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Page 1 of 5

## ŠKODA 4x4 – the benefits of all-wheel-drive technology throughout the year

- › ŠKODA all-wheel drive demonstrates its strengths in all seasons
- › Popular with caravan owners due to exceptional traction and high towing capacity
- › Strengths of ŠKODA 4x4 drive are a higher level of practicality and even more functionality
- › A wide range of equipment and genuine accessories

Mladá Boleslav/Rovaniemi, 15 February 2018 – The modern all-wheel-drive systems used in ŠKODA 4x4 models assist drivers all year round in a wide range of different situations, and thereby provide a significant contribution to active safety. ŠKODA's 4x4 system operates entirely automatically, meaning the driver never needs to intervene. The high level of suitability for daily use, exceptional traction and a towing capacity of up to 2,500 kg are also appreciated by caravan or horsebox owners.

The idea that all-wheel drive only provides real benefits in winter on snow-covered or icy roads is a common misconception. In fact, ŠKODA's all-wheel-drive technology improves active safety all year round. Thanks to state-of-the-art electronics systems, the 4x4 technology also assists the driver in situations where they are probably not aware that this is happening. The electronically controlled multi-plate clutch is the centrepiece of the entire ŠKODA all-wheel-drive system. Using many sensors and in combination with the control systems for driving dynamics, the clutch can react to current driving conditions within milliseconds and anticipate future situations.

As soon as the electronics deem it to be sensible, all-wheel drive is automatically activated – without the driver having to intervene. One example would be pulling away from traffic lights in urban traffic. Irrespective of the road surface, the multi-plate clutch recruits the rear wheels to aid in the transfer of tractive power. This prevents wheelspin at the front axle. Even during further acceleration, a small portion of the torque is automatically transferred to the rear wheels, thereby increasing vehicle stability. When travelling at a steady speed, however, mostly the front axle is driven, which reduces fuel consumption.

ŠKODA's 4x4 models offer a range of other advantages that drivers will come to appreciate throughout the year. These include considerably better traction on wet and unsealed roads. The electronically controlled all-wheel-drive system, in conjunction with the active driver assistance systems, is also used when passing through corners on dry roads. Here, the control units monitor the speed of the individual wheels and prevent the unloaded inner wheel from spinning by transferring torque to the wheel with better traction. The modern multi-link rear axle used in all of the ŠKODA 4x4 models supports the favourable impact on handling, active safety and comfort thanks to precise wheel guidance.

More and more ŠKODA 4x4 customers are using their cars to tow caravans, horseboxes or trailers for boats or cars, for example. The all-wheel-drive system used in ŠKODA vehicles adds value through reliable traction and a higher towing capacity. In comparison to front-wheel-drive vehicles, the 4x4 variants can tow up to 25 per cent more weight. The ŠKODA OCTAVIA COMBI 4x4 with a 2.0 TDI engine producing an output of 110 kW (150 PS) can, for example, tow a braked trailer



# PRESS KIT

Page 2 of 5

with a weight of up to 2,000 kg, compared to a maximum towing capacity of 1,600 kg for the models with front-wheel drive. And, with a towing capacity of up to 2,500 kg (compared to 2,000 kg for the front-wheel-drive version) the large SUV ŠKODA KODIAQ 4x4 is at the top of the current model portfolio.

When towing, Trailer Stability Assist equips the driver with an invaluable assistance feature that provides support when reversing and monitors the stability of the tow car and trailer whilst driving. Trailer Stability Assist detects swaying motions so that the trailer can be stabilised in good time, before it starts to swerve.

The typically high level of functionality found within ŠKODA models remains completely unchanged when fitted with all-wheel-drive technology. The 4x4s' boots match the size of the two-wheel-drive variants and, in many models, a full-sized spare wheel is provided. This provides another significant advantage, particularly when travelling regularly on poor roads where there is an increased risk of punctures.

Larger fuel tanks ensure a sufficient operating range: depending on the model, ŠKODA 4x4s hold up to five litres more fuel. In this context, it should also be mentioned that possible differences in dynamics or consumption when compared to the front-wheel-drive variants have been minimised using state-of-the-art technical improvements.

## At home on rough terrain – selected technical parameters for driving on unsealed surfaces:

	KAROQ 2.0 TDI/110 kW 4x4 DSG transmission*	OCTAVIA SCOUT 2.0 TDI/110 kW 4x4**	KODIAQ SCOUT 2.0 TDI/110 kW 4x4 DSG transmission*
Ground clearance [mm]	183	171	194
Approach angle [°]	19.9	16.6	20.1
Departure angle [°]	27.8	14.5	22.8
Max. braked trailer towing weight [kg]	2,000	2,000	2,500

\* applies to vehicles with 19" wheels

\*\* applies to vehicles with 17" wheels

## Ready for winter: useful equipment and genuine accessories

Winter, and the snow and ice that accompany it, not only poses a challenge for technology, but also for drivers and their passengers. ŠKODA wants to make mobility as enjoyable as possible even at this time of the year, and therefore offers an array of useful, practical and comfortable equipment as well as a whole range of ŠKODA Genuine Accessories. ŠKODA cars can not only be equipped with heated seats in the front, but also in the rear. The heated steering wheel ensures warm hands even on cold starts in icy weather. The heated windscreen guarantees a clear view in any weather. Finally, the auxiliary heating comes into use when the car is parked outside. It can be programmed with a start time using the ŠKODA Connect app or by remote control.





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# PRESS KIT

Page 3 of 5

'Simply Clever' is particularly applicable in the winter: the practical ice scraper in the fuel filler flap is already included on the list of standard equipment for all models; over the course of 2018 it will be equipped with a simple tyre tread depth gauge. In addition, a wide range of ŠKODA Genuine Accessories is available. Whether roof rails, boxes, practical rubber floor mats or the double-sided boot liner – ŠKODA accessories are produced to a high standard and are subject to all certification processes, including crash tests.

## QUESTION:

### **FOR ŠKODA 4x4 VEHICLES, ON WHICH AXLE SHOULD SNOW CHAINS BE FITTED?**

If the situation calls for the use of snow chains\*, these should be fitted to the tyres on the front axle of ŠKODA 4x4 models with electronically controlled all-wheel drive. Only then is optimal steering in demanding conditions guaranteed.

\* We recommend the use of approved snow chains from the ŠKODA Genuine Accessories range.

## Stay warm with smartphones and connectivity

The fact that ŠKODA cars are 'always online' is a given. Besides its numerous benefits, ŠKODA Connect also offers special functions for use in winter. The car's heating can be turned on remotely using the smartphone app, and the user can check current weather conditions along their chosen route as well as at their destination. On cold winter days, it is also handy to be able to regularly check your vehicle's status (e.g. battery level or tyre pressures) from the comfort of your home.

## INTERVIEW

Dipl. Ing. Martin Hrdlička, PhD  
ŠKODA AUTO, Technical Development

### **What do engineers have to consider when developing all-wheel-drive models?**

To optimally design all-wheel-drive vehicles, the variants must be an integral part of vehicle development right from the very start. For its current models, ŠKODA AUTO uses Volkswagen Group's modern modular transverse matrix, the MQB, which not only makes development easier, but also faster. Every variant in a model range has its own specific design. To this end, the optimal components are chosen, including the shock absorbers, springs, stabilisers, wheels, tyres or all of the electrical system settings. The chosen solution then undergoes a variety of tests. All-wheel drive also has an influence on where components are positioned including, for example, the fuel tank, exhaust system and not least the bodywork. The 4x4 drive system fundamentally changes the vehicle's weight distribution on its axles, the centre of gravity and thereby the vehicle's driving dynamics as well.

### **The all-wheel-drive system used in the current ŠKODA OCTAVIA, SUPERB, KAROQ and KODIAQ models comes with an electronically controlled multi-plate clutch. Are there variations between different models?**

The electronically controlled multi-plate clutch is structurally identical in every ŠKODA model. Every model does, however, feature individual calibration for the all-wheel-drive software that corresponds to parameters for each vehicle such as the wheelbase, centre of gravity or engine.

### **What other differences are there between the ŠKODA 4x4 models, besides the multi-plate clutch?**





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# PRESS KIT

Page 4 of 5

As well as the components used in the all-wheel-drive system itself, that is to say the front differential, the propshaft featuring a Hardy coupling or the 4x4 coupling with the rear transmission, numerous other components have to be modified. These include chassis settings or the rear axle with its independent suspension and in some cases it could even be the fuel tank, exhaust system and parts of the floor assembly.

#### **Can you provide specific examples that illustrate the technical progress in ŠKODA 4x4 vehicles since 1999?**

Thanks to the multi-plate clutch's predictive behaviour and the ESC, XDS+ and TCS electronic stability systems' gentle interventions, the driver can also drive safely in situations that would have previously required them to considerably reduce their speed. The first generation of the 4x4 multi-plate clutch could only regulate the difference in speeds at the axles. In comparison to that first generation, the current 4x4 drive system is 6 kg lighter, which, amongst other things, has noticeably reduced fuel consumption. The centrifugal valve integrated into the electronic pump enables the clutch to be fully engaged even when the vehicle is stationary.

It has also improved traction when pulling away, regardless of the conditions, but particularly when towing a trailer or performing a hill start on snow. We offer Off-Road mode in several models, which significantly improves the driving characteristics on rough terrain at speeds up to 30 km/h. This even applies in difficult conditions, including on steep descents or when driving on slippery surfaces. Any driving manoeuvre can easily be mastered in all-wheel-drive vehicle – whether on motorways or on challenging terrain.

#### **How has the clutch switching speed changed between the 1<sup>st</sup> and 5<sup>th</sup> generations?**

The clutch switching speed for the current 5<sup>th</sup> generation is, for example at a differential speed between the front and rear axle of 25 rpm, three times faster than that of the 1<sup>st</sup> generation.

#### **Does the 4x4 drive system have specific maintenance or service intervals?**

The progressive development of the multi-plate clutch has significantly reduced the need for maintenance in 4x4 vehicles. Previously, the clutch required an oil change every 60,000 km, and the oil filter also had to be changed. Now, only the oil in the multi-plate clutch has to be changed every three years. Nowadays, the modern all-wheel-drive system requires no further maintenance.

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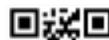
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Page 5 of 5

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## ŠKODA AUTO

- › is one of the longest-established car manufacturers in the world. The company was founded in 1895 – during the pioneering days of the automobile. Today, the company's headquarters remain in Mladá Boleslav.
- › currently offers the following model range: CITIGO, FABIA, RAPID, OCTAVIA, KAROQ, KODIAQ and SUPERB.
- › delivered more than 1 million vehicles to customers worldwide in 2017.
- › has been part of Volkswagen Group since 1991, one of the most successful vehicle manufacturers in the world. ŠKODA, in association with the Group, independently manufactures and develops vehicles as well as components such as engines and gear transmissions.
- › operates at three locations in the Czech Republic; produces in China, Russia, Slovakia, Algeria and India mainly through Group partnerships, as well as in Ukraine and Kazakhstan with local partners.
- › employs over 30,000 people globally and is active in more than 100 markets.

