Audi Q5 – quattro with ultra-technology

Next-generation all-wheel drive: quattro with ultra-technology
With the exception of the 3.0 TDI, all Q5 versions have the completely newly developed quattro with ultra technology. It offers maximum efficiency and does not perceptibly differ from permanent systems in terms of traction and driving dynamics. Control of the new quattro drivetrain operates predictively. Networked throughout the vehicle, it acquires and evaluates data – in ten millisecond cycles – such as the steering angle, transverse and longitudinal acceleration and engine torque.

As long as the new Audi Q5 is driving with a moderate type of gear and there is no risk of tire slip, the quattro with ultra technology benefits from all of the advantages of a front-wheel drive. If all-wheel drive is needed, it is immediately available. It is engaged in two stages – predictive and reactive.

On the predictive level, the focus is on data supplied by the networked systems. From this data the control unit computes, for instance, the point at which the front tire on the inside of the curve will reach its grip limit during fast cornering; it computes this around one-half second in advance. If the wheel approaches the grip limit at a defined threshold value, the all-wheel drive system is activated.

The control unit’s decision on whether to predictively engage the all-wheel drive is primarily based on the driver’s style of driving, the status of the Electronic Stabilization Control (ESC) and the mode selected in the Audi drive select system. In reactive engagement, the system reacts to sudden changes in friction, and it engages the quattro drive. These changes might occur, for example, when the wheels go from dry asphalt to a sheet of ice.

Networking of the quattro drive with Audi drive select means that drivers of the new Audi Q5 can adjust the properties of the quattro drive according to their personal preferences. The auto mode represents maximum traction and balanced handling properties. In the dynamic mode, the torque is redirected to the rear axle earlier and at higher levels – this increases dynamic performance, especially when pavement friction values are low.

The crucial efficiency gains compared to the competition are rooted in the concept of the two clutches in the drivetrain. When the system changes to front-wheel drive, the front clutch – a multi-plate clutch at the transmission outlet – disconnects the propshaft. An integrated decoupling clutch also opens in the rear differential. It shuts down those components that cause the most drag losses here, such as the large crown wheel running

in the oil bath. Despite the new parts, the quattro with ultra technology is nearly four kilograms (8.8 lb) lighter than the previous system.

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