
Audi A5 Coupé – Suspension with damper control

The all-new chassis is among the strengths of the Audi A5 Coupé, including with respect to systematic lightweight construction and precise response. From dynamic handling to comfortable cruising – the two-door coupé has luxury-class qualities.

The broad track – 1,587 millimeters (5.2 *ft*) up front and 1,568 millimeters (5.1 *ft*) in the rear – and a wheelbase that is relatively long for this segment are the foundation for a suspension tuning that is both sporty and balanced. The wheelbase measures 2,764 millimeters (9.1 *ft*).

An updated five-link suspension is used on the front axle. The axle principle enables optimal absorption of longitudinal and transverse forces. Its mounts are sporty-stiff in a lateral direction and supple and soft longitudinally. Vibrations are consistently eliminated with the use of a hydromount, which ensures excellent comfort along with a high degree of agility.

Unlike on the previous model, the Audi engineers integrated the upper links directly into the body for optimal stiffness. All suspension control arms, the pivot bearing and the damper stilts are forged aluminum. The lightweight concept is completed with the use of monotube dampers and high-strength, thin-wall tubular stabilizer bars and segmented wheel hubs. Compared with the previous model, the weight of the front axle has been reduced by more than six kilograms. The lower link level is attached with newly designed rubber mounts to a hybrid subframe made of high-strength steel and aluminum consoles. The stiff connection of the subframe to the front end enables high vibrational comfort and provides the foundation for optimal agility.

Electromechanical power steering

The electromechanical power steering, a compact, new development from Audi, saves 3.5 kilograms (7.7 *lb*) compared with the previous model. It consumes little energy and has a direct, sporty ratio of 15.9:1. Power assistance is based on the vehicle's speed.

The steering provides very exact feedback from the road, responds spontaneously and is very precise. The new electromechanical power steering is functionally connected with some of the new driver assistance systems, such as the Stop&Go adaptive cruise control including traffic jam assist.

Dynamic steering

The optional dynamic steering uses a superposition gear to vary its ratio by up to 100

percent, depending on the car's speed and the mode selected in the Audi drive select driving dynamics system. Vehicle stabilization is also supported by lightning-fast steering impulses, further enhancing stability and safety.

Rear suspension

In the rear of the new Audi A5 Coupé, a five-link axle replaces the trapezoidal-link axle of the previous model. Audi has used an intelligent mix of materials to reduce the weight of the axle components by an additional five kilograms (*11.0 lb*). Low unsprung mass provides a sporty driving experience, and together with the new damper and elastomer tuning, it allows a smooth ride, a reduction in body movements and improved wheel damping.

The reduced-weight alloy wheels also contribute to this. Depending on the model, they weigh less than 13 kilograms (*28.7 lb*) per wheel, even the 19-inch versions. Monotube shock absorbers have been used for the first time, resulting in a further weight reduction and improves responsiveness, which in turn improves body control. The axle is insulated from the body with hydraulically damped axle mounts. They reduce the shocks from the road surface significantly without adversely affecting lateral guidance. Friction-optimized wheel bearings reduce rolling resistance, and aero-deflectors on the floor pan reduce aerodynamic drag.

Central chassis control unit - the electronic chassis platform (ECP)

A central chassis control unit has been applied to achieve ideal interaction between the various driving dynamics systems. Developed for the new Audi A5 Coupé*, this highly integrated control device – the electronic chassis platform (ECP) – processes all the information relevant for driving dynamics, from which it computes the driving situation and the current road surface frictional coefficient. This information enables optimal control of the systems for highly precise, dynamic handling and maximum ride comfort.

Suspension with damper control

As an alternative to the standard suspension with highly sensitive monotube shock absorbers, the new A5 Coupé* can also be equipped with a suspension with damper control. Sensors measure the movements of all four wheels plus lateral and longitudinal acceleration. The damper characteristic is then adjusted accordingly to the road surface conditions and driving situation. The result is enhanced driving dynamics with even more comfort. Furthermore, the driver can push a button to choose the default setting of the suspension in the Audi drive select system and thus call up the desired handling characteristics at any time.

The variable suspension works with newly developed CDC dampers

(CDC = continuous damping control) with electromagnetically actuated valves in their pistons. They allow hydraulic fluid to flow faster or more slowly as required. A new actuation concept makes them very energy efficient. The central chassis control unit processes all sensor signals within milliseconds and controls each damper individually. Together with the wide range of the damper valves, this ensures a wide spectrum between a soft ride and firm handling.

The A5 Coupé already has a sporty, low ride height in the standard version (from standard suspension).

Audi drive select dynamic handling system

The damper controller is integrated into the standard Audi drive select dynamic handling system. In the basic configuration, the driver can use it to switch between multiple modes for the function of the throttle valve, automatic transmission, steering, cruise control or adaptive cruise control (ACC) as well as the automatic air conditioning. The modes are "comfort," "auto," "dynamic" and "efficiency." In combination with a navigation system, there is also the mode "individual," with which the driver can further customize the individual systems such as the steering and suspension.

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