Audi RS 5 – quattro with Dynamic Torque Control

World-first quattro with Dynamic Torque Control in the rear transaxle brings handling to a new level

quattro with Dynamic Torque Control: precision near the limit Audi is bringing a world first in a production vehicle with the RS 5: Dynamic Torque Control in the rear transaxle. Electro mechanical torque vectoring is the invisible maestro conducting an orchestra of driving fun and safety like never before. This functionality is enabled by a central driving dynamics controller and the high-performance torque vectoring system. A water-cooled permanent-magnet electric motor with an output of 8 kW and 40 Nm serves as a high-voltage actuator, overdrive gears, and a conventional differential with low lock percentage are the key components. Combined, they can rapidly and precisely distribute torque between the rear wheels. It takes just 15 milliseconds – around a tenth of the blink of an eye – for the electro mechanical torque vectoring to deploy torque differences of up to 2.000 newton meters and react to any driving situation.

The overdrive gears use the actuator’s torque to transfer this difference to the wheels via the driveshafts. Unlike purely mechanical systems, electro mechanical torque vectoring can transfer torque in either direction. It operates accurately and reliably, both on and off throttle as well as under braking – irrespective of which way the forces are pushing. The result: both under forceful acceleration and sudden braking, the system’s full potential is always available. Electro mechanical torque vectoring in the rear transaxle ensures a perfect balance between agility, stability, and traction. In a straight line, the system initially splits torque evenly between both wheels. When necessary, it shifts it to the wheel with better traction – guaranteeing the Audi RS 5 maximum acceleration. When entering a corner, the torque differential has a stabilizing effect for high directional stability. At corner exit, torque is shifted to the outer wheel where it helps rotate the vehicle and realize its acceleration potential. Because the torque vectoring can be tuned differently for different cornering phases and different drive select modes, drivers can experience a broad range of driving characteristics in their RS 5.

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