
Audi Q8 – Suspension

With as much as 254 millimeters (10.0 in) of ground clearance, short overhangs, quattro permanent all-wheel drive and hill descent control, the Audi Q8 can keep going when paved roads end. The suspension with damper control is standard.

Responsive on narrow country roads, composed on the highway and robust off-road: the suspension of the Audi Q8 also combines the best characteristics from various worlds. Five-link suspensions are used at the front and rear so that longitudinal and lateral forces can be handled separately. The linkages and the subframes are made largely of aluminum. The SUV coupé has a track of 1,679 millimeters (5.51 ft) up front and 1,691 millimeters (5.55 ft) at the rear. The standard progressive steering in the Audi Q8 features a sporty and rather low ratio of 14.6:1 in the center position and becomes even more direct with increasing steering angle. The steering system with its electromechanical drive provides differentiated road feedback. It responds spontaneously and is highly precise. Audi also offers optional all-wheel steering. With this system, a high-torque electric spindle drive and two track rods turn the rear wheels. At low speeds, they turn up to 5 degrees opposite the direction of the front wheels. They thus reduce the SUV's turning circle by a good meter (3.3 ft) and make it even more agile. At high speeds, they turn up to 1.5 degrees in the same direction as the front wheels to provide greater stability during fast lane changes.

The Q8 rolls off the assembly line on 19-inch wheels with particularly good aerodynamic properties and 265/55-series tires. 20-, 21- and 22-inch tires are optionally available, the latter with 285/40 tires. All wheels are 20 millimeters (0.8 in) larger in diameter than those of the Q7. The 21- and 22-inch wheels feature torus absorbers – layers of foam between the running surface and the carcass – to dampen undesired frequencies and noise radiation. Mounted on the front axle of the Audi Q8 are six-piston, fixed-caliper brakes. The discs have central pots made of aluminum; the internally vented friction rings are made of cast iron. They measure a large 375 millimeters (14.8 in) in diameter up front and 350 millimeters (13.8 in) in the back.

Versatile: the adaptive air suspension

Customers can choose between three variants for the suspension setup. The suspension with damper control is standard. The adaptive air suspension with controlled damping is an optional feature, with either comfort or sport setup. The Audi Q8 then sits a good 15 millimeters (0.6 in) lower than with a steel spring suspension, which has 220 millimeters (8.7 in) of ground clearance. The air suspension can be set to four modes via the Audi

drive select dynamic handling system, varying the ride height of the body by up to 90 millimeters (3.5 in) depending on the driver's wishes and the driving situation. At speeds up to 30 km/h (18.6 mph), the driver can increase ground clearance by up to 50 millimeters (2.0 in). As the speed increases the suspension automatically lowers the body in stages. This leads to a reduction in air resistance and increased driving dynamics. At speeds of 160 km/h (99.4 mph) and above, or if the driver selects the dynamic mode in Audi drive select the vehicle is lowered by 40 millimeters (1.6 in) compared to the normal level. When the car is parked, the system can also lower the loading level by 65 millimeters (2.6 in) relative to the normal level.

Tightly networked: Audi drive select and the electronic chassis platform

With Audi drive select, drivers can vary the characteristics of their SUV between seven profiles – comfort, auto, dynamic, individual, efficiency, allroad and offroad, the latter only in combination with the air suspension. The dynamic handling system influences engine and transmission management, steering boost, the function of the automatic air conditioning and the optional all-wheel steering among other things. Management of all adjustable suspension systems is integrated into the control unit for the electronic chassis platform (ECP). The systems are tightly networked and work in a highly coordinated manner with maximum precision. The dampers are actuated in millisecond cycles, for example. As the central suspension controller, the ECP collects all key data about the movement of the car and about the systems involved. The integral dynamic handling controller then uses these data to compute the optimal function of these components.

Off the beaten track: hill descent control

Off-road, the Audi Q8 benefits from quattro drive, the short overhangs and the high ground clearance – a maximum of 25.4 centimeters (10.0 in) with the adaptive air suspension. With the standard suspension it is 22 centimeters (8.7 in). If the driver chooses offroad mode in Audi drive select, the electronic stabilization control automatically switches to stability, traction and braking control modes that are optimized for off-road driving. It also activates the standard hill descent control. On steep slopes over six percent, this function provides support with automatic braking input. The system maintains a constant speed up to a maximum of 30 km/h (18.6 mph), which the driver sets by accelerating or braking. This allows the driver to concentrate fully on the terrain. The electronic chassis platform captures the tilt angle of the car and displays this information for the driver on the MMI. The ESC also has a sport mode that enables even more agile handling by adjusting the influence on engine torque braking input. The driver can also deactivate the ESC in part by pressing a button.

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