



# Introduction of E 63 AMG (ECE/USA)

Introduction into Service Manual for Model Series 212

Mercedes-Benz



Introduction of E 63 AMG (ECE / USA)  
Introduction into Service Manual  
for Model Series 212

## Ordering workshop information

All printed workshop information from GSP/OI, such as Introduction into Service Manuals, System Descriptions, Function Descriptions, Technology Guides, Technical Data Manuals and adhesive labels, can be ordered as follows:

### In Germany

Through our GSP/OI Shop on the Internet

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

or alternatively

E-mail: [customer.support@daimler.com](mailto:customer.support@daimler.com)

Phone: +49-(0)18 05 / 0 10-79 79

Fax: +49-(0)18 05 / 0 10-79 78

### Outside Germany

Please get in touch with the contact person responsible for your market.

## Product Portfolio

Comprehensive information about our full Product Portfolio can also be found at our Internet Portal.

Link: <http://aftersales.mercedes-benz.com>

## Questions and suggestions

If you have any questions or suggestions concerning this product, please write to us.

E-mail: [customer.support@daimler.com](mailto:customer.support@daimler.com)

Fax: +49-(0)18 05 / 0 10-79 78

or alternatively

Address: Daimler AG

GSP/OIS

HPC R822, W002

D-70546 Stuttgart

© 2009 by Daimler AG

This document, including all its parts, is protected by copyright.

Any further processing or use requires the previous written consent of

Daimler AG, Department GSP/OIS, HPC R822, W002, D-70546 Stuttgart.

This applies in particular to reproduction, distribution, alteration, translation, microfilming and storage and/or processing in electronic systems, including databases and online services.

Image no. of title image: P00.01-3920-00

Order no. of this publication: 6516 1377 02

06 / 09

<b>Preface</b>	5
----------------	---

## Overview

<b>Models and major assemblies</b>	6
<b>Brief description</b>	7
<b>Highlights</b>	8
<b>Equipment</b>	8

## Overall vehicle

<b>Exterior</b>	16
<b>Dimensions</b>	19
<b>Technical data</b>	21
<b>Interior</b>	22

## Drive

<b>Engine M 156</b>	28
<b>Engine data M 156</b>	29
<b>AMG Cooling System (ACS)</b>	31
<b>Exhaust system</b>	32
<b>Fuel system</b>	33

## Transmission

<b>SPEEDSHIFT MCT sport transmission</b>	36
<b>AMG DRIVE UNIT</b>	39
<b>RACE START function</b>	41

## Chassis

<b>Steering/axles/suspension</b>	44
<b>Brake system</b>	45
<b>Technical data</b>	46
<b>Wheels and tires</b>	47

## Networking

<b>Overall network</b>	48
<b>Battery and alternator</b>	53
<b>On-board electrical system</b>	54

## Lights

<b>Exterior lights</b>	56
------------------------	----

## Annex

<b>Abbreviations</b>	58
<b>Index</b>	60

Dear Reader,

This Introduction into Service Manual presents the new E 63 AMG 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 AMG model 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 as well as detailed descriptions of systems and their components 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 of the information relating to specifications, equipment and options are valid as of the publication deadline in June 2009 and may therefore differ from the current production configuration.

Daimler AG

Technical Information  
and Workshop Equipment (GSP / OI)

## Models and major assemblies

W 212 AMG Market launch 08 / 2009	Model	Engine	Automatic SPEEDSHIFT MCT sport transmission
E 63 AMG	212.077	156.985	722.930

W 212 AMG USA Market launch 11 / 2009	Model	Engine	Automatic SPEEDSHIFT MCT sport transmission
E 63 AMG	212.077	156.985	722.930



P00.10-4806-00

**E 63 AMG (model series 212, ECE version)**



### Vehicle concept

With an expressive design combined with outstanding technology, the E 63 AMG represents the perfect blend of business class comfort and sporty dynamics. It surpasses its predecessor with improved vehicle dynamics yet lower consumption.

### Dimensional concept

The dimensional concept of the new E 63 AMG 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 reduced.

Dimensional concept comparing W 211 and W 212

Dimensions	Unit	W 211 E 63 AMG	W 212 E 63 AMG	Difference
Vehicle length	mm	4,881	4,891	+10
Vehicle width	mm	1,822	1,872	+50
Vehicle height	mm	1,465	1,442	-23
Wheelbase	mm	2,854	2,874	+20



## Highlights

### Exterior

- AMG-specific front skirt, rear apron and side trim
- Independent, flared front fenders with "6.3 AMG" logo
- AMG-specific LED daytime running lights
- Darkened headlamps in combination with Intelligent Light System (SA)
- 18" AMG light alloy wheels as standard
- 19" forged AMG light alloy wheels (SA)
- AMG Sport exhaust system with new exhaust tip design

### Interior

- AMG DRIVE UNIT with E-SELECT selector lever
- Leather AMG sport seats with optimized lateral support
- AMG 4-spoke sport steering wheel with silver-colored aluminum shift paddles
- AMG instrument cluster with AMG main menu incl. RACETIMER
- AMG door sills made from brushed stainless steel with AMG logo
- AMG sport pedals incl. footrest made of brushed stainless steel with black rubber naps (LHD vehicles only)

### Technology

- AMG 6.3-liter V8 engine
- AMG SPEEDSHIFT MCT 7-speed sport transmission
- AMG RIDE CONTROL sports suspension
- AMG-specific speed-sensitive power steering with more direct gear ratio
- 3-stage ESP with ON, Sport and OFF function
- AMG high-performance brake system



P00.00-4474-00



	E 63 AMG ECE	E 63 AMG USA
<b>Brakes, drivetrain</b>		
DISTRONIC PLUS including PRE-SAFE <sup>®</sup> brake	Code 233	
SPEEDSHIFT MCT sport transmission	Standard	
<b>Steering</b>		
AMG Sport speed-sensitive power steering	Standard	
<b>Suspension</b>		
AMG RIDE CONTROL sports suspension	Standard	
<b>Wheels, tires, light alloy wheels</b>		
18" AMG light alloy wheel "5-spoke design" FA 255 / 40 R18 RA 285 / 35 R18	Standard	
19" AMG light alloy wheel "5-spoke design" FA 255 / 35 R19 RA 285 / 30 R19	Code 793	
Spare wheel / collapsible spare wheel	Code 669	Standard
Tire pressure monitor (TPM)	Code 475	Standard

## Equipment

	E 63 AMG ECE	E 63 AMG USA
<b>Light systems</b>		
H7 projection headlamps and daytime running lights in bumper	Standard	
Light package consisting of bi-xenon headlamps with Intelligent Light System (ILS), Adaptive High Beam Assist, LED daytime running lights and LED rear lamps	Code P35	
Night View Assist	Code 610	
<b>Safety and theft protection</b>		
Driver and front passenger airbags with 2-stage triggering, situation-sensitive	Standard	
Kneebags for driver and front passenger	Standard	
Pelvisbags for driver and front passenger	Standard	
Left and right front sidebags in the backrests	Standard	
Left and right rear sidebags without belt force limiter	Code 293	Standard
Windowbags for driver, front passenger and rear passengers	Standard	
Weight sensing system (WSS)	Standard	
Rear seat belt status indicator	Standard	-
Anti-theft alarm system (ATA [EDW]) ECE: with interior monitoring USA: without interior monitoring	Code P54	Standard
Fire extinguisher	Code 682	-
Radio remote control with PANIC switch (315 MHz)	-	Code 763



	E 63 AMG ECE	E 63 AMG USA
<b>Safety and theft protection</b>		
KEYLESS-GO		Code 889
KEYLESS-GO package incl. comfort trunk closing (code 881)		P17
Comfort trunk closing		Code 881
<b>Climate control</b>		
THERMATIC air conditioning	-	Standard
THERMOTRONIC automatic air conditioning	Standard	-
Cooling output booster	-	Standard
<b>Driving assistance systems</b>		
Exclusive Parking Assist		Code 230
Blind Spot Assist		Code 234
Advanced-Lane-Departure-Warning (ALDW)		Code 476
Reversing camera		Code 218
Driver assistance package consisting of DISTRONIC PLUS, Lane Keeping Assist and Blind Spot Assist		Code 23P

## Equipment

	E 63 AMG ECE	E 63 AMG USA
<b>Comfort systems</b>		
AMG 4-spoke sport steering wheel with aluminum shift paddles	Standard	
Electrically adjustable driver and front passenger seats with memory and lumbar support	Standard	
Heated driver and front passenger seats	Code 873	
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, ECE	Code 432	-
Active multicontour seat for driver, USA (only in combination with seat climate control, code 401)	-	Code 432
Automatic child seat recognition (ACSR)	U18	-
Ashtray package	Code 301	Standard
Ski bag	Code 282	-
Through-loading feature	Code 287	
Mirror package	Standard	
Garage door opener (284-390 MHz)	-	Standard
Panoramic sliding sunroof	Code 413	
Tilting/sliding roof	Code 414	Standard



	E 63 AMG ECE	E 63 AMG USA
<b>Comfort systems</b>		
Electric roller blind for rear window	-	Standard
Sun protection package (electric roller blind for rear window, roller sun blinds in left and right rear doors, dual left and right sun visor with vanity mirror)	P09	-
Double sun visor with vanity mirrors on both sides	Code 543	Standard
EASY-PACK trunk comfort box	B04	-
Heated windshield washer system	Code 875	Standard
Headlamp cleaning system	Code 600	
Fuel tank (66 l)	Standard	-
Fuel tank with increased capacity (80 l)	Code 915	Standard
Cup holder, dual	Code 309	Standard
115 V power outlet	-	Code U80

## Equipment

	E 63 AMG ECE	E 63 AMG USA
<b>Telephone, audio and communications</b>		
Audio 20 CD	Standard	-
Audio 20 CD with CD changer	Code 510	-
Audio 50 APS	Code 525	-
Audio 50 APS with DVD changer and LINGUATRONIC	Code 511	-
COMAND DVD Plus	-	Standard
COMAND APS	Code 527	-
COMAND APS ECE with DVD changer	Code 512	-
COMAND APS USA with DVD changer and LINGUATRONIC	-	Code 512
Comfort telephony	Code 386	-
TELE AID emergency call system	-	Standard
Digital Audio Broadcasting (DAB)	Code 537	-
"Sirius" satellite radio, full system, including HD radio	-	Standard
Media interface	Code 518	Standard
Digital / analog TV tuner	Code 863	-
Sound system (Harman / Kardon LOGIC 7®)	Code 810	
Rear entertainment (RSE)	Code 864	



AMG PERFORMANCE STUDIO	E 63 AMG ECE	E 63 AMG USA
<p><b>AMG performance package</b></p> <ul style="list-style-type: none"> <li>• 19" forged AMG light alloy wheels Front: 9 x 19 ET 37 with tires 255 / 35 R19 Rear: 9.5 x 19 ET 52 with tires 285 / 30 R 19</li> <li>• AMG RIDE CONTROL performance suspension</li> <li>• AMG locking rear axle differential with 40% locking effect</li> <li>• AMG spoiler lip</li> <li>• AMG 3-spoke performance steering wheel with Alcantara inserts in grip area</li> </ul>	Code P30	
<b>Special equipment</b>		
AMG Exterior Carbon Package with front skirt deflectors, mirror housings, AMG spoiler lip and rear apron insert in carbon	Code 773	
AMG carbon interior trim	Code H73	
AMG 3-spoke performance steering wheel with Alcantara inserts in grip area (not in combination with Lane Keeping Assist, code 476)	Code 281	
AMG door sill moldings with white illumination	Code U25	
AMG floor mats	Code U26	Standard
AMG locking rear axle differential with 40% locking effect	Code 471	
<p><b>AMG DRIVERS PACKAGE</b> including:</p> <ul style="list-style-type: none"> <li>• "Power &amp; Passion" driver training course</li> <li>• Maximum speed limit raised to 300 km / h</li> <li>• AMG spoiler lip</li> </ul>	Code 250	Code 251



## Exterior

### Front view

The new E 63 AMG is characterized by:

- AMG front skirt with large openings for cooling air
- AMG-specific daytime running lamps in bumper
- Darkened headlamps (in combination with Intelligent Light System)

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.



*Front view of E 63 AMG (ECE version)*

P00.00-4463-00



## Rear view

The E 63 AMG has an expressive rear end design based on the eye-catching sides of the AMG rear apron where it covers the wheels.

The black diffusor insert in the AMG rear apron creates additional visual impact. The AMG Sport exhaust system with two chrome-plated and newly designed dual tailpipes represents a characteristic feature of the brand.



P00.00-4464-00

*Rear view of E 63 AMG (ECE version)*

## Exterior

### Side view

The highly dynamic character of the E 63 AMG is also obvious from the side. The side design is characterized by the following features:

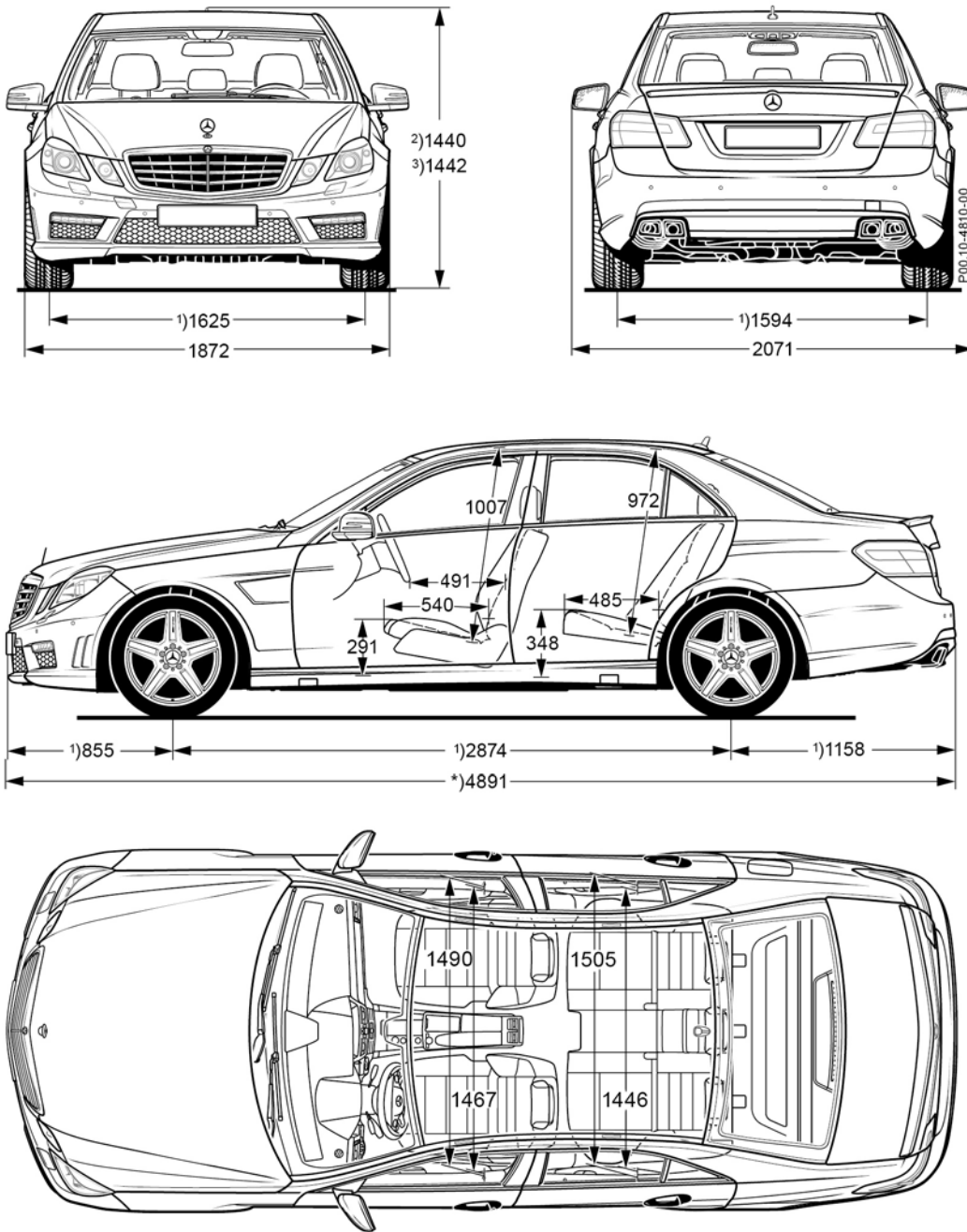
- Fender with integrated "6.3 AMG" logo
- Side air outlets in the front skirt
- AMG side trim to improve aerodynamics and protect against stone chipping



*Side view of E 63 AMG (ECE version)*

P00.00-4465-00





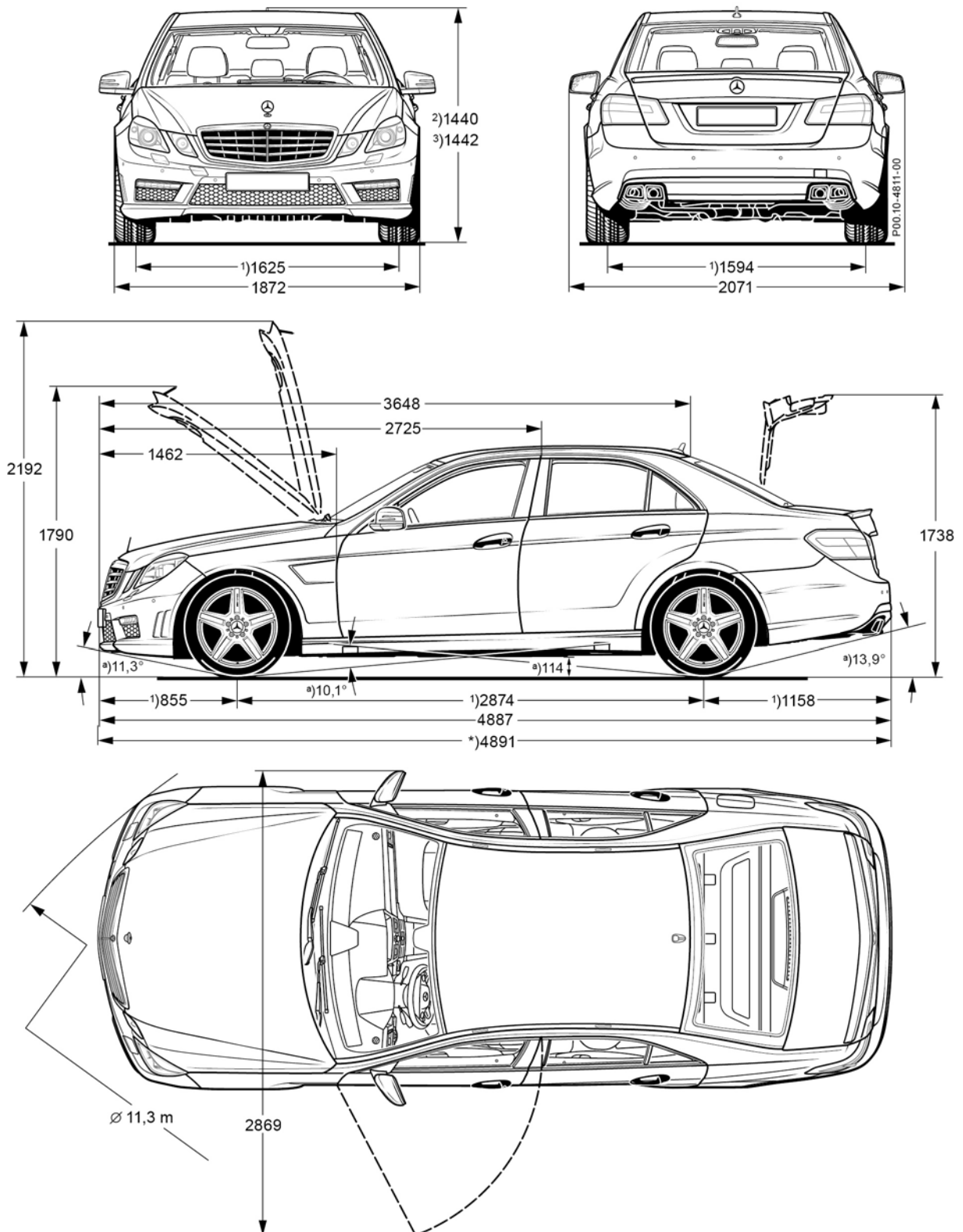
### Vehicle dimensions of E 63 AMG

Dimensions unloaded

- <sup>1)</sup> Loaded with 3 persons of 68 kg each
- <sup>2)</sup> With 18" tires

- <sup>3)</sup> With 19" tires
- <sup>\*</sup> Incl. license plate adapter (4 mm)

## Dimensions



### Vehicle dimensions (garage dimensions) E 63 AMG

#### Dimensions unloaded

- 1) Loaded with 3 persons of 68 kg each
- 2) With 18" tires
- 3) With 19" tires

- a) At permissible gross vehicle weight
- \*) Incl. license plate adapter (4 mm)



	Unit	E 63 AMG ECE	E 63 AMG USA
<b>Dimensions</b>			
Vehicle length	mm	4,891	
Vehicle width (without outside mirrors)	mm	1,872	
Vehicle width (with outside mirrors)	mm	2,071	
Vehicle height	mm	1,442	
Wheelbase	mm	2,874	
Front track width	mm	1,625	
Rear track width	mm	1,594	
Coefficient of drag	C <sub>d</sub>	0.29	

	Unit	E 63 AMG ECE	E 63 AMG USA
<b>Dimensions and weights</b>			
Curb weight with 66 l fuel tank with 80 l fuel tank (SA)	kg kg	1765 (as per DIN) 1780 (as per DIN)	1885 1900
Permissible gross vehicle weight	kg	2,390	
Max. seating capacity		5	
Trunk capacity (with TIREFIT)	l	540	
Turning circle	m	11.3	
Fuel tank /including reserve	l	66 / 14	-
Fuel tank /including reserve	l	80 / 14 (SA)	80 / 14 (standard)



## Interior

### Interior design

The newly designed interior attracts attention due to its high-quality materials and functional, sporty appearance.

The exclusive interior touches include:

- Independent, electrically adjustable AMG sport seats with optimized lateral support
- AMG 4-spoke steering wheel with shift paddles
- AMG sport pedals incl. footrest made of brushed stainless steel with black rubber naps (LHD vehicles only)

A new and exclusive feature of the E 63 AMG is the touch-operated AMG selector lever. Located directly next to this in the centre console is the AMG DRIVE UNIT. This is used to adjust the 7-speed sport transmission, the ESP functions, the suspension setup and the AMG program.



P68.00-6363-00

### Interior design



**Color concept**

**Standard equipment**

The leather interior including the armrest of the centre console is available in three interior color combinations:

- black / black
- reef gray / alpaca gray
- mocca brown / almond beige

The inner headliner features the selected color scheme while the trim parts are designed in ash black.

**AMG Exclusive Package (SA)**

The AMG Exclusive Package creates an even higher quality interior with nappa leather appointments. The main features are:

- Nappa leather for seats, upper section of instrument panel, upper door trim, centre door panels and armrests in doors and centre console
- Inner headliner including A, B, C-pillars and sun visors in Alcantara® interior color scheme
- AMG floor mats in selected color scheme



P68.30-3503-00

*Leather or nappa leather, black / black*



P68.30-3504-00

*Leather or nappa leather, mocca brown / almond beige*



P68.30-3506-00

*AMG Exclusive Package black / black with AMG Carbon trim*



P68.30-3505-00

*Leather or nappa leather, reef gray / alpaca gray*



# Interior

## 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 equipment variants.



Instrument cluster, ECE version

P54.32-7870-00



Instrument cluster, USA version

P54.32-7871-00



**Instrument cluster**

A1	Instrument cluster	A1e54	Coolant temperature warning lamp
A1e1	Left turn signal indicator lamp	A1e57	Front fog lamp indicator lamp
A1e2	Right turn signal indicator lamp	A1e58	Engine diagnosis indicator lamp
A1e3	High beam indicator lamp	A1e59	DISTRONIC warning lamp (with code 233 Distronic Plus)
A1e4	Fuel reserve warning lamp	A1e64	Service brake indicator lamp
A1e7	Brake fluid and parking brake warning lamp	A1e66	Tire pressure monitor warning lamp
A1e9	Seat belt warning lamp	A1e67	Low beam indicator lamp
A1e15	Supplemental restraint system indicator lamp	A1p1	Coolant temperature gauge
A1e17	Antilock brake system indicator lamp	A1p2	Fuel level indicator
A1e18	Rear fog light indicator lamp	A1p5	Tachometer
A1e32	ESP and ASR OFF warning lamp	A1p8	Speedometer
A1e41	Electronic Stability Program warning lamp	A1p9	Analog clock
A1e46	ESP SPORT indicator lamp	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.

The center console contains, from top to bottom:

- COMAND
- Upper control panel
- Air conditioning operating unit
- Stowage compartment with 12 V power outlet or ashtray with cigarette lighter
- AMG selector lever
- AMG DRIVE UNIT
- Central operating unit
- Armrest with stowage compartment

The transmission can be set to the following positions using the AMG selector lever:

- **R** Reverse gear
- **N** Neutral
- **D** Drive

The park position with park pawl "P" is engaged using a separate P-button, which is positioned on the left in front of the selector lever.

### Illuminated door sill moldings

In addition to the standard door sills made of brushed stainless steel with AMG logo, illuminated door sill moldings are also available as special equipment.



P68.30-3501-00

**Illuminated door sill moldings**



P68.20-4180-00

**Center console**



P27.60-3387-00

**P-button**





### 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.

Partially electric seat adjustment with manual lumbar support adjustment is provided as standard equipment.

Fully electric seat adjustment with memory function and pneumatic lumbar support is available as special equipment.

The driver and front passenger seats are also optionally available as multicontour seats or active multicontour seats (dynamic seats) (USA: driver seat only).

### 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.

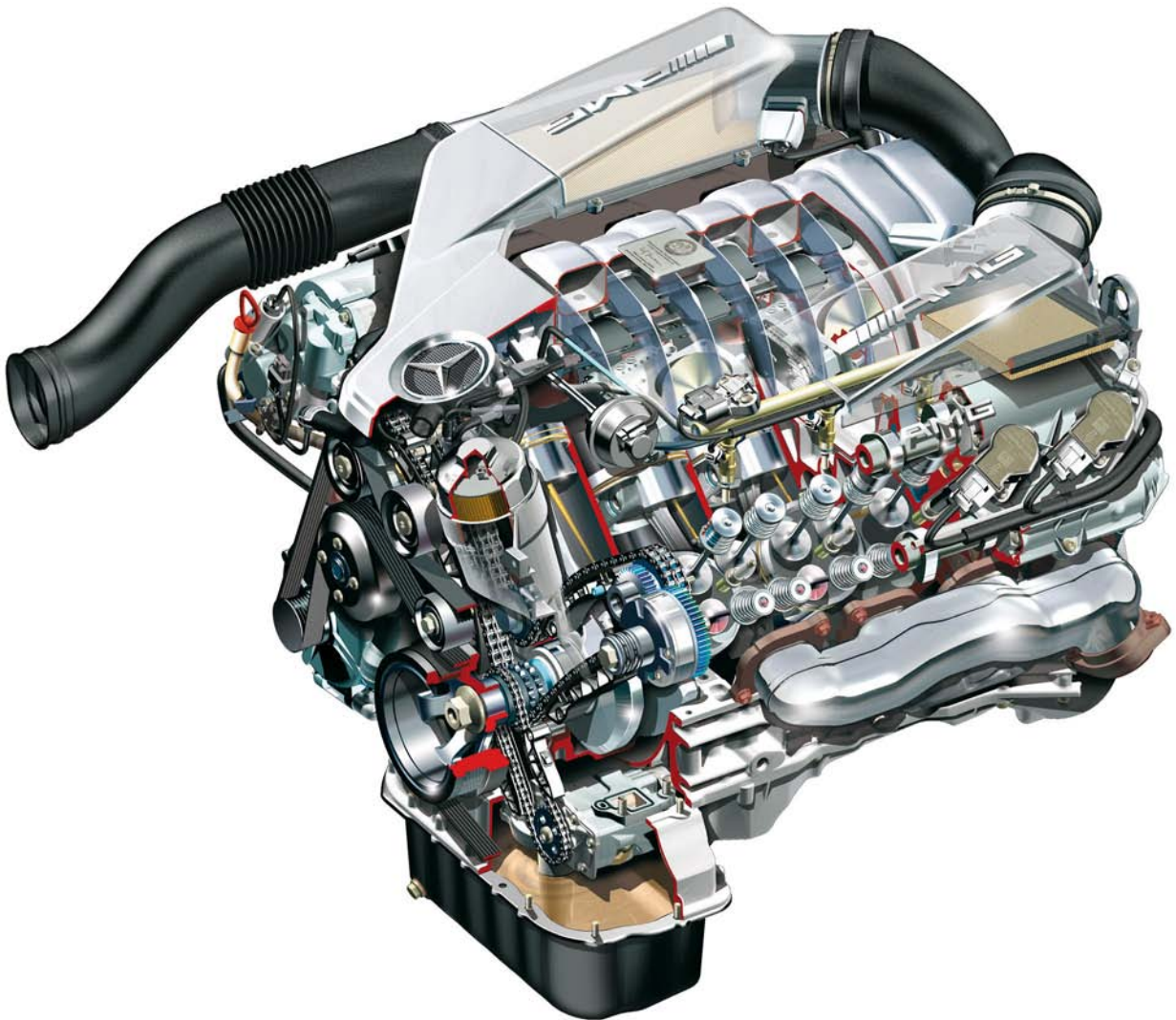


P91.10-3504-00

## Engine M 156

The 6.3-liter V8 naturally aspirated engine M 156 E63 with model designation 156.985 is used in the E 63 AMG.

It has an output of max. 386 kW (525 hp) and a max. torque of 630 Nm.



*Engine M 156*

P01.10-2821-00



W 212	Unit	E 63 AMG
<b>Engine data</b>		
Engine model designation		156.985
Engine designation		M 156 E 63
Engine configuration / no. of cylinders		V8
Displacement	cm <sup>3</sup>	6208
Bore	mm	102.2
Stroke	mm	94.6
Fuel	RON	Premium gasoline, unleaded 98 RON
<b>Performance</b>		
Acceleration 0 ... 100 km / h	s	4.5
Maximum speed	km / h	250 <sup>1</sup> 300 <sup>2</sup>
<b>Fuel economy / CO<sub>2</sub> emissions</b>		
Fuel economy, overall (NEDC)	l / 100 km	12.6
CO <sub>2</sub> emissions (ECE)	g / km	295
Exhaust emission standard ECE / USA	Standard	Euro 5 / LEV <sup>3</sup>

<sup>1</sup> Electronically governed

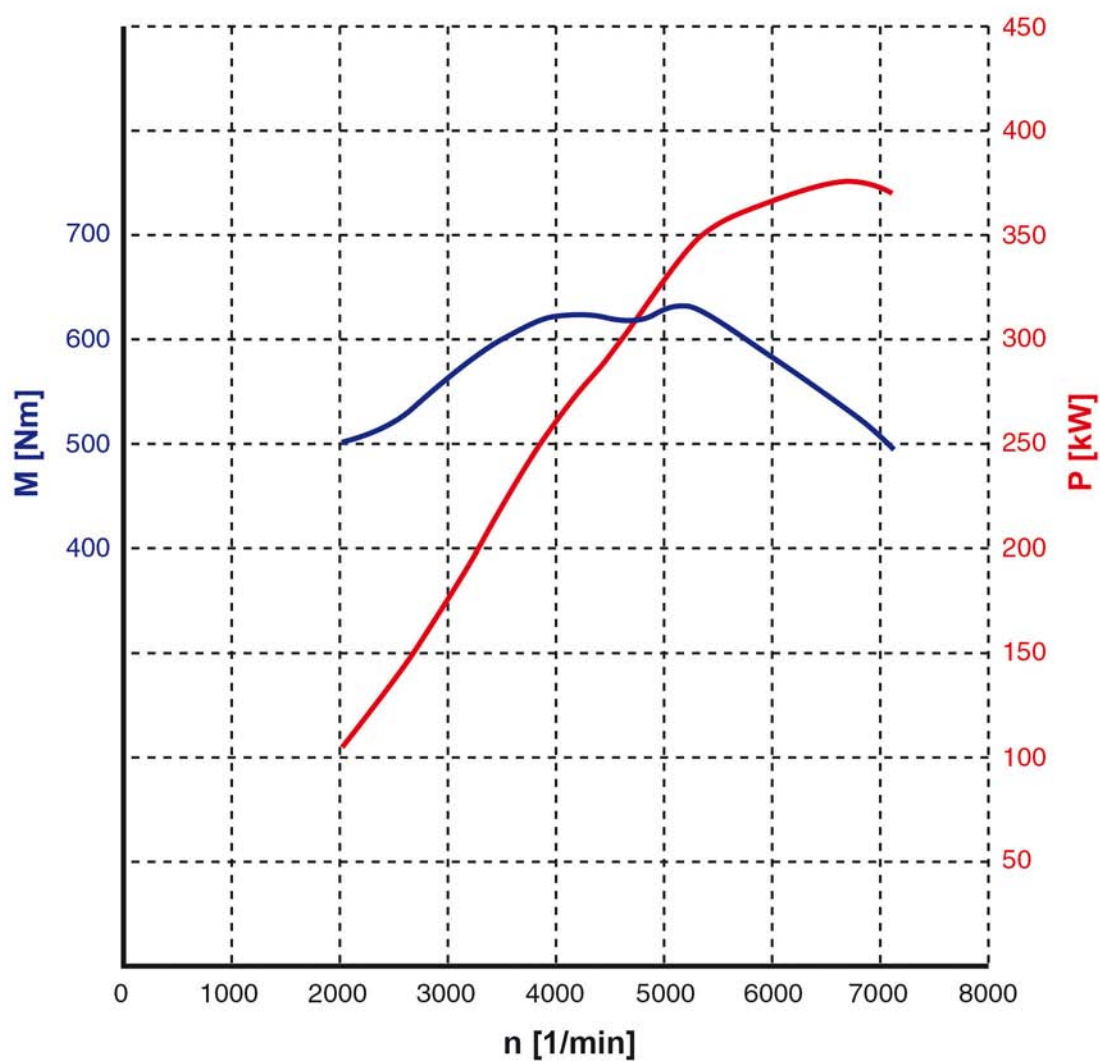
<sup>2</sup> In combination with AMG-Driver's Package (electronically governed)

<sup>3</sup> as of MY2011 LEV2 / ULEV

Engine data, performance and consumption figures are provisional.

## Engine data M 156

Engine data	Unit	M 156.985 in E 63 AMG
Rated output at engine speed	kW (hp) at rpm	386 (525) 6,800
Rated torque at engine speed	Nm at rpm	630 5,200
Compression ratio	$\varepsilon$	11.3 : 1



Performance graph M 156

P01.00-3194-00

- M Torque
- P Power output
- n Rpm





## AMG Cooling System (ACS)

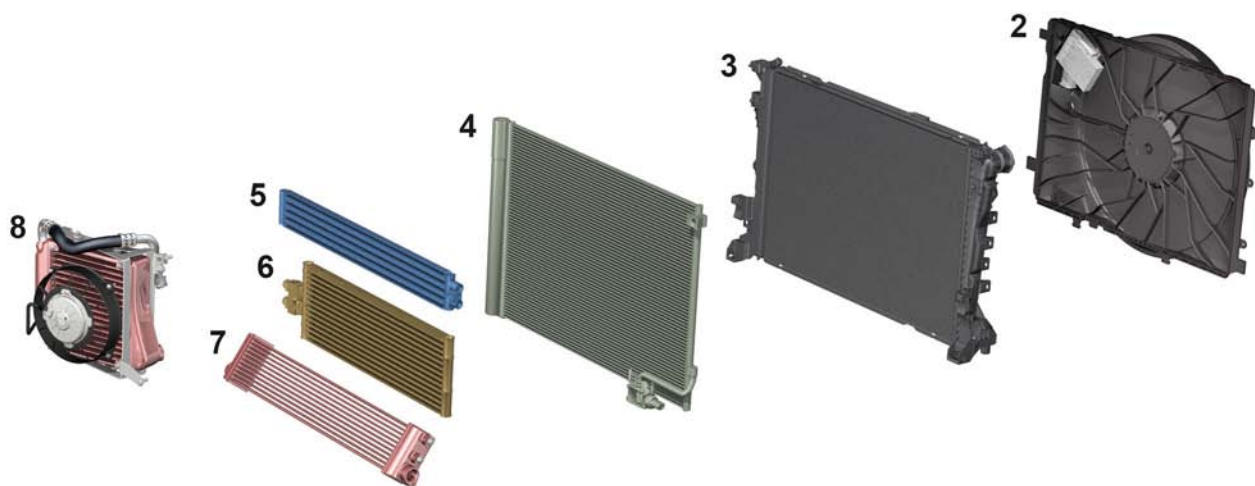
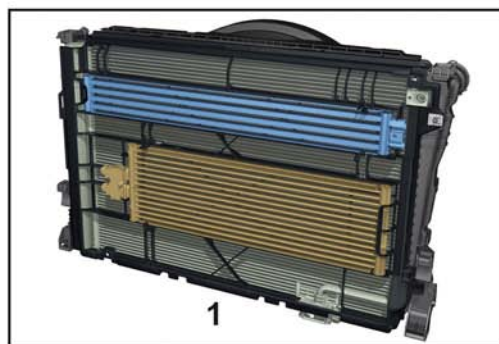
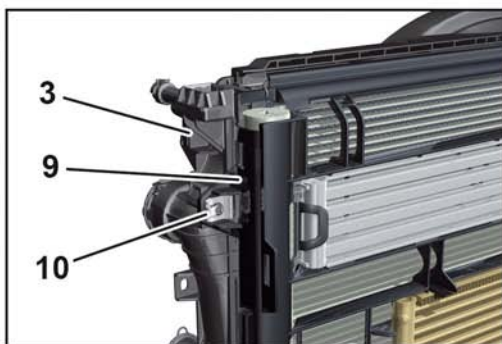
The newly designed AMG Cooling System, consisting of a blower, cooler module and engine oil cooling system, ensures that the engine and major assemblies are adequately cooled even when subjected to highly dynamic loads.

The cooler module is comprised of:

- Radiator
- Condenser
- Steering oil cooler
- Transmission cooler

The engine oil cooling system consists of an oil cooler which is located in front of the cooler module and a front oil cooler in the right wheel arch.

The individual components of the cooler module are attached to the radiator in an assembly frame with a modular clip system.



P20.00-2367-00

### AMG Cooling System

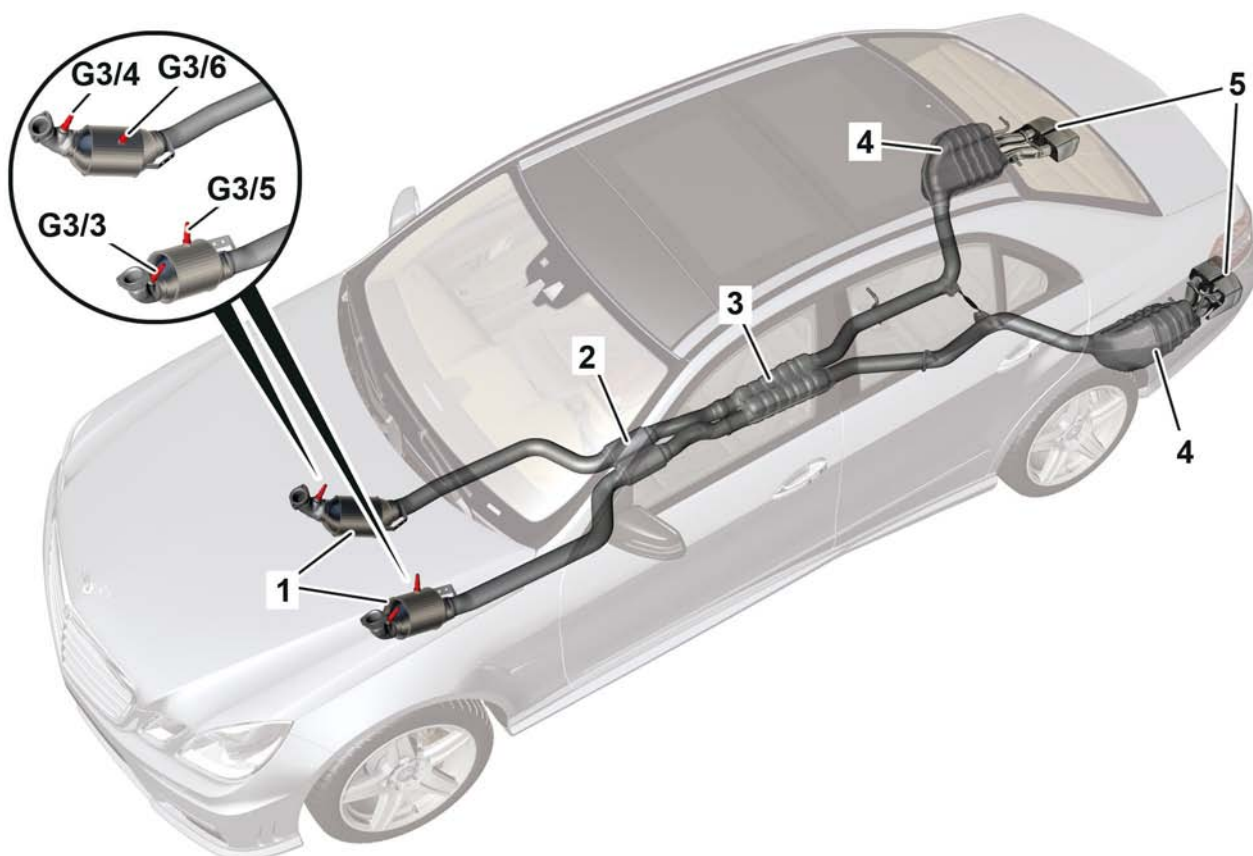
- |                       |                                  |
|-----------------------|----------------------------------|
| 1 Cooler module       | 7 Engine oil cooler (front end)  |
| 2 Blower              | 8 Engine oil cooler (wheel arch) |
| 3 Radiator            | 9 Condenser assembly frame       |
| 4 Condenser           | 10 Clips                         |
| 5 Steering oil cooler |                                  |
| 6 Transmission cooler |                                  |



## Exhaust system

AMG-specific twin-pipe exhaust system (full-length) with enlarged pipe cross sections and new exhaust tip design.

Flow-optimized thin-walled ceramic catalytic converters with AMG-specific monolith coating are used.



P49.10-2899-00

### Exhaust system

- 1 Catalytic converter
- 2 Front muffler
- 3 Center muffler
- 4 Main muffler
- 5 Exhaust tip

- G3/3 Left oxygen sensor upstream of catalytic converter
- G3/4 Right oxygen sensor upstream of catalytic converter
- G3/5 Left oxygen sensor downstream of catalytic converter
- G3/6 Right oxygen sensor downstream of catalytic converter



## Fuel supply

The fuel supply system of the E 63 AMG has no return line and consists of a feed unit with a powerful fuel pump (electronically commutated) and a filter unit. This system supplies filtered fuel from the fuel tank to the fuel distributor (fuel rail) as required in all operating conditions.

The housing of the feed unit, the swirl pot, is filled by a suction jet pump in the pot and an additional suction jet pump on the outside of the pot. In addition, a suction jet pump on the filter unit pumps fuel from the left chamber of the tank into the feed unit in the right chamber.

A pressure limiting valve (opening pressure 6.0 bar) in the filter unit limits the fuel pressure when the engine is switched off at high temperatures and in limp-home mode.

## Fuel tank

The fuel tank 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 is approx. 66 or 80 liters, including a reserve of approx. 14 liters.

Two service openings on the upper side of the tank facilitate disassembly of the pump and filter unit. The expansion volume is inside the fuel tank. The left float-and-lever sensor (driver-side) has a separate electrical connector whereas the right float-and-lever sensor and the fuel pump share an electrical connector (passenger-side).

The fuel filler flap is located in the usual place in the right rear fender below the C pillar. The filler neck is welded directly onto the fuel tank. 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 system control unit

The fuel system control unit is located under the trim of the right rear door sill.

### Function

The function is described at the following points:

- Fuel pump control
- Emergency running
- De-tanking service
- Diagnosis

## Fuel pump control

The fuel supply is controlled and monitored by the ME-SFI [ME] control unit and the fuel system control unit. The fuel pump is switched on when the fuel system control unit receives the "Fuel pump ON" ground signal from the ME-SFI [ME] control unit.

The ME-SFI [ME] control unit determines the current fuel pressure via the fuel pressure sensor. To control the fuel pump, the ME-SFI [ME] control unit evaluates the fuel pressure and the load requirement and transmits a corresponding PWM signal (with a duty factor of 10 to 90%) to the fuel system control unit. This evaluates the PWM signal and actuates the fuel pump accordingly by means of three-phase AC signals. The actual fuel pressure is thus variably regulated between 3.6 and 4.5 bar depending on the operating condition.

## Fuel system

### Emergency running

- The fuel pump is shut off if the ground signal "Fuel pump ON" is missing or implausible.
- The fuel pump is shut off if the signal "Specified fuel pressure" is missing or implausible.
- If the signal "Circuit 15" is missing or implausible, the fuel system control unit and thus the fuel pump is shut off.

### De-tanking service

The fuel tank can be emptied via the fuel system control unit without the engine running. To do this, the de-tanking service is called up using Xentry Diagnostics and the following parameters are entered:

- Parameter 01 for "Fuel pump ON"
- Time "0-99,999" seconds
- Specified fuel pressure 4.5 bar

During emptying the diagnostic unit must be connected and the ignition must remain on.

### Diagnosis

The fuel system control unit conducts a self-test and component check. Detected faults are stored by the fuel system control unit and made available via the drive train CAN (CAN C) to the ME-SFI [ME] control unit and via the diagnostic CAN (CAN D) to the connected diagnostic unit.

### Variants

The vehicle and engine variants are already stored in the fuel system control unit. If the fuel system control unit is replaced, the new control unit must be variant-coded.

### Activated charcoal filter

Fuel vapors from the tank which are released during operation and when the vehicle is parked are stored in the activated charcoal filter.

Vehicles with code 494, 860 or 835 are equipped with a significantly larger activated charcoal filter because the fuel vapors released during refueling must be stored in an activated charcoal filter in these countries.

The activated charcoal filter is flushed with fresh air during purging. The fuel vapors from the filter are thus fed to the engine for combustion via the purge valve.

### Purge valve

The purge valve is opened to flush the activated charcoal filter with fresh air (i.e. to purge the filter).

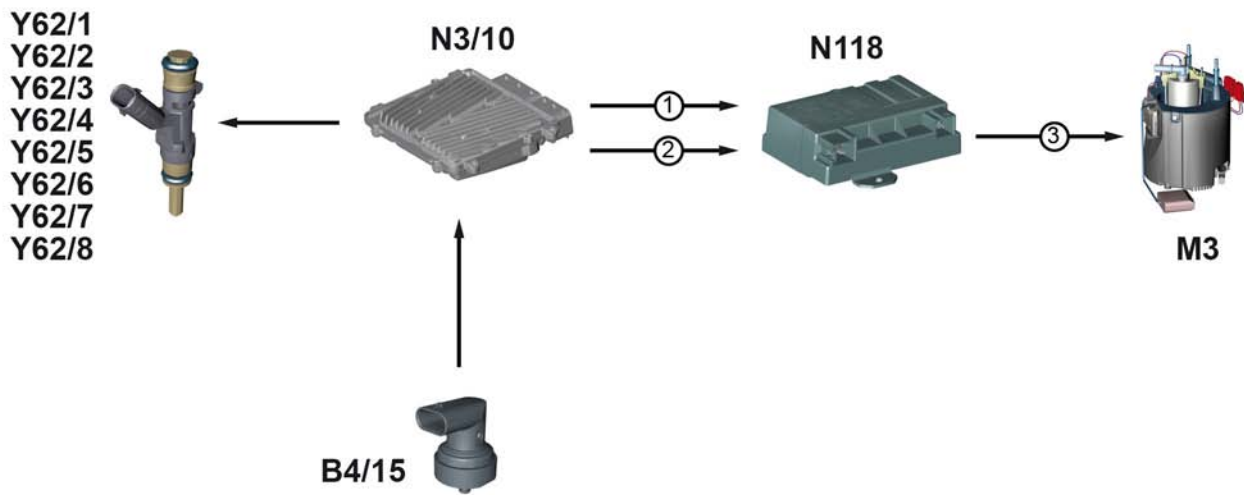
The purge valve is also actuated to perform a tank leak test (only code 494, 860 and 835).

### Activated charcoal filter shutoff valve (USA)

The activated charcoal filter shutoff valve is actuated by the ME-SFI [ME] control unit to close the ventilation connections of the activated charcoal filter. This is necessary in order to perform the leak test of the purging system that is required by law. When the activated charcoal filter shutoff valve is closed, the mechanical safety valve is responsible for ventilating the activated charcoal filter.

### Fuel tank pressure sensor (USA)

The fuel tank pressure sensor registers the internal pressure in the fuel tank for the leak test.



**Electrical function schematic of fuel supply**

P47.40-2088-00

- B4/15 Fuel pressure sensor
- M3 Fuel pump
- N3/10 ME-SFI [ME] control unit
- N118 Fuel pump control unit
- Y62/1 Cylinder 1 injection valve
- Y62/2 Cylinder 2 injection valve
- Y62/3 Cylinder 3 injection valve
- Y62/4 Cylinder 4 injection valve
- Y62/5 Cylinder 5 injection valve
- Y62/6 Cylinder 6 injection valve
- Y62/7 Cylinder 7 injection valve
- Y62/8 Cylinder 8 injection valve

- 1 Fuel pump, request ON
- 2 Fuel pump, specified pressure request
- 3 Fuel pump, actuation

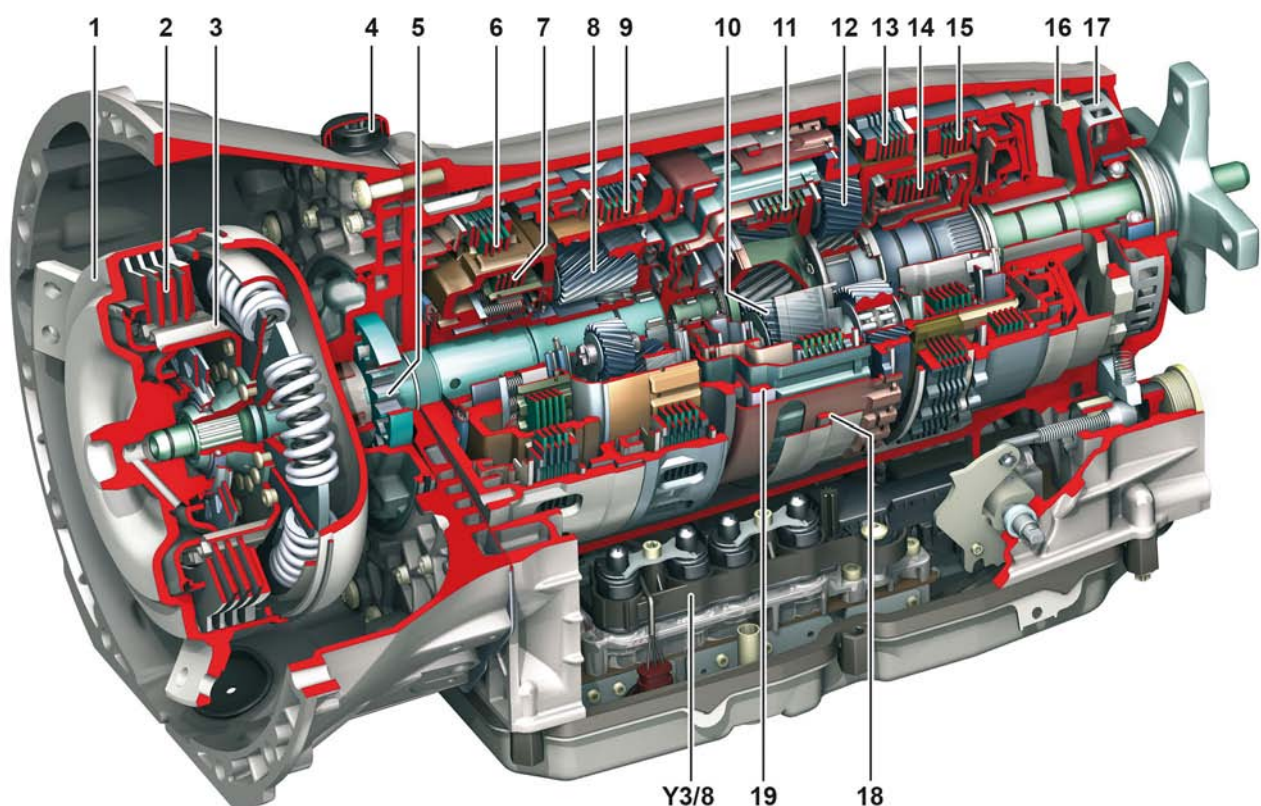
## SPEEDSHIFT MCT sport transmission

The SPEEDSHIFT MCT sport transmission is installed in the E 63 AMG as standard.

The automatic transmission is an electronically controlled 7-speed automatic transmission with wet start-up clutch (Multi-Clutch Technology = MCT) instead of a torque converter. The transmission has seven forward gears and two reverse gears.

Other features:

- Transmission mode "C" for optimum fuel consumption (Controlled Efficiency)
- Shorter shift times due to partial deactivation of individual cylinders during upshifting
- Automatic positive torque function for downshifting
- More dynamic response without the power loss typical of torque converters due to low inertia



**AMG SPEEDSHIFT MCT 7-speed sport transmission**

P27.10-2304-00

- |  |                                     |
|--|-------------------------------------|
| 1 External plate carrier                       | 11 Multidisk clutch K2              |
| 2 Multidisk clutch                             | 12 Rear single planetary gear set   |
| 3 Internal plate carrier with torsional damper | 13 Multidisk brake BR               |
| 4 Transmission housing ventilation             | 14 Multidisk clutch K3              |
| 5 Oil pump                                     | 15 Multidisk brake B2               |
| 6 Multidisk brake B1                           | 16 Park pawl gear                   |
| 7 Multidisk clutch K1                          | 17 Pulse ring for rpm sensing       |
| 8 Ravigneaux gear set                          | 18 Ring magnet for rpm sensing      |
| 9 Multidisk brake B3                           | 19 Ring magnet for rpm sensing      |
| 10 Front single planetary gear set             |                                     |
|  | Y3/8 Electric controller unit (VGS) |



## SPEEDSHIFT MCT sport transmission

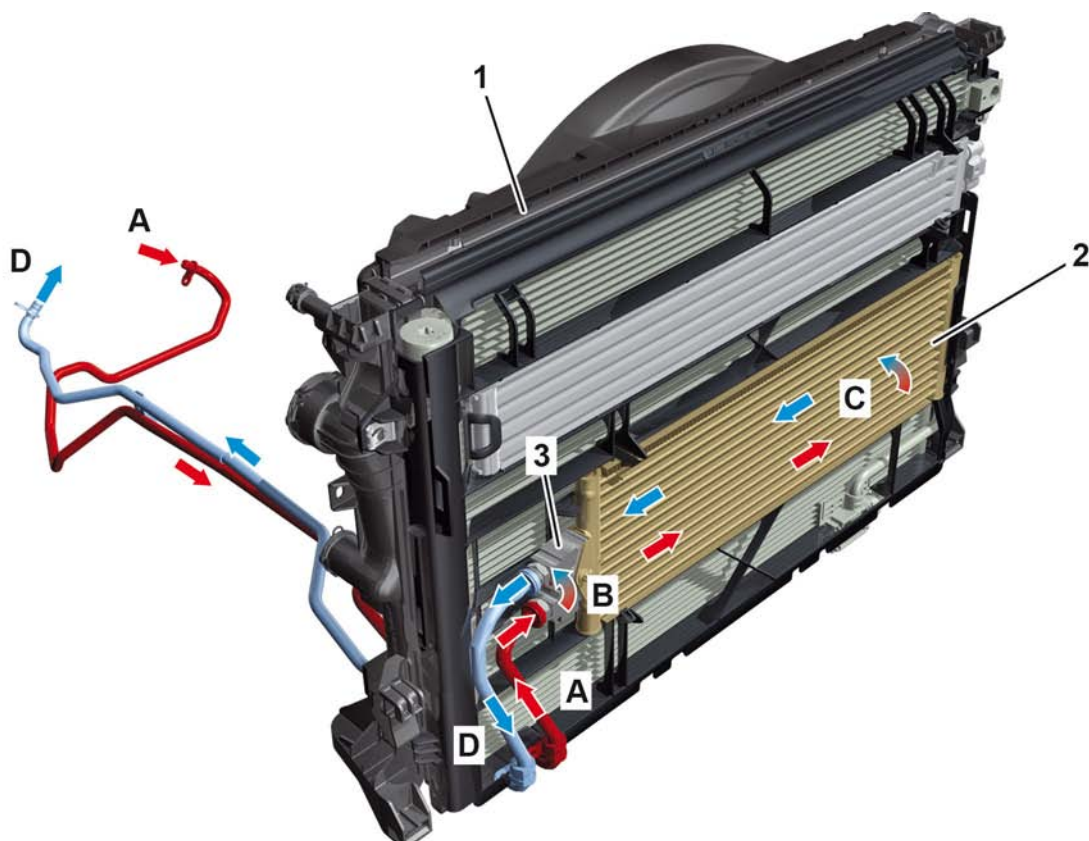
Technical data	Unit	E 63 AMG
Transmission model		722.930
Transmission version		K7B1000
Number of gears (forward / reverse)		7 / 2
Maximum transferable torque	Nm	1000
Starting device		Wet start-up clutch
Weight approx. (without oil charge)	kg	74
Oil charge approx. (permanent charge)	l	9
1st gear ratio		4.377
2nd gear ratio		2.859
3rd gear ratio		1.921
4th gear ratio		1.368
5th gear ratio		1.000
6th gear ratio		0.820
7th gear ratio		0.728
1st reverse gear ratio		-3.416
2nd reverse gear ratio		-2.231



## SPEEDSHIFT MCT sport transmission

### Transmission oil cooling

The transmission oil is suctioned out of the transmission oil pan by a mechanical pump in the transmission and pumped to the transmission oil thermostat. At a transmission oil temperature of  $T < 80\text{ °C}$ , the thermostat directs the transmission oil back to the transmission through a bypass. At a transmission oil temperature of  $T > 80\text{ °C}$ , the thermostat starts to open and it is fully open at  $95\text{ °C}$ . The transmission oil then flows through the transmission oil cooler before returning to the transmission via the return feed line.



P27.55-2117-00

### Transmission oil cooling of AMG SPEEDSHIFT MCT 7-speed sport transmission

- |   |                             |   |                                |
|---|-----------------------------|---|--------------------------------|
| 1 | Cooler module               | A | Feed from transmission         |
| 2 | Transmission cooler         | B | Return via thermostat          |
| 3 | Transmission oil thermostat | C | Return via transmission cooler |
|   |                             | D | Return to transmission         |

On the E 63 AMG, all of the driving-related switches and buttons are combined for the driver in one operating unit, the "AMG DRIVE UNIT".

The following buttons and switches are integrated in the AMG DRIVE UNIT:

- Transmission mode adjustment rotary switch
- ESP Sport OFF button
- Suspension button
- AMG button

## AMG DRIVE UNIT control unit

The AMG DRIVE UNIT is controlled via a separate control unit. The AMG DRIVE UNIT control unit is located on the underside of the step plate in the front passenger footwell.



P27.60-3378-00

### AMG DRIVE UNIT

S192 Transmission mode adjustment rotary switch

S193/1 ESP Sport OFF button

S193/2 Suspension button

S193/3 AMG button



## AMG DRIVE UNIT

### Transmission mode adjustment rotary switch

The transmission mode adjustment rotary switch is used to select the various transmission modes:

- Controlled Efficiency "**C**"
- Sport "**S**"  
(normal driving situation)
- Sport-Plus "**S+**"  
(sporty driving situation with reduced shift times)
- Manual "**M**"
- RACE START "**RS**"  
(not selectable in normal driving mode)

The indicator for the program selected on the transmission mode adjustment rotary switch is highlighted with red background illumination.



P54.25-8180-00

**Transmission mode adjustment rotary switch**

### ESP Sport OFF button

Three different ESP modes can be selected using the ESP Sport OFF button:

- ESP ON
- ESP Sport (raised control threshold)
- ESP OFF (ESP deactivated)

### Suspension button

The suspension button is pressed to select either the "Comfort", "Sport" or "Sport+" suspension setting.

### AMG button

The AMG button is used to store and call up the following setup menus:

- Transmission mode
- Suspension tuning

The setup menu and the stored transmission mode can be called up by briefly pressing the AMG button. If the AMG button is pressed for a longer period of time, the setup menu not only opens but the current transmission mode and suspension settings are also stored.

The RACE START function permits optimal vehicle acceleration from a standstill.

Certain basic requirements must be fulfilled for RACE START to be activated:

- Driver door, trunk lid and engine hood closed
- Engine, transmission, ESP and ABS not in emergency operation mode
- ESP Sport mode activated

The following parameters are also checked before the RACE START function is started:

- Engine oil temperature  $T > 80\text{ °C}$
- Position of steering angle sensor:  
The steering wheel must be in the straight-ahead position
- No thermal overload of start-up clutch
- Gear range "D" must be engaged

If one of these basic requirements is not fulfilled, RACE START is not possible or is aborted. The following message is displayed on the multifunction display:

- **RACE START not possible**  
**see operating instructions**



P54.32-7872-00

*RACE START not possible display*

### RACE START procedure

#### 1. Actuate brake pedal

When the brake pedal is actuated by the left foot of the driver, pressure is built up in the hydraulic brake system. The level of pressure is forwarded to the fully integrated transmission control unit (VGS) by the ESP, SPS [PML] and BAS control unit via the CAN bus.

#### 2. Engage gear range

The AMG DRIVE UNIT control unit receives feedback about gear range engagement from the VGS control unit via CAN bus.

#### **i** Note

The brake pedal must be actuated with the left foot because the right foot is required to actuate the accelerator pedal.

## RACE START function

### 3. Call up RACE START

RACE START mode is activated in the fully integrated transmission control unit (VGS) via the AMG DRIVE UNIT by turning the transmission mode adjustment rotary switch to position "RS".

The VGS control unit then evaluates the following signals:

- Engine oil temperature  $T > 80\text{ °C}$
- Steering angle sensor position
- Temperature of wet start-up clutch
- Gear range "D" engaged

The VGS control unit also displays the following messages via the instrument cluster:

- Paddle UP to confirm RACE START
- Paddle DOWN to abort RACE START

### 4. Activate / deactivate RACE START

The signal to confirm or abort RACE START is transmitted to the fully integrated transmission control unit via the steering column tube module by pressing the steering wheel Paddle UP or the steering wheel Paddle DOWN.

### 5. Actuate accelerator pedal

The fully integrated transmission control unit (VGS) transmits a request to the instrument cluster to display the following text on the multifunction display:

- **RACE START available**  
**Depress accelerator pedal**

In accordance with the text on the multifunction display, the driver must now depress the accelerator pedal all the way with his / her right foot. The status of the accelerator pedal is read in by the ME-SFI [ME] control unit and made available to the fully integrated transmission control unit via the CAN bus.



P54.32-7873-00

**RACE START confirm display**



P54.32-7874-00

**RACE START available display**

#### **i** Note

If RACE START is used several times in quick succession, it only becomes available again after the vehicle is driven a certain distance.

## 6. Activate RACE START

The VGS control unit places the signal "RACE START mode active" on the CAN bus. The ME-SFI [ME] control unit then raises the engine speed to approx. 4,000 rpm and the following text appears on the multifunction display:

- **RACE START**  
Release brake to start

## 7. RACE START mode active

The RACE START function is started by releasing the brake pedal and the start-off procedure is performed with maximum acceleration.

The following message appears on the multifunction display:

- **RACE START active**

## 8. End of RACE START mode

When a speed of approx. 50 km/h is reached, the RACE START function is terminated and the "S+" transmission mode is engaged.

## RACE START abort

RACE START mode is aborted if the VGS control unit receives one of the following signals:

- Driver door, trunk lid or engine hood open
- Engine, transmission, ESP or ABS in emergency operation mode
- Start-up clutch thermally overloaded
- Steering wheel not in straightahead position
- ESP Sport mode not activated
- Gear range "D" not engaged

The following message is then displayed on the multifunction display:

- **RACE START aborted**



P54.32-7875-00

*RACE START start display*



P54.32-7876-00

*RACE START active display*



P54.32-7877-00

*RACE START aborted display*



## Steering/axles/suspension

### Steering

The speed-sensitive rack-and-pinion steering has been redesigned for the E 63 AMG. The steering ratio of 14:1 is 22% more direct than on the series production model.

AMG-specific features:

- Constant gear ratio between toothed rack and pinion
- Outer tie rods have been adjusted to the axle kinematics

### Variable steering assistance

The steering power assistance is regulated according to the vehicle speed. It is controlled via the speed-sensitive power steering solenoid valve, which is actuated by the ESP control unit according to vehicle speed.

### Axles and suspension

The E 63 AMG is equipped with hybrid suspension and the AMG RIDE CONTROL (ARC) suspension system, which are characterized by the following features:

- Front axle with steel suspension
- Rear axle with air suspension
- AMG RIDE CONTROL: continuous adjustment damping at the front and rear axle
- AMG-specific dual-tube shock absorber system at the front and rear axle
- Four position sensors to determine the vehicle level and direction of movement
- Three acceleration sensors to determine the absolute sprung mass vibrations

#### Note

A new adapter plate, MB number W212 589 02 63 00, is required to clamp the front axle springs.

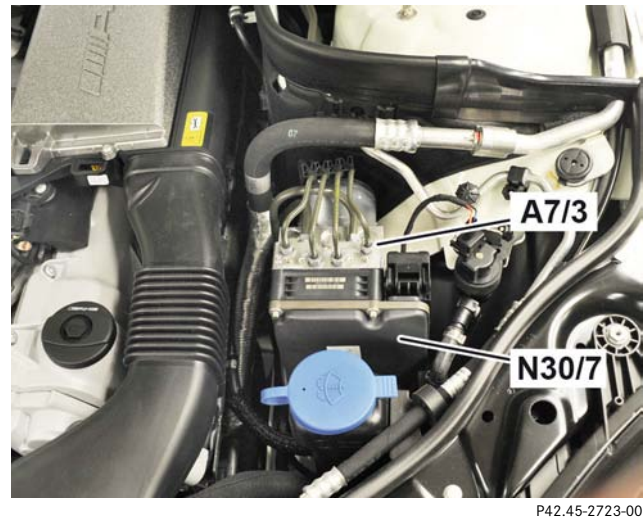
### Adaptive Brake

The premium Adaptive Brake system is used on the E 63 AMG:

The ESP control unit is installed at the left front of the engine compartment on the traction system hydraulic unit.

The ESP control unit controls the following systems:

- Adaptive Brake
- PRE-SAFE®
- Variable speed limiter, except code (233) DISTRONIC PLUS
- Cruise control, except code (233) DISTRONIC PLUS



P42.45-2723-00

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

#### **i** Note

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

## Technical data

Model	Engine	Transmission	Rear axle differential	Ratio $i_{RA}$
<b>Rear axle ratios</b>				
	156.985	722.930	215 FE	2.82

Brake system	Unit	E 63 AMG
<b>Brake system, front</b>		
Type of brake (aluminum caliper)		6-piston fixed caliper
Brake disk		Internally ventilated composite brake disk
Brake disk diameter	mm	360
Brake disk thickness	mm	36
Lining area	cm <sup>2</sup>	118.7
<b>Brake system, rear</b>		
Type of brake (aluminum caliper)		4-piston fixed caliper
Brake disk		Solid
Brake disk diameter	mm	360
Brake disk thickness	mm	26
Lining area	cm <sup>2</sup>	48.3



	Front light alloy wheel	Front tires	Rear light alloy wheel	Rear tires
<b>Standard equipment – light alloy wheels</b>				
Code 790	9.0J x 18 ET 37	255 / 40 ZR 18 (99Y) XL	9.5J x 18 ET 52	285 / 35 ZR 18 (101Y) XL
<b>AMG Performance Studio special equipment</b>				
Code 793	9.0J x 19 ET 37	255 / 35 ZR 19 (96Y) XL	9.5J x 19 ET 52	285 / 30 ZR 19 (98Y) XL

<b>Spare tire</b>				
Collapsible spare wheel	Rim: Tire: Pressure:	6.5B x 19 H2 ET 14 T 175 / 50-19 97 P 3.5 bar (51 PSI)		
<b>Winter tires</b>				
18" tires	Front:	255 / 40 R18 99 V XL M+S		
	Rear:	255 / 40 R18 99 V XL M+S		
19" tires	Front:	255 / 35 R19 96 V XL M+S		
	Rear:	255 / 35 R19 96 V XL M+S		
<b>Mixed tires</b> (snow chain operation not permissible)				
19" tires	Front:	255 / 35 R19 96 V XL M+S		
	Rear:	285 / 30 R19 98 V XL M+S		



P40.10-5816-00

Light alloy wheel, code 790



P40.10-5817-00

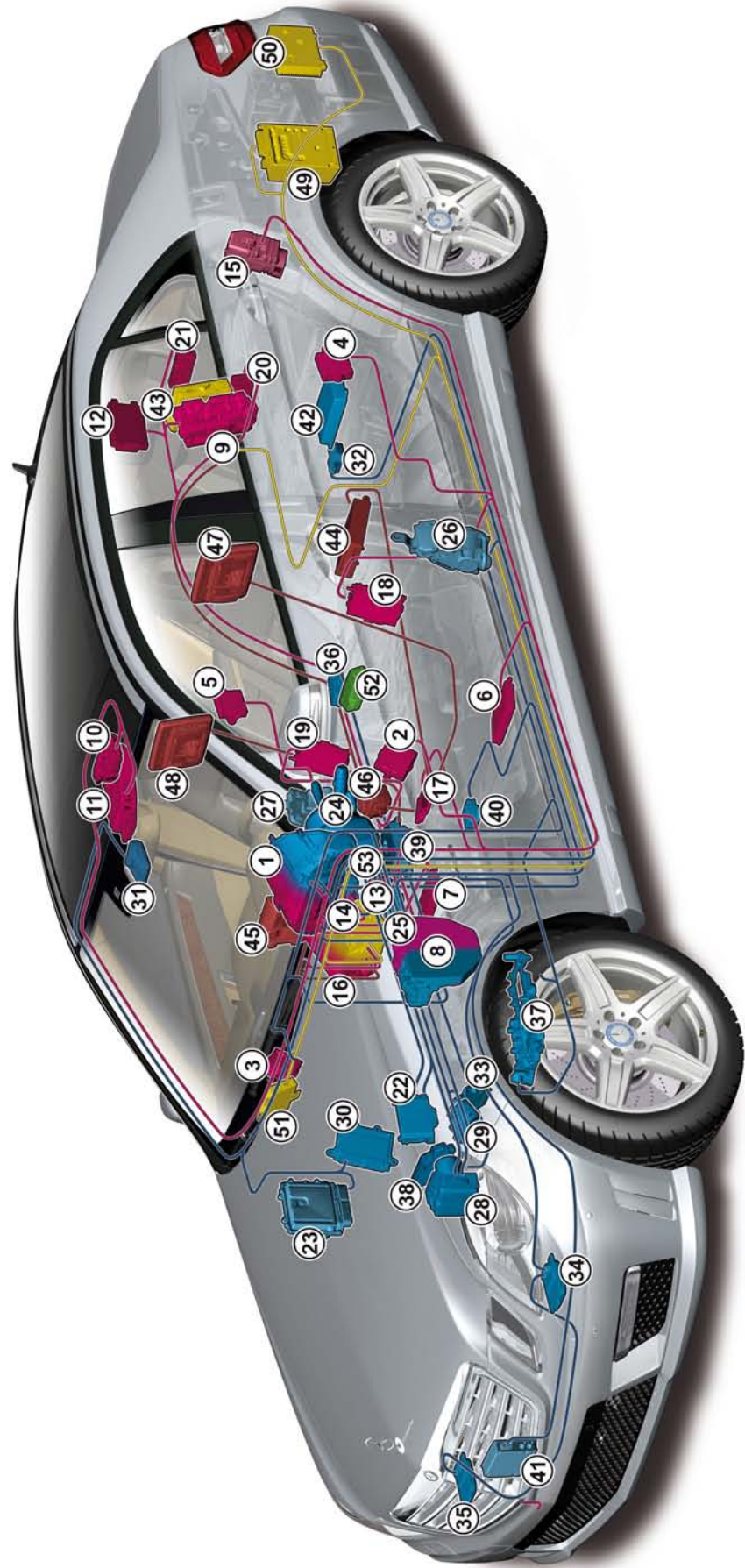
Light alloy wheel, code 793



Overall network

Overall network of E 63 AMG (model series W 212)

- Interior CAN
- Chassis CAN
- Drivetrain CAN
- Front end CAN
- Vehicle dynamics CAN
- Diagnostic CAN
- MOST
- Telematics CAN



P00.19-4687-00



**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
- 8 Front SAM control unit with fuse and relay module
- 9 Rear SAM control unit with fuse and relay module
- 10 Panoramic sliding sunroof control module (with code (413) Panoramic glass sunroof with top sliding sunroof)
- 11 Overhead control panel control unit

**Interior CAN**

- 12 KEYLESS-GO control unit
- 13 Automatic air conditioning control and operating unit
- 14 Electronic ignition lock control unit
- 15 Dynamic multicontour seat pneumatic pump
- 16 COMMAND controller unit
- 17 Weight Sensing System (WSS) (USA)
- 18 Left front dynamic multicontour seat control unit
- 19 Right front dynamic multicontour seat control unit
- 20 Rear seat heater control unit (only ECE)
- 21 Trunk lid control control unit

**Chassis CAN**

- 1 Instrument cluster
- 9 Front SAM control unit with fuse and relay module
- 14 Electronic ignition lock control unit
- 22 Radar sensors control unit
- 23 ME-SFI [ME] control unit (M 156)
- 24 Steering column tube module control unit
- 25 Supplemental restraint system control unit
- 26 Left front reversible emergency tensioning retractor
- 27 Right front reversible emergency tensioning retractor
- 28 Electronic Stability Program control unit
- 29 AIRMATIC control unit
- 30 Night View Assist control unit
- 31 Multifunction camera
- 32 Tire pressure monitor (TPM (RDK))
- 33 PARKTRONIC control unit
- 38 Transmission mode control unit (AMG DRIVE UNIT)

**Front end CAN**

- 8 Front SAM control unit with fuse and relay module
- 34 Left xenon lamp control unit
- 35 Right xenon light control unit

**Drivetrain CAN**

- 23 ME-SFI [ME] control unit (M 156)
- 36 Fuel system control unit
- 37 Fully integrated transmission control unit
- 38 Transmission mode control unit (AMG DRIVE UNIT)
- 39 DIRECT SELECT INTERFACE

## Overall network

**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 actually exist in this form because control units for different equipment variants and national versions are shown together on this vehicle.

**Private bus**

- 2 Left front door control unit
- 3 Right front door control unit
- 4 Left rear door control unit
- 5 Right rear door control unit
- 8 Front SAM control unit with fuse and relay module
- 9 Rear SAM control unit with fuse and relay module
- 13 Automatic air conditioning control and operating unit
- 14 Electronic ignition lock control unit
- 24 Steering column tube module control unit
- 39 DIRECT SELECT INTERFACE
- 52 Rear air conditioning control unit (only ECE)
- 53 Upper control panel

**Telematics CAN**

- 16 COMAND controller unit
- 43 TV tuner (only ECE)
- 44 DVD player
- 45 COMAND display
- 46 COMAND control panel
- 47 Left rear display
- 48 Right rear display

**Vehicle dynamics CAN**

- 22 Radar sensors control unit
- 28 Electronic Stability Program control unit
- 40 Yaw rate sensor for lateral and longitudinal acceleration
- 41 DISTRONIC electric controller unit

**Diagnostic CAN**

- 8 Front SAM control unit with fuse and relay module
- 42 Emergency call system control unit <sup>(USA)</sup>

**MOST ring**

- 16 COMAND controller unit
- 43 TV tuner (only ECE)
- 49 Sound system amplifier control unit
- 50 SDAR control unit with HD radio <sup>(USA)</sup> or digital radio (DAB) ECE
- 51 Media interface control unit



## 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 can 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.

## Overall network

### MOST

MOST is an optical networking system. Data are transmitted via fiber optic cables between the connected information, navigation and communications components.

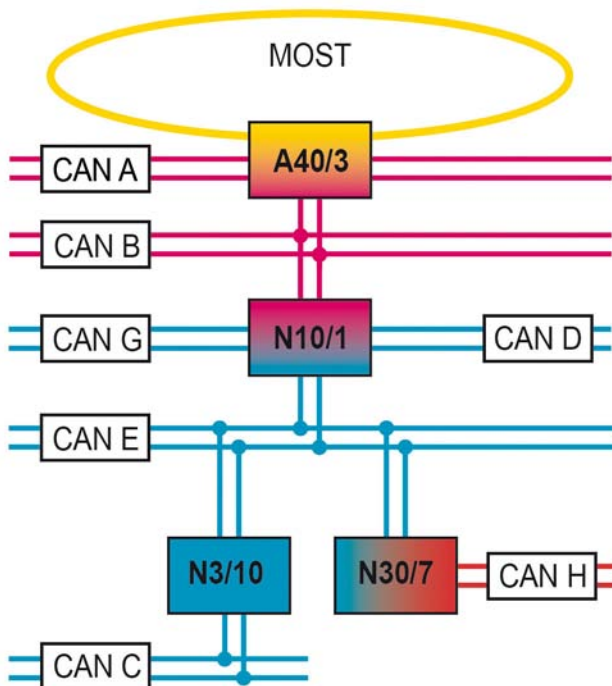
Transfer rate 22 Mbit/s.

### 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.



- A40/3 COMAND controller unit
- N3/10 ME-SFI [ME] control unit
- N10/1 Front SAM control unit with fuse and relay module
- N30/7 Electronic Stability Program Premium control unit

- 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
- MOST Media Oriented System Transport

Control units with gateway function

P00.19-4680-00



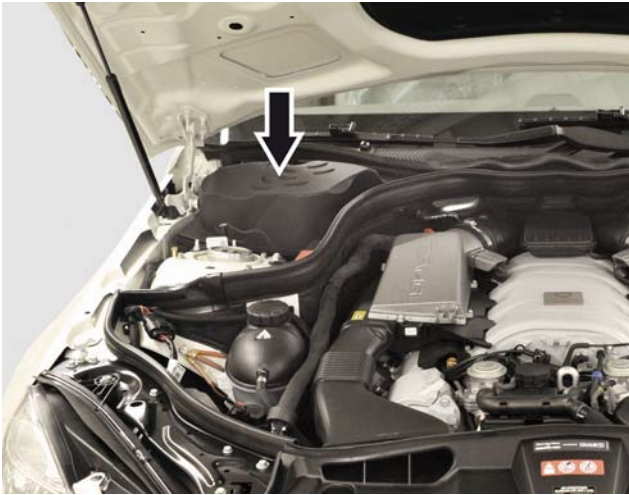


## Battery and alternator

The on-board electrical system battery (G1) is located on the right of the engine compartment under a plastic cover.

**i Note**

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



P54.10-3261-00

**Battery location on E 63 AMG**

## Overview of battery and alternator

Engine	Battery	Alternator
M 156	70 Ah	180 A



## 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
- ME-SFI [ME] control unit
- All additional 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
- Regenerative braking
- 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 ME-SFI [ME] 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 ME-SFI [ME] 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.

### Regenerative braking in deceleration mode

If the ME-SFI [ME] control unit detects deceleration mode with the engine running at a stable speed, the ME-SFI [ME] control unit activates charging of the battery in deceleration mode by means of regenerative braking up to a voltage of  $U = 15 \text{ V}$ .

### 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.

## On-board electrical system

### Consumer shutoff

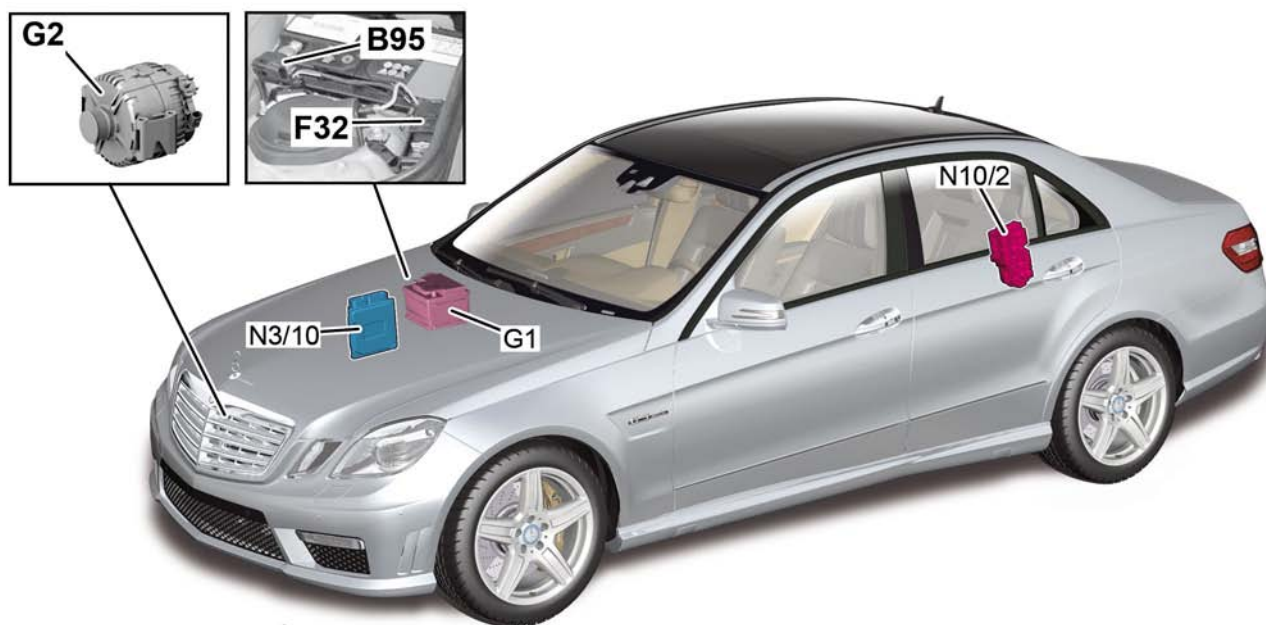
In order to prevent complete discharge of the on-board electrical system battery in all driving cycles, the on-board electrical system voltage is continuously monitored by the battery sensor and evaluated by the rear SAM control unit. The operating rate of the alternator is also monitored.

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.



P54.10-3263-00

### Main components of on-board electrical system

B95 Battery sensor

F32 Front fuse box

G1 On-board electrical system battery

G2 Alternator

N3/10 ME-SFI [ME] control unit

N10/2 Rear SAM control unit with fuse and relay module

## Exterior lights

### Front lights

The E 63 AMG has retained the "4-eye" front end of the predecessor model series. 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.

The following light systems are available depending on the equipment installed:

- H7 halogen headlamps with 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

### 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 the standing and parking lights, the reflection system continues to be used in the halogen variant.



P82.10-5973-00

#### Halogen headlamp (USA version)

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

E6/2 Right front side marker lamp  
(with code (494) USA version)



## Bi-xenon headlamps

The following bi-xenon 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

As a special design feature, the bi-xenon headlamps are darkened.



P82.10-6005-00

### Daytime running lights with LEDs

E2/3 Right daytime running light



P82.10-6006-00

### Bi-xenon headlamp (USA version)

- |      |   |       |  |
|------|---|-------|--|
| E2   | Right front lamp unit                   | E2e10 | Right xenon bulb with integrated ignition module           |
| E2e3 | Right front standing and parking lights | E2e11 | Right infrared lamp (with code (610) Night View Assist)    |
| E2e5 | Right front turn signal light           | E6/2  | Right front side marker lamp (with code (494) USA version) |
| E2e9 | Right cornering light                   |       |  |

## Abbreviations

**ABS**

Antilock Brake System

**ACS**

AMG Cooling System

**AKSE**

Automatic child seat recognition (ACSR)

**ALDW**

Advanced Lane Departure Warning

**APS**

Auto Pilot System

**ARC**

AMG RIDE CONTROL

**ASR**

Acceleration skid control

**BAS**

Brake Assist System

**CAN**

Controller Area Network

**CD**

Compact Disc

**COMAND**

Cockpit Management and Data System

**CO<sub>2</sub>**

Carbon dioxide

**DBV**

Pressure limiting valve

**DSI**

DIRECT SELECT INTERFACE

**DVD**

Digital Versatile Disc

**ESP**

Electronic Stability Program

**FIN**

Vehicle identification number (VIN)

**GF**

Basic knowledge / functions (WIS)

**HDPE**

High-Density Polyethylene

**ILS**

Intelligent Light System

**LED**

Light Emitting Diode

**LEV**

Low-Emission-Vehicle

**LIN**

Local Interconnect Network





**ME**

Motor Electronics (ME-SFI)

**MCT**

Multi-Clutch Technology

**MOST**

Media Oriented System Transport

**M+S**

Mud and Snow

**NEFZ**

New European Driving Cycle (NEDC)

**PML**

Speed-sensitive power steering (SPS)

**RDK**

Tire pressure monitor (TPM)

**RDS**

Radio Data System

**ROZ**

Research Octane Number (RON)

**RSE**

Rear Seat Entertainment

**SA**

Special equipment

**SAM**

Signal acquisition and actuation module

**SBS**

Voice control system (VCS)

**ULEV**

Ultra-Low-Emission-Vehicle

**VGS**

Fully integrated transmission control

**WIS**

Workshop Information System



## Index

<b>A</b>	
Adaptive Brake . . . . .	.45
Alternator management . . . . .	.54
AMG Cooling System . . . . .	.31
AMG DRIVE UNIT . . . . .	.39
AMG RIDE CONTROL . . . . .	.44
AMG SPEEDSHIFT MCT 7-speed sport transmission . . . . .	36, 38
<b>B</b>	
Bi-xenon headlamps . . . . .	.57
<b>C</b>	
Center console . . . . .	.26
Consumer shutoff . . . . .	.55
<b>D</b>	
Daytime running lights . . . . .	.57
Dimensional concept . . . . .	7
Dimensions . . . . .	.21
Dimensions and weights . . . . .	.21
Door sills . . . . .	.26
<b>E</b>	
Engine	
Engine data . . . . .	.29
E-SELECT selector lever . . . . .	8
Exterior lights	
Front lights . . . . .	.56
<b>F</b>	
Front seats . . . . .	.27
<b>H</b>	
H7 halogen headlamps . . . . .	.56
Hybrid suspension . . . . .	.44
<b>I</b>	
Instrument cluster . . . . .	24
Interior color concept . . . . .	23
Interior design . . . . .	22
<b>L</b>	
Light alloy wheels . . . . .	47
<b>N</b>	
Networking	
Bus systems . . . . .	51
Gateway function . . . . .	52
On-board electrical system management . . . . .	54
Overall network . . . . .	48
No-load current shutoff . . . . .	54
<b>P</b>	
Performance graph . . . . .	30
<b>R</b>	
RACE START . . . . .	.40, 41
RACETIMER . . . . .	8
Rear seats . . . . .	27
Regenerative braking . . . . .	54
<b>T</b>	
Technical data	
Brake system . . . . .	46
Rear axle differential . . . . .	46
Transmission . . . . .	37
Transmission oil cooling . . . . .	38
<b>V</b>	
Vehicle concept . . . . .	7
Vehicle views	
Front view . . . . .	16
Rear view . . . . .	17
Side view . . . . .	18



