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Press kit information

The new Audi TT Roadster

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Short version

The new Audi TT Roadster

Sheer sportiness, high power reserves plus a stirring driving experience – cue the new TT Roadster from Audi. The open-top two-seater, available in two engine versions, has retained all the strengths of its successful predecessor and added even more emotion, performance and dynamism. It is a sports car built to appeal to all the senses.

The exterior design

The design of the first TT Roadster has already acquired a remarkable timelessness by virtue of its classical purity and strictly geometrical orientation. Audi has retained the genetic code of the formal idiom and carefully honed it for the new model.

Compared to the predecessor model, the new TT Roadster has grown above all in length and width, its altered proportions underscoring its dynamically sporty character. The open-top two-seater measures 4,178 millimetres in length (+ 137 mm), and it is 1,842 mm wide (+ 78 mm) but only 1,358 mm high (+ 8 mm). The wheelbase has increased to 2,468 mm (+ 46 mm). With the hood up, the drag coefficient of the 2.0 TFSI is a mere 0.32 – proof indeed of the high functional quality of its design.

In contrast to the new TT Coupé, with its flat, flowing C-posts, the hood of the TT Roadster creates a marked contrast with the tail end of the body, making the overall appearance much more geometrical – entirely in keeping with the style of its predecessor. This impression is underscored by the athletic and muscular curves of the vehicle's flanks and the rising dynamic line above the sill area, as well as the taut shoulder line. The tank cap above the rear right wheel is made from aluminium, in the classic manner.

The front end of the new TT Roadster conveys an impression of resoluteness. Wing-shaped plastic elements are embedded into the slanted, sharply tapered headlights to emphasise the three-dimensional depth of the lamp units. At the rear, the tubular reflectors appear to be suspended freely inside the rear lights; the exhaust system's large tailpipes and the wide diffuser are other striking features of the face end. As on the Coupé, the TT Roadster has an electrically powered spoiler that is extended when the speed reaches 120 km/h and which further increases downforce.

The soft top

In classic Audi tradition, the new TT Roadster likewise has a fabric top – a decision which was made consciously. The soft top fits in perfectly with the philosophy of purist open-top motoring and also offers a number of practical benefits over a folding steel hard top.

The low weight is a vital advantage that promotes sporty driving. The fabric top, incorporating reinforcements made from steel and aluminium as well as a large glass rear window, reduces the overall weight of the TT Roadster and lowers its centre of gravity.

The soft top, available in the colours black and dark grey, blends in ideally with the design approach and occupies very little space when folded up and stowed away. **Thanks to the new Z-fold, the front section of the roof lies on top of the cloth like a cover. It locks into place to lie flush with the body, dispensing with the need for a tonneau cover.**

The TT Roadster comes as standard with a fully automatic electro-hydraulically powered soft top. In response to a brief push of the button, the soft top opens in no more than 12 seconds, even when driving at low speeds – a huge practical advantage for urban driving. The fully automatic soft top has an integral additional acoustic mat beneath the black headlining; this further improves on its already very good acoustic and thermal insulation.

A mesh wind deflector is standard for both engine versions to reduce the airflow for the driver and passenger. It is extended and retracted electrically – none of the TT Roadster's competitors are able to boast a similarly customer-friendly concept.

The body and safety

As with the TT Coupé, Audi has opted for Audi Space Frame technology for the body of the new TT Roadster. In this instance, the ASF principle has evolved into a forward-looking composite structure that brings together the brand's considerable expertise in lightweight construction. The body is made from 58% aluminium and 42% steel.

This intelligent mix reduces the overall weight – when unladen, the 2.0 TFSI weighs just 1,295 kilograms.

Thanks to the composite construction, the developers have been able to distribute the axle loads of the new TT Roadster perfectly. Steel components are therefore used towards the rear of the body.

The side sills likewise differ from their counterparts in the TT Coupé, though only on the inside – they are made from extruded aluminium sections with a highly complex ribbed internal structure. The A-posts have been strengthened, too, and a high-strength steel tube is integrated into the frame of the windscreen.

The static torsional rigidity of the new TT Roadster surpasses its predecessor's already good figure by 120%.

From the driver's point of view, this progress makes its presence felt via excellent vibrational comfort and precise handling.

A whole series of restraint systems assures maximum passive safety. In the event of impact from the side, aluminium beams and cushioning in the doors are called into action along with the head and thorax side airbags integrated into the seat backs.

Two-stage full-size airbags and the Audi backguard system are on hand to limit the consequences of a collision from the front or rear.

The interior

The interior of the TT Roadster has likewise grown noticeably in size, offering extra headroom and elbow room. The width at shoulder height is now 1,362 mm, up 29 mm. Deep-set sports seats provide particularly good lateral support for both the driver and passenger. The standard-specification leather sports steering wheel features a flat-bottomed rim, as on the new R8 mid-engine sports car.

The option of Chennai Brown impulse leather trim with its distinctive topstitching already attained cult status when it was offered for the outgoing model. It is now one of four different leather trim packages. The 3.2 quattro is upholstered in fine nappa leather trim as standard and there are also three additional leather packages to choose from.

The three circular air outlets and the dome shrouding the instrument cluster dials inject the driving area with characteristic TT flair. The ergonomic concept is consistent and the finish of superb quality – both typical hallmarks of an Audi.

The larger overall body dimensions have also benefited the luggage compartment. It has grown to a generous capacity of 250 litres, on both the front-wheel-drive 2.0 TFSI model and the 3.2 quattro version.

The drivetrain

Like the TT Coupé, the new TT Roadster is available with a choice of two transversely installed petrol engines. Both combine high pulling power with impressive peak output, resulting in out-and-out sporty performance.

The four-cylinder engine directs its power to the front wheels, while the V6 powers all four wheels according to the quattro principle. The innovative S tronic dual-clutch gearbox, which changes gear with lightning speed and without interrupting the power flow is standard for Australian specification vehicles.

The four-cylinder engine that goes by the abbreviation 2.0 TFSI has a displacement of 1,984 cm³. It delivers an output of 147 kW and develops 280 Nm of torque – the latter all the way from 1,800 rpm to 5,000 rpm. TFSI technology combines two modern principles in ideal fashion – it combines turbocharging with the petrol direct injection developed by Audi. The TFSI responds very directly to throttle movements and is mechanically very refined and acoustically pleasing to the ear. An international jury of automotive specialists voted it the "Engine of the Year" in 2005, 2006 and 2007.

Equipped with the S tronic gearbox, the Audi TT Roadster 2.0 TFSI accelerates from 0 to 100 km/h in just 6.5 seconds and goes on to reach a top speed of 237 km/h. It consumes just 7.8 litres of fuel per 100 km on average.

The V8 engine has a displacement of 3,189 cm³. It musters 184 kW and a torque of 320 Nm between 2,500 and 3,000 rpm. Thanks to its extremely narrow included angle of 15 degrees, this undersquare engine is extremely compact. Its two camshafts can be adjusted continuously for ideal cylinder filling.

The TT Roadster 3.2 quattro with S tronic sprints from 0 to 100 km/h in 5.9 seconds and is capable of achieving a governed top speed of 250 km/h, delivering powerfully sonorous acoustics. It returns an average fuel consumption of 9.5 litres per 100 km.

The chassis

The sporty chassis has been fundamentally reengineered for the new TT Roadster. Its chief features are the complex four-link rear suspension, wide track widths, elastokinematics that have been heavily reworked, plus large wheels. The 2.0 TFSI rides on 17-inch Y-spoke alloy wheels, and the 3.2 quattro on 18-inch alloy wheels.

The front suspension, which is linked to a separate subframe, has the extensively used McPherson construction that has been refined by lightweight aluminium components. The power steering, with its electromechanical assistance, has a direct ratio and operates with responsive precision.

On the four-link rear suspension, which likewise uses a subframe, the trailing links have a relatively soft configuration for reasons of comfort, to absorb the propulsive and braking forces. The three wishbones per wheel, on the other hand, are connected rigidly in order to introduce the transverse forces precisely into the body. The coil springs and shock absorbers are mounted separately from each other.

The TT Roadster is configured for self-steering behaviour that is neutral to slightly understeering, and its newly developed stabilisation program supports this characteristic by intervening subtly when the limits of handling are approached. The four disc brakes are large in dimension. If necessary, a brake assist system ensures that they build up to maximum performance as rapidly as possible.

The optional adaptive damping system Audi magnetic ride is a high-tech feature that assures the new TT Roadster an exceptional position within its segment. The driver determines at the push of a button whether the suspension response places the emphasis on comfort or dynamism. Circulating inside the shock absorber pistons is a special fluid containing microscopically small magnetic particles. If a voltage is applied to the magnetic field, prompted by a pulse which is activated by sensors, the behaviour of these particles changes. The viscosity of the fluid and therefore the damping characteristic can be adjusted within milliseconds.

At a glance:

The new Audi TT Roadster

- New dynamic, striking exterior and interior **design**
- Body using innovative **ASF** principle incorporating aluminium and steel, with roadster-specific reinforcements
- **Dimensions:** L 4.18 m, W 1.84 m, H 1.36 m, wheelbase 2.47 m
- Light **fabric top** with fully automatic control and soundproofing
- Electrically operated **wind deflector**
- Load-through hatch for two pairs of skis up to 1.90 m long

- Powerful **petrol engines:**
- New: **2.0 TFSI** developing 147 kW (200 bhp), 280 Nm
- **3.2 V6** developing 184 kW (250 bhp), 320 Nm

- Six-speed **S tronic gearbox**
- **quattro** permanent four-wheel drive for the V6 version

- **Audi dynamic suspension** with transverse-link front suspension and four-link rear suspension
- Speed-dependent **power steering** as standard
- **High-performance brake system** with ESP with sports settings
- Innovative **Audi magnetic ride** damping system as option

- New generation of steering wheels: flat bottomed **leather sports steering wheel** as standard
- **Leather upholstery**
- Optional: **DVD-based navigation system**
- Optional: **adaptive light cornering light** with xenon plus

Long version

The new Audi TT Roadster

The experience of dynamic movement, the fascination of open-top driving – the new Audi TT Roadster is a sports car built to appeal to all the senses. In its second generation, the open-top two-seater has become even more emotionally charged. Beneath the charismatic design of its exterior resides the full array of advanced technology of the Audi brand.

The exterior design

Audi created a real stir in the late 1990s in unveiling what was at that time an entirely new range of sports cars. The TT, appearing in 1998 as the Coupé and in 1999 as the Roadster, was visually a sensation. Their common design became established as an icon of automotive design because it pursued the ideal of pure geometry. Its core motifs were the semicircles of the wheel arches and the curves of the roof line and the front and rear end. This timeless architecture lent the Audi TT Coupé and TT Roadster the character of a total driving machine and simultaneously gave the development of the entire brand decisive momentum.

Cautiously managed evolution: the styling

In the case of the new TT Roadster, Audi has respectfully and attentively developed and nurtured this genetic code. Unlike the Coupé, where the geometrical shapes merge dynamically with one another, the design of the open-top sports car comes across as strongly geometrical, as on its predecessor – the tail end and hood are clearly distinct entities.

The panelled body, accounting for two-thirds of the height, looks poised and powerful. The convex and concave curves of its surfaces accentuate the character of an athletic sculpture straining forward.

The wheel arches enclose wheels 17 or 18 inch wheels, depending on the engine version, complete with striking rim designs.

The tornado line beneath the body's shoulder and the strikingly ascending dynamic line above the sills create the impression of a more elongated body. The legendary aluminium tank cap above the rear right wheel now features a cross-bar bearing the TT logo. The two rollover bars are angled slightly forwards, and their elegant aluminium trims have round cross-sections.

The front end of the new TT Roadster has acquired a charismatic expression. Its defining element is the single-frame radiator grille surrounded by a narrow chrome strip, with a high-gloss black instead of titanium grey finish on the V6 models. The slits beneath the grille and the large air inlets, in front of which the standard front fog lights are located, hint at the potential of the engines. Starting at the single-frame grille, two pronounced contours extend across the front lid to the A-posts.

A captivating feature: "winged" headlights

The lights sloping to a point – with chrome-look trims that are standard on the V6 versions as well as in conjunction with xenon lights, and optional on the 2.0 TFSI – underscore the presence of the TT Roadster. Reverse-curve plastic elements below the tubes, known as the "wings", accentuate the spatial effect. Instead of the halogen lights, xenon plus headlights that can be combined with daytime running lights are available as an option. Adaptive headlights with dynamic cornering light are a further option.

At the rear end of the new TT Roadster, the large exhaust tailpipes, diffuser and centred rear fog light serve as reminders of the performance of the Audi brand in motor sport. There are likewise tubular reflectors at the rear, appearing to hover inside their casings by virtue of their visual depth. Rectangular shields on the reflectors mean that other drivers following on behind perceive angular light rings.

On the TT Roadster with four-cylinder engine, the light housings are red, and on the V6 quattro they are of a dark colour (optional on 2.0 TFSI).

The spoiler of the new Audi TT Roadster is unobtrusively integrated into the contour of the luggage compartment lid. When the car reaches a speed of 120 km/h, the spoiler is automatically extended out by an electric motor, thereby improving the downforce on the rear axle. It is automatically retracted again when the speed falls below 80 km/h. The driver can also manually operate it via a switch.

The drag coefficient of the Audi TT Roadster is only 0.32, compared with 0.34 for the final version of the predecessor model. The frontal area has grown in size from 1.99 m² to 2.09 m², but the overall drag of the new two-seater nevertheless undercuts the figure for its predecessor. Thanks to engine encapsulation and the body's ASF design, its underbody is smooth throughout almost its entire length. Lift has been reduced by 50% at the front axle, and by 40% at the rear.

The engineers implemented cutting-edge technology in the development work performed in the wind tunnel. The facility is equipped with a belt that runs at the speed of the wind, allowing the wheels to rotate when the measurements are being taken. The balanced aerodynamic properties provide the basis of this open-top sports car's excellent road behaviour and stability right up to top speed.

The dynamic impression that the new two-seater creates also stems from its modified proportions. Compared with the previous model, the two-seater is 137 mm longer and 78 mm wider, but only 8 mm taller. It is now 4,178 mm long, 1,842 mm wide and 1,358 mm high. The new TT Roadster's wheelbase is 2,468 mm (+ 46 mm). This growth has by and large been translated into increased space inside: it has become measurably more spacious and has a more airy feel.

The soft top

Audi likewise remains faithful to its classic line for the TT Roadster: the new model has again been given a fabric top. The soft top fits in perfectly with the authentic roadster idea of open-top motoring and offers major practical benefits over a folding steel hard top.

For those fond of sporty driving – that basically means all roadster drivers – the low weight is a crucial advantage. The fabric top, complete with its lightweight-construction steel and aluminium reinforcements, reduces the vehicle's overall weight and – when the roof is up – lowers its centre of gravity.

The soft top, which is available in black or dark grey and integrates a large glass rear window, blends in smoothly with the design approach. When folded up it occupies only little space – everything fits into a shallow compartment between the bulkhead and the rear lid. Thanks to its new Z-fold, the front section of the soft top lies on top of the cloth like a cover. It locks into place to lie flush with the body, with flaps covering the lateral apertures. A tonneau cover is not required.

The soft top utilises a fully automatic electro-hydraulic motion. In response to a brief push of the button, the soft top opens in 12 seconds – including on the move at speeds of up to 30 km/h; in urban traffic, the driver consequently need no longer wait until they are sitting at a red traffic light.

There is an additional acoustic mat between it and the outer skin, further improving the already good acoustic and thermal insulation.

A mesh wind deflector is standard, to reduce the air flows and turbulence for the occupants. It is extended and retracted electrically – none of the TT Roadster's competitors are able to boast a similarly convenient concept.

The body

The body of the new TT Roadster is built at the Ingolstadt plant in line with the ASF principle, using an innovative composite structure of aluminium and steel; like its predecessor, the painted bodyshell is then forwarded by rail for final assembly at the Győr plant in Hungary. ASF stands for Audi Space Frame, the ground-breaking aluminium technology that the brand developed at the start of the 1990s.

The supporting structure of the Roadster body is made of extruded aluminium sections and die-castings; a large number of aluminium sheet panels form a positive connection and perform a load-bearing role within this structure. The individual components have various shapes and cross-sections – like the bones in a human skeleton, they combine best possible function with lowest possible weight.

In the body of the new TT Roadster, Audi has supplemented ASF technology with high-strength steel, which accounts for 42 percent of the overall weight. Steel components are used primarily at the rear of the floor assembly. The reinforcing bulkhead that plays a key role in the Roadster, as well as the doors and rear lid, are likewise made from steel. The developers were thus able to achieve an optimum distribution of axle loads and consequently dynamic handling.

The bodyshell of the TT Roadster weighs 251 kg; were it built entirely of steel, it would be 45 percent heavier. Unladen, the 2.0 TFSI tips the scales at a mere 1,295 kilograms.

Central zones of the body: the cast nodes

The percentage of wrought aluminium components in terms of the overall body weight are as follows: 22 % of sheet, 18 % of castings and 18 % of extruded sections. Castings are deployed primarily where high forces are introduced locally and where multi-functionality is required. A prime example is the A-post node – a high-tech component that connects the longitudinal member, sill, A-post and windscreen cross-member.

On the new TT Roadster, a large proportion of the extruded sections are made from innovative aluminium alloys that exhibit superior strength and therefore help to cut the weight even further.

The new-style ASF features properties that are ideal for a sports car. Compared with the already very good predecessor, its static torsional rigidity has risen by over 100 percent. The vibrational comfort on board is also exceptional; this is all thanks to high local rigidity at the points of introduction of the frequencies, improved soundproofing of the body and the specific design of the metal-panelled areas. The drivetrain and suspension, too, are acoustically optimised.

The new Roadster TT also sets new standards in terms of crash safety. The longitudinal members at the front end are made of extruded aluminium sections and castings. In conjunction with the front cross-member and the subframe, which is bolted to the forward structure at six points, this assembly reduces and distributes the energy that acts in a head-on collision.

At the rear end, there are large-volume members to protect the passenger compartment. High-strength aluminium profiles in the doors and robust side sections resist the worst of a side impact. Transverse extruded sections reinforce the floor of the passenger compartment. The windscreen frame, which is reinforced by a high-strength steel tube, and the rollover bar protect the passengers in the event of a rollover.

Both front airbags, which are activated in two stages depending on the severity of the impact, receive their signals from an early-responding up-front sensor located at the front of the vehicle. The belt tensioners and belt force limiters protect the driver and passenger, and a special mechanism pivots the pedals away from the driver's legs. Large-size head and thorax side airbags are integrated into the seat backs. In a rear-end collision, the Audi backguard system uses the head restraint to support the back of the head.

The interior

The dynamic exterior appearance is carried through into the interior of the new TT Roadster. It has the same advantages as a made-to-measure suit: the driving area, the horizontal edge of which echoes the tornado line of the body, is perfectly tailored to the driver's requirements. The centre console, now with three circular air outlets instead of the previous two, is turned slightly towards the driver and rests visually on a wide centre tunnel.

The short gear lever knob and the rotary controls for the automatic air conditioning have a substantial look that is entirely in keeping with the TT tradition. The instrument cluster is located beneath a round instrument panel hood that can be supplied trimmed in leather as an option. The two scales for speed and revs, embedded deeply inside tubes, are another characteristic TT feature. They are complemented by a large digital speedometer in the driver information system display.

The new multifunction three-spoke sports steering wheel, which is adjustable horizontally and vertically, fits snugly in the hands. Its thick rim, trimmed in high-grade Nappa leather, is flattened at the bottom, reminiscent of the Audi RS 4 and the new R8 mid-engine sports car. It also features sporty shift paddles.

The driver's and passenger's sports seats offer a very deep, sporty position allied to high comfort and firm lateral support. They now have a greater adjustment range; a four-way lumbar support and electric adjustment of the entire seat.

Superlative finish has already become a hallmark of Audi. The rings on the air outlets and various controls such as the door openers are finished in aluminium. The carpets are made from high-quality pile carpet and there are aluminium door sill trims in the side sills. The seats are leather as standard. Three optional leather packages complete the range.

The TT 2.0 TFSI has Valetta leather upholstery, and the 3.2 quattro features Fine Nappa as standard. For custom specifications, Audi offers a combination of Leather and Alcantara and Impulse leather. The Impulse equipment and trim, available exclusively in chennai brown and with strikingly contrasting seams, rose to cult status in a similar form on the previous model as the moccasin-like Authentic leather.

Sporty and practical: the load-through hatch with removable ski bag

There are two large, practical door compartments and two cup holders inside the car as standard. A storage package comprising three nets and four compartments – beneath the seats and in the rear bulkhead – is available as an option. Sporty customers will moreover appreciate a load-through hatch complete with removable ski bag for the rear bulkhead. It accommodates two pairs of skis up to 1.90 m long – this practical feature is unique in the roadster segment.

The luggage compartment, too, has benefited considerably from the body's larger dimensions. It has grown from previously 180/220 litres to a capacity of 250 litres.

In a new departure compared with the previous model, the capacity is the same on both the front-wheel-drive 2.0 TFSI and the 3.2 quattro. It remains constant irrespective of whether the hood is open or closed.

The drivetrain

The new Audi TT Roadster starts out life with a choice of two transverse petrol engines – one a four-cylinder turbo, and the other a naturally aspirated V6. Both power units provide it with impressive pulling power, top performance values and correspondingly dynamic road performance.

-2.0 TFSI developing 147 kW (200 bhp), 280 Nm

-3.2 V6 developing 184 kW (250 bhp), 320 Nm

The 2.0 TFSI

The direct-injection four-cylinder turbo engine badged as the TFSI has a displacement of 1,984 cm³. In recognition of its innovative technical package, an international jury of automotive specialists voted it the "Engine of the Year" three years running from 2005 to 2007.

The TFSI engine combines the FSI petrol direct injection system developed by Audi with a turbocharger – an ideal combination.

FSI petrol direct injection has already demonstrated its superiority in terms of performance and efficiency not only for road driving, but also in particular measure in the world of motor sport. From 2001, the Audi R8 sports prototype powered by FSI engines notched up numerous overall wins in endurance races, including five wins in the legendary Le Mans 24 Hours.

FSI technology involves injecting the fuel at between 30 and 110 bar from an accumulator, similar to the common rail of a diesel engine, directly into the combustion chambers. Flaps in the intake tract moved by actuating motors induce a rolling type of movement in the incoming air. The injectors atomise the fuel into this "tumble" inside the combustion chambers.

Because the fuel's evaporation draws heat out of the combustion chambers, petrol direct injection overcomes the fundamental problem faced by all turbocharged engines – the high amount of heat generated, and the engine's resulting tendency to knock, hitherto necessitating a reduced compression ratio. For the TFSI, Audi has been able to achieve an exceptionally high compression ratio of 10.3:1, decisively improving the thermodynamic efficiency of the engine.

The continuously variable intake camshaft in the TFSI cylinder head contributes towards optimum cylinder filling across the entire engine-speed range. The lightweight pistons are made from a highly heat-resistant aluminium alloy with a piston-ring carrier zone featuring a grey cast iron reinforcement.

Two balancing shafts running at double the speed of the crankshaft compensate for the second-degree inertial forces, thus producing a high level of refinement in the engine's running.

The turbocharger's turbine housing and the exhaust manifold are made from a single grey cast iron component. The charge-air intercooler is located immediately ahead of the engine's radiator, with the result that it also catches the airflow of the cooling fan. Cooling of the compressed air increases the charging efficiency of the cylinders.

The two-litre TFSI is a real all-rounder. It responds spontaneously to the accelerator, revs up eagerly and delivers ample pulling power even at very low engine speeds. The undersquare engine puts 280 Nm of torque onto the crankshaft even at engine speeds as low as 1,800 rpm, and is able to keep this high level of torque constant up to 5,000 rpm. The nominal power output of 147 kW (200 bhp) is available between 5,100 and 6,000 rpm.

The Audi TT Roadster 2.0 TFSI accelerates to 100 km/h in 6.5 seconds and on to a top speed of 237 km/h. It clocks up 100 km on an average of 7.8 litres of premium-grade fuel.

The 3.2 V6 quattro

Even more power is on tap from the V6 engine with its 3,189 cm³ capacity. Its peak torque of 320 Nm is available at engine speeds as low as 2,500 to 3,000 rpm, and its output of 184 kW at 6,300 rpm.

Many aspects of the six-cylinder engine have been revised compared with the version in the previous TT Roadster model. The reconfigured mapped characteristic ensures that it responds to the throttle even more spontaneously and with more "bite" in all engine speed ranges.

This undersquare engine is fascinatingly free-revving and sonorous, accentuating in particular the intake sound, whereas the sound produced by the TFSI is primarily based on the exhaust spectrum.

The V6 owes its suitability for transverse installation to its extremely narrow included angle of just 15 degrees between the cylinder banks; both banks share the same cylinder head. Both camshafts can be adjusted continuously, for more effective cylinder filling – by 52 degrees at the intake end and 42 degrees at the exhaust end. The variable intake manifold optimises cylinder filling still further.

The new Audi TT Roadster 3.2 quattro with S tronic sprints from a standing start to 100 km/h in 5.9 seconds. Its top speed is 250 km/h (governed), and its average fuel consumption 9.5 litres per 100 km.

The transmission

Both engines in the new Audi TT Roadster boast S tronic, combining the advantages of both automatic and manual transmission. Thanks to its innovative dual-clutch technology, it can change its six gears in just 0.2 of a second, without perceptibly interrupting the power flow. With this captivating dynamism, the S tronic gives the TT Roadster a unique status in its competitive field.

S tronic fundamentally comprises two separate three-speed transmissions, each with their own clutch, accommodated in a single housing. The first multi-plate clutch serves the odd-numbered gears and reverse, and the second one serves the even-numbered gears. Two input shafts sharing the same axle are connected up to them, with a solid shaft running inside a hollow shaft.

When the TT is being driven in third gear, for instance, the second clutch is disengaged. As the transmission computer assumes that a driver who is accelerating wants to change to fourth gear, it already engages that pair of gears in anticipation. As soon as the shift command is given, the first clutch is disengaged and the second clutch is engaged almost simultaneously.

Every transmission speed is assigned a conventional switching unit, as a result of which it is also possible, for instance, to change directly from sixth to second gear.

The function is controlled by an electro-hydraulic device. In the manual and S modes, the transmission management blips the throttle when performing a downshift, thus reinforcing the impression of ultra-dynamic gearshifts.

S tronic can be operated by means of the one-touch lever on the centre tunnel or, in motor racing style, via two shift paddles on the steering wheel. There are furthermore two automatic operating principles available: N for Normal and S for Sport. Depending on the surface on which it is driving and the accelerator position, S tronic can make the TT Roadster move off with varying degrees of subtlety or sportiness. The special "Launch Control" start program achieves optimum acceleration from a standstill.

quattro drive

The TT Roadster with the four-cylinder engine is fundamentally a front-wheel-drive model, whereas the V6 features permanent four-wheel drive. Its quattro drive system, developed specially for transverse-mounted engines, operates with an electronically controlled and hydraulically actuated multi-plate clutch. In the interests of balanced axle load distribution, the clutch is located at the end of the propshaft, in front of the rear axle differential.

The package of plates, which runs in an oilbath, can be compressed under a controlled pressure potentially as high as 100 bar in order to transmit higher drive torques to the rear axle. In normal driving conditions, the clutch directs 85 percent of the torque to the front wheels, but in extreme circumstances it is able to transmit as much as 100 percent of the forces to one of the two axles.

The mechanical construction has likewise been further optimised, and the control unit's mapped characteristics given sporty settings. Thanks to its high traction, drivers of the TT Roadster 3.2 quattro always enjoy a safe and exhilarating form of travel.

The chassis

The sporty chassis has undergone complete redevelopment for the TT Roadster. The aim was to achieve a neutral to mildly understeering self-steering behaviour. The package of measures that the developers implemented affected all components and assemblies, ranging from the wider track, through larger tyres and redefined elastokinematics, to the completely re-engineered rear axle. The car's centre of gravity was lowered by 9 millimetres, to 311 mm above ground level.

For the front suspension, with a track of 1,572 millimetres – 44 mm more than previously – Audi has used a design principle that has already proved highly effective: a McPherson structure with triangular lower wishbones. The pivot bearings, the subframe and the wishbones are now made from aluminium; the unsprung weight of the transverse links alone has been cut by 2.5 kilograms thanks to this measure.

The subframe is bolted to the body, thus imparting the forward structure with very high rigidity. New linear pistons in the shock absorbers enable even finer tuning. The instantaneous centre was raised by 22 mm to 64 mm, as a result of which the degree to which the body tilts sideways is less pronounced.

The rack-and-pinion steering, the electromechanical power assistance of which is governed as a function of road speed, is new. It combines precise, firm, direct steering feedback with minimal sensitivity to excitation from the road surface. Because the electromechanical system does not tap the power supply when the car is driving in a straight line, the new steering system saves on average 0.2 litres of fuel per 100 kilometres.

The rear suspension

The new four-link rear suspension, also new, represents a further major technical breakthrough. It is used on both the quattro and the front-wheel-drive version, the only difference being the subframe, which is made from aluminium instead of sheet steel on the quattro, and accommodates the additional differential. The rear track measures 1,558 millimetres, an increase of 45 mm on the previous model.

The four-link principle realises major benefits in terms of driving dynamics, because it separates the functions of cushioning of longitudinal and transverse forces. The longitudinal links absorb the driveline and braking forces, and their relatively soft mounts assure good ride comfort. On the other hand, the three wishbones per wheel – the spring link, the upper wishbone and the tie rod – are attached very rigidly to the subframe, for optimum handling characteristics.

As on the front axle, the subframe is bolted firmly to the body. All links are made from high-strength steel grades. Separate, compact springs and shock absorbers provide the necessary vertical support.

The progress that this configuration represents really can be felt. The new TT Roadster responds with precision to steering movements, with only minimal movement of the body. It turns spontaneously and takes all manner of bends at high speed; its high limits of handling are heralded by a slight understeering response. The new TT Roadster features sporty settings.

Wheels and brakes

The TT Roadster 2.0 TFSI features 17-inch alloy wheels, fitted with 245/45 R 17 tyres as standard. The 3.2 quattro is equipped with forged 18-inch lightweight alloy wheels, fitted with size 245/40 R 18 tyres.

There are two 19-inch alloy rims available optionally.

The brake system has been specially matched to the requirements of a sports car. Newly developed brake pads on the front wheels generate around 15 percent more friction. On the four-cylinder version, the front discs are ventilated and measure 312 mm in diameter; the large rear discs have a diameter of 286 mm. The 3.2 quattro features four ventilated discs, in diameters of 340 mm at the front and 310 mm at the rear. The brake calipers, painted black as standard, are also available in the colour dark grey as an option.

Thanks to the new ratio of the brake servo, the pedal response is more direct and spontaneous, and braking power easier to regulate. There is also a brake assist system to aid the driver in critical situations. Particular emphasis was in addition placed on reducing the braking distance when the new stabilisation program was developed. The ESP has moreover been optimised for a sporty driving style and subtlety of control. Its new functions include dry-braking the discs in rain by repeatedly applying the pads briefly to the discs.

Both engine versions of the TT Roadster can be supplied optionally with Audi Magnetic Ride – this new damping technology overcomes the traditional conflict of objectives between comfort and handling characteristics. A continuously adaptive system, it repeatedly adjusts the damping characteristics to the new situation within a matter of milliseconds.

The shock absorber pistons contain a special magneto-rheological fluid – a synthetic hydrocarbon oil in which microscopically small magnetic particles measuring between three and ten microns are enclosed. When a voltage is applied to a coil, a magnetic field is created in which the alignment of the particles changes. They arrange themselves transversely to the direction of flow of the oil, thus inhibiting its flow through the piston channels. This instantaneously alters the characteristic, much faster than is possible in conventional adaptive dampers.

Two programs: comfortable or dynamic

The control unit, supplied by complex sensing technology, constantly monitors the properties of the road surface and the driver's style. The driver is able to activate the normal position or the Sport mode via a button on the centre tunnel. In the normal mode – when the oil is more viscous – the TT Roadster rolls smoothly; this is ideal for long-distance driving or uneven road surfaces. In the Sport mode, by contrast – when the oil is less viscous – it reveals an extremely dynamic character that is manifested by a firm grip of the road surface.

From the very moment the steering is turned, rolling movements are suppressed even more effectively than in the basic suspension setting, and the steering response is further improved. The specific stabilisation of each individual wheel further optimises the self-steering behaviour, resulting in a driving feel reminiscent of a go-kart.

Equipment

The new TT Roadster comes with a choice of three solid paint colours as standard, with ten metallic and pearl-effect colours available as options. A special lights styling package incorporates chrome-look trims for the headlights and black rear-light inserts (standard on the 3.2 quattro and in conjunction with xenon plus).

Audi is able to supply the headlights of the new TT Roadster in two different versions: xenon plus lights with integral daytime running lights (standard on the 3.2 quattro), and a xenon plus system that incorporates adaptive light, the dynamic cornering light system. A combined light and rain sensor is also available as an option.

The S tronic dual-clutch gearbox and the adaptive damping system Audi magnetic ride guarantee the TT Roadster a unique competitive position. Customers looking for other dynamic options such as sports suspension with steel springs will find them in the S lines and in the Audi exclusive range from quattro GmbH.

New technologies: the infotainment

Audi is presenting a new generation of equipment for its infotainment technology. The high-level Symphony audio system has a double DIN frontage format and incorporates an MP3-enabled six-disc CD changer. High-quality sound systems ensure audio enjoyment. A digital five-channel amplifier produces an output of 140 watts, spread among nine active speakers.

The highlight is a surround sound system from the specialist Bose: twelve high-performance speakers, including one subwoofer, are supplied with a total output of 255 watts from eight separate channels.

The optional navigation system shares the operating logic of the exemplary MMI concept from the large Audi model series, and can be combined with other modules such as a CD changer or mobile phone preparation. The system can also play MP3-coded songs on CDs and memory cards. The new TT Roadster can, if desired, be equipped with a mobile phone interface with Bluetooth technology; the telephone can also be operated via the multifunction steering wheel or the navigation systems.

The market

Like its predecessor, the new Audi TT Roadster has considerable potential to win over new customers. Most of its customers will be young, dynamic climbers aged between 30 and 45 – the youngest customer group for Audi and indeed the field of competitors. They will have a high level of education and professional qualifications. The first generation of the TT Roadster was already extremely popular with women. That is likely to remain the case with its successor.

Buyers of the new TT Roadster will attach particular importance to lifestyle and leisure. They regard their car as a statement of their personal vitality, and feel a strong emotional bond with it. For them, driving a roadster is a tangible expression of freedom and independence.