Introduction of the New E-Class

Introduction into Service Manual - Model Series 212 Sedan

Mercedes-Benz

Introduction of the New E-Class Introduction into Service Manual – Model Series 212 Sedan

Daimler AG · Technical Information and Workshop Equipment (GSP/OI) · D-70546 Stuttgart

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Contents

Contents

Contents

Dear reader,

This Introduction into Service Manual presents the new E-Class sedan in model series 212.

The purpose of this brochure is to acquaint you with the technical highlights of this new vehicle in advance of its market launch. This brochure is intended to provide information for people employed in service or maintenance / repair as well as for aftersales staff. It is assumed here that the reader is already familiar with the Mercedes-Benz model series currently on the market.

In terms of the contents, the emphasis in this Introduction into Service Manual is on presenting new and modified components and systems.

This Introduction into Service Manual is not intended as an aid for repairs or for the diagnosis of technical problems. For such needs, more extensive information is available in the Workshop Information System (WIS) and via Xentry Diagnostics.

WIS is updated continuously. Therefore, the information available there reflects the latest technical status of our vehicles.

The Introduction into Service Manual presents initial information relating to the sedan of model series 212 and, as such, is not stored in WIS. The contents of this brochure are not updated. No provision is made for supplements.

We will publicize modifications and new features in the relevant WIS documents. The information presented in this Introduction into Service Manual may therefore differ from the more up-to-date information found in WIS.

All the information relating to specifications, equipment and options are valid as of the publication deadline in November 2008 and may therefore differ from the current production configuration.

Daimler AG

Technical Information
and Workshop Equipment (GSP / OI)

Note

Information about the vehicles and about operating the vehicle functions can also be found in the interactive owner's manual on the internet at:

www.mercedes-benz.de / betriebsanleitung

Models and major assemblies

W212 Market launch 03 / 2009	Model	Engine	6-speed manual transmission	Automatic 5-speed transmission	Automatic 7-speed transmission
E 220 CDI BlueEFFICIENCY	212.002	651.924	716.656	722.646	–
E 250 CDI BlueEFFICIENCY	212.003	651.924	711.670	722.646	–
E 350 CDI BlueEFFICIENCY	212.025	642.850	–	–	722.902
E 350 CGI BlueEFFICIENCY	212.057	272.983	–	–	722.906
E 500	212.072	273.971	–	–	722.904

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New E-Class (model series 212) sedan

Vehicle concept

In March 2009 the W211 E-Class sedan will be replaced by the new W212 sedan.
With the new E-Class the customer receives a sedan that sets new standards with its new **styling**, its **reliability**, its **comfort**, its **efficiency** and its **safety**.

These high standards are evident in its elegant appearance, its strikingly dynamic front view with redesigned 4-eye headlamps and its powerful, sporty aura.

The interior, too, reflects these high standards through maximum precision, quality in looks and workmanship, combined with sporty and luxurious elegance. By means of numerous new technical features it has been possible to improve on the already high standards of the predecessor model series with better ride comfort, larger space gains and further innovations, particularly in the areas of active and passive safety.

Dimensional concept

The dimensional concept of the new E-Class sedan is derived from that of the predecessor model series 211 and is characterized by more space in the interior and a restyled body.

The length of the vehicle has increased only slightly, although the proportions of wheelbase to overhang have been changed. Shortening the front overhang has significantly increased the wheelbase. This has allowed the interior to be enlarged while simultaneously improving ride comfort.

The vehicle width has increased considerably. The height of the car has increased due to the relocation of the roof antenna, although the nominal vehicle height dimension has been slightly reduced.

Dimensional concept comparing W211 and W212

Dimensions	Unit	W211 E 220 CDI	W212 E 220 CDI	Difference
Vehicle length	mm	4,852	4,868	+16
Vehicle width	mm	1,822	1,854	+32
Vehicle height	mm	1,483	1,470	-13
Wheelbase	mm	2,854	2,874	+20

Highlights

Innovations

- New headlamp styling
- New 4-cylinder diesel engine 651 with advanced common rail technology
- DIRECT CONTROL suspension with selective damping system
- AGILITY CONTROL steering
- Direct steering (special equipment with OM 651)
- ECO power steering pump
- DIRECT SELECT and shift buttons on the steering wheel
- ADAPTIVE BRAKE
- Crash-active engine hood
- PRE-SAFE®
- Knee airbag
- NECK-PRO head restraints
- Intelligent Light System (ILS) (special equipment)
- Daytime running lights
- New Telematics Generation 4 (NTG 4)
- Digital radio reception (DAB) (special equipment)
- Rear entertainment (special equipment)
- EASY-PACK trunk comfort box (special equipment)

Innovative driving assistance systems

- Adaptive Highbeam Assist (special equipment)
- Speed Limit Assist (special equipment)
- ATTENTION ASSIST
- Lane Keeping Assist (special equipment)
- Blind Spot Assist (special equipment)
- Exclusive Parking Assist (special equipment)
- Night View Assist (special equipment)
- Reversing camera (special equipment)
- DISTRONIC PLUS including PRE-SAFE® brake (special equipment)

Environmental compatibility

Crucial factors in environmental compatibility are not only fuel economy and emissions while driving, but also the environmental burden and consumption of resources from manufacture through vehicle use to recycling and disposal.

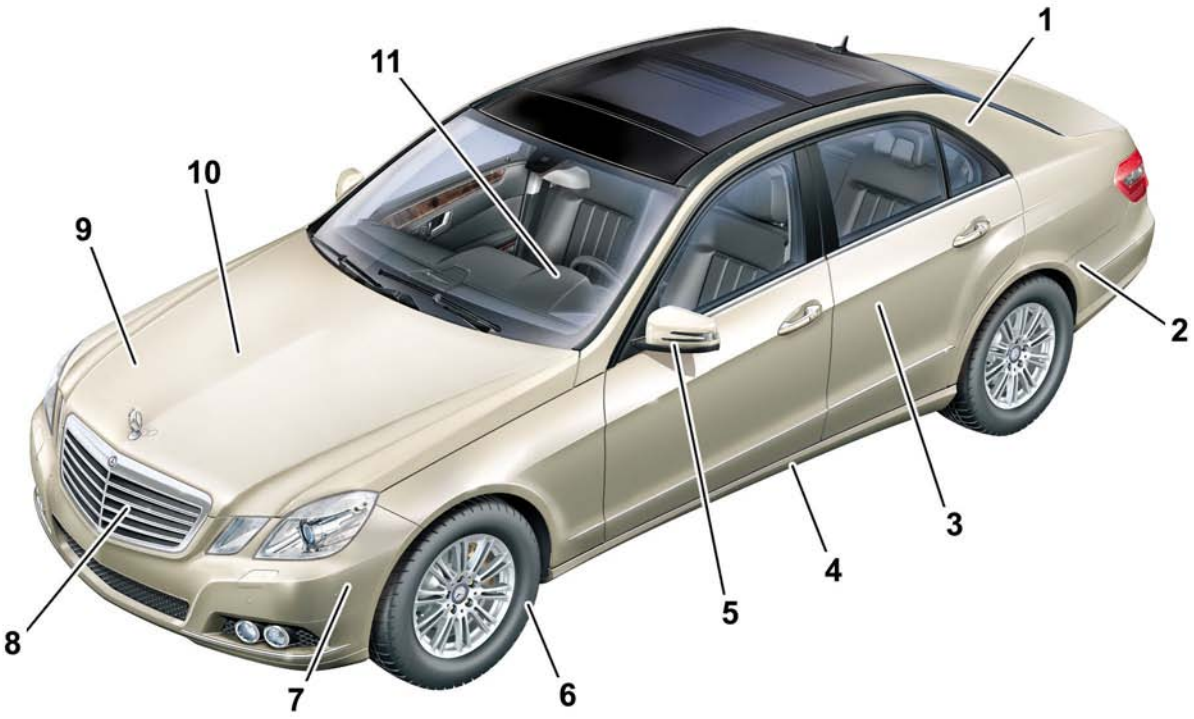
The new E-Class sedan is certified on the basis of the strict international ISO standard "Design for Environment". This environment certification confirms the holistic approach in aspects of environmental protection:

- Designed with recycling in mind
- Use of high-quality secondary raw materials
- Use of biomaterials
- Avoidance of potentially hazardous substances
- Recycling concept

BlueEFFICIENCY

With the universal implementation of BlueEFFICIENCY measures the new E-Class is more economical and more environmentally compatible without sacrificing typical brand properties such as safety, comfort and driving pleasure.

The following BlueEFFICIENCY measures are implemented on the market launch:



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BlueEFFICIENCY measures

1 Weight reduction

Thanks to the lightweight construction with a mixture of high-strength and ultra high-strength materials in the bodyshell and the use of aluminum add-on parts, it has been possible to reduce the weight of the vehicle considerably and thus achieve further fuel savings.

2 Fuel pump

By regulating the fuel pump it is possible to drastically reduce its electrical power consumption. The power requirements of the fuel pump depend on the amount of fuel currently required. Reducing the electrical output also reduces fuel consumption.

3 Rear axle

Lengthened rear axle ratios leading to a reduction in fuel consumption.

4 Underfloor paneling

Installation of full-length, smooth-surfaced underfloor paneling to reduce fuel consumption.

5 Outside mirror housing

Aerodynamically shaped outside mirror housings leading to a reduction in fuel consumption.

6 Tires

The use of silicates in the tires means that the tire temperature quickly increases in critical situations to improve the grip to the level of a standard tire. At the same time, all the properties relevant to usage are preserved and the rolling resistance coefficient is increased, which improves fuel economy.

BlueEFFICIENCY

7 ECO power steering pump

The ECO power steering pump is based on a conventional pump with additional electronic control of the flow rate. In straightline driving the flow is reduced to a defined minimum. When the steering wheel is turned, the delivery rate is increased to the necessary level according to the vehicle speed. Reducing the delivery rate during straightline driving decreases the system flow pressure and therefore reduces the system temperature and the fuel consumption.

8 Radiator shutters

The flow of cooling air through the cooling module and engine compartment can be regulated by opening the radiator shutters.
Closing the radiator shutters prevents the engine compartment from cooling down at low outside temperatures while increasing the heating power available in the passenger compartment. In addition, the aerodynamic drag of the vehicle decreases due to the reduced input of cooling air (in the E 220 CDI, E 250 CDI and E 350 CGI).

9 Alternator management

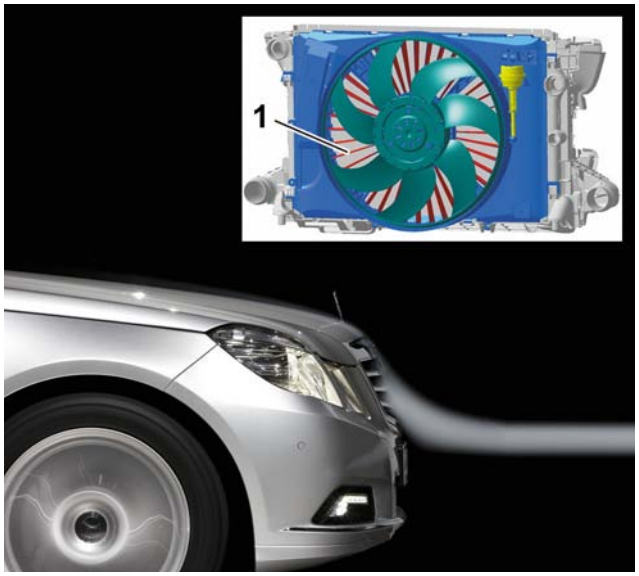
The alternator is switched off-load when the charge level is sufficiently high (80%). This means that the vehicle is only supplied by the battery, and the battery is charged only by occasionally coupling in the alternator during brake applications and in deceleration mode.

10 Engine optimizations

Engines with high outputs and low fuel consumption are used. The 4-cylinder diesel engines feature 2-stage turbocharging (in the E 220 CDI and E 250 CDI). The 6-cylinder gasoline engine features direct injection instead of port injection (in the E 350 CGI).

11 Shift point display

The shift point is displayed in the multifunction display of the instrument cluster. Based on information from the engine control unit, the driver can always see when he should change to a different gear in the interests of fuel economy. This enables the driver to optimize his driving style to save fuel
(with 6-speed manual transmission).



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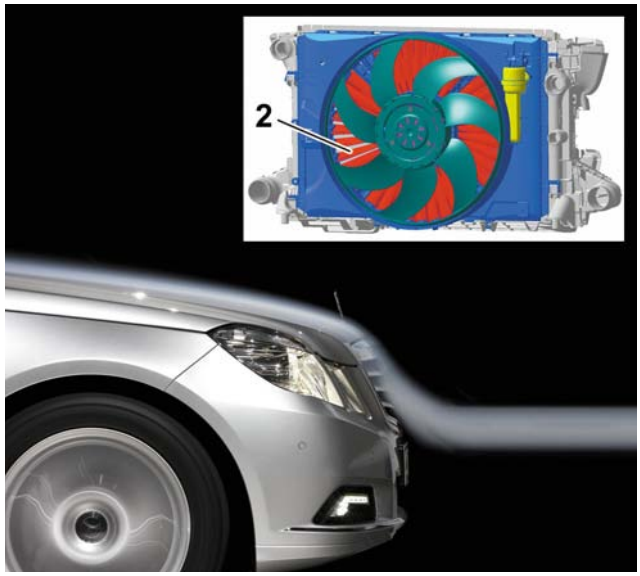
1 Radiator shutters open



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2 Radiator shutters closed

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Equipment variant / line package					
ELEGANCE line	Code 955				Standard
AVANTGARDE line	Code 954				
AMG sport package	Code 950				
Rear comfort package	Code P08				
Brakes, drivetrain					
DISTRONIC PLUS including PRE-SAFE® brake	Code 233				
6-speed manual transmission	Standard		–		
5-speed automatic transmission	Code 423		–		
7-speed automatic transmission	–		Standard		
Diesel particulate filter	Code 474			–	
Steering					
Speed-sensitive power steering (direct steering)	Code 213		Standard		
Suspension					
DIRECT CONTROL suspension with selective damping system	Standard				–
Suspension for increased ground clearance	Code 482				–

Equipment

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Suspension					
Comfort suspension optional on AVANTGARDE line	Code 485				–
Sports suspension included in AVANTGARDE line package	Code 677				–
AIRMATIC air suspension with electronically controlled damping system	–		Code 489		Standard
Wheels, tires, light alloy wheels					
16" light alloy wheel "9-spoke design" 205 / 60 R16	Standard Code R12	–			
16" light alloy wheel "9-spoke design" 225 / 55 R16	Code R13	Standard Code R13			–
16" light alloy wheel "10-double-spoke design" 225 / 55 R16 (ELEGANCE)	Code R14				–
17" light alloy wheel "10-double-spoke design" 245 / 45 R17 (ELEGANCE)	Code R15				Standard Code R15
17" light alloy wheel "5-double-spoke design" 245 / 45 R17 (AVANTGARDE)	Code R11				
16" light alloy wheel "5-double-spoke design" 225 / 55 R16	Code R78				–

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Wheels, tires, light alloy wheels					
17" light alloy wheel "5-double-spoke design" 245 / 45 R17	Code R48				
18" light alloy wheel "5-spoke design" Front 245 / 40 R18 Rear 265 / 35 R18	Code R32				
18" AMG light alloy wheel "6-double-spoke design" Front 245 / 40 R18 Rear 265 / 35 R18	Code 786				
Emergency spare tire (minis-pare)	Code 690				
Run-flat tires	Code R66				
M+S winter tires (instead of summer tires)	Code 645				
Snow chain-compatible winter tires in the appropriate sizes can be ordered ex factory for the 16-inch and 17-inch wheels listed.					
Tire pressure loss warning (RDW)	Standard				
Tire pressure monitor (TPM)	Code 475				
Light systems					
H7 projection headlamps and front fog lamps in the bumper (for countries without manda-tory daytime running lights)	Standard				

Equipment

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Light systems					
H7 projection headlamps and front fog lamps and daytime running lights in the bumper (for countries with mandatory daytime running lights)	Standard				
Bi-xenon headlamps with ILS, Adaptive Highbeam Assist, LED daytime running lights and LED rear lamps	Code 622				
Light package with Adaptive Highbeam Assist	Code P35				
Night View Assist	Code 610				
Safety and anti-theft protection					
Driver and front passenger airbags with 2-stage triggering, situation-sensitive	Standard				
Knee airbag	Standard				
Left and right front sidebags in the backrests	Standard				
Left and right rear sidebags without belt force limiter	Code 293				
Windowbags for driver, front passenger and rear passengers	Standard				
Rear seat belt status indicator	Standard				

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Safety and anti-theft protection					
Pedestrian protection including crash-active engine hood	Standard				
Fire extinguisher	Code 682				
Anti-theft alarm system (ATA) with interior monitoring	Code P54				
KEYLESS-GO	Code 889				
Comfort trunk closing	Code 881				
Climate control					
THERMATIC automatic air conditioning	Standard				–
THERMOTRONIC comfort automatic air conditioning with rear AC operating unit	Code 581				Standard
Stationary heater	Code 228				
Driving assistance systems					
Reversing camera	Code 218				
Reversing camera with guidelines (Japan only)	–		Standard	–	Standard
Exclusive Parking Assist	Code 230				
PARKTRONIC (Japan only)	–		Standard	–	Standard

Equipment

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Driving assistance systems					
Blind Spot Assist	Code 234				
Lane Keeping Assist	Code 476				
Speed Limit Assist[1)]	Code 513				
[1)] Currently only available in the following countries: Germany, Belgium, Switzerland, Austria, Denmark, Spain, France, Italy, Luxembourg and Netherlands					
Comfort systems					
Wood / leather steering wheel	–		Code 289		
Steering wheel heater	–		Code 443		
Electrically adjustable driver and front passenger seats with memory and lumbar support	Code 275				
Heated driver and front passenger seats	Code 873				
Heated left and right rear seats	Code 872				
Rear seat with integrated child seat	Code 248				
Seat climate control for driver and front passenger seats	Code 401				
Multicontour seats for driver and front passenger	Code 409				
Active multicontour seats for driver and front passenger	Code 432				

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Comfort systems					
Automatic child seat recognition (ACSR)	Code U18				
Ski bag	Code 282				
Through-loading feature	Code 287				
Panoramic sliding sunroof	Code 413				
Tilting / sliding roof	Code 414				
Heated windshield washer system	Code 875				
Headlamp cleaning system	Code 600				
Mirror package	Code 249				Standard
Trailer hitch	Code 550				
Fuel tank with increased capacity (66 l)	Code 916		–		
Fuel tank with increased capacity (80 l)	Code 915		Standard		
Double sun visor with vanity mirrors on both sides	Code 543				
Sun protection package	Code P09				
EASY-PACK trunk comfort box	B04				
Cup holder	Code 309				

Equipment

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Telephone, audio and communications					
Comfort telephony	Code 386				
Audio 20 CD	Standard				
Audio 20 with CD changer	Code 510				
Audio 50 APS	Code 525				
Audio 50 APS with DVD changer and LINGUATRONIC	Code 511				
COMAND APS	Code 527				
COMAND APS with DVD changer	Code 512				
COMAND APS + with TV tuner (Japan only)	–		Standard	–	Standard
Digital Audio Broadcasting (DAB) radio operation	Code 537				
Media interface	Code 518				
Sound system (Harman / Kardon LOGIC 7)	Code 810				
Digital / analog TV tuner	Code 863				
Rear entertainment	Code 864				

*BlueEFFICIENCY	E 220 CDI*	E 250 CDI*	E 350 CDI*	E 350 CGI*	E 500
Retrofit special equipment					
Audio 20 with CD changer			Code 510		
Audio 50 APS			Code 525		
Audio 50 APS with DVD changer and LINGUATRONIC			Code 511		
COMAND APS			Code 527		
COMAND APS with DVD changer			Code 512		
Digital Audio Broadcasting (DAB) radio operation			Code 537		
Media interface			Code 518		
Trailer hitch			Code 550		
AMG sport package			Code 950		

Exterior

Front view

The new E-Class sedan is characterized by:

- A steep and proportionally very tall radiator grille with a three-dimensional chrome frame extending deep into the bumper
- The "4-eye face" with new rhomboid headlamps

The striking front end is dynamically tapered. The line of the taper continues almost steplessly from the bumper across the radiator grille and into the engine hood.

The appearance is rounded off by the air grille in the bumper air inlet and the daytime running lights in their grille surround, the length of which creates an impression of width and sportiness.

The daytime running lights in the bumper are available as a twin oval arrangement (combined with front fog lamps in conjunction with H7 projection headlamps) or as an LED crossbar (in conjunction with bi-xenon headlamps).

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Front view, shown on E 220 CDI

Rear view

The rear view is dominated by the characteristic Mercedes-Benz V-shaped trunk lid and the powerful bumper.

The redesigned two-piece rear lamps continue into the trunk lid adding extra width. The side surfaces of the two-piece rear lamps are transparent at the gap and therefore melt into one optical unit at night. The rear lamps are connected by a chrome-colored handle strip which elegantly rounds off the wide lines.

With the pronounced wheel arches over the rear wheels, the new E-Class conveys an impression of stability when viewed from behind.

Another sporty aspect of the models with V-engine is the dual-flow exhaust system. This is emphasized by the stainless steel tail pipe finishers which fit exactly into the bumper with very small gaps.

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Rear view, shown on E 220 CDI

Exterior

Side view

With its dynamically flowing side line and bulging shoulder line, the new E-Class looks stern and powerful.

Compared to the predecessor model 211, the new model series 212 has an even more dynamic wedge shape with rising beltline and a powerful structural line originating in the front bumper.

A feeling of pronounced forward momentum is conveyed by the lines rising towards the rear and by the tapered side contour of the lamp unit. The dynamic lines with slender A- and C-pillars lend the vehicle a rakish look while simultaneously displaying a design element typical of all Mercedes-Benz model series.

All these lines serve to stretch the appearance of the vehicle. This is complemented by the powerful rear wheel arches.

The redesigned outside mirrors with integrated LED turn signals blend easily into the overall image.

The new rear lamps extending deep into the sides also help to visually stretch the length of the vehicle. Space was created in the bodywork to allow the rear lamps to shine towards the side too, thus increasing safety.

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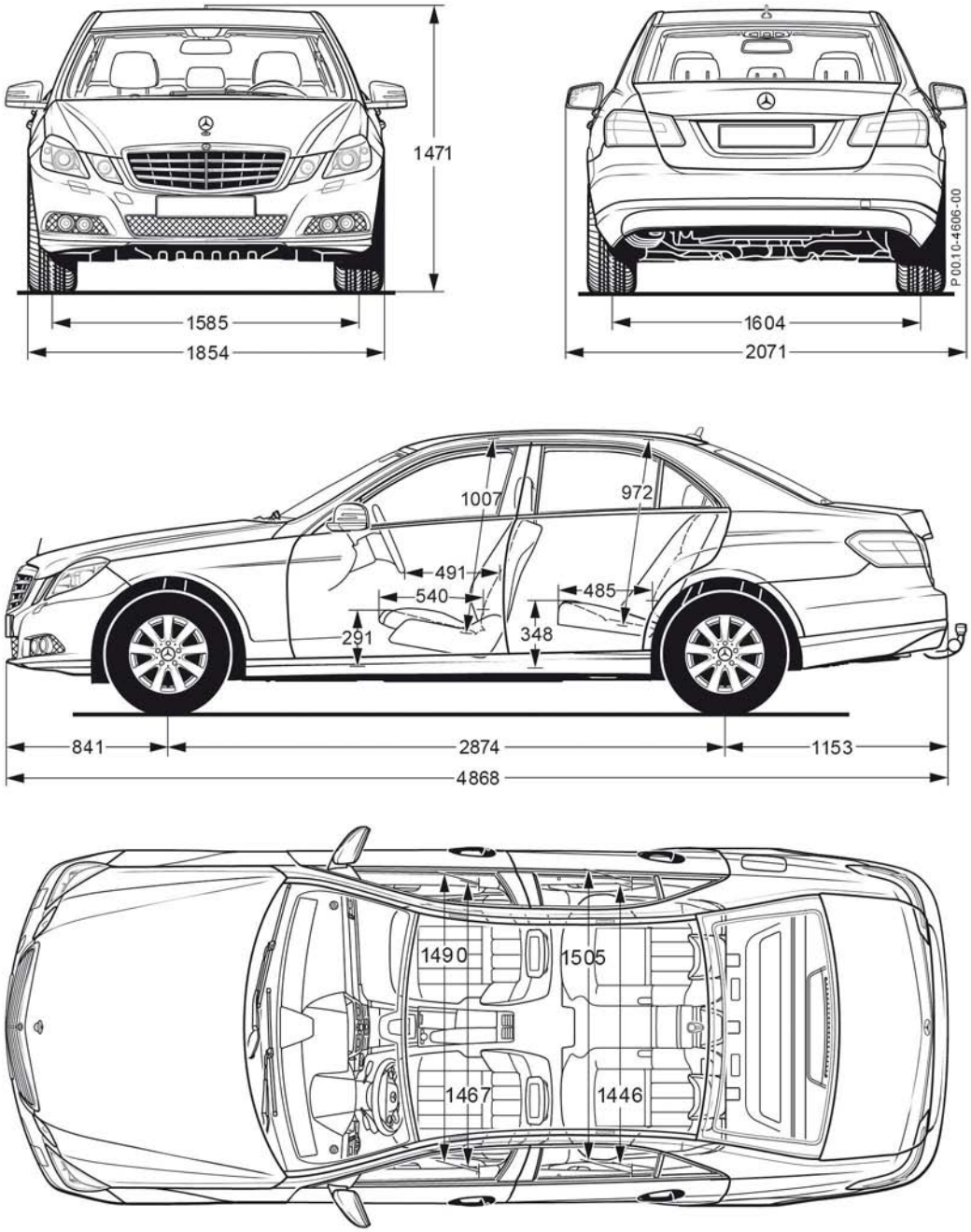
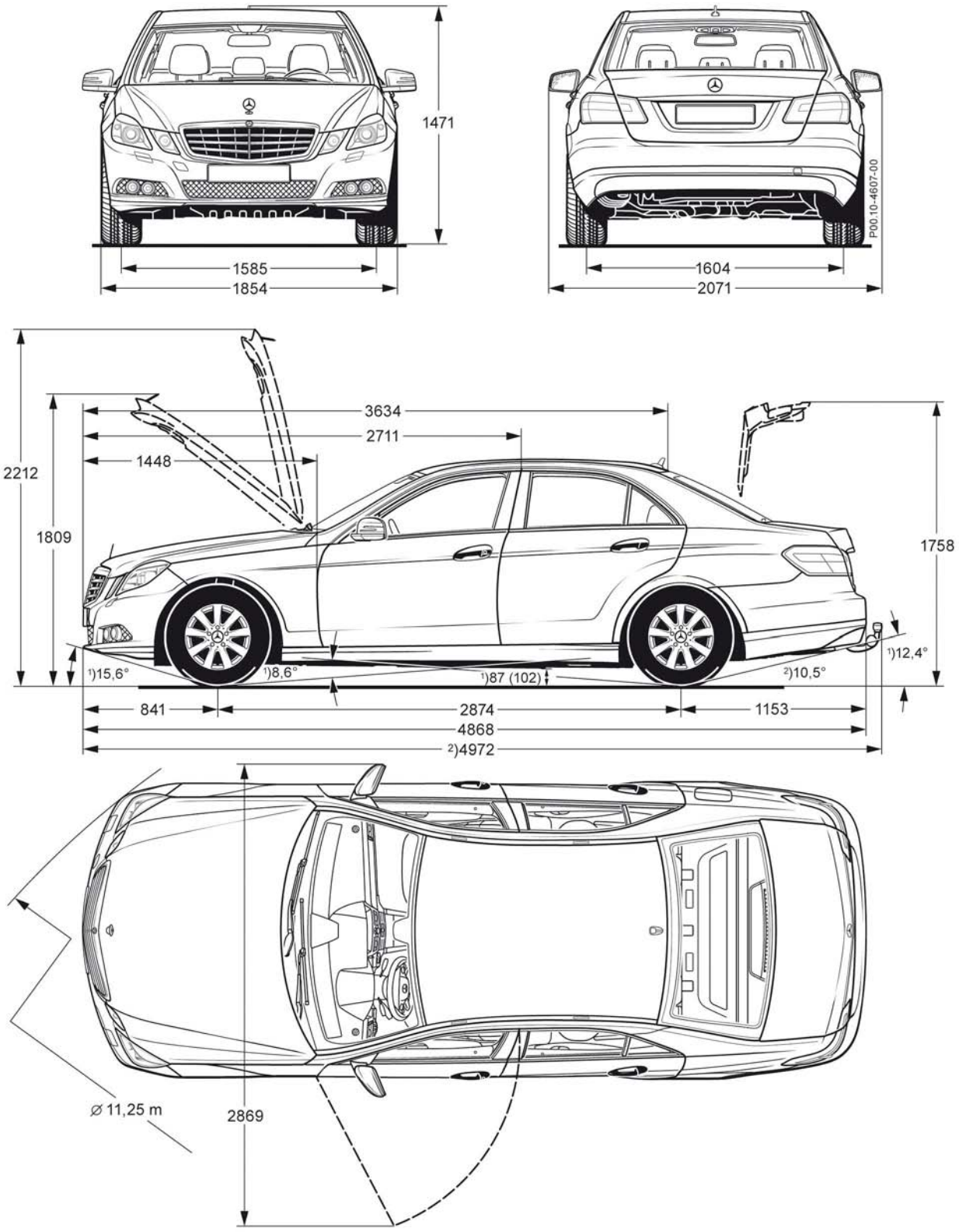
Side view, shown on E 220 CDI



Vehicle dimensions E 250 CDI, E 350 CDI, E 350 CGI
Dimensions unloaded

Dimensions



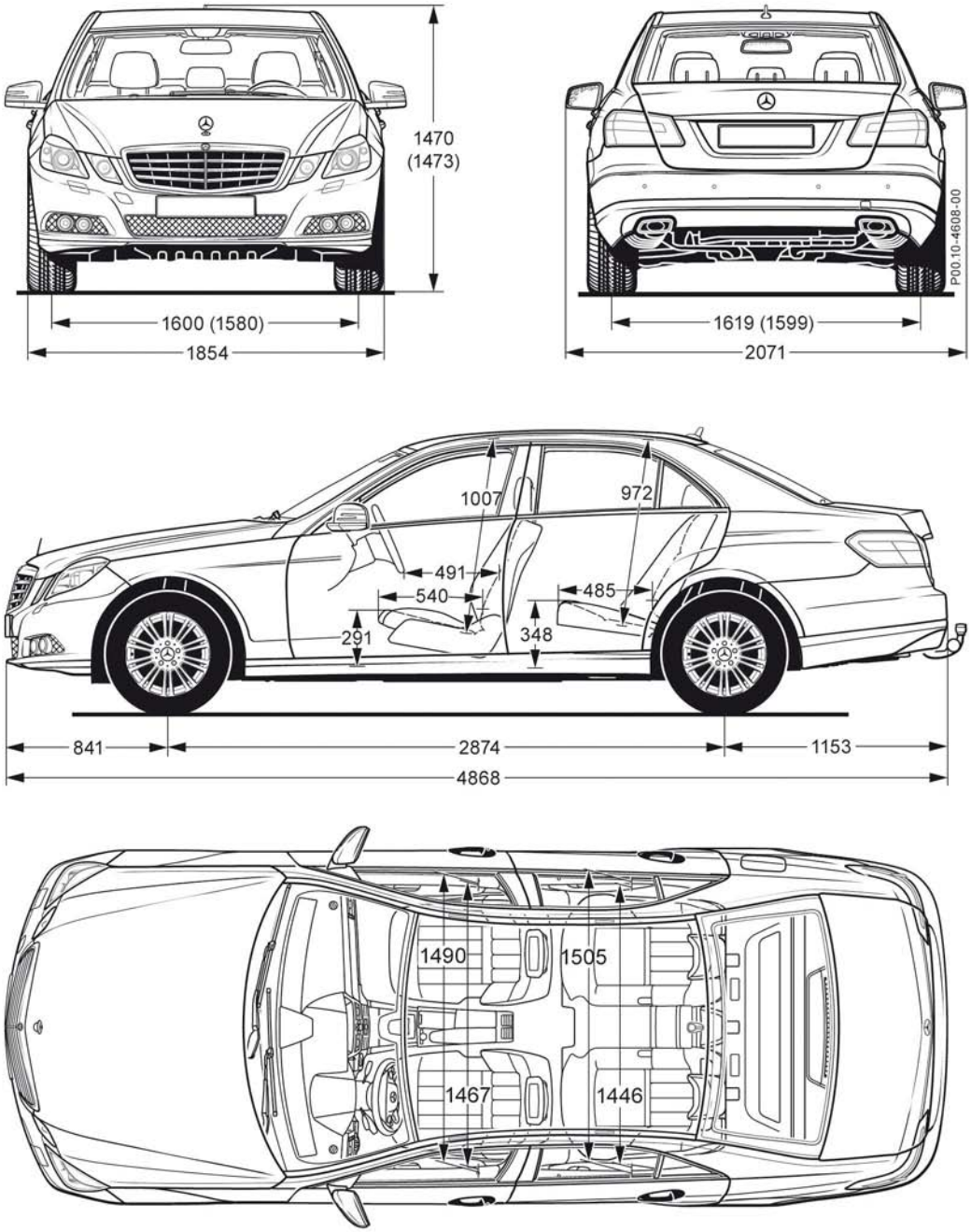
Vehicle dimensions (garage dimensions) E 250 CDI, E 350 CDI, E 350 CGI

Dimensions unloaded

1) At permissible gross vehicle weight

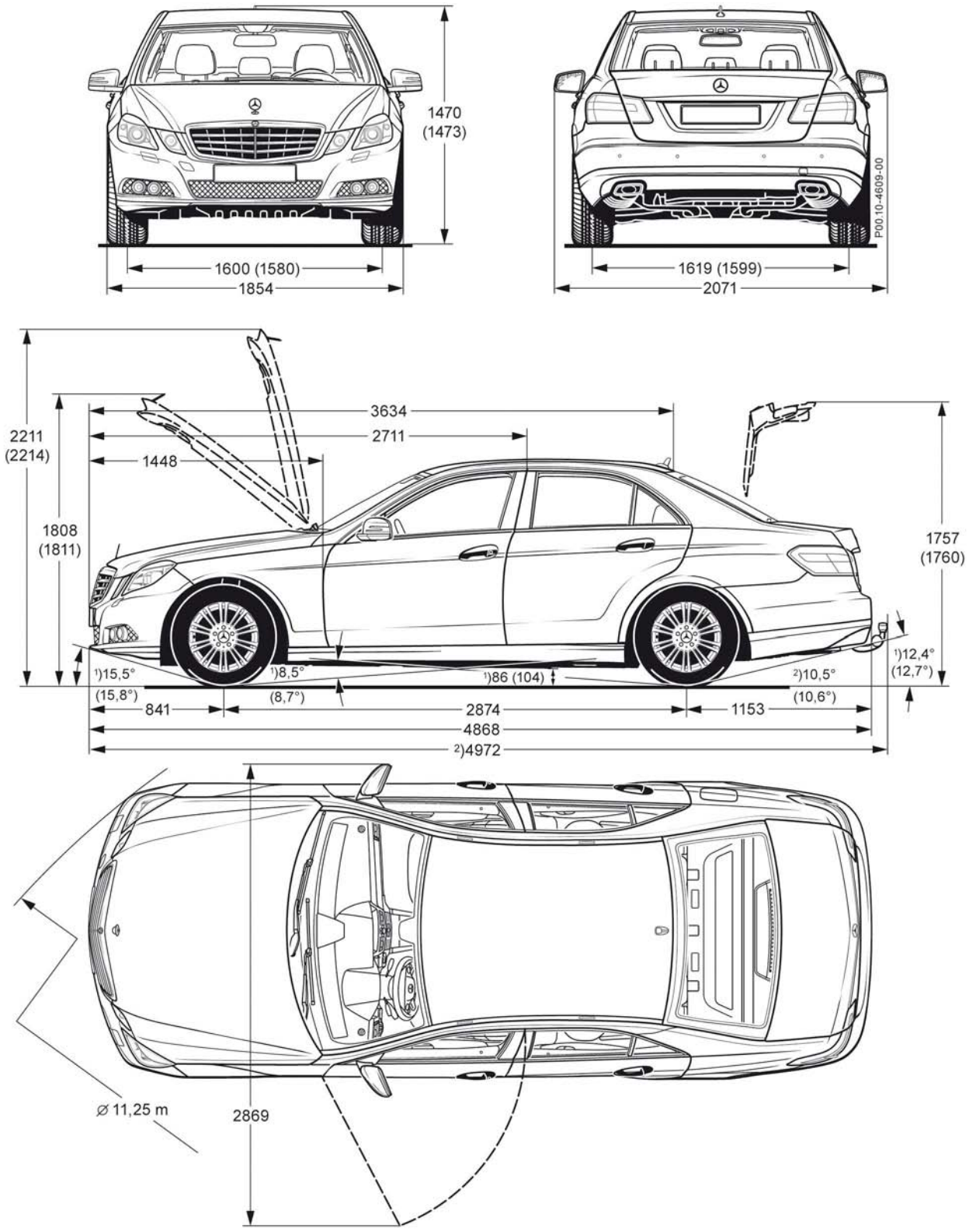
2) With trailer hitch and protective cap (special equipment)

(...) For E 350 CGI



Vehicle dimensions E 220 CDI, E 500 (shown on E 500 ELEGANCE)
Dimensions unloaded
(...) For E 500

Dimensions



Vehicle dimensions (garage dimensions) E 220 CDI, E 500 (shown on E 500 ELEGANCE)

Dimensions unloaded

1) At permissible gross vehicle weight

2) With trailer hitch and protective cap (special equipment)

(...) For E 500

Comparison of W211 and W212

	Unit	W211 E 220 CDI	W212 E 220 CDI	Difference
Dimensions				
Vehicle length	mm	4,852	4,868	+16
Vehicle width	mm	1,822	1,854	+32
Vehicle width (with outside mirrors folded out)	mm	2,063	2,071	+8
Vehicle height	mm	1,483	1,470	-13
Wheelbase	mm	2,854	2,874	+20
Front track width	mm	1,577	1,600	+23
Rear track width	mm	1,570	1,619	+49
Coefficient of drag	C_d	0.26	0.26	0

Technical data

Comparison of W211 and W212

	Unit	W211 E 220 CDI	W212 E 220 CDI	Difference
Dimensions and weights				
Curb weight as per DIN	kg	1,615	1,735	+120
Permissible gross vehicle weight	kg	2,140	2,270	+130
Maximum payload	kg	525	610	+85
Permissible towing capacity, unbraked	kg	750		0
Permissible towing capacity, braked[1]	kg	1,900	2,000	+100
Max. seating capacity		5		0
Trunk capacity (with TIREFIT)	l	540		0
Turning circle	m	11.43	11.25	-0.18
Fuel tank including reserve	l l	65 8	59 8	-6 0
Larger fuel tank (special equipment) including reserve	l l	–	66 8	–
Larger fuel tank (special equipment) including reserve	l l	80 8		0 0

[1]At minimum startability on gradients 12%

Interior design

The clearly structured surfaces of the exterior are reflected in the interior. This harmony of the interior is the result of the clear lines, combined with precision and with high quality in looks and workmanship.

The numerous customization options in the interior can be combined in terms of color and material to produce a variety of styles.

The instrument cluster with its five dial-type gauges is clearly structured and enhanced with a metallic silver tone in the AVANTGARDE line.

The center console is available in two versions depending on the transmission variant.

The seats have been redesigned in terms of shape, comfort, material and color. The materials in the seats range from fabric to nappa leather and are available in a variety of colors.

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Interior design

Interior

Instrument panel

Model series 212 features a redesigned, horizontally structured instrument panel. In contrast to the predecessor model, it is designed as a one-piece component with integral glove box module.

On the upper part of the instrument panel is a hood for the instrument cluster which has been enlarged for the new central display on the right-hand side of the instrument cluster.

In addition to the basic versions, the instrument panel is available in different color combinations. The color combinations are delineated by three decorative / trim strips made of wood or aluminum.

The upper portion of the center tower is a constituent part of the instrument panel and is fitted with a knee airbag on the driver side.

The horizontally partitioned glove compartment can be ventilated.
As standard equipment the glove compartment contains an AUX IN jack and a 12 V power outlet, while a media interface connection instead of the AUX IN jack is available as special equipment.

The two adjustable ventilation outlets for the driver and front passenger are located at the top of the center tower. Between the air vents are the switch for the hazard warning system and the status indicator for the front passenger airbag.

Below the air vents in the audio unit, which varies according to the equipment installed.
Then there is the operating unit containing the switches for various equipment packages.
The operating unit for the climate control marks the beginning of the center console area.

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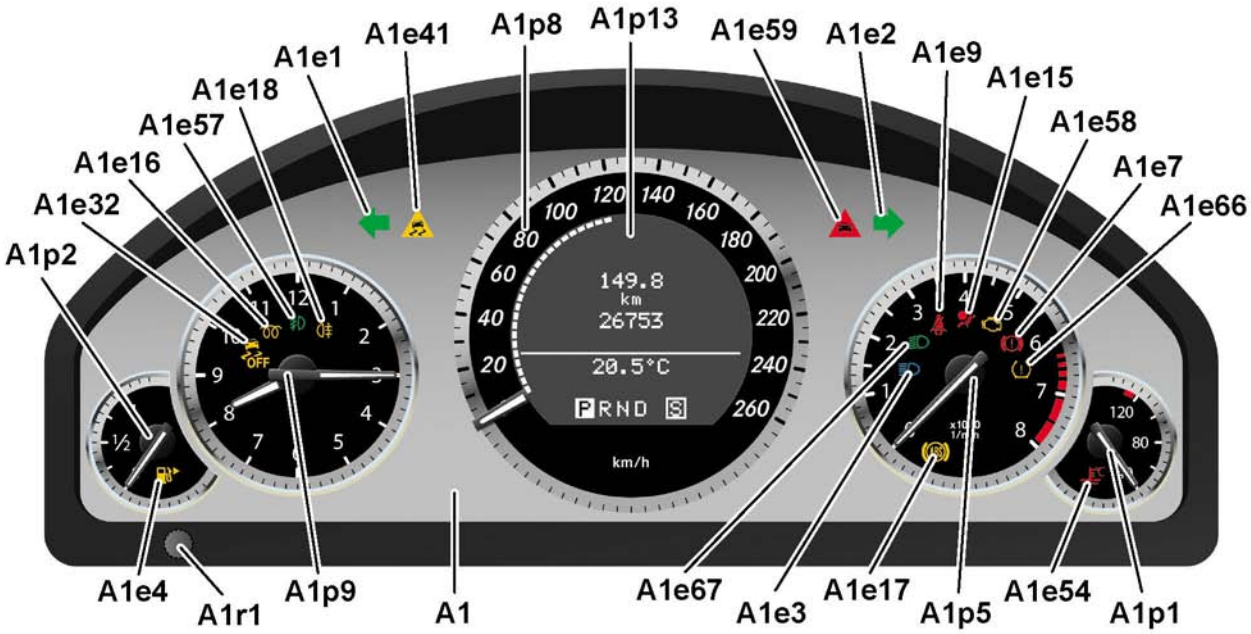
Instrument panel

Instrument cluster

The new, sporty instrument cluster with its five dial instruments contains a 4.5" multifunction display in the center dial. The instrument cluster is operated via the multifunction steering wheel with 12 function buttons.

Different menus appear in the multifunction display to operate and explain the various systems and to account for engine and equipment variants.



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Instrument cluster

A1	*Instrument cluster*
A1e1	*Left turn signal indicator lamp*
A1e2	*Right turn signal indicator lamp*
A1e3	*High beam indicator lamp*
A1e4	*Fuel reserve warning lamp*
A1e7	*Brake fluid and parking brake warning lamp*
A1e9	*Seat belt warning lamp*
A1e15	*Supplemental restraint system indicator lamp*
A1e16	*Preglow indicator lamp (with diesel engine)*
A1e17	*Antilock brake system indicator lamp*
A1e18	*Rear fog light indicator lamp*
A1e32	*ESP/ASR OFF warning lamp*
A1e41	*Electronic Stability Program warning lamp*
A1e54	*Coolant temperature warning lamp*
A1e57	*Front fog lamp indicator lamp*
A1e58	*Engine diagnosis indicator lamp*
A1e59	*DISTRONIC warning lamp (with code (233) DISTRONIC PLUS)*
A1e66	*Tire pressure monitor warning lamp (with code (475) Tire pressure monitor)*
A1e67	*Low beam indicator lamp*
A1p1	*Coolant temperature gauge*
A1p2	*Fuel level indicator*
A1p5	*Tachometer*
A1p8	*Speedometer*
A1p9	*Analog clock*
A1p13	*Multifunction display*
A1r1	*Instrument illumination brightness control*

Interior

Center console

Continuing down from the bottom section of the center tower of the instrument panel is the start of the transition to the center console.

There are two versions of center console:

- In vehicles with 6-speed manual transmission or 5-speed automatic transmission, the gearshift / selector lever is located in the center console.
- In vehicles with 7-speed automatic transmission, there is no selector lever in the center console because the DIRECT SELECT lever is installed on the steering column tube module of the steering wheel.

The center consoles differ in the number and location of the stowage compartments, in the position of the central controller and in the shape of the armrests for the driver and front passenger.

The storage compartments under the armrest and the location of the telephone also vary between the two versions of center console.

P68.20-4117-00

Center console with selector lever

P68.20-4118-00

Center console with DIRECT SELECT lever

Seats

The seats are either entirely new or more advanced systems. They meet the most stringent and diverse demands in terms of comfort, ergonomics, safety and differentiation between the equipment variants.

Modifications have been made in particular to the seat cushion surfaces, the side bolsters and the arrangement of the fluting, which varies according to the equipment line.

In the ELEGANCE line the fluting on the seat cushion and backrest surfaces runs lengthwise, while in the standard version and the AVANTGARDE line it runs across the cushions. All seat covers feature padded fluting, which provides a particularly high degree of comfort as well as passive ventilation that assures continued comfort over long distances.

Integrated child seats in the rear seats are available as special equipment.

Certain conventional child seats can be connected to the bodyshell via the standardized ISOFIX fastening system.

The TopTether system (upper retaining strap) provides additional fastening points for child seats on the rear shelf.

P91.00-2266-00

Seats

Interior

Front seats

In addition to the redesigned seat cushions and backrests, the sides of the seats in particular have been redeveloped with firm side bolsters for improved comfort and functional lateral support.

The front seats are equipped with partially electric seat adjustment as standard and have a manually operated lumbar support. Fully electric seat adjustment with memory function and a corresponding pneumatic lumbar support are offered as special equipment.

On the top of the backrests are the NECK-PRO head restraints with their new continuous inclination adjustment.

As an option, the front seats can also be ordered as multicontour seats or active multicontour seats.

P91.25-2486-00

Sectional view of active multicontour seat

Multicontour seat, code (409)

The driver and front passenger seats can be ordered as multicontour seat as special equipment.

The multicontour seat offers the ability to further improve comfort by adjusting the length of the seat cushion and the contour of the backrest individually and steplessly to fit the body shape of the driver and front passenger.

This seat adjustment for the driver and front passenger is accomplished by inflating and deflating air chambers that are integrated in the front of the seat cushion and the surface of the backrest. The seat cushion contains an air chamber for the thigh area. More air chambers are located in each side and on the surface of the backrest. The controls are installed on the side of the seat cushion between the side bolsters and the center console.

Active multicontour seat, code (432)

The active multicontour seat is a development of the multicontour seat. As well as seat contour adjustment, the active multicontour seat contains a massage function and automatic adjustment of the lateral support of the backrest to suit the current driving situation.

When the vehicle dynamics function is activated, the air pressure in the side bolsters of the backrest is changed electropneumatically according to the steering angle, the lateral acceleration and the speed of the vehicle. When the active multicontour seat vehicle dynamics function is switched off, the pressure in both chambers in the backrest returns to the pressure that existed before the function was activated.

Rear seats

The standard version is fitted with fixed rear seats for three passengers.
It is possible to order an asymmetrically split, folding rear seat backrest as special equipment. The rear seat backrest can be unlocked from the trunk side in order to enlarge the cargo area. As it is being unlocked, the head restraints drop down onto the backrest under their own weight so that they do not need to be removed, but can be folded down together with the backrest.

Both versions of rear seat have three head restraints. The two on the outside are adjustable for both height and angle. A special convenience feature allows the driver to move the head restraints to a lower position at the touch of a button. The passenger on the rear bench seat can then adjust the height as required manually.

Comfort individual seats in rear, code (P08)

To further improve individual comfort, the new E-Class sedan is the first car to feature the comfort individual seats with comfort head restraints in the rear as a special equipment option.

The individual seats are characterized by special lateral support, additional contour padding and an especially comfortable center console that acts as an armrest. The comfort seat system offers generous space with its own center console which is ideally suited for work in the rear seats..

The comfort individual seats at the rear are only available with leather covers and seat heaters. Behind a flap between the rear backrests is the standard-equipment through-loading facility, which can be expanded with am optional ski bag.

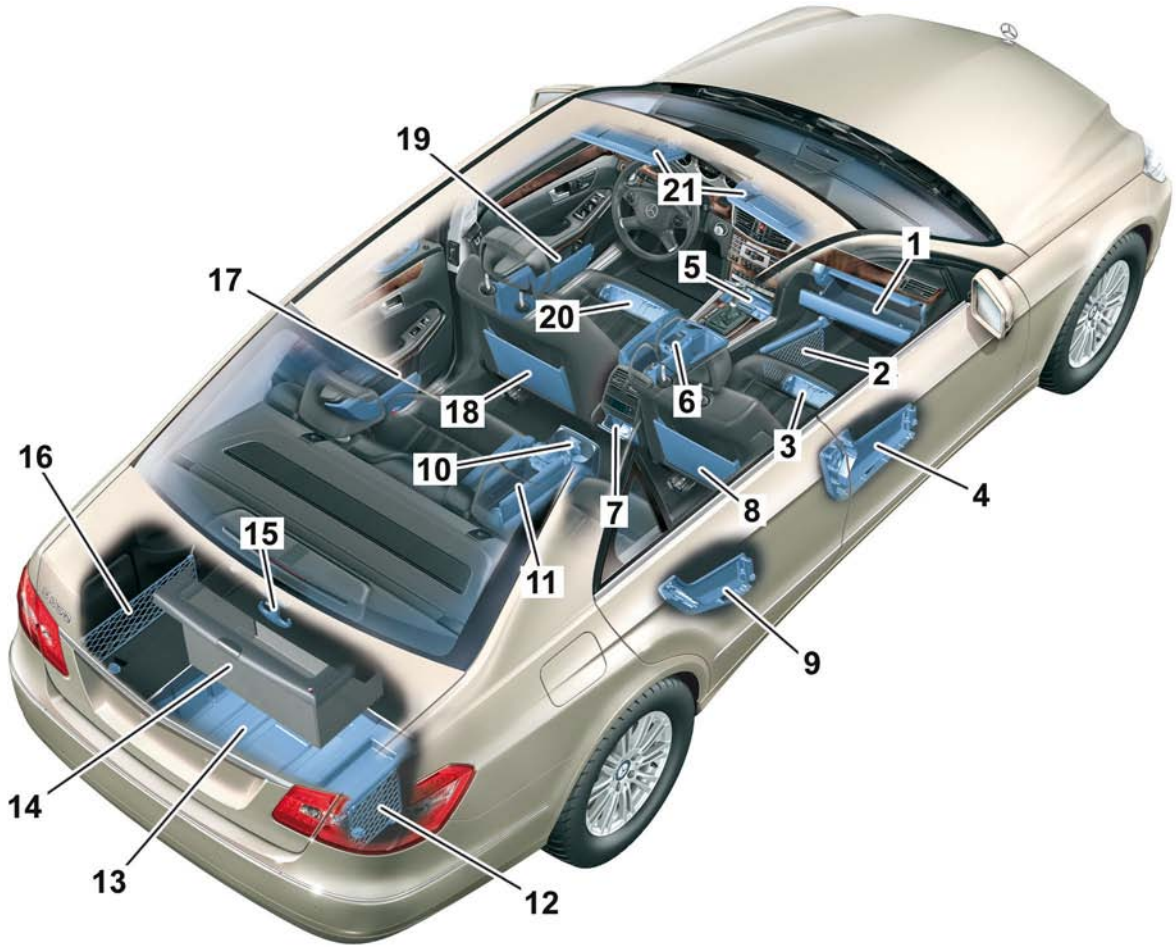
P91.12-3408-00

Comfort individual seats in rear

Stowage compartments

Storage and stowage compartments

The model series 212 sedan has 21 storage and stowage compartments.



P68.00-5839-00

Storage and stowage compartments in the E-Class

1 *Glove compartment*
2 *Parcel net and bottle holder in front passenger footwell*
3 *Stowage compartment under front passenger seat (special equipment)*
4 *Right front door stowage compartment*
5 *Stowage compartment in front center console with power outlet or with ashtray and cigarette lighter (special equipment)*
6 *Stowage compartment in front of armrest or cup holder in center console (special equipment) or stowage compartment with phone compartment under armrest (special equipment)*
7 *Power outlet with stowage compartment or ashtray (special equipment)*
8 *Map pocket*
9 *Right rear door stowage compartment*
10 *Cup holder in rear (with comfort individual seats in rear)*
11 *Stowage compartment in rear (with comfort individual seats in rear)*
12 *Luggage net*
13 *Stowage space under trunk floor*
14 *EASY-PACK trunk comfort box (special equipment)*
15 *Bag hook*
16 *Luggage net*
17 *Left rear door stowage compartment*
18 *Map pocket*
19 *Left front door stowage compartment*
20 *Stowage compartment under driver seat or stowage compartment for fire extinguisher (special equipment)*
21 *Retaining clip on sun visor*

EASY-PACK trunk comfort box

A new item of special equipment is the EASY-PACK trunk comfort box under code (B04).

The comfort box can be fastened to and detached from the underside of the rear shelf by means of rotary locks without the need for tools. When the comfort box is not required, it can either be raised or it can be removed from the vehicle entirely.

When the comfort box is moved towards the rear for use, it can be unfolded by pressing down in the middle of the base. The box is infinitely variable and has a volume of 7-55 liters and a maximum load capacity of about 10 kg.

When the weight inside exceeds approx. 3-4 kg, the floor of the comfort box moves down by itself until it reaches the floor of the trunk.

When not in use, the entire system including fasteners, rails and frame measures approx. 570 mm wide, approx. 280 mm deep and approx. 50 mm tall.

The comfort box itself is approx. 535 mm wide, approx. 265 mm deep and approx. 435 mm high when the variable-height floor is resting on the trunk floor.

P68.00-5940-00

EASY-PACK trunk comfort box

1 Handle for pulling out or pushing in the comfort box
2 Variable loading volume
3 Button for rolling up the comfort box

ASSYST PLUS

Extended maintenance strategy

Both workshops and the customer will benefit from the extended maintenance scopes from the very first kilometer driven.
By making maintenance less complicated and introducing the basic service which covers the technically essential items, we are able to offer maintenance that is more cost-efficient and competitive without compromising the usual Mercedes-Benz service quality.

Previously, the maintenance scopes alternated between the minor basic service (Service A) and the major basic service (Service B). These services have now been classified as the technically essential **Basic Service** and the additional **PLUS package**.

A basic package, which does not include some individual service items which previously formed part of the service, has been developed for the Basic Service for price-conscious customers.

A PLUS package has also been developed to allow those customers for whom convenience and service is important to continue to have these service items performed by Mercedes-Benz Service.

PLUS package

The service advisor must offer the PLUS package to the customer during a consultation because it is no longer included in the conventional maintenance scopes.

The aim of this consultation is to offer the customer the package best suited to him or her.

The "Service Package Pricing System" (SPPS) can provide support to the service advisor. The actions performed by the dealer and the service items included in the PLUS package are stored in this system.

Decoding of the workshop code

On the After-Sales platform it is possible to decode the service code in the SPPS service management system. The SPPS provides the customer with highly accurate information about the duration and expected costs of the upcoming service visit.

After the service code is entered into the system, the system outputs the service items for the upcoming maintenance.
Service-relevant special equipment must be determined by the customer service advisor when the service code is entered. If the workshop code is entered with the complete vehicle identification number (VIN), service-relevant special equipment is also included.

Digital Service Booklet

All service, body and major assembly operations are documented in a central database using the Digital Service Booklet (DSB). The customer also receives a service report which he / she stores in the service booklet.

Note

For further information about the maintenance strategy, see the brochure "ASSYST PLUS Maintenance, Extended Maintenance Strategy for Model Series as of Modification Year 2008".

Order No.: 6516 1355 02

This and other brochures can be obtained from our GSP / TI Shop on the Internet.

Link: http: / / gsp-ti-shop.de

Service indicator

The 2-digit service code in the service indicator can be used to determine the upcoming service scope.

The first digit indicates whether the service is a minor or a major basic service.

- A = Service A = Minor basic service
- B = Service B = Major basic service

The second digit indicates that additional operations are due:

- Number or letter

The scope of additional operations can be determined via the SPPS using the number or letter.

Vehicle-specific special equipment such as a panoramic sliding sunroof or trailer hitch are not taken into account by the service code. These service items, if present, are however stored in the workshop code.

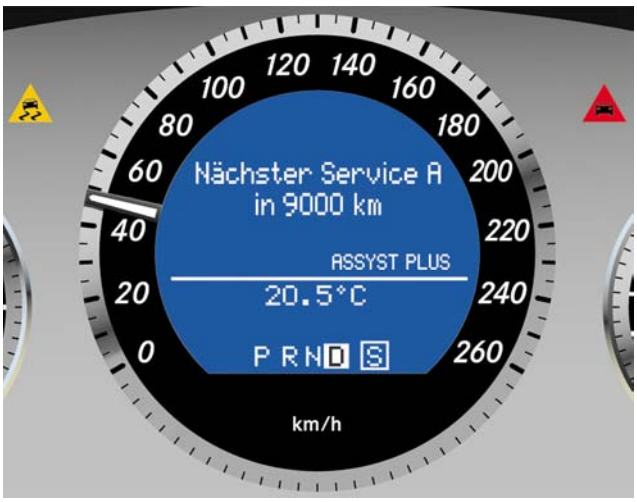
Workshop display

The workshop code is stored in the maintenance computer and is read out by the customer service advisor via the instrument cluster or Xentry Diagnostics. The customer has no access to this workshop code.

The workshop code contains all vehicle-specific service items which currently need to be performed on the vehicle, depending on mileage, time and equipment.

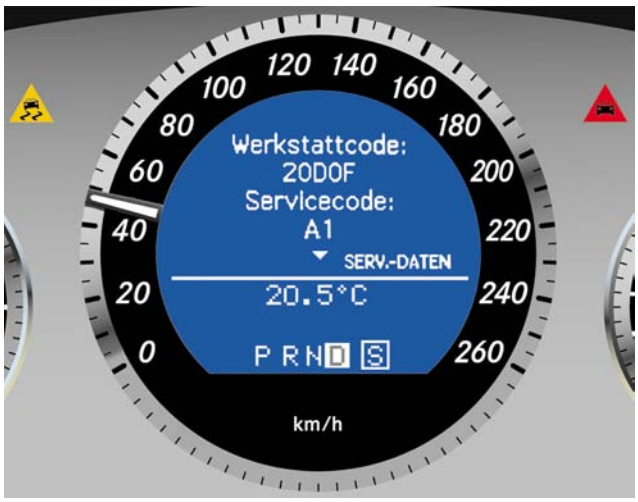
The workshop code can have 3 to 6 digits. It consists of numbers and / or letters.

The workshop code is required to generate a vehicle-specific service sheet in the Workshop Information System (WIS).



P54.32-7399-00

Representation in multifunction display
Service code (mileage-based maintenance)



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Representation in multifunction display
Workshop code

Engine data

W212	Unit	E 220 CDI	E 250 CDI
Engine data			
Engine model designation		651.924	651.924
Engine designation		OM 651 DE22 LA	OM 651 DE22 LA GST
Engine configuration / no. of cylinders		R4	
Displacement	cm^3	2,143	
Bore	mm	83.0	
Stroke	mm	99.0	
Fuel	RON	Diesel	
Performance			
Acceleration 0...100 km / h Manual transmission Automatic transmission	s	 9.0 8.3	 8.2 7.4
Maximum speed Manual transmission Automatic transmission	km / h	 231 229	 242 239
Fuel economy / CO_2 emissions			
Fuel economy, overall (NEDC) Manual transmission Automatic transmission	l / 100 km	 5.4 5.8	 5.6 5.8
CO_2 emissions Manual transmission Automatic transmission	g / km	 143 152	 146 152
Exhaust emission regulation	Standard	EU 5	

Engine data, performance and consumption figures are provisional.

W212	Unit	E 350 CDI	E 350 CGI	E 500
Engine data				
Engine model designation		642.850	272.983	273.971
Engine designation		OM 642 DE30 LA	M 272 DE35	M 273 KE55
Engine configuration / no. of cylinders		V6	V6	V8
Displacement	cm^3	2,987	3,498	5,461
Bore	mm	83.0	92.9	98.0
Stroke	mm	92.0	86.0	90.5
Fuel	RON	Diesel	Premium gasoline, unleaded 95 RON	
Performance				
Acceleration 0...100 km / h Manual transmission Automatic transmission	s	 – 6.9	 – 6.3	 – 5.2
Maximum speed Manual transmission Automatic transmission	km / h	 – 248	 – 250[1]	 – 250[1]
Fuel economy / CO_2 emissions				
Fuel economy, overall (NEDC) Manual transmission Automatic transmission	l / 100 km	 – 6.8	 – 8.5	 – 11.0
CO_2 emissions Manual transmission Automatic transmission	g / km	 – 178	 – 203	 – 263
Exhaust emission regulation	Standard	EU 5		

[1]Electronically governed

Diesel engine OM 651

In the new model series 212 the new 4-cylinder diesel engine 651 replaces the previously installed OM 646 EVO of model series 211.
The OM 651 will be installed in the E 220 CDI model on market launch and an uprated version in the E 250 CDI.

The main technical features of the 4-cylinder diesel engine 651 are:

- Common rail with an injection pressure of up to 2,000 bar
- 2-stage turbocharging
- Engine running characteristics optimized in terms of noise and vibrations
- Compact engine design with rear recumbent gear drive
- Compliance with the EU 5 emissions standard

Note

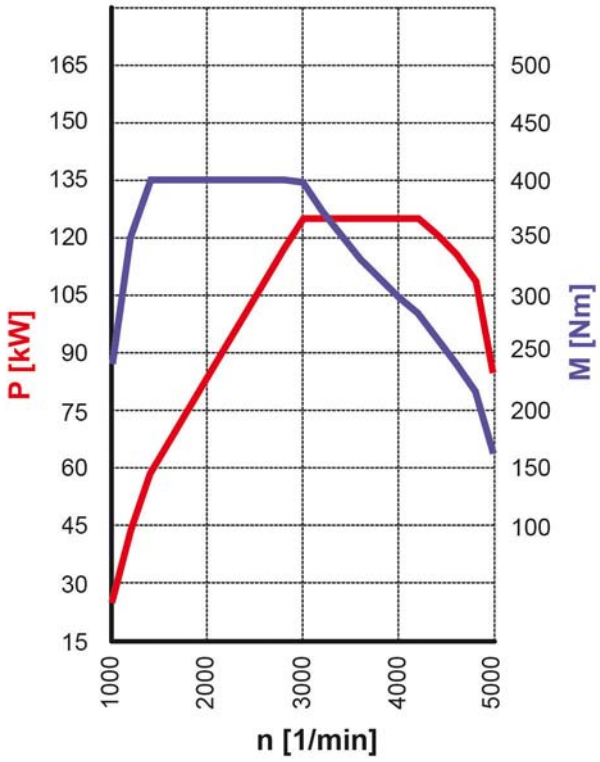
The following literature is available for diesel engine 651:

- System Description:
  CDI Diesel Direct Injection for OM 651
  Order No. 6516 1363 02
- Introduction into Service Manual:
  New Inline Engine Generation, 4-cylinder OM 651
  Order No. 6516 1364 02

P01.00-3121-00

OM 651 in models E 220 CDI and E 250 CDI

Engine data	Unit	OM 651.924 in E 220 CDI	OM 651.924 in E 250 CDI
Rated output at engine speed	kW (hp) at rpm	125 (170) 3,000 – 4,200	150 (204) 4,200
Rated torque at engine speed	Nm at rpm	400 1,400 – 2,800	500 1,600 – 1,800
Compression ratio	ε	16.2 : 1	



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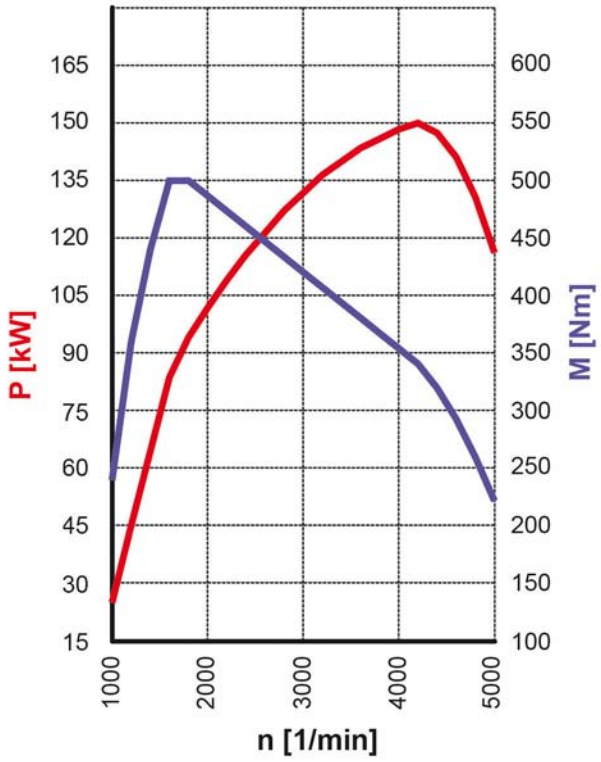
Performance graph OM 651, 125 kW variant



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Performance graph OM 651, 150 kW variant

M *Torque*
P *Output*
n *Rpm*

Diesel engine OM 642

To complement the 4-cylinder diesel engines, the advanced 6-cylinder diesel engine 642 will be available in the E 350 CDI on the market launch of model series 212.

The main technical innovations of the 6-cylinder diesel engine 642.850 are:

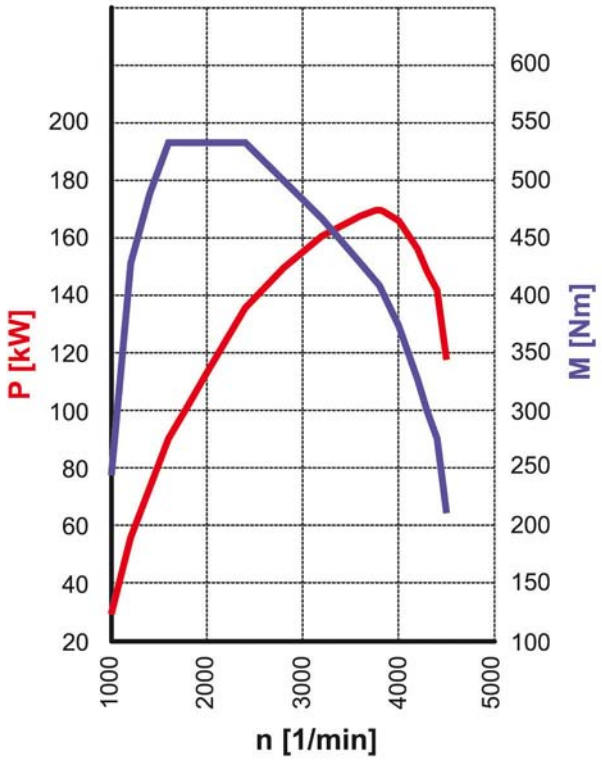
- Suction-regulated high-pressure pump
- Injectors with optimized orifice geometry to reduce pollutant emissions
- Heated fuel main filter
- Quick glow system with glow output stage (ceramic glow plugs)
- Reduced compression ratio
- Intake camshaft with sensor ring for improved emergency running characteristics
- Heated coolant thermostat
- Two-piece encapsulation of the exhaust manifold
- Maintenance-friendly air filter attachment (see picture)
- Compliance with the EU 5 emissions standard

P01.10-2975-00

OM 642.850 in model E 350 CDI

1 Air filter housing upper section
2 Engine air intake duct
3 Air filter housing lower section

Engine data	Unit	OM 642.850 in E 350 CDI
Rated output at engine speed	kW (hp) at rpm	170 (231) 3,800
Rated torque at engine speed	Nm at rpm	540 1,600 – 2,400
Compression ratio	ε	15.5 : 1



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Performance graph OM 642

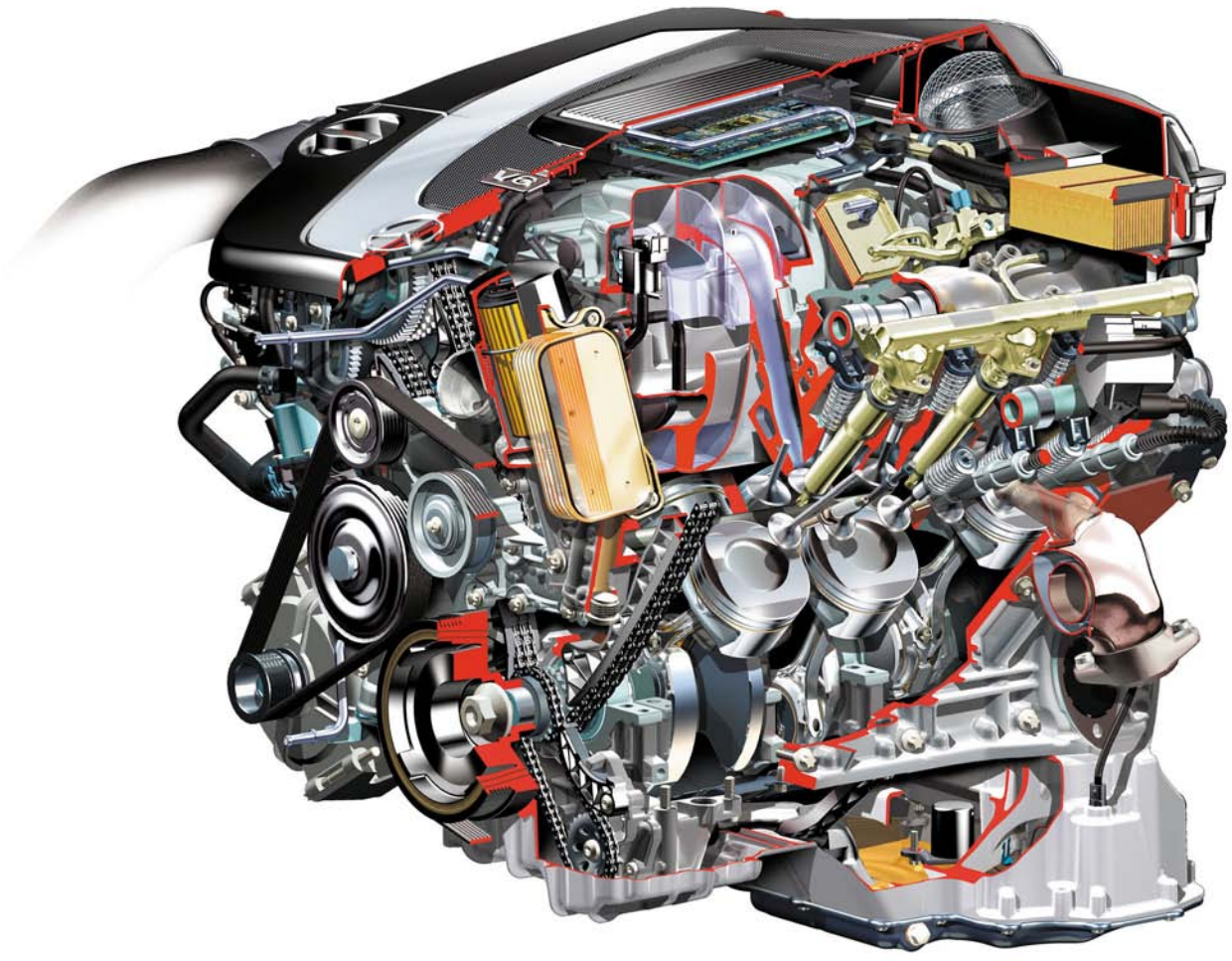
M *Torque*
P *Output*
n *Rpm*

Gasoline engine M 272/M 273

The new E-Class will be launched with two gasoline engines that are already familiar from the predecessor model series.

These are the E 350 CGI model with the 6-cylinder engine M 272 and direct injection and the E 500 model with the 8-cylinder engine M 273.

Both models satisfy the EU 5 emissions standard on launch.



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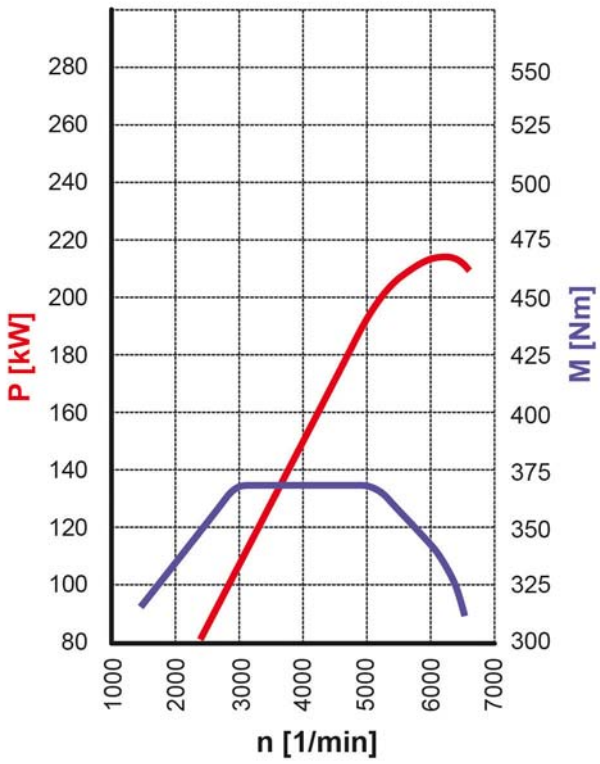
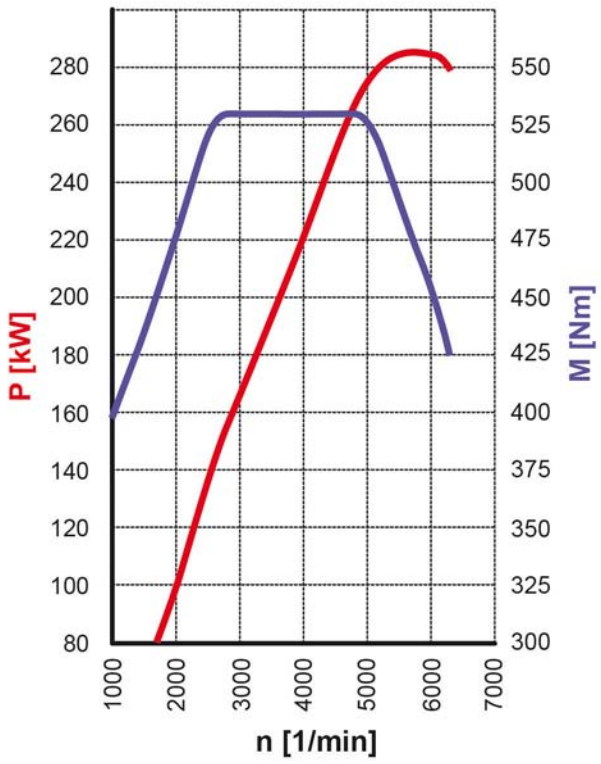
M 272.983 in model E 350 CGI

Engine data	Unit	M 272.983 in E 350 CGI	M 273.971 in E 500
Rated output at engine speed	kW (hp) at rpm	215 (292) 6,400	285 (388) 6,000
Rated torque at engine speed	Nm at rpm	365 3,000 – 5,100	530 2,800 – 4,800
Compression ratio	ε	12.2 : 1	10.7 : 1



P01.00-3166-00

Performance graph M 272



P01.00-3156-00

Performance graph M 273

M *Torque*
P *Output*
n *Rpm*

Exhaust system

E 220 CDI and E 250 CDI

The exhaust system of the 4-cylinder diesel engine 651 consists of an oxidation catalytic converter, a diesel particulate filter and a rear muffler. All the emission control components are near-engine mounted.

Connecting points in the exhaust system are located downstream of the near-engine mounted combination unit consisting of oxidation catalytic converter and diesel particulate filter, and upstream of the rear exhaust line.

The exhaust pipe consists of a single pipeline along its entire length. From the rear muffler, which is designed as a double-skinned baffled muffler, the exhaust gas flows through the tail pipe.
On standard-equipment models the tail pipe is concealed behind the bumper cover. On models with the optional AMG sport package, code (950), the tail pipe is installed with a visible trim finisher.

P49.00-2120-00

Exhaust system in OM 651 (E 220 CDI or E 250 CDI)

E 350 CDI

The exhaust system for the V6 diesel engine 642 consists of an oxidation catalytic converter, a diesel particulate filter and one rear muffler for each pipe. All the emission control components are near-engine mounted. The exhaust pipe is air gap-insulated as far as the diesel particulate filter.

The connecting points in the exhaust system are located downstream of the oxidation catalytic converter, downstream of the diesel particulate filter and at the rear exhaust system.

The two tail pipes are integrated into the bumper cover on each side and each one ends in a tail pipe finisher.

E 350 CGI and E 500

The exhaust system for the V6 and V8 gasoline engines consists of one firewall catalytic converter each for the right and left cylinder banks.

Downstream of the two firewall catalytic converters the exhaust gas flows through the front muffler and the underfloor catalytic converter via the center muffler to the two rear mufflers, before leaving the exhaust system through the tail pipes.

The connecting points in the exhaust system are located downstream of the air gap-insulated manifold, downstream of the front muffler and after the underfloor catalytic converter.

The E 350 CGI is fitted with a trim finisher on the tail pipe, while on the E 500 the finisher is integrated in the bumper cover and the tail pipe ends in the finisher without touching it.

Note

New devices are available for exhaust extraction on vehicles with tail pipe finishers integrated in the bumper. These are described in more detail in the "Workshop equipment" chapter.

Note

For an overview of the exhaust aftertreatment systems and the relevant limits in the emission regulations the following Technology Guide is available:

Exhaust aftertreatment for current passenger car model series

Order No. 6516 1337 02

Fuel system

Fuel supply

Gasoline engines

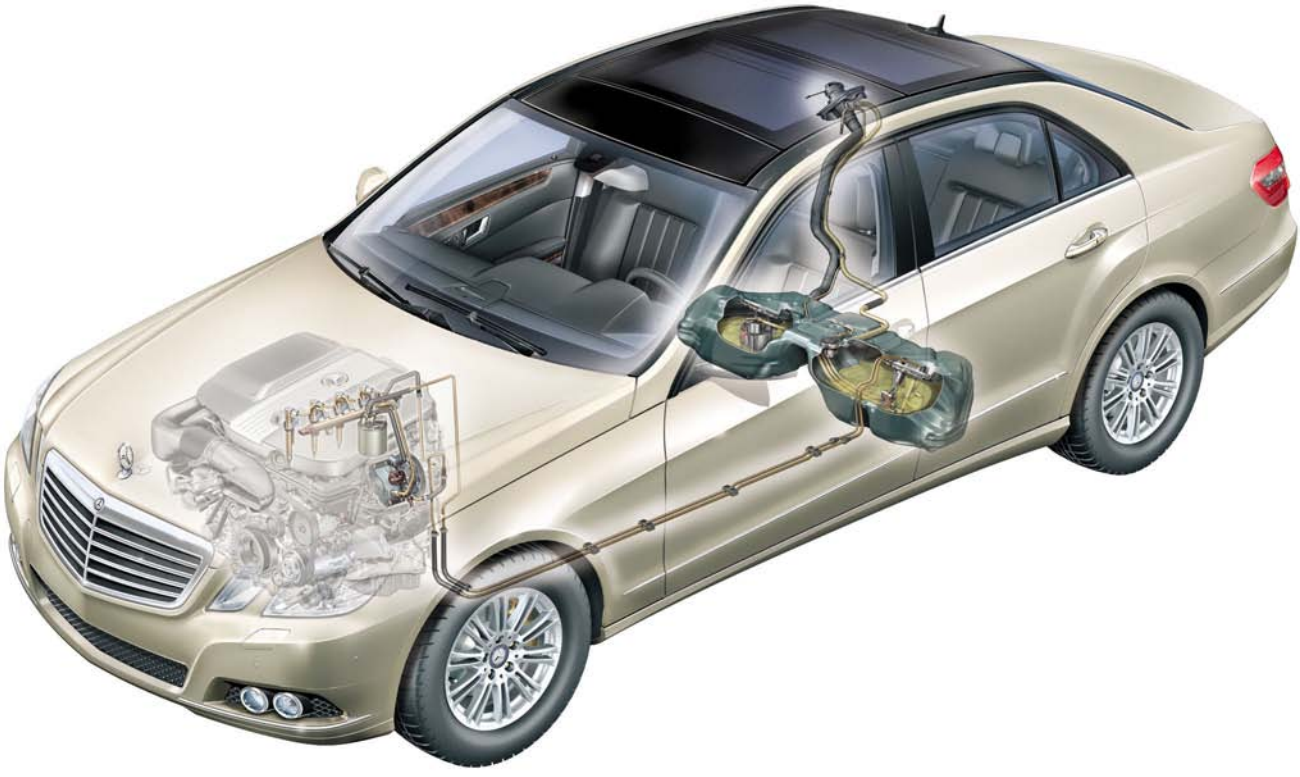
An electric fuel pump with different performance is used for fuel delivery in engines 272 and 273. In these systems the fuel is pumped from the fuel tank into the fuel distributor (fuel rail) by the pump according to demand, in order to supply the injection valves. This is done with the aid of a pump governor which regulates the quantities in relation to the system pressure. The two gasoline engines are equipped with a non-return fuel system.

Diesel engines

The fuel supply in engines 651 and 642 is provided via a high-pressure pump, which is supplied by an electrically controlled fuel pump in the fuel tank.

The electric fuel pump used is a positive-displacement pump based on the roller cell principle which has been adapted to suit the volume requirements and system pressure of the high-pressure pump.

The fuel supply system is equipped with one feed line and one return line, and it is via the feed line that the electric fuel pump delivers the scavenging quantity of the high-pressure pump and the full-load consumption of the engine. The surplus fuel is directed back to the tank via the return line.



P47.00-2170-00

Fuel system in E 250 CDI with OM 651

Fuel tank

As in the predecessor model series, the fuel tank in model series 212 is located in front of the rear axle under the rear bench seat in order to provide the largest possible opening between the trunk and the passenger compartment when the rear seat backrest is folded down.

The blown fuel tank is a new development and is made of high-density polyethylene (HDPE). The complex shape of the thermoplastic fuel tank has a multiple-layer wall construction of six layers with a block layer to prevent hydrocarbon penetration.

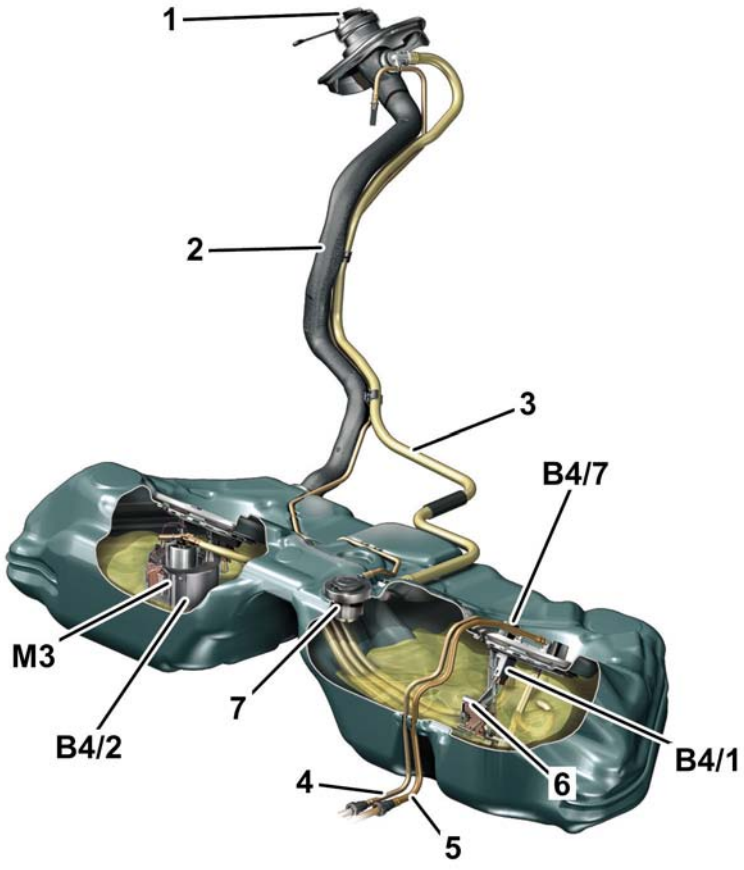
The capacity of the fuel tank in the 4-cylinder models is approx. 59 liters, including a reserve of approx. 8 liters. Fuel tanks with capacities of approx. 66 liters or approx. 80 liters can be ordered as special equipment.

In all models, two service holes on the top of the tank facilitate removal of the pump and the filter unit with pressure sensor. The expansion volume is inside the fuel tank. The fuel tank fill level is measured by a dedicated float-and-lever sensor in each chamber. Each float-and-lever sensor has its own electrical connector plug.

The fuel filler flap is located in the usual place in the right fender below the C pillar. The filler neck is welded directly onto the tank bladder. It opens into the right-hand chamber of the fuel tank, which is filled first. The tank cap is tied to the fuel filler flap with a retaining strap so that it will not be forgotten after refueling.

Fuel tank in E 250 CDI with OM 651

1	*Tank cap*
2	*Filler neck*
3	*Breather line*
4	*Feed line*
5	*Return line*
6	*Suction jet pump*
7	*Tank limiting and vent valve*
B4 / 1	*Fuel level indicator sensor, left*
B4 / 2	*Fuel level indicator sensor, right*
B4 / 7	*Fuel pressure sensor*
M3	*Fuel pump*



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7G-Tronic transmission

The models E 350 CDI, E 350 CGI and E 500 are fitted with the familiar "7G-Tronic" 7-speed automatic transmission as standard equipment.

Automatic transmission 722.9 is an electronically controlled 7-speed automatic transmission with a lockup clutch in the torque converter. The transmission has seven forward gears and two shifted reverse gears.

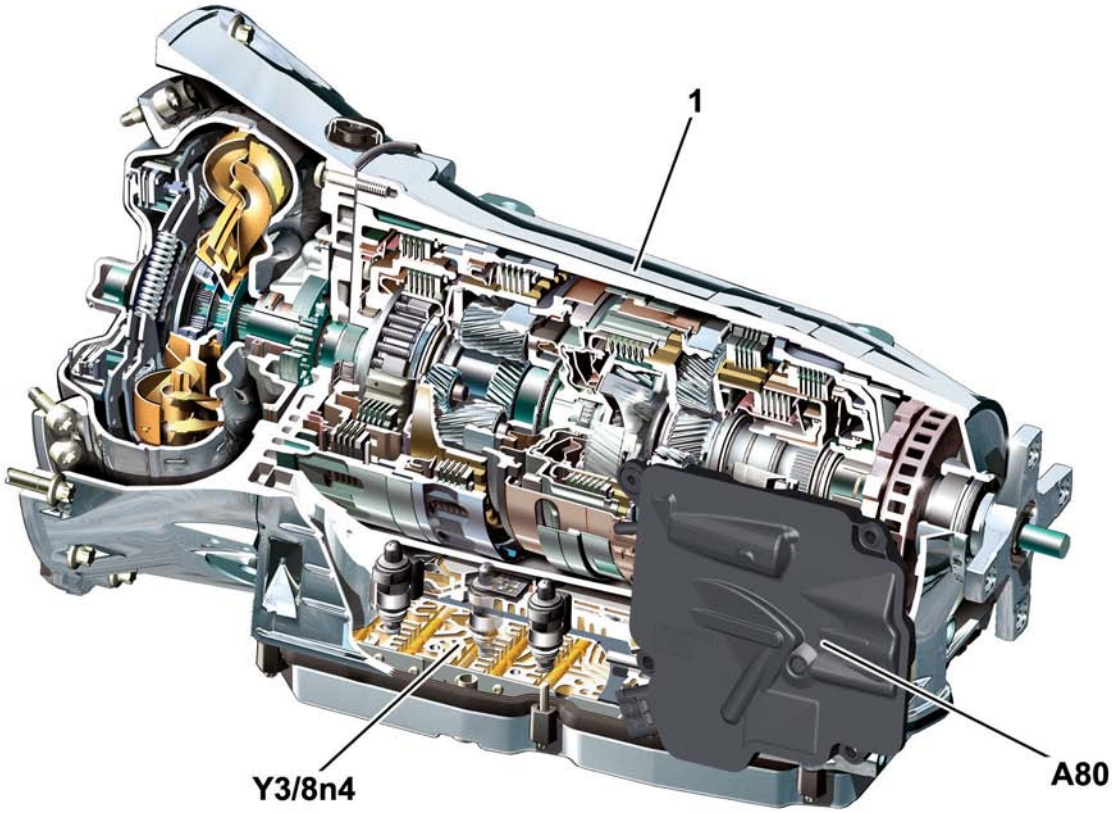
The DIRECT SELECT lever located near the steering wheel replaces the electronic selector lever module in the center console.

Note

The following information brochure is available for the 7-speed automatic transmission:

7G-TRONIC (722.9) in the Workshop
Tips and Tricks

Order No. 6516 1356 02



P27.00-2322-00

7-speed automatic transmission (722.904) in E 500

1 Transmission

A80 Intelligent servo module for DIRECT SELECT
Y3/8n4 Fully integrated transmission control unit

Technical data	Unit	E 350 CDI	E 350 CGI	E 500
Transmission model		722.902	722.906	722.904
Transmission version		W7B 700		
Number of gears (forward / reverse)		7 / 2		
Maximum transferable torque	Nm	700		
Starting device		Torque converter with torque converter lockup clutch		
Weight approx. (without oil charge)	kg	74		
Oil charge approx. (permanent charge)	l	9		

DIRECT SELECT lever

The desired gear range is transmitted to the automatic transmission via the DIRECT SELECT lever by an electrical link.

The DIRECT SELECT lever for the gear ranges P, R, N and D is located on the right side of the steering column tube module and can be operated from the steering wheel. On the rear of the steering wheel there are additional shift buttons on both sides installed in the steering wheel spokes.

In transmission modes C and S the shift buttons are used to limit the gear selection, i.e the transmission selects the ideal gear itself up to the set upper limit gear.

In transmission mode M (Manual), which is available only with the AMG sport package special equipment, the driver can select the desired gear himself. In this mode the shift buttons on the steering wheel are used to shift up and down through the gears manually.

The right shift button in the steering wheel shifts up and the left shift button shifts down. The requirements for this are that transmission mode M must be selected and gear range D must be engaged.

P27.60-3305-00

S16 / 13 DIRECT SELECT lever

Steering

AGILITY CONTROL steering

The AGILITY CONTROL steering is installed as standard equipment. The rack-and-pinion steering with safety steering column is located in front of the center of the wheels and produces desirable understeering self-steering behavior under lateral force.

Steering column

The standard-equipment steering column is manually adjustable for length and height. An electrically adjustable version with easy-entry function is offered as special equipment in the memory package.

Note

If the driver's body impacts with the steering column, the steering column moves forward by up to 100 mm under a predefined force in order to reduce the loads on the driver. For this purpose the entire substructure of the steering column tube is suspended on a slide that runs in a mounting console rigidly mounted in the body.

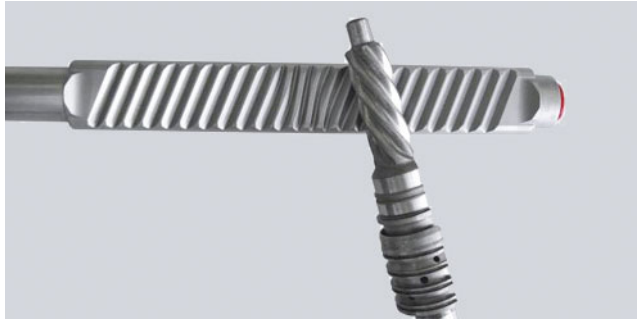
In the event of a severe frontal impact the lower part of the steering column can telescope and the integral corrugated tube can deform.

ECO power steering pump

The ECO power steering pump is used as standard to improve consumption figures as it has a very low energy demand in straightahead running. An additional electrically actuated proportional solenoid valve controlling a bypass opening at the pressure connection directs oil to the steering gear on demand. This oil quantity and therefore the flow pressure in the steering system are minimal when driving straightahead.

Direct steering with speed-sensitive power steering, code (213)

On its market launch, the new model series 212 will be fitted with the direct steering that is already being used with success in other model series. The direct steering will be special equipment for the E 220 CDI and E 250 CDI models. In the models with engines OM 642, M 272 and M 273 the direct steering is installed as standard.
In addition to the familiar speed-dependent manual force curve of the speed-sensitive power steering, this offers the driver additional steering comfort and plays a significant part in further improving the agility of the vehicle.
The direct steering differs from the familiar speed-sensitive power steering in terms of a new valve characteristic and a redesigned steering rack. The teeth in the middle of the rack are closer together than those on the outside.



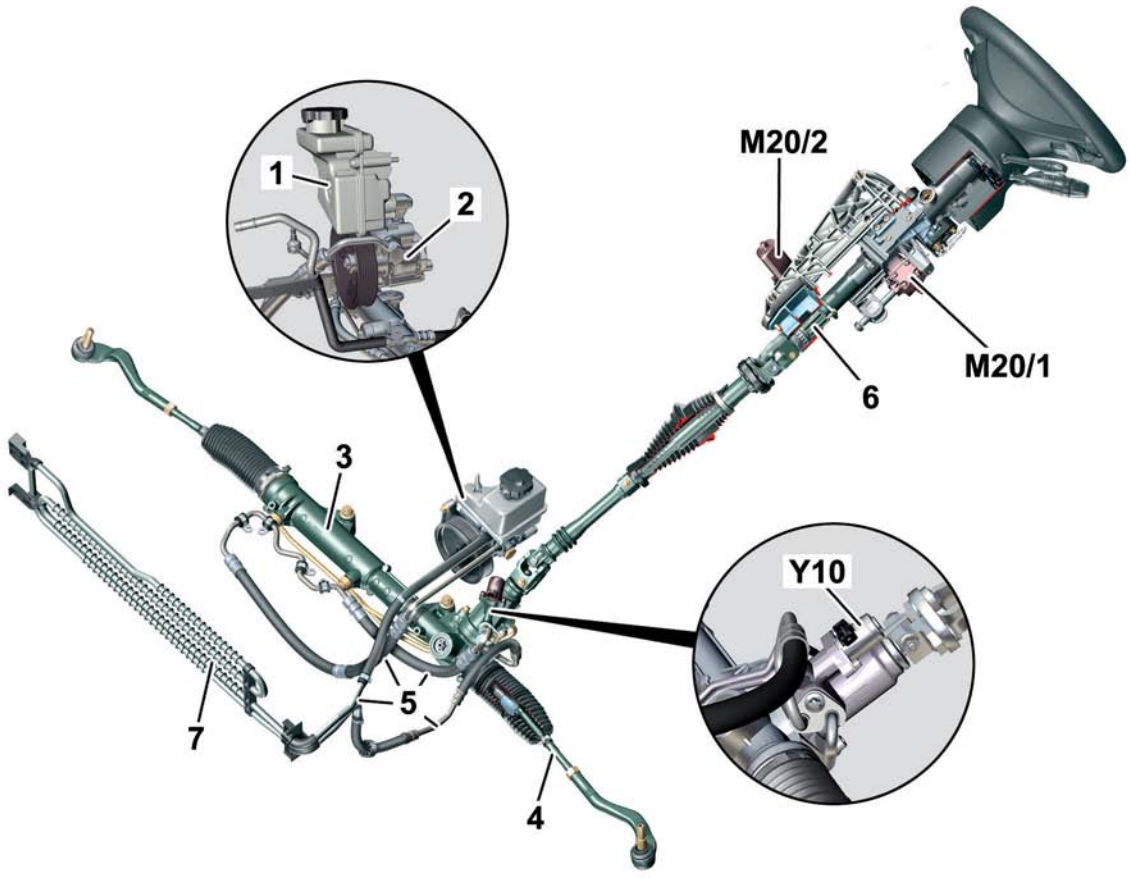
P46.50-2082-00

Redesigned steering rack

The ratio of the steering rack increases sharply away from the center position. This increase in the ratio begins at approx. 6° steering angle and reaches the maximum ratio at approx. 100° steering angle. This means that there are fewer steering wheel turns from lock to lock with direct steering.

Variable steering assistance

The steering power assistance is regulated according to the vehicle speed. It is regulated via the speed-sensitive power steering solenoid valve, which is actuated by the Electronic Stability Program control unit according to the speed of the car.



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Direct steering with electrically adjustable steering column

1 Expansion reservoir
2 ECO power steering pump
3 Rack-and-pinion steering
4 Tie rod
5 Hydraulic lines
6 Steering column (telescopic)
7 Steering oil cooler

M20/1 Steering column in/out adjustment motor
M20/2 Steering column up/down adjustment motor
Y10 Speed-sensitive power steering solenoid valve

Axles

Front axle

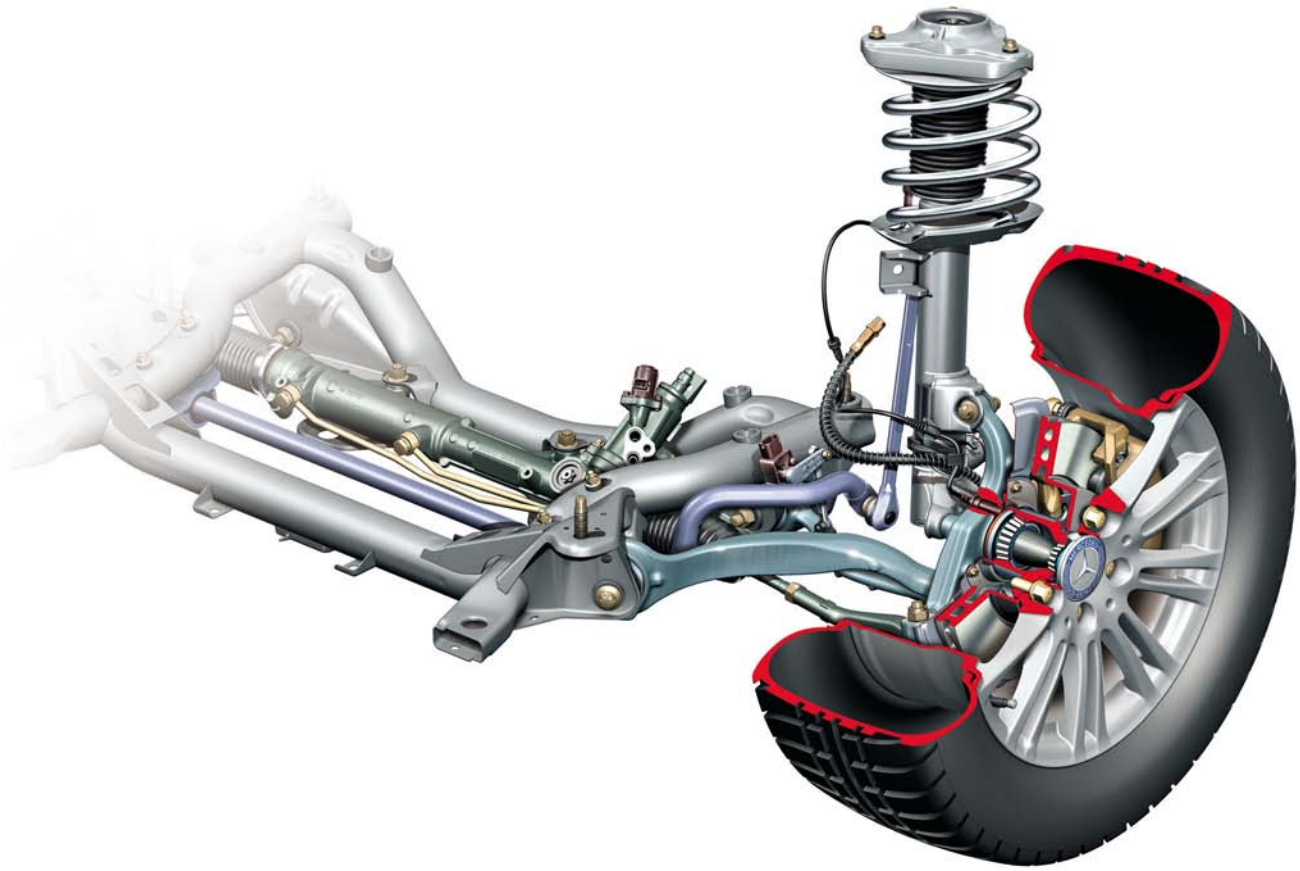
For the best possible vehicle dynamics and ease of installation, the front axle and steering gear are preinstalled on a frame-type integral support together with the engine and transmission. The remarkably rigid and low-weight frame-type integral support is made of high-strength steel and is bolted directly onto the longitudinal members of the body.

An advanced principle of the three-link front axle was selected for the front suspension. The most important features of this are two individual links (the strut rod and cross strut) in the lower plane, whose steering force requirements have been reduced by means of an additional angular guide joint.

The stabilizer bar is connected to the suspension strut via a link rod. The strut rod, which runs diagonally forward, is a weight-optimized forged aluminum component while the cross strut in the transverse direction is a weight-optimized forged steel part.

The third link is the tie rod, which forms part of the new rack-and-pinion steering.

The arrangement and design of the wheel control parts, and in particular the splitting of the lower wishbone control arm into two individual links, provide favorable characteristics in terms of axle kinematics.



Front axle with steel suspension

P33.10-2319-00

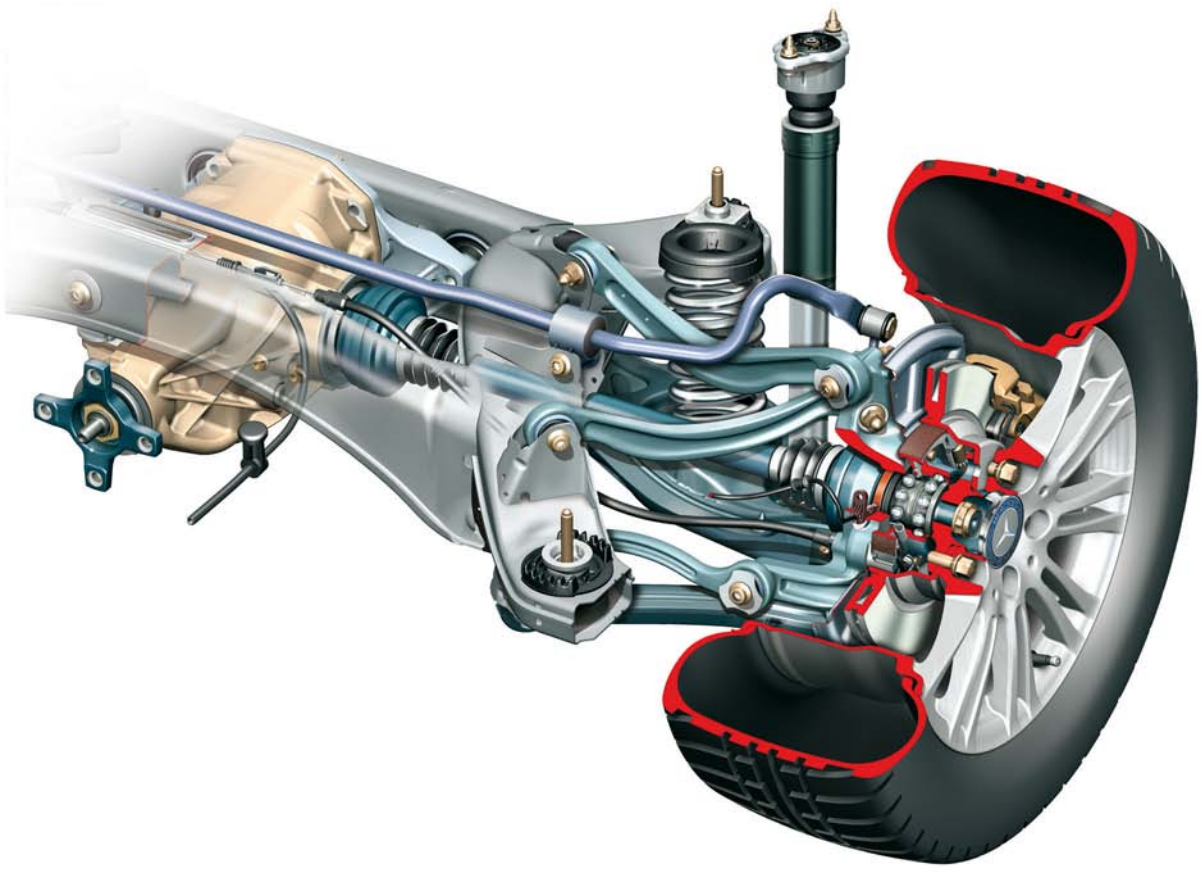
Rear axle

The principle of the lightweight independent multilink rear suspension suspended from a subframe was selected because of its wheel control properties. The axle components have been modified in the interests of greater ride comfort and lightweight design.

The kinematics and elastokinematics of the axle have been optimized with regard to responsiveness, contributing significantly to the improved ride comfort due to the new layout and the lower resultant forces.

Another comfort-related feature is the use of an additional support for the front subframe mounting on the body, which considerably increases the rigidity to introduced forces.

At the same time the corrosion protection has been improved through the treating of weld seams and an additional coating on all components.



Rear axle with steel suspension

P35.10-2352-00

Suspension

Suspension systems

The new E-Class sedan is fitted with conventional steel suspension with selective damping system as standard equipment, while the AIRMATIC air suspension is available as an option.

In combination with bi-xenon headlamps, the Intelligent Light System or with the AIRMATIC air suspension, a level sensor system is also installed on the front and rear axles.

The following suspension variants are available:

- DIRECT CONTROL suspension with selective damping system (standard equipment, except E 500)
- Sports suspension, code (677)
  Also included in the AVANTGARDE line and in the AMG sport package, code (950)
- Suspension for increased ground clearance (countries with rough roads), code (482)
- AIRMATIC air suspension with electronically controlled damping system, code (489)
  (standard equipment on E 500)

DIRECT CONTROL suspension with selective damping system

The comfortably-tuned conventional spring / damper system is equipped with a vibration-dependent damping system as standard. The function module of the selective damping system (stroke-dependent damping) consists of a small
elastomer piston that, when caused to move a short distance, opens a bypass for the oil stream parallel to the conventional damper compression.
This serves to reduce the damping effect in the case of small irregularities in the range +/- 10 mm. This provides particular benefits for driving comfort and suspension response without any attendant sacrifices in the area of driving safety. In the case of larger road bumps, the selective action of the damper ensures that the full damping function is reactivated.

Sports suspension, code (677)

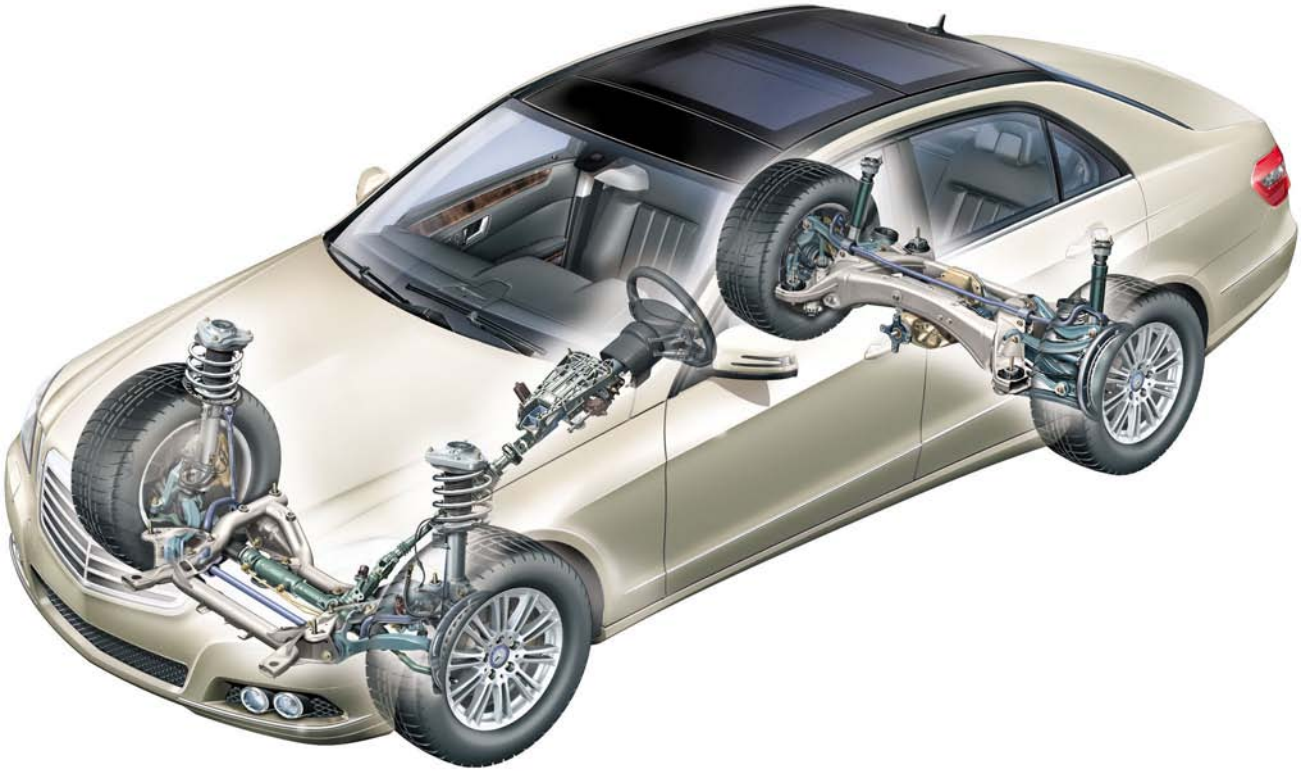
The principle and function of the sports suspension are the same as those of the DIRECT CONTROL suspension with selective damping system.

It offers the customer a 15 mm lower vehicle with harder damping. Roll support is also increased, leading to smaller roll angles when a dynamic driving style is used.

In technical terms it differs from the basic suspension in its harder, shorter springs, harder dampers and larger torsion stabilizer bars with strengthened torsion bar linkages.

Suspension for increased ground clearance, code (482)

For selected countries a special "suspension for increased ground clearance" is available, which differs from the basic suspension in that the overall level of the vehicle is 15 mm higher. The raised level at the front axle is achieved through the use of an appropriately raised spring plate and the rear axle by means of appropriate shims and lengthened springs.



DIRECT CONTROL suspension with selective damping system

P32.20-2241-00

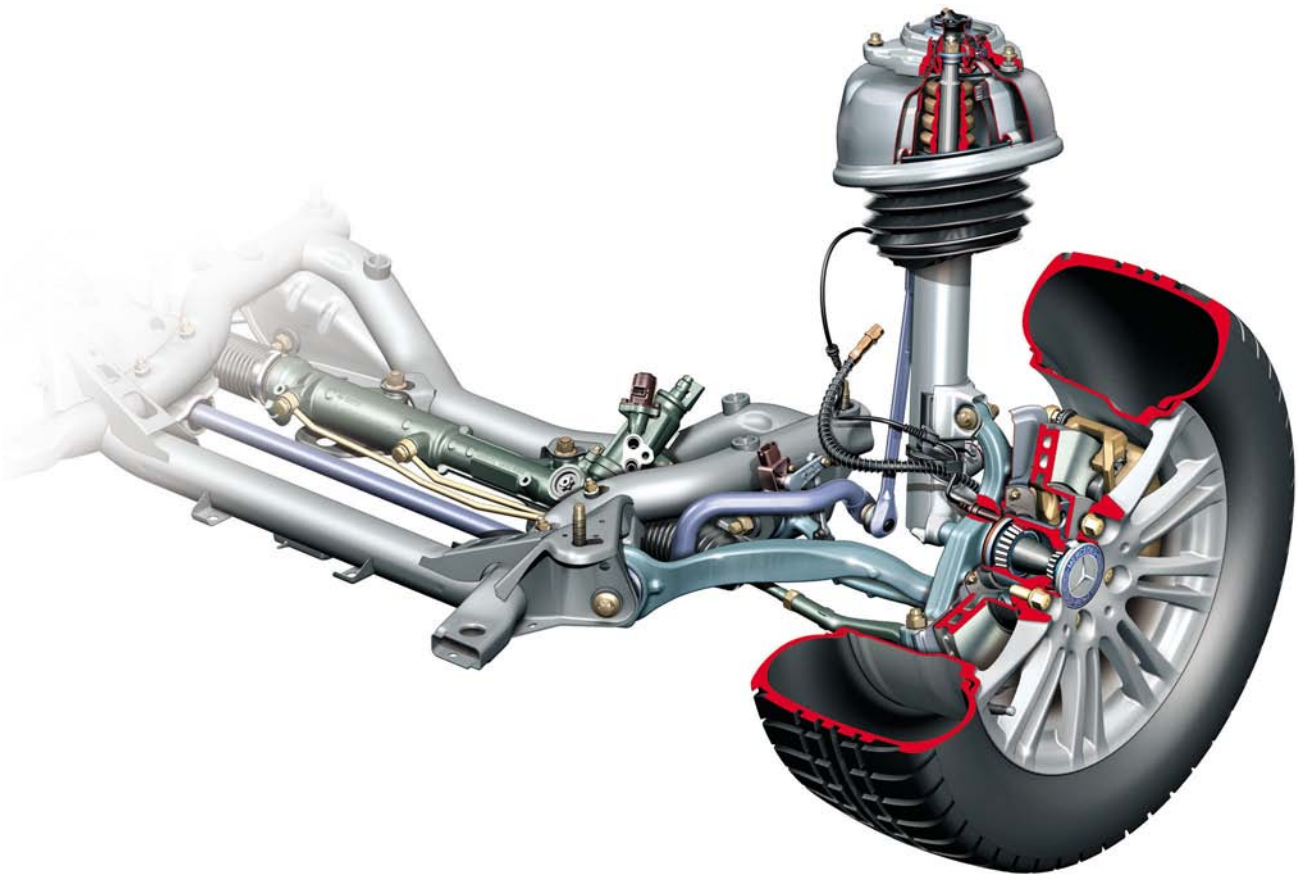
Suspension

AIRMATIC air suspension, code (489)

Like its predecessor, model series 212 can be fitted with air suspension as special equipment. A new feature is the design of the front axle air suspension with a wheel control McPherson strut due to the three-link axle design. Attention was paid to ensuring that the air spring fully compensates for transverse force in order to provide maximum ride comfort. The air springs and dampers on the rear axle are of a conventional design.

The dampers on the front and rear axles are equipped with infinitely adjustable valves.
By operating the Comfort and Sport button the driver can influence the damping characteristics and change the handling from comfortable to sporty.

The ground clearance of the vehicle can be increased manually using the level adjustment switch.



Front axle with AIRMATIC air suspension

P33.10-2320-00

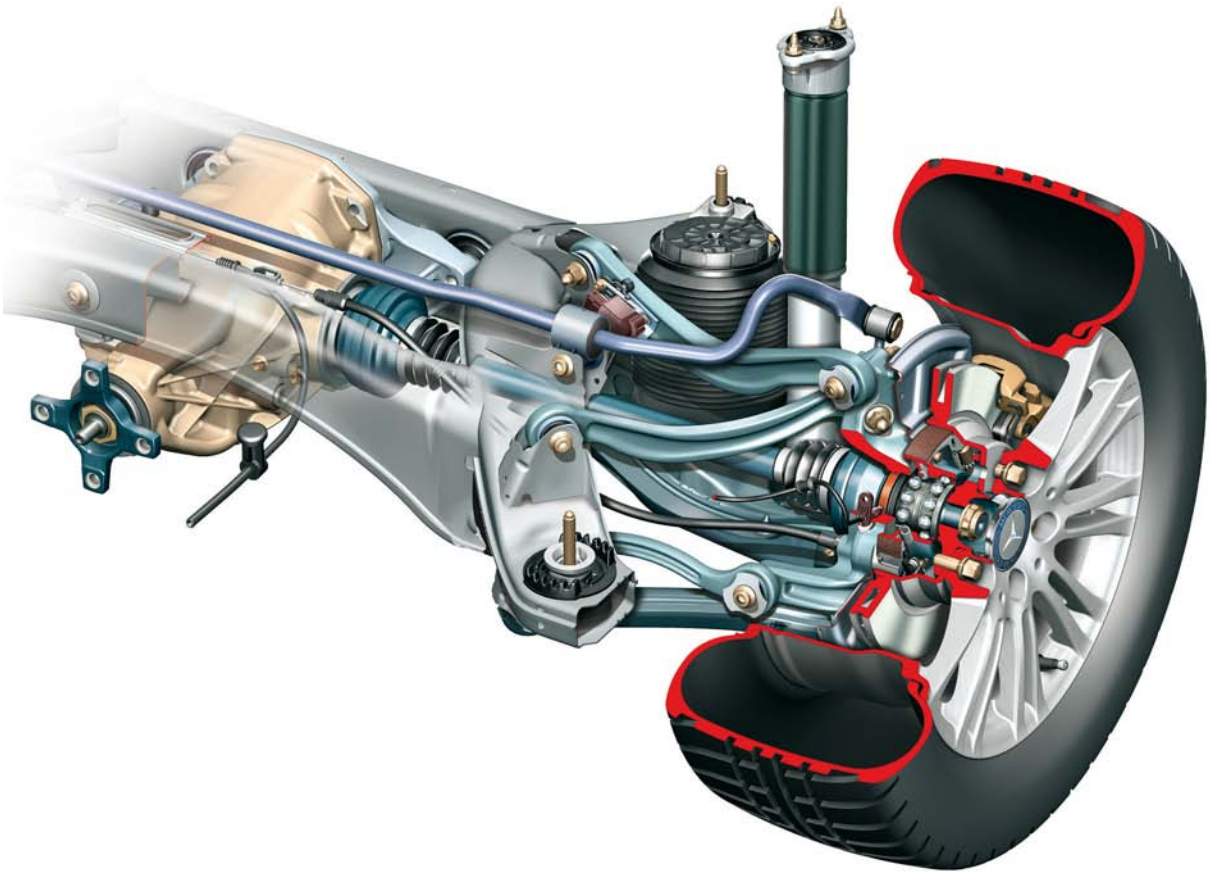
AIRMATIC properties and advantages

- The damping adjusts continuously for significant improvements in ride comfort even in laden vehicles in terms of body and shock behavior
- The automatic speed-dependent ride-height control reduces fuel consumption and improves vehicle safety
- The level adjustment switch allows the ground clearance to be increased for rough roads or steep driveways
- The quick damping adjustment ensures that the damper characteristic is immediately adapted to suit the vehicle dynamics in the case of evasive maneuvers

Comfort and Sport button

In Sport mode the characteristic of the shock absorbers is increased to improve vehicle dynamics.

- For better control of the vehicle
- To reduce understeer at speeds up to 120 km / h
- For better directional stability and road adhesion at higher speeds



Rear axle with AIRMATIC air suspension

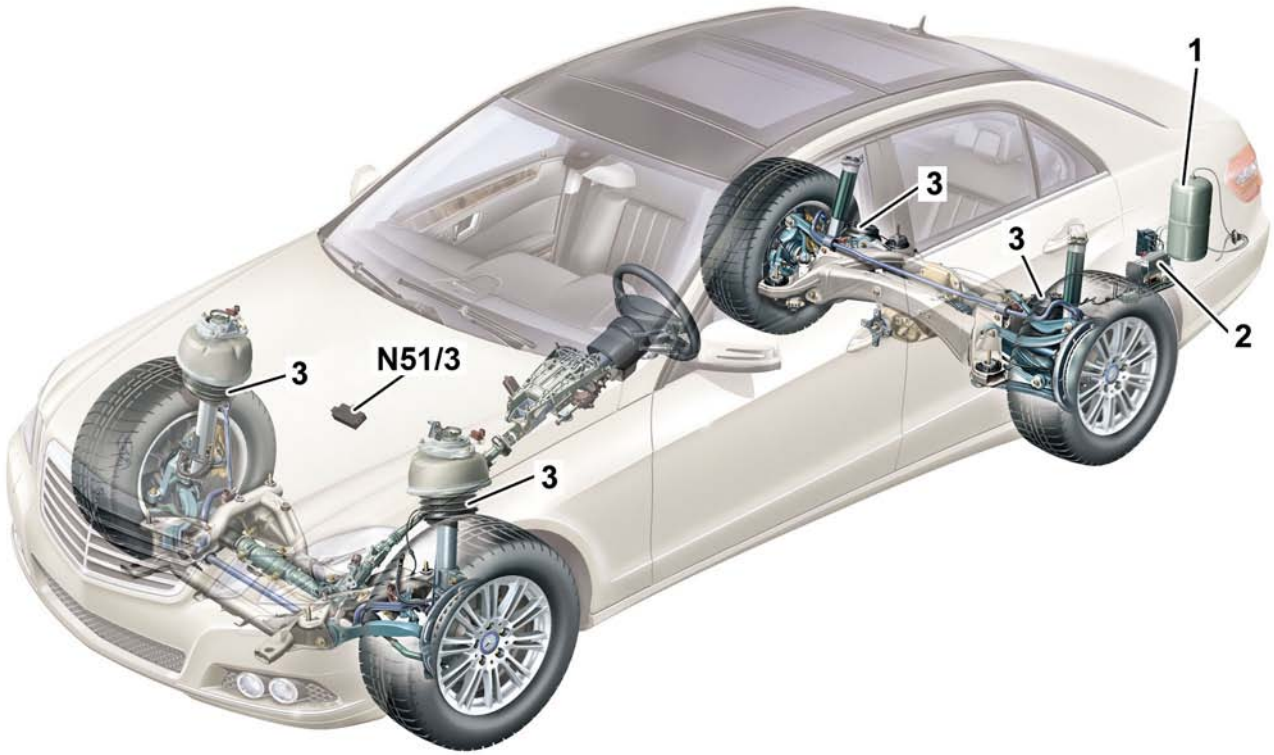
P35.10-2353-00

Suspension

Function of AIRMATIC

The full air suspension is designed as an open system, i.e. the vehicle position and control processes are achieved by adding or releasing compressed air. The air springs are designed for a maximum static pressure of 10 bar. The vehicle position is regulated via solenoid valves assigned to each wheel. The air suspension system is controlled by the AIRMATIC control unit and is supplied with pressure by an electrically driven compressor.

The system possesses a central reservoir with a capacity of 5 liters and a filling pressure of approx. 16 bar to enable it to operate silently when the vehicle is loaded while stationary. The AIRMATIC control unit contains an automatic disabling function so that all adjustment is suppressed in certain situations, such as when changing a wheel on a jack or when lifting the car on a vehicle lift.



P32.22-2455-00

AIRMATIC air suspension

1 Central reservoir
2 Compressor
3 Air spring
N51/3 AIRMATIC control unit

Function of Adaptive Brake

The Adaptive Brake function assists the driver when dangerous situations suddenly occur and thus serves the purpose of active safety.

The ESP control unit evaluates the data from the following components in order to detect the current driving situation:

- Yaw rate sensor for lateral and longitudinal acceleration
- Front and rear axle rpm sensors
- Steering angle sensor
- Brake light switch

The Adaptive Brake function consists of the following subfunctions:

- Electronic Stability Program (ESP)
- Electronic brake force distribution (EBD)
- Antilock brake system (ABS)
- Acceleration skid control (ASR)
- Electronic traction system (ETS)
- Brake Assist (BAS and BAS Plus)
- Trailer stabilization in vehicles with code (550)
- Hill Start Assist
- Dry braking
- Precharging (dependent on accelerator pedal operation or lateral acceleration)
- Start-off assist (HOLD function)

P42.00-2145-00

Braking situation

Note

The Adaptive Brake is available as either the Basis system or the Premium system. There are no differences in terms of the subfunctions of the Adaptive Brake.

Brake system

Versions of Adaptive Brake

The following two variants are used:

- Adaptive Brake (Basic system) **without** code (233) DISTRONIC PLUS
- Adaptive Brake (Premium system) in combination **with** code (233) DISTRONIC PLUS

Different versions of the ESP control unit are installed for the two variants:

- N30 / 4 Electronic Stability Program control unit (in Basic system)
- N30 / 7 Electronic Stability Program Premium control unit (in Premium system)

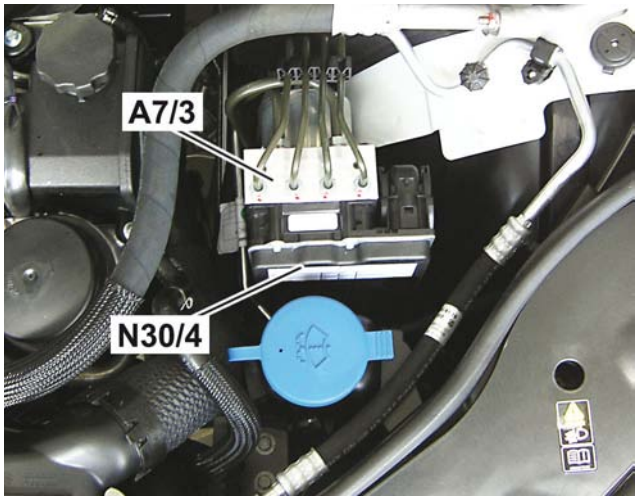
Regardless of variant, the ESP control unit is located at the front of the engine compartment on the left side on the traction system hydraulic unit.

The ESP control unit controls the following systems:

- Adaptive Brake
- Direct steering, code (213)
- Tire pressure loss warning
- PRE-SAFE®
- Lane Keeping Assist, code (476)
- Variable speed limiter, except code (233) DISTRONIC PLUS
- Cruise control, except code (233) DISTRONIC PLUS

Note

In vehicles with DISTRONIC PLUS the variable speed limiter and the cruise control are integrated in the radar sensors control unit.



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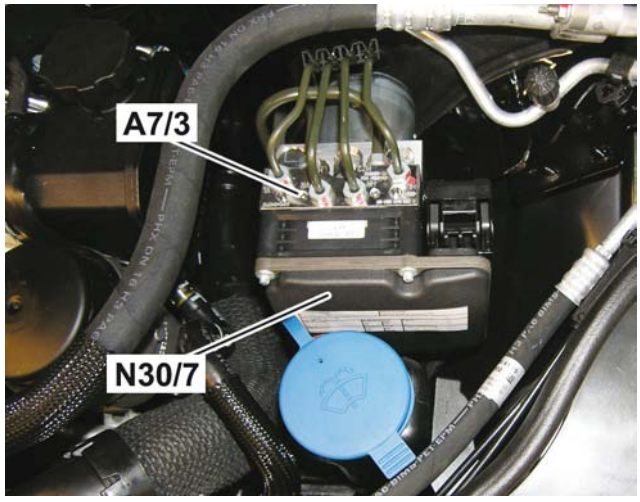
Basic system

A7 / 3 *Traction system hydraulic unit*
N30 / 4 *Electronic Stability Program control unit*



P42.45-2707-00

Premium system

A7 / 3 *Traction system hydraulic unit*
N30 / 7 *Electronic Stability Program Premium control unit*

Model	Engine	Transmission	Rear axle differential	Ratio i_{RA}
Rear axle ratios				
212.002	651.924	716.656	200 FE	2.47
		722.646		2.65
212.003	651.924	711.670	215 FE	2.47
		722.646		2.65
212.025	642.850	722.902	215 FE	2.47
212.057	272.983	722.906	200 FE	3.07
212.072	273.971	722.904	215 FE	2.47

Brake system	Unit	E 220 CDI	E 250 CDI	E 350 CDI E 350 CGI	E 500
Brake system, front					
Type of brake (aluminum caliper)		1-piston floating caliper			4-piston fixed caliper
Brake disk		Internally ventilated			Internally ventilated and perfo-rated
Brake disk diameter	mm	295		322	344
Brake disk thickness	mm	28		32	
Lining area	cm^2	2 x 60.6		2 x 76.2	2 x 77
Brake system, rear					
Type of brake (aluminum caliper)		1-piston floating caliper			
Brake disk		Solid	Internally ventilated		
Brake disk diameter	mm	300			320
Brake disk thickness	mm	10	22		24
Lining area	cm^2	2 x 38			

Wheels and tires

	Front light alloy wheel	Front tires	Rear light alloy wheel	Rear tires
Light alloy wheels				
Code (R12) standard version	7J x16 ET 38	205 / 60 R16	7J x16 ET 38	205 / 60 R16
Code (R13) standard version	7.5J x16 ET 45.5	225 / 55 R16	7.5J x16 ET 45.5	225 / 55 R16
Code (R14) ELEGANCE line	7.5J x16 ET 45.5	225 / 55 R16	7.5J x16 ET 45.5	225 / 55 R16
Code (R15) ELEGANCE line	8J x 17 ET 48	245 / 45 R17	8J x 17 ET 48	245 / 45 R17
Code (R11) AVANTGARDE line	8J x 17 ET 48	245 / 45 R17	8J x 17 ET 48	245 / 45 R17

Design allocation

P40.10-5664-00

Light alloy wheel, codes (R12) and (R13)

P40.10-5663-00

Light alloy wheel, code (R11)

P40.10-5666-00

Light alloy wheel, codes (R14) and (R15)

Note

Further information in wheels, tire sizes, recommended tire makes and tire pressures for all model series can be found in the Technology Guide brochure "Everything about Wheels and Tires", Summer 2009 edition.

Order No. 6516 1607 02

	Front light alloy wheel	Front tires	Rear light alloy wheel	Rear tires
Special equipment – light alloy wheels				
Code (R78)	8J x 16 ET 46	225 / 55 R16	8J x 16 ET 46	225 / 55 R16
Code (R48)	8.5J x 17 ET 48	245 / 45 R17	8.5J x 17 ET 48	245 / 45 R17
Code (R32)	8.5J x 18 ET 48	245 / 40 R18	9J x 18 ET 54	265 / 35 R18
Special equipment – AMG light alloy wheels				
Code (786)	8.5J x 18 ET 48	245 / 40 R18	9J x 18 ET 54	265 / 35 R18

Design allocation

P40.10-5670-00

Light alloy wheel, code (R78)

P40.10-5667-00

Light alloy wheel, code (R32)

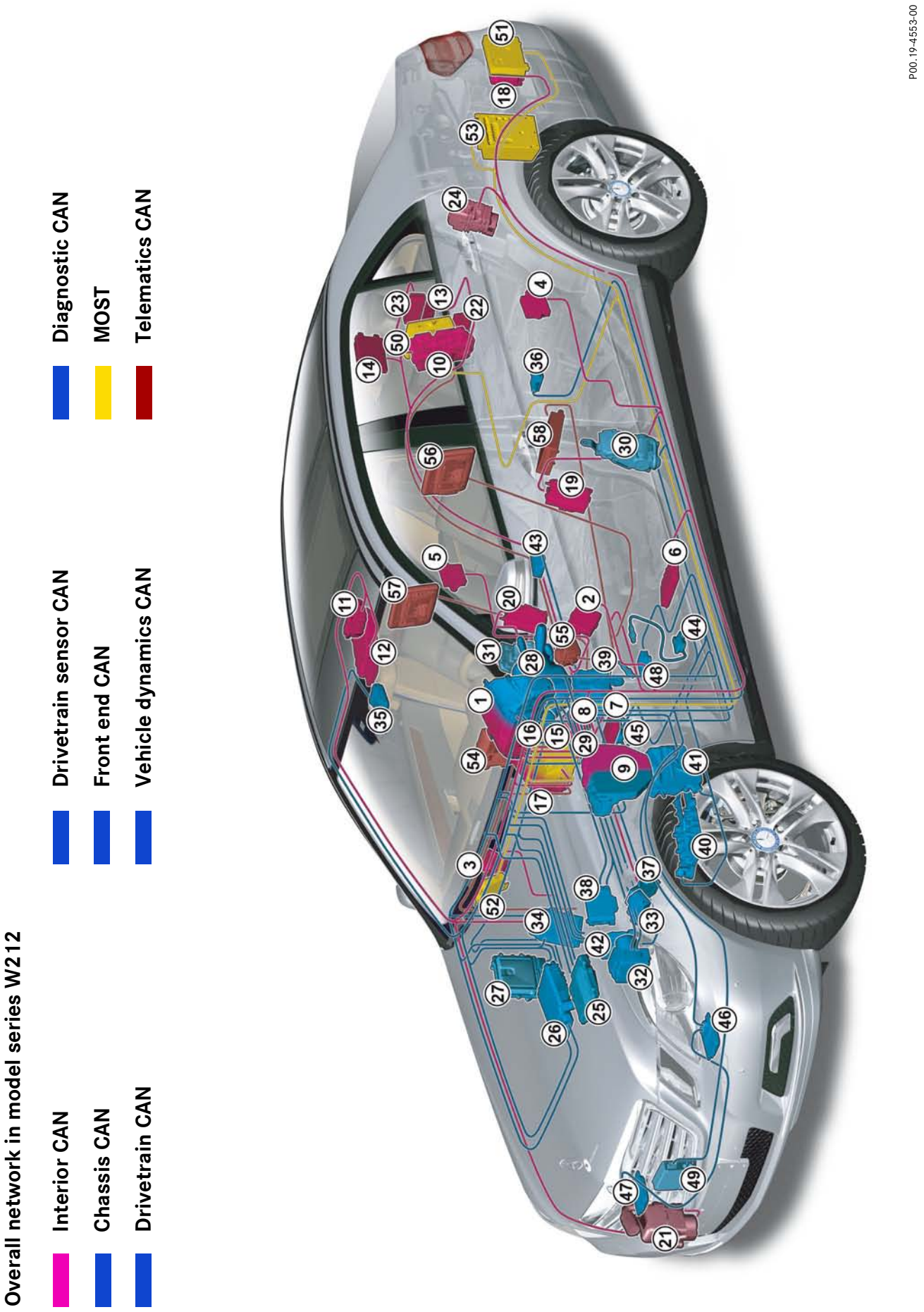
P40.10-5668-00

Light alloy wheel, code (R48)

P40.10-5671-00

AMG light alloy wheel, code (786)

Overall network



Interior CAN

1 *Instrument cluster*
2 *Left front door control unit*
3 *Right front door control unit*
4 *Left rear door control unit*
5 *Right rear door control unit*
6 *Driver seat control unit (with code (275) Memory package for electrically adjustable front seat)*
7 *Front passenger seat control unit (with code (275) Memory package for electrically adjustable front seat)*
8 *Steering wheel heater control unit (with code (443) Steering wheel heater)*
9 *Front SAM control unit with fuse and relay module*
10 *Rear SAM control unit with fuse and relay module*
11 *Panoramic sliding sunroof control module (with code (413) Panoramic glass sunroof with top sliding sunroof)*
12 *Overhead control panel control unit (with code (414) Glass electric tilting/sliding roof)*
13 *Trailer recognition control unit (with code (550) Trailer hitch)*

Interior CAN

14 *KEYLESS-GO control unit (with code (889) Keyless-Go)*
15 *Automatic air conditioning control and operating unit*
16 *Electronic ignition lock control unit*
17 *COMAND controller unit (with code (512) COMAND APS including DVD changer or with code (527) COMAND APS (with navigation))*
18 *Reversing camera control unit (with code (498) Japan version)*
19 *Left front dynamic multicontour seat control unit (with code (432) Left and right dynamic multicontour seat)*
20 *Right front dynamic multicontour seat control unit (with code (432) Left and right dynamic multicontour seat)*
21 *Stationary heater control unit (with code (228) Stationary heater)*
22 *Rear seat heater control unit (with code (872) Electric seat heater for left and right rear seats)*

Interior CAN

23 *Trunk lid control control unit (with code (881) Remote trunk closing (RTC))*
24 *Dynamic multicontour seat pneumatic pump (with code (432) Left and right dynamic multicontour seat)*

Chassis CAN

1 *Instrument cluster*
9 *Front SAM control unit with fuse and relay module*
16 *Electronic ignition lock control unit*
25 *ME-SFI [ME] control unit (M 272, M 273)*
26 *CDI control unit (OM 651)*
27 *CDI control unit (OM 642)*
28 *Steering column tube module control unit*
29 *Supplemental restraint system control unit*
30 *Left front reversible emergency tensioning retractor*
31 *Right front reversible emergency tensioning retractor*

Chassis CAN

32 *Electronic Stability Program control unit*
33 *AIRMATIC control unit (with code (489) AIRMATIC)*
34 *Night View Assist control unit (with code (610) Night View Assist)*
35 *Multifunction camera (with code (476) Automatic lane recognition, code (513) Speed Limit Assist or code (608) or (P35) Adaptive Highbeam Assist in light package)*
36 *Tire pressure monitor control unit (with code (475) Tire pressure monitor)*
37 *PARKTRONIC control unit (with code (498) Japan version) or code (230) Exclusive Parking Assist)*
38 *Radar sensors control unit (with code (233) DISTRONIC PLUS)*

Diagnostic CAN

9 *Front SAM control unit with fuse and relay module*

Overall network

Drivetrain CAN

25 ME-SFI [ME] control unit (M 272, M 273)
26 CDI control unit (OM 651)
27 CDI control unit (OM 642)
39 Electronic selector lever module control unit (with transmission 722.6)
40 Fully integrated transmission control unit (with transmission 722.9)
41 Intelligent servo module for DIRECT SELECT (with transmission 722.9)
42 Electronic transmission control control unit (with transmission 722.6)
43 Fuel system control unit (with gasoline engine)

Drivetrain sensor CAN

25 ME-SFI [ME] control unit (M 272)
44 Left nitrogen oxides control unit (M 272)
45 Right nitrogen oxides control unit (M 272)

Front end CAN

9 Front SAM control unit with fuse and relay module
46 Left xenon light control unit (with code (622) Intelligent Light System)
47 Right xenon light control unit (with code (622) Intelligent Light System)

Vehicle dynamics CAN

32 Electronic Stability Program control unit
38 Radar sensors control unit (with code (233) DISTRONIC PLUS)
48 Yaw rate sensor for lateral and longitudinal acceleration
49 DISTRONIC electric controller unit (with code (233) DISTRONIC PLUS)

MOST ring

17 COMAND controller unit (with code (512) COMAND APS including DVD changer or with code (527) COMAND APS (with navigation))

MOST ring

50 Sound system amplifier control unit (with code (810) Sound system)
51 Digital Audio Broadcasting control unit (with code (537) Digital radio)
52 Media interface control unit (with code (518) Media interface)
53 TV tuner (analog / digital) (with code (863) Digital / analog TV tuner)

Telematics CAN

17 COMAND controller unit (with code (512) COMAND APS including DVD changer or with code (527) COMAND APS (with navigation))
53 TV tuner (analog / digital) (with code (863) Digital / analog TV tuner)
54 Audio / COMAND display
55 Audio / COMAND control panel
56 Left rear display (with code (864) Rear entertainment system)

Telematics CAN

57 Right rear display (with code (864) Rear entertainment system)
58 DVD player (with code (864) Rear entertainment system)

Note

The overall network shows all the control units that can be installed at the time of the market launch and their locations in the vehicle. The vehicle illustrated does not exist as it shows the control units of all engine variants in the vehicle at the same time.

Introduction

The ever increasing demands on the on-board electronic system in the fields of vehicle safety, comfort, communications and diagnosis require wider and wider networking of the existing systems in order to allow the necessary information to be exchanged. To provide complete vehicle networking, a number of control units also function as gateways, i.e. data from the connected bus systems are relayed by these control units.
The following data bus systems are used to exchange the necessary information:

- Controller Area Network (CAN)
- Media Oriented System Transport (MOST)

CAN

The CAN is an electrical bus system that transmits data over two lines.
Each connected control unit can send or receive data (bidirectional bus). A data protocol defines the individual data blocks and specifies which data can be received or transmitted by a control unit. Any errors detected are saved and stored in the fault memory.

The following CAN buses are involved in the overall network:

Telematics CAN (CAN A)

The telematics CAN is responsible for data transfer by the telecommunications systems.
Transfer rate 125 kbit / s.

Interior CAN (CAN B)

The interior CAN is responsible for data transfer in the vehicle interior.
Transfer rate 125 kbit / s.

Drivetrain CAN (CAN C)

The drivetrain CAN is responsible for data transfer by the drive systems.
Transfer rate 500 kbit / s.

Diagnostic CAN (CAN D)

The data link connector cab be used to connect an external tester (e.g. Xentry Diagnostics) to the diagnostic CAN.
Transfer rate 500 kbit / s.

Chassis CAN (CAN E)

The chassis CAN is responsible for data transfer by the chassis and suspension systems.
Transfer rate 500 kbit / s.

Front end CAN (CAN G)

The front end CAN is responsible for data transfer by the front light systems in vehicles with xenon headlamps.
Transfer rate 500 kbit / s.

Vehicle dynamics CAN (CAN H)

The vehicle dynamics CAN is responsible for data transfer of the vehicle dynamic data, e.g. the turn rate or longitudinal acceleration.
Transfer rate 500 kbit / s.

Drivetrain sensor CAN (CAN I)

The drivetrain sensor CAN is responsible for data transfer at the exhaust system.
Transfer rate 500 kbit / s.

Overall network

MOST

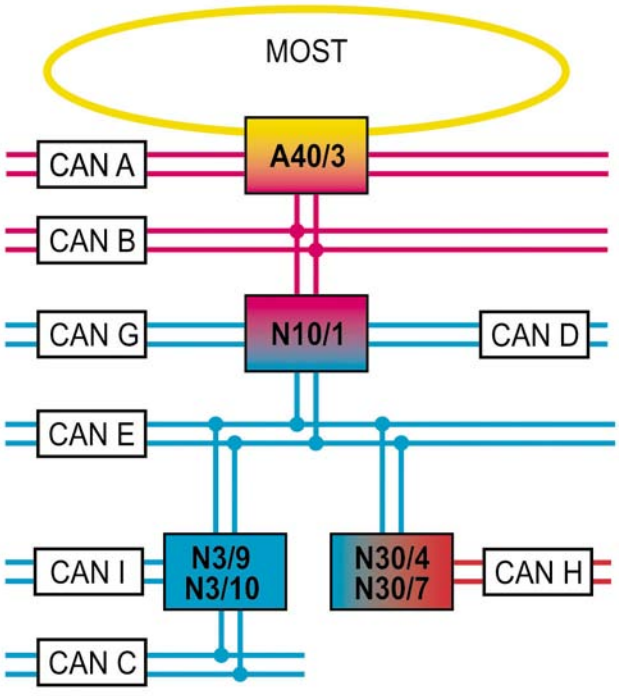
MOST is an optical networking system. Data are transmitted via fiber optic cables between the connected information, navigation and communications components.
Transfer rate 22 Mbit / s.

Front SAM control unit with fuse and relay module with central gateway function

One innovation is the integration of the central gateway with the front SAM control unit with fuse and relay module in a single housing. Both control units feature separate microprocessors, each with a dedicated CAN interface.

Gateway function

Control units with a data bus function can receive signals from more than one data bus and relay them to more than one data bus as they are linked with two or more data buses.



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Control units with gateway function

A40 / 3	*COMAND controller unit*
N3 / 9	*CDI control unit (with diesel engine)*
N3 / 10	*ME-SFI [ME] control unit (with gasoline engine)*
N10 / 1	*Front SAM control unit with fuse and relay module*
N30 / 4	*Electronic Stability Program control unit without code (233)*
N30 / 7	*Electronic Stability Program Premium control unit with code (233)*
CAN A	*Telematics CAN*
CAN B	*Interior CAN*
CAN C	*Drivetrain CAN*
CAN D	*Diagnostic CAN*
CAN E	*Chassis CAN*
CAN G	*Front end CAN*
CAN H	*Vehicle dynamics CAN*
CAN I	*Drivetrain sensor CAN*
MOST	*Media Oriented System Transport*

Battery and alternator

The battery (G1) in models E 220 CDI, E 250 CDI, E 350 CDI and E 350 CGI is located on the right-hand side in the engine compartment. In the E 500 the battery is located in the trunk under the load compartment floor on the right side.

P54.10-3072-00

Battery locations in E 220 CDI, E 250 CDI, E 350 CDI and E 350 CGI

P54.10-3111-00

Battery location in E 500

Overview of battery and alternator

Engine	Battery	Alternator
M 272	70 Ah	180 A
M 273	95 Ah	180 A
OM 651	70 Ah	180 A
OM 642	80 Ah	180 A

Note

The procedure for connecting or disconnecting the battery with no voltage is described in the Workshop Information System (WIS).

On-board electrical system

On-board electrical system management

The task of the on-board electrical system management system is to guarantee that all the electrical consumers are supplied and the engine can still be started on demand in all situations.

The on-board electrical system control system is integrated into the rear SAM control unit with fuse and relay module.

The system consists of the following components:

- On-board electrical system battery for power storage and supply when the engine is off
- Alternator for power generation
- Battery sensor
- Front prefuse box
- Rear prefuse box (in E 500)
- CDI control unit (with diesel engine)
- ME-SFI [ME] control unit (with gasoline engine)
- All the electrical consumers or components that influence the performance of the on-board electrical system

The load state of the on-board electrical system is determined from the characteristic variables available in the vehicle, and suitable measures are initiated as and when necessary.

These include the following sub-functions:

- Alternator management
- No-load current shutoff
- Consumer shutoff
- Dynamic idle speed increase

Alternator management

The state of the on-board electrical system battery is determined via the battery sensor. This uses voltage, current and temperature measurements to define characteristic values which serve as the basis for the on-board electrical system control. From these values the rear SAM control unit calculates a nominal voltage for the alternator.

The CDI or ME-SFI control unit reads in this information and, if necessary, other values (e.g. if the air conditioner compressor is on), computes an optimum nominal voltage from these input variables and forwards this to the alternator. In addition the input values are checked for plausibility in order to rule out the following faults:

- Battery overcharged
- Insufficient battery charge

The CDI or ME-SFI control unit compares the values of the alternator request with those of the alternator output, and is thus able to recognize the energy state of the on-board electrical system.

No-load current shutoff

The integrated no-load current management function in the on-board electrical system control of the rear SAM control unit is intended to preserve the starting ability of the engine. It allows the vehicle to stand idle for a longer time without the on-board electrical system battery becoming completely discharged. To do this, consumers or components are isolated from the power supply by the no-load current shutoff relay. The no-load current management function tolerates an increased level of energy consumption for a certain period of time. This is desirable, for example, when the radio is left switched on while the car is being washed.

Consumer shutoff

In order to prevent complete discharge of the on-board electrical system battery in all driving cycles, the on-board electrical system voltage is continuously monitored by the battery sensor and evaluated by the rear SAM control unit. The operating rate of the alternator is also monitored.

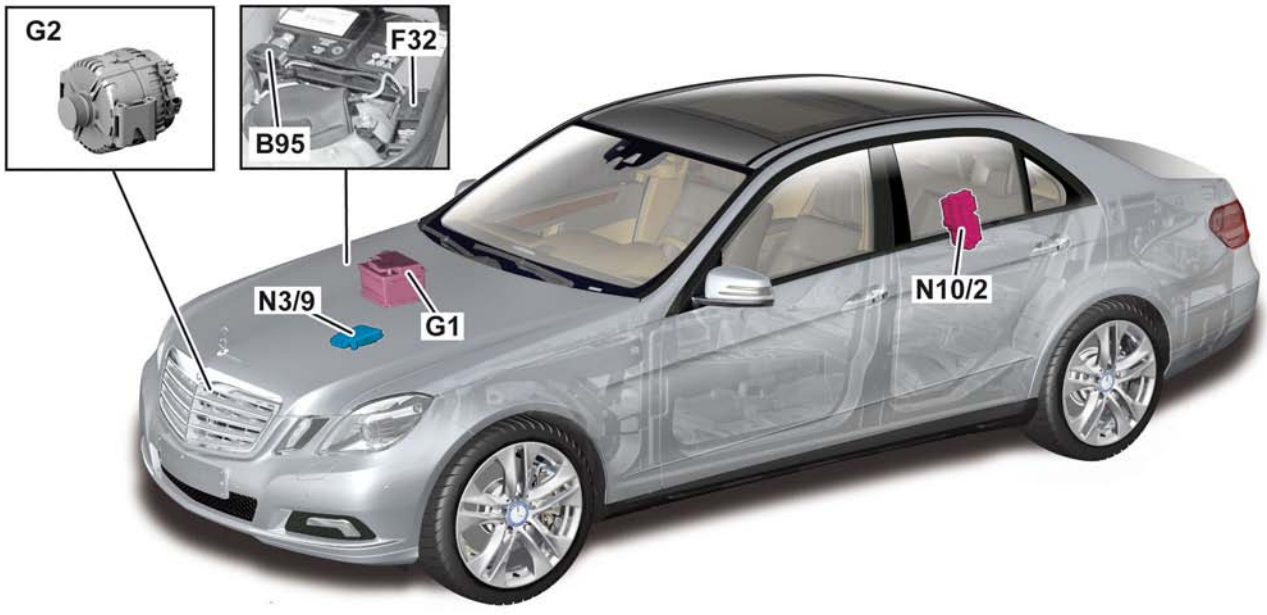
In phases where the alternator can no longer supply the demands for electrical power, the on-board electrical system management system employs a dynamic load management function to reduce the load on the electrical system by successively shutting down convenience functions (consumer shutoff).

This guarantees a positive charge balance and ensures that starting ability is preserved. As soon as the power supply is sufficient, the consumer shutoff is revoked accordingly.

Dynamic idle speed increase

The dynamic rpm increase is intended to adjust the idle speed of the engine so that no power is drawn from the on-board electrical system battery while idling. Accordingly, when consumer load is high, a high idle speed is set. In contrast to the previous rpm increase function, which takes effect when the voltage drops below a given limit or when a certain consumer shutoff stage is reached, the dynamic idle speed control acts preventively. Therefore it does not react to a lack of electrical energy, but determines in advance the necessary idle speed for the current load.

The required idle speed increase is computed via the on-board electrical system control in the rear SAM control unit and forwarded to the CDI or ME-SFI control unit. This calculates the idle speed that is actually required, taking into account various engine characteristics.



P54.10-3112-00

Main components of on-board electrical system, shown on the E 250 CDI

B95	*Battery sensor*
F32	*Front prefuse box*
G1	*On-board electrical system battery*
G2	*Alternator*
N3/9	*CDI control unit*
N10/2	*Rear SAM control unit with fuse and relay module*

Exterior lights

Front lights

The new model series 212 preserves the "4-eye face" of its predecessor. The twin headlamps have been redesigned and are drawn deep into the fender, matching the new styling of the bodywork shape, in order to reinforce the sporty lines of the front end.

Aside from the new design of the headlamps, their functions have also been modified and expanded.

Depending on equipment installed, the following light systems are available, which differ in the design of the headlamps and front fog lamps and daytime running lights in the bumper:

- H7 halogen headlamps with front fog lamps in the bumper (only in countries without mandatory daytime running lights)
- H7 halogen headlamps with front fog lamps and daytime running lights in the bumper
- Bi-xenon headlamps with LED daytime running lights in the bumper
- Bi-xenon headlamp with infrared lights and LED daytime running lights in the bumper

P82.10-5803-00

Halogen headlamps

E2	*Right front lamp unit*
E2e1	*Right high beam*
E2e2	*Right low beam*
E2e3	*Right front standing and parking lights*
E2e5	*Right front turn signal light*

H7 halogen headlamps

In vehicles with halogen lights, the low beam function is an advanced projection system in contrast to the predecessor model series. For the high beam function and for the standing and parking lights, the reflection system continues to be used in the halogen variant.

Daytime running lights

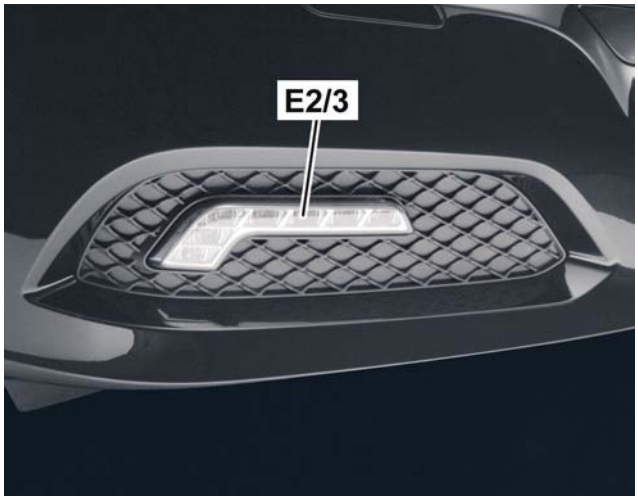
A new feature is the combination of halogen headlamps with daytime running lights positioned on the outside of the bumper beside the front fog lamps. The daytime running lights increase the visibility of moving vehicles and therefore improve safety on the road. The daytime running lights are fitted with special bulbs that are designed to last as long as the entire life of the vehicle. Compared with driving in daylight with the low beams lit, the daytime running lights consume significantly less power and, thanks to their specially aligned illumination, are much easier to see.

P82.10-5809-00

Daytime running lights with bulbs

E2/3 Right daytime running light
E5/2 Right front fog lamp

Vehicles with bi-xenon headlamps or with the optional light packages with codes (608) and (P35) are equipped with LED-type daytime running lights and the front fog lamps in the bumper are not installed. LED headlamps consume less power than light bulbs and constitute an additional styling element at the front of the car.



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Daytime running lights with LEDs

E2/3 Right daytime running light

Exterior lights

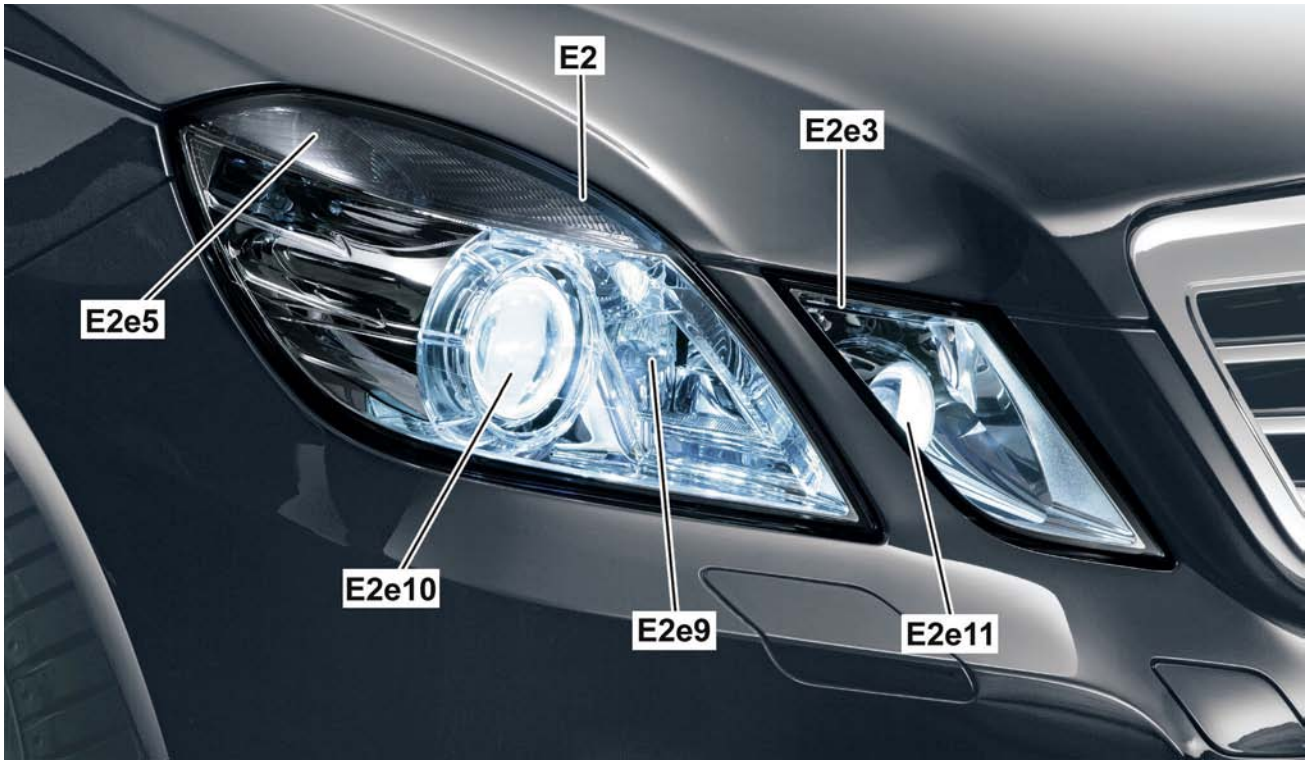
Bi-xenon headlamps

As an alternative to the advanced standard equipment with halogen headlamps, the following headlamp variants are available as special equipment:

- Bi-xenon headlamps with Intelligent Light System
- Bi-xenon headlamps with Intelligent Light System and Adaptive Highbeam Assist or infrared lights

Intelligent Light System (ILS)

The functions of the Intelligent Light System improve the illumination of the road in different driving situations. The system adjusts the alignment and light output of the xenon headlamps to suit the situation in hand. This ensures that other road users are not inconvenienced or dazzled.



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Bi-xenon headlamps

E2	*Right front lamp unit*
E2e3	*Right front standing and parking lights*
E2e5	*Right front turn signal light*
E2e9	*Right cornering light*
E2e10	*Right xenon bulb with integrated ignition module*
E2e11	*Right infrared lamp (with code (610) Night View Assist)*

The Intelligent Light System comprises:

Basic light functions

- Low beams
- High beams
- Standing lights
- Turn signal lights

Extended driving light functions

- Dynamic curve illumination
- Cornering lights (in main headlamps)
- Dynamic headlamp range control
- Country lights
- Motorway lights
- Extended fog light function
- Adaptive Highbeam Assist
  (**new** extended special equipment)
- Infrared lights
  (**new** extended special equipment)

Adaptive Highbeam Assist

With the Adaptive Highbeam Assist system, included in the light package, the new E-Class sets new standards in the field of intelligent and adaptive illumination. Like the manual high beams, the system is activated via the steering column lever. A camera, combined with a special image analysis module, sends signals for automatic headlamp range adjustment or high beam activation to the headlamps according to the traffic situation.

The system is capable of adjusting the light cone almost steplessly to keep it below the dazzle threshold for oncoming and preceding road users.

Infrared lights

Vehicles with bi-xenon headlamps and Intelligent Light System can be supplemented with infrared lights by means of the special equipment with code (610) Night View Assist. Infrared projection modules are installed in the "little eyes" on each side. The infrared light emitted by the infrared lamps is not visible to the human eye. It therefore does not disturb or dazzle oncoming traffic.

Danger!

Extended exposure to infrared radiation can damage the eyes. This damage is not immediately noticeable. Observe the following instructions to ensure that this does not happen:

- Avoid extended visual contact with activated infrared lamps.
- When working on the front of the vehicle make sure that the infrared lamps are switched off.

Note

Additional information on the Adaptive Highbeam Assist and Night View Assist can be found in the "Driving assistance systems" chapter.

Exterior lights

Rear lamps

The redesigned taillamps extend around the corners of the rear end on both sides. The two red areas at the top and bottom of the taillamps are illuminated all the way to the edges when a light function is activated, thus improving the visibility of the vehicle and increasing safety. Each taillamp is composed of two parts and extends into the trunk lid towards the center of the rear end. The transition between the two parts of the taillamps is transparent and allows the light to appear to be seamless.

The center brake lamp has been relocated to the bottom of the rear window on the inside, and is an LED lamp. The advantages of the brake light are its fast response time, its virtually unlimited lifespan and its lower power consumption of approx. 4 W compared with conventional 21 W bulbs.

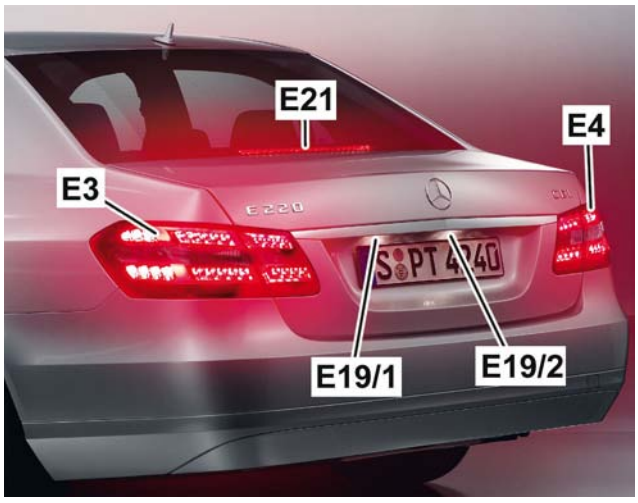
Taillamps

The following taillamp variants are installed depending on the type of front lights:

- In vehicles with halogen headlamps, the taillamps are the LED type with bulbs for the turn signal function.
- In vehicles with the optional bi-xenon headlamps and vehicles in the AVANTGARDE line, the taillamps are entirely the LED type including the turn signal function.

The light functions of the taillamps are located at different levels one above the other:

- At the top in a broad red strip are the taillight / brake light / side marker lamp on the outside and the rear fog light on the inside in the trunk lid light
- In the middle in a broad white stripe are the yellow turn signal lamp on the outside and the backup lamp on the inside; in vehicles with the optional light packages the turn signal lamp consists of a number of yellow LEDs instead of a light bulb
- At the bottom in a broad red stripe are the taillamp / brake light across the full width

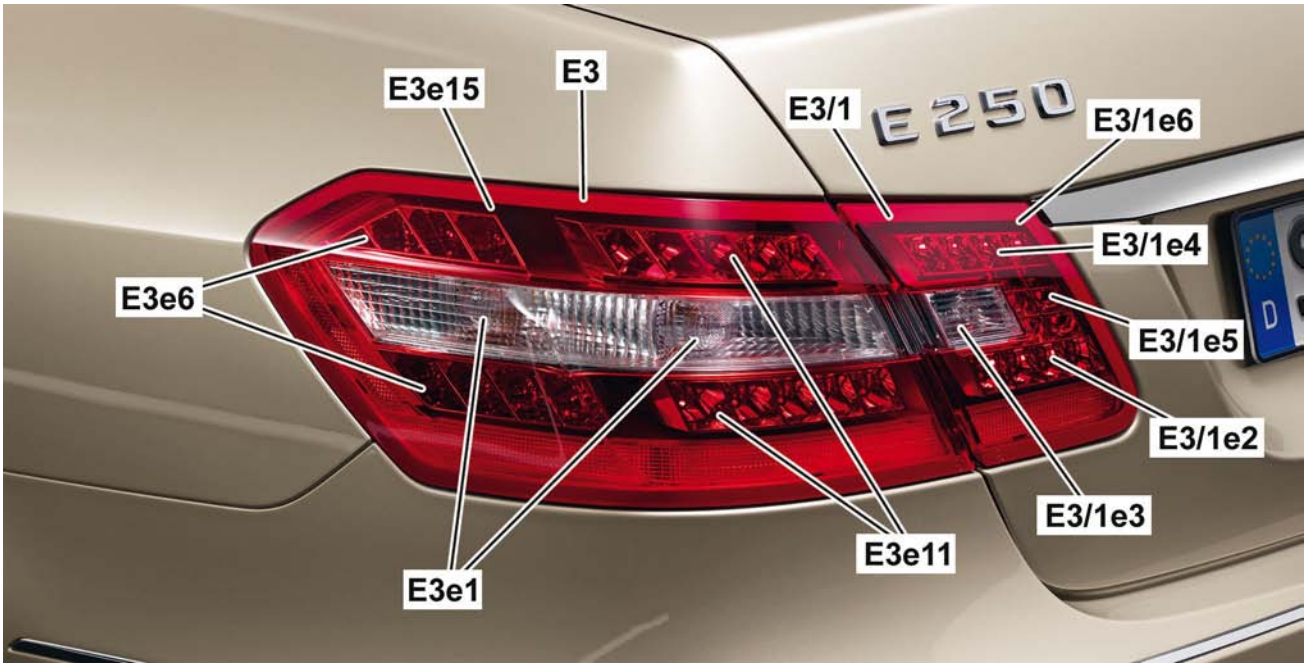


P82.10-5806-00

Rear lamps

E3	*Left rear lamp unit*
E4	*Right rear lamp unit*
E19 / 1	*Left license plate lamp*
E19 / 2	*Right license plate lamp*
E21	*Center brake lamp*

Design of taillamps



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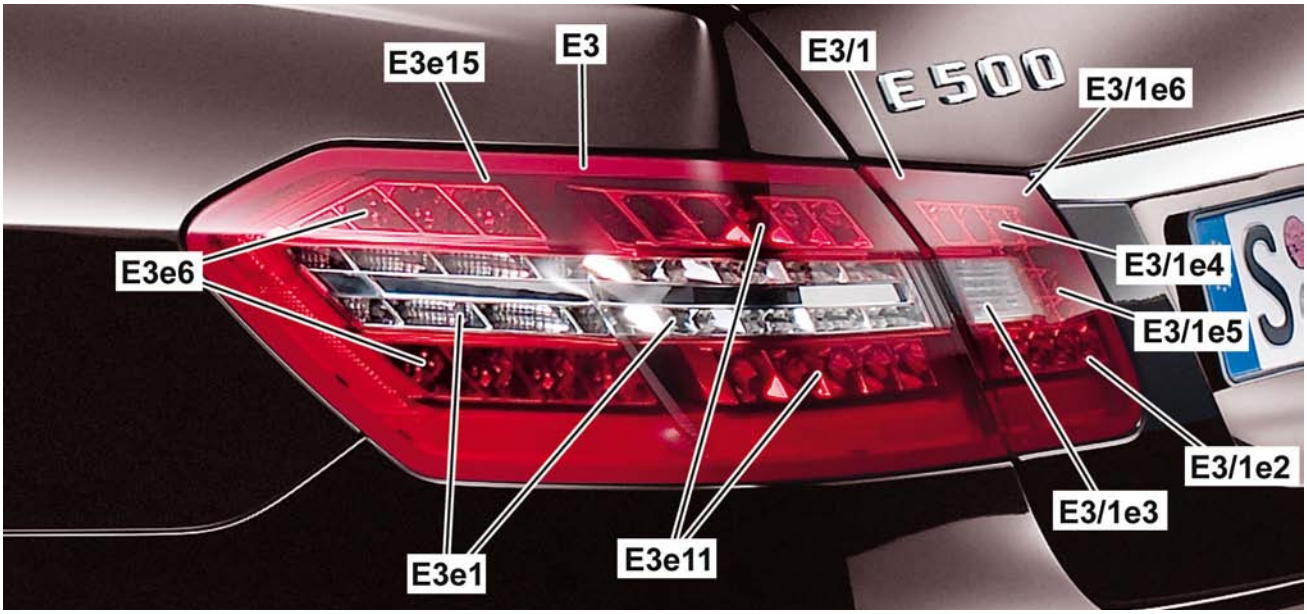
Left taillamp in vehicles with halogen headlamps



P82.10-5808-00

Left taillamp in vehicles with bi-xenon headlamps

E3	*Left rear lamp unit*
E3e1	*Left rear turn signal light*
E3e6	*Left side marker lamp*
E3e15	*Outer left background light*
E3e11	*Outer left brake light and taillight*
E3/1	*Inner left rear lamp unit*
E3/1e2	*Inner left taillight*
E3/1e3	*Left backup lamp*
E3/1e4	*Inner left brake light and taillight*
E3/1e5	*Left rear fog light*
E3/1e6	*Inner left background light*

Active safety

In the new E-Class, high levels of active safety are provided by both tried-and-tested and newly developed systems and components.

Driving safety is provided by:

- Larger track width
- Three-link front axle with suspension strut
- Five-link rear axle
- New steel suspension with selective damping
- AIRMATIC air suspension (special equipment)
- DISTRONIC PLUS including PRE-SAFE® brake (special equipment)
- ADAPTIVE BRAKE with the added functions: HOLD function, Hill Start Assist, precharging and dry braking
- BAS and BAS-Plus Brake Assist
- ABS antilock brake system
- ASR / ESP dynamic handling control systems
- Trailer stabilization (special equipment)
- Tire pressure loss warning or tire pressure monitor (special equipment)
- Suspension with increased ground clearance (special equipment)
- Adaptive brake lights

and the following driving assistance systems:

- ATTENTION ASSIST
- Lane Keeping Assist (special equipment)
- Speed Limit Assist (special equipment)
- Blind Spot Assist (special equipment)
- Exclusive Parking Assist (special equipment)
- Reversing camera (special equipment)

High levels of **stress-reducing safety** are due to:

- Numerous details in the bodyshell
- Longer wheelbase
- Comfortable seats
- Heat-insulating glass all round
- Roller blinds for side and rear windows (special equipment)
- Climate control
- Audio unit with central control button
- Cruise control including Speedtronic
- Selective damping system
- AIRMATIC air suspension (special equipment)
- Improved acoustics

The components that ensure a high level of **perceptual safety** include:

- Intelligent Light System (special equipment)
- Night View Assist (special equipment)
- Adaptive Highbeam Assist (special equipment)

Operating safety is provided by:

- Ergonomically designed driver area with optimized location of the controls
- Comfort multifunction steering wheel
- 4.5" multifunction display in the instrument cluster
- New display and control system for the information and communications systems
- New display in the upper central part of the instrument panel with optimized font size and improved reflections and contrasts

The core of the advanced passive **safety system** includes:

- Body structure with front and rear end constructions with high strain energy, and a high-strength passenger cell
- Compatibility of the front end structure design with regard to frontal collisions
- A long deformation path due to short 4-cylinder and 6-cylinder engines mounted on a bolted frame-type integral support, which absorbs energy and deforms in the direction of the impact during a frontal collision
- Multiple parallel load paths at the level of the longitudinal members for improved load distribution in the event of a partial head-on collision
- Cockpit crossmember made out of extruded aluminum section between the A-pillars
- Telescoping steering column
- Doors with reinforcement profiles
- 4-spoke steering wheel with foam-padded rim
- Supplemental restraint systems
- PRE-SAFE® preventive occupant protection system
- Crash-active engine hood and extended safety measures for pedestrians and cyclists
- Emergency illumination after an accident

Extended safety measures for pedestrians and cyclists:

Reducing the severity of an accident is important particularly in the case of collisions with weaker road users such as pedestrians and cyclists, as these weaker road users have no crumple zones of their own.

To supplement the active safety measures (the Brake Assist, for instance), which prevent an accident from occurring or which help to reduce its severity, the so-called passive measures of pedestrian protection have been optimized even further in model series 212.

For example, to reduce the loads that occur during an impact on the hood of the vehicle, the deformation clearances between the engine hood and the components underneath have been enlarged.
This has been done by increasing the exterior contour of the vehicle at the front end as well as by lowering the drive unit and relocating components such as control units and fluid reservoirs in the engine compartment as necessary. In addition, the E-Class is the first vehicle to be fitted with a crash-active engine hood.

P46.10-3078-00

4-spoke steering wheel with foam-padded rim

Passive safety

Crash-active engine hood

The crash-active engine hood is installed as standard equipment on model series 212 in order to reduce the accident loads for pedestrians and cyclists and to meet the legal requirements in Europe and Japan.

In the event of a collision, e.g. with a pedestrian, this hood can be triggered by sensors and raised in the area of the A-pillar. Raising the engine hood creates additional deformation space in the event of an impact with the head of the pedestrian and thereby reduces the accident loads.

If the vehicle collides with a pedestrian, an extensive sensor system in the front bumper actuates the spring-loaded engine hood lifters near the hood hinges, which lift the hood by approx. 50 mm. The additional space gained between the engine hood and components in the engine compartment results in an efficient and gentle deceleration when impacted by the pedestrian's head.

The deformation properties of the hood were developed specifically to meet these requirements. The use of aluminum and homogeneous reinforcement on the inside of the engine hood further reduce the loads during an impact.

The function sequence occurs in the following stages:

1 During an impact, sensors installed in the bumper and on the flexural member generate acceleration signals, which are relayed to the supplemental restraint system control unit.
2 When it receives the acceleration signals, the supplemental restraint system control unit activates the spring-loaded engine hood lifters at the hinges of the engine hood on each side.
3 This triggers the spring-loaded engine hood lifters and the hood is raised by a distance of approx. 50 mm in the area of the A-pillar on both sides.

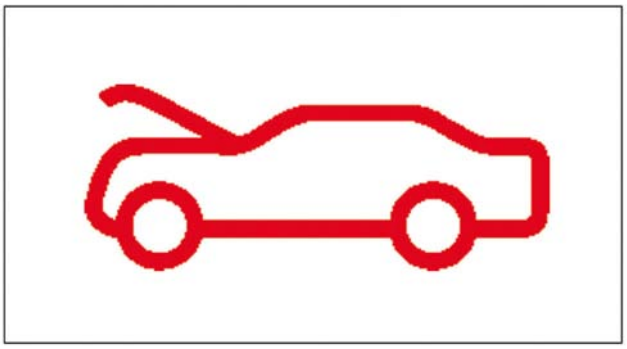
P88.40-2852-00

Crash-active engine hood (triggered)

Note

Never attempt to press the engine hood back down at the rear when it has triggered. This could cause damage to the hood.

It is possible to continue driving after the hood has been triggered in order to have it reset at a qualified workshop. If the hood release handle is pulled, the hood must be reset before the vehicle can be driven further. When the ignition is on, the multifunction display in the instrument cluster shows a symbol indicating that the engine hood is open.



P54.32-7545-00

Symbol "Engine hood open"

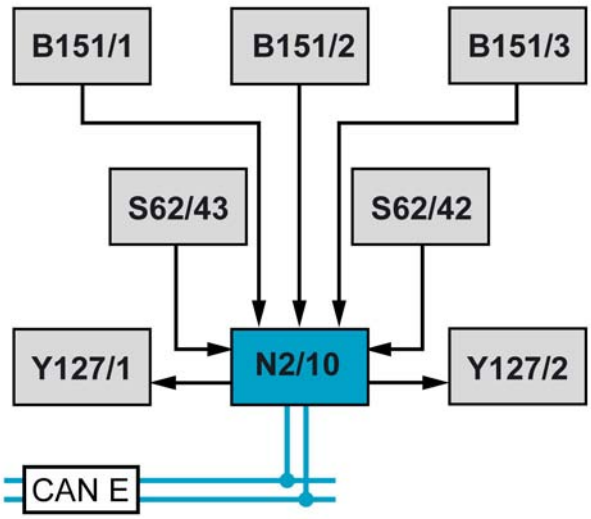
Note

The hood clamping lever must be disconnected before the hood is moved to the vertical position, and reconnected before the hood is closed.

The correct procedure for restoring the engine hood to its original position after triggering while avoiding all risk of accident and injury, and when it is possible to continue driving with the hood in the triggered position, are described in the owner's manual.

Interactive owner's manual in the internet at:

www.mercedes-benz.de / betriebsanleitung



P91.60-3907-00

Block diagram of main components of the crash-active engine hood

B151/1	*Left front bumper pedestrian protection sensor*
B151/2	*Center front bumper pedestrian protection sensor*
B151/3	*Right front bumper pedestrian protection sensor*
N2/10	*Supplemental restraint system control unit*
S62/42	*Right engine hood contact switch*
S62/43	*Left engine hood contact switch*
Y127/1	*Left rear engine hood lifter*
Y127/2	*Right rear engine hood lifter*
CAN E	*Chassis CAN*

Passive safety

Other **passive safety** features include the supplemental restraint systems:

- Two-stage, situation-dependent triggering of the driver and front passenger airbag
- Optimized location of the front passenger airbag at the top of the instrument panel
- Reversible emergency tensioning retractors with PRE-SAFE® function for driver and front passenger
- Deactivation of front passenger airbag, emergency tensioning retractor and sidebag when the front passenger seat is unoccupied thanks to seat occupied recognition in combination with automatic child seat recognition (special equipment)
- Knee airbag on the driver side
- Sidebags at the front
- Seat belt force limiters in the rear
- Rear seat belt status indicator in the instrument cluster
- 3-point seat belts in the rear with reel tensioners
- Seat belt reminder warning for driver and front passenger
- Windowbags between the A-pillar and C-pillar
- Active NECK-PRO head restraints at the front
- ISOFIX and TopTether for fastening suitable child seats on the outer rear seats
- Two integrated child seats (IKS) with side head restraints (special equipment)

P91.60-3840-00

Airbag system

PRE-SAFE® preventive occupant protection system

The PRE-SAFE® system is available as standard and offers an effective combination of active and passive safety. The instant that a potential accident situation is detected, preventive measures can be initiated to further improve the safety of the occupants.

PRE-SAFE® can be activated by:

- Emergency braking: Rapid operation of the brake pedal indicating a scare reaction by the driver
- Panic brake applications: The deceleration desired by the driver significantly exceeds the vehicle deceleration that is physically possible, e.g. on slippery roads, aquaplaning, ice or snow
- Oversteer: The rear of the vehicle breaks away, combined with severe stabilization attempts by the ESP system
- Understeer: The vehicle pushes over the front wheels over a period of time
- Critical steering movements: Rapid steering movements at high speeds above approx. 140 km / h, which indicate a scare reaction by the driver and which may lead to instability of the vehicle

Vehicles with the optional DISTRONIC PLUS feature a new special function that can detect imminent frontal collisions under certain conditions on the basis of data from the short-range radar sensors. This extends the range of danger situations that can be detected by PRE-SAFE®:

- Detection of collisions when cornering
- Detection of collisions with oncoming traffic

These danger situations are recognized without prior emergency braking or skidding.

Depending on the equipment installed, the following measures can be activated for preventive occupant protection:

- Initial motorized seat belt tightening for the driver and front passenger
- Positioning of the front passenger seat to a more favorable position in case of a crash
- Automatic closing of front and rear side windows, the tilting / sliding roof (special equipment) or the panoramic sliding sunroof (special equipment), except for a small gap, to protect the occupants from objects penetrating the passenger cell and to prevent their heads or arms from swinging outside through an opening

If an accident is avoided, the front belts are relaxed again when the vehicle is back inside the critical limits. The systems involved can then be restored to the desired settings.

Overview of systems

General

Modern assistance systems effectively contribute towards accident avoidance. This was the result of analyses carried out by Mercedes-Benz based on representative data from accident research and the evaluation of real-life accidents.

On average, these technologies can help to prevent one fifth of all tail-end collisions involving passenger cars in Germany alone. The accident figures on freeways can be reduced by around 36%.

Note

All the driving assistance systems are merely aids for the driver in controlling the vehicle in certain difficult situations.

They can never replace a properly relaxed and attentive driver. The driver bears sole responsibility at all times for the safety of his vehicle and its behavior.

New systems

With the launch of the new E-Class the following driving assistance systems are available for the first time depending on the equipment package selected:

- Adaptive Highbeam Assist
- Speed Limit Assist
- ATTENTION ASSIST
- Lane Keeping Assist
- Exclusive Parking Assist

Familiar systems

In addition, model series 212 also features driving assistance systems which are familiar from other model series. These include the following systems:

- Blind Spot Assist
- Night View Assist
- Reversing camera
- DISTRONIC PLUS including BAS PLUS and PRE-SAFE® brake

Detailed descriptions of all assistance systems appear on the following pages.

Note

Further details on these and other electrical systems (e.g. function descriptions and the locations of electrical components in model series 212) are available in the Workshop Information System (WIS) under "Basic knowledge / functions" (GF).

Multifunction camera

A new multifunction camera is installed in model series 212 to control the new driving assistance systems. The multifunction camera is located below the inside rearview mirror on the windshield.

The following systems are controlled:

- Adaptive Highbeam Assist
- Speed Limit Assist
- Lane Keeping Assist

The input variables and signals are read in by the multifunction camera via the chassis CAN.
The integrated microprocessor evaluates the input variables and signals, and the relevant components are then actuated over the chassis CAN.

The multifunction camera records images of the scene in front of the vehicle. The image recognition module recognizes the input signals of the camera, such as other road users, road signs and lane markings. The decision module compiles all the relevant data, such as references to other road users, their distance and angle, the vehicle's current environment and the current vehicle parameters. It then issues the appropriate requests, e.g. control of the headlamps, actuation of the instrument cluster or control of the vibration motor in the steering wheel.

Note

If the multifunction camera is removed or the windshield is replaced, the camera must be calibrated using Xentry Diagnostics.

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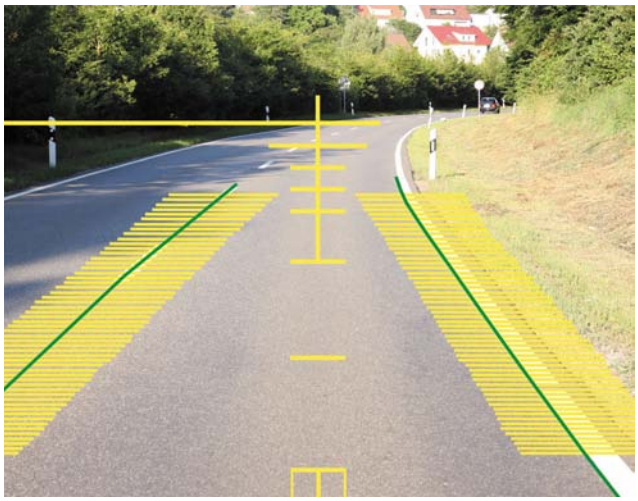
Multifunction camera (A40/11)



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View of multifunction camera for Lane Keeping Assist

Adaptive Highbeam Assist

The Adaptive Highbeam Assist is available for the first time as special equipment with code (608) or (P35). The new Adaptive Highbeam Assist sets new standards in the field of vehicle lighting. The Adaptive Highbeam Assist helps the driver by automatically reducing the glare for other road users and by optimizing the illumination of the road according to the situation.

The multifunction camera on the windshield ensures that the headlamp range and the light cone are controlled so as to provide optimum illumination of the road according to the traffic situation. The transitions between the low beams and high beams are smoothly overlapped with no sudden light changes.

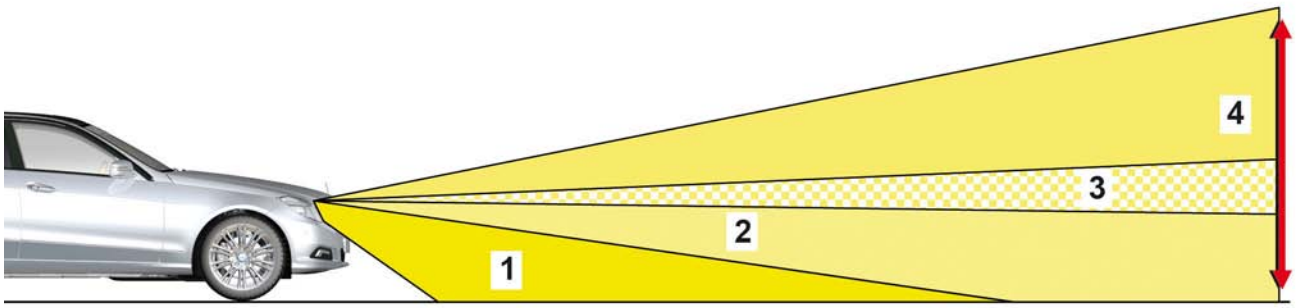
The function is activated when the steering column lever is moved to the "high beam position" while the rotary light switch is at "Auto".

The high beams are switched on automatically if no other road users are detected. The status indicator for the automatic high beam including optical headlamp range adjustment appears in the instrument cluster in the form of an indicator symbol in the multifunction display in addition to the familiar blue indicator lamp for the high beams.

P54.32-7532-00

Representation in multifunction display

1 Adaptive Highbeam Assist indicator symbol



P82.10-5777-00

Light cone and light zones

1 Low beam
2 Dynamic low beam
3 No low beam, no high beam
4 High beam

The Speed Limit Assist available as special equipment with code (513) determines the speed limit for the stretch of road on which the vehicle is driving. The information is displayed in the instrument cluster in the form of a traffic sign.

The system is activated via the instrument cluster and is displayed as a symbol in the multifunction display.

The function of the Speed Limit Assist operates in three main steps inside the multifunction camera.

Image recognition

The multifunction camera located at the top of the windshield registers images of the area in front of the vehicle.
The recorded images are transmitted to the integrated image recognition module for which the raw camera images and the camera control data are evaluated while the vehicle is driving past a road sign.
The image recognition module recognizes speed limit and derestriction signs by comparing details of the recorded images with learned templates.

The system also takes into account speed limits that cannot be stored in a digital road map, such as variable traffic signs or roadworks signs. The image recognition module assigns degrees of probability to the registered results and forwards these on to the decision module.

Limitations of image recognition:

- Only round speed limit signs (Vienna Convention) are recognized. Notices, such as those at the beginning and end of some built-up areas, are not take into account
- Image recognition is poorer in darkness, when the signs are a long way off to one side, or when the vehicle is traveling at high speeds
- Signs outside the viewing angle of the camera are not detected (e.g. immediately after turning off)
- Flashing or pulsating road signs
- Wholly or partially obscured road signs
- Non-standard road signs (e.g. old traffic sign types, incompletely covered road signs)

False alarms may occur in the following situations:

- Stickers on the rear ends of trucks or buses that resemble speed limit signs
- Other objects that happen to have similarities with road signs

Additional speed restriction signs are not detected, not displayed and not recognized as restrictions, e.g. speed restrictions applicable for commercial vehicles only, for wet conditions, for certain time periods, for freeway exits and advance warnings of speed restrictions.

National legislation governing the design and installation of traffic signs is taken into account by the system. The image recognition module assigns degrees of probability to all the results and forwards these on to the integrated software modules.

Speed Limit Assist

Decision module

The decision module processes the following relevant data:

- The vehicle's surroundings registered by the multifunction camera
- Speed and yaw rate
- Attributes of the navigation system from the digital road map (e.g. type of road)

When the data has been evaluated, the multifunction camera sends a corresponding request to control the display of the currently detected speed limit to the instrument cluster.

The Speed Limit Assist must compile this information into a single result even if the individual references to the speed limit contradict each other.

If a control unit or one of the data sources (image recognition, vehicle data or navigation data) fails, the Speed Limit Assist is temporarily unavailable.

Function sequence of display concept

The display concept can be selected via the instrument cluster. A distinction is made between notification mode and display mode:

Notification mode

In notification mode the detected speed limit is displayed in the form of a road sign for 5 s. The notification can be canceled within the display time. Notification mode can be switched on and off by the driver. The status is indicated by a symbol in the instrument cluster.

Display mode

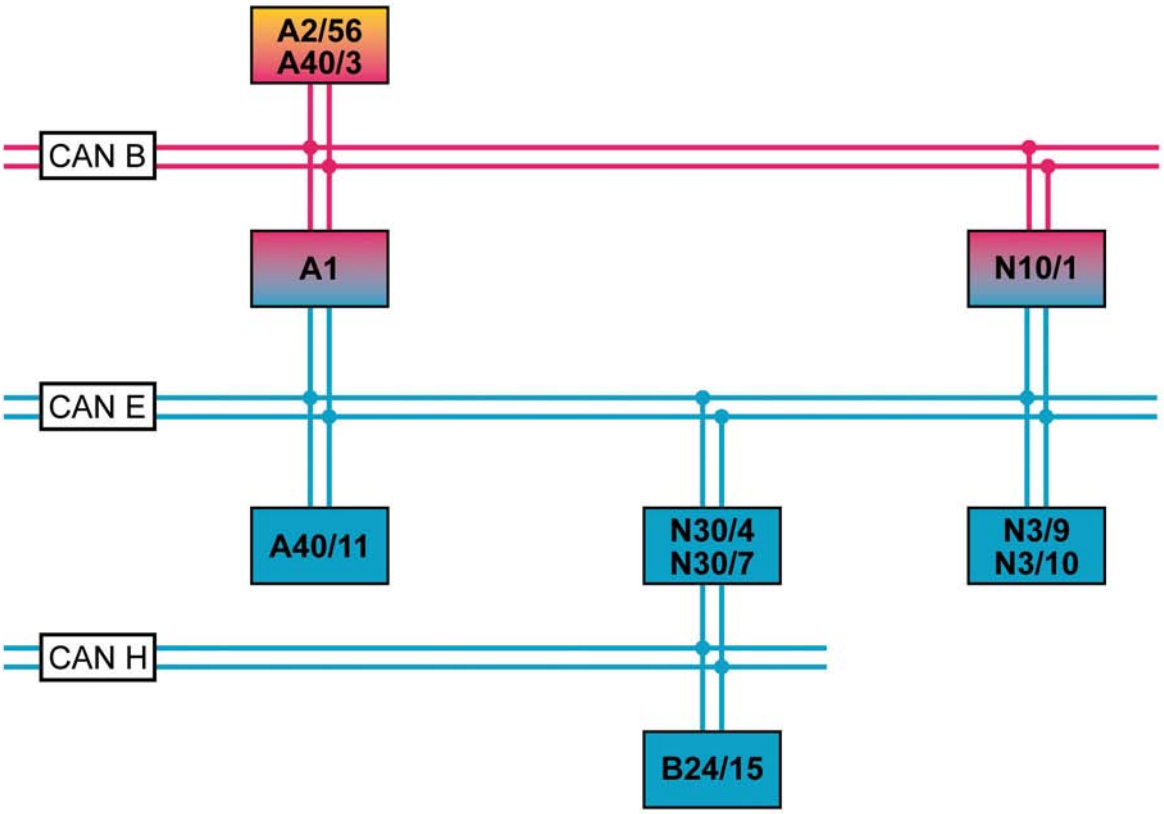
In display mode the detected speed limit is displayed continuously in the instrument cluster until one of the following events occurs:

- A new speed limit is detected
- A derestriction sign is detected
- No relevant traffic sign is detected inside a driving distance that varies according to the type of road
- The vehicle passes the boundaries of a recognized built-up area
- The system detects that the vehicle is turning off the current road
- The type of road changes

P54.32-7148-00

Representation in multifunction display (example)

1 Speed Limit Assist is available and notification mode is activated
2 Detected speed limit
3 Unit for the displayed road sign



P54.30-9861-00

Block diagram of Speed Limit Assist

A1	*Instrument cluster*
A2/56	*Radio with Auto Pilot System*
A40/3	*COMAND controller unit*
A40/11	*Multifunction camera*
B24/15	*Yaw rate sensor for lateral and longitudinal acceleration*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N30/4	*Electronic Stability Program control unit (without code (233) DISTRONIC PLUS)*
N30/7	*Electronic Stability Program Premium control unit (with code (233) DISTRONIC PLUS)*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
CAN H	*Vehicle dynamics CAN*

ATTENTION ASSIST

The ATTENTION ASSIST system is standard equipment in the new model series 212 and assists the driver during long, monotonous journeys. It is active in the speed range between 80 and 180 km / h. When the ATTENTION ASSIST detects excessive fatigue or increasing inattention on the part of the driver, it suggests taking a break as a way of improving driving safety.

The ATTENTION ASSIST is activated in the instrument cluster by means of the buttons on the multifunction steering wheel.

The function sequence is determined by an analysis of the steering wheel angle signal for certain steering patterns which occur more frequently as fatigue or inattention increase. In the first 20 minutes of driving, parameters for pattern recognition and the warning threshold for the driver are calculated individually. If the warning threshold is exceeded by an increased frequency of so-called "steering events", the driver is warned accordingly. In addition, the driver's personal driving style, the time of day and the driving time are taken into account.

When the ATTENTION ASSIST detects fatigue or increasing inattention on the part of the driver, it issues an acoustic warning in the form of double four-tone signal from the instrument cluster and a visual warning in the multifunction display.

A warning can be confirmed and canceled by pressing the "OK" button in the left multifunction steering wheel button group. Another waning cannot be issued for another 15 minutes.

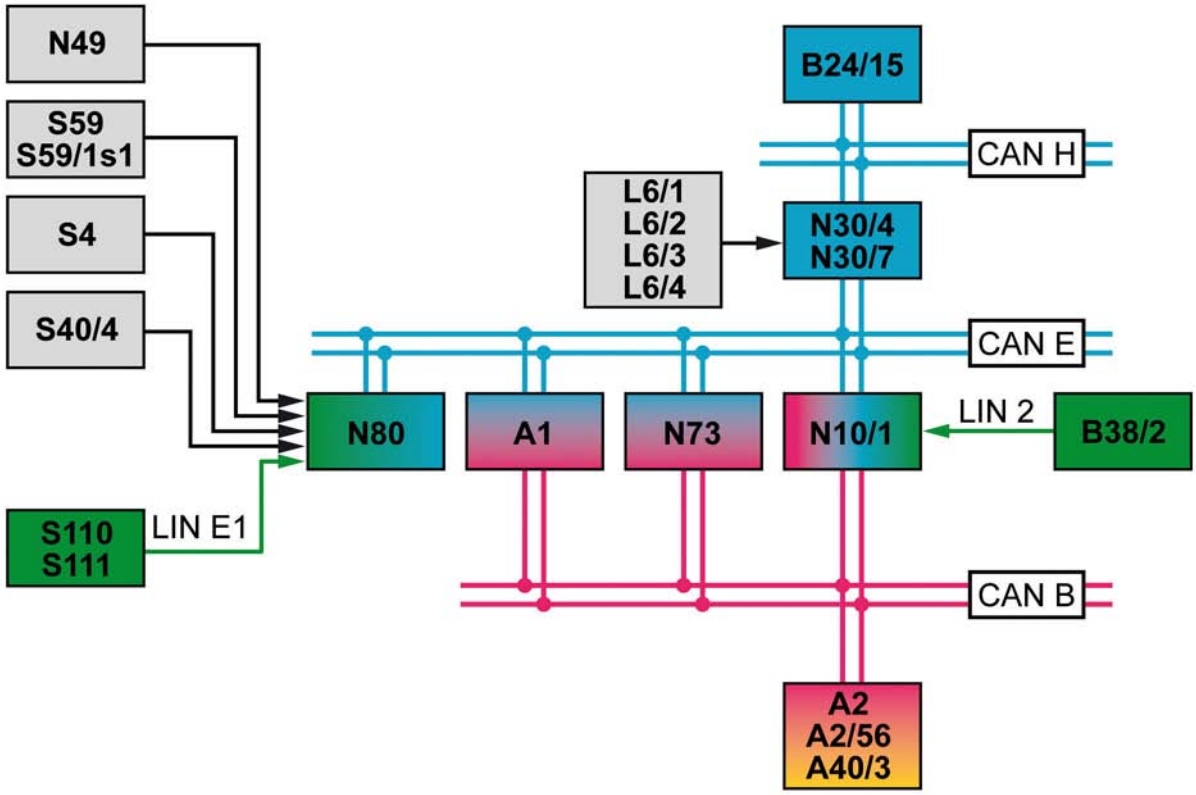
The function of the ATTENTION ASSIST is restricted and warnings are not issued, or issued only after a delay, in the case of:

- Sporty driving style
- Active driving situations such as lane changes, sharp acceleration or high cornering speeds
- Poor road conditions with surface undulations or potholes
- Long-lasting strong crosswind
- Distraction by operating the audio equipment, the telephone or the switches of various systems (e.g. lights, turn signals etc.)

P54.32-7149-00

Representation in multifunction display (example)

1 ATTENTION ASSIST active



P54.30-9862-00

Block diagram of ATTENTION ASSIST

A1	*Instrument cluster*
A2	*Radio*
A2/56	*Radio with Auto Pilot System*
A40/3	*COMAND controller unit*
B24/15	*Yaw rate sensor for lateral and longitudinal acceleration*
B38/2	*Rain/light sensor*
L6/1	*Left front axle rpm sensor*
L6/2	*Right front axle rpm sensor*
L6/3	*Left rear axle rpm sensor*
L6/4	*Right rear axle rpm sensor*
N10/1	*Front SAM control unit with fuse and relay module*
N30/4	*Electronic Stability Program control unit (without code (233))*
N30/7	*Electronic Stability Program Premium control unit (with code (233))*
N49	*Steering angle sensor*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
S4	*Combination switch*
S40/4	*Cruise control lever (with code (233))*
S59	*Steering column adjustment switch (with code 275))*
S59/1s1	*Steering column adjustment switch (with code (275), (443))*
S110	*Left multifunction steering wheel button group*
S111	*Right multifunction steering wheel button group*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
CAN H	*Vehicle dynamics CAN*
LIN E1	*Steering LIN*
LIN 2	*Wiper/inside rearview mirror LIN*

Lane Keeping Assist

The Lane Keeping Assist helps the driver by warning him if the vehicle is about to leave its lane unintentionally. The warning comes in the form of steering wheel vibrations that are barely noticeable to the other occupants of the vehicle.

The Lane Keeping Assist is activated in the instrument cluster by means of the buttons on the multifunction steering wheel.

The Lane Keeping Assist monitors the area in front of the vehicle with the multifunction camera which is mounted to the top of the windshield. The assistance from the Lane Keeping Assist is available at speeds above approximately 60 km / h. The system takes measurements of the lane markings on the road. From the recorded image sequences and the measurements of the road markings it calculates the position of the vehicle within the lane and the path of the lane itself. If there are multiple markings on the road, the innermost marking acts as the reference point. On the basis of this data the multifunction camera can determine whether the driver is crossing a road marking.

When the Lane Keeping Assist detects that one of the front wheels is touching or crossing a road marking, it warns the driver that he is leaving the lane unintentionally. The warning is given by actuating a vibration motor in the steering wheel which provides the driver with a haptic warning by intermittently vibrating the steering wheel.

In order to provide the correct warning in the right situation, the warning time can be shifted forward or backward and warnings that are obviously undesirable can be suppressed. To do this the system evaluates the driver's actions on the primary controls, such as the steering wheel, brakes and accelerator pedal.

Shifting of the warning time

- If the lanes are narrow, the warning occurs slightly later
- When negotiating a bend in the road, the warning occurs later on the inside of the curve depending on the lateral acceleration; on the outside of the curve the warning occurs earlier
- If the lanes are very wide, on freeways in particular, the warning occurs slightly earlier
- When unbroken lane markings are detected, the warning again occurs earlier because it is more dangerous if these lines are crossed (e.g. due to the hard shoulder or crash barriers beyond the markings)

Suppression of the warning

- Under strong acceleration, heavy braking and sudden steering
- When turn signaling
- When the active and passive safety systems are activated

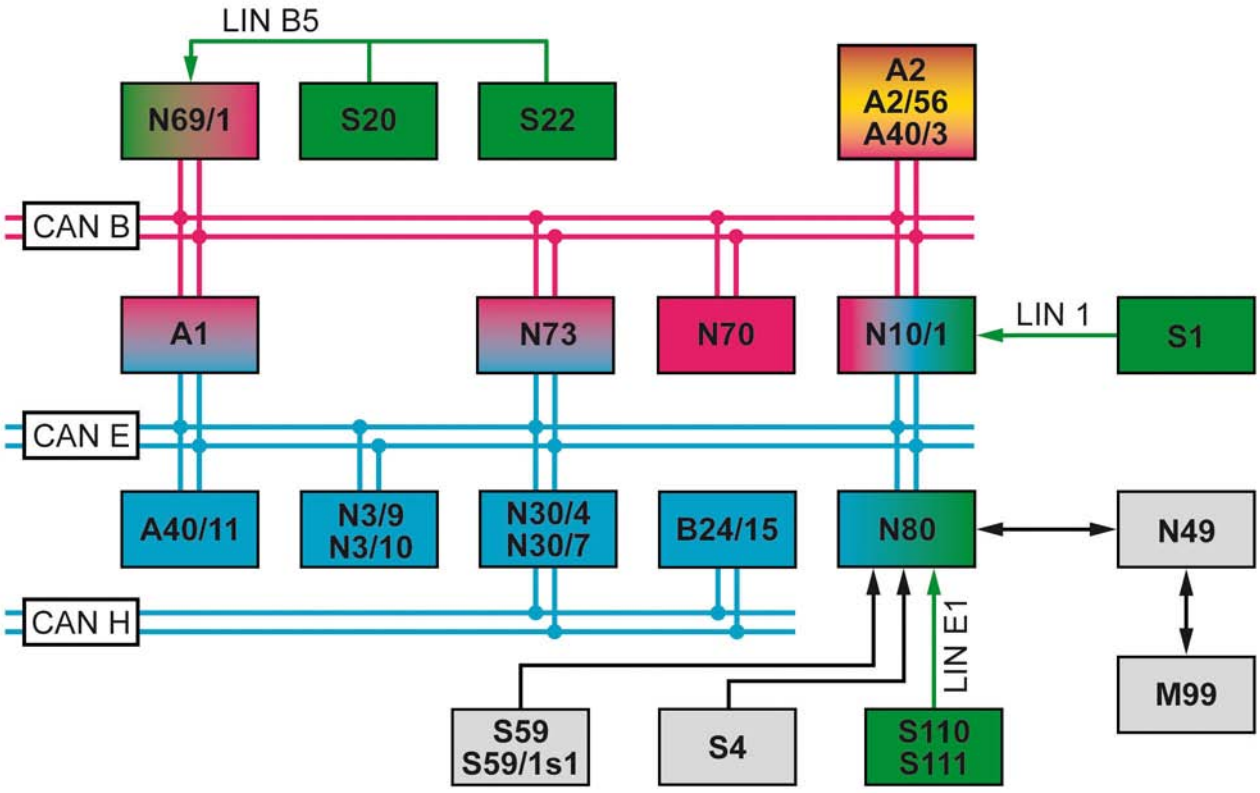
Note

Ambiguities in the lane recognition can occur when there are multiple markings, e.g. at roadworks. If the system is unable to make a reliable decision about the lane to be followed, the Lane Keeping Assist shuts down.

P54.32-7360-00

Representation in multifunction display (example)

1 Lane Keeping Assist active



P54.71-2022-00

Block diagram of Lane Keeping Assist

A1	*Instrument cluster*
A2	*Radio*
A2/56	*Radio with Auto Pilot System*
A40/3	*COMAND controller unit*
A40/11	*Multifunction camera*
B24/15	*Yaw rate sensor for lateral and longitudinal acceleration*
M99	*Steering wheel vibration motor*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N30/4	*Electronic Stability Program control unit (without code (233))*
N30/7	*Electronic Stability Program Premium control unit (with code (233))*
N49	*Steering angle sensor*
N69/1	*Left front door control unit*
N70	*Overhead control panel control unit (with code 414))*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
S1	*Exterior lights switch*
S4	*Combination switch*
S20	*Driver side power window and outside mirror adjustment switch group*
S22	*Left front seat adjustment switch group (with code (275))*
S59	*Steering column adjustment switch*
S59/1s1	*Steering column adjustment switch (with code (275), (443))*
S110	*Left multifunction steering wheel button group*
S111	*Right multifunction steering wheel button group*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
CAN H	*Vehicle dynamics CAN*
LIN 1	*Instrument panel LIN*
LIN B5	*Left front door LIN*
LIN E1	*Steering LIN*

Blind Spot Assist

The Blind Spot Assist with code (234) is an accident-prevention system which assists the drive in safely performing a lane change. The Blind Spot Assist monitors events to the rear and sides of the vehicle where the inside rearview mirror and the two outside mirrors cannot provide adequate visibility (blind spots). These areas are monitored by radar sensors installed on the left and right sides of the rear bumper. The Blind Spot Assist is activated in the instrument cluster by means of the buttons on the multifunction steering wheel.

If the driver initiates a lane change by operating the turn signals while there is another vehicle inside the detection range, a visual and acoustic collision warning is issued.

Monitoring and warning indicator

When the Blind Spot Assist is switched on, the indicator lamps in the outside mirrors light up yellow if the engine is on and the vehicle is traveling at a speed of less than 30 km / h. Above a speed of 30 km / h the indicator lamps go out and the Blind Spot Assist is ready to operate. If a vehicle is detected inside the monitoring zone at a speed of 30 km / h or above, the warning lamp on the appropriate side lights up red. The warning always occurs whenever a vehicle enters the detection range from behind or from the side. When a vehicle is overtaking, a warning is given only if the speed difference is less than 12 km / h.

Detection range

The Blind Spot Assist monitors the immediate area behind and beside the vehicle up to a range of three meters.

Collision warning

If a vehicle is detected inside the blind spot monitoring zone and the turn signal on the same side is actuated, a double warning tone sounds once and the warning lamp flashes red. The red warning lamp in the outside mirror continues to flash until the turn signal is deactivated or the other vehicle leaves the monitoring zone. Another acoustic warning is not given.

Note

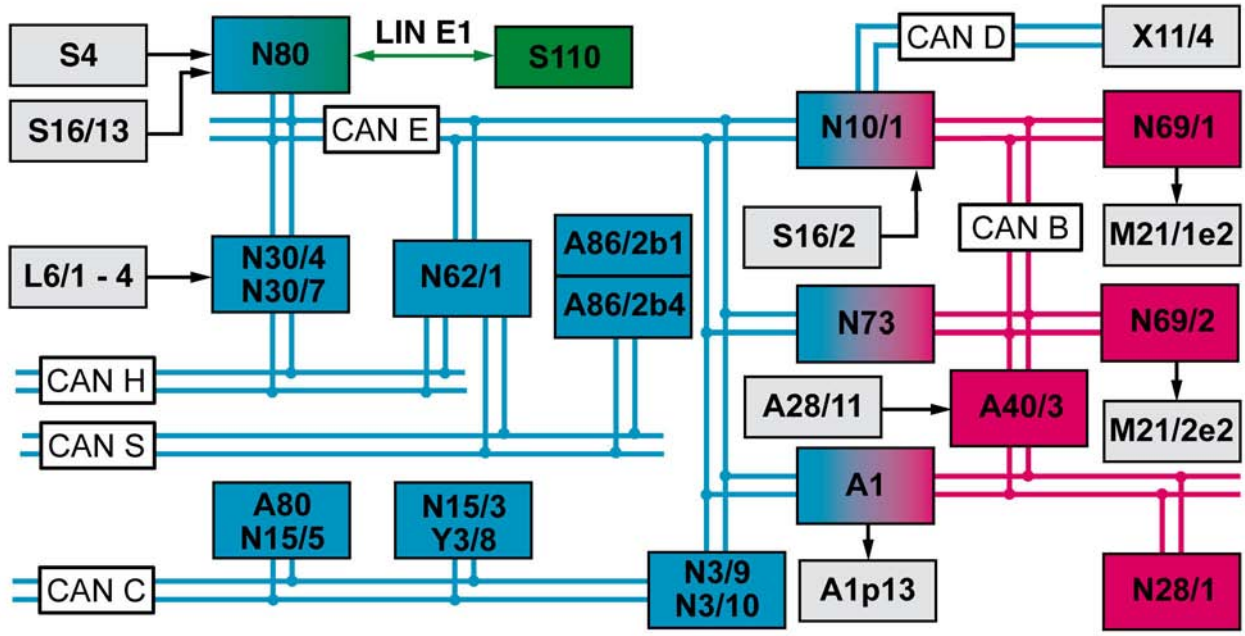
If there is a trailer hitched to the vehicle, the rear area of the car cannot be monitored by the Blind Spot Assist. The warning message "Blind Spot Assist currently unavailable, see owner's manual" is displayed in the instrument cluster and the function indicators of the Blind Spot Assist are switched off.

The radar sensors control unit detects a hitched trailer from a signal from the trailer recognition control unit.

P54.71-2025-00

Visual warning message

M21 / 1e2 Left Blind Spot Assist warning lamp



P54.71-2023-00

Block diagram of Blind Spot Assist

A1	*Instrument cluster*
A1p13	*Multifunction display*
A28/11	*Multifunction antenna*
A40/3	*COMAND controller unit*
A80	*Intelligent servo module for DIRECT SELECT (with transmission 722.9)*
A86/2b1	*Right outer radar sensor, rear bumper*
A86/2b4	*Left outer radar sensor, rear bumper*
L6/1	*Left front axle rpm sensor*
L6/2	*Right front axle rpm sensor*
L6/3	*Left rear axle rpm sensor*
L6/4	*Right rear axle rpm sensor*
M21/1e2	*Left Blind Spot Assist warning lamp*
M21/2e2	*Right Blind Spot Assist warning lamp*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N15/3	*Electronic transmission control control unit (with transmission 722.6)*
N15/5	*Electronic selector lever module control unit (with transmission 722.6)*
N28/1	*Trailer recognition control unit*
N30/4	*Electronic Stability Program control unit (without code (233))*
N30/7	*Electronic Stability Program Premium control unit (with code (233))*
N62/1	*Radar sensors control unit*
N69/1	*Left front door control unit*
N69/2	*Right front door control unit*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
S4	*Combination switch*
S16/2	*Backup lamp switch (with manual transmission)*
S16/13	*DIRECT SELECT lever (with transmission 722.9)*
S110	*Left multifunction steering wheel button group*
X11/4	*Diagnostic connector*
Y3/8	*Fully integrated transmission control controller unit (with transmission 722.9)*
CAN B	*Interior CAN*
CAN C	*Drivetrain CAN*
CAN D	*Diagnostic CAN*
CAN E	*Chassis CAN*
CAN H	*Vehicle dynamics CAN*
CAN S	*Sensor CAN*
LIN E1	*Steering LIN*

Exclusive Parking Assist

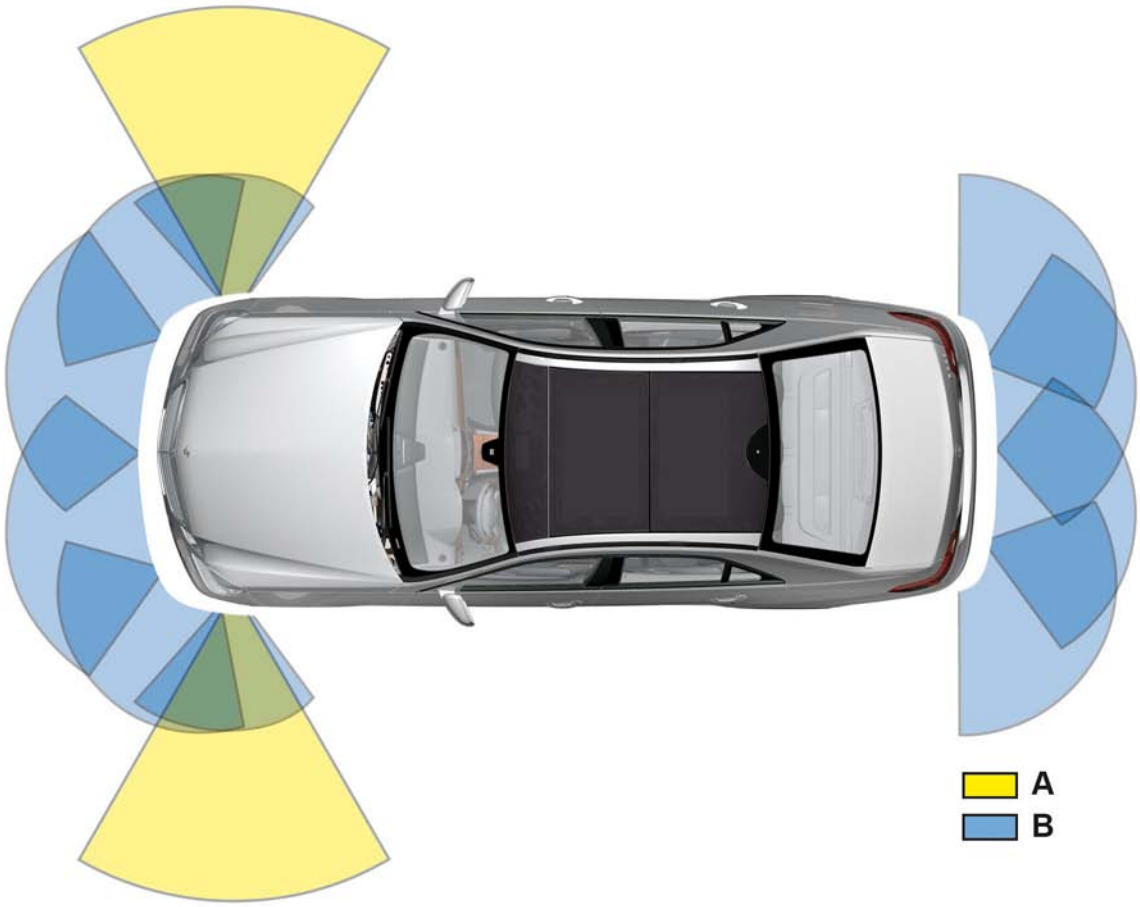
The special equipment Exclusive Parking Assist with code (230) is an extension of the PARKTRONIC system which now helps the driver in finding a parking space and provides steering instructions during the parking procedure. However, it does not park the vehicle by itself. The system merely gives steering and direction instructions in the instrument cluster to assist with longitudinal guidance and lateral control.

Ultrasonic sensors measure potential parking spaces and suggest them to the driver.

Note

The driver is responsible for estimating the suitability and plausibility of the parking space found, and for the actual parking.

The parking space search function can merely detect a free space that is geometrically suitable for parking; it cannot tell whether this free space is actually a parking space.



P54.65-3831-00

Monitoring ranges of distance sensors for Exclusive Parking Assist (schematic)

A Ranges of both side sensors for parking space search

B Ranges of the ten sensors for the PARKTRONIC functionality

Ultrasonic sensors

On vehicles with Exclusive Parking Assist, the outer left and right front ultrasonic sensors are not just used for the PARKTRONIC function, they also scan the road for potential parallel parking spaces. The two outer sensors therefore change their sensing range according to requirements.

P54.65-3830-00

Example locations of left front ultrasonic sensors

B8/1 Outer left front PARKTRONIC distance sensor
B8/2 Center left front PARKTRONIC distance sensor
B8/3 Inner left front PARKTRONIC distance sensor

Function sequence

The parking space search function does not have to be activated. At vehicle speeds of up to 36 km/h, the outer ultrasonic sensors in the front bumper continuously measure the parking spaces to the left and right of the vehicle. The parking spaces are stored for a distance of approx. 15 m.

The multifunction display in the instrument cluster displays the symbol "P" to indicate that it is searching for parking spaces. When a parking space is found, an arrow indicates the side of the road on which the parking space is located.

Note

By default the system only indicates parking spaces on the passenger-side of the vehicle. To have parking spaces on the driver side indicated as well (e.g. on one-way streets), the driver must actuate the turn signal towards the driver side.

The parking space search function detects parallel parking spaces based on the following criteria:

The space must be parallel to the road, must be at least 1.3 m longer than the vehicle, may not be longer than 10.0 m and must be at least 1.5 m wide.

Exclusive Parking Assist

Parking

If the driver stops and engages reverse gear after driving past a suitable parking space, the following message is first displayed on the multifunction display of the instrument cluster:

"Watch for traffic! Press OK to confirm"

The parking assistance begins after the warning displayed in the instrument cluster has been confirmed with the OK button on the multifunction steering wheel.
The multifunction display changes to the parking guidance display and, depending on the distance to the parking space, shows the message:

"Reverse"

This is indicated by a white arrow pointing to the rear. Reverse the vehicle until a signal tone is heard. Then stop the vehicle. This is the stop position. The white arrow in the display is full. The following message appears:

"Steer right" or "Steer left"

With the vehicle stationary, turn the steering wheel in the direction indicated until the white arrow is full. Maintain the steering angle and reverse the vehicle carefully.
Stop as soon as you hear the signal tone. The vehicle has reached the countersteering position.
The following message appears:

"Steer left" or "Steer right"

With the vehicle stationary, turn the steering wheel in the direction indicated until the white arrow is full. Maintain the steering angle and reverse the vehicle carefully.
Stop as soon as you hear the signal tone.
The car must be stopped at the latest when the continuous warning tone of the PARKTRONIC system sounds. The following message appears:

"Parking guidance complete"

A signal tone sounds.
The system may ask the driver to change direction. In this case, further displays in the multifunction display guide the car into the final position.

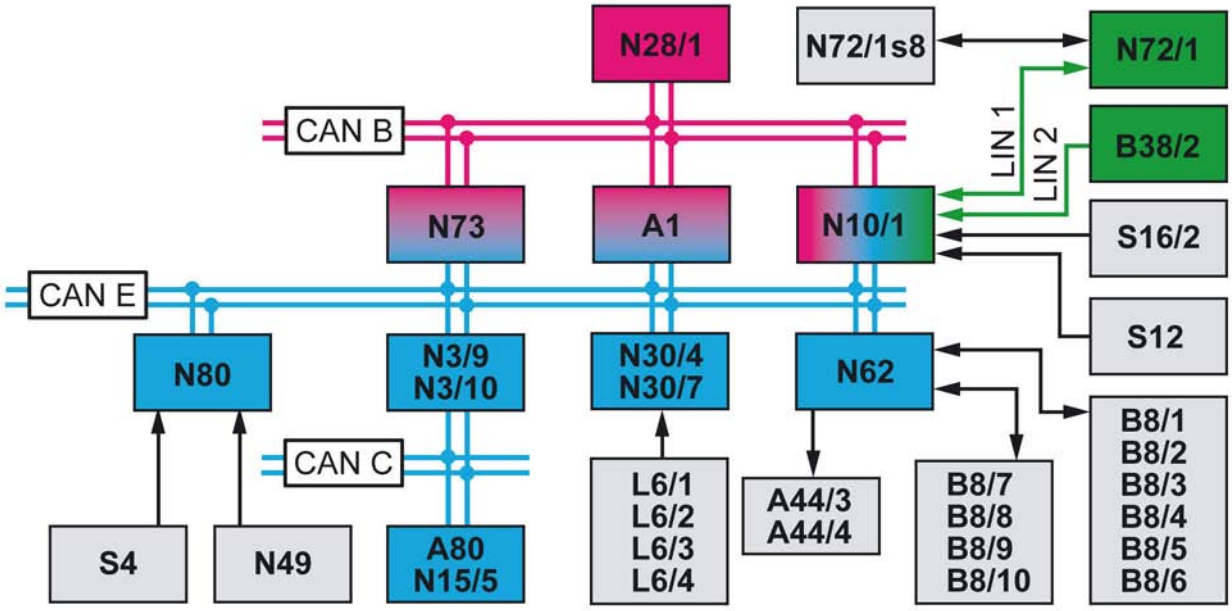
If necessary, adjust the end position by maneuvering while watching the PARKTRONIC warning indicator.

P54.32-7434-00

Representation in multifunction display (example)

Note

If an obstacle in the trajectory (measurement method) is detected during the parking procedure, a warning message appears in the instrument cluster and an additional warning tone is emitted. The warning stops if the obstacle is removed or if the vehicle drives over the position of the obstacle.



P54.65-3832-00

Block diagram of Exclusive Parking Assist

A1	*Instrument cluster*
A44/3	*Rear PARKTRONIC warning indicator*
A44/4	*Instrument panel PARKTRONIC warning indicator*
A80	*Intelligent servo module for DIRECT SELECT (with transmission 722.9)*
B8/1	*Outer left front PARKTRONIC distance sensor*
B8/2	*Center left front PARKTRONIC distance sensor*
B8/3	*Inner left front PARKTRONIC distance sensor*
B8/4	*Inner right front PARKTRONIC distance sensor*
B8/5	*Center right front PARKTRONIC distance sensor*
B8/6	*Outer right front PARKTRONIC distance sensor*
B8/7	*Outer right rear PARKTRONIC distance sensor*
B8/8	*Inner right rear PARKTRONIC distance sensor*
B8/9	*Inner left rear PARKTRONIC distance sensor*
B8/10	*Outer left rear PARKTRONIC distance sensor*
B38/2	*Rain/light sensor*
L6/1	*Left front axle rpm sensor*
L6/2	*Right front axle rpm sensor*
L6/3	*Left rear axle rpm sensor*
L6/4	*Right rear axle rpm sensor*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N15/5	*Electronic selector lever module control unit (with transmission 722.6)*
N28/1	*Trailer recognition control unit*
N30/4	*Electronic Stability Program control unit (without code (233))*
N30/7	*Electronic Stability Program Premium control unit (with code (233))*
N49	*Steering angle sensor*
N62	*PARKTRONIC control unit*
N72/1	*Upper control panel control unit*
N72/1s8	*PARKTRONIC button*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
S4	*Combination switch*
S12	*Parking brake indicator switch*
S16/2	*Backup lamp switch (with manual transmission)*
CAN B	*Interior CAN*
CAN-C	*Drivetrain CAN*
CAN E	*Chassis CAN*
LIN 1	*Instrument panel LIN*
LIN 2	*Wiper/inside rearview mirror LIN*

Night View Assist

The Night View Assist system with code (610) provides a visual representation of the road in darkness, with the aim of identifying people, obstructions or other objects before they become visible in the light cone of the conventional driving lights.

The Night View Assist system is activated by pressing the Night View Assist button beside the rotary light switch. In addition, the following function requirements must be fulfilled and registered by the Night View Assist control unit:

- Rain / light sensor detects darkness
- Rotary light switch in Auto or low beam position
- Reverse gear not engaged
- Vehicle speed above 10 km / h

When the Night View Assist system is activated, the road in front of the vehicle is illuminated by two infrared lamps in the front lamp units. If the vehicle is moving forward at a speed less than 5 km / h, the infrared lamps are switched off.

An infrared camera, which is installed behind the windshield in the passenger compartment, scans the illuminated area. The infrared camera of the Night View Assist is sensitive to infrared light and designed with a fixed aperture. The picture from the infrared camera is displayed as a black / white video image in the audio / COMAND display. The area displayed corresponds roughly with the area visible through the windshield with the high beam switched on.

A new feature in the Night View Assist system is the night vision with pedestrian detection function. With this function, any pedestrians detected can be highlighted in the audio / COMAND display by means of frame corners. The function is intended to make it easier to identify pedestrians especially outside towns on dark country roads. Pedestrians can be detected at ranges up to 90 m in front of the vehicle.

In addition to the function requirements listed above, a prerequisite for night vision with pedestrian detection is that the multifunction camera in the windshield, which is located on the left side of the Night View Assist camera, must register darkness.

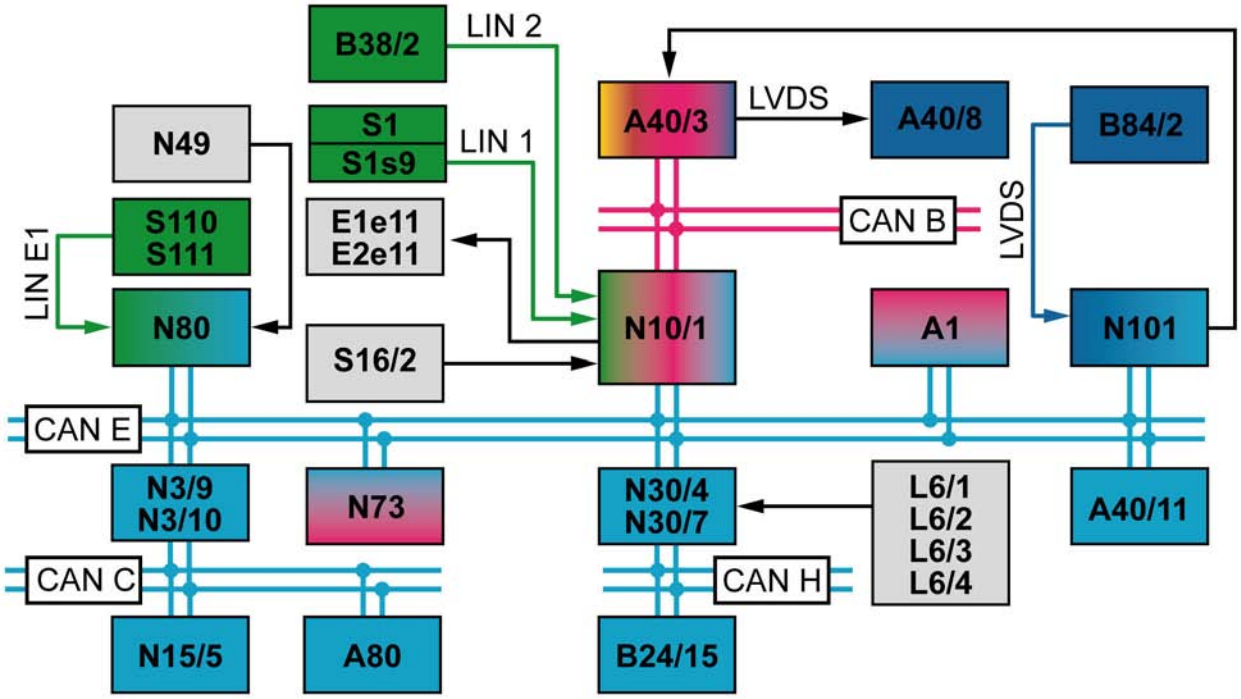
Note

The light emitted by the infrared lamps is not visible to the human eye. So it does not disturb or dazzle oncoming traffic. The infrared light can therefore remain switched on permanently in addition to the low beam.

P82.87-2972-00

Black / white video image with pedestrian detection

1 Pedestrian highlighted by frame corners
2 Pedestrian detection active symbol



P54.30-9863-00

Block diagram of Night View Assist

A1	*Instrument cluster*
A40/3	*COMAND controller unit*
A40/8	*Audio/COMAND display*
A40/11	*Multifunction camera*
A80	*Intelligent servo module for DIRECT SELECT (with transmission 722.9)*
B24/15	*Yaw rate sensor for lateral and longitudinal acceleration*
B38/2	*Rain/light sensor*
B84/2	*Night View Assist camera*
E1e11	*Left infrared lamp*
E2e11	*Right infrared lamp*
L6/1	*Left front axle rpm sensor*
L6/2	*Right front axle rpm sensor*
L6/3	*Left rear axle rpm sensor*
L6/4	*Right rear axle rpm sensor*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N15/5	*Electronic selector lever module control unit (with transmission 722.6)*
N30/4	*Electronic Stability Program control unit (without code (233))*
N30/7	*Electronic Stability Program Premium control unit (with code (233))*
N49	*Steering angle sensor*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
N101	*Night View Assist control unit*
S1	*Exterior lights switch*
S1s9	*Night View Assist button*
S16/2	*Backup lamp switch (with manual transmission)*
S110	*Left multifunction steering wheel button group*
S111	*Right multifunction steering wheel button group*
CAN B	*Interior CAN*
CAN C	*Drivetrain CAN*
CAN E	*Chassis CAN*
CAN H	*Vehicle dynamics CAN*
LIN 1	*Instrument panel LIN*
LIN 2	*Wiper/inside rearview mirror LIN*
LIN E1	*Steering LIN*
LVDS	*Low voltage differential signal*

Reversing camera

Reversing camera, code (218)

The reversing camera system is a visual aid and assists the driver when reverse parking and when backing up the car.

The reversing camera is always activated whenever reverse gear is selected, provided that the setting "Automatic ON in reverse gear" is selected via the menu in the COMAND controller unit.

For the reversing camera system, a color video camera with wide-angle lens is installed in the trunk lid, which registers the area immediately behind the vehicle. The images recorded by the reversing camera are transmitted in the form of a CVBS signal (Composite Video Baseband Signal) via the reversing camera power supply module to the COMAND controller unit.

The image data are directed straight from the COMAND controller unit via the LVDS interface (low voltage differential signal) to the audio / COMAND display and displayed.

Reversing camera, Japan

Japan-version vehicles are equipped with an expanded reversing camera system.

In the system for Japan, the reversing camera control unit superimposes guidelines over the video pictures output in the audio / COMAND display. With the aid of these lines the driver can maneuver the vehicle until he has reached the desired parking position.

The reversing camera system is activated automatically when reverse gear is engaged. The prerequisite for this is the setting "Automatic in R" in the menu of the COMAND controller unit. The central operating unit then provides two parking modes to choose from, for which guidelines are superimposed on the picture.

The mode that was active the last time the car was reversed is displayed as the default. The following options can be selected:

- Back-In Parking Mode (reverse parking)
- Parallel Parking Mode (parallel parking)

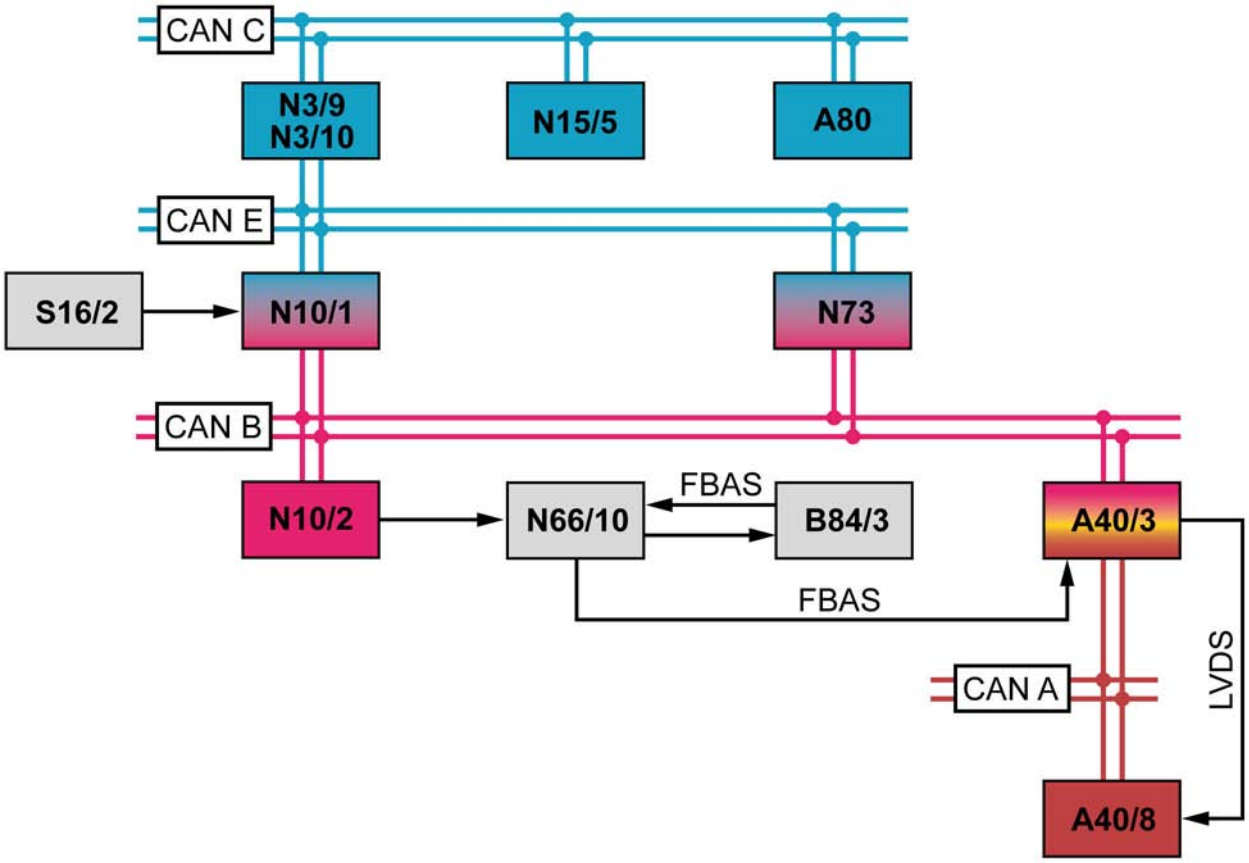
P54.65-3936-00

Reversing camera on trunk lid

B84 / 3 Reversing camera

P54.65-3935-00

Representation in audio / COMAND display



P54.65-3833-00

Block diagram of reversing camera (except Japan)

A40/3	*COMAND controller unit*
A40/8	*Audio/COMAND display*
A80	*Intelligent servo module for DIRECT SELECT (with transmission 722.9)*
B84/3	*Reversing camera*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N10/2	*Rear SAM control unit with fuse and relay module*
N15/5	*Electronic selector lever module control unit (with transmission 722.6)*
N66/10	*Reversing camera power supply module*
N73	*Electronic ignition lock control unit*
S16/2	*Backup lamp switch (with manual transmission)*
CAN A	*Telematics CAN*
CAN B	*Interior CAN*
CAN C	*Drivetrain CAN*
CAN E	*Chassis CAN*
FBAS	*Composite Video Baseband Signal (CVBS)*
LVDS	*Low voltage differential signal*

DISTRONIC PLUS

DISTRONIC with code (233) contains the following functions in addition to the conventional cruise control features:

- DISTRONIC PLUS
- BAS PLUS
- PRE-SAFE® brake

DISTRONIC PLUS

DISTRONIC PLUS is an extension of the DISTRONIC adaptive cruise control.

DISTRONIC PLUS also incorporates a short range radar with two new sensors at the front, which now covers the vehicle speed range from 0 to 30 km / h within a detection radius of 30 m.

This allows the distance to be regulated in the speed range from 0 to 200 km / h and can also be used to handle stop-and-go traffic.

If the lane ahead of the vehicle is clear, DISTRONIC PLUS regulates the set target speed in the same way as a conventional cruise control. As the car approaches a preceding vehicle, the speed is reduced in order to maintain the distance set by the driver.

BAS PLUS

BAS PLUS is coupled with the sensor system of DISTRONIC PLUS. This makes BAS PLUS a predictive brake assist system, the activation strategy of which, in addition to the analysis of the driver's brake application, can also call on an evaluation of the ambient situation (detection of preceding objects) in front of the vehicle.

The aim of the Brake Assist System in the event of an imminent collision is to avoid a crash or, if this is not successful, to significantly reduce the effects of the accident.

BAS PLUS is only triggered when the driver applies the brakes and the system detects the danger of an imminent collision. If the reaction speed and brake force are insufficient, the BAS PLUS Brake Assist System assists the driver's braking action. It can apply full braking until the vehicle comes to a stop. The brake application is intensified by the system according to the situation.

By not using full brake force at once, the stopping distance for following vehicles is lengthened and the risk of a collision is reduced.

PRE-SAFE® brake

The PRE-SAFE® brake will be available as special equipment in combination with DISTRONIC PLUS in the new E-Class for the first time.

As in the DISTRONIC PLUS system, the combined data from the long and short range radar is used to continuously calculate the potential risk of a collision. The distance warning function can be activated and deactivated separately via a menu in the instrument cluster.

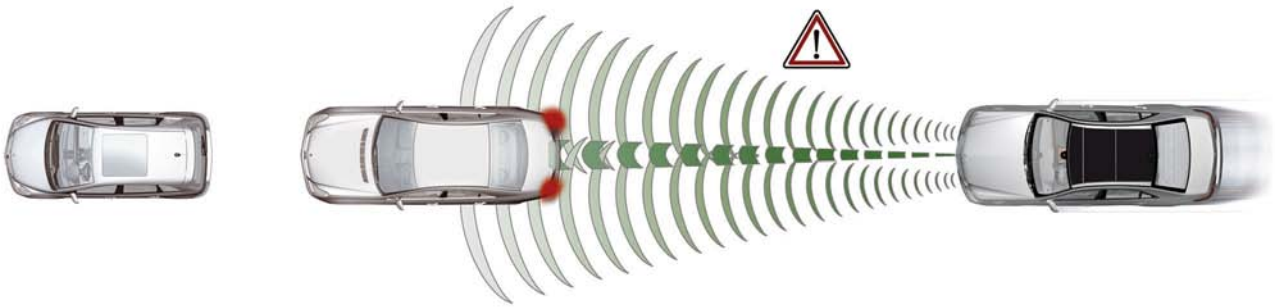
The distance warning is triggered whenever a deceleration of more than 6 m / s^2 is necessary in order to avoid a collision. The warning alerts the driver to moving or stationary obstructions in his lane in the vehicle speed range from 30 to 250 km / h. The distance warnings are given by the DISTRONIC warning lamp and an intermittent tone. The DISTRONIC warning lamp remains lit until the correct distance has been reestablished.

If a critical driving situation is detected, the visual and acoustic distance warnings are given first.

If the driver fails to react adequately to the warning, the PRE-SAFE® brake automatically initiates a noticeable partial braking maneuver. This relaxes the situation slightly and at the same time the driver is again requested to take action (brake). In parallel, PRE-SAFE® measures are initiated in addition to the braking action.

Thanks to the PRE-SAFE® brake, the driver receives a very clear warning that enables him to intervene in a potentially hazardous situation by pressing the brake pedal at an even earlier stage.

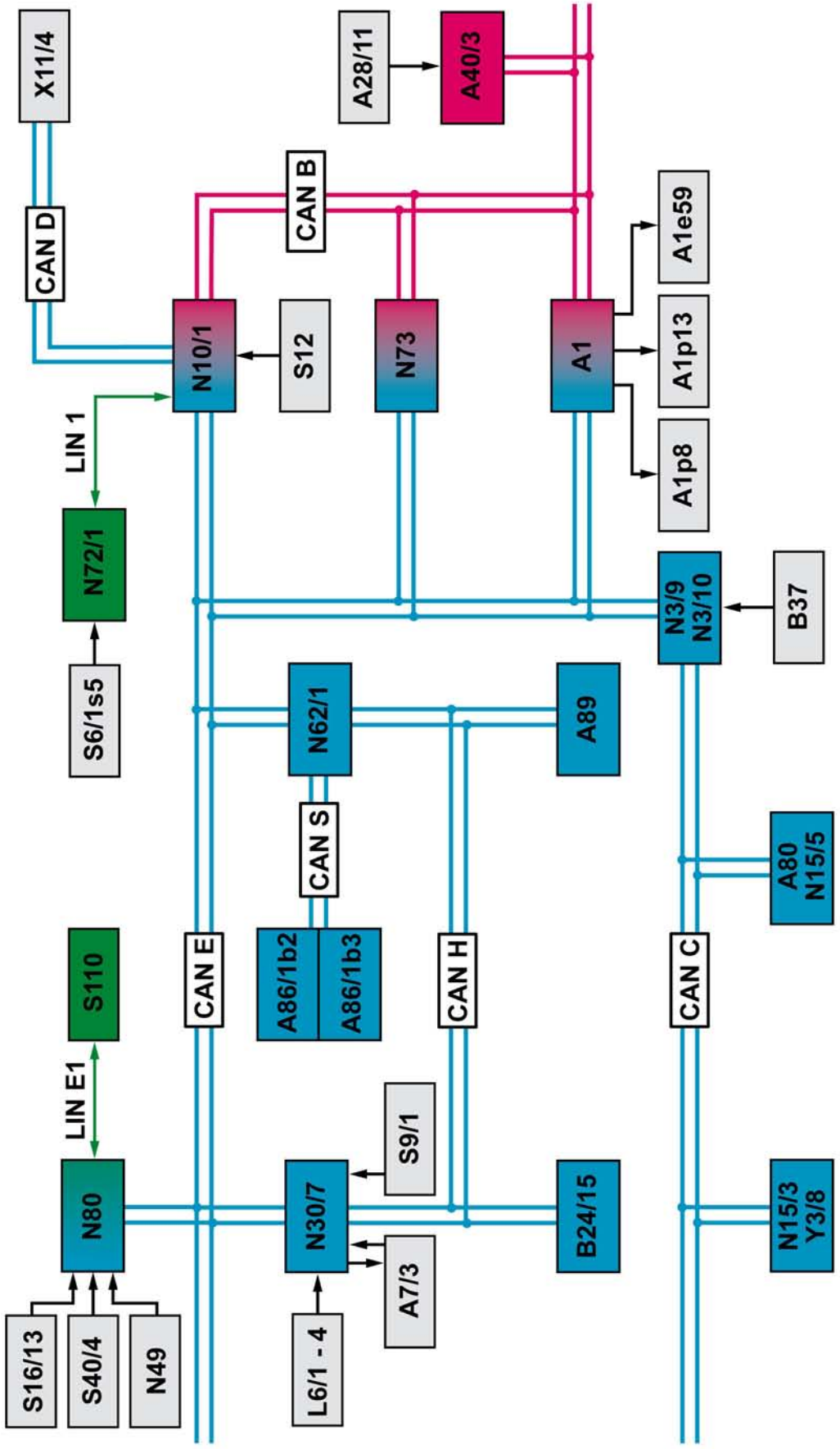
The maximum deceleration is limited to 4 m / s^2.



P30.30-2245-00

Detection of a potential accident situation

DISTRONIC PLUS



P30.30-2244-00

Block diagram of DISTRONIC PLUS including BAS PLUS and PRE-SAFE® brake

Legend for block diagram of DISTRONIC PLUS including BAS PLUS and PRE-SAFE® brake

A1	*Instrument cluster*
A1e59	*DISTRONIC warning lamp*
A1p8	*Speedometer*
A1p13	*Multifunction display*
A28/11	*Multifunction antenna*
A7/3	*Traction system hydraulic unit*
A40/3	*COMAND controller unit*
A80	*Intelligent servo module for DIRECT SELECT (with transmission 722.9)*
A86/1b2	*Left inner radar sensor, front bumper*
A86/1b3	*Right inner radar sensor, front bumper*
A89	*DISTRONIC electric controller unit*
B24/15	*Yaw rate sensor for lateral and longitudinal acceleration*
B37	*Accelerator pedal sensor*
L6/1	*Left front axle rpm sensor*
L6/2	*Right front axle rpm sensor*
L6/3	*Left rear axle rpm sensor*
L6/4	*Right rear axle rpm sensor*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N15/3	*Electronic transmission control control unit (with transmission 722.6)*
N15/5	*Electronic selector lever module control unit (with transmission 722.6)*
N30/7	*Electronic Stability Program Premium control unit (with code (233))*
N49	*Steering angle sensor*
N62/1	*Radar sensors control unit*
N72/1	*Upper control panel control unit*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
S6/1s5	*ESP button*
S9/1	*Brake light switch*
S12	*Parking brake indicator switch*
S16/13	*DIRECT SELECT lever (with transmission 722.9)*
S40/4	*Cruise control lever*
S110	*Left multifunction steering wheel button group*
X11/4	*Diagnostic connector*
Y3/8	*Fully integrated transmission control controller unit (with transmission 722.9)*
CAN B	*Interior CAN*
CAN C	*Drivetrain CAN*
CAN D	*Diagnostic CAN*
CAN E	*Chassis CAN*
CAN H	*Vehicle dynamics CAN*
CAN S	*Sensor CAN*
LIN 1	*Instrument panel LIN*
LIN E1	*Steering LIN*

Climate control

Climate control systems

Two climate control systems are available for model series 212:

- THERMATIC two-zone automatic air conditioning
- THERMOTRONIC three-zone comfort automatic air conditioning (with code (581))

Both climate control systems combine automatic heating, ventilation and cooling systems.

With the two-zone automatic air conditioning the temperature for the driver and front passenger sides can be regulated independently. With the three-zone comfort automatic air conditioning the rear AC operating unit can be used to set the temperature for the rear passenger compartment separately. Furthermore, the center console contains a compact additional fan installed underneath the stowage compartments. This fan can be used to regulate the air volume for the front and rear zones separately via the control buttons on the rear AC operating unit.

Both systems feature air recirculation and a combination filter with fine filtration function as standard.

The main improvements to the climate control systems in model series 212 are:

- The passenger compartment ventilation with regard to draft-free ventilation, low noise emissions and effectiveness
- The design and layout of the operating units with regard to clarity, ergonomic handling and harmonization with the interior styling
- The response behavior of the system functions

Control and sensor systems

The automatic function allows the air flow, air distribution and interior temperature to be regulated automatically.

The actual values of the interior temperatures are sensed by one ventilated sensor in the overhead control panel, one near the ignition lock and also by two air outlet temperature sensors on each side in the air stream of the side and footwell vents. Depending on various parameters such as the outside temperature, the coolant temperature and the values of the above sensors, the appropriate target outlet temperature is calculated. If significant deviations are found, the temperature is additionally corrected.

The standard-equipment sun sensor on the instrument panel near the windshield is a dual sensor that registers the intensity and angle of incidence of sunlight on the vehicle. According to the intensity, the registered values are also used for the control loops of the climate control. If the sunlight falls on one side only, an appropriate temperature difference is set between the left and right target temperatures.

The three-zone comfort automatic air conditioning includes a pollutant sensor for calculating the pollutant concentration; the values measured are used to close the fresh air flap and shut off the outside air supply completely if necessary.
A dew point sensor in this variant allows the refrigerant compressor to be controlled specifically according to requirements.

Ventilation

The cross sections in the areas of the air intake, the air ducts, the low-drag center air vents and the air conditioner housing have been optimized to minimize noise from the ventilation system. Additional soundproofing foam inserts in the air conditioner housing and in the center air vents significantly improve noise levels compared with the predecessor model series.

The air outlet openings have been enlarged to provide less drafty but more effective ventilation.

A so-called ram air flap in the intake of the air conditioner housing steplessly throttles the fresh air cross section in order to provide constant air outlet speeds from the vents at high vehicle speeds.

The glove compartment is cooled as standard. The ventilation can be regulated by means of a separate control wheel on the left near the top of the glove box.

P83.10-2687-00

Interior climate control air outlets

Climate control

AC operating units

The operating units of the THERMATIC two-zone automatic air conditioning and the THERMOTRONIC three-zone comfort automatic air conditioning have been completely redesigned. Modifications have been made to the styling and to the controls.

The new operating units are modular in design.
The rocker switches at the bottom of the operating units control the following functions:

- Interior temperature for driver and front passenger
- Blower output in various stages
- Air distribution in the desired areas of the vehicle
- Air flow via various ventilation modes, "Diffuse", "Medium" and "Focussed"
  (with THERMOTRONIC)

The ventilation modes allow the air flow and air distribution to be adjusted more specifically.

- "Diffuse" air flow: The air flow is kept relatively low and is not directed at the occupants if possible.
- "Medium" air flow: The air flow is approximately the same as in conventional automatic mode.
- "Focussed" air flow: The air flow is kept slightly higher and more focussed.

In the middle across the full width of each operating unit is the display, where the settings of the automatic air conditioning are shown.

Note

Each ventilation mode can only be selected in automatic mode.

P83.40-4295-00

THERMATIC two-zone automatic air conditioning

The upper portion of the operating units is separated from the display by a chrome bar and consists of a row of pushbuttons. Above each button is the associated function LED. In vehicles with three-zone comfort automatic air conditioning, the AC operating unit also contains a function key marked "REST". The row of buttons is mainly used to operate functions that are switched on and off.

A new button in the row is the "ZONE" button. Pressing this button resets all the front passenger's custom air conditioner settings to the driver's settings and the associated LED indicator above the button goes out. In vehicles with THERMOTRONIC, this also resets the temperature settings in the rear passenger compartment. If a setting for the passenger side or in the rear is changed, this is shown by the lighting of the LED indicator above the "ZONE" button.

Vehicles equipped with three-zone comfort automatic air conditioning have a separate AC operating unit installed in the rear compartment in addition to the left / right separation. The rear AC operating unit is installed at the end of the center console and is used to regulate the temperature and air flow in the rear compartment of the vehicle.

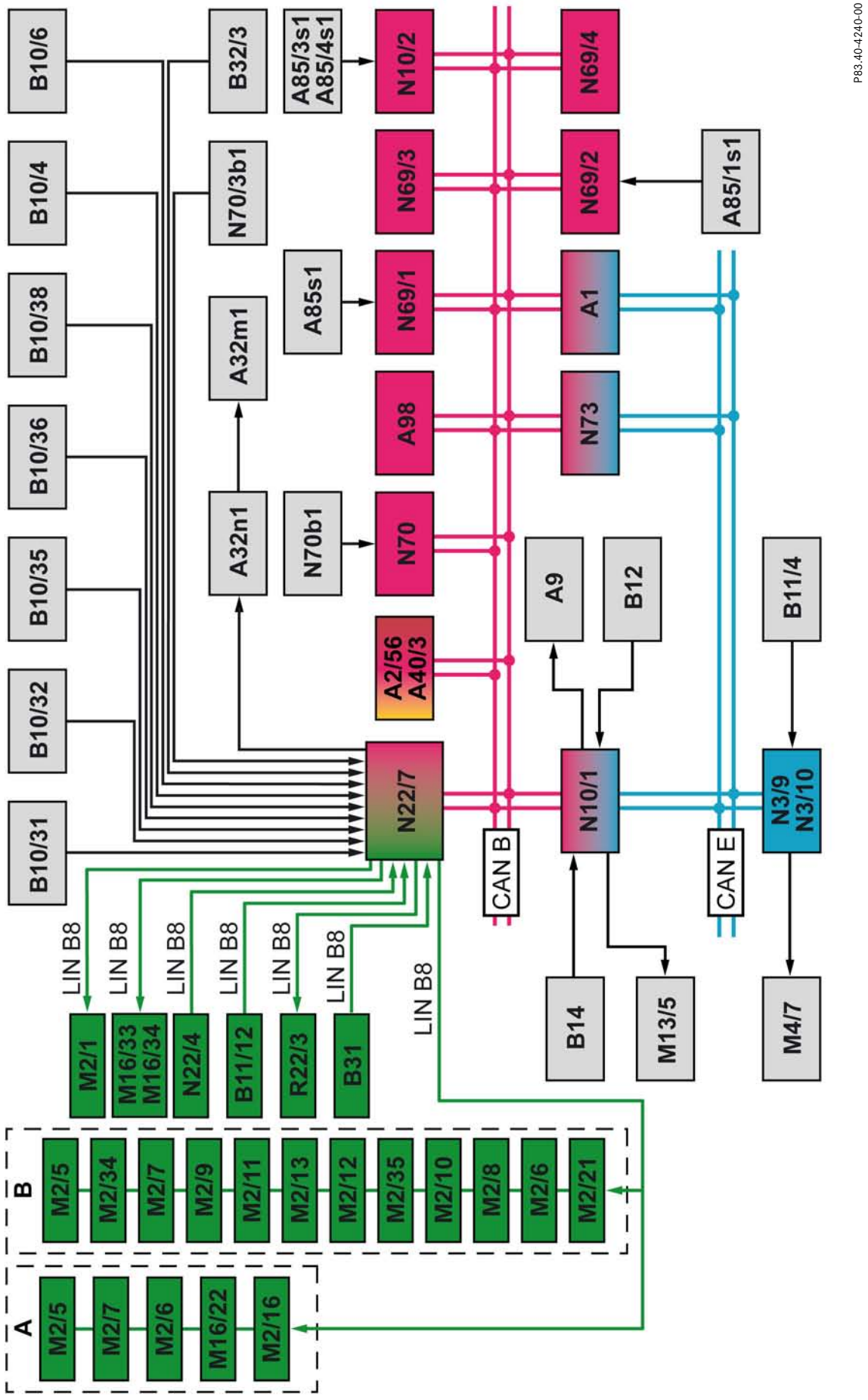
P83.40-4297-00

Rear AC operating unit

P83.40-4296-00

THERMOTRONIC three-zone automatic air conditioning

Climate control



Block diagram of climate control

Legend for block diagram of climate control

A1	*Instrument cluster*
A2/56	*Radio with Auto Pilot System*
A9	*Refrigerant compressor*
A32m1	*Blower motor*
A32n1	*Blower regulator*
A40/3	*COMAND controller unit*
A85s1	*Left front door rotary tumbler switch*
A85/1s1	*Right front door rotary tumbler switch*
A85/3s1	*Left rear door rotary tumbler switch*
A85/4s1	*Right rear door rotary tumbler switch*
A98	*Panoramic sliding sunroof control module (with code (413))*
B10/4	*Interior temperature sensor*
B10/6	*Evaporator temperature sensor*
B10/31	*Left side air vent air outlet temperature sensor*
B10/32	*Right side air vent air outlet temperature sensor*
B10/35	*Left front footwell vent air outlet temperature sensor*
B10/36	*Right front footwell vent air outlet temperature sensor*
B10/38	*Rear footwell vent air outlet temperature sensor (with code (581))*
B11/4	*Coolant temperature sensor*
B11/12	*Dew point sensor (with code (581))*
B12	*Refrigerant pressure sensor*
B14	*Outside temperature sensor*
B31	*Pollutant sensor (with code (581))*
B32/3	*Sun sensor*
M2/1	*Rear blower motor (with code (581))*
M2/5	*Fresh air/recirculated air flap actuator motor*
M2/6	*Left blend air flap actuator motor*
M2/7	*Right blend air flap actuator motor*
M2/8	*Left defroster flap actuator motor (with code (581))*
M2/9	*Right defroster flap actuator motor (with code (581))*
M2/10	*Left footwell flap actuator motor (with code (581))*
M2/11	*Right footwell flap actuator motor (with code (581))*
M2/12	*Left center air vent flap actuator motor (with code (581))*
M2/13	*Right center air vent flap actuator motor (with code (581))*
M2/16	*Defroster flap actuator motor (with code (581))*
M2/21	*Diffusor flap actuator motor (with code (581))*
M2/34	*Ram air flap actuator motor (with code (581))*
M2/35	*Rear blend air flap actuator motor (with code (581))*
M4/7	*Engine and air conditioning fan motor with integrated control*
M13/5	*Coolant circulation pump*
M16/22	*Air distribution flap actuator motor (without code (581))*
M16/33	*Left B-pillar air distribution actuator motor (with code (581))*
M16/34	*Right B-pillar air distribution actuator motor (with code (581))*
N3/9	*CDI control unit (with diesel engine)*
N3/10	*ME-SFI [ME] control unit (with gasoline engine)*
N10/1	*Front SAM control unit with fuse and relay module*
N10/2	*Rear SAM control unit with fuse and relay module*
N22/4	*Rear automatic air conditioning operating unit (with code (581))*
N22/7	*Automatic air conditioning control and operating unit*
N69/1	*Left front door control unit*
N69/2	*Right front door control unit*
N69/3	*Left rear door control unit*
N69/4	*Right rear door control unit*
N70	*Overhead control panel control unit (with code (414))*
N70b1	*Interior temperature sensor with integrated fan (with code (414))*
N70/3b1	*Interior temperature sensor with integrated fan (without code (414))*
N73	*Electronic ignition lock control unit*
R22/3	*PTC heater booster (with diesel engine)*
A	*without code (581) Comfort automatic air conditioning*
B	*with code (581) Comfort automatic air conditioning*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
LIN B8	*Climate control LIN*

Sliding roof

Tilting / sliding roof, with code (414)

The optionally available electric tilting / sliding roof is equipped with anti-pinch protection and is available only in glass.

As before, the tilting / sliding roof is opened or closed using the switch in the overhead control panel.

The "automatic operation" control function is new. The switch is pressed in the "Open" direction beyond an actuation point and released. This causes the tilting / sliding roof to move to the most recently set position before it was closed. If a different position is required, the switch must be pressed in the desired direction again.

If the tilting / sliding roof is open and the switch is pressed beyond the actuation point in the "Close" direction, the roof is closed automatically. If the tilting / sliding roof is obstructed while closing, the sequence is aborted by the excess force limiter function and the glass panel is reversed a short distance. This prevents fingers from being accidentally trapped in the closing roof.

Panoramic sliding sunroof, with code (413)

A further item of special equipment is an externally operating panoramic sliding sunroof. The distinguishing feature is the continuous glass surface extending from the windshield to the C-pillar with a trim strip on each side that blends with the all-glass look.

The outer skin of the panoramic sliding sunroof comprises three separate elements made of safety glass:

- A fixed glass roof panel at the front
- A moving glass roof section in the middle
- A fixed glass roof section at the rear

The entire module is based on a steel frame that acts as an assembly carrier, which is lowered onto and bonded with the roof frame of the bodyshell after the bodyshell has been painted.

The control logic of the panoramic sliding sunroof is identical to that of the tilting / sliding roof, including the anti-pinch protection function.

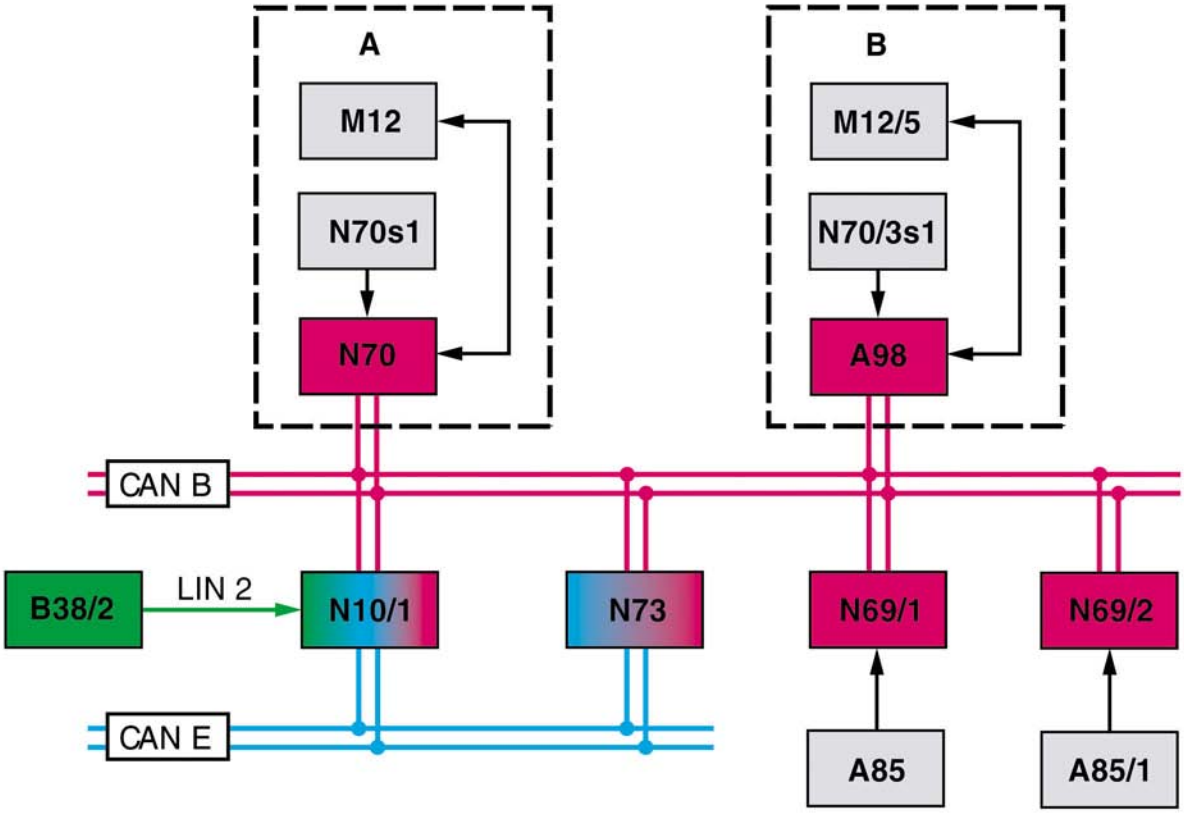
For protection against sunlight the glass areas can be covered on the inside with two electrically powered roller blinds. The blinds are located in the center bar of the modular roof and also feature an anti-pinch protection function.

P77.20-2739-00

Tilting / sliding roof

P77.21-2277-00

Panoramic sliding sunroof



P77.20-2736-00

Block diagram of tilting / sliding roof and panoramic sliding sunroof

A85	*Left front door lock*
A85 / 1	*Right front door lock*
A98	*Panoramic sliding sunroof control module (with code (413))*
B38 / 2	*Rain / light sensor*
M12	*Tilting / sliding roof drive unit (with code (414))*
M12 / 5	*Panoramic sliding sunroof roller sun blind drive unit (with code (413))*
N10 / 1	*Front SAM control unit with fuse and relay module*
N69 / 1	*Left front door control unit*
N69 / 2	*Right front door control unit*
N70	*Overhead control panel control unit (with code (414))*
N70s1	*Tilting / sliding roof switch (with code (414))*
N70 / 3s1	*Panoramic sliding sunroof switch (with code (413))*
N73	*Electronic ignition lock control unit*
A	*Tilting / sliding roof*
B	*Panoramic sliding sunroof*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
LIN 2	*Wiper / inside rearview mirror LIN*

Telematics

New Telematics Generation 4

The New Telematics Generation 4 provides a new control and display concept as well as new functions and is based on the systems in model series 204. The emphasis is on matters of ergonomics, ease of use and safety. In spite of the large number of functions, the complexity of operating them remains as low as possible.

On the market launch of model series 212 the following audio systems are installed depending on the equipment variant:

For ECE:

- Audio 20
- Audio 20 including CD changer, code (510)
- Audio 50 APS, code (525)
- Audio 50 APS including DVD changer, code (511)
- COMAND APS, code (527)
- COMAND APS including DVD changer, code (512)

For Japan, code (498):

- COMAND APS, code (527)

Innovations of Telematics Generation 4

- New control structure via the audio / COMAND control panel in the center console and on the audio units and the multifunction steering wheel
- Separately located high-resolution 5.8" display on the instrument panel
  (with Audio 20 and Audio 50 APS)
- Separately located high-resolution 7" display on the instrument panel
  (with COMAND APS)
- New colors and graphics in the display
- Map navigation with map material subdivided into country groups and stored in the internal read-only memory (with Audio 50 APS)
- Stations broadcasting in Digital Audio Broadcasting (DAB) format can now be received throughout the ECE area (digital radio reception). An FM switchover function allows DAB radio mode to receive digital or analog radio signals. DAB radio mode is available with special equipment code (537) for all audio units with MOST connection.
- Bluetooth hands-free system
- Improved voice control system (VCS) LINGUATRONIC (with Audio 50 APS with DVD changer and COMAND APS)
- MusicRegister in COMAND APS for saving audio files
- Components that were previously decentralized, such as the CD / DVD changer, Bluetooth control unit, voice control module and navigation module, are now integrated in the audio unit depending on equipment installed
- Standard equipment includes an AUX IN jack installed in the glove compartment for connecting external devices (e.g. MP3 player) with the audio system in the vehicle. The AUX IN jack is omitted on vehicles with the media interface special equipment, code (518).

P82.60-7376-00

A2 Radio

Audio 20 (standard)

Basic equipment

- 5.8" color display screen
- Radio with twin tuner
- CD drive (audio)
- Audio amplifier
- MP3 capability
- AUX IN jack in glove compartment
- Bluetooth capability for telephone system

Special equipment

- Comfort telephony
- Rear entertainment

Audio 20 including CD changer, code (510)

Additional basic equipment compared with Audio 20

- CD changer (audio)
- MOST bus connection

Special equipment

- Digital radio reception (DAB)
- Comfort telephony
- Surround sound system
- Media interface
- Rear entertainment

Audio equipment

P82.61-4071-00

A2/56 Radio with Auto Pilot System

Audio 50 APS, code (525)

Basic equipment

- 5.8" color display screen
- Radio with twin tuner and additional RDS/TMC tuner
- DVD drive (audio)
- Audio amplifier
- Map navigation
- Internal read-only memory with map material subdivided into country groups
- MP3 capability
- AUX IN jack in glove compartment
- Bluetooth capability for telephone system
- MOST bus connection

Audio 50 APS including DVD changer, code (511)

Additional basic equipment compared with Audio 50 APS

- DVD changer (audio)
- LINGUATRONIC

Special equipment for both variants

- Digital radio reception (DAB)
- Comfort telephony
- Surround sound system
- Media interface
- Rear entertainment

P82.87-3042-00

A40/3 COMAND controller unit

COMAND APS, code (527)

Basic equipment

- 7" color display screen
- Radio with twin tuner and additional RDS / TMC tuner
- DVD drive (audio and video)
- Audio amplifier
- Hard disk map navigation
- MusicRegister
- MP3 capability
- LINGUATRONIC
- AUX IN jack in glove compartment
- Bluetooth capability for telephone system
- MOST bus connection

COMAND APS including DVD changer, code (512)

Additional basic equipment compared with COMAND APS

- DVD changer (audio and video)

Special equipment for both variants

- Digital radio reception (DAB)
- Comfort telephony
- Surround sound system
- Media interface
- TV reception
- Rear entertainment
- Reversing camera image in color display

Audio equipment

P82.87-3007-00

A40/3 COMAND controller unit

COMAND APS Japan, code (498), standard

Basic equipment

- 7" color display screen
- 3-band radio tuner
- DVD drive (audio and video)
- Audio amplifier
- Hard disk map navigation
- MusicRegister
- MP3 capability
- LINGUATRONIC
- AUX IN jack in glove compartment
- Comfort telephony
- TV reception
- Reversing camera image with guidelines in color display
- MOST bus connection

Special equipment

- Surround sound system
- Media interface
- Rear entertainment

Navigation

The launch of the Telematics Generation 4 also sees the introduction of new and extended functions in the field of navigation. Through the use of read-only memory and hard disk storage, navigation with the Audio 50 APS and COMAND APS is now significantly faster than before.

The two audio units allow the user to select a destination via special points of interest. Navigation instructions are given by means of high-quality voice output and a 2D map display (Audio 50 APS) or by a generated 3D representation (COMAND APS) with road sign information on freeways, intersection zoom, lane recommendations and direction arrows in the instrument cluster.
The range to destination and expected arrival time are also displayed.

It is also possible to choose routes avoiding toll roads and to display symbols for refueling stations, restaurants and car parks en route.

The COMAND APS unit features the following innovations in the field of navigation:

- Graphic selection of traffic jam symbols on the map
- Topographical map
- Representation of selected buildings as images on the map
- Map locations can be set as waypoints

Entertainment

MusicRegister

With its integral hard disk, the COMAND APS unit is capable of saving files in MP3 format and storing them in specific locations via a MusicRegister. The files can be transferred from a CD / DVD or a PCMCIA card onto the hard drive and played back via the MusicRegister.

With the functionality of the MusicRegister, information about artists, track names, track lengths and music genre can be found on the "Gracenote" database and displayed on the 7" display.

AUX IN jack

Regardless of the audio unit fitted, an AUX IN jack is installed in the glove compartment as standard. This can be used to connect external devices (e.g. MP3 player) with the audio system of the vehicle.

Note

The AUX IN jack in the glove compartment is omitted in vehicles with the media interface special equipment, code (518).

Telephone

Suitable mobile phones can be connected to the vehicle's audio system via the standard Bluetooth interface in vehicles with basic telephony, or via a universal interface in vehicles with the optional comfort telephony, code (386) (suitable mobile phones must support the Hands Free Profile (HFP) 1.0 or 1.5).
In both variants the mobile phone can be operated from the multifunction steering wheel and via the buttons on the relevant audio unit.

Basic telephony via Bluetooth interface

During Bluetooth operation, the mobile phone is not connected to the external vehicle antenna and is not recharged.
There is read access to the phone book of the mobile phone if it supports the Bluetooth Phonebook Access Profile (PBAP). Otherwise the entries in the phone book of the mobile phone can only be transferred to the audio unit by means of business cards.

Shutdown behavior

The mobile phone cannot be switched on or off via Bluetooth. The mobile phone remains on even when the data bus is idle. Calls are ended when the ignition key is removed, in order to ensure that any connections continuing unnoticed are terminated.

Comfort telephony via universal interface

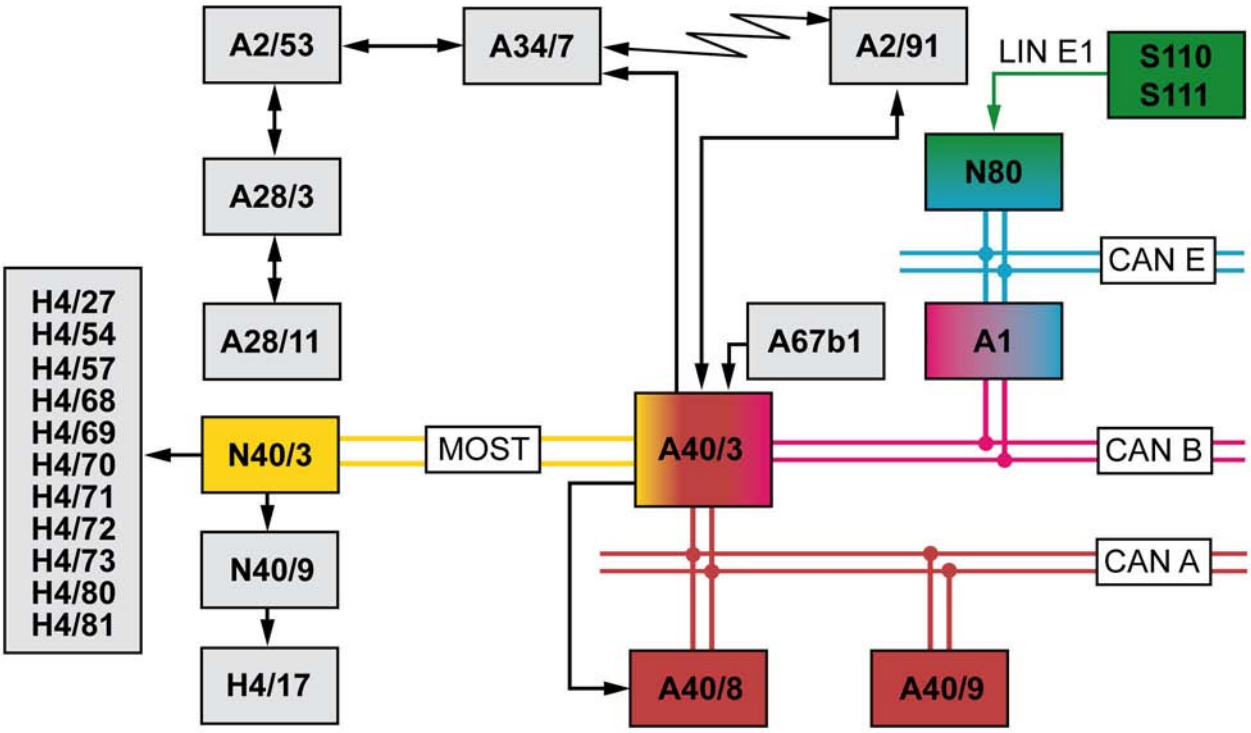
The universal interface is located in the center console and connects the mobile phone to the vehicle via a suitable cradle. Integrating the mobile phone into the on-board electrical system via the cradle has the advantage that the external vehicle antenna can be used and the battery of the mobile phone can be recharged by the on-board electrical system.
Operating the phone via the universal interface allows the phone book to be transferred to the audio unit. The entries can be downloaded both from the memory of the mobile phone and from the SIM card.

Shutdown behavior

The shutdown behavior of a plugged-in mobile phone when the ignition key is removed depends on the behavior of the cradle associated with it. Generally, new cradles do not shut down.

An overview of the cradles and their shutdown behavior can be found at:

http://www.mercedes-benz-mobile.com



Block diagram of telephone system with COMAND controller unit and sound system (except Japan)

A1	*Instrument cluster*
A2/53	*Mobile phone and stationary heater radio remote control antenna splitter*
A2/91	*Bluetooth antenna*
A28/3	*E-net compensator (with code (386))*
A28/11	*Multifunction antenna (with code (386))*
A34/7	*Bluetooth module (with code (386))*
A40/3	*COMAND controller unit*
A40/8	*Audio/COMAND display*
A40/9	*Audio/COMAND control panel*
A67b1	*Hands-free system microphone*
H4/17	*Bass speaker*
H4/27	*Center instrument panel speaker*
H4/54	*Left rear surround speaker*
H4/57	*Right rear surround speaker*
H4/68	*Left front door sound system tweeter*
H4/69	*Right front door sound system tweeter*
H4/70	*Left rear door sound system tweeter*
H4/71	*Right rear door sound system tweeter*
H4/72	*Left front door sound system midrange and bass speakers*
H4/73	*Right front door sound system midrange and bass speakers*
H4/80	*Left rear door sound system midrange speaker*
H4/81	*Right rear door sound system midrange speaker*
N40/3	*Sound system amplifier control unit*
N40/9	*Rear bass speaker amplifier*
N80	*Steering column tube module control unit*
S110	*Left multifunction steering wheel button group*
S111	*Right multifunction steering wheel button group*
CAN A	*Telematics CAN*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
LIN E1	*Steering LIN*
MOST	*Media Oriented System Transport*

LINGUATRONIC

LINGUATRONIC voice control system (VCS)

The individual functions of the driver information system are called up and operated via the LINGUATRONIC voice control system (VCS). The VCS is integrated in the Audio 50 APS with DVD changer and the COMAND APS.
The new LINGUATRONIC generation features new functions and improved operating convenience.

The following functions can be activated by voice input:

- Whole-word entry of town and road names for navigation in the national language preset in the audio unit
- Control of the audio systems
- Making a telephone call by saying the telephone number out loud
- Operation of the audio system
  - Station select
  - Station save
  - Track search in CD or DVD audio mode
  - Control of DVD video mode
- Operation of TV mode (Japan)
- Calling up of the global address book

The inside rearview mirror contains a microphone unit consisting of two individual microphones. In conjunction with the digital signal processing function, the microphone unit allows speech to be specifically amplified while simultaneously suppressing ambient noise from other directions.

The voice control recognized compound spoken commands which can be entered without preliminary training and regardless of speaker.

If the voice control system is operated incorrectly or fails to recognize a command, it provides acoustic feedback and asks the user to repeat.

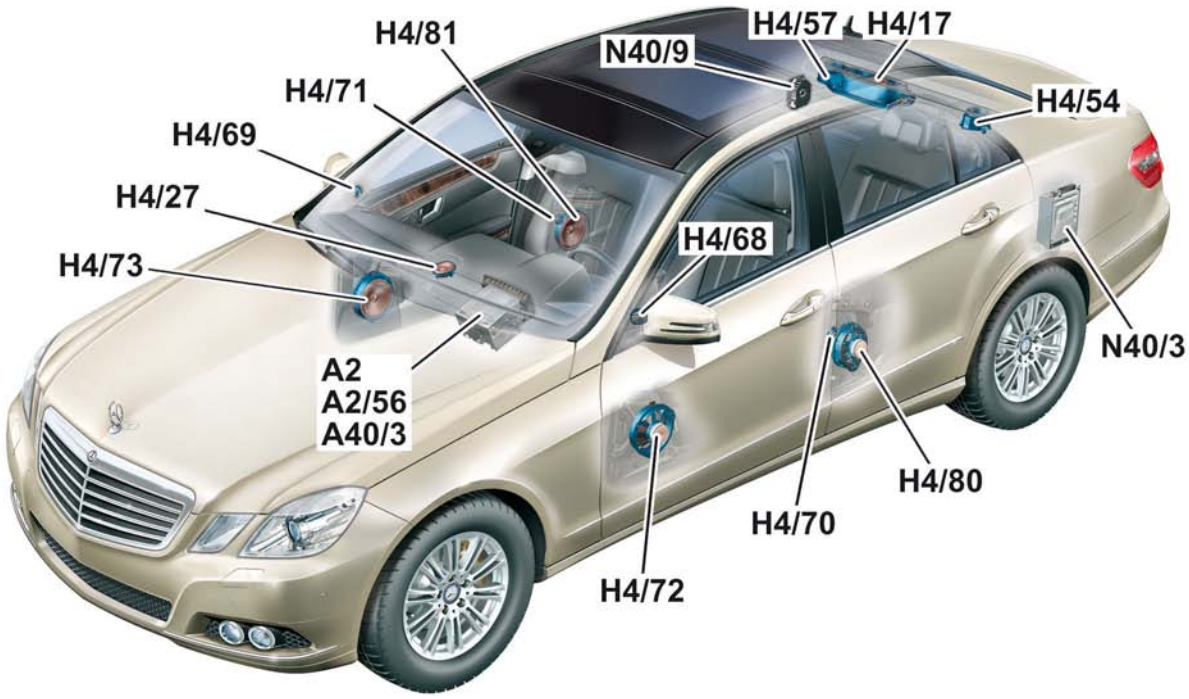
Surround sound system, code (810)

The Harman / Kardon LOGIC 7 surround sound system with 11 speakers and one subwoofer is available as special equipment with Telematics Generation 4.

Compared with the predecessor model series, the sound system now delivers a higher power output of 580 W (previously 420 W) and a more intensive sound experience thanks to Dolby Digital 5.1 surround sound.

Note

The surround sound system is only available in vehicles with the Audio 20 audio unit with CD changer with MOST bus connection or higher.



P82.62-3415-00

Harman / Kardon LOGIC 7 surround sound system

A2	*Radio*
A2 / 56	*Radio with Auto Pilot System*
A40 / 3	*COMAND controller unit*
H4 / 17	*Bass speaker*
H4 / 27	*Center instrument panel speaker*
H4 / 54	*Left rear surround speaker*
H4 / 57	*Right rear surround speaker*
H4 / 68	*Left front door sound system tweeter*
H4 / 69	*Right front door sound system tweeter*
H4 / 70	*Left rear door sound system tweeter*
H4 / 71	*Right rear door sound system tweeter*
H4 / 72	*Left front door sound system midrange and bass speakers*
H4 / 73	*Right front door sound system midrange and bass speakers*
H4 / 80	*Left rear door sound system midrange speaker*
H4 / 81	*Right rear door sound system midrange speaker*
N40 / 3	*Sound system amplifier control unit*
N40 / 9	*Rear bass speaker amplifier*

Rear entertainment

Rear entertainment, code (864)

For the first time a rear entertainment package is available as special equipment for the rear seat row in model series 212.

The package consists of the following components:

- CD / DVD drive and AUX IN jack under the rear bench seat or, with rear comfort seats, in the center console between the individual seats
- Two 8" displays mounted on the backs of the driver and front passenger head restraints
- Two wireless infrared headsets with integrated volume controllers
- One infrared remote control for both rear displays

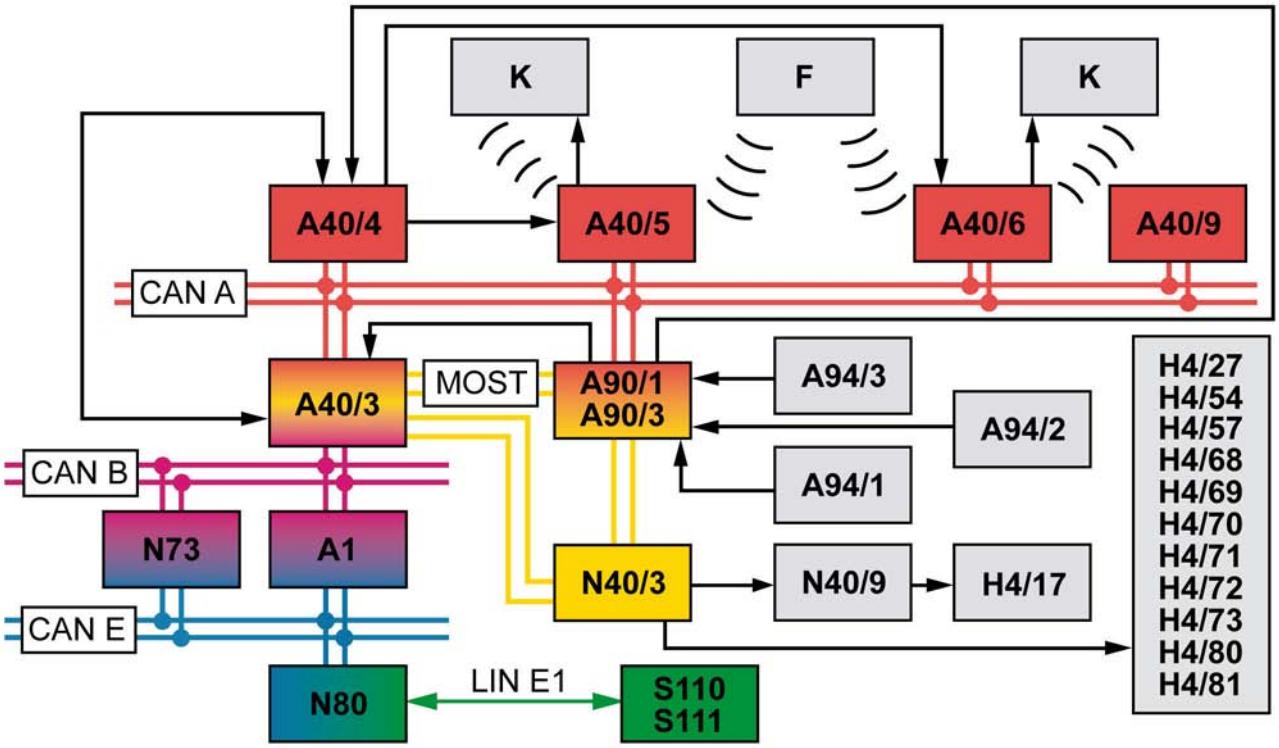
On the rear entertainment system the video or audio sources loaded in the CD / DVD drive can be heard or watched on one or both of the displays.

In addition a TV tuner can be ordered, which can also be controlled via the rear displays of the rear entertainment system.

Other external audio / video components or e.g. a games console can be connected via the AUX IN jack on the CD / DVD drive.

P82.90-2418-00

Rear entertainment

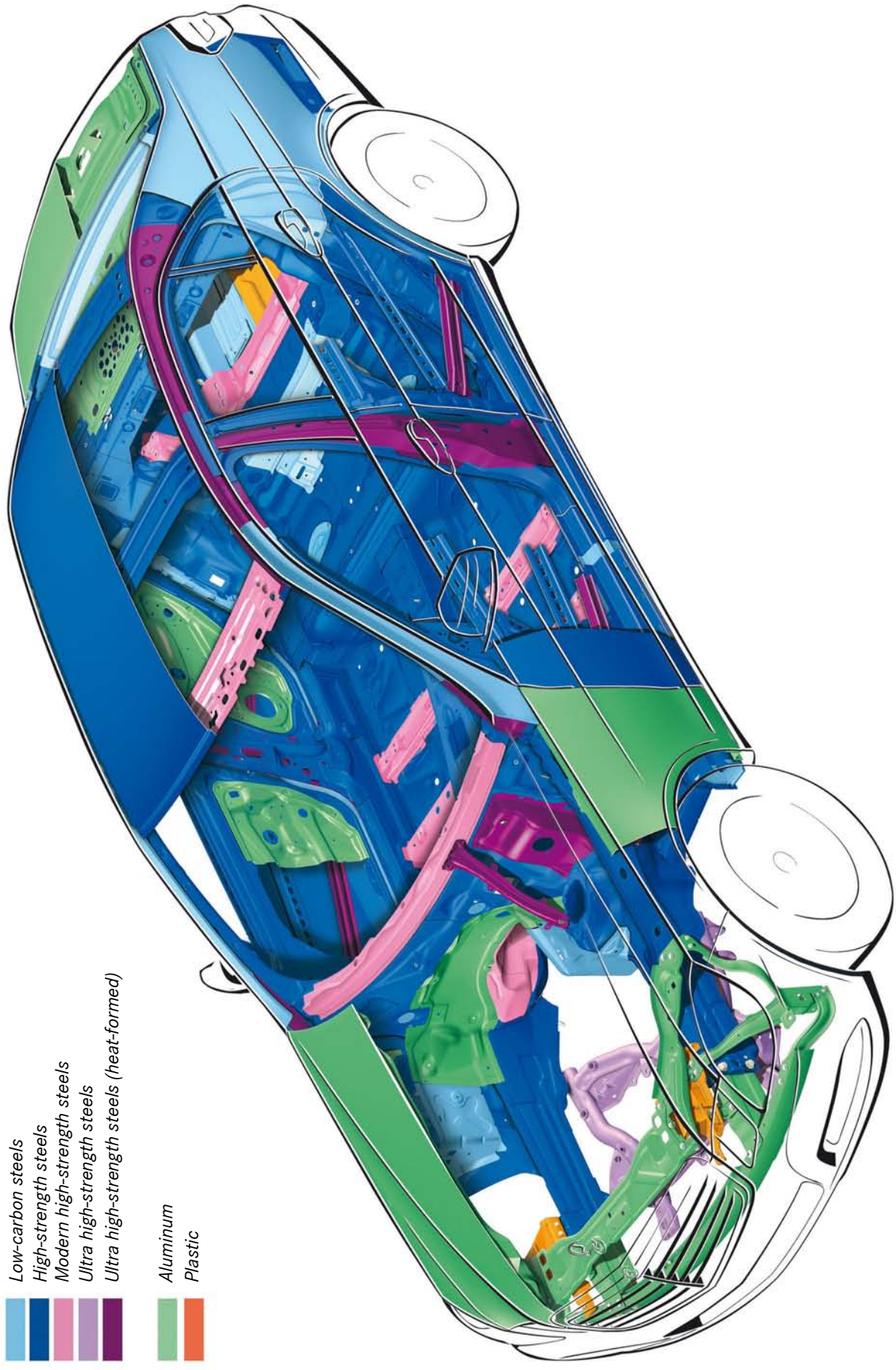


P82.90-2413-00

Block diagram of rear entertainment with COMAND controller unit and sound system

A1	*Instrument cluster*
A40/3	*COMAND controller unit*
A40/4	*DVD player*
A40/5	*Left rear display*
A40/6	*Right rear display*
A40/9	*Audio/COMAND control panel*
A90/1	*TV tuner (analog/digital)*
A90/3	*TV digital tuner*
A94/1	*TV 1 antenna amplifier*
A94/2	*TV 2 antenna amplifier*
A94/3	*TV 3 antenna amplifier*
H4/17	*Bass speaker*
H4/27	*Center instrument panel speaker*
H4/54	*Left rear surround speaker*
H4/57	*Right rear surround speaker*
H4/68	*Left front door sound system tweeter*
H4/69	*Right front door sound system tweeter*
H4/70	*Left rear door sound system tweeter*
H4/71	*Right rear door sound system tweeter*
H4/72	*Left front door sound system midrange and bass speakers*
H4/73	*Right front door sound system midrange and bass speakers*
H4/80	*Left rear door sound system midrange speaker*
H4/81	*Right rear door sound system midrange speaker*
N40/3	*Sound system amplifier control unit*
N40/9	*Rear bass speaker amplifier*
N73	*Electronic ignition lock control unit*
N80	*Steering column tube module control unit*
S110	*Left multifunction steering wheel button group*
S111	*Right multifunction steering wheel button group*
CAN A	*Telematics CAN*
CAN B	*Interior CAN*
CAN E	*Chassis CAN*
LIN E1	*Steering LIN*
MOST	*Media Oriented System Transport*
F	*Remote control*
K	*Headphones*

Overview of materials



P60.00-2840-00

Overview of bodyshell materials in the W212

All the components of the bodywork have been redesigned for model series 212.

The most important features considered in the development of the bodyshell of the new E-Class include:

- Further improvements in the rigidity and strength of the passenger cell
- Specifically developed deformation zones in the front and rear end structures
- Ease of repair due to detachable front and rear end assemblies with a simultaneous reduction in the weight through the use of an extruded aluminum section (at the front) and high-strength steel (at the rear)
- Good installation conditions for drive assemblies and the front axle thanks to the bolted frame-type integral support
- The use of MIG soldering means that MAG weld seams can be dispensed with completely. This has significantly improved the quality of manufacture and resistance to corrosion
- The torsional stiffness of the bodyshell has been increased by 31%
- The proportion of high-strength steel sheet in the bodyshell has risen from 47% to 72% by weight, with newly developed steel grades being increasingly used

Sheet steel was selected as the material for the vast majority of the bodyshell. The front fenders, the engine hood and the trunk lid are made of aluminum. The proportion of aluminum in the bodyshell is therefore 8% by weight.

As in model series 204, a high-strength steel frame-type integral support holding the front axle, steering and engine is bolted onto the front longitudinal members.

The spare tire well is made of glass fiber matting-reinforced thermoplastics (GMT).

Front end

The front structure of model series 212 is a front end assembly mounted on the vehicle, which consists of:

- An extruded aluminum section
- A single-part aluminum crash box connecting the front longitudinal members
- A multi-piece framework of aluminum sheet for holding the headlamps, the bumper, the washer fluid reservoir and the engine hood catches, as well as two supports made of fiber-reinforced plastic

The entire front end assembly is bolted to the front end structure, as are the individual components of the front end assembly to each other. If any parts are damaged, this makes it possible to replace them inexpensively and with no welding required.

Passenger cell

The core of the body safety concept is the high-strength passenger cell in the form of a safety cage. Its high strength under the stresses of an accident (frontal, side-on and rear-end collisions as well as roll-overs) is primarily due to:

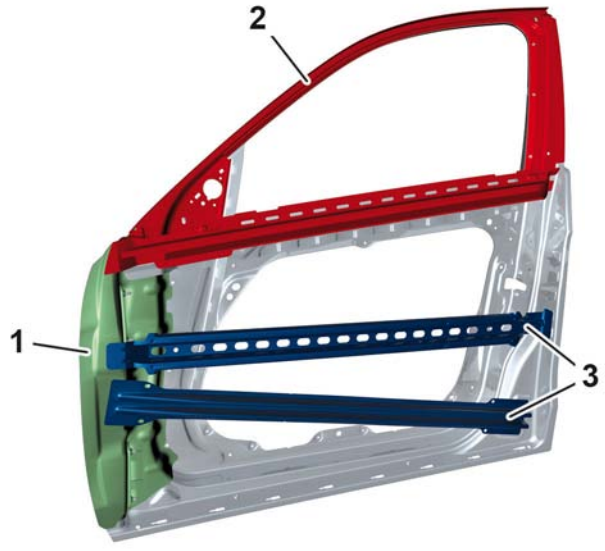
- The increased use of high-strength, modern high-strength, ultra high-strength and heat-formed ultra high-strength sheet steel and panels with graduated wall thicknesses
- Components and structural zones susceptible to heavy loads in accidents which incorporate materials and sheet thicknesses designed to resist these loads
- Optimized shapes and cross sections

Bodyshell components

Doors

The door shells, including the side window frames, incorporate an inner sheet steel shell with external reinforcements (rolled profile and deep-drawn parts). As in the current C-Class, the hinge-bearing panel is separate from the inner shell. This makes it possible to use a thicker panel to improve the distribution of forces in the area of the hinge with only a low weight penalty.

To improve the rigidity and strength of the doors, reinforcement profiles are welded on at the frames and at the beltline. The deformation depth in side-on collisions is reduced and dent resistance is improved by two additional reinforcements which run diagonally and in the longitudinal direction and which are spot-welded and glued into the doors.



P72.00-2195-00

Driver door shell

1 Hinge-bearing panel
2 Window frame and beltline reinforcements
3 Diagonal and longitudinal reinforcement profiles

Rear end

In the new E-Class sedan the locations of the independent multilink rear suspension, the fuel tank and the spare tire well are similar to those in the predecessor model. Nevertheless, the geometry of the body structures at the rear end is different. This applies particularly to the design of the structures in the vicinity of the through-loading hole in the rear wall of the passenger cell, the rear longitudinal members, the spare tire well and the rear end assembly.

As in the predecessor model, a through-loading hole was planned into the bodyshell from the start, and in the W212 this equipment detail is offered as basic equipment.

The fasteners for the backrest and for the hinges and catches on the folding backrest (special equipment) are mounted on an all-round support structure which is welded to the inner shell of the side wall on both sides and to the floor panel at the bottom, and is clinched to the rear shelf at the top. This supporting structure further improves the torsional strength of the bodyshell.

To increase their strength, enhance their strain energy and improve their deformation behavior, the multi-part, high-strength steel rear longitudinal members have a cross section which is closed along their entire length with graduated sheet thicknesses, as in the predecessor model.

The rear end assembly consists of a steel flexural member with integral deformation zone.
Weight is optimized through the use of ultra high-strength steel, which is flexibly rolled so that the areas subject to the greatest loads are thicker than those under lower stress.

For reasons of weight and corrosion protection, plastic (glass fiber matting-reinforced thermoplastic) is used for the spare wheel well as in the predecessor model.

Floor

The floor of the passenger cell consists of a sheet metal part, with three parts connected to each other by laser welding prior to forming. The middle part is thicker and forms the transmission tunnel, acting as the backbone of the floor system. Additional solid tunnel reinforcements are placed on top. Full-length longitudinal floor members are now installed to improve force progression into the floor structure. To the left and right of the tunnel it is reinforced from the inside with:

- Reinforcements between the inner shell of the front longitudinal members and the tunnel, and between the tunnel and the side longitudinal members
- A rigid crossmember for mounting the seats and for lateral support on the tunnel in the event of a side collision
- A further crossmember in the area of the B-pillar

As in the predecessor model, the junction with the rear floor assembly is formed by a continuous rear seat crossmember with additional reinforcements which is extremely strong with regard to side collisions.

Corrosion protection

Long-term protection against corrosion is guaranteed by full galvanization of the steel body components. Structural areas that are particularly susceptible to corrosion are protected by additional cavity preservation.

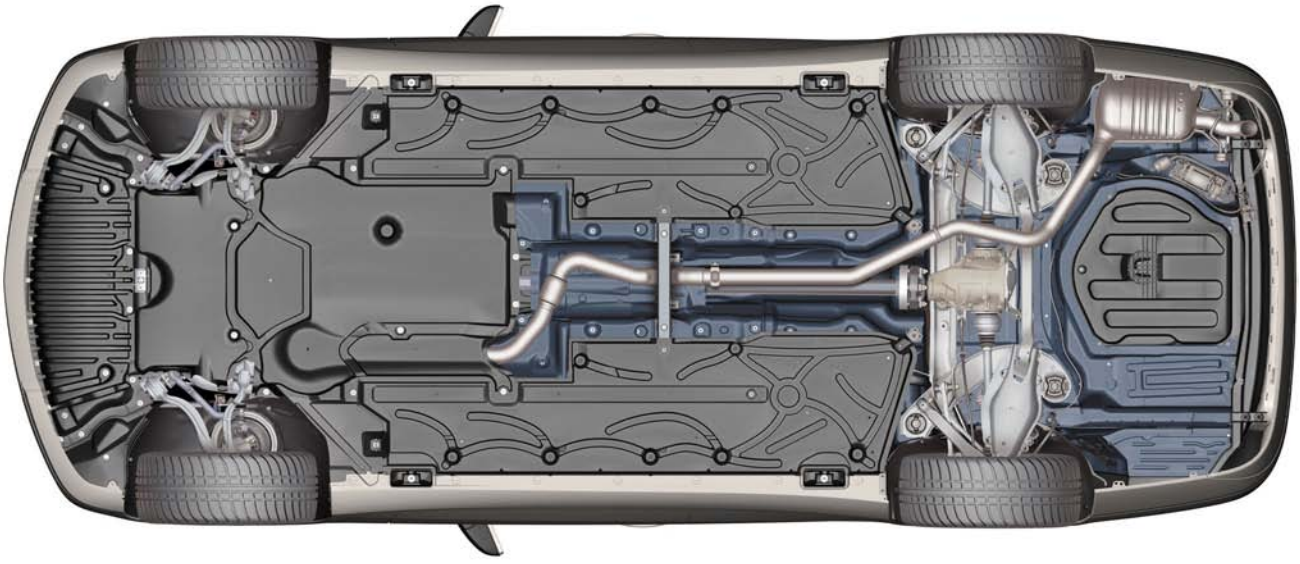
To supplement this, the following protective measures are used in addition to regular galvanizing in the manufacture of the sheet steel:

- Use of organically coated sheet steel
- Cataphoretic immersion primer bath
- Seam sealing

Underfloor protection

Because the underfloor area is entirely covered with penta laminate, it was possible to omit the PVC underfloor protection. The advantages are:

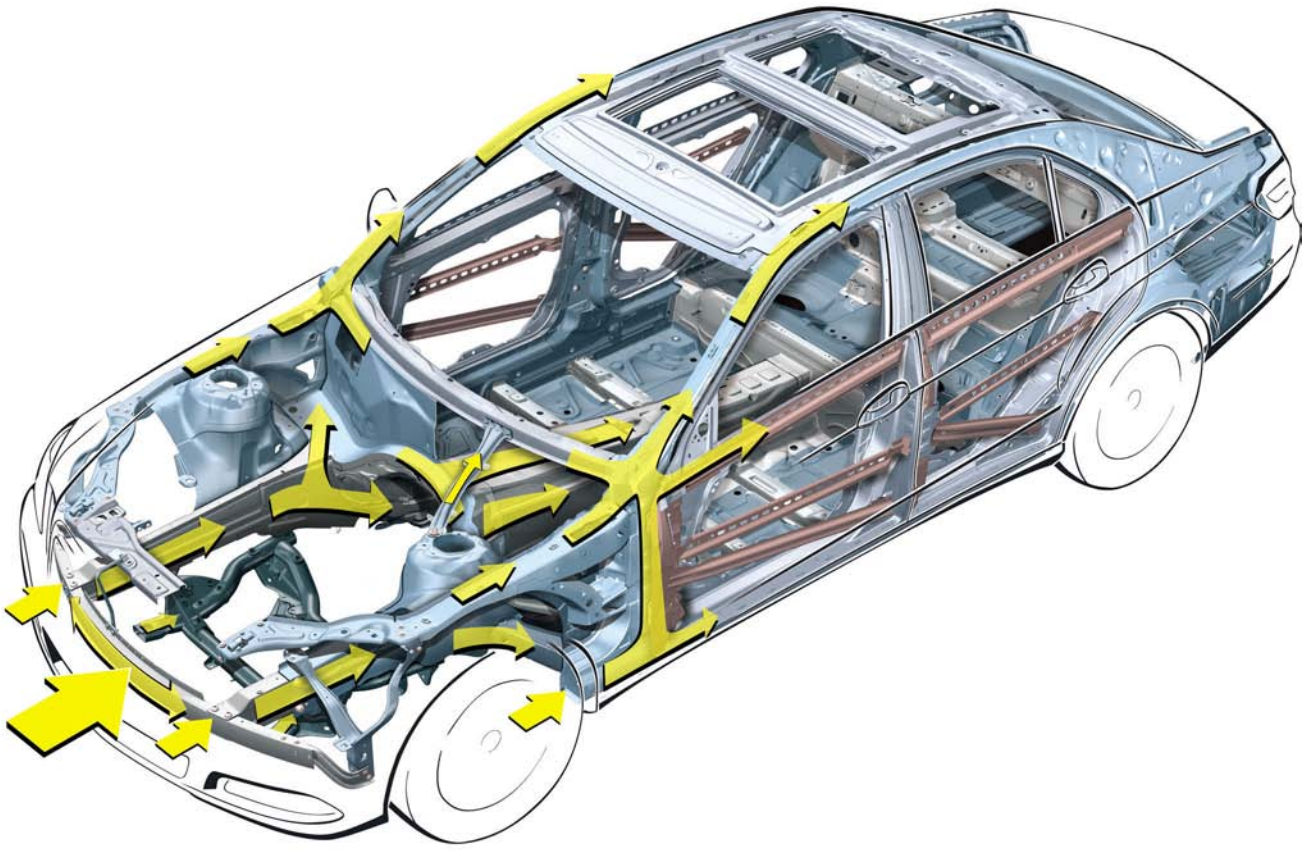
- Lower aerodynamic drag
- Interchangeability if damaged (ease of repair)
- Detachability for vehicle recycling
- Increased impact resistance (stone chipping protection)



P61.45-2049-00

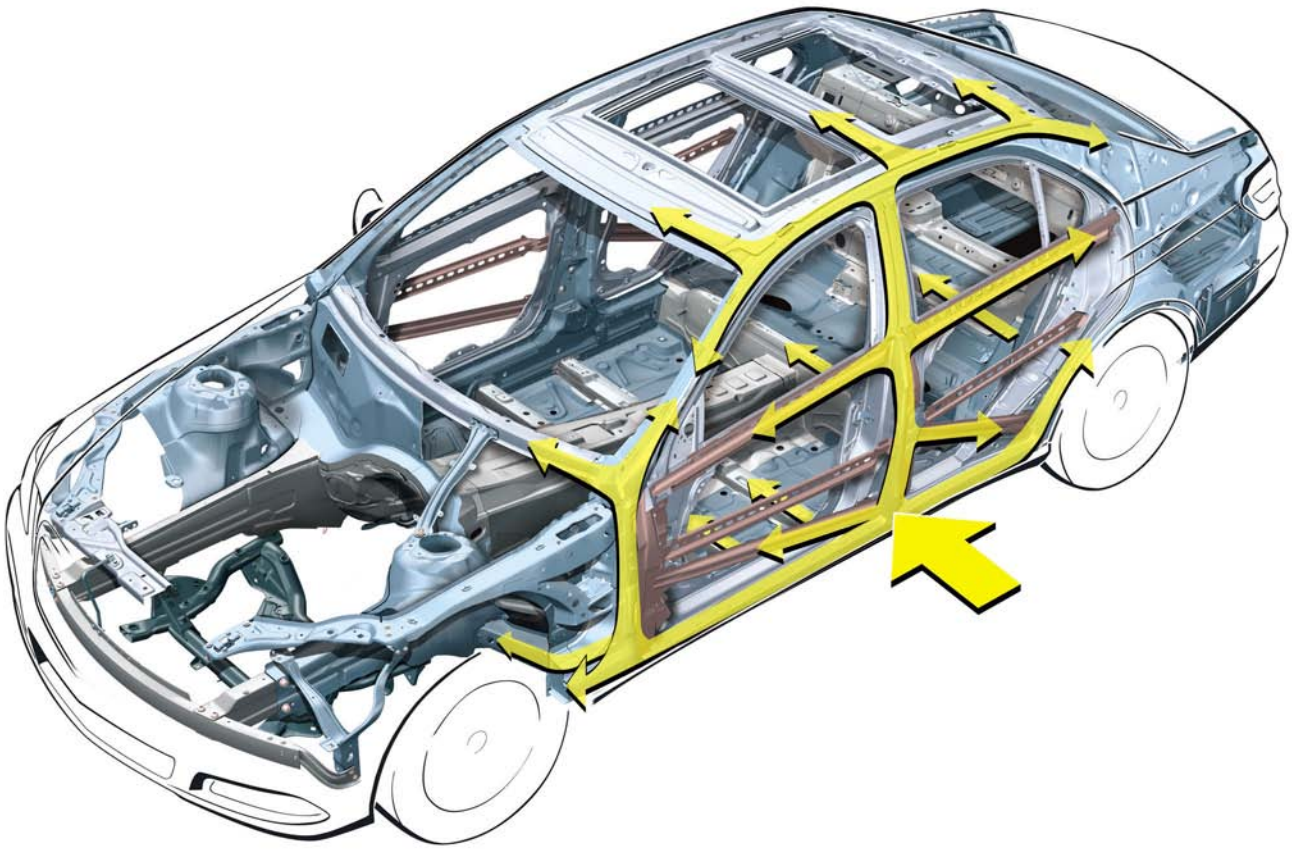
Underfloor paneling

Force progression during an accident



60.00-2841-00

Force progression in a frontal impact

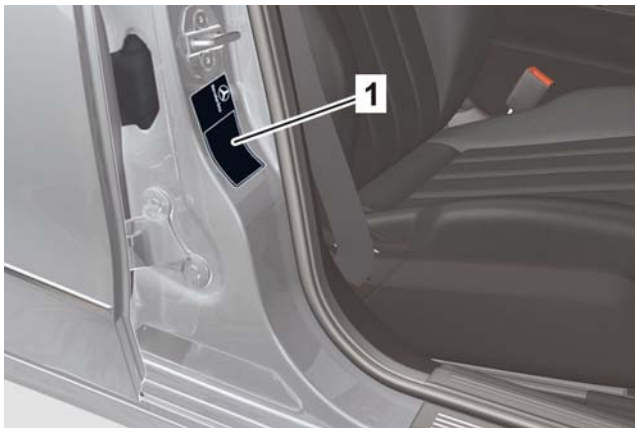


P60.00-2842-00

Force progression in a side-on impact

Model plate and vehicle identification number (VIN)

The model plate is mounted on the right side in the door frame.



P00.01-3760-00

Location of model plate

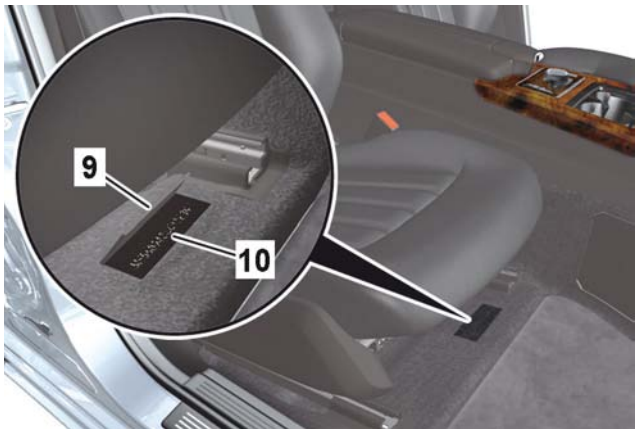
1 *Model plate*
2 *Vehicle manufacturer*
3 *Vehicle identification number (VIN)*
4 *Permissible gross vehicle weight*
5 *Permissible traction weight*
6 *Permissible front axle load*
7 *Permissible rear axle load*
8 *Paint code number*
9 *Cover*
10 *Stamped vehicle identification number*

P00.01-3761-00

Example model plate

In addition to the model plate, the vehicle identification number (VIN) is also stamped into the bodywork. It is located at the bottom in front of the passenger seat on the seat crossmember.

To check the VIN, move the front passenger seat all the way back and flip up the cover in the floor covering. The vehicle identification number is now visible.



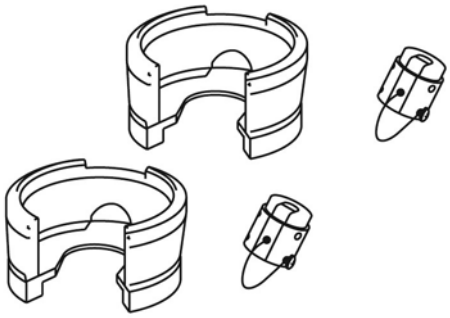
P00.01-3762-00

Location of stamped VIN

Suspension

Set of emergency buffers

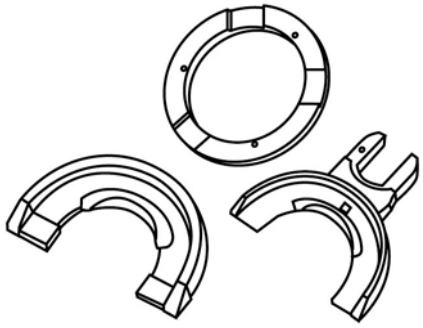
Use	Set of emergency buffers for front and rear for maneuvering the vehicle when the air suspension system is unpressurized (only in combination with an appropriate vehicle jack).
MB number	W212 589 00 31 00
FG	32
Set	B
Category	Passenger Car Basic Operation Mandatory – alternative / cooperation
Note	The set contains 4 ea. (2 ea. front and 2 ea. rear) in combination with hydraulic vehicle jack, maximum overall height (support plate) 80 mm, minimum lift height: 375 mm, load capacity: 2 t.



P58.20-2252-00

Adapter plate

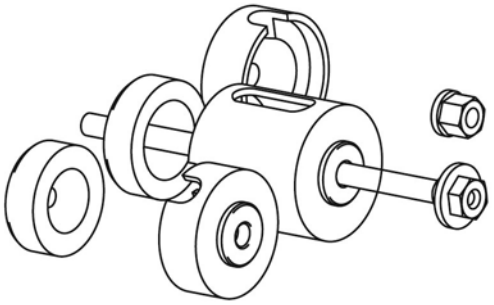
Use	Adapter plate including adapter ring and protective lining for clamping the front axle springs.
MB number	W212 589 00 63 00
FG	32
Set	B
Category	Passenger Car Basic Operation Mandatory – without exception ruling
Note	In combination with clamping plate W204 589 00 63 00.



P58.20-2257-00

Extraction and insertion tool

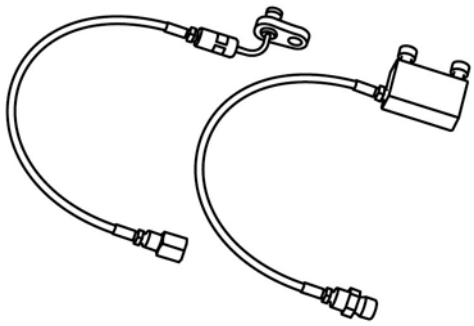
Use	For extracting and inserting the strut rod bearings.
MB number	W212 589 00 43 00
FG	33
Set	B
Category	Passenger Car Basic Operation Mandatory – recommendation / alternative
Note	In combination with W652 589 00 33 21, hand pump W652 589 00 33 23, hydraulic hose W001 589 51 33 00, hollow piston cylinder.



P58.20-2253-00

Test adapter

Use	Test adapter for pressure testing of the power steering pump.
MB number	W212 589 00 90 00
FG	46
Set	B
Category	Passenger Car Basic Operation Mandatory – without exception ruling
Note	In combination with tester W 124 589 06 21 00.

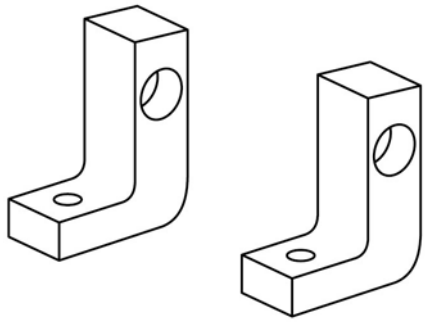


P58.20-2258-00

Body

Adapter

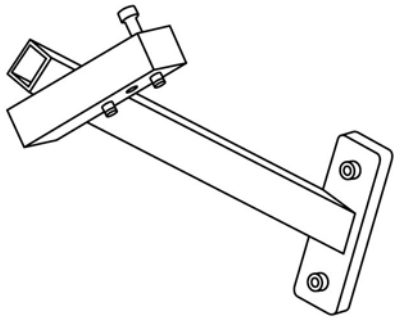
Use	Adapter for the welding device for checking and fastening the upper left and right longitudinal member levels for partial repairs.
MB number	W212 589 01 23 00
FG	62
Set	K
Category	Passenger Car Special Operation
Note	In combination with the welding device W204 589 01 23 00.



P58.20-2254-00

Device

Use	Device for fixing brake pedal support in place during repair.
MB number	W212 589 02 23 00 (left-hand drive) W212 589 03 23 00 (right-hand drive)
FG	62
Set	K
Category	Passenger Car Special Operation
Note	Only in combination with welding device W204 589 01 23 00 and adapter W212 589 01 03 00.



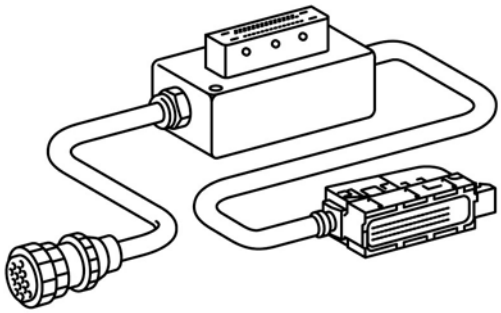
P58.20-2255-00

Note

The published bodywork special tools already ordered for model series 204 are also valid for the model series 212 sedan. Details of relevant expansions for this model series are described in the Workshop Information System (WIS).

38-pin adapter cable

Use	38-pin adapter cable for the Adaptive Brake System (ABR) Basic in combination with socket box.
MB number	W212 589 01 63 00
FG	54
Set	B
Category	Passenger Car Special Operation
Note	In combination with socket box W129 589 00 21 00 or W124 589 00 21 00.



P58.20-2259-00

Note

For detailed information on the individual special tools please refer to the Market Information Catalog 4-2008, which will be sent to your local MPCs in February 2009.

Body/exhaust system

Straightening and portal tool set

Company-owned sales and service outlets in the Federal Republic of Germany are supplied by MBVD / KP.

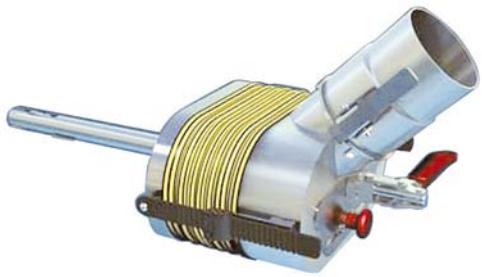
	CELETTE	CAR BENCH
Article	CELETTE straightening and portal tool set	CAR BENCH straightening and portal tool set
Order number	7212.500 (straightening tool set) 7212.800 (portal tool set)	82466 (straightening tool set) A7243600 / T (portal tool set)
Source in Germany	CELETTE Vertriebs GmbH Siemensstrasse 19 D-77694 Kehl-Sundheim www.celette.de	HSK CAR BENCH Karosseriegeräte-Vertriebs-GmbH Am Fliegerhorst 3 D-63762 Grossostheim-Ringheim www.carbench.de
Source outside Germany	CELETTE S.A. 13. Route de Bechevienne BP9 F-38217 Vienne Cedex France	CAR BENCH International S.p.A. Via Dorsale 22 I-54100 Massa Italy

Note on exhaust systems

Depending on the engine variant, vehicles of model series 212 and future model series feature exhaust tail pipe finishers integrated in the bumper. Proper extraction of exhaust gases at the vehicle requires a special adapter for existing extraction systems in the workshop.

Extraction device, socket with internal clamping

Use	Exhaust socket for vehicles with tail pipe finishers integrated in the bumper and vehicles with straight exhaust tail pipes.
Manufacturer	NORFI Absaugtechnik GmbH Kelterstr. 65 D-72669 Unterensingen www.norfi.de
Order number	25-4950-103



P58.40-2087-00

Extraction device, exhaust funnel with internal clamping

Use	Exhaust socket for vehicles with tail pipe finishers integrated in the bumper and vehicles with straight exhaust tail pipes.
Manufacturer	Nederman Ph. & Co AB (S) Sysdhamnsgatan 2 S-25228 Helsingborg www.nedermann.se
	Nederman GmbH (D) Kelterstrasse 65 D-72669 Unterensingen www.nederman.de
Order number	20867261

P58.40-2086-00

Note on the extraction devices

The clamp operates inside the tailpipe of the exhaust system. Exhaust sockets can be ordered from the manufacturers listed from mid-January 2009.
Information on the socket and ordering addresses are published in GOTIS under:

Chapter U, Design Group 00.21, Topic 03.1

Note

GOTIS address on the internet:

http://gotis.aftersales.mercedes-benz.com

Abbreviations

ABS
Antilock brake system

AGR
Exhaust gas recirculation (EGR)

AKSE
Automatic child seat recognition (ACSR)

APS
Auto Pilot System

ASR
Acceleration skid control

AUX
Auxiliary

BAS
Brake Assist System

CAN
Controller Area Network

CD
Compact Disc

CDI
Common rail diesel injection

CGI
Stratified charged gasoline injection

COMAND
Cockpit Management and Data System

CO_2
Carbon dioxide

DE
Direct injection (DI)

DSB
Digital Service Booklet

DVD
Digital Versatile Disc

EBV
Electronic brake force distribution (EBD)

ECO
Electronically Controlled Orifice

ESP
Electronic Stability Program

ETS
Electronic traction system

EU 4
Euro 4 standard (exhaust emission regulation)

EU 5
Euro 5 standard (exhaust emission regulation)

FBAS
Composite Video Baseband Signal (CVBS)

FIN
Vehicle identification number (VIN)

GF
Basic knowledge / functions (WIS)

GMT
Glass fiber matting-reinforced thermoplastic

HDPE
High-density polyethylene

HFP
Hands Free Profile

IKS
Integrated child seat

ILS
Intelligent Light System

KE
Port injection

LA
Turbocharger

Abbreviations

LED
Light-emitting diode

LIN
Local interconnect network

LVDS
Low voltage differential signal

MAG
Metal active gas

MBVD
Mercedes-Benz Sales Germany

ME
Motor electronics

MIG
Metal inert gas

MOST
Media Oriented System Transport

MP3
MPEG-1 audio layer 3

M+S
Mud and Snow

NEFZ
New European Driving Cycle (NEDC)

NTG 4
New Telematics Generation Version 4.0

PCMCIA
Personal Computer Memory Card International Association

PTC
Positive temperature coefficient

RDK
Tire pressure monitor (TPM)

RDS
Radio data system

RDW
Tire pressure loss warner

ROZ
Research octane number (RON)

SA
Special equipment

SAM
Signal acquisition and actuation module

SBS
Voice control system (VCS)

SCR
Selective Catalytic Reduction

SIM
Subscriber identification module

SKS
Side head restraints

SPPS
Service Package Pricing System

TMC
Traffic Message Channel

WIS
Workshop Information System

Index

S

T

V

W

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