

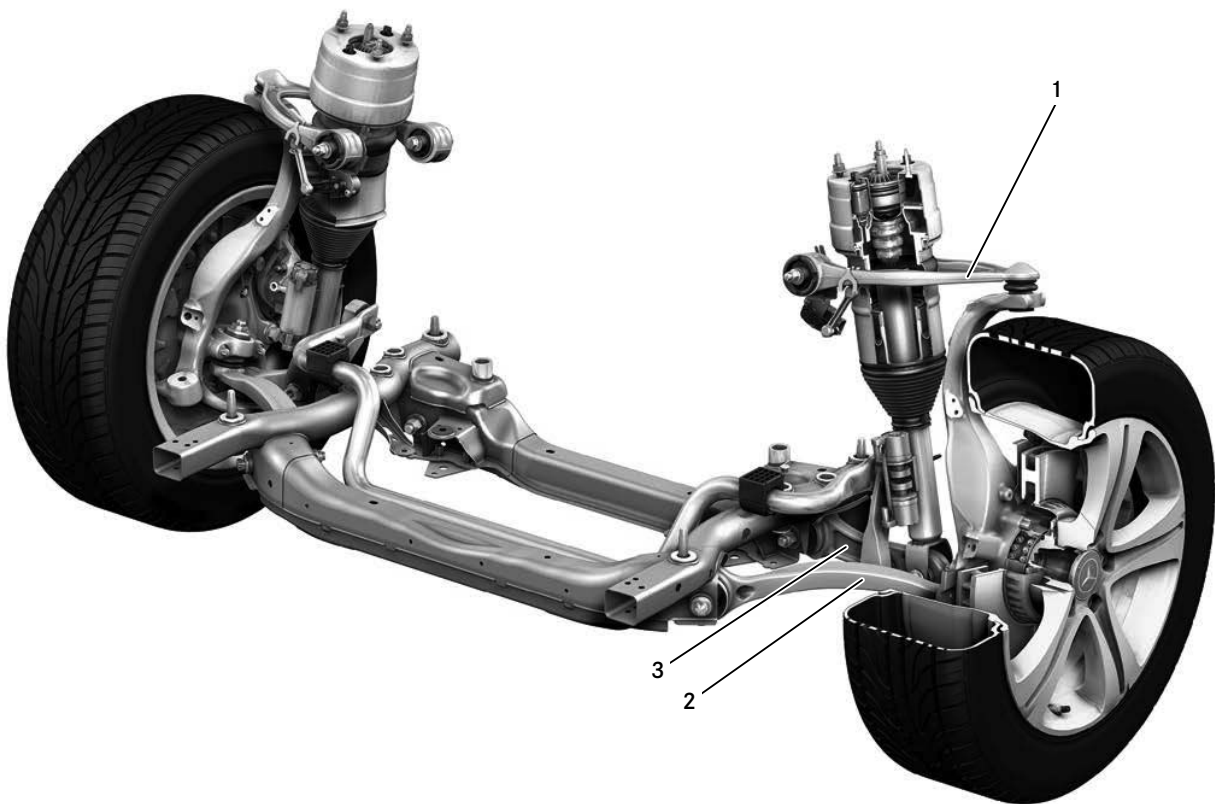
Axes and suspension

Front axle

The suspension of the new E-Class has been conceived such that it exceeds the levels of suspension and driving comfort of the predecessor model in on-road operation. This improvement in driving dynamics has been achieved through the following measures:

- Change from a three-link front axle to a four-link front axle
- Enlarged track width on the front axle and rear axle
- Improved kinematics and use of lightweight materials
- Suspension bearings optimized for ride comfort and vehicle dynamics
- Enlarged tire dimensions
- Enlarged wheel/tire combinations
- Rigidity

The arrangement and design of the wheel control parts produce favorable characteristics for the axle kinematics. The steering axis is close to the wheel center. A small tire contact patch and steering offset minimizes sensitivity to vibrations from tire imbalance or fluctuations in braking force. A significant feature of the four-link front axle is the lower link level, consisting of the strut rod and spring control arm. The upper wishbone control arm performs additional wheel control functions such as torque support during braking maneuvers. In addition to the lightweight construction using aluminum, the camber stability has been increased and the natural frequency has been adjusted so that road surface excitation cannot result in resonant vibrations. The result is optimal response time when cornering and outstanding noise-related comfort.



P33.10-2482-00

Front axle with AIR BODY CONTROL (view from front)

- 1 Upper wishbone control arm
- 2 Strut rod

- 3 Spring control arm

Rear axle

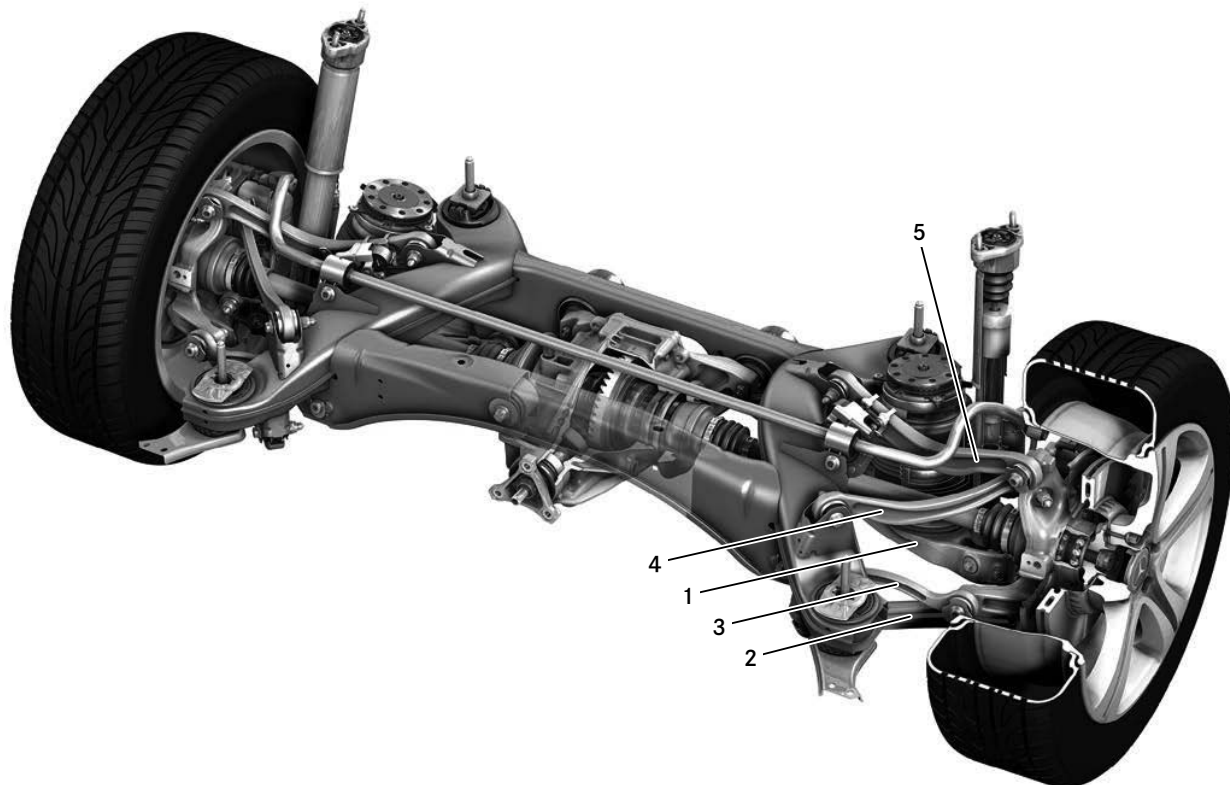
The rear axle is designed as a 5-link rear axle. However, all components have been further developed compared to model series 212 with a view to improving functionality and weight optimization for optimal wheel control.

The kinematics and elastokinematics have been adapted to the requirements of the new E-Class. The following adaptations have been made:

- Neutral to slightly understeering self-steering behavior
- Fine-tuning of the wheel-control elastomer bearings to improve vehicle dynamics
- Enlargement of the front integral carrier bearing to improve comfort

The consistently lightweight design means that the weight of the unsprung masses stays low. Three of the wheel-controlling links are made from aluminum, as is the forged wheel carrier.

The spring control arm is made of high-strength, worked sheet steel or, on vehicles with optional air suspension, of aluminium. For vibration decoupling of the drivetrain, the mounting of the rear axle carrier and rear axle differential with the body's force application area have been further optimized. The rear axle carrier is decoupled from the body and built in two load ratings. The first load rating is made of sheet steel for the smaller and lighter vehicle variants. The second load rating is made of high-strength sheet steel and is intended for the heavier vehicle variants with more powerful engines.



P35.10-2493-00

5-link rear axle with AIR BODY CONTROL (view from front)

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|----------------------|----------------|
| 1 Spring control arm | 4 Strut rod |
| 2 Thrust arm | 5 Camber strut |
| 3 Tie rod | |

Axles and suspension

Suspension and damping

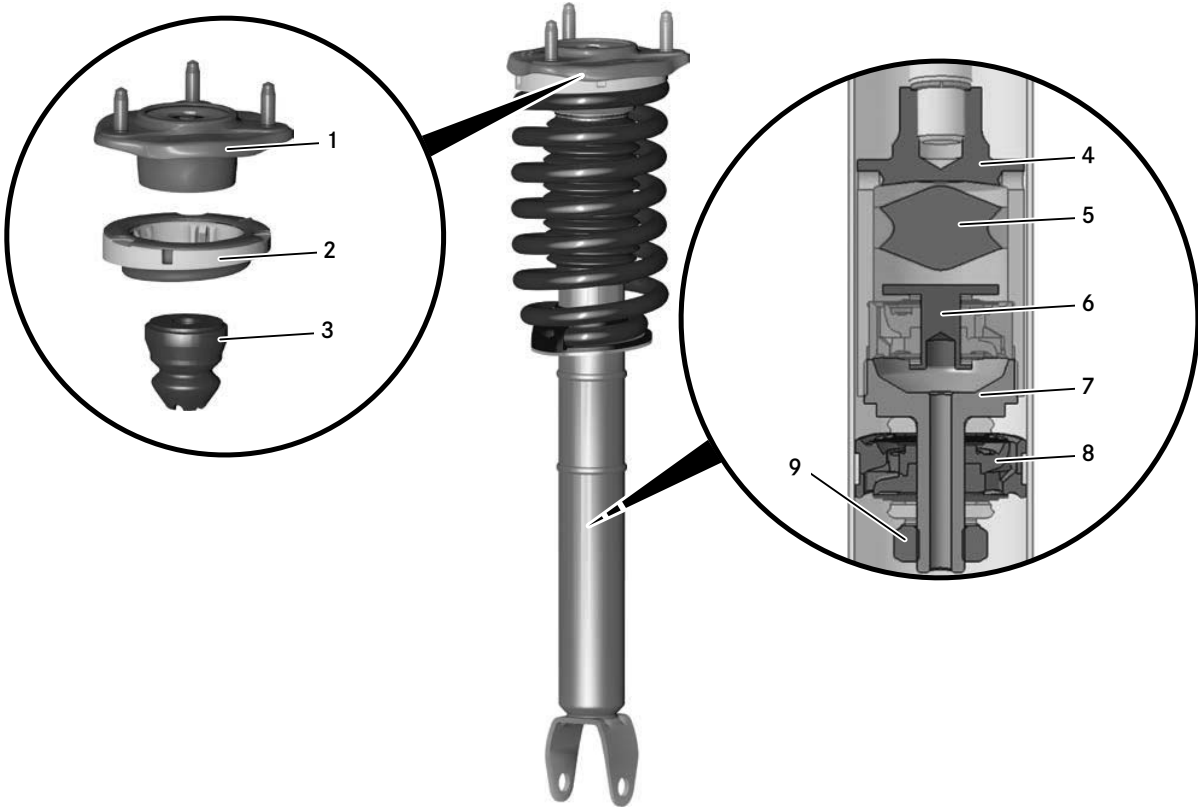
The new E-Class is equipped as standard with conventional steel suspension with a road surface-dependent, passive damping system.

The multi-chamber air spring with AIR BODY CONTROL continuous adjustable damping system is available optionally. The suspension components comprise non-wheel-controlling suspension struts on the front axle, springs and dampers on the rear axle and torsion bars with torsion bar linkages for each axle. In combination with AIR BODY CONTROL, four level sensors and three acceleration sensors are implemented on the front and rear axles as of the market launch. Here, the level sensors are installed on the wheel control assemblies and the acceleration sensors are installed on the body.

AGILITY CONTROL suspension with selective damping system

The comfortably tuned, conventional suspension/damping of the E-Class is designed as a road surface-dependent damping system. The front axle suspension strut is attached to the body with a triple-path head bearing. With this system, the static carrying forces are transmitted directly to the body via a plastic shim. Large forces (e.g. when shock absorbers bottom out) are absorbed by a jounce buffer.

The function module consists of a small elastomer piston, which reduces the damping effect in the event of minor road surface excitations. This considerably improves the driving comfort and the response of the suspension in particular. For heavier road surface excitation, the full damping effect is available.



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AGILITY CONTROL suspension strut

- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Head bearing 2 Plastic shim 3 Jounce buffer 4 Working housing 5 Elastomer piston | <ul style="list-style-type: none"> 6 Comfort valve with bypass separation 7 Restrictor 8 Working piston with bypass separation 9 Nut |
|--|--|

Axles and suspension

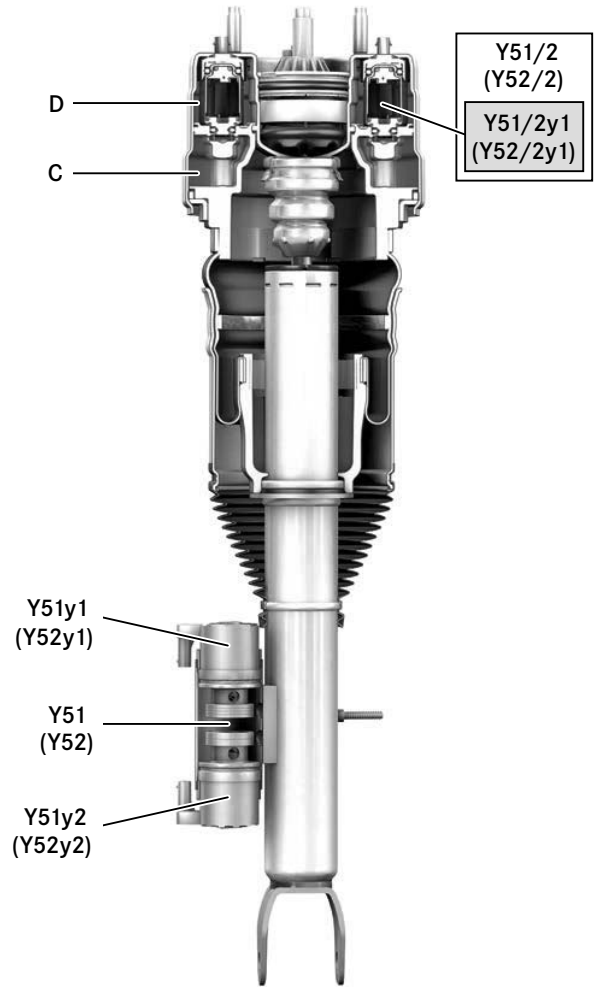
AIR BODY CONTROL

The AIR BODY CONTROL special equipment option provides multi-chamber air suspension on all four wheels. The system combines air suspension with continuous adjustment damping, whereby the damping characteristics are adjusted appropriately to the road surface condition.

The multi-chamber springs allow the air volume which supports the vehicle to be varied. The chambers can be separated or connected with each other by means of a valve. This varies the rigidity of the multi-chamber air springs and adjusts it to the driving situation. This results in less rolling when cornering. The supply of compressed air for the air suspension is achieved with an electrically powered compressor. As of the market launch, the system is equipped with a central reservoir to be able to regulate the vehicle load silently at a standstill. The driver can adjust the vehicle level individually by pressing the vehicle level button in the lower control panel.

The electronic control unit contains an automatic disabling function so that all control operations, such as air release from the suspension struts or compressor operation, are suppressed in certain situations e.g. when changing a wheel on a jack or when lifting the vehicle on a vehicle lift.

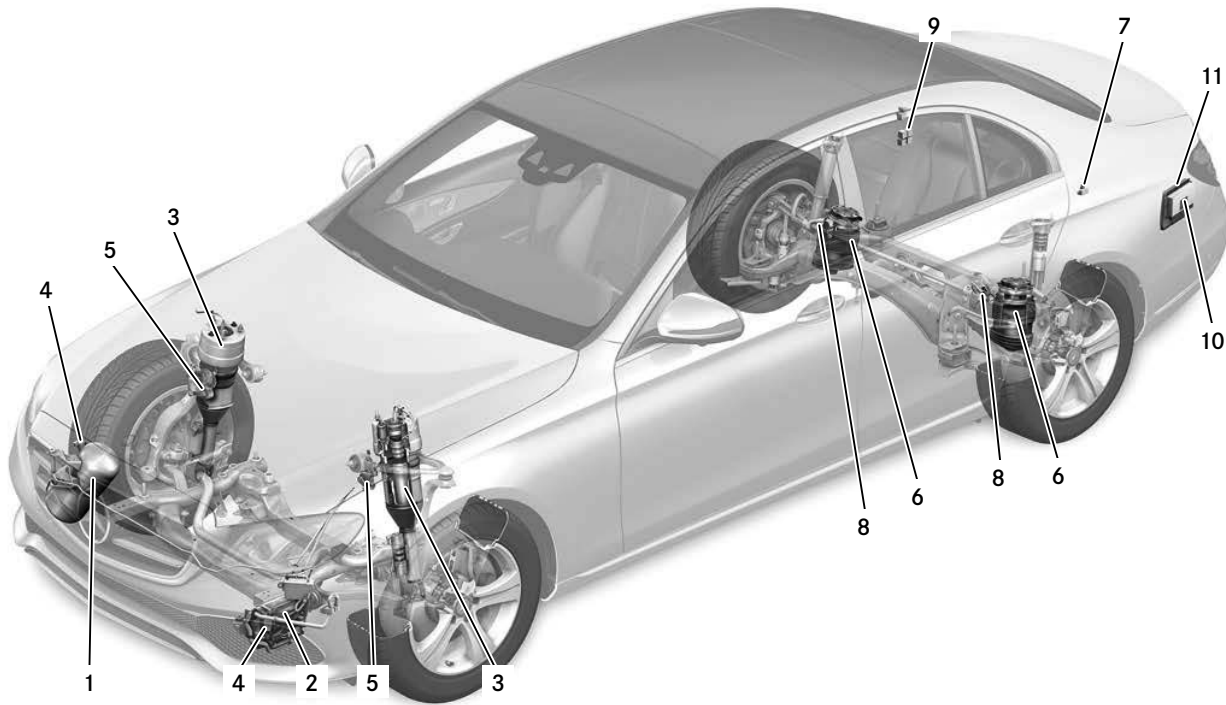
When the vehicle is fully laden, the air suspension guarantees excellent ride comfort. Depending on the current speed, the automatic ride-height control function can reduce the fuel consumption and improve the safety of the vehicle. In addition, the vehicle can be lifted on rough road surfaces or unfavorable uphill stretches using the vehicle level button in the lower control panel. The continuously adjustable damping system improves body stability in particular, whilst maintaining optimal driving comfort. Excellent vehicle dynamics can be achieved with the quick-responding adjustable damping system without any reduction in comfort. In evasive maneuvers, for example, this means that there is an immediate adjustment of the spring and damping forces to optimize the vehicle's anti-roll characteristics and roll torque distribution.



P32.22-2597-00

AIR BODY CONTROL with continuous damping control illustrated on the front suspension strut

C	Air chamber	Y52	Right front axle damping valve unit
D	Air chamber		
Y51	Left front axle damping valve unit	Y52y1	Solenoid valve 1, right front
Y51y1	Solenoid valve 1, left front	Y52y2	Solenoid valve 2, right front
Y51y2	Solenoid valve 2, left front		
Y51/2	Left front axle air suspension valve unit	Y52/2	Right front axle air suspension valve unit
Y51/2y1	Air suspension valve 1, left front	Y52/2y1	Air suspension valve 1, right front



AIR BODY CONTROL in installation position

- | | | | |
|---|-------------------------------------|----|---------------------------|
| 1 | Central reservoir | 7 | Rear acceleration sensors |
| 2 | Valve unit with electric compressor | 8 | Rear level sensors |
| 3 | Front suspension struts | 9 | ABC relay |
| 4 | Front acceleration sensors | 10 | ABC control unit |
| 5 | Front level sensors | 11 | ABC+ control unit |
| 6 | Rear suspension bellows | | |

P32.22-2598-00

Axles and suspension

AGILITY CONTROL suspension with selective damping system and lowering

The suspension with selective damping system is lowered by -15 mm. The lowering and tighter suspension tuning enables a dynamic driving style combined with high ride comfort. It also gives the vehicle a sporty appearance.

The suspension is equipped with continuously adjustable damping at the front and rear axle. Depending on the driving situation, vehicle speed and road surface condition, the system varies the damper characteristic and automatically reduces sprung mass vibrations of the body. It is possible to choose between Comfort, Sport and Sport Plus transmission modes. Each transmission mode allows the damping characteristics to be changed individually and conveniently. The driver is informed about the current mode setting on the multifunction display.