

# The new Mercedes-Benz E-Class Coupé

**Press Information**

<b>Contents</b>	Page	April 2009
<b><u>Short version</u></b>		
<b>The new Mercedes-Benz E-Class Coupé</b> Excitement can be this efficient	2	
<b>At a glance:</b> Technical highlights of the new E-Class Coupé	14	
<b><u>Long version</u></b>		
<b>Model range</b> Elegance, exclusivity and emotion – Coupé excitement à la E-Class	18	
<b>Design</b> Passion, sportiness and charisma – Lines with the power to move you	25	
<b>Active safety</b> Radar, cameras and sensors – new assistance systems for safe motoring	31	
<b>Passive safety</b> Reflexes, airbags and actuators – comprehensive commitment to comprehensive protection	45	
<b>Interior</b> Space, modes and music – a complete package for comfort without compromise	54	
<b>BlueEFFICIENCY</b> Tyres, pumps and louvres – practical solutions for reducing CO <sub>2</sub> emissions	69	
<b>Drive system</b> Turbo, piezo and direct injection – new engines which offer big fuel savings	74	
<b>Chassis and suspension</b> From damping to shift programs – technology for a unique driving experience	88	
<b>Technical data</b>	98	

The descriptions and information in this press kit apply to the international Mercedes-Benz model range and may vary from country to country.

## Excitement can be this efficient

**Stuttgart – The Geneva Motor Show will see the comeback of an intriguing product idea when Mercedes-Benz presents the Coupé range in the new E-Class. Three months after the presentation of the Saloon, the brand is therefore launching a new highlight in the new model series while continuing a tradition that has repeatedly met with great enthusiasm throughout the history of the E-Class.**

**The new E-Class Coupé offers a very special combination of two attributes for which the Mercedes brand is known: fascination and efficiency. With its classic coupé side aspect – no B-pillars and fully retractable side windows – the new two-door car is a particularly sporty interpretation of the E-Class's dynamic design. At the same time the most aerodynamic variant of the Coupés achieves a new world best in terms of drag coefficient: with a Cd-figure of just 0.24, this model is the world's most aerodynamically efficient series-production car. The model programme includes two new 4-cylinder engines, which consume up to 17% less fuel whilst offering a significant increase in performance and torque. The new E-Class Coupé's standard-fit AGILITY CONTROL suspension adjusts automatically to the current driving situation. It combines driving enjoyment and excellent handling with the maximum comfort. The new E-Class Coupé will be in the showrooms of the European Mercedes-Benz dealerships and company-owned sales outlets at the beginning of May 2009.**

The new Coupé offers all the technical innovations of the new E-Class series that one might expect to find in a sports-oriented luxury coupé. These include selective damper control, drowsiness detection, preventive occupant protection and the Active Bonnet. As a feature specific to the Coupé, the Dynamic Driving package allows different suspension setups at the touch of a button. Adaptive Main Beam Assist, road sign recognition and an automatic emergency braking

system are other features with which the new series sets standards in this vehicle category.

The E-Class also takes on a pioneering role in the drive sector. The new diesels and direct-injection petrol engines combine efficiency with an effortless power delivery. The engine line-up includes two new four-cylinder models which deliver significantly more power and torque while consuming up to 17 percent less fuel. The best example is the E 250 CDI BlueEFFICIENCY Coupé, which consumes 5.1 litres of diesel per 100 kilometres and emits 135 grams of CO<sub>2</sub> per kilometre, making it one of the most economical vehicles in its class.

The exemplary, low fuel consumption has not only been achieved because of the new engines, but also with a number of practical measures. These include on-demand activation of the steering and fuel pumps, the use of tyres with low rolling resistance and an alternator control system which takes account of the current driving situation and the vehicle's electrical power requirements, plus the very decisive factor of outstanding aerodynamics .

An overview of the engines:

<b>Model designation</b>	<b>Output (kW/hp)</b>	<b>Max. torque (Nm at rpm)</b>	<b>Combined NFDC fuel consumption (l/100 km)</b>
E 250 CDI BlueEFFICIENCY Coupé	150/204	500 at 1600-1800 rpm	5.1
E 350 CDI BlueEFFICIENCY Coupé	170/231	540 at 1600-2400 rpm	6.8
E 250 CGI BlueEFFICIENCY Coupé	150/204	310 at 2000-4300 rpm	7.2
E 350 CGI BlueEFFICIENCY Coupé	215/292	365 at 3000-5100 rpm	8.5
E 500 Coupé	285/388	530 at 2800-4800 rpm	10.9

## **Design which expresses passion and effortless superiority**

Page 4

The design of the new two-door model includes traditional styling elements which give Mercedes-Benz Coupés their unmistakable identity: for example the side windows, which are not interrupted by a B-pillar and are fully retractable. Another hallmark of Mercedes Coupé design is the sports radiator grille with the large central star. At the same time, however, the new model points the way to the future with an exciting, contemporary design idiom.

At the same time the Coupé shows its close family resemblance to the E-Class Saloon. This is shown by the 'twin-headlamp face', with rhomboid contours but somewhat sportier, sharper treatment for a more dynamic and incisive look. Another design feature which the Coupé shares with the Saloon is the powerful contour of the rear wing – a styling cue which also gave the S 220 "Ponton" Coupé of 1955 its athletic appearance.

Although it shares family traits with the Saloon, the Coupé has its own, distinct identity characterised by effortless superiority and a greater sense of passion. The arrow shape of the entire front section from front bumper to radiator to bonnet, the more extreme interpretation of the twin headlamp face and its more sinewy build give it a racier and more dynamic presence.

## **Newly developed seats with a sporty design**

The seats of the E-Class Coupé are new developments whose design and technology reflect the sporty nature of this two-door Mercedes. They are electrically adjustable for seat height and backrest angle as standard. The high, sports car-like seat backrests have a practical **Easy-Entry function** to make access and egress easier for rear-seat passengers. In conjunction with electric seat adjustment with memory (an optional extra), the front seats are equipped with electropneumatically adjustable **four-way lumbar supports**; these are able to provide anatomically favourable support for the lower spine, which further improves seating comfort.

Luxury seats with leather upholstery and active **ventilation** are available as optional extras, as are newly developed **multicontour seats** with inflatable air chambers in the front seat cushions as well as in the centre and side bolsters of the backrests. Two comfortable **individual seats** are available for the rear passengers. These feature backrests which can be folded down individually or together to increase the capacity of the luggage compartment.

### **Engines: fuel consumption down by 17 percent**

The diesel in the **E 250 CDI BlueEFFICIENCY Coupé** is the top-of-the-range unit in the new generation of Mercedes-Benz four-cylinder engines, which are notable for features such as two-stage turbocharging, precise piezo injectors and the latest common-rail technology. The engine has an output of 150 kW/204 hp and develops a maximum torque of 500 newtonmetres which is available from just 1600 rpm. This means that it is some 36 percent more powerful than the four-cylinder diesel in the preceding model yet consumes around 17 percent less fuel: **5.1 litres** per 100 kilometres (combined NEDC consumption, provisional figure). This corresponds to a carbon dioxide emission level of **135 grams** per kilometre.

The turbocharged V6 diesel engine with common-rail direct injection remains in the line-up. Fitted in the **E 350 CDI BlueEFFICIENCY Coupé**, it develops 170 kW/231 hp (previously: 165 kW/224 hp) and consumes **6.8 litres** per 100 kilometres (combined) in the NEDC cycle. Its carbon-dioxide emissions are **179 grams** per kilometre.

### **Two new petrol engines with direct injection**

Mercedes-Benz has also chosen to move over to direct-injection technology for its petrol engines. Once again, the E-Class Coupé points the way: the powerplant at work under the bonnet of the **E 250 CGI BlueEFFICIENCY Coupé** is a newly developed four-cylinder direct-injection unit with 150 kW/204 hp and a five-speed automatic transmission as standard. This engine makes do with **7.2 litres** of fuel per 100 kilometres (combined NEDC consumption, provisional figure). CO<sub>2</sub> emissions are **167 grams** per kilometre. This is some 13 percent less than

the figure for the previous four-cylinder engine (135 kW/184 hp) with conventional fuel injection.

Mercedes-Benz has replaced the previous V6 petrol engine with the world's first six-cylinder unit featuring spray-guided direct petrol injection in the new **E 350 CGI BlueEFFICIENCY Coupé**. This engine develops 215 kW/292 hp – an extra 15 kW/20 hp – and consumes about 14 percent less fuel than the previous V6 engine: its combined NEDC consumption per 100 kilometres is **8.5 litres**. This corresponds to **199 grams of CO<sub>2</sub>** per kilometre.

In the top-of-the-range model, the **E 500 Coupé**, the muscular V8 engine with 285 kW/388 hp and 530 newtonmetres of torque offers the performance characteristics of a sports car. Mercedes engineers have enhanced details of the eight-cylinder unit, reducing the fuel consumption (compared to the preceding model) by 0.5 litres to **10.9 litres** per 100 kilometres (combined NEDC consumption). All the engines in the new E-Class Coupés meet the EU5 exhaust emission standard.

### **Safety: sensors, radar and cameras for safe driving**

The safety systems newly developed for the E-Class are based on **accident research** findings; they can make a valuable contribution to enabling safe, accident-free driving, improving vehicle occupant protection and, moreover, helping to increase the safety of other road users. These trend-setting developments are also available for the new E-Class Coupé, or are included in its standard equipment. Based on highly sensitive sensors, cameras and radar systems, they turn this two-door model into an "**intelligent partner**" able to see, feel and react reflexively in critical situations and, if necessary, act independently if the danger of an accident is acute.

**Drowsiness** is one of the most common causes of accidents on motorways. This is why Mercedes experts have developed the **ATTENTION ASSIST** system which forms part of the **standard equipment** of the new E-Class Coupé. As the vehicle is being driven, the system continuously evaluates more than 70 different parameters in order to identify driver drowsiness and provide a warning before the

dangerous microsleep phase begins. Observing the driver's **steering behaviour** has proved to be a particularly strong indicator: several years of practical research by Mercedes engineers have shown that drowsy drivers make minor steering errors which they often correct very rapidly in a characteristic way. This steering behaviour is recognised by a special steering angle sensor.

Also fitted as standard is the PRE-SAFE<sup>®</sup> **anticipatory occupant protection** system – a Mercedes invention which has received a number of awards and which is not offered by any other vehicle in this class. If there is an immediate danger of an accident occurring, the system activates protective measures for the driver and front passenger as a precaution so that the seat belts and airbags can provide their full protective effect on impact. This warning of an impending accident is possible because PRE-SAFE<sup>®</sup> uses the sensors of the Brake Assist system and the Electronic Stability Program (ESP<sup>®</sup>) to identify potentially critical dynamic handling situations.

### **Adaptive Main Beam Assist for the best possible road illumination**

Like the Saloon, the new E-Class Coupé also offers the latest lighting technology. The headlamps adjust continuously to the current driving situation and react automatically to offer the driver the best possible degree of road illumination at all times. This task is taken care of by the **Adaptive Main Beam Assist** function: a camera fitted on the inside of the windscreen allows the system to detect oncoming vehicles/vehicles in front and automatically controls the headlamps to prevent the other road users from being dazzled. As a result, the range of the dipped-beam headlamps can increase from the current norm of 65 metres to as much as 300 metres. If the road ahead is clear, the system performs a gradual transition to high-beam mode.

Adaptive Main Beam Assist is based on the **bi-xenon headlamps**, which Mercedes-Benz offers in combination with LED daytime driving lights.

## **Automatic emergency braking when a collision is imminent**

Page 8

The well-proven assistance systems from the S-Class which help to prevent **rear-end collisions** are now available for the E-Class Coupé, too. They use long and short-range radar sensors to monitor the traffic situation ahead of the vehicle and warn the driver if there is a risk of an accident. Mercedes-Benz combines these technologies in the DISTRONIC PLUS system; along with the proximity control system – which automatically maintains the Coupé at a set distance from the vehicle in front and can brake it to a standstill if required by the traffic situation – this comprises **Brake Assist PLUS** and the **PRE-SAFE® Brake**.

Brake Assist PLUS intervenes if there is suddenly a very rapid reduction in the distance. In this situation, the system warns the driver and almost instantaneously calculates the degree of braking assistance necessary to prevent a collision. This brake force is available immediately the driver depresses the brake pedal. Depending on the speed and distance, it allows controlled braking to a defined point or – if necessary – emergency braking.

The PRE-SAFE® Brake goes a step further and automatically brakes the E-Class if there is imminent danger of a collision and the driver does not react to the warnings. This can reduce the severity of an impact considerably, as the system can be regarded as something like an "**electronic crumple zone**" which offers the occupants an even greater degree of safety.

## **Most comprehensive array of safety features in this vehicle category**

With seven standard-fit airbags, belt tensioners and belt force limiters on all seats, as well as crash-responsive head restraints for the driver and front passenger, the new E-Class Coupé offers the most comprehensive array of safety features in this vehicle category. The range of airbags, which can deploy in thousandths of a second in an accident, comprises front and side airbags for the driver and front passenger, a kneebag for the driver and windowbags. Rear sidebags are available as an optional extra.

The front crumple zone has four independent impact planes which allow the forces to be distributed over a wide area while bypassing the passenger cell. Furthermore, increased use of **extra-high-strength steel alloys** helps the vehicle body to withstand high impact loads. In fact, particularly strong grades of steel like this account for about two thirds of all the sheet metal used in the bodyshell of the E-Class Coupé.

An **Active Bonnet**, which forms part of the standard equipment, is the latest development to result from Mercedes-Benz's long-standing and successful commitment to **pedestrian protection**. In the event of an impact, a system of springs raises the rear section of the bonnet by 50 millimetres within a fraction of a second, thereby increasing the available deformation space. A special feature of the Mercedes system is its reversible mechanism which allows the driver to reset the Active Bonnet without having to visit a workshop.

### **Comfort: advanced technology for a new driving experience**

Along with safety, comfort has always been one of the outstanding qualities of the E-Class. Here, too, the Coupé lives up to the high standard set by the Saloon and demonstrates further noticeable progress, especially with regard to ride, seating and climate comfort. Another important comfort factor is the generous interior **space**, which Mercedes engineers created by increasing both the length and width of the vehicle body by 46 millimetres. This resulted in the **distance between the front and rear seat reference points** – an important dimension for the occupants' freedom of movement – increasing by ten millimetres to 789 mm while the **elbow width** improved by up to 49 millimetres, compared to the preceding model.

### **High standard of ride comfort through selective damper control**

The new E-Class Coupé's standard-fit AGILITY CONTROL suspension adjusts automatically to the current driving situation. In order to provide the best possible ride comfort, this system reduces the damping during normal driving

but immediately applies the maximum damping force during dynamic cornering or sudden evasive manoeuvres. This ensures optimum stabilisation of the Coupé.

As an alternative to the standard-fit AGILITY CONTROL suspension which is set up for comfort, a variant with a sportier damper response and more direct steering – the AGILITY CONTROL sports suspension – is available as an optional extra. To meet the requirements of even more demanding drivers, Mercedes-Benz has developed a **dynamic handling package** with an electronically controlled damping system. This processes sensor data about the current driving situation and adjusts the shock absorbers separately for each wheel. Furthermore, the driver can switch between two drive modes – Comfort and Sport – which make corresponding adjustments to the suspension set-up, accelerator response and the shift points of the automatic transmission. A newly developed **speed-sensitive sports steering** system with a more direct ratio and variable centring is also included in the dynamic handling package.

In order to allow a comparison of suspension characteristics, Mercedes engineers have developed the **body index** – a composite formula which is calculated from the readings for various typical driving manoeuvres. The body index is an indication of how well the suspension is linked to the body, how closely the car hugs the road and how nimble the handling is through fast bends. The higher the figure, the sportier – i.e. the firmer – the suspension characteristics.

The body index shows how the **dynamic handling package** is able to meet customers' requirements for dynamism and comfort in equal measure: the index figure of 2.06 attained in Sport mode is reduced to 1.89 – a typical level for a saloon – when Comfort mode is selected.

## Individual climatic comfort at the touch of button

Page 11

The newly developed luxury automatic climate control system regulates the temperature, volume and distribution of the air in **three zones** to meet the requirements of the driver, front passenger and rear passengers. What's more, for the first time, this optional THERMOTRONIC system allows the selection of different **climatisation modes**: the occupants can choose "Diffuse", "Medium" or "Focus" modes at the touch of a button in order to adapt the air volume and distribution to their personal preferences while still benefiting from the convenience and comfort of automatically regulated climate control. Fitted as standard in the E-Class Coupé, the THERMATIC **two-zone automatic climate control** has been enhanced to offer five percent more heating and cooling power than the version fitted in the predecessor model.

## Infotainment system with colour display in the dashboard

The well-proven **operating concept** from the S-Class, comprising the multifunction steering wheel, Controller on the centre tunnel, colour display in the dashboard and direct selection buttons also offers the occupants of the new E-Class Coupé a very high standard of operating comfort.

The **Controller** puts all the functions of the advanced infotainment system – such as the radio, CD/DVD player, telephone and navigation system – at the fingertips of the driver and front passenger. The Audio 20 CD radio with eight loudspeakers, a CD player and a Bluetooth interface for a mobile phone is fitted as standard. Customers who specify the optional **COMAND APS** multimedia system benefit from additional functions: a Europe-wide hard-disc navigation system, a DVD changer, the Music Register (storage for about 1000 music tracks) and voice control with whole-word recognition. Further options for even greater listening pleasure are available in the form of a 500-watt surround **sound system**, a **media interface** for connecting external MP3 players and a **tuner** for digital radio reception.

With an initial line-up of five engines, three suspension variants, a wide choice of colours, six different wheel/tyre combinations and many optional extras, the new E-Class Coupé offers plenty of scope for customers to turn their individual automotive dreams into reality. The basis for configuring the look and feel of the Coupé is provided by the **ELEGANCE** and **AVANTGARDE** interior concepts.

These not only offer different upholsteries and items of trim, but are complete configuration packages designed to create a harmonious atmosphere. Depending on the choice, the interior differs in its colour scheme and mix of materials to emphasise the elegant or progressive character of the Coupé.

The AMG Sports package, on the other hand, clearly focusses on agility and performance potential. AMG bodystyling includes the unmistakable contours of the AMG front apron with large air intakes, AMG side skirts and the expressive AMG rear apron with a black insert. High-sheen 18-inch AMG light-alloy wheels in a 6 twin-spoke design with wide-base tyres in size 235/40 R 18 at the front and 255/35 R 18 at the rear provide further highlights. The **AGILITY CONTROL** sports suspension with a stiffer spring, shock absorber and stabiliser setup is combined with large, perforated brake discs at the front, plus brake callipers with Mercedes-Benz lettering. Perfect road contact is ensured by the sports speed-sensitive steering with a more direct ratio.

Striking interior features include upholstery in black **ARTICO** man-made leather. Leather or the particularly exclusive nappa leather is also available in a wide range of colours. Multicontour seats for the driver and front passenger provide the best possible adjustment to personal comfort preferences, thereby ensuring outstanding long-distance comfort.

With production limited to the first few months, the E-Class Coupé is also available as a Prime Edition series which particularly emphasises the new model's character with selected, high-grade features. Among the most eye-catching are the palladium silver metallic paint finish, a panoramic glass sliding roof and 18-inch AMG high-sheen light-alloy wheels painted in titanium grey. Inside, a designo-interior with two-tone designo leather upholstery, matching designo floor mats and a sports pedal cluster of brushed stainless steel rounds off the exclusive overall impression.

**Contacts:**

Wolfgang Zanker, Tel.: +49 711-17-75847, [wolfgang.zanker@daimler.com](mailto:wolfgang.zanker@daimler.com)

Frank Bracke, Tel.: +49 711 17-75852, [frank.bracke@daimler.com](mailto:frank.bracke@daimler.com)

More information from Mercedes-Benz is available online at:

[www.media.daimler.com](http://www.media.daimler.com)

## At a glance: technical highlights\* of the new E-Class Coupé

Page 14

<b>Cornering lights:</b> this function of the bi-xenon headlamps and the Intelligent Light System provides more safety on junctions and when driving slowly on tight bends.	Optional
<b>ADAPTIVE BRAKE:</b> this Mercedes brake system offers assistance functions, such as a HOLD function and Hill Start Assist, for greater safety and comfort.	Standard
<b>Adaptive front airbags:</b> the front airbags deploy in two stages, depending on accident severity.	Standard
<b>Adaptive Highbeam Assist:</b> this system adjusts the range of the headlamps in accordance with the distance to oncoming vehicles/vehicles travelling ahead.	Optional
<b>Adaptive brake lights:</b> flashing brake lights warn vehicles behind in an emergency braking situation.	Standard
<b>AGILITY CONTROL suspension:</b> the shock absorbers adjust automatically to the current driving situation.	Standard
<b>Active Light System:</b> the Intelligent Light System's bi-xenon headlamps follow the driver's steering movements.	Optional
<b>Active Bonnet:</b> in the event of an accident, the rear of the bonnet is raised by 50 millimetres in order to reduce the risk of injury to pedestrians.	Standard
<b>ATTENTION ASSIST:</b> this Mercedes system detects driver drowsiness and gives a warning.	Standard
<b>Motorway mode:</b> from 90 km/h the entire width of the carriageway is illuminated, improving the driver's range of vision by around 50 metres.	Optional
<b>Bi-xenon headlamps:</b> gas-discharge lamps for low and high beam improve safety at night.	Optional
<b>Bluetooth interface:</b> the mobile phone is wirelessly linked to the hands-free system.	Standard
<b>Brake Assist PLUS:</b> this system uses radar sensors to recognise an impending head-to-tail collision, calculates the necessary degree of braking assistance and makes it available immediately when the driver presses the brake pedal.	Optional in conjunction with DISTRONIC PLUS

<b>COMAND APS:</b> the navigation data are stored on a hard disc. Further functions include the Music Register and voice control.	Optional
<b>Controller:</b> the principal control for the infotainment system is mounted on the transmission tunnel.	Standard
<b>C<sub>d</sub> value:</b> the drag coefficient of the new E-Class Coupé has been reduced by as much as eleven percent (depending on the model) to 0.24. This means that the new Mercedes Coupé is the most aerodynamically efficient series-production car in the world.	Standard
<b>Digital radio:</b> a special DAB tuner allows the reception of digital radio broadcasts in CD quality.	Optional
<b>DISTRONIC PLUS:</b> this radar-based proximity control system automatically maintains the E-Class Coupé at a set distance from the vehicle in front, braking it to a standstill if necessary and accelerating when the gap ahead is sufficiently large. If the distance to the vehicle ahead decreases too quickly, the system gives the driver visual and audible warnings.	Optional
<b>Enhanced fog lamps:</b> this function (part of the Intelligent Light System) works by pivoting the outer headlamp outwards by eight degrees and lowering its beam. This provides brighter illumination of the inner half of the road and reduces the self-dazzling effect caused by light reflected by the fog.	Optional
<b>ESP<sup>®</sup>:</b> this safety system is able to reduce the risk of skidding and warns of pressure loss in the tyres.	Standard
<b>Headlamp Assist:</b> a sensor on the windscreen automatically switches the headlamps on when darkness falls.	Standard
<b>Speed Limit Assist:</b> a camera fitted behind the windscreen detects speed limit signs. The relevant limit is then displayed in the instrument cluster.	Optional (available from Q4, 2009)
<b>Belt feeder:</b> the seat belt is automatically brought within easy reach of the front seat occupants when they get into the car.	Standard for driver and front passenger
<b>Belt force limiters:</b> this technology reduces the force exerted by the belt strap on the seat occupant during a crash.	Standard for all seats
<b>Belt tensioners:</b> any slack in the seat belt strap is instantly taken up during a crash to reduce the forward movement of the occupants caused by the impact.	Standard for all seats
<b>Intelligent Light System:</b> in combination with bi-xenon headlamps, this system offers five lighting functions which are activated depending on the driving and weather conditions.	Optional

<b>KEYLESS-GO:</b> the doors and boot lid can be opened without a key. The engine is started at the touch of a button.	Optional
<b>Child seat recognition:</b> a transponder system automatically recognises whether a rear-facing child seat is installed, and deactivates the front passenger airbag if this is the case.	Optional
<b>Kneebag:</b> in the event of a crash, an additional airbag reduces the forward movement of the driver caused by the impact.	Standard
<b>THERMATIC automatic climate control:</b> this improved system controls two temperature zones and offers numerous adjustments for individual passenger comfort.	Standard
<b>THERMOTRONIC luxury automatic climate control:</b> this system provides three-zone climate control, and allows individual climatisation modes to be set.	Optional
<b>Radiator louvres:</b> this newly developed feature allows the supply of cooling air to be regulated in accordance with the driving situation and thus improves the vehicle's aerodynamics.	Standard in the four-cylinder models and the E 350 CGI Blue-EFFICIENCY Coupé
<b>Media Interface:</b> this universal interface allows portable audio devices to be connected to and controlled by the infotainment system of the E-Class Coupé.	Optional
<b>Multifunction steering wheel:</b> the radio, telephone, navigation system, display and other devices can be controlled from the steering wheel.	Standard
<b>Country mode:</b> this function of the Intelligent Light System replaces the previous low-beam headlamps and provides broader and brighter illumination of the opposite road verge.	Optional
<b>LINGUATRONIC:</b> the voice control system operates the radio, CD/DVD-player, CD/DVD-changer, navigation system and telephone.	Optional; standard in conjunction with Audio 50 APS including 6-disc DVD changer and with COMAND APS
<b>Memory function:</b> three memory settings are stored for both the driver's and the front passenger seat. The settings for the steering wheel and exterior mirrors are also stored.	Optional
<b>Multicontour seats:</b> inflatable air chambers enable the seat contours and seat cushion length to be adjusted to the individual occupant.	Optional

<b>NECK-PRO head restraints:</b> crash-responsive head restraints support the heads of the driver and front passenger at an early stage during a rear-end collision, reducing the risk of a whiplash injury.	Standard
<b>Panoramic sliding roof:</b> a large glass surface extends from the windscreen to the rear window. The front section slides to the rear at the touch of a button. The roof closes automatically in the event of rain.	Optional
<b>Parking guidance:</b> side-mounted ultrasonic sensors measure parking spaces as the car drives past; the cockpit display gives the driver guidance on how to manoeuvre into the space safely.	Optional
<b>PRE-SAFE®:</b> anticipatory safety measures are taken to protect the occupants if an accident risk is detected.	Standard
<b>PRE-SAFE® Brake:</b> if there is imminent danger of a head-to-tail collision, this system brakes the E-Class automatically if the driver fails to react.	Optional in conjunction with DISTRONIC PLUS
<b>Reversing camera:</b> as soon as reverse gear is selected, the dashboard display shows the image from a camera covering the area immediately to the rear of the coupé.	Optional
<b>Sidebags:</b> these airbags reduce the risk of injury in a collision from the side.	Standard for driver and front passenger; optional for the rear
<b>7G-TRONIC seven-speed automatic transmission:</b> the world's only automatic car transmission with seven ratios is combined with the V6 engines and the V8.	Standard in the V6 and V8 models
<b>Sound system:</b> a multi-channel system with innovative digital technology, an output of 500 watts and twelve loudspeakers provides surround-sound for every seat.	Optional
<b>Daytime driving lights:</b> the twin circular halogen daytime driving lights switch on automatically. In combination with the Intelligent Light System, the daytime driving lights use LED technology.	Standard
<b>Fuel consumption display:</b> a display in the instrument cluster shows the current fuel consumption (extrapolated into litres per 100 km) and tells the driver when to shift to a higher gear.	Standard
<b>Windowbags:</b> like a curtain, these large airbags extend from the A to the C-pillar in a side impact.	Standard

\*Selection

## Elegance, exclusivity and emotion – Coupé excitement à la E-Class

- **The continuation of the successful E-Class Coupé tradition**
- **The advanced technology of the saloon teams up with the sporty agility of a coupé**
- **High-spec standard equipment includes ATTENTION ASSIST and PRE-SAFE®**
- **Two different interior design and equipment concepts**

Their compelling elegance, exclusivity and charisma have made them highlights of the Mercedes-Benz model line-up for over 70 years: the coupés with the three-pointed star on the bonnet have always exerted a special fascination. They epitomise all that a refined, sporty car should be, their technology, aesthetics and appointments forming a stylish and harmonious whole. They are cars for people who believe in making their dreams come true.

Mercedes coupés have always been offered in a number of different vehicle categories – and in different forms. There have been city coupés, touring coupés, combination coupés, sports coupés ... For all their differences, these two-door models had one important factor in common: the Stuttgart-based firm has always made a point of creating coupés which are much more than just saloon models with a shorter rear section. In fact, Mercedes coupés have always been clearly identifiable as distinct models in their own right – as **automotive personalities** with their own charisma and their own character. It is this recipe for success that has made all Mercedes coupés, past and present, automotive **classics** which are sought-after collector's items.

Sporty and elegant two-door models have occupied a permanent place in the mid-range model series – today's E-Class – since **1967**. It was in that year that Mercedes-Benz launched the coupé version of the W 114 model series which meant that customers in this traditionally high-volume segment could now choose a car

with a highly distinctive character. This Coupé was followed by the "C" models of the W 123 (1977) and W 124 (1987) model series and finally the CLK (1997).

### **Coupé version closely related to the saloon**

The new Mercedes two-door model, which reaches the market in May 2009, follows in the tracks of its successful predecessors and represents a technical and stylistic high point in the history of the E-Class coupés. Although the new model continues to emphasise its own, distinct identity, the genes of the **Saloon** stand out more prominently than ever and establish a closer relationship between the two models. This connection is underlined by the reappearance of the "E" in the model designation.

The **status** and **commanding, confident presence** which typify the new E-Class are also obvious characteristics of the two-door model. Although the Coupé shares the Saloon's more pronounced, masculine look as well as its design idiom which acts as a statement of power, it complements these qualities with its own attributes to create a concept with even greater emotional appeal. Both models are unrivalled for the high standard of their technology. With trend-setting safety systems such as the ATTENTION ASSIST drowsiness warning system, PRE-SAFE<sup>®</sup> anticipatory occupant protection, Adaptive Highbeam Assist, Speed Limit Assist and PRE-SAFE<sup>®</sup> automatic emergency braking, the new two-door model boasts features which put the E-Class in pole position – not just in its own segment, but among luxury-class coupés, too.

### **Comfort, safety and agility**

The passion people feel for a Mercedes coupé is aroused above all by the design – the lines, the colours, the choice of materials and appointments. Take the fully retractable side windows, for example: to see them slide down and provide an unobstructed view of the interior as the outside world and the inside of the vehicle merge into a harmonious whole is just one example of how the compelling Mercedes coupé experience appeals to the emotions.

The new E-Class Coupé sends the driver's pulse even higher when it's out on the road and its sporty, attractive looks are matched by its youthful, **character** – a character that is defined by sporty **handling**, responsive **agility** and impressive **power delivery**. These qualities are a consequence of features such as the newly developed suspension with selective damper control, the more direct steering ratio and the new, more powerful engines which are more economical than their predecessors.

Complemented by other characteristic Mercedes qualities – especially the outstandingly high E-Class standards of safety and comfort – these attributes create an ideal basis for delivering an extremely high degree of **driving enjoyment**.

### **The highest-specification standard equipment in this market segment**

The successful Mercedes coupé vehicle concept is matched by the high-specification equipment line-up which Mercedes-Benz has put together for the new two-door model and which meets the same high standards of exclusivity and individuality set for all other aspects of the E-Class Coupé. No other coupé in this vehicle category offers such a comprehensive range of equipment as standard.

The line-up includes:

- Adaptive driver and passenger airbags
- Adaptive flashing brake lights
- Active Bonnet with reversible actuator
- Anti-lock braking system (ABS)
- Electrically adjustable and heated exterior mirrors
- Audio 20 CD radio with twin tuner, CD player and eight loudspeakers
- Controller
- Wide-base tyres 235/45 R 17 or 235/40 R 18 (front) and 255/35 R 18 (rear) for the E 500 Coupé
- Brake Assist
- ADAPTIVE BRAKE system with Hold function and Hill Start Assist
- ELEGANCE or AVANTGARDE interior concept
- Easy-Entry function for the front seats

- Electronic Stability Program (ESP<sup>®</sup>) with acceleration skid control (ASR)
- DIRECT CONTROL suspension with selective damping system
- Colour display in dashboard
- Asymmetrically split/folding rear seats
- Five-speed automatic transmission (E 250 CGI BlueEFFICIENCY Coupé)
- Automatic belt feeders for driver and front passenger
- Belt tensioners and belt-force limiters for all seats
- Air conditioned glove compartment
- Remote boot lid unlocking
- ISOFIX child seat anchorage
- THERMATIC automatic climate control with combination activated charcoal filter
- THERMOTRONIC automatic climate control (E 500 Coupé)
- Kneebag for driver
- NECK-PRO crash-responsive head restraints
- 17-inch light-alloy wheels (18-inch for E 500 Coupé)
- ATTENTION ASSIST drowsiness detection system
- Leather-trimmed multifunction steering wheel
- PRE-SAFE<sup>®</sup> anticipatory occupant protection
- Tyre pressure loss warning system
- Rear lights with LED technology
- Windscreen wipers with intermittent setting and rain sensor
- Six-speed manual transmission (E 250 CDI BlueEFFICIENCY Coupé)
- Sidebags for driver and front passenger
- 7G-TRONIC seven-speed automatic transmission (E 350 CDI BlueEFFICIENCY Coupé, E 350 CGI BlueEFFICIENCY Coupé and E 500 Coupé)
- Seats upholstered in combined fabric/ARTICO man-made leather
- Daytime driving lights
- Bluetooth hands-free system for telephone
- Cruise control
- Front seats electrically adjustable for height and backrest angle
- Green-tinted windows
- Windowbags
- Central locking with crash sensor
- Aluminium trim

Mercedes-Benz offers specially designed interiors in order to provide the individuality called for by today's customers. The two standard-equipment concepts available for the new E-Class Coupé differ principally in terms of the materials and colours used for the interior of the vehicle.

**ELEGANCE interior concept**

---

- Light roof lining, pillar trim and sun visors
- Three-spoke steering wheel and shift/selector lever trimmed with nappa leather in appointments colour and chrome insert
- Aluminium trim elements, or, optionally, wood trim elements
- Interior appointments in the colour combinations black/black, reef grey/alpaca grey or mocha brown/almond beige (leather)
- Instrument cluster with black backplate

**AVANTGARDE interior concept**

---

- Black roof lining, pillar trim and sun visors
- Three-spoke steering wheel and shift/selector lever trimmed with nappa leather and chrome insert
- Aluminium trim elements, or, optionally, wood trim elements in black ash
- Interior appointments in the colour combinations black/black, black/alpaca grey (leather), black/almond beige (leather), black/natural beige (leather) or black/flamenco red (leather)
- Instrument cluster with silver backplate

## **AMG sports package with exclusive front and rear design**

Page 23

The sporty aspect of the E-Class Coupé can be reinforced with the optional AMG sports package. This comprises additional high-specification appointments details as well as a special front and rear design treatment which gives the car a distinctive look:

- Wide-base tyres: 235/40 R 18 (front) and 255/35 R 18 (rear)
- Front brake callipers with Mercedes-Benz lettering
- Perforated front brake discs
- AMG three-spoke sports steering wheel
- AMG front apron
- Velour floor mats with AMG lettering
- AMG rear apron with black decor panel
- 18-inch AMG light-alloy wheels in a 6 twin-spoke design
- Multicontour seats for driver and front passenger, adjustable to suit the individual occupant
- Speed-sensitive sports steering with more direct ratio
- AMG side sill panels
- Seats upholstered in ARTICO man-made leather with contrasting topstitching or, optionally, leather or leather/nappa upholstery
- Sports suspension AGILITY CONTROL
- Sports pedals in brushed stainless steel with black rubber studs

The E-Class Coupé sets new standards among coupés with its advanced assistance systems which represent a distinct plus in terms of safety, comfort and driving enjoyment. The selected items listed here provide an indication of the scope of the factory-fitted optional extras which can be specified:

- DISTRONIC PLUS proximity control system with Brake Assist PLUS and PRE-SAFE® Brake
- Adaptive Highbeam Assist (in combination with Intelligent Light System)
- Automatic child seat detection
- Audio 50 APS car radio with map navigation and DVD player
- Parking aid with parking space measurement
- Dynamic handling package with Sport mode (standard for E 500 Coupé)
- Five-speed automatic transmission (standard for E 250 CGI BlueEFFICIENCY Coupé)
- Speed Limit Assist (available from autumn 2009)
- Intelligent Light System with bi-xenon headlamps and headlamp cleaning system
- KEYLESS-GO
- THERMOTRONIC luxury automatic climate control system (standard for E 500 Coupé)
- Luxury seats, heated and ventilated (in combination with leather appointments)
- Steering wheel with shift paddles (standard for E 500 Coupé)
- Multicontour seats for driver and front passenger
- COMAND APS multimedia system with map navigation, voice control, Music Register and DVD changer
- Multimedia interface in glove compartment
- Panoramic sliding sunroof
- Speed-sensitive steering
- PARKTRONIC
- Reversing camera
- Rear sidebags
- Power seat adjustment with memory function and four-way lumbar support
- 500-watt sound system with twelve loudspeakers
- TV tuner for digital and analogue TV reception

## Passion, sportiness and charisma – Lines with the power to move you

- **An independent, passionate personality with its own distinct identity**
- **Sporty, taut design idiom**
- **Interior with characteristic Mercedes elegance and perceived value**

The new E-Class Coupé from Mercedes-Benz aims straight at the senses – it takes only a moment to be captured by the charisma of this sports car. Its taut lines, powerful muscles and sharp, arrow-shaped front speak directly to the emotions and promise compelling driving enjoyment.

The proud tradition of Mercedes-Benz coupés continues with the latest two-door model from Stuttgart. The newcomer features styling elements which give Mercedes-Benz coupés their unmistakable identity: elements such as the side window treatment which has no B-pillar to interrupt it and features fully retractable windows, or the characteristic sports radiator grille with the large central star. At the same time, this model points the way to the future with an exciting, contemporary design idiom.

The Coupé makes no secret of its close relationship to the new E-Class Saloon. It is immediately obvious from the twin-headlamp face which features a similar rhomboid design for the lights but with a somewhat sportier, sharper treatment which creates a more dynamic and incisive look. Another design feature which the Coupé shares with the Saloon is the powerful contour of the rear wing – a styling cue which also gave the S 220 "Ponton" Coupé of 1955 its athletic appearance.

Despite its E-Class family traits, the new Coupé has its own, distinct identity and a personality that speaks more directly to the emotions. The arrow shape of the entire front section from front bumper to radiator to bonnet, the more extreme interpretation of the twin headlamp face and its more sinewy build give it a racier

and more dynamic presence – in short, it is every inch a coupé and evokes speed even when stationary.

### **The powerful styling accentuates the sleek, flowing lines**

Viewed from the side, the two-door model impresses with its clean proportions and its perfect coupé profile: long bonnet, wide door, high shoulderline with elongated side window treatment, lowered roof line and a short rear overhang. A powerful, muscular form which is integrated in the side wall over the rear axle and a slender, sweeping C-pillar add to the stylish appearance and embody agility and athleticism.

A special characteristic of the contemporary Mercedes design idiom is the creative interplay of edges and surfaces. Taut, sharply defined lines, which grow out of surfaces organically and disappear into them again equally gently, structure the sides of the coupé. The high shoulderline, a prominent, downward-pointing feature line (another contemporary Mercedes styling element) and a second structuring line delimit the sensitively sculpted surfaces. Alternately concave and convex, these create a sleek yet sharply defined flow of lines which creates a fascinating interplay of reflected incident light. In short: flowing surfaces and taut curves form visual energy flows and compelling forms.

The wheel arches have deliberately been given different design treatments at the front and the rear. The resulting formal tension ensures that the overall design does not look too smooth. Indeed, it is the distinct difference between the front and the powerful rear that underlines the car's athletic character.

### **Arrow-shaped front and dominant radiator grille**

From the front bumper to the radiator grille to the bonnet, the pronounced arrow shape of the front section emphasises the sporty character of the Coupé. A central crease in the bonnet picks up this shape and trails back towards the windscreen. A wide, upright radiator grille with two louvres, striking chrome strips, a powerful chrome surround and the central star testifies to status and self-assurance in

time-honoured Mercedes style. The grille makes a dominant, expressive statement of the brand's identity.

The traditional twin headlamp face is based on that of the new E-Class Saloon, but has its own identity. Longer, more sharply inclined and flatter, the headlamps have a more dynamic look which is unmistakable. With their elaborate, high-tech interior and quadrant-shaped indicators, they add a sparkling finishing touch to the front of the vehicle.

A distinctive front apron with large air intakes gives the vehicle a strong, powerful presence. Two vertical struts in the front apron provide visual support for the radiator grille and give it a substantial formal base. Depending on the model version, the bumper houses either the fog lamps or the daytime driving lights and fog lamps side by side. In the versions with bi-xenon headlamps, L-shaped daytime driving lights based on LED technology give the vehicle an expressive look.

### **Powerful rear with innovative lights**

"Powerful and not afraid to show it" could be the motto for the rear section of the new E-Class Coupé: the rear wings spanning the rear axle are sculpted to create a powerful, muscular form which visually enhances the vehicle's width. The distinctive feature line – a characteristic Mercedes styling element – is continued skilfully around the back of the vehicle and into the tail lights, thereby forming a link between front and rear.

The LED tail lights are split and extend from the boot lid far into the side wall. In so doing, they emphasise the width and dynamism of the vehicle. Their innovative lighting technology is particularly noteworthy. An LED background lighting system provides indirect illumination of the three-dimensional back cavity in both light units and in this way sets the basic background lighting tone. Twin light arrays with twin LED light guides stand out against the background lighting. These light arrays accommodate the tail lights and the brake lights while the reversing lights and an additional LED fog lamp are integrated in the boot lid light units.

The narrowness of the gap between the light unit on the boot lid and that on the side wall, as well as the extremely precise bevelling of the adjacent light lenses allows light transmission between the two sections. As a result, the night design of the new Coupé maintains the perceived width and harmonious appearance of the rear section.

The upswept rear bumper simultaneously creates a sense of lightness, underlines the sporty character of the vehicle and serves as a visual differentiator for the different engine versions. A single oval tailpipe indicates a four-cylinder model; the V6 Coupé models can be identified by two oval tailpipes while the eight-cylinder model has two diamond-shaped tailpipes.

### **New paint finishes with effect pigments**

The range of paint finishes comprises twelve colours, five of which are new. A high aluminium content and effect pigments provide the basis for the new stannite grey. Depending on the light incidence, it acquires a green to beige tinge and brings out the forms of the new E-Class Coupé to particularly good effect.

### **Interior with sporty lines and high perceived value**

In the interior, the designers have continued the taut, sporty design idiom of the exterior. The compelling interplay of surfaces and clearly defined lines creates an interior whose elegance and high perceived value are evocative of modern architecture. The cockpit is structured horizontally with a dark upper section in order to avoid unwanted reflections. Interior appointments in two colours – in keeping with the logic of the two-level structure – create intriguing contrasts.

With its sporty look and feel, the cockpit design is clearly in keeping with the agile character of the new Coupé. The instrument cluster with five tubes for the dials and a central display has a slender look while the dials themselves are clearly laid out and have high-quality chrome surrounds as well as a silver backing for the scales. The background colour of the dashboard is silver or black, depending on the choice of trim elements. The three-spoke steering wheel with

multifunction buttons is available in a number of different versions and colours in order to match the interior appointments.

Next to the instrument cluster – and therefore in the primary field of vision of the driver and front passenger – is the display area for the control and display system for the radio, navigation system and other functions. The system is operated by means of a rotary and push-action Controller which falls conveniently to hand in front of the asymmetrically split armrest between the front seats. This armrest also serves as a handrest when operating the Controller.

The horizontally structured dashboard flows into a centre console with a dynamic, arrow-shape where the air-conditioner control unit is to be found along with other features.

### **The light coming through the continuous glass roof creates a special ambience**

Light has an important positive effect on people's sense of well-being. This is why the interior mirror housing contains an ambient lighting source as well as reading lights for the driver and front passenger. A particularly pleasant lighting ambience is created by the optional panoramic sliding roof featuring heat-insulating glass which forms a continuous visual element extending from the windscreen to the rear window. This feature makes the interior brighter and even more appealing but can be covered by means of an electrically operated roller blind when required.

### **Sporty individual seats for the rear passengers, too**

The thoroughly sporty look and feel of the new E-Class Coupé is underlined by the sporty design of the seats which also take the form of individual seats for the rear passengers. Although the Coupé is deliberately designed as a four-seater, the rear backrests still offer a 1/3 to 2/3 split folding function. The front integral seats with pronounced, faceted side bolsters and transverse piping on the seat cushion have a light, contemporary look and immediately create a distinctly

sporty impression while offering excellent seating comfort. Another notable characteristic of the seats is the high-quality, hand-stitched workmanship featuring discreet flat-felled seams

The seats are upholstered in a combination of fabric, which evokes high-quality outdoor products, and ARTICO man-made leather, or, optionally, leather.

### **Fine materials**

The whole interior is dominated by pleasing surface finishes. Trim elements made from valuable, authentic materials emphasise the high-quality of the new Coupé. The sporty two-door model is equipped as standard with brushed aluminium trim elements with a sporty spin finish. Customers can also choose from fine woods: burr walnut, high-gloss black ash or the graphic linearity of pine. In all cases, the trim elements have a thin chrome strip along their upper edge.

Five appointments colours are available: black, alpaca grey and almond beige (in the form of tone-in-tone combinations or sporty contrasts), as well as the special colours natural beige and flamenco red which are offered in conjunction with black as the contrasting basic colour. Fabric is available in black and alpaca grey while leather appointments can be specified in all five colours; nappa leather is offered in the three basic colours. ARTICO leather in the AMG sports package is also offered in the three basic colours.

## Radar, cameras and sensors – New assistance systems for safe motoring

- **Standard-fit ATTENTION ASSIST warns against drowsiness in plenty of time**
- **Adaptive Highbeam Assist selects the optimum light settings automatically**
- **Speed Limit Assist displays the currently permitted speed in the cockpit**
- **DISTRONIC PLUS offers proximity control and Brake Assist PLUS**
- **Autonomous emergency braking if there is an acute risk of an accident**
- **Outstanding aerodynamics enhance active and perceptual safety**

Preventing traffic accidents is at the heart of Mercedes-Benz's commitment to safety. This is why the engineers in Sindelfingen are dedicated to advancing the development of sophisticated assistance systems which warn and assist the driver in critical situations and can act autonomously if there is acute danger. ABS, ESP® and Brake Assist were the first technologies of this kind; their positive effect has since been confirmed by accident statistics.

The new or modified driver assistance systems in the E-Class Coupé are based on state-of-the-art radar, camera and sensor technology. They are specially configured to help reduce the number of accidents caused by being too close to the vehicle in front, drowsiness and darkness.

**ATTENTION ASSIST**, invented by Mercedes, is specified as standard. With this system, Mercedes-Benz is making a further key contribution towards active safety as, according to studies, around a quarter of all serious motorway accidents are caused by drowsy drivers – making drowsiness an even bigger cause of accidents than drink-driving. The drowsiness-detection system monitors the driver's behaviour on a permanent basis, recording a total of more than 70 parameters to gauge the driver's level of awareness. This continuous monitoring is crucial for

detecting the floating transition from awakesness to drowsiness and for giving the driver plenty of warning.

Based on this wealth of data (see figure), ATTENTION ASSIST calculates an individual driver profile during the first few minutes of every trip. This profile is then compared with the current sensor data and the prevailing driving situation by the car's electronic control unit. In addition to the vehicle speed, lateral acceleration and longitudinal acceleration, the Mercedes system also detects use of the turn indicators and the pedals as well as certain control inputs and external influences such as side winds or road unevenness, for example.

**ATTENTION ASSIST:  
How the Mercedes driver assistance system detects tiredness**



## **Drowsiness detection: steering behaviour as the key indicator**

Page 33

Four years of development and testing work on the ATTENTION ASSIST system revealed steering behaviour to be an extremely meaningful indicator of drowsiness. In the tests involving over 670 drivers, the Mercedes scientists determined that drowsy drivers have trouble steering a precise course in their lane, making minor **steering errors** that are often corrected quickly and abruptly. This effect occurs at an early stage when drowsiness kicks in – often before the dangerous microsleep phase. ATTENTION ASSIST is active at speeds of between 80 and 180 km/h.

If the system detects drowsiness, it emits an audible warning signal and flashes up an unequivocal message on the display in the instrument cluster: "ATTENTION ASSIST. Break!"

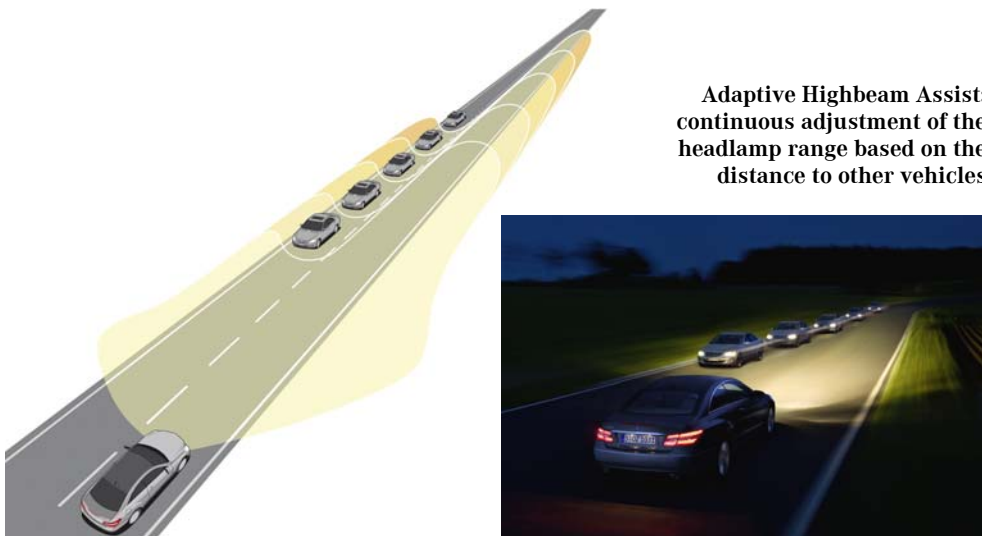
## **Highbeam Assist: optimum light distribution in every driving situation**

Driving can be particularly dangerous at night. Although there is far less traffic on the road in the evening and at night, almost 40 percent of all fatal traffic accidents occur during the hours of darkness. One of the main causes of accidents is the driver's lack of visibility. According to a study carried out by the TÜV (German technical inspection authorities), around 23,000 serious accidents involving 1200 deaths could be avoided if all cars were fitted with powerful bi-xenon headlamps.

Mercedes-Benz has used this headlamp technology since as far back as 1999. Now the Stuttgart-based brand is unveiling a further innovation in the shape of optionally available **Adaptive Highbeam Assist**. This innovative system adjusts the range of the headlamps automatically based on the distance to oncoming vehicles or moving vehicles in front of the car with their lights on. Consequently, the best possible headlamp range is always selected, allowing the driver to see the course of the road, pedestrians or danger spots more clearly and at an earlier stage. The low-beam range can therefore be increased from around 65 to up to 300 metres – without dazzling other motorists.

This innovative Mercedes technology is based on a **camera**, located on the inside of the windscreen, which monitors the traffic situation in front of the car. Thanks to a special image-processing algorithm, the camera is able to detect other vehicles and the distance to them. The range of the variable-control **bi-xenon headlamps** is set based on these findings and adapted continuously depending on the distance to the vehicle in front or the oncoming traffic. The system operates at lightning speed, sending new data to the headlamps every 40 milliseconds and controlling the beam of light so that it always ends in front of the other vehicles.

Adaptive Highbeam Assist additionally takes into account the steering angle in order to dim the headlamps on tight bends. If the road ahead is clear, the system performs a gradual transition to high-beam mode.



**Adaptive Highbeam Assist:**  
continuous adjustment of the  
headlamp range based on the  
distance to other vehicles

Realistic tests confirm that motorists who use Adaptive Highbeam Assist are safer on the road in the dark: dummies placed at the side of the road to simulate pedestrians were detected from a distance of around 260 metres – around 150 metres earlier than is the case when conventional low beam is used – despite the presence of oncoming traffic. The new Mercedes assistance system therefore offers more than **double the safety** at night. What's more, the system helps to relieve driver stress as there is no longer any need to repeatedly flick the stalk on the steering wheel. So the driver can concentrate more on actually driving the car.

Adaptive Highbeam Assist is ready to act at speeds above 55 km/h and operates autonomously once the driver has moved the rotary light switch to the "Auto" position and selected high beam using the multifunction stalk on the steering wheel.

### **Intelligent Light System: five light functions with bi-xenon headlamps**

The Intelligent Light System is another innovation in lighting technology available for the new E-Class Coupé. This optional extra provides five different light functions designed specifically for typical driving situations and weather conditions:

- The familiar low-beam headlamps are replaced by **country mode**, which illuminates the road verge on the driver's side more broadly and brightly than before. This enables drivers to orientate themselves even more easily in the dark, and respond more rapidly when other road users cross the road.
- **Motorway mode**, which comes on automatically when driving above 90 km/h, increases the driver's range of vision by up to 60 per cent. This lighting function is activated in two stages: the Intelligent Light System first increases the output of the bi-xenon bulbs from 35 to 38 watts, thereby increasing the light intensity and providing noticeably better illumination of the road ahead and the side verges. The second stage of motorway mode is triggered at 110 km/h, when the beam of the bi-xenon module on the driver's side is elevated slightly. Motorway mode has a range of around 120 metres, and the driver is able to see about 50 metres further at the centre of this cone of light than with conventional low-beam headlamps.
- With the **enhanced fog lamps**, Mercedes-Benz improves driver orientation when visibility is poor. The new lighting function is activated at speeds below 70 km/h, as soon as the rear fog lamp is switched on. The variable headlamp technology incorporated in the Intelligent Light System makes it possible to pivot the bi-xenon headlamp on the driver's side outwards by eight degrees, while lowering the beam of light at the same time. This adjustment illuminates the inner half of the road more brightly and reduces the degree of glare

from light reflected back by the fog.

- Depending on the steering angle, yaw rate and vehicle speed, the **active light function** pivots the headlamps sideways by up to 15 degrees in fractions of a second to greatly improve road illumination. On a long sweeping bend with a radius of 190 metres, the driver is able to see 25 metres further than with conventional low-beam headlamps thanks to the active light function, which, incidentally, operates with both low and high beam.
- The **cornering light function** improves safety at crossroads, at T-junctions and on tight bends. It is activated automatically when the driver turns the steering wheel at a speed below 70 km/h. The lights then swivel to illuminate the area diagonally in front of the vehicle for a distance of around 30 metres, with an angle of coverage of up to 65 degrees.

The new E-Class Coupé is fitted with halogen headlamps as standard. For low beam, the Mercedes engineers have developed a sophisticated projection system, which is housed in the two larger lamps at the front end. The inner headlamps, based on reflection technology, provide the high beam and serve as side lights. **Headlamp Assist**, which switches on the headlamps automatically when it is raining, at dusk/dawn, in the dark and when entering a tunnel, is likewise specified as standard.

When it comes to road safety, being seen is as just as important as seeing – and not just at night. This is why the standard equipment package for the E-Class Coupé includes circular **daytime driving lights** based on halogen technology, which are located next to the likewise standard-fitted fog lamps and switch on automatically when the engine is started. They are deactivated when the driver switches on low beam. If the Intelligent Light System (optional) is specified, the daytime driving lights are formed by a total of 14 **light emitting diodes (LEDs)** arranged in an L-shape, which offer high light output but have a low energy consumption of just ten watts. These are dimmed when low beam is switched on. In this case, the fog lamps are integrated in the main headlamps.

## **Tail lights: LEDs for every function**

Page 37

Mercedes-Benz also specifies LEDs as standard for the indicators, tail lights, brake lights and rear fog light in the rear light clusters. One of the advantages of LEDs is their quick response, meaning that drivers behind receive an earlier warning if the Coupé's brakes are applied in the event of danger. What's more, this technology allows a new and unmistakable night design.

Like many of the latest Mercedes passenger cars, the new Mercedes Coupé is fitted with **adaptive brake lights**, which flash four times as fast as the hazard warning lights during an emergency stop and, therefore, provide an extremely effective warning for drivers behind if a head-to-tail collision is imminent.

The combination of directly and indirectly emitting LEDs used for the **tail lights** ensures that the red sections of the rear light clusters, which are drawn deeply into the car's flanks, are illuminated homogeneously.

## **Speed Limit Assist: speed limit displayed in the instrument cluster**

As well as being used by Adaptive Highbeam Assist, the electronic **camera** located on the inside of the windscreen provides the image information for Speed Limit Assist (optional). This newly developed system reminds drivers of the speed limit currently in force by displaying it in the instrument cluster – a further contribution towards preventing accidents.

The image recorded by the windscreen-mounted camera is scanned for round surfaces only by an electronic control unit. These surfaces are then highlighted. In the next step, an **algorithm** filters out all objects that are round but do not resemble traffic signs. Finally, a comparison with stored patterns eliminates all but those objects which the system is programmed to detect: round traffic signs indicating the speed limit. The symbols are sent to the cockpit display, where they remain visible until the speed restriction is lifted or changed. The driver is therefore always aware of the current speed limit and can adjust the car's speed accordingly.

Thanks to the huge strides forward made in computer-based image-processing technology, Speed Limit Assist is able to work in real time, analysing the images within a fraction of a second so as to provide the driver with the required information practically instantaneously. Plus it makes no difference whether the speed-limit sign is at the side of the road or on a **gantry** above the road. The system is therefore able to react to variable speed limits (often indicated on gantries) as well as temporarily erected speed-limit signs, for example at road works.

Some of the speed-limit signs in Europe – for example those seen when entering or leaving towns in certain countries – are rectangular. In such cases, the assistance system also scans the data stored on the navigation system's **digital map** to check the plausibility of the camera image. The last speed limit detected disappears from the display in the instrument cluster when the car enters a built-up area, for example.

### **DISTRONIC PLUS: radar systems to help prevent head-to-tail collisions**

Radar – for monitoring events in front of and behind the car as well as warning the driver in critical situations – is a tried-and-trusted technology introduced at Mercedes-Benz in 1998. It plays an important part in helping to prevent accidents, as shown by an analysis based on representative accident-research data. This technology can prevent a fifth of all head-to-tail crashes in Germany alone. On motorways, the accident rate can be reduced by as much as around 36 percent. For the new E-Class Coupé, Mercedes-Benz offers a radar-based assistance system in the shape of **DISTRONIC PLUS** (optional), which also incorporates **Brake Assist PLUS**.

DISTRONIC PLUS proximity control operates at speeds of between 0 and 200 km/h: it keeps the car a set distance behind the vehicle in front, applies the brakes as required and can even bring the car to a complete halt, depending on the traffic situation. If the gap to the vehicle in front narrows too quickly, the system gives the driver an audible warning and, as soon as this first warning signal sounds, automatically calculates the brake pressure required to prevent a collision in this situation.

This technology helps the driver to gauge the level of risk and, in combination with **Brake Assist PLUS**, makes the calculated brake boosting force available instantly, even if the driver does not press the brake pedal forcefully enough. Brake Assist PLUS allows controlled, targeted braking and, if necessary, increases the braking force right up to the point at which an emergency stop is performed, depending on the road speed and the distance to the vehicle in front.

When a potential accident situation is recognised, two wide-angle **short-range sensors** with an 80-degree beam width and a range of around 30 metres, located behind the front bumper, and a **long-range radar** with a range of 200 metres, located in the radiator grille, are called upon to offer assistance. In addition, the sensor system now also has medium-range detection capability, allowing monitoring of the area up to around 60 metres ahead of the car with a 60-degree beam width. This new technology enables even more accurate monitoring of the traffic situation and even better detection of dynamic events such as a car in front swerving suddenly.



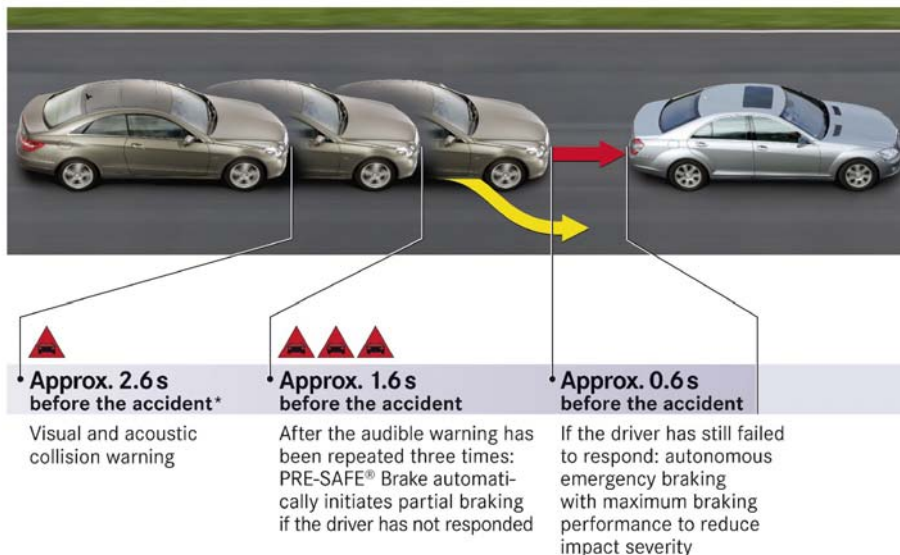
### **PRE-SAFE® Brake: autonomous braking as "electronic crumple zone"**

Accident research shows that drivers do not always react as quickly as necessary at critical moments – for example because they are distracted and therefore do not recognise the immediate danger of a head-to-tail collision, or because they fail

to heed the warning signals given by an assistance system. The **PRE-SAFE® Brake** intervenes in situations such as these by braking the car automatically. It does so in two stages: around 1.6 seconds before the calculated impact point – after three audible warning signals – the system initiates partial braking autonomously and decelerates the car with around 40 percent of the maximum braking power (approx 4 m/s<sup>2</sup>) as well as activating the reversible PRE-SAFE® occupant protection systems as a precaution.

Designed to supplement the visual and audible warnings, autonomous **partial braking** gives the driver a further, perceptible signal to act. If the driver then brakes immediately, the maximum braking force is made available or, if the driver swerves, the accident can be avoided at the last moment, depending on the driving situation.

#### PRE-SAFE® Brake



\* Time calculated by the system until the impact where the relative speed remains unchanged

If the driver fails to react, however, even after automatic partial braking, the PRE-SAFE® Brake activates the maximum braking power around 0.6 seconds before the now unavoidable collision. This **emergency braking** can reduce the severity of the impact by a substantial margin.

### **Effect: impact speed reduced by 16 km/h on average**

Page 41

Realistic tests carried out by the Mercedes engineers have revealed that autonomous PRE-SAFE® braking reduces the impact speed by 16 km/h on average. The system therefore acts like an "electronic crumple zone", offering the car occupants an even higher level of protection.

The PRE-SAFE® Brake is active at speeds of between 30 and 200 km/h when moving vehicles are detected in front of the car. The system also reacts if the car approaches a stationary queue of traffic, providing the car's speed is below 70 km/h.

### **Parking aid: ultrasonic measurement of parking spaces**

A newly developed system that can help drivers to **park** safely works on the basis of ultrasonic technology: sideways inclined sensors on the front bumper record the length of a parking space as the car drives past it (at a speed of up to 35 km/h), and indicate on the cockpit display whether the space is large enough to park in. After reverse gear has been engaged, instructions for safe parking appear on the display in the instrument cluster.

The tried-and-trusted Mercedes **PARKTRONIC** system (optional extra), which uses LEDs and audible signals to indicate the distance between the Coupé and an obstacle or another vehicle when parking, is integrated in the Parking Guidance system.

Mercedes-Benz offers a further parking and manoeuvring aid in the shape of a **reversing camera** which films the area behind the E-Class Coupé and sends the image to the display in the centre of the dashboard.

<b>ABS</b>	Standard: ensures that the car remains steerable, even when braking.
<b>ESP<sup>®</sup></b>	Standard: reduces the risk of skidding and stabilises the car.
<b>Brake Assist</b>	Standard: provides full braking power almost instantaneously in the event of an emergency stop.
<b>Adaptive brake lights</b>	Standard: the brake lights flash to warn drivers behind if the brakes are applied in an emergency.
<b>ATTENTION ASSIST</b>	Standard: detects driver drowsiness by means of sensor signals and warns the driver.
<b>Intelligent Light System</b>	Optional: incorporates five light functions specially configured for typical driving situations and weather conditions.
<b>Adaptive Highbeam Assist</b>	Optional: detects vehicles in front or oncoming vehicles and, in each case, provides the optimum headlamp range (available from the fourth quarter of 2009).
<b>DISTRONIC PLUS</b>	Optional: uses radar to automatically maintain a desired distance between the E-Class and the vehicle in front and warns the driver if the gap narrows rapidly.
<b>Brake Assist PLUS</b> (part of DISTRONIC PLUS)	Optional: uses radar sensors to detect an imminent head-to-tail collision, calculates the level of braking assistance required and provides this assistance instantaneously when the brake pedal is pressed.
<b>PRE-SAFE<sup>®</sup> Brake</b> (part of DISTRONIC PLUS)	Optional: initiates partial or emergency braking automatically if there is an acute risk of an accident and the driver fails to react.
<b>Speed Limit Assist</b>	Optional: uses a camera to detect speed-limit signs and indicates the current speed limit on the display (available from the fourth quarter of 2009).
<b>Parking aid</b>	Optional: ultrasonic sensors measure the length of parking spaces as the car drives past; instructions for safe parking appear on the display.

Like its Saloon counterpart, the new E-Class Coupé is exceptionally aerodynamic – one of the main reasons behind the high level of active safety and the low fuel consumption. The **drag coefficient** ( $c_d$  figure) is as low as 0.24, depending on model, which is around eleven percent lower than the figure for the previous model, making the new E-Class Coupé the world's most aerodynamic series-production car. The exact figures:

	<b>New E-Class Coupé</b>	<b>Preceding model</b>
<b>Drag coefficient (<math>c_d</math>)</b>	0.24*	0.27
<b>Frontal area (A) m<sup>2</sup></b>	2.11*	2.12
<b>Wind resistance (<math>c_d \times A</math>) m<sup>2</sup></b>	0.51*	0.58

\*For E 220 CDI BlueEFFICIENCY Coupé, available from spring 2010

The **rear** of a car affects the drag coefficient even more than the front section, since the air swirl that can occur here acts like an invisible brake and increases fuel consumption unnecessarily. One of the ways in which the Mercedes experts prevent such air swirl is by incorporating a discreet, barely visible **spoiler lip** in the central area of the boot lid. In addition to this, they equip the tail-light lenses with special spoiler lips, which direct the airstream flowing along the car's flanks a long way rearwards; were these small spoiler lips not included, the air would flow inwards at the rear of the Coupé and create a vacuum, which would have a negative impact on both wind resistance and lift.

Further aerodynamically effective details displayed by the new E-Class include:

Page 44

- Controllable **fan shutter**: allows the amount of cooling air to be limited as required, depending on the driving situation. Otherwise heavy pressure losses would occur as the air made its way into the engine compartment.
- Sealed **joints** between the bonnet and headlamps: ensure an even better airflow around the front section.
- **Wheel spoilers** on the front and rear wheels: improve the airflow around the tyres and reduce lift.
- **Cladding** of the engine compartment and the underbody: optimises the flow of cooling air from the engine compartment and prevents flow losses caused by air blockage und swirl on the underbody.
- Aerodynamic **exterior mirror housings**: improve aerodynamics as well as aeroacoustics and safety.

The exterior mirrors also play a crucial role in enhancing **perceptual safety** as they improve the driver's visibility in the rain. The mirror housings are designed so that any rainwater hitting them flows outwards in a narrow groove running around the outside so that it can drip off at a precisely defined point. As a consequence, the side windows remain largely clean, affording the driver an unimpeded view of the exterior mirror and the outside. The A-pillars likewise help to keep dirt away from the side windows as they feature special water guides where the rainwater hitting the windscreen is collected before being blown downwards as well as rearwards across the roof by the airflow.

## Reflexes, airbags and actuators – Comprehensive commitment to comprehensive protection

- **PRE-SAFE® occupant protection for the first time in this vehicle category**
- **Substantially enlarged front and rear crumple zones**
- **Active Bonnet with reversible actuator control as standard**

In the new E-Class Coupé, occupant protection actually begins in the phase leading up to a possible accident thanks to the Mercedes PRE-SAFE® invention, which is specified as standard for the two-door model. If there is a risk of an accident, the system activates protective measures as a precaution, allowing the seat belts and airbags to deploy with maximum effect in the event of a collision. This **early accident detection** is possible because PRE-SAFE® is an intelligent synergy of active and passive safety. It is linked to Brake Assist and the Electronic Stability Program (ESP®), whose sensors detect critical driving situations and send the relevant information to the electronic control units within a matter of milliseconds. PRE-SAFE® also uses these sensor data.

Anticipatory occupant protection is activated in the event of emergency braking or high lateral acceleration – heavy understeer or oversteer, for example, or fast, sudden movements of the steering wheel by the driver:

<b>PRE-SAFE® In the event of emergency braking</b>	<b>PRE-SAFE® In the event of high lateral acceleration</b>
<ul style="list-style-type: none"> <li>• Driver and front-passenger seat belts are tensioned by means of electric motors</li> <li>• Electrically adjustable front-passenger seat** is moved backwards or forwards into the optimum position whilst the cushion angle and backrest inclination are also optimised</li> </ul>	<ul style="list-style-type: none"> <li>• Side windows at the front and rear are closed</li> <li>• Sunroof** is closed</li> </ul>

\*In addition to the emergency-braking measures  
\*\*Optional equipment

All PRE-SAFE® protective measures are reversible: if the accident is averted, the advance tensioning of the seat belts is halted automatically, and the occupants are able to reset the positions of the seats and the sunroof. The anticipatory occupant protection system is then ready for action again straightaway.

The technology used for the PRE-SAFE® belt tensioners enables a further protective measure to be activated as a precaution: once the driver and front passenger have put on their seat belts, the electric motors tighten the belt straps to reduce **belt slack** right at the start of a trip.

For the first time, PRE-SAFE® also uses the information provided by the **short-range radar sensors** (optional) in the front bumper to tension the front seat belts at the very last moment before an unavoidable collision, thus reducing the loads exerted on the driver and front passenger during a collision. This PRE-SAFE® function is literally the "ultima ratio" of anticipatory occupant protection, since the accident occurs around 200 milliseconds later.

Analyses performed during crash tests show just how important and effective this safety system can be. In the case of precautionary **belt tensioning**, for example, the measures mean that the driver and front passenger are held in their seats in the best possible position and so do not move forwards as much before the impact, thus reducing the load exerted on the head and neck area. These tests showed that the head was subjected to around 30 per cent less stress, while the Mercedes engineers recorded a reduction of around 40 per cent in the neck area.

#### **Front-end structure: further enlarged crumple zone on four levels**

Compared to the previous model series, the Mercedes engineers have enlarged the deformation zones substantially in the front and rear sections of the new E-Class Coupé as well as improving the energy flows. The front crumple zone has four independently-acting impact levels, meaning that the forces can be distributed over a wide area while bypassing the passenger cell.

- 1) **Sectional panels** above the wheel arches form the upper side-member level. From here, the impact forces are channelled into the A-pillars and, subsequently, into the roof frame.
- 2) An **aluminium crossmember** connects the forward-extended side members and ensures that the forces are transferred to the side facing away from the impact. The crossmember and the forward-extended side members form the central impact zone.
- 3) The **subframe** to which the engine, steering and front axle are attached also serves as an impact level in the event of a frontal collision. It is made of high-strength steel and, depending on the engine variant, can be connected to the newly developed floor side members by means of special supporting tubes. As a consequence, the subframe can deform in a predetermined manner and absorb energy in the event of a crash on the one hand and channel high impact forces straight into the vehicle floor on the other.
- 4) The **side skirts** have been extended forwards to support the wheel and prevent it from entering the footwell in the event of an offset frontal collision. In order to provide specifically targeted front-wheel support and location, Mercedes-Benz has also developed special struts and additional energy-absorbing elements for the wheel arches. The struts are arranged diagonally and prevent the passenger cell from sinking in the event of an impact.

The **firewall** is a four-part construction. This design enables Mercedes engineers to vary the material thickness according to the level of vulnerability in an accident. As the load acting on the firewall during a frontal crash is greatest in the lower section, the sheet steel used here is almost 50 percent thicker.

#### **Side wall: two-shell construction with reinforcements**

Like the designers, the body specialists and safety engineers at the Mercedes-Benz Technology Centre (MTC) in Sindelfingen played a major part in creating one of the new E-Class Coupé's most attractive design features: the elegant side lines, along with the continuous strip of the side windows and the filigree roof

pillars were only made possible thanks to a series of complex body manufacturing processes. All of which enables the Coupé to meet the most stringent of test requirements with respect to torsional stiffness and occupant protection, even though it has no upper B-pillars.

The single-piece **sidewalls** feature individually welded inner shells which provide strong, stiff cross-sections for the roof pillars, the roof frame and the side members. All of the load-bearing components feature additional panel reinforcements in the A-, B- and C-pillars, stretching across their entire length in each case. In addition to this, the **A-pillars** contain high-strength steel tubing which is capable of withstanding high impacts of the kind experienced in the roof-drop test.

Likewise, high-strength panelling is welded into the (non-visible) **B-pillars** which, together with numerous other reinforcement measures, provides effective resistance in the event of a side impact. Below the dashboard, there is also a solid square section which is bolted to both the A-pillars.

### **Materials: around 60 percent of all panels are made from high-strength steel**

These examples show that, more so than ever before, Mercedes-Benz has given preference to ultra-high-strength steel alloys for the body construction because they offer maximum strength whilst minimising weight and, therefore, are essential for meeting the strict safety and durability requirements. Around two thirds of all the bodysHELL panels for the new E-Class Coupé are made from these grades of steel. These **ultra-high-strength alloys**, which boast three to four times the tensile strength of conventional high-strength steel grades, account for around 20 percent of the weight (previous model: one percent). They are used in those areas where the material can be subjected to extreme stresses during an accident.

Mercedes-Benz's intelligent material concept also involves the specifically targeted use of **aluminium** and **plastic**, both of which help to save weight above all. Hence the front end, bonnet, front wings and boot lid of the new Coupé are made from aluminium, while the front end is a **hybrid construction** made from sheet

aluminium and fibreglass-reinforced plastic. The front single-section aluminium crash boxes are inserted into the side members and bolted to them at the side. The other front-end components are likewise bolted together and can therefore be replaced cost-effectively following an accident. Glass fibre matting-reinforced **plastic** has been used to produce the spare-wheel well.

### **Passenger cell: custom-designed floor panels and robust load-bearing sections**

The passenger cell of the new two-door model is a robust structure which is virtually immune to deformation and keeps the passengers' survival space intact, even at high impact speeds, regardless of whether the collision is head-on, from the rear or from the side, or whether the vehicle rolls over. The use of high-strength steel and thicker panels plays as important a role here as the installation of additional load-bearing members.

The **main floor assembly** consists of custom-designed steel sheets that either undergo flexible rolling or are laser-welded and subsequently shaped. Flexible in this sense means that the high-strength steel can be processed in such a way that areas with different steel thicknesses can be produced within a single component. The extremely thick middle blank forms the tunnel – the actual backbone of the passenger cell. Other new features which are equally crucial for both occupant protection and the rigidity of the bodyshell include the continuous **floor side members**, the insides of which are reinforced with additional sections. Their front sections connect to the side members, thereby lengthening the load-bearing paths along which forces can be distributed in the event of an impact. At the rear, the floor side members extend as far as the crossmember beneath the rear seat unit to stabilise the entire floor structure.

The Mercedes engineers have also incorporated sturdy aluminium transverse sections – known as **transmission tunnel braces** – into the floor assembly. One is located beneath the transmission, and is designed to direct forces to the side of the vehicle facing away from the impact in the event of a side-on collision. The second forms a connection between the two side members. It likewise braces the

floor assembly and is able to channel impact forces into the floor structure at an early stage following a side-on collision.

### **Rear-end structure has successfully passed the toughest of crash tests**

Multi-piece side members and a robust **crossmember** made from ultra-high-strength steel form the key components of the rear-end structure. The rear side members are continuous, closed box sections with carefully graduated material thicknesses. These are able to absorb high forces, thereby making a decisive contribution to occupant safety in the event of a rear impact. The bolt-on flexible crossmember is manufactured using a flexible rolling process which likewise allows the material thickness to be varied as required. Accordingly, the material thickness on the outside of the crossmember – where impact loads are highest – is greater than on the inside. The new Coupé therefore also meets the world's most stringent crash regulations where rear impact protection is concerned, for example the 80-km/h test in the US.

Typically for a Mercedes-Benz car, the **fuel tank** is located in a protected position beneath the rear seats, in other words ahead of the rear axle and, therefore, outside of the impact zone.

### **Body torsional stiffness increased by around 24 percent**

As well as being a major reason behind the high level of impact resistance, this intelligently designed bodyshell enhances ride comfort or, to be more precise, reduces noise and vibration. The Sindelfingen engineers paid particular attention to the **connecting points** between the chassis and the bodyshell, which are required to withstand very high forces. These were specifically reinforced to ensure that road-induced vibrations are not transferred to the body at the expense of driving enjoyment.

A reliable indicator of the excellent cumulative effect of these measures is the body's static torsional stiffness, which has been increased by around 24 percent compared to the outgoing model.

## **Restraint systems: seven airbags as standard**

Page 51

With seven airbags fitted as standard, not to mention four seat-belt tensioners and belt-force limiters as well as NECK-PRO crash-responsive head restraints for the driver and front passenger, the new E-Class Coupé offers an even more extensive package of safety equipment than its predecessor.

The airbags, which can deploy in a matter of milliseconds in the event of an accident, include two **adaptive airbags** (for the driver and front passenger), a **kneebag** for the driver, two **sidebags** in the front-seat backrests and two large **windowbags** which extend from the A-pillar to the C-pillar during a side impact. Plus the E-Class Coupé is the only coupé in this vehicle category to also offer the option of sidebags for the rear passengers.

Three-point inertia-reel seat belts with belt tensioners and belt-force limiters are fitted as standard for all the occupants. The Mercedes engineers have developed practical technology in the form of **automatic belt feeders** in order to make it even easier for the driver and front passenger to put on these seat belts. As soon as the occupants are seated, an electric motor extends plastic sections from the side panels on both sides, bringing the seat belt to within easy reach.

The belt feeders retract again once the seat belts have been put on; the belt feeder on the front-passenger side retracts automatically after around five seconds if the seat is unoccupied. A **push of a button** on the dashboard is all it takes to re-activate the belt feeders.

The standard occupant restraint system at a glance:

	Front seats	Rear seats
Inertia-reel seat belts with height adjustment	•	•
Automatic belt feeders	•	
Belt tensioners	•	•
Belt-force limiters	•	•
Head restraints	• with NECK-PRO function	•
Front airbags, two-stage	•	
Sidebags	•	optional
Windowbags	•	•
Kneebag	• on the driver's side	

### Crash-responsive head restraints for driver and front passenger

**NECK-PRO** is the name Mercedes-Benz has given to a crash-responsive head restraint whose development, like that of PRE-SAFE® and other Mercedes innovations, is based on analyses of real accidents. NECK-PRO is an effective means of reducing the risk of whiplash injuries during a rear-end collision. If the sensor system detects a rear-end collision with a defined impact severity, it releases pre-tensioned springs inside the head restraints, causing the head restraints to move forward by about 40 millimetres and upwards by 30 millimetres within a matter of milliseconds.

### Pedestrian protection: extensive raft of measures including Active Bonnet

The protection of those road users who are most at risk has always been a top priority during the development of Mercedes passenger cars. Smooth-surfaced bodies, energy-absorbing bumpers, flush-mounted door handles, laminated-glass

windcreens, folding exterior mirrors and recessed windscreen wipers are pedestrian-protection measures that have been features of Mercedes models for many years. But, as ever, another top priority for the safety engineers is accident prevention. So systems such as Brake Assist and the cornering light function play crucial roles. Fitting Brake Assist as standard alone has reduced the rate of serious accidents involving collisions between pedestrians and Mercedes passenger cars by 13 percent.

The additional protective measures Mercedes-Benz has introduced for the E-Class, including the new Coupé model, are based on these high standards. Top of the bill is an **Active Bonnet**, which enlarges the deformation area, reducing the risk of injury to pedestrians. This system, fitted as standard, includes three impact sensors in the front section as well as special bonnet hinges pretensioned and arrested by powerful springs. Upon impact with a pedestrian, the sensors send information to the electronic control unit which, in turn, activates two solenoids in the hinges instantaneously. These solenoids release the arresters so that the rear section of the bonnet is pushed upwards by **50 millimetres** by means of spring force. It all takes just a fraction of a second.

As well as being extremely fast, the newly developed technology has a further crucial benefit: the Active Bonnet is reversible. If the bonnet is released in another type of collision, for example, Mercedes customers can reset it to its original position and, therefore, reactivate the system themselves, allowing them to continue driving.

In addition to this, the Mercedes engineers have increased the **deformation space** between the bonnet and the assemblies beneath it by raising the Coupé's exterior contours and lowering the engine, shock absorber towers, reservoirs and control units. As on all the latest Mercedes models, the front bumper incorporates a flush spoiler lip with a bracing function, which provides a pedestrian with uniform cushioning at an early stage in a collision.

## Space, modes and music – A complete package for comfort without compromise

- **Dimensions: substantially more space**
- **Climate control: new THERMOTRONIC with individual climate modes**
- **Control concept: Controller and large colour display as standard**
- **Infotainment: COMAND APS with even more functions**

Aesthetics and ergonomic design – two of the main aims when Mercedes-Benz designs and develops car interiors. And the new E-Class Coupé is proof that the Sindelfingen designers and engineers are also masters of these disciplines. The team of designers has created an attractive, appealing interior by using sophisticated styling, fine materials and pleasant colours, while the engineers implemented new comfort- and enjoyment-enhancing ideas and concepts to perfect this "atmosphere of wellbeing". The end result is a unique symbiosis of aesthetics and technology.

Key factors that enable man and machine to exist in perfect harmony include the dimensions which determine **spaciousness** for the occupants: seat spacing, headroom, kneeroom, elbow width and shoulder width. In all of these areas, the new Mercedes Coupé is substantially larger than the preceding model: the **body** is 46 millimetres longer and 46 millimetres wider than previously, while the **wheelbase** has been increased by 45 millimetres to 2760 millimetres.

These basic dimensions are a major factor behind the enhanced ride comfort and interior spaciousness. This is highlighted, for example, by the **seat reference point** – effectively the distance between the front and rear seats, which is crucial in determining the space in which the occupants are able to move and now stands at 789 millimetres (outgoing model: 779 millimetres) – as well as the new dimensions for **shoulder room** and **elbow width**. Here the new Coupé impresses by offering up to 49 millimetres more (front elbow width) than its predecessor, largely

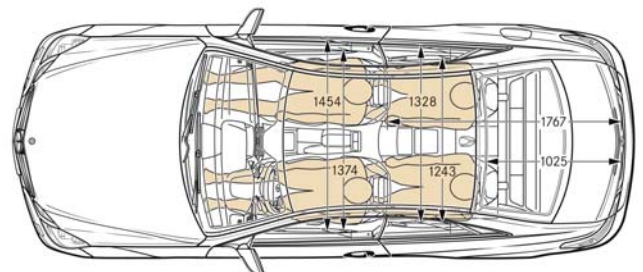
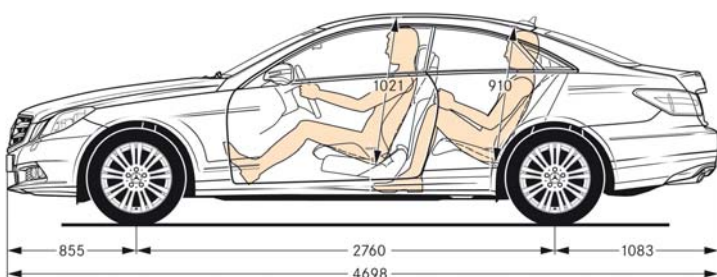
down to the wider body and the wider track (up to 33 millimetres wider at the front and up to 70 millimetres wider at the rear).

The main dimensions\* of the new E-Class Coupé compared to those of the previous model:

	New E-Class Coupé	Predecessor	Difference
Vehicle length	4698	4652	+ 46
Vehicle width	1786	1740	+ 46
Vehicle height, not incl. aerial	1397*	1413	- 16
Wheelbase	2760	2715	+ 45
Track, front/rear	1538/1544	1505/1474	+ 33/+ 70
Seat reference point	789	779	+ 10
Maximum front headroom	1021	1019	+ 2
Shoulder room, front/rear	1374/1243	1346/1242	+ 28/+ 1
Elbow width, front/rear	1454/1328	1405/1305	+ 49/+ 23
Boot capacity**	450 l	435 l	+ 15 l

Figures in millimetres; \*With 17-inch tyres, 1393 mm if 16-inch tyres fitted;

\*\*Acc. to VDA measuring method



When it came to planning the **boot**, the Mercedes experts focussed on drivers' everyday needs. Hence the key criteria for the boot design were sufficient space for safely stowing four sets of luggage, practical variability when using the luggage compartment and excellent functionality for stowing large and small items.

Compared to the predecessor model, the **width** of the luggage compartment between the wheel arches has been increased by 94 millimetres to 960 millimetres, while the **height** has risen by six millimetres to 461 millimetres.

The overall boot capacity of **450 litres** (as per the VDA measuring method) has been increased by 15 litres despite the far more extensive basic equipment package for the new E-Class Coupé. There are 25 litres of stowage space available in the compartment beneath the luggage-compartment floor. And the folding **rear-seat backrests** allow Mercedes customers to increase the load-carrying capacity depending on the transport task in hand as well as producing a practically flat load bay. Standard-fit **load-securing rings** enable items of luggage to be secured in place.

### **Seats: sporty design and maximum comfort**

Newly developed seats, which reflect the sporty character of the Coupé in terms of both design and technology, offer the driver and front passenger hallmark Mercedes comfort. The standard-fit **NECK PRO head restraints** are integrated in the raised backrests.

A host of individualisation options allows both very tall and very short drivers to adjust the seats so that the Coupé's functions are within easy reach. The seat cushion height and backrest inclination are electrically adjustable, while the seat cushion fore/aft position and inclination can be adjusted manually.

The seats in the new E-Class Coupé have the largest **fore/aft adjustment** range in this market segment: 273 millimetres. The individual seat position can be adjusted in very small 4.5-millimetre stages and, therefore, is almost continuously variable, whereas the backrest inclination is fully continuously variable.

Adjustment ranges of the standard-specification front seats:

Page 57

- Fore-and-aft adjustment                    273 millimetres
- Seat height                                    54 millimetres
- Seat cushion angle                         8 degrees
- Head restraint height                       80 millimetres

Standard equipment for the new Coupé includes a mechanical entry and exit aid for the rear passengers, called the **Easy-Entry system**. It is operated using a lever next to the head restraint, which initially tilts the seat backrest forwards. The seat can then be pushed forwards.

#### **Memory function: comfort-enhancing four-way lumbar support**

The **fully electrically adjustable** seats for the driver and front passenger, which Mercedes-Benz supplies as optional extras, are even easier to use. In this case, the fore/aft position, seat cushion angle, head restraint, steering column and exterior mirrors can be adjusted by electric motors in addition to the seat height and backrest angle. In addition to this, the Easy-Entry system is operated with the assistance of the electric motors.

If the **Memory package** (optional) is specified, three individual positions can be stored for the fully electrically adjustable front seats as well as for the steering wheel and the exterior mirrors. In this case, a touch of a button on the inner door lining is all it takes to move the seats, steering wheel and exterior mirrors to their programmed positions automatically. When the driver removes the electronic ignition key, the steering wheel can be moved upwards to make it even easier to get out of the car. The steering wheel then remains in this position until the ignition key is re-inserted, providing the driver with more legroom when getting back into the car as well.

If the Memory package is specified, the two front seats are also equipped with electropneumatically adjustable **four-way lumbar supports**, including side-to-side adjustment as well as height and shape adjustment so as to provide ergonomic support for the spinal column.

The foam padding used for the front seat cushions is housed in seat squabs with integral springs. Here a frame made partly of high-strength steel provides a firm base. Special **tubular sections** and **impact-absorbing elements** in the seat lining ensure that the seats are able to absorb high impact forces in a side-on collision and transfer them to the other side of the vehicle. The front-seat backrests consist of steel frames with springing and foam pads whose contours, like those of the cushions, have also been designed to provide better lateral support.

#### **Seat climate: four ventilators for active ventilation**

When developing seats, the Mercedes specialists look not only at the classic comfort features like springing and damping but also at occupant wellbeing as a whole, including what is referred to as seat climate. The materials used in a Mercedes seat, and its internal structure, must be designed to ensure comfort under all weather and temperature conditions. In the case of the new Coupé seats, this is achieved by using breathable composite seat materials and high-quality fabric or leather surface upholstery.

Climate comfort is likewise enhanced by the optionally available **climatised seats** with leather upholstery and **active ventilation**: four ventilators in the seat cushion and in the backrest extract cool air from the floor area of the interior and distribute it evenly through a ventilation tissue beneath the seat surface. The mild airflow can prevent the car's occupants from sweating, even when it is extremely hot outside.

### **Multicontour seats: air chambers in the backrests and seat cushions**

Page 59

The newly developed multicontour seats allow the driver and front passenger to adapt the contours of the seat to suit their anatomy or personal preferences thanks to inflatable air chambers in the side bolsters of the backrest, in the lumbar region and at the front edge of the seat cushion. One special attribute of the new multicontour seat is the function for pneumatically adjusting the **seat cushion length**. The front air cushion increases the seat cushion length at the push of a button, allowing occupants to relax their legs and ensuring good blood circulation.

### **Rear: comfortable individual seats with folding backrests**

For the rear passengers, there are two comfortable individual seats with integral head restraints whose distinctively contoured foam upholstery ensures a high level of comfort and excellent lateral support. The asymmetrically divided rear-seat backrests can be folded forwards individually or together to increase the boot capacity. Between the individual rear seats is a spacious stowage compartment incorporating two **cup holders** under a retractable cover – suitable for various cup, can and bottle formats.

### **Climate control: THERMOTRONIC with three individual climate modes**

Comfort is all about highly individual preferences. Which is why it is important for cars to offer their occupants a wide range of personalisation options. The new Coupé meets this requirement, not only in terms of suspension tuning and seat adjustability, but also when it comes to climate comfort.

Like its Saloon counterpart, the new E-Class Coupé can be ordered with a newly developed automatic climate control system which, as well as being able to set individual temperatures in three zones (for the driver, the front passenger and the rear passengers), additionally offers special **climate modes**. This means that, if the optionally available THERMOTRONIC system is fitted, the car occupants can choose from "Diffuse", "Medium" and "Focus" at the push of a button and

thus adjust the air quantity and air distribution to their liking without having to leave the convenient automatic mode.

In "**Diffuse**" mode, for example, the THERMOTRONIC system operates with a low air speed and distributes the air over a wide area so that there are fewer draughts. This is the purpose of the automatically controlled, upwards inclined diffuse nozzle in the centre of the dashboard. In "**Focus**" mode, meanwhile, the air outlets in the centre area of the dashboard are used for the most part, meeting the need for a direct flow of a larger quantity of air.

Sophisticated **sensors** also help the three-zone luxury automatic climate control system do full justice to its name. These ensure that the desired temperatures set by the occupants remain constant: even the standard-fit THERMATIC system features two sensors for the interior temperature, four sensors for measuring the temperature of the air flowing out of the air outlets and one sensor for recording the intensity and direction of the sun's rays, while the THERMOTRONIC system additionally includes a dewpoint/moisture sensor and a pollutant sensor.

Thanks to the dewpoint sensor, the inflowing air can be cooled and warmed up again if required, depending on its moisture content. This makes the air conditioning system all the more economical. The pollutant sensor detects excessively high levels of carbon monoxide and nitrogen oxides in the outside air, automatically switching to air recirculation mode if concentrations of these pollutants suddenly increase.

Finally, the THERMOTRONIC system is equipped with a separate control panel at the rear of the tunnel console, allowing the **rear passengers** to select their ideal temperature. Another highlight of the THERMOTRONIC system is the **residual heat function**: pressing the "Rest" button heats or ventilates the interior for around 30 minutes when the engine is switched off.

The standard equipment package for the new E-Class Coupé includes **THERMATIC** two-zone automatic climate control. With this system on board, the driver and front passenger can set the desired temperature using the rocker switches on

the elegant control panel in the lower section of the centre console. The OLED (organic light emitting diode) display indicates the programmed levels. If automatic mode is deactivated, the blower speed and air distribution can also be adjusted by rocker switch. The "ZONE" function is new: at the push of a button, the temperature settings are synchronised, and the level selected by the driver is transferred to the front-passenger side. Two separately controllable air outlets are provided for climate control in the rear.

### **Heating and cooling output increased by five percent**

The THERMATIC and THERMOTRONIC systems have received a boost in both heating and cooling output. The heating output has been increased by around five percent to eleven kilowatts, equivalent to the capacity of the central heating system in a modern family home. In the diesel models, a heat exchanger with six integral PTC heating elements (PTC = Positive Temperature Coefficient) is also activated when the outside temperature falls below a certain level in order to boost the effect of the main heat exchanger with an electrical output of around 1200 watts. The assistance from the PTC heater is necessary due to the high thermal efficiency of today's **CDI engines**, which is precisely what makes them so economical and means that they release considerably less heat to the coolant under partial load conditions than conventional engines.

The interior is cooled rapidly by an **air-conditioning unit** with an output of around 8.4 kilowatts – some five percent more than the unit used in the predecessor model. Its compressor is variable in operation, allowing on-demand, i.e. economical, operation of the air conditioning. The compressor is controlled by a solenoid valve which varies the swept volume.

The climate control systems are not only more efficient, but also operate more quietly than before. Revised flow areas for the air intake, air ducts and air conditioning unit have enabled the **noise level** at maximum cooling output to be reduced by around three decibels (dB (A)), for example. In addition, the air ducting has been lined with acoustic absorption elements and/or sound-insulating foam.

### **Air cleaning: fine-dust particulate filter fitted as standard**

Page 62

A large, hermetically sealed **fine-dust combination filter**, fitted as standard, ensures that the air entering the interior is clean. It is 96 to 98 percent efficient at filtering out particles between five and ten micrometres in size and 100-percent efficient when it comes to removing ten-micrometre particles. Thanks to the activated-charcoal lining, gaseous substances, which are the cause of unpleasant odours, can also be filtered out. This filter is active on a permanent basis – even in air recirculation mode.

### **Dashboard: form and function in perfect harmony**

As an option, the horizontally divided **dashboard** specially designed for the E-Class Coupé can be ordered with a two-tone design: while the upper section and the centre console are finished in a darker shade, the lighter contrasting colour used for the knee bolster, glove compartment lid and tunnel console makes these areas really stand out. The surface of the dashboard is made from a polyurethane skin with additional padding. This sophisticated production process allows both small radii and precise edges, plus it ensures a pleasant feel.

The dashboard incorporates an illuminated **glove compartment** which can be cooled by the automatic climate control system. A twelve-volt outlet and a socket for connecting an external audio device are also integrated. This is likewise the location of the optional AUX-IN socket for connecting an external audio device. In addition to this, Mercedes customers can specify a Media Interface, allowing an external MP3 player to be connected.

The interior door linings also reflect the aim of the Mercedes engineers to combine elegant design with pleasing tactile qualities. This is achieved by a combination of high-quality materials such as leather, wood or aluminium with scratch-resistant plastic boasting a new grain-effect finish. The wide armrests on the **interior door linings** are pleasingly soft to the touch and, therefore, exceptionally comfortable. This is where the designers have elegantly and conveniently integrated the control panel for the power windows and the exterior mirrors.

## **Centre console: command centre for the infotainment and automatic climate control systems**

Page 63

The centre console blends in harmoniously with the dashboard form and colour concept. This is where the controls for the infotainment system and the optionally available car phone are located, just below the air outlets. Beneath these, the buttons for the seat heating, seat ventilation, rear window blind and other optional extras are demarcated by a discreet chrome strip. The lower section of the centre console houses the controls for the standard-fit automatic climate control system.

The visible surfaces of the switches and controls have been coated with a special lacquer which provides a silky sheen and a surface which is soft to the touch. In conjunction with the sophisticated push-push buttons, which are easy to press and have very little travel, the lacquer finish makes the selection of vehicle functions both precise and pleasant to the touch. Pressing once is enough to activate or deactivate the function concerned. The buttons always engage with a soft "click", also providing the car occupants with audible confirmation that the desired function has been activated.

### **Controls: proven concept from the S-Class**

Fewer switches but more functions. A simple way of expressing the credo of sophisticated automotive controls at Mercedes-Benz, which are based on four basic principles:

1. Easy identification of the most important control functions
2. Rapid access to the most important spontaneous functions
3. Easy, intuitive operation of the most important functions
4. All controls located in the right place

Key features of the control concept include special hotkey-type buttons which provide fast access to frequently used functions. This is why all the control and display elements that are necessary or important during a journey are located in the cockpit, i.e. in immediate proximity to the driver. These include the switches and stalks for the lights, windscreen wipers, indicators and cruise control. Fur-

thermore, in keeping with the "everything in the right place" logic, the switches and buttons for the power windows, central locking and exterior mirrors are where one would intuitively look for them: on the inside of the doors.

In other words, the driver does not need to learn anything new and, when it comes to the controls too, feels at home immediately in the new E-Class Coupé.

### **Multifunction steering wheel: twelve buttons for key functions**

The buttons on the multicontour steering wheel are linked to the central display in the instrument cluster and merely need to be tapped with the thumbs to gain fast access to a wide range of information displayed right in front of the driver's eyes. The driver uses the buttons on the left-hand side to mark one of the main menus on the **central display** (in horizontal direction) and to activate the desired submenu (in vertical direction). Each selection or setting is accepted by pressing the "OK" button, while the "Return" button is used to return quickly to the next-highest menu level.

The buttons on the right-hand side of the multifunction steering wheel are used to adjust the volume setting (vertical), switch to mute (centre) and operate the car phone (horizontal). Below this there is an additional button for activating the LINGUATRONIC voice-operated control system.

### **Cockpit: circular instruments based on a high-quality chronometer-style design**

The cockpit's **round dials** – including chrome bezels, white backlighting, a black or silver background and deep, slanting cylinders – emphasise the sporty, elegant character of the new Mercedes Coupé. There are five instruments in the cockpit, which provide drivers with all the information they need: speedometer (centre), rev counter (right), clock (left), coolant temperature gauge (far right) and fuel gauge (far left). The use of black-panel technology means that the indicator and warning lamps assigned to the various round dials are not visible during normal

driving – they can only ever be seen when the ignition is switched on or in the event of a fault.

In the centre of the speedometer, there is a two-section **central display** (4.5-inch) with white backlighting, whose upper section can be used to show a variety of information such as mileage, range, oil level, route distance, driving time, current fuel consumption, average fuel consumption and average car speed. If a navigation system is installed (optional), this area of the display also provides information about the current route. This display can also be used in conjunction with the buttons on the multifunction steering wheel to select radio stations, phone numbers and around 50 individual settings.

The lower section of the central display is used for displaying icons that provide information about the status of the driver assistance systems as well as digital readouts of the outside temperature, transmission gear and transmission mode (if an automatic transmission is fitted).

Other new features include the **fuel consumption and gearshift indicators**, which inform the driver of the current fuel consumption and at what point the next-highest gear should be selected in order to save fuel and reduce CO<sub>2</sub> emissions.

### **Colour display: view of all the infotainment functions**

In the centre of the dashboard – where it can be easily seen by the driver and the front passenger – a large colour display in 16:9 format provides information about all the infotainment system functions. There are two versions of this sophisticated AM-TFT (Active Matrix Thin Film Transistor) display available, depending on the equipment specified: a 5.8-inch version for the Audio 20 and Audio 50 APS devices or a high-resolution 7.0-inch version for COMAND APS.

The **Controller** on the tunnel console incorporates the main controls for the infotainment systems and allows fast and easy access to the devices' clearly structured menus. This turn/push control can be moved in eight directions: turning

the controller selects the main menu and submenus on the display, while pushing it activates or accepts the displayed function or setting. The buttons marked with symbols in front of the controller are used to quit submenus quickly or delete entries.

As the infotainment control system has a duplicate design, the radio, CD/DVD changer, telephone and navigation system can be operated either using the Controller or by pressing control buttons. This is the purpose of the **function buttons** on the centre console, whose ideal ergonomic positioning allows drivers to operate them easily without diverting their eyes from the road.

#### **Car radio: CD player and Bluetooth interface as standard**

Mercedes-Benz equips the E-Class Coupé with sophisticated **infotainment devices** that deliver outstanding performance and, above all, are easy to use. These are called Audio 20 CD (standard equipment), Audio 50 APS and COMAND APS (optional extras). All of the devices include speed-sensitive **volume control**, a keypad for entering telephone numbers and radio frequencies, a colour display in the centre of the dashboard and a **Bluetooth** interface to connect a mobile phone to the hands-free system wirelessly. Eight loudspeakers fitted as standard in the doors provide superlative sound.

Features of the **Audio 20 CD** system, fitted as standard, include a CD player (with MP3 capability), a dual tuner for FM/MW/LW/SW, automatic station search, RDS function (FM reception) and a 4 x 20-watt amplifier.

The **AUDIO 50 APS** infotainment system, available as an option, is an all-in-one device featuring a combination of car radio, DVD player and Europe-wide navigation system. The radio functions and the options for linking with other systems are the same as for the Audio 20 system. Mercedes customers who opt for the version with integral six-disc DVD changer also receive the LINGUATRONIC voice-operated control system.

The **COMAND APS** multimedia system includes a DVD player for audio and video as well as a Europe-wide navigation system whose data are stored on a 40-gigabyte hard drive, allowing extremely fast access to the navigation data and, compared to DVD-based navigation, even faster route calculations. The high-resolution map appears on the 7.0-inch colour display in the centre of the dashboard and provides useful additional information. By way of example, the map shows the outlines of prominent buildings along the route to aid orientation.

In addition, COMAND APS includes a **Music Register** for around 1000 compressed music tracks in MP3, WMA or AAC format, which can be downloaded from PC memory cards. The system has a saved database, enabling it to recognise music tracks played from a CD, DVD or the Music Register and then display the title of the track and the artist on the display. Mercedes-Benz combines COMAND APS with LINGUATRONIC **voice-operated control** and a text-to-speech function as standard, allowing the driver to listen to route-specific traffic reports, SMS messages, address book entries or station names. New traffic reports relevant to the current route are read out automatically by the system.

**Voice-operated control: whole-word voice input for navigation, telephone and radio**

Mercedes-Benz is acknowledged as one of the inventors of modern voice-operated control systems. And the LINGUATRONIC voice-operated control system has benefitted from continuous further development in recent years. The navigation system in the E-Class Coupé can be operated by **entering whole words**, for example: the driver no longer needs to spell out the names of countries, towns or roads, but is able to speak them as whole words. The voice control system is just as convenient when selecting radio stations or entries in the telephone directory: all the stored names can be called up without any prior voice input training.

## **Additional systems: technology for the ultimate in listening pleasure and entertainment**

Page 68

As an option, Mercedes customers can combine the infotainment devices that feature in the E-Class with further systems offering even more information and entertainment:

- The "Logic7" **surround sound system**, developed by Mercedes-Benz together with the audio specialists harman/kardon<sup>®</sup>, delivers three-dimensional sound as a natural 360-degree musical experience for all passengers, from both DVD and CD and regardless of whether the source was recorded in 5.1 surround or normal stereo. The audio signals are distributed via a 500-watt amplifier connected to twelve high-performance loudspeakers.
- A **media interface** in the glove compartment can be used to connect an iPod, USB stick or other external audio devices to the infotainment system. All that is required for this is a suitable cable from the Mercedes accessories range. The interface includes a control unit that links the external music memory to the E-Class Coupé's on-board electronic and control systems. The advantage of this is that the titles of the tracks stored on the iPod can be shown on the colour display in the dashboard and in the instrument cluster, allowing them to be selected almost effortlessly using the buttons on the multifunction steering wheel. The battery in the audio device is charged for as long as the portable music memory is connected to the car via the media interface.
- A separate **DAB tuner** (DAB = Digital Audio Broadcasting) and additional aerials (optional) allow passengers on board the new E-Class Coupé to receive digital radio stations in CD quality. The system switches to analogue reception automatically when the DAB signal is too weak.

## Tyres, pumps and louvres – Practical solutions for reducing CO<sub>2</sub> emissions

- **Aerodynamics: world-best  $c_d$  figure for series-production cars**
- **Energy management: on-demand control of the ancillary components**
- **Tyres: rolling resistance reduced by up to 17 percent**
- **Alternator control: recuperation of braking energy**

BlueEFFICIENCY – the trademark for exceptionally economical and ecofriendly Mercedes passenger cars – is a package of measures compiled by development engineers across all disciplines, the main aims being to reduce weight, aerodynamic drag and rolling resistance, to further optimise the engine technology, and to make energy management even more efficient.

Mercedes-Benz's commitment to reducing fuel consumption and carbon-dioxide emissions targets actual driver **usage profiles**. As part of a large-scale field trial, the typical driving profiles of Mercedes customers were ascertained and combined in an in-house **fuel-consumption test** covering a total of almost two million kilometres. Hence the positive effects of the BlueEFFICIENCY concept are most noticeable during everyday use of the cars.

For the new E-Class Coupé, Mercedes-Benz has developed an extensive raft of measures, which is one of the key factors behind the reduction in fuel consumption. From the power steering to the tyres, from the fuel pump to the alternator, the development engineers scrutinised a wide range of components to determine if and how lightweight designs, new forms, more efficient control or enhanced functioning could be employed to save fuel. Although many of the individual measures only improved fuel economy by the odd percentage point or two, together they add up to a substantial saving.

## **Fan shutter adapts the flow of air through the engine compartment in line with the current driving situation**

Page 70

By performing complex computer calculations and meticulous work in the wind tunnel, the Mercedes engineers have succeeded in aerodynamically optimising the body of the new E-Class, achieving an impressive overall result: with a  $c_d$  **figure** as low as 0.24 (depending on model version), the E-Class Coupé is the world's most aerodynamic series-production car.

One of the main reasons behind the reduction in wind resistance is the new, electropneumatically controlled **fan shutter**. Its development is based on the knowledge that the air flowing through the radiator and the engine compartment accounts for up to ten percent of a car body's total aerodynamic drag. The fan shutter allows the engine's cooling air quantity to be limited in line with requirements, thus saving fuel. In essence, this means that, when the engine is running under part load and requires relatively little cooling, the radiator grille is closed by a circular system of louvres located behind the radiator. For minimum cooling, the shutter allows just a small amount of residual air to enter the engine compartment, but opens completely when the sensors signal that more cooling air is required.

The fact that the area around the radiator is hermetically **sealed** ensures that the fan shutter works extremely effectively, allowing precise control of the air flowing into the engine compartment. When the fan shutter is closed, the  $c_d$  figure falls by 0.013, which is equivalent to a **fuel saving** of up to 0.2 litres per 100 kilometres when travelling at the motorway speed of 130 km/h. The fan shutter is fitted as standard on the four-cylinder models and on the E 350 CGI BlueEFFICIENCY Coupé model.

The most important aspect when trying to save fuel and reduce CO<sub>2</sub> emissions is to avoid unnecessary energy losses – both internal losses caused by friction in the powertrain and losses due to drag and rolling resistance.

By way of example, the use of a **turbocharger** in place of the previous mechanical supercharger in the new models with direct petrol injection allows even more efficient energy management, since the mechanical drive power from the belt drive required to operate the supercharger is no longer needed. The biggest plus point in favour of the new four-cylinder engines is the homogeneously operated direct injection system, which brings about a major increase in thermodynamic **efficiency** compared to the previous port injection system. The fuel vaporising in the cylinders lowers the temperature in the combustion chambers, thereby reducing the engine's tendency to knock and allowing higher compression.

The engine developers have succeeded in cutting fuel consumption further still by incorporating an intelligent **thermal management system** which prevents coolant from being pumped through the cylinders when the engine is cold, meaning that the combustion chambers can heat up more quickly.

Another aspect of the BlueEFFICIENCY concept involved optimising the **automatic transmissions**: the newly developed **converter** for the five-speed automatic transmission reduces hydraulic losses and, therefore, uses up less fuel. For the seven-speed automatic transmission in the E 350 CDI BlueEFFICIENCY Coupé, Mercedes-Benz has developed a **decoupling device** which is activated when the car is stationary: at traffic lights or in traffic jams, the transmission switches to "N" position so as to reduce the engine load.

The standard-fit power steering system is based on an intelligent solution designed to prevent energy losses and, therefore, cut fuel consumption. Unlike conventional steering systems, in which the **power steering pumps** operate at full power on a permanent basis, the power steering pump in the new Coupé features an additional valve for on-demand control. This means that, when the

driver does not require steering assistance, an electronic control unit minimises the operating power of the power steering pump. The advantage of this system is that less energy from the engine is required to drive the pump.

The delivery rate of the power steering pump is increased again spontaneously when the driver moves the steering wheel. In this instance too, the system operates on-demand, adjusting itself in line with the current steering speed and vehicle speed.

In order to ensure on-demand energy management, Mercedes-Benz is using controlled **fuel pumps** in all petrol and diesel engines for the new E-Class Coupé from market launch onwards. In this setup, the engine control unit only calls for the maximum pump output during full-load operation. In all other driving situations, the pump adapts the delivery volume and pressure in line with the current driving situation, resulting in fuel saving of 0.15 litres per 100 kilometres (NEDC).

The **tyres** also help to minimise fuel consumption. The E-Class is fitted with newly developed tyres whose rolling resistance has been reduced by up to 17 percent without impairing their outstanding handling and braking characteristics.

#### **Alternator: power from braking energy**

Each time the car is braked, kinetic energy is converted into heat and therefore goes to waste. This is why the new E-Class Coupé incorporates efficient **alternator management**. This means that, whenever the engine is coasting and whenever the vehicle is braked, the voltage level in the vehicle electrical system is increased and the battery is charged. This increased alternator load assists the driver with braking and also helps to recuperate part of the braking energy, which is converted into electrical energy. This is why experts refer to **recuperation**. Conversely, the alternator switches to no-load operation in certain situations – for example when accelerating or when the battery charge level is high – thus relieving the strain on the drive system. This process saves fuel to the tune of around 0.1 litres per 100 kilometres (NEDC) and up to 0.2 litres per 100 kilo-

metres when in city traffic, where coasting and braking are more frequent than in the NEDC test cycle.

Page 73

### **Cockpit information: current fuel consumption displayed**

Drivers can also help to save fuel, aided in the new E-Class by a **display** in the centre of the speedometer, which indicates the current fuel consumption – converted into litres per 100 kilometres. Drivers are therefore able to check whether their driving style is fuel-efficient and, consequently, environmentally friendly. In addition to showing this information, the display also advises the driver when to change up a gear (manual models).

Mercedes-Benz "**ECO driver training**" courses have shown that adopting an economical and energy-efficient driving style alone can cut fuel consumption by up to 15 percent on average.

## Turbo, piezo and direct injection – New engines which offer big fuel savings

- **Petrol engines: new four- and six-cylinder models with direct injection**
- **Diesel: four-cylinder model with two-stage turbocharger**
- **Transmissions: technology for fuel-efficient motoring**

With its newly developed direct-injection diesel and petrol engines, Mercedes-Benz has taken further major strides forward in its quest to reduce both fuel consumption and exhaust emissions – without compromising on agility and driving enjoyment.

The new four-cylinder diesel engine in the **E 250 CDI BlueEFFICIENCY Coupé**, for example, shows just how much progress has been made: with an output of 150 kW/204 hp, a peak torque of 500 Nm and a displacement of 2.2 litres, it develops around 36 percent more power and delivers 47 percent more torque than the previous four-cylinder diesel engine yet consumes **around 17 percent less** fuel: 5.1 litres per 100 kilometres (provisional NEDC combined figure). What's more, CO<sub>2</sub> emissions are just **135 grams** per kilometre. All of which means that the new CDI Coupé is more fuel-efficient than comparable models in this output category.

In the case of the petrol models too, "more power and more driving pleasure with even lower fuel consumption" proves to be the perfect formula: the likewise new **E 250 CGI BlueEFFICIENCY Coupé** model with direct petrol injection has a displacement of 1.8 litres and an output of 150 kW/204 hp yet consumes a mere 7.2 litres of premium unleaded petrol per 100 kilometres (provisional NEDC combined figure) – around one litre per 100 kilometres (12 percent) less than the previous four-cylinder engine (135 kW/184 hp) with conventional fuel injection and a supercharger. The CO<sub>2</sub> emissions of the direct-injection model have been cut to **167 grams** per kilometre.

As with carbon dioxide emissions, the engines for the new E-Class have also taken a further major step towards the future when it comes to **exhaust gas emissions**: all of the powerplants meet the requirements of the **EU 5 standard**, whose limits are up to 80 percent more stringent than those specified by previous standards.

### **Diesel engines: new four-cylinder unit featuring state-of-the-art common-rail technology**

As well as being economical and ecofriendly, the four-cylinder CDI engine impresses with its exceptional agility, effortlessly superior power delivery and exemplary refinement. The former is reflected in the performance figures: the new E 250 CDI BlueEFFICIENCY Coupé needs 7.4 seconds to **accelerate** from 0 to 100 km/h.

The engine is part of a new series of four-cylinder powerplants, which sees Mercedes-Benz introducing the fourth generation of its tried-and-trusted common-rail direct-injection units into series production. One of its hallmarks is a 400-bar increase in the maximum **rail pressure**, which now stands at 2000 bar. This increased pressure potential was a key factor in raising the engine output to up to 150 kW/204 hp and the peak torque to 500 Nm whilst also achieving a significant reduction in untreated emissions.

Newly developed **piezo injectors** are key components in the latest CDI engine generation. They use their piezoceramic properties to change their crystal structure - and therefore their thickness - in a matter of nanoseconds when electrical voltage is applied. The new injectors are equipped with a stack of thin piezoceramic layers (called the "piezo stack") to enable them to achieve a sufficient overall lift from the very small lift per layer.

In contrast to the systems commonly used to date, this lift activates the nozzle needle directly, so that the fuel injection can be adjusted even more precisely in line with the current load and engine-speed situation - for example by means of precise multiple injections, which have a favourable effect on emissions, fuel

consumption and combustion noise. What's more, the engine is far quieter when idling than its predecessor.

Another key factor behind the impressive output and fuel consumption at full load with respect to emissions is the maximum **ignition pressure**. And, with 200 bar, the new four-cylinder diesel unit from Mercedes-Benz is among the leading contenders in the field of passenger-car diesel engines.

### **Torque: two-stage turbocharging for exceptional pulling power**

The new diesel engine in the E 250 CDI BlueEFFICIENCY Coupé model marks the debut of two-stage turbocharging in a series-production diesel engine for Mercedes-Benz passenger cars. The aim is to achieve further advantages compared to a single-stage turbocharger, for example a further improvement in start-up performance and peak output.

The compact module for the new two-stage turbocharger consists of a small **high-pressure (HP) turbocharger** and a large **low-pressure (LP) turbocharger**. These are connected in series, and each has a turbine and a compressor driven by this turbine. The HP turbine is located directly at the exhaust manifold and initially allows exhaust gas to flow through it; it then rotates at up to 215,000 revolutions per minute. The HP turbine housing features an integral bypass duct, which can be opened or closed by means of a charge-pressure control flap triggered by a vacuum cell. If the flap is closed, the whole exhaust stream flows through the HP turbine, meaning that the exhaust-gas energy is available solely for the HP turbine drive. This means that the optimum charge pressure can be built up at low engine revs.

As the engine speed increases, the **charge-pressure control flap** opens. Any remaining exhaust gas energy drives the HP turbine at a maximum speed of up to 185,000 revolutions per minute. To protect against overloading, the LP turbine is also equipped with a bypass, which is opened or closed by means of a wastegate. Once the engine reaches medium revs, the HP turbine's charge-pressure control flap is opened so wide that the HP turbine ceases to perform any appreciable

work. This allows the full exhaust gas energy to be directed with low losses into the LP turbine, which then does all of the turbine work.

The two compressors are likewise connected in series and are in addition connected to a bypass duct. The combustion air from the air cleaner first flows through the low-pressure compressor, where it is compressed as a function of the LP turbine's operating energy input. This pre-compressed air then passes into the high-pressure compressor, which is coupled to the HP turbine, where it undergoes further compression. The result is a genuine two-stage turbocharging process.

The key benefit of this sophisticated, on-demand control of the combustion air supply by means of two turbochargers is the improved **cylinder charging** and, consequently, a high torque even at low revs. What's more, fuel consumption is reduced. During normal operation, the advantages of this concept can be seen in the harmonious driving characteristics without turbo lag, a good torque curve across the entire engine speed range, spontaneous throttle response and noticeably improved performance.

As a logical addition to the turbocharger system, Mercedes-Benz installs a larger **intercooler** than the one seen in the previous models, which reduces the temperature of the compressed and heated air by up to 140 degrees Kelvin so that a larger volume of air can enter the combustion chambers.

### **Cooled exhaust gas recirculation to reduce NO<sub>x</sub> emissions**

The newly developed EGR valve works like a rotary disc valve and ensures precise control of the fresh air and recirculated exhaust gas. So as to optimise the quantity of exhaust gas recirculated and thereby achieve high recirculation rates, the exhaust gases are cooled down as required in a highly efficient heat exchanger with a large cross-sectional area. Together with the HFM (hot-film air-mass sensor) module integrated in the fresh-air ducting, which provides the engine control unit with precise information about the current fresh-air mass, this setup brings about a significant reduction in nitrogen oxide emissions.

The combustion air subsequently flows into the charge-air distributor module, which supplies air to each cylinder in a uniform manner. Built into the distributor module is an electrically controlled **intake port shutoff**, which allows the cross-sectional area of each cylinder's intake port to be smoothly reduced in size. This alters the swirl of the combustion air in such a way as to ensure that the charge movement in the cylinders is set for optimum combustion and exhaust emissions over the full spectrum of engine loads and speeds.

#### **Pedestrian protection: the advantages of a rear-mounted camshaft drive**

Another of the highlights of the new four-cylinder diesel engine is the rear-mounted camshaft drive, which allows statutory **pedestrian protection** requirements to be met when the engine is installed longitudinally and the bonnet rises from front to rear. The **valve timing mechanism** is another new development and reduces friction at the 16 intake and exhaust valves, which are controlled by one overhead intake camshaft and one overhead exhaust camshaft acting via cam followers featuring hydraulic valve clearance compensation. The camshaft, Lanchester balancer and the ancillary assemblies are driven by a combination of gearwheels and just a short chain drive.

#### **Six-cylinder CDI: increased output and fuel consumption of 6.8 litres per 100 kilometres**

The V6 diesel engine for the **E 350 CDI BlueEFFICIENCY Coupé** is one of the most sophisticated compression-ignition units on the world market. It offers greater output, comfort and driving enjoyment than other engines thanks to the immense torque of 540 Nm alone – compared to the 510 Nm developed by the previous model – which is available between 1600 and 2400 rpm, ensuring outstanding **agility** when accelerating from rest and exemplary **flexibility** when accelerating in any gear: the vehicle accelerates from 0 to 100 km/h in 6.7 seconds. The six-cylinder unit now has an output of 170 kW/231 hp instead of 165 kW/224 hp as before.

Despite the higher output and torque, **fuel consumption** is considerably less than that of the previous model, amounting to just 6.8 litres per 100 kilometres, equivalent to **179 grams** of CO<sub>2</sub> per kilometre. The 7G-TRONIC seven-speed automatic transmission is specified as standard for the E 350 CDI BlueEFFICIENCY Coupé.

The Mercedes engineers have gone to great lengths to optimise the technology at the heart of the V6 diesel engine, reducing the compression from 17.7 to 15.5 and enhancing the turbocharger with a more efficient EGR cooling zone, switchable bypass duct, ceramic glow system, modified injection nozzles and optimised air ducting.

The range of diesel engines for the new E-Class at a glance:

	<b>E 250 CDI BlueEFFICIENCY Coupé*</b>	<b>E 350 CDI BlueEFFICIENCY Coupé</b>
<b>Engine/cylinders</b>	Diesel/4 in-line	Diesel/V6
<b>Transmission</b> fitted as standard	6-speed manual	7-speed automatic
<b>Displacement</b>	2143 cc	2987 cc
<b>Rated output</b>	150 kW/204 hp	170 kW/231 hp
<b>Rated torque</b>	500 Nm at 1600-1800 rpm	540 Nm at 1600-2400 rpm
<b>Fuel consumption**</b>	5.1 l/100 km	6.8 l/100 km
<b>CO<sub>2</sub> emissions***</b>	135 g/km	179 g/km
<b>Emission standard</b>	EU 5	EU 5

\*Provisional figures;

\*\*NEDC combined fuel consumption;

\*\*\*NEDC

## **Petrol engines: new four-cylinder unit with direct injection**

Page 80

CGI appears at the end of the model designation of the four- and six-cylinder petrol engines for the new E-Class Coupé, signifying that Mercedes-Benz uses direct petrol injection for all of these powerplants – a technology which allows further advances when it comes to reducing petrol consumption.

Compared to conventional port injection, direct fuel injection allows higher **compression** and, therefore, improved thermodynamic **efficiency**, saving motorists money at the pump: the new four-cylinder direct-injection powerplant consumes up to 13 percent less fuel than the previously installed supercharged engine with port injection. Power and torque, however, are much higher than in the case of the outgoing model: 150 kW/204 hp instead of 135 kW/184 hp and 310 Nm instead of 250 Nm. Hence the new CGI Coupé also boasts even more impressive performance figures:

0 to 100 km/h:           7.4 seconds instead of 9.1 seconds as before

Mercedes-Benz equips the E 250 CGI BlueEFFICIENCY Coupé with a **five-speed automatic transmission**.

The four-cylinder engine is made almost entirely of **aluminium**: the crankcase is made of diecast aluminium, while a special, high-strength aluminium alloy is used for the cylinder head. Two forged overhead camshafts with variable adjustment are used to control the 16 valves. A **vane-type adjuster** with integrated control valve allows fast and smooth adjustment of the timing, ensuring that it is always at the optimum setting. This setup has two advantages: firstly, the variable camshaft adjustment enables a high torque yield even at low revs; secondly, this technology allows high specific outputs. The valves are controlled by means of cam followers and feature maintenance-free, hydraulic valve clearance compensation.

## **Thermal management: coolant circulation based on engine temperature**

Page 81

The Mercedes engineers have paid special attention to the engine's **warm-up governor** because also has a major effect on fuel consumption. This is why the new direct-injection petrol model features an electronically controlled thermostat to ensure that circulation of the coolant is stopped when the engine is cold. This setup allows the engine oil to heat up quickly and, therefore, minimises in-engine friction. This intelligent thermal management system is logic-controlled. In other words, it is based on driving style, ambient temperatures and other parameters.

The **turbocharger** module, welded to the exhaust manifold on the engine's exhaust side, features a wastegate valve and a deceleration air function for controlling the pressure characteristics. There were very good reasons for using a turbocharger in place of the previously installed mechanical supercharger – not least the higher efficiency as the engine does not need to provide the extra drive power required for the mechanical supercharger. What's more, the turbocharger takes up far less space than the supercharger, is around four kilograms lighter and, in addition, offers better noise and vibration characteristics. The Mercedes engineers brought about a noticeable improvement in the turbocharger's bottom-end response by incorporating newly developed turbine geometry and a cylinder-flushing process.

## **Direct injection: pressure of up to 140 bar and new multi-hole injectors**

In the direct-injection system, the air and fuel are not mixed until they reach the combustion chambers. With the help of an injector, the fuel is injected into the cylinders at an angle of 30 degrees and, depending on the engine operating characteristics, at a pressure of up to 140 bar. Here the fuel droplets and the air particles form a mixture which is guided to the spark plugs via specially shaped recesses in the pistons. By way of comparison, the fuel pressure in a four-cylinder engine incorporating conventional injection technology is approximately 3.8 bar.

In order to ensure optimum swirl in the mixture, thus making combustion fast and as complete as possible, the CGI engine has intake ports with specially calcu-

lated flow characteristics. An adjustable **swirl flap** is also used so as to produce high turbulence in certain operating ranges and thus improve the combustion process. The high-pressure fuel pump is driven by the intake camshaft, while a quantity control valve integrated in the pump module ensures on-demand metering of the fuel supply. A pressure regulator with its own sensor, monitored by the engine control unit, controls the pressure in the fuel line (rail), which is directly connected to the **multi-hole solenoid injectors**. The four-cylinder direct-injection units operate in a homogeneous range, in other words with a stoichiometric air-to-fuel ratio of 14.7 : 1 ( $\Lambda = 1$ ), which is important for emission control by means of three-way catalytic converter. The new four-cylinder direct-injection engines meet the requirements of the EU 5 emission standard.

#### **Comfort-enhancing measure: balancer in the crankcase**

In addition to exemplary power delivery, low fuel consumption and low exhaust emissions, the new Mercedes four-cylinder engines have a further advantage, namely outstanding refinement, thanks in no small part to the newly developed Lanchester balancer: two forged shafts supported in three bearings, which are arranged below the crank mechanism and counter-rotate at twice the crankshaft speed. In so doing, they compensate for the inertia forces that are caused by the motion of the pistons, for example, which can lead to irritating vibrations. The aluminium housing that contains the bearing-mounted balancer shafts is located in the **oil sump**, where it is bolted to the crankcase from below. The crankcase also contains the controlled engine **oil pump**, which is driven by one of the two shafts by means of a gear pair.

#### **Six-cylinder engine: CGI technology with spray-guided direct petrol injection**

The new E 350 CGI BlueEFFICIENCY Coupé is powered by the world's first petrol engine with spray-guided direct injection. The six-cylinder powerplant develops 215 kW/292 hp and provides a peak torque of 365 Nm from 3000 rpm. Thanks to the state-of-the-art engine technology, which Mercedes-Benz has modified right down to the last detail, **fuel consumption** is reduced to 8.5 litres per 100 kilo-

metres (NEDC combined figure), which is 14 percent lower than the figure for the previous model, whose V6 engine featured port injection. These exemplary performance and fuel-consumption figures are achieved using cost-efficient **premium unleaded petrol** (RON 95). The seven-speed automatic transmission is fitted as standard.

What's more, the highly economical and environmentally compatible CGI powerplant provides a unique driving experience: it takes the V6 Coupé just 6.5 seconds to accelerate from 0 to 100 km/h.

#### **Mode of operation: stratified-charge mode, even at higher engine speeds**

Mercedes-Benz was the first car manufacturer to introduce spray-guided direct petrol injection into series production in 2006. Thanks to higher thermodynamic efficiency, this technology allows better use of the fuel and, therefore, lower fuel consumption and lower exhaust gas emissions. The key benefit of the six-cylinder engine is delivered in **stratified-charge mode**, when the powerplant operates with a high degree of excess air and, therefore, extremely fuel-efficiently. This advantageous "lean-burn operation" is now also possible when the Mercedes direct-injection unit is running in higher engine-speed and load ranges because the combustion chambers are supplied with fuel several times in succession within a fraction of a second in every combustion cycle, thus vastly improving mixture formation, combustion and consumption.

Fast and highly precise **piezo injectors** are among the key components of the second-generation direct petrol injection system. They open their nozzle points outwards, forming an annular gap that is mere micrometres in size, shaping the jet of fuel and ensuring its even, hollow-cone-shaped dispersion. Thanks to their ability to switch within milliseconds, the piezo injectors also allow the multiple injection that is also of benefit for lean-burn operation, thus playing a crucial role in achieving the engine's exemplary consumption figures. A **high-pressure pump** with downstream distributor and pressure valve supplies the fuel and ensures on-demand flow control. With a level of up to 200 bar, the system's fuel pressure is several times higher than that in a conventional port injection system.

The combustion process with several injections in succession per combustion cycle developed by Mercedes-Benz also enhances the refinement and **emission characteristics** of the V6 engine. Tests show that untreated emissions (hydrocarbons) are reduced by more than half in the warm-up phase. Plus the specifically targeted injection and combustion control allows higher temperatures in the exhaust manifold, ensuring faster heating of the catalytic converters.

Emissions are controlled by two close-coupled three-way catalytic converters with linear lambda control, which are activated immediately after a cold start. Mercedes-Benz reduces nitrogen-oxide emissions by means of two-pipe electrically controlled exhaust gas recirculation, which directs up to 40 percent of the exhaust gases back into the cylinders, depending on the engine's operation, and by means of two **NO<sub>x</sub> storage catalytic converters** on the underbody. During lean-burn operation, these catalytic converters absorb the nitrogen oxides and re-release them in short regeneration phases so that they react chemically to form harmless nitrogen.

Four valves per cylinder, variable intake and exhaust camshaft adjustment, a two-stage intake manifold, a balancer shaft and intelligent thermal management with a logic-controlled thermostat are further technical highlights of the V6 engine with direct injection. The crankcase and cylinder head are made of aluminium; the cylinders are equipped with liners that have a lightweight, low-friction aluminium-silicon coating that is stable in shape.

## Precision-modified eight-cylinder engine

Page 85

The eight-cylinder unit in the E 500 Coupé – the flagship powerplant in the new generation of Mercedes-Benz V engines – provides a blend of high output and torque yield with exemplary refinement and effortlessly superior agility. The extent of the powerplant's capability is highlighted by the performance figures for the new top-of-the-range E-Class Coupé, which is equipped with the 7G-TRONIC 7-speed automatic transmission as standard:

- 0 to 100 km/h: 5.2 seconds

Mercedes engineers use an intelligent valve-timing concept, achieving a level of progress that is a major factor behind the excellent torque and output characteristics. An optimum supply of fresh mixture for the cylinders is assured thanks to four-valve technology and, above all, continuously variable and continuous intake and exhaust **camshaft adjustment**. The valves are always opened at precisely the right moment in any driving situation, significantly improving the gas cycle in the combustion chambers and reducing energy losses.

The "quadruple" continuously variable camshaft adjustment process is further enhanced by **shifting camshafts**, which are used to enable opening of the exhaust valves and, therefore, further improve the engine's gas cycle. The exhaust cams are designed so that the valves open at different times during the exhaust process, depending on the firing order. As a consequence, the pressure fluctuations inherent in a V8 engine's exhaust train are reduced. Thanks to a more constant residual-gas content, a higher knock limit and improved bottom-end and mid-range cylinder charging, the shifting camshafts increase the engine's torque and refinement.

The key data for the new E-Class petrol models at a glance:

Page 86

	<b>E 250 CGI BlueEFFICIENCY Coupé*</b>	<b>E 350 CGI BlueEFFICIENCY Coupé</b>	<b>E 500 Coupé</b>
<b>Engine/cylinders</b>	Petrol/4 in-line	Petrol/V6	Petrol/V8
<b>Transmission</b> fitted as standard	5-speed automatic	7-speed automatic	7-speed automatic
<b>Displacement</b>	1796 cc	3498 cc	5461 cc
<b>Rated output</b>	150 kW/204 hp	215 kW/292 hp	285 kW/388 hp
<b>Rated torque</b>	310 Nm at 2000-4300 rpm	365 Nm at 3000-5100 rpm	530 Nm at 2800-4800 rpm
<b>Fuel consumption**</b>	7.2 l/100 km	8.5 l/100 km	10.9 l/100 km
<b>CO<sub>2</sub> emissions***</b>	167 g/km	199 g/km	254 g/km
<b>Emission standard</b>	EU 5	EU 5	EU 5

\*Provisional figures;

\*\*NEDC combined fuel consumption;

\*\*\*NEDC

### **Modified manual transmission and consumption-optimised automatic**

The Mercedes engineers have adapted the tried-and-tested **six-speed manual transmission** to suit the high torques of the four-cylinder engines. For instance, they equip the new E 250 CDI BlueEFFICIENCY Coupé with a modified transmission which, thanks to more effective gearing and a newly developed dual-mass flywheel, is capable of transmitting the peak torque of 500 Nm with the utmost reliability. On account of the larger gears, the transmission is around 78 millimetres longer than its counterpart for the other four-cylinder models.

The **five-speed automatic transmission**, available as an option for the four-cylinder CDI Coupé (standard for the E 250 CGI) has likewise been precision-modified by the Mercedes engineers and features a newly developed **converter** that reduces the hydraulic losses and, therefore, operates even more fuel-efficiently than previously. In "C" mode, the transmission meets the most

stringent of requirements in terms of fuel consumption, comfort and output, while "S" mode offers a more sportier configuration with an appropriately adapted gear-change strategy and accelerator pedal characteristic. Optional extras for the AMG Sports package include "M" mode, which has been specially configured for the keenest of drivers.

Page 87

Standard equipment for the new V6 and V8 E-Class Coupé models includes a seven-speed automatic transmission. In "C" mode, the **7G-TRONIC** offers a consumption-optimised transmission mode that is always active after the engine is started.

## From damping to shift programs – Technology for a unique driving experience

- **Shock absorbers: selective control as standard**
- **Dynamic handling package: damping system with two modes**
- **Brakes: ADAPTIVE BRAKE with useful additional functions**

The newly developed AGILITY CONTROL suspension with standard-fit amplitude-dependent damping system forms the basis for the further enhanced ride comfort and agile handling of the E-Class Coupé. The shock absorbers adapt to the current driving situation, reducing the damping forces automatically when driving normally with low shock-absorber impulses and increasing the forces up to the maximum as required when cornering at speed or performing evasive manoeuvres. In this way, the chassis and suspension meet stringent requirements in terms of road roar, tyre vibration and agility – without ever compromising on active safety.

What's more, the longer **wheelbase** (an extra 45 millimetres), wider **track** (an extra 33 and 70 millimetres respectively) as well as the positioning of the engine low down and far towards the rear make a fundamental contribution to the new, agile driving experience by producing a favourable centre of gravity. The even **axle load distribution** ensures an almost perfect balance between the front and rear axles, as well as improved traction and handling stability.

The data at a glance:

	New E-Class Coupé	Preceding model
Track*, front/rear	1538/1544 mm	1505/1474 mm
Wheelbase	2760 mm	2715 mm
Turning circle	10.95 m	10.76 m
Axle load distribution *, front/rear	52.1 %/47.9 %	52.9 %/47.1 %

\*Based on the example of the E 250 CGI BlueEFFICIENCY Coupé

### **Shock absorbers: adjustment of the damping forces in line with the current driving situation**

The AGILITY CONTROL **shock absorber system** – fitted as standard – is purely hydromechanical and requires no sensors or electronics. The core components are a bypass channel in the shock absorber's piston pin and a control piston moving within a separate oil chamber. When linear travel of the shock absorber is low, the control piston forces oil through the bypass channel to produce a significantly smaller damping force at the actual damper valve. The resulting, "softer" shock absorber characteristic translates into a high level of ride comfort. If the excitation of the shock absorber is greater, the control piston moves to its limit position so that oil ceases flowing through the bypass duct, meaning that the full damping force is available.

Mercedes-Benz has enhanced the three-link **front suspension** with McPherson struts in a number of different respects, achieving excellent results in terms of ride comfort in particular. In the interests of favourable axle kinematics, superior vibration characteristics and enhanced safety, the lower link level consists of two separate elements which act as torque and cross struts. As well as offering more precise wheel location, this design has the particular advantage of compensating vibrations caused by tyre imbalance and fluctuating braking forces better than rigid wishbones. It also provides longer deformation paths in the event of a frontal collision. The third front-axle link is the track rod which connects the transversely installed steering gear to the wheels.

The **spring struts** consist of cylindrical, transverse force-compensating coil springs, double-tube shock absorbers and newly developed three-phase head bearings. In order to further optimise ride comfort, a starkly upright position has been chosen for the spring strut so as to reduce the forces acting on the torque strut bearing. As a consequence, it was possible to reduce the bearing rigidity, which has a positive effect on the chassis' tyre/road contact characteristics and rolling characteristics – for example when driving over expansion joints running across the road. The anti-roll bar is connected to the spring strut, which is likewise actively involved in locating the front wheels.

Intelligent use of **aluminium** and **steel** reduces the weight of the front axle by twelve percent compared to the outgoing model. The forwards-slanting torque struts and the cross struts are made of aluminium.

#### **Subframe: robust high-strength-steel construction**

The front-axle components, steering gear, engine and transmission are pre-mounted on a high-strength-steel **subframe** which is bolted securely to the body-shell's side members, making it a key component in the front crash structure of the new Coupé: in the event of a frontal impact, the subframe forms a separate load-bearing path along which the impact energy is absorbed at specific points. The stiffness at the connecting points between the subframe and the body where load is transferred as a result of the forces and vibrations produced by the chassis and suspension has been increased substantially, all of which translates into more agile and more precise handling.

#### **Steering: more direct for agile handling**

The Mercedes Coupé's AGILITY CONTROL suspension is complemented by a likewise newly developed rack-and-pinion steering system. This operates with a ratio of 14.5, and is therefore around seven per cent more direct than on the outgoing model. Positioning the steering gear 80 millimetres in front of the wheel centre makes for predictable self-steering characteristics with a slight tendency to understeer.

The steering gear housing and valve body are made of aluminium, while the rack is forged from high-strength steel. Thanks to further optimisation of all components with respect to installation space and weight, the steering gear is around 0.8 kilograms lighter than the version in the outgoing model.

Drivers can adjust the **steering column** to their liking within a height adjustment range of +/- 25 millimetres and a reach adjustment range of 35 millimetres – well in excess of the standard in this vehicle category. A fully electrically adjustable steering column is included if the optional Memory package is ordered.

To greatly enhance occupant safety, the steering column has been designed to collapse telescopically by up to 100 millimetres when hit by the driver with a certain degree of force in the event of a frontal collision. This extended **deformation path** reduces the forces exerted on the driver's head and chest area.

As an optional extra, Mercedes-Benz also offers **speed-sensitive power steering**. This adapts the power assistance to the vehicle speed: the lower the speed, the greater the assistance. Up to a speed of 200 km/h the steering effort is continuously reduced as a function of vehicle speed, which means that only one third of the maximum steering effort is required when parking at slow speed. Variable centring is another new feature adopted from the S-Class: the electro-hydraulic speed-sensitive servo valve is used to generate a centring moment that increases with the speed and gives a secure and stable feeling in the straight-ahead position. At slow speeds, this additional steering moment is not activated, so the benefits of the power steering can be exploited to the full.

The **power steering pump** features an electrically controlled solenoid valve which controls a bypass opening and, as a result, allows metering of the oil quantity in line with requirements. This setup reduces the pressure and oil quantity when driving straight ahead, for example – the power steering pump operates with a substantially reduced output and, consequently, helps to save fuel.

### **Rear axle: further developed multi-link independent suspension**

Mercedes-Benz's multi-link independent suspension, which has proven itself time and again over a period spanning more than 25 years, has been further modified for use in the new E-Class Coupé in order to meet more stringent requirements in terms of comfort and agility. Modified components include the subframe, subframe carrier, struts and hub carriers/steering knuckles. In keeping with the lightweight design concept, wheel location components such as struts, hub carriers and the metal sections of the elastomer bearings are largely made of **aluminium**. The rear-axle subframe is made of high-strength steel.

#### **Optional equipment: sports suspension and dynamic handling package**

Alongside the standard-fit AGILITY CONTROL suspension with adaptive damping system, the new E-Class Coupé offers two further options for adapting the suspension to the driver's individual requirements. One of these optional extras is the AGILITY CONTROL **sports suspension** with sports-tuned speed-sensitive power steering, stiffer springs, tauter shock absorbers and stronger torsion bars. When cornering or performing evasive manoeuvres at speed, this sporty suspension tuning translates into noticeably lower body **roll**.

Further optional equipment available includes a **dynamic handling package** developed specially for the E-Class Coupé (standard for the E 500 Coupé), which solves the classic suspension-tuning trade-off by offering a choice of two modes: Sport or Comfort. These modes allow continuously-variable electronic control of the shock absorbers based on seven sensor signals.

The system adjusts the damping force for each wheel individually and fully automatically, depending on the current road conditions and driving situation. When driving normally on poor road surfaces, a soft damper setting is selected to give the occupants maximum comfort while maintaining excellent handling stability and safety. If the driver decides that more brisk progress is called for, however, the shock absorber settings are continuously adapted to meet the need for more dynamic performance.

The driver can pre-program the principle vehicle characteristics at the push of a button. In **Sport mode**, the hydraulic forces of the shock absorbers are increased so as to allow even better directional stability and road adhesion at high speeds as well as reduce understeer at speeds of up to 120 km/h.

**Speed-sensitive sports steering** with variable centring is also part of this package. To enhance agile handling, the steering ratio has been reduced from 14.5 to 13.5; the steering torque is increased at speeds above 80 km/h to provide a more sporty steering feel. Furthermore, the system adjusts the **accelerator pedal** characteristics in Sport mode in order to ensure more spontaneous engine response. If the Coupé is fitted with an automatic transmission, the **gear-change characteristics** are also altered, while the gear-change times are shorter and the driver can change gear even more quickly by using the shift paddles on the steering wheel.

#### **Body Index: outstanding agility without compromising on ride comfort**

In order to allow comparison of the suspension characteristics, Mercedes engineers have developed the "Body Index" concept – a **composite formula** for handling dynamics, which is calculated from the readings for various typical driving manoeuvres. The Body Index is an indication of how well the suspension is linked to the body, how closely the car hugs the road and how nimble the handling is through fast bends. In other words, how taut the suspension settings are. The higher the figure, the sportier, i.e. firmer, the suspension characteristics.

The Body Index for the E-Class Coupé with AGILITY CONTROL suspension fitted as standard is 2.0; this figure is around ten percent higher than that for the outgoing model and, thanks to adaptive shock absorber control, is achieved without compromising on ride comfort. If the Coupé is equipped with the dynamic handling package, the Body Index is between 1.89 (Comfort) and 2.06 (Sport).

With the **ADAPTIVE BRAKE**, the E-Class Coupé offers an innovative braking system incorporating additional assistance functions for enhanced comfort and safety. One example of this is the practical **HOLD** function: after the two-door model has been braked to a standstill, briefly pressing the brake pedal a little further is all that is required to activate this function. The car is then held by the brakes, even if the driver's foot comes off the brake pedal. In this way, the **ADAPTIVE BRAKE** prevents the car from rolling forwards inadvertently when stopped at traffic lights or stuck in stop-and-go traffic and from rolling backwards when facing up a slope. The **HOLD** function is deactivated automatically when the car moves off.

If the driver's foot moves abruptly from the accelerator to the brake pedal before an emergency stop, the brake system increases the pressure in the brake lines and brings the pads into contact with the brake discs so that maximum braking power is available as soon as the driver hits the brake pedal. This **priming** of the brakes allows the system to assist the standard-fit Brake Assist system.

The **ADAPTIVE BRAKE** enhances safety in the wet by sending brief braking pulses at regular intervals to remove the film of moisture from the brake discs, allowing the brakes to work to full effect. This automatic **brake drying function** is always activated when the windscreen wipers have been operating for a certain time; the driver never even notices these precisely metered brake pulses. Finally, the **ADAPTIVE BRAKE** assists the driver with **hill starts**. If the sensors detect that the car is stopped on an uphill slope, a hill-start-assist function is activated automatically, maintaining a constant brake pressure for a brief period to prevent the car from rolling backwards. The driver therefore has enough time to move their foot from the brake pedal to the accelerator without having to use the foot-operated parking brake.

## Brake discs: larger and even more effective than before

Large front and rear **brake discs** provide an ideal technical basis for ensuring safe and reliable deceleration in any driving situation. The front and rear discs measure up to 344 millimetres and 300 millimetres in diameter respectively, depending on the engine version.

Brake data and dimensions at a glance:

<u>Front</u>	E 250 CGI BlueEFFICIENCY Coupé	E 250 CDI BlueEFFICIENCY Coupé, E 350 CDI BlueEFFICIENCY Coupé, E 350 CGI BlueEFFICIENCY Coupé	E 500 Coupé
<b>Brake calliper</b> <b>Brake disc</b> <b>Diameter/thickness</b>	Single-piston floating Internally ventilated 295 mm/28 mm	Single-piston floating Internally ventilated 322 mm/32 mm	Single-piston floating* Internally ventilated and perforated 344 mm/32 mm
<u>Rear</u>			
<b>Brake calliper</b> <b>Brake disc</b> <b>Diameter/thickness</b>	Single-piston floating Solid 300 mm/10 mm	Single-piston floating Internally ventilated 300 mm/22 mm**	Single-piston floating Internally ventilated 300 mm/22 mm

\* Composite aluminium and nodular-cast-iron design;

\*\*10 mm for E 250 CDI BlueEFFICIENCY Coupé

For **brake cooling**, the Mercedes engineers have developed two-section aluminium cover plates which have been tested in the wind tunnel and ensure that, whilst driving, the cool air flows from the underbody into the wheel arches and, finally, to the brake discs.

## Control systems: electronics for safe motoring

When it comes to active safety systems too, the E-Class Coupé features an array of state-of-the-art technology as standard, including anti-lock brakes, acceleration skid control, Brake Assist and the Electronic Stability Program. For ESP<sup>®</sup>, Mercedes-Benz has developed **control logic** that offers the driver even more effective

assistance in critical cornering situations: precisely measured brake pulses sent to up to three wheels cause a moderate reduction in the car's speed and help it to turn safely into bends.

ESP® **Trailer Stabilisation**, which is activated if the Coupé is equipped with a trailer coupling, detects dangerous oscillating movements of the trailer and restabilises it automatically by sending precisely measured brake pulses to the front wheels of the towing vehicle. If the danger is even more acute, the system applies the brakes to reduce the car's speed automatically whilst reducing the engine torque before the precisely measured brake pulses are sent to the wheels to stabilise the trailer.

As an option, Mercedes-Benz can equip the Coupé with a pivoting **trailer coupling**, whose ball head needs to be neither fitted nor removed again. Instead it pivots away beneath the body together with its electrical socket, so that it is concealed from sight when not in use. The E-Class Coupé has a maximum trailer load of up to 1800 kilograms (braked).

The Electronic Stability Program monitors the tyre **inflation pressure** too, and warns the driver if there is a sudden loss of pressure in one of the tyres. To this end, the system continuously compares the rotational wheel speeds, which mainly depend on the vehicle speed, vehicle load and tyre pressures. The control unit also consults other dynamic ESP® sensor readings, such as the lateral acceleration, yaw rate and wheel torque, to help it diagnose tyre pressure loss. The system is therefore able to detect any deviations, and informs the driver accordingly via the central display.

To ensure continued mobility in the event of a flat tyre, Mercedes-Benz also offers **run-flat tyres** as an option. These are available in 245/45 R 17 format and feature self-supporting sidewalls, enabling Mercedes customers to continue driving for a distance of up to 50 kilometres at a maximum speed of 80 km/h, depending on the vehicle load.

## **Wheels and tyres: 16-inch wheels as standard**

Page 97

The range of wheels and tyres for the new E-Class Coupé offers a wealth of personalisation options. Mercedes customers have a choice of wheel and tyre combinations in 17- or 18-inch format. The four-cylinder models are equipped with 16-inch nine-spoke light-alloy wheels and 215/55 R 16 tyres as standard. As a no-cost option, Mercedes-Benz can also supply 205/55 R 16 tyres with extremely low rolling resistance and special light-alloy wheels whose weight has been reduced by a total of 9.6 kilograms thanks to sophisticated **forging technology**.

Mercedes-Benz equips the V8 Coupé with 235/40 R 18 front tyres and 255/35 R 18 rear tyres as standard.

**Engine**

No. of cylinders/arrangement		4/in-line, 4 valves per cylinder
Displacement	cc	2143
Bore x stroke	mm	83.0 x 99.0
Rated output	kW/hp	150/204 at 4200 rpm
Rated torque	Nm	500 at 1600-1800 rpm
Compression ratio		16.2 : 1
Mixture preparation		High-pressure fuel injection with common-rail technology and piezo injectors, two-stage turbocharger, EDC

**Power transmission**

Transmission		Six-speed manual transmission
Ratios	Final drive	2.47
	1st gear	5.10
	2nd gear	2.78
	3rd gear	1.75
	4th gear	1.25
	5th gear	1.00
	6th gear	0.81
	Reverse	4.63

**Chassis and suspension**

Front axle		Three-link suspension, anti-dive, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Rear axle		Multi-link independent suspension, anti-squat and anti-dive systems, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Braking system		Disc brakes all round, internally ventilated at the front, solid at the rear, drum-type parking brake at the rear, ABS, Brake Assist, ESP®
Steering		Rack-and-pinion power steering, steering damper
Wheels		7.5 J x 16 ET 45
Tyres		215/55 R 16

**Dimensions and weights**

Wheelbase	mm	2760
Track, front/rear	mm	1538/1544
Overall length	mm	4698
Overall width	mm	1786
Overall height	mm	1393
Turning circle	m	10.95
Boot capacity max.*	l	450
Kerb weight acc. to EC	kg	1695
Payload	kg	545
Perm. gross vehicle weight	kg	2165
Tank capacity/incl. reserve	l	66/8

**Performance and fuel consumption**

Acceleration 0-100 km/h	s	7.4
Top speed	km/h	250
Fuel consumption comb.	l/100 km	5.1**
CO <sub>2</sub> emissions	g/km	135**

\*Acc. to VDA measuring method;

\*\*Provisional figures

**Engine**

No. of cylinders/arrangement		V6, 4 valves per cylinder
Displacement	cc	2987
Bore x stroke	mm	83 x 92
Rated output	kW/hp	170/231 at 3800 rpm
Rated torque	Nm	540 at 1600-2400 rpm
Compression ratio		15.5 : 1
Mixture preparation		High-pressure fuel injection with common-rail technology and piezo injectors, turbocharger, EDC

**Power transmission**

Transmission		Seven-speed automatic transmission
Ratios	Final drive	2.47
	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	3.42/2.23

**Chassis and suspension**

Front axle		Three-link suspension, anti-dive, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Rear axle		Multi-link independent suspension, anti-squat and anti-dive, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Braking system		Internally ventilated disc brakes all round, drum-type parking brake at the rear, ABS, Brake Assist, ESP®
Steering		Rack-and-pinion power steering, speed-sensitive, steering damper
Wheels		7.5 J x 17 ET 45
Tyres		235/45 R 17

**Dimensions and weights**

Wheelbase	mm	2760
Track, front/rear	mm	1538/1544
Overall length	mm	4698
Overall width	mm	1786
Overall height	mm	1397
Turning circle	m	10.95
Boot capacity max.*	l	450
Kerb weight acc. to EC	kg	1730
Payload	kg	525
Perm. gross vehicle weight	kg	2180
Tank capacity/incl. reserve	l	66/8

**Performance and fuel consumption**

Acceleration 0-100 km/h	s	6.7
Top speed	km/h	250
Fuel consumption comb.	l/100 km	6.8
CO <sub>2</sub> emissions	g/km	179

\* Acc. to VDA measuring method

## Mercedes-Benz E 250 CGI BlueEFFICIENCY Coupé

Page 100

### Engine

No. of cylinders/arrangement		4/in-line, 4 valves per cylinder
Displacement	cc	1796
Bore x stroke	mm	82 x 85
Rated output	kW/hp	150/204 at 5500 rpm
Rated torque	Nm	310 at 2000-4300 rpm
Compression ratio		9.3 : 1
Mixture preparation		Electronically controlled direct petrol injection, turbocharger

### Power transmission

Transmission		Five-speed automatic transmission
Ratios	Final-drive	3.07
	1st gear	3.95
	2nd gear	2.42
	3rd gear	1.49
	4th gear	1.00
	5th gear	0.83
	Reverse	3.15/1.93

### Chassis and suspension

Front axle		Three-link suspension, anti-dive, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Rear axle		Multi-link independent suspension, anti-squat and anti-dive systems, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Braking system		Disc brakes all round, internally ventilated at the front, solid at the rear, drum-type parking brake at the rear, ABS, Brake Assist, ESP®
Steering		Rack-and-pinion power steering, steering damper
Wheels		7.5 J x 17 ET 45
Tyres		235/45 R 17

### Dimensions and weights

Wheelbase	mm	2760
Track, front/rear	mm	1538/1544
Overall length	mm	4698
Overall width	mm	1786
Overall height	mm	1397
Turning circle	m	10.95
Boot capacity max.*	l	450
Kerb weight acc. to EC	kg	1575
Payload	kg	545
Perm. gross vehicle weight	kg	2045
Tank capacity/incl. reserve	l	66/8

### Performance and fuel consumption

Acceleration 0-100 km/h	s	7.4
Top speed	km/h	250
Fuel consumption comb.	l/100 km	7.2**
CO <sub>2</sub> emissions	g/km	167**

\*Acc. to VDA measuring method;

\*\*Provisional figures

**Engine**

No. of cylinders/arrangement		V6, 4 valves per cylinder
Displacement	cc	3498
Bore x stroke	mm	92.9 x 86
Rated output	kW/hp	215/292 at 6400 rpm
Rated torque	Nm	365 at 3000-5100 rpm
Compression ratio		12.2 : 1
Mixture preparation		Electronically controlled direct petrol injection with piezo injectors

**Power transmission**

Transmission		Seven-speed automatic transmission
Ratios	Final drive	2.82
	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	3.42/2.23

**Chassis and suspension**

Front axle		Three-link suspension, anti-dive, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Rear axle		Multi-link independent suspension, anti-squat and anti-dive, coil springs, gas-filled shock absorbers with amplitude-dependent damping system, stabiliser
Braking system		Internally ventilated disc brakes all round, drum-type parking brake at the rear, ABS, Brake Assist, ESP <sup>®</sup>
Steering		Rack-and-pinion power steering, steering damper
Wheels		7.5 J x 17 ET 45
Tyres		235/45 R 17

**Dimensions and weights**

Wheelbase	mm	2760
Track, front/rear	mm	1538/1544
Overall length	mm	4698
Overall width	mm	1786
Overall height	mm	1397
Turning circle	m	10.95
Boot capacity max.*	l	450
Kerb weight acc. to EC	kg	1670
Payload	kg	545
Perm. gross vehicle weight	kg	2140
Tank capacity/incl. reserve	l	66/8

**Performance and fuel consumption**

Acceleration 0-100 km/h	s	6.5
Top speed	km/h	250
Fuel consumption comb.	l/100 km	8.5
CO <sub>2</sub> emissions	g/km	199

\* Acc. to VDA measuring method

## Mercedes-Benz E 500 Coupé

Page 102

### Engine

No. of cylinders/arrangement		V8, 4 valves per cylinder
Displacement	cc	5461
Bore x stroke	mm	98 x 90.5
Rated output	kW/hp	285/388 at 6000 rpm
Rated torque	Nm	530 at 2800-4800 rpm
Compression ratio		10.7 : 1
Mixture preparation		Electronically controlled petrol injection

### Power transmission

Transmission		Seven-speed automatic transmission
Ratios	Final drive	2.65
	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	3.42/2.23

### Chassis and suspension

Front axle	Three-link suspension, anti-dive, coil springs, gas-filled shock absorbers with electronically controlled infinitely variable damping system, stabiliser
Rear axle	Multi-link independent suspension, anti-squat and anti-dive, coil springs, gas-filled shock absorbers with electronically controlled infinitely variable damping system, stabiliser
Braking system	Internally ventilated disc brakes all round, drum-type parking brake at the rear, ABS, Brake Assist, ESP®
Steering	Rack-and-pinion power steering, speed-sensitive, steering damper
Wheels	Front: 8 J x 18 ET 45 ; rear: 8.5J x 18 ET 49
Tyres	Front: 235/40 R 18; rear: 255/35 R 18

### Dimensions and weights

Wheelbase	mm	2760
Track, front/rear	mm	1538/1536
Overall length	mm	4698
Overall width	mm	1786
Overall height	mm	1397
Turning circle	m	11.20
Boot capacity max.*	l	450
Kerb weight acc. to EC	kg	1715
Payload	kg	540
Perm. gross vehicle weight	kg	2180
Tank capacity/incl. reserve	l	66/8

### Performance and fuel consumption

Acceleration 0-100 km/h	s	5.2
Top speed	km/h	250
Fuel consumption comb.	l/100 km	10.9
CO <sub>2</sub> emissions	g/km	254

\* Acc. to VDA measuring method