Summary

An all-round talent – the new Audi A3 Sportback

Sporty, versatile and functional – Audi presents the new A3 Sportback. The compact five-door model with the spacious luggage compartment is ground-breakingly light thanks to ultra lightweight technology. The engines are powerful and highly efficient. The infotainment and driver assistance systems available in the new A3 Sportback set new standards in the premium compact segment. The overall design language concentrates on the essentials, with each individual design element making a confident aesthetic statement.

A lightweight car is a prerequisite for sportiness and efficiency. ultra lightweight technology from Audi reduces the weight of the new Audi A3 Sportback by as much as 85 kilograms compared with the previous version. Equipped with the 1.4 TFSI engine and S tronic transmission, the five-door model has a kerb weight (without driver) of just 1,225 kilograms. Hot-shaped high-tensile steels are used in the occupant cell of the new A3 Sportback to reduce weight. The complete occupant cell is 37 kilograms lighter overall than in the previous model. Significant weight reductions were also achieved in the interior and with the engines. Audi, worldwide pioneer in lightweight construction, has reversed the weight spiral and once again set a new record.

The body of the new Audi A3 Sportback is long and lean. While the length (4,310 millimetres), width (1,785 millimetres) and height (1,425 millimetres) of the new model are only slightly greater than on the previous model, the wheelbase is now significantly longer at 2,636 millimetres, an increase of 58 millimetres.

The front end is low; the roof arch spans a dome that extends beyond the subtle roof spoiler to the muscular tail end. The design with the three side windows is taut, with every detail precise and expressive. The large wheel wells underscore the sporty aspirations of the new Audi A3 Sportback.

The distinctive, Stone Grey single-frame grille with the angled upper corners is the distinguishing element at the front of the vehicle. Its horizontal slats and the Audi rings are highlighted three-dimensionally. The flat headlights are works of art and give the new Audi A3 Sportback a determined gaze.

The interior of the new A3 Sportback is elegant, airy and cleanly designed. It

carries over the dynamics of the exterior. The instrument panel with its curving front is slim and low. Together with the centre console oriented toward the driver, it appears to float slightly.

Large, round air nozzles in jet design, the elegant user interface panel for the climate control system and sculpturally styled trim set the tone – with their polish they bring the quality of the full-size class into the new A3 Sportback. The seats and steering wheels are new developments, and the car's user controls are clear and intuitive – as they are in every Audi. The compact five-door model offers a generous luggage capacity of between 380 and 1,220 litres.

Audi is bringing its assistance systems from the full-size class to the premium compact segment for convenience and a superior driving experience. They range from adaptive cruise control to Audi side assist and Audi active lane assist to the safety system Audi pre sense. The driver information system with rest recommendation is standard for all A3 models.

The new Audi A3 Sportback is launching with two TDI and two TFSI engines, all of which are new developments. Their engine displacements range from 1.4 to 2.0 litres and their power from 77 kW to 132 kW. Technologies from the modular efficiency platform help to reduce their fuel consumption by an average of nine percent compared with the previous model.

The new A3 Sportback also underscores its technological leadership role in power transmission. At launch, all engines will be offered with either a six- or seven-speed S tronic dual clutch transmission; in combination with the vehicle dynamics system Audi drive select (standard on Ambition models), it offers a free-wheeling function that reduces fuel consumption. A manual transmission is available for the petrol engine models by customer order only.

The chassis and the long wheelbase (2,636 millimetres) of the new Audi A3 Sportback combine sporty driving enjoyment with high levels of comfort and impressive stability. The power steering system with sensitive response and direct gearing has an efficient electromechanical drive. The ESC stabilisation control system integrates an electronic limited slip differential – this makes handling even smoother and safer in fast driving through curves.

Audi drive select (standard on Ambition models) lets the driver vary the operating of engine management, the power steering system and S

tronic in different modes. The system also incorporates adaptive or standard cruise control, adaptive light and the air conditioning system. Wheel sizes range from 16 to 18 inches in diameter, and sport suspension is available as an option.

At a glance

The new Audi A3 Sportback

Design and body

– Sporty and progressive design with stretched lines and long wheelbase
– Intelligent multimaterial construction, occupant cell has large share of high-strength steels, engine hood and fenders made of aluminium
– Weight reduced by up to 85 kg, depending on the engine, kerb weight of Audi A3 Sportback 1.4 TFSI is just 1,225 kg
– Optional xenon plus headlights and LED tail lights

Interior

– Spacious interior, luggage capacity between 380 and 1,220 litres
– Elegant design and exemplary ergonomics
– Inlays with three-dimensional look and round air nozzles in jet design

Drivetrain

– At launch, two TDI and two TFSI engines from 77 kW to 132 kW; all engines with state-of-the-art efficiency technologies
– 1.6 TDI with consumption of just 3.9 litres per 100 km
– S tronic dual-clutch transmission is standard on all models

Chassis

– Alloy wheels, 16- to 18-inch, powerful brakes
– ESC stabilisation control with electronic limited slip differential is standard
– Aluminium front suspension components, electromechanical power steering
– Audi drive select vehicle dynamics system is standard on Ambition models

Equipment and trim

– Extensive standard features, including comfortable and sporty extras
– Optional high-performance driver assistance systems, including Audi adaptive cruise control, further developed park assist and Audi pre sense
– Wide range of infotainment components, Bang & Olufsen Sound System
– MMI navigation plus with MMI touch and 7.0-inch colour monitor

Full version

The new Audi A3 Sportback – sporty versatility

Sporty, versatile and functional – Audi presents the new A3 Sportback. The compact five-door model with the spacious luggage compartment is groundbreakingly light thanks to ultra lightweight technology. The engines are powerful and highly efficient. The infotainment and driver assistance systems available in the new A3 Sportback set new standards in the prmium compact segment.

Audi ultra lightweight technology

ultra lightweight construction has long been a main pillar of the brand. Audi recorded a pioneering achievement in the use of aluminium as a body material back in 1994: The first A8 had a full-aluminium body in ASF (Audi Space Frame) technology.

ultra lightweight technology reduces the weight of the new Audi A3 Sportback by as much as 85 kilograms compared with the previous version. Equipped with the 1.4 TFSI engine, the compact five-door model has a kerb weight (without driver) of just 1,225 kilograms. Audi, worldwide pioneer in lightweight construction, has reversed the weight spiral and once again set a new record.

ultra lightweight construction in the body

The broad-based expertise of the Audi body development engineers is by no means restricted to a certain material, but rather encompasses all relevant materials. The multi-material construction of the new Audi A3 Sportback is entirely in keeping with the motto “The right material at the right place for optimal function.”

High-end components of hot-shaped steel in the occupant cell form a strong, yet lightweight structure. Before deformation, they are heated in a continuous flow furnace to nearly 1,000 degrees Celsius and are then cooled to about 200 degrees in a water-cooled stamping press.

This extreme temperature jump creates an iron-carbon structure with extreme tensile strength. Hot shaped steels are able to perform with relatively thin walls, and this makes them lightweight.

Hot-shaped steels represent a roughly 25 percent share of body materials.

They are used in the transition from the front of the vehicle to the occupant cell, in the A-pillars, roof arch, centre tunnel, side sills and floor panels. What is known as a tailored rolled blank forms the transition from the floor to the rear body section – its eleven individual segments are rolled into five different thicknesses.

The B-pillars also consist of this high-end steel; their lower sections are more flexible than above, since the energy of a side-impact collision must be absorbed here. All together, the hot-shaped steels in the new Audi A3 Sportback reduce the weight of the vehicle by 37 kilograms compared with the previous model.

High-strength and ultra-high-strength steel grades are used in many other body areas such as in the side members and in the floor of the passenger cell. The engine hood, fenders, the subframe of the front axle and the sections mounted behind the front bumper as crash absorbers are made of aluminium. Together the aluminium components save around twelve kilograms, thus improving axle load distribution.

Processing aluminium components in body construction and joining these components with steel components are challenging tasks. The same is true of welding hot-shaped components, which are coated with a corrosion-inhibiting aluminium-silicon alloy. Audi benefits here from its extensive know-how in ultra lightweight construction – the joining technologies have been practice-proven for years now in models such as the TT. A number of very different joining technologies are used to assemble the new A3 Sportback, including bonding, clinching and punch riveting.

Between the side wall and the roof, which are both made of steel, a Plasmatron brazed seam produces the joint, where the allowable tolerance is just a few tenths of a millimeter. The finished seam is smoothed with brushes – the practically invisible zero-joint that is produced is an expression of the stringent precision thinking at Audi.

Unlike the previous model, the doors and window frames are stamped in one piece, and this also saves weight. The door hinges integrate a convenient new type of clamping mechanism.

Rigidity and acoustics

The body of the new Audi A3 Sportback attains very good values in static and dynamic torsional rigidity – this creates the foundation for its high

precision, e.g. in the fits of doors, hoods, trunk lids, in production and in the acoustic comfort inside the car. A noise-insulating windshield is standard equipment; despite the addition of an intermediate film layer, it is no heavier than the previous windshield.

New are two encircling sealing lines that reduce wind noise in the area of the doors and windows. They also keep the entry sills clean. The design of the exterior mirrors, which are mounted to the upper door panels, also contributes to the car's acoustic comfort.

Many other measures have been implemented to reduce interior noise in the new A3 Sportback, including wheel housing shells made of an acoustically insulating fleece material – its weight impact is 0.5 kg. The insulation used behind the pillar trim, behind the instrument panel and in the luggage compartment consists of the same lightweight material.

Safety and aerodynamics

The new Audi A3 Sportback is a class-leader when it comes to passive safety. In a frontal collision, the front cross-member distributes the forces to the two side members, which undergo defined deformation to dissipate these forces. The structural members for the engine and front suspension, as well as the sections in the upper area of the fenders, act as additional load paths. If necessary, the pedals are decoupled from the firewall; the steering column absorbs energy and is not displaced into the occupant cell.

In a side impact, the occupant cell offers excellent protection with its hot-shaped steel components such as the sills and B-pillars. In a rear-end collision, the bumper's cross members redirect loads to the large side members made of high- strength steel.

The new Audi A3 Sportback is planted firmly on the road – a strength attributable in large part to Audi's aerodynamics specialists. The underbody back to the B-pillar is completely lined. The covering is made of fibre-glass reinforced polymer. It protects the sheet metal and engines from salt, water and stone impact and absorbs undesirable vibrations. Small spoilers in front of the wheels help to guide the air flow with low drag losses. The aerodynamic underbody of the new Audi A3 Sportback reduces aerodynamic drag by about ten percent. To take full advantage of the aerodynamic potential, a great deal of effort was also focused on the flow of air through the engine compartment.

Thanks in part to the aerodynamic fine tuning in such areas as the underbody and the engine compartment, the new Audi A3 Sportback has a coefficient of drag of just 0.31 with a frontal area of 2.13 m².

ultra lightweight construction in the interior

The Audi ultra lightweight principle is not limited to the body or to specific subassemblies and parts – developers always consider the vehicle as a whole, and in their work every gram counts. This is the only way the car's kerb weight could be reduced by up to 85 kg compared with the previous model.

The engineers have internalised the Audi ultra lightweight principle, and in the interior of the new Audi A3 Sportback they also succeeded in eliminating every superfluous gram. The redesigned seats contribute a one kilogram weight saving; lightweight plastic inserts replace the steel wire used previously in the frame of the rear bench seat.

A new control unit arrangement requires fewer wires, thus reducing the weight by 1.5 kilograms. The blower motor requires fewer coils, and the air conditioning system shed four kilograms of weight. The housing of the passenger airbag is made of polymer; the mounting for the MMI monitor is made of magnesium. Together these two solutions save 640 grams. In the previous model, many linings in the interior were fastened with steel screws. In the new Audi A3 Sportback, polymer expanding rivets were used here for a weight savings of four grams per fastening point. When it comes to the Audi ultra lightweight construction principle, every gram counts.

ultra lightweight construction in engines and chassis

The engines of the new Audi A3 Sportback have shed a significant amount of weight as well. The engines of the new A3 have shed a lot of weight as well. The 1.8 TFSI, for example, weighs just a little over 130 kilograms, while the 1.4 TFSI weighs in at just 107 kilograms – 21 kilograms less than the previous engine. With a weight difference of 15 kilograms, the aluminium crankcase accounts for the largest share of reductions, but progress has also been made in many small engine details – e.g. in the new aluminium pistons and the hollow-bored connecting rod pins.

In the 1.8 TFSI, the thin-wall technology of the crankcase reduces weight by 2.4 kilograms. In the 2.0 TDI, the balance shafts are mounted in the engine block, which accounts for three kilograms of savings, while modified sound

dampers in the exhaust system save an additional two kilograms. Weight was trimmed from the exhaust system in all engine versions.

In the chassis, the new one-piece aluminium subframe and aluminium pivot bearings (depending on the engine) reduced the weight of the front suspension system by about six kilograms. The optional 18-inch alloy wheels are no heavier than the 17-inch wheels; they are produced by a complex flow-forming technology. In this process, the rim well is rolled out over a cylinder under high pressure and at high temperature. The system shapes the wheel blank in a single work step, during which the material also becomes stronger. This permits thinner wall thicknesses so that the wheel is both lighter and stronger.

Environmental footprint

In developing the new A3, Audi conducted an environmental assessment of two of the engine versions. The 1.4 TFSI and the 2.0 TDI were subjected to a detailed analysis. Both versions offer clear benefits compared with their respective previous models. Greenhouse gas emissions, for example, are reduced by roughly two metric tons per model. This corresponds to roughly seven to nine percent of the greenhouse gas emissions over the entire life cycle. This is due in large part to the substantially lower fuel consumption and low weight of the new models. At the end of its life, about 95 percent of the new Audi A3 Sportback can be recycled.

The theme of sustainability is a high priority in production as well. The new hall, in which the bodies of the A3 Sportback are produced, has a photovoltaic system on its roof that covers 7,500 m^2 of surface area. It generates about 460 MWh of electricity annually, which avoids 245 metric tons of CO_2 emissions. All production systems and their control units are networked into an intelligent shut-down strategy that saves a lot of electricity.

Exterior design

The new Audi A3 Sportback is long and lean. While the length (4,310 millimetres), width (1,785 millimetres) and height (1,425 millimetres) are only slightly greater than on the previous model, the wheelbase is now significantly longer at 2,636 millimetres, an increase of 58 millimetres. The overall design language of the new Audi A3 Sportback concentrates on the essentials, with each individual design element making a clear and confident aesthetic statement. The front end is low; the roof arch spans a dome that extends beyond the subtle roof spoiler to the muscular tail end. The ratio of

metal surface area to windows is two-thirds to one-third – a typical proportion for Audi.

The design with the three side windows is taut, with every detail precise and expressive. The tautly curved surfaces, the sharp shoulder of the body and the relatively narrow, sharply inclined C-pillar give the new Audi A3 Sportback its typical character. The sharply defined tornado line articulates the flank below the windows and evokes a powerful shoulder. The dynamic line above the side sills runs upward toward the rear. The large, precisely defined wheel wells and the subtle roof spoiler underscore the sporty aspirations of the new Audi A3 Sportback. The same applies to the exterior mirrors with integrated LED turn signals, which like with a sports car are mounted on the doors.

The distinguishing element of the front end is the distinctive, Stone Grey single- frame grille with the angled upper corners. Its horizontal slats and the Audi rings are highlighted three-dimensionally. A slender, chrome-plated frame surrounds the grille. Large air intakes up front hint at the supreme power of the engines.

The flat headlights are works of art of the highest technical precision and give the new Audi A3 Sportback a determined gaze. They are styled in a wedge shape, and their lower edges are contoured in a slight wave. In the optional xenon plus modules, the LED daytime running lights form clear, visually uniform contours of lights at the upper and lower edges, which suggest the shape of an eyebrow. The turn signal lights are at the pointed corner of the headlight behind the “wing” – a narrow, chrome-plated fin that is a typical Audi feature.

As an option, Audi can supply the new A3 Sportback with the high-beam assistant, and – in conjunction with xenon plus headlights – with adaptive light. It integrates a special curve, cornering and intersection light function and can be supplemented by variable headlight range control. It works together with the front-facing camera to adjust the light-dark boundary of the headlights automatically in response to approaching vehicles or the vehicles ahead.

The rear is sculptured, and the split rear lights underscore its width. Audi offers LED rear lights in combination with the xenon plus headlights; LED light conductors appear to form a continuous arch. The adaptive brake light, which pulses at high frequency during hard braking, is standard. A sharp

crease sets off the diffuser. Depending on the engine, the exhaust system terminates in one or two tailpipes on the left side of the car. On Ambition models, they are chrome-plated.

The S line exterior package further sharpens the look of the premium compact car. The single-frame grille is painted in a high-gloss black, honeycomb-look screens with fog lights fill the large air inlets, which are bordered by powerful edges. Suggested air inlets that extend towards the wheels create distinctive visual accents. The sills have distinctive add-on strips. The roof spoiler has been lengthened, the bumper has an additional edge, the platinum grey diffuser includes a honeycomb-pattern insert, and the tailpipes of the exhaust system are chrome-plated.

There are twelve paint colors from which to choose. The solid finishes are called Amalfi White, Brilliant Red and Brilliant Black. The metallic finishes are Beluga Brown, Dakota Grey, Ice Silver, Glacier White, Monsoon Grey, Scuba Blue and Shiraz Red. The pearl-effect finishes Phantom Black and Misano Red round out the selection. A high-gloss package that offers small highlights in the area of the side windows is standard on Ambition models.

Interior

The interior of the new A3 Sportback is marked by an elegant, clean and light design. The dynamics of the exterior are also fully carried over here; the lines and surfaces are dynamic and taut. In the style of the larger Audi model series, a long arch called the wrap-around runs below the windshield. The instrument panel with its curving front is slim and low. Together with the centre console oriented slightly toward the driver, it appears to float slightly.

The clean ergonomics are a classic Audi strength. The MMI operating system with the power-retractable monitor is available with the standard MMI radio and above. The centre tunnel console, framed on both sides by knee pads in the style of the TT sports car, presents a clean, well-organised look. Thanks to the new electromechanical parking brake, there is no longer any brake lever; this has created space for the terminal of the optional MMI user interface. The armrest is adjustable in length and height.

The driver seats at an elegant steering wheel. Depending on the version, it has three or four spokes, a flat-bottomed rim, multifunction buttons and shift paddles. The large dial instruments can be easily read at a glance. The driver information system, which is available with an optional color monitor,

displays useful data on a 3.5-inch display. These include such things as the current radio station or song title, speed, outside temperature and the time, as well as information from the navigation and driver assistance systems if present. The on-board computer provides information on fuel consumption, average speed and the time and distance driven. Furthermore, the integrated efficiency program supports an economical driving style.

The newly developed front seats offer countless adjustment possibilities for optimal support. Audi also offers optional sport seats (standard with Ambition), which can also be adjusted to the driver's body size. Another comfort and safety feature is the height-adjustable seat belt. S sport seats with integrated head restraints will be offered somewhat later as part of the S line sport package.

The new Audi A3 Sportback also offers several millimetres more head and leg room than the previous model. Thanks to the 58-millimetre increase in wheelbase, it also offers enough head, elbow, knee and foot room in the rear. The L-shaped rear head restraints provide for good rear visibility.

The interior of the new A3 Sportback conveys the luxurious look and feel of the full-size class. The sculpted inlays are just one of the highlights. Audi offers a choice of Aluminium Mistral or 3D glass-look inlays as options. The top-of-the-line version is manufactured using a complex process.
The transparent film that is drawn over the base part is imprinted with a pattern of tiny triangles five times. A layer of transparent polycarbonate amplifies the 3D visual effect and at the same time gives the trim an extraordinary glass-like look.

The four large, round air nozzles in classic jet design are a typical Audi feature that simultaneously reflects technological aesthetics. Each of the air nozzles consists of over 30 individual parts, and tolerances of just a few hundredths of a millimeter are allowable. Their air flow is adjusted by pulling on the central axis – this varies the air flow from broadly dispersed or draft-free to a focused stream. When the rings are turned, they make the sound of technical precision – a fine, precisely-defined click.

The A3 Sportback comes standard with a deluxe dual-zone automatic air conditioning system that is mounted on a panel in Piano-finish black. The instrument cluster fascia is also black. Many of the controls feature an aluminium-look finish. The optional interior lighting package accents the interior with additional highlights: Small LED lights are placed in the

headlining, front and rear, in the make-up mirrors, doors, and foot areas, at the cup holder, in the glove box and on the exterior mirrors.

The S line sport package, which is available for the A3 Sportback Ambition, completely immerses the interior in black – even the headlining. Seat upholstery options are available in various materials – ranging from a leather/alcantara combination to Fine Nappa leather; S line logos are embossed on the front seatbacks. Silver seams accentuate the styling, while the same color is used in contrasting seams for the borders of the floor mats; the decorative trim strips are made of matt brushed aluminium. Besides the sport suspension, a gear knob in perforated leather and a three-spoke leather-covered flat-bottom sport steering wheel emphasize the dynamic atmosphere.

The luggage compartment of the new Audi A3 Sportback has a capacity of 380 litres in its standard configuration and 1,220 litres with the rear seats folded down. The cargo floor is flat, and the opening between the wheel wells measures 1,000 millimetres. The cargo floor can be inserted on two levels, and the supports on which it rests are marked with small LED lights. The rear seat can be folded down in a 60:40 split or as a whole. Practical bag hooks and lashing eyes in the cargo compartment are standard.

As options for the new A3 Sportback, Audi offers a load-through hatch, a ski and snowboard sack and a reversible floor mat. A storage and luggage compartment package is standard across the range. For the interior, this package offers nets on the backs of the front seats and in the front passenger area, a 12-volt outlet and a storage bin for safety vests under the middle rear seat.

For the luggage compartment, it offers a 12-volt outlet, a multi-fixing point for shopping bags, a luggage net and a compartment with net on the left side.

Multimedia systems

Audi’s leadership in automotive electrical and electronic systems can also be fully experienced in the new A3 Sportback – the premium compact offers a comprehensive system of infotainment components. The heart of the mobile communications electronics is a groundbreaking innovation: the modular infotainment platform (MIB). This concept enables very fast innovation cycles in development.

The new Audi A3 Sportback comes standard with the MMI radio – with a control terminal on the centre tunnel console and the power-retractable 5.8-inch monitor. Audi music interface integrates the addition of a mobile player and a Bluetooth interface, including audio streaming.

The new central computer of the MIB is located in the glove compartment of the A3 Sportback. It comprises two units – the radio car control unit and the MMX board (MMX = Multi-Media eXtension). One of the plug-in module's key components is the fast T-20 graphics process from market leader Nvidia's Tegra 2 series. The chip, which generates complex 3D images, is used in all online, voice control, media, navigation and telephone functions. The screen with the high-resolution monitor (5.8 or 7.0-inch diagonal) extends from the instrument panel when the system is started.

The MMI terminal is used to control the numerous functions. Audi is also presenting important innovations for the control terminal on the centre tunnel console. The hard keys for navigation, telephone, radio and media have been rearranged and are now implemented as toggle switches. The volume control includes a skip function.

MMI navigation plus

The top version available in the new Audi A3 Sportback is the MMI navigation plus with MMI touch – a media centre with 64 GB of storage capacity, DVD drive and whole-word voice control. The high-resolution 7-inch monitor displays the map with detailed 3D graphics. Mobile phones and auxiliary devices can be paired with MMI navigation plus through the integrated Bluetooth interface.

The power-retractable 7.0-inch monitor extending from the instrument panel has a resolution of 800 x 480 pixels for razor-sharp images with brilliant colors. Efficient LEDs provide the backlight. The cover glass is bonded directly to the surface of the TFT screen by means of a special lamination process, leaving no air gap between the display glass and the cover glass. Just eleven millimetres thin and painted in glossy black, its lightweight magnesium housing gives it an elegant, premium look.

The large rotary pushbutton has been consolidated with the touchpad called MMI touch to form the touch wheel. The top of the control wheel is a touch-sensitive field. The MMI touch, which is a solution from the Audi full-size class, works with handwriting recognition. The driver writes letters or numbers he or she wishes to input for navigation or a phone call on the

touch-sensitive screen by fingertip on the pad; the system then provides acoustic feedback after each character.

A voice control system is available as an alternative to manual user control at the MMI terminal. The driver can use it to input the name of the city and street in a single command and to control the telephone, Audi connect services and music playback.

The user menus in the A3 Sportback have a new layout. In the media area, for instance, the player and media centre are clearly separated; song titles, albums and artists can be located directly via free text search.

The Audi sound system, in which a six-channel amplifier drives ten loudspeakers including a centre speaker and subwoofer, is available with the MMI radio and above.

Delivering even more audio enjoyment is the Bang & Olufsen Sound System, the most sophisticated sound system in the premium compact class. Its key component is an amplifier with 705 watts of output power that is mounted in the centre of the cabin. It drives 14 active loudspeakers over 15 channels. The system uses a microphone to record intrusive noise in the cabin in order to adjust the sound accordingly. In combination with MMI navigation plus, the sound is also output in 5.1 format. The two woofers in the doors also offer visual highlights – running along their upper edges is an arc-shaped trim strip of anodized aluminium, in which the logo of the Danish hi-fi specialist is laser-engraved. Located between the trim strip and the loudspeaker screen is an ultra-narrow light conductor which radiates white LED light.

Driver assistance systems

The new Audi A3 Sportback is also bringing highly developed technologies from the full-size class to the premium compact segment when it comes to driver assistance systems, such as the Audi adaptive cruise control (ACC). The radar- based cruise control system, whose sensor is located in the lower section of the single-frame grille, keeps the car at a desired distance from the vehicle ahead at speeds between 30 and 150 km/h. It accelerates and brakes autonomously within certain limits.

The driver can adjust the distance and the control dynamics in four levels. If the assistance package is fitted, the speed range at which ACC is active

extends up to 200 km/h. The stop & go function in combination with the S tronic complements the ACC. This function can brake the new A3 Sportback to a stop when a vehicle in front is stopping, and it can automatically resume driving if the stopped phase lasts less than three seconds.

Audi active lane assist becomes active at a speed of 65 km/h. A video camera in the interior mirror identifies the lane markings on the road surface. If the new Audi A3 Sportback approaches one of them without using the turn signal, the system helps the driver to steer back into the lane. The MMI control system is used to specify how quickly this assistance system should intervene as well as whether the steering wheel should vibrate in conjunction with this. If early correction is activated, the system helps to return the car to the centre of the lane by intervening slightly in the electromechanical steering.

The optional Audi side assist helps the driver to change lanes at speeds of 30 km/h and above. Two radar sensors in the rear monitor the area to the side of and behind the car at a distance of about 70 meters. If Audi side assist considers a vehicle detected in the blind spot or approaching rapidly from the rear to be critical for a lane change, it signals this by illuminating the indicator in the respective exterior mirror. If the driver activates the turn signal in such a situation, the indicator blinks brightly and rapidly several times – a very prominent warning signal.

Integrated into the driver information system is the rest recommendation function, which analyzes the driver's steering motions among other things at speeds between 65 and 200 km/h. If the analysis reveals indications that the driver's attentiveness is declining, the system recommends a rest by illuminating an indicator in the driver information system and sounding an acoustic signal. The rest recommendation can be deactivated.

Audi offers various options that make parking easy. When maneuvering in reverse, the standard rear parking system measures the distance to obstacles behind the car with four ultrasonic sensors. Parking system plus with selective display utilizes four additional sensors to detect such obstacles as vertical posts in front of and behind the new A3 Sportback. They are shown in the driver information system display, on the MMI monitor and in critical situations are also indicated acoustically.

The high-end solution is park assist with selective display – it can back the new A3 Sportback into parking spaces. To find a parking space, it measures

spots along the side of the road when traveling at moderate speeds – up to 40 km/h when parallel parking and up to 20 km/h when perpendicular parking. A notification appears in the driver information system display when the system finds a suitable spot.

If the driver now puts the car into reverse, the system takes control of the electromechanical steering. The driver must continue to accelerate, shift gears and brake. When parallel parking, it suffices if the space is roughly 0.8 meters longer than the vehicle. When perpendicular parking, 0.7 meters of additional width is sufficient. Park assist will maneuver forward and backward multiple times, if necessary. It offers similar support when pulling out of parallel parking spots. In this case, 0.5 meters is sufficient. The park assist and the parking system plus can be supplemented with a reversing camera, which is integrated inconspicuously into the handle of the tailgate.

One technology with which the new A3 Sportback is setting new standards in the compact segment is the optional safety system Audi pre sense. If it detects an unstable driving state via the sensors of the electronic stabilisation control (ESC), it pretensions the front seatbelts. If the A3 Sportback begins to skid, the system closes the windows and the optional sunroof.

The function pre sense front is integrated into the adaptive cruise control (ACC). In case of an impending collision, the system warns the driver in stages, depending on the severity of the situation. The first stage involves output of visual and acoustic signals, and the second is a warning jolt in the braking system – a brief braking pulse. If the driver now steps on the pedal, the system supports the intended braking so that a collision can be avoided.

However, if the driver remains passive, the ACC initiates braking at partial braking power to reduce the speed at impact. In an emergency, and at speeds of less than 30 km/h, the system can autonomously slow the new A3 Sportback with nearly full braking power, regardless of whether the vehicle in front of the A3 is in motion or stationary. At speeds of less than 20 km/h, this function can avoid an accident altogether in some situations; in this case, the collision speed and the severity of the accident can be reduced substantially.

If a collision occurs nevertheless, a new subsystem is activated: the multicollision brake assistant. It helps to ensure that the vehicle does not continue rolling uncontrolled, while at the same time the cabin lights and

the hazard lights are switched on.

Lighting technology

Precisely designed, powerful halogen headlights with clear glass covers ensure that the new Audi A3 Sportback comes standard with good visibility in the dark. The A3 Sportback is optionally available with xenon plus headlights. The automatic headlight range control helps to prevent blinding oncoming traffic. The integrated daytime running lights form a narrow, visually homogenous contour of light at the top and inside edges of the highlights, like an eyebrow.

If equipped with xenon plus headlights, the rear lights also use state-of-the-art LED technology. The three-dimensional floating effect of the curved LED light guide is an element of Audi's new design language. The turn signal, which also uses LED technology, closes the contour as a strip at the top edge. The adaptive brake light, which pulses during hard braking, is standard.

The xenon-plus-based Audi adaptive light pivots intelligently into curves. If linked to the navigation system, it also includes special functions for urban, interurban, highway, intersections and tourist attraction lighting (for switching from driving on the right to driving on the left). In combination with variable headlight range control, the light-dark boundary of the headlights is adjusted automatically and steplessly. This provides substantially improved visibility and safety at night.

The optional lighting package provides for pleasant, non-glare lighting in the interior of the A3 Sportback. LED technology is used at the inside door handles, in the front and rear foot wells and at the cup holders. The ambient light, which shines from the roof module to the centre console and also illuminates the inside surfaces of the doors, provides for improved orientation. The touch wheel of the MMI navigation plus is also illuminated via a light guide.

Drivetrain

Audi is initially offering the new A3 Sportback with a choice of two TDI and two TFSI engines, all of which are new developments. Their engine displacements range from 1.4 to 2.0 litres and their power from 77 kW to 132 kW.

All of the engines follow the Audi engine philosophy of downsizing, in

which displacement is replaced by forced induction for strong performance and low fuel consumption. Fuel consumption has been reduced on average by around nine percent compared with the previous model.

Technologies from the Audi modular efficiency platform play a key role in the reductions achieved in fuel consumption. That start-stop system uses powerful fleece, AGM or EFB batteries and reduces fuel consumption by roughly 0.3 litres per 100 km.

The innovative thermal management system (in the 1.8 TFSI and the TDI engines) ensures that the engine comes up to its operating temperature rapidly after a cold start. This shortens the phase of elevated friction losses due to viscous oil, and the car's interior warms up faster as well.

All engines have the same mounting position in the new Audi A3 Sportback – a result of standardisation based on the Group's modular transverse matrix. In the previous model, the petrol engines in some cases were still installed inclined 10 degrees to the front. Their exhaust side faced the radiator, whereas that of the TDI engines faced to the rear, i.e. toward the cabin. In the new Audi A3 Sportback, all petrol engines have their exhaust side facing the rear, and – like the diesel engines – they are also tilted 12 degrees towards the rear.

This mounting arrangement and the compact layout of the new petrol engines shorten the installation length in front by about 50 mm compared with the previous model. This let the Audi developers shift the front axle forward by 40 mm. The front overhang was shortened by the same amount, which benefits crash behavior, styling and the distribution of axle loads.

Audi A3 Sportback: TDI engines

The TDI engines from Audi have been setting standards for decades. They stand for a contemporary, smart type of sportiness – exhibiting a harmonious blend of supreme power, high torque, impressive efficiency and smooth running properties.

1.6 TDI

The 1.6 TDI is the most efficient engine in the Audi model lineup. The compact diesel engine, which displaces 1,598 cc (bore x stroke 79.5 x 80.5

millimetres) impresses with the systematic minimisation of internal friction. Improvements were achieved through the integration of thermal management measures in the oil and coolant loops, the choice of materials for the piston rings and the piston pin, and in the manufacturing process through the use of a special honing process for the crankcase cylinder barrels.

The solenoid injectors of the common rail system can perform six separate injection operations per work cycle, which benefits combustion and exhaust quality as well as engine smoothness. A new feature is the intake manifold-integrated charge air intercooler for diesel engines. This results in an extremely compact charge air path, which improves engine responsiveness substantially. An exhaust turbocharger with adjustable turbine geometry and the unthrottled intake and charging air system round out the overall concept.

The 1.6 TDI engine develops 77 kW and 250 Nm. In combination with the S tronic transmission, the 1.6-litre TDI accelerates the Audi A3 Sportback from zero to 100 km/h in 10.9 seconds on its way to a top speed of 195 km/h. The diesel engine consumes on average just 3.9 litres of fuel per 100 km, corresponding to102 grams of CO_2 per km.

2.0 TDI

The 2.0 TDI with its 1,968 cc of displacement (bore x stroke 81.0 x 95.5 mm) was systematically designed for low friction losses. The toothed belt in the oil pan drives the oil and vacuum pumps, which are located in a housing, via the crankcase. The two balance shafts, which were moved from the oil pan to the crankcase, are mounted on roller bearings and serve to balance the free mass forces.

Elaborate needle bearings are used in the drive system for the camshafts as well. The assembled shafts are mounted in a separate frame and mated directly in this modular component. The new valve train module is characterised by high stiffness and low weight. In contrast to the previous engine, the cylinder head has a rotated valve star layout; each of the two camshafts actuates one intake valve and one exhaust valve per cylinder.

At the pistons, reduced stress on the rings results in smooth running; in manufacturing the engine, a honing process in fine machining of the

cylinder liners guarantees high precision. The oil pump, with its two-stage control, requires very little drive energy. The cylinder block and cylinder head each have separate coolant circulation loops. The pump for block circulation can be deactivated during the warm-up phase, so that only the cylinder head circulation loop is active.

The common rail injection system develops up to 1,800 bar of system pressure. The fuel is nebulized via eight-port nozzles. The turbocharger operates with adjustable guide vanes whose pneumatic activation has been further refined. The intercooler is integrated into the induction pipe – this type of construction leads to short gas paths, high control quality and very good engine efficiencies. The new low-pressure exhaust gas recirculation system is also very compact and is configured for low flow losses. The emissions control system was located near the engine and is already prepped for the future Euro 6 emissions standard.

The 2.0 TDI engine produces 110 kW and 320 Nm of torque, with the latter available from 1750-3000rpm. It accelerates the A3 Sportback from zero to 100 km/h in 8.4 seconds on its way to a top speed of 213 km/h. Its average fuel consumption is 4.5 litres of fuel per 100 km, which corresponds to 119 grams of CO_2/km.

Audi A3 Sportback: TFSI engines

The abbreviation TFSI represents the combination of petrol direct injection and turbocharging, a technology that Audi was the first carmaker in the world to introduce. The combination of the two technologies results in high power and high torque as well as low fuel consumption.

1.4 TFSI

The 1.4 TFSI with 1,395 cc engine displacement (bore x stroke: 74.5 x 80.0 mm) is an engine that is new from the ground up. Its crankcase is made of die cast aluminium instead of the grey cast iron of the previous engine. It only weighs 18 kg instead of 33 kg. Other changes, e.g. to the crankshaft and the connecting rods, contribute towards the new 1.4 TFSI attaining a weight of only 107 kg. The 21 kg reduction also yields significant benefits in terms of axle load distribution.

Another innovation is integration of the exhaust manifold in the cylinder head. It quickly brings the coolant to temperature after a cold start; only then does a thermostat in the new coolant pump module enable cooling of the crankcase. At full load – e.g. during very fast freeway driving – the cooling jacket reduces the temperature of the exhaust gases. This eliminates the process of enriching the fuel-air mixture which would otherwise be necessary – which improves fuel economy significantly.

The aluminium pistons were redesigned; the nearly flat design of the piston heads is precisely tuned to the intake ports that were also redesigned. The common rail system operates at pressures of up to 200 bar, and its five-hole injectors can deliver up to three injections per operating cycle.

The turbocharger has shed 1.8 kg of weight compared with the previous engine. Its newly developed electric wastegate adjuster operates very quickly and precisely, which significantly improves engine responsiveness. The intercooler, which is also integrated in the induction pipe, accelerates the buildup of charge pressure – in a way similar to the 2.0 TDI.

In the 1.4 TFSI, friction losses were reduced by up to 20 percent compared to the previous engine. Improvements were made to the piston rings and their play when mounted in the grey cast iron cylinder sleeves, their reduced diameter at the crankshaft main bearing, lighter-weight valves and toothed belts for the timing and ancillary drives designed to last the life of the engine. The pressure-regulated oil pump also contributes to efficiency.

Like the 2.0 TDI, the 1.4 TFSI has a valve train module with low-friction camshaft bearings – with the difference that the shafts are integrated directly in the valve cover. The intake camshaft can be adjusted over 50 degrees of crank angle.

The new 1.4 TFSI produces 90 kW and 200 Nm of torque, accelerating the A3 Sportback from zero to 100 km/h in 9.3 seconds on its way to a top speed of 203 km/h. Its average fuel consumption is 5.0 litres of fuel per 100 km, which corresponds to 116 grams of CO_2/km.

1.8 TFSI

The new 1.8 TFSI – the most powerful engine in the new A3 Sportback at market launch – showcases Audi's high-tech competence with innovative solutions in many technical areas. Its torque curve is like that of a TDI – its maximum torque of 250 Nm is already available at 1,250 rpm, and it

remains constant up to 5,000 rpm. Its power is 132 kW.

A major innovation in the 1.8 TFSI is the addition of indirect injection. Complementing FSI direct fuel injection, it is active at part load; it injects the fuel at the end of the induction pipe in the vicinity of the tumble flaps, where it is intensively tumbled with the air.

The resulting improved mixture formation boosts fuel economy and reduces particulate emissions. Direct FSI fuel injection, with its up to 200 bar pressure, comes into play in the starting phase and at higher loads.

Audi engineers have discovered new degrees of freedom in filling the combustion chambers. The intake and exhaust camshafts are adjustable; on the exhaust side, the Audi valvelift system also varies the strokes of the valves to further minimize charge changing losses.

The innovative thermal management system is controlled by two rotary valves, which are combined in a module and driven by an electric motor via a worm gear. They ensure that the engine oil is rapidly heated, and they regulate coolant temperature between 85 and 107 degrees Celsius according to the driving situation. At all loads and engine speeds they strike an optimal balance between minimal friction and high thermodynamic efficiency.

As in the 1.4 TFSI, the exhaust manifold of the 1.8 TFSI is integrated in the cylinder head where coolant is circulating. This solution reduces the temperature of the exhaust gases, which improves fuel economy at full load. The turbocharger is also a new development; it builds up its high relative charge pressure of up to 0.8 bar very dynamically. Its main features are an electric wastegate adjuster, which regulates the charge pressure rapidly and precisely, and a turbine wheel made of a new alloy that can handle exhaust gases as hot as 980 degrees Celsius.

Despite all of its new technologies, the 1.8 TFSI only weighs a little over 140 kg – a value that is attained by such measures as reducing wall thickness slightly in the grey cast iron crankcase compared with the previous model. The walls are only about three millimetres thick, saving about 2.4 kg. The pistons consist of a new high-strength alloy. The oil pan consists of a lightweight plastic, and many screws in the engine are aluminium.

Internal friction is low as well – due to a new type of coating for the piston skirts, low-friction bearings for the two balancer shafts and a reduced-diameter main bearing for the crankshaft that is 1.6 kg lighter and only

requires four counterweights. The regulated oil pump requires little energy itself, and a high- precision electric system controls the piston heads with jets of oil.

Key performance data of the 1.8 TFSI with S tronic and front-wheel drive: from zero to 100 km/h in 7.3 seconds, top speed of 232 km/h and average fuel consumption of 5.6 litres per 100 km corresponding to 129 grams CO_2 per km.

Power transmission

A manual six-speed transmission is available by customer order only. It shifts easily and precisely over short paths and is distinguished by high efficiency. As in all Audi transmissions, the gear spread is large – the lower gears have relatively short gear ratios, while the last gear is comparatively long to reduce engine revs.

All four A3 Sportback models come standard with a six- or seven-speed S tronic transmission; it unites the comfort of a classic automatic with the dynamic performance and efficiency of a manual transmission. The driver can operate the S tronic via the selector lever or with the paddles on the steering wheel. Shift points are somewhat higher in the automatic S mode, whereas D mode prioritizes taller gear ratios. When combined with the Audi drive select dynamics system (standard in Ambition), the S tronic includes a free-wheeling function in efficiency mode that further reduces fuel consumption.

The seven-speed S tronic consists of two sub-units; two multi-plate clutches service the gears. The large K1 clutch located on the outside directs the torque via a solid shaft to the gear wheels for the gears 1, 3, 5 and 7. It is connected to the smaller K2 clutch, which is integrated inside its larger sibling, and which acts on the gear wheels for gears 2, 4 and 6, as well as reverse.

Both transmission structures are continuously active, but only one of them is connected to the engine at any one time. For example, when the driver accelerates in third gear, the fourth gear is already engaged in the second transmission section. Shifts are performed by switching the clutches. This takes just a few hundredths of a second and happens without any noticeable interruption in propulsive power.

The seven-speed S tronic, which is about 37 cm long, is very compact and only weighs about 70 kg. The two clutch mechanisms do not require an oil

supply, which further boosts their already impressive efficiency. A regulated electric oil pump supplies the clutch and gear actuators.

Chassis

The sophisticated chassis of the new Audi A3 Sportback is balanced, harmonious and sporty. The finely balanced axle load distribution is the foundation for this. The front axle has been shifted forward by 40 millimetres compared with the previous model, shortening the overhang correspondingly.

The front axle of the Audi A3 Sportback is a McPherson construction with wishbones and lightweight aluminium pivot bearings. The subframe to which they are linked is also made of lightweight metal. The front suspension has a track of 1,535 millimetres. As in the rear suspension, an anti-roll bar is used here too.

The electromechanical power steering, whose electric motor is located directly on the steering rack, impresses with its high efficiency. Its steering gear ratio of 15.3:1 is direct, and steering assist is varied as a function of vehicle speed. The turning circle measures just 10.9 metres. The steering works closely together with various systems and sensors on board the new A3 Sportback. This also includes the standard rest recommendation function in the driver information system and the optional Audi active lane assist and park assist.

The four-link rear suspension has a track of 1,506 mm. Its trailing links absorb drive forces and braking forces, and its bearings are sized large to enhance ride comfort.

On the other hand, the three wishbones per wheel, which are responsible for absorbing lateral forces, are rigidly joined to the subframe to improve handling characteristics.

The rear links are made of high-strength grades of steel. The shock absorbers and compact helical springs are mounted independent of one another – this is advantageous for a large luggage space and finely tuned response. A weight- optimized torsion beam rear suspension is used here in the 1.6 TDI. Audi offers an optional sport suspension that lowers the body 15 millimetres.

The new Audi A3 Sportback rolls standard on 16-inch or 17-inch alloy wheels

for the Attraction and Ambition models respectively. All of the tyres are distinguished by their low rolling resistance, without any compromises in dynamic performance. A tyre pressure monitoring indicator is standard, as is the space saver spare tyre.

The powerful brakes of the new A3 Sportback can be very precisely metered. The pedal feel is spontaneous and firm. The vented front discs measure 288 or 312 millimetres in diameter; the rear discs always measure 272 millimetres. The new electromechanical parking brake, which is operated from a button next to the gearshift or gear selection lever, is integrated in the brake system of the rear suspension. It also serves as an emergency brake, if necessary. The optional hold assist maintains brake pressure for a certain time after the driver has taken the foot off the pedal, which enhances drive-off comfort.

In the A3 Sportback with front-wheel drive, the ESC stabilisation control comes standard with the electronic limited slip differential. When the driven front wheel on the inside of a curve shows inadequate loading, the control module initiates a small and precise brake intervention at that wheel.

The intervention causes excess torque to flow to the outside wheel. Simultaneously, the difference in propulsive forces ensures that the car turns into the curve – which is helpful to the driver. Self-steering behavior remains neutral longer, making handling more precise, agile and stable.

Audi drive select (standard with Ambition) makes driving the new A3 Sportback an even more versatile and inspiring experience. The driver decides with the push of a button whether the accelerator response, the power steering and the optional S tronic operate in comfort, automatic, dynamic, individual or efficiency mode. In the latter mode, the optional deluxe automatic air conditioning and adaptive cruise control also operate in a mode targeted to optimise fuel consumption.