AIR BAG SAFETY PRECAUTIONS

Observe following precautions when working with air bag systems:

- When working around steering column components and before any repairs are performed, disable air bag system. See **DISABLING & ACTIVATING AIR BAG SYSTEM** .
- Before straightening any damage to body, or before performing electrical arc-welding, disable air bag system. See **DISABLING & ACTIVATING AIR BAG SYSTEM** .
- Always wear safety glasses and gloves when handling a deployed air bag module. Air bag module may contain sodium hydroxide deposits which are irritating to the skin.
- DO NOT repair any portion of SRS wiring harness.
- Always handle air bag module with trim cover away from your body. Always place air bag module on workbench with trim cover up, away from loose objects.
- DO NOT expose any SRS component to temperatures in excess of 212 F (100 C).
- DO NOT expose any SRS component to cleaning agents such as solvents, gasoline, lye, etc.
- DO NOT connect Hand-Held Tester (6511 0001 99) to Data Link Connector (DLC) with ignition on. Damage to HHT may result.
- DO NOT connect HHT (6511 0001 99) to vehicle if a battery charger is connected to vehicle battery. Damage to HHT may result.

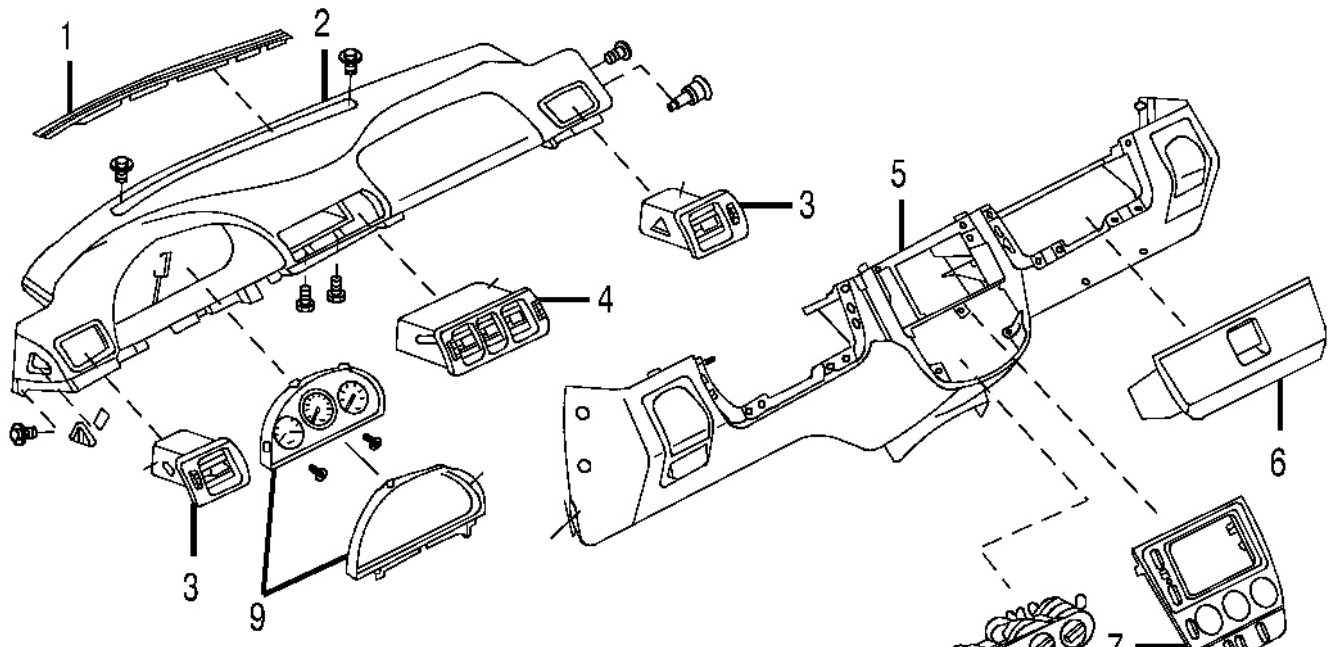
⇒		Test scope/ Actual value no. and text	Test connection	Test condition	Nominal value/ display	Possible cause/Remedy
20.2	021	012 Right side airbag sensor (A54) Insulation fault F1– / F1+	N2/2 6 — (Ω) — 20 5 — — 20	Connect See Figure 23. Disconnect connector at A54	> 20 kΩ > 20 kΩ	Short in wiring circuit 31, Short in wiring circuit 30, 15, 15R
21.0	020 024 025	04 Front passenger seat occupied recognition sensor (B41/1) or (B48)		connected. Ignition key in position "1".	√ F	⇒ 21.1
21.1			Except model 170 X55/3 X55/4 3 — — 4 Model 170 3 — — 2	connected. Connect See Figure 29. Set resistance of 30 k Ω (seat occupied), use diode 1N4007 as well as 300 Ω resistor, switched in parallel. Watch polarity!	√ F	Contact matt, ⇒ 21.2

98B14317

Fig. 21: SRS & ETR Diagnosis (15 Of 16)
Courtesy of MERCEDES-BENZ OF NORTH AMERICA

⇒		Test scope/ Actual value no. and text	Test connection	Test condition	Nominal value/ display	Possible cause/Remedy
21.2			Except model 170 X55/3 X55/4 3 — (Ω) — 4 Model 170 3 — (Ω) — 2	Front passenger seat **not** occupied. Front passenger seat **occupied.**	> 70 k Ω ≤ 30 k Ω	Contact matt
22.0	027 028 037	Model 170 only Front passenger seat occupied recognition with automatic child seat recognition (B48) (ACSR)	X55/3 X55/4 1 — (V) — 4	Ignition key in position "1".	11 – 14 V	Wiring, Fuse 2 in fuse and relay box (F1).
23.0	036	Model 170 only Automatic child seat recognition warning lamp (A72e1) (AIRBAG OFF), Automatic child seat recognition (ACSR) indicator lamp (E16) Voltage supply	E16 4 — (V) — 1	Child seat **"Babysafe"** installed. Ignition key in position "1".	11 – 14 V	Wiring, Fuse 3 in fuse and relay box (F1), If ok: E16

98C14318



1. Upper Air Outlet Panel
2. Instrument Panel
3. Outer Air Vent
4. Center Air Vent
5. Lower Instrument Panel
6. Glove Box
7. Center Trim Plate
8. Control Head
9. Instrument Panel Cluster

99H30418

Fig. 3: Identifying Instrument Panel Components
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

PASSENGER-SIDE AIR BAG MODULE

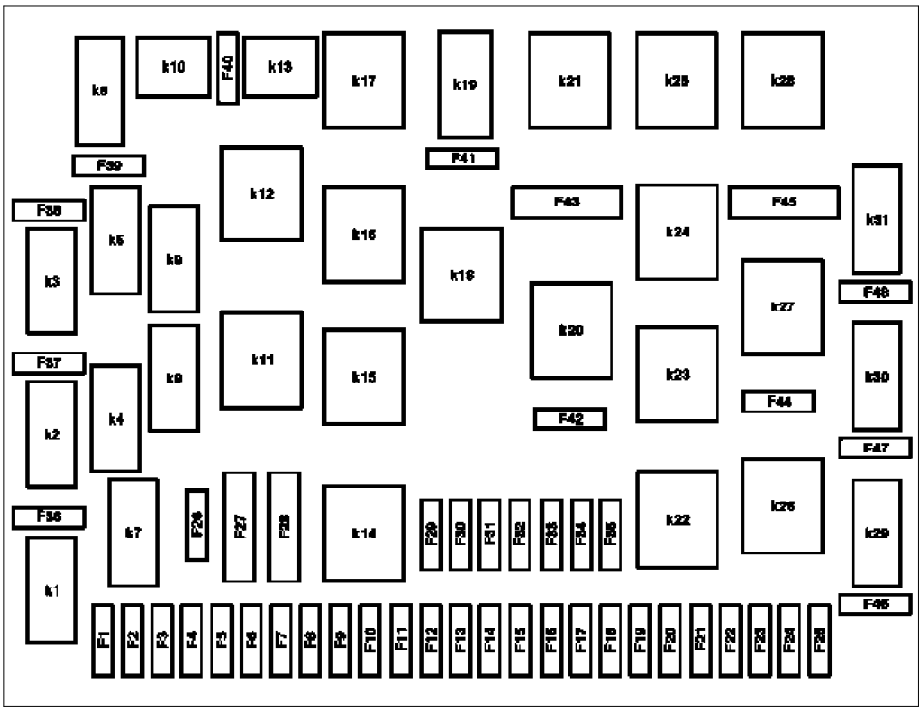
Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING & ACTIVATING AIR BAG SYSTEM** .
2. Remove instrument panel. See **INSTRUMENT PANEL** . Disconnect passenger-side air bag module electrical connectors. Remove passenger-side air bag module nuts. Remove passenger-side air bag module. See **Fig. 4** .
3. To install, reverse removal procedure. Tighten passenger-side air bag module nuts to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. Read diagnostic codes and erase memory. See **DIAGNOSTICS** .

GF54.15-P-1255GH	Assignment and cable connections of fuse blocks	18.3.97

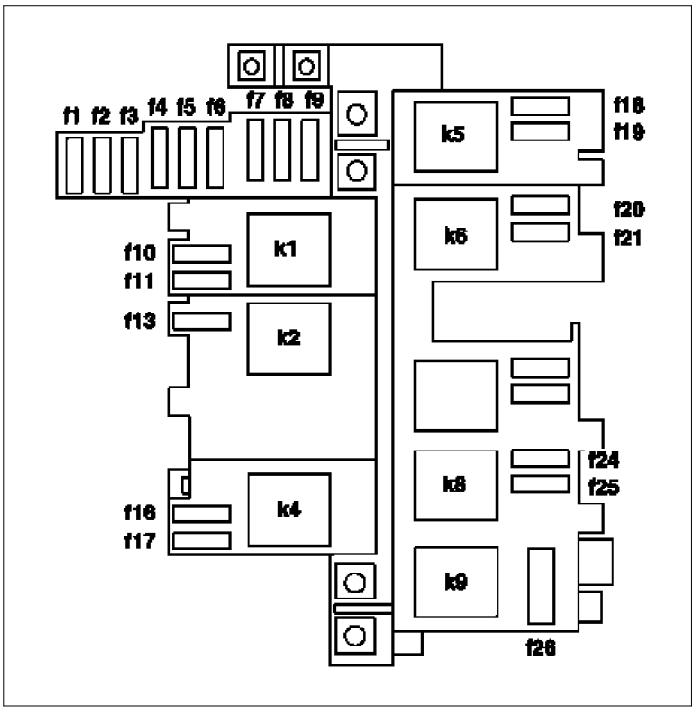
MODEL 163

Fuses *1-42*
Relay *k1-k32*



P54.15-0438-06

Overview of fuse and relay module in right front footwell



P54.15-2486-12

	Fuse and relay box, fuses, relay holder	Engines 612.963 and 628.963	GF54.15-P-1255-12G
	Fuse and relay box, fuses, relay holder	up to 31.08.01	GF54.15-P-1255-15GH
	Fuse and relay box, fuses, relay holder	as of 01.09.01	GF54.15-P-1255-15GA
	Fuse and relay box, fuses, relay holder	Fuse and module box in right front footwell	GF54.15-P-1255-15GI
	Fuse and relay box, relay/relay holder	up to 31.08.01	GF54.15-P-1255-18GH
	Fuse and relay box, relay/relay holder	as of 01.09.01	GF54.15-P-1255-18GA
	Fuse and relay box, relay/relay holder	Fuse and module box in right front footwell	GF54.15-P-1255-18GI

Automatic Transmission, Gear Ratios

See **AUTOMATIC TRANSMISSION, GEAR RATIOS**.

Power Transmission, Function

See **AUTOMATIC TRANSMISSION, POWER TRANSMISSION, FUNCTION**.

Power Flow In 1st Gear, Function

See **POWER FLOW IN 1ST GEAR, FUNCTION**.

Power Flow In 2nd Gear, Function

See **POWER FLOW IN 2ND GEAR FUNCTION**.

Power Flow In 3rd Gear, Function

See **POWER FLOW IN 3RD GEAR FUNCTION**.

Power Flow In 4th Gear, Function

See **POWER FLOW IN 4TH GEAR FUNCTION**.

Power Flow In 5th Gear, Function

See **POWER FLOW IN 5TH GEAR FUNCTION**.

Power Flow In Reverse, Function

See **POWER FLOW IN REVERSE, FUNCTION**.

Gearshift System, Function

See **FUNCTION OF GEAR SHIFT**.

Function Of Gear Change

See **FUNCTION OF GEAR CHANGE**.

Shifting N To D (1st Gear), Function

See **SHIFTING N TO D (1ST GEAR), FUNCTION**.

Shift From 1 to 2, Function

See **SHIFT FROM 1 TO 2, FUNCTION**.

Starter Lockout Contact, Location

The starter lockout contact (Y3/6sl) is located in the electrical control unit (Y3/6) and is permanently connected to the conductor track. See **Fig. 28**.

Starter Lockout Contact, Task

To recognize selector valve and selector lever position "P" and "N".

Starter Lockout Contact, Design

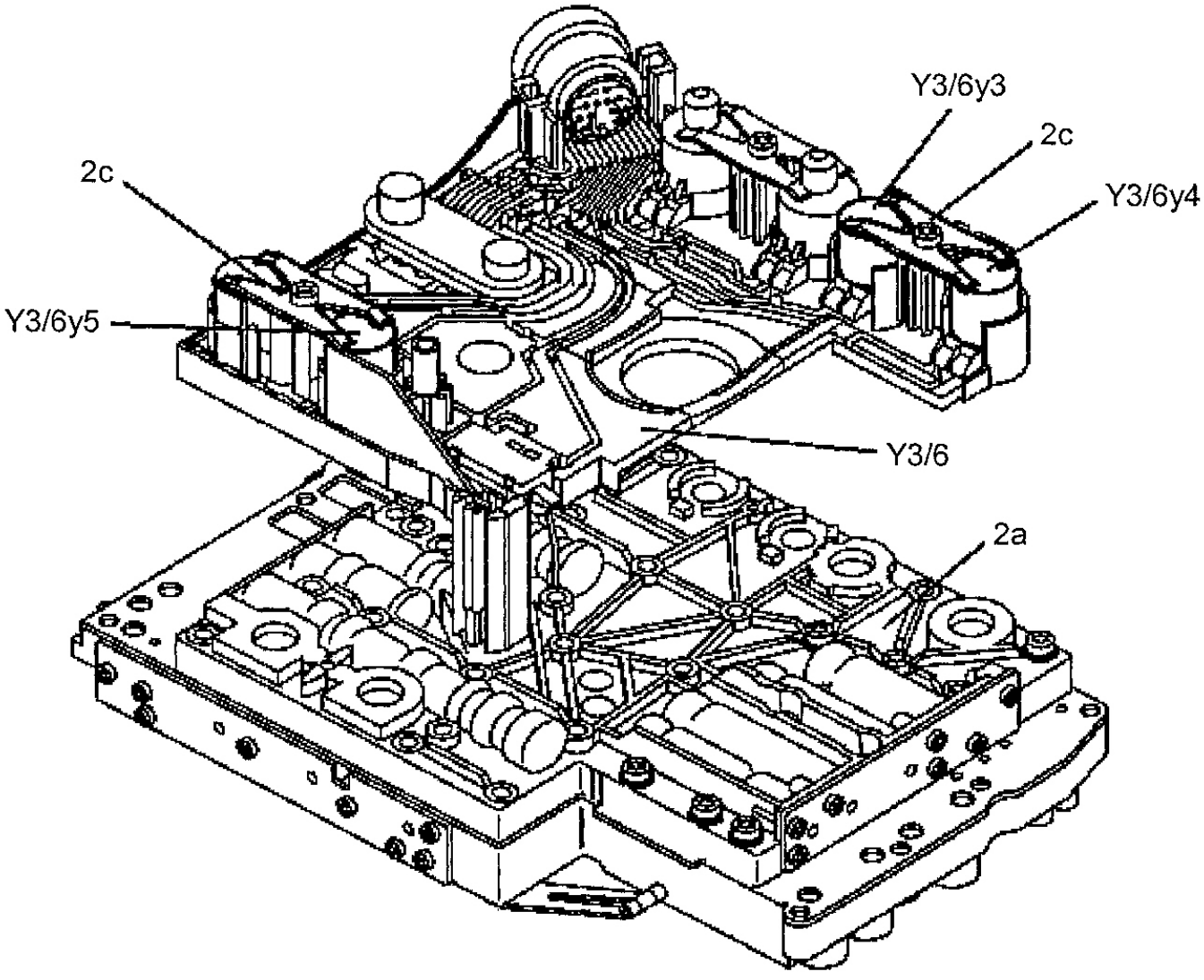
The starter lockout contact (Y3/6sl) consists of:

- A Plunger
- A Permanent Magnet
- A Reed Contact

Starter Lockout Contact, Function

See **STARTER LOCKOUT CONTACT, FUNCTION**.

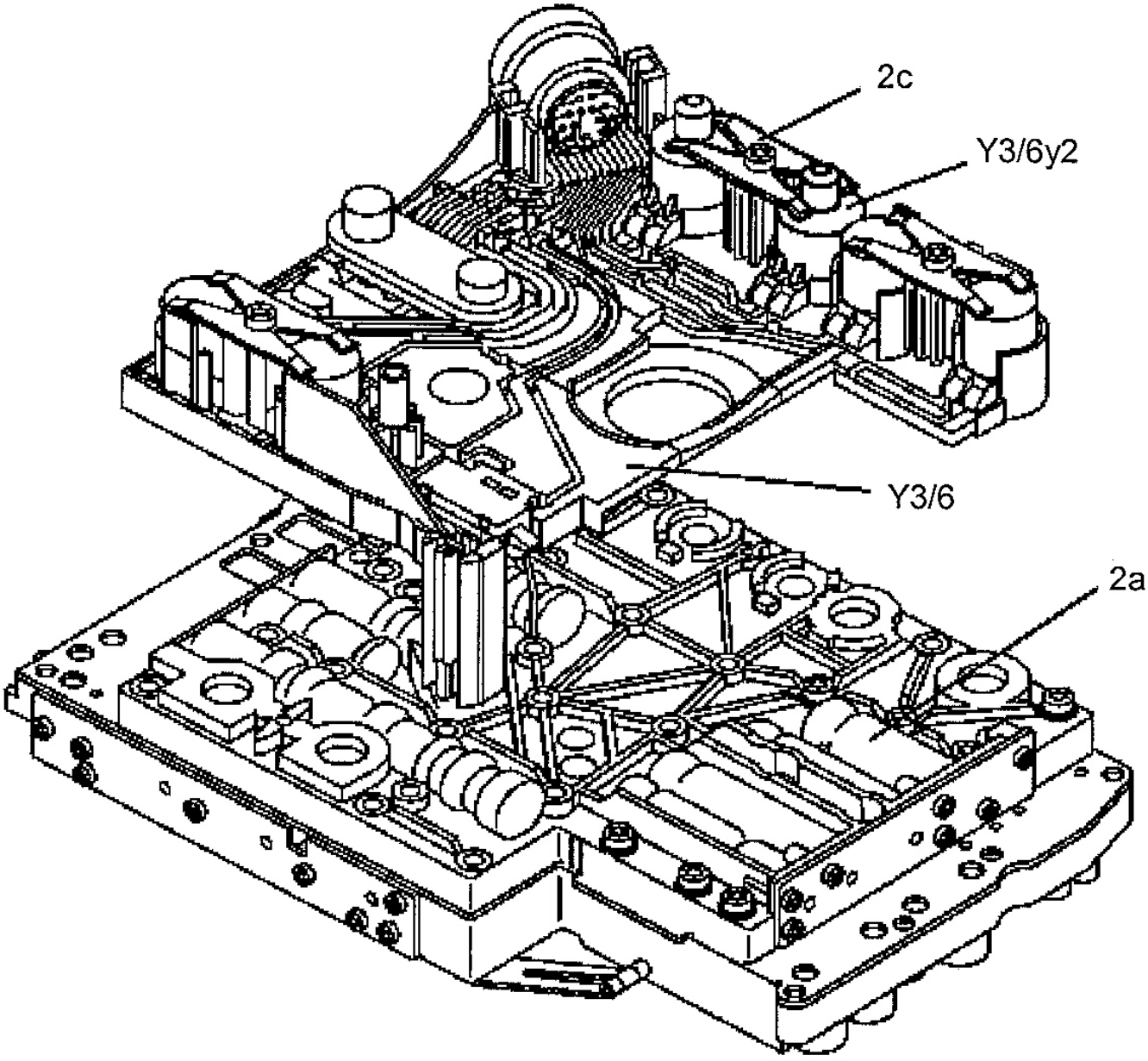
Starter Lockout Contact, Function



2a	Valve housing of shift plate
2c	Left spring
Y3/6	Electric control unit
Y3/6y3	1-2 and 4-5 shift solenoid valve
Y3/6y4	3-4 shift solenoid valve
Y3/6y5	2-3 shift solenoid valve

G00354405

Fig. 47: Upshift/Downshift Solenoid Valve, Location/Task/Design/Function



2a	Valve housing of shift plate
2c	Left spring
Y3/6	Electric control unit
Y3/6y2	Shift pressure control solenoid valve

G00354412

See **SHIFT DETENT, DESIGN**.

Shift Detent, Function

See **SHIFT DETENT, FUNCTION**.

Shift Detent, Design

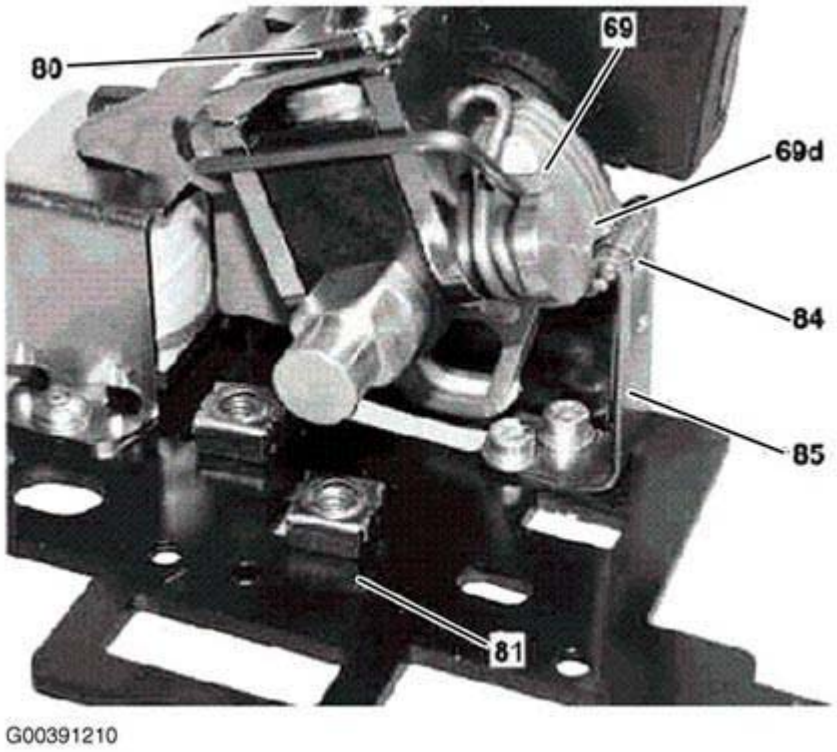


Fig. 86: Shift Detent, Design
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

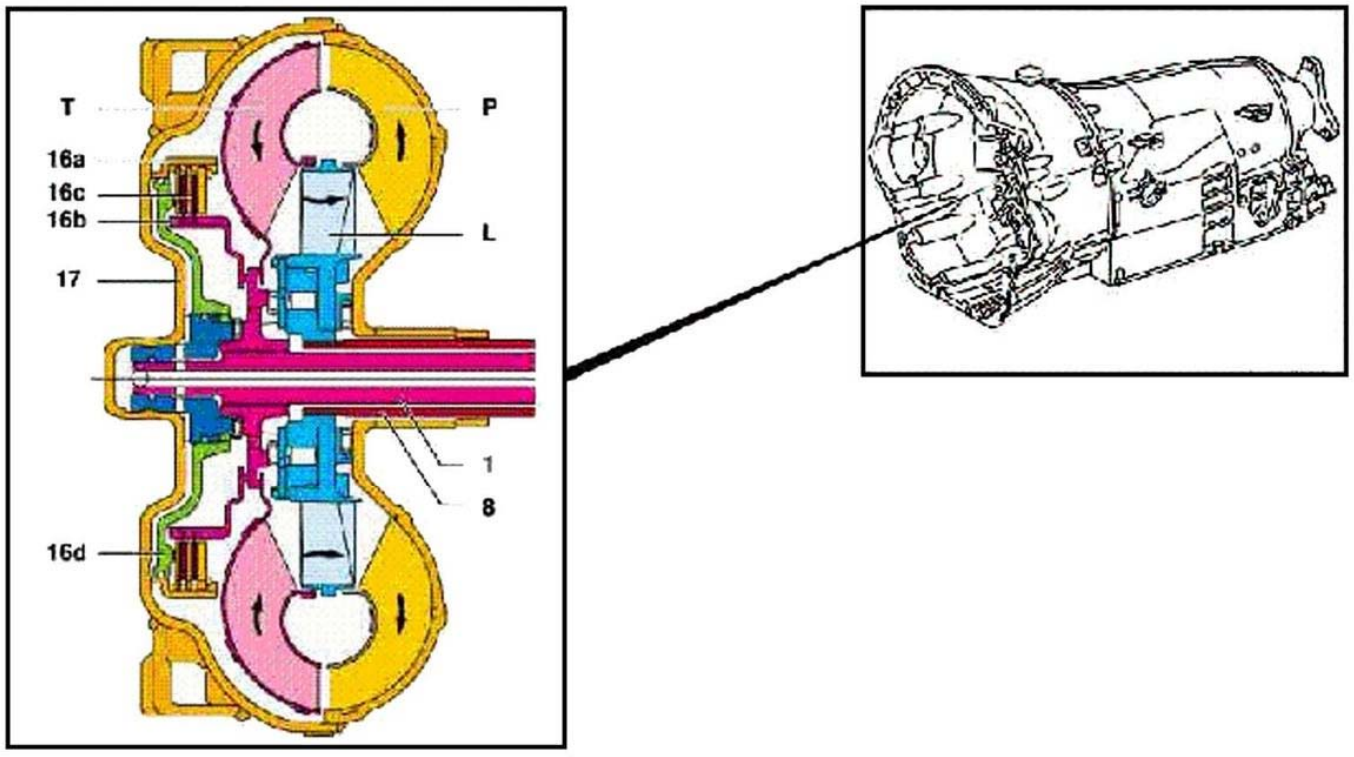
Structure - The shift detent consists of:

- The Locking Disc (69) Rigidly Connected To The Selector Lever (80). See **Fig. 86**
- The Cam With Recess (69D)
- A Leaf Spring (85) Bolted Onto The Body (81)
- A Metal Roller (84) Inserted Into The Leaf Spring (85)

Shift Detent, Function

selected by the driver.

Torque Converter Lock-Up Clutch, Location/Task/Design/Function



1	Drive shaft	16c	Clutch pack	L	Stator
8	Stator shaft	16d	Pistons	P	Impeller
16a	External plate carrier	17	Cover	T	Turbine wheel
16b	External plate carrier				

G00391216

Fig. 105: Torque Converter Lockup Clutch, Location/Task/Design/Function
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

Torque Converter Lockup Clutch, Location

The torque converter lockup clutch is integrated in the torque converter. See **Fig. 105**.

Torque Converter Lockup Clutch, Task

The torque converter lockup clutch minimizes the power losses of the torque converter and as a result reduces the engine speed and improves the efficiency of the transmission.

Torque Converter Lockup Clutch, Design

Fig. 122: Planetary Gear Set, Function (3 Of 5)
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

3. Locking two elements together so that the planetary gear set turns as a unit, produces a direct power

as regulated by the overlap regulating valve.

- Initializes 2nd gear in limp-home mode.

Shift Pressure Regulating Solenoid Valve, Location/Task/Design/Function

See **SHIFT PRESSURE REGULATING SOLENOID VALVE, LOCATION/TASK/DESIGN/FUNCTION**.

Shift Pressure Regulating Valve, Location/Task/Function

See **SHIFT PRESSURE REGULATING VALVE, LOCATION/TASK/FUNCTION**.

Overlap Regulating Valve, Location/Task/Function

See **OVERLAP REGULATING VALVE, LOCATION/TASK/FUNCTION**.

Upshift/Downshift Solenoid Valve, Location/Task/Design/Function

See **UPSHIFT/DOWNSHIFT SOLENOID VALVE, LOCATION/TASK/DESIGN/FUNCTION**.

Modulating Pressure Regulating Solenoid Valve, Location/Task/Design/Function

See **MODULATING PRESSURE REGULATING SOLENOID VALVE, LOCATION/TASK/DESIGN/FUNCTION**.

Location/Task/Design/Function Of PWM Solenoid Valve, Torque Converter Lockup Clutch

See **LOCATION/TASK/DESIGN/FUNCTION OF PWM SOLENOID VALVE, TORQUE CONVERTER LOCKUP CLUTCH**.

Multiple-Disc Brake, Location/Task/Design/Function

See N**MULTIPLE-DISC BRAKE, LOCATION/TASK/DESIGN/FUNCTION**.

Multiplate Clutch, Location/Task/Design/Function

See **MULTI-PLATE CLUTCH, LOCATION/TASK/DESIGN/FUNCTION**.

Holding Pressure Shift Valve, Location/Design/Function

See **HOLDING PRESSURE SHIFT VALVE, LOCATION/TASK/FUNCTION**.

Shift Pressure Shift Valve, Location/Design/Function

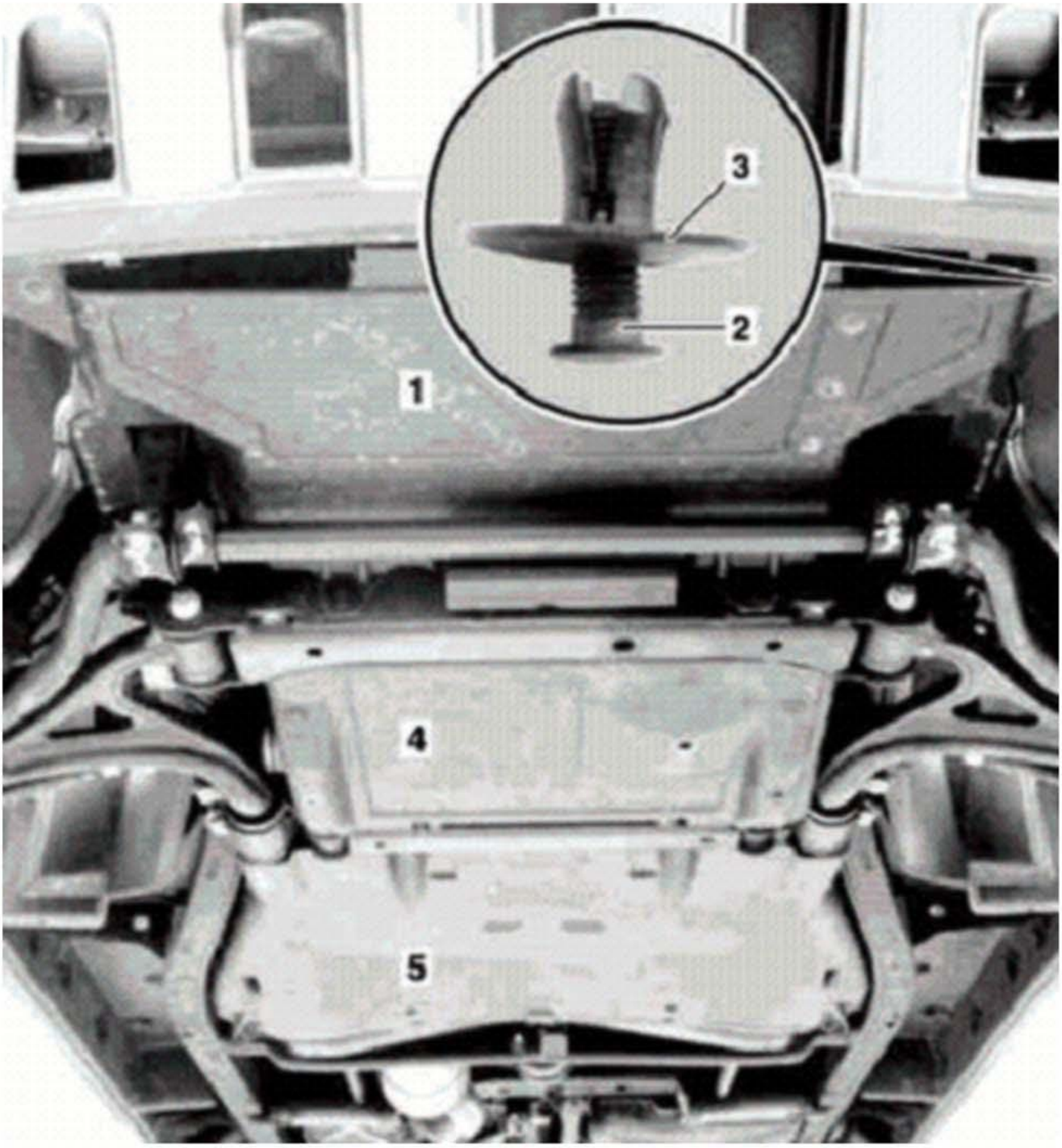
See **SHIFT PRESSURE SHIFT VALVE, LOCATION/TASK/FUNCTION**.

Command Valve, Location/Design/Function

Fig. 152: R/P Lock, Function (Locking Position)
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

Function Of R Lock

Above a speed of approximately 10km/h the R/P locking solenoid (89) is actuated by the electronic selector lever module control module (N15/5). See **Fig. 152**. The R/P lock lever (90) is turned to the lock position (shift from "N" to "R"). The tab on the lock lever (R lock) (90c) locks (R-lock (69c) the locking disc (69). The selector lever (80) cannot be shifted into selector lever position "R".



1 Noise encapsulation, front section

4 Noise encapsulation, center section

1998-2005 ACCESSORIES & BODY, CAB

Electrical System - Body - 163 Chassis

GENERAL INFORMATION

GENERAL NOTES: PASSENGER CARS: ELECTRICAL SYSTEM BODY - AH82.00-Z-9999AZ

MODEL all

	Adjusting headlamps when driving abroad	MODEL 452.3 /4	AH82.10-P-0001-01RR
	Adjusting headlamps when driving abroad	MODEL 450.3 up to 10.2.02	AH82.10-P-0001-01SM
	Adjusting headlamps when driving abroad	MODEL 450.3 as of 11.2.02, 450.4 (except 450.418)	AH82.10-P-0001-01SN
	Notes on wiper arm adjustment	MODEL 164, 251	AH82.30-P-0001-01GZ
	Notes on radio installation	MODEL 169,245...	AH82.60-P-0001-03AK
	Notes on D2B ring	MODEL 215.###, 220.### 1# as of 1.9.02 with CODE (803) Model year 2003	AH82.70-P-0001-03MN
	Notes regarding the Tele-Aid emergency call system	MODEL 215, 220 with CODE (347) TELE AID emergency call system (D2B) with CODE (855) TELE AID	AH82.95-P-0001-01AM
i	Adjusting headlamps when driving abroad	MODEL 199	AH82.10-P-0001-01SLR
i	Notes on navigation system TrafficStar	MODEL 129, 140, 163, 168, 170, 202, 208, 210	**AH82.61-P-0001-03A**
i	Notes on telephone operation with Audio 30 APS navigation system	MODEL 129, 163, 168, 170, 202, 208, 210 ...	**AH82.61-P-0001-06A**
i	Notes on Traffic Pro navigation system	MODEL 129, 140, 163, 168, 170, 202, 208, 210	**AH82.61-P-0002-01A**
i	Notes on D2B ring	MODEL 129...	AH82.70-P-0001-03D
i	Notes on Linguatronic voice control system	MODEL 220 ...	AH82.70-P-0001-06CM
i	Notes on converting portable cellular telephone installation kit	MODEL 129, 168, 170, 202, 208, 210, 215, 220...	AH82.70-P-0001-08A
i	Information on Tele Aid	MODEL 140.###1#, 210	AH82.95-P-0001-01A

INTERIOR LIGHTING (IL), FUNCTION - GF82.20-P-0002GH

MODEL 163

The interior lighting can be switched on in two ways: **Manually** with

- the switches for the individual light

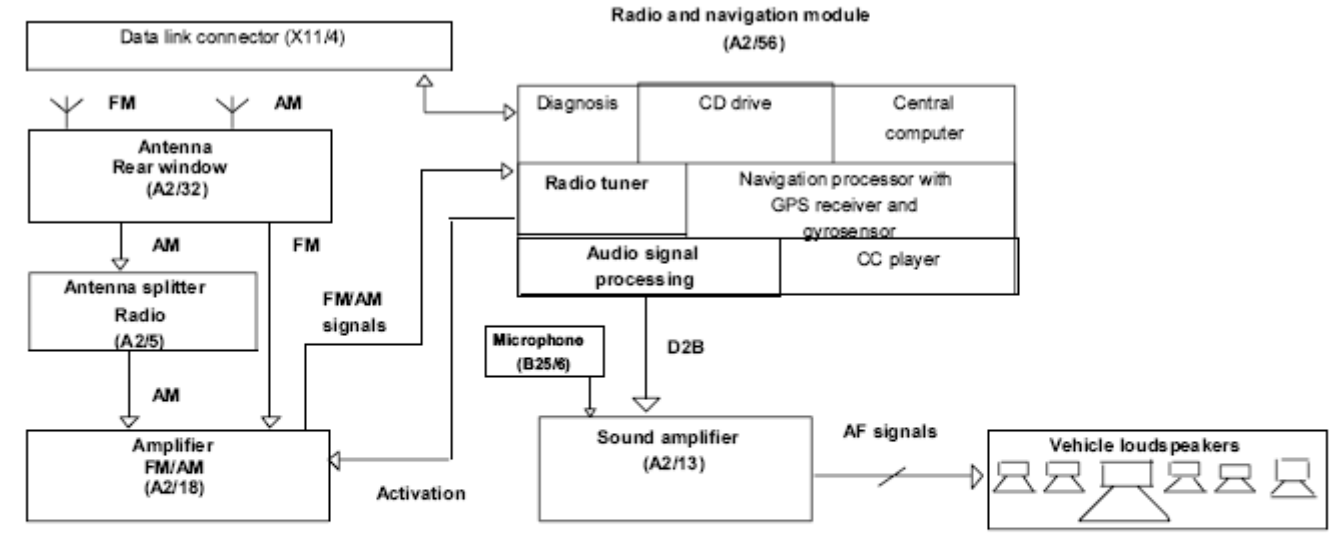
automatically by

- opening the doors
- Switching off the ignition
- Locking the vehicle with the central locking feature
- Following an accident

GF	Switching on interior lighting manually		**GF82.20-P-2009GH**
GF	Switching on interior lighting automatically		**GF82.20-P-2010GH**

CONTENTS - FUNCTION DESCRIPTION OF INTERIOR LIGHTING (IL) - GF82.20-P-0998GH

MODEL 163



MCS radio system block diagram
illustrated with antenna system and following equipment:

- *Sound system (code 810)*

Abbreviations

AM	*Amplitude-modulated*
FM	*Frequency-modulated*
AF	*Audio frequency (20Hz..20kHz)*
D2B	*Digital data bus*

B25/6 *Sound amplifier microphone*

The components marked are significant for the Radio mode

Fig. 37: Identifying Radio Mode Function

The **MCS** radio menu is activated by pressing the **"RADIO"** button on the **radio and navigation module (A2/56)** .

Radio reception, function

The **rear window antenna (A2/32)** receives the high frequency **FM** and **AM** signals. The music, voice and/or data signal is superimposed on these high-frequency carriers. The **radio antenna splitter (A2/5)** decouples the **AM** signals from the heater current in the rear window and relays them to the **FM/AM amplifier (A2/18)** , while the **FM** signals are transmitted directly from the rear window to the **FM/AM amplifier (A2/18)** . The **FM/AM amplifier (A2/18)** filters the frequencies of the radio frequency bands from the high frequency signals received and amplifies these signals.

The amplified signals are then transmitted to the radio tuner integrated into the radio and navigation module (A2/56) by the **FM/AM amplifier** (A2/18) via a common co-axial line (**FM, AM**)

The radio receiver **demodulates** the high-frequency signals, i.e. it separates the useful information (audible frequencies) from the carrier signal (inaudible).

The demodulated audio signals are amplified and converted into sound signals by the vehicle loudspeakers.

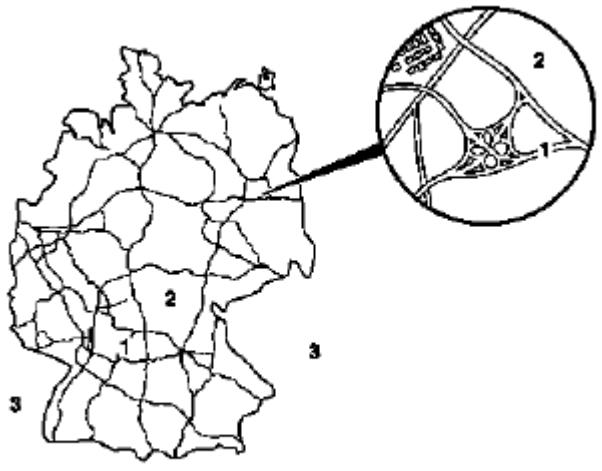
The MCS radio system offers the following possibilities for station selection and adjustment:

1 *Vehicle position within the digitized DVD map*

2 *Vehicle position within the DVD map limits but outside the digitized map area ("OFF ROAD", company premises, path across a field, etc.)*

Non-digitized DVD map areas:

3 *Vehicle position outside the DVD map ("OFF MAP")*



P82.61-2888-11

Fig. 52: Identifying Digitized DVD Map Area And Non-Digitized DVD Map Areas

Navigation is the generation and output of driving recommendations, in order to guide the driver to the desired destination. The prerequisites of destination guidance include:

- Constant map matching is in operation (occurs automatically),
- Destination was entered
- Route has been calculated.

The navigation processor continuously compares the route calculation data with the ongoing location finding data and derives from this measures for further navigation.

i The navigation processor is integrated in the radio (A2).

Depending on the vehicle position, a distinction is made between the following navigation modes:

- Destination within digitized DVD map area
- Restricted navigation outside the digitalized DVD map area

	Destination guidance in digitalized map area, function		**GF82.61-P-4000C**

GUIDANCE, FUNCTION - GF82.61-P-3012GI

MODEL 163 as of 1.9.01 with CODE (522) Modular control system (MCS) radio USA with CODE (357) Navigation system - additional unit with CODE (818b) Single CD player - additional unit with CODE (491) U.S. version

Digitized and non digitized CD-ROM map areas

	location/task		
	Contents - function description of antenna system (ATS)		**GF82.62-P-0999GHZ**

CD PLAYER WITH CHANGER, LOCATION - GF82.64-P-3113-01GI

The CD player with changer is located behind the access flap in the right side cover of the trunk.

A2/6 CD player with changer

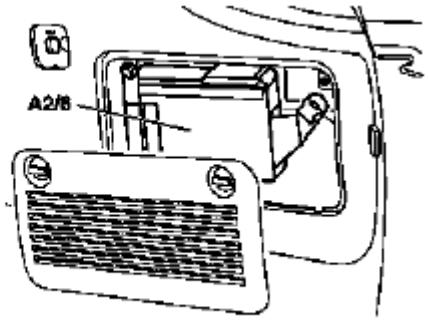


Fig. 73: Identifying CD Player With Changer Location

CD PLAYER WITH CHANGER, FUNCTION - GF82.64-P-3113-02GI

Controlling CD player

The **CD player with changer (in trunk) (A2/6)** is controlled by the **radio and navigation module (A2/56)** via the digital data bus (D2B).

The CD player generates reports on the following operating conditions:

- No magazine in CD changer
- Magazine assignment (only with music CD)
- Number of current CD
- Number of current title
- List of occupied slots (CDs)
- Title number per disc
- Current operating state (acoustic playback of radio signals, pause, etc.)

The messages are stored on the digital data bus **D2B**) and interpreted by the **radio and navigation module (A2/56)** .

CD playback

The audio data is stored digitally on the **CD-ROM** . The audio CD is driven by a motor in the **CD-player with changer (in trunk) (A2/6)** .

- GPS **G** lobal **P** ositioning **S** ystem. Satellite-supported system for precise positioning and navigation. At present **26** satellites are in operation orbiting the earth on **6** orbits.
- AMPS: **A** dvanced **M** obile **P** hone **S** ystem. The AMPS network is now available to **98% of the population in the most densely-populated areas of the USA** .
- SOC: **S** ervice **O** perating Center. The **SOC** takes over all individual requirements of the driver and transmits the corresponding information to the vehicle.

Concept of personal information service:

- Individual information and news transmission according to personal interest profile (stock exchange, weather, sport...)
- Transmitting a request via a button (**SVC** button) to the **S** ervice **O** perating **C** enter (**SOC**)
- e **S** ervice **O** perating **C** enter (**SOC**) transmits the customer profile corresponding to the individual information and news.
- The data transmitted is indicated on the display of the **radio and navigation module (A2/56)** and can then be read.

	Information service, function		**GF82.85-P-3016GI**
	Data transmission for Starguide, function		**GF82.85-P-3017GI**

VOICE OUTPUT, FUNCTION - GF82.85-P-3001GI

MODEL 163 as of 1.9.01 with CODE (522) Modular control system (MCS) radio USA with CODE (357) Navigation system - additional unit with CODE (818b) Single CD player - additional unit with CODE (491) U.S. version

- The personal symbols on the map are not updated during active guidance.
- Voice control does not react to commands
- Occasionally no sound (duration approx. 1 second).
- TV screen switches off when standing still
- After switching on CD player plays CD1/track 1 instead of title played last
- No message when CD magazine sticks during ejection
- Wavy interference in navigation display when TV picture is switched off (as if station is not correctly received)
- TCS icons are occasionally not displayed on the map with active dynamic guidance
- Telephone book is not activated.

- COMAND: A 208 820 40 89, A 210 820 54 89, A 163 820 14 89

Error patterns:

- Increased quiescent current.
- The personal symbols on the map are not updated during active guidance.
- Voice control does not react to commands
- No message when CD magazine sticks during ejection
- TCS cannot be activated sporadically.
- Time in instrument cluster and COMAND differs approx. 1-2 seconds.
- COMAND signals CD reading error without any obvious cause

PERFORMING SOFTWARE DOWNLOAD - AF82.85-P-6000-04A

[i] COMAND 2.0-ECE / 2.5-ECE - Perform software download of CD:

(!) Do not start vehicle during download, do not cause other voltage drops in the vehicle electrical system, do not remove CD and do not switch off unit! (Unit will be damaged!)

In the case of erroneous operation of the download control module, the download starts again or is terminated if the old software has not been erased previously.

1. Switch off ignition.
2. Remove navigation CD and insert download CD.
3. Switch off control module.
4. After a waiting time of min. 5 s and with buttons * and # pressed simultaneously, switch on unit.

   [i] The menu "Service download of CD" appears with menu points "Control module" and "Termination".

5. Select "Start control module" with right knob

RADIO ILLUMINATION, TESTING ELECTRICAL SYSTEM, RADIO (RD) - AD82.60-P-6000-10A

	Scope of test	Measuring instrument/ Test connection	Operation/Requirement	Specified value	• Possible cause/Remedy
1.0	**Radio (A2) orAPS radio and navigation operating unit (A2/29)** Radio illumination when side light is switched off	8 (A.8) — A2 (V) — 7 (A.7)	Remove radio or operating unit Do not disconnect couplings Carry out test at coupling A Ignition: **ON** Radio: **ON**	11 - 14 V **"ON"** button illuminated **"ON"** button and display illuminated	• Cables • Fuse E in radio or in APS radio and navigation operating unit • Radio or APS radio and navigation operating unit ⇒1.1
1.1	Radio illumination when side light is switched on	8 (A.8) — A2 (V) — 6 (A.6)	Remove radio or operating unit Do not disconnect couplings Carry out test at coupling A Side light: **ON** Radio: **ON**	11 - 14 V Controls illuminated Controls and display illuminated	• Cables • Fuse E in radio or in APS radio and navigation operating unit • Radio or APS radio and navigation operating unit

Fig. 122: Radio Illumination, Testing Electrical System, Radio (RD)

RADIO MUTE CIRCUIT, TESTING ELECTRICAL SYSTEM, RADIO (RD) - AD82.60-P-6000-11A

	Scope of test	Measuring instrument/ Test connection	Operation/Requirement	Specified value	• Possible cause/Remedy
1.0	**Radio (A2) or radio and navigation operating unit (APS) (A2/29)** Radio mute circuit through telephone system (phone)	8 (A.8) —(—)— 3 (A.3)	Remove radio or operating unit Do not disconnect couplings Carry out test at coupling A Radio: **ON**	Radio switches to mute, **PHONE** appears in display	• Cables • Radio or APS radio and navigation operating unit • Telephone system

RADIO (RD), TESTING ELECTRICAL SYSTEM - AD82.60-P-6000A

MODEL 124, 129, 140, 163, 168, 170, 202, 208, 210 with MB radio

MODEL 129, 140, 168, 170, 202, 208, 210 with MB radio and navigation operating unit

	Radio (RD) diagnosis, advanced information		**AD82.60-P-2000A**
i	• Carry out test of loudspeaker outputs		

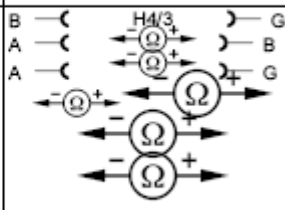
	Scope of test	Measuring instrument/ Test connection	Operation/ Requirement	Specified value	• Possible cause/Remedy
1.0	**Loudspeaker** Left rear door (H4/3) **Model 163**		Radio (A2): **OFF** Disconnect coupling 1 from amplifier control module (N40/6).	1.5-2.5 Ω ∞ Ω ∞ Ω	• Cables • Loudspeaker (H4/3) • Values in order: Amplifier control module (N40/6)

Fig. 145: Speaker Test Electrics LSA

SPEAKER TEST ELECTRICS LSA - AD82.62-P-6001-02T

Model 163 with sound system

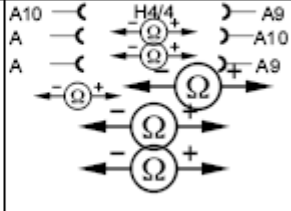
	Scope of test	Measuring instrument/ Test connection	Operation/ Requirement	Specified value	• Possible cause/Remedy
1.0	**Loudspeaker** Right rear door (H4/4) **Model 163**		Radio (A2): **OFF** Disconnect couplings 1 and 2 from amplifier control module (radio/loudspeaker) (N40/6).	1.5-2.5 Ω ∞ Ω ∞ Ω	• Cables • Loudspeaker (H4/4) • Values in order: Amplifier control module (N40/6)

Fig. 146: Speaker Test Electrics LSA

SPEAKER TEST ELECTRICS LSA - AD82.62-P-6001-02U

Model 163 with sound system

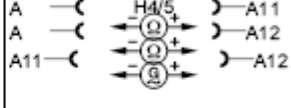
	Scope of test	Measuring instrument/ Test connection	Operation/ Requirement	Specified value	• Possible cause/Remedy
1.0	**Loudspeaker** Left front door (H4/5) **Model 163**		Radio (A2): **OFF** Disconnect couplings 1 and 2 from amplifier control module (N40/6). Connect function generator (a change in voltage level results in a change in loudness; a change in frequency results in a change in sound), set a frequency of 100 to 10,000 Hz with a voltage amplitude of approx. 2 V.	∞ Ω ∞ Ω The frequency adjusted at the function generator can be heard over the loudspeakers	• Cables • Loudspeaker (H4/5) • Values in order: Amplifier control module (N40/6)

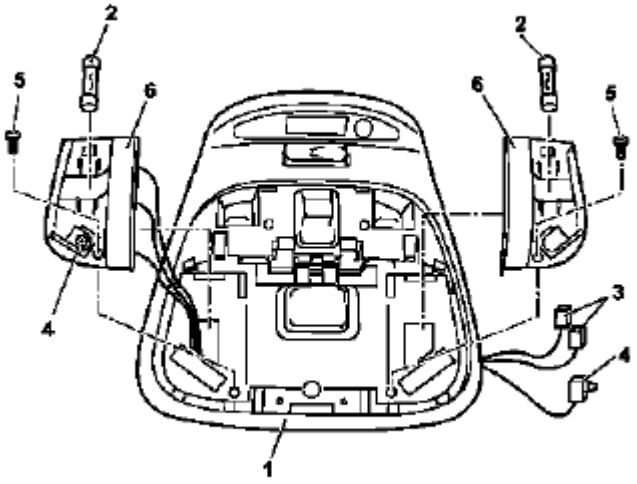
Fig. 147: Speaker Test Electrics LSA

2	Remove retaining clip (2) and water hose (1) from telescopic nozzle		
3	Unscrew screws (3) from mount of telescopic nozzle		
4	Remove cover (4) from telescopic nozzle	i Risk of breakage! i Press telescopic nozzle upward to obtain access to the retaining lugs for the cover from above	
5	Remove telescopic nozzle (5) together with mount		
6.1	Remove mount from telescoping nozzle	i Only when the telescopic nozzle is replaced.	
7	Install in the reverse order		

REMOVING AND INSTALLING FRONT DOME LAMP - AR82.20-P-0110GH

MODEL 163

1 *Overhead control panel*
2 *Bulb*
3 *Socket*
4 *Dome lamp switch*
5 *Screws*
6 *Reflector housing*



P82.20-0400-11

Fig. 172: Identifying Front Dome Lamp Components

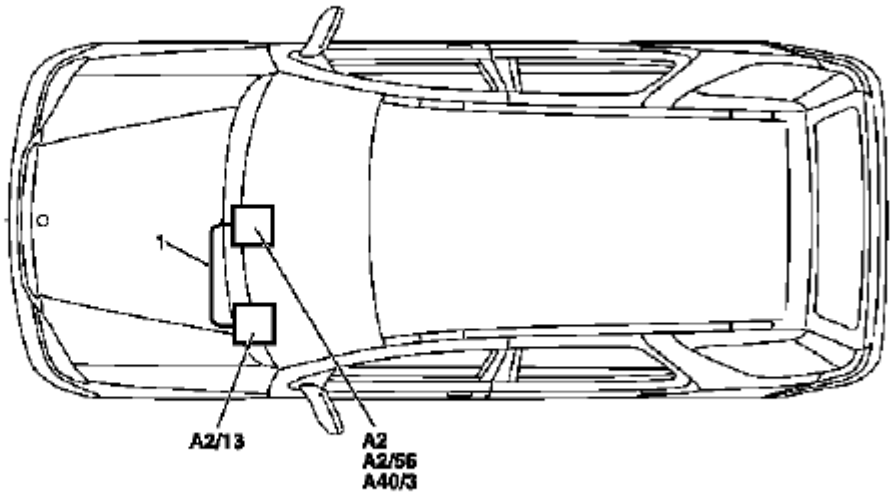
	Removal, installation		
1	Remove overhead control panel (1)		**AR82.20-P-1100GH**
2	Remove bulb (2)		

	amplifier (A2/18) with bracket (5)		
6	Install in the reverse order		
7	Perform function check		

REPLACE FIBER OPTICAL CABLE (D2B) BETWEEN RADIO AND SOUND AMPLIFIER (AFTER TESTING) - AR82.62-P-8350GH

MODEL 163.113 /154 /174 #A as of 289565, 163.113 #X as of 754620, 163.128 /157 /175 with CODE (810) Sound system

1	*Exchange D2B wiring harness*
A2	*Radio*
A2/13	*Sound amplifier*
A2/56	*Radio and navigation unit*
A40/3	*COMAND operating, display and control module*



P82.62-2395-06

Fig. 203: Identifying Sound Amplifier, Radio And Navigation Unit

1	*Exchange D2B wiring harness*
2	*Bracket*
3	*Clip*
N15/3	*ETC control module*

P82.62-2396-01

Fig. 204: Identifying ETC Control Module And Exchange D2B Wiring Harness

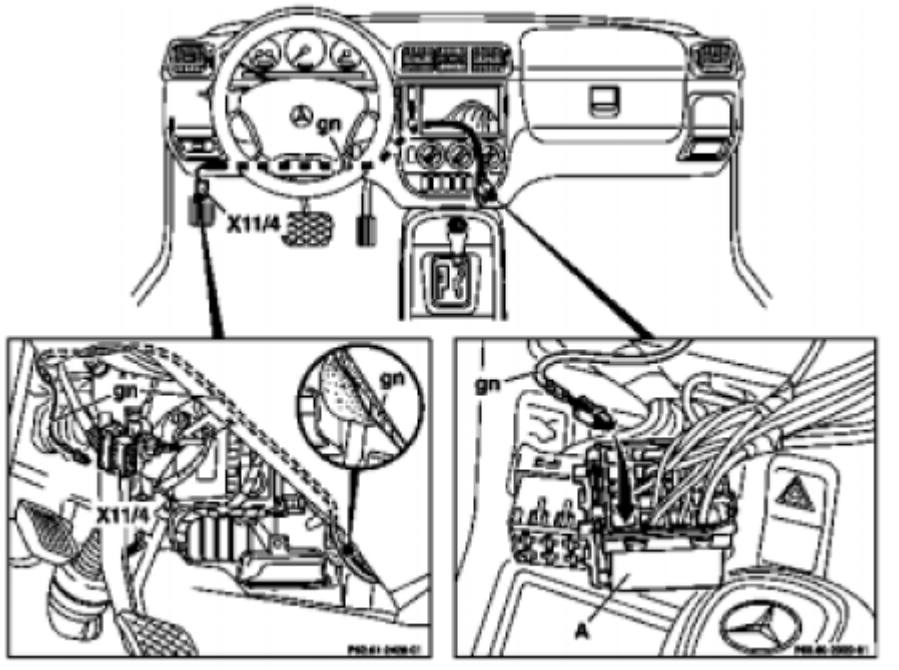


Fig. 235: Identifying Retrofitting Diagnostic Cable

i If a lead is already present in chamber 12 connect it to the green (gn) lead using a solder connector.

RETROFIT NAVIGATION SYSTEM AUDIO 30 APS - AN82.61-P-0001H

MODEL 163 up to 30.6.99 except CODE (819) 6-disk CD changer in trunk

MODEL 163 as of 1.7.99 in combination with CD changer with D2B fiber optic cable system

System illustration with GPS and telephone roof antenna

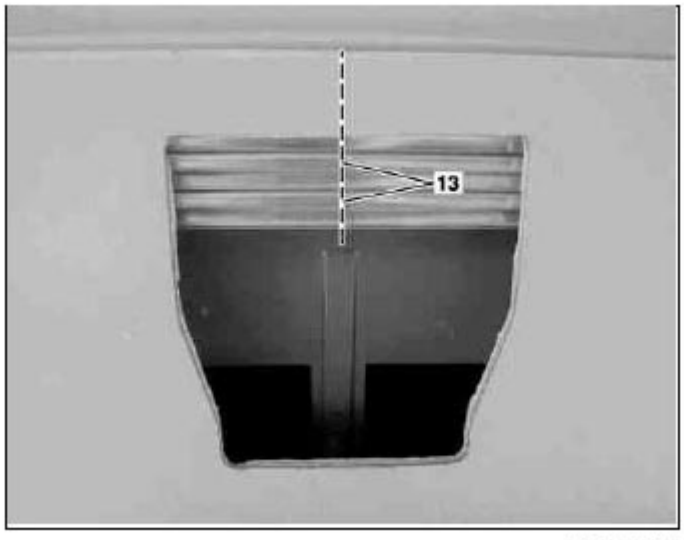


Fig. 272: Identifying Mark On Center Monitor Bracket

16. Adhere bracket to crossmember ribs.

    i Align the center incision (14) of the monitor bracket to the marking on the crossmember (25). Guide lugs (15) of the monitor bracket latch at front in the grooves (26) of the crossmember.

17. Route monitor wiring harness (8) through opening (16) in rear area of bracket.
18. Provide bore hole with Ø = 5 mm through bracket and crossmember.

    i Use guide hole (17) provided in the bracket. To prevent damage to the vehicle roof, limit drilling depth to 5 mm. Cover interior to collect the chips.

19. Rivet bracket with rivet supplied to crossmember of tilting/sliding roof frame.

AR	Remove/install glove compartment	Torx bit set	**AR68.10-P-1400GI** **Fig. 309**
6	Loosen upper section of right front door rubber seal		
7 AR	Remove A-pillar paneling on right Remove/install paneling on A-pillar	Long wedge	**AR68.30-P-4050GH** **Fig. 155**
8 AR	Remove right sun visor Remove/install sun visor		**AR68.60-P-5480GH**
9	Remove right front handle	Open covers for handles, press down clip on each side of handle, at the same time press handle upward and pull out.	
10	Remove edge guard for tilting/sliding roof cutout		
11	Release upper right B-pillar paneling		
12 AR	Remove covers at lower rear seat Remove and install cover on bottom of rear seat	Do NOT remove center cover for lower 40% seat. Do NOT reinstall curtain on 60% front bench seat.	**AR91.12-P-1100GH**
13	Release side shade at the 60% bench	Fold shade upward so that the working area is not obstructed.	
14 AR	Remove 40% rear seat Remove and install bench	Torx bit set	**AR91.12-P-1010GI** **Fig. 309**
	Install		
15	Retrofit central interface module (1)		**AZ82.60-P-0004-01A**
16	Insert antenna cable for FM modulator (6) into vehicle antenna cable (7)		
17	Cover connector with self-adhesive foamed		

Model 163 up to 31.8.00 for Nokia 3110 portable CTEL

1. Place assembly plate (10) onto telephone console (12) as shown in figure and align to size: a=20 mm and b=55 mm. Mark hole pattern and drill with 2.5 dia. bit.
2. Attach assembly plate (10) to telephone console (12) with screws (11).

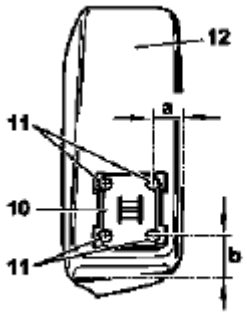


Fig. 349: Identifying Telephone Console And Assembly Plate

3. Plug connection cable into mount and route to the rear in a curve (arrow) as shown in figure.

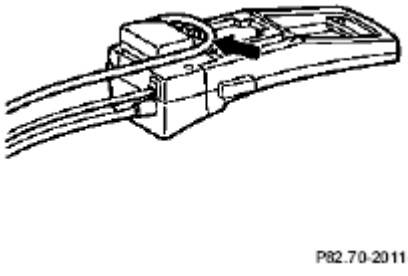


Fig. 350: Plugging Connection Cable Into Mount

4. Fasten mount (1) to assembly plate (10) with locating screw (16).

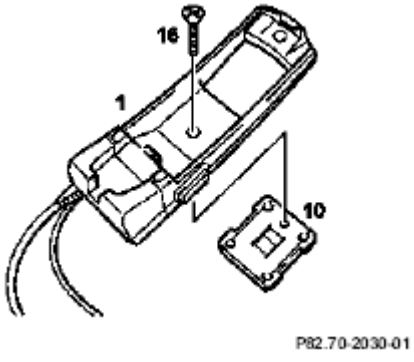


Fig. 351: Identifying Fasten Mount And Assembly Plate

5. Install holder (1) on telephone console (12) and stick the antenna lead (17) as well as the connection cable

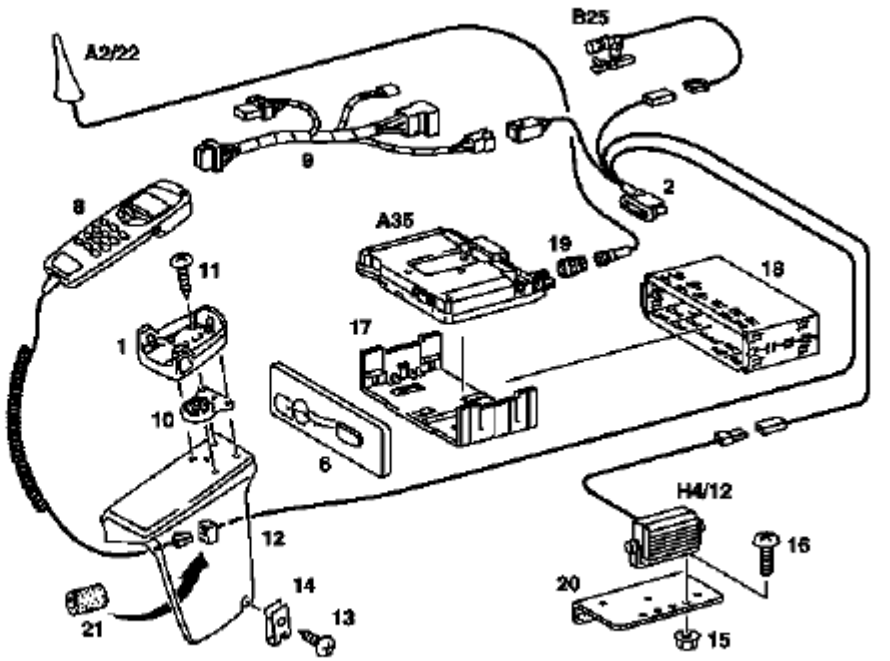
	steering	
B6 787 6808	Telephone console, gray, right-hand steering	1
Group 82 (see EPC)	Packard connector housing	1
Group 82 (see EPC)	Packard terminals	5
N914 127 004 204	Sheet metal screw	2
A002 994 11 45	Clip fastener	2
A000 989 92 71	Special glue	1

RETROFIT PERMANENTLY INSTALLED GSM NETWORK CAR PHONE - AZ82.70-P-0002C

MODEL 163 as of 1.12.99 up to 31.8.00

fixed installation Nokia 6090 CTEL

1 *Telephone handset mount*
2 *Telephone wiring harness*
6 *Cover*
8 *Telephone handset*
9 *Radio/telephone wiring harness*
10 *Mounting plate*
11 *Sheet metal screw*
12 *Telephone console*
13 *Sheet metal screw*
14 *Clip fastener*
15 *Nut*
16 *Screw*
17 *Insert frame*
18 *DIN/ISO installation frame*
19 *Antenna adapter*
20 *Bracket*
21 *Foam rubber sleeve*
A2/22 *Roof antenna*
A35 *Telephone, transmitter/receiver*
B25 *Handsfree system microphone*
H4/12 *Handsfree speaker*



P82.70-2751-06

Fig. 400: Identifying Permanently Installed GSM Network Car Phone Components

	Removal		
1 AR	Disconnect ground cable of battery		AR54.10-P-0003A
2	Remove radio		
3	Remove stowage compartment below radio	i No longer required.	

GF82.15-P-2100-04GH	Function of headlamp cleaning system telescopic nozzles		n

After the **HCS pump (M5/2)** has started to operate, pressure builds up in the washing water line for approx. 1 second. Driven by the water pressure, the nozzles first move telescopically into the cleaning position. Then as a result of a further pressure rise, a valve at each telescopic nozzle opens and an exactly metered quantity of washing water is sprayed onto the headlamp lenses.

Swirl chambers are provided at the tips of the telescoping sections and these ensure controlled propagation of the water jet, even when traveling fast. After the cleaning process, the telescoping sections are retracted back into the starting position with the aid of return springs.

AD54.30-P-6000-05GH	CAN input resistance, testing electrical system of IC	Model 163	

t A	Scope of test	Measuring instrument/ Test connection	Operation/ Requirement	Specified value	D Possible cause/ Remedy
1.0	**Instrument cluster (A1)** CAN input resistance	A1 9 v b K 10 (B.9) (B.10)	Ignition: **OFF** Coupling "B" (12-pin) disconnected	approx. 120 W	D A1

Fig. 1: Drive Belt Routing
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Verify customer complaint by operating system. Visually inspect for obvious signs of mechanical and electrical damage. Check generator belt tension and condition. Ensure that battery voltage is within specifications. Inspect for blown fuses and damaged relays.

Verify ground connection integrity between engine, body, battery and generator. Check for damaged wiring harnesses and/or switches. Check for a broken or partially broken wire inside insulation, which could cause system malfunction but prove good in a continuity/voltage check with system disconnected. Ensure any aftermarket electronic equipment is properly installed. If fault is found, repair as necessary. If no fault is found, check for conditions that might cause an intermittent situation.

SERVICE PRECAUTIONS

BATTERY DISCONNECT/CONNECT

Disconnect Procedures

NOTE: Numbers and letters in text refer to numbers and letters in figures.

1. On vehicles not equipped with TELE AID, go to step 5 . Vehicles equipped with TELE AID, switch TELE AID into service mode by turning ignition ON.
2. Turn ON telephone and enter code "*#4610#" on handset.
3. Confirm that "No Telematics Service" appears on handset with okay.
4. Turn OFF handset.
5. Turn OFF ignition.
6. Open hood and open snap fasteners (1) on dust filter housing. See **Fig. 2** .
7. Remove dust filter housing (2) exposing battery.
8. If not using quiescent current retention unit, go to step 14 . If using quiescent current retention unit, go to next step.
9. Connect quiescent current retention unit by switching on quiescent current retention unit (7) and then first connecting positive terminal (8) and negative terminal (9) of retention unit to positive cable and battery ground (W10). See **Fig. 3** .
10. On vehicles equipped with TELE AID, remove luggage compartment cargo anchoring lugs and remove floor paneling.
11. Remove screws (1). See **Fig. 4** .
12. Dismantle cover from TELE AID control module (A35/8).
13. Disconnect connection coupling for back up battery and remove back up battery.
14. Disconnect negative battery cable (1) and insulate terminal. See **Fig. 5** .

MODEL 163

The convenience control allows the driver to operate the electrical seat adjustment, the power windows, the electric vent windows, the electric outside rearview mirror as well as the electric sliding/pop-up roof or the electric lamella sliding roof when the ignition is switched off.

To achieve this, the all-activity module (AAM) (N10) switches to the corresponding loads via the convenience relay (F1k14) circuit 30 .

As of 12.99 the vehicle is equipped with its own convenience relay for seat adjustment (relay 1, F2k1). In addition the status of the convenience control via CAN is transmitted to the extended activity module (EAM, N10/1).

Conditions for control actuation

On all-activity module (AAM) (N10) configured for I up to 11.99:
The convenience actuation becomes active as soon as
D Circuit 15 ON is recognized
When circuit 15 is switched off, the convenience actuation is deactivated after a door is opened

Otherwise

The convenience actuation is active in the following cases:
D Circuit 15c ON
D A front door is open
D The remote control key is removed, however, the doors are not yet opened
In both cases the convenience actuation remains active for 5 min.

Switch-on condition for circuit 15c

When the remote control key is inserted into the ignition lock, circuit 15c is switched on when the key is turned out of the zero position. Circuit 15c switches off only after the remote control key is removed from the ignition lock

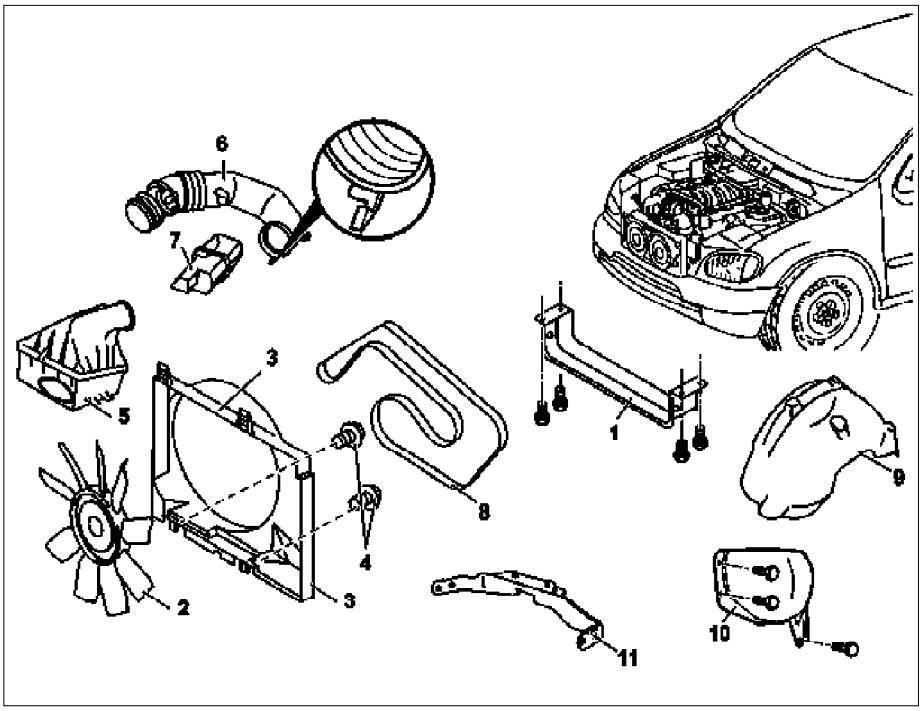
	Electric seat adjustment without memory, function		GF91.29-P-0003GH
	Electric seat adjustment with memory, function	as of 12.99	GF91.29-P-0002GH
	Convenience control, function	for electrical seat adjustment as of 12.99	GF91.29-P-2013GK
	Power windows, function		GF72.29-P-0003GH
	Power tilting/sliding roof (SR), function		GF77.20-P-0001GH
	Electrically adjustable outside rearview mirrors, function		GF88.79-P-0005GH
	Electric vent windows, function		GF67.39-P-1000GH
	Extended activity module, location/purpose/design	as of 12.99	GF54.21-P-4107GK

AR01.30-P-5800MV	Remove/install cylinder head	22.7.98

ENGINE 112.942 in MODEL 163.154
ENGINE 112.970 in MODEL 163.157
ENGINE 113.942 in MODEL 163.172
ENGINE 113.981 in MODEL 163.174
ENGINE 113.965 in MODEL 163.175

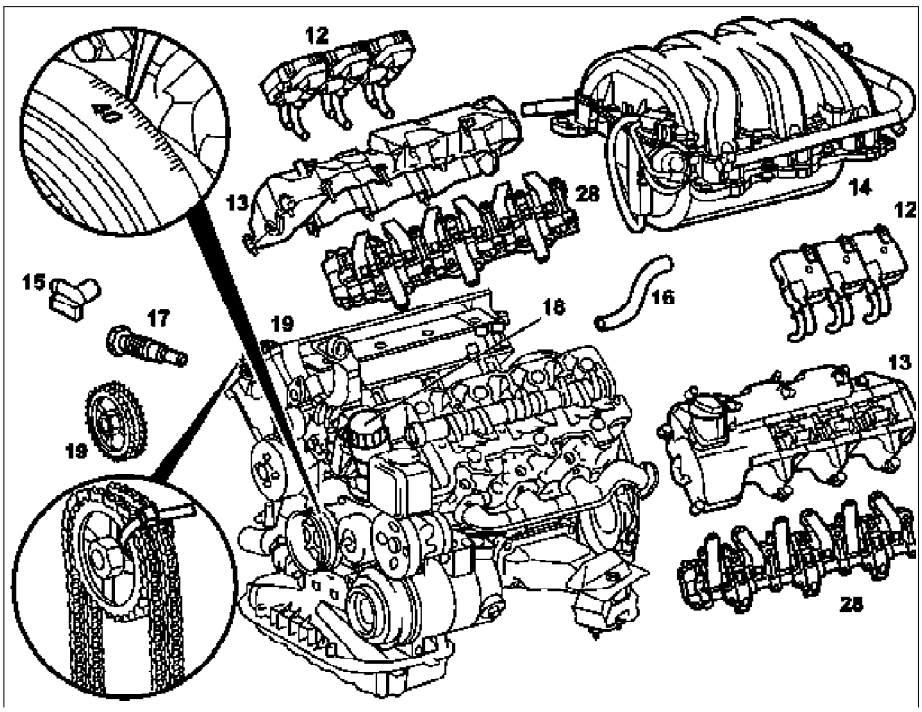
Shown on model 163.154 with engine 112

1 Air baffle
2 Viscous fan
3 Fan shroud
4 Bolts
5 Air cleaner housing
6 Air intake manifold
7 Resonance unit
8 Poly-V-belt
9 Fender liner
10 Shield
11 Exhaust bracket



P01.30-2032-06

12 Right and left ignition coils
13 Left and right cylinder head covers
14 Intake manifold
15 Camshaft position sensor
16 Coolant line
17 Chain tensioner
18 Oil filter housing
19 Camshaft sprockets
28 Camshaft bearing bridges



P01.30-2033-06

P 345U JASPISBLAU - METALLICLACK
P 346K PRO.TYP S211-0052 (M113 E43)
P 346P PRO.TYP S211-0169 (M113 E50)
P 347 AUTOTELEFON "TELE AID" FESTANLAGE
P 347K PRO.TYP W211-0053 (M112 E26)
P 347P PRO.TYP S211-0170 (M611 DE22 LA)
P 347U CHALCEDONBLAU METALLICLACK
P 348 AUTOTELEFON MIT INTEGR.NOTRUFSYSTEM "ARTHUR"
P 348K PRO.TYP W211-0054 (M113 E43)
P 348P PRO.TYP S211-0171 (M612 DE27 LA)
P 349 VORRUESTUNG FUER NOTRUFSYSTEM "E-CALL"
P 349K PRO.TYP W211-0055 (OM613 DE32LA)
P 349P PRO.TYP S211-0172 (M613 DE32 LA)
P 350 COMMUNICATION AND NAVIGATION-SYSTEM (CNS)
P 350K PRO.TYP S211-0056 (OM611 DE22LA)
P 350P PRO.TYP S211-0173 (M113 E50) CRASH
P 351 AUTOMOTIVE PILOT-SYSTEM (APS)
P 351K PRO.TYP W211-0057 (M112 E32)
P 351P PRO.TYP S211-0174 (M112 E26) CRASH
P 352 COMAND
P 352K PRO.TYP W211-0058 (OM611 DE22LA)
P 352P PRO.TYP S211-0175 (M113 E50) CRASH
P 352U LINARITBLAU - METALLICLACK
P 353 AUDIO 30 APS
T 3534 LACKFARBE FEUERROT MB 3534
T 3535 LACKFARBE KARMINROT MB 3535
T 3536 LACKFARBE RUBINROT MB 3536
T 3537 LACKFARBE PURPURROT MB 3537
P 353K PRO.TYP W211-0059 (M112 E26)
P 353P PRO.TYP S211-0176 (M271 E18 ML)
P 353U TEALLITBLAU - METALLICLACK
P 354 ANTENNE FUER TELEFON D/E-NETZ
T 3548 LACKFARBE BERNSTEINROT METALLIC MB 3548
P 354K PRO.TYP W211-0060 (OM613 DE32LA)
P 354P PRO.TYP S211-0177 (M113 E50)
P 355 ANTENNE FUER TAXI-FUNK AUF KOTFLUEGEL HINTEN LI
T 3558 LACKFARBE WEINROT MB 3558
P 355K PRO.TYP W211-0061 (OM612 DE27LA)
P 355P PRO.TYP S211-0178 (M611 DE22 LA)
P 356 ANTENNE AUF DACH HINTEN MITTE FUER TAXI-FUNK U.
P 356K PRO.TYP W211-0062 (OM613 DE32LA)
P 356P PRO.TYP S211-0179 (M613 DE32 LA)
P 357 NAVIGATIONS-SYSTEM - ZUSATZGERAET
T 3572 LACKFARBE RUBIN MICA METALLIC MB 3572
P 357K PRO.TYP W211-0063 (OM613 DE32LA)
P 357P PRO.TYP S211-0180 (M613 DE32 LA)
P 357U LOLITHBLAU - METALLICLACK
T 3580 LACKFARBE TOMATENROT MB 3580
T 3586 LACKFARBE MAGMAROT MB 3586
P 358K PRO.TYP W211-0064 (M271 E18ML)
P 359K PRO.TYP W211-0065 (M271 E18ML)
P 359O TANSANITBLAU METALLICLACK
P 359U TANSANITBLAU METALLICLACK
T 3600 LACKFARBE MIELE-ROT MB 3600
T 3607 LACKFARBE SCHWARZROT (AEHNLICH RAL 3007) MB 3607
P 360K PRO.TYP W211-0066 (M271 E18ML)
P 360P SAF TYP X164 SAMMELCODE
P 361 VERLADEKOSTEN (MASCH. BILDUNG BEI VA 2)
T 3615 LACKFARBE HELLROSA MB 3615
T 3618 LACKFARBE ERDBEERROT MB 3618
P 361K PRO.TYP W211-0067 (M271 E18ML)
P 361P SAF TYP X164 DE30
P 362 RECHTSLENKER NACH EG-VERORDNUNG
T 3620 LACKFARBE VERKEHRSROT MB 3620
T 3625 LACKFARBE ZINNOBERROT "88" MB 3625

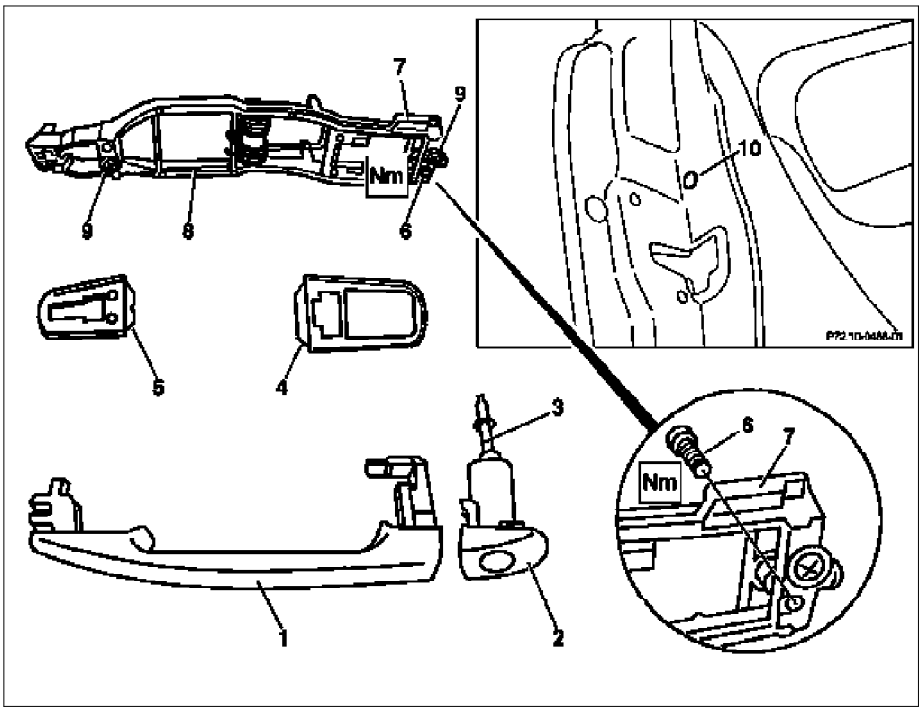
T 853L LIBANON
P 853L LIBANON
P 854 TELEFON "HANDY", NOKIA 6150 (6210)
P 855 TELEFON TELE AID AM "DOM", NOKIA, D-NETZ
P 855A ANTHRAZIT / BEIGE
P 855L MALAYSIA
T 855L MALAYSIA
P 856 2.BEDIENHOERER IM FONDARMLEHNE
P 857A ANTHRAZIT / ROT
T 857L MALEDIEVEN
P 857L MALEDIVEN
P 858A ALPACAGRAU DUNKEL
P 859 TELEFONKARTE E-NETZ DEBITEL (PREISREDUZIERUNG)
P 860 TV-TUNER
P 861 TV-BILDSCHIRM IM FOND
T 861L OMAN (SULTANAT MUSKAT)
P 861L OMAN
P 862 TV-VORRUESTUNG
P 863L MONGOLEI
T 863L MONGOLISHE VOLKSREPUBLIK
T 865L NEPAL
P 865L NEPAL
T 867L PAKISTAN
P 867L PAKISTAN
T 868L BANGLADESH
P 868L BANGLADESH
P 869L PHILIPPINEN
T 869L PHILIPPINEN
P 870A LEDER
P 871 CODE VORLAEUFIG UNGUELIG
P 871A LEDER SCHWARZ
P 872 SITZHEIZUNG FONDSITZ LI UND RE
P 872A LEDER LASERBLAU
P 873 SITZHEIZUNG FAHRERSITZ LINKS UND RECHTS
P 873A LEDER TOBACOBRAUN
T 873L SAUDI-ARABIEN
P 873L SAUDI-ARABIEN
P 874 HEIZWASSER-UMWAELZPUMPE
P 874L PG/UF-SONSTIGE
T 874L PG/UF-SONSTIGE
P 875 SCHEIBENWASCHANLAGE BEHEIZT
P 875A LEDER SAHARABEIGE
T 875L SINGAPUR
P 875L SINGAPUR
P 876 INNENRAUM-LICHTPAKET
T 876L OZEANIEN
P 876L OZEANIEN
P 877 LESELEUCHTE IM FOND
P 877A LEDER AKZENTROT
P 877L SYRIEN
T 877L SYRIEN
P 878 ARBEITSLEUCHTE KARDANISCH IM FOND LINKS U.RECHTS
P 878A LEDER ALPACAGRAU
P 878L ABU DAHBI
T 878L ABU DHABI
P 879L THAILAND
T 879L THAILAND
P 880 SCHLIESSANLAGE MIT INFRAROT-FERNBEDIENUNG
P 880L DUBAI
T 880L DUBAI
P 881 HECKDECKEL-FERNSCHLIESSUNG
P 881A LEDER AMG ANTHRAZIT/ANTHRAZIT
P 881L CKD-LAENDER
T 881L CKD-LAENDER
P 882 INNENRAUMABSICHERUNG

```
P     N80     STEUERCODE WERK BREMEN
T     N80     GETRIEBESPERRE FUER NEBENANTRIEB
P     N81     STEUERCODE WERK BREMEN
P     N82     STEUERCODE WERK BREMEN
P     N83     STEUERCODE WERK BREMEN
P     N84     STEUERCODE WERK BREMEN
P     N85     STEUERCODE WERK BREMEN
P     N86     STEUERCODE WERK BREMEN
P     N87     STEUERCODE WERK BREMEN
T     N87     KAELTEKOMPRESSOR MIT HALTERUNG
P     N88     STEUERCODE WERK BREMEN
P     N89     STEUERCODE WERK BREMEN
P     N8Y     STEUERCODE WERK SINDELFINGEN CKD
P     N8Z     STEUERCODE WERK SINDELFINGEN CKD
P     N90     STEUERCODE WERK BREMEN
P     N91     STEUERCODE WERK BREMEN
P     N92     STEUERCODE WERK BREMEN
P     N93     STEUERCODE WERK BREMEN
P     N94     STEUERCODE WERK BREMEN
P     N95     STEUERCODE WERK BREMEN
P     N96     STEUERCODE WERK BREMEN
P     N97     STEUERCODE WERK BREMEN
P     N98     STEUERCODE WERK BREMEN
P     N99     STEUERCODE WERK BREMEN
P     N9Y     STEUERCODE WERK SINDELFINGEN CKD
P     N9Z     STEUERCODE WERK SINDELFINGEN CKD
P     NA1     STEUERCODE WERK BREMEN
P     NA2     STEUERCODE WERK BREMEN
P     NA3     STEUERCODE WERK BREMEN
P     NA4     STEUERCODE WERK BREMEN
P     NA5     STEUERCODE WERK BREMEN
P     NA6     STEUERCODE WERK BREMEN
P     NA7     STEUERCODE WERK BREMEN
P     NA8     STEUERCODE WERK BREMEN
P     NA9     STEUERCODE WERK BREMEN
P     NB1     STEUERCODE WERK BREMEN
P     NB2     STEUERCODE WERK BREMEN
P     NB3     STEUERCODE WERK BREMEN
P     NB4     STEUERCODE WERK BREMEN
P     NB5     STEUERCODE WERK BREMEN
P     NB6     STEUERCODE WERK BREMEN
P     NB7     STEUERCODE WERK BREMEN
P     NB8     STEUERCODE WERK BREMEN
P     NB9     STEUERCODE WERK BREMEN
P     NC1     STEUERCODE WERK BREMEN
P     NC2     STEUERCODE WERK BREMEN
P     NC3     STEUERCODE WERK BREMEN
P     NC4     STEUERCODE WERK BREMEN
P     NC5     STEUERCODE WERK BREMEN
P     NC6     STEUERCODE WERK BREMEN
P     NC7     STEUERCODE WERK BREMEN
P     NC8     STEUERCODE WERK BREMEN
P     NC9     STEUERCODE WERK BREMEN
P     ND1     STEUERCODE WERK BREMEN
P     ND2     STEUERCODE WERK BREMEN
P     ND3     STEUERCODE WERK BREMEN
P     ND4     STEUERCODE WERK BREMEN
P     ND5     STEUERCODE WERK BREMEN
P     ND6     STEUERCODE WERK BREMEN
P     ND7     STEUERCODE WERK BREMEN
P     ND8     STEUERCODE WERK BREMEN
P     ND9     STEUERCODE WERK BREMEN
P     NE1     STEUERCODE WERK BREMEN
P     NE2     STEUERCODE WERK BREMEN
P     NE3     STEUERCODE WERK BREMEN
```

AR72.10-P-2400GH	Removing and installing outer door handle on front door	12.2.97

MODEL 163

1 Handle
2 Lock cylinder guide
3 Rotating rod
4 Base
5 Base
6 Screw
7 Retaining strap
8 Bearing bracket
9 Screw
10 Screw opening



P72.10-0488-06

Operation no. of operation texts or of standard texts and flat rates

Division	Operation no.	Operation text
P	727240	REPLACING OUTER DOOR HANDLE ON LEFT FRONT DOOR
P	727241	REPLACING OUTER DOOR HANDLE ON LEFT FRONT DOOR, WITHOUT BEARING BRACKET
P	727242	REPLACING OUTER DOOR HANDLE ON LEFT FRONT DOOR, WITH BEARING BRACKET
P	727243	REPLACING OUTER DOOR HANDLE ON LEFT FRONT DOOR (INCLUDING TRANSFERING LOCKING CYLINDER)
P	727265	REPLACING OUTER DOOR HANDLE ON RIGHT FRONT DOOR
P	727266	REPLACING OUTER DOOR HANDLE ON RIGHT FRONT DOOR, WITHOUT BEARING BRACKET
P	727267	REPLACING OUTER DOOR HANDLE ON RIGHT FRONT DOOR, WITH BEARING BRACKET
P	727268	REPLACING OUTER DOOR HANDLE ON RIGHT FRONT DOOR (INCLUDING TRANSFERING LOCKING CYLINDER)

	Removal, installation		
1	Loosen screw (6)	i Accessible through opening (10) on inner side of door, loosen screw (6) max. 5 turns	
		Nm	*BA72.10-P-1003-01D
2	Pull off cylinder guide (2) outward to remove	i **Installation:** Insert rotary rod (3) into door lock actuating mechanism	
3	Pull handle (1) toward rear together with base (4) out of bearing bracket (8)		
4	Remove base (5)	i **Installation:** Insert base (5) into bearing bracket (8)	
5.1	Remove bearing bracket (8)	i Only if bearing bracket is defective. The bearing bracket (8) can only be removed through the installation opening in the inner door panel. For this purpose# Remove door liner on front door	AR72.10-P-1000GH
6	Install in opposite order		
7	Adjust clearance between handle (1) and actuating lever on door lock with eccentric adjustment screw	iEccentric adjustment screw: Accessible through opening on end of door. Use Phillips screwdriver	
8	Check for proper function		

	box.
Fuel Pump Relay	In left side of engine compartment, in fuse & relay box.
Headlamp Cleaning System Relay	In right front footwell fuse & relay box.
Heated Rear Window Relay	In right front footwell fuse & relay box.
Heater Relay	At right kick panel.
Heater Relay (Stage 1)	At right kick panel.
Heater Relay (Stage 2)	At right kick panel.
High Pressure/Return Pump Relay	In left side of engine compartment, in fuse & relay box.
Left Front Power Window Relay	In left side of engine compartment, in fuse & relay box.
Left Turn Signal Relay	In left side of engine compartment, in fuse & relay box.
Low Beam Headlamp Relay (W/ DRL)	In left side of engine compartment, in fuse & relay box.
Rear Foglight Relay	In left side of engine compartment, in fuse & relay box.
Rear Wall Door Washer Pump Relay	In left side of engine compartment, in fuse & relay box.
Rear Window Defroster Relay	In right front footwell fuse & relay box.
Right Front Power Window Relay	In left side of engine compartment, in fuse & relay box.
Right Turn Signal Relay	In left side of engine compartment, in fuse & relay box.
Seat Comfort Relay	In right front footwell fuse & relay box.
Seat Heater Relay (Stage 1)	On underside of left/right front seat.
Seat Heater Relay (Stage 2)	On underside of left/right front seat.
Secondary Air Injection Pump Relay	In left side of engine compartment, in fuse & relay box.
Starter Relay	In left side of engine compartment, in fuse & relay box.
Two-Tone Horn Relay	In left side of engine compartment, in fuse & relay box.

CIRCUIT PROTECTION DEVICES

CIRCUIT PROTECTION DEVICES LOCATION

Component	Component Location
E-Box	In left side of engine compartment.
Fuse & Relay Box	In left side of engine compartment, in E-box. See **Fig. 1** .
Right Front Footwell Fuse & Relay Box	Below right side of dash, behind kick panel. See

"Retarded" if:

- Intake air temperature > 35 °C
- Coolant temperature > 105 °C

In supercharged engines the charge air temperature is used as information for the ignition timing adjustment in place of the intake air temperature.

The values of the retardation of the ignition angle of intake air temperature and coolant temperature are added together.

2.5 Transmission overload protection

In order to protect the shift elements of the automatic transmission during power shifts (1-2-1, 2-3-2) from excessive thermal stresses, the ignition angle is briefly retarded during the gearshift and the engine torque reduced as a result. The ME-SFI control units are supplied with a signal for this purpose from the ETC control unit (N15/3) over the CAN databus.

2.6 ESP/ASR control mode

In order to reduce the engine torque as rapidly as possible in the ESP/ ASR control mode, the ignition angle is retarded by the throttle valve actuator (opening angle reduced) prior to the control mode being activated. The information from the ESP/ASR control unit is supplied over the CAN databus to the ME-SFI control unit.

2.7 Anti-knock control (AKC)

If uncontrolled combustion (knocking) occurs at one or several cylinders, the ignition angle at the relevant cylinder or cylinders is "Retarded".

2.8 Smooth engine running analysis

To restrain the three way catalytic converter from thermal overload through combustion misfiring and in order to keep the exhaust emission values, the smooth operation of the engine is continuously monitored.

If combustion misfiring is identified at one or several cylinders, the corresponding fuel injection valves are no longer actuated after a certain number of misfires.

Engine 104, 111, 112, 113, 119, 120: Smooth operation evaluation is performed through the signals of the crankshaft position sensor.

Engine 137: Identification of combustion misfiring by means of ionic current signal, see ECI ignition system function.

2.9 Double ignition engine 112,113,137

Number	Designation	Engine 112.910/911/912/913/914/915/916/917/920/921/922/923/940/941/942/943/944/945/946/947/949/951/953/954/955/960/961/970/972/973/975/976	Engine 113.940/941/942/943/944/945/946/948/960/961/962/963/964/965/966/967/968/969/971/980/981/982/984/986/987/988/990/991/992/993/995	Engine 113.989
BA15.10-P-1001-02A	Bolt securing knock sensor to cylinder block Nm	20	20	20

SERVICING WIRING HARNESS - AR15.18-P-0500A

MODEL 124, 126, 129, 140, 163, 168, 170, 201, 202, 208, 210, 215, 220

B2 Cable connection of mass air flow sensor
B11 Cable connection of temperature sensor
Z Terminal block

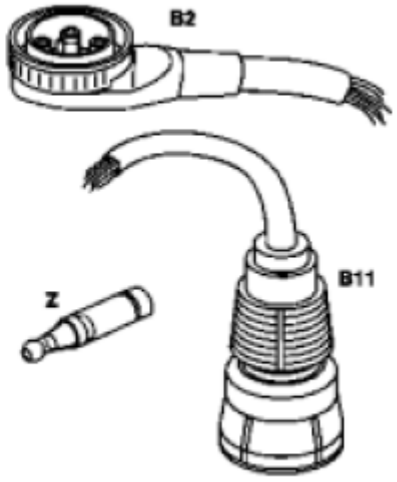


Fig. 27: Identifying Terminal Block And Cable Connection Of Mass Air Flow Sensor And Temperature Sensor

If a cable break or similar damage exists in the area of the plug connection of the mass air flow sensor (B2) or temperature sensor (B11), it is possible to repair the wiring harness in order to avoid costly replacement of a wiring harness.

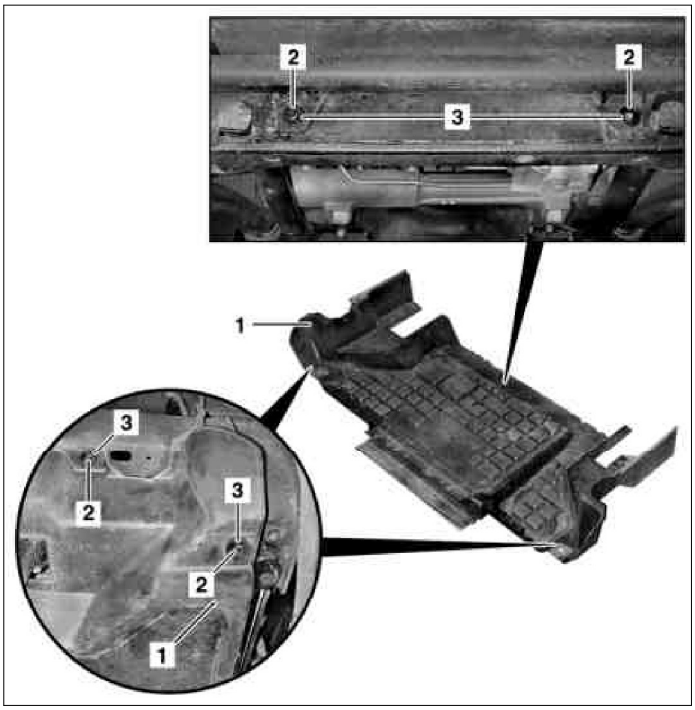
Modification notes

27.9.99	Supersedes SI 54/76 dated 23.1.96	Remove SI 54/76 from your file.	

AR61.20-P-1105GH	Remove/install bottom engine compartment paneling	22.6.00

MODEL 163.172 with ENGINE 113.942
MODEL 163.174 with ENGINE 113.981
MODEL 163.175 with ENGINE 113.965

1 Engine compartment paneling
2 Grub screw
3 Plastic clips



P61.20-2017-12

	Remove/Install		
1	Remove grub screws (2) of plastic clips (3)	6 grub screws pins. **Installation:** Check grub screws, replace if necessary.	
2	Pull out plastic clips (3)	**Installation:** Check plastic clips, replace if necessary.	
3	Remove engine compartment panel (1)	**Installation:** Ensure that engine compartment panel is positioned correctly.	
4	Install in the reverse order		

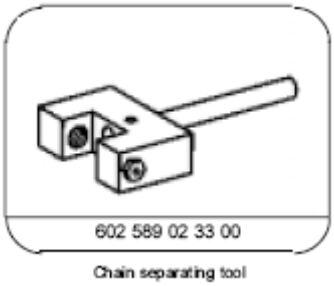


Fig. 13: Identifying Chain Separating Tool (602 589 02 33 00)

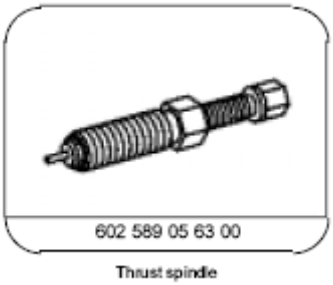


Fig. 14: Identifying Thrust Spindle (602 589 05 63 00)

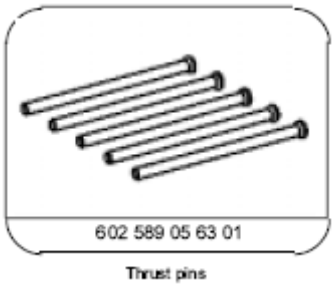


Fig. 15: Identifying Thrust Pins (602 589 05 63 01)

Fig. 16: Identifying Case (602 589 00 98 00)

1. Assemble chain separating tool (1) and thrust spindle (2).

					113.948/966	
BA01.45-P-1003-01B	Oil drain screw to oil pan	M14		Nm	30	30

GF Engine lubrication

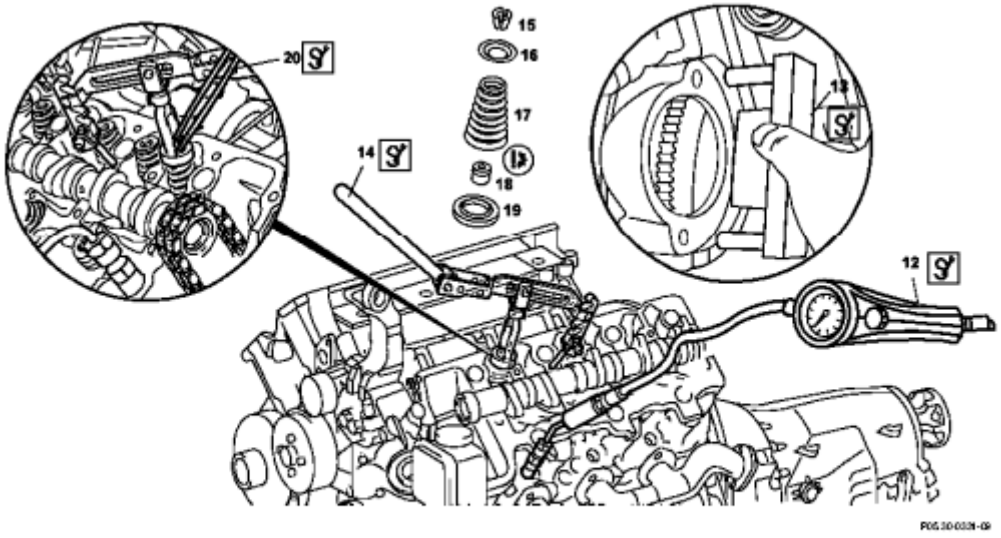
Number	Designation				Engine 112 except 112.916/953/975	Engine 112.916/953	Engine 113.948/966
BF18.00-P-1001-01H	Engine oil	Filling capacity with oil filter		Liters	8.0	7.5	8.0
		Filling capacity without oil filter		Liters	7.5	7.0	7.5
		Specifications for Operating Fluids	Sheet		**BB00.40-P-0229-01A**	**BB00.40-P-0229-01A**	**BB00.40-P-0229-01A**
			Sheet		**BB00.40-P-0229-03A**	**BB00.40-P-0229-03A**	**BB00.40-P-0229-03A**
			Sheet		**BB00.40-P-0229-05A**	**BB00.40-P-0229-05A**	**BB00.40-P-0229-05A**

GF Engine lubrication

Number	Designation				Engine 113.944/944/980981/984/984/986/991	Engine 113.963/963/965	Engines 113.987/988/990/
BF18.00-P-1001-01H	Engine oil	Filling capacity with oil filter		Liters	7.5	7.5	8.5
		Filling capacity without oil filter		Liters	-	7.0	8.0
		Specifications for Operating Fluids	Sheet		-	**BB00.40-P-0229-01A**	-
			Sheet		-	**BB00.40-P-0229-03A**	-
			Sheet		**BB00.40-P-0229-05A**	**BB00.40-P-0229-05A**	**BB00.40-P-0229**

GF Engine lubrication

Number	Designation				Engines 113.940/941/942/943/960/961/962/969/982	Engine 112.975	Engine 113.967
BF18.00-P-1001-01H	Engine oil	Filling capacity with oil filter		Liters	8.0	8.0	7.5
		Filling capacity without oil filter		Liters	7.5	7.5	7.0
		Specifications for Operating Fluids	Sheet		**BB00.40-P-0229-01A**	**BB00.40-P-0229-01A**	**BB00.40-P-0229-01A**
			Sheet		**BB00.40-P-0229-03A**	**BB00.40-P-0229-03A**	**BB00.40-P-0229-03A**
			Sheet		**BB00.40-P-0229-05A**	**BB00.40-P-0229-05A**	**BB00.40-P-0229-05A**



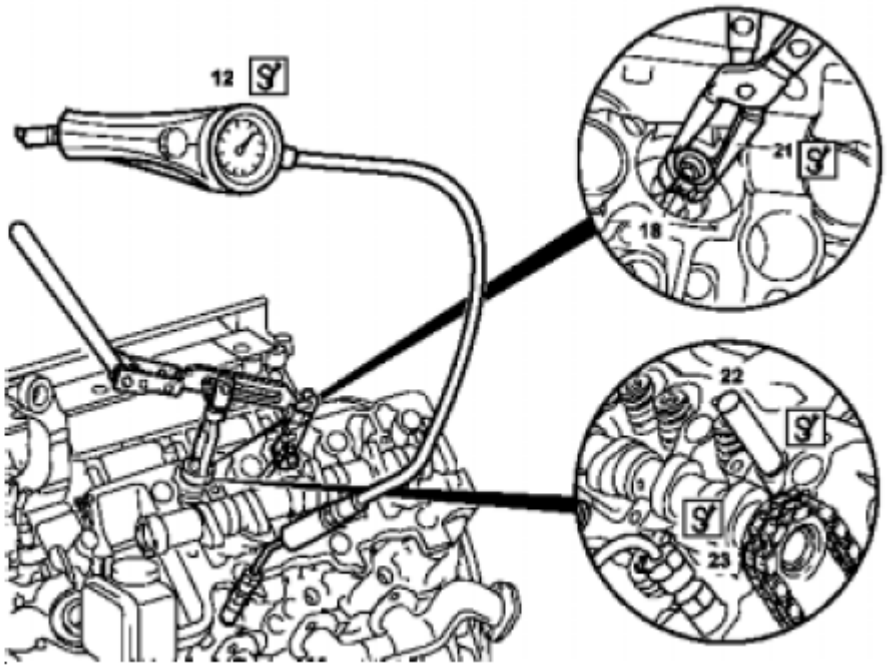
12 Cylinder leak tester
13 Retaining lock
14 Valve tool
15 Valve collets
16 Upper valve spring retainer
17 Valve spring
18 Valve stem seal
19 Bottom valve spring retainer
20 Tweezers

Fig. 82: Identifying Valve Springs And / Or Valve Stem Seal Components - Shown On Engine 112 (1 Of 2)

Shown on engine 112

Shown on engine 112

12 Cylinder leak tester
18 Valve stem seal
21 Valve stem seal pliers
22 Assembly drift
23 Connection hose



					946/947/948/ 951/960/961, 113.940/941/94 2/943/944
BE05.30-P-1004-03C	Valve seat ring - overlap in cylinder head	Intake	mm	0.084...0.115	0.084...0.115
		Exhaust	mm	0.074...0.100	0.074...0.100
BE05.30-P-1006-03C	Basic bore diameter of inlet valve seat rings in cylinder head	Standard	mm	31.000...31.016	37.000...37.016
		Rep. size 1	mm	32.000...32.016	38.200...38.216
BE05.30-P-1007-03C	Basic bore diameter of exhaust valve seat rings in cylinder head	Standard	mm	35.000... 35.016	42.000... 42.016
		Rep. size 1	mm	36.200...36.216	43.200...43.216

Test values for valve seat rings

Number	**Designation**			**Engine 113.960/ 961/962/963/ 964/965/967/ 968/971/980/ 981/982/984/ 987/988/990/ 991/992/993/ 995**
BE05.30-P-1004-03C	Valve seat ring - overlap in cylinder head	Intake	mm	0.084...0.115
		Exhaust	mm	0.074...0.100
BE05.30-P-1006-03C	Basic bore diameter of inlet valve seat rings in cylinder head	Standard	mm	39.000...39.016
		Rep. size 1	mm	40.200...40.216
BE05.30-P-1007-03C	Basic bore diameter of exhaust valve seat rings in cylinder head	Standard	mm	44.000...44.016
		Rep. size 1	mm	45.200...45.216

Commercially available tools

Number	**Designation**
WH58.30-Z-1001-28A	Recirculated air warming cabinet
WH58.30-Z-1003-28A	Heating oven

Workshop equipment

WE58.40-Z-1009-21A	**Valve seat turning device**
WE58.40-Z-1010-21A	Valve seat turning device

i The sealing compound must only be applied to the specified surfaces in the form of a bead of 2.0 mm ± 0.5 mm in diameter.

The sealing compound must be processed within 10 min. The sealing compound bead must not be spread. Only the sealing compound listed in the section Repair products may be used.

TROUBLE DIAGNOSIS

GURGLING NOISE IN HEATER HOUSING - AF01.30-P-1000AG

ENGINE 113.##### up to 286599 in MODEL 129, 163, 202, 208, 210, 215, 220

ENGINE 113.### ## up to 286599 in MODEL 463

Modification notes

17.1.01	Replaces STIP 20.10-004 dated 17.01.2001		

Damage code	Cause	Remedy	
01 243 B2	Heater return duct in cylinder head clogged with casting crust	i Before working on the cooling system, coolant pump, heater housing, etc.:? 1 Remove left cylinder head ENGINE 113 in MODEL 210, 208, 202, 129 ENGINE 113 in MODEL 220 ENGINE 112.945, 113.962 in MODEL 463 ENGINE 113.942 in MODEL 163.172 ENGINE 113.981 in MODEL 163.174	AR01.30-P-5800B AR01.30-P-5800BA AR01.30-P-5800GV **AR01.30-P-5800MV**
		2 Check coolant duct, if necessary, remove possible casting crust i As of engine end number 285600 (as of beginning of 01/2001) there is no casting crust at this point.	

	swallowing battery acid. **Risk of injury** caused by burns to skin and eyes from battery acid or when handling damaged lead-acid batteries		
3	Disconnect battery ground cable	ⓘ The battery is located in the right of the engine compartment.	**AR54.10-P-0003A**
Ⓡ	Notes on battery	All models ⓘ **Installation:** After connecting, read out fault memory, encode radio and normalize power windows.	**AH54.10-P-0001-01A** Vehicles with stationary heater: adjust time display on stationary heater.
4.1	Remove air guide (23)	ⓘ Engine 113.942 only.	
⚠ Danger!	**Risk of injury** to skin and eyes caused by scalding from contact with hot coolant spray. **Risk of poisoning** caused by swallowing coolant.	Do not open cooling system unless coolant temperature is below 90°C. Open cap slowly and release the pressure. Do not pour coolant into beverage containers. Wear protective gloves, protective clothing and safety glasses.	**AS20.00-Z-0001-01A**
5	Drain coolant from radiator	ⓘ Remove coolant pump line --> (16) from coolant pump.	**AR20.00-P-1142HA**
6	Drain and collect engine oil	⚠ Danger! 📖	***BA01.45-P-1003-01B** ***BF18.00-P-1001-01H**
7.1	Remove viscous fan (1)	All except model 163.174 with engine 113.981 and 163.175 with engine 113.965. ⓘ Right-hand thread!	**AR20.40-P-5660C**
8.1	Remove fan shroud (2).	ⓘ Unscrew bolts at bottom of fan shroud	
8.2	Remove electric fan	ⓘ Only model 163.174 with engine 113.981 and 163.175 with engine 113.965.	**AR20.40-P-5000GH**
9	Attach guard plate for radiator / condenser		
WF	Guard plate for radiator / condenser	Engine 606 in MODEL 124, Engine 606.961 in MODEL 140, Engine 112, 113, 604, 605, 611.960 in MODEL	WF58.50-P-0110-01A

1 Air baffle
2 Viscous fan
3 Fan shroud
4 Bolts
5 Air filter housing
6 Air intake pipe
7 Resonance unit
8 Poly-V-belt
9 Fender liner
10 Shield
11 Exhaust bracket

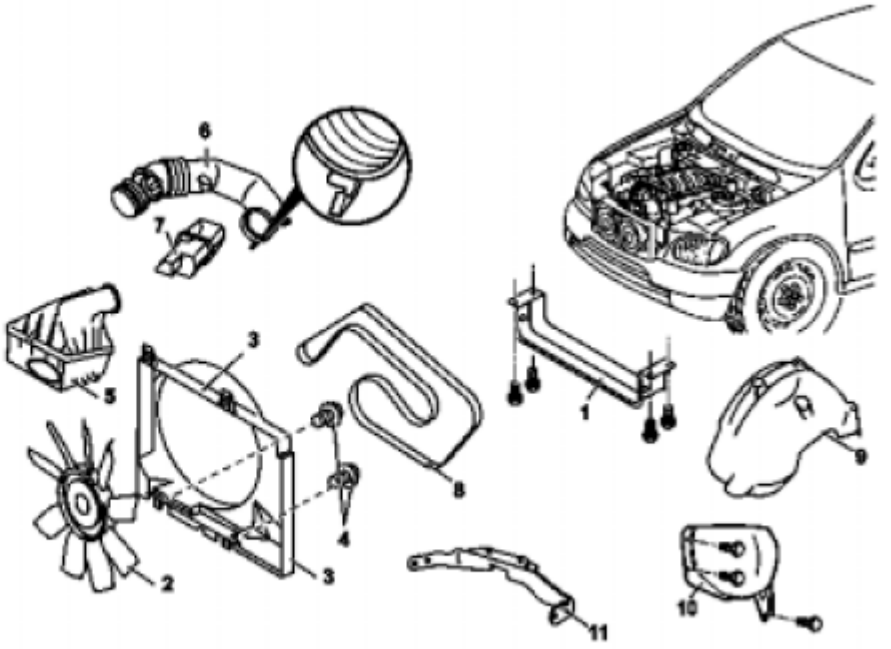


Fig. 80: Identifying Cylinder Head Remove/Install Components - Shown On Model 163.154 With Engine 112 (1 Of 3)

12 Right and left ignition coils
13 Left and right cylinder head covers
14 Intake manifold
15 Camshaft position sensor
16 Coolant line
17 Chain tensioner
18 Oil filter housing
19 Camshaft sprockets
28 Camshaft bearing bridges

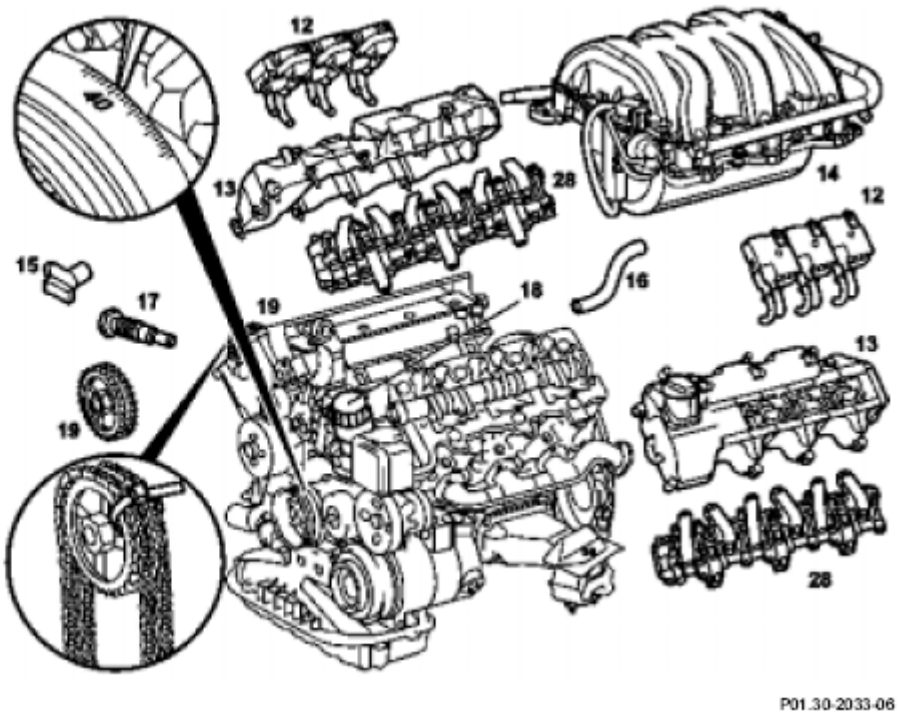
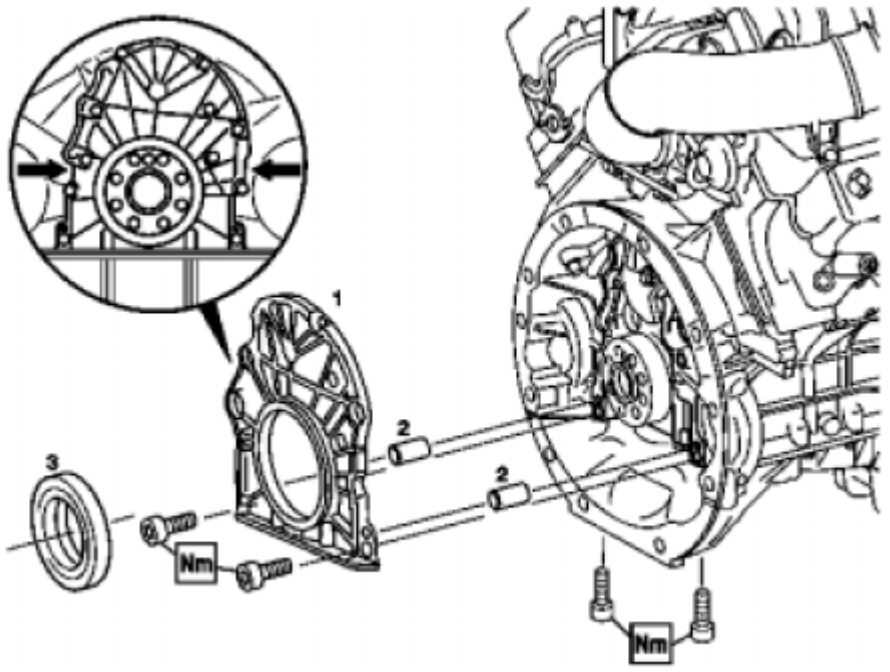


Fig. 81: Identifying Cylinder Head Remove/Install Components - Shown On Model 163.154 With Engine 112 (2 Of 3)

1 *End cover*
2 *Fitting sleeves*
3 *Crankshaft radial sealing ring*



P01.40-0290-06

Fig. 96: Identifying End Cover Remove/Install Components - Shown On Engine 112

☒☒	**Remove/install**		
1	Remove flywheel/drive plate		**AR03.30-P-8001C**
2	Remove the end cover (1).	ⓘ Pry off end cover (1) carefully at both marked points with a slanted screwdriver (see magnified section). ⓘ The crankshaft radial sealing ring (3) must always be replaced when end cover (1) is removed. ⚠ Danger!	***BA01.40-P-1004-01C**
3	Install a new rear crankshaft radial seal (3)	ⓘ The rear crankshaft radial sealing ring (3) must only be removed once end cover (1) has been removed. **Installation:** Circumference and lip of the crankshaft radial sealing ring (3) as well as the counter tread on the	

		dimension "H2"			
BE01.30-P-1005-04B	Cylinder head after necessary stock removal	Reference dimension "H1"	mm	-	-
		Reference dimension "H2"	mm	-	-

Cylinder head/cylinder head bolts

Number	Designation			Engine 119	Engine 120
BE01.30-P-1001-04B	Cylinder head bolt	Thread diameter	M	12	12
		Length (L) when new	mm	160	168
		Length (L)	mm	< or = 162.7	< or = 171
		See picture		-	-
BE01.30-P-1002-04B	Cylinder head	Overall height "H" mm	mm	-	135.9 to 136.0
		Height	mm	-	> or = 135.5
		See picture		-	-
BE01.30-P-1003-04B	Cylinder head	permissible difference of flatness of contact surface in longitudinal direction	mm	-	-
		permissible difference of flatness of contact surface in transverse direction	mm	-	-
		Peak-to-valley height	µM	-	-
BE01.30-P-1004-04B	Cylinder head when new	Reference dimension "H1"	mm	130.6 to 130.7	-
		Reference dimension "H2"	mm	145.9 to 146.0	-
BE01.30-P-1005-04B	Cylinder head after necessary stock removal	Reference dimension "H1"	mm	130.0	-
		Reference dimension "H2"	mm	145.3	-

Cylinder head/cylinder head bolts

Number	Designation			Engine 137	Engine 155.980
BE01.30-P-1001-04B	Cylinder head bolt	Thread diameter	M	10	11
		Length (L) when	mm	126/162	175 +-0.5

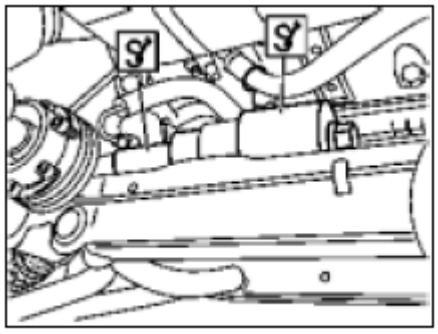


Fig. 8: Identifying Extraction Tool

Install rubber mount

Observe installed position of rubber mounts. The recesses (arrows) must be horizontal relative to the front-axle carrier.

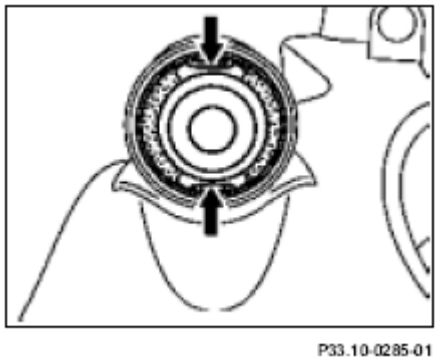


Fig. 9: Identifying Position Of Rubber Mounts And Recesses

2. Coat rubber mounts with liquid lubricant.
3. Use the insertion and extraction tool AP (Parts 01, 02, 03) to pull the front and rear rubber bushings into the front subframe, continuing until they are flush with the surface.

Rear bushing shown

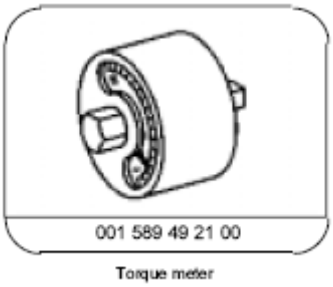


Fig. 64: Identifying Torque Meter (001 589 49 21 00)

Commercially available tools

Number	Designation
WH58.30-Z-1013-06A	Wrench bit 41 mm hexagon 3/4 inch four-point

1. Measure and note friction torque using torque meter (040b) and connecting piece on the hexagon collared nut.

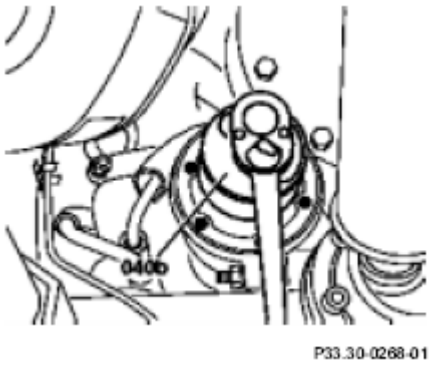


Fig. 65: Identifying Torque Meter

CHECK FRONT AXLE GEAR OIL LEVEL AND TOP UP IF NECESSARY - AR33.30-P-0525-02GH

Modification notes

8.1.07	Filling capacity, Specifications for Operating Fluids	Model 163	***BF33.30-P-1001-03B**

AH Front final-drive unit

Number	Designation		Model 163
BA33.30-P-1002-03B	Oil filler screw, front axle gear	Nm	50
BA33.30-P-1003-03B	Oil drain screw, front axle gear	Nm	50

GF Front axle gear

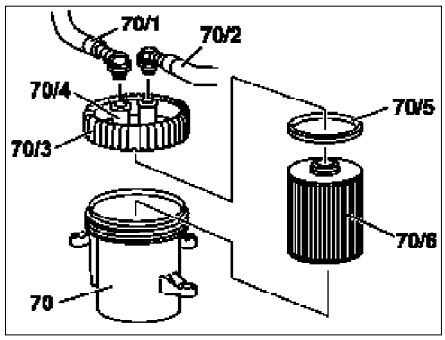
Number	Designation			Model 163
BF33.30-P-1001-03B	Filling capacity	Front axle gear	Liters	1.2
		Specifications for	Sheet	BB00.40-P-0235-

AP47.20-P-0780BB	Replace fuel filter	2.3.99

ENGINE 611.960 in MODEL 202.133 /134 /193 /194
ENGINE 611.961 in MODEL 210.006 /007 /206 /606
ENGINE 612.961 in MODEL 210.016 /216 /616
ENGINE 612.963 in MODEL 163.113
ENGINE 613.961 in MODEL 210.026 /226
ENGINE 613.960 in MODEL 220.026 /126

Shown on engine 611.960

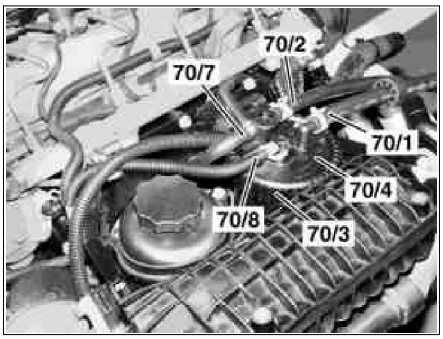
70 Fuel filter housing
70/1 Fuel filter input
70/2 Fuel filter output
70/3 Threaded ring
70/4 Cap
70/5 Seal
70/6 Filter element



P47.20-0289-01

Shown on engine 612.961

70/1 Fuel line input
70/2 Fuel line output
70/3 Threaded ring
70/4 Cap
70/5 Seal
70/6 Filter element
70/7 Fuel return line
70/8 Fuel feed line



P07.16-2101-01

⛶ ⛶	**Remove/install and replacing**		
⚠ **Danger!**	**Risk of death.** Death may result if vehicle slips or topples from the lifting platform.	Align vehicle between the columns of the lifting platform and position the four support plates at the lifting platform support points specified by the vehicle manufacturer.	AS00.00-Z-0010-01A
⚠ **Danger!**	**Risk of explosion** from fuel igniting, **risk of poisoning** from inhaling and swallowing fuel as well as **risk of injury** to eyes and skin from contact with fuel.	No fire, sparks, naked flames or smoking. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing when handling fuel.	AS47.00-Z-0001-01A
1	Remove trim panel of charge air distribution pipe		
2	Disconnect fuel return line (70/7) and fuel feed line (70/8)		
3 f	Unscrew threaded ring (70/3) and remove together with cover (70/4).	ⓘ If the fuel filter housing is soiled inside, it must be removed and cleaned (against separate order): # Remove/install fuel full-flow filter	AR47.20-P-1070HB
4	Replace filter insert (70/6)	ⓘ After inserting the filter element Fill fuel filter housing with fuel.	
5	Replace sealing ring (70/5)		
6	Mount threaded ring with cover so that the groove latches at the fuel filter housing	ⓘ Tighten threaded ring by hand.	
7	Mount fuel return line (70/7) and fuel feed line (70/8)		
8	Install trim panel of charge air distribution pipe	Nm	*BA01.20-P-1003-01A
⚠ **Danger!**	**Risk of accident.** Accidents may result if the vehicle starts off unintentionally with the engine running. **Risk of injury.** Crushing and burn injuries may result while working on engine during when it is being started or when it is in operation.	Secure vehicle to prevent it from moving. Wear closed and snug-fitting work clothes. Do not grasp hot or rotating parts.	AS00.00-Z-0005-01A
9	Run engine and inspect fuel filter for leaks		

Nm **Crankcase ventilation, cylinder head cover**

Fuse	Terminal	Color of unfused wire	Color of fused wire	Fused function	Bay	Rating in amperes (A)
1	15		5,0 mm ^{2} red	Interior socket (X58/1)		15
2	L		0,5 mm ^{2} green 1,0 mm ^{2} green	Instrument cluster (A1): • Left front indicator lamp (A1e1) Left front lamp unit (E1): • Left turn signal lamp (E1e5) Left left taillamp (E3): • Left turn signal lamp (E3e1) Left auxiliary turn signal lamp (E22/1) Interior connector sleeve, circuit L (Z53/4) • Trailer hitch connector (X52)		7,5
3	56a	2,0 mm ^{2} bg	1,0 mm ^{2} white	Right front lamp unit (E2): • Right high beam (E2e1)		15
4	30		2,0 mm ^{2} white	Supply of sliding/tilting roof (SHD) circuit 30: • Sliding/tilting roof motor (SHD) (M12)		30
5	56a	2,0 mm ^{2} bg	1,0 mm ^{2} white 0,5 mm ^{2} white	Left front lamp unit (E1): • Left high beam (E1e1) Instrument cluster (A1): • High beam indicator lamp (A1e3)		7,5
6	15		0,8 mm ^{2} green	Rear-end door wiper motor (M6/4)		7,5
7	30 53a	3,0 mm ^{2} grey	2,0 mm ^{2} white 1,0 mm ^{2} white	Combination switch (S4): • Hazard flasher switch (S6/1s1) • Windshield washer system switch (S4s4) • Wipe switch (S4s5) Wiper motor (M6/1) Relay k17: Front wiper interval relay		15
8	30		1,0 mm ^{2} red	Transfer case control unit (N78)		25

G00315202

Fig. 4: Fuse Assignments Fuse & Relay Box F1 (1 Of 6)
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

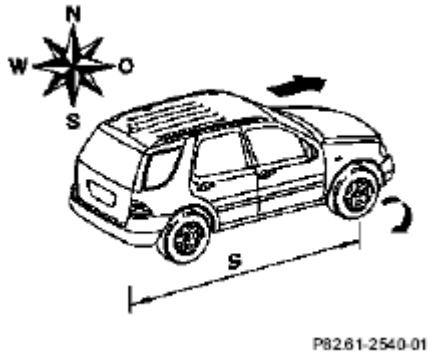


Fig. 3: Layout Of Vehicle Data Card - Front Of Vehicle Data Card

Back of vehicle data card

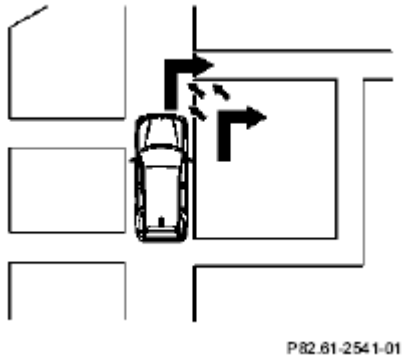


Fig. 4: Layout Of Vehicle Data Card - Back Of Vehicle Data Card

i The vehicle data card with all the essential data is required to be able to find the correct replacement parts for a particular vehicle.

This requires data that cannot be accommodated on the vehicle (e.g. on the model plate) any more.

The vehicle data card format DIN A5 (approx. 21.0 x 14.5 cm) was introduced in January 1978 as a standard for all manufacturing plants. Only the vehicle data card that is glued into the service booklet has a size of approx. 10.0 x 19.5 cm. The back of this card remains empty. As of 01.09.2005, the vehicle data card is no longer glued into the service booklet.

Field contents	Comments
Chassis number	The chassis or vehicle identification number is the identification number of every vehicle. It also provides information on the version and the manufacturing plant of this vehicle. The preceding letter combination WDB is the World Manufacturer Code and means "Westdeutschland Daimler-Benz" ("Western Germany Daimler-Benz"). It has no meaning as far as replacement parts are concerned.

In areas exposed to particularly high stresses (dampness, scouring), additional safety precautions may however be required.

The following measures are recommended depending on the application.

Protect repair area using:

- Heat-shrinkable tube
- Corrugated tube
- Wrapping with fabric tape
- Spaghetti insulation

BASIC KNOWLEDGE

MODEL SURVEY - GF00.10-P-0025-01I

163.1	163.11	163.113	ML 270 CDI
	163.12	163.128	ML 400 CDI
	163.13	163.136	ML 230
	163.15	163.154	ML 320
		163.157	ML 350
	163.17	163.172	ML 430
		163.174	ML 55 AMG
		163.175	ML 500

MAJOR ASSEMBLY OVERVIEW - GF00.10-P-0025-02I

Sales designation	Model	Engine	Manual transmission	Automatic transmission	Steering gear
ML 270 CDI	163.113	612.963	716.644	722.661	-
ML400CDI	163.128	628.963	-	722.666 722.673	-
ML 230	163.136	111.977	717.461	722.660	-
ML 320	163.154	112.942	-	722.662	-
ML 350	163.157	112.970	-	722.674	-
ML 430	163.172	113.942	-	722.663	-
ML 55 AMG	163.174	113.981	-	722.666	-
ML 500	163.175	113.965	-	722.666	-

COMPLETE VEHICLE, MODEL/COMPONENT INSTALLATION SURVEY, BUILD CONDITION - GF00.10-P-0801I

MODEL 163

AR		contact coupling, 3, red Remove female contact	AR00.19-P-0120-17A
AR	026 545 91 28	6-pin RK 2.5 solder contact coupling, -, green Remove female contact	AR00.19-P-0120-17A

CONNECTOR PART NUMBERS - GF00.19-P-8100BD

MODEL 124, 126, 129, 140, 163, 164, 168, 169, 170, 171, 199, 202, 203, 208, 209, 210, 211, 215, 216, 219, 220, 221, 230, 240, 245, 251, 414, 461, 463

Connector and couplings part-original-number 028

	Part number	Designation, Coding, Color	
AR	028 545 27 28	6-pin RK 2.5, variant 1 coupling, B, orange Remove female contact	AR00.19-P-0120-15A
AR	028 545 38 28	4-pin SPT coupling, B, black Remove female contact	AR00.19-P-0120-10A
AR	028 545 83 28	8-pin MQS coupling, A, black Remove female contact	AR00.19-P-0120-04A
AR	028 545 84 28	4-pin MQS coupling, A, black Remove female contact	AR00.19-P-0120-04A

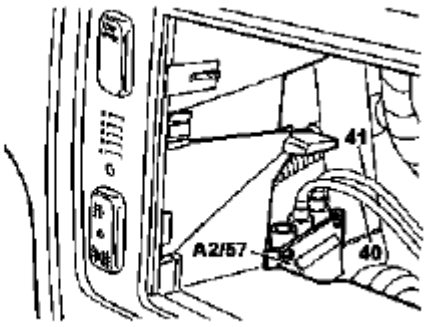
CONNECTOR PART NUMBERS - GF00.19-P-8100BE

MODEL 124, 126, 129, 140, 163, 164, 168, 169, 170, 171, 199, 202, 203, 208, 209, 210, 211, 215, 216, 219, 220, 221, 230, 240, 245, 251, 414, 461, 463

Connector and couplings part-original-number 029

	Part number	Designation, Coding, Color	
AR	029 545 13 28	5-pin SPT coupling, A, black Remove female contact	AR00.19-P-0120-10A
AR	029 545 19 28	8-pin RK 2.5 variant 1 coupling, A, black Remove female contact	AR00.19-P-0120-15A
	029 545 21 28	4-pin RK 2.5 variant 1	

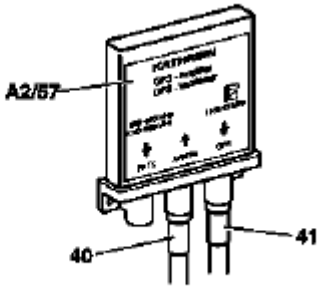
A2/57	CTEL and GPS antenna splitter
40	Coaxial cable for CTEL and GPS roof antenna (A2/49)
41	Coaxial cable to GPS receiver



P82.61-2343-01

Fig. 53: Identifying 4-Pin SLK Coupling

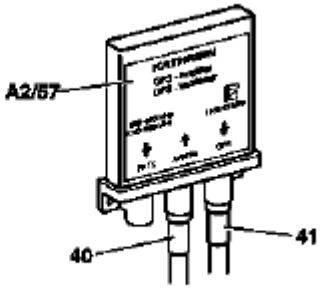
A2/57	CTEL and GPS antenna splitter
40	Connection for coaxial cable of CTEL and GPS roof antenna (A2/49)
41	Connection for coaxial cable to GPS receiver



P82.61-2304-01

Fig. 54: Identifying 5-Pin SLK Coupling

A2/57	CTEL and GPS antenna splitter
40	Connection for coaxial cable from CTEL and GPS roof antenna (A2/49)
41	Connection for coaxial cable to GPS receiver



P82.61-2304-01

Fig. 55: Identifying 6-Pin SLK Coupling

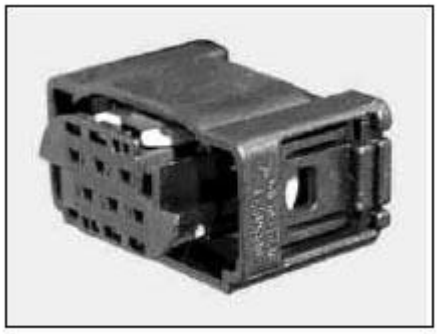


Fig. 137: Identifying 6-Pin MQS Coupling

Fig. 138: Identifying 4-Pin MQS Coupling

Fig. 139: Identifying 2-Pin MQS Coupling

Fig. 213: Identifying 4-Pin JPT Coupling

Fig. 214: Identifying 8-Pin JPT Coupling

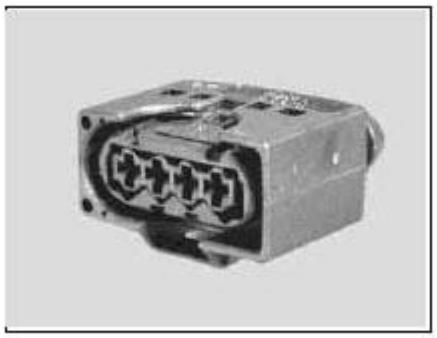
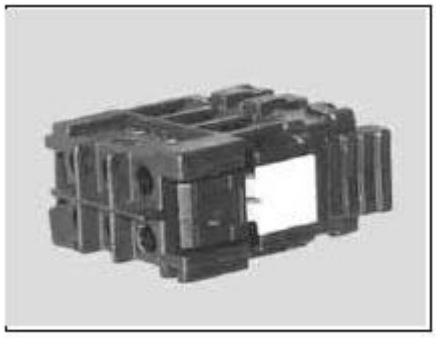


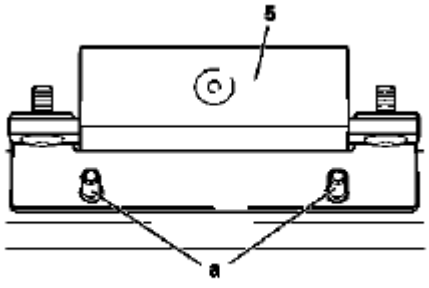
Fig. 215: Identifying 4-Pin JPT Coupling

Fig. 284: Identifying 4-Pin RK-2.5 Solder Contact Coupling



P54.18-2545-01

Fig. 285: Identifying 6-Pin RK-2.5 Solder Contact Coupling



P82.61-2125-01

Fig. 286: Identifying 8-Pin RK-2.5 Solder Contact Plug

P54.18-2548-01

Fig. 287: Identifying 8-Pin RK-2.5 Solder Contact Coupling

If oil is now topped up after 5 000 km (a), the remaining distance displayed is not extended as the curve is within the shaded area. The bonus B1 is nevertheless added internally and results in an extension of the service interval to slightly more than 15 000 km - provided the driving conditions remain the same or are more favorable.

(The service interval of 15 000 km is always reached, however, even if the internal value were less.)

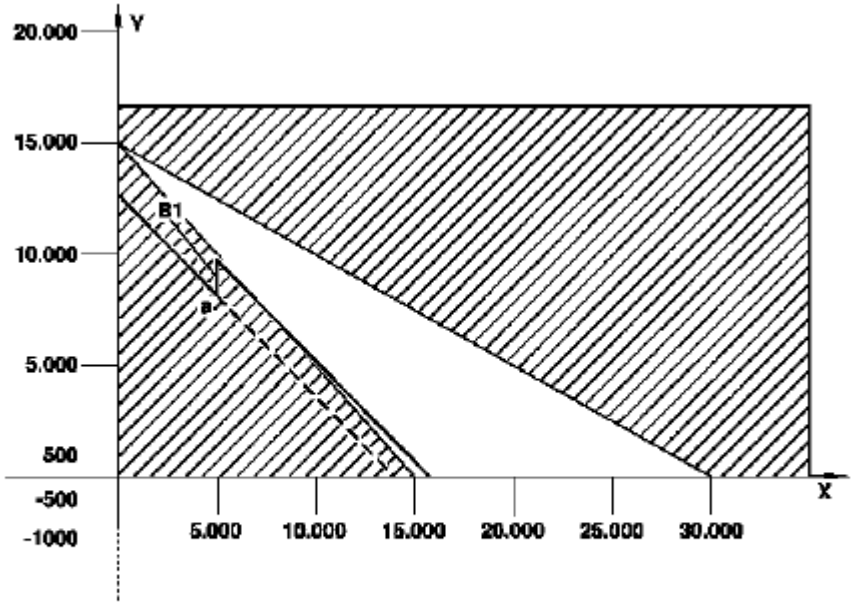


Fig. 324: Engine Oil Monitor Function - (3 Of 4)

Example 4:

Oil has been topped up after 5 000 km under unfavorable driving conditions (a) and the oil replenishment (bonus B1) detected internally. We now have two cases to consider:

- If the car continues to be driven under the same conditions (unbroken line), the remaining distance displayed is not extended as the curve is within the shaded area.

  The service interval in this case is nevertheless 15 000 km although the internal value is less. (The remaining distance displayed can always only be within the light area.)

- If the car continues to be operated under more favorable conditions (broken line), the value of the internal remaining distance slowly moves into the light area. Consequently, the service interval may be greater than 15 000 km.

Fig. 333: Connecting STAR DIAGNOSIS For Read Out Fault Memory (Illustrated On Model 171.4)

1. Connect STAR DIAGNOSIS (0100) to diagnostic socket, on the data link connector (X11/4) or on the data link connector (1.3) (X11/22).
2. Switch on ignition.
3. Start the Diagnosis Assistance System.
4. In the "Model" menu, select the sub menu "Other model series".
5. Go through the instructions on the screen:
   - Enter the control unit version.
   - Read fault memory, erase.
   - Read actual values.
   - Perform actuations.
   - Adaptation of control units
6. Disconnect STAR DIAGNOSIS (0100).

[i] Stored faults which may be caused by disconnecting cables or by simulation during testing operations must be deleted in the diagnostic trouble code memory following completion of the operations.

EXPLANATION OF DIAGNOSTIC SYMBOLS - AD00.00-P-2001A

MODEL 124, 129, 140, 163, 168, 170, 201, 202, 208, 210, 215, 220

	Explanation of symbols for testers and components		**AD00.00-P-2000-01A**

DIAGNOSIS ASSIGNMENT - AD00.00-P-2002A

MODEL 124, 129, 140, 163, 168, 170, 201, 202, 208, 210

	Assignment of data link connector	Models 124.034/036, 129.063/067/076, 140, 170, 202, 208, 210	AD00.00-P-2000-02A
	Assignment of data link connector	Model 124 except 124.034/036, 129.060/061/066, 201	AD00.00-P-2000-02B
	Assignment of data link connector	Models 163, 168	**AD00.00-P-2000-02C**

CONNECT DIAGNOSIS TESTING EQUIPMENT - AD00.00-P-2003A

MODELS 124, 129, 140, 163, 168, 170, 201, 202, 203, 208, 209, 210, 220

MODELS 211.004 /006 /016 /026 /028 /042 /043 /061 /065 /070 /076 /206 /216 /226 /242 /261 /265 /616, 215.374

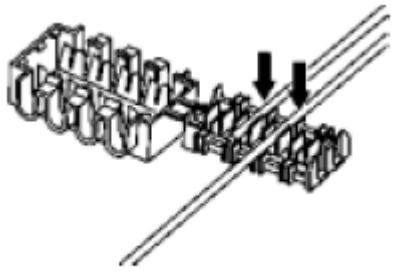


Fig. 389: Locating Cables

At the ends of cables, ensure that the wire is positioned such that distance (a) between the end of the wire and the edge of the housing is approx. 2 mm (arrow). Make sure that this distance is not too long or too short.

Only this ensures that the line is clamped twice and that the distance to the edge of the housing is large enough to prevent a short circuit.

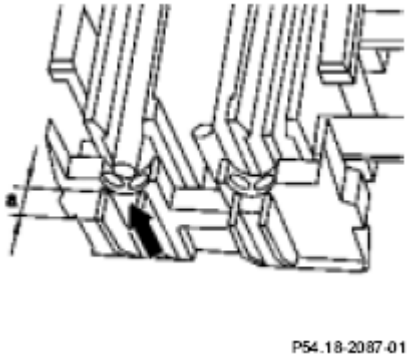


Fig. 390: Locating Distance Between End Of Wire And Edge Of Housing

3. Press together the cable connector by pressing the top and bottom part at the same time using pliers until you hear it snap into place.

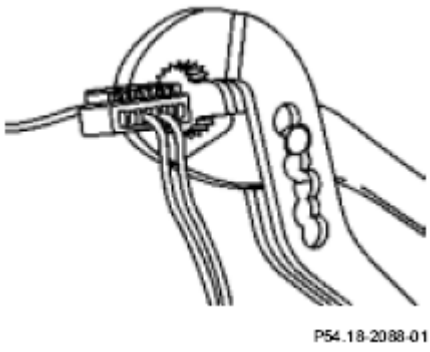


Fig. 391: Pressing Cable Connector

2. Remove retaining cap (2) from coupling housing (3) in direction of arrow.

Shown on 3/3-pin MQS coupling

⇒		Test scope/ Actual value no. and text	Test connection	Test condition	Nominal value/ display	Possible cause/Remedy
9.0	005 007	03 Front passenger AB squib (R12/8) > Ω < Ω		Ignition key in position "2".	√ F	⇒ 9.1
9.1		03 Front passenger AB squib (R12/8)	R12/8 1 — 2	Remove ignition key. Remove glove box. Disconnect front passenger AB squib (R12/8) connector. Connect See fig. 55 Set resistance of 2 Ω. Ignition key in position "2".	√ F	Front passenger airbag unit. **Model 140:** SRS test connector (X11/13) not properly connected. **Model 202:** Airbag intermediate connector (X28/12) not properly connected. Model 140 ⇒ 9.2, except Modle 129, 140, 210 as of 03/97: ⇒ 9.3, All models: ⇒ 9.4
9.2		03 Right front ETR squib (R12/8) > Ω < Ω	X11/13 5 — 6	Remove ignition key. Disconnect X11/13. Connect See fig. 51	2 – 5 Ω	Wiring, ⇒ 9.4

99F00971

Fig. 458: Retaining Cap From Coupling Housing - Shown On 3/3-Pin MQS Coupling

Secondary unlocking for version with retaining housing (MQS)

1. Lift locking catch (2) of retaining cap (4) using a suitable tool (1).
2. Pull coupling housing (3) from retaining cap (4) in direction shown by arrow.

Shown on a 3/3-pin MQS/MCP coupling

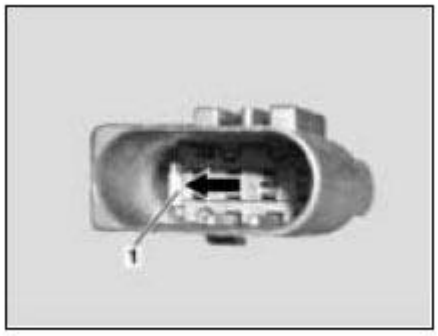


Fig. 515: Moving Locking Bar - Shown On 4-Pin JPT Plug

Secondary release on version with retaining cap (JPT)

1. Using a suitable tool, pry up the lock tab on the retaining cap (6).
2. Move the retaining cap (6) in direction of arrow until it reaches the stop.

Shown on 4/8-pin JPT/MQS plug

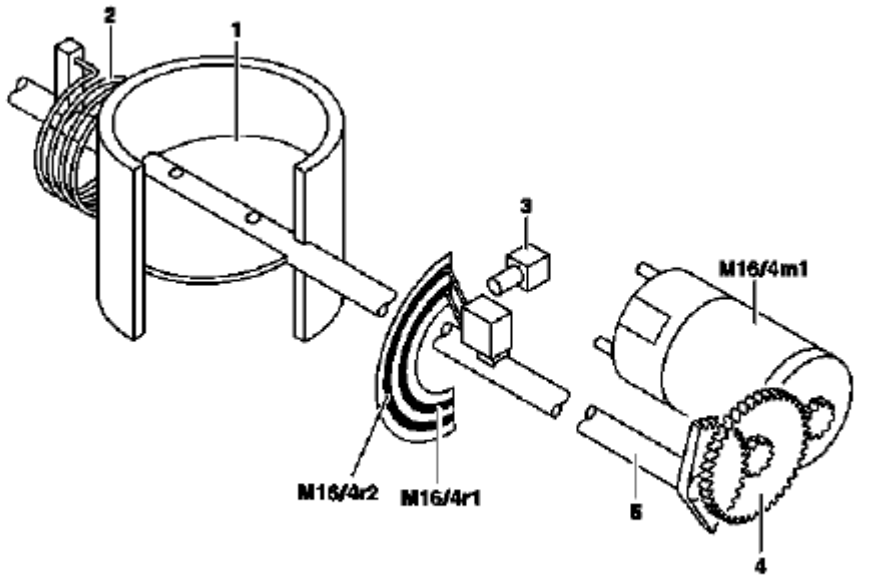
Fig. 516: Prying Up Lock Tab On Retaining Cap - Shown On 4/8-Pin JPT/MQS Plug

Secondary unlocking for version with lock tab

1. Insert suitable tool underneath locking tabs (1).
2. Pry up the locking tabs (1) in direction shown by arrow.

Shown on 4-pin JPT connector

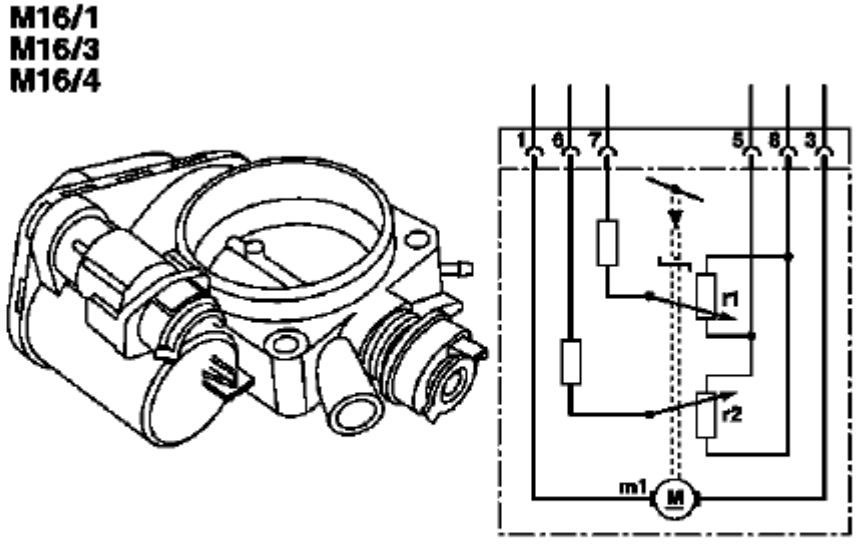
1 Throttle valve
2 Return spring 3 Spring capsule
(mechanical stop)
4 Transmission
5 Drive shaft throttle valve
M16/4 m1Actuator motor
M16/4r1 Actual value potentiometer 1 Throttle valve
M16/4r2 Actual value potentiometer 2 Throttle valve



P30.20-0211-05

Fig. 583: Identifying Blade Holder With Clamping Pliers (220 589 01 99 50)

M16/1 EA/CC/ISC [EFP/TPM/LLR] actuator
M16/3 Right EA/CC/ISC actuator
Position on left of engine (M120)
M16/4 Left EA/CC/ISC actuator
Position on right of engine (M120)
(additional designation:
M16/6 throttle valve actuator)



P07.60-0231-05

Fig. 584: Identifying RK 2.5 Blade Solder Contact (220 589 01 99 53)

Secondary release on version with slide valve (RK 2.5 solder contact)

i	Remove contacts from 2.5 solder contact coupling round plug contact		**AR00.19-P-0120-17A**
i	Remove contacts from laminated contact system plug		**AR00.19-P-0120-20A**
i	Remove contacts from laminated contact system coupling		**AR00.19-P-0120-19A**
i	Remove contacts from Micro Timer 3 coupling		**AR00.19-P-0120-06A**
i	Remove contacts from Siemens ELO plug		**AR00.19-P-0120-24A**
i	Remove contacts from Siemens ELO coupling		**AR00.19-P-0120-23A**
i	Remove contacts from Multi-Contact-Point-coupling		**AR00.19-P-0120-09A**
i	Remove contacts from mini laminated contact coupling		**AR00.19-P-0120-26A**
i	Remove contacts from mini laminated contact plug		**AR00.19-P-0120-27A**
i	Remove contacts from YAZAKI 1.5 system coupling	461 as of 1.4.94	AR00.19-P-0120-28A

PERFORMING BASIC PROGRAMMING - AR00.19-P-0200GH

MODEL 163

	Adjusting		
1	Set time on instrument cluster	i See Operating Instructions	
2	Set clock of stationary heater	i See Operating Instructions	
3	Normalize side power windows	i See Operating Instructions	
4	Activate steering angle sensor	i Electronic stability program (ESP) Code (472a) as of 1.9.98. i Refer also to operating instructions.	**AR46.10-P-0300-01A**

Migrol HD Motor Oil Superlife Special			X			X Migrol-Genossenschaft, Zurich, Switzerland
Mobil Delvac Super 1300 15W-40			X			Exxon Mobil Corporation, Fairfax, Virginia, USA
Mogul Diesel DT			X			Paramo, a.s., Pardubice, Czech Republic
MOL Turbo Diesel			X			MOL-LUB Ltd., Almasfuzito /Hungary
Motor Gold Normtec SAE 15W-40			X			Mineralol-Raffinerie Dollbergen GmbH, Uetze-Dollbergen, Germany
Motorex Cobra 1040		X				Bucher AG Langenthal, Langenthal/Switzerland
Motorex Cobra 1540			X			Bucher AG Langenthal, Langenthal/Switzerland
Motorex Topaz			X			Bucher AG Langenthal, Langenthal/Switzerland
Motul Tekma Supra 15W-40			X			Motul, Aubervilliers/France
Motul Tekma Supra 20W-50					X	Motul, Aubervilliers/France
Multiturbo Plus			X			Repsol YPF Lubricantes y Especialidades, S.A., Mostoles-
Madrid, Spain National Super Ultra Diesel			X			Emirates Lube Oil Co. Ltd., Sharjah/United Arab Emirates
National Ultra Diesel			X			Emirates Lube Oil Co. Ltd., Sharjah/United Arab Emirates
New Process SHPD			X			New-Process AG, Tubach SG, Switzerland
Oest Gigant Universal HD Motorol			X			Georg Oest Mineralolwerke GmbH & Co KG, Freudenstadt/Germany
Olmaline Plus			X			OLMA d.d., Ljubljana, Slovenia
oMV control			X			OMV Refining & Marketing GmbH, Vienna, Austria
oMV truck CF			X			OMV Refining & Marketing GmbH, Vienna, Austria
OMV truck M plus SAE 15W-40			X			OMV Refining & Marketing GmbH, Vienna, Austria

Total Rubia 4400 TSA				X			Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia FE		X					Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia Polytrafic 10W-40		X					Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR 6400 15W-40				X			Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR 6400 FE 15W-30		X					Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR 7200 FE 15W30		X					Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR 7400 15W-40				X			Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR 7400 FE 10W30	X						Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR Max				X			Total Lubrifiants, Paris la Defense Cedex, France
Total Rubia TIR XLD				X			Total Lubrifiants, Paris la Defense Cedex, France
Total TP MAX 10W-40		X					Total Lubrifiants, Paris la Defense Cedex, France
Touring High Tech Super Tropic					X		Liqui Moly GmbH, Ulm, Germany
Triathlon Diesel Longlife				X			Adolf Wurth GmbH & Co. KG, Kunzelsau, Germany
Triathlon Dynamik		X					Adolf Wurth GmbH & Co. KG, Kunzelsau, Germany
Truckmaster DX				X			Millers Oils Ltd., Brighouse West Yorkshire, England
Truckmaster E5				X			Millers Oils Ltd., Brighouse West Yorkshire, England
Truckmaster Global CX				X			Millers Oils Ltd., Brighouse West Yorkshire, England
Truckmaster Global XD				X			Millers Oils Ltd., Brighouse West Yorkshire, England
Truckmaster LD		X					Millers Oils Ltd., Brighouse West Yorkshire, England
Truckmaster XHPD				X			Millers Oils Ltd.,

Castrol Syntec 0W-30 European Formula	X						Castrol Limited, GB Reading RG8 7QR, England
Castrol Syntec 5W-40					X		Castrol Limited, GB Reading RG8 7QR, England
Castrol TXT Softec 5W-40				X	X		Castrol Limited, GB Reading RG8 7QR, England
Castrol TXT Softec Plus 5W-30				X			Castrol Limited, GB Reading RG8 7QR, England
Cepsa Star Mega Synthetic 0W-30	X						Cepsa Lubricantes, S.A., Madrid, Spain
Cepsa Star Mega Synthetic 5W-30				X			Cepsa Lubricantes, S.A., Madrid, Spain
CONCEP-TECH HDC SAE 5W40					X		Swd Lubricants GmbH & CO. KG, Duisburg, Germany
CONCEP-TECH VS		X					Swd Lubricants GmbH & CO. KG, Duisburg, Germany
Consol Ultima					X		Vial Oil Ltd., Moscow, Russia
Cosmo Lio Royal					X		Cosmo Oil Lubricants Co., Ltd, Tokyo, Japan
CPC 9000 MB Motor Oil					X		Chinese Petroleum Corporation, Kaoshiung, Taiwan 806, Taiwan
Cyclon F1 Racing					X		Cyclon Hellas S.A., Maroussi, Greece
DBV Synthetik Motorenol 5W-40					X		Deutscher Brennstoffvertrieb GmbH, Wurzburg, Germany
Divinol Syntholight HC-FE 5W-30				X			Zeller + Gmelin GmbH & Co., Eislingen, Germany
Duckhams Q 5W-40 Fully Synthetic					X		BP p.I.c., London, England
Econo Veritas XL-HC					X		Oelwerke Julius Schindler GmbH, Hamburg, Germany
Elf Excellium LDX 0W-	X						Total Lubrifiants, Paris

automatic transmission											
MB automatic transmission W 4 B 035 6.)	ATF					•	•				
Voith/ZF automatic transmission	ATF	•				•	•	•	•		•
Allison transmission 9.)	ATF				o 10.)				•		
ZF 4 HP 20	ATF									•	
AG4 - automatic part										•	
- final-drive assembly											

This table only serves as an overview!
• Should be used.
o Can be used.
⚠ When changing to a different oil:
Change service life factors in the maintenance system (WS) and pay attention to specified maintenance intervals.

1. Only for: G 1/18-5, G 3/50, G 3/60 without MS synchronization
2. Use engine oils as under Sheet 235.12, SAE 30 for common oil circuits with ZF torque converter clutch 400
3. Transmissions with oil coolers only.
4. With intarder 5.)
5. Use engine oils as under Sheet 235.27, SAE 30 for common oil circuits with ZF torque converter clutch 400
6. Only install W 4 B 035 as of major assembly end no 00 57 33 or modified shift plate. 00 57 33 or fit modified shift plate.
7. Only for: G 1/18-5, G 3/50, G 3/60 with MS synchronization
8. Only use in exceptional cases! If no synthetic oil in accordance with 235.4 or 235.11 available.
9. ⚠ For Allison transmissions, it is absolutely essential to observe the application instructions on Sheet 231.0 under point 3.4!
10. Sheet 236.5 only for HT700

AF18.00-P-8045A	High oil consumption, blue smoke	26.10.99

ENGINE 112 in MODEL 129, 163, 202, 208, 210
ENGINE 112 in MODEL 463

Modification notes

18.11.99	Supersedes STIP 18.40-004 dated 5.11.97	Remedy revised	

Damage code	Cause	Remedy	
01 241 B2	Cast iron crust in oil drain duct on right cylinder head, inner rear i In case of complaint oil drain duct is filled with engine oil.	1 Remove right cylinder head.# Engine 112 in model 129, 202, 208, 210 Engine 112.942 in model 163.154 Engine 112.945 in model 463	 AR01.30-P-5800B AR01.30-P-5800MV AR01.30-P-5800GV
		2 Remove present cast iron crust. i Use sharp edged 10 mm punch. The cast iron crust (approx. 11x17x1 mm) is located approx. 50 mm below the upper cylinder head separating surface.	
		3 Install right cylinder head#	
		Engine 112 in model 129 Engine 112 in model 202, 208, 210 Engine 112.942 in model 163.154 Engine 112.945 in model 463	AR01.30-P-5800B AR01.30-P-5800BA AR01.30-P-5800MV AR01.30-P-5800GV

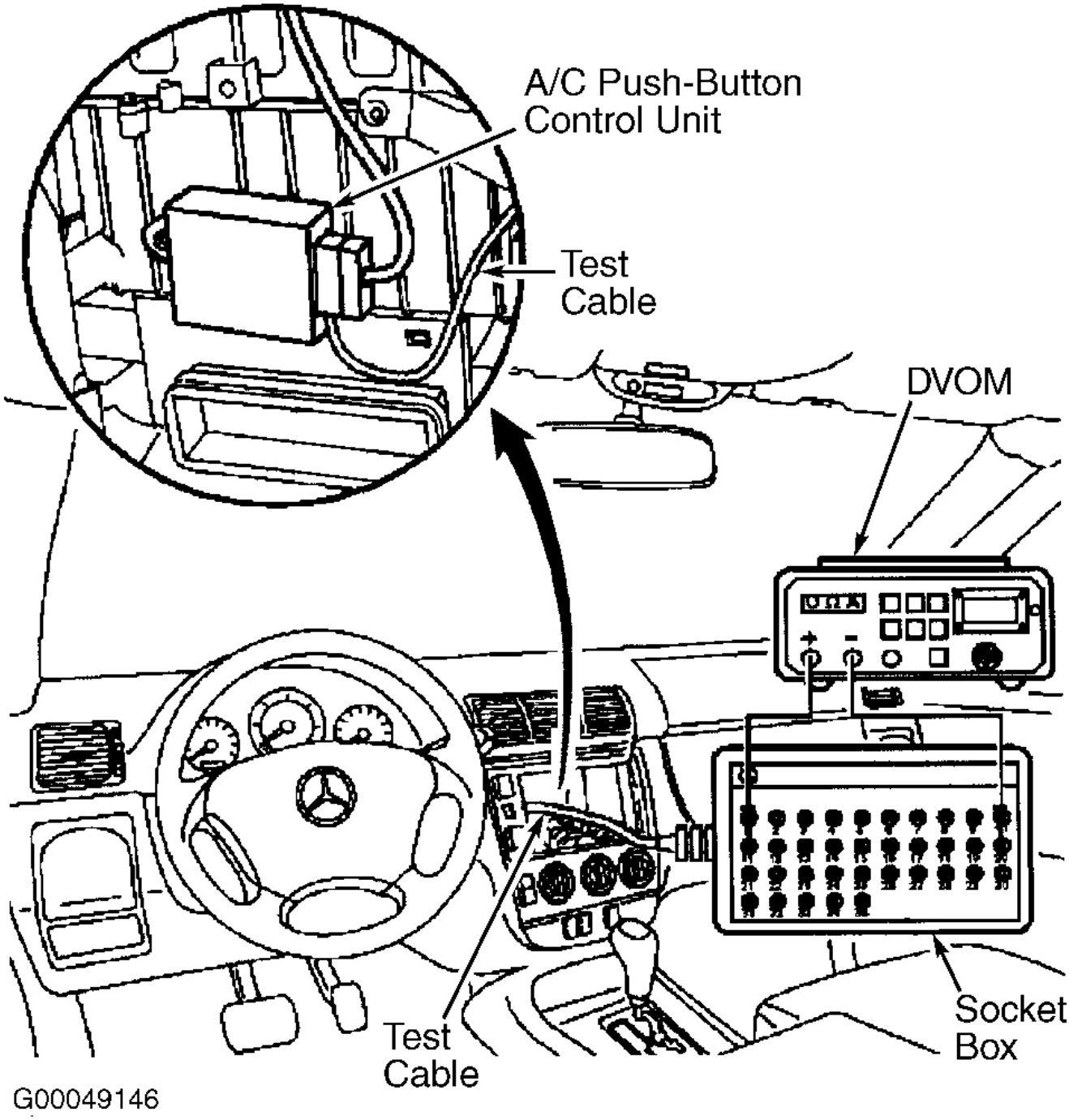


Fig. 3: Connecting Test Cable & Socket Box To A/C Push-Button Control Unit
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

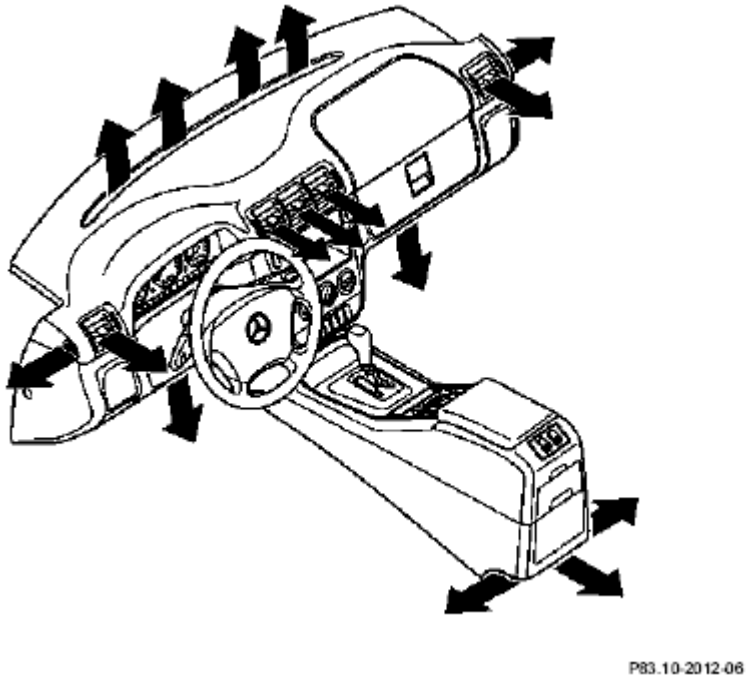


Fig. 1: Identifying Ventilation System Function

Function

The ventilation system ensures:

- that the windshield and windows are kept without mist.
- there is a supply of fresh air to the vehicle occupants.
- that constant and pleasant temperatures are quickly achieved in the vehicle interior.

Ventilation is achieved with the assistance of the blower motor (M2) during normal operation, when vehicle is stationary or to increase the air quantity.

Fresh air is drawn into the heater housing via the air inlet. Depending on the control module setting, the air is directed through the air ducts to the air vents in the interior.

The air flows out of the vehicle again through the rear vent via ventilation slots to the left and right in the area below the rear side windows.

In recirculating air mode, air is drawn out of the interior of the vehicle through the recirculating air flap by the blower motor (M2), and passed to the heater housing.

Air inlet, location/function		**GF83.10-P-2138GC**
Air ducts, location/task/design		**GF83.10-P-2139GH**

NOTE: All actuator motors are identical.

If a problem exists, it is possible to retrieve and verify the defined end positions by means of the diagnosis assistant system (DAS) (valuation trip).

After replacing an actuator motor an adjustment run must be performed via the Diagnosis Assistant System (DAS), i.e. the end positions flap OPEN and SHUT are defined and retained.

REAR SHUTOFF FLAP ACTUATOR MOTOR LOCATION/TASK/FUNCTION - GF83.10-P-2171GI

MODEL 163 as of 1.9.01 with CODE (580a) Automatic air conditioning

M2/12 Rear shutoff flap actuator motor

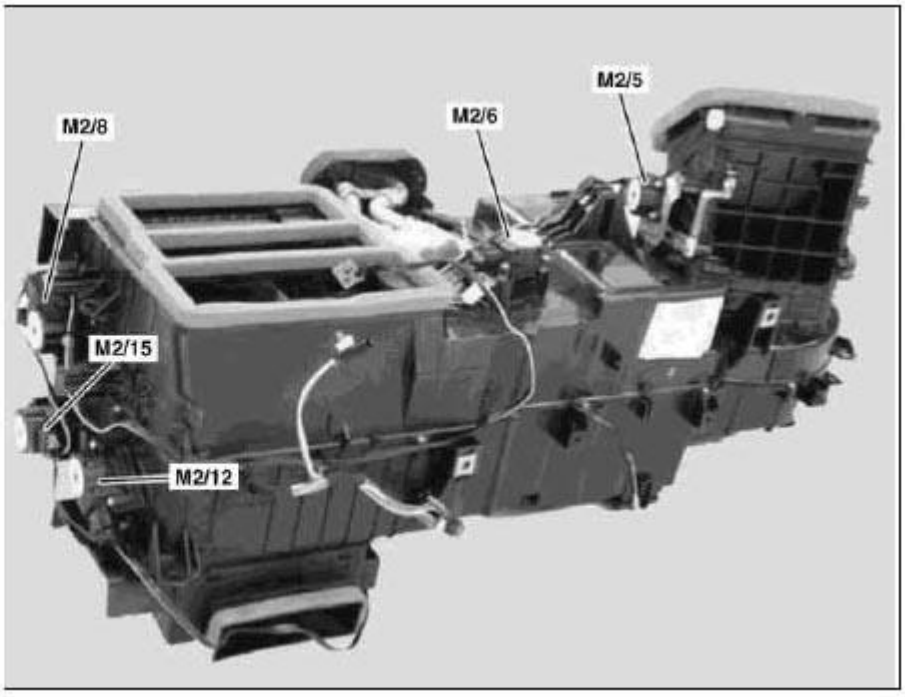


Fig. 28: Identifying Rear Shutoff Flap Actuator Motor

	Rear shutoff flap actuator motor location	The rear shutoff flap actuator motor (M2/12) is to the left of the automatic air conditioning housing.	
	Rear shutoff flap actuator motor task	The rear shutoff flap actuator motor (M2/12) operates the rear shutoff flap for controlling the flow of air to the rear compartment nozzle.	
	Rear shutoff flap actuator motor function		**GF83.10-P-2171-01GI**

CENTER OUTLET FLAP ACTUATOR MOTOR - GF83.10-P-2172-01GI

TABLE OF CONTENTS, AIR CONDITIONING (TAC) FUNCTION DESCRIPTION - GF83.30-P-0999GH

MODEL 163 up to 31.8.01 with code (580) Air conditioning or Tempmatic for USA

AIR CONDITIONING CONTROL MODULE FUNCTION - GF83.30-P-2001GH

MODEL 163 up to 31.8.01 with CODE (580) Air conditioning or Tempmatic for USA

The following components are integrated into the air conditioning control module (S98):

Blower switch (1): with 0 setting and 4 levels.

☒ The blower switch (1) is not available as an individual part.

Temperature selector wheel (2): with the "Blue", non-heating setting and the continuously variable heater setting.

☒ When set to the indented position "blue" 100 % recirculated air is provided.

Air distribution switch (3): with the settings: Defroster vents, footwell, center plane and intermediate settings.

Recirculation switch ( ) : 100 % recirculation without time limit, when diode illuminates.

AC button (⚠ Danger!): Diode illuminates,

Refrigerant compressor **ON** cooling mode/air dehumidification Diode is not illuminated, refrigerant compressor **OFF** no air dehumidification/cooling mode

- Blending air flap actuator
- Fresh air/recirculated air flap actuator
- Defroster vent flap actuator motor
- Rear shutoff flap actuator motor
- Footwell flap actuator
- Electric heater booster (for engine 612.963 only) and therefore forms a complete unit.

AIR CONDITIONER HOUSING, LOCATION / TASK / DESIGN / FUNCTION - GF83.40-P-2105GI

MODEL 163 as of 1.9.01 with code (580a) Automatic air conditioning

1 Automatic air conditioning box

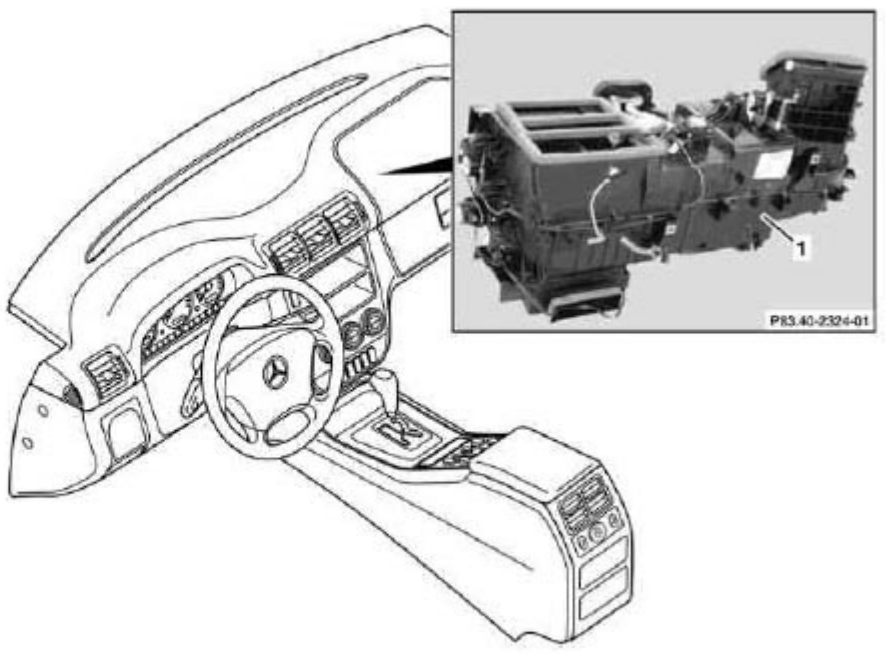


Fig. 77: Identifying Automatic Air Conditioning Box

	Automatic air conditioning box, location	The Automatic air conditioning box (1) is below the instrument panel.	
	Automatic air conditioning box, purpose	The automatic air conditioning box distributes the air that is required to ventilate the vehicle to the relevant air ducts and vents depending on the interior temperature that is required.	
	Automatic air conditioning box, design		**GF83.40-P-2105-04GI**
	Automatic air conditioning box	with engine 112, 113	**GF83.40-P-**

- Diaphragm pressure in the refrigerant compressor control valve (8) (approx. 2 bar)
- Suction pressure of refrigerant compressor

The change in suction pressure which is dependent on the control current on the refrigerant compressor control valve (8) induces a change of pressure in the crankcase (2) and thus a corresponding adjustment of the swash plate (4).

Automatic air conditioning (AAC [KLA]) OFF

If the automatic air conditioning is regulated or manually switched off, the refrigerant compressor control valve (8) is completely opened. Refrigerant flows unobstructed over the high pressure side into the crankcase (2). This in turn leads to a rapid pressure rise in the crankcase (2). The coil body (10), for closing the refrigerant compressor, is displaced here to the right against the valve plate (9) and thus stops the flow of refrigerant over the intake side.

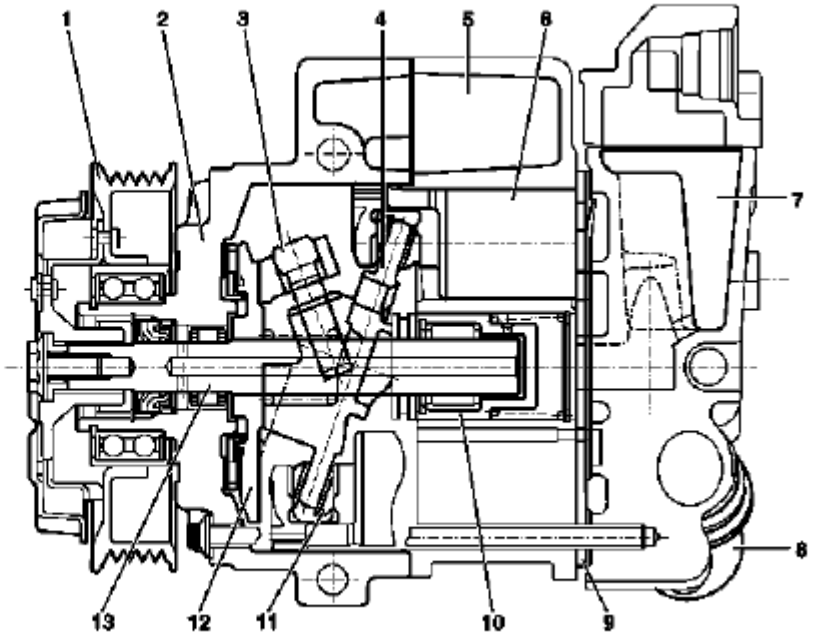
Refrigerant compressor lubrication when automatic air conditioning switched off

An internal lubrication circuit ensures the lubrication supply for all moving parts.

Lubrication is ensured at a minimum refrigerant compressor volumetric flow by means of two valves being regulated. In doing so, the refrigerant is transported together with the compressor oil located in the crankcase (2) over the bored refrigerant compressor shaft (13). The mixture enters the cylinder housing, where it is compressed and then pumped into the refrigerant circuit.

REFRIGERANT COMPRESSOR, DESIGN - GF83.55-P-2100-03P

1 *Belt pulley*
2 *Crankcase*
3 *Alignment pin*
4 *Swash plate*
5 *Damping container on the pressure side*
6 *Pistons*
7 *Damping container on the suction side*
8 *Refrigerant compressor control valve*
9 *Valve plate*
10 *Coil body*
11 *Sliding shoe*
12 *Stop plate*
13 *Refrigerant compressor shaft*



P83.55-0220-06

- If the victim's breathing is shallow, or the individual has stopped breathing altogether, tilt the head back and administer artificial resuscitation. Call a doctor.

In case of ingestion

- Consult a physician immediately.

SAFETY INFORMATION: CLIMATE CONTROL - AS83.00-Z-9999ZZ

MODEL all

i	Risk of explosion. Explosions may result when performing welding or soldering work on a closed air conditioning system. Risk of poisoning. Poisoning may result from inhaling overheated refrigerant vapors. Risk of injury. Contact with liquid refrigerant may result in injury to the skin and eyes.	MODEL 240	AS83.00-P-0001-01H
i	Risk of death caused by contact with current conducting parts when repairing parts of the external power supply	MODEL 639, 903 ...	AS83.00-Z-0002-01A
i	Risk of explosion caused by welding or soldering work on closed air conditioning system. Risk of poisoning caused by inhaling overheated refrigerant vapors. Risk of injury to skin and eyes caused by contact with liquid refrigerant.	MODEL all	**AS83.00-Z-0001-01A**
i	Hazard from contact with parts conducting high voltages.	MODEL all with CODE (H25) Eberspacher D 30 W with CODE (H26) Webasto DW 300	AS83.70-Z-0001-01A
i	Risk of explosion caused by fuel vapors igniting, risk of poisoning caused by inhaling combustible gases and risk of injury caused by burns during and after operation of heater unit	MODEL all with heater, additional heating or stationary heating	AS83.70-Z-0002-01A
i	Risk of explosion from liquefied petroleum gas flowing out and from fuel vapors. Risk of poisoning from inhaling combustion gases.	BODY 940, 972 ...	AS83.70-Z-0004-01A
i	Risk of poisoning due to inhalation of heater exhaust gases	MODELS 901, 902, 903, 904, 905 for underfloor heaters	AS83.70-Z-0005-01A

TROUBLE DIAGNOSIS

AIR CONDITIONING SOMETIMES DOES NOT WORK - AF83.30-P-6000B

MODEL 124, 126, 129, 140, 163, 168, 170, 201, 202, 208, 210

Modification notes

1.9.99	Supersedes STIP 83.30-007 dated 15.8.97		

WE58.40-Z-1002-20A	Air conditioning leak detector

1. Start vehicle engine and switch on air conditioning system.
2. Check entire air conditioning circuit using leak detector probe (1).

   Remain for some time in areas where leaks are suspected.

Since refrigerant is heavier than air and sinks, always guide leak detector probe (1) underneath the locations where leaks are suspected.

Line connections, screwed pipe connections, condensers and evaporators are the most frequent cause of refrigerant leaks.

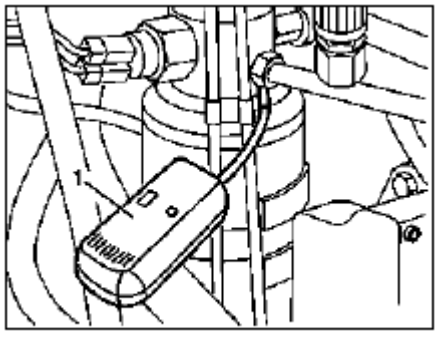


Fig. 155: Identifying Air Conditioning System Leak Detector Probe

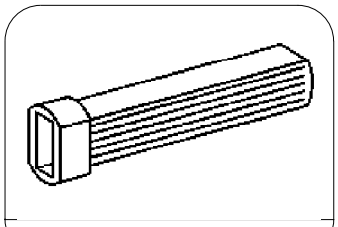
CARRY OUT QUICK TEST ON AIR CONDITIONING SYSTEM - AR83.30-D-1209A

MODEL 163 with CODE (580) Air conditioning or Tempmatic for USA

MODELS 901.0/3 /4, 902.0/3 /4, 903.0/3 /4, 904.0/3 /4 with CODE (H06) Air conditioning

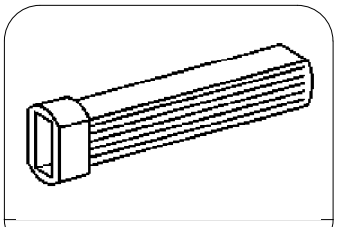
☒	Notes on handling refrigerant R134a	All models fitted with air conditioning	**AH83.30-N-0003-01A**
1.1 Remove additional fan (M4)	☒	Models 163.136 /154/157 /172 with air conditioning or for USA Tempmatic, code 580.	**AR83.30-P-5600GH**
2.1	Remove intercooler	☒ Only models 163.113/ 128. Model 163.113 Model 163.128	AR09.41-P-6817MM AR09.41-P-6817CD
3	Discharge air conditioning system	☒ **Installation:** Evacuate, refill air conditioning system and check for proper operation and tightness.	**AR83.30-P-1760GH**
4.1	Detach lower engine compartment paneling	Model 163.172/174/175	**AR61.20-P-1105GH**
4.2	Remove noise encapsulation	☒ **Removal:** Only remove front part. Model 163.113/128	AR94.30-P-5400GH
5.1	Remove air guide	☒ Only if present Located at front crossmember, in center behind front bumper.	
6	Unscrew bolts at bottom of electric fan or fan shroud.	☒ Also remove sheet metal nuts.	
7	Remove attachment parts (20) and rubber shock absorber(21)	☒ **Removal:** Lower attaching parts and damper rubber. ☒ **Installation:** Replace attaching parts.	
8	Unscrew screw (2) for refrigerant line at fluid reservoir	☒	***BA83.30-P-1001-01B**
9	Detach refrigerant line from fluid reservoir	☒ **Installation:** Replace sealing rings and moisten with compressor oil.	
10	Unscrew screw (6) for refrigerant line at condenser(5)	☒	***BA83.30-P-1002-01B**
11	Detach refrigerant line from condenser (5)	☒ **Installation:** Replace sealing rings and moisten with compressor oil.	
12	Detach rubber seal (4) from radiator (7)		
13	Remove screws (3)		
14.1	Remove attachment parts (20) and rubber shock absorber(21)	Model 163.113/128 ☒ Upper attaching parts and damper rubber. ☒ **Installation:** Replace attaching parts.	

AR54.30-P-6049-01Z	Removing bulbs		



129 589 00 09 00

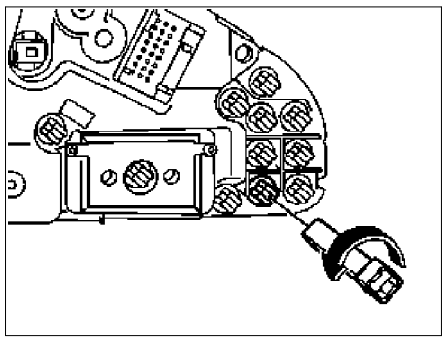
Pin socket



129 589 01 09 00

Pin socket

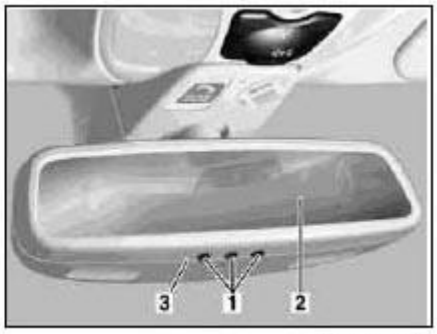
Turn bulbs to the left and remove using special tool



P54.30-0011-01

Shown on model 230

1 Garage door opener button 1 (A67s1)
Garage door opener button 2 (A67s2)
Garage door opener button 3 (A67s3)
2 Interior rearview mirror unit (A67)
3 Garage door opener indicator lamp (A67e4)



P68.05-2038-01

Fig. 1: Identifying Garage Door Opener Buttons - Shown On Model 230

Garage door opener, function

The garage door opener consists of an intelligent radio remote control with three transmitter buttons capable of learning. Various receivers for opening and closing systems and doors can be activated with the three buttons, garage door opener button 1 (A67s1), garage door opener button 2 (A67s2) or garage door opener button 3 (A67s3).

Program remote control

Function requirements:

- Term. 15R or 15 ON
- Press and hold down garage door opener button 1 (A67s1), garage door opener button 2 (A67s2) or garage door opener button 3 (A67s3).
- The garage door opener indicator lamp (A67e4) starts flashing (frequency 1 Hz).
- Continue to actuate garage door opener button 1 (A67s1), garage door opener button 2 (A67s2) or garage door opener button 3 (A67s3) and hold garage door remote control with transmit button pressed for t < 90 s.

  After successful programming, the garage door opener indicator lamp (A67e4) flashes rapidly (f = 5.5 Hz) for approx. 10 s.

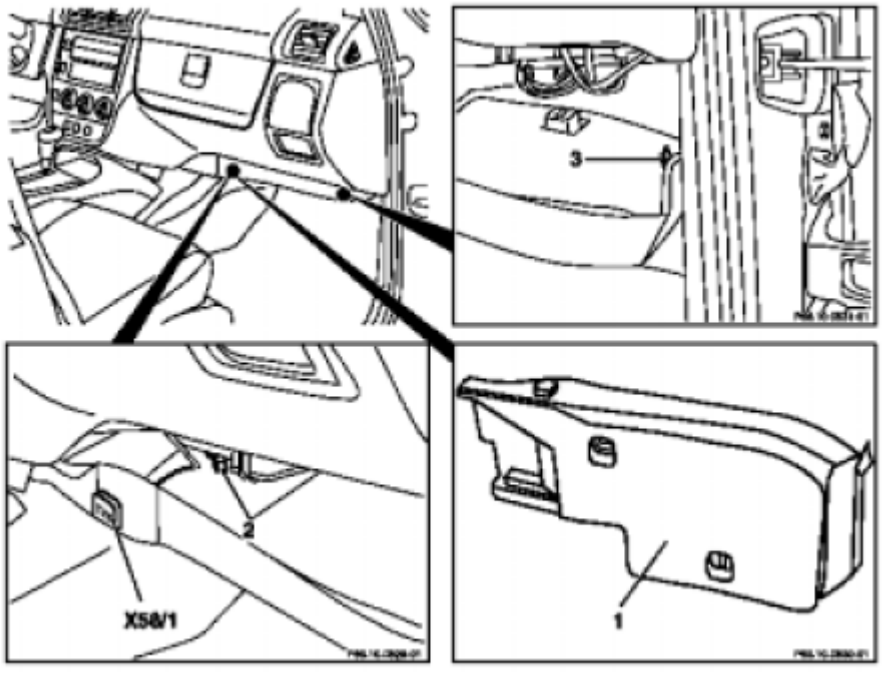
- Release the two transmit buttons and program additional transmitters as required.

Time switch-off

To protect the vehicle battery, the transmitter unit switches off the learn-in mode when programming is not accomplished within approx. 100 s.

Transmitter mode

1 *Cover*
2 *Plug-in clips*
3 *Catch*
X58/1 *Interior socket*



P68.10-0527-06

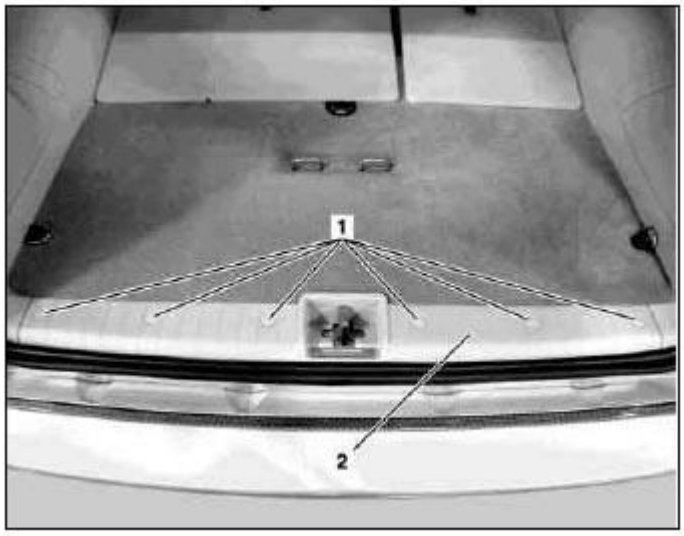
Fig. 26: Identifying Cover Below Instrument Panel (Right)

Danger!	**Remove/Install**	
1	Unhook catch (3) on blower motor	**Risk of breakage!**
2	Unclip cover (1)	Cover is fastened with 2 clips (2).
3	Disconnect electrical connector from interior socket (X58/1)	
4	Install in the reverse order	

REMOVE/INSTALL COVER BELOW INSTRUMENT PANEL (RIGHT) - AR68.10-P-1520GI

MODEL 163.136 /154 /172 #A as of 145273,163.136 /154 /172 #X as of 708319,163.113 /128 /157 /174 /175

1 Caps
2 Door sill molding



P68.30-2393-11

Fig. 64: Identifying Caps And Door Sill Molding

Danger!	**Remove/install**	
1	Remove cover caps (1)	(USA) Do not scratch door sill molding.
2	Remove screws below caps	
3	Remove door sill molding (2)	**Installation:** Ensure that sealing rubber is positioned correctly.
4.1	Disconnect connector from electronic compass	Only as of 01.09.00 and with code (245), trip computer.
5	Install in the reverse order	

PREPARE HEADLINER FOR INSTALLING HANDLES - AR68.30-P-4300-01GH

Models 163.113/136/154/172 up to 31.8.01

(USA) When aligning the template, ensure that the arrow is pointing in direction of travel and the correct template is used for each side.

1. Align template at cutouts provided.
2. Mark cutouts for grab handles.
3. Cut out cutouts for grab handles.

AH00.00-N-0001-01A	Notes on self-locking nuts and bolts	All models	(!)

Important repair information

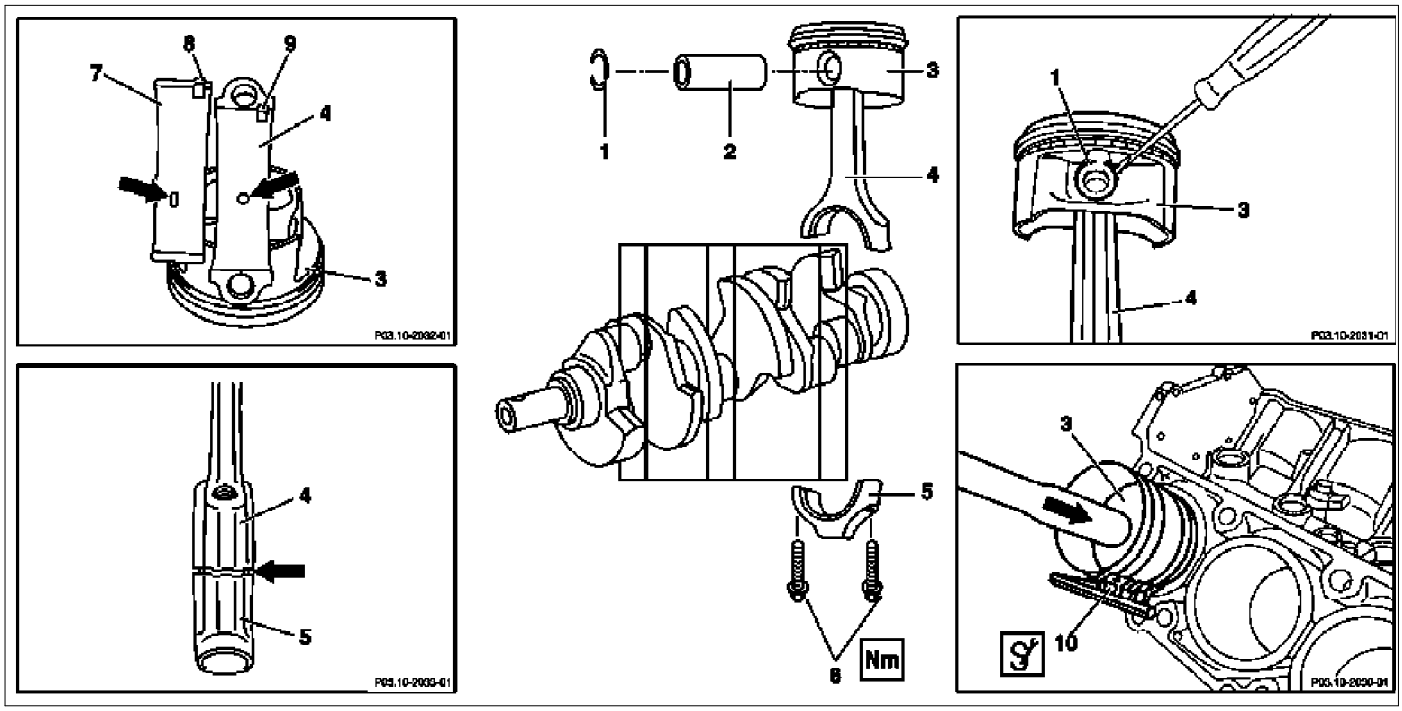
(!) Bolts with locking splines, micro-encapsulated bolts and self-locking nuts must always be replaced after being used once.

There is an increased risk of injury when unscrewing micro-encapsulated bolts due to the sudden breakaway torque.

Before new micro-encapsulated bolts are screwed in, the mating thread must be re-cut in order to remove all the residue of the old bolt locking compound.

AR03.10-P-7021AV	Removing/installing pistons	2.7.97

ENGINE 112
ENGINE 112.945 in MODEL 463.209 /232 /233 /244 /245 /250
ENGINE 113.962 in MODEL 463.206 /240 /241 /247 /248 /249 /254
ENGINE 113.982 in MODEL 463.243 /246
ENGINE 113 in MODEL 129, 163, 202, 203, 208, 209, 210, 211, 215, 220, 230



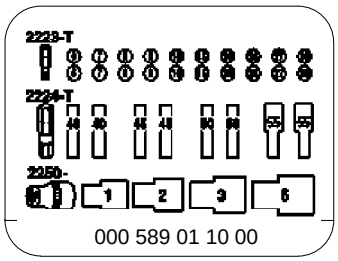
P03.10-2029-09

Shown on engine 112

1 Circlip
2 Piston pin
3 Pistons
4 Conrod
5 Conrod bearing cap
6 Conrod bolts
7 Conrod bearing shell
8 Anti-twist lock
9 Groove
10 Clamping strap

	Remove		
Danger!	**Risk of death** caused by vehicle slipping or toppling off of the lifting platform.	Align vehicle between the columns of the lifting platform and position the four support plates at the lifting platform support points specified by the vehicle manufacturer.	AS00.00-Z-0010-01A
1	Remove engine	Models 463.206/ 209/ 232/ 233/ 240/ 241	AR01.10-P-2400CC
		Models 463.244/ 245/ 247/ 248/ 249/ 250/ 254	AR01.10-P-2401GT
		Models 463.243/ 246	AR01.10-P-2401MG
		Model 230.475	AR01.10-P-2400R
		Model 230.474	AR01.10-P-2400RVK
		Model 220 without 4MATIC	AR01.10-P-2400AB
		Model 220 with 4MATIC	AR01.10-P-2400IW
		Model 210 with 4MATIC	AR01.10-P-2400C
		Models 129, 202, 208, 210 without 4MATIC	AR01.10-P-2400CB
		Model 203 without 4MATIC, 209 with Engine 112	AR01.10-P-2400PV
		Model 203 with 4MATIC	AR01.10-P-2400PW
		Model 209 with Engine 113	AR01.10-P-2400Q
		Models 211.061/065/070	AR01.10-P-2400TC
		Model 170	AR01.10-P-2400SV
		Model 163	AR01.10-P-2400CA

B6 688 0819	Adapter kit for fender flares, bordeaux red	1
B6 688 0820	Adapter kit for fender flares, alabaster white	1
B6 688 0821	Adapter kit for fender flares, black opal	1
B6 688 0822	Adapter kit for fender flares, tansanite blue	1
B6 688 0823	Adapter kit for fender flares, jaspis blue	1
B6 688 0824	Adapter kit for fender flares, desert silver	1
B6 688 0825	Adapter kit for fender flares, andradite green	1



000 589 01 10 00

Torx bit set

ENGINE 119.980 /981 /982 /985

ENGINE 137.970

B37	Accelerator pedal sensor R1 Set value potentiometer 1 (or Hall sensor 1) r2 Set value potentiometer 2 (or Hall sensor 2)
M16/1	EA/CC/ISC [EFP/TPM/LLR] actuator (other designation: M16/6 throttle valve actuator) M1 Actuator motor r1 Actual value potentiometer 1 r2 Actual value potentiometer 2
N3/10	ME-SFI control unit

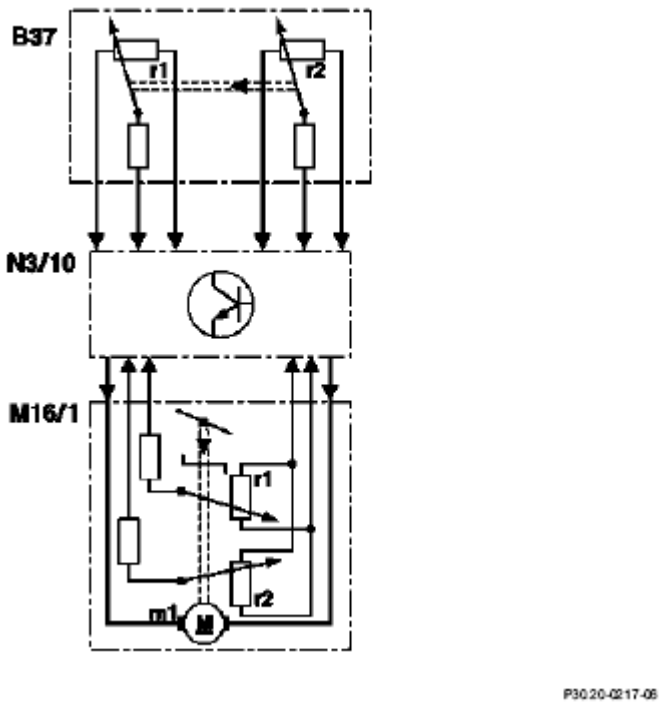


Fig. 1: Identifying Electronic Accelerator Function

The function of the electronic accelerator pedal EFP in the ME control unit determines the opening angle of the throttle valve over the actuator EFP/TPM/LLR (other designation: throttle valve actuator).

Further functions are:

- Idle speed control [ISC]
- Cruise control mode
- Variable speed limiter
- 30 km/hour limit
- Reduce/increase the engine torque for ASR/ESP operation
- short performance limitation, for example for a higher coolant temperature
- Emergency electronic accelerator pedal
- Safety concept
- Actuate indicator lamp EPC (up to 5/96)
- Storing faults
- Data exchanger via CAN

24	Accelerator pedal
31/1	Relay lever position sensor
32	Control cable
32/2	Adjusting bolt
32/3	Adjusting bolt
A	Idle speed
B	Full throttle
S16/6	Kickdown switch

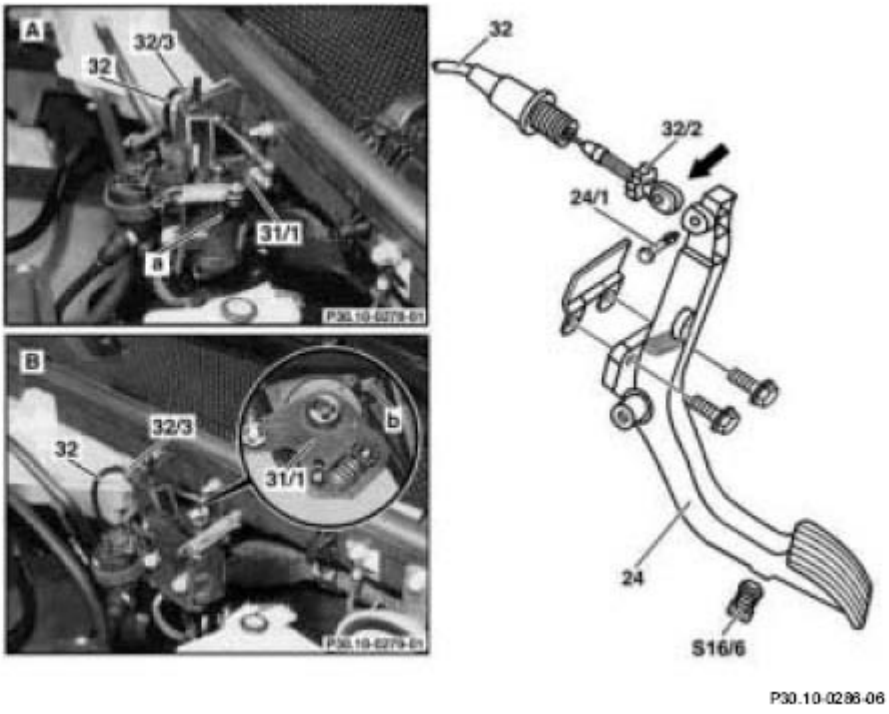


Fig. 18: Identifying Throttle Control Adjustment Components

	Inspection		
1	Check ease of movement and condition of relay lever position sensor (31/1) and control cable (32)	USA Replace parts if necessary.	
	Setting		
2	Depress accelerator (24) until it rests against the kickdown switch (S16/6)	USA Full throttle position. USA Do not operate kickdown switch (S16/6)!	
3	Twist adjusting screw (32/3) until relay lever position sensor (31/1) rests against full throttle stop (b)	USA Do not overstretch control cable (32).	
4	The relay lever position sensor (311) must rest against the closed throttle stop (a) when the accelerator pedal is relieved	USA Closed throttle position.	
5	Twist adjusting nut (32/2) until relay lever position sensor (31/1) rests against closed throttle stop (a) or until there is no more accelerator pedal free travel		
	Inspection		
6	Check full throttle and closed throttle positions		

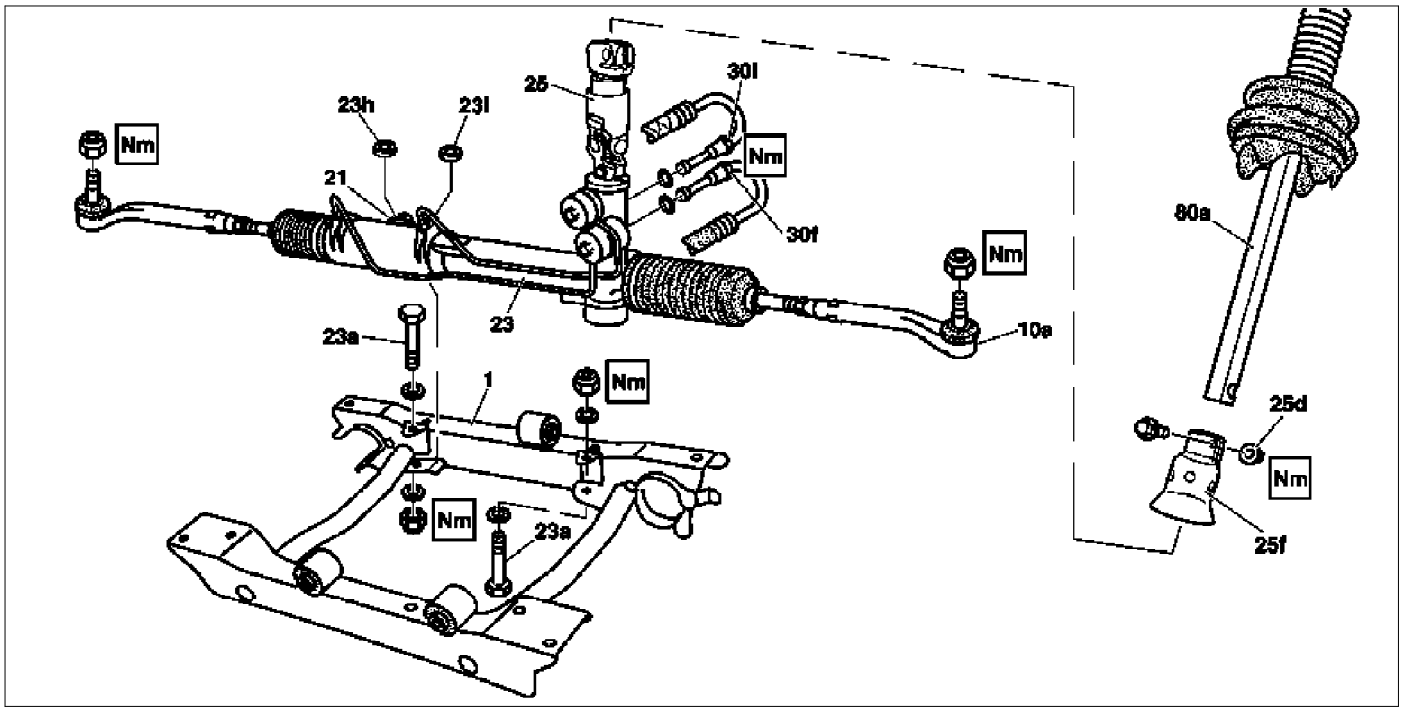
REMOVING AND INSTALLING THROTTLE CONTROL CABLE - AR30.10-P-3400GI

ENGINE 612.963 in MODEL 163.113

ENGINE 628.963 in MODEL 163.128

AR46.20-P-0600GH	Removing and installing rack-and-pinion steering	1.3.97

MODEL 163.113 /128 /136 /154 /157 /172 /174 /175



P46.20-2126-09

Shown on model 163.154 (vehicles without speed-sensitive power steering)

1 Front axle carrier
10a Tie rod joint
21 Rubber mount
23 Rack-and-pinion steering
23a Bolts
23h Shim
23i Shim
25 Steering coupling
25d Nut
25f Steering coupling shield
30f Return line
30i High-pressure expansion hose
80a Lower steering shaft

Modification notes

10.9.03	Reference to adjusting toe on front axle replaced by reference to chassis alignment check	Step 16.1	

	Removing, installing		
⚠ **Danger!**	**Risk of fatal injury** if the vehicle slips or topples off the lifting platform	Align vehicle between the columns of the lifting platform and position the four support plates at the lifting platform support points specified by the vehicle manufacturer.	AS00.00-Z-0010-01A
⚠ **Danger!**	**Risk of injury** with **trapped or crushed** fingers when removing and installing or aligning hoods, doors, trunk lid/tailgate and sliding roof.	When moving components ensure that no body parts or limbs are in the area of movement.	AS00.00-Z-0011-01A
1	Open engine hood		AR88.40-P-1000GI
2	Extract oil from power steering pump supply reservoir	Hand pump	*210589007100
3	Raise vehicle		
4	Remove front axle gear		AR33.30-P-0525GH
5	Press tie rod joints (10a) off steering knuckles	**Installation:** Replace self-locking nuts. Nm Thrust piece Puller	AR46.40-P-0200-02C *BA46.40-P-1001-01C *140589006300 *202589023300
6	Turn steering wheel to horizontal position (front wheels in straight-ahead position)		
7	Remove key and engage steering lock		
8.1	Unplug speed-sensitive power steering connector from timing case	On vehicles with speed-sensitive power steering code 213a	

		(11b), upper rubber mount (11c), lower rubber mount (11d), plate (11e) and plate (11f). Nm **Installation:** If new upper rubber mounts (11c) and lower rubber mounts (11d) are used, the white coated (harder must be installed at the top and the yellow coated (softer) must be installed at the bottom. Observe the sequence of the separate parts and if necessary the markings applied to the upper rubber mount (11c) and lower rubber mount (11d). 🔧	***BA32.25-P-1002-01C**
4	Detach lower shock absorber mounting from lower transverse control arm (4)	Nm **Installation:** Only tighten bolt (11u) when the vehicle is on its wheels in the ready-to-drive condition. 🔧	***BA32.25-P-1001-01C**
5	Remove shock absorber (11)		
6 i	Shock absorber inspection Disposing of shock absorber	Nm Install new shock absorber if necessary.	**AR32.25-P-0121A** OS32.25-P-0121-01GH
7	Install in the reverse order		

🔧 **Front axle shock absorber**

Number	Designation		Model Series 163
BA32.25-P-1001-01C	Bolt, shock absorber to lower wishbone	NM	130
BA32.25-P-1002-01C	Self-locking nut, shock absorber to longitudinal frame member	NM	30

REMOVE/INSTALL REAR SHOCK ABSORBER - AR32.25-P-0110GH

MODEL 163.113 /128 /136 /154 /157 /172 /174 /175

AD54.30-P-5000-03A	Directly controlled display instruments troubleshooting chart IC		

Directly controlled display instruments or indicator lamp/warning message:

- D Outside temperature indicator
- D Fuel gauge
- D Oil pressure gauge (models 129 and 140 only)
- D Left turn signal indicator lamp
- D Right turn signal indicator lamp
- D High beam indicator lamp
- D Fuel reserve indicator lamp
- D Airbag SRS indicator lamp/MIL
- D AIRBAG OFF indicator lamp (only model 163 except I)
- D Low brake fluid level/parking brake indicator lamp (only brake fluid direct)
  (both functions via CAN on model 163)
- D Low windshield washer fluid level indicator lamp (except models 163 and 168)
- D Low ECL indicator lamp (except models 163 and 168)
- D Generator charge indicator lamp
- D Seat belt reminder lamp
- D Seat belt/backrest lock reminder lamp
- D Exterior lamp failure indicator lamp
- D Hydraulic fluid level indicator lamp (models 202 and 210 only)
- D ADS MIL, suspension
- D Turn signal clicking
- D Seat belt reminder lamp
- D Light reminder lamp
- D Key reminder lamp
- D Soft top reminder lamp (model 170 only)
- D Steering lock warning lamp (I)

Fig. 7: Brake Assist Circuit

ANTI-THEFT

Fig. 22: Ground Distribution Circuit (1 of 3)

Fig. 37: Passenger"s Memory Seat Circuit

POWER DISTRIBUTION