dynamic side profile. The engine hood and wrap-around tailgate, which emphasizes the width of the car, are made of lightweight aluminium.

Distinctive design accents give the vehicle a sporty look. The six-corner Single-frame grille, with a frame surround in matt aluminium look, and the large air intakes, have black honeycomb inserts. The RS bumper is powerfully contoured. A black quattro logo trims the flat centre air intake. The wedge-shaped headlight units house xenon plus lamps with homogeneous daytime running light clasps.

When the Audi RS Q3 is viewed from the side, the powerful wheels stand out as does the large RS roof spoiler. The exterior mirror housings have a standard matt aluminium look, but they can be ordered in body colour as well. The door trims and wheel arch strips are always painted in body colour. The roof rails are in matt aluminium look, but are available in black from Audi as an option.

Dark red tinted tail lights dominate the strongly sculptured rear end along with the large tailpipe and the angular bumper, which contains a diffuser insert with six longitudinal ribs. RS logos are located on the Singleframe grille and at the rear.

Three styling packages are available to make the vehicle look even more customized. The matt aluminium styling package includes the following features accentuated in aluminium look: the fins of the roof spoiler, upper edge of the diffuser, frame of the central air intake and the flaps in the outer air intakes that supply the engine and transmission cooler with air. In the extended aluminium styling package, this also applies to the quattro logo. The Audi RS Q3 is available in eight exterior colours, including the colour exclusive within the Q3 line-up, which is Sepang blue, pearl effect.

In the Audi exclusive black gloss package, the grille frame and insert are painted in high-gloss black. Here, the roof rails are in matt black finish.

Interior

The so-called wrap-around extends above the instrument panel – the long arc is a feature from the brand's higher-level model lines. The wide centre console is asymmetrically cut and is inclined toward the driver.

The sporty line of the exterior design is continued in the spacious interior of the RS Q3. The dials in the instrument cluster are grey, with red needles and white scales. Rock grey contrasting stitching trims the multifunction three-spoke steering wheel with flattened bottom and a powerful rim; the gear selector lever has a red ring. The displays of the MMI and driver information system welcome the driver with the RS Q3 logo. The charge pressure, oil temperature and a lap timer can be accessed via the special RS menu in the driver information system.

The Audi RS Q3 provides electrically adjustable sport seats as standard equipment, including four-way lumbar support and a centre armrest. The seat upholstery comes in a black fine Nappa leather with contrasting stitching in rock grey. Available as a no cost option is fine Nappa leather in lunar silver with contrasting stitching in rock grey. The black seat can also be upgraded by an optional diamond quilting pattern. RS logos are located on the tachometer, steering wheel, gear selector lever, seat backs and door sill plates with aluminium inlays.

Interior inlays are in black piano finish (options: Aluminium Race or carbon), and the pedals and foot rest shine in an aluminium look finish. Black headlining is standard, with lunar silver and black Alcantara as options. The Audi exclusive features line-up offers many other options for customizing the RS Q3 even more.

The wide luggage compartment provides 356 litres of cargo capacity. When the split rear seatbacks are folded forward, cargo capacity increases to 1,261 litres loaded to the roof. The load sill guard is made of stainless steel, and a reversible cargo floor is standard. As an option, Audi can deliver a cargo load-through hatch, a removable ski/snowboard bag, reversible mat and towing bracket.

Infotainment

MMI navigation plus hard-drive navigation system is standard equipment.

The large media centre integrates a high-resolution seven-inch monitor that can be manually extended, which has a DVD drive, whole word voice control, two SDHC card readers, Audi music interface for connecting to an external player and a Bluetooth interface for telephone and audio data.

Other infotainment modules round out the infotainment line-up. For hi-fi fans there is the surround sound system from BOSE. It drives 14 loudspeakers with up to 465 watts of acoustic power. In conjunction with MMI navigation plus, it can also play back recordings in 5.1 surround sound.