

Operator's Manual



Tourrider

Mercedes-Benz
The standard for buses.



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Preface

Every coach is delivered complete with a set of user information booklets. These booklets are intended for the persons qualified to operate the vehicle. The set of user information booklets consists of the following:

- The Operator's Manual contains detailed information and also safety-related information.
- The Service Record serves as your guide to servicing and maintaining your vehicle's technical components. It contains all the information relating to maintenance intervals and maintenance tasks.
- As applicable, Supplementary Instructions describing certain items of equipment that are not necessarily installed in every vehicle (e.g. vehicles with gaseous fuel engines).

The operator's manual and the Service Record are important documents and

should remain with the vehicle at all times.

Be sure to study the section headed "Safety" before putting the vehicle into service for the first time. Also familiarize yourself with the information contained in the Operator's Manual before you set off on the first drive.

When they are required, this manual also furnishes descriptions of options and special equipment. Because your individual coach has been specially manufactured to include the special equipment and options that you have specified, some of the equipment descriptions and illustrations in this manual may not apply to your own vehicle.

We pursue an engineering policy devoted to continuous improvement. This policy embraces all aspects of the technology and design features incorporated in our vehicles. We must therefore reserve the right to introduce modifications affecting design, equipment and technical features at any time. As a result, we are unable to recognize legal claims based on discrep-

ancies between the descriptions in this manual and your own vehicle's features.

Daimler Buses GmbH is committed to a policy of integrated environmental protection that addresses causes and takes all effects of the production processes and the product on the environment into account in business decisions.

Objectives are to conserve resources and respect the natural essentials that need to be preserved for the sake of both mankind and nature.

By operating your vehicle in a spirit of ecological awareness you too can help preserve the environment. Driving style has a major effect on fuel consumption and wear on powertrain components (engine, clutch, transmission, axles, brakes, tires).

We hope you enjoy driving your coach.

Daimler Buses GmbH

Mercedes-Benz Coaches

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Symbol usage and meanings

Safety information and other important information is specially marked with symbols.

In addition to the information specified in the contents, the safety and accident prevention regulations of the employers' liability insurance associations must also always be complied with.

In principle, regarding the use of instructions too, it is assumed that the user information is only for persons who have the training, experience and ability to carry out the necessary work.

These persons should also be able to recognize and avoid risks that can occur when performing their work.

Useful information

Symbols identifying additional information:

	Note
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Risk of property damage and environmental damage

Symbol drawing attention to potential for damage, possible consequences and instructions for avoidance.

	Property damage
	Environmental damage

Warnings

Symbol drawing attention to hazards, possible consequences and instructions for avoidance.

	DANGER. Warning of dangers for persons with the possible consequence of serious injury or death.
	WARNING. Warning of danger for persons with the possible consequence of injuries.

Symbols and structure aids

Marking of text passages

▶	Action to be taken
◀	Expected reaction of the system after an action
▽	Unexpected reaction of the system after an action
●	Bulleted list with random sequencing
→	Cross-reference to another section or content

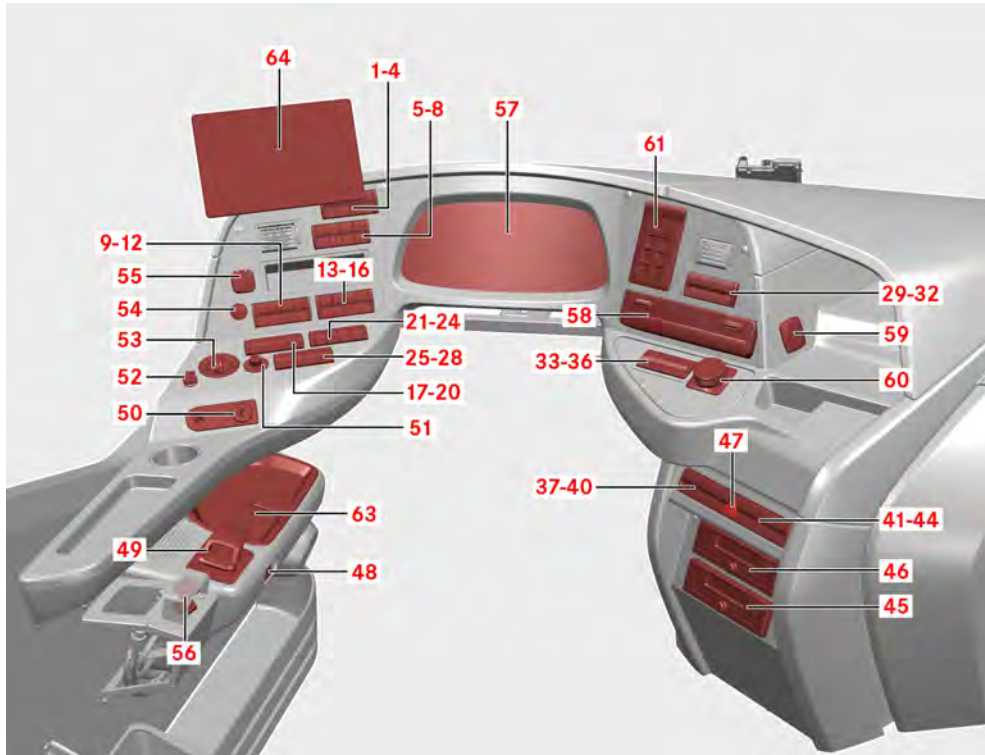
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Cockpit - general overview (Business line)

Cockpit - general overview (Business line)

Note

The overview shows the full complement of switches and pushbuttons, including those for optional extras, installed at their usual positions in the standard layout. Switches and pushbuttons can be located at other positions on the instrument panel in accordance with customer special requests, or they can be assigned only one or other of the two functions indicated.



Cockpit - general overview (Business line)

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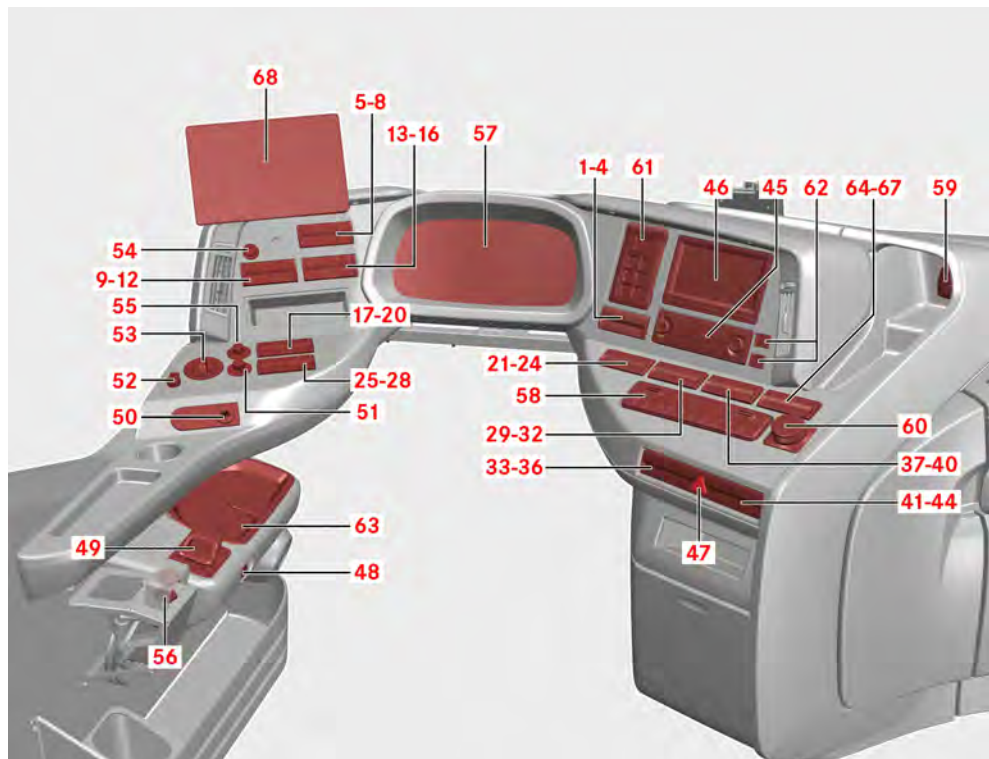
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Cockpit - general overview (Premium line) **Note**

The overview shows the full complement of switches and pushbuttons, including those for optional extras, installed at their usual positions in the standard layout. Switches and pushbuttons can be located at other positions on the instrument panel in accordance with customer special requests, or they can be assigned only one or other of the two functions indicated.

Cockpit - general overview (Premium line)



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62	USB jack for audio	80
63	Telephone cradle	
64	optionally occupied	
65	optionally occupied	
66	optionally occupied	
67	optionally occupied	

Item	Description	Page
68	360° camera monitor (option)	110

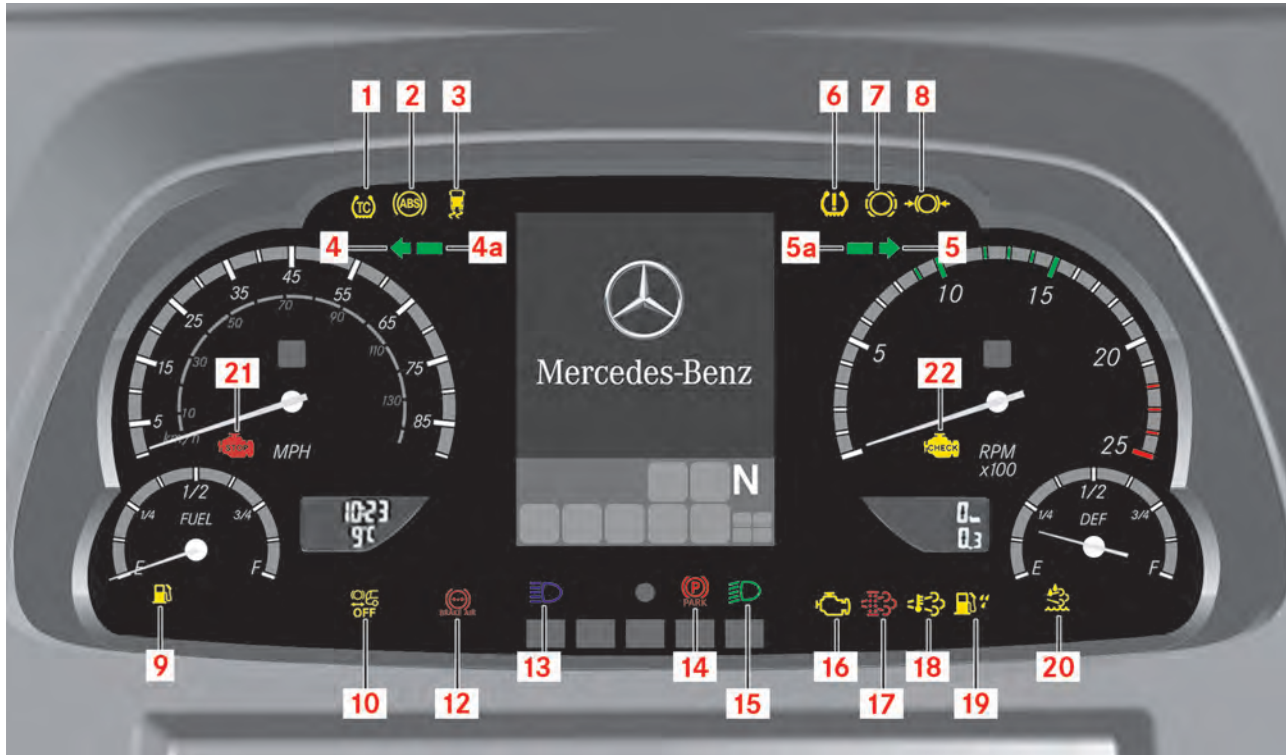
Instrument cluster

Instrument cluster



Note

For more detailed explanations of the indicator and warning lamps, see "Driver service and roadside repairs", "Status messages, function messages and warnings".



Instrument cluster

Item	Description	Page
1	'ASR' traction control indicator lamp	
2	'ABS' indicator lamp	
3	'ESP' indicator lamp	
4	'Turn signal left' indicator lamp	
4a	'Trailer turn signal left' indicator lamp	
5	'Turn signal right' indicator lamp	
5a	'Trailer turn signal right' indicator lamp	
6	'Tire pressure monitoring system' warning lamp	
7	'Brake pad wear' indicator lamp	
8	'Brake request' indicator lamp	
9	'Fuel down to reserve level' indicator lamp	

Item	Description	Page
10	'Active Brake Assist OFF' indicator lamp	
12	'Brake system malfunction' warning lamp (yellow or red)	
13	'High beams' indicator lamp	
14	'Parking brake active' indicator lamp	
15	'Low beams' indicator lamp	
16	Warning lamp for emissions-relevant fault (Malfunction Indicator Lamp, MIL)	
17	Warning lamp for diesel particulate filter condition / malfunction	
18	High Exhaust System Temperature indicator lamp	

Item	Description	Page
19	Water in Tank indicator lamp	
20	DEF (diesel exhaust fluid) indicator lamp	
21	Stop Engine indicator lamp (red)	
22	Check Engine indicator lamp (yellow)	

Emergency equipment, fire extinguishers, first-aid kit, emergency exit windows

Emergency equipment, fire extinguishers, first-aid kit, emergency exit windows

Location of first-aid kit (soft-sided)

The first-aid kit is stowed in a pouch behind the driver's seat.

i Note

Check the expiration dates for the various contents once a year and replace any materials whose service life has expired.

Tools and emergency equipment

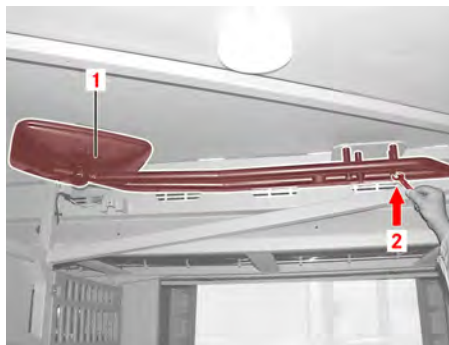
The vehicle tool kit and emergency equipment are in the stowage compartment above the front axle on the left and behind the front-end flap (spare tire hatch).

Tools and emergency equipment:

- Warning triangle
- Hydraulic jack, 10 t maximum load with support base (follow the manufacturer's operating instructions)!
- Drive-on ramp

- Wheel chock
- Socket wrench 30/32 mm
- Towing hook/towing coupling
- Disassembly tools for interior equipment (adapters service sets/paneling of luggage-rack support)
- Toolbox (containing spare bulbs, valve connector, tire inflation hose, flashlight and warning lamp etc.) (option)

Location of emergency replacement mirror (option)



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The emergency replacement mirror (1) is stowed in the luggage compartment on

the left directly to the rear of the front axle. This mirror is intended exclusively for use in emergencies.

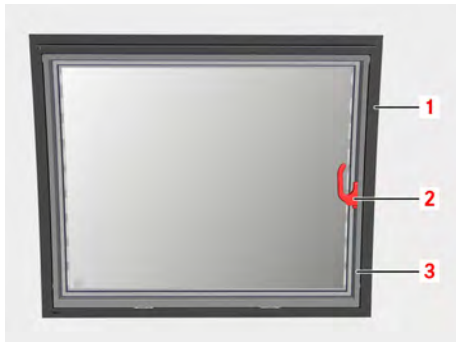
Remove the 4 screws (2) to take out the mirror.

i Note

For informations on replacing the outside mirror see the section headed "Removing outside mirror" in "Driver service and roadside repairs" (→ Page 330).

Emergency equipment, fire extinguishers, first-aid kit, emergency exit windows

Emergency exit window



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- ▶ Turn handle **(2)** down to unlatch emergency exit window **(1)**.
 - ◁ Push glass pane **(3)** of emergency exit window **(1)** out to open the emergency exit.

i Note

If the vehicle is in motion, bring the vehicle to a stop, paying attention to the traffic situation.

If there is no emergency, close the emergency exit window again. To do

so swing the glass pane out slightly and then allow it to snap closed.

Smoke-detector and fire-extinguishing system

Preparation for fire detection system

No fire detection system installed in the standard-equipment configuration

A fire detection system is not installed as standard in your vehicle. However, the vehicle features preparation for the installation of a fire detection system.

We recommend retrofitting a fire detection system as quickly as possible.



Property damage notice

The fire detection system must be in compliance with the applicable laws, regulations and standards.

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General safety information

General safety information

The vehicle is approved for its intended use:

- Transport of persons in touring, excursion or regular service, in the passenger compartment.
- Young children and infants in baby carriages or other approved carriers or means of transport that ensure safe transport in the passenger compartment.
- Persons with mobility restrictions with approved mobility aids that support safe transport in the passenger compartment, insofar as a zone for this purpose is provided in the passenger compartment.
- Small items of luggage belonging to the passengers, stowed in the stowage compartments in the passenger compartment. Large items of luggage in the luggage compartment.
- Domestic pets in appropriate transport containers that ensure safe transport in the passenger compart-

ment, insofar as transport in transport containers is required by law.

- Winter sports equipment in the luggage compartment or in a correctly installed ski box.



Danger

Caution: Risk of injury! due to unwanted movement and unauthorized operation of the vehicle.

- ▶ Whenever you stop and park the vehicle always secure it by applying the parking brake.
- ▶ Whenever you leave the cockpit, always take the vehicle key with you.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in toward the curb.

Fire prevention

Measures before the vehicle is operated

- ▶ Check tire pressures (daily visual inspection/weekly measurement).
- ▶ Check dual wheels to ensure that there is sufficient clearance between the tires all round.
- ▶ Check that the smoke detector LED shows steady green.

For information about the smoke alarm (→ Page 381) see "Driver service and roadside repairs".

Measures during vehicle operation

- ▶ Keep the coolant temperature under observation.

Measures after operation of the vehicle



Danger

Risk of combustion due to hot parts of the exhaust system.

- ▶ Switch off the auxiliary heater inside structures and at filling stations.

- ▶ Do not park beside or on dry grass or fields of stubble.
- ▶ Keep well clear of fuel pumps and parked vehicles.
- ▶ Avoid zones with concentrations of gas or dust in the air, such as gas depots, stocks of coal or wood and the like.
- ▶ Use only air extraction systems that are approved for these exhaust temperatures.
- ▶ Park the vehicle where it is safe and secure.
- ▶ Notify a mechanic/next driver of malfunction.
- ▶ Disconnect the battery or set the battery disconnect switch to OFF.

Installations, alterations or modifications to the vehicle

Installations, alterations or modifications to the vehicle



Warning

Risk of accident and injury due to malfunction of unapproved spare parts and installation parts.

- ▶ Use only genuine OMNIplus parts.
- ▶ Entrust all work of installation, alteration and modification to qualified workshops only.
- ▶ When ordering genuine OMNIplus parts, always quote the vehicle identification number (VIN).
- ▶ If necessary, contact the service partner.

Work on or modifications to the vehicle carried out incorrectly or with unapproved parts can lead to malfunctions and jeopardize safe operation of the vehicle.

- In the case of safety-relevant systems, a malfunction can occur.
 - E.g. the brake system.

- In the case of electronically networked systems, a malfunction can occur.
 - In the affected system itself.
 - On account of the networking of electronic systems, even in systems not directly affected.

Unapproved parts can void the operating permit. This can be the case for example if:

- The vehicle no longer conforms to the vehicle type approved in the operating permit.
- There is any expectation of endangering road users.
- Exhaust-emission of noise levels change.



Note

Daimler Buses accepts liability only for genuine OMNIplus parts. Even when an acceptance by a technical inspection body or an official approval has been issued for parts on an individual basis, Daimler Buses cannot accept liability.

Both vehicle keeper and vehicle driver are responsible for ensuring that whenever anything is mounted on the vehicle, particularly as regards the use of load carriers and trailer hitches, there is no violation of country-specific legal requirements.

Stickers

Stickers

Warning stickers have been attached at various locations on your vehicle. These warning stickers are intended to alert you and other persons to potential hazards. Therefore: Never remove any warning sticker unless instructions specifically requesting removal are printed on the sticker.



Warning

Caution: Risk of injury! due to unrecognized present dangers. If stickers with warnings or safety notices are removed or not replaced in good time, present dangers are not recognizable.

- ▶ Do not remove stickers.
- ▶ Immediately replace missing stickers.

Operation, retrofitting of radio systems

Operation, retrofitting of radio systems



Danger

Risk of accident and injury due to distraction from the traffic situation. Operation of integrated information and communication systems requires some share of the driver's attention.

- ▶ Familiarize yourself adequately with operation and handling before you use the information and communication systems.
- ▶ Operate information and communication systems only when the traffic situation permits.
- ▶ If necessary, before using the information and communication systems stop the vehicle safely where it will not impede traffic.
- ▶ When using the telephone or any other communication device, always comply with the applicable legal stipulations.

A vehicle traveling at a speed of 30 mph (50 km/h) covers ground at approximately 46 ft (14 m) per second.

Operation of auxiliary heaters

Auxiliary heaters



Danger

Risk of poisoning and risk of burn injuries due to hot parts of the exhaust system and exhaust gas.

- ▶ Inside closed spaces such as garages, run the engine and the auxiliary heater only with exhaust extraction systems in operation.
- ▶ Make sure there is an adequate fresh air supply.
- ▶ Keep well clear of hot parts.
- ▶ If necessary, wear appropriate protective clothing.



Danger

Risk of combustion due to hot parts of the exhaust system.

- ▶ Switch off the auxiliary heater inside structures and at filling stations.
- ▶ Do not park beside or on dry grass or fields of stubble.

- ▶ Keep well clear of fuel pumps and parked vehicles.
- ▶ Avoid zones with concentrations of gas or dust in the air, such as gas depots, stocks of coal or wood and the like.
- ▶ Use only air extraction systems that are approved for these exhaust temperatures.

Never park vehicles inside enclosed spaces, in the vicinity of tank systems or flammable materials, if the auxiliary heater:

- was in operation until shortly beforehand,
 - is still in operation, or
 - will be switched on by a timer or timing device.
- ▶ Switch the auxiliary heater on and allow it to operate for 10 minutes at least once every month.

Handling 120 volt equipment

Handling 120 volt equipment

120 volt equipment (option)



Danger

Risk of burn injuries and risk of death
due to electric shock and cardiac arrest.

- ▶ Keep clear of electrically live parts.
- ▶ Do not reach into sockets or touch damaged lines.
- ▶ Inspect extension cables for damage before plugging in.
- ▶ Keep liquids away from all electrically live parts and devices.
- ▶ Only specially trained and qualified technicians are permitted to carry out maintenance and repair work.
- ▶ Comply with the safety information for handling high-voltage equipment.

Safety precautions

As regards the handling of 120 volt systems, comply with the following safety precautions:

- Have all systems checked regularly by trained and qualified specialists in accordance with national rules and

regulations. In particular, built-in automatic circuit breakers have to be checked at regular intervals, for example always before the system is used. Press the test button on the device to check that it is full working order.

- Always comply with the system manufacturer's safety instructions and operating instructions.
- Do not load sockets in excess of their maximum permissible total power rating. Note the total load of the power inverter.

Further safety precautions apply to the operation of external power supplies:

- Connect to grounded power supplies only. Connection to other supply systems such as generators, for example, is prohibited.
- Do not use damaged supply cables.
- Never connect 120 volt equipment to a power supply without first verifying that the power supply is protected by an automatic circuit breaker. Otherwise, incorporate an in-line adapter

plug with a built-in automatic circuit breaker.

- Use the test switch to ensure that this circuit breaker operates correctly. Comply with all these instructions before connecting the outside power supply to the vehicle's 120 volt equipment.
- Supply cables must meet the following requirements: maximum length 25 meters; minimum conductor cross-section 2.5 mm²; end-to-end protective ground conductor.
- Connect the supply cable only to the connector provided for the purpose, otherwise the engine start lockout is not active.

Additional safety information

Safety information relating to the windshield wiper system and to hand-luggage storage boxes/trays is set out below.

Windshield wiper system

Windshield wiper system

Entrust maintenance operations on the windshield wipers and the mechanical windshield wiper components to trained, qualified personnel only.



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Warning

Caution: Risk of injury! due to inadvertent activation of the windshield wiper system. While work such as cleaning the windshield wipers or changing the wiper blades is in progress:

- ▶ Switch off the battery disconnect switch (01S01).
- ▶ Whenever cleaning or care work is going to be carried out on the windshield wiper system, set the intermittent-wipe control of the windshield wipers to stage 0 (OFF).

Additional safety information

- ▶ Switch off the ignition and remove the key to secure against unauthorized operation.

Overhead storage trays for carry-on luggage



M68.00-0574-71

The overhead storage trays above the seats are suitable only for light-weight carry-on articles.

Additional safety information



Warning

Caution: Risk of injury! due to flying objects. The forces occurring in quick swerves or due to an accident can cause unsecured objects to be flung around at considerable velocity.

- Adequately secure all heavy, hard and sharp-edged or pointed objects.

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Instructions online

Instructions online

Operator's Manual, maintenance instructions and supplementary instructions are available on the internet and as apps.

Descriptions:

- User information in the Internet and apps
- Care and cleaning instructions
- Specifications for operating fluids and lay-up instructions

User information in the Internet and apps



M99.00-0027-71

These and other instructions are available as PDF files for download in the internet and can be accessed by means of the QR code above.

Interactive operating instructions for current Mercedes-Benz buses are also available there as Web-based applications.

Care and cleaning instructions



M97.20-A001-71

Full instructions for care and cleaning are available on the internet at the following address.

Care and cleaning instructions:
<https://busdoc.i.daimler.com/public/pa/>

Specifications for operating fluids and lay-up instructions



M99.00-A008-71

The specifications for operating fluids are also available on the internet at the following address. Instructions for laying up your vehicle have also been posted there under "Preservation specifications (vehicle lay-up)".

Specifications for operating fluids:
<https://busdoc.i.daimler.com/public/>

Instructions from Bosch online

Instructions from Bosch online

Descriptions:

- Bosch website for manuals, data sheets, product information and map updates
- Bosch Coach Infotainment Series Operator's Manual

Bosch website for manuals, data sheets, product information and map updates



M99.00-A010-71

Current manuals, data sheets, product information and map updates for the

Bosch products installed in the vehicle are posted here.

Bosch manuals, data sheets, product information and map updates:
<https://bosch-professional-systems.com/en/>

Bosch Coach Infotainment Series Operator's Manual

The operator's manual for the installed Bosch infotainment system (CIS) is posted here.

Bosch Coach Infotainment Series Operator's Manual:
<https://busdoc.i.daimler.com/public/pa/bae>

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Running-in notes

Running-in notes



Caution

Property damage due to excessive stain on the engine and drivetrain during the first 3100 miles (5000 km) of operation. Correct running in is essential for future performance and service life.

- ▶ Vary engine rpm and driving speeds frequently. DO NOT drive long distances at steady engine rpm or driving speed.
- ▶ Gradually increase vehicle load.
- ▶ Drive the first 1300 miles (2000 km) at no more than $\frac{3}{4}$ of maximum engine speed and upshift early.
- ▶ Daily or at the latest every 310 miles (500 km), check the oil level because the engine's oil consumption might be high for the first 13,000 miles (20,000 km).

Run in the suspension, running gear and drivetrain with frequent changes of speed and load.



Note

Both the performance and the durability of the new coach depend definitively on how the suspension, running gear and drivetrain are treated during the first 3100 miles (5000 km) of operation.

- ▶ New tires have to be run in correctly in order to achieve maximum grip (comply with the information supplied by the manufacturer).
- ▶ Bed in the brakes by moderate braking. Premature sharp braking, as in a maximum full-stop braking situation, can lead to damage to the brake rotors.

Preparation for operation, daily

Procedures to perform daily

The checks are to be carried out only by persons familiar with the procedures involved and the necessary measures.

- ▶ Check the fill level in the windshield washer fluid reservoir, see the section headed "Windscreen washer fluid reservoir" in "At a glance" (→ Page 405).
- ▶ Check operation of the windshield washer system and the windshield wiper system.
- ▶ Check the fuel supply for the engine and the auxiliary heater (option).
- ▶ Check the supply of diesel exhaust fluid (DEF) for the BlueTec® emission control system.
- ▶ Check the electrical system, paying particular attention to the headlights, turn signals, taillights, brake lights and license plate lights.

Note

Under certain climatic and operating conditions condensation may accumulate in the headlights and other light units while the coach is stationary. This does not indicate any defect. The ventilation openings in the headlights will allow this moisture to dissipate automatically once the coach is again driven for a brief period.

- ▶ Check that the outside flaps all lock securely, see the section headed "Overview, outside flaps" in "At a glance" .
- ▶ Check the emergency exits.
- ▶ Check the accessibility and completeness of the emergency equipment, e.g. first aid kits, fire extinguishers, hazard warning triangle, emergency exit windows, vehicle jack.
- ▶ Check the settings of the inside and outside mirrors, clean the mirrors, check that the mirror heating is in full working order.

Preparation for operation, daily

- ▶ Check the tire pressures and the condition of the tires, including the spare wheel (option). For specified tire pressures see the section headed "Wheels, tires: tire pressures" (→ Page 378). Check the security of the wheel nuts and the hubcaps.
- ▶ Check each wheel and it´s associated detachable parts (rim, hubcap, wheel studs and nuts) to ensure that everything is correctly installed and free of damage. Damaged parts must be replaced.

Preparation for operation, daily



M40_00-0115-71

- ▶ Check wheel hubs (**1**) of all wheels for leaks, both inboard and outboard sides (visual inspection).
- ▶ Have leaks eliminated as quickly as possible by a service partner.

Preparation for operation, weekly**Weekly procedures**

The checks are to be carried out only by persons familiar with the procedures involved and the necessary measures.

- ▶ Check the coolant levels in the engine cooling system and the heating system, see the section headed "Checking the coolant levels in the engine cooling system and the heating system" (→ Page 400).
- ▶ If the coolant level has to be topped up, check the concentration of the corrosion inhibitor/antifreeze agent in the coolant.
- ▶ Check the belt tension of all belt drives.
- ▶ Visually inspect the engine, transmission, drive axle, steering, cooling and heating systems for leaks.
- ▶ Check the electrolyte levels in the starter batteries (only vehicles with lead-acid batteries).
- ▶ If installed: Check the seat belts (inertia-reel locks). Visually inspect the belt straps for damage.

Starting, driving, parking

Starting, driving, parking

Starting the engine



Danger

Risk of poisoning and risk of burn injuries due to hot parts of the exhaust system and exhaust gas.

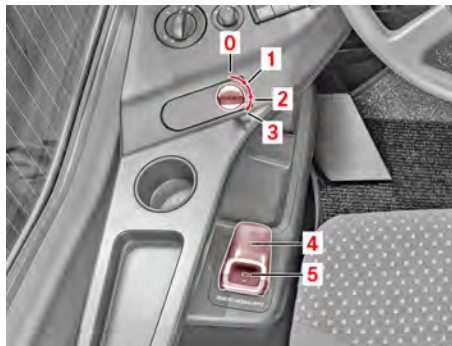
- ▶ Inside closed spaces such as garages, run the engine and the auxiliary heater only with exhaust extraction systems in operation.
- ▶ Make sure there is an adequate fresh air supply.
- ▶ Keep well clear of hot parts.
- ▶ If necessary, wear appropriate protective clothing.

Precondition for starting the engine

- Parking brake is engaged.
- Transmission in neutral position.
- Use a start-approved key.
- If the vehicle is equipped with a breathalyzer-controlled immobilizer, follow procedure to neutralize the immobilizer (consult the manufacturer's instructions).

- Engine compartment flap is closed.
- ▶ If outside temperature is below -4 °F (-20 °C) preheat the engine with auxiliary heater in preparation for starting. Comply with the "Safety information on heating, ventilation, air conditioning" (→ Page 258).

Starting



M54.00-A009-71

- ▶ Turn the ignition key to position **(2)**.
 - ◁ Automatic system check is carried out: Indicator lamps are checked, needles swing across their dials.

- ▶ Without depressing the accelerator pedal, turn the ignition key to the start position, position **(3)**.
 - ◁ Engine starts.

Note

If the engine does not start about the starting procedure after a maximum of 15 seconds, wait for approx. 1 minute and try again. Turn the ignition key back to the initial position, position **(0)** before each start attempt. If the engine fails to start after three consecutive attempts, wait for approximately 15 minutes before trying again. Directly after the engine starts, check the indicator lamps and event messages in the instrument cluster. If no malfunction is indicated, the vehicle can be driven off.



Property damage notice

If a message indicating that oil pressure is too low appears on the display, stop the engine immediately and ascertain the cause.



Environmental protection

Never allow the engine to warm up with the vehicle at a standstill; instead, drive off and run the engine at medium rpm.

- ▶ As soon as the engine starts, release the ignition key.



Property damage notice

The target operating temperature is between 158 °F (70 °C) and 221 °F (105 °C). If the minimum operating temperature of 158 °F (70 °C) is not achieved without fluctuation on account of the outside temperature, the auxiliary heater has to be switched on or, if applicable, must remain on.

Automatic increase of idle speed

To prevent inadequate electricity supply in the on-board electrical system, 3 measures are initiated in sequence:

- 1. Increase of idle speed,
- 2. Reduction in power draw of individual consumers,
- 3. Shutdown of consumers.

Driving



Warning

Risk of accident due to the failure of functions that assist safe operation of the vehicle, including for example the power steering or brake control.

- ▶ DO NOT shut down the engine while the vehicle is on the move.
- ▶ DO NOT switch off the ignition while the vehicle is on the move.
- ▶ DO not remove the key while the vehicle is on the move.

Measures

- ▶ If the engine fails or the ignition shuts down, bring the vehicle to a stop safely.
- ▶ Continue operating the brakes and the steering by applying all your strength to brake pedal and steering wheel.

Preconditions for starting off:

- Reservoir pressure has built up fully in the compressed air system: Message in the display disappears or bar indicator changes from red to white.
- Oil pressure has built up: Message in the display disappears display instrument indicates correct reading for operating pressure.
- All doors are unlocked and closed.
- Hand luggage and all other items of luggage of driver, accompanying staff and passengers safely stowed.
- Driver, accompanying staff and passengers are all seated and all seat belts are buckled, as necessary. In

Starting, driving, parking

regular service: Passengers have secured themselves appropriately.

Starting off

- ▶ Check freedom of movement of the pedals.
- ▶ Depress the brake pedal, engage gear and slowly release the brake pedal.
 - ◁ The vehicle starts moving.

Reversing

If the vehicle is equipped with a reversing camera, the camera shows an image of a limited area behind the vehicle.

The reversing camera is not a substitute for cautious and responsible maneuvering, so other points have to be taken into consideration as well:

- Always have a second person acting as spotter.
- Watch out for objects outside the camera viewing range.
- Watch out for persons outside the camera viewing range.

Driving

Before starting off, check the brakes. Conduct this check without passengers

on board is possible, and always in full awareness of the traffic situation.

If the vehicle is not fully run in, comply with the running-in notes.

- ▶ Keep engine speed to the medium rpm range while the engine is still cold. Pay attention to the reading shown by the rev counter. Get the engine up to operating temperature quickly.
- ▶ Full engine power can be requested after the operating temperature of at least 158 °F (70 °C) has been reached. If this temperature is not reached on account of low outside temperatures, switch on the auxiliary heater (if installed) to help raise the temperature.
- ▶ Keep the engine's operating temperature in the range 158 °F - 230 °F (70 °C - 110 °C).
- ▶ Drive economically and always keep engine speed below the redline.

Shutting down the engine

Preconditions for shutting down the engine

- After heavy-duty operation (e.g. long uphill climb), the engine has to be allowed to idle for approx. 2 minutes so that the turbocharger has time to cool down.

Note

Park the vehicle where there is plenty of room to open the engine-compartment flap or the battery compartment.

- The choice of parking space allowed for the fact that the parking heater might still be activated, or was active only a short time before.
- ▶ Comply with the safety information on heating, ventilation, air conditioning (→ Page 258).

Shutting down



Danger

Risk of combustion due to hot parts of the exhaust system.

- ▶ Switch off the auxiliary heater inside structures and at filling stations.
- ▶ Do not park beside or on dry grass or fields of stubble.
- ▶ Keep well clear of fuel pumps and parked vehicles.
- ▶ Avoid zones with concentrations of gas or dust in the air, such as gas depots, stocks of coal or wood and the like.
- ▶ Use only air extraction systems that are approved for these exhaust temperatures.



M54.00-A009-71

- ▶ Set the transmission to neutral.
- ▶ Apply the parking brake by pressing button **(5)**.
- ▶ Turn the ignition key to position **(0)**.
 - ◁ The engine shuts down.

Operating fluids, fuels and consumables, refueling and filling reservoirs

Operating fluids, fuels and consumables, refueling and filling reservoirs

Operating fluids

Operating fluids must be matched to the vehicle's components. Consequently, use only brands approved by Daimler Buses.

Operating fluids are:

- fuels
- lubricants, e.g. engine oils, transmission fluids, greases
- coolant
- brake fluids
- etc.

Information on operating fluids is available on the Internet at: busdoc.i.daimler.com/public/.

No lubricant additives are necessary. The use of additives can restrict the validity of the warranty.

- ▶ Comply with the safety information and warnings on the safe handling of fuels and consumables (→ Page 44).

Safety information for fuels and consumables

Handling fuels and consumables



Danger

Risk of poisoning due to contact with hazardous operating fluids through the mucous membranes or by skin contact.

- ▶ Wear protective gloves and also wear other personal protective equipment as necessary.
- ▶ Protect clothing, skin, eyes and mucous membranes against contact.
- ▶ Make sure that no vapors are inhaled.
- ▶ Keep children at a safe distance.

Measures

- ▶ Clean the skin thoroughly with soap and water.
- ▶ Rinse the eyes with plenty of water.
- ▶ Consult a physician if operating fluids have been ingested.
- ▶ Change clothing wetted by operating fluids.



Warning

Risk of fire and explosion due to leaking flammable vapors.

- ▶ Permit no open sources of light, fire or sparking in the immediate vicinity.
- ▶ Keep well clear of hot components, for example the exhaust system.
- ▶ Switch off the ignition and auxiliary heater.



Caution

Property damage due to use of wrong operating fluids or fuels. Operating fluids or fuels that do not comply with the applicable standards will cause long-term damage to the engine or exhaust after-treatment system.

- ▶ Use diesel fuels compliant with ASTM D2622.
- ▶ Use diesel exhaust fluid (DEF) compliant with DIN 70070 and ISO 22241.
- ▶ Do not attempt to return spilled fuel or operating fluids to the vehicle's

Operating fluids, fuels and consumables, refueling and filling reservoirs

tanks. Instead, dispose of spillage in the correct and appropriate manner.

- ▶ DO NOT introduce additives into the fuel or operating fluids.
- ▶ All fuels used must be compliant with the climatic requirements.
- ▶ DO NOT introduce flow improvers.

Winter fuels, rated for operational reliability at temperatures down to -4 °F (-20 °C) are fully saturated with additives. Higher concentrations of additives will not produce any further improvement in cold flow behavior and instead will endanger the engine's ability to operate correctly.



Environmental protection

Environmental hazard due to entry of fuel or operating fluids into the soil, water or sewage system.

- ▶ Use only approved containers for storage.
- ▶ Take up spillages and leaks by appropriate means, always with full regard for your own safety and the safety of others.

- ▶ Dispose of residues, empty containers and soiled rags in the correct and appropriate manner.

Fuels that are prohibited because their use would damage the engine and the emission control system are:

- marine diesel
- heating oil
- fuel containing more than 0.0015 % by weight of sulfur
- flow improvers such as kerosene or gasoline

Diesel exhaust fluid (DEF)

Diesel exhaust fluid (DEF) is bio-degradable and is not a hazardous substance as defined by the Directive on Dangerous Substances as enacted in Germany.



Warning

Caution: Risk of injury! due to hot, pressurized diesel exhaust fluid (DEF) in the lines or due to irritation of the skin or mucous membranes on contact.

- ▶ Do not attempt to work on the diesel exhaust fluid (DEF) line

system. Have this work carried out by qualified persons only.

- ▶ When handling diesel exhaust fluid (DEF) wear gloves and avoid contact with the eyes and skin.
- ▶ Do not inhale ammonia vapors given off by the diesel exhaust fluid (DEF).

Measures

- ▶ In the event of contact with the skin or eyes rinse with plenty of clean water; change clothes wetted by the liquid.

If heated, for example by the rays of the sun, to temperatures above 122 °F (50 °C), ammonia vapor can form in the diesel exhaust fluid (DEF) tank and irritate mucous membranes and the eyes.



Caution

Property damage due to use of unsuitable containers for storage. They can permit passage into the diesel exhaust fluid (DEF) of substances that damage the emission control system and lead to voiding of the warranty. Containers made of:

Operating fluids, fuels and consumables, refueling and filling reservoirs

- ▶ aluminium, copper, alloys containing copper and unalloyed or galvanized steel are banned.

Measures

- ▶ Use containers made of highly alloyed CrNi or MoCrNi steels.
- ▶ Keep clear when opening the diesel exhaust fluid (DEF) tank, do not directly inhale ammonia vapors escaping from the tank.
- ▶ If diesel exhaust fluid (DEF) comes into contact with painted surfaces or aluminum, rinse off immediately with plenty of water.

Diesel exhaust fluid (DEF) is a design part of the emission control system and a constituent part of the vehicle's approval for operation in road traffic.

- ▶ Check the level of the diesel exhaust fluid (DEF) in the tank at regular intervals and refill as necessary. Operation without diesel exhaust fluid (DEF) is not permissible.

In the event of operation of the vehicle without diesel exhaust fluid (DEF):

- the permit for use on public roads is voided,
- tax benefits from acquisition and operation no longer apply,
- in some countries such operation constitutes a misdemeanor punishable by law.

Refueling with diesel fuel

Design of the fuel tank

Depending on the equipment configuration, the vehicle has twin fuel tanks installed in front of the front axle. The fuel tanks are connected to one another below floor level by a fuel line. These vehicles can be refueled from either side.

- ▶ Comply with the safety information on handling fuel and operating fluids. (→ Page 44)

Precondition for tank filling:

- Vehicle is parked correctly and standing level.

- Engine and auxiliary heater are switched off.
- Wear gloves.

Refilling

If the vehicle has a twin-tank system open both filler caps for refueling so that air can escape, permitting both tanks to be filled optimally.

- ▶ If installed, open the filler caps of both tanks.
- ▶ Select diesel fuel suitable for the expected climatic conditions. Use winter-grade diesel for driving in wintry areas.
- ▶ Fill the tank(s) holding the pump nozzle firmly and keeping the procedure under observation from start to finish.
- ▶ When removing the pump nozzle, make sure that no fluid drips out.
- ▶ Correctly re-close all tank caps.

Malfunctions due to unsuitable fuel

If there is a sudden severe cold snap or if fuels with inadequate clod-flow behavior are used, paraffin separation can occur.

Operating fluids, fuels and consumables, refueling and filling reservoirs

This can impair operation of the fuel filter, for example.

- Adding flow improver to fuel in which paraffin separation has already occurred does not reverse the process of separation.

If diesel fuel containing a high proportion of water is used, the fuel filter can ice up if a cold snap occurs.

Do not under any circumstances add gasoline to the diesel fuel on account of the hazard due to increased risk of explosion and fire in the engine.

- ▶ Comply with the safety information on handling fuel and operating fluids. (→ Page 44)

Heating the entire fuel system is the only way of countering paraffin separation.

- ▶ To achieve this, leave the vehicle parked for a lengthy period of time inside a heated building.
- ▶ Open the vehicle's flaps (engine compartment) to improve the circulation of air.
- ▶ If necessary, replace the fuel filter.

Refilling the diesel exhaust fluid (DEF) tank

BlueTec® emission control system

The BlueTec® emission control system consists primarily of the storage tank, catalytic converter and the diesel exhaust fluid (DEF) metering system. It is monitored electronically.

Injected diesel exhaust fluid (DEF) and the catalytic converter integrated into the exhaust system convert pollutants in the exhaust gas into environmentally friendly substances.

Diesel exhaust fluid (DEF) is a non-flammable, colorless, odorless and water-soluble liquid. It freezes at temperatures lower than approximately 12.2 °F (-11 °C), so the vehicle has a preheating system for winter operation.

- Do not dilute diesel exhaust fluid (DEF) with water or additives because this would damage the emission control system and void the warranty.

- ▶ Comply with the safety information on handling fuel and operating fluids. (→ Page 44)

Refilling the diesel exhaust fluid (DEF) tank



M47.00-A003-71

The storage tank is mounted on the right, behind the trailing axle.

Consumption of diesel exhaust fluid (DEF) is between 3 and 5 % of the consumption of diesel fuel. The DEF fill level in the storage tank can be checked in the display.

- When the fill level in the tank is below 10 % a yellow message (→ Page 48) appears in the display.

Operating fluids, fuels and consumables, refueling and filling reservoirs

- ▶ Open filler opening **(1)** of the diesel exhaust fluid (DEF) tank.
- ▶ Refill the tank, holding the pump nozzle firmly and keeping the procedure under observation from start to finish, or carefully transfer the fluid to the tank from a container.
- ▶ When removing the pump nozzle, make sure that no fluid drips out.
- ▶ Close the filler cap.
- ▶ Dispose of the empty container, if applicable, in an environmentally acceptable manner.

Public filling stations have larger-diameter pump nozzles for diesel fuel to prevent the possibility of diesel fuel being pumped into the diesel exhaust fluid (DEF) tank by mistake. When refilling from other sources (e.g. canisters) take great care to ensure that only diesel fuel goes into the fuel tank and only DEF goes into the DEF tank.

There is a ring magnet in the filler neck of the DEF tank. The diesel exhaust fluid (DEF) pump nozzles at public filling stations open only in the presence of this ring magnet in the filler neck of the (DEF)

tank. There is no magnetic transmitter of this nature in the filler neck of the diesel tank and this prevents diesel exhaust fluid (DEF) from being pumped into the tank for diesel fuel.

Warning messages about diesel exhaust fluid (DEF) fill level

Stage 1 warning message



M54.30-A183-71

Indicator for diesel exhaust fluid (DEF) fill level **(5)**.

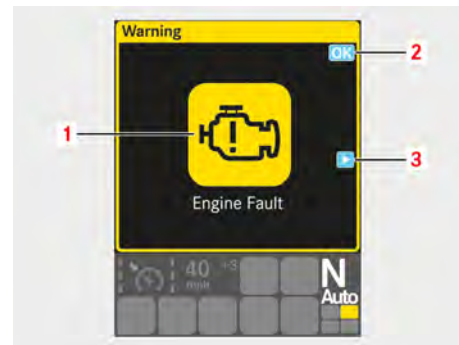
When fill level is 10 % or less, a "DEF Reserve" yellow message **(1)** appears in the display.

If the driver acknowledges the yellow message by pressing OK button **(2)** on the steering wheel,

- symbol **(6)** changes color to blue as a reminder that the tank has to be refilled,
- yellow message **(1)** disappears,
- yellow warning lamp **(4)** remains visible in the display as a reminder.

When the tank is topped up, warning lamp **(4)** goes out and symbol **(6)** disappears.

Stage 2 warning message



M54.30-A184-71

If the stage 1 warning is ignored and the fluid level in the diesel exhaust fluid (DEF)

Operating fluids, fuels and consumables, refueling and filling reservoirs

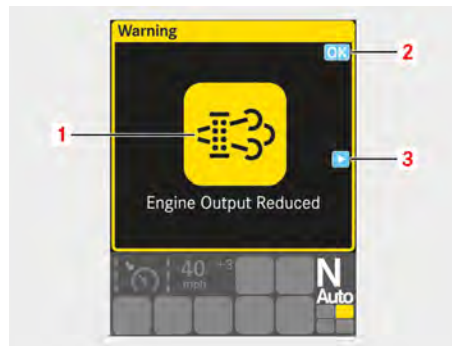
tank is down to 7.5 % or less, an "Engine Fault" yellow message **(1)** appears in the display.

If the driver acknowledges the yellow message by pressing OK button **(2)** on the steering wheel,

- yellow message **(1)** disappears,
- as a reminder, yellow warning lamp **(4)** still shows in the display,
- symbol **(6)** changes color to yellow as a reminder that the tank has to be refilled,

When the tank is topped up, warning lamp **(4)** goes out and symbol **(6)** disappears.

Stage 3 warning message



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If the stage 2 warning is ignored and the fluid level in the diesel exhaust fluid (DEF) tank is down to 2.5 % or less, an "Engine Output Reduced" yellow message **(1)** appears in the display.

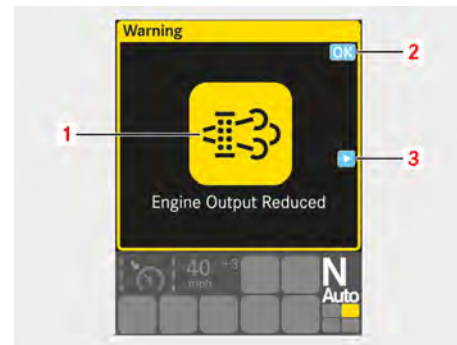
If the driver acknowledges the yellow message by pressing OK button **(2)** on the steering wheel,

- yellow message **(1)** disappears,
- as a reminder, yellow warning lamp **(4)** still shows in the display,

- symbol **(6)** remains yellow as a reminder that the tank has to be refilled,
- symbol **(7)** shows yellow,
- engine output is reduced to provide a maximum speed of 55 mph.

When the tank is refilled, warning lamp **(4)** goes out, symbols **(6)**, **(7)** disappear and full engine output is again available.

Stage 4 warning message



M54.30-A185-71

If the stage 3 warning is ignored and the fluid level in the diesel exhaust fluid (DEF) tank is down to 0 %, an "Engine Output

Operating fluids, fuels and consumables, refueling and filling reservoirs

Reduced" yellow message **(1)** appears in the display.

If the driver acknowledges the yellow message by pressing OK button **(2)** on the steering wheel,

- yellow message **(1)** disappears,
- as a reminder, yellow warning lamp **(4)** still shows in the display,
- symbol **(6)** remains yellow as a reminder that the tank has to be re-filled,
- symbol **(7)** still shows yellow,
- engine output is reduced to provide a maximum speed of 5 mph.

When the tank is refilled, warning lamp **(4)** goes out, symbols **(6)**, **(7)** disappear and full engine output is again available.

Note

Operating the vehicle without diesel exhaust fluid (DEF) voids the approval for road service, see the section headed "Safety information for fuels and consumables" (→ Page 44).

Diesel particulate filter (DPF)

Diesel particulate filter (DPF)

Safety information for regeneration of the diesel particulate filter

Stopping or parking the vehicle



Danger

Risk of combustion due to hot parts of the exhaust system.

- ▶ Switch off the auxiliary heater inside structures and at filling stations.
- ▶ Do not park beside or on dry grass or fields of stubble.
- ▶ Keep well clear of fuel pumps and parked vehicles.
- ▶ Avoid zones with concentrations of gas or dust in the air, such as gas depots, stocks of coal or wood and the like.
- ▶ Use only air extraction systems that are approved for these exhaust temperatures.



Danger

Risk of poisoning and risk of burn injuries due to hot parts of the exhaust system and exhaust gas.

- ▶ Inside closed spaces such as garages, run the engine and the auxiliary heater only with exhaust extraction systems in operation.
- ▶ Make sure there is an adequate fresh air supply.
- ▶ Keep well clear of hot parts.
- ▶ If necessary, wear appropriate protective clothing.

The exhaust system becomes very hot while regeneration is in progress.

Consider the conditions in the immediate surroundings when you chose where to park the vehicle,

- if automatic regeneration took place shortly beforehand,
- If manual regeneration is going to be started.
- ▶ If you enter a danger zone where, for example, high exhaust temperatures

have to be avoided, automatic regeneration must be canceled or locked out, as applicable. See also the section headed "Canceling or locking out regeneration" (→ Page 54).

Diesel particulate filter (DPF)

Function

The diesel particulate filter is installed in the exhaust system. It filters the soot particles out of the hot exhaust gas. Over time the filter can slowly become clogged by soot particles, in which case back pressure builds up in the exhaust system.

The filter is cleared of soot particles by an increase in exhaust temperature. This has to be done regularly as otherwise power loss and damage to the engine will result.

Automatic regeneration

The on-board computer monitors the condition of the diesel particulate filter and starts automatic regeneration of the diesel particulate filter when necessary.

The process requires higher engine rpm and a sufficiently high operating tempera-

Diesel particulate filter (DPF)

ture in the engine. As a rule, these conditions satisfied in normal driving operation, for example on freeways or in intercity service. The start of automatic regeneration can be assisted by positive action on the part of the driver, for example by adoption of a suitable load profile.

During regeneration the exhaust temperature is higher than normal, which means that the exhaust system and the exhaust tailpipe become very hot.

Manual regeneration

If the vehicle is driven mainly in short-distance or low-load operation, the pre-conditions for automatic regeneration are not fulfilled. The on-board computer issues the yellow message accompanied by a note to the effect that manual regeneration (regeneration with vehicle stationary) is required.

In manual regeneration the on-board computer increases the engine's idle speed with the vehicle stationary, in order to bring the temperature of the exhaust gas up to the level required to clear the soot particles from the filter. The time this

takes depends on the temperature of the exhaust system and is between 30 and a maximum of 60 minutes.

Automatic regeneration of DPF

Conditions

- Appropriate operating conditions, e.g. engine-oil temperature or exhaust temperature.
- Trouble-free operation of the systems, e.g. diesel exhaust fluid (DEF).
- Engine is running and vehicle is on the move.
- Transmission under load, not in neutral.
- Manual lockout of regeneration is NOT active.

The driver must ensure that the surroundings are suitable for the regeneration cycle to take place. If the vehicle is currently in surroundings where elevated exhaust temperatures cannot be achieved,

- ▶ Lock out or cancel automatic regeneration (→ Page 54).

- ▶ Comply with the safety information on diesel particulate filter (→ Page 51).

Performance

Automatic regeneration is started by the on-board computer. While this is in progress, continue driving with normal load profile.



Note

Automatic regeneration takes place in the background, without indicator lamps showing.

End

When automatic regeneration has completed, the on-board computer issues a message to this effect.

Manual regeneration of DPF

Conditions

- Appropriate operating conditions, e.g. engine-oil temperature or exhaust temperature.
- Trouble-free operation of the systems, e.g. diesel exhaust fluid (DEF).

Diesel particulate filter (DPF)

- Engine idles.
- The parking brake is engaged.
- The transmission is in neutral position N.
- Yellow message in the display indicates that the load condition of the filter is critical.
- Manual lockout of regeneration is NOT active.

Driver must make sure,

- that the vehicle is safely parked and is safely clear of:
 - pedestrians,
 - other vehicles,
 - flammable objects and dry surface materials.
- that ventilation is always adequate to remove the heat of engine operation.

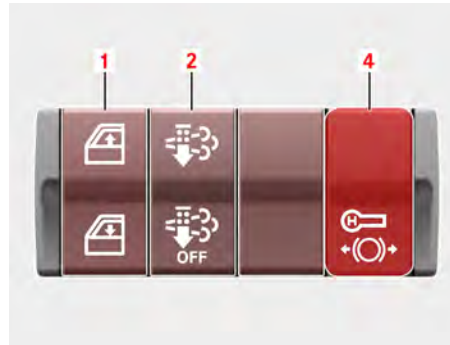
Note

If manual regeneration has to be carried out at a low outside temperature, start the procedure immediately after the vehicle has been driven, before shutting down the engine.

At low outside temperatures, when the engine is cold it can take longer for the preconditions for starting regeneration to be satisfied. If the diesel exhaust fluid (DEF) is frozen, thawing can take up to 60 minutes.

- Comply with the safety information on diesel particulate filter (→ Page 51).

Performance



M54.30-A186-71

- Press the top section of rocker button (2) for 3 seconds.
 - ◁ Regeneration of the diesel particulate filter is started.

- ◁ Engine speed is increased by the on-board computer.



M54.30-A263-71

- High Exhaust System Temperature (HEST) indicator lamp (3) flashes one second ON every ten seconds.
- If the temperature at the exhaust tailpipe is higher than 977 °F (525 °C), High Exhaust System Temperature (HEST) indicator lamp (3) shows steadily.

End

When manual regeneration has completed,

Diesel particulate filter (DPF)

- engine speed drops to normal idle speed,
- "Diesel particulate filter" indicator lamp **(2)** in the instrument cluster goes out and stays out.

Note

High Exhaust System Temperature (HEST) indicator lamp **(3)** continues to show steadily until the temperature at the exhaust tailpipe returns to normal.

Cancellation / lockout of DPF regeneration

Canceling manual regeneration



M54.30-A186-71

The process is aborted in response to any one of the following events:

- ▶ Button **(2)** is pressed (LED shows), bottom section of rocker. Important notice: Lockout remains in force, see the section headed "Locking out automatic regeneration" (→ Page 55).
- ▶ Release of the parking brake.



M54.30-A263-71

- ▶ Take the transmission out of neutral "N".
 - ◁ The "Diesel particulate filter" indicator lamp **(2)** in the instrument cluster goes out.
 - ◁ Engine speed drops to normal idle speed.

Diesel particulate filter (DPF)

Cancellation of automatic regeneration



M54.30-A186-71

The process is aborted in response to any one of the following events:

- ▶ Button **(2)** is pressed (LED shows), bottom section of rocker. Important notice: Lockout remains in force, see the section headed "Locking out automatic regeneration" (→ Page 55).
- ▶ Engine shut-down.
- ▶ Relevant system parameters no longer apply.
 - ◁ The "Diesel particulate filter" indicator lamp **(2)** in the instrument cluster goes out.

Note

The on-board computer restarts regeneration when the preconditions are again satisfied.

Lockout of automatic regeneration



M54.30-A186-71

Press bottom section of rocker button **(2)** (LED shows):

- prevents start of automatic regeneration.
- interrupts automatic regeneration if in progress.

- prevents start of manual regeneration.
- Remains active even after the engine is next restarted.



Caution

Property damage due to manual blocking of regeneration for longer than the period originally needed.

- ▶ Enable automatic regeneration or start manual regeneration.
- ▶ Comply with the information displayed by the on-board computer.
- ▶ End lockout by pressing the bottom section of rocker button **(2)** again.
 - ◁ The red LED in button **(2)** goes out.

Diesel particulate filter warning messages

The diesel particulate filter (DPF) can issue warning messages about load condition and malfunctions.

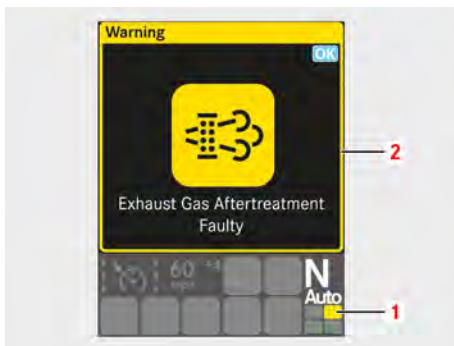
Diesel particulate filter (DPF)

Warning messages about malfunctions



Property damage notice

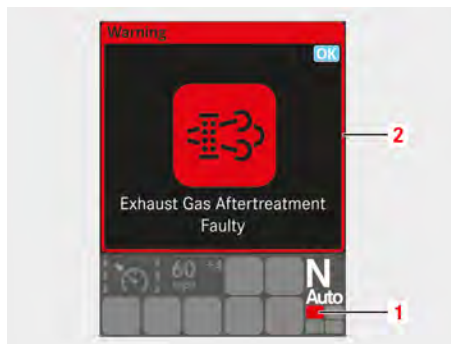
Ignoring a malfunction in the exhaust aftertreatment system can result in irreparable damage to components. Consequently, always have malfunctions rectified immediately by a service partner.



M54.30-A188-71

Yellow messages warn of functional restrictions; you can continue driving but must exercise extra caution.

- ▶ Stop as soon as possible and consult a service partner.



M54.30-A189-71

Red messages indicate safety-relevant malfunctions. Continuing to drive endangers the safety of the passengers, other road users and the driver.



Danger

Risk of accident due to restriction of the vehicle's operating safety and road safety.

- ▶ Stop immediately, taking the traffic situation into account, and switch on the hazard warning flashers.
- ▶ If necessary, contact the service partner.

- ▶ Do not resume driving until the malfunction has been rectified.

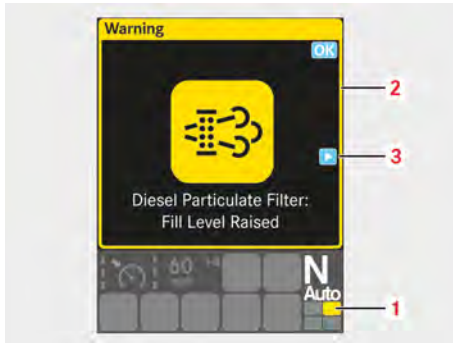
Warning messages about load condition



M54.30-A263-71

If automatic regeneration did not take place and the load condition of the diesel particulate filter becomes critical, symbol (2) flashes or shows yellow in the display.

Diesel particulate filter (DPF)



M54.30-A190-71

"Regenerate Diesel Particulate Filter", the first prompt for regeneration, appears in the detailed information **(3)**.

The diesel particulate filter requires regeneration. Make sure that regeneration lockout is not in force and take the vehicle for an intercity or freeway run. Stationary regeneration initiated by means of the stationary regeneration button is also an option.

Note

Note: Under certain circumstances the vehicle's usage profile might not be enough for automatic regeneration (load request too low, interruptions too frequent).

If regeneration does not take place, a second warning message is issued, this time a yellow message reading "Full Diesel Particulate Filter". A prompt to start regeneration right away appears in the detailed information.

If regeneration does not take place despite this warning, a flashing yellow message is issued. Regeneration of the diesel particulate filter is urgently required and this is the last opportunity to start the procedure manually. Stationary regeneration must, if possible, be initiated immediately by means of the stationary regeneration button. Otherwise the diesel particulate filter can be cleaned or replaced only by a qualified specialist workshop.



M54.30-A187-71

Without regeneration, further loading of the DPF causes symbol **(2)** to show red in the display and a pop-up window with the words "Diesel Particulate Filter Full" to appear.

Stationary regeneration is no longer possible! Have the vehicle towed to the nearest workshop and have the diesel particulate filter cleaned or replaced.

Diesel particulate filter (DPF)



Warning

Risk of combustion due to overheating of the diesel particulate filter.

- ▶ Stop immediately, taking the traffic situation into account, and switch on the hazard warning flashers.
- ▶ If necessary, contact the service partner.
- ▶ Do not resume driving until the malfunction has been rectified.

Catalytic converter protection function

Catalytic converter protection function

Catalytic converter

Function

The catalytic converter is part of the exhaust system. It reduces the proportion of NOx in the exhaust gas.

In rare instances, frequent low-load operation with relatively low exhaust temperatures can result in build-up of unburned fuel in the exhaust system. This could damage the exhaust system.

Automatic regeneration

The on-board computer monitors the exhaust system and if the need arises it initiates an automatic increase in exhaust temperature to burn the unburned fuel. The time this takes depends on the temperature of the exhaust system and is between 20 and 30 minutes. This function is started only when the vehicle is stationary with the engine running. During regeneration the exhaust temperature is higher than normal, which means that the

exhaust system and the exhaust tailpipe can become very hot.

Automatic regeneration of catalytic converter

Conditions

- Parking brake is engaged.
- The transmission is in neutral position N.
- Engine idles.

Driver must make sure,

- that the vehicle is safely parked and is safely clear of:
 - pedestrians,
 - other vehicles,
 - flammable objects and dry surface materials.
- that ventilation is always adequate to remove the heat of engine operation.

Regeneration is started automatically by the on-board computer. A message to this effect appears in the display of the instrument cluster.

- ▶ Comply with the safety information at the start of this section (→ Page 51).

Cancellation of automatic regeneration

The process is aborted in response to any one of the following events:

- ▶ Select a gear.
- ▶ Release of the parking brake.
- ▶ Engine shut-down.
- ▶ Relevant system parameters no longer apply.
 - ◁ The message in the instrument cluster disappears.



Note

The on-board computer restarts regeneration when the preconditions are again satisfied.

End

When automatic regeneration has completed,

- If the message in the instrument cluster disappears,
- engine speed drops to normal idle speed.

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Switch on panoramic camera (option)	139

Description of the switches and pushbuttons

Description of the switches and push-buttons

Driver's microphone

Top section of switch pressed: This switch activates the driver's seat microphone for announcements.



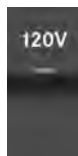
Note

After making an announcement to the passengers, switch the microphone off.



Power inverter

Top section of switch pressed: 120 V power inverter switched on.



Attendant call system (option)

Top section of switch pressed: The attendant call system is switched on.



Description of the switches and pushbuttons

Enable lavatory

Top section of button pressed: Lavatory enabled. LED shows.



Reversing camera washer (option)

Top section of button pressed: Pressing the switch with the ignition switched on activates the washer system for the reversing camera.



TC off

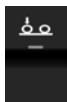
Top section of button pressed: Traction Control is deactivated at speeds below 13 mph (20 km/h). This is indicated by an indicator lamp in the instrument cluster. Pressing the pushbutton switch again resets the function, which is also reset when the ignition is switched on after being switched off.



Description of the switches and pushbuttons

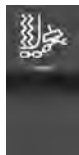
Axle-load transfer

Top section of button pressed: Axle-load transfer of the tag axle can be activated by means of the pushbutton switch in the instrument panel when the speed of the vehicle is below 18 mph (30 km/h). Activated axle-load transfer can be switched off by pressing the switch again. Exceeding 18 mph (30 km/h) also switches off activated axle-load transfer. Active axle-load transfer is indicated on the display by a symbol and in the switch by the LED.



Skid chains

Top section of button pressed: Skid chains will be activated. LED lights up.



Adjustable steering column

Top section of switch pressed: Press the switch to disengage the lock securing the steering column in position. The red LED in the switch shows.



Warning

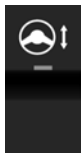
Risk of accident and injury due to distraction from the traffic situation. Making adjustments to mirrors, driver's seat and steering wheel requires some share of the driver's attention.

- ▶ Familiarize yourself with operation and handling before you make adjustments to mirrors, driver's seat and steering wheel.
- ▶ Adjust the mirrors, driver's seat and steering wheel before pulling away.
- ▶ Before pulling away, check the mirror settings while the vehicle is still stationary and adjust the mirrors as required.
- ▶ After adjusting the adjustable steering column, check that you have a clear view of all instruments and in-

Description of the switches and pushbuttons

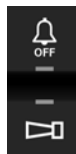
indicator lamps; correct the position of the steering column if necessary.

- After adjusting, be sure to re-engage the lock holding the steering column in position.



Reversing alarm (option) / air horn on

Top section of button pressed: Reversing alarm off. Bottom section of button pressed: Air horn active.



SEO (stop engine override)

Top section of button pressed: A special engine-protection routine is activated in response to major problems related to the power plant (inadequate oil pressure, excessive oil temperature, coolant temperature too high or coolant level too low, etc.). If one of these problems arises, the "Stop engine" and "Check engine" lights both come on and engine power is reduced. 30 seconds after the "Stop engine" light comes on the engine will be shut down (even if the vehicle is still moving)! If the SEO (stop engine override) switch is pressed within these 30 seconds, the engine can continue running for another 30 seconds.



Danger

Risk of accident due to disregard of warnings and the consequent forced shutdown of the engine, even when vehicle is being driven.

- Comply with warnings and take appropriate action in good time.

Description of the switches and pushbuttons

- If the vehicle is in a danger zone and forced shutdown of the engine is imminent, press the SEO button in good time.

Note

This process can be repeated as often as desired until the vehicle can be parked in a safe location.



Roller sunblind for driver

Top section of button pressed: The roller sunblind can be raised by means of the pushbutton switch. Bottom section of button pressed: The roller sunblind can be lowered by means of the pushbutton switch.

Note

Short-press to roll the roller sunblind quickly up or down, as appropriate (in the downward direction only approx. 60 cm from the top, for safety reasons). Press the pushbutton switch and hold it down to have the roller sunblind roll slowly up or down, as appropriate.



Roller sunblind for driver's assistant

Top section of button pressed: The roller sunblind can be raised by means of the pushbutton switch. Bottom section of button pressed: The roller sunblind can be lowered by means of the pushbutton switch.

Note

Short-press to roll the roller sunblind quickly up or down, as appropriate (in the downward direction only approx. 60 cm from the top, for safety reasons). Press the pushbutton switch and hold it down to have the roller sunblind roll slowly up or down, as appropriate.



Description of the switches and pushbuttons

Windshield heater (option) / heating for driver window + mirror heater

Top section of button pressed: The windshield heater is activated and the corresponding LED in the pushbutton switch shows. Bottom section of button pressed: The heating for the driver's window and the outside mirror is activated and the corresponding LED in the pushbutton switch shows. To switch off, again press the top or bottom section of the pushbutton switch, as appropriate. The corresponding LED goes out.

i Note

These functions can be activated only when the engine is running.

**Docking light switch**

Top section of button pressed: The outside lighting in the area of the luggage compartment on the left and right can be switched on and off.

**Auxiliary heater, timer**

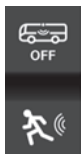
Top section of button pressed: This button calls up the timer for the auxiliary heater. Long-press the button to set the cut-in times. For a detailed description see the section headed "Activating heating, ventilation, air conditioning, auxiliary heater".



Description of the switches and pushbuttons

Anti-theft alarm system / panic alarm (option)

Top section of button pressed: The anti-theft alarm system is switched on without interior protection. Bottom section of button pressed: The "panic alarm" is triggered. The driver can trigger the panic alarm in an emergency. The alarm siren and the hazard warning flashers are activated. The closed doors and flaps are locked. The panic alarm can be canceled only by pressing the switch again.



Additional batteries (option)

Top section of button pressed: Additional batteries can also be connected for a limited time to ensure reliable starting of the engine after longer periods at standstill with the electrical consumers switched on. The additional batteries remain connected for as long as the switch is actuated.



Enabling of passenger signaling system (option)

Top section of button pressed: Use this pushbutton to disable the passenger signaling system. A corresponding symbol appears in the instrument cluster's display panel to indicate that the function has been disabled.



Description of the switches and pushbuttons

Driver's power window switch

Top section of button pressed: The driver's window can be raised by means of the pushbutton switch. Bottom section of button pressed: The driver's window can be lowered by means of the pushbutton switch.

**Warning**

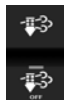
Risk of injury by crushing due to the closing action of the window.

- ▶ When the window is closing, keep all body parts clear of the aperture between the window and the frame.
- ▶ No trap-protection detection during emergency closing.



Diesel particulate filter (DPF) regeneration / regeneration block

Top section of button pressed: Start DPF regeneration. Press bottom section of button: End DPF regeneration or suppress automatic DPF regeneration.



Frequent-stop brake emergency release switch

This switch is sealed and should only be operated if there is a fault in the frequent stop brake or starting-off lock. For more information on safety and operation see the section headed "Emergency release switch for frequent-stop brake" in "Driver service and roadside repairs" (→ Page 365).

**Danger**

Risk of accident due to unwanted movement of the vehicle.

- ▶ If the emergency release switch of the frequent-stop brake is used, secure the vehicle by application of the parking brake.
- ▶ Have the fault rectified as quickly as possible by a service partner!



Cockpit controls

Description of the switches and pushbuttons

Cockpit light

Top section of button pressed: With the ignition switched on, the cockpit light can be switched on and off.



Reading lamps

Top section of button pressed: The reading lamps for the passengers are enabled. Bottom section of button pressed: The reading lamps are switched on and remain on as additional lighting for the interior.

Note

The ignition must be switched on, the economy circuit must be inactive and at least the standing/parking lights must be switched on.



Passenger compartment lighting stages I+II

Top section of button pressed: The passenger compartment lighting is switched on at stage I irrespective of the economy circuit. Bottom section of button pressed: The passenger compartment lighting is switched on at stage II, if the economy circuit is not active.

Note

If the ignition is not on, at stage II the night lighting is switched on irrespective of the economy circuit.



Description of the switches and pushbuttons

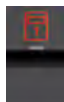
Night illumination

Top section of switch pressed: Night illumination for passenger compartment.



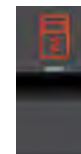
Door I

Top section of button pressed: Use this pushbutton switch to open and close the front door of the passenger compartment. The coach must be stationary for the door to open. The door-open state is indicated to the driver by an indicator lamp in the pushbutton switch and a corresponding symbol that shows in the display of the instrument cluster.



Door II (option)

Top section of button pressed: Use this pushbutton switch to open and close the rear door of the passenger compartment. The coach must be stationary for the door to open. The door-open state is indicated to the driver by an indicator lamp in the pushbutton switch and a corresponding symbol that shows in the display of the instrument cluster.



Description of the switches and pushbuttons

Emergency door lever reset

Top section of button pressed: With the ignition switched on, pressing the "Emergency door lever reset" button resets an emergency door lever actuated beforehand.



Hazard warning light for school bus (option)

Top section of button pressed: This switch activates all of the turn signal lights on both sides of the vehicle. You can use either the school bus warning flasher switch or the turn signal lever on the steering column (move up or down) to reset the school bus warning flashers.



Central locking for luggage compartment, left

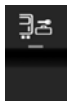
Top section of button pressed: With the ignition on, this rocker switch controls the electro-pneumatic lock mechanism that engages and releases the locks on the luggage compartment doors. The luggage compartment lighting is automatically switched on whenever the bank of luggage compartment doors on one side is unlocked and a luggage compartment door is opened. The LED in the switch serves as a status indicator for the driver. LED shows -> luggage compartment doors unlocked.



Description of the switches and pushbuttons

Central locking for luggage compartment, right

Top section of button pressed: With the ignition on, this rocker switch controls the electro-pneumatic lock mechanism that engages and releases the locks on the luggage compartment doors. The luggage compartment lighting is automatically switched on whenever the bank of luggage compartment doors on one side is unlocked and a luggage compartment door is opened. The LED in the switch serves as a status indicator for the driver. LED shows -> luggage compartment doors unlocked.

**Switch for left-hand docking light**

Top section of button pressed: The exterior lighting in the area of the left-hand luggage compartment can be switched on and off.

**Switch for right-hand docking light**

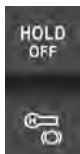
Top section of button pressed: The exterior lighting in the area of the right-hand luggage compartment can be switched on and off.



Description of the switches and pushbuttons

Hold off, frequent-stop brake

Top section of button pressed: Deactivates the HOLD function. For more information on the HOLD function see the section headed "HOLD function" in "Chassis, suspension and running gear" (→ Page 170). Bottom section of button pressed: Activates the frequent-stop brake. For more information on the frequent-stop brake see the section headed "Frequent-stop brake function" in "Chassis, suspension and running gear" (→ Page 172).



Normal level/kneeling

Top section of button pressed: The vehicle is brought to its normal level. Bottom section of button pressed: The kneeling function is activated. When the front entrance door opens the front right corner of the vehicle is lowered, making it easier for passengers to board or exit the coach.



Raise/lower vehicle

Top section of button pressed: Entire vehicle is raised. Bottom section of button pressed: Entire vehicle is lowered

Note

When a change from top to bottom or bottom to top is made, the first time the button is pressed the vehicle returns to its normal level and is not farther raised or lowered, as applicable, until the button is pressed again.



Description of the switches and pushbuttons

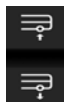
Level control system, front

Top section of button pressed: Front of vehicle is raised. Bottom section of button pressed: Front of vehicle is lowered.



Level control system, rear

Top section of button pressed: Rear of vehicle is raised. Bottom section of button pressed: Rear of vehicle is lowered.



Hazard warning flashers

This switch activates all the turn signals on both sides of the vehicle regardless of the status of the ignition lock. The turn signal repeater in the hazard warning flasher switch and the green indicator lamps in the instrument cluster flash.



Description of the switches and pushbuttons

USB jack for phone

A smartphone can be plugged into the USB jack for phone and the battery in the phone can be recharged.

Parking brake

The braking force of the parking brake (4) is applied by the mechanical force of a spring that holds the brake pads against the brake rotors. Consequently, the parking brake remains operational even if the compressed air system loses pressure and when the on-board electrical system is disconnected from its power supply. For more information on function and operation see the section headed "Frequent-stop brake function" in "Chassis, suspension and running gear", "Brakes" (→ Page 164).



M54.00-A009-71

Ignition lock

The ignition lock enables ignition stages 1 and 2 to be switched on and in stage 3 the "Engine" (→ Page 40) can be started.



M54.00-A009-71

Description of the switches and pushbuttons

Mirror adjustment switch

The mirror setting or the position of the outside mirror housing (option) can be changed, depending on the position of the adjusting knob.

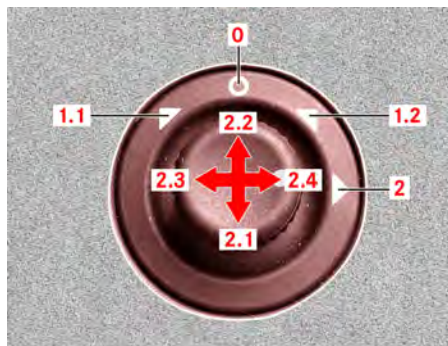
**Warning**

Risk of accident and injury due to distraction from the traffic situation. Making adjustments to mirrors, driver's seat and steering wheel requires some share of the driver's attention.

- Familiarize yourself with operation and handling before you make adjustments to mirrors, driver's seat and steering wheel.
- Adjust the mirrors, driver's seat and steering wheel before pulling away.
- Before pulling away, check the mirror settings while the vehicle is still stationary and adjust the mirrors as required.
- After adjusting the adjustable steering column, check that you have a clear view of all instruments and in-

dicator lamps; correct the position of the steering column if necessary.

- After adjusting, be sure to re-engage the lock holding the steering column in position.



M68_00-0255-71

- 0 Idle position
- 1.1 Changing mirror adjustment of left-hand outside mirror
- 1.2 Changing mirror adjustment of right-hand outside mirror
- 2 Electrically extend/retract exterior mirror housing (option)

**Property damage notice**

Do not attempt to change the position of the outside-mirror housing by hand, because this could damage the drive of the outside mirror housing.

- 2.1 Fold in left and right-hand outside mirror housing: As long as the adjustment knob is pressed in the direction of the arrow, both outside mirror housings simultaneously move in toward the windshield.
- 2.2 Fold out left and right-hand outside mirror housing: As long as the adjustment knob is pressed in the direction of the arrow, both outside mirror housings simultaneously move out into the driving position.
- 2.3 Fold in left-hand outside mirror housing: As long as the adjustment knob is pressed in the direction of the arrow, the left-hand outside mirror housing moves in toward the windshield.
- 2.4 Fold in right-hand outside mirror housing: As long as the adjustment

Description of the switches and pushbuttons

knob is pressed in the direction of the arrow, the right-hand outside mirror housing moves in toward the windshield.

Power socket

The socket's voltage rating (12 or 24 V) is stated on an adhesive label affixed below the socket.

Emergency release button for parking brake

If the compressed air system of the parking brake is damaged, the parking brake can be released by means of the emergency release unit: Press and hold down emergency release button (1) = parking brake released.



Property damage notice

This emergency release feature is intended exclusively for use when moving the vehicle from a hazardous area to a safe location. Park the vehicle safely and contact a service partner!

Description of the switches and pushbuttons



M42.20-A006-71

LED ambient lighting control panel (option)

There is a rotary switch for changing light color and adjusting the brightness of the lighting.

Allison automatic transmission control panel

For more information see → "Gearshift and transmission".



M27.00-0074-71

Description of the switches and pushbuttons

USB jack for audio

A USB stick can be plugged into the USB jack for audio for playback of the audio files saved on the stick.

Note

The Coach Infotainment Series supports the following media file formats:

MP3, WMA 9/10, AAC, WAV, AIFF, 3GPP, audio books, FLAC.

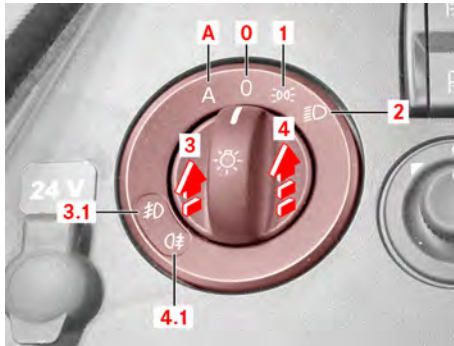
More information about the video formats and the USB stick requirements is available in the Bosch user guide (QR code).



M99.00-A009-71

Exterior lights

Rotary headlight switch



For information on changing the driving lights over from driving on right to driving on left and vice versa see the section headed "Electrics: Lighting" .

- A Automatic driving light switching/ daytime running lights switched on
- 0 Daytime running lights switched on
- 1 Parking lights
- 2 Headlights

- 3 Switch pulled out to stage 1 position: Front fog lamps. Vehicles with cornering lights: Rear fog lamp.

i Note

Vehicles with cornering lights have a single-stage light switch. In this configuration, front fog lamps cannot be switched on.

- 4 Switch pulled out to stage 2 position (only vehicles with front fog lamps): Rear fog lamp.

Automatic driving light switching

When the ignition switch is in position 1, the standing lights are automatically switched on or off in accordance with ambient brightness. With the engine running, the low-beam headlights and the license plate lighting are also switched on and off in accordance with ambient brightness.

Warning

Risk of accident When the rotary light switch is in position (A), activated driving lights can be deactivated automatically by a brief increase in ambient brightness (e.g. by the lighting in a lighted tunnel). In conditions of diffuse ambient light without sufficient dimness (e.g. fog) the driving lights are not activated automatically.

- ▶ In fog or in other conditions of diffuse ambient light in which the driving lights do not come on automatically despite the rotary switch being in position (A), quickly turn the rotary light switch to the "Driving lights" position (2).

Daytime running lights (country-specific)

As soon as the engine is running, the parking lights, low-beam headlights and the license plate lights are automatically switched on.

Exterior lights

Note

If the rotary lighting switch is set to a position other than (A) or (0), the corresponding lights are switched on.

Headlights

The low-beam or high-beam headlights (depending on the position of the combination switch), standing lights and license plate lighting are switched on when the switch is in position (2) and in darkness when the switch is in position (A).

Note

Precondition: Key is in the ignition lock, ignition "stage 2" is switched on and/or the engine is running.

Front fog lamp

In addition to the standing lights, low-beam or high-beam headlights, the front fog lamps can be switched on when the

ignition is on. Turn the rotary light switch to position (1) or (2) and pull the switch out to its first latching point (3). Indicator lamp (3.1) shows.

Note

When the rotary light switch is in position (A) or (0), the front fog lamps and the rear fog lamp cannot be switched on.

Rear fog lamp

Along with the front fog lamps, the rear fog lamp can be switched on as well. With the front fog lamps switched on, pull the rotary light switch out to its second latching point (4). Indicator lamp (4.1) shows. If the vehicle is towing a trailer or has a rear luggage box mounted, the rear fog lamp on the vehicle is switched off and the rear fog lamp of the trailer or the luggage box is switched on.

Note

If the rotary lighting switch is set to (A), the front fog lamps and the rear fog lamp cannot be switched on.

Note

The legal regulations of the respective country must be observed when using the rear fog lamp.

Cornering lamps

Special front fog lamps illuminate the area into which the vehicle is being driven during cornering. The cornering lamps only light up in darkness, at a driving speed below 25 mph (40 km/h) and with the front fog lamps switched off. The cornering lamps are switched on both by the turn signals and by turning steering wheel to the left or right.

i Note

Make sure that the engine is running and the low-beam headlights (rotary lighting switch in Position (A) or (2)) are switched on.

i Note

Switch on the turn signal. The cornering lamp on the side of the active turn signal lights up, even if the steering wheel is turned in the opposite direction following signaling.

i Note

Turn the steering wheel in the desired direction. In forward gear: The cornering lamp on the side of the vehicle closest to the inside of the curve goes on. In reverse gear: The cornering lamp on the side of the vehicle closest to the outside of the curve goes on.

i Note

To switch off the cornering lamp, switch off the turn signal or turn the steering wheel into the straight-ahead position again until the turn signal switches off.

Surround lighting

If the surround lighting function is active, in the dark the front fog lamps light up after complete unlocking or locking of the vehicle. Surround lighting helps people orientate themselves in the vicinity of the vehicle in the dark. For information on how to set the switch-off delay time see the description of the "Settings" main menu in the section headed "Cockpit controls" (→ Page 123).

i Note

The switch-on duration of the surround lighting can be 15, 30, 45, or 60 seconds. Following expiration of the switch-on duration, the surround lighting automatically switches off.

Bosch Smart Radio, operation

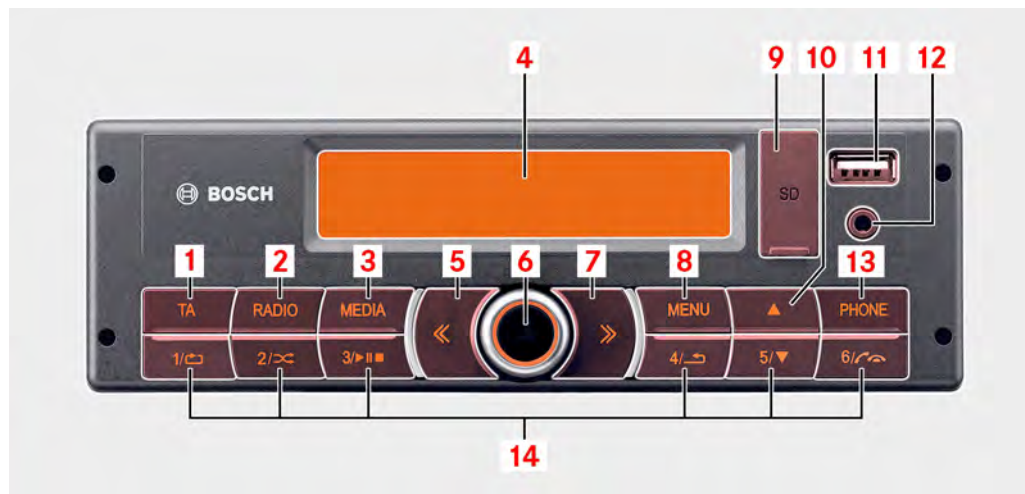
Bosch Smart Radio, operation

The Bosch Smart Radio has inputs for a range of media, so it offers numerous playback options. AM/FM radio, DAB+, Bluetooth audio streaming, USB audio, micro SD audio and AUX are the sources that can be selected for playback to the driver's cockpit.



Note

See the manufacturer's operating instructions for detailed information.



Bosch Smart Radio, operation

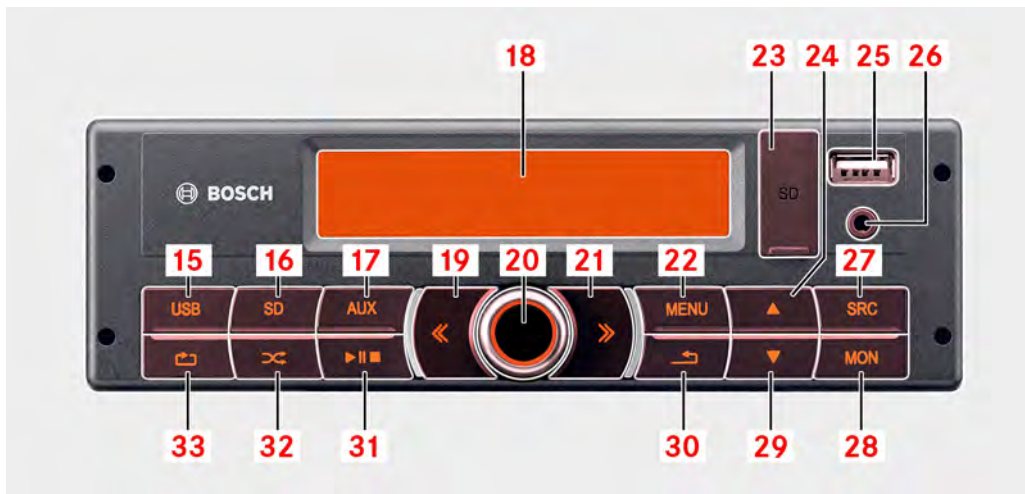
- | | | | | | |
|---|--|--|---|----------------|--|
| 1 | TA button: Switch priority for traffic announcements on/off, suppress an ongoing traffic announcement. | Mute/unmute: Long-press: Switch device off: Turn: Adjust volume. | 12 | Front AUX jack | |
| 2 | Radio button: Select the radio audio source In radio mode: Select memory bank/waveband. | 7 | >> button: In radio mode: Start station search. During media playback: Short-press: Skip forward to next track Long-press: Fast forward. | 13 | PHONE button: Open the PHONE menu. Call in progress: Transfer call between device and cellphone. |
| 3 | Media button: Select SD/USB/iPod/AUX/Bluetooth audio source. | 8 | Menu button: Short-press: Open menu of current audio source. Long-press: Open main menu In Menus: Confirm selected menu item or setting, as applicable. | 14 | Buttons 1 - 6: In radio mode: Short-press: Select a station saved to memory. Long-press: Save this station to memory. During media playback: Track repeat on/off (1), random playback on/off (2), interrupt/resume playback (3). In menus: Short-press: Back. Long-press: Exit menu (4). Select menu item, change setting (5). Phone calls: Short-press: Accept/end call. Long-press: Reject call (6). |
| 4 | Display | 9 | SD card slot | | |
| 5 | << button: In radio mode: Start station search. During media playback: Short-press: Skip back to preceding track Long-press: Rewind. | 10 | ↑ button: Change display content. In menus: Select menu item, change setting. | | |
| 6 | ON/OFF button: In standby: Switch device on. In operation: Short-press: | 11 | USB port | | |

Bosch Coach Smart Panel, operation

The Bosch Coach Smart Panel is the interface for control of the audio system for the passenger compartment. Independently of the settings for the driver's cockpit, controlled by the Bosch Smart Radio, other audio sources can be selected for playback and the volume can be adjusted separately. The Smart Panel enables the source selected for the driver (AM/FM, DAB+, Bluetooth audio streaming, USB audio, micro SD audio, AUX) can be activated for the passenger compartment as well, or some other source from the Smart Panel (USB video, micro SD video, AUX) can be selected.

 Note

See the manufacturer's operating instructions for detailed information.



Bosch Coach Smart Panel, operation

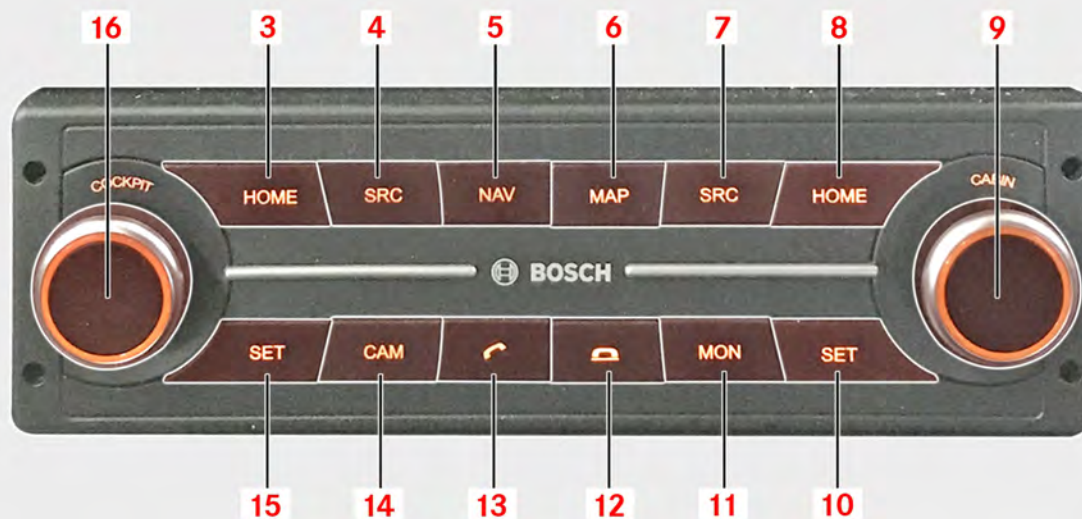
- | | | |
|--|--|---|
| 15 USB button: Select USB source | Short-press: Skip forward to next track Long-press: Fast forward. | 27 SRC button: Select front AUX/rear AUX/USB/SD/tandem radio/tandem media source. |
| 16 SD button: Select SD source | 22 Menu button: Short-press: Open menu of current audio source. Long-press: Open main menu In Menus: Confirm selected menu item or setting, as applicable. | 28 MON button: Activate/deactivate monitors. |
| 17 AUX button: Select AUX source | | 29 ↓ button: Change display content. In menus: Select menu item, change setting. |
| 18 Display | 23 SD card slot | 30 Back button: In menus: Short-press: Back. Long-press: Exit menu. |
| 19 ⏮ button: In radio mode: Start station search. During media playback: Short-press: Skip back to preceding track Long-press: Rewind. | 24 ↑ button: Change display content. In menus: Select menu item, change setting. | 31 Play/pause/stop button: Pause/resume playback. |
| 20 ON/OFF button: In standby: Switch device on. In operation: Short-press: Mute/unmute Long-press: Switch device off: Turn: Adjust volume. | 25 USB port | 32 Random playback button: Random playback on/off. |
| 21 ⏭ button: In radio mode: Start station search. During media playback: | 26 Front AUX jack | |

Bosch Coach Smart Panel, operation

33 Repeat button: Track repeat on/off.

Coach Infotainment Series (CIS) control unit (ControlPanel CM-X 19)

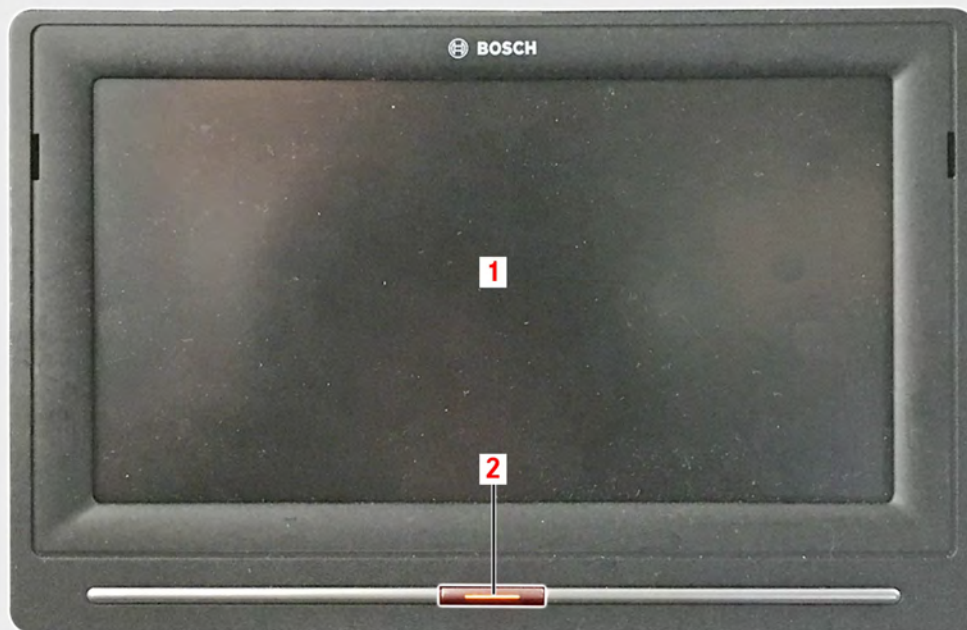
Coach Infotainment Series (CIS) control unit (ControlPanel CM-X 19)



Coach Infotainment Series (CIS) control unit (ControlPanel CM-X 19)

3	HOME <i>Open the Cockpit Home menu</i>	Turn: <i>Set volume</i>	Short-press without incoming call/call in progress: <i>Start voice control</i>
4	SRC <i>Open the menu for the media and radio sources available in the cockpit</i>	Press: <i>Mute / unmute device in the passenger compartment</i>	Long-press without incoming call/call in progress: <i>Start voice control of the paired cellphone / smartphone</i>
5	NAV <i>Open the "Destinations" menu or toggle between "Destinations" menu and map view</i>	10 SET When the Cabin Home menu is displayed: <i>Open "System settings" menu</i>	14 CAM <i>Open the Camera menu</i>
6	MAP <i>Show/hide map view on the monitors in the passenger compartment</i>	When the current cabin source is displayed: <i>Show Settings menu for the current cabin source</i>	15 SET When the Cockpit Home menu is displayed: <i>Open "System settings" menu</i>
7	SRC <i>Open the menu for the media and radio sources available in the passenger compartment</i>	11 MON <i>Switch monitors in the cabin on/off or automatic control</i>	When the current cockpit source is displayed: <i>Show Settings menu for the current cockpit source</i>
8	HOME <i>Open the Cabin Home menu for the passenger compartment</i>	12 Hang-up button Incoming call: <i>Reject call</i>	16 Cockpit volume control Turn: <i>Set volume</i>
9	CABIN volume control for passenger compartment	Call in progress: <i>End call</i>	Press: <i>Mute / unmute device in the cockpit</i>
		13 Call-accept button Short-press with incoming call: <i>Accept incoming call</i>	

Coach Infotainment Series (CIS) head unit (Center CM-C19)



Coach Infotainment Series (CIS) head unit (Center CM-C19)

- 1 Display



Note

The display is touch-sensitive.

- 2 ON/OFF button

Briefly actuate when device is switched off:

Switch on device

Briefly actuate when device is switched on:

Mute / unmute audio playback in the active range

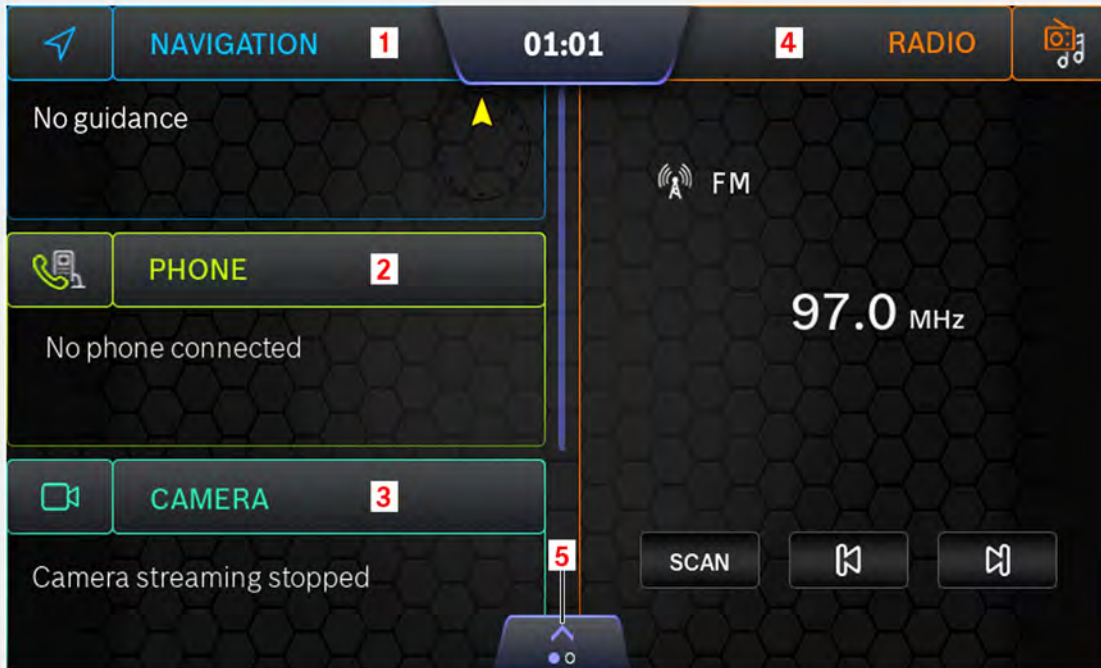
Press: (3 sec.)

Return to Start menü of the active area

Long-press: (5 sec.)

Switch off device

Coach Infotainment Series (CIS)
Home menu, cockpit

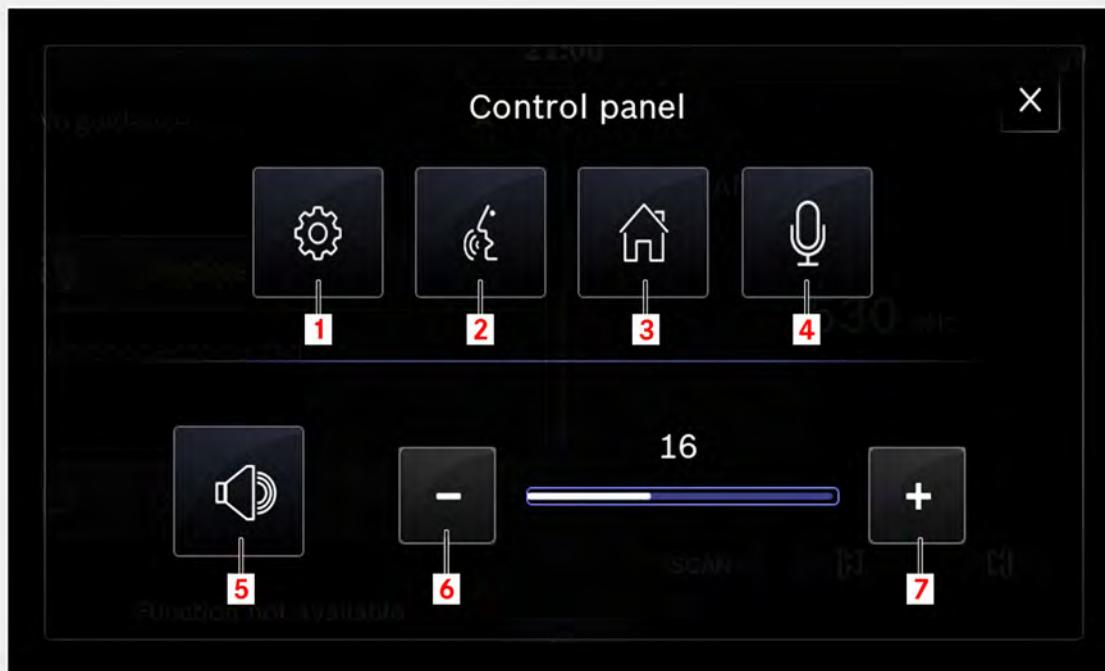


Coach Infotainment Series (CIS) head unit (Center CM-C19)

Home menu, cockpit

- | | |
|---|---|
| <p>1 Navigation tile
<i>Navigation destinations can be entered and the map can be called up with this menu item. It also shows the current road or the next road when a turn-off is approaching.</i></p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"><p> Note
Available for the cockpit only.</p></div> <p>2 Telephone tile
<i>A telephone can be paired with this menu item. It also shows the telephone status and missed calls.</i>
If an on-board telephone is installed the tile can be used to switch to the on-board telephone so that other call stations can be called.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"><p> Note
Available for the cockpit only.</p></div> | <p>3 Camera tile (equipment-dependent)
<i>Various cameras can be activated and their images displayed with this menu item.</i></p> <p>4 Media tile
<i>Various media, such as the radio for example, can be activated and configured with this menu item.</i></p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"><p> Note
Settings valid for the cockpit only.</p></div> <p>5 Cockpit menu
<i>Additional settings for the cockpit can be made here</i></p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"><p> Note
Settings valid for the cockpit only.</p></div> |
|---|---|

Coach Infotainment Series (CIS)
menu, cockpit



Coach Infotainment Series (CIS) head unit (Center CM-C19)

Cockpit menu

- 1 System settings tile
System parameters can be set with this menu item.

 **Note**
Certain settings are valid for the cockpit only.
- 2 Voice control tile
Voice control can be activated and deactivated with this tile.

 **Note**
Available for the cockpit only.
- 3 Home menu tile, cockpit
Jump back to the Home menu for the cockpit with this tile.
- 4 Microphone tile
The microphone can be activated for an announcement or deactivated with this tile.



Note

Settings valid for the cockpit only.

- 5 Mute tile
Audio can be muted and unmuted with this tile.



Note

Settings valid for the cockpit only.

- 6 Reduce volume tile
These tiles are for adjusting volume.



Note

Settings valid for the cockpit only.

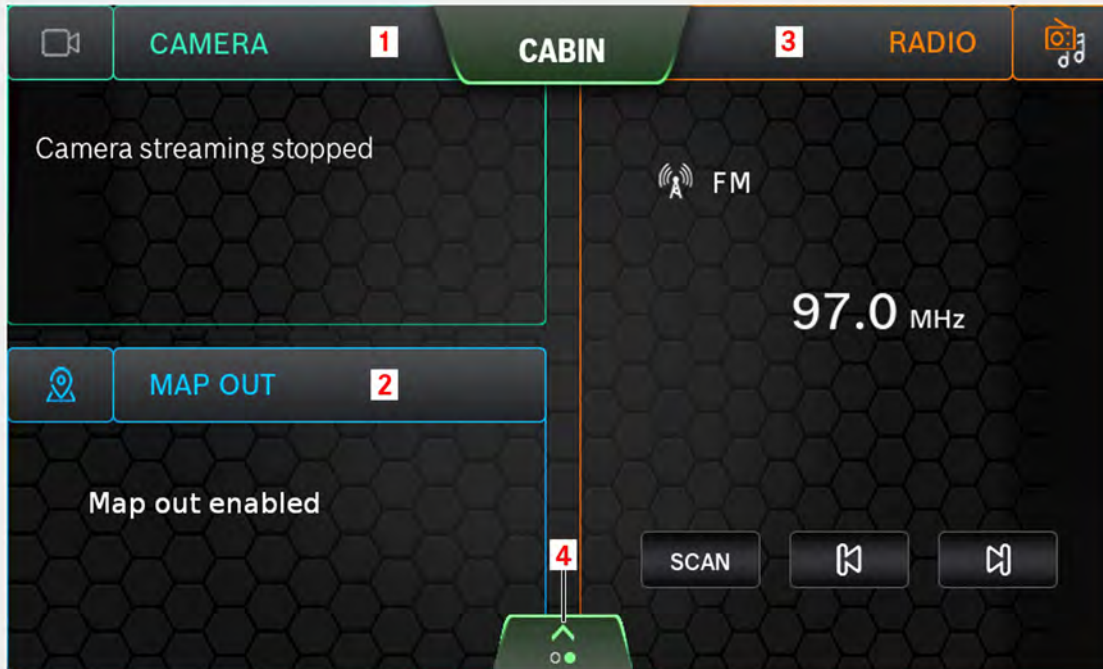
- 7 Increase volume tile
These tiles are for adjusting volume.



Note

Settings valid for the cockpit only.

Coach Infotainment Series (CIS)
Home menu, passenger compartment



Coach Infotainment Series (CIS) head unit (Center CM-C19)

Home menu, passenger compartment (cabin)

- 1 Camera tile (equipment-dependent)
Various cameras can be activated and their images displayed on the monitors with this menu item.

- 2 Map tile
Navigation destinations and the map can be displayed on the monitors with this menu item.



Note

Available for the passenger compartment only.

- 3 Media tile
Various media, such as the radio for example, can be activated and configured with this menu item.



Note

Settings valid for the passenger compartment only.

4

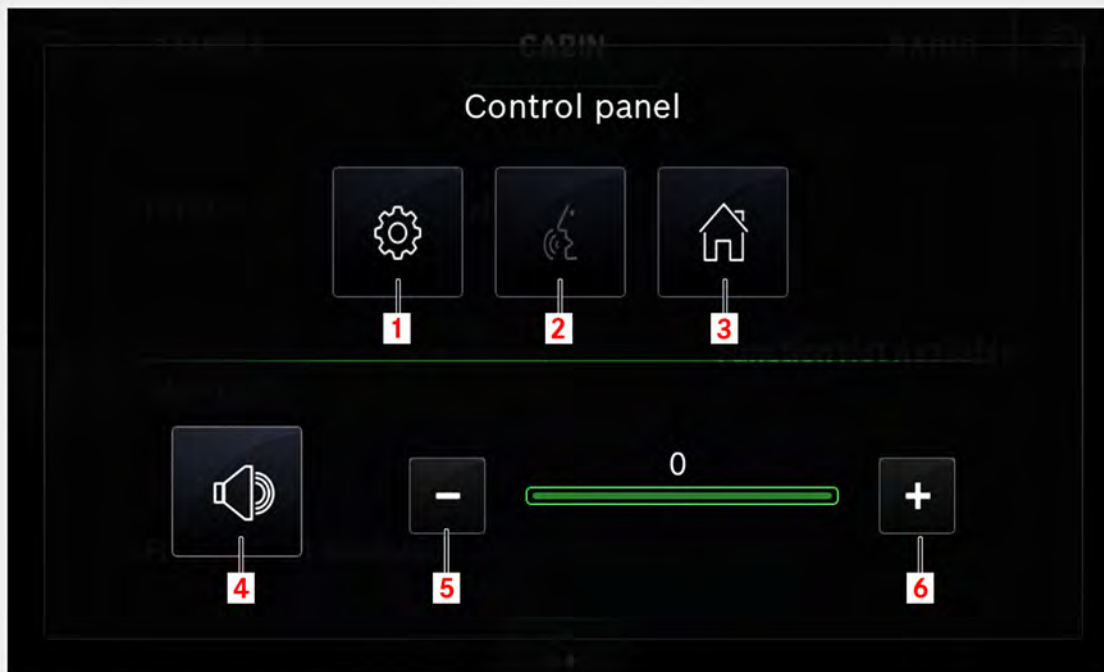
Passenger compartment menu
Additional settings for the passenger compartment can be made here



Note

Settings valid for the passenger compartment only.

Coach Infotainment Series (CIS)
menu, passenger compartment



Coach Infotainment Series (CIS) head unit (Center CM-C19)

Passenger compartment menu

- 1 System settings tile
System parameters can be set with this menu item.



Note

Certain settings are valid for the passenger compartment only.

- 2 Available for the cockpit only.
- 3 Home menu tile, passenger compartment
Jump back to the Home menu, passenger compartment with this tile.

- 4 Mute tile
Audio can be muted and unmuted with this tile.



Note

Settings valid for the passenger compartment only.

- 5 Reduce volume tile
These tiles are for adjusting volume.



Note

Settings valid for the passenger compartment only.

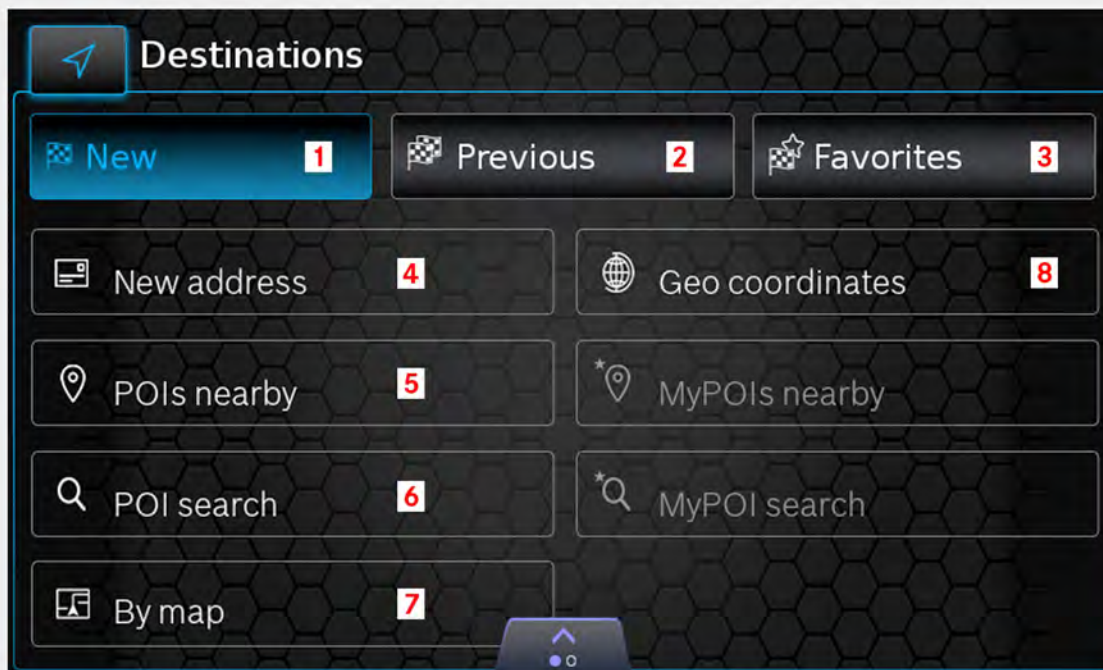
- 6 Increase volume tile
These tiles are for adjusting volume.



Note

Settings valid for the passenger compartment only.

Coach Infotainment Series (CIS) navigation



Coach Infotainment Series (CIS) head unit (Center CM-C19)

New destination

- 1

'New' tab

New destinations can be entered with this menu item.
- 2

'Previous' tab

Previous destinations can be selected with this menu item.
- 3

'Favorites' tab

Navigation destinations saved as favorites can be selected with this menu item.
- 4

'New address' tab

A new navigation address can be entered with this menu item.

 Note

Address components are entered in the following sequence:

1. Country
2. Place/zip code
3. Road/street
4. Intersection or building number

- 5

'POIs nearby' tab

Points of interest in the vicinity can be searched for and selected with this menu item.



Note

Up to 100 points of interest within 93 miles (150 km) of the current location are listed.

- 6

'POI search' tab

A point of interest in a specific place / zip code can be searched for and selected with this menu item.
- 7

'By map' tab

A destination can be selected on the map with this menu item.



Note

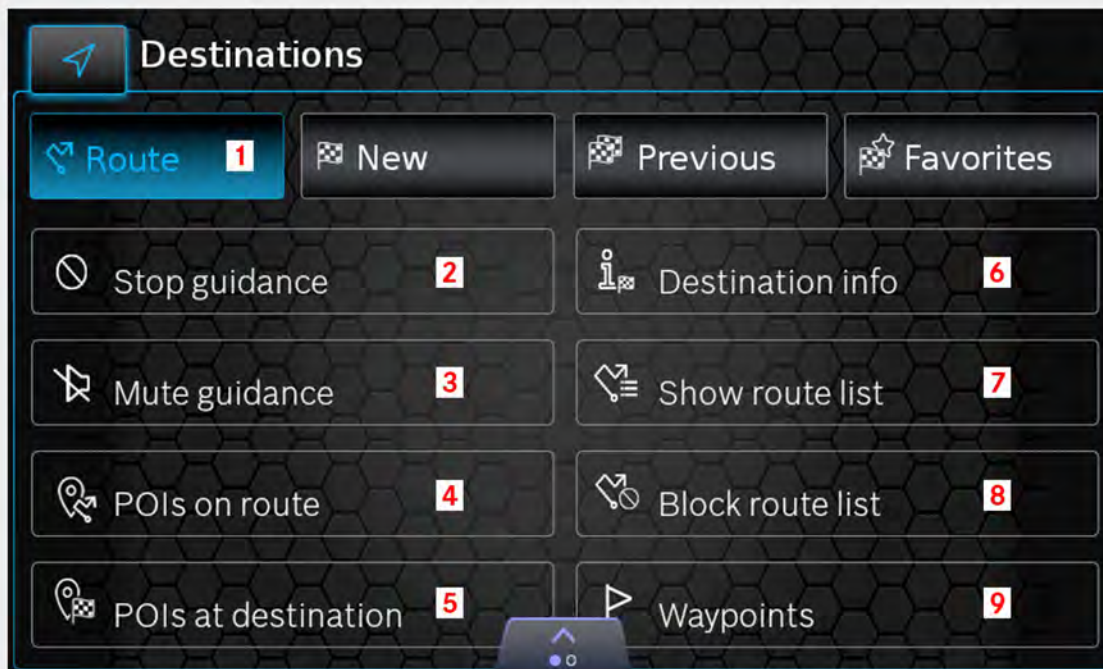
Scroll the map until the destination you want to select is underneath the destination cursor.

- 8

'GEO coordinates' tab

A destination can be searched for by GEO coordinates and selected with this menu item.

Coach Infotainment Series (CIS) navigation



Coach Infotainment Series (CIS) head unit (Center CM-C19)

Current route

- 1 'Route' tab
The current destination can be edited with this menu item.
- 2 'Stop guidance' tab
Guidance to the current destination can be ended with this menu item.
- 3 'Mute guidance' tab
Guidance to the current destination can be muted with this menu item.
- 4 'POIs on route' tab
Points of interest along the current route can be searched for and selected with this menu item.
- 5 'POIs at destination' tab
Points of interest at the current destination can be searched for and selected with this menu item.

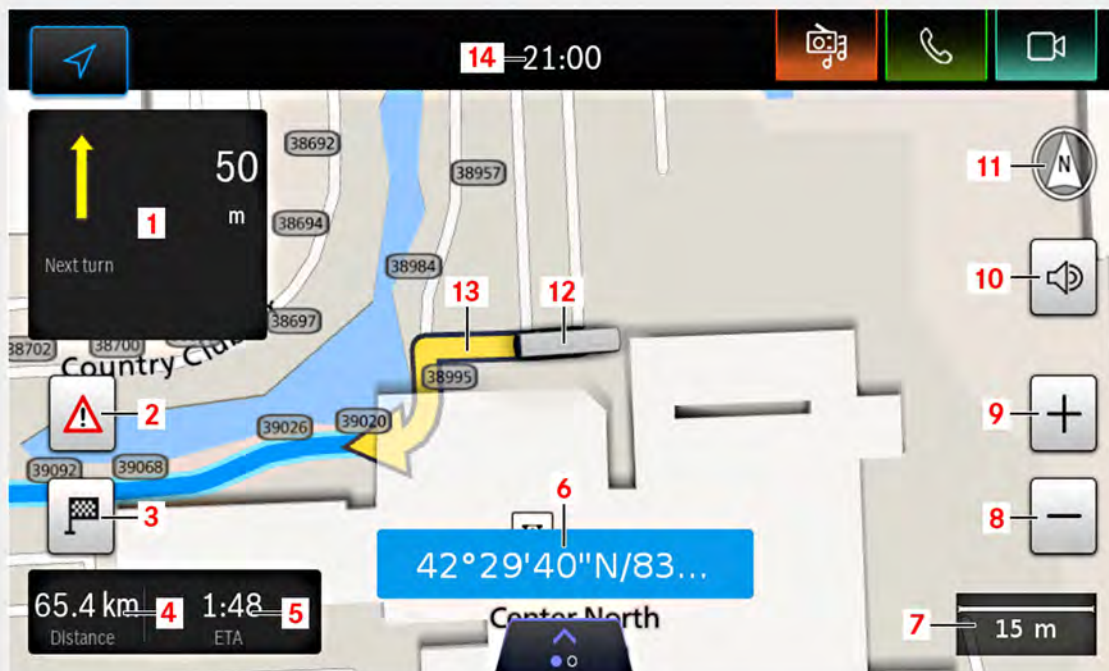
- 6 'Destination info' tab
The current destination can be viewed in detail with this menu item.
- 7 'Show route list' tab
The individual sections of the route are shown with this menu item.
- 8 'Block route list' tab
Individual sections of the current route can be blocked with this menu item.

i Note
A double-tap on an entry in the list blocks the corresponding section of the route.

i Note
Individual sections or multiple consecutive sections can be blocked.

- 9 'Waypoints' tab
The waypoints and the destination of the current route are shown with this menu item.

Coach Infotainment Series (CIS) navigation



Coach Infotainment Series (CIS) head unit (Center CM-C19)

Map view

- 1 Distance to next driving maneuver with visual navigation recommendations



Note

The driving maneuver is shown in symbolic form as you approach the location. The name of the next road or street appears as you approach the location.

- 2 Show available TMC messages
- 3 Toggle between route overview map and map showing the vehicle's immediate surroundings
- 4 Distance to destination
- 5 Estimated time of arrival or estimated countdown time to arrival
- 6 GEO-coordinates or name of the current street/road
- 7 Current map scale
- 8 Zoom out
- 9 Zoom in

- 10 Mute voice directions
- 11 Compass
- 12 Vehicle position
- 13 Current route
- 14 Current time

Pairing cellphone

A Bluetooth® connection between cellphone and infotainment system is a prerequisite for using the handsfree function for telephone calls and for media playback from the cellphone.



Note

The infotainment system's Bluetooth® function must be active.

Whenever they introduce new software versions, cellphone manufacturers also influence the functions supported by their products, so there is no blanket guarantee that handsfree or media playback via a Bluetooth® connection will work correctly with an older software version of a given cellphone or will con-

tinue to work correctly with an updated version of the software.

Establishing Bluetooth® connection between cellphone and infotainment system in the vehicle



M82.65-A001-71

- Tap the **'Telephone'** button in the Cockpit Home menu (see section headed "Coach Infotainment Series CIS") to open the Bluetooth® menu.

Coach Infotainment Series (CIS) head unit (Center CM-C19)



M82.65-A002-71

- Tap the '**Add device**' button to start establishment of a Bluetooth® connection.

i Note

If the cellphone was connected to the infotainment system in the past, tapping the corresponding cellphone name in the list re-establishes the Bluetooth® connection.

- In the Bluetooth® menu of the cellphone, start the establishment of a connection with the '**INF4CV**' device

and follow the further instructions to establish the Bluetooth® connection.

i Note

When a cellphone is being connected to the Infotainment System for the first time, the vehicle system PIN must be compared and confirmed on the cellphone after the Bluetooth® connection is established successfully. The vehicle system PIN appears in the display of the infotainment system.



M82.65-A003-71

- As soon as the Bluetooth® connection between cellphone and infotainment system is established, the name of the cellphone is highlighted in the list.

i Note

The symbols beside the name of the connected cellphone show the options supported by the Bluetooth® connection. Telephony or media playback.

Coach Infotainment Series (CIS) head unit (Center CM-C19)

For more information see the separate operating instructions for the Coach Infotainment Series (CIS).



M99.00-A010-71

Bosch website for manuals, data sheets, product information and map updates

Current manuals, data sheets, product information and map updates for the Bosch products installed in the vehicle are posted here.

Bosch manuals, data sheets, product information and map updates:

<https://bosch-professional-systems.com/en/>

Bosch Coach Infotainment Series Operator's Manual

The operator's manual for the installed Bosch infotainment system (CIS) is posted here.

Bosch Coach Infotainment Series

Operator's Manual:

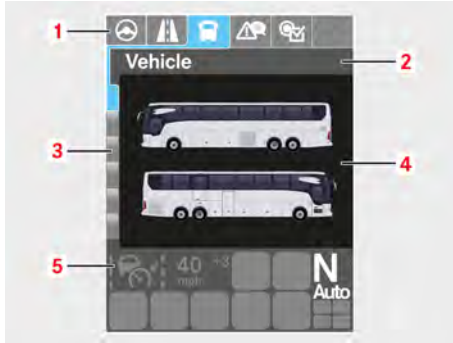
<https://busdoc.i.daimler.com/public/pa/bae>

360° camera monitor (option)

Monitor for viewing the image viewed by the 360° camera, see 360° camera (→ Page 247).

Display overview

Description of the display



M54.30-A208-71

The display is a status display unit that displays information on operating status and malfunctions. It can also be used to access information from the on-board diagnosis function.

It is active when ignition stage 1 or stage 2 has been switched on.

The display consists of five basic elements:

- **(1):** Display field for main menus

Display field **(1)** shows the main menus. The active main menu shows light blue.

- **(2):** Title bar
Title bar **(2)** shows the name of the active menu window.
- **(3):** Display field for submenus
Display field **(3)** shows the submenus. The active submenu shows light blue.
- **(4):** Display area
In display area **(4)**, the on-board computer shows the menu window or the event window. An event window opens automatically and contains a message or information relating to a malfunction. If you can acknowledge the event window by pressing the "OK" button on the steering wheel, the event window disappears.
- **(5):** Status area
In addition to the event window, an indicator lamp in status area **(5)** of the instrument cluster can show.

Menu control for display

Display sequence during starting



M83.00-0968-71

After the ignition switch is switched on, the standby screen with the brand logo appears in the display. If a fault already occurs now, a corresponding fault message is displayed. Otherwise it is checked whether any notices of events are active. If this is the case, corresponding pop-up windows are opened and the driver must acknowledge the event messages in the order of their urgency. Then it is checked whether the reservoir pressure for the various compressed-air circuits is OK. If this

Display overview

is the case, the bus graphic is shown in the "Vehicle" main menu. If air pressure is too low, which is not uncommon after the vehicle has been out of service for a lengthy period, a pop-up window opens showing the air pressures in the various compressed-air circuits. The pop-up window is automatically closed when the necessary operating pressure is reached. If the driver acknowledges the pop-up window prematurely by pressing the buttons on the steering wheel, another pop-up window opens showing a red message again notifying the driver of insufficient air pressure. If the necessary operating pressure is now achieved, or if the driver acknowledges the red message, the bus graphic is displayed in the "Operational messages" main menu.

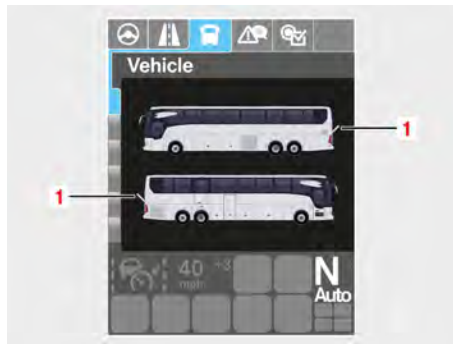
i Note

The operating pressure can be monitored by navigating to main menu 3 "Vehicle" and selecting submenu 2 "Compressed Air".

Changing menus

The driver can change menus manually with the steering wheel buttons. To keep the driver supplied with all the information needed when the vehicle is stationary or on the move even without manual changes from menu to menu, the system toggles automatically between the "Vehicle" and "Assistance" main menus when certain conditions are satisfied.

Display when stopped



M54.30-A218-71

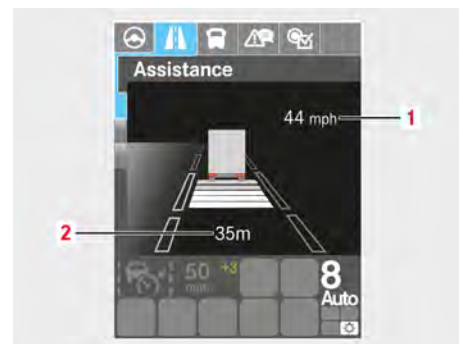
The "Vehicle" main menu appears if doors or flaps are open and also directly after

the ignition is switched on. If the driver manually changes menus, no automatic change to the "Assistance" menu takes place while the vehicle is on the move.

i Note

In slow maneuvering, even with a luggage compartment door open, the display continues to show the "Vehicle" main menu.

Display while driving



M54.30-A215-71

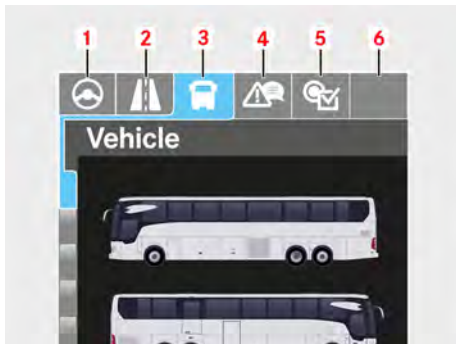
With all doors and flaps closed and the vehicle in motion, the view changes au-

tomatically to the "Assistance" submenu.
As soon as a door is opened, the view
changes to the "Vehicle" main menu.

Display menu structure

Display menu structure

Main menus in display



M54.30-A209-71

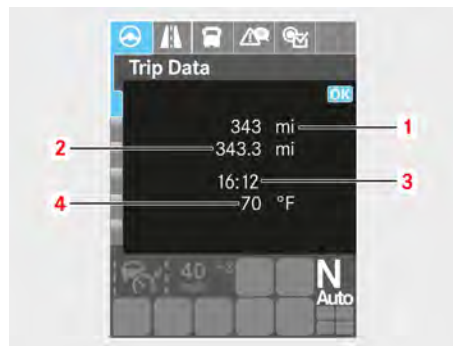
The display shows 6 main menus in the title bar and each main menu has a different number of submenus. Active main menu and submenu show light blue.

- (1): Trip Data
- (2): Assistance
- (3): Vehicle
- (4): Messages
- (6): Settings

1st main menu "Trip Data"

The "Trip Data" main menu shows all available information on speed, time of day, driving times and break times, distances covered and outside temperature.

"Trip Data" submenu



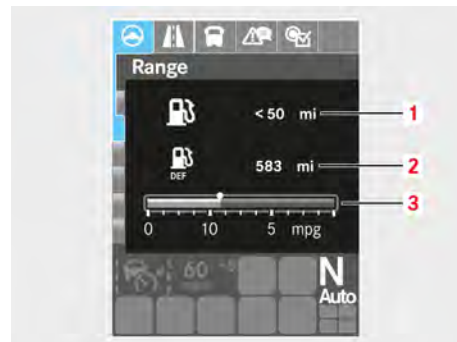
M54.30-A210-71

The "Trip Data" submenu shows all available information on total distance logged by the vehicle (1), trip distance recorded (2), time of day (3) and outside temperature (4).

i Note

To reset the trip distance recorder, press the "OK" button in the steering wheel and confirm the prompt in the next window by selecting "Yes".

"Range" submenu



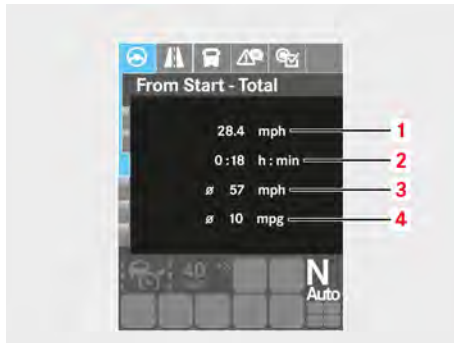
M54.30-A211-71

The "Range" submenu shows all available information on range that can be covered with the supplies of fuel (1) and DEF (2), and current fuel consumption (3).

Note

Fuel consumption **(3)** is shown in mpg or in gal/h (when vehicle is stationary).

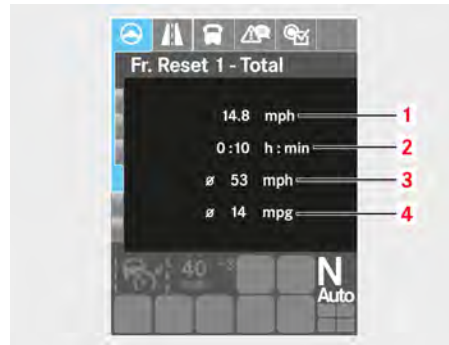
"From Start - Total" submenu



M54.30-A212-71

The "From Start - Total" submenu shows all available information from starting on distance covered **(1)**, time **(2)**, average speed **(3)** and average consumption **(4)**.

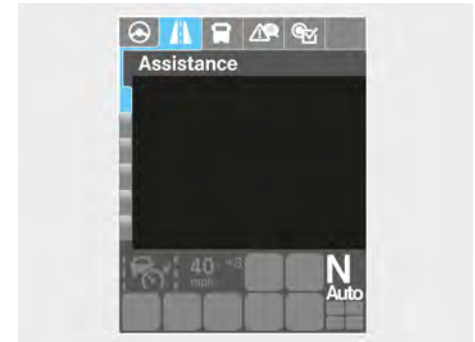
"Fr. Reset 1 + 2 - Total" submenus



M54.30-A213-71

The "Fr. Reset 1 - Total" and "Fr. Reset 2 - Total" submenus show all available information since the last reset of this menu on distance covered **(1)**, time **(2)**, average speed **(3)** and average consumption **(4)**.

2nd main menu "Assistance"

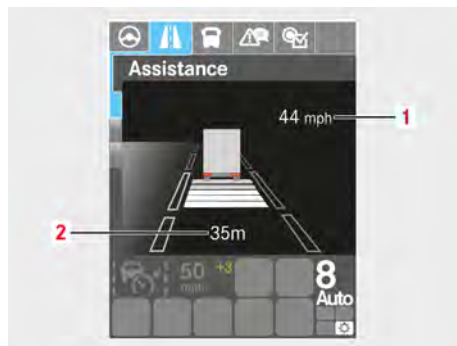


M54.30-A214-71

In the main menu "Assistance", all available driving systems are displayed.

Display menu structure

"Assistance" submenu



M54.30-A215-71

The "Assistance" submenu shows all available information on distance from vehicle ahead (1), speed of the vehicle ahead (2) and on keeping in lane.

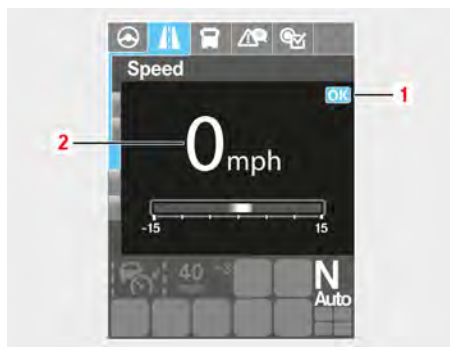
Note

If your vehicle closes up on the vehicle ahead, the color in which the vehicle ahead is shown changes from white to yellow and then to red.

If your vehicle gets closer to a lane marking, the color of the lane marking

changes from white to yellow and then to red.

"Speed" submenu

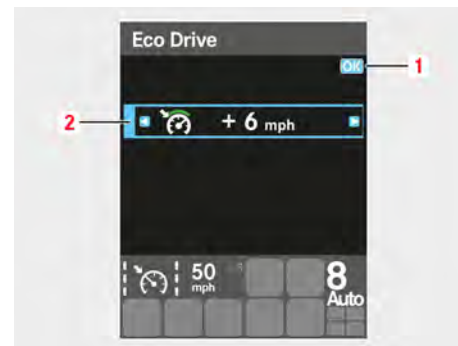


M54.30-A216-71

The "Speed" submenu shows the current speed (2).

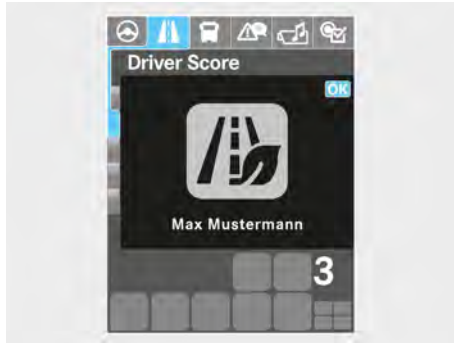
Tapping "OK" (1) opens the "Eco Drive" menu.

"Eco Drive" submenu



M54.30-A217-71

The "Eco Drive" submenu can show the top and bottom limits for speed tolerance, see the section headed "Eco Drive tolerance" in the chapter "Eco Drive tolerance".

"Driver Score" submenu (option)

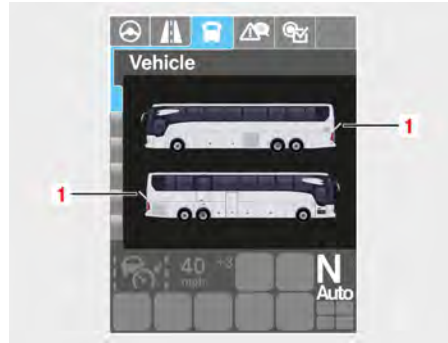
M54.30-A003-71

The "Driver Score" submenu shows the points scores for the style of driving.

- ▶ Tap "OK" to view the various criteria. For details see the section headed "Driver Score" in "Driver assistance systems".

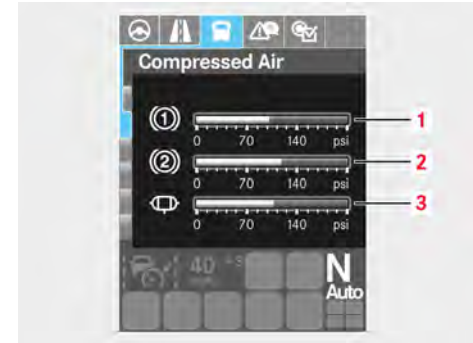
3rd main menu "Vehicle"

The "Vehicle" main menu shows all available information on flaps and hatches, doors, operating pressures, temperatures and voltages.

"Vehicle" submenu

M54.30-A218-71

The "Vehicle" submenu shows whether doors, flaps and roof hatches are open or closed. In the screenshot shown here, engine compartment flap (1) is open.

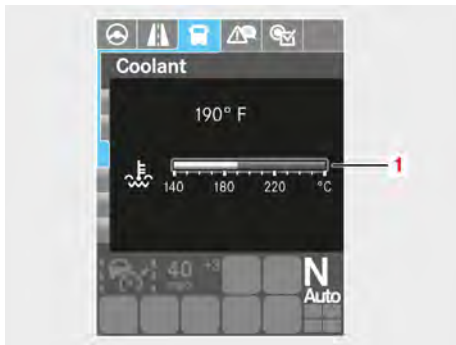
"Compressed Air" submenu

M54.30-A219-71

The "Compressed Air" submenu shows the air pressures for brake circuit 1 (1), brake circuit 2 (2) and for release of the brake in spring-loaded brake circuit (3).

Display menu structure

"Coolant" submenu



M54.30-A220-71

The "Coolant" submenu shows the current coolant temperature (1).

"Engine" submenu



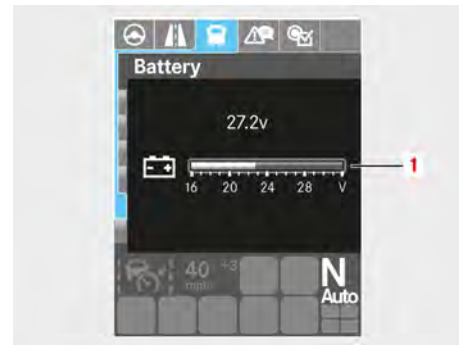
M54.30-A221-71

The "Engine" submenu shows engine oil level (1) and engine operating hours (2).

Note

The engine oil level can be shown only when the engine is stopped.

"Battery" submenu



M54.30-A222-71

The "Battery" submenu shows the current battery voltage (1).

"Suspension" submenu

M54.30-A223-71

The "Tire pressure" submenu shows the tire pressures for all wheels. The specified pressures, the temperature in the tires and the battery state of charge of each of the sensors can also be called up.

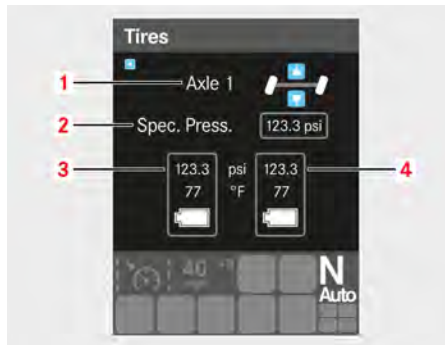
Note

If pressure is too low or temperature too high in a tire, the color in which the tire is shown on the display changes from white to yellow or red.

On account of tolerances and temperature compensation, tires can show in dif-

ferent colors (white, yellow or red) even though they are inflated to the same pressure.

- To view specified pressure, temperature and battery state of charge, tap "OK" button (1).



M54.30-A224-71

(1): Readings for axle 1.

(2): Specified pressure.

(3): Actual tire pressure, tire temperature and battery state of charge of the sensor in the left front wheel.

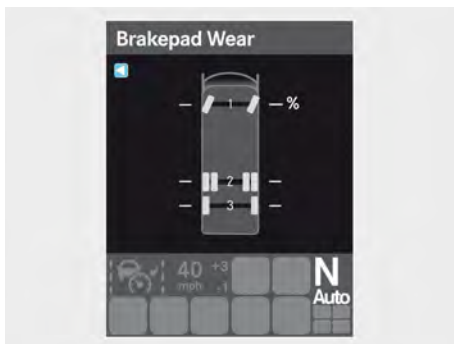
(4): Actual tire pressure, tire temperature and battery state of charge of the sensor in the right front wheel.

Note

If the battery symbol is displayed as shown here, the battery's remaining life is more than 24 months. If the battery symbol shows only half full, the battery's remaining life is between 7 and 24 months. If the battery symbol is displayed as empty, the battery's remaining life is less than 7 months. This is accompanied by a service message: "Battery in wheel sensor weak".

"Brakepad Wear" submenu

Display menu structure



M54.30-A247-71

The "Brakepad Wear" submenu shows the wear condition of the brake pads for all wheels.

4th main menu "Messages"

The "Messages" main menu shows all operational messages and fault messages and events. Diagnostics information and servicing-related information can also be called up.

"Operational Messages" submenu



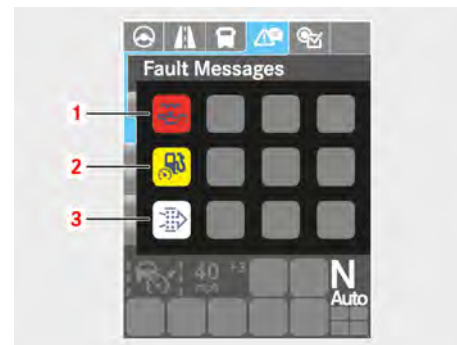
M54.30-A225-71

The "Operational Messages" submenu shows all active operational messages, for example air recirculation mode (1).

Note

For information on operational messages and warning messages see the section headed "Status messages, function messages and warnings" in "Driver service and roadside repairs".

"Fault Messages" submenu

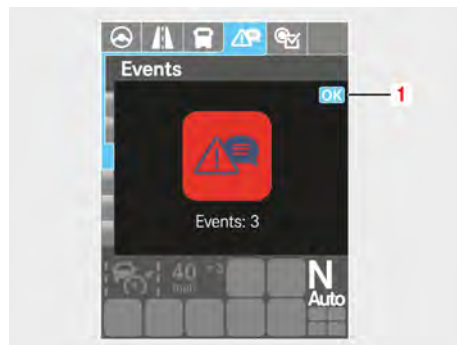


M54.30-A226-71

The "Fault Messages" submenu shows all possible fault messages, for example: "Oil level too high" (1), "Fuel level indicator malfunctioning" (2), "Air filter clogged" (3).

Note

Red messages, yellow messages and maintenance messages (gray) are displayed.

"Events" submenu

M54.30-A227-71

The "Events" submenu shows all events saved to memory.

i Note

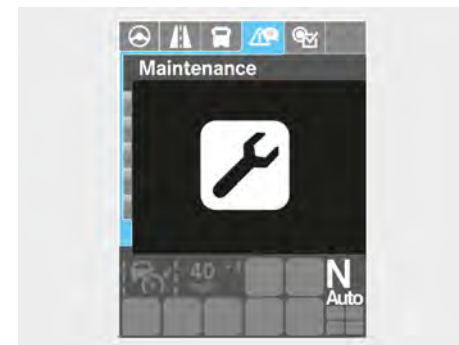
Red messages, yellow messages and maintenance messages (gray) are displayed.

- To view individual events, tap "OK" button (1).

"Diagnosis" submenu

M54.30-A228-71

In the "Diagnosis" submenu, tapping "OK" button (1) calls up fault codes, if faults have been saved in memory, and the corresponding instructions for dealing appropriately with the faults, see the section headed "Activation and evaluation of on-board diagnosis (OBD)" in "Driver service and roadside repairs".

"Maintenance" submenu

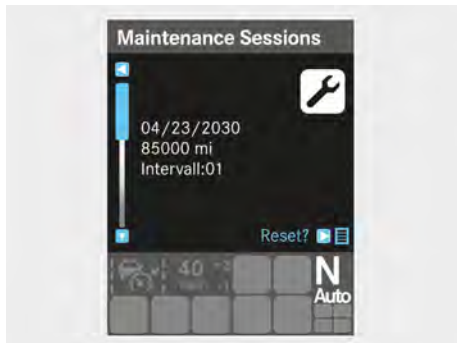
M54.30-A229-71

The "Maintenance" submenu is for calling up information about the s next upcoming maintenance for the vehicle and the brakes.

14 days before the calculated service due date a pop-up outlining the necessary maintenance jobs appears.

A warning message is issued if the service due date is allowed to pass.

Display menu structure



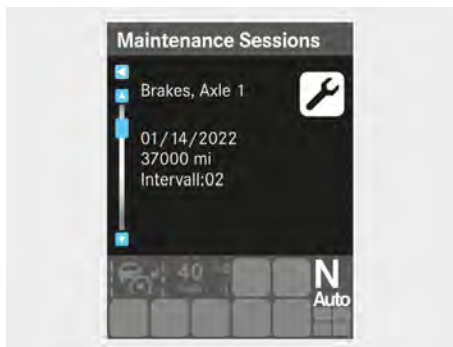
M54.30-A245-71

- Press the "OK" button on the steering wheel to see the predicted date and odometer reading for the next maintenance.

Note

The vehicle has to log 50 operating hours before a forecast for the first maintenance can be made. Until then, the input window shows "-.-.-", indicating that a forecast is not yet possible.

- To view the maintenance intervals for the brakes, use the "↓" and "↑" buttons on the steering wheel.



M54.30-A246-71

The axles are shown in the sequence in which maintenance is required.

Note

In order for the valid values to be shown, all brakes must be released for at least six seconds.

Danger

Risk of accident and injury due to unwanted movement of the vehicle.

- If all brakes are going to be released so that the maintenance intervals can be viewed, secure the vehicle with wheel chocks so that it cannot roll away and turn the steered wheels in toward the curb.

Reset maintenance

When maintenance has been carried out, the corresponding readings can be reset.

Note

A reset increases the interval counter by 1; this counter cannot be reset.

- Use the "↑" and "↓" buttons to navigate to the appropriate maintenance point.

If a reset is possible, "Reset?" appears in the input window.

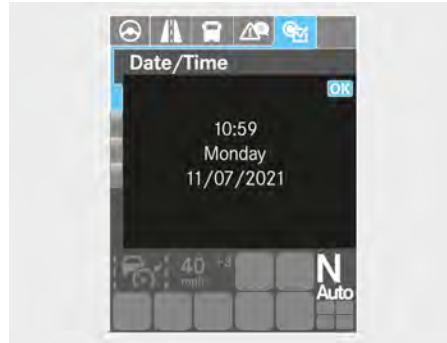
- Press the "→" button on the steering wheel.

- ◁ The input window shows "No/Yes".
- Use the buttons on the steering wheel to select "Yes" and then use "OK" to confirm.
- ◁ The maintenance interval is reset and recalculated on the basis of the current data.

6th main menu "Settings"

The "Settings" main menu is for setting the clock, the language and parameters of the driver assistance systems (bus settings and basic settings).

"Date/Time" submenu



M54.30-A230-71

The "Date/Time" submenu shows the current date and the time of day. The setting is linked to the digital recording device, on which the time of day can be set.

"Settings Menu" submenu

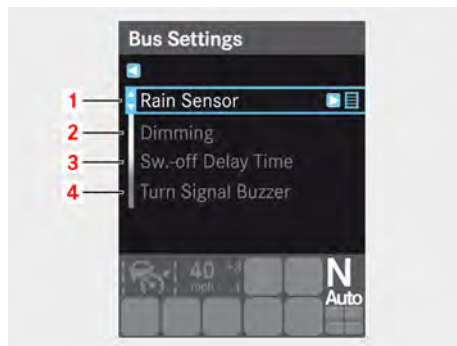


M54.30-A231-71

The "Settings Menu" submenu is for accessing the "Bus Settings" and "Basic Settings" submenus by tapping "OK" button (1).

Display menu structure

"Bus Settings" submenu



M54.30-A232-71

The "Bus Settings" submenu enables adjustment of the sensitivity of the "Rain Sensor" (1), the "Dimming" of display brightness (2), the "Sw.-off Delay Time" (3) and the volume of the "Turn Signal Buzzer" (4).

Use the buttons on the steering wheel to scroll through the menus. The button selectable at any given time is shown in the display.

"Basic Settings" submenu



M54.30-A233-71

The "Basic Settings" submenu enables the units and the display format for the time of day to be set using the buttons in the steering wheel. The button selectable at any given time is shown in the display.

"Systems" submenu



M54.30-A234-71

The "Systems" submenu enables activation of various driver assistance systems installed in the vehicle.



M54.30-A235-71

Examples of selectable systems:

- Active Brake Assist
- Lane Keeping Assist
- Sideguard Assist
- Attention Assist

A check mark **(3)** showing after the name of the system means that the system is active.

Tap "OK" button **(1)** to deactivate the system.

Use the buttons on the steering wheel to scroll through the menus. The button

selectable at any given time is shown in the display.

The functions and operation of the driver assistance systems are described in the section headed "Driver assistance systems" (→ Page 200).

"Language" submenu



M54.30-A236-71

The "Language" submenu enables the language for the information shown in the display to be selected.

Warning messages

Warning messages

Warning messages in the display

Warning messages in the display appear as pop-up windows.

Depending on the importance of the information a gray, yellow or red message is issued on the display and, if applicable, explained in more detail by an accompanying symbol and text.

Acknowledging a pop-up window minimizes it, clearing the display for other purposes. However, the warning message remains active in the background until its cause is eliminated.

If two or more messages are active at the same time, each message is represented by a number. These numbers are assigned in consecutive order.

As long as it remains active, a message is shown in the "Fault Messages" and "Events" submenus of the "Messages" main menu.



M46.10-A018-71

- The ◀ and ▶ buttons on the steering wheel can be used to view additional instructions, if available, on dealing with the situations that lead to the messages.

Display of a yellow message



M54.30-A191-71

Yellow messages warn of functional restrictions; you can continue driving but must exercise extra caution.

The message appears in a pop-up window **(2)**.

In addition, status indicator **(3)** in the status-indicator section of the display shows as well.

**Caution**

Property damage due to restricted operation or imminent loss of operability of the vehicle systems. The vehicle's handling characteristics might deteriorate.

- ▶ Adapt your driving in accordance with the content of the warning message.
- ▶ Have the cause of the restriction eliminated immediately by repair by qualified specialists.
- ▶ Stop as soon as possible and consult a service partner.

Acknowledging a yellow message**Danger**

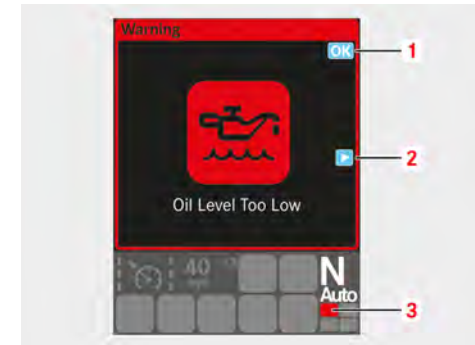
Risk of accident and injury due to distraction from the traffic situation. Operation of integrated information and communication systems requires some share of the driver's attention.

- ▶ Familiarize yourself adequately with operation and handling before you use the information and communication systems.

- ▶ Operate information and communication systems only when the traffic situation permits.
- ▶ If necessary, before using the information and communication systems stop the vehicle safely where it will not impede traffic.
- ▶ When using the telephone or any other communication device, always comply with the applicable legal stipulations.

To clear the display:

- ▶ Acknowledge the message by pressing the **OK** button on the steering wheel.
 - ◀ The pop-up window closes.
 - ◀ Status indicator **(3)** continues to show in the status-indicator section of the display.

Display of a red message

M54.30-A192-71

Red messages indicate safety-relevant malfunctions. Continuing to drive endangers the safety of the passengers, other road users and the driver.

The message consists of a pop-up window **(2)** and an acoustic signal as warning.

In addition, status indicator **(3)** in the status-indicator section of the display shows as well.

Warning messages



Danger

Risk of accident due to restriction of the vehicle's operating safety and road safety.

- ▶ Stop immediately, taking the traffic situation into account, and switch on the hazard warning flashers.
 - ▶ If necessary, contact the service partner.
 - ▶ Do not resume driving until the malfunction has been rectified.
- ▶ If necessary, initiate further measures such as towing (→ Page 325).

Acknowledging a red message

To clear the display:

- ▶ Acknowledge the message by pressing the **OK** button on the steering wheel.
 - ◁ The pop-up window closes.
 - ◁ Status indicator **(3)** continues to show in the status-indicator section of the display.

Steering wheel buttons**Steering wheel buttons**

What appears on the display is controlled with the steering wheel buttons. It is also possible to make changes to various settings.

Overview of steering wheel buttons



- 1 Left-hand steering wheel buttons
- 2 Right-hand steering wheel buttons
- 3 Horn

Steering wheel buttons

Left-hand steering wheel buttons



-  Save / show favorite menu window
-  Previous main menu
-  In input window, select previous value or reduce value.
-  Next main menu
-  In input window, select next value, increase or reset value.
-  Previous menu window
-  In input window, move up one menu line
-  Next menu window
-  In input window, move down one menu line
-  Open and close input window / acknowledge event message
-  Increase volume for cockpit speakers

**Note**

Short-press to adjust step by step.

Long-press to ramp-adjust.



Reduce volume for cockpit speakers

**Note**

Short-press to adjust step by step.

Long-press to ramp-adjust.

Steering wheel buttons

Right-hand steering wheel buttons



Accept incoming call



Note

Activate CIS voice control in the absence of an incoming or active call.

Short-press to start voice control of the CIS.

Long-press to start voice control of the paired phone.



End call, reject call



Select Temposet (limiter) function



Select Tempomat / adaptive cruise control



Speed / speed limitation

Switch on and set current speed / speed limitation, increase set speed / speed limitation.



Switch on and recall speed / speed limitation from memory, reduce set speed / speed limitation

OFF

Switch off Temposet (limiter) / TEMPOMAT / adaptive cruise control

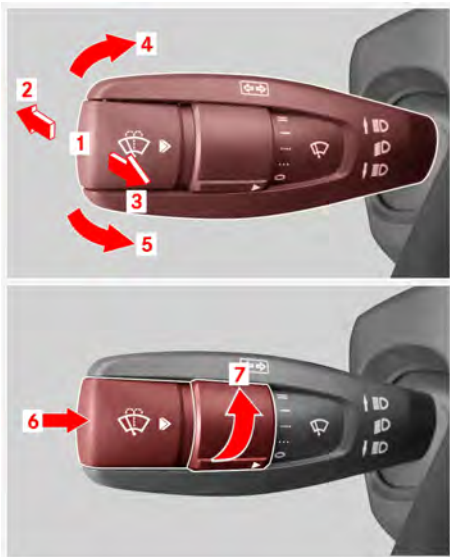


Menu window for driving systems

Idle speed increase / set specified distance (adaptive cruise control) / set speed tolerance (Tempomat / adaptive cruise control)

Combination switch for lights and wiper functions

Combination switch for lights and wiper functions



M54.00-1898-72

- 1 Driving lights position: High beams off (with driving lights switched on)
- 2 Headlamps bright: High beams on (with low beams switched on)

- 3 Headlamp flasher: Flick stalk up
- 4 Right turn signal with automatic cancellation: Push stalk past the detent until stalk engages

i Note

Brief actuation of turn signal for changing lanes: Press the stalk lightly (not past the pressure point). The turn signal lamps flash five times.

- 5 Left turn signal with automatic cancellation: Push stalk past the detent until stalk engages

i Note

Brief actuation of turn signal for changing lanes: Press the stalk lightly (not past the pressure point). The turn signal lamps flash five times.

- 6 Wipe and wash: Press the sleeve on the stalk toward the steering column. With the windshield wipers switched off = windshield wipe and wash

- 7 Windshield wipers: Turn the sleeve on the stalk: Stage 0 = off. Stage = slow intermittent wipe or wipe with rain sensor. Stage..... = fast intermittent wipe or wipe with rain sensor. Stage I = slow continuous wipe. Stage II = fast continuous wipe.



Property damage notice

Combination-switch position stage : If the rain sensor is active, the windshield wipers might inadvertently sweep the windshield in dry weather if the windshield is dirtied. The wiper blades or the windshield can be damaged as a result. In dry weather, switch the windshield wipers off.



Note

Combination-switch position stage : If the rain sensor is active, wipe frequency automatically adjusts to the severity of precipitation.

 Note

Frost function: The rain sensor does not switch the windshield wipers on at low temperatures when the windshield is being scraped clear of frost and ice.

 Note

The sensitivity of rain sensor can be set in the display by going to the "Settings" main menu and then selecting the "Bus settings" submenu.

Combination switch, permanent brake (engine brake and retarder)

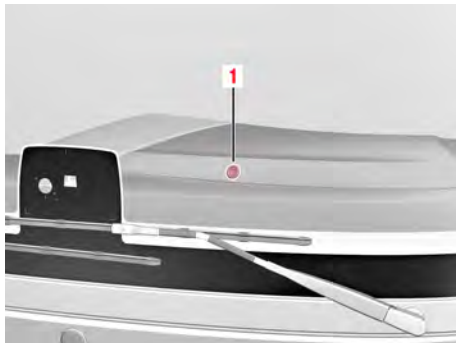
Combination switch, permanent brake (engine brake and retarder)



M46.10-A021-71

- 5 Operate permanent brake
- 5.1 Permanent brake stage 1
- 5.2 Permanent brake stage 2
- 5.3 Permanent brake stage 3
- 5.4 Permanent brake stage 4
- 5.5 Permanent brake stage 5

Switch on panoramic camera (option)



M82.00-A004-71

The panoramic camera can be switched on by the CIS by selecting "Camera from the " "Cabin" menu and the image shown on the monitors in the passenger compartment.

i Note

Make sure there are no objects between the windshield and camera **(1)**.

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Adjusting ISRI NTS2 driver's seat	148
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Safety notes on driver's seat

Safety notes on driver's seat

Operation and use



Danger

Risk of death due to shorter deformation zone in a collision. In the event of a frontal impact the driver's seat is displaced by up to 20 cm to the rear to prevent the driver against injuries caused by the steering column.

- ▶ Do not stow objects, bags, rugs or jackets behind the driver's seat.
- ▶ Use the stowage compartments.



Danger

Risk of death due to damaged or faulty seats.

- ▶ In the event of a malfunction or if components are faulty, immediately consult a specialist workshop to have the relevant systems checked or repaired, and parts replaced as necessary. If the seat can be wiggled in any direction, this movement could be indicative of loose

threaded fasteners, worn parts or other faults.

- ▶ After an accident, the seat must be checked and, if necessary, replaced.



Warning

Risk of accident due to unplanned change of seated position on adjustment of the seat. Accelerator and brake pedals might suddenly be beyond reach, uncontrolled steering movements can be triggered.

- ▶ Before pulling away, adjust the driver's seat so that your seated position is correct.
- ▶ Correct your seated position only with the vehicle at a standstill and the parking brake applied.



Warning

Jamming/entrapment hazard! Reaching between mechanically moved parts are result in serious injury from the shear-cutting or crushing of body parts.

- ▶ When components are moving, make sure no body parts or limbs

are within the reach of the moving machinery.

- ▶ Keep the danger zone under supervision at all times.
- ▶ When components are in motion, secure the zone within reach of the moving machinery to ensure that no-one can reach into it.



Caution

Property damage due to cleaning agents containing solvent contacting the fabric of upholstery covers or interior fittings made of plastic or foam material.

- ▶ DO NOT use acetone, pure benzene, alcohol or other cleaning agents containing solvents.
- ▶ Use only pH-neutral cleaning agents.
- ▶ Use cleaning agents that are approved for the fabric of the upholstery covers.
- ▶ Use distilled water to prevent limescale markings.

- ▶ Remove soiling immediately whenever possible, in order to avoid permanent stains and damage.
- ▶ Before starting off, familiarize yourself with operation of the driver's seat.
- ▶ Before starting off, adjust all mirrors.
- ▶ When adjusting the seat, make sure that the components move correctly and the seat adjustment actions are smooth. If any adjustment action is stiff, have the functions checked by a specialist workshop.

Note

Fore-and-aft rail lock, backrest lock, seat-cushion tilt lock, seat pivot (optional) and seat cushion length adjustment must all engage audibly when adjusted, the levers must snap back to their original positions when released.

- ▶ Pull the operating levers all the way up and hold them in this position over the entire range of adjustment to avoid damage to the adjuster mechanisms.

- ▶ Never attempt to operate more than one control or grip at a time.
- ▶ If the seat has heating or ventilation, do not cover it up (items of clothing, rugs, etc.) or an extra fitted cover.

Note

It is advisable to change the seat position from time to time.

Adjusting driver's seat

Adjusting driver's seat

Optimum seat position

Seat position

A correct seated position permits comfortable, fatigue-free driving on long runs, enabling the driver to stay fit.

A poorly adjusted seat or an incorrect seated position can have a detrimental effect on the driver's health and ability to operate the vehicle safely and without unnecessary fatigue.

- ▶ Make sure that you adopt the correct seated posture, particularly when you take over the vehicle from another driver.

The description below is based on recommendations issued by the German employers' liability insurance associations. The information is backed by science.

Optimum seat settings



M91.10-0077-71

A: Arm angle

- 95° - 135°

B: Hip angle

- 100° - 115°

C: Knee angle

- 110° - 120°

D: Foot angle

- 90°

- ▶ Set the steering wheel and, if applicable, the instrument panel support, to the forward position.

- ▶ Adjust the length of the seat cushion so that there is a gap of about half the width of your hand between the edge of the seat cushion and the back of your knee.
- ▶ Adjust the tilt of the seat cushion so that it is angled slightly down toward the rear.
- ▶ Adjust the backrest angle and adjust the shoulder supports, if fitted.

Note

Sit right back in the seat to adjust the backrest to the optimum angle of rake.

Note

The angle is correct when, with the upper body at a slight angle past the upright, the entire back is resting against the backrest and there is no sense of pressure or constriction in the abdominal region.

- ▶ Adjust reach to pedals and adjust set height.

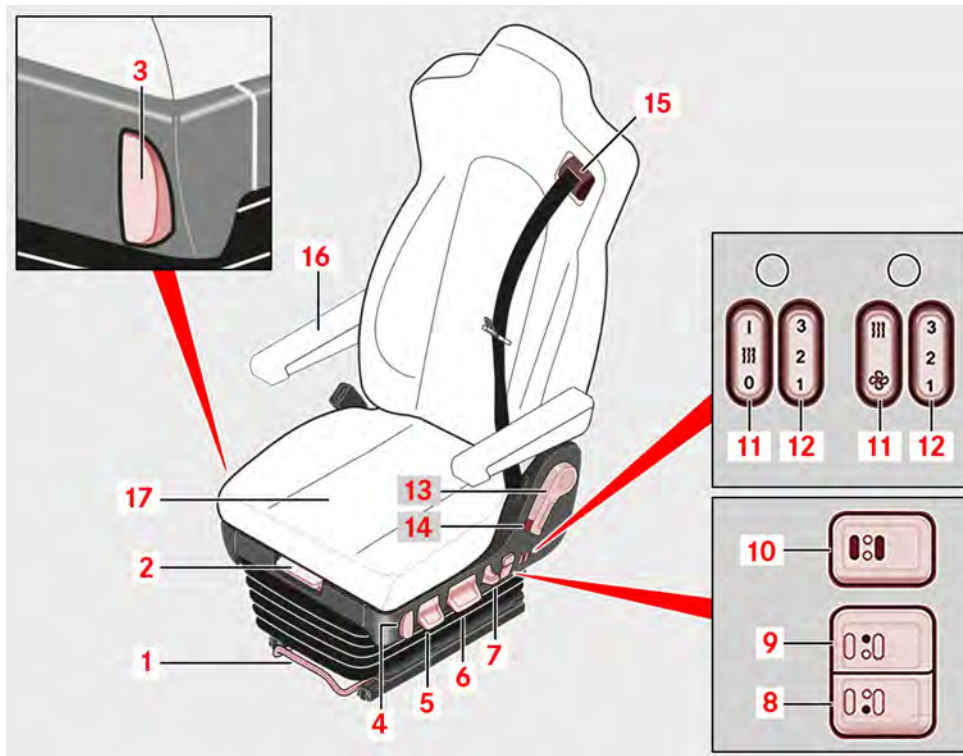
i Note

Reach to the pedals is optimum when, with the driver's heel on the floor, the accelerator pedal is halfway depressed and the ankle is at an angle approximating to a right angle. In this position the thigh should be resting on the front edge of the seat, without pressing against the edge.

- ▶ Adjust the steering wheel and, if applicable, the instrument panel support, so that the arms are at a slight angle at the elbows.
- ▶ Adjust lumbar support and side bolsters so that they provide slightly perceptible support, without unpleasant pressure.
- ▶ Buckle the seat belt, see the section headed "Buckling seat belt" (→ Page 157).

Controls of ISRI NTS2 driver's seat

Controls of ISRI NTS2 driver's seat



- 1 Horizontal adjustment
Move the seat forward or back, as appropriate.
- 2 Seat cushion height adjustment
Move the seat cushion forward or back, as appropriate.
- 3 Turnable base
Swivel the seat on its base.
- 4 Entry and exit rapid descent
Lower/raise the seat to facilitate entry/exit.
- 5 Inclination adjustment
Change the front seat inclination.
- 6 Height adjustment
Adjust seat height.
- 7 Shock absorber adjustment
Adjust ride comfort.
- 8 Bottom pneumatic lumbar support
Inflate/deflate the air chambers.
- 9 Top pneumatic lumbar support
Inflate/deflate the air chambers.
- 10 Side bolsters
Inflate/deflate the air chambers.

- 11 Seat heating (option)
Switch on/off.

**Note**

Optionally, the ventilation function can be assigned to button **(11)**.

- 12 Stage selection for heating/air conditioning (option)
Adjust heat output.
- 13 Backrest adjustment
For upright back posture.
- 14 Adapting to shoulders
Adjustment for full back content against the backrest.
- 15 Seat belt height adjustment, three-point seat belt (option in city buses)
Adaptation to body size.
- 16 Armrest (option)
Inclination adjustment
- 17 Seat cushion

Adjusting ISRI NTS2 driver's seat

Adjusting ISRI NTS2 driver's seat

- Comply (→ Page 142) with the safety information at the start of the section.

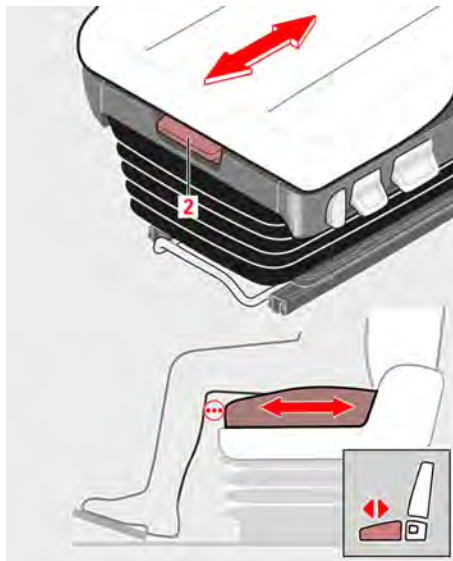
i Note

See the section headed "Optimum seat position" (→ Page 144) for tips on how best to adjust the seat position.

i Note

The seat is designed for a driver's weight of max. 150 kg or 330 lbs.

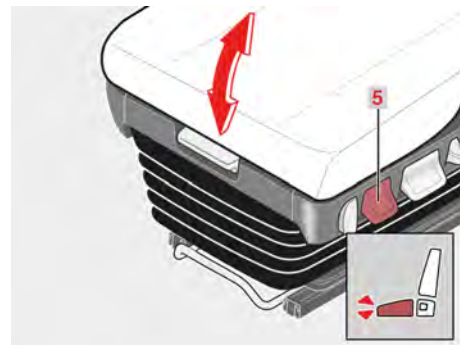
Adjusting length of seat cushion



91.10-0079-72

- Pull lever **(2)** up and slide the seat cushion forward or back.

Adjusting tilt of seat cushion



M91.10-0082-71

- Pull lever **(5)** up and adjust the angle of seat-cushion tilt by applying your weight to or taking your weight off the front part of the seat cushion.

i Note

After adjusting the angle of tilt, you must set the backrest to an upright position.

Adjusting ISRI NTS2 driver's seat



Property damage notice

Make sure that after adjustment, the backrest does not come into contact with the cabin wall.

Backrest adjustment



M91.10-0090-72

- ▶ Press your back lightly against the backrest.
- ▶ Pull handle **(13)** up and keep it pulled up over the entire range of adjustment.
- ▶ Adjust the backrest to the desired pressure by leaning forward to relieve

pressure, or leaning back against the backrest.



Property damage notice

To avoid damaging the backrest, do not sit on a backrest that has been folded down or weigh it down with objects and do not fold the backrest down forcibly on to the seat cushion.



Property damage notice

Make sure that after adjustment, the backrest does not come into contact with the cabin wall.



Note

Adjust the backrest only when sitting on the seat, because the backrest would snap forward if the seat were unoccupied.

Adjusting ISRI NTS2 driver's seat

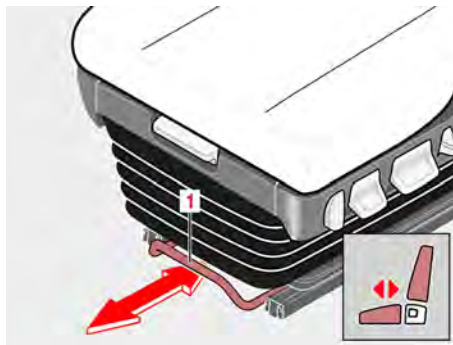
Adapting to shoulders



M91.10-0091-72

- ▶ Press button **(14)**.
- ▶ Use the pressure of your upper body to adjust the top half of the backrest to the desired position.

Adjusting reach to pedals



M91.10-0078-71

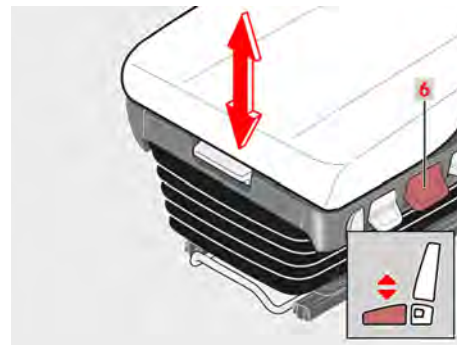
- ▶ Pull lever **(1)** all the way up and move the seat forward or back.



Property damage notice

Do not hook your heels over rail release bow handle **(1)**.

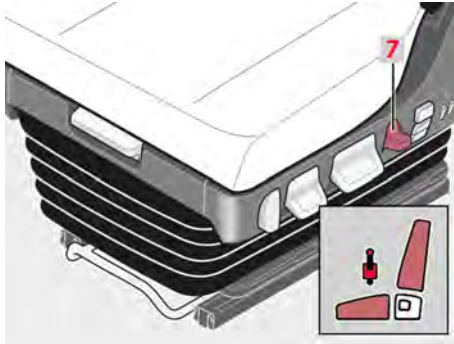
Adjusting seat height



M91.10-0083-71

- ▶ Pull or push handle **(6)** and adjust the seat to the desired height.

Shock absorber adjustment



M91.10-0084-71

- Pull handle **(7)** up for soft spring action with slight damping force.
- Push handle **(7)** down for hard spring action with high damping force.

i Note

Seat damping has to be adjusted if road conditions change.

Bottom pneumatic lumbar support



M91.10-0085-71

- Push button **(8)** forward to fill the air chamber or back to vent the chamber.

Top pneumatic lumbar support

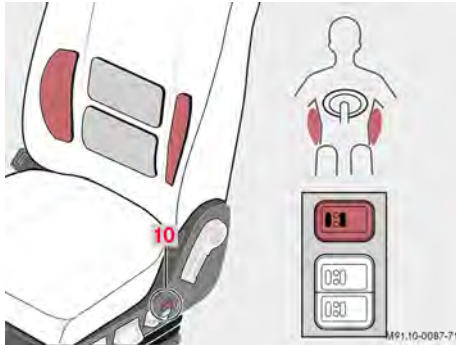


M91.10-0086-71

- Push button **(9)** forward to fill the air chamber or back to vent the chamber.

Adjusting ISRI NTS2 driver's seat

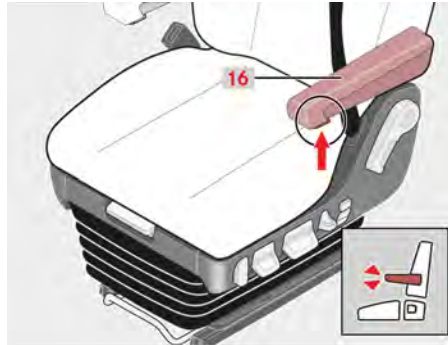
Side bolsters



M91.10-0087-71

- Push button **(10)** forward to fill the air chamber or back to vent the chamber.

Armrests (option)



M91.10-0094-71

- Slightly raise armrest **(16)**.
- Steplessly adjust the tilt of the armrest by turning the knob **(arrow)**.

Three-point seat belt / seat belt height adjustment (option for city buses)



M91.10-0092-72

- Press in on roller **(15)** at outboard side of seat **(1)**.
- Swivel the belt to the desired height **(2)**.

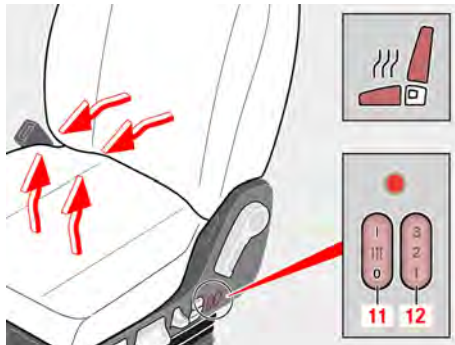
Adjusting ISRI NTS2 driver's seat

i Note

There are 7 stages of adjustment.

- ▶ After adjustment, make sure that roller **(15)** snaps back into engagement.

Heating (option)



M91.10-0088-71

- ▶ Press button **(11)** top section **(I)**.
 - ◁ Heating is switched on.
 - ◁ Red lamp is on.
- ▶ Press button **(11)** at bottom **(0)**.
 - ◁ Heating is switched off.
 - ◁ Red lamp is off.

i Note

The seat-cushion and seat-back-rest heating is thermostatically controlled.

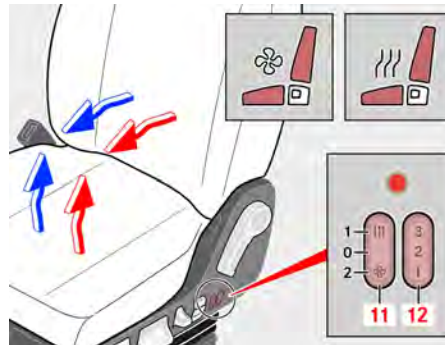
Adjusting intensity of seat heating

- ▶ Press button **(12)**.

i Note

The seat heating can be adjusted in 3 stages from low to high.

Heating/air conditioning (option)



M91.10-0089-71

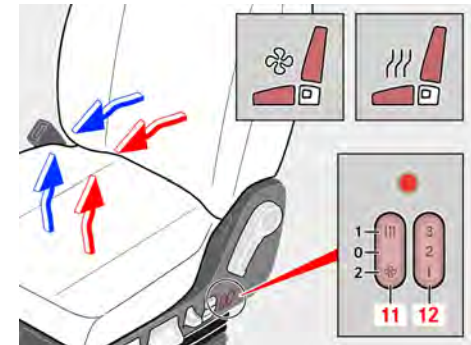
- ▶ Press the top section of button **(11)** and preselect heating or ventilation.

i Note

The air conditioning does not switch off automatically.

It is advisable not to have the system switched on permanently, to protect against chills.

Switch position



M91.10-0089-71

Centered **(0)**:

- Heating and ventilation are off.
 - Red indicator lamp is off.

Top **(1)**:

- Heating is switched on.

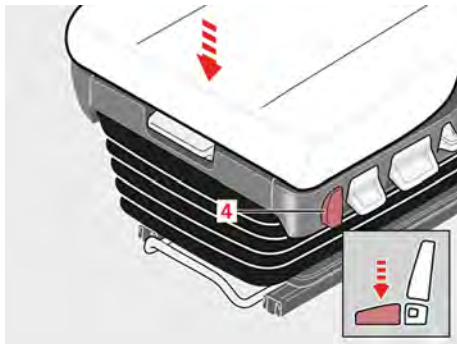
Adjusting ISRI NTS2 driver's seat

- Red indicator lamp is on.

Bottom (2):

- Ventilation is switched on.
 - Red indicator lamp is on.
- ▶ Press button (12) and set the intensity of heating or ventilation, as applicable, in three stages from low to high.

Entry and exit rapid descent



M91.10-0081-71

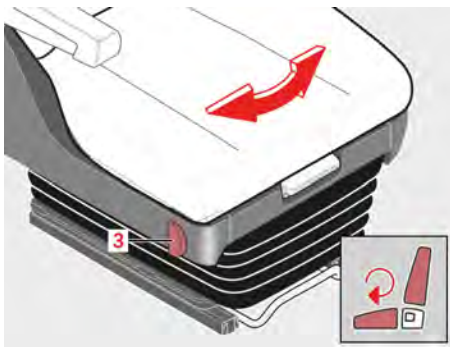
- ▶ Press rocker button (4).
 - ◁ Seat descends rapidly to its lowest position to facilitate entry/exit.

- ▶ Press rocker button (4) again.
 - ◁ Controlled by the memory function, seat returns to the height set beforehand.

i Useful notes

A seat descended to its fully lowered position is not permissible as a position for driving, because in this position no seat suspension travel is available.

Turnable base



M91.10-0080-71

- ▶ Press button (3) and swivel the seat.

i Note

The seat can be locked only when engaged in the forward-facing, direction-of-travel position.

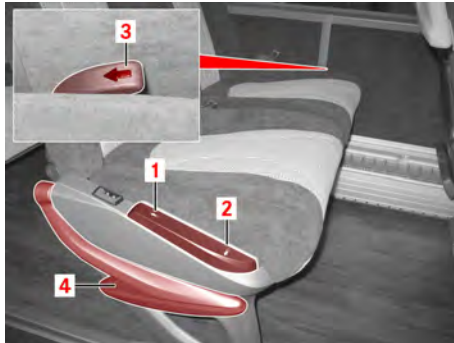
- ▶ After swiveling the seat, ease it slowly back into the engagement position to avoid damaging the engagement mechanism and the stop.

Adjusting passenger seat, removing/installing seat cushions and head restraints

Adjusting passenger seat, removing/installing seat cushions and head restraints

Adjusting passenger seats

Backrest



M91.00-0046-71

The backrests of the seats on the aisle and window sides can be tilted back.

Several intermediate positions are selectable between the initial upright position and the tilted limit position.

- ▶ Aisle side: Operate rear section of rocker (1) or

- ▶ Window side: Pull small black lever (3) between seat cushion and vehicle side panel back and
- ▶ when the latching mechanism is released, use your upper body to push back on the backrest.
- ▶ Release the rocker or lever when the backrest is in the desired position.
 - ◁ The backrest locks in place in this position.

Folding armrests up and down

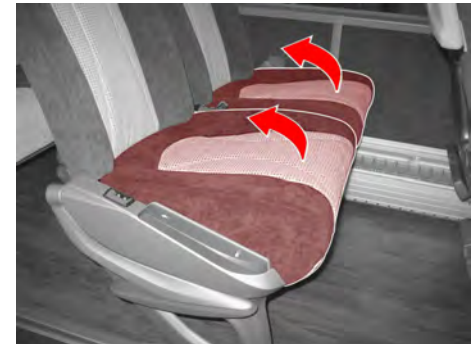
Seats on the aisle side have armrests on the side toward the center aisle. Between-seat armrests for the window seats are an option.

- ▶ To fold up the aisle-side armrest: Fold armrest (4) up, the armrest engages in the raised position.
- ▶ To fold down the aisle-side armrest: Grip armrest (4) by the armrest pad and raise the armrest slightly. Then carefully fold the armrest down.
- ▶ Window side: Fold the armrest down or up, as necessary.

i Note

Before exiting the seat, fold the armrests down. Raise the backrest. This makes it easier for everyone to exit the vehicle.

Removing seat cushions



M91.00-0047-71

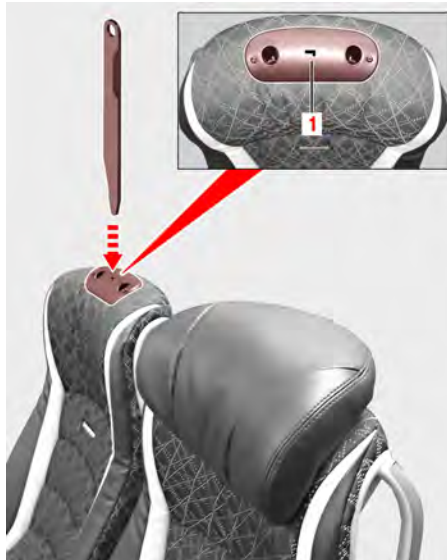
- ▶ To remove the seat cushion, grasp the seat cushion at the front with both hands and pull it upward. Then pull the cushion out of the guide in the driving direction and remove it upward.

Adjusting passenger seat, removing/installing seat cushions and head restraints

Installing seat cushions

- ▶ Slightly raise the seat cushion at the front and push it into the guide up to the stop at the rear. Press the seat cushion down at the front until it engages with an audible click.

Installing, removing head restraint (option)



M91.00-0057-72

- ▶ Insert the lock all the way into lock **(1)** and pull out the head restraint.
- ▶ Remove the head restraint.
- ▶ To install, insert the head restraint until it engages.

Buckling seat belt**Handling seat belt****Buckling seat belt**

In many countries, the driver is required by law to wear a seat belt at all times, unless driving in regular frequent-stop service. Observe the regulations of the specific country.

The seat models installed in the vehicle have an integrated seat-belt system. The user instructions therefore only apply to belts installed in the manufacturer's plant.

i Note

Before driving off, the driver is required to notify all passengers of the obligation to wear seat belts and if necessary to assist correct procedures for handling the seat belts.

**Danger**

Risk of death due to incorrectly used seat belt.

- ▶ Use each seat belt for one person only.
- ▶ Buckle the seat belts in accordance with the instructions and check that they are seated correctly.
- ▶ Wear no hard, fragile objects inside your clothing.
- ▶ Remove bulky items of clothing before buckling your seat belt.
- ▶ Route the belt webbing clear of sharp edges and chafing points.
- ▶ Belt must unreel freely in order for the inertia-reel function to trigger correctly in an emergency situation.

Three-point seat belts on driver's seat and co-driver's seat

M91.00-0059-71

- ▶ Draw the seat belt free of twists and taut over lap and shoulder.
- ▶ Push the tongue of the seat belt into the buckle, making sure that it engages securely and with an audible click.

Buckling seat belt



M91.00-0060-71

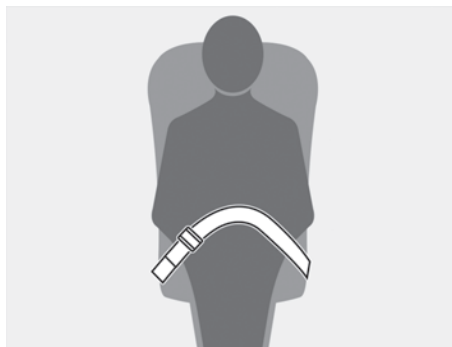
- ▶ Adjust the seat belt - insofar as adjustment is possible - to fit your body size.
- ▶ Check seat position, correct if necessary; comply with the safety information for driver (→ Page 142).

Seat belt reminder for driver and co-driver

The "Seat belt" red warning in the instrument cluster  draws your attention to the fact that occupants of the driver's seat and the co-driver's seat are required to buckle their seat belts correctly.

The red message disappears as soon as the seat belt on the occupied seat is buckled.

Two-point seat belts for passenger seats



M91.00-0061-71

- ▶ Draw the seat belt free of twists and taut over the lap.
- ▶ Push the tongue of the seat belt into the buckle, making sure that it engages securely and with an audible click.

Unbuckling seat belt

- ▶ Press the red button on the seat belt buckle.

- ▶ Assist the inertia reel by guiding the seat belt as it is reeled back.

Display of seat belt reminder

Display of seat belt reminder

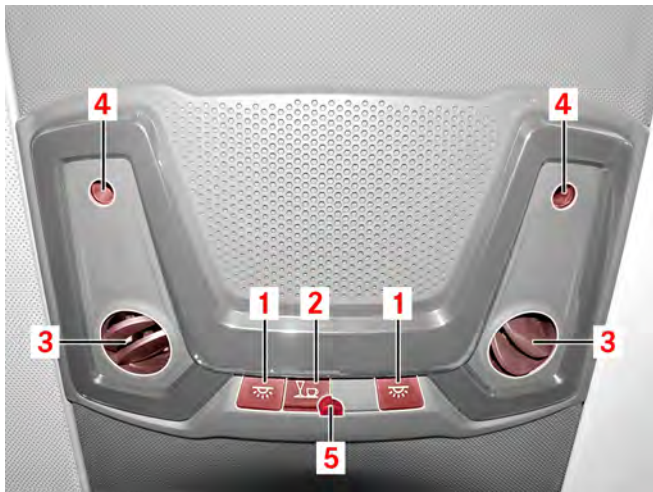


M54_00-0978-01

With the ignition switched on and the doors closed, after the vehicle pulls away the "Buckle seat belts" reminder (1) shows for 5 minutes at the front right in the passenger compartment.

Passenger seat service set

Passenger seat service set



- 1 Reading lamp button
- 2 Service call button (option)
- 3 Airflow control, vent grille
- 4 Reading light
- 5 Indicator lamp for service call

Brakes	162
Steering	176
Air suspension	178

Brakes

Brakes

Functions:

- Brake systems
- Active safety systems

Safety information about the brake systems

Malfunction in brake system

The vehicle has an array of safety and driver assistance systems. These systems also access the brake systems when necessary.

Depending on the scope of the malfunction, a yellow or red message is issued on the display and explained in more detail by an accompanying text.

A malfunction occurring in one of the brake systems might affect the safety and assistance systems as well.

- ▶ Familiarize yourself with the severity of the malfunction and the consequences of the functional restrictions corresponding to the various warning messages (→ Page 126).

Yellow message, brake system

Take note of the information output on the display and react accordingly.

- ▶ Brake carefully and circumspectly, avoid maximum full-stop braking.
- ▶ If pedal travel is longer than usual or brake boost is less than usual, adapt the pressure applied to the brake pedal accordingly.
- ▶ Stop as soon as possible and consult a service partner.

Red message, brake system



Danger

Risk of accident due to malfunction or failure of the brake system and driver assistance systems such as ABS. Excessively sharp braking causes the wheels to lock up, in which case the vehicle no longer answers to the steering.

- ▶ Assess the traffic situation and stop the vehicle immediately.
- ▶ In the event of a partial failure brake the vehicle by applying appropriate pedal pressure; in the event of a total failure initiate manual emergency

braking by means of the parking brake.

- ▶ Shut down the vehicle and secure it with wheel chocks.
- ▶ If necessary, get passengers to safety.
- ▶ Secure the vehicle in accordance with the applicable traffic regulations.
- ▶ As applicable, initiate other measures, such as towing (→ Page 325).

Brake systems

Overview

The vehicle has the following brake systems:

- Service brake,
Acts on all wheels and axles. Activation by the brake pedal.
 - Used when the vehicle is on the move to reduce speed, if necessary down to standstill.
- Parking brake,
Does not act on all axles. Activation by hand lever.

- Used when vehicle stationary and applied when driver is preparing to exit the cockpit.
- For securing the vehicle when parked on level terrain.
- For manual emergency braking in the event of failure of the brake circuits.
- Frequent-stop brake, acts as a weaker service brake. Activation by pushbutton switch on the instrument panel.
 - Used when vehicle stationary at designated stop, while passengers are boarding or exiting.
- Retarder, Acts on the drive train. Activation by combination switch or by application of light pressure on the brake pedal.
 - Used when the vehicle is on the move to reduce speed.

Service brake

Function

The service brake acts on all wheels and therefore on all axles. The braking force is applied by the brake pads acting on the brake rotors.

Their action is assisted by the brake booster when the ignition switch is turned to stage 2 or a higher stage, and when the engine is running. In the absence of ignition ON, more pressure has to be applied to the brake pedal and the pedal depressed farther in order to achieve the same braking effect.

Operation

- Comply with the safety information for operating the braking systems and driver assistance systems (→ Page 162).

When the vehicle is on the move the service brake is used to reduce speed and to slow it all the way to a standstill.

The braking effect is assisted by the Brake Assist System; in maximum full-stop brak-

ing situations the brake lights switch to Adaptive Brake Lights mode.

In maximum full-stop braking the ABS (Antilock Brake System) is active as well. Consequently, the vehicle retains its steerability.

By thinking well ahead when driving and making use of the retarder, the driver can help minimize wear and tear on the brake pads and the brake rotors.



Warning

Risk of accident due to the failure of functions that assist safe operation of the vehicle, including for example the power steering or brake control.

- DO NOT shut down the engine while the vehicle is on the move.
- DO NOT switch off the ignition while the vehicle is on the move.
- DO not remove the key while the vehicle is on the move.

Brakes

Measures

- ▶ If the engine fails or the ignition shuts down, bring the vehicle to a stop safely.
- ▶ Continue operating the brakes and the steering by applying all your strength to brake pedal and steering wheel.
- ▶ Depress the brake pedal slowly and smoothly to help ensure the safety of the passengers.

The braking effect is applied only for as long as the brake pedal is depressed. Releasing the brake pedal releases the brakes.

The service brake is not appropriate for safe parking of the vehicle.

- ▶ After bringing the vehicle to a standstill and before exiting the cockpit, apply the parking brake .

Brake Assist

In a maximum full-stop braking situation, the Brake Assist System ensures the shortest possible stopping distance.

Depending on the speed at which the brake pedal is depressed, the Brake Assist System reduces the possible occurrence of a hazardous situation and in this case it immediately applies full braking force.

The Brake Assist System activates the Adaptive Brake Lights.

- ▶ In a maximum full-stop braking situation depress the brake pedal as far as it will go, in order to achieve optimum braking deceleration.

Performance limit

Sensors at each wheel continuously register brake-pad wear.

Insufficient brake pad thickness is indicated by a yellow message with the "Brake pads" symbol appearing in the display.

If the brake pads on an axle are permitted to wear past the wear limit, even the Brake Assist System is unable to compensate for the diminished braking effect.

Adaptive Brake Lights

The Adaptive Brake Lights function makes the brake lights flash in rapid succession.

This constitutes a warning for following traffic.

This function is activated only when speed is above 30 mph (50 km/h) and the Brake Assist System is actively assisting application of the brakes.

Parking brake

Function

The parking brake acts on the drive axle. Braking force is applied by the mechanical force of a spring that holds the brake pads against the brake rotors.

During operation of the vehicle the braking force of the springs is not wanted and the springs are held back by compressed air. After the vehicle's engine is started sufficient pressure has to build up in the compressed air supply system before the brakes can be released.

In critical situations, such as failure of the service brake, the parking brake can be used to perform manual emergency braking. Under these circumstances the ABS is not operational.

Note

When the on-board electrical system batteries (24 V) are isolated from the on-board electrical system by means of the battery disconnect switch, the parking brake valve cannot be actuated. Consequently, with the on-board electrical system isolated from the power supply from the batteries, it is not possible to release the parking brake.

Operation

- ▶ Comply with the safety information for operating the braking systems and driver assistance systems (→ Page 162).

The parking brake must be applied when the vehicle is stationary and the driver is preparing to exit the cockpit.

It is for securing the vehicle when it is parked on level ground.

Danger

Risk of accident and injury due to unwanted movement and unauthorized operation of the vehicle.

- ▶ Whenever you stop and park the vehicle always secure it by applying the parking brake.
- ▶ Whenever you exit the cockpit, always switch off the ignition and secure it so that it cannot be switched on again without your knowledge and consent.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in toward the curb.

Manually applying the parking brake

Precondition:

- Vehicle speed is less than 3 mph (5 km/h).
- Service brake fault-free.



M54.00-A009-71

- ▶ Press button (5) or pull hand brake lever (4) up, past the perceptible point, as far as it will go.
 - ◁ The LED in button (5) shows, the parking brake is applied.
 - ◁ The indicator lamp for the parking brake shows in the display of the instrument cluster.
 - ◁ The vehicle's drive axle shows white in the display of the instrument cluster.

Brakes

i Note

Only when the LED in button **(5)** shows is the parking brake correctly applied.

i Note

If there is a fault in the electronic brake system (EBS), with the ignition switched on the parking brake can be applied only by pulling the hand brake lever **(4)** until the LED in button **(5)** shows. With the ignition switched off, even if there is a fault the parking brake can still be applied manually by means of hand-brake lever **(4)** and button **(5)**. (See the section headed "Manually applying the parking brake")



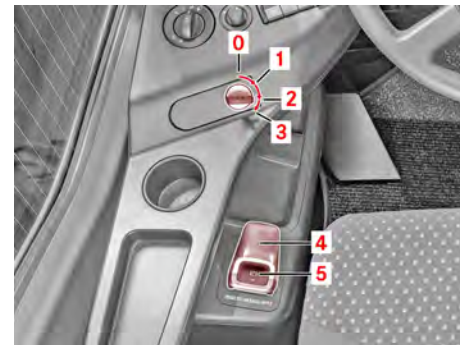
M54.30-A193-71

- ▶ Before exiting the cockpit, switch off the ignition and remove the key.
 - ▽ If the ignition is switched off without the parking brake being applied, if applicable an acoustic warning sounds and an "Apply Parking Brake or Start Engine" red message appears.
 - ▶ Apply parking brake.
- ▶ If the vehicle is parked on an uphill or downhill gradient, chock the wheels accordingly as an additional safety precaution.

Manually releasing the parking brake

Precondition:

- The brake pedal or the accelerator pedal is pressed.
- Reservoir pressure of the brake circuits must correspond to the minimum pressure.



M54.00-A009-71

- ▶ Press button **(5)** in hand brake lever **(4)**.
- ▶ Observe the reading for reservoir pressure in the compressed-air system. The parking brake releases when sufficient air pressure has built up.

- ◁ The indicator lamp for the parking brake in the instrument cluster goes out.



- ◁ The LED in button (5) goes out.
- ▽ If the indicator lamp does not go out, despite adequate reservoir pressure in the pneumatic system:
 - Contact the service partner.

Automatic application of parking brake

Conditions

- The vehicle is at a standstill.
- The ignition is on.



M54.00-A009-71

- Switch off ignition.
 - ◁ The parking brake is automatically applied.
 - ◁ The LED in button (5) shows.
 - ◁ The indicator lamp for the parking brake in the instrument cluster shows.

Note

Depending on vehicle equipment, if the holding function is active, having been activated for example by the frequent-stop brake, the hill holder or the HOLD function, the parking brake is also applied when

the driver's seat belt is unbuckled, when the driver exits the driver's seat, or when the engine is shut down.

Automatic release of the parking brake

Conditions

- The engine is running or the ignition is on.
- The pressure in brake circuits 1 and 2 and in the parking brake circuit is sufficiently high.
- The doors are closed.
- The brake pedal is pressed.
- Change transmission position from "N" to "D" or "R".
- Depress the accelerator pedal.
 - ◁ The parking brake is released.
 - ◁ The vehicle starts to move.

Manual emergency braking

In manual emergency braking with the parking brake, braking forces act only on the driven wheels. The ABS is inactive, so there is an increased risk of skidding.

Brakes

Use manual emergency braking only in the event of failure of both brake circuits, in order to avoid worse damage due to an accident.

Brake force can be modulated by the position of the hand brake lever. This requires the driver's full attention.

i Note

Depending on the desired sharpness of the emergency stop, pull the hand brake lever up if necessary as far as it will go, past the perceptible pressure point.

i Note

Full application of the parking brake is not possible at speeds above 3 mph (5 km/h).



M54.00-A009-71

- ▶ Comply with the safety information for operating the braking systems and driver assistance systems. (→ Page 162)
- ▶ Pull hand brake lever (4) out slowly and gradually, maintaining your grip on the lever and controlling its movement at all times.
 - ◀ The brake force applied corresponds to the position of the lever. The farther the lever is pulled out toward 'Applied', the stronger the braking effect.

Emergency release of the parking brake

Without sufficient pressure in the pneumatic system, the parking brake cannot be released. Release is possible by:

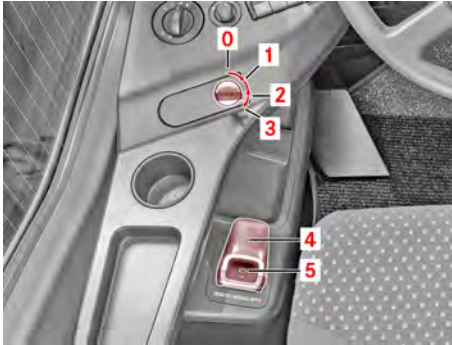
- Emergency release of the parking brake by means of the automatic emergency release device, see the section headed "Emergency release device for parking brake" in "Brake systems, operation and function" (→ Page 169).
- Mechanically releasing combination brake cylinders (→ Page 329).

Secure the vehicle so that it cannot roll away.

i Note

Only trained and qualified persons are permitted to perform emergency release of a brake system. This malfunction detracts significantly from the vehicle's operational safety.

Activating workshop mode of the electronic parking brake



M54.00-A009-71

i Note

Activating workshop mode of the electronic parking brake deactivates all automatic parking-brake functions.

To prevent automatic application of the electronic parking brake to allow towing (→ Page 325) of the vehicle, activate the workshop mode.

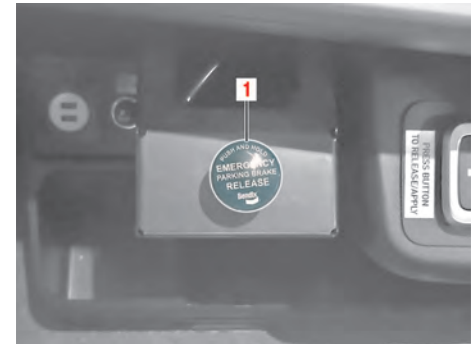
- ▶ Switch on the ignition.
- ▶ Press and hold down button (1).
- ▶ Switch off ignition.

- ◁ The workshop mode of the electronic parking brake is activated.
- ◁ A corresponding event window opens in the instrument cluster.
- ▶ If speed exceeds 15 km/h while the workshop mode is active, the workshop mode is deactivated.

i Note

Alternatively, the workshop mode can also be deactivated by diagnosis.

Emergency release device, parking brake



M42.20-A006-71

Press and hold down parking brake emergency release button (1).

i Note

The parking brake is released and the vehicle can be moved.

Brakes



Warning

Risk of accident and injury due to unwanted movement and unauthorized operation of the vehicle.

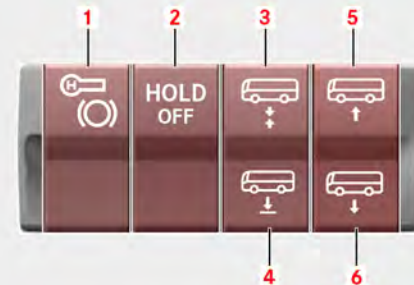
- ▶ When you have brought the vehicle to a stop and when you park the vehicle, always apply the parking brake.
- ▶ Whenever you exit the cockpit, always switch off the ignition and secure it so that it cannot be switched on again without your knowledge and consent.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in to the curb.



Property damage notice

The spring-loaded actuators of the parking brake require a release pressure of 84 psi (5.8 bar) to 93 psi (6.4 bar). If the pressure in the pneumatic system is lower, the brakes may fail to disengage completely. The resulting light contact between friction surfaces can lead to overheating. When the parking brake is released, the LED in the button of the hand brake lever corresponding symbol in the instrument cluster must go out.

Using the HOLD function



M54.30-A142-71

The HOLD function holds the vehicle at a standstill without the need for you to maintain pressure on the brake pedal, for example for hill starts and during waiting times due to traffic congestion.

The HOLD-Off (2) button enables you to completely deactivate the HOLD function.

Note

Do not use the HOLD function on steep downhill or uphill gradients with slippery or loose surfaces. Under certain circumstances the HOLD function might not be able to hold the vehicle at a standstill in these conditions.

The HOLD function is purely an assistant system. Invariably, the responsibility for securing the vehicle so that it cannot roll away resides with the driver.

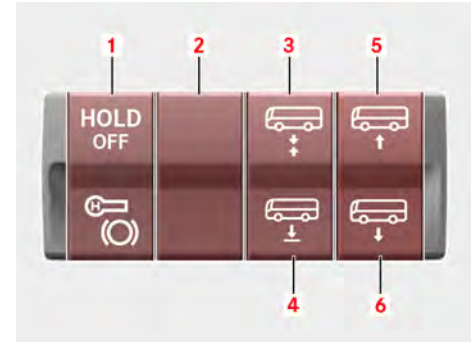
Preconditions:

- The vehicle is stationary and the doors are closed.
- The engine is running.
- The electronic parking brake is released.
- The transmission is in position "D", "N", "R".

Danger

Risk of accident due to activated HOLD function when vehicle is exited. If the vehicle is braked by the HOLD function only, in the following situations it can roll away:

- ▶ If a malfunction occurs in the system or in the power supply.
- ▶ If the HOLD function is switched off by the application of pressure to the accelerator pedal.
- ▶ Whenever you leave the cockpit, always apply the parking brake to secure the vehicle from rolling away.



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Switch assignment can vary, depending on the vehicle's as-built configuration or year of construction.

- ▶ To activate the HOLD function depress the brake pedal and after a short time firmly depress it fully.
 - ◁ The word "HOLD" shows in the instrument cluster.

HOLD

- ▶ Release the brake pedal.

Brakes

In the following cases the HOLD function is deactivated and "HOLD" indicator lamp goes out:

- The "HOLD off" button on the instrument panel is pressed.
- The electronic parking brake is applied.
- The engine is switched off.
- A system fault occurs.
- The power supply is too low.

Frequent-stop brake function

The frequent-stop brake acts on the wheels of all axles. It uses less compressed air than the parking brake and therefore releases more rapidly, but its braking force is weaker.

Note

On account of the reduced braking effect, the frequent-stop brake can be used only on flat ground or uphill/downhill gradients up to max. 15 %. Steeper gradients require application of the parking brake to hold the vehicle stationary.

The frequent-stop brake works only when the on-board electrical system is energized. If the battery is disconnected from the on-board electrical system, the frequent-stop brake is switched off as well.

Operating frequent-stop brake

Operation



Danger

Caution: Risk of injury! due to unwanted movement and unauthorized operation of the vehicle.

- ▶ Whenever you stop and park the vehicle always secure it by applying the parking brake.
- ▶ Whenever you leave the cockpit, always take the vehicle key with you.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in toward the curb.

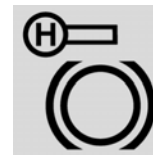
Precondition:

- Vehicle is stationary.
- ▶ Comply with the safety information for operating the braking systems and driver assistance systems (→ Page 162).
- ▶ Press the button for the frequent-stop brake.



- ◁ All wheels are braked with reduced compressed-air pressure.
- ◁ The symbol for "Frequent-stop brake applied" appears in the display.

Frequent-stop brake active



This symbol appears in the display of the instrument cluster

when the frequent-stop brake is active. It also appears when the starting-off lock is active (one or more doors open).

Note

Deactivation of the frequent-stop brake or the starting-off lock is possible only when the doors are closed. The "Ready for pullaway" symbol appears in the display.

- ◁ The "Ready for start-off" symbol is displayed when the frequent-stop brake can be released by the driver depressing the accelerator pedal.

Ready for pullaway



This symbol is displayed as soon as all doors are closed. Depressing the accelerator pedal

makes the symbol disappear and deactivates the frequent-stop brake/starting-off lock.

Note

If the symbol does not show the starting-off lock is still active (e.g. an open door, lift extended).

- ▶ Depress the accelerator pedal.
 - ◁ The "frequent-stop brake" function is deactivated and the symbols are no longer visible in the display.

Note

In an emergency, the frequent-stop brake can be released by means of a lead-sealed switch (see the section headed "Emergency release switch for frequent-stop brake" (→ Page 365) in "Driver service and roadside repairs").

Starting-off lock

The vehicle is equipped with a starting-off lock; the frequent-stop brake is activated as soon as a door is opened.

Retarder

Function

The retarder acts directly on the drivetrain, so its braking effect is virtually wear-free.

The effect is dependent on the vehicle's speed. The retarder's braking effect diminishes at low speeds.

Some driver assistance systems use the retarder function to reduce the vehicle's speed.

If more braking energy is converted into heat than the retarder can dissipate, the retarder can overheat. A warning message to this effect appears in the display.

Retarder and engine brake are also referred to as 'permanent brake'.

Brakes

Operation

- Comply with the safety information for operating the braking systems and driver assistance systems (→ Page 162).

Use of the retarder on downhill gradients

On long or steep downhill gradients, the vehicle's mass causes speed to increase constantly.

On very long and steep downhill gradients, the brake systems have to absorb a very large amount of kinetic energy. This can lead to overheating of the permanent brake.

To prevent damage to the permanent brake, the system reduces braking power when overheating is imminent. A warning message to this effect is issued in the display.



Danger

Risk of accident on account of loss of control over the vehicle due to speed in excess of the maximum permissible speed.

- Slow the vehicle to permissible speed.
- By selecting a lower gear, utilize the engine's braking force.
- Comply with speed limits.
- On your approach to a downhill gradient, reduce speed and select a lower gear.
- If necessary, use the service brake to prevent overheating.

Activation by combination switch



M46.10-A021-71

The retarder is activated in stages by means of the right combination switch.

- Stage 1: From its 'neutral position' (5) move the combination switch down one notch to the 'stage 1' position (5.1).
- To increase braking effect move the combination switch down farther to the maximum 'stage 5' position (5.5); to cancel the braking effect move the combination switch all the way up.

Activation by brake pedal

On light application of the service brake, the braking effect is produced by the retarder initially and only afterward by the service brake.

- ▶ Depress the brake pedal only slightly to activate the retarder.



- ◁ The indicator lamp shows in the display instrument.

Performance limit

Some driver assistance systems, such as 'Tempomat' cruise control, make use of the retarder function. If the retarder gets too hot a warning message to this effect appears in the display and retarder power is reduced.

Depending on the driving situation, the diminished braking effect has to be compensated for by active intervention on the part of the driver.

Active safety systems

The vehicle has an array of state-of-the-art systems to assist the driver.

They are described in detail in the section headed Driver assistance systems (→ Page 200).

Steering

Steering

Important note on steering



Warning

Risk of accident due to failure of power steering assistance and resulting stiff steering.

- ▶ Exercising increased caution, drive the vehicle to the nearest emergency lay-by or the nearest service partner.
- ▶ Have the fault rectified immediately by a service partner.

The size of the steering system and the mechanical steering ratio are such that, if the hydraulic power steering assistance fails, the force that has to be applied to the steering wheel does not exceed what the law deems to be the maximum reasonable force.

The driver must know that if the steering servo breaks down suddenly (e.g. by pump drive malfunction) the coach can nevertheless still be steered although con-

siderably more force must be applied in order to steer.

Since such a situation occurs extremely rarely, but then often completely unexpectedly, the driver may mistakenly assume that the steering system is blocked. The driver merely has to apply the necessary force in order to steer.

This important note should assist in clarifying the described connection and possibly assist the driver against making a misjudgment.

Turning the steering wheel when the coach is stationary

- ▶ Comply with the applicable information!



Note

To prevent damage to the steering column, when turning the steering wheel with the vehicle stationary (stopped vehicle) without hydraulic steering assistance (stopped engine) and without turntables under the front wheels (tires in direct contact with the ground) take the following points into consideration:

- ▶ Disengage the steering wheel lock and push the steering wheel all the way down. Lock the steering wheel adjustment mechanism. Turn the steering wheel with both hands, with an angle of 90° to 180° between your hands.



Property damage notice

The steering wheel should never be turned by two people at once! Do not pull on the steering wheel on one side!



Note

Please comply, particularly in the workshop!

Air suspension

Air suspension

Safety information, air suspension



Warning

Risk of accident and injury due to restricted suspension function or fault in the air suspension.

- ▶ If the suspension depressurizes, proceed at no more than walking pace to the nearest lay-by or to the nearest service partner.
- ▶ As a rule, if work is to be performed on the air suspension system, secure the body on vehicle jacks and jack stands placed at the positions intended for the purpose.
- ▶ If moving the vehicle with the body lowered or raised, drive no faster than walking pace.

The designs of the front suspension and of the drive axle's locating elements ensure that the vehicle can still be maneuvered in the event of pressure loss in the suspension bellows.

In this case, the entire vehicle weight rests on the front suspension and against the jounce stops installed at the rear axle. These jounce stops do not come into play when the suspension is operating under normal conditions. Their function is to prevent the axle and the vehicle from hard contact under extreme compression of the suspension. The jounce stops are not designed for extended exposure to loads and are not a substitute for the standard suspension! Moreover, the body can also be damaged (cracks, etc.).

Raising, lowering vehicle

The kneeling function is for lowering the vehicle either at the door side or at the front axle to make it easier for passengers to board the vehicle. Kneeling can be initiated only at a speed below 3 mph (5 km/h) and the pullaway disabler is automatically activated.

The vehicle can be raised above its normal ride height to increase the angle of approach/departure, for example for driving

on to a ferry or for negotiating tight hairpin bends on gradients.

- ▶ Comply with the safety information in the section headed "Safety information, air suspension" (→ Page 178).

Preconditions:

- Ignition switched on.
- Vehicle is stationary.
- Doors are closed.
- Sufficient operating pressure.
- Level control system ready for operation.



Warning

Caution: Risk of injury! to persons below or directly beside the vehicle, due to the vehicle's lowering action.

- ▶ Lower the vehicle only when you are sure that no-one is below the vehicle and no-one can be trapped by the vehicle's lowering action.

**Warning**

Risk of accident due to increase in overall vehicle height with suspension raised.

- ▶ When moving the vehicle with the body raised, do not exceed the maximum allowable vehicle height.
- ▶ Comply with national regulations and always check available headroom.
- ▶ Press the top section of the switch to left the vehicle or the bottom section to lower the vehicle.



- ◁ The air suspension bellows are vented or charged, as applicable, rising or lowering the body by 2.75 inch (70 mm) accordingly.
- ◁ The corresponding symbol appears in the display of the instrument cluster.

- ▶ To interrupt or reverse the up or down movement, press the "Normal level" (→ Page 179) button.

**Note**

When speed exceeds 18 mph (30 km/h), the vehicle returns to its normal ride level.

**Note**

When the vehicle travels for 20 seconds at more than 59 mph (95 km/h), the front and rear axles are lowered 0.79 inch (20 mm). The suspension is returned to its normal ride level when speed drops below 43 mph (70 km/h).

Kneeling and normal level

Preconditions:

- Ignition switched on.
- Vehicle is stationary.
- Doors are closed.
- Sufficient operating pressure.

- Level control system ready for operation.

Kneeling

To make it easier for passengers to board or exit the vehicle, with the kneeling function activated the front right corner of the vehicle is lowered when the front entrance door opens.

- ▶ Press the bottom section of the switch to lower the front right corner of the vehicle.

**Standard ride height**

- ▶ Press the top section of the switch to raise the vehicle to its normal level.

Air suspension

Activating and deactivating the trailing axle load transfer



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- Pressing button (3) in the cockpit activates axle load transfer of the trailing axle.

i Note

The axle load transfer (starting-off aid) is used especially in winter for starting off or for reversing under wintry road conditions. This feature shifts weight away from the trailing axle to increase the effective weight on the drive axle and enhance traction at the drive wheels.

i Note

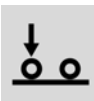
After activation, the compressed air supply to the air suspension bellows of the trailing axle is interrupted. The air suspension bellows are vented by an overflow valve.

i Note

The starting-off aid can be activated only when the ignition is on and the speed of the vehicle is below 13 mph (20 km/h).

i Note

If ASR traction control intervenes, the starting-off aid is activated automatically.



- ◁ When the starting-off aid is active, the LED in the button shows and the "Starting-off aid active" symbol appears in the display.



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- Pressing switch (3) again switches off the starting-off aid.

i Note

The starting-off aid function is interrupted if pressure in the air suspension bellows of the drive axle exceeds 100 psi (7 bar) while the vehicle is moving with axle load transfer activated. The air suspension bellows are again uniformly loaded.

Note

The starting-off aid also switches off when speed exceeds 18 mph (30 km/h).

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Safety information for the Allison automatic transmission

Safety information for the Allison automatic transmission

Gearshifts

- ▶ For optimum use of the Allison automatic transmission, familiarize yourself with the operating routines.
- ▶ Comply with the warning messages, if issued.
- ▶ Intervene in good time to protect against damage.

Selection of the gear

The transmission permits automatic or manual gear selection.

Occasion for driver intervention can arise in both operating modes.



Warning

Risk of accident due to restricted braking effect of engine and transmission on downhill gradient. Despite the range lock, when the maximum governed rpm is exceeded in the selected gear the transmission upshifts one gear. Engine braking effect is diminished accordingly and control over the vehicle can be lost.

- ▶ Use the retarder and the service brake to control the speed of the vehicle.



Warning

Risk of accident due to uncontrolled braking of the drive wheels on slippery surface. The excessive braking effect of the drivetrain caused by a downshift leads to the tires losing adhesion with the road surface. Even active ABS might not be able to prevent skidding.

- ▶ Before downshifting, use the service brake to slow the vehicle.
- ▶ On slippery surfaces, avoid abrupt deceleration due to the braking effect of the drivetrain.
- ▶ Before driving off, familiarize yourself with the operating procedures. For more information see the manufacturer's operating instructions → "Allison World Transmission Operator's Manual".

Reversal of drive direction



Caution

Property damage due to overloading of the transmission and the clutch caused by opposed rotation of the gears in the transmission.

- ▶ Do not permit the vehicle to roll in the opposite direction with a gear engaged.
- ▶ Do not attempt to reverse the direction of the vehicle's movement without pausing with the transmission set to "N" (neutral).
- ▶ Observe the display indicator for gear engagement, it is the only definitive indicator of transmission status.
- ▶ Bring the vehicle to a complete stop before reversing the drive direction.

Leaving the cockpit

Procedure in normal circumstances

Safety information for the Allison automatic transmission



Caution

Property damage due to overload caused by misuse of the transmission.

- ▶ When stopped for any length of time, set the transmission to "N" (neutral).
- ▶ Do not attempt to leave the cockpit with a gear engaged.
- ▶ Apply the parking brake before leaving the cockpit.
- ▶ Switch off the engine and remove the key.

Procedure in exceptional situations

In rare exceptions (e.g. repair) it is necessary to leave the engine running.



Danger

Risk of accident due to unwanted movement of the vehicle when driver leaves driver's seat although the engine is running. While the engine is running, do not leave the driver's seat unless all the preconditions are satisfied:

- ▶ You are sure that there are no passengers in the passenger compartment.
- ▶ The vehicle is secured against unauthorized entry.
- ▶ Transmission is set to "N" (neutral).
- ▶ Parking brake is engaged.
- ▶ On steep uphill or downhill gradients the vehicle is additionally secured with wheel chocks.
- ▶ Adequately secure the cockpit against unauthorized use.

Description of Allison transmission

The direction of travel is selected by means of the buttons on the control panel. The vehicle's speed is then controlled by means of the accelerator pedal and the brake pedal. Advantage: The driver is relieved of the tasks of shifting gears and working the clutch.

The automatic transmission's intelligent gear-selection function takes into account the driver's input (operation of accelerator pedal and application of the brakes),

the current status of the engine, uphill or downhill gradient, as applicable, and the vehicle's load state to select the appropriate gear, achieving an optimum trade-off between comfort, consumption and wear.

There is a choice of 2 drive programs:

- In normal mode, the transmission shifts through all 6 gears when the optimum engine speed for upshifting or downshifting under normal driving conditions is reached.
- In "POWER" mode upshifts are delayed until the engine achieves a slightly higher speed.

The Allison automatic transmission is monitored and controlled by adaptive (teachable) electronics. The electronics analyze the driver's pattern of driving and adapt gearshifting accordingly. In the teach-in phase, therefore, the very first gearshifts are not yet adapted to the driver's pattern of driving and might be perceived to be slightly "hard".

The display in the instrument panel shows the driver system information (e.g. drive program selected, malfunction, etc.).

Safety information for the Allison automatic transmission

The Allison automatic transmission has an electronic fluid level sensor and the driver can view the fluid level registered by this sensor on the display of the control panel.

Operation

Allison automatic transmission control panel



- 1 Display
- R Reverse gear
- N Neutral
- D Drive position
- Arrow Manual gearshifting keys
- MODE Select drive program

Operating Allison automatic transmission

- ▶ Before driving off, familiarize yourself with the controls.
- ▶ Comply with the safety information and warnings for operating the transmission (→ Page 184).

Changing drive programs

There is a choice of 2 drive programs:

- In normal mode, the transmission shifts through all 6 gears when the optimum engine speed for upshifting or downshifting under normal driving conditions is reached.

Operation

- In "POWER" mode upshifts are delayed until the engine achieves a slightly higher speed.



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- ▶ Normal mode: This mode does not have to be selected; the normal mode is the default mode active every time the engine is started.



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- ▶ POWER mode: Press the **(MODE)** button.
 - ◁ The word "POWER" **(1)** appears in the display and the POWER mode is active. The LED in the MODE button shows.
 - ◁ After 1 minute the controller changes back to normal mode.
- ▶ To exit POWER mode sooner, press the **(MODE)** button again.

Selecting direction of travel



Caution

Property damage due to overloading of the transmission and the clutch caused by opposed rotation of the gears in the transmission.

- ▶ Do not permit the vehicle to roll in the opposite direction with a gear engaged.
- ▶ Do not attempt to reverse the direction of the vehicle's movement without pausing with the transmission set to "N" (neutral).
- ▶ Observe the display indicator for gear engagement, it is the only definitive indicator of transmission status.

If the attempt to change the direction of travel is too rushed, the transmission shifts into neutral ("N").



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Forward drive

Precondition:

- The vehicle is stationary and the service brake is applied.
- The engine is idling.
- ▶ Press the **(D)** button.
 - ◁ A number indicating the highest usable gear appears in the display.
 - ◁ The transmission engages a gear for starting off.
- ▶ Start off by releasing the service brake.
 - ◁ The vehicle starts moving.

- ▶ Press the accelerator pedal and accelerate the vehicle.
 - ◁ The automatic transmission shifts automatically to a higher gear.
- ▶ Release the accelerator pedal and allow the vehicle to decelerate, or slow the vehicle additionally by applying the service brake.
 - ◁ The automatic transmission shifts automatically to a lower gear.



Warning

Risk of accident due to uncontrolled handling because of interruption in the engine's braking force or propulsive force.

- ▶ Never set the transmission to "N" for neutral while the vehicle is moving.
- ▶ Perform gearshifts rapidly and steadily.
- ▶ Support the automatic transmission for gearshifting by appropriate use of the accelerator pedal or the service brake.

Reverse

Precondition:

- The vehicle is stationary and the service brake is applied.
- The engine is idling.
- ▶ Press the **(R)** button.
 - ◁ "R" appears in the display.
 - ◁ The transmission engages reverse gear.
- ▶ Press the accelerator pedal and accelerate the vehicle.

Neutral

The transmission has to be in neutral ("N") in order for the engine to start.

Precondition:

- The vehicle is stationary and the service brake is applied.

The control unit automatically selects the neutral position on engine start.

Operation



Caution

Property damage due to overload caused by misuse of the transmission.

- ▶ When stopped for any length of time, set the transmission to "N" (neutral).
- ▶ Do not attempt to leave the cockpit with a gear engaged.

- ▶ If the vehicle is going to be stationary for any length of time with the engine running, set the transmission to "N".

Range lock

Special road conditions, vehicle payload or traffic conditions sometimes require limiting automatic gearshifting to a lower range only. This also strengthens the engine braking effect

The range lock can be selected for all forward gears.

- ▶ Use the arrow buttons (↑) or (↓) to select the desired higher or lower gear.

- ◁ A number indicating the highest usable gear appears in the display.
- ▽ To prevent transmission damage, when a lower gear is selected in this way the transmission does not always downshift immediately.
 - ▶ Reduce vehicle speed in order to initiate the downshift.

Starting off on difficult surface

When the vehicle has to pull away on a difficult surface, the ability to select an appropriately high drive torque is of benefit. For example in slush or deep snow, whenever maneuvering space is restricted and for negotiating steel uphill or downhill gradients.

To operate the vehicle in slush or deep snow, when maneuvering space is limited, and on steep uphill and downhill gradients, press the "down" arrow button until "1" appears in the control panel display. This gear furnishes maximum effective torque as well as the highest level of engine braking

- ▶ Repeatedly press the (↓) arrow button until a "1" appears in the display.
 - ◁ The gear with the highest drive torque is engaged.

Rocking a stuck vehicle free

- ▶ Engage drive "D" (if applicable, gear "1").
- ▶ Gently depress the accelerator pedal for as long as the vehicle is able to crawl forward.
- ▶ Apply the service brake to keep the vehicle from rolling back, releasing the accelerator pedal at the same time.
- ▶ Engage reverse gear "R".
- ▶ Gently depress the accelerator pedal for as long as the vehicle is able to crawl backward. Release the service brake to permit movement.
- ▶ Apply the service brake to keep the vehicle from rolling forward, releasing the accelerator pedal at the same time.
- ▶ Engage drive "D" (if applicable, gear "1").

- ▶ Repeat this procedure until the vehicle moves freely.

Stopping and parking the vehicle

Stopping

In normal driving conditions, there are numerous occasions when the vehicle has to be braked to a standstill (traffic lights, etc.).

When the vehicle is brought to a stop, the controller of the transmission shifts into start-off gear in preparation for starting off. The vehicle can be held stationary by application of the service brake.

Shutting down

In preparation for parking, always shift the transmission into neutral.

- ▶ Press the **(N)** button.
◀ "N" appears in the display.



Danger

Caution: Risk of injury! due to unwanted movement and unauthorized operation of the vehicle.

- ▶ Whenever you stop and park the vehicle always secure it by applying the parking brake.
- ▶ Whenever you leave the cockpit, always take the vehicle key with you.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in toward the curb.
- ▶ Apply parking brake.
- ▶ Switch off the engine.

Allison automatic transmission, fault messages

Display outputs

Display flashes: The controller is suppressing a gearshift to "D" or "R" in order to prevent damage. An initiated gearshift is not carried out for as long as the reason for suppression persists (e.g. wrong engine rpm for the requested gearshift). When the reason no longer applies the display stops flashing and the gearshift takes place. If the gearshift is still not initiated automatically (e.g. range limited), initiate the gearshift again.

Display blank: No data connection or no power supply to the shift selector

Display shows "cat-eye": No data connection to the ECU.

On-board diagnosis

Faults saved in memory can be read out with the on-board diagnosis function.

Precondition:

- The vehicle is safely parked and the parking brake is applied.
- Transmission is in position "N".

Operation

- Ignition switch turned to stage 2.

The LED in the "MODE" button lights up if the displayed fault is currently present.

- ▶ Simultaneously press the (↓) and (↑) arrow buttons. If the vehicle has a fluid level sensor, press the arrow buttons twice.
 - ◁ The fault codes appear in succession in the display.
- ▶ For more information about on-board diagnosis, see "Driver service and roadside repairs".
- ▶ All tasks that change or clear fault codes must be entrusted to trained, qualified specialists.

Checking oil level

Fluid level check with Allison control panel



Caution

Property damage due to incorrect fluid level in the transmission. The transmission can run hot if the fluid level is too low or too high.

- ▶ Check the fluid level at regular intervals and correct the fluid level as necessary.



Note

The automatic transmission has an electronic fluid level sensor. The fluid level can be called up by means of the control panel and viewed in the control panel's display.



Note

The system automatically compensates for variations in transmission fluid temperature between 140 °F and 220 °F (60 °C and 104 °C) based on data from the temperature sensor. At temperatures below 140 °F (60 °C) or over 220 °F (104 °C), the display reading is invalid.

- ▶ Park the vehicle on a level surface.
- ▶ Apply the parking brake and idle the engine with the transmission set to "N" (neutral).
- ▶ Wait for at least 2 minutes for the fluid to collect.



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- ▶ Simultaneously press the "↑" and "↓" arrow buttons.
- ◁ If the display flashes and runs through the sequence of digits from 8 to 1 in descending order, it is still too soon for correct fluid level measurement.
- ◁ The fluid level is displayed when fluid temperature is between 140 °F and 220 °F (60 °C and 104 °C).
- ▶ Read the display.
- ◁ Fluid level is OK: Display shows "OL" (oil level) followed by "OK"
- ◁ Oil level too low: Display shows "OL" (oil level), followed by "LO" (low oil),

Checking oil level

then changes to a number representing the quantity of fluid to be added in quarts. Example: "OL" LO "02" = "oil level is low, top up with 2 quarts".

Note

Use only transmission fluids compliant with the Allison Transmission TES-295 specifications.

- ◁ Oil level too high: Display shows "OL" (oil level), followed by "HI" (high oil), then changes to a number representing the quantity of fluid to be drained in quarts. Example: "OL" LO "01" = "oil level is high, drain off 1 quart".
- ▶ Fault codes shown by display
- ◁ Oil level cannot be displayed: Display shows "OL" (oil level), followed by "- -", then changes to the fault code that indicates the malfunction.
- ◁ "OL" "- -" "0X": Waiting period too short
- ◁ "OL" "- -" "50": Engine speed too low
- ◁ "OL" "- -" "59": Engine speed too high
- ◁ "OL" "- -" "65": Automatic transmission not in "N" (neutral)
- ◁ "OL" "- -" "70": Fluid temperature too low
- ◁ "OL" "- -" "79": Fluid temperature too high
- ◁ "OL" "- -" "89": Transmission output shaft rotating
- ◁ "OL" "- -" "95": Fluid level sensor defective
- ▶ Exit fluid level display by pressing "D", "N" or "R".

Fluid level check, Allison transmission, manual (cold check)



Danger

Caution: Risk of injury! due to unwanted movement and unauthorized operation of the vehicle.

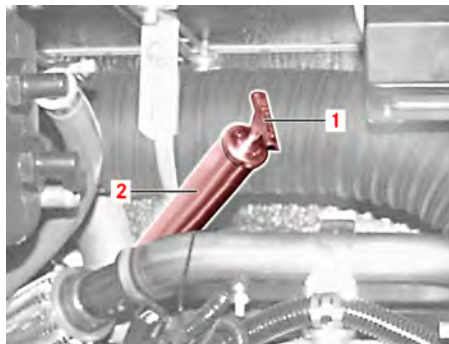
- ▶ Whenever you stop and park the vehicle always secure it by applying the parking brake.
- ▶ Whenever you leave the cockpit, always take the vehicle key with you.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in toward the curb.



Caution

Property damage due to incorrect fluid level in the transmission. The transmission can run hot if the fluid level is too low or too high.

- ▶ Check the fluid level at regular intervals and correct the fluid level as necessary.
- ▶ Check before engine start
- ◀ A manual pre-start check of the fluid level in the transmission is necessary only if it cannot be conclusively established whether there is enough fluid in the transmission to permit an engine start.



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- ▶ Clean the area around the upper end of the filler neck before pulling out the fluid dipstick.



Note

Dirt and foreign matter making their way into the fluid lead to malfunctions and excessive wear of the components.

- ▶ Remove dipstick (1), wipe it with a clean cloth and re-insert it all the way into dipstick tube (2).
- ▶ Remove dipstick (1) and check that fluid is visible up to the "HOT FULL" mark on the dipstick.



Note

The level is high enough if the fluid on the dipstick extends from the tip to close to the mark.

- ▶ Perform a cold check



Note

To ensure that there is enough fluid in the transmission to allow the engine oil level to be checked at operating temperature, the fluid level in the transmission has to be checked shortly after an engine start (cold check).

- ▶ Park the vehicle on a level surface. Apply parking brake.
- ▶ Start the engine and allow it to idle for approx. 1 minute. Transmission is set to "N" (neutral).
- ▶ On the control panel, select Drive by pressing the "D" button and then press the "R" button to select Reverse.

Checking oil level

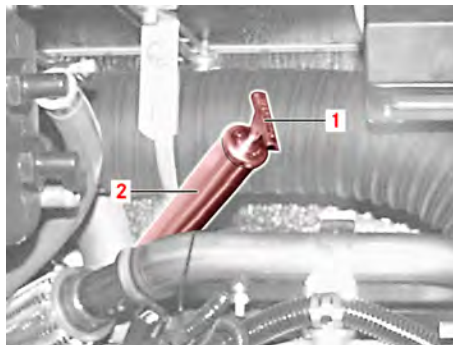
i Note

Excess air is expelled from the fluid system.

- ▶ Then set the transmission back to "N" (neutral) and allow the engine to idle for a short time.

i Note

The fluid temperature should be between 60 ° and 120 °F (16 °C and 49 °C).



M27.00-0025-01

- ▶ Clean the area around the upper end of the filler neck before pulling out the fluid dipstick.

i Note

Dirt and foreign matter making their way into the fluid lead to malfunctions and excessive wear of the components.

- ▶ Remove dipstick (1), wipe it with a clean cloth and re-insert it all the way into dipstick tube (2).
- ▶ Remove dipstick (1) and check that fluid is visible up to near the "COLD RUN" mark on the dipstick.

i Note

Top up with fluid or draw off fluid, as necessary, through dipstick tube (2).

i Note

Measuring the fluid level when the temperature of the transmission is too high falsifies the measurement result, rendering it inconclusive.

- ▶ Recheck the fluid level when the engine has reached its normal operating temperature of 160 °F to 200 °F (71 °C to 93 °C). → Fluid level check, Allison transmission, manual (hot check)

i Note

Use only transmission fluids compliant with the Allison Transmission TES-295 specifications.

 Note

Do not use the transmission for any extended period of time without checking the fluid level with the transmission warmed to its normal operating temperature. Extended operation at the wrong fluid level can damage the transmission.

Fluid level check, Allison transmission, manual (hot check)**Danger**

Caution: Risk of injury! due to unwanted movement and unauthorized operation of the vehicle.

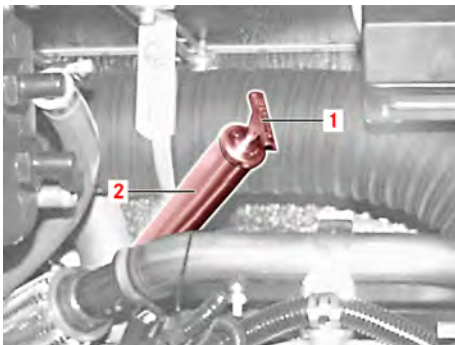
- ▶ Whenever you stop and park the vehicle always secure it by applying the parking brake.
- ▶ Whenever you leave the cockpit, always take the vehicle key with you.
- ▶ Keep the vehicle under supervision at all times, or else close and lock all means of access to the interior of the vehicle.
- ▶ On uphill and downhill gradients use wheel chocks and turn the steered wheels in toward the curb.

**Caution**

Property damage due to incorrect fluid level in the transmission. The transmission can run hot if the fluid level is too low or too high.

- ▶ Check the fluid level at regular intervals and correct the fluid level as necessary.
- ▶ Perform a hot check
- ▶ Operate the transmission under load for at least 1 hour, because the transmission fluid temperature must have reached the normal operating temperature of 160 °F to 200 °F (71 °C to 93 °C) for the check.
- ▶ Park the vehicle on a level surface. Apply parking brake.
- ▶ Start the engine and allow it to idle. Transmission is set to "N" (neutral).

Checking oil level



M27.00-0025-01

- Clean the area around the upper end of the filler neck before pulling out the fluid dipstick.

i Note

Dirt and foreign matter making their way into the fluid lead to malfunctions and excessive wear of the components.

- Remove dipstick (1), wipe it with a clean cloth and re-insert it all the way into dipstick tube (2).
- Remove dipstick (1) and check that fluid is visible up to near the "HOT RUN" mark on the dipstick.

i Note

Top up with fluid or draw off fluid, as necessary, through dipstick tube (2).

i Note

Use only transmission fluids compliant with the Allison Transmission TES-295 specifications.

i Note

Check the fluid level at regular intervals. Variations between individual readings might be indicative of a clogged transmission breather. If differences between readings are considerable, consult the service partner.

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Explanation of terms

Explanation of terms

Overview

Braking and acceleration systems

EBS (Electronic Brake System) assists optimum braking of the vehicle.

ABS (Anti-lock Braking System) prevents the wheels from locking up during braking.

ASR (Acceleration Slip Regulation) prevents the wheels from spinning under acceleration.

ESP (Electronic Stability Program) stabilizes the vehicle against lateral g forces, e.g. when cornering.

Speed control systems

Speed limiter/DBL (endurance brake limiter) prevents the vehicle from exceeding the maximum speed of 62 mph (100 km/h).

Temposet (limiter) prevents the vehicle from exceeding a maximum speed selected by the driver.

Tempomat (drive + brakes) maintains a preset steady speed.

ART (Abstands-Regel-Tempomat, adaptive cruise control, option) maintains a preset speed and reduces speed whenever the vehicle ahead slows. ART issues a warning on approach to within a critical safety distance from the vehicle ahead.

Lane assistance systems

SPA (Spurhalte-Assistent) Lane Keeping Assist issues a warning if the driver inadvertently drifts over the lane marking.

Emergency braking systems

ABA (Active Brake Assist) reduces the danger of a rear-end collision with slower vehicles ahead or stopped traffic and collisions with moving persons.

Attention monitoring

AtAs (Attention Assist, option) warns if the driver exhibits signs of fatigue or inattention.

Other driver assistance systems

360° camera (option) assists the driver for parking and at exits where the view is obstructed.

Sideguard Assist SGA (option) when the vehicle is turning off or making lane

changes, this system warns the driver of the presence of other road users or obstacles in close proximity to the right-hand side of the vehicle.

Function and operation of the driver assistance systems

Some driver assistance systems are constantly in standby mode, and some of them can be deactivated by the driver. Some of these systems rely on each other to some extent, so deactivation of one system might have an effect on certain other systems.

Some assistance systems have to be activated by the driver in order to go operational.

Safety information about the driver assistance systems

Safety information about the driver assistance systems

Responsibility of the driver

Assistance systems provide the driver with assistance for driving in a very wide range of traffic situations.

Despite the assistance these systems provide, responsibility for safe handling of the vehicle resides with the driver.

**Danger**

Risk of accident due to a driving style not adapted to the traffic situation. Even when driving assistance systems are actively providing assistance, responsibility resides with the driver of the vehicle. While assistance is being provided by the driving assistance system, always take heed of the driving situation and

- ▶ the current traffic situation.
- ▶ Assess the weather conditions and the state of the road.
- ▶ Take the behavior of other road users into consideration.

- ▶ Adapt your speed and distance from the vehicle ahead to the state of the road and the traffic conditions.
- ▶ Steer as appropriate to the traffic situation.

Before using or deactivating an assistance system:

- ▶ Familiarize yourself with the way in which the system works.
- ▶ Practice the routines involved.
- ▶ Be aware of the limits of system capabilities.
- ▶ Familiarize yourself with the ways in which the vehicle behaves with and without the driver assistance systems.

Some driver assistance systems can be driver-deactivated; this depends on the type of system.

**Danger**

Risk of accident due to deactivation or failure of one or more electronic driving assistance systems. The driving characteristics of the vehicle can deteriorate, leading to accidents in critical situations.

- ▶ Adapt your driving to suit road and traffic conditions.
- ▶ Do not use the retarder, if installed, or the brake lever in fog or on icy roads, or in difficult road and traffic conditions.
- ▶ Keep a safe distance back from the vehicle ahead.
- ▶ Adapt your speed.
- ▶ In the event of a malfunction, immediately consult a service partner.
- ▶ Adapt your driving to the prevailing road conditions, traffic conditions and weather conditions.

Warning messages in the display

Depending on the scope of the malfunction, a yellow or red message is issued on

Safety information about the driver assistance systems

the display and explained in more detail by an accompanying text.

Warning messages

Warning messages in the display

Warning messages in the display appear as pop-up windows.

Depending on the importance of the information a gray, yellow or red message is issued on the display and, if applicable, explained in more detail by an accompanying symbol and text.

Acknowledging a pop-up window minimizes it, clearing the display for other purposes. However, the warning message remains active in the background until its cause is eliminated.

If two or more messages are active at the same time, each message is represented by a number. These numbers are assigned in consecutive order.

As long as it remains active, a message is shown in the "Fault Messages" and "Events" submenus of the "Messages" main menu.



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- ▶ The ◀ and ▶ buttons on the steering wheel can be used to view additional instructions, if available, on dealing with the situations that lead to the messages.

Display of a yellow message



M54.30-A191-71

Yellow messages warn of functional restrictions; you can continue driving but must exercise extra caution.

The message appears in a pop-up window **(2)**.

In addition, status indicator **(3)** in the status-indicator section of the display shows as well.

Safety information about the driver assistance systems

**Caution**

Property damage due to restricted operation or imminent loss of operability of the vehicle systems. The vehicle's handling characteristics might deteriorate.

- ▶ Adapt your driving in accordance with the content of the warning message.
- ▶ Have the cause of the restriction eliminated immediately by repair by qualified specialists.
- ▶ Stop as soon as possible and consult a service partner.

Acknowledging a yellow message**Danger**

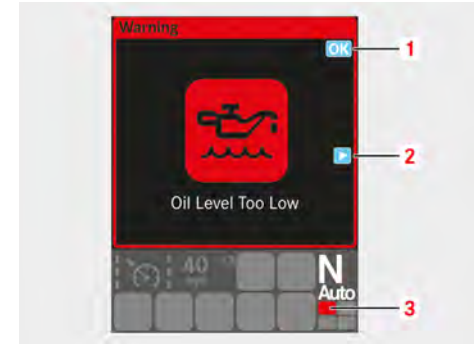
Risk of accident and injury due to distraction from the traffic situation. Operation of integrated information and communication systems requires some share of the driver's attention.

- ▶ Familiarize yourself adequately with operation and handling before you use the information and communication systems.

- ▶ Operate information and communication systems only when the traffic situation permits.
- ▶ If necessary, before using the information and communication systems stop the vehicle safely where it will not impede traffic.
- ▶ When using the telephone or any other communication device, always comply with the applicable legal stipulations.

To clear the display:

- ▶ Acknowledge the message by pressing the **OK** button on the steering wheel.
 - ◀ The pop-up window closes.
 - ◀ Status indicator **(3)** continues to show in the status-indicator section of the display.

Display of a red message

M54.30-A192-71

Red messages indicate safety-relevant malfunctions. Continuing to drive endangers the safety of the passengers, other road users and the driver.

The message consists of a pop-up window **(2)** and an acoustic signal as warning.

In addition, status indicator **(3)** in the status-indicator section of the display shows as well.

Safety information about the driver assistance systems



Danger

Risk of accident due to restriction of the vehicle's operating safety and road safety.

- ▶ Stop immediately, taking the traffic situation into account, and switch on the hazard warning flashers.
 - ▶ If necessary, contact the service partner.
 - ▶ Do not resume driving until the malfunction has been rectified.
- ▶ If necessary, initiate further measures such as towing (→ Page 325).

Acknowledging a red message

To clear the display:

- ▶ Acknowledge the message by pressing the  button on the steering wheel.
 - ◁ The pop-up window closes.
 - ◁ Status indicator **(3)** continues to show in the status-indicator section of the display.

Braking, acceleration and driving-stability systems: EBS, ABS, ASR, ESP

Descriptions:

- EBS Electronic Brake System
- ABS Antilock Braking System
- ESP function on understeer
- ESP function on oversteer

EBS Electronic Brake System

Function

The driver assistance system monitors the brake system after engine start. It cannot be set to inactive status.

The electronic brake system (EBS) assists when the driver uses the brake pedal to slow the vehicle.

Sensors at each wheel continuously register current brake-pad wear. During partial braking the brake pressures for the front and rear axles are modulated as a function of brake-pad thickness.

This constantly modulated braking pressure:

- helps keep brake-pad wear uniform.
- optimizes braking effect every time the brakes are applied.



Note

A "Brake pads" yellow message is displayed in the instrument cluster when the wear limit is reached.

Connected systems

The functions of the ABS and ASR systems are integrated into EBS.

Performance limit

EBS distributes braking power to all the wheels.

If the brake pads on an axle are permitted to wear past the wear limit, even EBS is unable to compensate for the diminished braking effect.

ABS Antilock Braking System

Function

The driver assistance system is always active after an engine start and cannot be set to inactive status by the driver.

ABS modulates brake pressure in such a way that the wheels do not lock up under braking (antilock braking). Consequently, your vehicle retains its steerability.

ABS is operational as soon as the vehicle reaches walking pace and if the roadway is slippery it intervenes even when the brakes are applied only very lightly.

It functions correctly only when:

- the vehicle is fitted with wheels of the approved dimensions.
- tire pressures are correct for the vehicle's payload.
- in winter, appropriate tires (M + S) are fitted.

Connected systems

The functions of the ABS, ASR and ESP systems are integrated into EBS. As long as ABS is intervening actively, the function of the retarder is suppressed.

Performance limit

ABS optimizes the transitions from rotating (therefore steerable) wheel to stationary (therefore braking) wheel, so it

Braking, acceleration and driving-stability systems: EBS, ABS, ASR, ESP

improves tracking and steerability under sharp braking.

Anti-lock braking, however, cannot avert the consequences of not staying far enough back from the vehicle ahead, for example, or speeding in bends.



Danger

Risk of accident due to excessive speed and/or insufficient distance from vehicle ahead. ABS cannot increase the grip between the tires and the roadway. If the vehicle is towing, the trailer might slew off to one side in an emergency braking situation.

- ▶ Always adapt your driving to suit road and traffic conditions.
- ▶ Keep a safe distance back from the vehicle ahead.
- ▶ Adapt your speed.
- ▶ In the event of a malfunction, immediately consult a service partner.

ASR acceleration skid control (ASC)

- ▶ Comply with the safety information for using driver assistance systems (→ Page 201).

The driver assistance system is always in ready status after engine start. It can be switched off by the driver.

ASR, or acceleration skid control (ASC) is a traction control system to prevent the drive wheels from losing traction and spinning on pullaway and under acceleration.

Reduction of the drive torque maintains traction and driving stability.

ASR in action

- ▶ When ASR is active and intervenes in a driving situation, the "TC" (Traction Control) indicator lamp in the instrument cluster flashes.



Performance limit

It is beyond the capabilities of ASR traction control to return a vehicle to the desired lane if overspeeding has resulted in a skid.

If ASR traction control is switched off, excessively sharp acceleration can result in a skid.

Connected systems

If ASR traction control is deactivated, the ABS antilock braking system remains fully operational.

Bear in mind that: ASR traction control and ESP (→ Page 207) stability control are interdependent systems.

Deactivating ASR

Driving on loose surfaces, driving with snow chains (anti-skid chains) and testing on a brake dynamometer are situations in which it can be desirable to have ASR traction control temporarily deactivated.

ASR traction control and ESP (→ Page 207) stability control can be switched off only together.

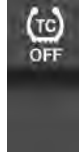
Braking, acceleration and driving-stability systems: EBS, ABS, ASR, ESP



Danger

Risk of accident due to deactivation or failure of one or more electronic driving assistance systems. The driving characteristics of the vehicle can deteriorate, leading to accidents in critical situations.

- ▶ Adapt your driving to suit road and traffic conditions.
- ▶ Do not use the retarder, if installed, or the brake lever in fog or on icy roads, or in difficult road and traffic conditions.
- ▶ Keep a safe distance back from the vehicle ahead.
- ▶ Adapt your speed.
- ▶ In the event of a malfunction, immediately consult a service partner.
- ▶ Before deactivating the system, familiarize yourself with the procedure and the consequences of deactivation!
- ▶ Press the "TC-Off" button.



- ◁ ESP stability control and ASR traction control go inactive.
- ▶ Deactivation of ASR traction control and ESP stability control is indicated by:
 - ◁ The "TC" (Traction Control) warning lamp shows in the instrument cluster.



- ◁ The "ESP off" warning lamp shows in the instrument cluster.



Activating ASR and ESP



Note

The ASR traction control and ESP stability control systems are reactivated automatically the next time the engine is started.

- ▶ Press the "TC-Off" button again.



- ◁ ASR and ESP are active again.
- ◁ The "ESP off" and "TC" warning lamps are off.

ESP Electronic Stability Program

Function

The driver assistance system is always active after an engine start and can be set to inactive status by the driver.

The electronic stability program (ESP) assists driving by:

- reducing engine output.

Braking, acceleration and driving-stability systems: EBS, ABS, ASR, ESP

- selectively braking one or more wheels, as necessary.

It functions ideally only when:

- the vehicle is fitted with wheels of the approved dimensions.
- tire pressures are correct for the vehicle's payload.
- in winter, appropriate tires (M + S) are fitted.

Connected systems

ESP stability control and ASR (→ Page 206) traction control are interdependent systems.

Note

If ASR traction control is deactivated, ESP stability control is also non-functional.

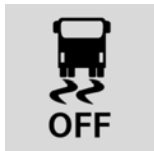
ESP in action

- The "ESP active" indicator lamp flashes when ESP detects a critical situation and actively intervenes.



ESP malfunction

- The "ESP off" Indicator lamp shows steadily if ESP experiences a malfunction. Vehicle behavior is the same as with ESP switched off.



Performance limit

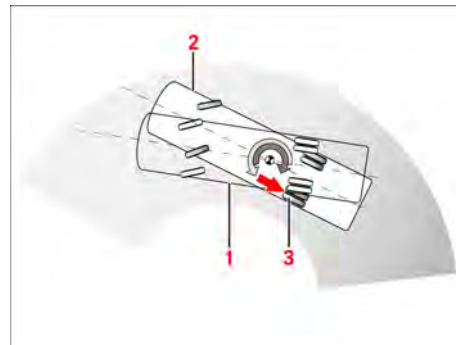
ESP reduces engine output and additionally brakes individual wheels to help correct vehicle understeer or oversteer. In this way and within the limits imposed by physics, ESP helps the vehicle stay on line when cornering.

ESP, however, cannot avert the consequences of speeding.

If ESP is switched off, excessively sharp acceleration can result in a skid.

ESP function on understeer

2-axis vehicle as example



M42_25_0003_01

The front of the vehicle pushes outward over the front axle, the front end skids toward the outside edge of the roadway (2) and departs from the intended line (1). ESP selectively brakes the inside rear wheel (3) and stabilizes the vehicle.

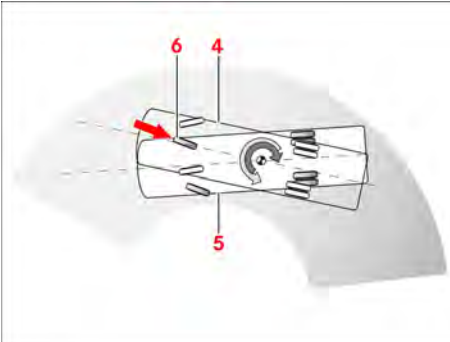
Braking, acceleration and driving-stability systems: EBS, ABS, ASR, ESP

i Note

On a 3-axle vehicle the third axle is controlled separately as necessary.

i Note

On a 3-axle vehicle the third axle is controlled separately as necessary.

ESP function on oversteer**2-axle vehicle as example**

M42_25_0002_01

The rear of the vehicle pushes outward over the rear axle, the front end turns in toward the inside edge of the roadway (5) and departs from the intended line (4). ESP selectively brakes the outside front wheel (6) and stabilizes the vehicle.

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

Speed limiter

Function

This driver assistance system is always active after an engine start and cannot be set to inactive status by the driver.

The speed limiter (permanent brake limiter) intervenes if the vehicle exceeds a speed of 62 mph (100 km/h).

The value is permanently set in the system, so it cannot be changed and applies even when the vehicle is used in other countries.

Connected systems

The speed limiter function accesses the engine management system and the retarder.

Manual disconnection of the retarder function from the brake pedal has no effect on this driver assistance system.

Speed limiter in action

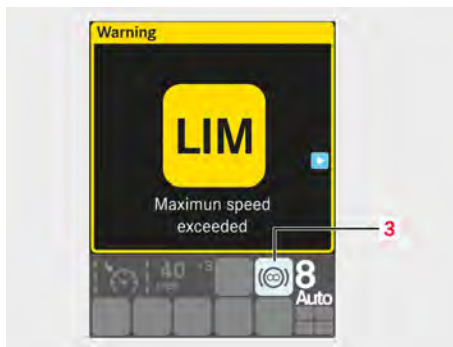
If the vehicle exceeds the permissible maximum speed of 62 mph (100 km/h) in

overrun mode, the system reduces engine output.

Further acceleration by depression of the brake pedal has no effect.

On steep downhill gradients the reduction of engine output is not enough so slow the vehicle.

If speed increases to 64 mph (104 km/h), the driver assistance system activates the retarder.



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"Retarder" indicator light (1) shows. If the situation persists for 30 seconds, a warning message appears in the display.

Performance limit

The braking effect of the retarder depends on:

- the gear engaged,.
- the steepness of the downhill gradient.
- the coolant temperature.



Risk of accident on account of loss of control over the vehicle due to speed in excess of the maximum permissible speed.

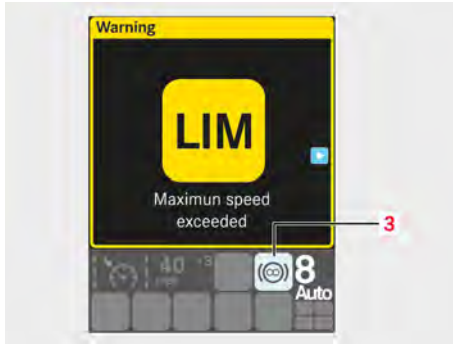
- ▶ Slow the vehicle to permissible speed.
- ▶ By selecting a lower gear, utilize the engine's braking force.
- ▶ Comply with speed limits.

Retarder power is reduced automatically if overheating occurs.

Invariably, responsibility for the speed of the vehicle resides with the driver.

Speed limiter, 'TempoSet', 'Tempomat' cruise control functions

Warning messages



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If speed increases to 66 mph (107 km/h), a warning message appears in the display.

An acoustic warning sounds.

Note

When speed drops below the permissible maximum, the display again shows the menu shown beforehand.

'TempoSet' cruise control (limiter)

- Comply with the safety information for using driver assistance systems (→ Page 201).

The 'TempoSet' cruise control function is inactive when the engine is started and has to be driver-activated when needed.

After being activated, the 'TempoSet' cruise control function limits maximum speed to the speed set by the driver. In the framework of its design capabilities, the driver assistance system prevents the vehicle from exceeding the preset maximum speed. The driver makes use of the accelerator pedal, brake pedal and retarder in the usual way.

The speed limit can also be set when the vehicle is stationary.

The lowest speed that can be set is 9 mph (15 km/h).

Connected systems

The 'TempoSet' cruise control function accesses the accelerator-pedal function.

Manual disconnection of the retarder function from the brake pedal has no effect on this driver assistance system.

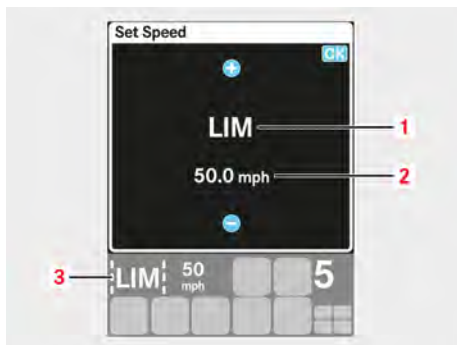
Limiter in action

If the vehicle exceeds the selected maximum speed in overrun mode by more than the tolerance entered by the driver (default is 2 mph (4 km/h)), the system reduces engine output.

Further normal acceleration by depression of the brake pedal has no effect.

If reducing engine output is not enough, the driver assistance system activates the retarder.

Speed limiter, 'Temposet', 'Tempomat' cruise control functions



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Indicator (3) flashes.



M54.30-A057-71

If the preset maximum speed is exceeded a yellow message is issued with the

warning message "Limiter passive" and remains visible until speed has again dropped to the preset maximum speed.

Performance limit

The driver assistance system cannot tell whether the maximum speed set by the driver:

- exceeds a valid speed limit, or
- is appropriate for the prevailing road, traffic and weather conditions.

The braking effect of the retarder depends on:

- the gear engaged,
- the steepness of the downhill gradient,
- the coolant temperature.

Invariably, responsibility for the speed of the vehicle resides with the driver.

Operation



Danger

Risk of accident due to a driving style not adapted to the traffic situation. Even when driving assistance systems are actively providing assistance, responsibility resides with the driver of the vehicle. While assistance is being provided by the driving assistance system, always take heed of the driving situation and

- ▶ the current traffic situation.
- ▶ Assess the weather conditions and the state of the road.
- ▶ Take the behavior of other road users into consideration.
- ▶ Adapt your speed and distance from the vehicle ahead to the state of the road and the traffic conditions.
- ▶ Steer as appropriate to the traffic situation.

- ▶ Before activating the system, familiarize yourself with the procedure and the consequences of activation!

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

Standby mode and activation

Standby mode:

After the ignition has been switched on, the driver first has to set the driver assistance system to standby mode.

In standby mode the system does not actively provide driver assistance.

Standby mode is not canceled until the ignition is switched off.

Precondition for activation:

Seat belt of the driver's seat is buckled.

Retarder not actuated.



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- Set the 'Temposet' limiter function to standby by pressing the **LIM** button.
 - ◁ The 'Temposet' cruise control limiter function is now activated and in the status section of the display the "LIM" symbol shows with a gray background.

Active mode:

Driver assistance does not take place until after the assistance system has been activated.

When deactivated, the driver assistance system returns to standby mode.

- Activate the driver assistance system by pressing the **SET** steering wheel button or by calling up the desired maximum speed by pressing the **RES** steering wheel button while the vehicle is on the move.
 - ◁ The 'Temposet' cruise control limiter function is now active and the "LIM" symbol shows with a white background in the display.
 - ◁ The assistance system actively assists the driver.

**Warning**

Risk of accident due to unexpected behavior of the vehicle. When an assistance system that calls up values saved beforehand by a driver is activated, the vehicle might abruptly slow down or accelerate.

- Before activating, check the presets and adapt them to the current driving situation.
- If necessary change the settings or refrain from activating the driver assistance system.

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

- Observe the vehicle's behavior; take appropriate action as necessary.

Activating the 'Temposet' limiter function when the vehicle is stationary

- Switch on ignition stage 2.



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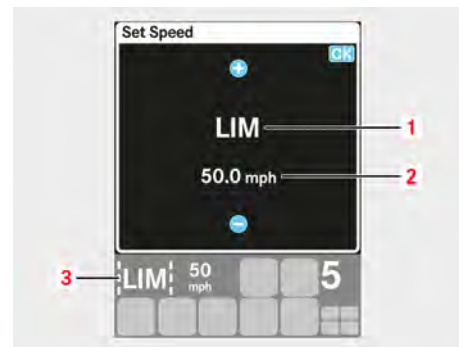
- Press the **LIM** button.
 - ◁ A pop-up window opens in the display and in the status display "LIM" shows gray.
- Use the **SET** and **RES** buttons to set the maximum speed.
- To increase the value, short-press the **SET** button.
 - ◁ The value increases in steps of 0.3 mph (0.5 km/h).
- Or long-press the **SET** button.
 - ◁ The value increases in steps of 3 mph (5 km/h).
- To reduce speed press the **RES** button in the same way as for increasing speed.
 - ◁ Inactivity after a value has been set saves the value.
 - ◁ The assistance system is now in standby mode.
- After pulling away, press the **RES** button to call up the speed saved in memory.
 - ◁ "LIM" symbol (3) shows in the display with a white background.
 - ◁ The assistance system is now active.

Activating 'Temposet' limiter while on the move

- Press the **LIM** button if the assistance system is not yet in standby mode.
 - ◁ The 'Temposet' cruise control limiter function is now selected

and the "LIM" symbol shows with a gray background in the display.

- ◁ The assistance system is now in standby mode.
- Depress the accelerator pedal to accelerate the vehicle to the desired speed.
- Press the **SET** button to set the current speed as maximum speed.



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- Alternatively, press the **RES** button to reactivate a maximum speed saved beforehand.
 - ◁ The 'Temposet' limiter cruise control function is active (1) and

Speed limiter, 'TempoSet', 'Tempomat' cruise control functions

set to the maximum speed (2) recalled from memory.

- ◁ "LIM" symbol (3) shows in the display with a white background.

Manually changing a maximum speed saved in memory

The maximum speed saved in memory can be changed by means of the steering wheel buttons, see the section headed "Activating the 'TempoSet' limiter function when the vehicle is stationary" above.

Braking with 'TempoSet' limiter cruise control function activated

The 'TempoSet' cruise control limiter function remains active when the vehicle is braked by means of:

- retarder, controlled by the combination switch,
- braking with the retarder and then with the service brake as well.

Accelerating with 'TempoSet' cruise control limiter function activated

The maximum speed saved in memory can be exceeded, for example for an overtaking maneuver.

- ▶ Briefly depress the accelerator pedal past the full-load position and all the way to the limit of travel to make the limiter go to inactive status.
- ▶ Perform the overtaking maneuver.
- ▶ On completion of the overtaking maneuver, briefly release the brake pedal and then depress it again.
 - ◁ The assistance system is active again and the preset speed limit takes effect.

On completion of the overtaking maneuver, if speed is higher than the preset maximum speed the driver assistance system slows the vehicle.

A "Limiter passive" yellow message shows until the preset maximum speed is reached.

Deactivating 'TempoSet' cruise control function

If not needed in the current driving situation, the driver assistance system can be set to standby mode as follows:

- ▶ Press the  button.

- ◁ "LIM" symbol (3) shows in the display with a gray background.
- ◁ The most recently set maximum speed shows gray in the status section of the display (beside the "LIM" symbol).
- ▶ To reactivate the 'TempoSet' limiter function, proceed as described in the section headed "Activating 'TempoSet' limiter while on the move" above.

'Tempomat' cruise control function

- ▶ Comply with the safety information for using driver assistance systems (→ Page 201).

The 'Tempomat' cruise control function is inactive when the engine is started and has to be driver-activated.

After being activated, the 'Tempomat' cruise control function uses engine management and the retarder to maintain the cruising speed selected by the driver.

The driver does not need to operate accelerator, brake pedal or retarder, but must

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

nevertheless remain attentive and ready to intervene at all times.

The lowest cruising speed that can be set is 9 mph (15 km/h).

Connected systems

The 'Tempomat' cruise control function accesses the engine management system and the retarder.

'Tempomat' cruise control in action

If the vehicle exceeds the selected cruising speed in overrun mode by more than the tolerance entered by the driver (default is 2 mph (4 km/h)), the system reduces engine output.

If reducing engine output is not enough, the driver assistance system activates the retarder.

Performance limit

The driver assistance system cannot tell whether the cruising speed set by the driver:

- exceeds a valid speed limit, or
- is appropriate for the prevailing road, traffic and weather conditions.

The braking effect of the retarder depends on:

- the gear engaged,
- the steepness of the downhill gradient,
- the coolant temperature.

Invariably, responsibility for the speed of the vehicle resides with the driver.



Danger

Risk of accident due to a driving style not adapted to the traffic situation. Even when driving assistance systems are actively providing assistance, responsibility resides with the driver of the vehicle. While assistance is being provided by the driving assistance system, always take heed of the driving situation and

- ▶ the current traffic situation.
- ▶ Assess the weather conditions and the state of the road.
- ▶ Take the behavior of other road users into consideration.

- ▶ Adapt your speed and distance from the vehicle ahead to the state of the road and the traffic conditions.
- ▶ Steer as appropriate to the traffic situation.

- ▶ Before activating the system, familiarize yourself with the procedure and the consequences of activation!

'Tempomat' cruise control and 'ART' adaptive cruise control (option)

If the vehicle is equipped with the ART adaptive cruise control assistance system, with the 'Tempomat' cruise control function activated additional information appears in the display, see the section headed "ART adaptive cruise control" (→ Page 220).

Ready mode and activation, no ART installed

Standby mode:

After the ignition has been switched on, the driver first has to set the driver assistance system to standby mode.

In standby mode the system does not actively provide driver assistance.

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

Standby mode is not canceled until the ignition is switched off.

Precondition for activation:

Seat belt of the driver's seat is buckled.

Retarder not actuated.



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- ▶ Activate 'Tempomat' cruise control by pressing the  steering wheel button.



- ◁ 'Tempomat' cruise control is now activated and in the sta-

tus section of the display the "speedometer" symbol shows with a gray background.

Active mode:

Driver assistance does not take place until after the assistance system has been activated.

When deactivated, the driver assistance system returns to standby mode.

- ▶ Activate the driver assistance system by setting a cruising speed  or by calling a cruising speed up again  while the vehicle is on the move.
 - ◁ 'Tempomat' cruise control is now active and in the status section of the display the "speedometer" symbols shows with a white background.
 - ◁ The assistance system actively assists the driver.



Warning

Risk of accident due to unexpected behavior of the vehicle. When an assistance system that calls up values saved beforehand by a driver is activated, the vehicle might abruptly slow down or accelerate.

- ▶ Before activating, check the presets and adapt them to the current driving situation.
- ▶ If necessary change the settings or refrain from activating the driver assistance system.
- ▶ Observe the vehicle's behavior; take appropriate action as necessary.

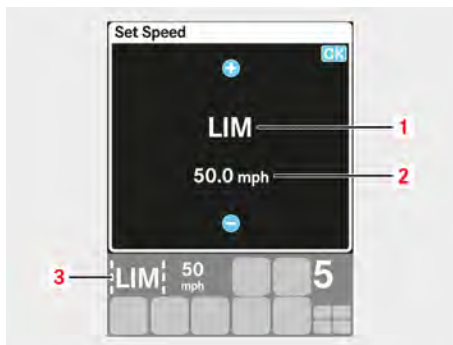
Activating 'Tempomat' cruise control while on the move, 'ART' adaptive cruise control installed

- ▶ Press the  button if the assistance system is not yet in standby mode.



Speed limiter, 'Temposet', 'Tempomat' cruise control functions

- ◁ In the status section of the display the "speedometer" symbol shows with a gray background and 'Tempomat' cruise control is selected.
- ◁ The assistance system is now in standby mode.
- ▶ Depress the accelerator pedal to accelerate the vehicle to the desired speed.
- ▶ Press the  button to set the current speed as cruising speed.
- ▶ Release the accelerator pedal.



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- ▶ Alternatively, press the  button to reactivate a cruising speed saved beforehand.
 - ◁ 'Tempomat' cruise control is active (1) and set to the cruising speed (2) recalled from memory.
 - ◁ "Speedometer" symbol (3) shows with a white background in the display.

Note

If 'ART' adaptive cruise control is installed a warning is issued if the distance from the vehicle in front is less than the specified distance, see the section headed "ART adaptive cruise control" (→ Page 220).

Manually changing a cruising speed saved in memory

The cruising speed saved in memory can be changed by means of the steering wheel buttons.

- ▶ Use the  and  buttons to change the cruising speed.
- ▶ To increase the value, short-press the  button.
 - ◁ The value increases in steps of 0.3 mph (0.5 km/h).
- ▶ Or long-press the  button.
 - ◁ The value increases in steps of 3 mph (5 km/h).
- ▶ To reduce speed press the  button in the same way as for increasing speed.

Speed limiter, 'Temposet', 'Tempomat' cruise control functions

- ◁ Inactivity after a value has been set saves the value.

Braking with 'Tempomat' cruise control function activated

The 'Tempomat' cruise control function remains active when the vehicle is braked by means of:

- ▶ retarder, controlled by the combination switch,
- ▶ retarder, controlled by the combination switch, and additionally braking by the service brake.

The 'Tempomat' cruise control function goes inactive as soon as the retarder is switched off by means of the combination switch.

Braking with the service brake immediately deactivates the 'Tempomat' cruise control function, see "Statusing 'Tempomat' inactive" in this section.

Accelerating with 'Tempomat' cruise control function activated

The cruising speed saved in memory can be exceeded, for example for an overtaking maneuver.

- ▶ Operate the accelerator pedal in the usual way during the overtaking maneuver.
- ▶ Perform the overtaking maneuver.
- ▶ On completion of the overtaking maneuver, release the brake pedal.

On completion of the overtaking maneuver, if speed is higher than the preset cruising speed the driver assistance system slows the vehicle. If speed is lower than the preset speed the vehicle accelerates.

Statusing 'Tempomat' inactive

If not needed in the current driving situation, the driver assistance system can be set to standby mode.

Any of the following activities deactivates the driver assistance system:

- ▶ Apply the service brake while 'Tempomat' is regulating vehicle speed
- ▶ Press the  steering wheel button.
 - ◁ The  shows with a gray background in the display.
 - ◁ The most recently set maximum speed shows gray in the status

section of the display (beside the "speedometer" symbol).

- ▶ Transmission position is "N" (neutral, no gear engaged) for longer than 5 seconds.
 - ◁ A short acoustic signal sounds.

Adaptive cruise control: ART (AbstandsRegelTempomat)

Adaptive cruise control: ART (AbstandsRegelTempomat)

Intelligent cruise control (ART)

- Comply with the safety information for using driver assistance systems (→ Page 201).

Function

ART adaptive cruise control is not in ready state after an engine start, so initially it does not intervene in driving.

ART supplements cruise control with distance control. The system slows or accelerates the vehicle without intervention by the driver, maintaining a steady distance from the vehicle in front.

This function assists the driver in high-density traffic and in convoy driving.

ART registers traffic up to 7874 inches (200 meters) ahead and analyzes the distance from the vehicle ahead and the speed differential.

ART can be activated at a speed of 9 mph (15 km/h).

The function is restricted if:

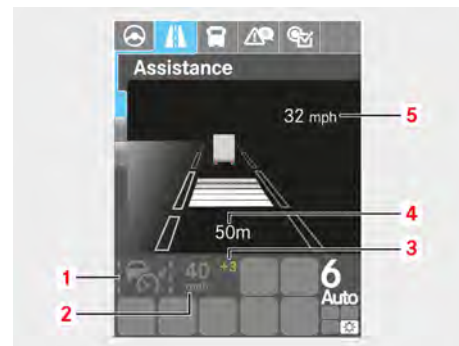
- sensors are dirty or obstructed,
- it is snowing or raining heavily.

Connected systems

ART utilizes and supplements the control functions of cruise control.

ART and ABA together are an ideal combination, but by nature they are separate systems. If ABA is deactivated, a distance warning is issued when necessary, but emergency braking is not automatically initiated.

ART passive



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After engine start, ART is not in ready status and

- "ART" symbol (1) in the status-indicator section of the display is grayed.

When ART detects a vehicle in the lane ahead, the display shows:

- the absolute distance (4) from the vehicle ahead and its speed (5).

Adaptive cruise control: ART (AbstandsRegelTempomat)

ART active

When ART has been activated:

- the display shows the same information as in passive mode,
- "ART" symbol (1) in the status-indicator section of the display shows white if the presence of a vehicle has been detected ahead.

ART now intervenes: it maintains the pre-set speed and brakes when the traffic ahead slows.

 Note

When ART is active and there is no vehicle in the detection cone, the small car in "ART" symbol (1) shows gray and there are no readings for distance and speed shown in the display.

Performance limit

ART is designed for convoy driving, so it calculates the speed differential relative to the vehicle ahead. An excessive speed differential relative to stationary traffic, for example on approach to a traffic tailback or a breakdown, is not registered by ART.

The system brakes with a maximum retardation of 78 inches/s² (approx. 2 m/s²), which corresponds to gentle and passenger-friendly braking.

This ensures that under the circumstances of normal driving no excessive forces act on passengers or luggage.

This rate of deceleration might not suffice in some traffic situations. The driver then has to intervene actively and increase deceleration by means of the retarder or the service brake.

The driver is always responsible for maintaining an adequate safe distance.

ART does not register the conditions prevailing in the surroundings of the vehicle and has to be deactivated in conditions of:

- fog.
- slippery surface.
- difficult road and traffic conditions (e.g. congested traffic, traffic with constantly changing speeds, twisty roads).
- steep uphill or downhill gradients.

- built-up areas.
- frequent lane swerves, e.g. in road-works.
- vehicle not at normal ride height (faulty air suspension or similar).

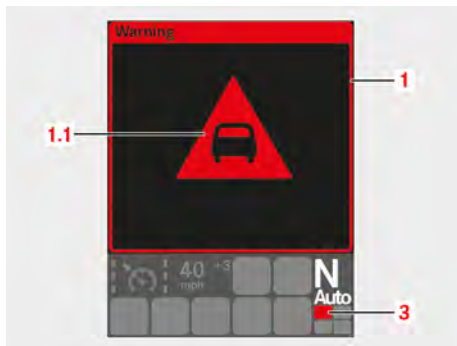
Warning messages can be output without justification, or warning messages might not be issued despite the occurrence of critical situations.

 Note

For detailed descriptions of situations that can lead to unjustified or incorrect warnings, see the section headed "Active Brake Assist, ABA" (→ Page 231).

Adaptive cruise control: ART (AbstandsRegelTempomat)

Warning messages



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If the retardation is not enough to maintain the preset distance from the vehicle ahead, Active Brake Assist issues a red message in the display and a warning tone, see the section headed "Emergency Brake Assist, ABA" (→ Page 231).

The driver has to intervene actively and brake the vehicle more sharply.

Operation



Risk of accident due to a driving style not adapted to the traffic situation. Even when driving assistance systems are actively providing assistance, responsibility resides with the driver of the vehicle. While assistance is being provided by the driving assistance system, always take heed of the driving situation and

- ▶ the current traffic situation.
 - ▶ Assess the weather conditions and the state of the road.
 - ▶ Take the behavior of other road users into consideration.
 - ▶ Adapt your speed and distance from the vehicle ahead to the state of the road and the traffic conditions.
 - ▶ Steer as appropriate to the traffic situation.
- ▶ Before activating the system, familiarize yourself with the procedure and the consequences of activation!

Activating ART while on the move

ART adaptive cruise control is not active after an engine start, so initially it does not intervene in driving. When the presence of a vehicle is detected ahead in the same lane, ART shows the readings for distance from the vehicle and the speed of the vehicle in the "Assistance" menu.

To activate the system while on the move, accelerate to the desired speed and set this speed by pressing the "SET+" button on the steering wheel.

Precondition for activation:

Vehicle traveling faster than 9 mph (15 km/h).



Risk of accident due to unexpected behavior of the vehicle. When an assistance system that calls up values saved beforehand by a driver is activated, the vehicle might abruptly slow down or accelerate.

Adaptive cruise control: ART (AbstandsRegelTempomat)

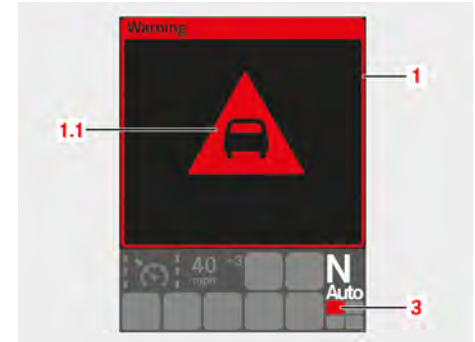
- ▶ Before activating, check the presets and adapt them to the current driving situation.
- ▶ If necessary change the settings or refrain from activating the driver assistance system.
- ▶ Observe the vehicle's behavior; take appropriate action as necessary.
- ▶ If a speed has already been saved, it shows gray in the status section of the display. Check this setting prior to activation and reset if necessary.



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- ▶ Save the current speed by pressing the  button or call up the value saved in memory by pressing .
- ▶ If necessary: Use the  and  buttons to change the cruising speed, see the section headed "'Tempomat' cruise control function" (→ Page 215).
- ▶ Release the accelerator pedal.
 - ◁ ART is now activated.
 - ▽ If a request is invalid the display shows "--- mph".
 - ▶ Check the preconditions for activation and try again.

- ◁ The display shows the information on distance and speeds, see the section headed .
- ◁ ART now intervenes: it maintains the preset speed and brakes, by application of the permanent brakes, when the traffic ahead slows.



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- ▶ If the distance from the vehicle ahead drops below the critical threshold, Active Brake Assist issues a red message in the display and an acoustic warning, see the section headed "Active Brake Assist, ABA" (→ Page 231). In a situation of this

Adaptive cruise control: ART (AbstandsRegelTempomat)

nature also use the service brake to slow the vehicle.

Braking with ART activated

ART remains active when the vehicle is braked by means of:

- ▶ retarder, controlled by the combination switch
- ▶ retarder, controlled by the combination switch, and additionally braking by the service brake.

ART goes inactive as soon as the retarder is switched off by means of the combination switch.

If a vehicle cuts in ahead and reduces its speed to below that of the own vehicle, the own vehicle is braked. The rate of deceleration might not suffice in some traffic situations.

- ▶ Active Brake Assist issues a warning message. If necessary, use the service brake to retard the vehicle.

Braking with the service brake immediately deactivates ART, see "Statusing ART inactive" in this section.

Changing lanes with ART activated

When the vehicle ahead is no longer in the detection cone, for example due to a lane change, if the vehicle ahead swerves or in a tight bend, the own vehicle is accelerated to the preset speed.

When the driver prepares for an overtaking maneuver and presses the accelerator pedal to accelerate, the distance from the vehicle ahead might be reduced to the extent that a distance warning is issued.

By this time at the latest the lane change should be completed, as otherwise the shortened distance from the vehicle ahead will initiate sharp deceleration and this could dangerously delay overtaking.

- ▶ Depress the accelerator pedal to accelerate and cancel ART intervention.
- ▶ On completion of the overtaking maneuver, release the brake pedal.

On completion of the overtaking maneuver, if speed is higher than the preset cruising speed the driver assistance system slows the vehicle. If speed is lower

than the preset speed the vehicle accelerates.

Statusing ART inactive

If not needed in the current driving situation, the driver assistance system can be set to standby mode.

Set ART to inactive status before exiting a freeway or expressway. If ART does not detect the presence of a vehicle ahead it will accelerate the vehicle to the preset speed saved in memory. This could be undesirable on an off-ramp or a minor road.

Any of the following activities deactivates the driver assistance system:

- ▶ Apply the service brake while ART is regulating vehicle speed.

Adaptive cruise control: ART (AbstandsRegelTempomat)



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- ▶ Press the **OFF** button.



- ◁ In the status section of the display, "ART" symbol **(3)** shows with a gray background.
- ◁ The most recently set cruising speed shows gray in the status section of the display (beside the "speedometer" symbol).
- ▶ For reactivation see the section headed: "Activating ART while on the move" at the beginning of this section.

- ▶ Vehicle speed drops below 3 mph (5 km/h) and the vehicle does not have a frequent stop assist system installed.
- ▶ Transmission position is "N" (neutral, no gear engaged) for longer than 5 seconds.
- ▶ Engage reverse gear.
- ▶ There is a malfunction in the brake system.
- ▶ Initialization of the distance sensor has not completed (if soiling is present, clean the front bumper).

Changing ART setting for specified distance

The specified distance can be set in 5 stages in the range from 40 % to 100 %; the default is the equivalent to approx. 60 % of the vehicle's speed.

Approx. 60 % means:

- At a vehicle speed of 62 mph (100 km/h), specified distance is 2362 inches (approx. 60 meters).
- At a vehicle speed of 30 mph (50 km/h), specified distance is 1181 inches (approx. 30 meters).



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- ▶ Repeatedly press the **SET** button until the "Assistance" menu window opens.

Adaptive cruise control: ART (AbstandsRegelTempomat)



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White bars (1) indicate the current specified distance.

The more white bars show, the greater the setting for specified distance.

- 1 bar corresponds to approx. 40 %
- 3 bars correspond to approx. 60 %
- 5 bars correspond to approx. 100 %



M46.10-A020-71

- ▶ Pressing the ▲ and ▼ buttons changes the specified distance.
- ▶ Exit the input window by pressing the OK button.
 - ◁ If 3 seconds pass without a button being pressed, the most recent specified distance setting is saved automatically.
 - ◁ If 10 seconds pass without a button being pressed, the input window closes automatically.

i Note

Switching off the ignition resets the specified distance to the default of approx. 60 %.

Lane Keeping Assist: SPA (SPurhalte-Assistent)

Lane Keeping Assist: SPA (SPurhalte-Assistent)

Lane Keeping Assist (SPA)

The camera installed behind the windshield constantly monitors the position of the vehicle in its lane by detecting the lane markings. By vibrations in the corresponding side of the driver's seat cushion, Lane Keeping Assist (Spurhalte-Assistent, SPA) warns the driver when the vehicle drives across a lane marking detected by the camera. In addition, a warning message is output in the display.

The system goes active automatically as soon as speed exceeds 37 mph (60 km/h) and can be deactivated by the driver, for example when the vehicle is being driven through major roadworks with multiple closely spaced temporary lane markings that would produce unnecessary warnings.

i Note

If deactivated by the driver, Lane Keeping Assist is reactivated after five minutes' driving at a speed >53 mph (85 km/h) and a lane width of more than 126 inches (3.2 m).

When the vehicle passes over lane markings no warning is issued if:

- speed is less than 37 mph (60 km/h),
- the corresponding turn signal is on,
- a rapid lane change takes place,
- the vehicle is slowed.

Performance limit

The function is restricted if:

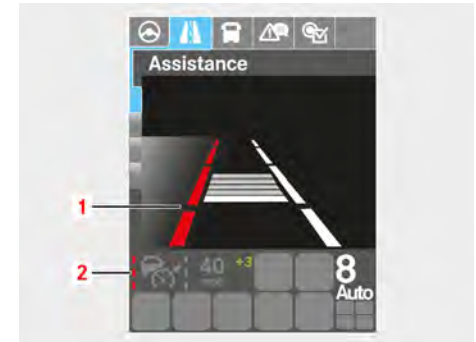
- lane markings are incomplete or poorly visible,
- the vehicle is passing through bends and roadworks,
- there is snow or slush on the roadway or the road surface is very dirty, or in extreme light conditions with deep shadowing,

- heavy rain or snow is falling or the windshield in front of the camera lens is very dirty.

The vibration of the seat cushion is damped by any thick padding placed on the seat and loses its warning effect.

i Note

Use only thin seat padding that does not damp out the vibrations.

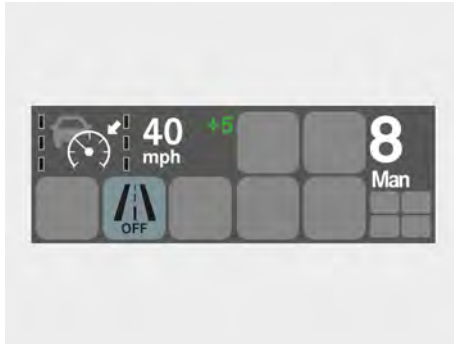
Status indicator

M54.30-A256-71

In the instrument cluster, select the "Assistance" main menu (see the section headed "Display" in "Cockpit controls").

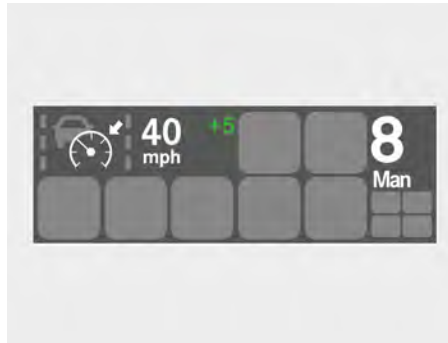
Lane Keeping Assist: SPA (SPurhalte-Assistent)

The lane markings shown in the instrument cluster **(1)** are color-coded to indicate the status of Lane Keeping Assist monitoring:



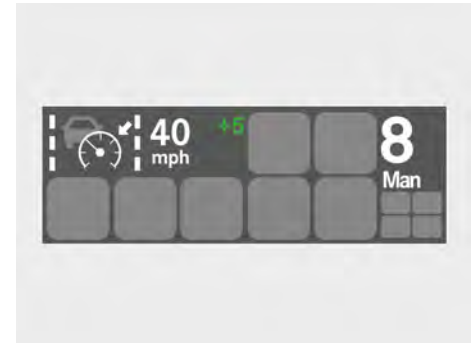
M54.30-A338-71

Lane Keeping Assist is switched off.



M54.30-A339-71

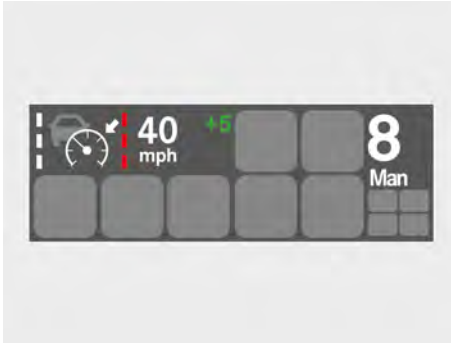
Lane Keeping Assist is switched on, but is not in ready status for issuing warnings. If a lane marking is detected on only one side, a warning is issued only when the vehicle passes over the lane marking that the system has detected.



M54.30-A340-71

Lane Keeping Assist is switched on and ready to issue warnings on the corresponding side of the vehicle.

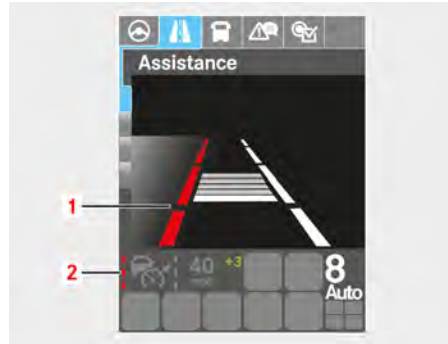
Lane Keeping Assist: SPA (SPurhalte-Assistent)



M54.30-A341-71

Lane Keeping Assist is active and issues a warning for the corresponding side of the vehicle and generates vibrations in the appropriate side of the driver's seat cushion.

Warning message



M54.30-A256-71

- If the vehicle passes over a lane marking the corresponding side shows red (1) and the appropriate side of the driver's seat cushion vibrates.
- In addition, in the status section of the display the corresponding side shows as a red line (2). In this way the visual warning is issued even if the main part of the display is occupied by another message.

Switching off Lane Keeping Assist

**Danger**

Risk of accident due to deactivation or failure of one or more electronic driving assistance systems. The driving characteristics of the vehicle can deteriorate, leading to accidents in critical situations.

- ▶ Adapt your driving to suit road and traffic conditions.
 - ▶ Do not use the retarder, if installed, or the brake lever in fog or on icy roads, or in difficult road and traffic conditions.
 - ▶ Keep a safe distance back from the vehicle ahead.
 - ▶ Adapt your speed.
 - ▶ In the event of a malfunction, immediately consult a service partner.
-
- ▶ Before deactivating the system, familiarize yourself with the procedure and the consequences of deactivation!
 - ▶ Lane Keeping Assist can be switched off only in the "Systems" (→ Page 123) settings menu.

Lane Keeping Assist: SPA (SPurhalte-Assistent)



Note

The next engine restart also reactivates the driver assistance system.

Active Brake Assist: ABA**ABA Active Brake Assist**

- Comply with the safety information for using driver assistance systems (→ Page 201).

ABA is always active after an engine start and can be set to inactive status by the driver.

ABA reduces the risk of rear-ending a vehicle traveling at lower speed or colliding with a stationary object in front of the vehicle. The fifth-generation ABA system also reacts to the presence of pedestrians in its detection range by initiating partial braking or, if necessary, emergency braking. In critical situations, ABA helps reduce the consequences of accidents.

The area in front of the own vehicle is monitored constantly and objects that are radar-beam reflective (e.g. metal objects) are analyzed. A warning is issued if the vehicle closes to within critical range of a slower vehicle ahead, a stationary object, or a pedestrian. The driver therefore has

the opportunity to defuse the critical situation by braking or evading.

If there is no detectable reaction by the driver, the next step is automatic deceleration of the vehicle, stage by stage to a complete standstill if necessary.

Automatic warning and braking reaction of the pedestrian detection system is performed up to a vehicle speed of 30 mph (50 km/h).

Under certain circumstances, ABA might not react correctly to the following in particular:

- vehicles approaching head-on from opposite direction,
- cross traffic,
- narrow vehicles (motorcycles, bicycles, etc.), traveling off-center in the lane occupied by the bus,
- stationary pedestrians or pedestrians in tunnels,
- animals.

In the following situations particularly, Active Brake Assist might warn unexpectedly or reduce the vehicle's speed:

- in vehicle wash facilities,
- on approach to stationary objects in tunnels,
- on ferries,
- in road-to-rail loading yards,
- in toll booths,
- in workshops.

The following are causes that might prevent visual and/or acoustic warning in a critical driving situation:

- Active Brake Assist has not correctly assessed the dangerousness of the situation,
- Active Brake Assist is switched off,
- Active Brake Assist has failed,
- Active Brake Assist is overridden by the driver.

Connected systems

ABA and ART together are an ideal combination, but by nature they are separate systems. Even if ART is deactivated, all

Active Brake Assist: ABA

ABA warning messages and functions remain active.

Note

Deactivating ABA does not switch off the ART adaptive cruise control system. For instructions on deactivating ART see the section headed "ART adaptive cruise control". (→ Page 220) In principle, ABA should never be deactivated.

Note

In the description below, deceleration is expressed in percent. The figure represents a percentage of the normal g force, which is the acceleration rate of 393 inches/s² (10 m/s²) due to gravity. Deceleration of 20 % means that the vehicle is slowed at 78 inches/s² (approx. 2 m/s²). This, in turn, means that every person and every object in the vehicle has to be restrained with approximately 20 % of their mass. Deceleration in excess of 70 % is possible in maximum full-stop braking on a road surface providing good grip. Persons, therefore, have to be restrained with 70 % of their

body weight in order not to fall over or slip out of their seats. Only a correctly buckled seat belt can restrain a person who is not prepared for this unanticipated force.

ABA in action

- Stage 1:
Red message and intermittent warning tone. Muting of telephone and cockpit speakers.
- Stage 2:
Red message, intermittent warning tone and partial braking with deceleration increasing up to 40 %. Brake lights are activated.

Note

To allow for the high dynamism of which pedestrians are capable and in order not to trigger unnecessary warnings and partial braking, intervention is delayed to the very last moment. Consequently, in the case of persons moving in the lane ahead, stages 1 and 2 are simultaneous.

- Stage 3:

Red message, continuous warning tone and maximum full-stop braking (emergency braking) with the maximum possible deceleration (on roadway with good grip more than 70 %). Rapid flashing of the hazard warning lights is activated if initial speed is in excess of 30 mph (50 km/h).

- Stage 4:
End of emergency braking and securing of the vehicle against rolling away until the accelerator pedal is pressed. After emergency braking to a standstill, the hazard warning lights change automatically to slow-flashing (option).

Note

The assistance system activates each stage in turn only in the continued absence of intervention by the driver. See the section headed "Progress of emergency braking by ABA" for an overview.

Performance limit

After ignition or after pullaway, for a few seconds full system power is not available.

able. The ABA sensors run a process of automatic adaptation over a certain initial distance after delivery of the vehicle. During this teach-in phase, ABA is not available or only conditionally available.

Under certain circumstances, Active Brake Assist might not react correctly to the following in particular:

- stationary pedestrians (if not detected beforehand as moving pedestrians),
- pedestrians concealed from the system's radar by other objects,
- the typical contour of a pedestrian if it does not stand out against the background,
- a pedestrian not detectable as such, for example on account of special clothing or other objects,
- pedestrians or vehicles moving quickly into the detection cone of the sensors,
- pedestrians in a tunnel.

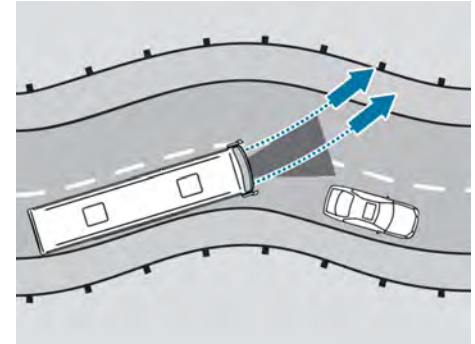
ABA is subject to functional restrictions:

- if sensors are dirtied or obstructed,
- if a camera is dirtied or obstructed,

- in snow or heavy rain, fog, heavy spray, glare, direct sunlight, or changing light conditions,
- in glare, for example from oncoming traffic, direct sunlight or reflections (e.g. off a wet roadway),
- when the roadway is covered by ice, snow, water or the like,
- in the traffic situations shown below (see illustrations).

Complicated traffic situations can lead to unfounded distance warnings or even to failure to issue distance warnings in situations when warning is appropriate.

The ABA radar sensor detects vehicles that are directly in front of the own vehicle.



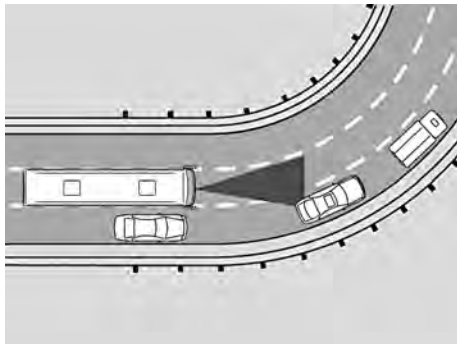
M54.70-0045-71

Curves:

- Vehicles in the same lane are outside the detection cone. Active Brake Assist and Adaptive Cruise Control might not warn/brake, even though a critical driving situation arises. Adaptive Cruise Control might unexpectedly initiate acceleration.

Do not wait in expectation of a warning but react appropriately and in good time.

Active Brake Assist: ABA

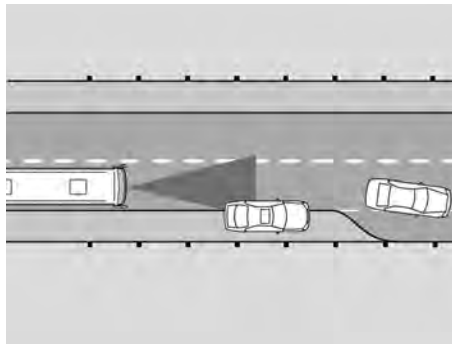


M54_00-1004-01

Curves:

- Active Brake Assist and Adaptive Cruise Control might unexpectedly issue a warning or decelerate your vehicle. Adaptive Cruise Control might unexpectedly initiate acceleration.

Do not wait in expectation of a warning but react appropriately and in good time.

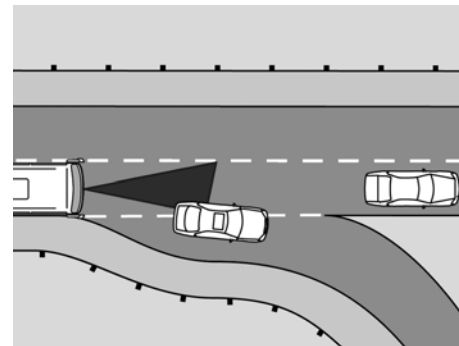


M54_00-1005-01

Vehicles positioned parallel or offset:

- When a lane change is in progress vehicles are still partially in the same lane and are still detected by the driver assistance system.
- Deceleration of the maneuvering vehicle shortens the distance between vehicles additionally and can trigger a warning sooner.
- Active Brake Assist and Adaptive Cruise Control might unexpectedly issue a warning. Adaptive Cruise Control might unexpectedly initiate acceleration.

Interrupt intervention by the driver assistance system in good time.



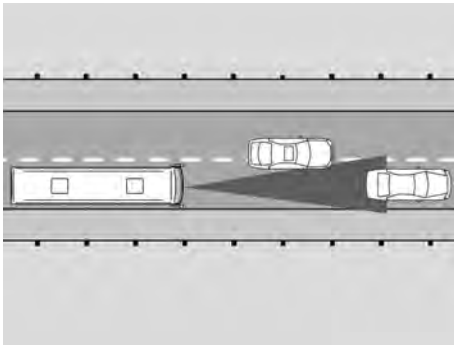
M54_70-0032-01

Vehicles in off-ramp lanes or swerving:

- When a lane change is in progress vehicles are still partially in the same lane and are still detected by the driver assistance system.
- Deceleration of the maneuvering vehicle shortens the distance between vehicles additionally and can trigger a warning sooner.
- Active Brake Assist and Adaptive Cruise Control might be too late de-

etecting obstacles or stationary vehicles in front of the detected vehicle.

- Active Brake Assist and Adaptive Cruise Control might not warn/brake, even though a critical driving situation arises.



M54_00-1006-01

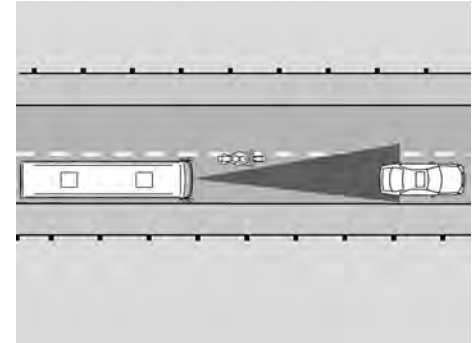
Vehicles in on-ramp lanes and offset in lane:

- When a lane change is in progress vehicles are only partially in the same lane and are detected too late.
- Active Brake Assist and Adaptive Cruise Control might unexpectedly

issue a warning or decelerate your vehicle.

- Active Brake Assist and Adaptive Cruise Control might not warn/brake, even though a critical driving situation arises.
- Adaptive Cruise Control might unexpectedly initiate acceleration.

Do not wait in expectation of a warning but react appropriately and in good time.



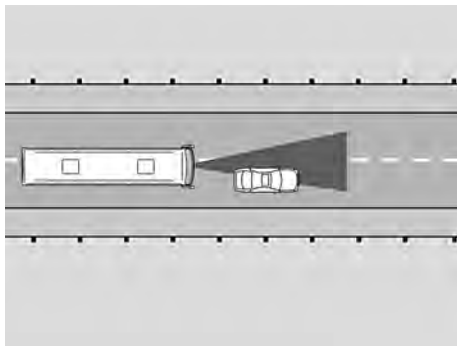
M54_00-1007-01

Narrow vehicles and vehicles cutting in too close in front:

- Narrow vehicles are outside the cone of detection, a warning is not issued early enough.
- Vehicles cutting in too close ahead of the own vehicle are detected too late. A warning and brake initiation are too late.
- Active Brake Assist and Adaptive Cruise Control might not warn/brake, even though a critical driving situation arises.
- Adaptive Cruise Control might unexpectedly initiate acceleration.

Active Brake Assist: ABA

Do not wait in expectation of a warning but react appropriately and in good time.

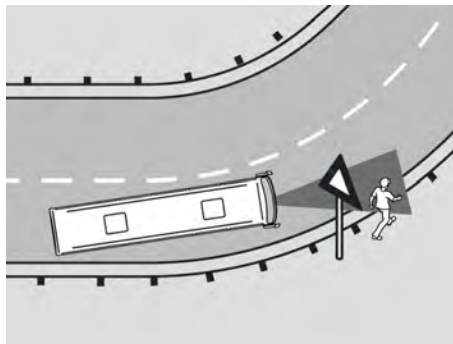


M54_00-1009-01

Overtaking other vehicles:

- Acceleration and lane change by the own vehicle in an overtaking maneuver shorten the distance from the vehicle ahead and can trigger a warning.

Interrupt intervention by the driver assistance system in good time.

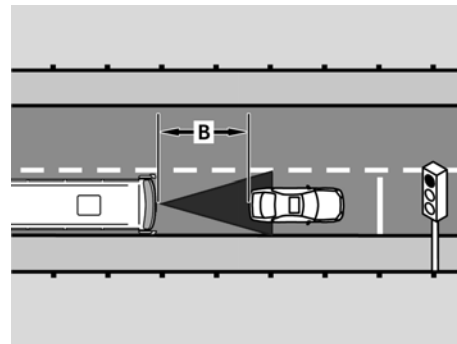


M54.70-0046-71

Persons or obstacles in bends or at entrances to designated stopping areas:

- Vehicles, posts, guardrails, traffic signs, bridge pylons at the outside of a bend or persons moving at the outside of a bend can trigger a warning.

Interrupt intervention by the driver assistance system in good time.

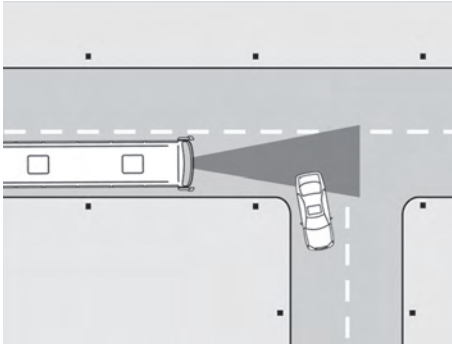


M54_70-0030-01

Stopping vehicles:

- Vehicles ahead brake irregularly or more sharply than anticipated and trigger a warning.

Either assist or interrupt the driver assistance system's intervention in good time, as the situation requires.

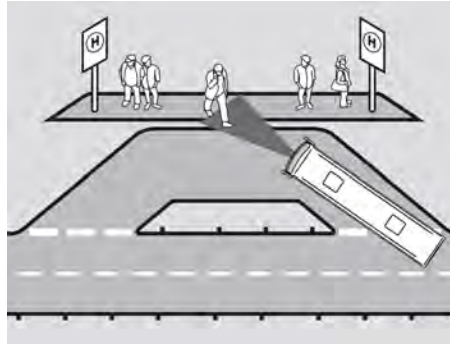


M54.00-3206-71

Traffic joining at intersections:

- In areas with intersections, entrances and exits, detection of vehicles ahead can be problematic. This can lead to an unexpected system reaction.

Either assist or interrupt the driver assistance system's intervention in good time, as the situation requires.



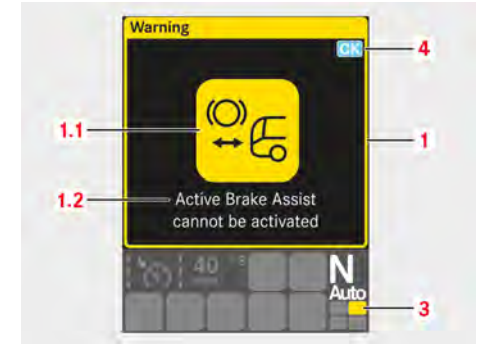
M54.70-0047-71

Designated stopping area:

- Vehicle pulls in to a designated stopping bay and on account of the shape of the roadway for a certain time it is approaching head-on toward standing/moving pedestrians or stationary objects there (e.g. bus-stop sign, street light). This situation can trigger an unjustified warning.

Interrupt intervention by the driver assistance system in good time and always think well ahead when approaching a designated stopping area.

Warning messages

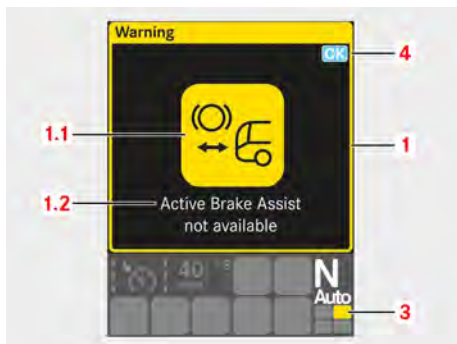


M54.30-A257-71

If the driver assistance system cannot be started when the engine starts or when the button is pressed, a warning message to this effect is issued.

A warning message is also issued if a fault occurs while the driver assistance system is active.

Active Brake Assist: ABA



M54.30-A258-71

Warning messages (1) indicate:

- icon (1.1),
- explanatory text (1.2) and indicator in the status area of display (3).
- An acoustic warning sounds.

Vehicle behavior is the same as with ABA switched off.

Deactivating ABA



Risk of accident due to deactivation or failure of one or more electronic driving assistance systems. The driving characteristics of the vehicle can deteriorate, leading to accidents in critical situations.

- ▶ Adapt your driving to suit road and traffic conditions.
- ▶ Do not use the retarder, if installed, or the brake lever in fog or on icy roads, or in difficult road and traffic conditions.
- ▶ Keep a safe distance back from the vehicle ahead.
- ▶ Adapt your speed.
- ▶ In the event of a malfunction, immediately consult a service partner.

- ▶ Before deactivating the system, familiarize yourself with the procedure and the consequences of deactivation!
- ▶ Active Brake Assist can be switched off only in the "Systems" (→ Page 123) settings menu.



The next engine restart also reactivates the driver assistance system.

- ▶ ABA deactivation is indicated by:
 - ◁ The "ABA OFF" warning lamp shows in the instrument cluster.



If the driver does not manually switch the ABA system on again, it is reactivated automatically after 10 minutes or when the engine is next restarted.

Activating ABA

- ▶ Active Brake Assist can be switched on only in the "Systems" (→ Page 123) settings menu.
 - ◁ The "ABA OFF" warning lamp in the instrument cluster goes out.

i Note

The next engine restart also reactivates the driver assistance system.

Driver action in response to warning and intervention

The emergency braking system assists the driver, but it is not a substitute for thinking ahead and adopting a cautious, preventive driving style.

No later than when stage 1 warning messages are issued, the driver must assess the situation independently of the assistance system and act appropriately.

Warning

Caution: Risk of injury! due to flying objects. The forces occurring in quick swerves or due to an accident can cause unsecured objects to be flung around at considerable velocity.

- ▶ Adequately secure all heavy, hard and sharp-edged or pointed objects.
- ▶ Brake with the service brake to utilize the full stopping distance.

- ▶ If necessary, apply the service brake to achieve maximum full-stop braking when the system has already initiated partial braking.
- ▶ Interrupt intervention by the driver assistance system if a warning is unjustified.

After emergency braking by the driver assistance system:

- ▶ secure the vehicle, if applicable remove it from the danger zone and park it safely.
- ▶ attend to passengers and ascertain their condition.

Interrupting assistance-system intervention

In warning stages 1 and 2, when partial braking has already been initiated in other words, the driver can actively intervene by:

- ▶ depressing the accelerator pedal down past its current position or past the pressure point (kick-down).

- ◁ The acoustic warnings are suppressed, the warning messages in the display remain visible.
- ◁ Partial braking, if already initiated by the assistance system, is canceled.
- ▶ Activate the turn signal, as appropriate.

i Note

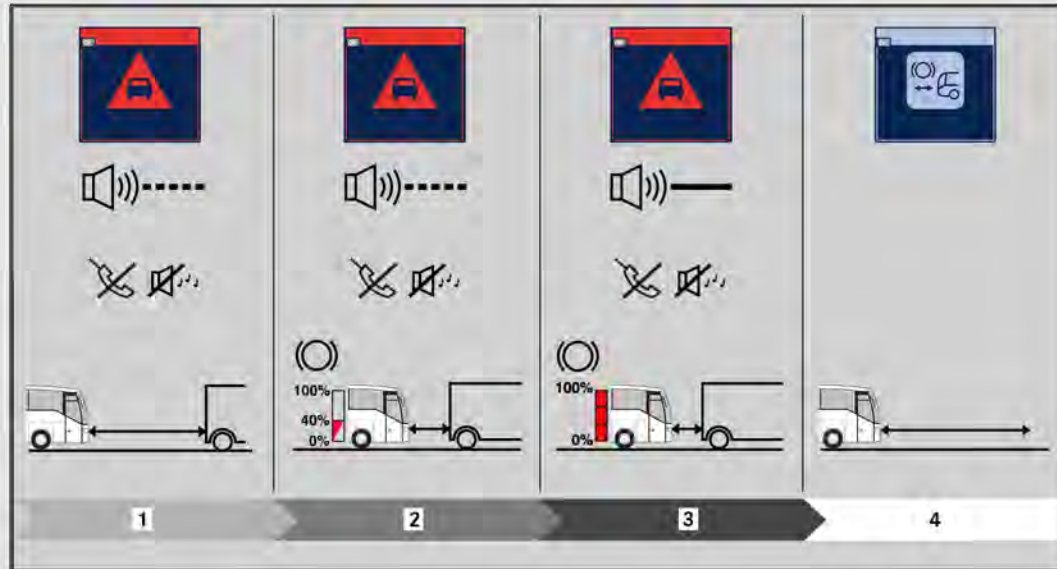
If ABA has reacted to the presence of persons, activating the turn signal does not cancel ABA intervention.

In warning stage 3, when maximum full-stop braking has already been initiated in other words, the driver can actively intervene by:

- ▶ depressing the accelerator pedal past the pressure point to the kick-down position.
 - ◁ The acoustic warnings are suppressed, the warning messages in the display remain visible.
 - ◁ Maximum full-stop braking, if already initiated by the assistance system, is canceled.

Active Brake Assist: ABA

Procedure for emergency braking by ABA

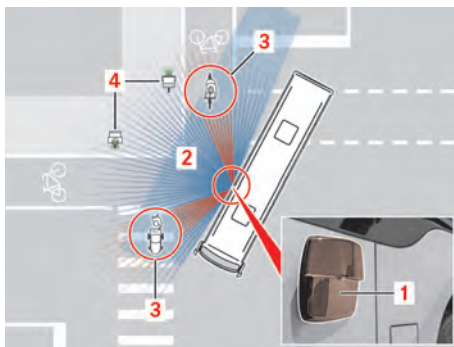


1. Warning stage 1: ABA issues a red message and an intermittent warning tone.
To allow for the high dynamism of which pedestrians are capable and in order not to trigger unnecessary warnings and partial braking, when the presence of pedestrians is detected intervention is delayed to the very last moment. Consequently, this warning of the presence of persons is accompanied by simultaneous initiation of partial braking (warning stage 2).
2. Warning stage 2: Partial braking, red message, intermittent warning tone and brake lights are activated.
ABA brakes with up to 40 % (increasing).
3. Maximum full-stop braking, red message and continuous warning tone.
ABA brakes with the maximum possible deceleration.
If the vehicle is traveling faster than 30 mph (50 km/h) when maximum full-stop braking is initiated, rapid flashing of the hazard warning lights is activated during brake application (emergency braking high-frequency flashing) to warn following traffic.
4. Emergency braking ended, gray message.
After emergency braking to a standstill, the hazard warning lights change automatically to slow-flashing (option). After emergency braking to a standstill, the HOLD function prevents the vehicle from rolling.

Sideguard Assist (option)

Sideguard Assist (option)

Sideguard Assist (Blind Spot Assist, option)



M54.00-3352-71

i Note

Sideguard Assist is a **warning system** that implements a two-stage warning concept enabling the driver to act in good time to defuse a potentially critical traffic situation without the assistance of others.

It monitors the area along the right-hand side of the vehicle with two radar sensors. The radar sensors are mounted on the

side wall of the vehicle behind the front axle **(1)**.

Moving objects such as persons or vehicles **(3)** that have moved within the detection zone **(2)** are detected. A warning is issued if the driver is preparing to turn off to the right.

Sideguard Assist works in the vehicle speed range from walking pace up to the maximum speed.

i Note

If the driver initiates a rapid turn-off to the right the system also reacts to stationary objects such as traffic light poles or traffic signs **(4)**, if they are within the tracking zone calculated for the curve of the vehicle's trajectory.

i Note

If the vehicle is towing, the trailer is treated as if it were an external object, not part of the vehicle.

A rear-mounted ski box is identified as part of the vehicle.



M54.00-3048-71

To help prevent a collision in a lane-change or right-turn situation, for example with passing bicycles, other vehicles or pedestrians, LED warning element **(1)** in the right outside mirror shows steady yellow until the current situation changes.

This information is intended to prompt the driver to scan the immediate surroundings viewable in the rear-view mirrors more closely for collision-risk vehicles or persons and adapt immediately subsequent driving activity accordingly.

i Note

A yellow warning signal appears in the display in the "Drive" menu.

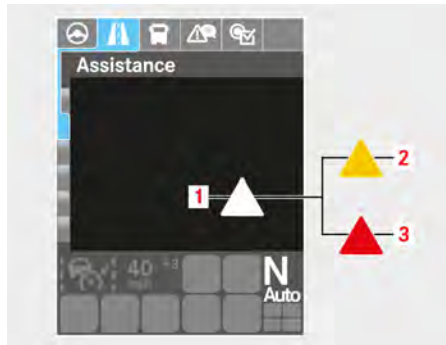
If a collision with bicycles, other vehicles or persons is imminent in a lane-change or right-turn situation, LED warning element **(1)** in the right outside mirror quick-flashes red. This is accompanied by a haptic warning in the form of perceptible vibration in the right side of the driver's seat cushion.

This is intended to produce an instant reaction or change of behavior on the part of the driver within a very short time, e.g. brake and/or steer.

If the risk of collision persists 2 seconds after detection, LED warning element **(1)** in the right outside mirror shows steady red.

i Note

A red warning signal appears in the display in the "Drive" menu.



M54.30-A260-71

The following warning stages can be shown in the form of symbols in the "Assistance" menu:

- Sideguard Assist **operational (1)**,
- Sideguard Assist warning stage **Information (2)** warning stage 1,
- Sideguard Assist warning stage **Warning (3)** warning stage 2.

Deactivating seat cushion vibration

Comply with the safety information for using driver assistance systems (→ Page 201).

! Danger

Risk of accident due to restricted detection and due to deactivation of the Blind Spot Assist system. If the Blind Spot Assist system has been deactivated, the driver does not receive a warning of the presence of persons, other vehicles or objects to the right of the vehicle. If detection is restricted the Sideguard Assist system might issue a warning too late, or not at all. In these cases in particular, detection might be restricted:

- ▶ dirtied, iced-up or obscured sensors,
- ▶ extra-wide lanes,
- ▶ guardrails or other roadside boundaries.

Measures

- ▶ Keep the traffic situation under close observation at all times and

Sideguard Assist (option)

allow ample clearance along the side of the vehicle.

- If the Blind Spot Assist system has been deactivated, reactivate it without delay.

The 'seat cushion vibration' haptic warning can be deactivated in the display by going to the "Settings" main menu and then selecting the "Systems" submenu.

Attention Assist (option)**AtAs Attention Assist****Function**

Attention Assist (AtAs) warns the driver of changes in his or her normal driving pattern. Changes of this nature occur due to increasing fatigue and inattentiveness.

The active profile is registered in the first few minutes of driving and saved as the driver's normal driving-behavior pattern. For the rest of the drive AtAs compares the momentary driving data with the profile saved in memory and can identify discrepancies, taking the following criteria into consideration:

- Personal style of driving, e.g. characteristics of steering.
- Driving conditions, e.g. driving time.

AtAs goes active automatically after engine start when speed reaches approximately 37 mph (60 km/h), but it can be deactivated by the driver.

Note

The next engine restart also reactivates the driver assistance system.

Connected systems

AtAs has no access to the data logged by the tachograph.

AtAs in action

If it detects the signs typical of driver fatigue or increasing inattentiveness on the part of the driver, AtAs issues a warning message via the display.

Note

AtAs warns irrespective of the rest periods and driving times required by law.

Performance limit

AtAs also accesses the logging of steering movements and the driving profile.

It does not warn, or issued delayed warnings, on:

- twisty roads.
- trips that average slower than 37 mph (60 km/h).

Invariably, responsibility for complying with the driving times and rest periods required by law resides with the driver.

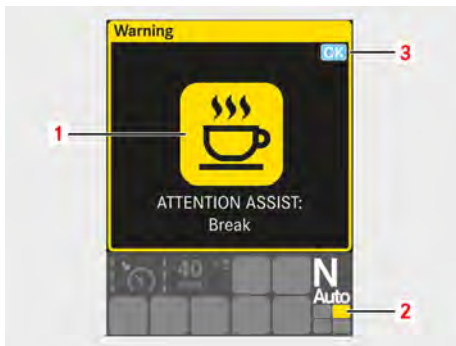
Active profile

The active profile is created in the minutes after engine start and subsequently serves as the basis for comparison for analysis of the current driving situation.

If 15 minutes pass without registration of a vehicle movement, the valuation basis for the active profile is reset and a new profile is created following resumption of the journey. This reset is independent of engine status and ignition status (i.e. "on" or "off").

Attention Assist (option)

Warning messages



M54.30-A261-71

If it detects signs of fatigue or inattentiveness, AtAs warns by:

- issuing a "Break" message **(1)** in the display.
- inducing vibrations in the seat cushion.

After being acknowledged, the message remains visible in the status section of the display **(2)**.

No further warning will be issued for at least 15 minutes.

The vibration of the seat cushion is damped by any thick padding placed on the seat and loses its warning effect.

Note

Use only thin seat padding that does not damp out the vibrations.

360° camera (option)**360° camera****Function**

The 360° camera assists the driver for parking and at exits where the view is obstructed.

The system consists of four cameras and monitors the immediate vicinity of the vehicle.

The 360° camera is available when:

- The vehicle is moving forward up to a speed of approx. 21 mph (35 km/h),
- The vehicle is reversing.

 Note

The 360° camera is merely an aid and cannot be a substitute for the exercise of your attention for everything happening in the vicinity of the vehicle. Invariably, responsibility for safe maneuvering and parking resides with the driver.

It does not take the place of cautious and responsible maneuvering or the directions given by a second person acting as spotter. Whenever you maneuver or

park the vehicle, make sure that there are no persons, animals or objects anywhere in the danger zone.

The system needs approx. 20 to 40 seconds to initialize; during this time the images from the cameras are not available. Pulling away is not recommended until all systems are available.

The system analyzes images from the following cameras:

- Reversing camera (below the rear window),
- Front camera (below the windshield),
- Two side cameras (above the side windows).

**Warning**

Risk of accident by objects higher than the cameras projecting into the traffic space, for example protruding roofs, the vehicle's own outside mirrors or the mirrors of other vehicles. The cameras cannot see these objects. In the 360° view in particular the impression of surroundings free of obstructions can be

created, despite the presence, above the mounted cameras, of objects protruding into the maneuvering space.

- ▶ Instead of relying solely of the images shown by the cameras, examine the maneuvering area and the traffic space for objects in the immediate vicinity of the vehicle.
- ▶ Whenever the traffic situation is uncertain, cameras are faulty or the lenses obscured and when the lighting is poor, do not attempt to maneuver unless you have the help of a second person as spotter.
- ▶ Use of the system is only conditionally possible in heavy rain, snowfall and if the lens is obscured. Direct sunlight, sudden changes in ambient lighting brightness (e.g. tunnel and darkness) can briefly impair imaging.
- ▶ If the reversing camera is obscured by attachments such as a ski box or trailer, if the rear hatch is open or the rear end of the vehicle is damaged, do not attempt to maneuver

360° camera (option)

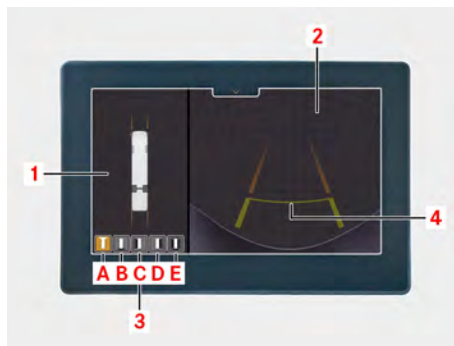
unless you have the help of a second person as spotter.

Measures

- ▶ Clean the cameras and keep them free of foreign matter.
- ▶ Regularly check the cameras to ensure that they are in full working order.
- ▶ In the event of a failure, permanently out-of-focus images or delayed imaging, have the system repaired by a service partner.

View when vehicle stationary or moving forward

This view is displayed when the vehicle is stationary or moving forward at a speed up to approx. 21 mph (35 km/h). The screen switches off when speed is above 21 mph (35 km/h). It switches on again when speed drops below approx. 19 mph (32 km/h) and at speeds above 21 mph (35 km/h) a tap on the screen switches the image on again.



M54.71-A013-71

- (1) Image in left monitor section
- (2) Image in right monitor section
- (3) Choice of views

- (A) **Top view 360° camera image** in left monitor section and **front camera image** in right monitor section,
- (B) **Top view 360° camera image** in left monitor section and **reversing camera image** in right monitor section,
- (C) **Top view 360° camera image** in left monitor section and **left side camera image** in right monitor section,

- (D) **Top view 360° camera image** in left monitor section and **right side camera image** in right monitor section,
- (E) **Top view 360° camera image.**

(4) Yellow guidance line approx. 1.0 m from the vehicle on roadway level

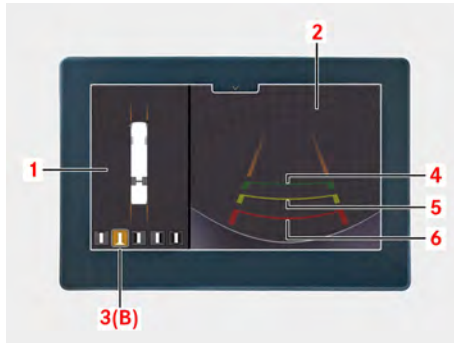
View when reversing

When reverse gear is engaged, the view from the reversing camera appears in the right section of the monitor.

Note

The reversing camera always has priority over the door camera.

Manual suppression of the image from the reversing camera is not possible; the only way to clear the image is to take the transmission out of reverse.



M54.71-A014-71

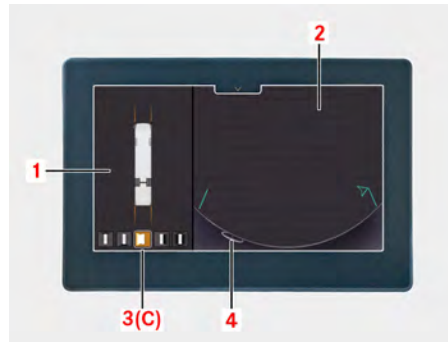
- (1) Top view 360° view
- (2) Reversing camera image
- (3) View B for **top view 360° image** in left monitor section and **reversing camera view** in right monitor section
- (4) Green guidance line 59 inches (approx. 1.5 m) from the vehicle on roadway level
- (5) Yellow guidance line 39 inches (approx. 1.0 m) from the vehicle on roadway level
- (6) Red guidance line 20 inches (approx. 0.5 m) from the vehicle on roadway level

i Note

When maneuvering at idle speed, the vehicle travels a distance of 59 inches (approx. 1.5 m) in one second. Therefore, the distance to the green guidance line is covered within one second.

View when turn signals activated

When the left turn signals are in operation, the image viewed by the left side camera is shown.



M54.71-A015-71

- (1) Top view 360° view
- (2) Left side camera image

- (3) View C for **top view 360° camera image** in left monitor section and **left side camera image** in right monitor section

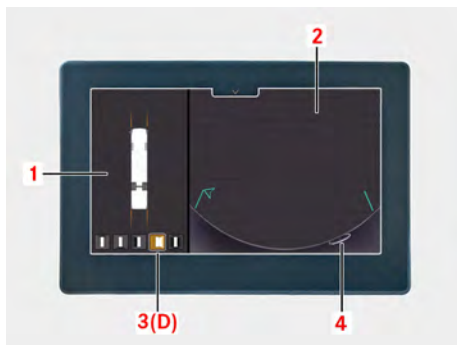
- (4) Depiction of rear axle

i Note

The cameras have fish-eye lens to maximize the scope of viewing. Consequently, straight lines appear curved in the camera image.

When the right turn signals are in operation, the image viewed by the right side camera is shown.

360° camera (option)



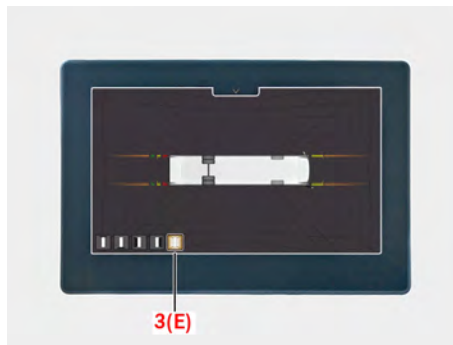
M54.71-A016-71

- (1) Top view 360° view
- (2) Right side camera image
- (3) View D for **top view 360° camera image** in left monitor section and **right side camera image** in right monitor section
- (4) Depiction of rear axle

Note

The cameras have fish-eye lens to maximize the scope of viewing. Consequently, straight lines appear curved in the camera image.

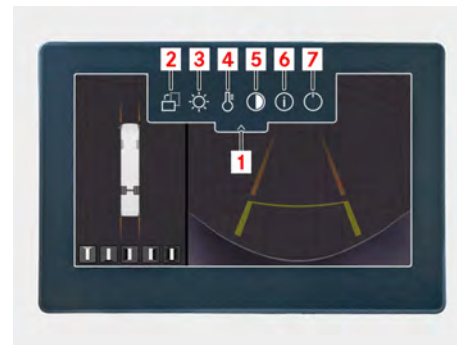
Top view 360° camera image



M54.71-A017-71

- (3) View E for top view 360° camera image, entire monitor

Settings menu



M54.71-A018-71

Pressing button (1) opens the Settings menu and the following settings can be made:

- (2) Settings menu, show in portrait format,
- (3) Adjust brightness,
- (4) Adjust color saturation,
- (5) Adjust contrast,
- (6) System information, tap again to skip back,
- (7) Switch monitor off, tap again to switch monitor back on.

 Note

Tap the corresponding button again to toggle from manual to automatic.

Operation with ski box or trailer

If the ski box or trailer has a compatible camera system, the reversing camera of this system is used instead. If the ski box or trailer does not have a reversing camera, the image from the reversing camera is obstructed by the ski box or trailer.

System limits

In the following situations the 360° camera works only conditionally or not at all:

- Doors are open,
 - Engine compartment flap is open,
 - Heavy rain or snow or thick fog,
 - Poor light conditions, e.g. at night,
 - Camera lens covered over, misted over or dirty,
 - Parts of the vehicle in which cameras are installed have suffered damage.
- In this case, have the cameras, their

positions and settings checked by a service partner.

- Incident bright sunlight or light from other sources, for example on exiting a tunnel or leaving covered parking.

 Note

Do not use the 360° camera in the above-mentioned situations. Otherwise persons could be injured or objects could be damaged as the vehicle is being parked or maneuvered.

Vehicle attachments (e.g. ski box, bicycle carrier or trailer) can restrict the viewable area and other functions of the 360° camera.

If the display's usability is significantly restricted, for example by pixel errors, have the display repaired or replaced by a service partner.

Use only clean water and a soft cloth to clean camera lenses. Do not use high-pressure cleaners.

Intelligent Headlight Control: IHC

Intelligent Headlight Control: IHC

Intelligent Headlight Control (IHC)



Warning

Risk of accident despite Adaptive High-beam Assist. The Adaptive Highbeam Assist does not react to:

- ▶ road users who do not have light sources, e.g. pedestrians
- ▶ road users who have only weak light sources, e.g. cyclists
- ▶ road users whose light source is concealed, e.g. by an interposed guardrail
- ▶ crossing road users

Measures

- ▶ Keep the traffic situation under close observation at all times and switch from high beams to low beams in good time.



Note

Intelligent Headlight Control (IHC) does not detect an overtaking vehicle until it is completely ahead of the own vehicle.

In very rare cases, Intelligent Headlight Control does not react or fails to react in time to other road users with their own lighting.

This, in turn, means that in situations of this nature or similar situations, the automatic high beam headlights are not deactivated or are activated despite the presence of other vehicles.

- ▶ Comply with the safety information for using driver assistance systems (→ Page 201).

Function

Intelligent Headlight Control (IHC) is a driver assistance system designed to improve illumination of the roadway ahead in the dark without dazzling other road users in oncoming traffic. A camera detects the presence of other road users and controls

the high-beam headlights in accordance with the traffic situation.

The camera also detects light from street lighting and ambient brightness and this function prevents the high-beam headlights from being activated by the system unnecessarily when the illumination from street lighting is adequate. Cyclists can be detected, depending on their lighting and the traffic situation, but detection is not ensured. Keep the traffic situation under close observation at all times, therefore, and switch from high beams to low beams manually when necessary.

Intelligent Headlight Control (IHC) is activated when speed exceeds 18 mph (30 km/h) and deactivated when speed drops below 16 mph (27 km/h). The function has no upper speed limit. Intelligent Headlight Control is merely an assistant system. The driver is always responsible for correct vehicle lighting suitable for the prevailing conditions of light and visibility and for the traffic situation as well.

Vehicles with Intelligent Headlight Control have a camera behind the windshield.

Intelligent Headlight Control: IHC

The system detects the following traffic situations:

- vehicles ahead with their lights on
- oncoming vehicles with their lights on

The following influencing variables can lead additionally to automatic activation/deactivation of the high beams:

- the ambient brightness
- the vehicle speed

System limits

Intelligent Headlight Control cannot make allowance for road and weather conditions and the traffic situation.

In the following situations the system can be restricted or nonoperational:

- In poor visibility, for example on account of snow, rain, fog or heavy spray
- If the windshield in front of the camera lens is dirty, fogged or damaged
- If the windshield in front of the camera lens is obstructed, for example by a defective windshield wiper or a sticker
- On very narrow and winding roadways

- If attachments, such as a snowplow for example, obstruct the camera's view of the lane markings
- After significant change in vehicle load state while the engine is running. Consequently, after a significant change in vehicle load state you should always switch the engine off and restart it to ensure that the Intelligent Headlight Control function is available without restriction

Keep the windshield directly in front of the camera lens clean and free of snow and ice. Use the windshield wipers or if necessary, clean the windshield by hand.

If the system experiences a fault the high beams are switched off. A display message in the instrument cluster notifies the driver of the malfunction.

Switch the high beam headlights on manually when they are needed.

Switching Intelligent Headlight Control on/off

- ▶ When Intelligent Headlight Control is active, the gray indicator lamp in the instrument cluster shows.



- ▶ When IHC has switched the high beams on automatically, the blue indicator lamp in the instrument cluster shows.



Depending on the vehicle's as-built configuration or year of construction, Intelligent Headlight Control (IHC) can be switched off only in the "Systems" (→ Page 123) settings menu.

Notes on refrigerants in air conditioning systems 256

Notes on refrigerants in air conditioning systems

Notes on refrigerants in air conditioning systems

Note

Your vehicle's air conditioning system is filled with the refrigerant R-134a and contains fluorinated greenhouse gas.

Information about the refrigerant is printed on the information sign on the inside of the engine compartment flap.

- ▶ Open the engine compartment flap.
- ▶ Use only refrigerant R-134a.
- ▶ Use only the ester oils approved by Mercedes-Benz.
- ▶ Do not mix the approved ester oil with ester oils that are not approved for the refrigerant R-134a.
- ▶ Entrust servicing tasks such as topping up refrigerant or replacing components to a certified workshop only.

Note

All applicable regulations and SAE standard J639 must be complied with.

- ▶ If the engine compartment flap is replaced, the signs all have to be replaced as well.



M54.30-A337-71

1. Symbol for hazard warnings and service information.
2. Quantity of refrigerant in lbs.
3. Reference to workshop documentation.

4. CO₂ equivalent of the refrigerant used.
5. Applicable SAE standard.
6. A Part number (vehicle-related).
7. GWP (Global Warming Potential) of the refrigerant used.
8. Trademark (durable common automotive parts).
9. Refrigerant type.



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10. Foreign languages.

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Safety information on heating, ventilation, air conditioning (HVAC)

Safety information on heating, ventilation, air conditioning (HVAC)

- ▶ Keep the driver's window and the roof hatches closed to ensure correct control of the systems.
- ▶ At the front of the vehicle, keep the openings underneath the spare wheel clear. Make sure that no objects slip out of position while the vehicle is on the move and obstruct the openings. Otherwise operation of the heating, ventilation and air conditioning could be impaired.
- ▶ Only appropriately trained and qualified persons are permitted to work on the air conditioning system.
- ▶ When work is to be performed in the vicinity of ventilation blowers of the condenser or evaporator unit, switch off the engine and remove the ignition key. If the automatic air conditioning is on, the ventilation blower starts automatically and can present a risk of injury.
- ▶ Familiarize yourself thoroughly with the operating procedures before us-

ing the auxiliary heater. Inadvertent programming of the preset function and start-up of the auxiliary heater can lead to dangerous situations.



Danger

Risk of poisoning and risk of burn injuries due to hot parts of the exhaust system and exhaust gas.

- ▶ Inside closed spaces such as garages, run the engine and the auxiliary heater only with exhaust extraction systems in operation.
- ▶ Make sure there is an adequate fresh air supply.
- ▶ Keep well clear of hot parts.
- ▶ If necessary, wear appropriate protective clothing.



Danger

Risk of combustion due to hot parts of the exhaust system.

- ▶ Switch off the auxiliary heater inside structures and at filling stations.

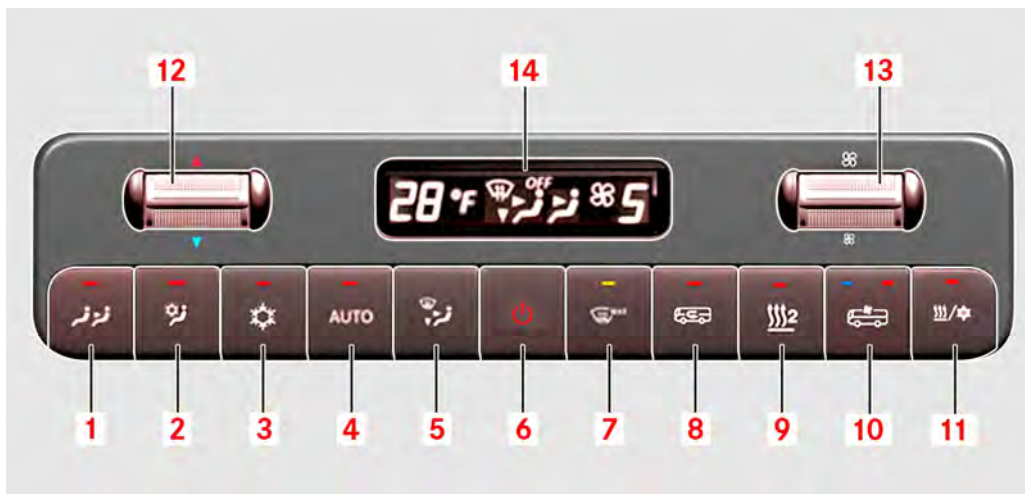
- ▶ Do not park beside or on dry grass or fields of stubble.
- ▶ Keep well clear of fuel pumps and parked vehicles.
- ▶ Avoid zones with concentrations of gas or dust in the air, such as gas depots, stocks of coal or wood and the like.
- ▶ Use only air extraction systems that are approved for these exhaust temperatures.
- ▶ For information on using the auxiliary heater see the section headed "Pre-selecting auxiliary heater, preheating engine, programming switching times" .

Control panel for heating, ventilation, air conditioning (HVAC)

Control panel for heating, ventilation, air conditioning (HVAC)

The HVAC control pane has 11 pushbuttons, 2 rocker buttons and a display. The pushbuttons have backlit symbols and LED function lighting.

Control panel for heating, ventilation, air conditioning (HVAC)



Control panel for heating, ventilation, air conditioning (HVAC)

- 1 Zone changeover, driver cockpit (FAP) - passenger compartment (FGR): Press the pushbutton switch once to switch from the zone from driver cockpit to passenger compartment. Rocker buttons 12 and 13 are for adjusting the temperature and the blower setting for the passenger compartment. Pressing the pushbutton switch again reactivates the driver cockpit zone.
- 2 Enable cooling mode, driver's cockpit: This button enables the cooling mode for the driver's cockpit or - if cooling mode is already active - switches it off. The LED rapid-flashes if there is no cockpit air conditioning system installed or if the switch-on conditions are not satisfied.
- 3 Enable cooling mode, passenger compartment: This button enables the cooling mode for the passenger compartment or - if cooling mode is already active - switches it off. The LED rapid-flashes if there is no passenger-compartment air conditioning system installed or if the switch-on conditions are not satisfied.
- 4 Automatic control: When this switch is pressed while the cockpit zone is activated, optimum values (temperature and blower speed) for the cockpit are set and cooling mode for cockpit and passenger compartment is switched to standby status. The defrost, smog and reheat modes are deactivated as well. When this switch is pressed while the passenger-compartment zone is activated, blower speed for the passenger compartment is adjusted automatically to an optimum value, the set values for temperature in the passenger compartment and the values for the cockpit are not changed.
- 5 Air-outlet flap adjustment, driver cockpit (FAP): Use this button to set the flaps that control the air-discharge direction to any of seven different positions between windshield and footwell.
- 6 ON / OFF (wake-up): When the ignition is off, the HVAC can be switched on and off with this button. When the ignition is on and "engine off", pressing the button activates or deactivates standby mode, as applicable. When the engine is running, pressing the button switches passenger-compartment control on or off, as applicable.
- 7 Defrost mode: Pressing this button activates or, as applicable, deactivates the defrost function for the cockpit (maximum outlet air temperature and blower setting, air discharge directed toward windshield). The de-

Control panel for heating, ventilation, air conditioning (HVAC)

- frost mode is limited to 30 minutes of operation.
- 8 Recirculated air/smog mode: This button activates or, as applicable, deactivates the recirculated air/smog mode of operation. Operation is limited to 30 minutes.
- 9 Enable auxiliary heater: When the ignition is on, pressing this button activates or, as applicable, deactivates the auxiliary heater. The LED quick-flashes if the switch-on conditions are not satisfied. When the ignition is off, the auxiliary heater is switched on. Operation is limited to 30 minutes and the last nine minutes are counted down on the display.
- 10 Roof ventilators: Short-pressing pushbutton switch 10 switches the roof ventilators to air induction (the blue LED in the button shows).
- Long-pressing (> 2 seconds) activates air extraction (red LED in the button shows). Short-pressing the button switches off the roof ventilators.
- 11 Reheat mode: If the vehicle is equipped with an air conditioning system, this pushbutton switch activates or deactivates the reheat mode. Operation is limited to 30 minutes. The LED rapid-flashes if the switch-on conditions are not satisfied (outside temperature must be higher than 50 °F (10° C)). Depending on the type of air conditioning system installed, the reheat mode can be activated for cockpit and passenger compartment or for cockpit only.
- 12 Temperature adjustment: Press top of switch: Target temperature setting is increased. Press bottom of switch: Target temperature setting is reduced.
- 13 Blower speed adjustment: Press top of switch: Blower speed is increased. Press bottom of switch: Blower speed is reduced.

Heating, ventilation, air conditioning, operating unit

Note

If the settings for temperature, blower speed and air-outlet flap positions are changed manually, after four hours with the ignition switched off these settings are reset to the following values:

- Outlet air temperature 30 °C,
- Blower setting 4,
- Air outlet flap position "distributed".

In addition, defrost, a recirculated air or reheat mode, if activated, is deactivated.

Automatic control

Pressing button **(4)** activates or deactivates automatic control.

i Note

Direct pressing of button **(4)**, without prior zone changeover **(1)**, always applies for the cockpit.

Automatic control, cockpit



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- ▶ Pressing button **(4)**, automatic control.
 - ◁ Button activated: LED shows.

- ◁ Optimum setting of specified temperature for the cockpit and passenger compartment.
- ◁ Optimum setting of blower speed for the cockpit and passenger compartment.
- ◁ Enabling of the air conditioning for the cockpit and passenger compartment.
- ◁ Deactivates "Defrost windshield", "Air recirculation mode" and "Reheat".

Automatic control, passenger compartment

- ▶ Pressing button **(1)**, zone changeover.
 - ◁ Button activated: LED shows.
- ▶ Pressing button **(4)**, automatic control.
 - ◁ Button activated: LED shows.
 - ◁ Optimum setting of specified temperature for the passenger compartment.
 - ◁ Optimum setting of blower speed for the passenger compartment.
 - ◁ Enabling of the air conditioning for the passenger compartment.

- ◁ Deactivates "Air recirculation mode" and "Reheat".

i Note

The settings for the cockpit all remain unchanged.

Control of the cockpit

Control of the cockpit

Temperature, cockpit

Pressing rocker switch (12) increases or reduces the specified temperature for the active zone.

i Note

Direct pressing of rocker switch (12), without prior zone changeover (1), always applies for the cockpit.



M83.00-A002-71

- ▶ Pressing top section of rocker switch (12).

- ◁ Specified temperature for cockpit is increased.
- ◁ Specified temperature shows in display (14).
- ▶ Pressing bottom section of rocker switch (12).
 - ◁ Specified temperature for cockpit is reduced.

i Note

Button (2) has to be pressed for enabling of the air conditioning system in the cockpit.

- ◁ Specified temperature shows in display (14).

Blower speed, cockpit

Pressing rocker switch (13) increases or reduces the blower speed for the active zone.

i Note

Direct pressing of rocker switch (13), without prior zone changeover (1), always applies for the cockpit.



M83.00-A003-71

- ▶ Pressing top section of rocker switch (13).
 - ◁ Blower speed for cockpit is increased.
 - ◁ Blower speed shows in display (14).
- ▶ Pressing bottom section of rocker switch (13).

Control of the cockpit

- ◁ Blower speed for cockpit is reduced.
- ◁ Blower speed shows in display (14).

Air-outlet flap position, cockpit



M83.00-A002-71

- Pressing button (5) changes the air-outlet flap position for the air discharge direction in the cockpit.
 - ◁ Position of the flaps shows in display (14).

i Note

If zone changeover (1) is active, the change to the cockpit is made automatically when button (5) is pressed.

Air conditioning system, cockpit



M83.00-A002-71

- Pressing button (2) activates or deactivates enabling of the air conditioning system for the cockpit.
 - ◁ Button activated: LED shows.
 - ▽ LED quick-flashes

- Temperature conditions for the air conditioning system are not satisfied.
- Error message in the instrument cluster "Switch-on condition not satisfied".
- ▽ LED quick-flashes
 - No air conditioning system for the cockpit installed.
 - Error message in the instrument cluster "Function not supported".

Control of the passenger compartment

Control of the passenger compartment

Temperature, passenger compartment

Pressing rocker switch **(12)** increases or reduces the specified temperature for the active zone.



M83.00-A002-71

- ▶ Pressing button **(1)**, zone changeover.
 - ◁ Button activated: LED shows.
- ▶ Pressing top section of rocker switch **(12)**.
 - ◁ Specified temperature for cockpit is increased.

- ◁ Specified temperature shows in display **(14)**.
- ▶ Pressing bottom section of rocker switch **(12)**.
 - ◁ Specified temperature for cockpit is reduced.

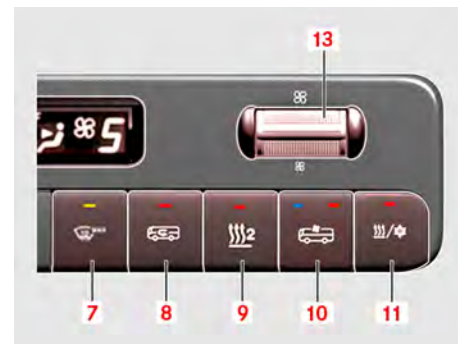
Note

Button **(3)** has to be pressed for enabling of the air conditioning system in the passenger compartment.

- ◁ Specified temperature shows in display **(14)**.

Blower speed, passenger compartment

Pressing rocker switch **(13)** increases or reduces the blower speed for the active zone.



M83.00-A003-71

- ▶ Pressing button **(1)**, zone changeover.
 - ◁ Button activated: LED shows.
- ▶ Pressing top section of rocker switch **(13)**.
 - ◁ Blower speed for cockpit is increased.
 - ◁ Blower speed shows in display **(14)**.
- ▶ Pressing bottom section of rocker switch **(13)**.
 - ◁ Blower speed for cockpit is reduced.
 - ◁ Blower speed shows in display **(14)**.

Air conditioning system, passenger compartment



M83.00-A002-71

- ▶ Pressing button **(3)** activates or deactivates enabling of the air conditioning system for the passenger compartment.
 - ◁ Button activated: LED shows.
 - ▽ LED quick-flashes
 - ▶ Temperature conditions for the air conditioning system are not satisfied.
 - ▶ Error message in the instrument cluster "Switch-on condition not satisfied".

- ▽ LED quick-flashes
 - ▶ No air conditioning system for the passenger compartment installed.
 - ▶ Error message in the instrument cluster "Function not supported".

Defrosting windshield



M83.00-A003-71

- ▶ Pressing button **(7)** activates or deactivates windshield defrosting.
 - ◁ Button activated: LED shows.

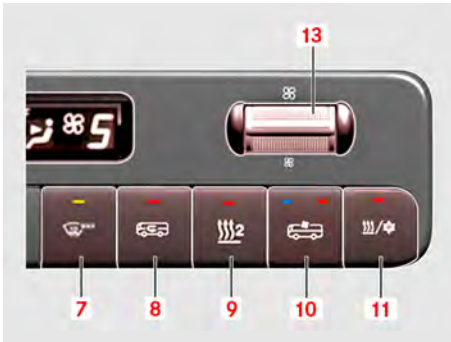


Note

Time limit is 30 minutes.

- ◁ "Max. heating" symbol shows in display **(14)**.
- ◁ Air discharge position is changed to windshield.
- ◁ Blower speed is set to the highest stage, stage 9.

Air recirculation mode



M83.00-A003-71

- Pressing button **(8)** activates or deactivates air recirculation mode.

- ◄ Button activated: LED shows.



Note

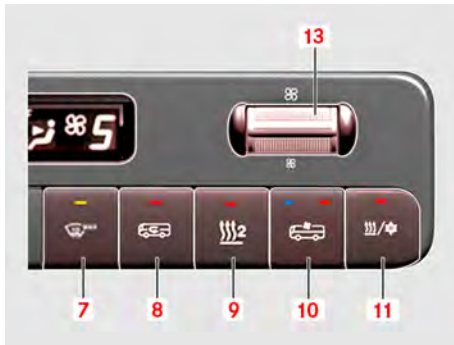
Time limit is 30 minutes.

- ◄ Roof hatches close automatically.

Roof ventilators

Roof ventilators

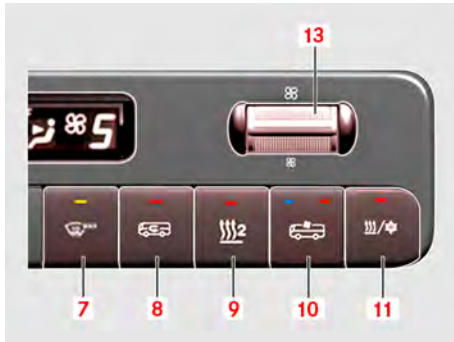
Pressing button **(10)** activates or deactivates the roof ventilators.



M83.00-A003-71

- ▶ Pressing switch **(10)**, roof ventilators, for < 2 seconds.
 - ◁ Button activated: LED shows blue.
 - ◁ Roof ventilators are in air-induction mode.
- ▶ Pressing switch **(10)**, roof ventilators, for > 2 seconds.
 - ◁ Button activated: LED shows red.
 - ◁ Roof ventilators are in air-extraction mode.

Reheat



M83.00-A003-71

- Pressing button **(11)** activates or deactivates the reheat function.

◁ Button activated: LED shows.

**Note**

Time limit is 30 minutes.

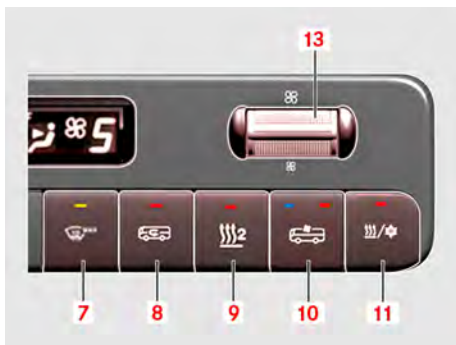
- ▽ LED quick-flashes
 - Temperature conditions for the auxiliary heater are not satisfied.
 - Error message in the instrument cluster "Switch-on condition not satisfied"

Switching on the auxiliary heater

Switching on the auxiliary heater

- ▶ Comply with the safety information for using auxiliary heater (→ Page 27).

Activating auxiliary heater



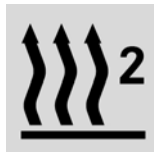
M83.00-A003-71

- ▶ Switch on the ignition.

Note

Pressing button (9) with ignition off activates or deactivates immediate ON of the auxiliary heater.

- ▶ Pressing button (9) activates or deactivates enabling of the auxiliary heater.
 - < Button activated: LED shows.
 - < Message in the instrument cluster "hot exhaust gases".
 - < After approx. 20 seconds, a symbol appears in the instrument cluster.



- < If the switch-on conditions are satisfied, the auxiliary heater starts automatically.
- ▽ LED quick-flashes
 - ▶ Temperature conditions for the auxiliary heater are not satisfied.
 - ▶ Error message in the instrument cluster "Switch-on condition not satisfied".



- ▽ LED quick-flashes
 - ▶ No auxiliary heater installed.
 - ▶ Error message in the instrument cluster "Function not supported".



Setting ON time of the auxiliary heater



M54.30-A129-71

- Press button **(1)** "Timer for auxiliary heater" and hold it down for approx. two seconds to change the duration of the ON time.



M54.30-A332-71

- Use the ↓ and ↑ steering-wheel buttons to select "Operating time" and press the "OK" button on the steering wheel to confirm.



M54.30-A333-71

- Use the ↓ and ↑ steering-wheel buttons to set the operating time.

i Note

The selectable time span is from 10 to 120 minutes.

Holding down either of the ↓ and ↑ steering-wheel buttons changes the operating time in 10-minute steps.

To protect the vehicle batteries against unnecessary discharge, do not set the ON time to longer than 40 minutes for operation of the auxiliary heater with the ignition off.

Switching on the auxiliary heater

- Confirm the setting by pressing the "OK" button on the steering wheel.

i Note

The setting applies for all timer programs (1, 2 and 3) equally.

- To exit, press steering-wheel button ← "ESC".

Presetting cut-in times



M54.30-A129-71

- Press button **(1)** to activate the timer.
 - ◁ The activation menu opens in the instrument cluster.



M54.30-A334-71

You can activate any one of the three different timer programs for the cut-in time of the auxiliary heater, and complete deactivation of the programs is another option.

- Use the ↓ and ↑ steering-wheel buttons to set the program of your choice.
- Confirm each setting in turn by pressing the "OK" button on the steering wheel.
- To exit the programming function, press steering wheel button ← "ESC".
- Press button **(1)** "Timer for auxiliary heater" and hold it down for approx.

two seconds to adapt timer programs or change the duration of the ON time.



M54.30-A335-71

- Use the ↓ and ↑ steering-wheel buttons to select the program or the operating time of your choice.
- Confirm each setting in turn by pressing the "OK" button on the steering wheel.
 - ◁ The selected program or operating time, as applicable, opens.
- To exit the programming function, press steering wheel button ← "ESC".



M54.30-A336-71

- Use the ↓ and ↑ steering-wheel buttons to set the day of the week and the time and press the "OK" button on the steering wheel to confirm each setting in turn.
- To exit the programming function, press steering wheel button ← "ESC".

Note

To prevent unexpected ignition of the auxiliary heater, the timer has to be activated for automatic switch-on after the vehicle has been parked and the engine switched off.

Control panel for special functions - heating, ventilation, air conditioning

Control panel for special functions - heating, ventilation, air conditioning

Activate compressor maintenance cycle



M83.00-A002-71

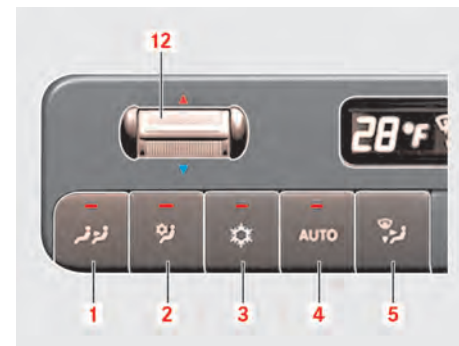
- ▶ Press and hold down buttons **(1)** and **(2)** and switch the ignition on.
 - ◁ If the function is already in progress, it can be canceled by simultaneously pressing buttons **(1)** and **(2)**.



M83.00-A003-71

- ▶ LED of button **(8)** flashes.
 - ◁ When the compressor maintenance cycle ends, the system changes to normal operation.

Activating refrigerant filling process

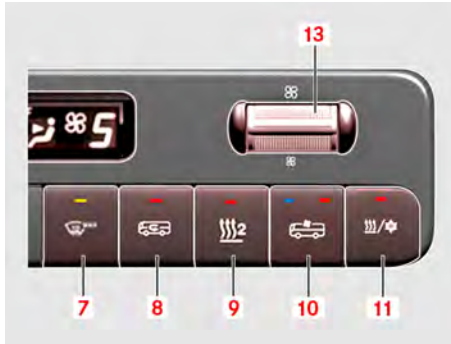


M83.00-A002-71

- ▶ Press and hold down buttons **(1)** and **(3)** and switch the ignition on.
 - ◁ If the function is already in progress, it can be canceled by simultaneously pressing buttons **(1)** and **(3)**.

Control panel for special functions - heating, ventilation, air conditioning

Activating coolant filling process



M83.00-A003-71

- ▶ LED of button **(8)** shows.
 - ◁ Remaining time "x" minutes for refrigerant filling.

i Note

Display shows Service "S3" and Step "1".

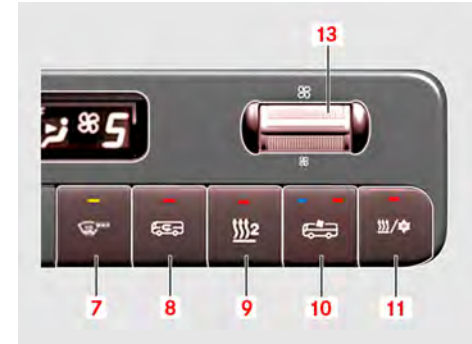
Refrigerant solenoid valves open.

- ▶ LED of button **(8)** flashes.
 - ◁ When button **(8)** is pressed, refrigerant filling is ended.
 - ◁ When the refrigerant filling process ends, the system changes to normal operation.



M83.00-A002-71

- ▶ Press and hold down buttons **(1)** and **(4)** and switch the ignition on.
 - ◁ If the function is already in progress, it can be canceled by simultaneously pressing buttons **(1)** and **(4)**.



M83.00-A003-71

- ▶ LED of button **(8)** shows.
 - ◁ Remaining time "x" minutes for coolant filling.

i Note

Display shows Service "S4" and Step "1".

Coolant valves open.

- ▶ LED of button **(8)** flashes.
 - ◁ Start the engine.

Control panel for special functions - heating, ventilation, air conditioning



Note

Display shows Service "S4" and Step "2".

Coolant pumps switch on.

- ◁ Auxiliary heater switches on after a delay.
- ▶ LED of button **(8)** flashes.
 - ◁ Press button **(8)**.



Note

Display shows Service "S4" and Step "3".

Coolant valves for floor close.

- ▶ LED of button **(8)** flashes.
 - ◁ When button **(8)** is pressed, coolant filling is ended.
 - ◁ When the coolant filling process ends, the system reverts to the normal operating mode.

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Safety information and warnings

Safety information and warnings

Before driving off

In an emergency, doors and flaps are exit and escape routes for passengers. If doors are mechanically locked (secured), they must be unlocked before the vehicle moves off.

Note

If the vehicle does not have central locking, an acoustic warning sounds and a visual warning message appears in the display of the instrument cluster if door 2 (option) is locked when the engine starts.

Warning

Caution: Risk of injury! due to panic on the part of passengers caused by blocked doors. In emergency situations, locked doors cannot be used as escape routes.

- Before pulling away, unlock all doors and check that they are fully operational.

- If a fault develops, have the doors checked by the service partner without delay.

What to do in the event of a door malfunction

Door malfunctions are indicated in the display.

The door affected by the malfunction shows yellow or red, as applicable, or an appropriate yellow or red message is displayed.

If a door malfunction occurs, proceed as described in the section on driver service and roadside repairs. If the door malfunction cannot be rectified, lock the door manually.

Transportation of passengers in a vehicle with a manually locked door is a last resort permissible in exceptional circumstances only.

Danger

Caution: Risk of injury! due to persons falling out while the vehicle is moving or when it is stationary, because doors are open or the door activation system is pressurized. If the vehicle stops anywhere other than at a designated stopping area or other, similar secured areas, persons are at additional risk from passing vehicles.

- Open the doors only when the vehicle is stationary and in a designated stopping area or other, similar secured area.
- Automatic doors: Enabling only by the enabling switch.
- Subsequent to emergency actuation, always reset the doors to normal operational status.
- DO NOT start off with the starting-off lock disengaged by emergency override and start off only with the doors closed.

- ▶ Conduct troubleshooting at a designated stopping area, keep the door under constant surveillance.
- ▶ Have the vehicle repaired immediately by a service partner.

Warning messages in the display

- ▶ Pay attention to warning messages in the display:

Yellow messages

warn of functional restrictions; you can continue driving but must exercise extra caution.



Caution

Property damage due to restricted operation or imminent loss of operability of the vehicle systems. The vehicle's handling characteristics might deteriorate.

- ▶ Adapt your driving in accordance with the content of the warning message.
- ▶ Have the cause of the restriction eliminated immediately by repair by qualified specialists.

Red messages

indicate safety-relevant malfunctions. Continuing to drive endangers the safety of the passengers, other road users and the driver.



Danger

Risk of accident due to restriction of the vehicle's operating safety and road safety.

- ▶ Stop immediately, taking the traffic situation into account, and switch on the hazard warning flashers.
- ▶ If necessary, contact the service partner.
- ▶ Do not resume driving until the malfunction has been rectified.

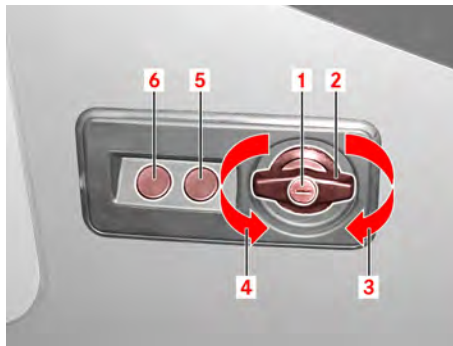
Locking/unlocking doors; boarding/exiting vehicle

Locking/unlocking doors; boarding/exiting vehicle

Manually unlocking/locking doors from outside

- ▶ Before driving off, familiarize yourself with the procedures for opening and closing the doors.
- ▶ Comply with the safety information and warnings for opening and closing doors (→ Page 280).

Unlocking doors



M72.00-A008-71

- ▶ Insert the vehicle key into lock **(1)** of the front door and turn the key clockwise **(3)**.

Note

The key with the brand logo works the locks on the exterior of the vehicle. The key with the cross-hatching works the locks in the interior of the vehicle.

- ▶ Turn toggle handle **(2)** clockwise **(3)**.

- ▶ Return vehicle key and toggle handle to the initial position and remove the key from the lock.
 - ◁ Doors are unlocked.
 - ◁ Fuel filler cap flap is unlocked.
 - ◁ External emergency actuation grips of the roof hatches are unlocked.
- ▶ Press the outside switch **(5)**.
 - ◁ Front door opens.

Note

Optionally, you can open the rear door (option) by pressing outside button **(6)**.

Locking doors

Requirement

- Ignition switched off and ignition key removed from ignition lock.
Vehicle is correctly parked.
All doors and flaps are closed, except the front door.
- ▶ Press the outside switch **(5)**.
 - ◁ Front door closes.

i Note

Optionally, you can close the rear door (option) by pressing outside button **(6)**.

- ▶ Insert the vehicle key into lock **(1)** and turn the key clockwise **(4)**.
- ▶ Turn toggle handle **(2)** counter-clockwise **(4)**.
- ▶ Return toggle handle and vehicle key to the initial position and remove the key from the lock.
 - ◁ Doors are locked.
 - ◁ Fuel filler cap flap is locked.
 - ◁ External emergency actuation grips of the roof hatches are locked.

i Note

The luggage compartment flaps are locked automatically approx. 43 minutes after ignition OFF.

Operating doors/flaps with engine running; status indicators in the display

Operating doors/flaps with engine running; status indicators in the display

Status of doors, ramps and flaps

"Door status" information shown by the display



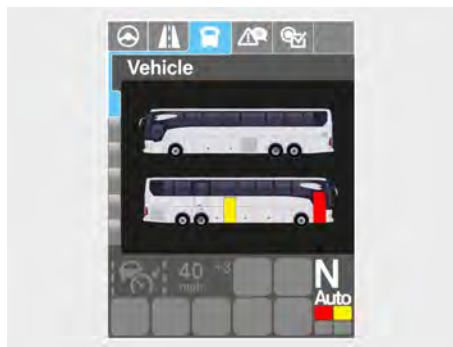
M54.30-A237-71

The information shown by the display might differ, depending on vehicle type (vehicle length and number of doors).

The status of the doors and flaps and, if applicable, the ramps is displayed as follows:

- Gray: Closed door, ramp or flap.

- White: Opened door, ramp or flap.
- Yellow or red: Malfunction of door



M54.30-A238-71

If a warning message is issued, pay attention to the information shown by the display.

Proceed in accordance with the safety information.

Open/close doors from inside by buttons

- Before driving off, familiarize yourself with the procedures for opening and closing the doors.

- Comply with the safety information and warnings for opening and closing doors (→ Page 280).

Opening door

Preconditions:

- Vehicle is stationary.
- Transmission is in neutral (N).
- Frequent-stop brake or parking brake applied.
- Ignition switched on or engine running.
- Doors are mechanically unlocked (optional function).



M54.30-A070-71

- Press button (1).

Operating doors/flaps with engine running; status indicators in the display

- ◁ LED in the button for front door shows.
- ◁ Front door opens.
- ▶ Press button **(2)**.
 - ◁ LED in button for rear door (option) shows.
 - ◁ Rear door (option) opens.

Closing door(s) and starting off

If the vehicle has a frequent-stop brake (option) and this function is activated, this status is shown in the display.

- ▶ Operate button **(1)**.
 - ◁ Front door closes.
 - ◁ LED in the button for front door goes out.
- ▶ Operate button **(2)**.
 - ◁ Rear door (option) closes.
 - ◁ LED in button for rear door (option) goes out.
- ▶ Release the frequent-stop brake or parking brake and start off.
- ▶ To start off with starting-off lock (option) active, depress the accelerator pedal.

- ◁ Starting-off lock disengages, vehicle starts off.

Door malfunctions when opening and closing

If the door does not open or close fully, the LED in the corresponding button flashes.

The following are causes that can affect opening or closing of a door:

- Insufficient operating pressure.
 - Run the engine to build up sufficient reservoir pressure in the compressed air circuit.
- Prior actuation of an emergency door lever:
 - Press reset button **(3)** and then press front door button **(1)** again.
- Door does not close because the door is not in the wedges and fully closed:
 - Re-open the door and then close it.

Door reverses when opening or closing

- ▶ Familiarize yourself with the anti-pinch protection (→ Page 287) door reversal function and how it works.

Starting off with door(s) open

If the vehicle is moved with a door or doors open and vehicle speed exceeds 2 mph (3 km/h), a warning appears in the display.

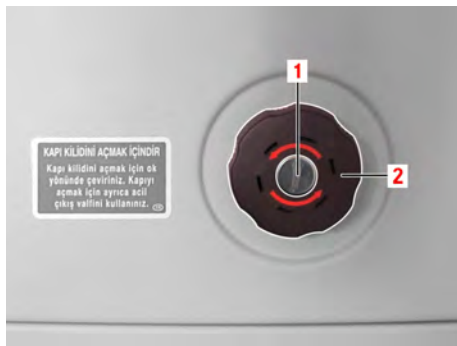
- ▶ If the "Door malfunction" message appears, stop the vehicle immediately.



- ▶ Rectify the cause of the door malfunction before resuming the journey.

Operating doors/flaps with engine running; status indicators in the display

Mechanically locking and unlocking rear door (option) from inside



M72.00-0579-71

- ▶ Close the rear door (option).
- ▶ To lock the rear door, insert the key into lock **(1)**, turn the key to the right and turn inside door-knob **(2)** to the right. Then turn the key back to its initial position and remove the key with the door-knob in the locked position.

i Note

The door can be locked only with the key.

- ▶ Do not turn inside door-knob **(2)** back to its initial position, because this would unlock the door.
- ▶ To unlock, turn the inside door-knob **(2)** to the left.

i Note

If the vehicle does not have central locking but has a lockable outside emergency door lever (option), the door lever can be locked from the outside with the key.

i Note

If the vehicle does not have central locking, an acoustic warning sounds and a visual warning message appears in the display of the instrument cluster if the rear door (option) is locked when the engine starts.

Door anti-pinch protection (door reverse); emergency operation of doors and flaps

Door anti-pinch protection (door reverse); emergency operation of doors and flaps

Door activates anti-pinch protection (reversing)

Door is opening

If a door wing encounters an obstacle when the door is opening, this door wing is de-energized. The indicator light in the door button of the door in question flashes. If the door is pneumatically actuated, the door then moves farther in the opening direction at low power.

Door is closing

If a door wing encounters an obstacle when the door is closing, the closing action is changed to an opening action (reversal). The indicator light in the door button of the door in question flashes.

Automatic doors re-initiate closing movement after the stay-open time expires. Automatic doors are doors that are opened by the passengers themselves after the driver has enabled door opening.

- ▶ Press the button again to return the door to its normal mode of operation.
 - ▽ If the door fails to return to its normal mode of operation:
 - ▶ Close the door by the emergency closing procedure, see the section headed "Emergency closing of doors after malfunction" (→ Page 289) and have the door malfunction rectified immediately by a service partner.

Actuating and resetting emergency door lever

- ▶ Before driving off, familiarize yourself with the procedures for opening and closing the doors.
- ▶ Comply with the safety information and warnings for opening and closing doors (→ Page 280).

Operating emergency door lever

In an emergency, the emergency door levers provide a means of preparing the doors for manual opening. There is an emergency door lever at each door on

the inside and, depending on the vehicle configuration, on the outside as well. In case of danger (fire), passengers can exit the vehicle and first responders can obtain access from outside. The doors must not be in the unlocked state.



Warning

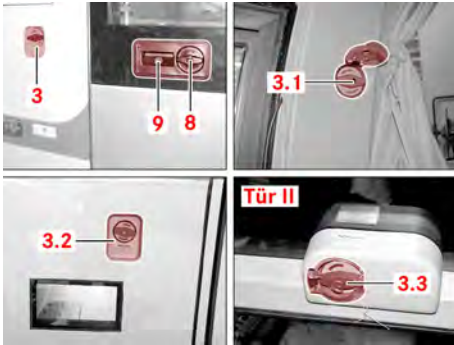
Caution: Risk of injury! due to panic on the part of passengers caused by blocked doors. In emergency situations, locked doors cannot be used as escape routes.

- ▶ Before pulling away, unlock all doors and check that they are fully operational.
- ▶ If a fault develops, have the doors checked by the service partner without delay.

Actuating an emergency door lever opens the door valve to vent the pneumatic system pressure that holds the door closed. This depressurizes the door system and the door can be opened by hand.

While the vehicle is on the move, actuation is automatically disabled.

Door anti-pinch protection (door reverse); emergency operation of doors and flaps



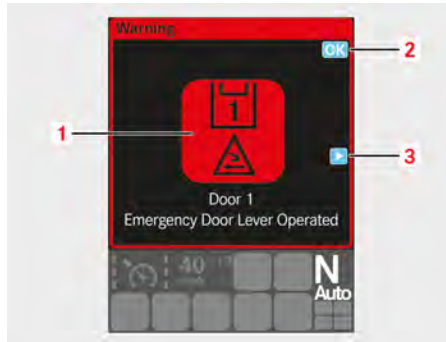
M72_00-0023-01

Location and installation position can vary, depending on vehicle type and version.

- ▶ Front door: Turn outside emergency door lever (3) / inside emergency door lever (3.1) in the direction indicated by the arrow.
 - ◁ Door is depressurized and can be opened by hand.
 - ◁ In the cockpit a warning message appears in the display and an acoustic warning sounds.
- ▶ Rear door (option) middle door: Turn outside emergency door lever (3.2) /

inside emergency door lever (3.3) in the direction indicated by the arrow.

- ◁ Door is depressurized and can be opened by hand.
- ◁ In the cockpit a warning message appears in the display and an acoustic warning sounds.



M54.30-A195-71

- ▶ Secure the vehicle with the parking brake.
- ▶ Check the door(s) indicated in the display, in this example (1).

Resetting emergency door lever

The journey cannot be resumed before all doors are fully operational.



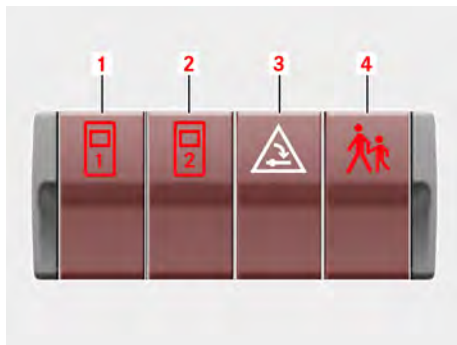
Caution: Risk of injury! due to persons falling out while the vehicle is moving or when it is stationary, because doors are open or the door activation system is pressurized. If the vehicle stops anywhere other than at a designated stopping area or other, similar secured areas, persons are at additional risk from passing vehicles.

- ▶ Open the doors only when the vehicle is stationary and in a designated stopping area or other, similar secured area.
- ▶ Automatic doors: Enabling only by the enabling switch.
- ▶ Subsequent to emergency actuation, always reset the doors to normal operational status.
- ▶ DO NOT start off with the starting-off lock disengaged by emergency override and start off only with the doors closed.

Door anti-pinch protection (door reverse); emergency operation of doors and flaps

- ▶ Conduct troubleshooting at a designated stopping area, keep the door under constant surveillance.

Red warnings can be acknowledged by the driver pressing the "OK" button on the steering wheel only when the vehicle is stationary and the parking brake applied.



M54.30-A070-71



Warning

Risk of injury by crushing due to uncontrolled movements of the door when the doors system is re-enabled.

- ▶ Keep everyone clear of the door's danger zone.

- ▶ Reset the emergency door lever (if not already reset automatically).
- ▶ Press emergency door lever reset button **(3)**.
- ▶ Use the emergency door control button to close the door.
 - ◁ Door system is again fully operational.
 - ▽ Door slams or movements are jerky.
 - ▶ Repeat the door reset procedure.
- ▶ Reseal the emergency valve.

Emergency closing of doors after malfunction

- ▶ Before driving off, familiarize yourself with the procedures for opening and closing the doors.
- ▶ Comply with the safety information and warnings for opening and closing doors (→ Page 280).

Forced closing of the door in the event of a malfunction

If a door malfunctions forced closing is possible, depending on the cause.

Conditions

- Vehicle is standing level and parking brake is applied.
- Ignition ON.
- Battery voltage 24 ± 3 volts
- ▶ Organize pick-up of the passengers so that they can continue their journey in another vehicle.
- ▶ Depressurize the door system and close the door manually.



Warning

Caution: Risk of injury! due to panic on the part of passengers caused by blocked doors. In emergency situations, locked doors cannot be used as escape routes.

- ▶ Before pulling away, unlock all doors and check that they are fully operational.

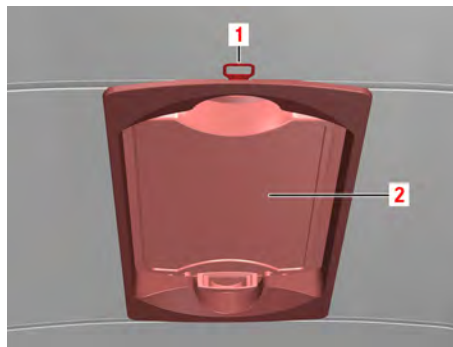
Door anti-pinch protection (door reverse); emergency operation of doors and flaps

- ▶ If a fault develops, have the doors checked by the service partner without delay.
- ▶ Mechanically lock the door.
- ▶ Have the vehicle repaired immediately by a service partner.

Unlocking emergency exits

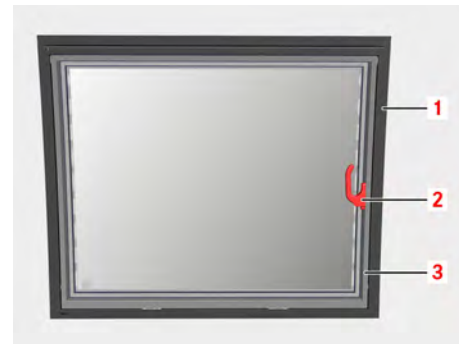
- ▶ Before driving off, familiarize yourself with the procedures for opening and closing the doors.
- ▶ Comply with the safety information and warnings for opening and closing doors (→ Page 280).

Emergency exit through roof hatches



M77.55-A001-71

- ▶ To unlock emergency exit roof hatch (2), pull handle (1) and push emergency exit roof hatch (2) up to remove.
 - ◁ Access to emergency escape hatch (2) is cleared.



M67.30-A000-71

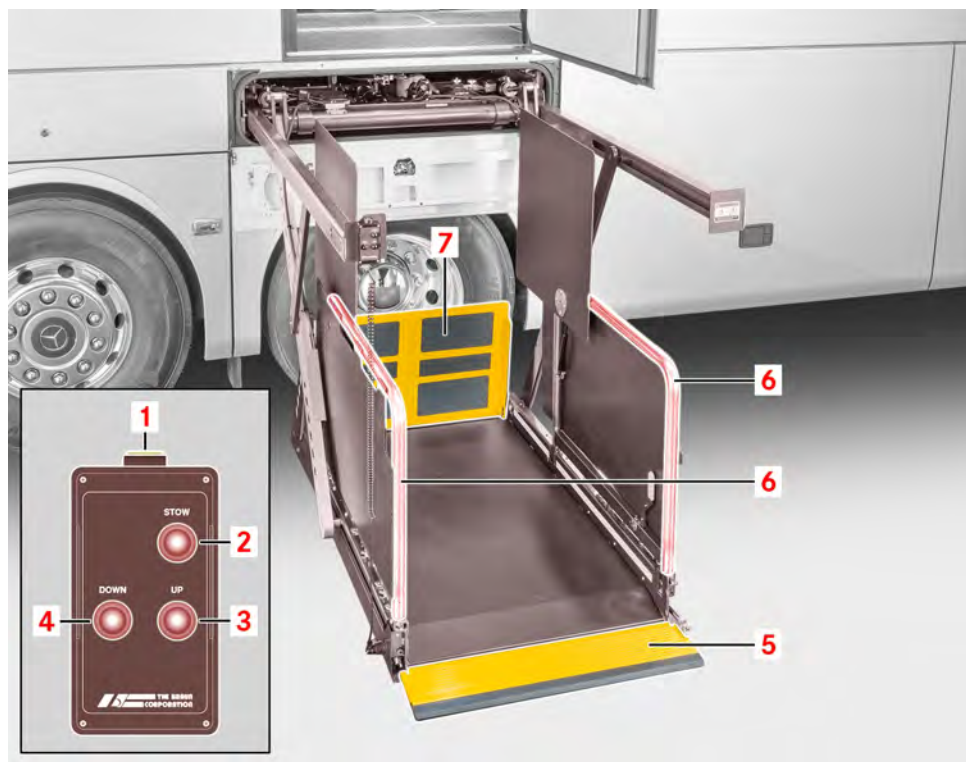
- ▶ Turn handle (2) down to unlatch emergency exit window (1).
 - ◁ Push glass pane (3) of emergency exit window (1) out to open the emergency exit.

Note

If the vehicle is in motion, bring the vehicle to a stop, paying attention to the traffic situation. If there is no emergency, close the emergency exit window again. To do so swing the glass pane out slightly and then allow it to snap closed.

Wheelchair lift

Lift with control panel



Wheelchair lift

1 ON/OFF button



Useful notes

Through training and instruction, the owner-operator must ensure that operating personnel is thoroughly familiar with the procedures for operation of the lift under all operating conditions.



Note

The ON/OFF button shows green when the lift is activated.

2 STOW button

The platform is fully retracted and secured in the stowed position.

3 UP button

Raise the platform from roadway level to entry/exit level.

4 DOWN button

The platform extends from the housing and descends to ground level.

5 Outer roll-off protection barrier
Raised to vertical while lift is in operation. Flipped flat, when the platform is at ground level.

6 Grab handle

7 Bridging plate

Safety information and warnings

The transportation of wheelchairs is permissible only if the vehicle has a designated area reserved for the purpose. Special restraint systems for wheelchairs, if installed, must be used.



Warning

Caution: Risk of injury! for all vehicle occupants due to unwanted movement of the wheelchair when vehicle is on the move.

- ▶ Always secure the wheelchair with the restraint system provided for the purpose.
- ▶ Secure the wheelchair occupant.

- ▶ Familiarize yourself thoroughly with the operating procedures before using flaps, ramps and other access aids.
- ▶ Use elevators and lift systems only when the vehicle is safely parked and standing level.



Warning

Caution: Risk of injury! due to inattentive operation of the ramp, lift and elevator systems.

- ▶ Familiarize yourself with the operating routines and also study the operating instructions provided by the equipment manufacturer.
- ▶ Do not permit anyone to be in the danger zone of movement of the ramp or the lift system.
- ▶ Always use the grips provided for the purpose during manual operation and be aware of the danger of hands and feet being inside the danger zone.

**Danger**

Risk of accident due to malfunction, lack of supervision, incorrect operation and external damage to the ramp, lift and elevator systems.

- ▶ Entrust all repair work to qualified workshops only.
 - ▶ Check the ramp, lift and elevator systems at regular intervals.
 - ▶ Run the ramp, lift and elevator systems through a full operating cycle at least once a day.
 - ▶ Familiarize yourself with the operating procedures.
- ▶ Do not exceed the maximum load capacity of ramps, elevators and lift systems.

Using elevators and lift systems

When parking the vehicle, be aware of the need to allow plenty of space for the operation of elevators and lift systems.

**Danger**

Caution: Risk of injury! due to incorrect use of the lift and elevator systems.

- ▶ Use the platform only for lifting or lowering a person in a wheelchair or an empty wheelchair.
- ▶ Only a person not on the platform is permitted to operate the lift.
- ▶ Secure the wheelchair on the platform by applying the wheelchair's brake. While the platform is in motion, the occupant of the wheelchair must maintain a firm grip on the grab handles.

- Do not lower elevators and lift systems on to ground that is loose or in any way unsafe. This includes puddles of water and deep snow.
- Keep the platform's outer roll-off protection barrier clear. In this context, note the position of the wheelchair's wheels.
- While lifting or lowering is in progress, the occupant of the wheelchair must

maintain a firm grip on the grab handles.

- ▶ Read the manufacturer's operating instructions.

Operating lift

- ▶ Before using the equipment, familiarize yourself with the controls.

**Note**

An operator manual provided by the manufacturer accompanies the vehicle. It describes emergency operation, cleaning and maintenance.

- ▶ Comply with the safety information and warnings for operating ramps and lifting systems (→ Page 292).

Preparing lift

Precondition:

- Vehicle stationary and standing level.
- Parking brake is engaged.
- Engine running.
- ▶ Note the maximum carrying capacity of the lift.

Wheelchair lift



M86.20-A030-72

- Open door (1) and flap (2).

Extending lift



Caution: Risk of injury! due to incorrect use of the lift and elevator systems.

- Use the platform only for lifting or lowering a person in a wheelchair or an empty wheelchair.
- Only a person not on the platform is permitted to operate the lift.
- Secure the wheelchair on the platform by applying the wheelchair's brake. While the platform is in motion, the occupant of the wheelchair must maintain a firm grip on the grab handles.

When using the lifting device, make sure that the front of the wheelchair is always toward the vehicle.

Deploy all the safety devices of the lift and the wheelchair.



M86.20-A031-71

- Press DOWN button (4) on the pendant control unit of the lift to extend and lower the lift until it is flat on the ground and the outer roll-off protection barrier is open.



M86.20-A032-71

- ▶ Do not release the DOWN button until outer roll-off protection barrier **(5)** is completely flat on the ground.
- ▶ Extend the grab handles by hand.
- ▶ Center the wheelchair on the lift platform.
- ▶ Secure the wheelchair by setting the wheel brakes of the wheelchair.

Raising lift



M86.20-A031-71

- ▶ Press UP button **(3)** on the pendant control unit and hold it down until the lift has reached the top level.
- ▶ Release the wheelchair's wheel brakes, push the wheelchair into the vehicle and position it safely.

Extending and raising lift



M86.20-A031-71

- ▶ Press UP button **(3)** on the pendant control unit and hold it down until the lift has reached the top level.
- ▶ The platform extends from the housing and the grab handles have to be extended manually.
- ▶ The platform rises to the level of the vehicle floor. The bridging plate extends on to the vehicle floor.
- ▶ Release UP button **(3)**. The wheelchair can now be maneuvered on to the platform.

Wheelchair lift

Lowering lift



M86.20-A031-71

- ▶ Press DOWN button **(4)** on the pendant control unit and hold it down until the lift has reached the bottom level.

Retracting lift



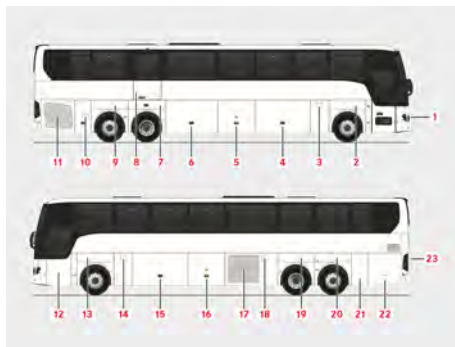
M86.20-A031-71

- ▶ Press UP button **(3)** or DOWN button **(4)** as applicable and hold the button down until the platform has reached its final position.
- ▶ Fold in the grab handles by hand.
- ▶ Press STOW button **(2)** and hold it down until the platform is fully retracted and secured in the stowed position.

Outside flaps

Overview, outside flaps

Outside flaps, Tourrider Business line

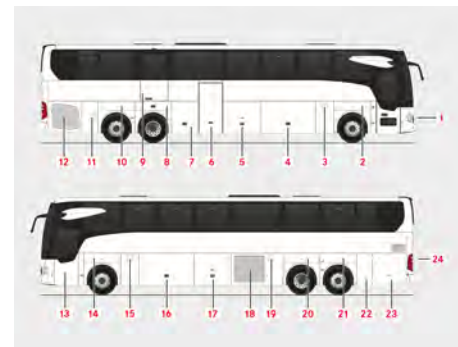


M00.10-A002-76

- 1 Spare wheel (option)
- 2 Main switch panel
- 3 Fuel tank
- 4 Luggage compartment
- 5 Luggage compartment
- 6 Luggage compartment
- 7 Wheelchair lift (option)
- 8 Door for wheelchair lift (option)

- 9 Auxiliary switch panel
- 10 Diesel exhaust fluid (DEF) tank, sewage tank/water connections for lavatory
- 11 Radiator
- 12 Power lifter, driver's window
- 13 Vehicle tool kit, towing jaw
- 14 Fuel tank
- 15 Luggage compartment
- 16 Luggage compartment
- 17 Components, air conditioning system
- 18 Auxiliary heater
- 19 Stowage compartment
- 20 Batteries/battery master switch
- 21 Exhaust system
- 22 Exhaust system
- 23 Engine compartment

Outside flaps, Tourrider Premium line



M00.10-A003-76

- 1 Spare wheel (option)
- 2 Main switch panel
- 3 Fuel tank
- 4 Luggage compartment
- 5 Luggage compartment
- 6 Door 2 (option)
- 7 Luggage compartment
- 8 Wheelchair lift (option)
- 9 Door for wheelchair lift (option)
- 10 Auxiliary switch panel

Outside flaps

- 11 Diesel exhaust fluid (DEF) tank, sewage tank/water connections for lavatory
- 12 Radiator
- 13 Power lifter, driver's window
- 14 Vehicle tool kit, towing jaw
- 15 Fuel tank
- 16 Luggage compartment
- 17 Luggage compartment
- 18 Components, air conditioning system
- 19 Auxiliary heater
- 20 Stowage compartment
- 21 Batteries/battery master switch
- 22 Exhaust system
- 23 Exhaust system
- 24 Engine compartment

Locking/unlocking luggage compartment flaps from inside by buttons

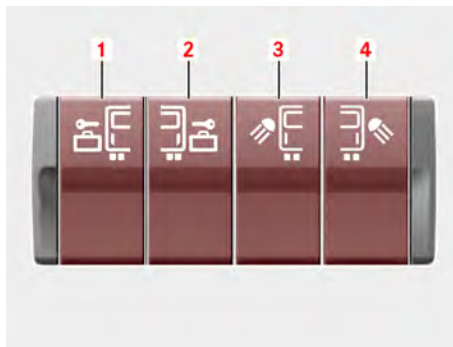
- Comply with the safety information and warnings for opening and closing doors and flaps (→ Page 280).

Luggage compartment doors

Conditions

- Sufficient reservoir pressure.

Unlocking luggage compartment flaps



M54.30-A331-71

- Operate button **(1)**.
 - ◁ Luggage compartment flaps on left as viewed in forward direction of travel are unlocked.
 - ◁ LED in the button shows red.
- Operate button **(2)**.
 - ◁ Luggage compartment flaps on right as viewed in forward direction of travel are unlocked.
 - ◁ LED in the button shows red.

- Open luggage compartment flaps from the outside by means of the handles, paying attention to the current traffic situation.

- ◁ Luggage compartment lighting switches on.

Locking luggage compartment flaps

- Close the luggage compartment doors completely and press against the vehicle.
- Press button **(1)** or button **(2)**.
 - ◁ Luggage compartment flaps are locked.

i Note

The luggage compartment flaps are locked automatically approx. 43 minutes after ignition OFF.

Emergency unlocking of flaps after malfunction

- Before driving off, familiarize yourself with the procedures for opening and closing the doors.

- Comply with the safety information and warnings for opening and closing doors (→ Page 280).

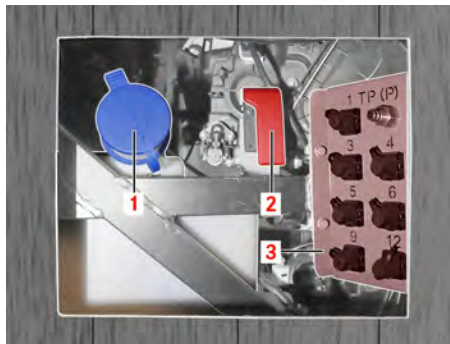
Emergency unlocking of the luggage compartment flaps in the event of a malfunction

If the compressed air supply or the electrical system fails, the luggage compartment flaps can be unlocked by means of an emergency compressed air supply.

The air in the spare wheel is used as a reservoir for this purpose.

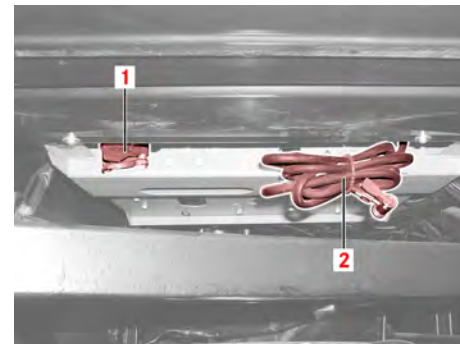
Conditions

- Vehicle is standing level and parking brake is applied.
- Spare wheel is on board and fully inflated.



M82.35-A000-71

- Open the cap in door sill of the front door.
- Pull handle (2).
 - ◁ Spare wheel flap opens.
- Remove the spare wheel.



M40_00-0073-01

- Behind the front-end air conditioner housing, remove hose with tire adapter (2) from its stowage position on the plate.
- Connect the adapter to the tire valve of the spare wheel.
 - ◁ The compressed air from the spare wheel flows through the shuttle valves directly to the cylinders of the luggage compartment locking mechanism and unlocks the luggage compartment flaps.
- Open the luggage compartment flaps.

Outside flaps

- ▶ Re-inflate the spare wheel to the specified pressure at the earliest possible opportunity!

Chemical toilet	302
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Rinsing diaphragm chamber in waste holding tank 1 (clear-rinse)	315
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Chemical toilet

Chemical toilet

Functions:

- Tanks
- Filling fresh water tank
- Basic filling of the chemical toilet
- Emptying waste holding tank 1

Tanks

There are three different liquid tanks for the chemical toilet.

Note

A fresh water tank for the basic filling of the chemical toilet (installed at the rear wall of the lavatory).

Note

A tank containing the chemical/water mixture (waste holding tank 1 - installed below the toilet seat).

Note

A waste holding tank with twice the capacity of the tank for the chemical/water mixture (waste holding tank 2 - installed under the lavatory).

Filling fresh water tank

The fresh water tank (approx. 13.5 gallons (51 liters)) can be filled with fresh water through a connection on the right, behind the trailing axle.

Basic filling of the chemical toilet

The tank is located directly below the toilet seat (waste holding tank 1, approx. 12.5 gallons (47 liters)). Prior to toilet operation the tank is filled to a specified level with chemical/water mixture. An indicator lamp in the lavatory lights up to show the mixture has reached the required level.

Emptying waste holding tank 1

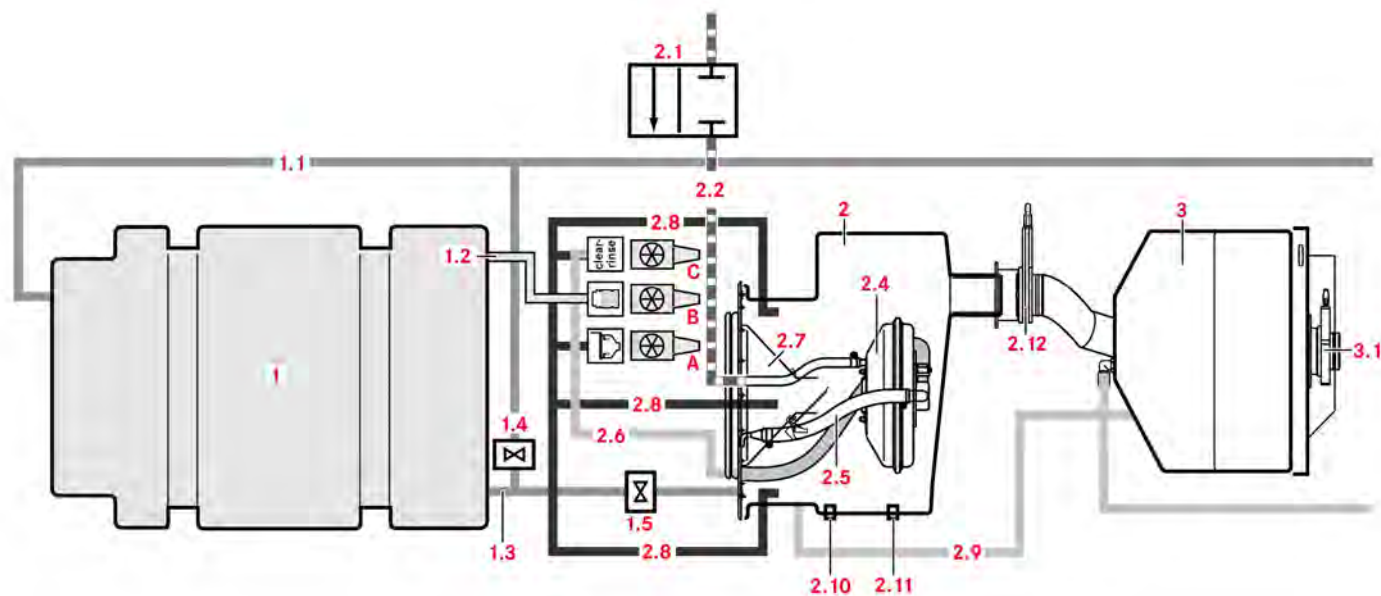
Once the contents of waste holding tank 1 reach a specified level, the driver receives a message in the display of the instrument cluster.

At the next stop, the driver must operate a switch, accessible from the right rear maintenance flap, to empty the contents of waste holding tank 1 into waste holding tank 2 (approx. 33 gallons (126 liters)) (this procedure can be performed twice, after which waste holding tank 2 is full and must be emptied at a suitable location).

The contents of waste holding tank 1 can also be emptied by pressing the right-hand button behind the cover in the WC.

Basic filling of waste holding tank 1 with a chemical/water mixture must then be performed again.

Schematic diagram of the chemical toilet



Schematic diagram of the chemical toilet

A	Service valve for "rinse waste holding tank 1"	2.4	Diaphragm pump (air-operated)
		2.5	Hose line for flushing toilet
B	Service valve for filling with fresh water	2.6	"Clear rinse" hose line (rinses the lower diaphragm chamber)
C	"Clear rinse" service valve (rinses the lower diaphragm chamber)	2.7	Toilet bowl
		2.8	Flush hoses for waste holding tank 1
1	Fresh water tank	2.9	Waste holding tank 1 runoff
1.1	Fresh water tank runoff	2.10	Level sensor for "waste holding tank 1 full"
1.2	Connection for filling with fresh water from outside	2.11	Level sensor for "waste holding tank 1 initial water charge"
1.3	Fresh water connection fitting for filling waste holding tank 1 with initial water charge	2.12	Waste holding tank 1 stop valve
1.4	Antifreeze valve (special equipment option)	3	Waste holding tank 2 (secondary tank)
1.5	Shutoff valve in cabinet below sink counter	3.1	Waste holding tank 2 stop valve
2	Waste holding tank 1 (primary tank)		
2.1	Switch for flushing toilet (compressed air valve)		
2.2	Compressed air connection for flushing toilet		

Returning lavatory to operational status

Returning lavatory to operational status

**Warning**

When the lavatory is out of use for any extended period of time and there is no chemical and water mixture in the waste holding tanks, it is absolutely essential that both the waste holding tanks and the diaphragm chamber in waste holding tank 1 be cleaned.



- ▶ The lavatory assumes standby status when the "LAV" instrument panel switch is operated while the ignition is switched on.

**Note**

The LED lights up in the switch and the lavatory cubicle lighting switches on.



M54_00-0978-01

- ◁ When the lavatory is locked from the inside, the ventilation fan in the lavatory is switched on and "Lavatory occupied" appears in the passenger compartment display (2).

**Note**

The ventilation fan operates in the lavatory cubicle generally operates when the engine is running.



M86.00-0428-71

- ▶ When the ignition/starter switch is switched on, the smoke detector in the WC is also activated. The LED (1) shows green.

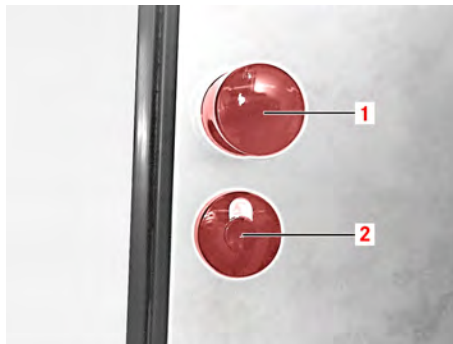
Returning lavatory to operational status

Note

When the LED (1) shows green, the smoke detector is in the normal operating mode. When soiling is light, the LED (1) shows green with brief changes to yellow. Heavy soiling of the detector is indicated by the LED flashing alternately green and yellow. Have smoke detectors replaced by a service partner. If a malfunction occurs, the LED (1) flashes yellow.

Warning

If smoke is detected, the LED (1) lights up red and a red message appears in the display in the cockpit in conjunction with this symbol.



M86.00-0103-01

- Opening a door locked mechanically

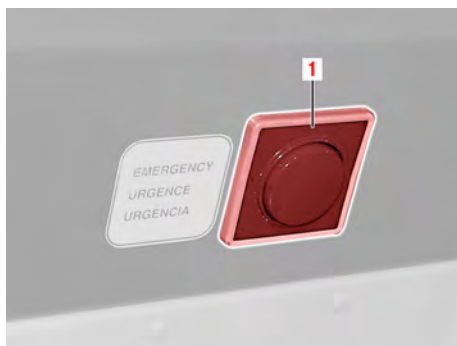
Warning

When the lavatory door's lock (2) has been engaged manually, it can be unlocked in an emergency using a suitable coin or screwdriver.

Lavatory emergency switch

i Note

Ignition switched on.



M86.00-0096-01

- Lavatory emergency switch (1) pressed.



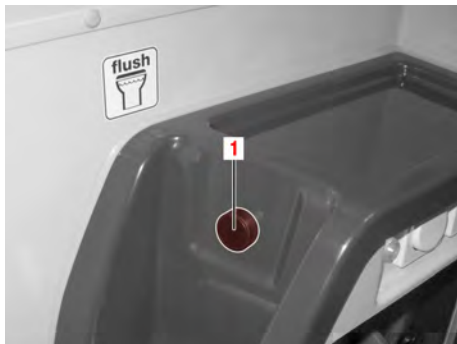
- ◁ The instrument cluster display panel shows the adjacent symbol together with a "condition yellow" warning.

i Note

An acoustic signal also sounds.

Flushing the toilet

Flushing the toilet



M86.00-0423-71

- ▶ Pressing the "WC - Flush" switch (1) flushes the toilet.

i Note

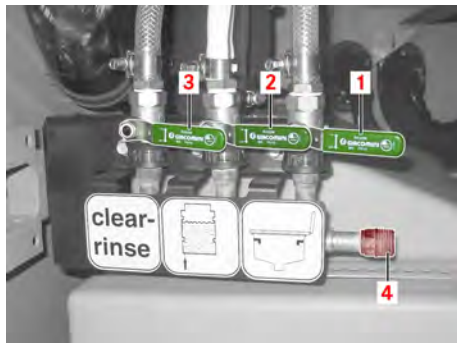
The flushing operation is supported by compressed air provided by a diaphragm installed in waste holding tank 1.

i Note

Reflushing is possible only after the switch (1) is released and following a brief interval.

Filling fresh water storage tank

Filling fresh water storage tank



M86.00-0421-71

- Connect a water hose to the service fitting (4) and then open the valve (2).

 Warning

Always ensure that the filling operation is monitored at all times! If excessive water pressure is used to refill the system, or if the runoff is blocked by any foreign object, the result can be uncontrolled expansion, ultimately causing damage to the lavatory.

- Completing filling operation

 Note

Once the tank is completely full water will start to emerge from the runoff and collect beneath the vehicle. Close the valve (2) immediately and disconnect the supply hose.

 Warning

Never add antifreeze to the fresh water tank - poisoning hazard!

Filling waste holding tank 1 to initial level

Filling waste holding tank 1 to initial level

Ignition switched on.

i Note

Waste holding tank 1 is located at floor level directly below the toilet seat.

i Note

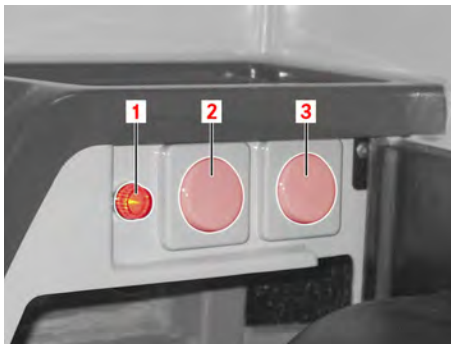
Waste holding tank 1 must be completely empty before being filled to its initial level for operation. The indicator lamp in the washstand bottom cabinet lights up.

i Note

There must be sufficient fresh water in the storage tank. When there is any danger of freezing, the fresh water tank must be empty, and it will be necessary to fill waste holding tank 1 to its initial operating level through the toilet bowl.

- Also note CC operating instructions on sticker in the washstand bottom cabinet.

- ▶ Open the washstand bottom cabinet with a square key.



M86.00-0422-71

- ▶ Press and hold the switch (2) until the required water level in waste holding tank 1 is reached and the red indicator lamp (1) goes out.
- ▶ Add chemical additive in mixture ratio specified by the manufacturer

i Note

Roughly 4 to 5 gallons (15 to 20 liters) of water are added to waste holding tank 1 during the initial filling process.

i Note

Pour the chemical into the stainless-steel bowl.

Discharging contents from waste holding tank 1

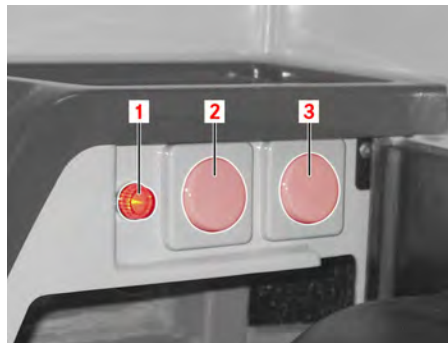
Discharging contents from waste holding tank 1

Ignition switched on

- ▶ When a certain level is reached, the following symbol appears in waste holding tank 1.



- ◁ The instrument cluster display panel shows the adjacent symbol together with a "condition yellow" warning.



M86.00-0422-71

- ▶ Respond by taking the earliest opportunity to allow the contents of waste holding tank 1 to flow into waste holding tank 2 by pressing the button (3).

i Note

Press and hold the button until waste holding tank 1 is completely empty

- ◁ The contents of waste holding tank 1 flow into waste holding tank 2.

i Note

If waste holding tank 2 is empty, this procedure may be performed two times.

i Note

If the signal in the display then fails to go out, waste holding tank 2 is full and must be emptied.

- ▶ Filling waste holding tank 1 to its initial operating level.

Emptying waste holding tanks 1 and 2

Emptying waste holding tanks 1 and 2

i Note

Waste holding tank 1 is located at floor level directly below the toilet seat.

i Note

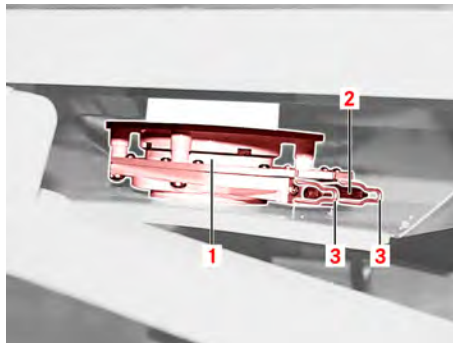
Waste holding tank 2 is located below the lavatory.

- ▶ To empty the waste tanks, position vehicle with the sewage outlet over a suitable draining point.



Environmental protection

Empty waste tanks only at locations specially provided for this purpose.

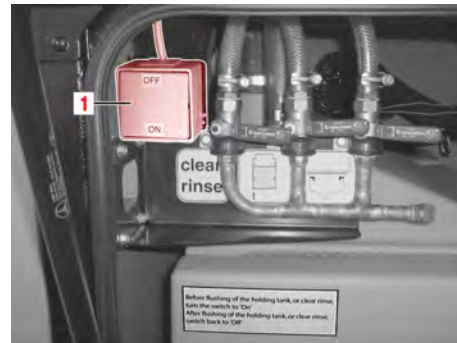


M86.00-0108-01

- ▶ Open dump valve (1) below waste holding tank 1 and waste holding tank 2.

i Note

To open the dump valve within the waste holding tank 2, fold the securing clamp (3) to the side and pull out the operating lever (2).



M54.00-1665-71

- ▶ Open the dump valve below the waste holding tank 1 with switch (1). The switch (1) is located behind the service-access door.

i Note

The switch (1) is only active with the "ignition on".

 Note

Once all contents have been discharged from the waste holding tanks, waste holding tank 1 and the diaphragm chamber must both be flushed out (clear-rinse).

- ◁ Move the switch (1) into the "off" position again after completing rinsing (clear rinse).

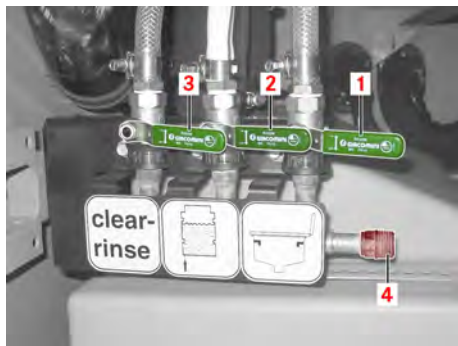
Rinsing waste holding tank 1

Rinsing waste holding tank 1

i Note

To rinse waste holding tank 1, first park the vehicle above a suitable disposal point. Then open the dump valves for waste holding tanks 1 and 2. Empty both waste holding tanks (see "Emptying waste holding tanks 1 and 2").

of the vehicle is clear, then reclose the valve (1) at the service fitting and the dump valves on waste holding tanks 1 and 2.



M86.00-0421-71

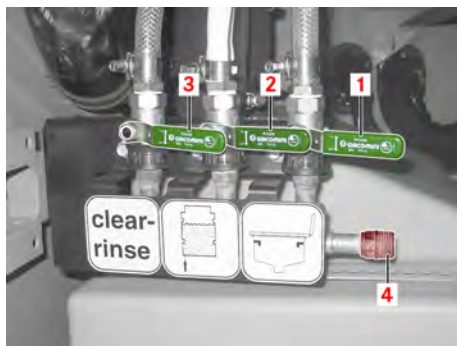
- ▶ Connect a water hose to the service fitting (4) and then open the valve (1).
- ▶ Wait until the water emerging from the discharge opening at the bottom

Rinsing diaphragm chamber in waste holding tank 1 (clear-rinse)

Rinsing diaphragm chamber in waste holding tank 1 (clear-rinse)

i Note

To rinse the diaphragm chamber in waste holding tank 1, first park the vehicle above a suitable discharge facility. Then open the dump valves for waste holding tanks 1 and 2. Empty both waste holding tanks (see "Emptying waste holding tanks 1 and 2").



M86.00-0421-71

- Connect a water hose to the service fitting (4) (clear-rinse) and then open the valve (3).

- Wait until the water emerging from the discharge opening at the bottom of the vehicle is clear, then reclose the valve (3) at the service fitting and the dump valves on waste holding tanks 1 and 2.

Winter operation

Winter operation



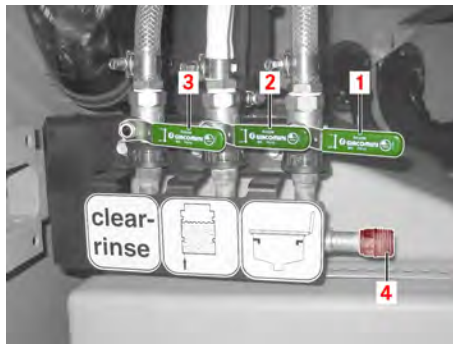
Warning

When temperatures fall below 32 °F (0 °C) the specified mixture of chemical and water must always be present in waste holding tanks 1 and 2 to prevent them from freezing.



Warning

The fresh water tank should be drained and remain out of use at temperatures below 32 °F (0 °C). Under these conditions waste holding tank 1 should be filled to the initial level required for operation through the toilet bowl.



M86.00-0421-71

- Emptying the fresh water tank: Connect discharge hose to service fitting (4).



Note

As special equipment (optional), a temperature-sensitive safety valve can be installed to automatically drain the fresh water from the tank onto the pavement at temperatures below 41 °F (5 °C).

- Open the valve (2) and allow the fresh water tank to drain until it is empty.
- Reclose the valve (2) and disconnect the discharge hose.

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Tasks required for maintenance record

Tasks required for maintenance record



Warning

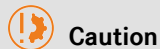
Risk of accident due to malfunction or failure of systems.

- ▶ Comply with the specified maintenance intervals.
- ▶ Care and maintenance tasks should be undertaken only by persons in possession of the necessary specialist knowledge.



Note

We recommend having all service and maintenance work performed by a service partner.



Caution

Property damage due to malfunction or failure of systems. To help ensure that the warranty is not voided:

- ▶ Comply with the specified maintenance intervals.

- ▶ Carry out tasks according to the maintenance record.

Supplementary maintenance requirements will vary according to individual operating conditions

Heating, ventilation, air conditioning

- ▶ Depending on the vehicle's usage profile, in addition to the normal maintenance work the vehicle operator must make allowance for additional care and maintenance tasks, see the section headed "Maintenance tasks, air conditioning system in the vehicle" (→ Page 391).

Basic service and maintenance procedures

Perform service and maintenance prescribed in the Service Record



Danger

Regular periodic maintenance on powertrain and chassis components is absolutely essential for ensuring that the vehicle continues to provide safe and reliable performance. Service intervals and required service procedures are described in the enclosed Service Record.



Property damage notice

We strongly urge you to have all listed service work performed at the specified intervals!



Note

Warranty claims based on our sales and delivery terms can be recognized only if the periodic maintenance operations have been performed at the specified mileages. Have all the work carried out on your vehicle confirmed in the service

ing and maintenance record by a service partner!

Cleaning and care

Cleaning and care

Descriptions:

- Care and cleaning instructions
- Specifications for operating fluids and lay-up instructions

Regulations applicable to care and cleaning



Danger

Risk of poisoning due to incorrect use of cleaning agents and care products.

- ▶ Comply with the instructions on the cleaning agents and care products.
- ▶ Do not use diesel, regular or premium fuels for cleaning.
- ▶ Always keep the containers of cleaning agents and care products tightly closed, store them correctly and keep them out of reach of children.
- ▶ Observe all applicable laws and regulations in the country of use. Comply with safety regulations, accident prevention regulations and environ-

mental protection laws. Implement the appropriate occupational health and safety measures.

- ▶ Read the instructions for use of the care and cleaning products prior to use and follow these instructions.
- ▶ Follow the regulations governing disposal of empty containers, cleaning cloths and polishing wads.



Caution

Property damage if a high pressure cleaner or steam cleaner is used, due to visible damage to material or invisible damage to structure. Structural damage leads to material failure at an unforeseeable subsequent point in time. This can result in dangerous situations in road traffic.

- ▶ DO NOT use high pressure cleaners or steam cleaners in the interior.
- ▶ In the engine compartment, DO NOT DIRECTLY AIM the spray jet at belt tensioners and guide pulleys.

- ▶ DO NOT use high-pressure cleaners with round jet nozzles or dirt blasters on the underbody.
- ▶ Never aim a high-pressure cleaning jet directly at tires, air suspension bellows, brake hoses, hose connections made of rubber, sealing boots and bearings of moving parts or at electrical wiring, components and their connections.
- ▶ Continually move the high pressure jet and alternate directions as you guide it over the areas to be cleaned.
- ▶ DO NOT use high-pressure cleaners or steam cleaners at axle seals (e.g. hubs, drive flanges) or at the axle ventilation apertures.
- ▶ DO NOT use round-spray nozzles to clean tires and air suspension bellows.
- ▶ Cleaning interior: Make sure that no liquid makes its way into or remains in gaps and cavities. Allow the interior of the vehicle to dry thoroughly.

Ensure an adequate passage of air throughout cleaning operations.



Caution

Property damage if unsuitable cleaning agents are used, due to damage to components such as rubber hoses. Damaged components lead to material failure at an unforeseeable subsequent point in time. This can result in dangerous situations in road traffic.

- ▶ DO NOT use acetone in the engine compartment or on parts with rubber.
- ▶ DO NOT use cleaning agents containing vinyl chloride in the engine compartment.



Environmental protection

Environmental hazard due to entry of cleaning agents and care products into the soil, water or sewage system.

- ▶ Use only approved containers for storage.
- ▶ Take up spillages and leaks by appropriate means, always with full

regard for your own safety and the safety of others.

- ▶ Dispose of residues, empty containers and soiled rags in the correct and appropriate manner.
- ▶ We recommend using only tested and approved care products. Any service partner will provide information on approved care products on request.
- ▶ In winter wash the vehicle more frequently, to remove residues of road salt.
- ▶ To prevent paint damage: Immediately remove foreign matter such as insect residues, bird droppings, tree and plant resins, oils and greases, fuel and tar with approved cleaning products.
- ▶ To prevent rust: Immediately clean and professionally touch up damage to the paintwork caused by stone chipping.

Care and cleaning instructions



M97.20-A001-71

Full instructions for care and cleaning are available on the internet at the following address.

Care and cleaning instructions:
<https://busdoc.i.daimler.com/public/pa/>

Cleaning and care

Specifications for operating fluids and lay-up instructions



M99.00-A008-71

The specifications for operating fluids are also available on the internet at the following address. Instructions for laying up your vehicle have also been posted there under "Preservation specifications (vehicle lay-up)".

Specifications for operating fluids:
<https://busdoc.i.daimler.com/public/>

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Towing

Towing

Basic notes

**Caution**

Property damage due to incorrect towing without professional skill for this vehicle category. The vehicle has to be prepared correctly.

- ▶ Have the vehicle towed by qualified specialists.
- ▶ Comply with the statutory requirements of the country in question.
- ▶ Select the transmission setting appropriate to the type of transmission installed.
- ▶ If transmission damage is suspected the propeller shaft has to be removed in the correct way. If the propeller shaft is removed, the bolts have to be installed in the flanges and secured so that they cannot work loose.
- ▶ Ensure the supply of compressed air to the spring-loaded brake cir-

cuit. Connect an external source of compressed air if necessary. Otherwise it is not permissible to attempt to tow the vehicle.

- ▶ Use only approved towing equipment and methods, such as a rigid tow bar, for example.
- ▶ Steer wide through curves and be aware of the vehicle overhang and, if applicable, the mirrors.
- ▶ If appropriate, switch off driver assistance systems such as ESP and ABA.

Only trained and qualified persons are permitted to tow a vehicle that has broken down.

For measures to be taken see "Measures for towing the vehicle" at the end of this section.

- ▶ Remove the propeller shaft by removing the bolts from the flange of the axle and securing them in the flange of the gearbox so that they cannot move.

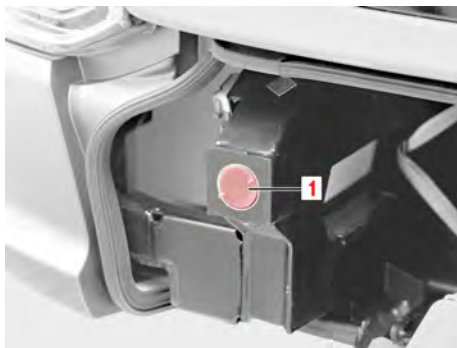
**Caution**

Property damage due to unwanted intervention of driver assistance systems when vehicle is being towed with the front axle raised. The driver assistance system detects different speeds of the axles and attempts to intervene, for example by applying the brakes. The vehicle is destabilized and slews off-line.

- ▶ Deactivate driver assistance systems by switching off the ignition.
- ▶ To prevent incorrect operation, secure the ignition so that it cannot be switched on (do not leave the drive-authorization key in the vehicle).
- ▶ It is not permissible to switch the ignition on while the front axle is raised.
- ▶ A vehicle lifted for towing is higher than normal: check headroom for passing underneath bridges and at buildings.

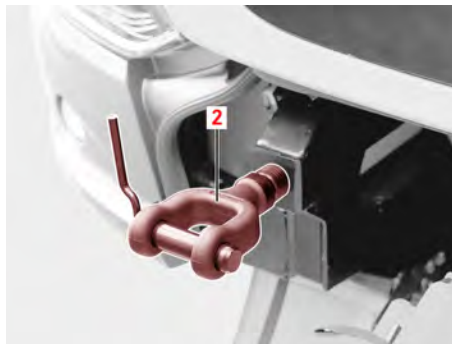
Towing

Installing towing coupling



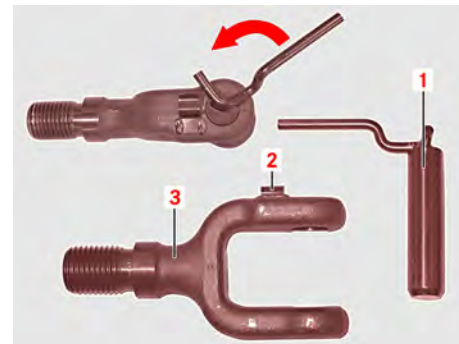
M00.60-A000-71

- ▶ Remove the towing coupling and accessories from the tools compartment.
- ▶ To install the towing coupling at the front of the vehicle, open the front flap. To install the towing coupling at the rear of the vehicle, remove the cover on the rear load-bearing member.
- ▶ Unscrew cap (1).



M00.60-A001-71

- ▶ Screw the towing coupling into mounting hole (2).



M00_00-0340-71

- ▶ Remove the tow bar (option) from the luggage compartment on the left behind the front axle.
- ▶ Engage the tow bar in towing coupling (3).
- ▶ Insert socket pin (1) to secure the tow bar.
- ▶ Pivot socket pin (1) to the rear until it engages in locking mechanism (2).
- ▶ Always make sure that the socket pin is securely seated (engaged).
- ▶ Removal: In reverse sequence. Turn socket pin (1) forward, while pulling locking mechanism (2) up slightly.

Mechanically releasing combination brake cylinders

- ▶ To ensure complete release of the brakes, the combination brake cylinders on the drive axle have to be mechanically released (→ Page 329).

Charging compressed-air reservoir

If on-board system's have to be charged with compressed air, the supply pressure of the off-board source must be at least 159 psi (11 bar). Only then will all the compressed-air circuits be charged.

- ▶ Do not charge the compressed air system at more than 181 psi (12.5 bar).
 - ▽ If the pressure is higher, use a pressure reducer.
 - ▶ Do not exceed the max. charging pressure of 181 psi (12.5 bar) as otherwise components of the compressed air system could be damaged.

Driving with vehicle on tow

Comply with information and warnings on the signs on the tow bar.

- ▶ In tight left-hand bends, make sure that the rear of the towing vehicle does not damage the left outside mirror of the towed vehicle.
- ▶ In tight right-hand bends, make sure that the tow bar does not damage the towed vehicle.

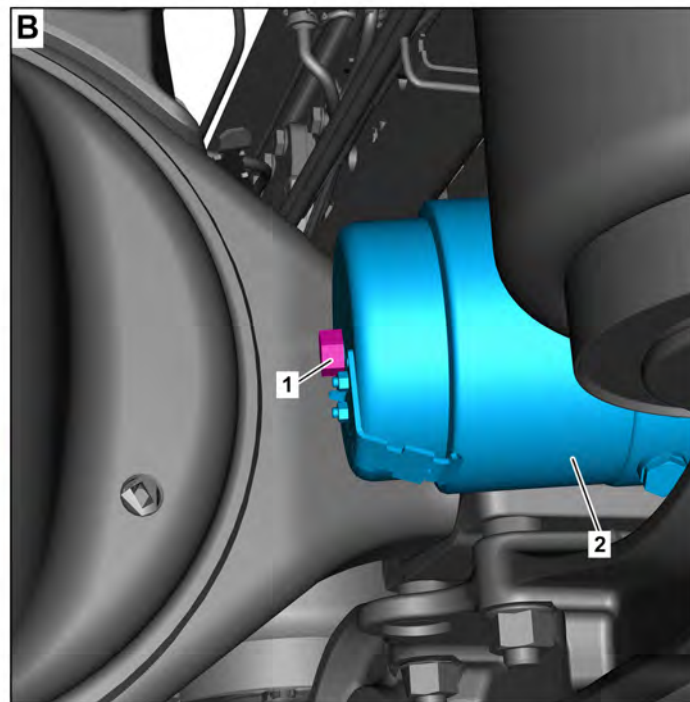
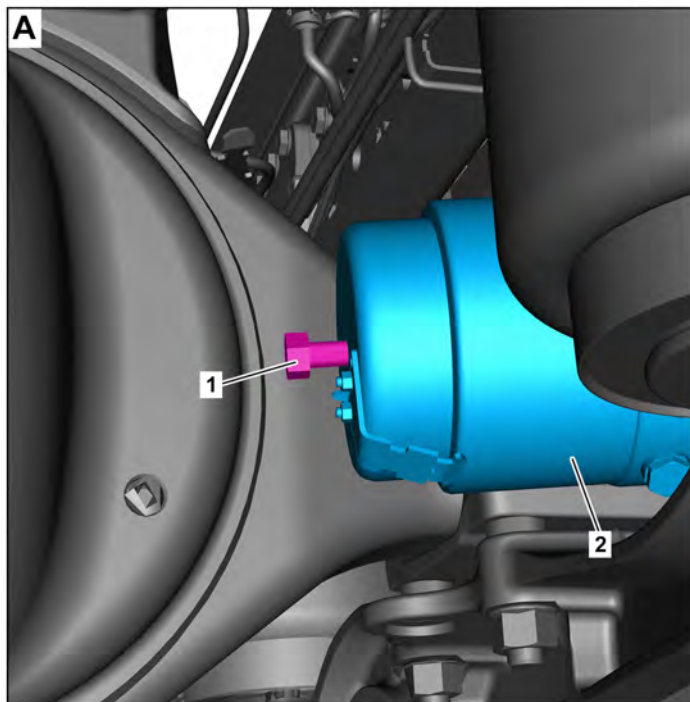
Measures for towing the vehicle

If the transmission is undamaged, the vehicle can be towed under the following conditions:

- Switch off the engine
- Raise the drive wheels clear of the road
- Remove the propeller shaft
- Make sure that the compressed air supply system is OK. Otherwise, connect an external compressed air supply.

Towing

Mechanically releasing combination brake cylinders



- A Release position
*Emergency release spindle (1) is
screwed out*
- B Drive position
*Emergency release spindle (1) is
screwed in*
- 1 Emergency release spindle
- 2 Combination brake cylinder

Mechanically releasing combination brake cylinders

Release position

Release the parking brake.



Note

Releasing the parking brake relieves the thread of emergency release spindle **(1)**.

Turn emergency release spindle **(1)** counter-clockwise all the way to release position **(A)**.

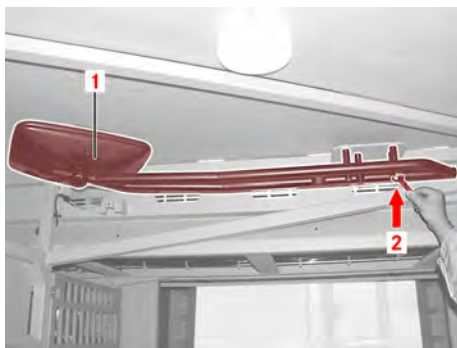
Drive position

Turn emergency release spindle **(1)** clockwise all the way to drive position **(B)**.

Removing outside mirrors

Removing outside mirrors

Location of emergency replacement mirror (option)



M88_00-0009-01

The emergency replacement mirror (1) is stowed in the luggage compartment on the left directly to the rear of the front axle. This mirror is intended exclusively for use in emergencies.

Remove the 4 screws (2) to take out the mirror.

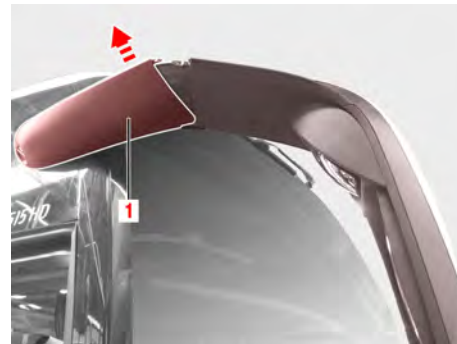
Note

For informations on replacing the outside mirror see the section headed "Removing outside mirror" in "Driver service and roadside repairs" (→ Page 330).

Removing outside mirror, installing emergency replacement mirror (option)

Note

The emergency replacement mirror is stowed in the luggage compartment and can be used on either side of the vehicle. Tools required for installation: Allen key w/f 6, flat tip screwdriver, open end wrench w/f 15.



M88.70-0042-71

Warning

Caution: Risk of injury! due to falls if climbing aids used are used.

- ▶ Perform operations only with a suitable ladder.
- ▶ Secure the ladder to prevent it from slipping.

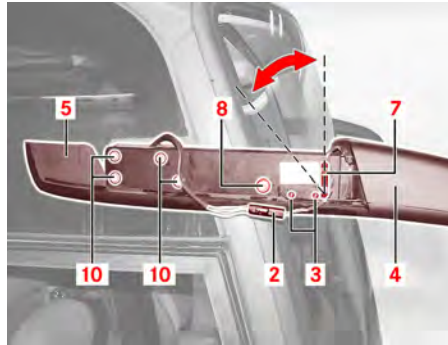
Removing outside mirrors

**Warning**

Risk of accident due to obstructed vision (blind spot) and misjudgment of distances, because objects in the mirror appear smaller and the emergency replacement mirror has no additional mirror.

- ▶ Adjust the mirrors to give you a view of as much as possible of the traffic area alongside the vehicle.
- ▶ Before starting off, always check to make sure that the area in front of the vehicle is free of persons and obstructions.
- ▶ When changing lanes turn you head and look over your shoulder to check the blind spot not visible in the mirror.
- ▶ Have the original mirror repaired or replaced as quickly as possible by a service partner!
- ▶ The mirror is mounted on a pivot on the mirror arm; pivot the mirror in toward the windshield.

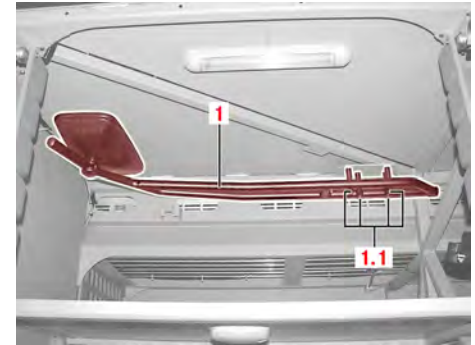
- ▶ Remove top cap (1) on the mirror arm. To do so, with both hands pull cap (1) up until it can be lifted out and off.



M88_70-0004-01

- ▶ Disconnect the electrical connection at connector (2).
- ▶ Slacken clamp screws (3) by a few turns.
- ▶ If a lock (8) (special equipment) is installed, it has to be unlocked.
- ▶ Pull safety clip (7) out and work mirror head (4) forward out of mirror arm (5).

- ▶ Remove screws (10) of mirror arm (5), remove the mirror arm.



M88_70-0003-01

- ▶ Remove screws (1.1) securing emergency replacement mirror (1) and remove the emergency replacement mirror.
- ▶ Hold the emergency replacement mirror in position at the mounting points on the mirror arm and tighten screws (10).
- ▶ Check that the emergency replacement mirror is secure and adjust the mirror position.

Status messages, function messages and warnings

Status messages, function messages and warnings

Overview of status messages, function messages and warnings

The display in the instrument cluster is a status display that shows information on operating status, functions and malfunctions (icons). It can also be used to access information from the on-board diagnostics (OBD). Depending on the vehicle's equipment complement, not all the display messages shown here can be displayed, or possibly there are other messages that are displayable.

Symbol Description

	Check engine
	Stop engine

Symbol	Description
	Data lines, engine management system/transmission control/etc. - total failure
	Alternator 1 malfunction
	Alternator 2 malfunction
	Alternator 3 malfunction
	no battery charge
	no battery charge (alternator 1)
	no battery charge (alternator 2)

Symbol	Description
	no battery charge (alternator 3)
	Low battery voltage
	High battery voltage
	Economy stage 1 (individual, non-essential consumers switched off, e.g. roof blowers). This economy stage is shown only when the engine is running.
	Economy stage 2 (consumers in addition to those switched off in economy stage 1 are switched off, e.g. auxiliary heater). This economy stage is shown only when the engine is running.

Status messages, function messages and warnings

Symbol	Description
	Economy stage 3 (shown automatically in response to ignition "on" and engine "off"). With the engine running, economy stage 3 shuts off the largest possible number of electric consumers (e.g. refrigerator, kitchenette, roof blowers).
	Air filter dirty
	High exhaust system temperature (HEST)
	Particulate filter
	'Tempomat' cruise control function

Symbol	Description
LIM	Limiter ('Temposet' cruise control function)
	Adaptive cruise control
	Brake prompt, adaptive cruise control
	Active Brake Assist
	ABA distance warning, visual only
	Engine fast idle
N	Transmission in neutral
R	Reverse gear engaged

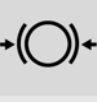
Symbol	Description
	Automatic mode
GEAR TEACH MODE	Transmission in teach-in mode
T	Advance warning, maximum speed
	Permanent brake preselected
	Permanent brake in operation
	No permanent-brake stopping power
	Retarder by brake pedal off

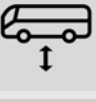
Status messages, function messages and warnings

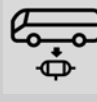
Symbol	Description
	Incorrect operation of permanent brake
	ABS not available
	Traction control
	Electronic Stability Program (ESP) active
	ESP off
	Skid chains active
	Sideguard Assist fault

Symbol	Description
	Sideguard Assist info
	Sideguard Assist initialization
	Sideguard Assist off
	Sideguard Assist warning
	Engine oil level too low
	Engine oil level too high
	Low engine oil pressure or sensor failure
	Coolant level too low or sensor failure

Symbol	Description
	Coolant temperature too high or sensor failure
	Engine power reduced, start-off power reduced
	Water in fuel filter
	Parking brake active
	Parking brake system air pressure too low or sensor failure
	Brake pad wear
	Brake malfunction

Symbol	Description
	Frequent stop brake
	Change in driving and braking patterns
	ABS fault, trailer
	Operate foot brake
	Reservoir pressure, compressed air for secondary consumers too low or sensor failure
	Intake filter for compressed air supply clogged

Symbol	Description
	Compressed air dryer malfunctioning
	Coach not at normal level
	Vehicle above standard level
	Vehicle below standard level
	Vehicle at highest level
	Vehicle at lowest level

Symbol	Description
	Level control, not enough air pressure
	Power steering fluid low
	Axle load transfer active
	Steering of trailing axle malfunction
	Steering of trailing axle not active
	Exterior lighting malfunction
	Light sensor malfunction

Status messages, function messages and warnings

Symbol	Description
	High-beam headlights malfunction
	Low-beam headlight malfunction
	Standing lights malfunction
	Turn signal malfunction
	Front fog lamps malfunction
	Rear fog lamp malfunction

Symbol	Description
	Brake lights malfunction
	Reversing light malfunction
	Defroster operating at MAX
	Wiper water level
	Rain sensor
	Rain sensor stage 1
	Rain sensor stage 2

Symbol	Description
	Rain sensor stage 3
	Rain sensor stage 4
	Rain sensor stage 5
	Rain/light sensor malfunction
	Emergency door lever blocked
	Emergency door lever for door 1 actuated
	Emergency door lever for door 2 actuated

Status messages, function messages and warnings

Symbol	Description
	Emergency exit open
	Door 1 fault
	Door 2 malfunction
	Ready for pullaway
	Door 2 locked
	Teach-in mode, outward swinging door

Symbol	Description
	Hinged door open
	Stop request
	Ramp request
	Baby carriage request
	Easy entry feature extended
	Passenger service call
	Restricted-mobility person

Symbol	Description
	Refrigerant compressor in operation
	Air recirculation for driver seat and passenger compartment
	Air recirculation mode, cockpit
	Roof hatch unlocked with emergency-release (emergency exit)
	Auxiliary heater flame indicator
	Auxiliary heater not installed
	Timer non-functional

Status messages, function messages and warnings

Symbol	Description
	Filling procedure for water circuit activated
	Blower speed adjustment not possible
	Control for passenger compartment OFF
	Maintenance cycle, refrigerant compressor
	Ignition lock malfunction
	Seat belt reminder
	Fire alarm in engine compartment/luggage compartment

Symbol	Description
	Smoke alarm
	Fire extinguishing system malfunction
	Fuel reserve
	Fuel level sensor
	DEF level too low
	Emergency call, lavatory

Symbol	Description
	Water tank level too low
	Rest room sewage waste container nearly full
	Luggage compartment flap open
	Luggage compartment and roof hatch open
	Open engine compartment door
	Side flap and engine compartment flap open
	Luggage compartment flap, engine compartment flap and roof hatch open

Symbol	Description
	Warning message
	Tire pressure monitoring
	Take a break (Attention Assist)

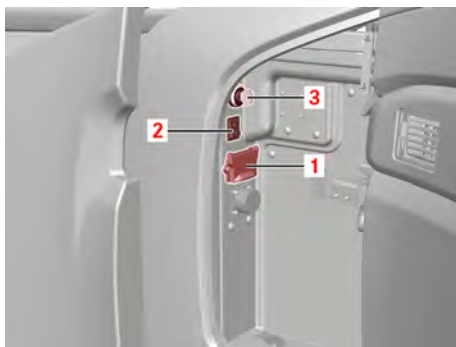
Info:

The symbols can differ, depending on the equipment.

Compressed air: Disabling level control system

Compressed air: Disabling level control system

Level control, key-operated switch



M54.22-A001-71

Key-operated switch **(3)** is behind the cover in the cockpit beside the diagnosis socket.

When the key is in position 1, the function for lifting and lowering by the buttons on the instrument panel is enabled.

When the key is in the "0" position the vehicle cannot be lifted or lowered by means of the lift and lower buttons on the instrument panel. All buttons for lifting and low-

ering the vehicle are non-functional. The automatic level control functions remain active.

A yellow warning with a text to the effect that: "level control nonfunctional" appears in the display, accompanied by a symbol.

Compressed air: Test ports, filling from external source, providing compressed air

Compressed air: Test ports, filling from external source, providing compressed air

Test connections for pneumatics, entrance, door front right



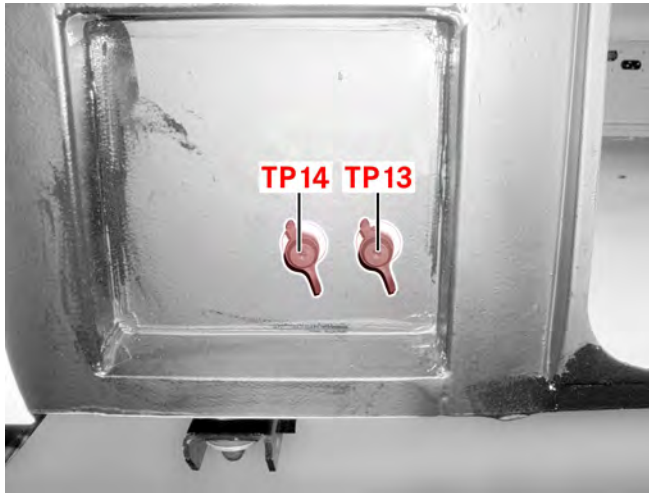
M42.60-A000-73

→ Test connections, pneumatics (behind the cover in the entrance of the door, front right).

- TP 1 Reservoir pressure for accessories*
- TP P Do not use*
- TP 3 Reservoir pressure for brake of front axle*
- TP 4 Reservoir pressure for brake of drive axle*
- TP 5 Brake pressure, front axle, left, controlled*
- TP 6 Brake pressure, front axle, right, controlled*
- TP 9 Brake pressure (redundancy), drive axle*
- TP 12 Reservoir pressure, suspension*

Compressed air: Test ports, filling from external source, providing compressed air

Test connections for pneumatics
behind door 2



**Test connections for pneumatics
(behind the luggage compartment flap on the right, in front of the drive axle)**

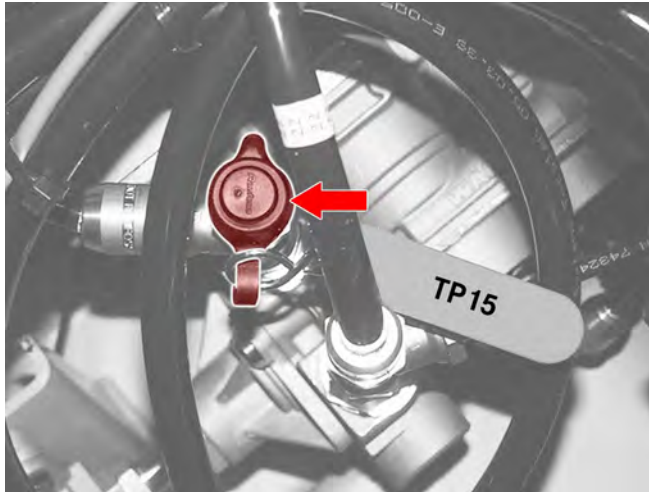
→ Test connections for pneumatics
(behind the luggage compartment flap on the right, in front of the drive axle)

TP 13 Brake pressure, drive axle, right, controlled

TP 14 Brake pressure, trailing axle, right, controlled (only if the vehicle has a third axle)

Compressed air: Test ports, filling from external source, providing compressed air

Other test connections for pneumatics



- TP 15 Brake pressure, drive axle, left, regulated (at axle modulator drive axle, connection 21)
- Door 2 Test connection, pneumatics

i Note

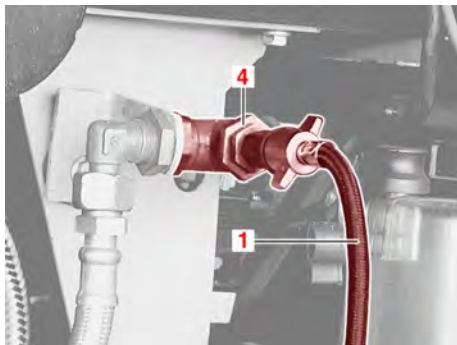
This test connection is located at the door valve in the step in the entrance for door 2.

Charging the compressed-air system of a second vehicle

i Note

Compressed air can only be withdrawn when the compressor is loaded (pumping).

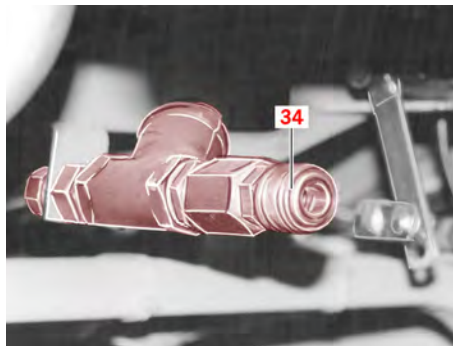
Compressed air: Test ports, filling from external source, providing compressed air



M42_00-0104-01

- ▶ If the pressure regulator has cut out (idle position - regulator discharging to atmosphere), operate the brake pedal to reduce the pressure in the compressed air system to the point at which the pressure regulator cuts in again (charging position).
- ▶ Use filling hose **(1)** to recharge the compressed air system of a 2nd vehicle connected to tire inflation connection **(4)**, located in the engine compartment.
- ▶ After recharging the pneumatic system, disconnect the hose and stow it securely.

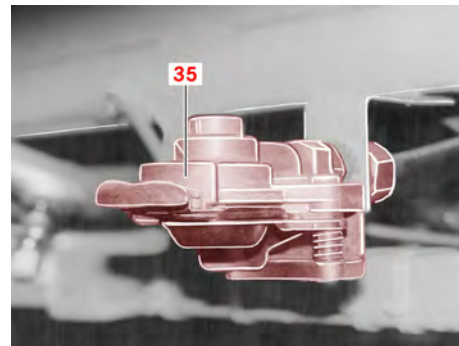
Charging by snap-connect nipple



M42_00-0105-01

Special equipment option 1: Compressed air connection by snap-connect nipple (1/2") **(34)** behind front-end flap and in engine compartment

Charging by coupling head



M42_00-0106-01

Special equipment option 2: Compressed air connection by coupling head **(35)** behind front-end flap and in engine compartment

The pneumatic system of the vehicle in question can be recharged or the compressed air system of a second vehicle supplied with compressed air via one of the connections provided for the purpose.

Compressed air: Test ports, filling from external source, providing compressed air



Property damage notice

Charge the compressed air system of the second vehicle only up to the cut-out pressure of the its pressure regulator!

Electrics: Important notes

Electrics: Important notes

Electrical system, important notes



M54.00-2004-71



Caution

Property damage due to work on the electrical system disregarding the following points:

- ▶ Work on the electrical system only when the batteries are isolated from the on-board electrical system.
- ▶ Always protect the starter, alternators and electrical plug connections against moisture when the engine is washed.



Warning

Risk of fire and risk of injury! Risk of fire due to use of fuses with inappropriately high ampere ratings. Risk of injury by sudden switch-on of consumers if the electric circuit of the fuse to be replaced is switched on.

- ▶ Use only fuses of the specified ampere ratings.
 - ▶ NEVER attempt to jumper fuses.
 - ▶ Replace fuses only after the causes of the faults have been eliminated.
 - ▶ Replace fuses only with their circuits isolated from the electricity supply.
-
- ▶ Before work starts on the electrical system and before batteries are disconnected or connected, always use the battery disconnect switch (01S01) to isolate the batteries from the on-board electrical system! The locations of the batteries and other important electrical components are shown on the next pages.

Electrics: Layout of components

Layout of electrical components

Electrical components	Installation location
Batteries, battery disconnect switch	Above the wheel arch of the trailing axle, left
Main switch panel with integral additional switch panel (power distribution board, PDB)	Above wheel arch, front right
Auxiliary switch panel	Above wheel arch, trailing axle rear right
Ceiling-mounted switch panel	In roof duct, front left
Diagnostic socket	In center console, right, at entrance
Electrical connection of the roof-mounted air conditioning system (heating, ventilation, air conditioning)	The fuses for the blowers of the roof-mounted air-conditioning system are accessible from the interior of the vehicle (below the service sets on right, behind entrance, door 2).
A detailed layout of the electrical components (control units, fuses, relays, etc.) can be obtained in the Internet at http://www.omniplus.com , keyword "Operational data".	

Electrics: Layout of components

Battery disconnect switch



M54.00-2004-71



Caution

Significant property damage in the case of vehicles with OM470 series engines, to the exhaust after-treatment system due to activation of the battery disconnect switch while the LED on the left beside the battery disconnect switch is showing.

- As long as the LED shows, DO NOT turn the battery disconnect switch to the OFF position.

- To isolate the batteries from the on-board electrical system, turn the battery disconnect switch to position **(1)**.

Note

If the battery disconnect switch is turned to the OFF position while the anti-theft alarm system (option) is armed, an alarm is triggered.

Note

The battery disconnect switch is inside the battery compartment above the wheel arch of the trailing axle, rear left.

Electrics: Batteries

Important notes on handling batteries

**Warning****Risk of explosion, poisoning and caustic burns.**

Risk of explosion from oxyhydrogen gas. Risk of poisoning and chemical burns from swallowing battery acid. When handling damaged lead-acid batteries, remember that battery acid poses a potential injury hazard and can cause chemical burns to the eyes and skin. Charging lead-acid batteries creates a high explosive oxyhydrogen gas mixture. Ingesting battery acid can produce toxic symptoms such as headaches, dizziness, stomach pains, respiratory paralysis, unconsciousness, vomiting, caustic burns and cramps. Battery acid mist causes caustic burns to the eyes. Inhalation causes caustic burning of the mucous membranes and respiratory paths. Absorption of lead in the body can damage the blood, nerves and kidneys; lead compounds are also con-

sidered hazardous to the reproductive system. Battery acid contains sulfuric acid, which can cause severe caustic burns to the skin and eyes.

- ▶ Charge lead-acid batteries only in well ventilated areas.
- ▶ Always start by disconnecting the negative terminal first; when reconnecting, always start with the positive terminal.
- ▶ Switch on the charger only after connecting it to the terminals; switch off before disconnecting.
- ▶ Do not place any tool or other conductive objects on the lead-acid battery (danger of short circuiting).
- ▶ Fire, sparks, open light sources and smoking are prohibited.
- ▶ Store lead-acid batteries in upright position only.
- ▶ For maintenance work on the battery wear acid-proof protective clothing, particularly safety glasses, protective gloves and an apron.

- ▶ Keep lead-acid batteries and battery acid away from unauthorized persons, particularly children.
- ▶ Comply with the instructions for the particular lead-acid battery and operating instructions of the vehicle.
- ▶ In case of contact with skin or eyes, immediately perform first aid measures.

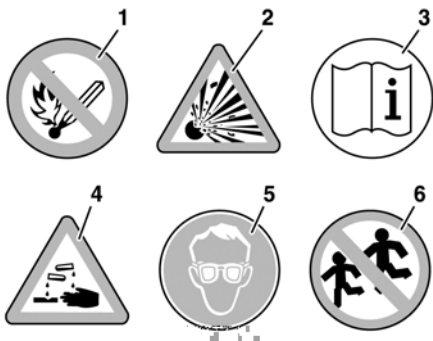
Measures

- ▶ Eye contact: immediately rinse eyes with lots of water.
- ▶ Skin contact: Remove clothing dampened by battery acid. Immediately neutralize acid splashes on the skin or clothing with acid neutralizers or soap suds, then rinse with lots of water.
- ▶ Inhalation of battery acid mist: Bring person into the fresh air.
- ▶ Swallowing of battery acid: Have the person drink lots of medicinally carbonated water.
- ▶ Always consult a physician or seek professional medical assistance after applying first aid.

Electrics: Batteries

- Fire protection measures: Suitable extinguishing agents are CO₂ and dry extinguishing agents.
- Warnings must be strictly observed!

Warning on the batteries:



M54_10-0004-01

- - **(1)**: Fire, open light sources and smoking are prohibited. Do not permit the formation of sparks.
- - **(2)**: Risk of explosion!
- - **(3)**: Comply with the instructions in the operator's manual.
- - **(4)**: Risk of acid burns! Battery acid is caustic. When dealing with batteries or battery acid always comply with

the applicable safety regulations and adopt the appropriate safety precautions. Do not allow it to come into contact with the skin, eyes or clothing. Rinse off splashes of acid immediately with plenty of clean water. Consult a physician if necessary.

- - **(5)**: Wear eye protection.
- - **(6)**: Keep children at a safe distance.

Disconnecting batteries

- It is essential to comply with the safety information in the section headed "Important notes on handling batteries" (→ Page 349)!
- Switch off the engine.



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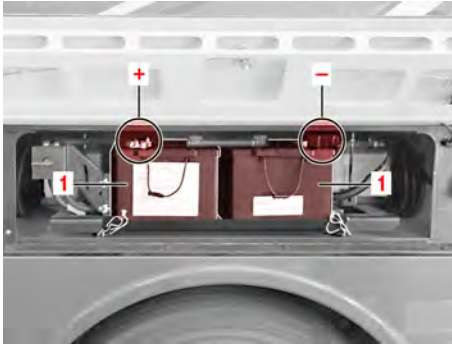
- Isolate the battery from the on-board electrical system at battery disconnect switch **(01S01)** and remove the key of the disconnect switch.



Property damage notice

To avoid damaging the exhaust aftertreatment system, turn the battery disconnect switch only when LED **(1)** is not showing.

- Disengage the battery cover at the four quick-release fasteners and remove.

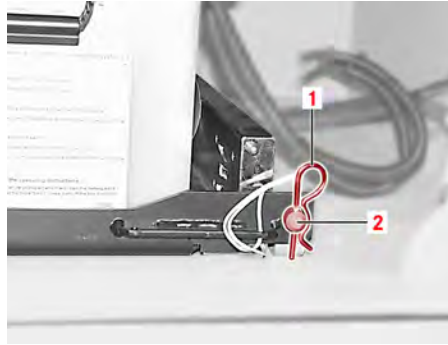


M54.00-2128-71

- ▶ Remove the spring cotter pins from the studs.
- ▶ Pull out the battery carrier.
- ▶ First disconnect the negative battery terminal.
- ▶ Then disconnect the positive battery terminal.

i Note

Reconnect in the reverse of the disconnect sequence.



M54_00-0839-01

! Warning

Caution: Risk of injury! due to frame parts of the battery carrier when the carrier is being pushed closed.

- ▶ Push the batteries back into the battery compartment with both your hands on the grips, DO NOT attempt to grip the mounting frame on the outside.
- ▶ Push the battery carrier all the way in, until studs (2) with the through-holes are visible.

! Warning

Risk of accident and injury due to loose battery carrier!

- ▶ After sliding the battery carrier into position, always insert both spring cotter pins (1) to prevent the batteries from sliding out while the vehicle is on the move!
- ▶ Insert the two spring cotter pins (1) on left and right to secure.

Charging batteries

i Note

Batteries self-discharge even when not in use, so we recommend recharging batteries once a month while they are not being used.

- ▶ It is essential to comply with the safety information in the section headed "Important notes on handling batteries" (→ Page 349)!
- ▶ Connect the charger. Make sure that polarity is correct (positive to posi-

Electrics: Batteries

tive, negative to negative), voltage is correct (24 V) and charging current is correct (approx. 1/10 of rated capacity, e.g. 200 Ah battery, 20 A charging current).

- ▶ Switch off the charger after charging has finished.
- ▶ When charging current flow stops, disconnect the charger.
- ▶ Special chargers are required for charging gel batteries.

Cutting in auxiliary batteries (option)

- ▶ Additional batteries can be cut in for a limited time for a boost to ensure reliable starting of the engine after longer periods at standstill with the electrical consumers switched on.



- ▶ With the ignition switched on, press the pushbutton switch.

Note

The auxiliary batteries are cut in for one minute.

- ▶ Start the engine in the usual way.

Note

When the engine is running the auxiliary batteries are connected in parallel with the vehicle batteries and recharge. After "engine off" they are isolated from the on-board electrical system so that they can retain their charge.

Jump-starting

Note

A discharged battery can freeze if the temperature is below 14 °F (-10 °C). Such batteries must be allowed to thaw before an attempt at jump-starting is made.

Caution

Property damage due to reversed polarity, incorrect charging voltage or wrong charging cables.

- ▶ Make sure polarity is correct (positive to positive, negative to negative).
- ▶ Make sure that battery voltage is matched (24 V).
- ▶ For jump starting use only jumper cables with a cross-section of at least 70 mm² and insulated crocodile clips.
- ▶ It is essential to comply with the safety information in the section headed "Important notes on handling batteries" (→ Page 349)!
- ▶ Switch off ignition. Remove the ignition key.
- ▶ First connect one end of the positive jumper cable to the positive terminal on the discharged battery and the other end to the positive terminal on the donor battery.

- ▶ Connect one end of the negative jumper cable to the negative terminal on the donor battery and connect the other end to any solid metal part of the vehicle frame not in the immediate vicinity of the discharged battery.

Note

Oxyhydrogen gas can escape from the batteries. Sparking can occur when the jumper cable touches the negative terminal of the discharged battery, causing the oxyhydrogen gas to explode. This is the reason why the last connection between discharged battery and donor battery should never be made directly to the battery.

- ▶ Start the engine of the donor vehicle and run it at fast idle. Wait a few minutes for the discharged battery to recharge to some extent.
- ▶ Start the engine of the coach being jump-started in the normal way and let it idle.

- ▶ After the engine has started, switch on heavy electrical consumers of the vehicle with the discharged battery, such as lighting, heated windows or the ventilation.

Note

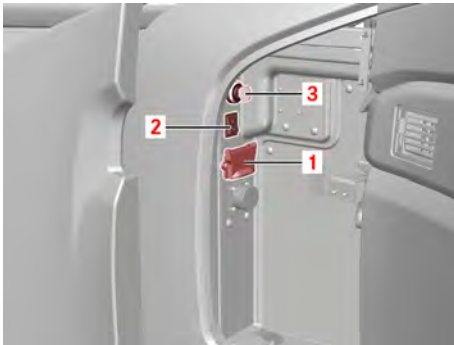
This prevents voltage spikes that could damage electrical components from occurring when the jumper cables are being disconnected.

- ▶ Switch off the engine of the donor vehicle.
- ▶ Disconnect both ends of the negative jumper cable first, then disconnect the positive jumper cable.
- ▶ Switch off unnecessary consumers in the vehicle with the discharged battery.

Electrics: Diagnostic link

Electrics: Diagnostic link

Diagnosis socket at cockpit



M54.22-A001-71

- Open the cover.
- Diagnosis socket (1) and download socket (2) are behind the cover.

Electrics: Fuse assignments

Information on fuse assignments

The following information applies to the fuse assignments listed below:

Note

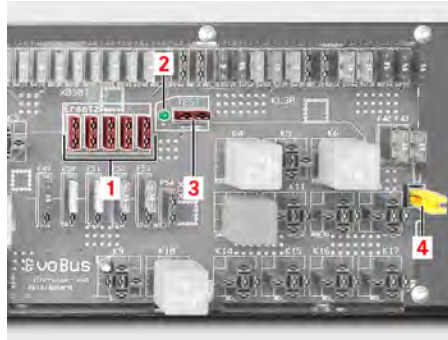
The information in this section is based on a vehicle with standard fuse assignments.

Actual fuse assignments can vary from vehicle to vehicle. Not all fuse sockets are used in all vehicles.

There is also a possibility of fuses being present at the slots listed here as "not used", for example if the vehicle is fitted with customer special request options or aftermarket installations.

Note

A detailed layout of the electrical components (control units, fuses, relays, etc.) can be obtained in the Internet at <http://www.omniplus.com>, keyword "Operational data".



M54.00-2124-71



Warning

Risk of fire and risk of injury! Risk of fire due to use of fuses with inappropriately high ampere ratings. Risk of injury by sudden switch-on of consumers if the electric circuit of the fuse to be replaced is switched on.

- ▶ Use only fuses of the specified ampere ratings.
- ▶ NEVER attempt to jumper fuses.
- ▶ Replace fuses only after the causes of the faults have been eliminated.
- ▶ Replace fuses only with their circuits isolated from the electricity supply.

Electrics: Fuse assignments

- ▶ Use fuse puller (4) to remove defective fuses from their slots in the fuse bank.

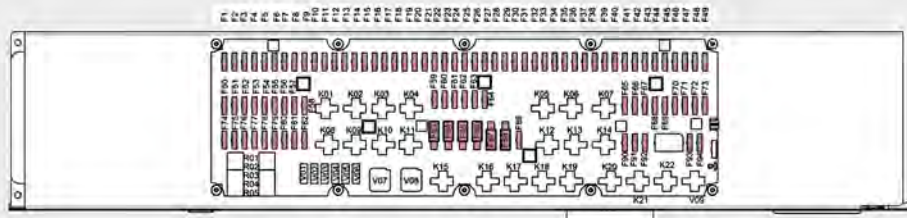
Note

Five fuses with different amperages are stored in spare-fuses bank (1).

- ▶ Test the fuses by inserting them into fuse holder (3).
 - ◁ If green LED (2) shows, the fuse is OK.

Electrics: Fuse assignments

Fuse assignment, main switch panel with PDB



Electrics: Fuse assignments

F01	7.5 A - mirror adjustment (32F05)	F13	7.5 A - USB connector, passenger double seat, middle left (09F31)	F27	Not used
F02	15 A - condenser blower (51F11)	F14	7.5 A - USB connector, passenger double seat, front right (09F34)	F28	Not used
F03	7.5 A - distance sensor (10F28)	F15	7.5 A - USB connector, passenger double seat, rear left (09F33)	F29	Not used
F04	15 A - air conditioning system (51F26)	F16	7.5 A - driver's seat ter. 15 (81F01)	F30	Not used
F05	25 A - windshield wipers (33F02)	F17	15 A - driver's window heater (32F07)	F31	7.5 A - iPod (70F83)
F06	5 A - clock ter. 15 (65F02)	F18	7.5 A - driver's seat ter. 15 (81F01)	F32	5 A - Lane Assistant (87F01)
F07	7.5 A - DVD changer ter. 30 (70F15)	F19	15 A - video monitor (70F03)	F33	7.5 A - wireless Internet (76F09)
F08	7.5 A - USB connector, passenger double seat, rear right (09F37)	F20	5 A - 12 V voltage supply (01F16)	F34	5 A - Common Powertrain Controller CPC 12 (10F35)
F09	7.5 A - infotainment (70F34)	F21	Not used	F35	Not used
F10	15 A - outside mirror, electrical fold in/out (32F12)	F22	Not used	F36	7.5 A - radio system ter. 15 (70F77)
F11	7.5 A - mirror heater (32F13)	F23	Not used	F37	7.5 A - diagnostic socket (13F08)
F12	7.5 A - USB connector, passenger double seat, front left (09F30)	F24	Not used	F38	5 A - 360° camera system (78F09)
		F25	Not used	F39	Not used
		F26	Not used	F40	7.5 A - video monitoring system (70F06)
				F41	5 A - roller sun blind ter. 30 (32F16)
				F42	Not used

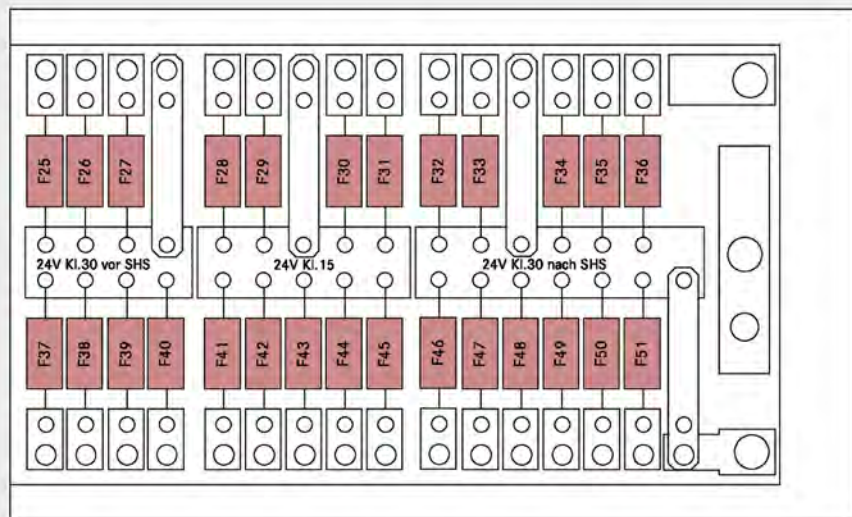
Electrics: Fuse assignments

F43	5 A - WiFi access point ter. 30 (73F42)	F55	15 A - condenser blower (51F09)	F71	7.5 A - transmission ter. 30 (13F04)
F44	15 A - front box ter. 30 (50F02)	F56	5 A - steering column adjustment (22F09)	F72	5 A - trailing axle ter. 30 (22F08)
F45	3 A - steering wheel angle sensor ter. 30 (20F10)	F57	15 A - 24 V socket (02F07)	F73	Not used
F46	10 A - EAPU electronic air processing unit incl. electronically controlled parking brake ter. 30 (24F06)	F58	5 A - microphone (70F31)	F74	15 A - condenser blower (51F10)
F47	5 A - speed module, blower for roof system ter. 30 (51F03)	F59	7.5 A - Common Powertrain Controller CPC ter. 30 (10F34)	F75	7.5 A - WiFi access point (73F43)
F48	15 A - HVAC control unit ter. 30 (51F94)	F60	Not used	F76	15 A - headlight cleaning system (33F09)
F49	20 A - radio FP21 ter. 30 (70F20)	F61	Not used	F77	7.5 A - cigarette lighter 24V (02F28)
F49	7.5 A - radio FP11 ter. 30 (70F20)	F62	Not used	F78	15 A - HVAC control unit, roof system (51F13)
F50	5 A - 12 V voltage supply (08F99)	F63	Not used	F79	5 A - telematics system ter. 15 (77F01)
F51	7.5 A - C3 signal I module/satellite (60F01)	F64	Not used	F80	Not used
F52	10 A - ambient lighting (31F46)	F65	Not used	F81	15 A - radio REI (70F01)
F53	5 A - fuel level sensor (65F08)	F66	15 A - video monitor ter. 30 (70F57)	F81	5 A - radio Bosch (70F01)
F54	Not used	F67	3 A - tire pressure monitoring ter. 30 (65F14)	F82	5 A - USB connector, cockpit (09F06)
		F68	7.5 A - diagnosis/download ter. 30 (05F02)	F83	Not used
		F69	5 A - telematics system ter. 30 (77F02)	F84	Not used
		F70	Not used		

F85	Not used
F86	Not used
F87	Not used
F88	Not used
F89	Not used
F90	5 A - video system ter. 30 (70F43)
F91	7.5 A - VRDU driver assistance system ter. 30 (10F62)
F92	Not used
F93	15 A - windshield washer pump 1 (33F11)
F94	15 A - windshield washer pump 2 (33F12)

Electrics: Fuse assignments

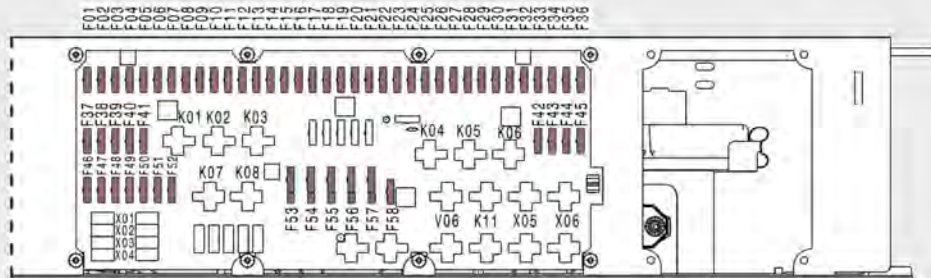
Fuse assignment, PDB on control console



F25	50 A - main fuse 12 V ter. 30 (01F28)	F41	Not used
F26	30 A - engine control MR 12 V ter. 30 (10F36)	F42	50 A - equalizer 24 V (01F30)
F28	30 A - main fuse 12 V ter. 15 (01F29)	F43	150 A - power inverter (01F47)
F29	80 A - fuse ter. 15 (01F17)	F44	Not used
F30	80 A - main fuse ter. 15 (01F02)	F45	70 A - lift door/emergency door (46F03)
F31	Not used	F46	Not used
F32	200 A - differential lock, rear axle (22F11)	F47	60 A - stand-alone multiplexer SMUX (04F39)
F33	50 A - stand-alone multiplexer SMUX (04F50)	F48	40 A - stand-alone multiplexer SMUX (04F40)
F34	50 A - stand-alone multiplexer SMUX (04F52)	F49	100 A - main fuse ter. 30 (01F07)
F35	50 A - stand-alone multiplexer SMUX (04F53)	F50	100 A - main fuse ter. 30 (01F13)
F36	50 A - stand-alone multiplexer SMUX (04F54)	F51	50 A - control units ter. 30 (08F05)
F37	30 A - control unit, exhaust aftertreatment ACM 12V ter. 30 (17F07)		
F38	Not used		
F40	100 A - equalizer 24 V (01F31)		

Electrics: Fuse assignments

Fuse assignment, auxiliary switch panel



Electrics: Fuse assignments

F1	Not used	F16	Not used	F31	15 A - blower, roof box, center (51F40)
F2	1 A - wheelchair lift (46F04)	F17	20 A - stand-alone multiplexer SMUX (04F45)	F32	15 A - mixer circuit, pump, roof (53F16)
F3	7.5 A - blower motor, entrance 2 (53F10)	F18	Not used	F33	Not used
F4	7.5 A - reading lights (31F03)	F19	5 A - instrument (61F03)	F34	7.5 A - substation 2 (51F36)
F5	7.5 A - starter control relay (10F38)	F20	5 A - Central GateWay CGW (05F03)	F35	Not used
F6	3 A - fuel pump switch (15F16)	F21	15 A - blower, roof box, center (51F39)	F36	Not used
F7	Not used	F22	15 A - blower, roof box, center (51F45)	F37	7.5 A - lavatory (80F05)
F8	Not used	F23	15 A - voltage transformer, trailer socket (30F44)	F38	5 A - smoke detector system (64F12)
F9	Not used	F24	15 A - lavatory, cold-resistant (80F10)	F39	Not used
F10	20 A - stand-alone multiplexer SMUX (04F42)	F25	15 A - blower, roof box, front (51F37)	F40	7.5 A - emergency light, sensor module V (front) (35F24)
F11	Not used	F26	7.5 A - substation 0 (51F35)	F41	Not used
F12	5 A - stand-alone multiplexer SMUX (04F41)	F27	Not used	F42	Not used
F13	10 A - EAPU electronic air processing unit incl. electronically controlled parking brake and hand brake lever ter. 30 (24F03)	F28	15 A - blower, roof box (51F38)	F43	Not used
F14	20 A - stand-alone multiplexer SMUX (04F46)	F29	7.5 A - horn (33F01)	F44	15 A - automated manual transmission (12F04)
F15	20 A - stand-alone multiplexer SMUX (04F44)	F30	15 A - heater, fuel oil filter (54F05)	F45	Not used
				F46	Not used
				F47	7.5 A - emergency light, sensor module H (rear) (35F25)

Electrics: Fuse assignments

F48	7.5 A - reading lights (31F04)
F49	Not used
F50	5 A - entrance lighting, rear lavatory (31F26)
F51	Not used
F52	Not used
F53	7.5 A - voltage sensing, generator (01F20)
F54	20 A - auxiliary heater (54F02)
F55	20 A - auxiliary heater (54F01)
F56	Not used
F57	15 A - night light (31F48)
F58	15 A - blower, roof box, front (51F43)

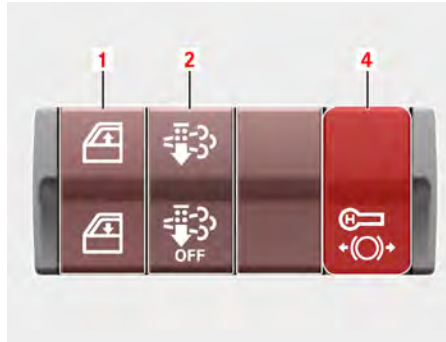
Frequent-stop brake emergency release

Frequent-stop brake emergency release

Frequent-stop brake emergency release

i Note

This switch is sealed and should only be operated if there is a fault in the frequent stop brake or starting-off lock.



M54.30-A186-71



Danger

Risk of accident due to unwanted movement of the vehicle.

- ▶ If the emergency release switch of the frequent-stop brake is used, secure the vehicle by application of the parking brake.
- ▶ Have the fault rectified as quickly as possible by a service partner!
- ▶ Remove the lead seal from emergency release switch (4).



M68_00-0311-71

- ▶ Flip open red cover (1) of the emergency release switch.
- ▶ Operate switch (2) by pulling it up.
 - ◁ The frequent-stop brake function is deactivated.

Wheels, tires: Important notes

Wheels, tires: Important notes

Wheels, tires: General safety information



Danger

Risk of accident due to wrong tire pressures, overloading, old, worn or damaged tires and wrong choice of tires.

- ▶ At regular intervals, check tire pressures, tire tread depth and the condition of all tires.
- ▶ Have damaged tires replaced without delay.
- ▶ Replace tires no later than when they have worn down to the minimum tread depth permitted by law.
- ▶ Avoid driving over sharp-edged objects.
- ▶ Do not rub tires against curbs.
- ▶ Always park the vehicle with the entire tire contact patch on the curb.
- ▶ Use only tires approved by EvoBus. Ask the service partner, if necessary.

- ▶ Fit only tires with the specified load index (at least 154/149) and the specified speed rating.
- ▶ Comply with the applicable country-specific ordinances and regulations.
- ▶ In dual-wheel arrangements use only tires with the same outside diameter, maximum tolerance 0.5 % of the outside diameter or the circumference. Fit the larger tire on the outside.
- ▶ Do not exceed the maximum payload, taking into account the technically permissible weights and, if applicable, additional rating marks on the tires.



Warning

Caution: Risk of injury! due to incorrect treatment of wheels and tires. Observe the following recommendations exactly to prevent injuries.

- ▶ Follow the safety precautions for workshop work.

- ▶ Wear safety glasses at all times while service or maintenance work is in progress.
- ▶ Do not use force, for example do not strike steel rims with a steel hammer. Otherwise sharp-edged metal fragments could be chipped off and cause injuries.
- ▶ Use only tested precision measuring equipment.



Note

The tires are the only points of contact between the vehicle and the roadway. They are, therefore, particularly important in terms of operational safety and roadworthiness.

- ▶ It is absolutely essential to comply with the warnings above and the section headed "Preparation for operation, daily" (→ Page 37).
- Incorrect air pressure reduces the tire's load capacity.
- Low tire pressure leads to overheated tires and accelerated tire wear, while also affecting the vehicle's directional

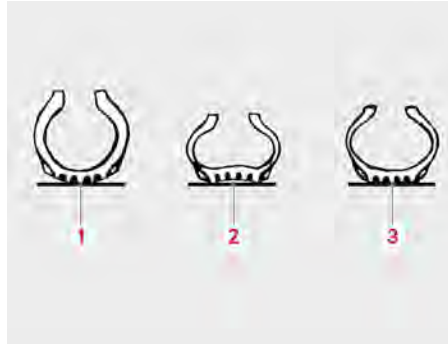
Wheels, tires: Important notes

stability and increasing fuel consumption.

- Excessively high tire pressure leads to longer braking and stopping distances while also reducing overall traction and accelerating the rate at which the tires wear.

Note

For every 50 °F (10 °C) of air temperature, tire pressure changes by about 30 to 40 kPa (4.3 to 5.8 psi (0.3 to 0.4 bar)). Bear this temperature-dependent change in tire pressure in mind when you check tire pressures indoors where the temperature is higher than the outdoor temperature. Example: Indoor temperature is about 68 °F (20 °C), outdoor temperature is about 32 °F (0 °C). Under these circumstances, inflate the tires to 60 to 80 kPa (8.7 to 11.6 psi (0.6 to 0.8 bar)) higher than the figure stated in the tire pressure table.



M40.15-0031-71

1. Tire pressure too high
2. Tire pressure too low
3. Correct tire pressure

Tire pressure on the type plate
(→ Page 380).



Property damage notice

Property damage due to moisture or dirt in the tire inflation valves and resulting loss of air.

- Always use the valve caps and screw them firmly on to the tire inflation valves.



Property damage notice

Property damage due to incorrect wheel balancing weights.

- DO NOT use wheel balancing powders, beads or gel; they can cause undesirable pulsation and/or oscillation.

TPMS

The TPMS sensors can be damaged in the tire removal process if the corresponding instructions are not followed.

If the work is carried out by a shop that does not have a TPMS permit, before the tire is removed from the rim be sure to inform the shop that the vehicle has a tire pressure monitoring system.

1. When tires are worked on, make sure that they do not fall on to feet, hands or other parts of the body or drop too heavily on to the floor. Watch for puddles of oil and obstacles on the floor when carrying wheels and tires. Keep the floor dry and clean.

Wheels, tires: Important notes

2. If the tire has to be deflated, first relieve as much pressure as possible by pressing the valve stem into the valve. Keep your eyes averted from the valve. Remove the valve insert to allow the last of the air to escape.
3. In order for the tire to be pulled off the rim, the rim has to be secured on a rim stand or tire-changing machine to prevent cuts to the hands and wrists. Use only standards-compliant tire-fitting tools and equipment.
4. Thoroughly examine the tire after removal and perform all the necessary repairs. A tire spreader is helpful, however be careful when working near it. Keep the arms of the tire spreader closed when the machine is not in use.
5. Thoroughly examine the rim components for rust, damage and deformation. Also check the holes for the wheel studs for wear. Never use rims that evidence deformation, corrosion, cracks or chipping.



M40.00-0139-82

1. Handling wheels and tires
2. Relieve pressure safely
3. Tire change
4. Use of tire levers
5. Tire spreader
6. Thorough visual inspection
7. Use rubber mallet
8. Precautionary measures for inflation (use tire inflation cage)

Wheels, tires: Wheel change

Wheels, tires: Wheel change

Wheel change

- ▶ When working on the wheels, always comply with the information set out in the section headed "General safety information" (→ Page 366)!

Spare wheel (option)



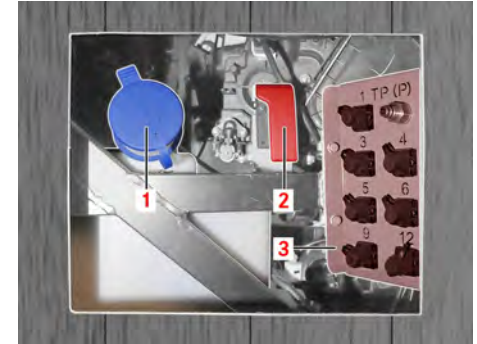
Warning

Risk of accident and injury due to stopping with a flat tire at an unsuitable location.

- ▶ Make sure the ground is level and firm, stop the vehicle as far as possible from moving traffic and switch on the hazard warning lights.
- ▶ Have all passengers disembark and have them proceed to a safe area where they will not be in immediate danger (behind a guard rail, etc.).
- ▶ Set up a warning triangle or portable emergency flasher at an appropriate distance from the vehicle.

- ▶ Observe the regulations of the specific country.
- ▶ To prevent the vehicle from slipping off the jack, change the wheel only on a level, firm surface that is not slippery.
- ▶ Never lie under the vehicle if it is jacked up and is not supported by jack stands.
- ▶ Switch off the engine and the ignition and secure them so that they cannot be switched on again without your knowledge and consent.
- ▶ The electronically controlled air suspension might attempt to make adjustments when the vehicle is lifted, so disconnect the power supply (use the battery disconnect switch).

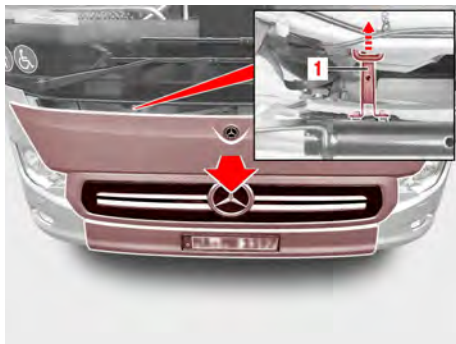
Removing spare wheel (option) from spare wheel compartment



M82.35-A000-71

- ▶ To remove the spare wheel from the spare wheel compartment, pull release handle **(2)** of the front-end flap. Release handle **(2)** is behind the cover in the entrance of the door, front right.
 - ◁ The front-end flap opens forward / down. If it is stiff, pull the flap forward / down.

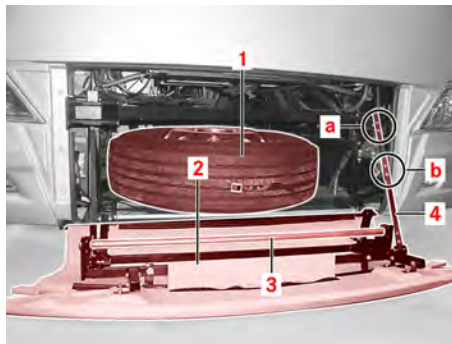
Wheels, tires: Wheel change



M83.10-A004-71

To prevent it from swinging all the way forward right away, the front flap is stopped by a catch hook (1).

- ▶ Disengage the catch hook and ease the flap down. In this process, hold the flap securely to prevent damage.
 - ◁ The spare tire hatch is now in the horizontal position, enabling the spare wheel to be pulled out.
- ▶ Disengage the retaining strap from the spare wheel and remove the strap.



M40_00-0072-01

- ▶ Pull spare wheel (1) forward over roller rod (3).

Note

Ensure that the openings below the spare tire in the forward compartment are never closed or obstructed by objects of any kind, as this could prevent the heater, ventilation and air conditioning systems from providing efficient and trouble-free performance.

Removing wheel nut cap (option)



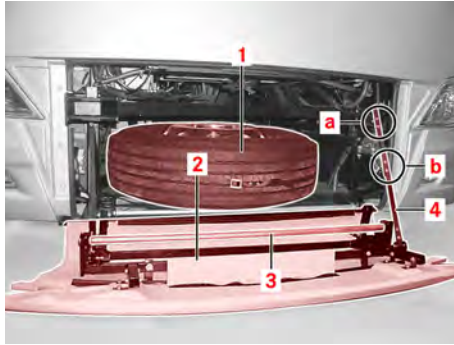
M40.00-0131-01

- ▶ Two wheel nuts secure wheel nut cap (1) to the disk wheel. Slacken and remove these two wheel nuts.
- ▶ Remove wheel nut cap (1).

Wheels, tires: Wheel change

Loosen wheel nuts

Loosen wheel nuts



M40_00-0072-01

- Use the wheel wrench from the on-board tool kit to slacken the wheel nuts by half a turn.

i Note

Roller rod (3) that makes the spare wheel easy to pull out of its storage compartment can be used as an extension for the wrench. Remove the spring cotter pin and disengage the roller rod from its holder.

Positioning vehicle jack (10 metric tons)



Warning

Caution: Risk of injury! due to the jack toppling underneath the jacked-up vehicle.

- NEVER attempt to change a wheel with the vehicle on an uphill or downhill gradient.
- Secure the coach against rolling away (apply the parking brake). If the defective wheel is on the rear axle, also place a wheel chock at the front axle.
- Position the vehicle jack only at one of the designated jacking points provided for the purpose on the vehicle.
- Plumb the jack with the base directly underneath the jacking point.
- Comply with the operating instructions provided by the manufacturer of the vehicle jack.
- To help minimize the damage that would result from failure of the vehi-

cle jack, place first the intact spare wheel and then the defective wheel underneath the body at a suitable point for the duration of the wheel-change operation.

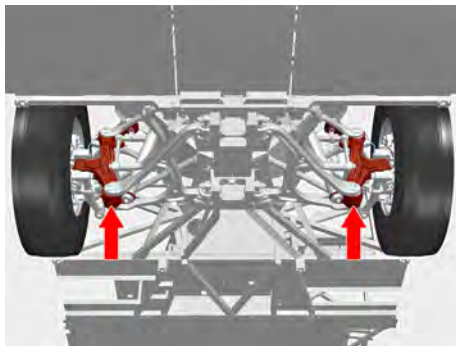


Property damage notice

To avoid damaging the framework, position the vehicle jack only at the designated jacking points (see illustrations below) or at the points marked by a jacking symbol visible on the outside of the vehicle's bodywork!

Wheels, tires: Wheel change

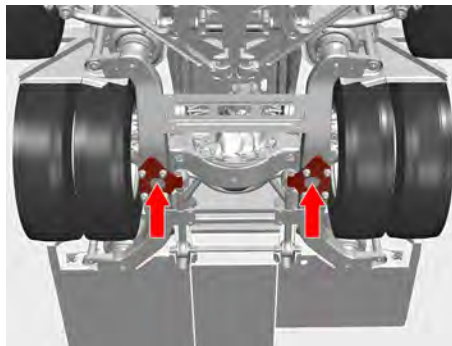
Vehicle jacking points, front axle



M40.00-A002-71

- Position the jack on a solid plywood pad and jack the vehicle up at the transverse control arm jacking point (**arrow**).

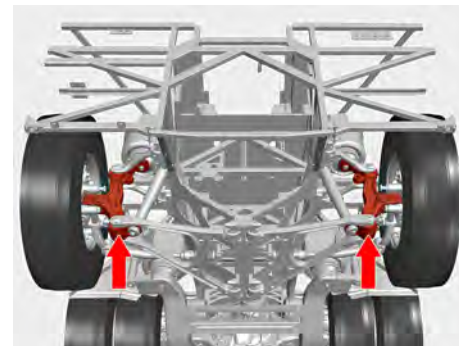
Vehicle jacking points, rear axle



M40.00-A001-71

- Position the jack on a solid plywood pad and jack the vehicle up at the defined jacking point (**arrow**).

Vehicle jacking points, trailing axle



M40.00-A000-71

- Position the jack on a solid plywood pad and jack the vehicle up at the transverse control arm jacking point (**arrow**).

Removing front wheel

Removing front wheel

- Comply with the safety information in the section headed Wheel change (→ Page 366)!



M40_00-0084-71

- Position the drive-on wedge in front of the defective wheel and with first gear engaged ease the vehicle forward so that the wheel rides up on to drive-on wedge (1).

i Note

To prevent the drive-on wedge from slipping away on very smooth, hard ground, drive up on to the wedge very slowly and carefully!

- Remove (→ Page 370) the wheel nut cap.

- Slacken (→ Page 371) each of the wheel nuts by half a turn.
- Position (→ Page 371) the jack.
- Extend the vehicle jack to maximum height to lift the wheel clear of the drive-on wedge.
- Remove the drive-on wedge.
- Remove all wheel nuts except three forming an equilateral triangle.
- Unscrew the last 3 wheel nuts only after you have checked that the wheel is resting loosely on the wheel studs.
- Remove the defective wheel.



Property damage notice

When removing the wheel take care to avoid pulling it over the threaded studs with its weight dragging directly against them. This would damage the stud threads and make it difficult to screw on the wheel nuts. Under unfavorable circumstances the wheel's wheel nut could seize on the damaged wheel stud's threads.

Removing drive wheel

Removing drive wheel

- Comply with the safety information in the section headed Wheel change (→ Page 366)!



M40_00-0012-01

- Place a drive-on wedge at the intact wheel of the twin tires and drive the vehicle up on the drive-on wedge.

Wheels, tires: Wheel change

Note

To prevent the drive-on wedge from slipping away on very smooth, hard ground, drive up on to the wedge very slowly and carefully!

- ▶ Slacken (→ Page 371) each of the wheel nuts by half a turn.
- ▶ Position (→ Page 371) the jack.
- ▶ Extend the vehicle jack to maximum height to lift the wheel clear of the drive-on wedge.
- ▶ Remove the drive-on wedge.
- ▶ Remove all wheel nuts except three forming an equilateral triangle.
- ▶ Unscrew the last 3 wheel nuts only after you have checked that the wheel is resting loosely on the wheel studs.
- ▶ Remove the defective wheel.



Property damage notice

When removing the wheel take care to avoid pulling it over the threaded studs with its weight dragging directly against them. This would damage the stud threads and make it

difficult to screw on the wheel nuts. Under unfavorable circumstances the wheel's wheel nut could seize on the damaged wheel stud's threads.

Removing wheel on trailing axle

Removing wheel on trailing axle

- ▶ Comply with the safety information in the section headed Wheel change (→ Page 366)!



M40_00-0014-01

- ▶ Put the outside wheel of the drive axle on to drive-on wedge (1).

Note

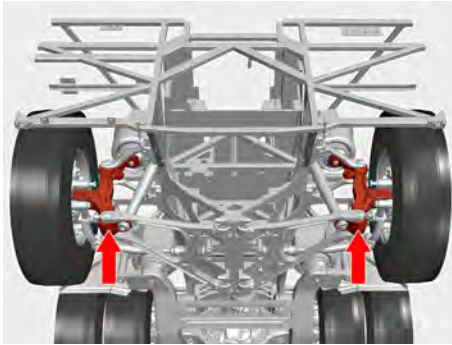
To prevent the drive-on wedge from slipping away on very smooth, hard ground, drive up on to the wedge very slowly and carefully!

- ▶ Remove (→ Page 370) the wheel nut cap, if fitted.
- ▶ Slacken (→ Page 371) each of the wheel nuts by half a turn.
- ▶ Raise body using lifting and lowering system.

Note

If the vehicle is not equipped with a lifting/lowering system, the load can be taken off the trailing axle by pressing the button for axle load transfer for the trailing axle.

- ▶ To prevent inadvertent adjustment by the lifting/lowering system, isolate the on-board electrical system from the batteries again at the battery disconnect switch.



M40.00-A000-71

- ▶ Raise the trailing axle by positioning telescopic jack (10 metric tons) positioned at the transverse control arm jacking point (**arrow**) high enough to allow the wheel to be removed.
- ▶ Comply with the information in the section headed "Positioning the jack (→ Page 371)".
- ▶ Extend the vehicle jack to maximum height to lift the wheel clear of the drive-on wedge.
- ▶ Remove the drive-on wedge.
- ▶ Remove all wheel nuts except three forming an equilateral triangle.

- ▶ Unscrew the last 3 wheel nuts only after you have checked that the wheel is resting loosely on the wheel studs.
- ▶ Remove the defective wheel.

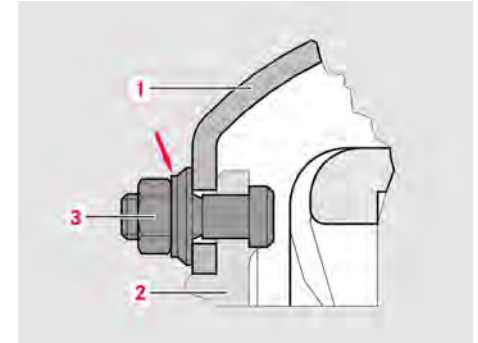


Property damage notice

When removing the wheel take care to avoid pulling it over the threaded studs with its weight dragging directly against them. This would damage the stud threads and make it difficult to screw on the wheel nuts. Under unfavorable circumstances the wheel's wheel nut could seize on the damaged wheel stud's threads.

Fitting the spare tire

Fitting the spare tire



M40_00-0016-01

- ▶ Remove rust and dirt from the contact surfaces of wheel, wheel hub, centering lug and wheel nuts.
- ▶ The threads of the wheel bolts and the wheel nuts must be oil and grease-free; degrease the threads if necessary.

Wheels, tires: Wheel change



Property damage notice

To prevent damage to the wheel rims and the wheel studs, replace only with wheel rims of the same type (only steel rims as replacements for steel rims, only aluminum rims as replacements for aluminum rims)! Different wheel nuts are needed for aluminum rims and steel rims! It is not permissible to install any combination of steel rims and aluminum rims on an axle with dual wheels!

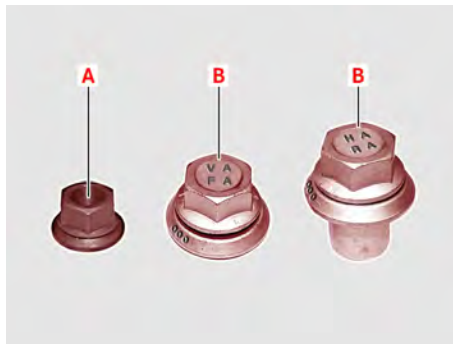
- ▶ Hold the spare wheel in position.



Note

Disk wheels **(1)** are centered by means of alignment lugs on hub **(2)**.

- ▶ Position the wheel nuts and screw them on until they are against the wheel but do not tighten.



M40_00-0053-01

- ▶ Note the differences in flat collar nuts and do not mix up the nuts when installing wheels!



Note

(A): Wheel nuts for steel disk wheels (steel rims) bear no lettering, **(B):** Wheel nuts for aluminum wheels (aluminum rims) are marked "VA FA" for the singles axle, "HA RA" for the twins rear axle and have three rings on the contact shoulder (see illustration).



M40_00-0061-01

- ▶ When installing and removing aluminum rims, fit the assembly sleeves (vehicle tool kit) over 2 opposing wheel studs to prevent damage.
- ▶ Replace the drive-on wedge under the wheel, lower the vehicle down and remove the jack.



Warning

Risk of accident due to wheels working loose on account too insufficient or excessive tightening torques.

- ▶ Always tighten wheel nuts uniformly and in diagonally opposite sequence.
- ▶ Always tighten wheel nuts to the specified tightening torque.
- ▶ Using a torque wrench, check the security of the wheel nuts after driving for approx. 31 miles (50 km).
- ▶ If necessary, consult a service partner to have the wheel nuts tightened to the specified tightening torque.

- ▶ Tighten the wheel nuts in diagonally opposite sequence and proceed carefully to the nearest service partner. Have a specialist there tighten the wheel nuts to the specified torque.

Torque specifications

Wheel nut (aluminum or steel disk wheel with centering lug)	442.5 ft·lb _f (600 Nm)
---	--------------------------------------

- ▶ Drive the coach off the drive-on wedge and securely stow away the defective wheel, vehicle tool kit and drive-on wedge.



Warning

Risk of accident by objects that impair steering!

- ▶ Always use the tensioning strap to secure the spare wheel in the spare wheel compartment!
- ▶ DO NOT use the spare wheel compartment as stowage space for loose objects such as snow chains!

Wheels, tires: Tire pressure

Wheels, tires: Tire pressure

Tire pressure monitoring via display



M54.30-A223-71

The "Tire Pressure" menu window is available if the vehicle has electronic tire pressure monitoring.

Tire pressure monitoring is a convenience system that assists the driver's regular tire pressure checks and warns the driver automatically if there is a tire pressure loss or if a tire is over-inflated.

The tire pressure monitoring system monitors the pressure in all the tires when the vehicle is at a standstill and on the move and it is able to issue warnings reliably if

all tires are set correctly beforehand to the specified pressure.

- It is absolutely essential to comply with the safety information in the section headed "Wheels, tires: General safety information" (→ Page 366)!

i Note

Responsibility for operating the vehicle with correctly inflated tires invariably resides with the driver at all times!

Tire pressure monitoring monitors incorrect tire pressures in the following cases:

- Vehicle overloaded.
- Wheels with a different tire size installed and specified pressure not corrected in the on-board computer or incorrect value set.

The use of radio transmitters (e.g. wireless headphones, two-way radios) inside the vehicle or in its immediate vicinity can prevent the tire pressure monitoring system from operating properly. The display in the instrument cluster shows dashes "-"

" instead of the tire pressure when a tire pressure sensor is experiencing a temporary fault, for example due to interference from a radio transmitter, or when the tire pressure sensor is not yet transmitting data.

- In cases of this nature, wait a few minutes and/or reposition the vehicle out of range of the radio transmitter.

The tire pressure values shown in the display might differ from those you measure with an air pressure gage. The tire pressures shown by the on-board computer are referenced to sea level. At higher elevations, air pressure gages show tire pressure readings higher than those on the display.

- Under these circumstances, do not reduce tire pressure!

The tire pressure monitoring system automatically detects new wheels or new tire pressure sensors.

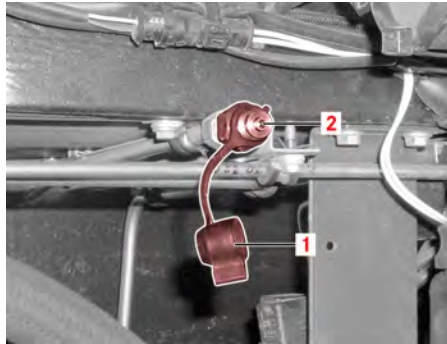
- After new tires have been installed, drive the vehicle for a few minutes

Wheels, tires: Tire pressure

at a speed higher than 21 mph (35 km/h).

- ◁ The system learns the changed values.
- ▽ If the tire pressure display does not learn the new value or values automatically, the teach-in process has to be started manually.
 - ▶ Park up and switch the ignition off for at least 10 minutes. Then start the vehicle and drive off right away.

Wheels, tires: Inflating tires



M40_00-0078-71

- ▶ Remove protective cap (1) from tire inflation connection (2)

i Note

With the engine running, the connection can supply compressed air at pressure up to 181 psi (12.5 bar) (shutoff pressure of the pressure regulator). Compressed air is available at the connection only when the pressure regulator is ready for charging. If the pressure regulator has cut out (idle position - discharging to atmosphere), the brake pedal

has to be depressed to relieve pressure in the system to the point at which the pressure regulator cuts in again.

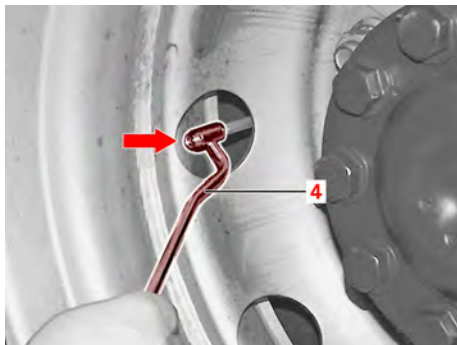


Property damage notice

The pressure might be too high for tire inflation, so the inflation process should be monitored by observing the "Reservoir pressure, compressed air" status indicator in the display of the instrument cluster.

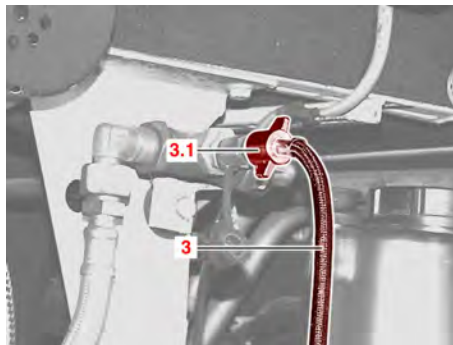
- ▶ Discharge pressure in the compressed air system (by operating the brake pedal), until the reservoir pressure in brake circuits 1 and 2 is below 94 psi (6.5 bar) - 100 psi (7 bar) (observe the reading in the display by selecting the "Vehicle" main menu and the "Compressed Air" submenu).

Wheels, tires: Tire pressure



M40.00-0135-71

- ▶ Screw on the valve stem connector **(4)**, if not already installed, to the other end of the tire inflation hose using the wing nut.



M40_00-0019-01

- ▶ Screw tire inflating hose **(3)** all the way on to the tire inflation connection with wing nut **(3.1)**.
- ▶ Position the hose so that the engine compartment door can be closed.
- ▶ Unscrew the protective cap from the tire's valve stem and place the valve connector **(4)** in position.
- ▶ Close the engine compartment flap.
- ▶ Start the vehicle's engine and inflate the tire to the specified pressure (approx. 123 psi (8.5 bar), reservoir pressure in brake circuit 1 and 2), then shut down the engine of the vehicle.

- ▶ On completion of the inflation process, disconnect tire inflating hose **(3)**, stow it away and refit the rubber cap on the tire inflation connection.
- ▶ Correct tire inflation pressure to the specified level at the earliest opportunity!

Nominal values according to total vehicle weight

MANUFACTURED BY		DATE		TIRE INFLATION PRESSURE	
GWR		TAXI		PSI	
GAWR		TAXI		PSI	
4	FRONT 7 500 KG (16 534 LBS)	315 / 60 R 22.5 - V	22.5 x 9.00	123	949 SINGLE
5	REAR 10 200 KG (22 665 LBS)	315 / 60 R 22.5 - V	22.5 x 9.00	94	649 DUAL
6	TAG 5 140 KG (11 332 LBS)	315 / 60 R 22.5 - V	22.5 x 9.00	94	649 SINGLE
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE					
VIN		TYPE OF VEHICLE		BUS / S-417	

M00_00-0214-05

- **(3)** Permissible gross vehicle weight
- **(4)** Permissible axle load, front axle
- **(5)** Permissible axle load, drive axle
- **(6)** Permissible axle load, trailing axle
- **(7)** Tire size for each axle
- **(8)** Tire pressure

Smoke detectors

Smoke detectors



M86.00-0428-717

Switching on the ignition also activates the smoke detectors in the WC, in the luggage compartment and in the driver's quiet room (if installed). LED (1) shows green.

**Warning**

Risk of accident due to the behavior of passengers or other road users because of severe smoke development in the passenger compartment, in the en-

gine compartment or, if installed, in the lavatory or in the luggage compartment.

- ▶ Stop immediately, taking the traffic situation into account, and switch on the hazard warning flashers.
- ▶ Adopt the necessary measures.

Measures

- ▶ Get passengers to safety.
- ▶ Transmit an emergency call or delegate a suitable person to do so.
- ▶ Using suitable equipment, extinguish the source of smoke development.

Smoke detectors

Description of LED on smoke detector

LED color	Display	Meaning	Measure
Green	Steady ON	Normal operation	—
Yellow	Weak flash	Slightly contaminated	Consult service partner.
Yellow	Strong flash	Badly contaminated	Consult service partner.
Violet	Steady ON	Malfunction	Consult service partner.
Red	Steady ON or flashing	Red message in driver's display 	Identify cause of smoke development.

Maintenance, care: Engine compartment, important notes

Maintenance, care: Engine compartment, important notes

Safety instructions for working inside the engine compartment

**Danger**

Caution: Risk of injury! due to moving parts such as V-belts and belt pulleys with engine compartment flap open and engine running. Parts of the body or clothing could be snagged by moving parts. Risk of injury due to hot engine parts.

- ▶ As a rule, never run the engine when work is being carried out in the engine compartment.
- ▶ Switch off the engine and the ignition and secure them so that they cannot be switched on again without your knowledge and consent.
- ▶ If the engine has to run for certain tasks, a safe distance from moving parts (such as belt drive) must be maintained.

- ▶ Before starting work on the engine or its mounted parts, wait until the contact faces have cooled down.
- ▶ To prevent damage due to unsuitable spare parts, use only genuine OEM parts!

Start/stop button in engine compartment

With the engine compartment flap open and the ignition switched on, the engine can be started and stopped by means of the start/stop button in the engine compartment.

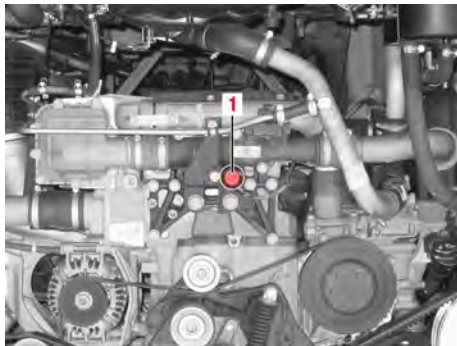
Note

Comply with the safety information for working inside the engine compartment.

Note

If start/stop button **(1)** is pressed to start the engine and held down for longer than 3 seconds, engine speed increases for as long as button **(1)** is held down (up to the engine's maximum governed rpm). The engine then continues to run at the speed reached when button **(1)** was pressed.

Maintenance, care: Engine compartment, important notes



M54.00-2275-71

Maintenance, care: Drive belts

Maintenance, care: Drive belts

Removing, installing drive belts

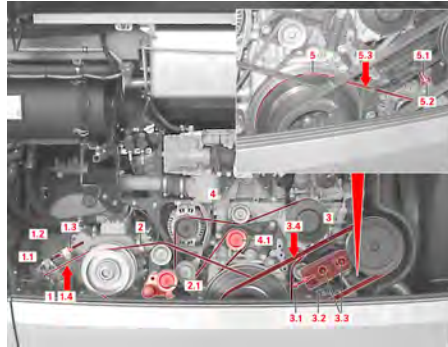
Note

The following is a description of the procedure for replacing drive belts. Adopt the procedure whenever drive belts require replacement.



Property damage notice

Replacement Vee-belts and parts of the tools described below are not included in the scope of supply of the vehicle! Use only genuine OEM replacement Vee-belts.



M01.00-0131-76

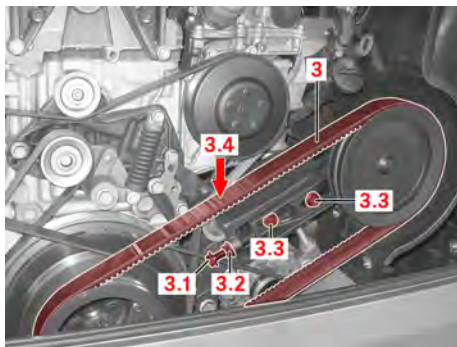
- 1 Left-hand alternator drive belt
 - 1.1 Tensioning screw
 - 1.2 Adjustment nut
 - 1.3 Locknut
 - 1.4 Belt tension test point
- 2 Drive belt for refrigerant compressor
 - 2.1 Automatic tensioner
- 3 Cooling fan drive belt
 - 3.1 Tensioning screw
 - 3.2 Locknut
 - 3.3 Screws

- 3.4 Belt tension test point
- 4 Drive belt for water pump and alternator
- 4.1 Automatic tensioner
- 5 Right alternator drive belt
 - 5.1 Tensioning screw
 - 5.2 Locknut
 - 5.3 Belt tension test point

These instructions do not claim to be complete in every detail. If necessary, have repairs carried out by a service partner.

Maintenance, care: Drive belts

Removing, installing fan belt



M01_00-0132-71

- ▶ Comply with the safety information for working inside the engine compartment set out the start of this section!
- ▶ Slacken locknut **(3.2)** of adjustment screw **(3.1)** on the carrier of the belt tensioner.
- ▶ Unscrew adjustment screw **(3.1)**.
- ▶ Slacken screws **(3.3)** of the tensioning-lever mount for the belt pulley.
- ▶ Move the tensioning-lever mount with belt pulley all the way up to carrier and remove slackened drive belt **(4)**.

- ▶ Installation is the reverse of the removal procedure.

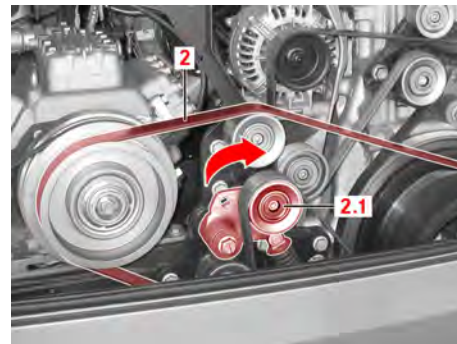
Note

Do not overtighten the drive belt. Finger and thumb must be enough to twist the drive belt at least 90° at measuring point **(3.4)**.

Removing, installing drive belt of refrigerant compressor

Note

Required tool: 1/2" bar with clamp extension.



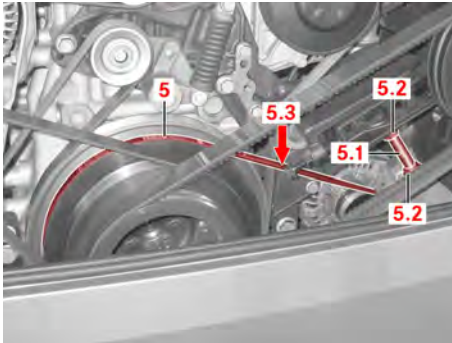
M01_00-0134-71

- ▶ Comply with the safety information for working inside the engine compartment set out the start of this section!
- ▶ Engage 1/2" toggle in mount of tensioner pulley **(2.1)**, use the toggle to pull the tensioner pulley up in the direction indicated by the arrow and hold it in position.
- ▶ Installation is the reverse of the removal procedure.

i Note

Tensioning pulley (2.1) is spring-loaded, so that the correct drive belt tension is set automatically.

Removing, installing right-hand alternator drive belt



M01.00-0139-71

- ▶ Comply with the safety information for working inside the engine compartment set out the start of this section!
- ▶ Slacken locknuts (5.2).

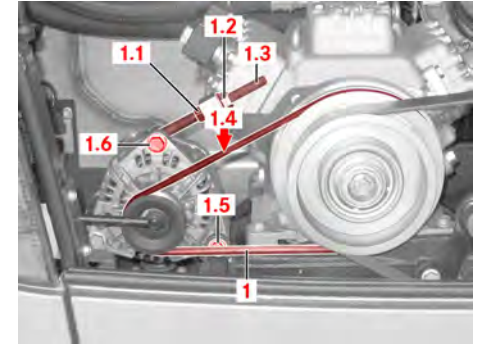
- ▶ Slacken the screws at the alternator pivot and at the tensioning spindle.
- ▶ Back off tensioning screw (5.1) until the drive belt is slack on the belt pulleys.
- ▶ Remove drive belt (5) from the belt pulleys.
- ▶ Installation is the reverse of the removal procedure.



Property damage notice

Do not overtighten the drive belt. Finger and thumb must be enough to twist the drive belt at least 90° at measuring point (5.3).

Removing, installing left-hand alternator drive belt



M01.00-0153-71

- ▶ Comply with the safety information for working inside the engine compartment set out the start of this section!
- ▶ Slacken locknut (1.2), slacken screws at alternator pivot (1.5, 1.6) and tensioning spindle.
- ▶ Back off tensioning screw (1.1) until the drive belt is slack on the belt pulleys.
- ▶ Remove drive belt (1) from the belt pulleys.

Maintenance, care: Drive belts

- ▶ Installation is the reverse of the removal procedure.

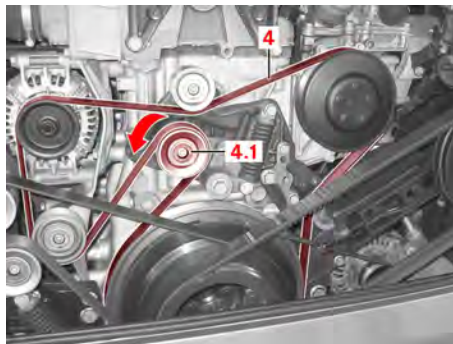
i Note

Do not overtighten the drive belt. Finger and thumb must be enough to twist the drive belt at least 90° at measuring point (1.4).

Removing, installing drive belt of water pump and center alternator

i Note

Required tool: 1/2" bar with clamp extension.



M01_00-0135-71

- ▶ Comply with the safety information for working inside the engine compartment set out the start of this section!
- ▶ Engage 1/2" toggle in mount of tensioner pulley (4.1), use the toggle to pull the tensioner pulley down in the direction indicated by the arrow and hold it in position.
- ▶ Remove drive belt from belt pulleys.
- ▶ Installation is the reverse of the removal procedure.

i Note

Tensioning pulley (4.1) is spring-loaded, so that the correct drive belt tension is set automatically.

Maintenance, care: Vehicle wash

Vehicle exterior wash in washing facilities

Preparation

- Prepare the vehicle in accordance with the instructions for care of the vehicle.

Manually folding mirrors in/out (Business line)



M88.70-A014-72

In preparation for washing, pivot mirrors **(1)** on their mirror arms in toward the windshield.

- Perform the vehicle washing operation, keeping the vehicle under your supervision at all times and staying

Maintenance, care: Vehicle wash

within range of the washing facility's emergency stop button.

- When washing has completed, pivot both mirrors **(1)** out again (operating position).

Manually folding mirrors in/out (Premium line)



M88.70-A013-71

In preparation for washing, pivot mirrors **(1)** on their mirror arms in toward the windshield.

- Perform the vehicle washing operation, keeping the vehicle under your supervision at all times and staying

Maintenance, care: Vehicle wash

within range of the washing facility's emergency stop button.

- ▶ When washing has completed, pivot both mirrors **(1)** out again (operating position).

Electrically folding mirrors in/out (option)

- ▶ Before washing: Electrically fold both mirrors in toward the windshield. Use the adjusting knob for mirror adjustment on the instrument panel for this purpose.
- ▶ Then proceed in the same way as after folding the mirrors in manually.
- ▶ After washing: Electrically fold both mirrors out.



Property damage notice

DO NOT attempt to fold the mirrors in or out by hand. That would damage the actuator motors!

Maintenance, care: Heating, ventilation, air conditioning

Replacing filters for passenger compartment, cockpit and roof-mounted air-conditioning system

General information on filter replacement

Note

The antiviral high-efficiency particle filters are used in the roof-mounted air conditioning system, for the air recirculation filters in the passenger compartment, and for the front aircon box. This equipment can filter up to 99 percent of particulates and aerosols out of the air inducted into the vehicle.

Older-generation fine particle filters without antiviral properties can be replaced by the new active filters. The distinguishing visual feature of the active filters is their blue surface.



M68.00-A003-71.tif

Filter replacement due:

- We recommend wearing gloves when replacing the filters.
- We recommend replacing the filters whenever necessary on account of the prevailing operating conditions. For more information see the repair and maintenance instructions.
- A sticker (2) affixed near each of the filters indicates when replacement is due.
- Used filters can be disposed of as domestic waste, if permitted by local regulations for disposal of waste materials.

ID marks at the entrance-ways



M68.00-A004-81.tif

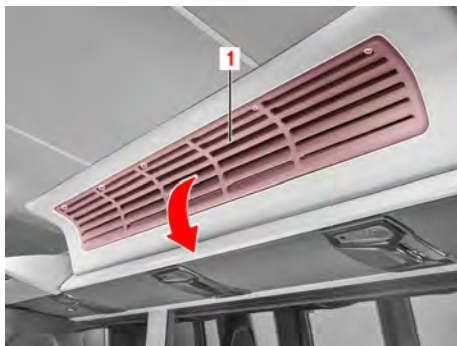
- A sticker (1) affixed in a visible location in the entrance indicates that the vehicle is equipped with antiviral high-efficiency particle filters.
- Whenever older-generation fine particle filters are replaced by antiviral high-efficiency particle filters, sticker (1) should be affixed in the entrance-way.

Replacing air recirculation filters for passenger compartment

- ▶ Switch off ignition.

Maintenance, care: Heating, ventilation, air conditioning

- Fit protective covers over the seats and carpets.



M83.00-A007-71

- Remove the screws and flip cover (1) down in the direction indicated by the arrow.
- Unscrew the dust screen and remove the filter cartridges.

Installing filters

- Install the filter cartridges with new filters and install the screws to secure the dust screen.

Note

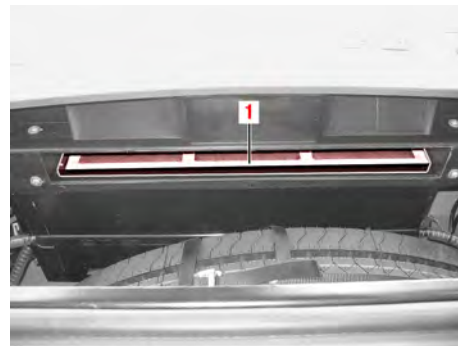
Install the filters right way round, with the coloring/lettering facing inward.

- Affix the filter inspection sticker where it is readily visible.
- Flip cover (1) up in the direction opposite to that indicated by the arrow and tighten the screws.

Finishing work

- Check operation of the air conditioning system.
- Remove the protective covers.

Replacing anti-pollutant filter for cockpit



M83_00-0796-71

- Switch on the ignition.
- Open the front flap.
- Lift filter cartridge (1) slightly and work it forward to remove.

Installation

- Insert filter (1) into the filter cartridge.

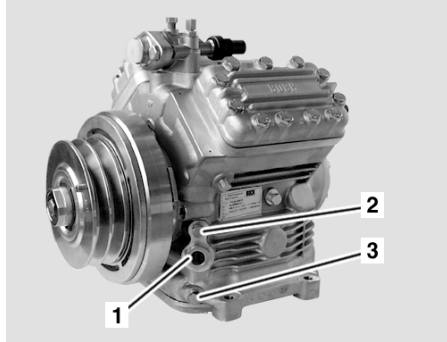
Maintenance, care: Heating, ventilation, air conditioning

i Note

Install filter (1) right way round, with the coloring/lettering facing toward the rear.

- ▶ Push the filter cartridge up and in and clip it into position.
- ▶ Affix the filter inspection sticker where it is readily visible.
- ▶ Close the front flap.
- ▶ Check operation.
- ▶ Switch off ignition.

Checking oil level in refrigerant compressor



M83_55-0002-01

- ▶ With the refrigerant compressor running, check the level in the inspection glass of the refrigerant compressor (after approx. 10 - 15 minutes of operation).

i Note

Compressor oil circulates together with the refrigerant through the entire refrigeration system. For this reason oil level can vary from inspection to inspection, but the level must always be between the MIN

and MAX marks on the sight glass. If the compressor oil level is low, have it corrected only by authorized trained personnel at a service partner's workshop.

i Note

To ensure that the slide ring seal on the crankshaft of the refrigerant compressor remains leaktight, once a month the air conditioning has to be operated for approx. 10 - 15 minutes by means of the "Reheat" button on the air conditioning control panel! At outside temperatures below 41 °F (5 °C) this has to be done indoors, as otherwise the low-pressure switch or the icing sensor will shut down the system!

Compressor maintenance cycle

Carry out maintenance cycle of the compressor

For details of the compressor maintenance cycle see the section headed Control panel for special functions .

Maintenance, care: Heating, ventilation, air conditioning

Coolant filling operation, general information

Note

A filling program is integrated in the heating ventilation air conditioning control panel. This program contains all necessary functions (actuation of the circulation pumps and coolant valves) required to completely fill and bleed the heating system's coolant circuit.

Note

The coolant is used in the engine cooling system and to heat the vehicle interior. Even though the antifreeze capability might be needed on only a few days of the year, corrosion protection is necessary all year round. For this reason, never use water on its own to top up the coolant. Instead, always mix the water with the correct corrosion-inhibitor/antifreeze agent in the correct ratio. As well as preventing corrosion and keeping the coolant from freezing, this also increases the boiling temperature of the coolant,

helping to protect the engine against overheating.

Note

Before starting this task, ready the coolant in accordance with operating fluid data sheet 325.5 or 326.5 (G40, color pink). If this coolant is not available, have the work carried out by a service partner.

If there is no alternative to topping up the coolant circuit with water on its own, use pure drinking water with as low a lime content as possible. Then proceed as soon as possible to a service partner to have the mixture adjusted to the correct ratio.

Performing coolant filling operation

For details of the coolant filling operation see the section headed Control panel for special functions .

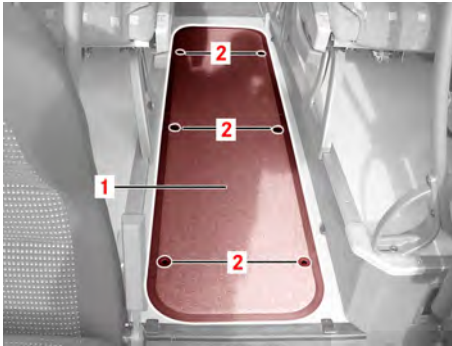
Refrigerant filling operation

Performing refrigerant filling operation

For details of the refrigerant filling operation see the section headed Control panel for special functions .

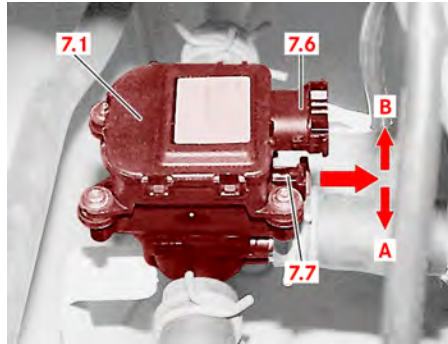
Maintenance, care: Heating, emergency actuation

Emergency operation of cockpit heater



M83.00-0176-01

- Remove front service flap (1). To do so, remove screws (2).



M83.00-0098-01

- Switch off the electrical power and disconnect the electrical wiring connection (7.6) for the water control valve (7.1)
- Pull the emergency lever (7.7) in the direction of the arrow
- Move emergency lever (7.7) in direction "A" = close valve. Move in direction "B" = open valve

i Note

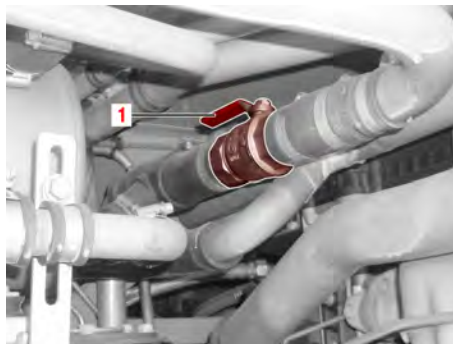
You will feel the mechanism stop when it reaches the end of its travel range. During emergency operation no electronic control of the outlet temperature for the cockpit heater is available.

Maintenance, care: Heating, emergency actuation

Emergency operation of the passenger compartment heating

Note

You can respond to failure in the control systems that modulate heating, ventilation and climate control (leaking control valve/heating in summer) and to leaks in the heating system by isolating the coolant circuit of the heating system from the engine's cooling circuit by closing the two manual shut-off valves in the heater flow line (1) and the heater return line.



M83.00-0939-71

- Operating manual shutoff valve in flow line

Note

The shutoff valve is in the engine compartment, on the left beside the engine's valve cover.



M83.00-0940-71

- Operating manual shutoff valve in return line

Note

Manual shutoff valve (1) is in the engine compartment, above the engine.

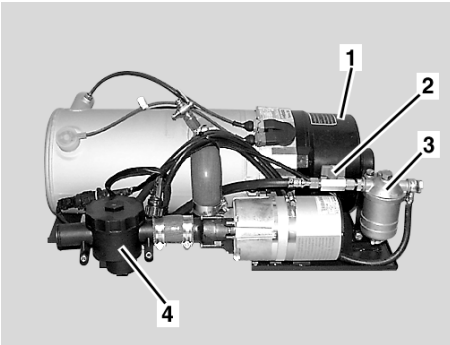


Property damage notice

To prevent overheating in the coolant circuit, do not operate the heating and the auxiliary heater while the shutoff valves are closed!

Maintenance, care: Heating, cleaning coolant filter

Cleaning coolant filter of the heating system



M83_00-0142-01

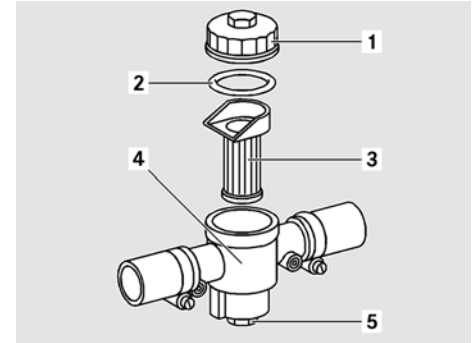
- Before removing coolant filter (4), switch off auxiliary heater (1) and isolate the batteries from the on-board electrical system by means of the battery disconnect switch.



Warning

Risk of scalding by hot coolant escaping under pressure.

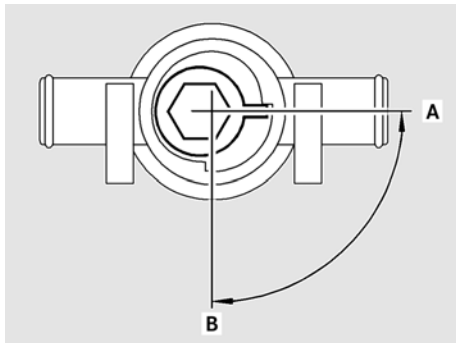
- Wear protective clothing (gloves and goggles).
- If possible, do not open the cap of the coolant expansion reservoir unless the coolant temperature is below 12 °F (5 °C).
- Open the cap slowly to allow the pressure to escape. Slowly turn the cap farther and remove.
- System might still be under pressure, so relieve pressure by opening the cap of the coolant expansion reservoir.



M20_00-0002-01

- To shut off the coolant feed at the coolant filter and drain the filter housing (approx. 1.5 liters), close shutoff valve (5) at the coolant filter.
- Unscrew cover (1) from the coolant filter and remove filter element (3) from filter housing (4).
- Clean filter element (3), or replace the filter element if it is badly clogged.
- Insert the filter element (3) in the filter housing (4) and screw on the cover (1) with a new O-ring (2).

Maintenance, care: Heating, cleaning coolant filter

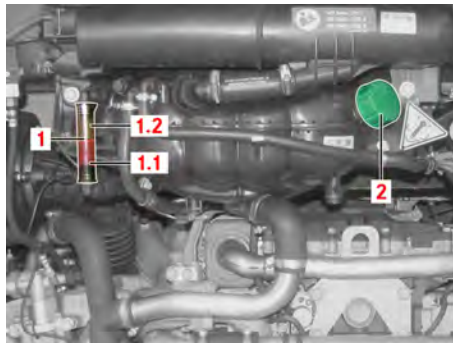


M20_00-0003-01

- Re-open shutoff valve **(5)** on the coolant filter.

Note

Position: A = open; position: B = closed



M54.00-2108-71

- Check the coolant level in inspection glass **(1)** on the expansion reservoir and top up the coolant level as necessary.

Note

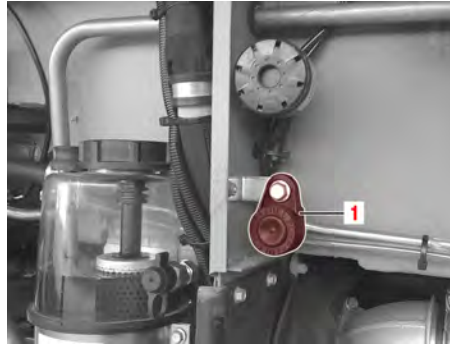
The coolant level in inspection glass **(1)** must be visible between minimum level **(1.1)** and maximum level **(1.2)**.

Maintenance, care: Fuel pump

Electric fuel pump (option)

**Property damage notice**

The high-pressure pumps of the diesel injection system of the 470/471 engine series are lubricated by the diesel fuel. To prevent damage to the high-pressure pump and the engine due to dry-running, if the fuel tank runs dry the fuel system has to be primed by means of the electric fuel pump (option) or with an external pump before an attempt is made to restart the engine.



M47_00-0121-71

The fuel system can be primed with the electric fuel pump (EFP).

- ▶ Switch on the ignition (stage 2).
- ▶ Short-press button **(1)** to switch on the electric fuel pump.

**Note**

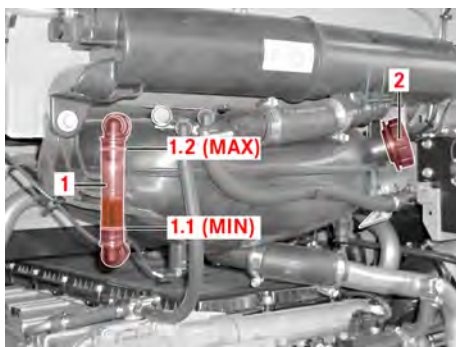
The pump switches off as the fuel lines are primed, or at the latest after 85 seconds.

- ▶ After the pump has switched off, close the engine compartment flap.
- ▶ Start the engine from the cockpit.

Maintenance, care: Coolant level

Maintenance, care: Coolant level

Check the coolant levels in the engine cooling system and the heating system.



M20.00-0144-71



Warning

Risk of scalding by hot coolant escaping under pressure.

- ▶ Wear protective clothing (gloves and goggles).
- ▶ If possible, do not open the cap of the coolant expansion reservoir unless the coolant temperature is below 12 °F (5 °C).

- ▶ Open the cap slowly to allow the pressure to escape. Slowly turn the cap farther and remove.
- ▶ Check coolant level **(1)** in the inspection glass.

i Note

With the engine cold (coolant temperature below 122°F (50°C)) the coolant level must be visible between top and bottom marks (MIN **(1.1)** and MAX **(1.2)**) on inspection glass **(1)** of the expansion reservoir.

- ▶ Top up coolant as necessary.
- ▶ Use clean and well filtered water with the lowest calcium content possible (drinking water quality) mixed with antifreeze containing corrosion inhibitor (mixing ratio of water and pure antifreeze containing corrosion inhibitor: 1 : 1, comply with specifications for operating fluids).
- ▶ For information on bleeding air from the heating system's coolant circuit, see the section headed "Coolant filling process" (→ Page 394).

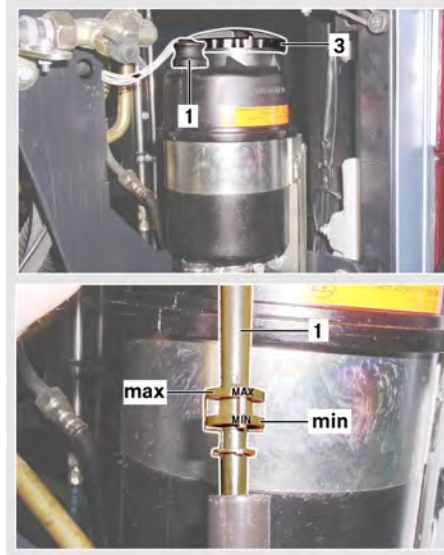
Maintenance, care: Steering hydraulics fluid level

Maintenance, care: Steering hydraulics fluid level

Checking hydraulic fluid level in power steering system reservoir

i Note

If the vehicle has electric oil level sensing, the power steering fluid reservoir is opaque. If the fluid level in the power steering is low, a yellow message appears in the display when the ignition is switched on. The fluid level can be checked manually using integral dipstick (1).



M46.00-0126-72

1. Check the fluid level reading.

i Note

With the engine running, the level must be visible between the MIN and MAX marks on dipstick (1).

2. If the fluid level is low, top up only with hydraulic steering fluid compliant

with the Specifications for Operating Fluids.

i Note

The specifications for operating fluids are published at the Internet address busdoc.i.daimler.com/public/.

Maintenance, care: Engine oil level

Maintenance, care: Engine oil level

Indicator for engine oil level

In principle, information about the engine oil level is issued via the display in the instrument cluster. There are oil level messages that are issued the first time the oil level goes below or above certain thresholds and there are also some oil level parameters that can be called up manually in a particular display menu.



Property damage notice

The vehicle has to be standing level in order for the oil level to be measured correctly. Measuring the oil level when the vehicle is off-level produces incorrect oil level readings in the display and can lead to output of a red message in the instrument cluster! An oil level that is too low or too high can lead to engine damage. Consequently, it is essential to correct the oil level at the earliest opportunity.

- In the "Vehicle" main menu, select the "Engine" submenu. The oil level

information indicates whether the oil level is correct or needs to be corrected.



Note

The oil level check can be carried out only when the engine is stopped and the ignition is switched on. The current oil level can be checked at the earliest 5 minutes after the engine has been shut down.

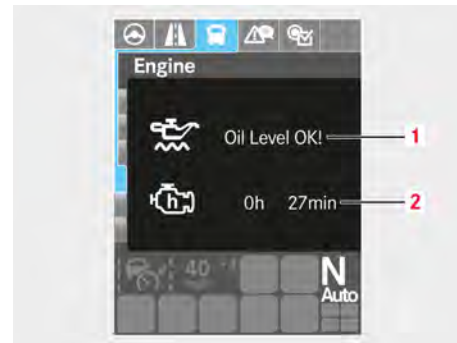


Property damage notice

To avoid engine damage, use only low-ash oils compliant with the Specifications for Operating Fluids! The specifications for operating fluids are published at the Internet address busdoc.i.daimler.com/public/.

Oil level information

Engine oil level OK



M54.30-A240-71

A normal engine oil level is indicated by the symbol and "OK" (1).

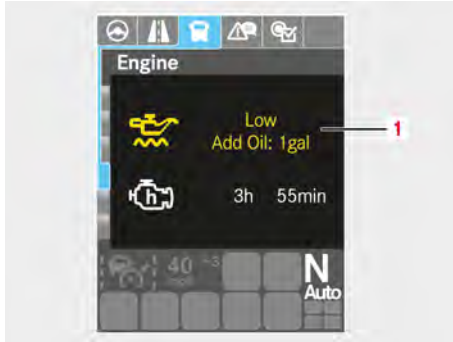


Note

Whenever the oil level is OK, no further oil level information can be called up.

Maintenance, care: Engine oil level

Engine oil level too low



M54.30-A241-71

A low engine oil level is indicated by the "engine oil level" symbol and the words "Low Add Oil: 1gal" (1) (currently 5 liters). Top up as soon as possible with the quantity shown on the display. Then run the engine for approx. 20 minutes (idling or driving). The reading on the display is not updated until this time has elapsed.

Engine oil level not available



M54.30-A242-71

If an oil level reading is requested while the vehicle is being driven, or before 5 minutes have elapsed since engine shut-down, this message is displayed. The same message appears if the oil level cannot be measured, for example because of a sensor problem.

Check the engine oil level with dipstick (option)

Note

The engines have electronic oil level sensing, which is definitive!

Checking the oil level with the dipstick is necessary only if the oil level sensing system is faulty.

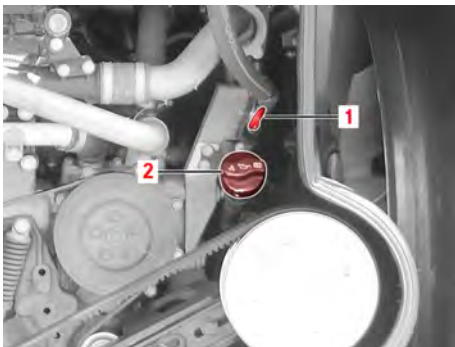
Danger

Caution: Risk of injury! due to moving parts such as V-belts and belt pulleys with engine compartment flap open and engine running. Parts of the body or clothing could be snagged by moving parts. Risk of injury due to hot engine parts.

- ▶ As a rule, never run the engine when work is being carried out in the engine compartment.
- ▶ Switch off the engine and the ignition and secure them so that they cannot be switched on again without your knowledge and consent.

Maintenance, care: Engine oil level

- ▶ If the engine has to run for certain tasks, a safe distance from moving parts (such as belt drive) must be maintained.
- ▶ Before starting work on the engine or its mounted parts, wait until the contact faces have cooled down.



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1. Park the vehicle where it is standing level.
2. After shutting off the engine, wait about 10 minutes to allow the oil to drain into the oil pan.

3. With the engine warmed to normal operating temperature and then switched off, withdraw oil dipstick **(1)**.

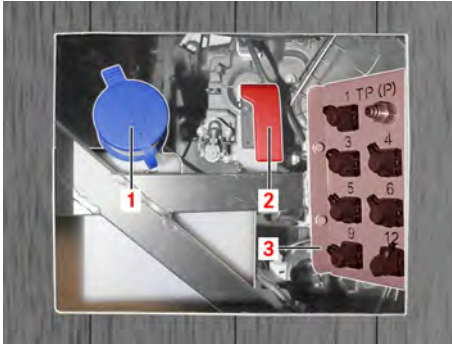
Note

The oil level must be visible between the MIN and MAX marks.

4. Top up to the specified level in compliance with Specifications for Operating Fluids; pour the oil in through filler opening **(2)**.

Maintenance, care: Window washer fluid

Windshield washer fluid reservoir



M82.35-A000-71

Access to the windshield washer fluid reservoir is through a flap in the entrance of the front door.

- ▶ Open the windscreen washer fluid reservoir by pulling cap **(1)** of the filler opening up by the tab.
- ▶ Use suitable additives if there is a possibility of the fluid freezing.
- ▶ Close the cap by pressing it firmly down on to the filler opening.

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Proposition 65

Proposition 65

Proposition 65

What is Proposition 65

Proposition 65 requires businesses to provide warnings about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm. Exposure to these chemicals may take place when products are acquired or used. Exposure may also occur in homes, workplaces, or other environments. By requiring that this information be provided, Proposition 65 enables informed decisions to be made about exposures to these chemicals.

Proposition 65 also prohibits businesses from knowingly discharging significant amounts of listed chemicals into sources of drinking water.



Warning

Risk of poisoning Inhaling exhaust gas from diesel engines exposes you to chemicals known to the State to cause cancer, birth defects or other reproductive harm!

- ▶ Always start and operate the engine in a well ventilated area.
- ▶ In an enclosed area, vent the exhaust from the diesel engine to outdoors.
- ▶ Do not tamper with or modify the exhaust system.
- ▶ Idle the engine only when necessary.



Warning

Risk of poisoning During operation, maintenance or servicing of a passenger car, van, truck, bus or off-highway vehicle, you can be exposed to chemicals such as diesel engine exhaust, carbon monoxide, phthalates and lead known to the State to cause cancer, birth defects or other reproductive harm!

- ▶ Avoid inhaling diesel engine exhaust.
- ▶ Idle the engine only when necessary.
- ▶ Always start and operate the engine in a well ventilated area.
- ▶ When undertaking maintenance and servicing of the vehicle, wear appropriate gloves or wash your hands frequently.

Nähere Informationen erhalten Sie unter folgender Adresse:

Proposition 65:

<https://www.p65warnings.ca.gov>

Dashcam, saved data

External camera/dashcam

The note below applies for the use of external cameras and dashcams in the vehicle:

The purpose of an external camera/dashcam is to clarify the situation in the event of an accident. In some countries the use of a dashcam or use of the images recorded by a dashcam might be inadmissible or only conditionally admissible. Use the camera only in accordance with the legal requirements in force where the vehicle is operated. Before using the camera find out about the regulations concerning video surveillance and data protection in the country or locality in question. Responsibility for compliance with the statutory requirements resides with the vehicle keeper.

If a video recording device is installed compliance is required with requirements for data protection, including for example the concept for deletion of video images.

Data stored in memory on board the vehicle

A multitude of electronic components in your vehicle incorporate data memories. These data memories save, either temporarily or permanently, technical information on

- Vehicle condition
- Events
- Faults

In general, technical information of this nature documents the condition of a component part, a module, a system or the conditions in the vicinity. Including, for example:

- Operating states of system components. Examples include fluid fill levels.
- Status messages of the vehicle and its individual components. Examples include wheel revolutions, speed, retardation, lateral acceleration, accelerator pedal position.

- Malfunctions and defects in important system components. Examples include lights, brakes.
- Reactions and operating states of the vehicle in special driving situations. Examples include airbag deployment, intervention by the stability control systems.
- Ambient conditions. Examples include outside temperature.

The data are exclusively technical in nature and can be used

- for assisting in the detection and rectification of faults and defects,
- for analyzing vehicle functions, for example after an accident,
- for optimizing vehicle functions.

Movement profiles tracking routes traveled cannot be generated from these data. Whenever you want to make use of services, this logged technical information can be read out from the event-data and fault-data memories.

Services include, for example.

Dashcam, saved data

- Repairs
- Service processes
- Claims under warranty
- Quality assurance

The data are read out by team members of the service network (including manufacturers) using special diagnostic units. They will be happy to provide you with additional information if required. After fault rectification, either the fault memory is cleared or the data it contains are continuously overwritten. In vehicle usage, situations are imaginable in which these technical data in combination with other information - possibly with the collaboration of an expert - could be rendered relatable to natural persons.

Examples include:

- Accident logs
- Damage sustained by the vehicle
- Witness statements

Furthermore, other additional functions contractually agreed with the customer

permit the transmission of certain vehicle data from the vehicle. Including, for example, the

- Fleetboard telematics system

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Descriptions:

- Type plate
- Vehicle identification number (body)

Type plate

The type plate with the data identifying your vehicle is behind the cockpit.



It is very important to identify the vehicle unequivocally so that the correct vehicle data can be applied. You also need to quote the vehicle identification number (VIN) when ordering parts and for technical queries.

Vehicle data, see the section headed "Technical data" (→ Page 413).

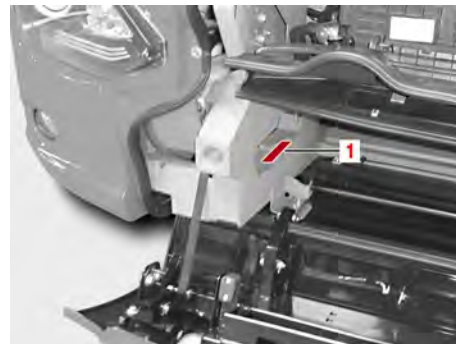
Key to information on type plate

	3	7	7	7	8	8	8
MANUFACTURED BY		ENDURUS GMBH U.A. GERMANY					
GVWR	22 820 KG (50 529 LBS)	DATE					
GAR		TIME	RM	SOLD INFLATION PRESSURE PSI KPS			
4	FRONT 7 900 KG (16 534 LBS)	315 / 80 R 22.5 J	22.5 x 9.50	123	949	SINGLE	
5	REAR 10 200 KG (22 863 LBS)	315 / 80 R 22.5 J	22.5 x 9.50	94	640	DUAL	
6	TAG 5 140 KG (11 332 LBS)	315 / 80 R 22.5 J	22.5 x 9.50	94	640	SINGLE	
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE							
VIN	TYPE OF VEHICLE			BUS S 6 417			
	2				1		

M00.00-0214-05

- | | |
|---|---|
| 1 | Coach name |
| 2 | Vehicle Identification Number (VIN) |
| 3 | Gross Vehicle Weight Rating (GVWR) |
| 4 | Maximum approved front axle weight |
| 5 | Maximum approved drive axle weight |
| 6 | Rated axle load for trailing axle |
| 7 | Specified tire dimensions on individual axles |
| 8 | Rated axle load for trailing axle |
| 9 | Tire inflation pressure |

Vehicle identification number (body)



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The vehicle identification number (**1**) is also on the framework at the front of the vehicle. You can gain access by opening the spare tire hatch (open using the lever at the front door).

Technical data

Unequivocal assignment of the technical values and vehicle parameters is ensured by the vehicle identification number (VIN) (→ Page 412). It always has to be quoted in orders for spare parts and for maintenance and repair jobs. Consult your service partner for more information.

Your vehicle's exact designation as stated in the vehicle registration documents is necessary for correct application of the overview of general vehicle data in the data listings below.

Coach length

Coach length	
All types with bumper	548 in (13,920 mm)
All types without bumper	540 in (13,715 mm)

Coach width

Coach width	
All types	102.4 in (2,600 mm)

Coach height

Coach height	
Business	145.1 in (3,685 mm)
Premium	147.4 in (3,745 mm)

Permissible gross mass

Permissible gross mass	
Front axle	16,534.7 lb (7,500 kg)
Drive axle	20,000.3 lb (9,072 kg)
Trailing axle	13,999.4 lb (6,350 kg)
Total	50,530 lb (22,920 kg)

Wheelbase

Wheelbase	
All types	288 in (7,315 mm)

Turning circle

Turning circle	
All types	958.3 in (24,340 mm)

Overhang, front

Overhang, front	
All types with bumper	93.1 in (2,365 mm)
All types without bumper	89.2 in (2,265 mm)

Overhang, rear

Overhang, rear	
All types with bumper	113.8 in (2,890 mm)

Technical data

Overhang, rear	
All types without bumper	109.6 in (2,785 mm)

Approach angle, front

Approach angle, front	
All types	9°36' (9.6°)

Overhang angle, rear

Overhang angle, rear	
All types	8°42' (8.7°)

Filling capacities

Filling capacities	
Fuel tank capacity, total	222 gal (840 l)
DEF tank capacity	14 gal (53 l)

Refrigerant capacities

Refrigerant capacities, air conditioning systems

Refrigerant capacities of various air conditioning systems

Air conditioning system type	Business	Premium
Air-conditioning system, passenger compartment type Evo Cool Basic with cockpit A/C	36.4 lb (16.5 kg)	36.4 lb (16.5 kg)

Refrigerant capacities

Refrigerant capacities, refrigerators

Refrigerant capacities of different refrigerator systems, stated in [g]

Installed location	All types
Refrigerator in entryway door 1	With code FP11: 100 With code FP22: 90

3

360° camera

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ABA

See "Driver assistance systems" 200

ABS

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ASR

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VIN 412

V

Vehicle identification number

VIN 412

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