The new quattro drive

In the powertrain, the lightning-quick shifts of the seven-speed S tronic dualclutch transmission, an optimized mechanical differential lock and a new electrohydraulically activated multi-plate clutch work together. The actively cooled allwheel drive system can distribute torque freely between the axles. The intelligent dynamic control system for the quattro drive is incorporated into the Audi drive select dynamic handling system that offers four basic modes.

In each mode, the new high-performance sports car expresses a different character – from relaxed freeway cruiser to race car on the circuit track. In the top R8 V10 plus model, a performance leather steering wheel is standard equipment. In its performance mode, it offers three additional modes: dry, wet and snow. They make handling even more precise and sharper, tuned to the friction coefficient of the specific road surface. The new technology is also available on the R8 V10, including the steering wheel that is used to select the special modes.

The quattro drive system of the R8* has been fully re-developed. The combination of its high-performance mechanical system and software precisely tuned to the mid-engine concept makes it possible to realize dynamic handling properties in a new dimension. The intelligent all-wheel drive software continually distributes torque ideally according to the driving situation, driver inputs and ambient conditions.

The electrohydraulic multi-plate clutch integrated in the front differential transmits the calculated torque to the front wheels within just a few milliseconds. Unlike the previous component, the new clutch can distribute torque between the axles fully variably – it does not have any fixed underlying distribution. The level of maximum torque transfer was increased significantly for the best possible traction and dynamic handling.

The quattro drive is connected to the engine’s coolant circulation system, which utilizes three large radiators at the front of the car. This solution ensures that the clutch can perform its control work fully and precisely under all conditions. A temperature sensor and a pressure sensor continually monitor conditions and adapt control parameters as necessary. Although the multi-plate clutch operates with minimal slip – which is necessary for defined transmission of torque – it surpasses the previous viscous coupling when it comes to efficiency.

The quattro drive is integrated in the Audi drive select dynamic handling system, which lets the driver choose between the basic modes comfort, auto, dynamic and individual. On

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the R8 V10 plus (and as an option on the V10), there are supplemental programs in performance mode: dry, wet and snow. They adapt dynamic handling parameters to the friction coefficient of the specific road surface.

The purely mechanical rear differential further improves traction and dynamic handling – it exhibits a 25 percent locking effect in traction and 45 percent in thrust. It is precisely designed for the dynamic character of the new R8 and the actively controlled quattro drive system. This results in turn-in behavior that practically eliminates understeer. The mid-engine is positioned very near the vertical axis of the car’s center of gravity, so the inertia of its mass hardly comes into play in fast changes of direction. The axle load distribution is 42:58 – an ideal figure.

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