

Dear Customer,

We are pleased that you have chosen a motorhome from **HYMER** and would like to thank you for the trust you have shown in our company.

This instruction manual is intended to help you get to know and use your new motorhome. **It is essential that you read and comply with the safety instructions in chapter 2.**

Don't hesitate to contact our **HYMER** service centres if you have any questions. Their staffs are fully conversant with your vehicle and will be pleased to help in any way they can. Our list of **HYMER** service centres in Europe is updated regularly. You can obtain a copy of the latest edition from our customer service department or from your **HYMER** dealer.

In addition to this instruction manual, you are also receiving from us

- **the service folder containing all information about the inspection intervals and the water ingress tests,**
- **the separate instruction manuals for the base vehicle and the various appliances.**

We are sure that you will get a lot of enjoyment from your motorhome. Have a good trip!

You will also find **HYMER GmbH & Co. KG** on the Internet at: <http://www.hymer.com>.

Yours, **HYMER GmbH & Co. KG**

Please also always observe the use and instruction manual of the chassis manufacturer.

The terms used in this instruction manual with regard to weight specifications are explained again in detail at the end of the instruction manual (legal information on weight-related data). For further details on the weight data, please also visit the "Weight information" section of our homepage at www.hymer.com/de/en/weight-information

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Observe the following instructions before first journey of the vehicle:



- ▶ Re-tighten the wheel nuts/wheel bolts after 50 km (30 miles).
- ▶ Read the instruction manual to avoid personal and material damage.

Observe the following instructions before each journey of the vehicle:



- ▶ **Check the tyre pressures.**
See Tyre pressure section.
- ▶ **Load the vehicle correctly. Observe the technically permissible maximum laden mass.**
See Payload section.
- ▶ **Fully charge batteries before each journey.**
See Starter battery and Living area battery sections.
- ▶ **In case of external temperatures below 0 °C first heat vehicle, then fill water system.**
See Water supply/Filling the water tank section.
- ▶ **Gas bottles are only to be transported within the designated gas bottle compartment.**
- ▶ **Keep forced ventilations clear.**
See Skylights and Ventilation sections.
- ▶ **Before filling the vehicle with fuel switch off the gas/diesel-operated appliances.**

If there is any risk of frost, observe the following instructions:



- ▶ **If there is any risk of frost, always heat the vehicle.**
See Heater section.
- ▶ **If the vehicle is not being used when there is risk of frost, empty the entire water system. Make sure that the 12 V power supply on the panel is switched off. Otherwise, the water pump will over-heat and may get damaged. Leave the water taps on in central position. Leave all drain cocks open. This will avoid frost damage to appliances and to the vehicle.**
See Emptying the water system section.

Please read this instruction manual completely before using the vehicle for the first time!

Always keep this instruction manual in the vehicle. Also inform all other users of the safety regulations.



▶ The non-observance of this symbol can lead to personal injury.



▷ The non-observance of this symbol can lead to damage being caused to, or inside the vehicle.



▷ This symbol indicates recommendations or special aspects.



▷ This symbol indicates actions which lead to environmental awareness.

This instruction manual contains sections which describe model-specific equipment or special equipment. These sections are not specially marked. It may be that your vehicle has not been fitted with this special equipment. In some cases, the actual equipment of your vehicle may therefore be different from that shown in some illustrations and descriptions.

However, your vehicle may be fitted with other special equipment not described in this instruction manual.

Special equipment is described when an explanation is required.

Adhere to the instruction manuals which are separately enclosed.



▷ The details "right", "left", "front" and "rear" always refer to the vehicle in direction of travel.

▷ All dimensions and weight details are "approximate".

Should the vehicle be subjected to damage due to a failure to follow the instructions in this instruction manual, then the warranty claim is deemed invalid.

Our vehicles are subjected to continuous development. Please understand that we reserve the right to alter the form, equipment and technology. Therefore, no claims can be made against the manufacturer as a result of the contents of this instruction manual. The equipment which was known and included at the time of going to press is described.

The reprinting, translation and copying, including extracts is not permitted without prior written authorisation from the manufacturer.

1.1 General

The vehicle is constructed in accordance with the latest technology and the recognised safety regulations. Nevertheless, personal injury may result and the vehicle may be damaged if the safety instructions in this instruction manual are not followed.

Before using the vehicle for the first time, equip it with the legally prescribed equipment (e.g. first aid kit, warning vest, hazard warning triangle etc.). Observe the relevant equipment regulations when travelling abroad.

Only use the vehicle in a technically impeccable condition. Follow the instructions in the instruction manual.

Malfunctions which impair the safety of persons or the vehicle should be immediately remedied by qualified personnel. To avoid further damages, observe the duty to avert, minimise or mitigate loss for the user during faults.

Have the vehicle's braking and gas systems inspected and repaired by an authorised specialist workshop only.

Alterations to the body are only to be carried out with the authorisation of the manufacturer.

The vehicle is designed for the exclusive transport of persons. Luggage and accessories may only be transported up to the maximum permissible gross weight.

Observe the test and inspection periods stipulated by the manufacturer.

1.2 Environmental tips



- ▷ Be considerate of the environment.
- ▷ Remember that: All kinds of waste water and household waste are not to be disposed of in drains or in the open countryside.
- ▷ On board, collect waste water only in the waste water tank or – if necessary – in other containers designed for that purpose.
- ▷ Only empty the waste water tank and sewage tank at disposal stations, camping sites or caravan sites especially provided for this purpose. When stopping in towns and communities, observe the instructions at caravan sites or ask where there are disposal stations.
- ▷ Empty waste water tank as often as possible, even when it is not completely full (hygiene).

If possible, flush out waste water tank and, if necessary, drainage pipe with fresh water every time it is emptied.
- ▷ Never allow the sewage tank to become too full. Empty the sewage tank frequently, at the latest as soon as the filling level indicator lights up.
- ▷ Separate household waste according to glass, tin cans, plastic and wet waste also when on a journey. Enquire at the town or community authority about disposal points. Household waste is not to be disposed of in waste paper baskets which are situated at car parks.
- ▷ Empty waste bins as often as possible into the containers provided for this purpose. This helps to avoid unpleasant smells and an accumulation of rubbish on board.



- ▷ When parked, do not allow the engine to run more than necessary. When running idle, a cold engine releases more contaminants than usual. The running temperature of the engine is achieved more quickly whilst the vehicle is in motion.
- ▷ Use an environmentally-friendly WC chemical agent for the WC which can also be biologically degraded and only use small doses.
- ▷ When staying in towns and communities for long periods, search for parking areas which are specially reserved for motorhomes. Enquire at the town or community authority about parking spaces.
- ▷ Always leave the parking places in a clean condition.

Chapter overview

This chapter contains important safety instructions. The safety instructions are for the protection of persons and property.

2.1 Fire prevention

2.1.1 Avoidance of fire risks



- ▶ Never leave children in the vehicle unattended.
- ▶ Keep flammable materials clear of heating and cooking appliances.
- ▶ Never use portable heating or cooking appliances.
- ▶ Only authorised qualified personnel may make changes to the electrical system, gas system or appliances.

2.1.2 Fire-fighting



- ▶ Please inform yourself about the country- and location-specific requirements for firefighting in the place where you are staying and keep the required tools on hand.

2.1.3 In case of fire



- ▶ Evacuate all passengers.
- ▶ Cut off the electrical power supply and disconnect from the mains.
- ▶ Close regulator tap on the gas bottle.
- ▶ Sound the alarm and call the fire brigade.
- ▶ Fight the fire if this is possible without risk.



- ▷ Acquaint yourself with the position and operation of the emergency exits.
- ▷ Keep escape routes clear.
- ▷ Observe the fire extinguisher instructions for use.

2.2 General



- ▶ The oxygen in the vehicle interior is used up by breathing and the use of gas/diesel-operated appliances. Therefore, the used air must be replaced permanently. For this purpose, forced ventilation options (e.g. skylights with forced ventilation, mushroom-shaped vents or floor vents) are fitted to the vehicle. Never cover or block forced ventilations from the inside or outside with objects such as e.g. a winter mat. Keep forced ventilations clear of snow and leaves. There is a danger of suffocation due to increased CO₂ levels.
- ▶ Do not use storage spaces or rear garages as places for people or animals to stay or sleep in. These spaces are not forced-air ventilated. There is a danger of suffocation due to oxygen deprivation or exhaust from the heater.
- ▶ Observe the headroom of the doors.



- ▷ As far as the fitted appliances (heater, cooker, refrigerator, etc.) and the base vehicle (engine, brakes, etc.) are concerned, the instruction manuals are authoritative. It is imperative that they be observed.
- ▷ Fitting accessories or special equipment can alter the dimensions, weight and road behaviour of the vehicle. Some of the add-on parts must be entered in the vehicle documents.
- ▷ Only use wheel rims and tyres which are approved for the vehicle. Information concerning the size of the approved wheel rims and tyres is included in the vehicle documents or can be obtained from authorised dealers and service centres.
- ▷ Firmly apply the handbrake when parking the vehicle.
- ▷ If the technically permissible maximum laden mass of the vehicle exceeds 4 tonnes, a wheel chock must be used when parking on gradients. The wheel chock is provided as standard for vehicles with a technically permissible maximum mass exceeding 4 tonnes.



- ▷ When leaving the vehicle, it is imperative that all doors, external flaps and windows are closed.
- ▷ Always carry the legally prescribed equipment (e.g. first aid kit, warning vest, hazard warning triangle etc.) with you. The regulations of the host country apply when travelling abroad.
- ▷ The vehicle may only be driven by drivers who hold a driving licence which is valid for the respective vehicle class.
- ▷ When selling the vehicle, hand over all instruction manuals for the vehicle and the fitted appliances.

2.3 Road safety



- ▶ Before commencing the journey, carry out a functional check of indicating and lighting equipment, the steering and the brakes.
- ▶ If the vehicle has been stationary for a long period (approx. 10 months) have the braking and gas systems checked by an authorised specialist workshop.
- ▶ Before commencing the journey and after short interruptions of the journey, ensure that the entrance step is completely retracted.
- ▶ Before commencing the journey, open and secure the shades on the windscreen and on the driver's and front passenger's windows.
- ▶ Before commencing the journey, place and secure the flat screen and screen support in the initial position. If the screen holder is installed in a TV cabinet: Close TV cabinet.
- ▶ Before commencing the journey, remove the loose sink cover (if present) and store it securely in the kitchen unit or wardrobe.
- ▶ Carefully store all moving parts and all loose objects before starting your journey.
- ▶ Before commencing the journey, fix adjustable tables.
- ▶ Before commencing the journey, rotate all swivel seats in the direction of travel and lock in position. During the journey, the swivel seats must remain locked in place in the direction of travel.
- ▶ It is not permitted to stay in the alcove during the journey.
- ▶ During the journey, persons are only to sit on the permitted seats (see chapter 4). The authorised number of seats is stipulated in the vehicle documents.
- ▶ Seat belts must be worn by all passengers.
- ▶ Fasten your seat belts before the beginning of the journey and keep them fastened during the journey.
- ▶ When travelling, secure children under 13 years of age that are smaller than 150 cm, with a suitable and officially approved child restraint system.
- ▶ Only attach the child restraint system to seats that are specified for this purpose. We strongly recommend to install child restraint systems preferably in the second row of seats.
- ▶ **Never** use rearward-facing child restraints on a seat with **activated front airbag**. This may lead to **death** or to **serious injuries** in children.
- ▶ The base vehicle is a commercial vehicle (small truck). Adjust your driving technique accordingly.
- ▶ In case of underpasses, tunnels or similar obstacles, note the total height of the vehicle (including the roof load).
- ▶ In winter, the roof must be free of snow and ice before commencing the journey.
- ▶ Check tyre pressure before a journey or every 2 weeks. Wrong tyre pressure causes excessive wear and can lead to damage or even to tyre burst. You can lose control of the vehicle (see section 13.9).
- ▶ Do not operate the heater at petrol stations. Danger of explosion!
- ▶ Do not operate the heater in closed spaces. Danger of suffocation!



- ▷ Before commencing the journey, distribute the payload evenly within the vehicle (see chapter 3).
- ▷ When loading the vehicle and when taking a rest from driving, in order to load luggage or food, for example, observe the technically permissible maximum laden mass and the technically permissible maximum mass on the axle (refer to vehicle documents).
- ▷ Before commencing the journey, close and lock, if possible, all inner doors, adjustable partition walls, drawers and flaps. Engage the refrigerator door securing device.
- ▷ Before commencing the journey, close windows and skylights.
- ▷ Before commencing the journey, close all external flaps and lock them.
- ▷ Before commencing the journey, remove the external supports and retract the corner steadies or steady legs, which are fitted to the vehicle.
- ▷ Before commencing the journey, put the antenna in park position.
- ▷ During the initial journey and each time after changing a wheel, retighten the wheel bolts/wheel nuts after 50 km (30 miles). Subsequently inspect them at regular intervals in order to ensure that they are firmly seated. See chapter 13 for tightening torque.
- ▷ Tyres should not be older than 6 years as the material becomes brittle over time (see chapter 13).
- ▷ When using snow chains, the tyres, wheel suspension and steering are subjected to an additional load. When using snow chains, drive slowly (maximum speed 50 km/h) and only on streets which are completely covered with snow. Otherwise the vehicle could be damaged.

2.4 Towing



- ▶ Care is to be taken when connecting and detaching a trailer. Risk of accident and injury!
- ▶ No persons are to be between the motorhome and the trailer during positioning for connecting and detaching.

2.5 Gas system

2.5.1 General instructions



- ▶ The operator of the gas system is responsible for the performance of recurring inspections and for complying with the maintenance intervals.
- ▶ If there is **no** DuoControl regulating system with crash sensor installed: Before commencing the journey, when leaving the vehicle or when the gas devices are not in use, close all gas isolator taps and the main regulator tap on the gas bottle.
If there is a DuoControl regulating system with crash sensor installed, the gas isolator taps and the main regulator tap may remain open during the journey.



- ▶ All gas/diesel-operated devices (depending on the equipment: heater, cooker, oven, grill, refrigerator) must be switched off for refuelling, on ferries or in the garage. Danger of explosion!
- ▶ Do not use gas-operated devices in closed spaces (e.g. garages). Danger of poisoning and suffocation!
- ▶ Only have the gas system maintained, repaired or altered by an authorised specialist workshop.
- ▶ Have the gas system checked by an authorised specialist workshop according to the national regulations before commissioning. This also applies for not registered vehicles. For modifications to the gas system have the gas system immediately checked by an authorised specialist workshop.
- ▶ The gas pressure regulator, the gas tubes, and the exhaust gas pipes must also be inspected. The gas pressure regulator and the gas tubes must be replaced observing the nationally defined deadlines (the latest after 10 years). The vehicle owner is responsible for seeing that this is carried out.
- ▶ In case of a defect of the gas system (gas odour, high gas consumption) there is danger of explosion! Close regulator tap on the gas bottle immediately. Open doors and windows and ventilate well.
- ▶ If the gas system is defective: Do not smoke; do not ignite any open flames, and do not operate electric switches (light switches etc.). Check the tightness of gas-conducting parts and lines with leakage search spray. Do not check with an open flame.
- ▶ Only the stipulated devices may be connected to internal connections. Do not operate any device outside the vehicle if it is connected to an internal connector.
- ▶ Before using the cooker make sure that there is sufficient ventilation. Open a window or the skylight.
- ▶ Cooking is prohibited during the journey.
- ▶ Do not use gas-operated cooking and baking facilities for heating purposes.
- ▶ If there are several gas devices, each gas device must have its own gas isolator tap. If individual gas devices are not in use, close the respective gas isolator tap.
- ▶ Ignition safety valves must close within 1 minute after the gas flame has extinguished. A clicking sound is audible. Check function from time to time.
- ▶ The built-in gas devices are exclusively meant for use with propane or butane gas or a mixture of both. The gas pressure regulator as well as all built-in gas devices are designed for a gas pressure of 30 mbar.
- ▶ Propane gas is capable of gasification up to -42 °C, whereas butane gas gasifies at 0 °C. Below these temperatures no gas pressure is available. Butane gas is unsuitable for use in winter.
- ▶ Due to its function and construction, the gas bottle compartment is a space which is open to the exterior. Never cover or block up the standard forced ventilations. Otherwise gas that is emitted can not be diverted to the outside.
- ▶ The gas bottle compartment must not be used as storage space.
- ▶ Secure the gas bottle compartment against unauthorised access. To do this, lock the compartment.



- ▶ The regulator tap on the gas bottle must be accessible.
- ▶ Only connect gas-operated devices which have been designed for a gas pressure of 30 mbar.
- ▶ The exhaust gas pipe must be fitted tightly to the heating system and to the vent and must be sealed. The exhaust gas pipe must not show any evidence of damage.
- ▶ Exhaust fumes must be able to escape into the atmosphere unhindered and fresh air must be able to enter unhindered. For this reason, keep the exhaust pipe and intake openings clean and unobstructed (e.g. free from snow and ice). For this reason, no snow walls or aprons may lie against the vehicle.

2.5.2 Gas bottles



- ▶ Handle full or emptied gas bottles outside the vehicle only with closed regulator tap and attached protective cap.
- ▶ Gas bottles are only to be transported within the designated gas bottle compartment.
- ▶ Place the gas bottles in vertical position in the gas bottle compartment.
- ▶ Fasten the gas bottles so that they are unable to turn or tilt.
- ▶ Connect the gas tube to the gas bottle without tension.
- ▶ If the gas bottles are not connected to the gas tube, always place the protective cap on top.
- ▶ Close the regulator tap on the gas bottle before the gas pressure regulator or gas tube are removed from the gas bottle.
- ▶ Depending on the connection, unscrew the gas tube from the gas bottle and screw it on the gas bottle again by hand or using a suitable special spanner. The screw connection on the gas bottle generally has a left-hand thread. **Do not** tighten too firmly.
- ▶ Only use special gas pressure regulators with a safety valve designed for vehicle use. Other gas pressure regulators are not permitted and cannot meet the demanding requirements.
- ▶ Use the gas pressure regulator defroster if the temperature falls below 5 °C.
- ▶ Use only 11 kg or 5 kg gas bottles. (The size of the gas bottles may vary depending on the country.) Exception: Only 5 kg gas bottles can be used with the special model Crossover.
- ▶ Use the shortest possible tube lengths (150 cm max.) for external gas bottles.
- ▶ Never block the floor ventilation openings below the gas bottles.

2.6 Electrical system



- ▶ Only allow qualified personnel to work on the electrical system.
- ▶ Prior to carrying out work on the electrical system, switch off all devices and lights, disconnect the battery and disconnect the vehicle from the mains.
- ▶ Only use original fuses with the stipulated values.
- ▶ Only replace defective fuses when the cause of the defect is known and has been remedied.
- ▶ Never bridge or repair fuses.

2.7 Water system



- ▶ Water left standing in the water tank or in the water pipes becomes undrinkable after a short period. Therefore, before each use of the vehicle, thoroughly clean the water pipes and the water tank. After each use of the vehicle completely empty the water tank and the water pipes.
- ▶ In the case of lay-ups lasting more than a week, disinfect the water system before using the vehicle (see section 11.7.3).



- ▷ If the vehicle is not used for several days or if it is not heated when there is a risk of frost, empty the entire water system. Make sure that the 12 V power supply on the panel is switched off. Otherwise, the water pump will overheat and may get damaged. Leave the water taps on in central position. Leave all drain cocks open. Frost damage to appliances, frost damage to the vehicle and deposits in water-carrying components can be avoided in this way.

Chapter overview

This chapter contains important information which has to be noted before commencing your journey or carrying out any tasks before the journey.

At the end of the chapter there is a checklist which once again summarises the most important points.

3.1 Initial start-up



- ▷ During the initial journey and each time after changing a wheel, re-tighten the wheel bolts/wheel nuts after 50 km (30 miles). Subsequently inspect them at regular intervals in order to ensure that they are firmly seated. See chapter 13 for tightening torque.

The motorhome is supplied with a set of keys, consisting of keys for the base vehicle and keys for the body.

Always deposit a replacement key outside the vehicle. Make a note of the key number. Our authorised dealers and workshops can offer assistance in case of loss.

Further information in chapter 12.

When starting up for the first time or after a lay-up, the electrical system must be started up as follows:

- Switch on the fuses or (if the fuses have been pulled out) insert the fuses.
- Set battery cut-off switch to on.
- Switch 12 V power supply on.



- ▷ The 12 V power supply must only be switched on in vehicles **without** SCU (System Control Unit). On vehicles **with** SCU, the 12 V power supply is activated automatically.
- ▷ The vehicle is not ready for operation until the above measures have been carried out.

3.2 Payload



- ▶ Overloading the vehicle and the axles can lead, for example, to a worsened steering response (changed driving behaviour), to an overload of the tyres and thus to an increased risk of tyre bursts or to an increase in braking distance. This creates the risk of the vehicle getting out of control and you endangering yourself and other road users. If you are not sure whether the laden vehicle complies with the technically permissible maximum laden mass, there is the possibility of weighing/checking the vehicle on public scales or at individual dealers.
- ▶ The vehicle documents state the technically permissible maximum laden mass or the mass including special equipment ex works (actual vehicle mass), but not the weight of the laden vehicle (see section 3.2.1). For your own safety, we recommend that you have your laden vehicle (with all passengers, luggage and personal objects) weighed on a public weighbridge before commencing the journey.
- ▶ Adapt the speed to the payload. The stopping distance is increased if the payload is high.



- ▷ Do not exceed the technically permissible maximum laden mass and the technically permissible maximum mass on the axle as stated in the vehicle documents by the payload.
- ▷ Built-in accessories and special equipment reduce the payload.
- ▷ On loading, make sure that the payload's centre of gravity is as low as possible (directly above the floor of the vehicle). Otherwise this may affect the driving characteristics of the vehicle.



- ▷ If the vehicle exceeds the technically permissible maximum laden mass specified by the manufacturer in the actual mobile operation, there is a risk of legal consequences such as a fine or the loss of insurance.

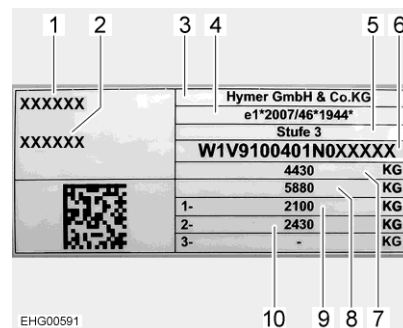
3.2.1 Terms



- ▷ Technically speaking, the term "mass" has now replaced the term "weight". However, "weight" is still the term more frequent in common use. For better understanding, "mass" is therefore only used in the following sections for fixed formulations.

Technically permissible maximum laden mass

The technically permissible maximum laden mass is a value set by the manufacturer (e.g. 3500 kg), which the vehicle must never exceed for safety reasons, even in laden condition. You can find information on the technically permissible maximum laden mass of the model you have chosen in the registration papers and on the factory plate of the body manufacturer attached to the vehicle.



- 1 Vehicletype
- 2 Consecutive serial number
- 3 Manufacturer
- 4 Vehicle type approval
- 5 Body stage
- 6 Chassis number
- 7 Technically permissible maximum mass
- 8 Permissible total towing mass (with caravan coupling option)
- 9 Permissible axle load for axle 1
- 10 Permissible axle load for axle 2

Fig. 1 Factory plate

The technically permissible maximum laden mass consists of the **actual vehicle mass** and the **payload**.

In the vehicle documents, the manufacturer has specified the technically permissible maximum laden mass (permissible total mass) in laden condition.

Actual vehicle mass

The actual vehicle mass consists of the mass in running order and the weight of the special equipment fitted at the factory.

Mass in running order

The mass in running order is the weight of the ready-to-drive series vehicle (excluding special equipment fitted at the factory).

The mass in running order is made up as follows:

- Unladen weight (mass of the empty vehicle) with factory-installed standard equipment (excluding special equipment fitted at the factory)
- Driver's weight
- Basic equipment weight
- Greases, oils and cooling liquids filled in
- Fresh water tank filled up to 100 %
- Aluminium gas bottle filled up to 100 %
- Fuel tank filled to 90 %

75 kg are calculated for the weight of the driver, regardless of how much the driver really weighs.

Basic equipment includes all equipment and fluids required for safe and proper vehicle use. The weight of the basic equipment includes:

- A full fresh water system
- A full heating system
- The power cables for the 230 V power supply
- A full toilet flushing system
- The installation kit for an auxiliary battery if an auxiliary battery can be used

The waste water and sewage tanks are empty.

Example for calculating the basic equipment

Water tank with 20 l (during the journey)	20 kg
Gas bottle (11 kg _{gas} + 14 kg _{bottle})	+ 25 kg
Boiler with 12 l	+ 12 kg
230 V power cable	+ 4 kg
Installation kit for auxiliary battery	+ 20 kg
Total	= 81 kg

The mass in running order and the actual vehicle mass are specified by the manufacturer in the vehicle documents.

Remaining payload capacity

To determine the remaining payload capacity, it is important that you know the real weighed mass of your vehicle. When your vehicle is completed, we therefore determine the real weight of your vehicle for the first time by weighing it at the end of the belt. This includes the mass in running order plus the weight of all ordered and factory-fitted special equipment.

Using this real weighed mass, you can calculate the remaining payload capacity for luggage or other accessories.

Example:

Maximum permissible gross weight - real weighed mass - mass of the passengers = remaining payload capacity
 3500 kg - 3000 kg - 225 kg (3 x 75 kg) = 275 kg



- ▷ Please note that the factory calculation of the remaining payload capacity assumes a flat rate of 75 kg per seat for the mass of the driver (included in the real weighed mass) and the mass of the passengers. Due to differing body weights, the real remaining payload capacity of your vehicle may be affected.
- ▷ The real mass of your vehicle weighed at the factory may vary slightly in retrospect due to weather conditions and, for example, the associated absorption or release of moisture. Any further subsequent modification of your vehicle, e.g. through the additional installation of accessories at the dealer's or other extensions and/or conversions, will additionally influence the notified real weighed mass of the vehicle and consequently also the remaining payload capacity. It is the responsibility of the dealer after collection from the factory and until delivery, and subsequently your responsibility from the time of handover by the dealer, to prevent the technically permissible maximum laden mass from being exceeded. If you are not sure whether the laden vehicle complies with the technically permissible maximum laden mass, there is the possibility of weighing/checking the vehicle on public scales or at individual dealers.
- ▷ We will inform your dealer of the actual mass of your vehicle weighed by us at the factory and the remaining payload capacity when we issue the invoice. The latter is required to pass the information on to you. If this has not been done, you can contact your dealer and ask for the information. Our scales meet all legal and standard requirements and are regularly maintained, tested and calibrated. A slight tolerance is nevertheless technically unavoidable. In addition, the weight of the vehicle may vary slightly due to weather conditions and, for example, the associated absorption or release of moisture. The real weight of the vehicle can therefore deviate by a few kilograms from the reported real weight.

The payload is made up as follows:

- Conventional load
- Special equipment
- Personal equipment



- ▷ The vehicle's payload can be increased by reducing the actual weight. To do this, it is allowed for example to empty the fluid containers or to remove the gas bottles.

You will find explanations on the individual components of the payload in the following text.

Conventional load

The conventional load is the weight specified by the manufacturer for the passengers.

Conventional load means: 75 kg are calculated for every seat specified by the manufacturer, regardless of how much the passengers actually weigh. The driver's seat is already included in the mass in running order and must **not** be counted.

In the vehicle documents, the manufacturer specifies the number of seats.

Special equipment Special equipment includes all equipment not included in the standard equipment which is fitted to the vehicle under the responsibility of the manufacturer.

- Caravan coupling
- Bike or motorcycle rack
- Satellite unit

Chapter 15 lists the weights of the various items of special equipment; they may also be obtained from the manufacturer.

Personal equipment Personal equipment includes all items carried in the vehicle that are not included in the conventional load and special equipment. For example, personal equipment can include the following:

- Foodstuffs
- Crockery
- Television
- Radio
- Clothes
- Bedding
- Toys
- Books
- Toiletries

No matter where kept, personal equipment also includes:

- Animals
- Bikes
- Boats
- Surfboards
- Sports equipment

For the personal equipment, according to the applicable regulations, the manufacturer must use a minimum weight that is determined according to the following formula:

Formula Minimum weight M (kg) = $10 \times N + 10 \times L$

Explanation N = maximum number of people including the driver, as stated by the manufacturer

L = total length of the vehicle in metres

3.2.2 Calculating the payload



- ▶ Never exceed the technically permissible maximum laden mass!
- ▶ The technically permissible maximum laden mass and the weight including special equipment fitted at the factory (actual mass) is shown in the vehicle documents, but not the weight of the laden vehicle (see section 3.2.1). For your own safety, we recommend that you have your loaded vehicle (with all passengers, luggage and personal objects) weighed on a public weighbridge before you set out on your journey.

The payload (see section 3.2.1) is the difference in weight between

- the technically permissible maximum laden mass and
- the actual vehicle mass.

Example for calculating the payload

	Mass in kg to be calculated	Calculation
Technically permissible maximum laden mass according to vehicle documents	3500	
Actual vehicle mass including standard equipment according to the vehicle documents	- 3070	
This results in a permissible payload of	430	
Flat-rate value of 10 kg per meter vehicle length (in the example: 7.00 m)	-70	
Conventional load e.g.: 3 persons each weighing 75 kg	- 225	
Special equipment and accessories	- 40	
For the personal load capacity this results in	= 95	

The load capacity is calculated based on the regulation (EC) no. 1230/2012.

The calculation of the payload from the difference between the technically permissible maximum laden mass and the actual vehicle mass specified by the manufacturer is however only a theoretical value.

Only if the vehicle is weighed on a public scale with filled tanks (fuel and water), filled gas bottles and complete special equipment (and accessories) can the actual payload be determined.

To do this, proceed as follows:

- First only drive the vehicle on to the weighbridge with the front wheels and have it weighed.
- Then drive the vehicle on to the weighbridge with the back wheels and have it weighed.

The individual values give the current axle loads. These are important for the correct loading of the vehicle (see section 3.2.3). The sum of these values is the current weight of the vehicle.

The actual payload is the difference between the technically permissible maximum mass in laden condition and the weighed vehicle weight.

This can be used to determine the weight that remains for the personal equipment:

- Determine the weight of the passengers and subtract it from the value for the actual payload.

The result is the weight that is permitted for the actual load of the personal equipment.

3.2.3 Load securing and load distribution



- ▶ For safety reasons, never exceed the technically permissible maximum laden mass.
- ▶ Distribute the load evenly on the left and right sides of the vehicle.
- ▶ Distribute the load evenly on both axles. Observe the technically permissible maximum mass on the axle specified in the vehicle documents. Observe the permissible load-carrying capacity of the tyres (see chapter 13).
- ▶ Heavy loads behind the rear axle can reduce the load on the front axle due to the leverage effect ($\frac{l}{\sigma-\sigma}$). This applies especially to long rear extensions, if a motorbike is transported on the rear carrier or if there is a heavy load in the rear storage space. The release of the front axle negatively affects the driving quality, especially for front-driven vehicles.
- ▶ Store all objects in such a way that they cannot slip.
- ▶ Store heavy objects (awning, tin cans, etc.) close to the axles. Low-lying storage spaces whose doors do not open in the direction of travel are particularly suited for storing heavy objects.
- ▶ Stack light objects (laundry) in the roof storage cabinets.
- ▶ Load the bike rack with bicycles only.



- ▷ Only load the drawers with a maximum of 15 kg.

Large storage compartments also offer room for heavy objects. The axle load of the front or rear axle may be exceeded as a result.

However, the individual axles may not be overloaded under any circumstances. That is why it is important, at which distance to the axles the load is stored.

When loading the vehicle, please observe the following instructions to ensure safe mobile operation:

- The luggage and other items carried in the vehicle must be evenly distributed between the left and right sides of the vehicle.
- Heavy or bulky objects should be stored as close to the ground as possible in storage compartments provided for this purpose and near the axle, as well as secured against slipping.
- Light and other items can be stored in cabinets and storage compartments.
- Always ensure that the doors and flaps on the cabinets and storage areas are properly secured.
- Use only suitable clamping systems to secure against slipping. Please check all lashings again before commencing the journey.



- ▶ Uneven loading has a negative influence on the driving behaviour. In particular, a rear-heavy load leads to a relief of the front axle due to the lever effects and thus e.g. to a loss of traction, a worsened steering response (changed driving behaviour), an overload of the tyres and thus to an increased risk of tyre bursts. This creates the risk of the vehicle getting out of control and you endangering yourself and other road users. An evenly distributed load over the entire vehicle leads to optimal handling during the journey.



- ▷ The technically permissible maximum laden mass and the technically permissible maximum mass on the axle must not be exceeded. Especially when storing or attaching heavy accessories or accessories that are heavily loaded at the rear (such as motorcycle rack or bike rack), the axle loads must be checked and complied with. If you are not sure whether the laden vehicle complies with the technically permissible maximum laden mass and the technically permissible maximum mass on the axle, there is the possibility of weighing/checking the vehicle on public scales or at individual dealers.
- ▷ For individual models, a maximum load is specified by the body builder for cabinets, drawers, storage compartments or other storage spaces. This is recognisable by means of stickers attached on the spots and must always be observed. The technically permissible maximum laden mass and the technically permissible maximum mass on the axle must not, however, be exceeded under any circumstances. Therefore, please note that the specified maximum load may not be used in full if this would cause the technically permissible maximum laden mass or technically permissible maximum mass on the axle to be exceeded.
- ▷ You can find more information on correct loading in the sections "Technically permissible maximum laden mass" (page 22), "Technically permissible maximum mass on the axle (axle load)" (page 28) as well as "Rear garage / rear storage space" (page 32).

To distribute the load correctly, you will need a scale, a tape measure, a calculator and some time.

Two simple formulas are needed to calculate the effect of the weight of the load on the axles:

Formulas

$A \times G : R =$ weight on the rear axle

Weight on the rear axle – $G =$ weight on the front axle

Explanation

A = distance between storage space and front axle in cm

G = weight of the load in the storage space in kg

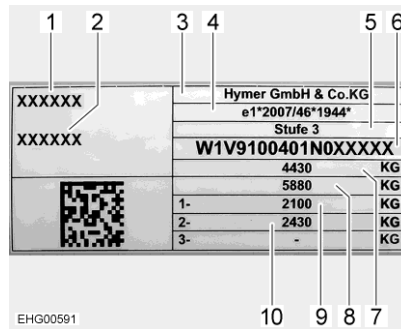
R = wheelbase of the vehicle (distance between axles) in cm



- ▷ Measure the external distances horizontally from the centre of the front wheel to the centre of the storage space or to the centre of the back wheel.

Technically permissible maximum mass on the axle (axle load)

The technically permissible maximum mass on the axle or group of axles (hereinafter referred to as axle load) describes the vehicle- and axle-specific load that may be transferred from the wheels of an axle or group of axles to the road surface. The axle load is a value set by the manufacturer which the vehicle must never exceed for safety reasons, even in laden condition. You will find information on the axle loads of your vehicle in the registration papers and on the factory plate of the body manufacturer attached to the vehicle.



- 1 Vehicle type
- 2 Consecutive serial number
- 3 Manufacturer
- 4 Vehicle type approval
- 5 Body stage
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- 7 Technically permissible maximum mass
- 8 Permissible total towing mass (with caravan coupling option)
- 9 Permissible axle load for axle 1
- 10 Permissible axle load for axle 2

Fig. 2 Factory plate



► If the technically permissible maximum mass on the axle is exceeded, the vehicle may be damaged (e.g. due to a broken axle or burst tyre) and driving may be considerably impaired. This creates the risk of the vehicle getting out of control and you endangering yourself and other road users. We therefore recommend weighing the finally laden vehicle including all passengers before the start of the journey so that compliance with the axle load and the technically permissible maximum laden mass is always guaranteed. For this purpose, there is the possibility of weighing/checking the vehicle on public scales or at individual dealers.



- ▷ Please note that the axle loads on the respective axles or axle groups may differ and therefore read the information provided in the registration papers carefully.
- ▷ If the vehicle exceeds the technically permissible maximum mass on the axle specified by the manufacturer in the actual mobile operation, there is a risk of legal consequences such as a fine or the loss of insurance.
- ▷ It is possible that the chassis manufacturer of your vehicle specifies a minimum load for the front axle in order to obtain optimum handling. Therefore, please also always take into account the information on this from the instruction manual of the chassis manufacturer.
- ▷ You can find more information on correct loading in the sections "Load securing and load distribution" (page 27) as well as "Rear garage / rear storage space" (page 32).

Calculating axle loads:

- Multiply the distance between storage space and front axle (A) with the weight of the load in the storage space (G) and divide the result by the wheelbase (R). The result is the weight of the load in the storage space on the rear axle. Make a note of this weight and of the storage space.
- In a second step, subtract the weight in the storage space (G) from the weight calculated beforehand. If the result is a **positive** value (example 1), this means that the load on the front axle is **reduced** by this value. If the result is a **negative** value (example 2), this means that the load on the front axle is **increased**. Make a note of this value, too.
- Calculate all storage spaces of the vehicle in the same way.
- In a last step, add all weights calculated for the rear axle to the rear axle load and add (or subtract) all weights calculated for the front axle to (from) the front axle load.
How to determine rear axle load and front axle load is described in section 3.2.2.

If the calculated value exceeds the permissible axle load, the load must be distributed in a different way.

If the load on the front axle is too low, the grip of the tyres on the road is reduced (traction). This applies in particular to vehicles with front-wheel drive. In this case, the load must be redistributed, too.

Example calculation

		Example 1	Example 2
Distance to the front axle	A	(A1) 450 (cm)	(A2) 250 (cm)
Weight in the storage space	G	x 100 (kg)	x 50 (kg)
Wheelbase of the vehicle	R	÷ 325 (cm)	÷ 325 (cm)
Load on the rear axle (add to the axle load)		138.5 (kg)	38.5 (kg)
Weight in the storage space		- 100 (kg)	- 50 (kg)
Load relief to the front axle (subtract from the axle load)		38.5 (kg)	
Load on the front axle (add to the axle load)			-11.5 (kg)

Increasing and reducing the design GVW

In the case of an increase of the GVW, the technically permissible maximum laden mass of the vehicle, the technically permissible maximum mass on the axle and, as a result, the remaining payload capacity for luggage, camping equipment, etc. is usually increased due to a change in the chassis.

In contrast to an increase of the design GVW, a reduction of the design GVW reduces the technically permissible maximum laden mass of the vehicle, the technically permissible maximum mass on the axle and, as a result, the remaining payload capacity for luggage, camping equipment, etc. There usually is no technical modification of the chassis.



- ▷ Increases or reduction of the design GVW may have an influence on the approved number of seats, the chassis and the axle loads due to the change in the technically permissible maximum laden mass. If you have any questions, please contact the competent technical inspection authority.
- ▷ Increases or reduction of the design GVW may result in changes to the legal requirements resulting from the new technically permissible maximum laden mass of the vehicle. This applies in particular to the legal requirements from the Road Traffic Act, the Road Traffic Licensing Act and the tax and insurance regulations. An increase of the design GVW to more than 3500 kg may, for example, affect the driving licence class or lead to other speed limits or prohibitions on passing and overtaking. Toll payment requirements may also change due to the new technically permissible maximum laden mass. Therefore, inform yourself about the current legal situation with regard to the new technically permissible maximum laden mass of the vehicle and seek advice on this at the relevant offices. Please note that national regulations in the country of your destination and countries visited for transit may differ from those of your home country.
- ▷ You can find more information on the remaining load capacity in the section "Remaining payload capacity" (page 23).

3.2.4 Roof load



- ▶ Only climb on to the roof if a roof rail or step has been fitted. Always use the ladder at the rear to climb onto the roof.
- ▶ Take care when stepping onto the ladder. There is danger of slipping when the ladder is moist or icy.
- ▶ Take care when stepping onto the roof. There is danger of slipping when the roof is moist or icy.
- ▶ Do not overload the roof. Road behaviour and brake reaction deteriorate as the roof load increases.



- ▷ If the vehicle is equipped with a roof rail, load racks can be mounted on the roof rail for roof loads (e.g. for surfboards, rubber boats or light canoes). Special girder systems are available as accessory. The authorised dealer or service centre will be happy to advise you.
- ▷ The maximum permissible roof load is 140 kg.
- ▷ If there is a step, only access the roof using the step provided for this purpose.
- ▷ Secure roof loads with tension belts. Do not use rubber expanders.
- ▷ Observe the overall height of the vehicle when the roof rack is loaded.



- ▷ The driver's cabin should have a clearly visible notice stating the overall height. This eliminates the need for calculations at bridges and thoroughfares.

Roof rail and step

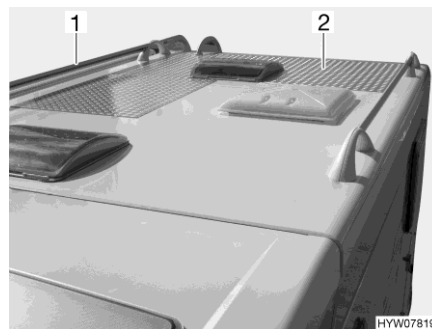


Fig. 3 Roof rail and step

If the vehicle is equipped with a roof rail (Fig. 3,1), then depending on the version a step will also be mounted on the roof (Fig. 3,2). In this case, only access the roof using the step.

Rear ladder



Fig. 4 Lock (rear ladder)

Folding downwards:

- Insert the key into the locking cylinder (Fig. 4,2) of the rear ladder lock (Fig. 4,1) and turn it a quarter turn until the key is in a vertical position.
- Hold the foldable part of the rear ladder (Fig. 4,4) and swing out the securing bracket (Fig. 4,5).
- Pull out the key and fold the rear ladder downwards.

Folding upwards:

- Fold the rear ladder upwards and hold it firmly.
- Insert the key into the locking cylinder (Fig. 4,2) of the rear ladder lock (Fig. 4,1).
- Swivel the securing bracket (Fig. 4,5) inward around the tube of the fixed part of the rear ladder (Fig. 4,3).
- Turn the key a quarter turn until it is in a horizontal position.
- Check the rear ladder lock: Slightly pull on the rear ladder.

3.2.5 Rear garage / rear storage space



- ▶ Observe the technically permissible maximum mass on the axle and the technically permissible maximum laden mass when loading the rear garage / rear storage space.
- ▶ The maximum permitted load of the rear garage/the rear storage space is 350 kg. If the vehicle is fitted with a caravan coupling or a motorcycle rack, the permitted load is 450 kg. Do not exceed the technically permissible maximum mass on the rear axle.
- ▶ Uneven loading or overloading has a negative influence on the driving behaviour. In particular, a rear-heavy load leads to a relief of the front axle due to the lever effects and thus e.g. to a loss of traction, a worsened steering response (changed driving behaviour), an overload of the tyres and thus to an increased risk of tyre bursts. This creates the risk of the vehicle getting out of control and you endangering yourself and other road users. An evenly distributed load over the entire vehicle leads to optimal handling during the journey. If you are not sure whether the laden vehicle complies with the technically permissible maximum laden mass and the technically permissible maximum mass on the axle, there is the possibility of weighing/checking the vehicle on public scales or at individual dealers.
- ▶ Do not exceed the maximum permissible external load on the rear wall/rear flap. Only equipment components approved by the manufacturer are permitted (e.g. certain bike racks).



- ▶ When transporting vehicles fuelled with petrol, diesel, gas or other flammable material, ensure that the tank of the transported vehicle is completely empty. When transporting e-bikes, we also recommend removing the battery before commencing the journey and storing it safely.
- ▶ Rear garages and rear storage spaces are not intended by the factory as sleeping or living areas for persons or animals. These spaces have no factory-provided ventilation. There is a danger of suffocation due to the lack of oxygen.



- ▷ Observe that only factory-fitted equipment components (e.g. storage nets) are permitted on rear doors/rear flap.
- ▷ Observe the maximum permissible load of 5 kg for the factory-attached storage nets.
- ▷ Depending on the vehicle equipment, clamping rails with clamping eyelets are mounted in the rear garage or in the rear storage space. Always secure loads onto the clamping eyelets. Always use tightening straps or lashing nets for securing the load, never rubber expanders.
- ▷ When clamping loads, always check that the clamping eyelets are placed tightly in the clamping rails. If the clamping eyelet is not anchored tightly in the clamping rail, the load may slide or loosen during forcible movements of the steering wheel or when braking.
- ▷ Distribute the load evenly. Excessive spot loads can lead to damages of the floor covering.
- ▷ Use the supporting system offered by your dealer if two-wheelers are transported in the rear garage.
- ▷ Do not drill into the vehicle floor. Do not screw any screws into the vehicle floor.

When loading rear garages and rear storage spaces, please observe the following instructions to ensure safe mobile operation:

- In rear garages and rear storage spaces, luggage and objects carried must also be evenly distributed in accordance with the section "Load securing and load distribution" (page 27).
- All objects stored in rear garages and rear storage spaces must be appropriately fixed and secured with suitable clamping systems to the existing fixing points provided by the factory.
- Before setting off, make sure that the rear garage or rear storage space has been properly locked.

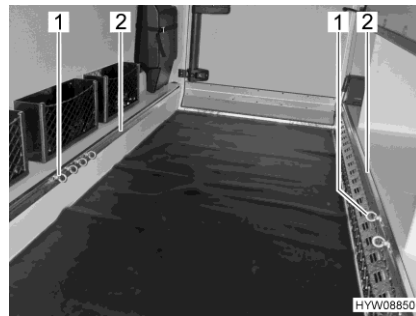


Fig. 5 Clamping eyelets (rear garage)

- 1 Clamping eyelet
- 2 Clamping rail

Moving the clamping eyelets:

- Turn the clamping eyelet (Fig. 5,1) half a turn in an anticlockwise direction. Now, the clamping eyelet (Fig. 6) may be moved.



Fig. 6 Clamping eyelet (movable)



Fig. 7 Clamping eyelet (clamped)

- Push the clamping eyelet into the clamping rail (Fig. 5,2) to the desired position.
- Give clamping eyelet one half turn in a clockwise direction. The clamping eyelet (Fig. 7) sits tightly in the clamping rail again.
- Check that the clamping eyelet is tight.



- ▷ Please always observe the maximum permissible load of the rear garage or rear storage space. The specified maximum permissible load of the rear garage or rear storage space can be influenced by the selection of further special equipments such as caravan couplings or frame extensions. The technically permissible maximum laden mass and the technically permissible maximum mass on the axle must not, however, be exceeded under any circumstances. Especially when storing or attaching heavy accessories or accessories that are heavily loaded at the rear (such as motorcycle rack or bike rack), the axle loads must be checked and complied with. Therefore, please note that the maximum load may not be used in full if this would cause the technically permissible maximum laden mass or technically permissible maximum mass on the axle to be exceeded.
- ▷ You can find more information on correct loading in the sections "Technically permissible maximum laden mass" (page 22), "Technically permissible maximum mass on the axle (axle load)" (page 28) as well as "Load securing and load distribution" (page 27).

3.3 Bike rack



- ▶ Observe the technically permissible maximum mass on the axle and the technically permissible maximum laden mass when loading bike rack.
- ▶ A total width of 2.55 m must not be exceeded. Adjust the attachments for the bikes accordingly. The overhang to the side and rear must be marked in accordance with the regulations for the country in which you are travelling.
- ▶ Load the bike rack with bicycles only.
- ▶ Do not transport more than the permitted number of bicycles for the bike rack used (max. 50 kg).
- ▶ Check the secure attachment of the bicycles on the bike rack after the first 10 km and then at each break in the journey.
- ▶ Do not use the bike rack as luggage rack or ladder.



- ▷ The identification plate and rear lights must not be covered.
- ▷ Driving with a folded out bike rack without bicycles is not permitted.
- ▷ Before every journey, check:
 - Is the bike rack without bicycles folded in correctly?
 - Are the bicycles securely fastened to the bike rack using the bike rack belts?

Loading the bike rack with bicycles

When loading the bike rack, observe the centre of gravity. The centre of gravity of the bicycles must be as close as possible to the rear wall of the vehicle. The bike rack should always be loaded from the inside to the outside.

Loading the bike rack correctly:

- Fold the bike rack downwards.
- Place the heaviest bicycle directly against the rear wall.
- Place the lightest bicycles in the centre or on the outside of the bike rack.
- Secure the front and rear wheels of each bicycle with the retaining straps on the bike rack.
- In addition, fasten the outermost bicycle on the retaining bracket or retaining arm.

If the bike rack is only loaded with **one** bicycle, position the bicycle as closely as possible to the rear wall.

3.4 Towing



- ▶ Care is to be taken when connecting and detaching a trailer. Risk of accident and injury!
- ▶ No persons are to be between the motorhome and the trailer during positioning for connecting and detaching.
- ▶ Observe the permissible nose weight and rear axle load of the motorhome. Nose weight and rear axle load must not be exceeded. The values of the nose weight and rear axle load are included in the documents of the vehicle and the caravan coupling.



- ▷ Trailer with an overrun brake: Do not connect or detach trailer with the overrun brake on.
- ▷ Caravan coupling with detachable ball neck: If the ball neck is mounted incorrectly, there is the danger of the trailer breaking away. Observe the instruction manual for the caravan coupling.



- ▷ The maximum permissible nose weight of the vehicle is 80 kg.

3.5 Caravan coupling



- ▶ When attaching a caravan coupling, refer to the vehicle documents for the maximum nose weight and the technically permissible towable mass.
- ▶ Retighten the caravan coupling fixing screws after 1000 operating hours.



- ▷ The bike rack and caravan coupling may not be used simultaneously.



- ▷ Have your authorised dealer or authorised service centre install the add-on parts. They will also take care of all the formalities for you.
- ▷ Observe the manufacturer's instruction manual.



Fig. 8 Caravan coupling (detachable)

3.6 Entrance step



- ▶ Before commencing the journey and after short interruptions of the journey, ensure that the entrance step is completely retracted.
- ▶ Do not stand in the direct range of the entrance step while it is being retracted or extended.
- ▶ Do not step on the entrance step until it has extended completely. There is a risk of injury!
- ▶ To prevent danger of slipping, clean the entrance step if necessary before entering (snow, ice, mud, etc.).
- ▶ Do not under any circumstances raise or lower persons or loads with the entrance step.
- ▶ Following a cold start, for vehicle-related reasons it can take a few seconds before the warning tone sounds.
- ▶ Observe the maximum load for the entrance step according to the manufacturer's instruction manual.



- ▷ Do not grease or lubricate the pivot bearing and joints of the entrance step (see chapter 11).

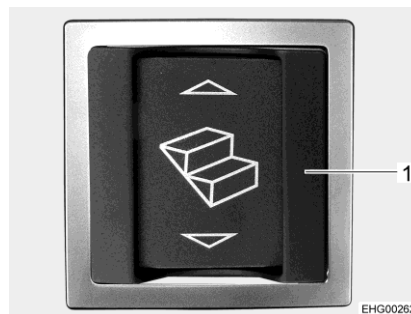


Fig. 9 Rocker switch for entrance step (entrance area)



Fig. 10 Rocker switch for entrance step (dashboard)



- ▷ The rocker switch in the entrance area has a covering frame (Fig. 9,1) to protect it from being actuated unintentionally.

Retracting:

- Press the rocker switch (Fig. 9) in the entrance area or the rocker switch (Fig. 10) on the dashboard in the driver's cabin.

Extending:

- Press the rocker switch (Fig. 9) situated in the entrance area.

When the engine is running and the entrance step is extended, a warning tone is heard. The warning tone stops as soon as the entrance step is retracted.

3.7 Multimedia system (Mercedes)

The multimedia system includes a DSP box installed in the seat console of the front passenger's seat. The DSP box contains the processor for programming sound.



- ▷ Do not open the DSP box. Only an authorised specialist workshop may open the DSP box.



- ▷ If during an ongoing sound reproduction of the mobile terminal you switch to a mobile terminal coupled via Bluetooth, a 2-minute interruption of the reproduction occurs.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

3.8 TV unit



- ▶ Before commencing the journey, return the flat screen and the screen holder into the initial position and secure them.
- ▶ Before commencing the journey, ensure that the antenna is in park position. Danger of accidents!



- ▷ Further information on positioning the flat screen can be obtained from chapter 6.

3.9 Kitchen area



- ▶ In the event of an accident or heavy braking, flying objects could injure the occupants of the vehicle. Before moving off, secure all moveable objects and remove all loose objects and store them securely.

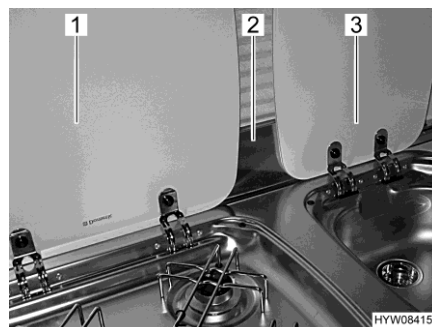


Fig. 11 Flame protection and covers

- Remove flame protection (Fig. 11,2) and store securely.
- Close sink cover (Fig. 11,3) and gas cooker cover (Fig. 11,1).

3.10 Gas regulator



- ▶ Operating gas-operated appliances during the journey is permitted only if the gas system has the relevant equipment. The hose break guard and crash sensor prevent an escape of gas in the event of an accident.

Depending on the equipment, different gas regulators can be installed in the vehicle.

If other gas regulators than the one listed below are installed in the vehicle, the regulator tap on the gas bottle and the gas isolator taps must be closed during the journey.

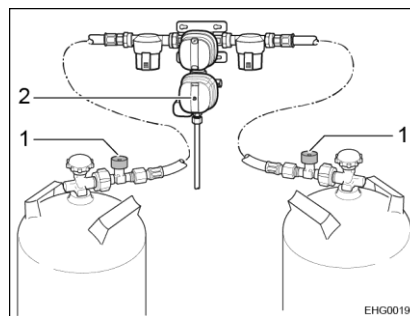


Fig. 12 Gas regulator (DuoControl CS)

Gas regulator with crash sensor and hose break guard

If a gas regulator with crash sensor (Fig. 12,2) and hose break guard (Fig. 12,1) is installed in the vehicle:

The regulator tap on the gas bottle and the "Heater" gas isolator tap may remain open during the journey. Gas-operated appliances may be on during the journey.

The design details of the gas regulators can vary (vertical or horizontal).



- ▷ If in doubt, get the relevant information from authorised dealers or service centres.

3.11 Snow chains



- ▷ Only mount snow chains if there is a clearance of at least 50 mm between the tyres and the vehicle body.
- ▷ When using snow chains, the tyres, wheel suspension and steering are subjected to an additional load. When using snow chains, drive slowly (maximum speed 50 km/h) and only on streets which are completely covered with snow. Otherwise the vehicle could be damaged.
- ▷ Observe the fitting instructions issued by the manufacturer of the snow chains.
- ▷ Do not fit snow chains on alloy wheel rims.

The use of snow chains is subject to the legal regulations of the individual countries.

- Always mount snow chains to the drive wheels.
- After a few metres, check the tension of the snow chains.

3.12 Road safety



- ▶ Check tyre pressure before a journey or every 2 weeks. Wrong tyre pressure causes excessive wear and can lead to damage or even to tyre burst. You can lose control of the vehicle (see section 13.9).
- ▶ Add-on parts can be exposed to adverse conditions (storms, ice, vibrations, etc.) and require close monitoring despite careful design and manufacturing. Therefore, check the tight fit of the add-on parts at certain intervals and before long journeys.


Before commencing the journey, work through the checklist:

	No.	Checks	Checked
Service partners	1	Service and sales partners noted (see section 12.1)	
Base vehicle	2	All vehicle documents are on board	
	3	Tyres in proper condition and tyre pressure correct	
	4	Vehicle lighting, brake lights and reversing lights function	
	5	Oil levels for engine, gearbox and power steering controlled	
	6	Coolant and fluid for windscreen washers filled up	
	7	Brakes function	
	8	Brakes react evenly	
	9	When braking, the vehicle remains in the lane	
	Housing body, outside	10	Awning completely retracted
11		Roof free of snow and ice (in winter)	
12		External connections and lines disconnected and stored away	
13		External supports removed	
14		Fitted steady legs retracted and fixed in place	
15		Wheel chocks removed and stored away	
16		Entrance step retracted (observe warning tone)	
17		External flaps closed and locked	
18		Rear living area door locked	
19		Overall height of the vehicle including roof rack when loaded measured and noted. Keep the height information close at hand in the driver's cabin	


Housing body, inside

No.	Checks	Checked
20	Windows and skylights closed and locked	
21	Television secured	
22	Loose parts stored away or fixed in position	
23	Open storage spaces empty	
24	Loose sink cover (if present) stored securely	
25	Refrigerator door secured	
26	Refrigerator set to 12 V operation	
27	All drawers and flaps closed	
28	Living area doors and sliding doors secured	
29	Children's seats only mounted on the seats approved for this purpose	
30	Swivel seat locking device for driver's seat and front passenger's seat locked	
31	Shades in the driver's cabin opened and secured	
32	Satellite unit switched off	

Gas system

33	Gas bottles firmly fixed in the gas bottle compartment so that they are unable to turn	
34	If the gas bottles are not connected to the gas tube, always place the protective cap on top	
35	Regulator tap on the gas bottle and gas isolator taps are closed  ▷ If there is a DuoControl regulating system with crash sensor installed, the gas isolator taps and the main regulator tap may remain open during the journey.	

Electrical system

36	Check the battery voltage of the starter and living area battery (see chapter 8). If the panel indicates that the battery voltage is too low, the respective battery will need to be recharged. Observe the notes and instructions in chapter 8  ▷ Commence journey with fully charged starter and living area batteries.	
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Chapter overview

This chapter contains instructions on how to drive the motorhome.

4.1 Driving



- ▶ The base vehicle is a commercial vehicle (small truck). Adjust your driving technique accordingly.
- ▶ Before commencing the journey and after short interruptions of the journey, ensure that the entrance step is completely retracted.
- ▶ When you start the engine, warning signals such as "entrance step extended" can sound. Under certain conditions (a cold start in winter) after the engine is started it can take up to 15 seconds for these warning signals to sound.
- ▶ A seat belt is fitted for each seat which is permitted for travel. Please keep your seat belt fastened during the journey.
- ▶ Never open your seat belts when travelling.
- ▶ Passengers must remain in the seats provided.
- ▶ The doors must remain locked.
- ▶ Avoid braking with a jerk.
- ▶ If a navigation system is used, only change the destination when the vehicle is stationary. Drive to a car park or stop in a safe area when changing the destination.
- ▶ Do not play DVDs using the monitor of the navigation system during the journey.



- ▷ Drive slowly on poor roads.
- ▷ Take extreme care when driving onto ferries, crossing uneven roads and driving in reverse. Because of the relatively large overhang, larger vehicles might swing out and "touch ground" in unfavourable conditions. This can cause damage to the underbody or to parts fitted there, e.g. a motorcycle rack.



- ▷ If an accident occurs as a result of these instructions not being observed, the manufacturer will not be responsible for damages caused.
- ▷ The safety measures stipulated in chapter 2 have to be observed.

4.2 Breakdown assistance in the event of vehicle-related technical problems



- ▶ In case of emergency call the national emergency number or use the Mercedes-Benz emergency call system (SOS button, refer to base vehicle instruction manual).

For breakdown assistance and any questions on the base vehicle, the Mercedes-Benz customer centre is at your disposal. The call to the Mercedes-Benz customer centre is set up via the "me connect" communication module in the vehicle.

Position The button for the call for breakdown assistance is installed in the roof operating unit.



- ▷ Only use the button for the call for breakdown assistance in the event of technical problems with the base vehicle. Any questions on the superstructure of the vehicle cannot be answered.

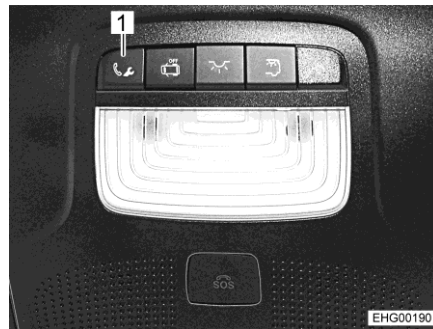


Fig. 13 Button for the call for breakdown assistance

- Calling:**
- Press the button (Fig. 13,1) for the call for breakdown assistance. A call to the Mercedes-Benz customer centre is initiated.

On the multifunction display appears a message indicating that the call is being initiated. The audio output is muted. The vehicle data are transmitted; this might take a few seconds. After that, a staff member of the Mercedes-Benz customer centre will contact you.



- ▷ In some countries, a voice message prompts you to confirm the transmission of the vehicle data. After confirming, the vehicle data are transmitted.

- Disconnecting the call:**
- Press phone button on the multifunction steering wheel.

4.3 Driving speed



- ▶ The vehicle is equipped with a powerful engine. This means there are sufficient reserves in difficult traffic situations. This high power enables a high maximum speed and requires above-average driving ability.
- ▶ The vehicle provides a large contact surface for wind. A sudden cross-wind can be especially dangerous.
- ▶ Uneven or one-sided loading affects road performance.
- ▶ Driving on unknown streets, you may encounter hazardous road conditions and unexpected driving situations. Therefore, in the interest of safety, make sure your driving speed is appropriate to any given driving situation and environment.
- ▶ Adhere to the national legal speed limits.

4.4 Brakes



- ▶ Have defects on the braking system immediately remedied by an authorised specialist workshop.

Before each journey

Before each journey, check by means of a braking test:

- Do the brakes function?
- Do the brakes react evenly?
- Does the vehicle remain in the lane when braking?

4.5 Additional main beam (Special model Crossover)

With the special equipment "Additional LED main beam" an additional pair of headlights or an additional headlight bar for an additional LED main beam will have been installed on the driver's cabin roof.



- ▶ The additional LED main beam strongly dazzles oncoming traffic. Dip the headlights in case of oncoming traffic. Take into account that the additional main beam has a longer range than the principal main beam.
- ▶ Do not use the Mercedes light assistant to dip the lights. Even when the function "AUTO" has been set, dip the lights manually (switch off the principal main beam and the additional LED main beam on the steering column lever).



- ▷ The engine must be running to be able to activate the additional LED main beam.
- ▷ The function "Headlight flashing" is not supported by the additional LED main beam.

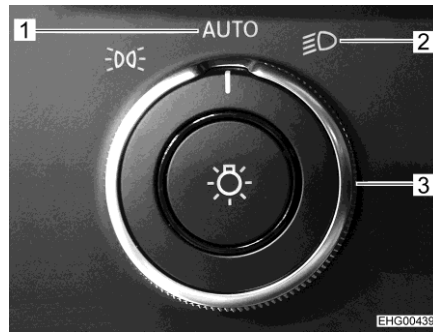


Fig. 14 Rotary light switch

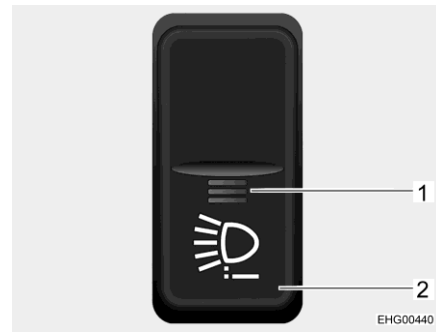


Fig. 15 Rocker switch

Using the additional LED main beam:

- Turn the Mercedes rotary light switch (Fig. 14,3) to the position "AUTO" (Fig. 14,1) or to the position Driving light (Fig. 14,2).
- Press rocker switch (Fig. 15,2). The function indicator (Fig. 15,1) is lit red. The text message "Additional lighting active" appears briefly in the display of the combined instrument.
- Switch the principal main beam on or off at the steering column lever of the vehicle (see instruction manual of the vehicle).

To deactivate the additional LED main beam, either switch off the engine or press the rocker switch (Fig. 15,2) again. The red function indicator (Fig. 15,1) goes out.

4.6 Seat belts

4.6.1 General

The vehicle is equipped with seat belts in the living area on the seats for which seat belts are compulsory by law. National regulations apply to fastening of seat belts.



- ▶ Fasten your seat belts before the beginning of the journey and keep them fastened during the journey.
- ▶ Do not damage or trap belts. Have damaged seat belts changed by an authorised specialist workshop.
- ▶ Do not alter the belt fixing devices, automatic seat belt winders and the seatbelt locks.
- ▶ Only use one seat belt for **one** adult person.
- ▶ Do not belt in objects together with persons.
- ▶ Seat belts are not sufficient for persons who are less than 150 cm tall. In these cases use additional restraining devices. Observe test certificate.
- ▶ Only attach the child restraint system to seats that are specified for this purpose. We strongly recommend to install child restraint systems preferably in the second row of seats.
- ▶ After an accident, replace the seat belts (have it replaced).
- ▶ During the journey, do not tilt the backrest too far backwards. Otherwise the functionality of the seat belt is no longer guaranteed.

4.6.2 Fastening the seat belts correctly



- ▶ Do not twist the belt. The belt must be positioned smoothly against the body.
- ▶ When fastening the seat belt, adopt the correct sitting position.

The seat belt is correctly fastened when the lap belt passes below your stomach and across the hip bone. The shoulder belt must pass across the chest and shoulder (not across your neck). The belt must always be taut against your body. Any bulky or padded clothing should therefore be removed before you start your journey.

4.6.3 Seat belt cover



- ▶ When using the bench during the journey: Do not use the bench without the headrests.

If the headrests have been removed from the back cushion of the bench and the seat belt cover (Fig. 16,1) has been attached (see section 6.8): Remove the seat belt cover and refit the headrests before commencing the journey.

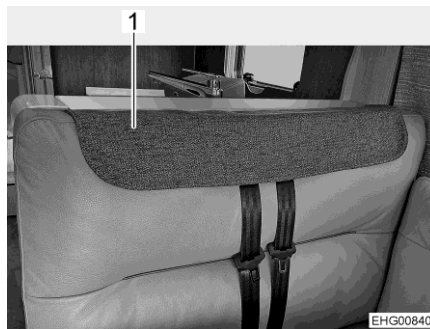


Fig. 16 Seat belt cover attached

4.7 Child restraint systems



- ▶ When travelling, secure children under 13 years of age that are smaller than 150 cm, with a suitable and officially approved child restraint system.
- ▶ Only attach the child restraint system to seats that are specified for this purpose. We strongly recommend to install child restraint systems preferably in the second row of seats.
- ▶ **Never** use rearward-facing child restraints on a seat with **activated front airbag**. This may lead to **death** or to **serious injuries** in children.
- ▶ Fasten the children's seat belts before commencing the journey and ensure that their seat belts are kept fastened during the journey.
- ▶ If a front passenger airbag is fitted in the vehicle, do not use a child restraint system (Reboard systems) that faces the back of the front passenger's seat. Follow warning notices in the vehicle.
- ▶ If it is necessary to let an infant travel in a cradle in the opposite direction to travel on the front passenger's seat, the airbags on the passenger side must be deactivated via the setup menu of the base vehicle. When the airbags are deactivated, an indicator lamp must be lit on the instrument panel (refer to the operating manual of the base vehicle). Before setting off, verify whether the indicator lamp is lit. Push the front passenger's seat backwards as far as it will go such that the child seat does not touch the dashboard.

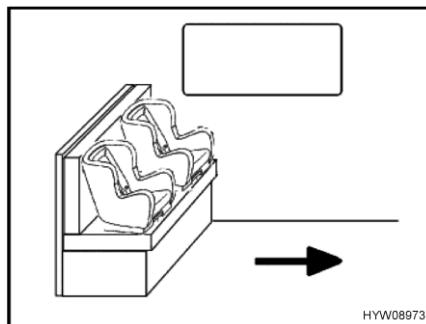


Fig. 17 Child seats on bench

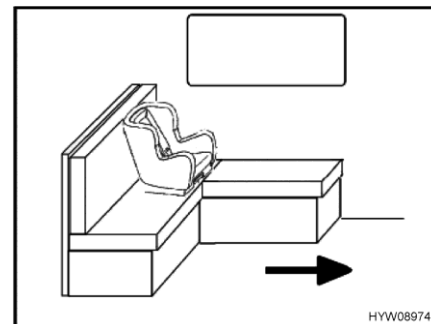


Fig. 18 Child seat on L-shaped bench

The arrow in Fig. 17 and Fig. 18 shows the direction of travel.

Child seats are only allowed on the bench (Fig. 17) if the table has been removed and stowed. A maximum of 2 child seats can be fitted.

Only one child seat is allowed next to the window on the L-shaped bench (Fig. 18). The back cushion on the side wall must be removed when a child seat is fitted. If the table is a fixed table, move the table top towards the centre of the vehicle and lock it.

Child restraint systems are divided into five classes:

Class	Body weight	Approximate age
0	Up to 10 kg	Up to 9 months
0+	Up to 13 kg	Up to 18 months
I	9 kg to 18 kg	9 months to 4 years
II	15 kg to 25 kg	3 years to 7 ½ years
III	22 kg to 36 kg	6 years to 12 years

The following tables show, which child restraint systems can be used on which seats.

Seats	Age groups			
	< 10 kg (0-9 months)	< 13 kg (0-24 months)	9-18 kg (9-48 months)	15-36 kg (4-12 years)
Front passenger's seat, front	X	X	UF	UF
Second row of seats (bench) Fig. 17	U ²⁾	U ²⁾	U	U
Second row of seats (L-shaped bench Fig. 18	U ³⁾	U ³⁾	U	U

Meaning of letters:	
U:	Suitable for universal restraint systems which are authorised for this age group
UF:	Suitable for front facing restraint systems of "universal" category, authorised for the use in this weight category
X:	Seat is not suitable for children in this age group
U ¹⁾ :	Only when front passenger's airbag is deactivated
U ²⁾ :	Only with table removed
U ³⁾ :	Only seat next to the window; back cushion on side wall removed

4.8 Driver's seat and front passenger's seat



- ▶ Before commencing the journey, rotate all swivel seats in the direction of travel and lock in position.
- ▶ The seats must remain fixed in position during the journey and are not to be rotated.



Fig. 19 Seat adjustment

Rotating seat into driving position

The seats can be rotated in any direction.

- Push both armrests upward.
- Push the seat backwards or into the central position.
- Rotate the seat in the direction of travel and lock in position.



- ▷ Rotating the seats in the pitched vehicle is described in chapter 6.

Adjusting seat in lengthways direction

Adjust the driver's seat so that the driver can depress the pedals comfortably.

- Pull the bar (Fig. 19,2) upwards.
- Push the seat forwards or backwards.
- Release the bar. The seat must audibly lock into place.

Setting the seat inclination

Adjust the seat inclination so that the thighs rest on the seat surface without any pressure.

- Pull the respective lever (Fig. 19,3) upwards.
- Bring the seat into the desired inclination position by applying or relieving pressure.
- Release the lever. The seat must audibly lock into place.

Adjusting the backrest

Adjust the angle of the backrest of the driver's seat so that the steering wheel can be held with the arms slightly bent.

- Turn the handle (Fig. 19,4).
- Bring the backrest into the desired inclination position by applying or relieving pressure.
- Release handle. The backrest must audibly lock into place.

Adjusting the armrest The height of the armrests can be continuously adjusted.

- For more convenient handling, first move the armrest slightly upward.
- Turn the knurled wheel (Fig. 19,1) for fine adjustments. The armrest inclines upwards or downwards, depending on the rotation direction.
- Swivel the armrest downwards and check the position.

4.9 Headrests



▷ The headrests are not adjustable for all models.



Fig. 20 Headrest (bench)

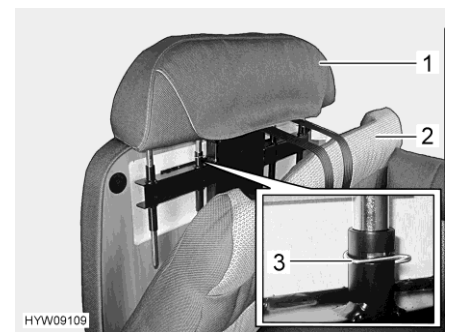


Fig. 21 Adjusting the headrest

Before commencing the journey, adjust the headrest (Fig. 20) so that the back of the head is supported at approximately ear height.

Inserting the headrest:

- Remove the cover on the bench.
- Insert the bars of the headrest into the holders.
- Push the headrest downward until it engages the first time.
- Remove the safety clamp (Fig. 21,3) and push the headrest further to the desired position.
- Fit the safety clamp.

Adjusting the headrest:

- Fold the cushion (Fig. 21,2) forwards.
- Remove the safety clamp (Fig. 21,3).
- Pull the headrest (Fig. 21,1) upward or push it downward until it reaches the desired locking position.
- Fit the safety clamp.
- Fold back the cushion.

4.10 Seating arrangement



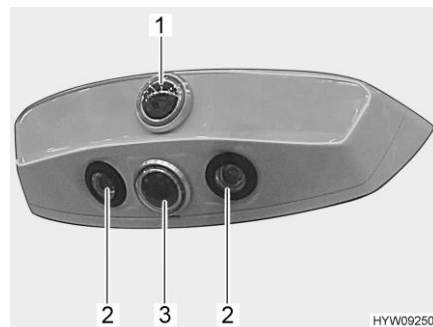
- ▶ During the journey, persons are only to sit on the permitted seats. The authorised number of seats is stipulated in the vehicle documents.
- ▶ During the journey sitting on the divans is not permitted.
- ▶ Seat belts must be worn by all passengers.

Seats which may be used during travel are equipped with a seat belt.

4.11 Rear view camera / waste water tank camera

Depending on the equipment, the vehicle will be equipped with several cameras. Depending on the equipment, the image of the cameras is fed into the multimedia/navigation system and displayed on the existing display or on an external screen.

A camera module is installed in the upper part of the vehicle's rear.



- 1 Rear view mirror camera
- 2 Rear area lighting (LEDs)
- 3 Reversing camera

Fig. 22 Camera module (example)

You can toggle between the following operating modes on the camera module:

- Reversing mode / monitoring mode: The reversing camera (Fig. 22,3) shoots the immediate area behind the vehicle. The immediate area is shown on the display. No camera image is displayed while travelling forward.
- Driving mode: The rear view mirror camera (Fig. 22,1) shoots the long-distance area behind the vehicle. The long-distance area is shown on the display ("3rd rear view mirror").

When going into reverse, the camera module automatically switches to reversing mode.

LEDs (Fig. 22,2) are integrated in the camera module. After dark, these LEDs can illuminate the area behind the vehicle (when using the camera and also independently of the camera).

A further camera (waste water tank camera) underneath the vehicle monitors the area of the waste water tank outlet. This makes easier to manoeuvre at a disposal station.

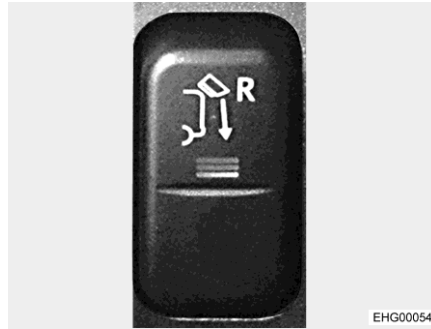


Fig. 23 Rocker switch (camera module/waste water tank camera)



Fig. 24 Display of the waste water tank camera (example)

Switching on reversing camera:

- Press the upper part of the rocker switch (Fig. 23). When reversing, the display will show the immediate area behind the vehicle.

Switching on rear view mirror camera:

- Switch rocker switch (Fig. 23) to the central position. When driving forward, the display will show the long-distance area behind the vehicle. When reversing, the immediate area behind the vehicle will be displayed automatically.

Switching on waste water tank camera:

- Press the lower part of the rocker switch (Fig. 23). The display shows the area of the waste water tank outlet (Fig. 24) underneath the vehicle.

4.12 Roman shades for driver's window and front passenger's window



- ▶ During the journey, the Roman shades for the driver's window and front passenger's window must be open, in a fixed position and secured.

Securing:

- Carefully push back the Roman shades for the side panes.
- Secure Roman shades.

4.13 Refuelling



- ▶ When refuelling, all gas/diesel-operated devices must be switched off. Danger of explosion!



- ▷ The fuel filler neck is part of the base vehicle.
- ▷ The fuel filler neck is labelled with the word "Diesel".

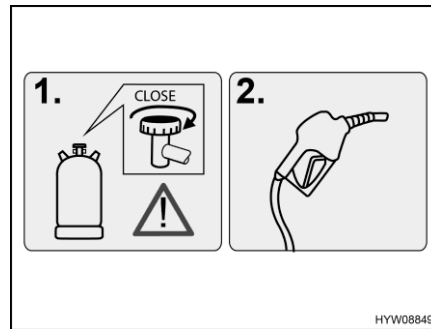


Fig. 25 Warning notice (fuel filler neck)

Refer to the instruction manual for the base vehicle for the position of the fuel filler neck.

4.14 Ad-Blue®



- ▷ Refer to the instruction manual of the base vehicle for any information and instructions regarding Ad-Blue®.

4.15 Towing



- ▶ To prevent any damages on the vehicle due to inadequate towing, observe the instructions in the operating manual of the base vehicle before towing.
- ▶ If the ignition key cannot be turned in the ignition lock, do not tow the vehicle. The steering will be locked.
- ▶ If, in the case of a vehicle with front-wheel drive and automatic transmission, the engine is not running: carefully push the vehicle a stretch of maximum of 15 meters. In the event of a breakdown, only transport these vehicles on a trailer or a transportation vehicle.



- ▷ If the engine is not running or the power supply is disrupted, the servo assistance for the steering and brakes will not be operational. A considerable amount of force will be required for steering and braking.

The vehicle manufacturer recommends to transport the vehicle on a transportation vehicle or a trailer. If the vehicle has to be towed, use a towing bar. The towing bar must be approved for the weight of the vehicle.



- ▷ National regulations apply to towing.

Chapter overview

This chapter contains instructions on how to pitch the vehicle at the campsite.

5.1 Handbrake

Firmly apply the handbrake when parking the vehicle.

5.2 Entrance step

In order to exit the vehicle, first fully extend the entrance step. If the entrance step is extended while the engine is still running, a warning tone will sound.

5.3 Ramps



- ▷ Ramps are not included in the scope of delivery. Different models are available at the accessories shop.

To enable the vehicle to be parked on the level, ramps can be used for height compensation when the vehicle is parked on a hill or on uneven ground.

5.4 Wheel chock

When parking the vehicle on slopes or inclines use a wheel chock.

If the technically permissible maximum laden mass of the vehicle exceeds 4 tonnes, a wheel chock must be used when parking on gradients. The wheel chock is provided as standard for vehicles with a technically permissible maximum laden mass exceeding 4 tonnes.

5.5 Rear area lighting

Depending on the equipment and model, the vehicle is equipped with rear area lighting.



Fig. 26 Rocker switch (rear area lighting)

Switching on rear area lighting:



- Press the lower part of the rocker switch (Fig. 26). The rear area lighting is switched on.
- ▷ It is only possible to switch on the rear area lighting when the vehicle engine is shut off. If the rear area lighting is switched on and you start the vehicle engine, the LEDs will go out. When shutting the vehicle engine off, the rear area lighting will switch on again (if the lower part of the rear area lighting rocker switch is pressed).

5.6 Supports

5.6.1 General instructions



- ▷ Do not use the fitted supports as a vehicle jack. They supports are only for stabilising the parked vehicle to prevent the rear axle from bottoming out.
- ▷ When pitching the vehicle, ensure that the supports are evenly loaded.
- ▷ Before driving away, wind up the supports as far as they can go, fully retract and secure them.



- ▷ When the ground is soft, place a pad or block under the supports in order to prevent the vehicle from sinking into the ground.
- ▷ Pitch the vehicle so that it is as horizontal as possible. Otherwise, the water from the shower tray will not be able to drain properly.

5.6.2 Steady legs



- ▶ The steady legs must not be used to jack up the vehicle in order to work beneath it, e.g. to change a wheel or carry out maintenance work.
- ▶ Whilst the vehicle is in a jacked up position, persons must not lie down under it.



- ▷ Always apply the handbrake before extending the steady legs.



- ▷ Depending on the model, the hexagonal nut has a joint, which can be used to bring the attached socket spanner into a more convenient position for turning.

In order to ensure their correct function, clean and grease the interior tubes of the steady legs regularly.

The length of the steady legs can be adjusted according to the model.

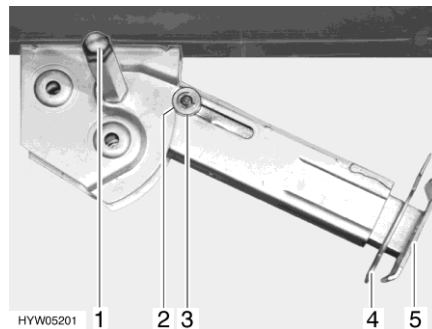


Fig. 27 Steady leg

- Extending:*
- Place the socket spanner on the hexagon nut (Fig. 27,1) and rotate until the steady leg is in a perpendicular downward position.
 - Remove the splint (Fig. 27,4) out of the support foot extension (Fig. 27,5).
 - Extend the support foot extension until it has reached the required length.
 - Insert the splint in the support foot extension.
 - Rotate the hexagonal nut until the steady leg rests completely on the ground and the vehicle is in a horizontal position.
- Retracting:*
- Place the socket spanner on the hexagon nut (Fig. 27,1) and rotate until the steady leg is clear of the ground.
 - Remove the splint (Fig. 27,4) out of the support foot extension (Fig. 27,5).
 - Push in the support foot extension (Fig. 27,5) and insert the splint (Fig. 27,4) in the drilled hole in the support foot extension.
 - Rotate the hexagonal nut (Fig. 27,1) with the socket spanner until the steady leg has swung upwards and the guide disc (Fig. 27,3) has completely retracted into the notch (Fig. 27,2).



- ▷ Before commencing the journey, observe the following: Are all steady legs and support foot extensions retracted completely and secured with the splint?

5.7 230 V connection

The vehicle can be connected to a 230 V power supply (see chapter 8).

5.8 Refrigerator



- ▶ If the refrigerator is set to 12 V operation, it will constantly consume current. Therefore, switch over to gas operation when the vehicle engine is **not** running, and the vehicle is **not** connected to the 230 V power supply.

For units with an automatic power selection, the 12 V operation of the refrigerator only functions in the automatic mode when the vehicle engine is running. When the vehicle engine is switched off, the automatic energy selection switches the refrigerator to 230 V operation or gas operation.

5.9 Awning



- ▷ When the support legs are not positioned, extend the awning a maximum of 1 m.
- ▷ Retract the awning in strong wind, rain or snow.
- ▷ In the case of light rain, shorten one of the support legs so that water can run off.
- ▷ In case of light wind or rain, anchor the awning with ropes on both sides.
- ▷ Only retract the awning when the fabric is dry. When the awning must be retracted while the fabric is still wet: Extend the awning as soon as possible, in order to dry out the fabric.
- ▷ Before retracting, remove leaves and coarse dirt from the awning.

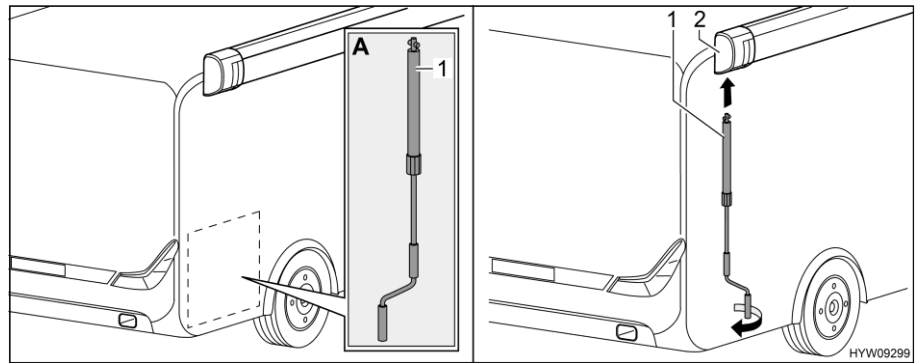


Fig. 28 Installing crank

Extending the awning:

- Take crank (Fig. 28,1) out of the rear garage (Fig. 28,A).
- Insert crank into bayonet socket (Fig. 28,2) of the awning.
- Turn the crank in an anticlockwise direction until the awning is extended to a maximum of 1 m.

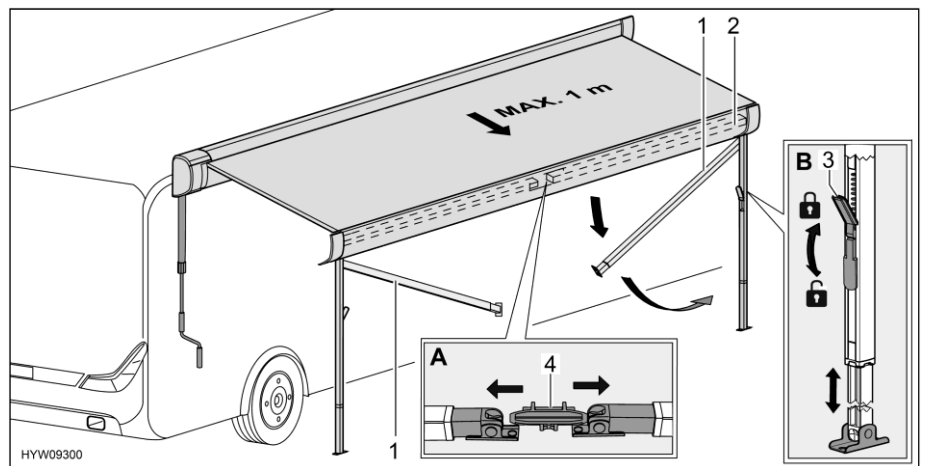


Fig. 29 Preparing support legs

- Release support legs (Fig. 29,1) from holder (Fig. 29,4) in the front bar (Fig. 29,2). In order to do this, apply slight outward pressure on the support legs (Fig. 29,A).
- Fold out the support legs.
- Release the locks (Fig. 29,3) of the support legs. In order to do this, fold the catch lever downwards.
- Pull lower part of the support legs out to the desired length (Fig. 29,B).
- Position the support legs.
- Close the locks (Fig. 29,3) of the support legs. In order to do this, fold the catch lever upwards.

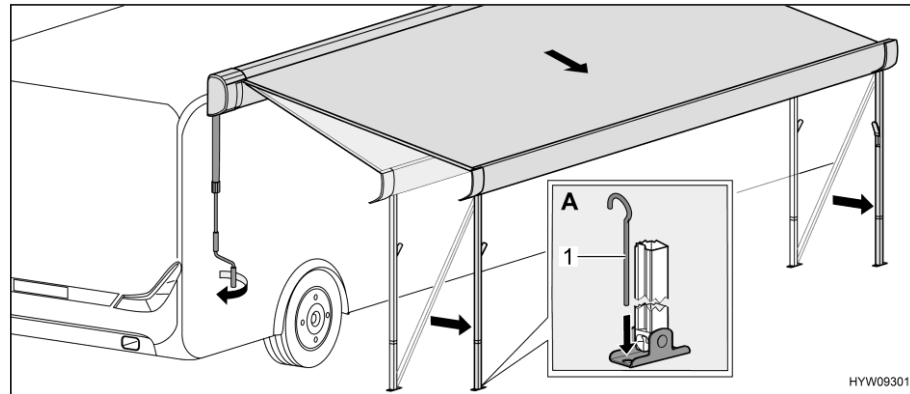


Fig. 30 Bringing awning into end position

- Use the crank to completely extend the awning. While doing so, reposition the support legs several times.
- Set the support legs to their final height.
- Pull crank out and store it in the rear garage.
- Fix the support legs to the floor with tent pegs (Fig. 30,1) (Fig. 30,A).

Retracting the awning:

- If present, remove guy ropes and tent pegs.
- Insert the crank in the bayonet socket of the awning and turn in a clockwise direction until the awning has been retracted up to approx. 1 m.
- If necessary, clean the support legs.
- Open the lock on the support legs. In order to do this, fold the catch lever downwards.
- Push the lower part of the support legs in completely.
- Fold both support legs upward into the front bar and let them click into position. In order to do this, apply slight outward pressure on the support legs.
- Continue turning the crank until the awning has been retracted completely.
- Remove the crank from the bayonet socket and store it.

Chapter overview

This chapter contains instructions about living in the vehicle.

6.1 Doors



- ▶ Only drive with locked doors.



- ▷ Locking the doors can prevent them from opening of their own accord, e.g. during an accident.
- ▷ Locked doors also prevent forced entry, e.g. when waiting at traffic lights. However, in an emergency, locked doors make it more difficult for helpers to enter the vehicle.
- ▷ When leaving the vehicle, always lock the doors.

6.1.1 Living area door, outside

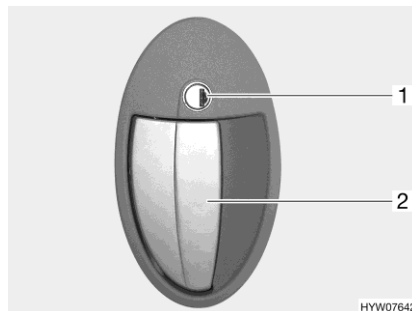


Fig. 31 Door lock (living area door, outside)

- Opening:*
- Insert the key in the locking cylinder (Fig. 31,1) and turn it in a clockwise direction until the door lock is unlatched.
 - Return the key to the central position and remove it.
 - Pull on the door handle (Fig. 31,2). The door is open.
- Locking:*
- Insert the key in the locking cylinder (Fig. 31,1) and turn it in an anti-clockwise direction until the door lock is engaged.
 - Return the key to the central position and remove it.

6.1.2 Living area door, inside

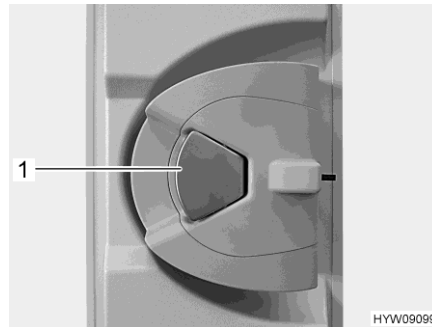


Fig. 32 Door lock (living area door, inside)

- Opening:**
- When the door lock is locked: Pull once at the door handle (Fig. 32,1). The door is unlocked.
 - Pull on the door handle (Fig. 32,1). The door is open.
- Locking:**
- Push the door handle (Fig. 32,1).

6.1.3 Driver's door, living area door, outside

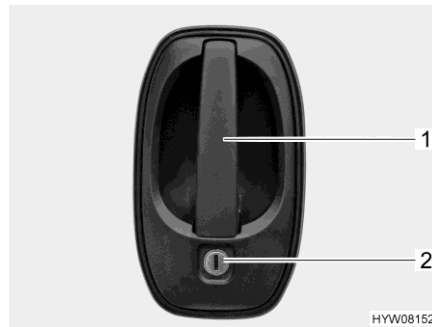


Fig. 33 Door lock (driver's door/ living area door, outside)

- Opening:**
- Insert the key into locking cylinder (Fig. 33,2) and turn until the door lock is unlatched.
 - Return the key to the central position and remove it.
 - Pull on the door handle (Fig. 33,1). The door is open.
- Locking:**
- Insert the key into locking cylinder (Fig. 33,2) and turn until the door lock is engaged.
 - Return the key to the central position and remove it.

6.1.4 Driver's door, living area door, inside

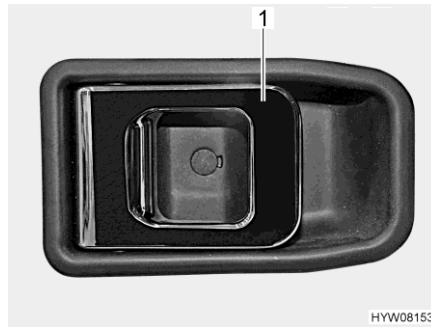


Fig. 34 Door lock (driver's door/ living area door, inside)

- Opening:** ■ Pull on the handle (Fig. 34,1). The door lock is unlatched or opened.
- Locking:** ■ Push the handle (Fig. 34,1). The door lock is locked.

6.1.5 Insect screen on the living area door, extendable



- ▷ Open the insect screen completely before closing the living area door.
- ▷ Hold holding bar with both hands when closing or opening. This reduces the risk of the insect screen getting stuck in the guides (Fig. 36,1).
- ▷ Do not push into the mesh area when opening or closing the insect screen.
- ▷ Keep dogs and cats away from the insect screen.
- ▷ Before leaving the vehicle, always return the insect screen completely into the door holder.



- ▷ The body manufacturer excludes any guarantee if the damage of the mesh seems to have been caused through third parties or own fault.

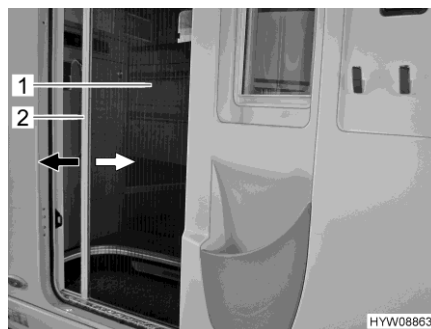


Fig. 35 Insect screen (living area door)

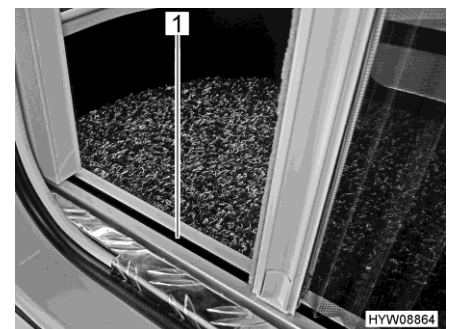


Fig. 36 Insect screen (bottom guide)

- Closing:** ■ Hold holding bar (Fig. 35,2) with both hands and pull the insect screen (Fig. 35,1) evenly out of the door holder.
- On the opposite side, push the insect screen as far as it will go.
- Opening:** ■ Hold holding bar (Fig. 35,2) with both hands and push the insect screen (Fig. 35,1) back into the door holder applying slight pressure.

6.2 External flaps



- ▷ Before commencing the journey, close all external flaps and lock them.
- ▷ To open and close the external flap, open or close all locks that are fitted to the external flap.



- ▷ When leaving the vehicle, close all external flaps.

The external flaps fitted to the vehicle are all fitted with identical locking cylinders. Therefore, all locks can be opened with a single key.

6.2.1 Flap lock, elliptical



- ▷ During rain, water can penetrate the opened flap lock. Therefore close the lock handle.

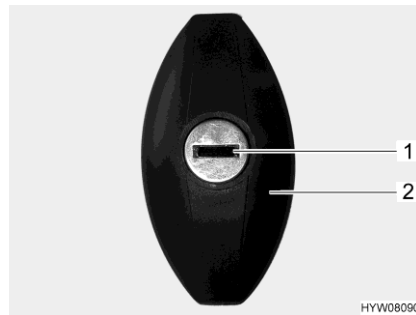


Fig. 37 Flap lock

- Opening:**
- Insert key into locking cylinder (Fig. 37,1) and turn one half turn in an anticlockwise direction. The lock handle (Fig. 37,2) snaps out.
 - Remove the key.
 - Turn lock handle one half turn in an anticlockwise direction. The flap lock is open.
- Closing:**
- Firmly close the external flap.
 - Give the lock handle one half turn in a clockwise direction. The flap lock is now engaged but not locked.
 - Insert key into locking cylinder.
 - Press down lock handle with key inserted and turn key one half turn in a clockwise direction. The lock handle will stay bolted.
 - Remove the key.

6.3 Ventilation



- ▶ The oxygen in the vehicle interior is used up by breathing and the use of gas/diesel-operated appliances. Therefore, the used air must be replaced permanently. For this purpose, forced ventilation options (e.g. skylights with forced ventilation) are fitted to the vehicle. Never cover or block forced ventilations from the inside or outside with objects such as e.g. a winter mat. Keep forced ventilations clear of snow and leaves. There is a danger of suffocation due to increased CO₂ levels.



- ▷ Although sufficient ventilation is provided, in certain weather conditions, condensation can form on metal objects (e.g. screwed connections in the floor)
- ▷ Additional cold spots can occur at thermal "bridges" (e.g. skylight edges, sockets, filler necks, flaps, etc.).

Condensation

Ensure that there is a continuous exchange of air by providing frequent and efficient ventilation. This is the only method for ensuring that condensation and resulting mould is not formed during cool weather. During the colder season, a pleasant living climate is created if heating output, air distribution and ventilation are synchronised. To avoid draft close the air outlet nozzles on the dashboard and set the air distribution of the base vehicle to air circulation.

If the vehicle is laid up for a longer period, occasionally ventilate it well, especially in summer as heat accumulation can occur. Do not only air the interior, but also the storage spaces which are accessible from the outside. Air the parking place as well if the vehicle is parked in a closed space (e.g. garage). The occurrence of condensation could lead to the formation of mould.

6.4 Windows



- ▷ The windows are fitted with a blind or Roman shade and with an insect screen or folding insect screen. After the latch has been released, the blind and insect screen automatically spring back to the initial position by tensile force. In order not to damage the tension mechanics, hold onto the blind or insect screen and allow it to slowly return to the initial position. The Roman shade and folding insect screen are made of thin woven fabric. In order not to damage the Roman shade or the insect screen, grasp the respective handle and carefully return it to the initial position.
- ▷ Do not keep blinds closed over a longer period of time as that can cause increased material wear.
- ▷ Grab the bottom rod of the blind by the centre when opening and closing. If the bottom bar is not grabbed by the centre, the blind may jam and be damaged.
- ▷ If the blind or the Roman shade is completely closed, exposure to direct sunlight can cause heat to accumulate between the blind/the Roman shade and the window. The window could be damaged. For that reason, close the blind/Roman shade only 2/3 of the way in direct sunlight. Also move the window into the "continuous ventilation" position.



- ▷ Before commencing the journey, close the windows.
- ▷ Depending on the weather, close the windows far enough to prevent moisture from entering.



- ▷ When leaving the vehicle, always close the windows.
- ▷ In extreme weather conditions or if the temperature fluctuates strongly, a light condensation film can form on the double-glazed acrylic glass. The glass is designed in such a way that condensation can evaporate when the external temperature increases. There is no danger of the double-glazed acrylic glass being damaged by condensation.
- ▷ The upholstery will fade over time, if it is exposed to sunlight. If the temperature within the vehicle rises rapidly as well, the colour will change at an accelerated rate.
Therefore, we recommend to close the shades on the windows when there is strong sunlight. Ensure that heat does not build up when you close the blind.

6.4.1 Hinged window with automatic hinges



- ▷ Open the window completely, to release the lock. If the locking device is not released and the window is closed nevertheless, there is the danger of the window breaking due to the massive counter-pressure.
- ▷ When opening the hinged windows, ensure that there are no torsional forces. Open and close the hinged windows evenly.
- ▷ The catch lever is fitted with a safety knob. When operating the catch lever, always press the safety knob.

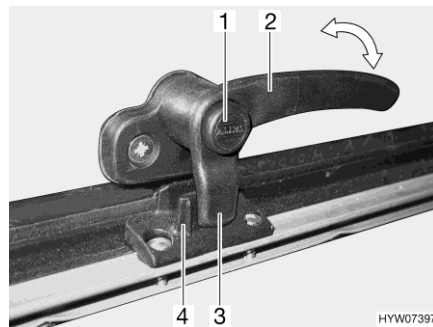


Fig. 38 Catch lever ("closed" position)



Fig. 39 Hinged window with automatic hinge

- Opening:*
- Press the safety knob (Fig. 38,1) and keep it pressed.
 - Turn the catch lever (Fig. 38,2) a quarter turn towards the centre of the window.
 - Open the hinged window to the desired latched position. The automatic hinge (Fig. 39,1) locks in place automatically.

The hinged window remains locked in the required position.

- Closing:*
- Open the hinged window as wide as is necessary to release the lock.
 - Close the hinged window.
 - Press the safety knob (Fig. 38,1) and keep it pressed.
 - Turn the catch lever (Fig. 38,2) a quarter turn towards the window frame. The locking catch (Fig. 38,3) on the catch lever is entirely on the inner side of the window catch (Fig. 38,4).

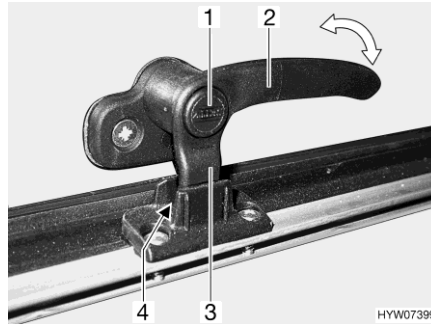


Fig. 40 Catch lever ("continuous ventilation" position)

Continuous ventilation

With the catch lever, the hinged window can be placed in two positions:

- "Continuous ventilation" (Fig. 40)
- "Firmly closed" (Fig. 38)

To place the hinged window into the "continuous ventilation" position:

- Press the safety knob (Fig. 40,1) and keep it pressed.
- Turn the catch lever (Fig. 40,3) a quarter turn towards the centre of the window.
- Lightly open the hinged window outwards.
- Return the catch lever to its initial position. Move the locking catch (Fig. 40,3) on the catch lever into the recess of the window catch (Fig. 40,4).
- Release the safety knob (Fig. 40,1).
- Make certain that the safety knob is not pushed in but rather that it secures the catch lever.

During the journey, the hinged window may not be in "continuous ventilation" position.

If it rains, the "continuous ventilation" hinged window position could lead to splashing water penetrating the living area. Therefore, close the hinged windows completely.

6.4.2 Hinged roof window with rotary window supports



- ▷ When opening the hinged roof window, ensure that there are no torsional forces. Open and close the hinged roof window evenly.

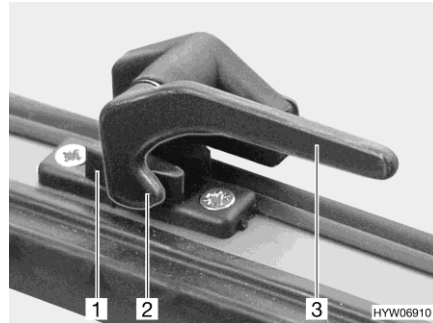


Fig. 41 Catch lever ("closed" position)



Fig. 42 Window support (hinged roof window)

- Opening:**
- Turn all catch levers (Fig. 41,3) a quarter turn towards the centre of the window.
 - Open the hinged roof window to the desired position and use knurled knob (Fig. 42,1) to lock it in position.

The hinged roof window remains locked in the desired position.

- Closing:**
- Turn knurled knob (Fig. 42,1) until the latch is released.
 - Close the hinged roof window.
 - Turn all catch levers (Fig. 41,3) a quarter turn towards the window frame. The locking catch (Fig. 41,2) is located on the inside of the window catch (Fig. 41,1).

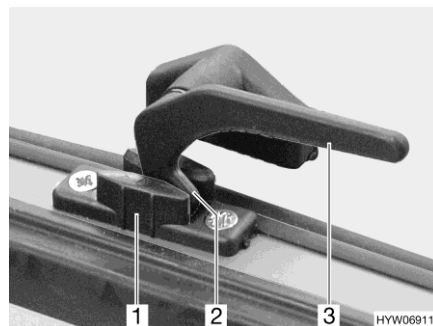


Fig. 43 Catch lever ("continuous ventilation" position)

Continuous ventilation

The hinged roof window can be brought to 2 different positions using the catch levers:

- "Continuous ventilation" (Fig. 43)
- "Firmly closed" (Fig. 41)

To bring the hinged roof window to the "continuous ventilation" position:

- Turn all catch levers (Fig. 43,3) a quarter turn towards the centre of the window.
- Press the hinged roof window slightly outwards.
- Return all catch levers to their initial position. The locking catch (Fig. 43,2) has to be moved into the recess of the window catch (Fig. 43,1).

During the journey, the hinged roof window may not be in the "continuous ventilation" position.

In the event of rain, splashing water can ingress into the living area if the hinged roof window is in the "continuous ventilation" position. Therefore, close the hinged roof window completely.

6.4.3 Roman shade and insect screen

The windows are fitted with a Roman shade and an insect screen. Roman shade and insect screen are fixed to each other.

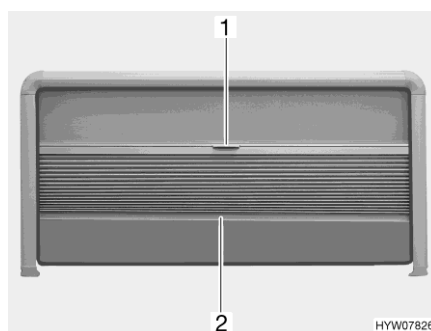


Fig. 44 Roman shade and insect screen (hinged window)

Roman shade The Roman shade is located in the upper window frame.

Closing: ■ Hold the Roman shade in the centre of the bottom rod (Fig. 44,2) and carefully draw it downwards.

Opening: ■ Hold the bottom rod (Fig. 44,2) of the Roman shade in the centre and carefully slide the Roman shade upwards.

Insect screen The insect screen is located in the upper window frame.

Closing: ■ Pull insect screen at the handle (Fig. 44,1) downwards.
 ■ Move the insect screen continuously.

If the insect screen is not drawn fully to the bottom, the Roman shade can be stretched up to the end of the side window frame.

Opening: ■ Move insect screen at the handle (Fig. 44,1) fully upwards.

6.4.4 Roman shade for windscreen, driver's window and front passenger's window



Fig. 45 Locking handle (front passenger's window)



Fig. 46 Roman shade (front passenger's window)

- Closing:**
- Press locking handle (Fig. 45) together and keep it pressed.
 - Pull Roman shade carefully to the opposite side until the magnetic catch holds the Roman shade (Fig. 46) in closed position.
- Opening:**
- Press locking handle (Fig. 45) together and keep it pressed.
 - Using the locking handle, carefully push back the Roman shade.
 - Release the locking handle. The lock must engage.

6.5 Skylights

Depending on the model, skylights with or without forced ventilation are fitted to the vehicle. If a skylight is fitted without forced ventilation, the forced ventilation is performed using mushroom-shaped vents.



- ▶ The apertures for forced ventilation must always be kept open. Never cover or block forced ventilations with objects such as e.g. a winter mat. Keep forced ventilations clear of snow and leaves.



- ▷ The skylights are fitted with a blind or Roman shade and an insect screen. After the latch has been released, the blind and insect screen automatically spring back to the initial position by tensile force. In order not to damage the tension mechanics, hold onto the blind or insect screen and allow it to slowly return to the initial position.
- ▷ Do not keep blinds closed over a longer period of time as that can cause increased material wear.
- ▷ If the blind or the Roman shade is completely closed, exposure to direct sunlight can cause heat to accumulate between the blind/the Roman shade and the skylight. The skylight could be damaged. For that reason, close the blind/Roman shade only 2/3 of the way in direct sunlight. Open the skylight slightly or move it to ventilation position.
- ▷ Depending on the weather, close the skylights far enough to prevent moisture from entering.
- ▷ Do not climb on the skylights.



- ▷ Before commencing the journey, close the skylights.
- ▷ Before commencing the journey, check that the skylights are closed and locked.



- ▷ When leaving the vehicle, always close the skylights.
- ▷ The upholstery will fade over time, if it is exposed to sunlight. If the temperature within the vehicle rises rapidly as well, the colour will change at an accelerated rate.
Therefore, we recommend closing the shades on the skylights of the parked vehicle by 2/3 when there is strong sunlight.

6.5.1 Skylight with crank handle (KLAKU)



- ▶ Observe the safety instructions and information in the separate instruction manual of the manufacturer.

The skylight is equipped with a pleated blind (as shade) and with an insect screen. With the integrated crank, the skylight can be opened on one side for ventilation.



Fig. 47 Skylight (closed)

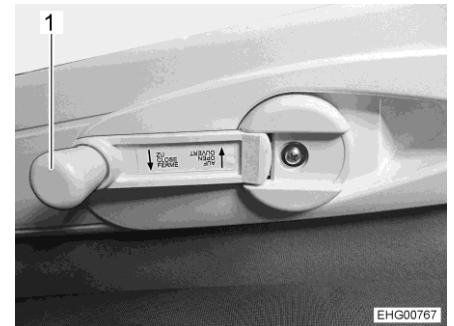


Fig. 48 Crank

Opening the skylight:

- Unfold the crank (Fig. 48,1) and turn it in a clockwise direction until the skylight has reached the desired position.
- Fold in the crank.



- ▷ Only turn the crank until you feel a slight resistance. At that point, you will have reached the maximum opening angle of the skylight.

Closing the skylight:

- Unfold the crank (Fig. 48,1) and turn it in an anticlockwise direction until the skylight is closed.
- Fold in the crank.



Fig. 49 Skylight (pleated blind closed)

Closing/opening the shade:

- Reach into the recessed grip of the pleated blind and pull the pleated blind to the desired position.

Closing/opening the insect screen:

- Reach into the recessed grip of the insect screen and pull the insect screen to the desired position.



- ▷ The pleated blind and the insect screen can be infinitely adjusted independently of each other.

6.5.2 Hinged skylight

The hinged skylight may be opened on one side only. Three inclination angles and a ventilation position are available.

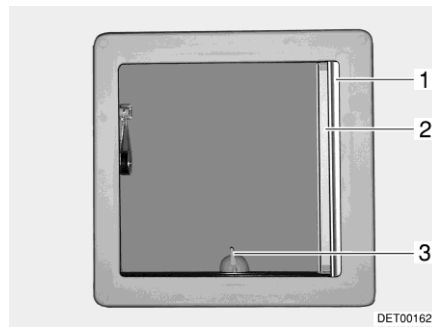


Fig. 50 Hinged skylight

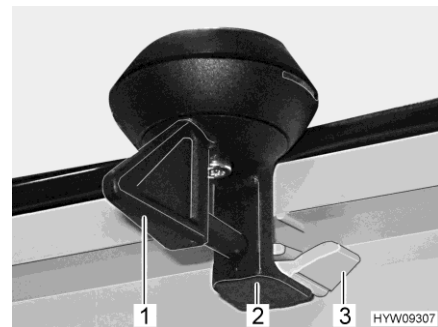


Fig. 51 Lock (hinged skylight)

Opening:

- Turn the lever (Fig. 50,3 or Fig. 51,1) one quarter turn.
- Grip lever and push hinged skylight upwards.

Closing:

- Grip lever and pull hinged skylight downwards.
- Turn the lever one quarter turn. The lock (Fig. 51,2) must slide into the bottom catch (Fig. 51,3).

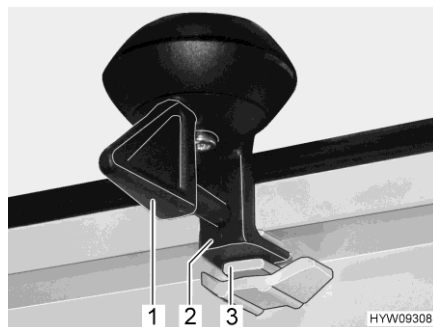


Fig. 52 Lock (ventilation position)

Locking in the ventilation position:

- Grip lever and pull hinged skylight downwards.
- Turn the lever (Fig. 52,1) one quarter turn. The lock (Fig. 52,2) must slide into the top recess (Fig. 52,3).



- ▷ If it rains and the hinged skylight is in ventilation position, that could lead to water penetrating the living area. Therefore close hinged skylight completely.

Roman shade

The Roman shade may be closed at any position, either with the hinged skylight open or closed.

Closing:

- Pull out Roman shade (Fig. 50,1) and release in the required position. The Roman shade will stay in that position.

Opening:

- Slowly push Roman shade at the handle to its initial position.

Insect screen



- ▷ The insect screen may be damaged if it is closed with the hinged skylight closed. Therefore only close the insect screen when the hinged skylight is open.

Closing:

- Pull insect screen (Fig. 50,2) out until it engages with the latch on the opposite side.

Opening:

- Slightly push up insect screen along the strip. Latch is released.
- Slowly return insect screen into its initial position.

6.5.3 Wind-up skylight

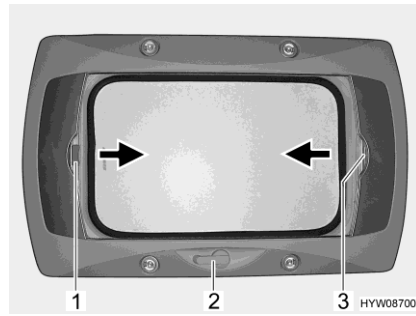


Fig. 53 Wind-up skylight

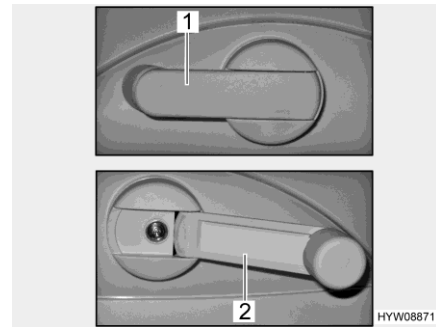


Fig. 54 Hand crank

The wind-up skylight can be opened using the hand crank. The hand crank is folded out (Fig. 54,2) for opening and closing. The hand crank is folded in (Fig. 54,1) when in resting position.

- Opening:**
- Rotate the hand crank (Fig. 53,2) until a resistance can be felt.
- Closing:**
- Rotate the hand crank until the wind-up skylight is closed. The wind-up skylight can be locked after rotating two or three more times.
 - Check the locking mechanism. To do so, press your hand against the acrylic glass.

Roman shade The Roman shade can be closed in any position, as desired. If the Roman shade is locked with the insect screen, the insect screen is also moved along on closing the Roman shade.

- Closing:**
- Pull the handle of the Roman shade (Fig. 53,3) in the direction of the arrow and release it in the desired position. The Roman shade will stay in that position.
- Opening:**
- Slowly push the Roman shade at the handle to its initial position.

Insect screen If the insect screen is locked with the Roman shade, the Roman shade is also moved along on closing the insect screen.

- Closing:**
- Use the handle to pull the insect screen (Fig. 53,1) in the direction of the arrow to the opposite handle of the Roman shade (Fig. 53,3) and allow it to engage.
- Opening:**
- Press the handle of the insect screen (Fig. 53,1) at the back upwards and detach the insect screen from the Roman shade (Fig. 53,3).
 - Use handle to return the insect screen slowly to its initial position.

6.5.4 Skylight with fan (special equipment)



- ▷ To save the battery, after one hour the fan automatically switches from level 6 down to level 1.

The skylight is equipped with an insect screen, blind and an adjustable fan for aerating and venting.

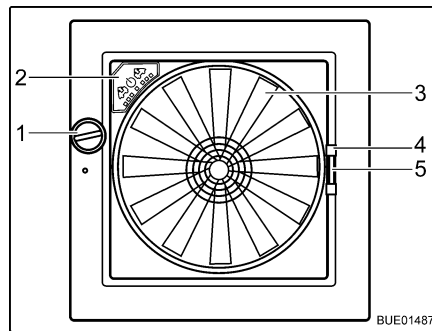


Fig. 55 Omni-Vent skylight

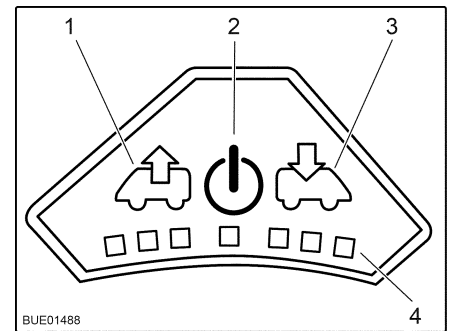


Fig. 56 Control panel for fan

- Opening:* ■ Turn the knob (Fig. 55,1) until the desired opening angle is reached.
- Closing:* ■ Turn the knob (Fig. 55,1) until the skylight is fully closed.

Insect screen To close and open the insect screen:

- Closing:* ■ Using the handle (Fig. 55,4) pull the insect screen across to the other side of the frame.
- Opening:* ■ Press the handle of the insect screen together. The latch is released.
 ■ Use handle to return the insect screen slowly to its initial position.

Shade To close and open the shade:

- Closing:* ■ Press together the handle (Fig. 55,5) of the shade.
 ■ Pull out the shade to the desired position and release. The shade will stay in that position.
- Opening:* ■ Press together the handle of the shade.
 ■ Slowly return the shade to its initial position.

Fan If the skylight is open, the interior can be vented and aerated with the 6-speed fan (Fig. 55,3). The fan is operated via the operating panel (Fig. 55,2).

- Switching on:* ■ Press the On/Off button (Fig. 56,2). The fan runs in comfort mode (venting at slowest fan speed).
- Venting:* ■ To increase the fan speed: Press the Vent button (Fig. 56,1). The fan speed in the venting direction increases by one level. LEDs (Fig. 56,4) show the operating levels.
 ■ To lower the fan speed: Press the Aerate button (Fig. 56,3). The fan speed decreases by one level.

- Aerating:*
- To increase the fan speed: Press the Aerate button (Fig. 56,3). The fan speed in the aerating direction increases by one step. LEDs (Fig. 56,4) show the operating levels.
 - To lower the fan speed: Press the Vent button (Fig. 56,1). The fan speed decreases by one level.
- Boost function:*
- Press and hold the Aerate button for approx. 3 seconds. The fan switches to the maximum aeration level and then, after approximately 5 minutes, automatically switches back to the previously selected level.
 - Press and hold the Vent button for approx. 3 seconds. The fan switches to the maximum venting level and then, after approximately 5 minutes, automatically switches back to the previously selected level.
- Switching off:*
- Press the On/Off button (Fig. 56,2). The fan stops, the LEDs go out.

6.6 Rotating seats



- ▶ Before commencing the journey, rotate all swivel seats in the direction of travel and lock in position. During the journey, the swivel seats must remain locked in place in the direction of travel.



- ▷ The driver's seat and the front passenger's seat are in some cases part of the base vehicle. Rotation of the seats is described in the operating manual of the base vehicle.

The lever for rotating the seat is located at the side of the seat.



Fig. 57 Driver's seat and front passenger's seat

- Rotating:*
- Push both armrests at the driver's/front passenger's seat upward.
 - Push the driver's seat/front passenger's seat backwards or into the central position.
 - Actuate the lever (Fig. 57,1) to turn the seat. The seat is released from the locking device.

The seats can be rotated in any direction.

6.7 Storage spaces



- ▶ Follow the safety instructions (sticker) that indicate when a space may not be used as a storage space (e.g. gas bottle compartment or spaces close to electrical wiring).
- ▶ Observe the technically permissible maximum mass on the axle / axle group and the technically permissible maximum laden mass when loading (see section 3.2.3).
- ▶ Do not transport fluids in the living area that emit gases hazardous to health.
- ▶ Close fluid containers tightly, secure them against sliding and against falling over.
- ▶ Always store heavy objects safely and slip-proof in the foot area. Lighter objects can be also stored safely in higher areas.



- ▷ Do not store wet clothes in cabinets or storage spaces.



- ▷ While storing the load, take into account how accessible the different objects should be, and how often they are used.

In the vehicle, there are the following possibilities for storage:

- Double floor area (interior and exterior access)
- Rear garage
- Storage cases
- Wall-mounted cupboards
- Storage options in the bathroom unit

6.7.1 Service cover in the floor



- ▷ Depending on the equipment, a carpet segment will have to be put aside to gain access to the service covers.

The service covers are accessible from the living area. The arrangement depends on the model.

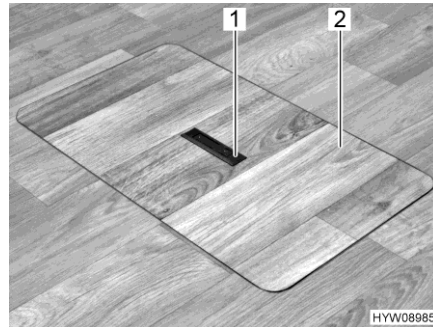


Fig. 58 Service cover (handle recessed)

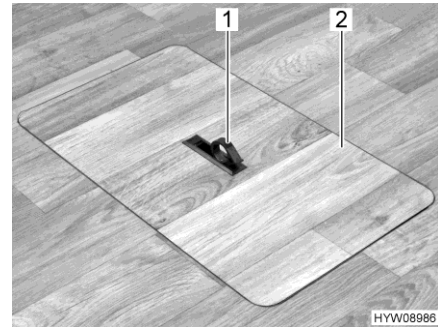


Fig. 59 Service cover (handle swivelled out)

Opening:

- If necessary, lay carpet segment aside.
- Push one side of the grip plate (Fig. 58,1) downwards. The handle (Fig. 59,1) swivels upwards.
- Remove the service cover (Fig. 59,2) upwards.



- ▶ Close the service cover again as soon as possible and recess the handle. Otherwise, there will be danger of tripping due to the open floor storage compartment or the protruding handle.
- ▶ Do not bend the carpet segments.
- ▶ Do not leave the carpet segments laying in the room. Danger of tripping!

Closing:

- Insert the service cover (Fig. 59,2) in the frame in the floor.
- Swivel handle downwards.

6.7.2 Underfloor installation compartment



- ▷ The maximum load of the underfloor installation compartment including the incorporated installation is 90 kg.

6.8 Seat belt cover

When the vehicle has been positioned, the headrests can be removed from the back cushion of the bench to allow for more comfortable seating. The openings for the headrests and the cut-out for the seat belts can then be covered with a seat belt cover (Fig. 60,1).

The seat belt cover can be made of leather (Fig. 61,1) or fabric (Fig. 61,3).

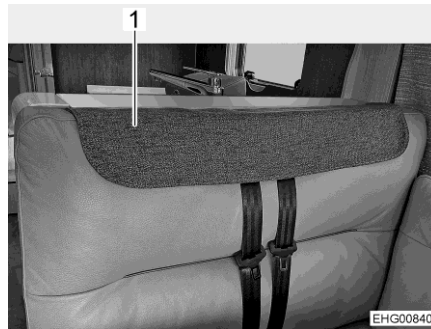


Fig. 60 Seat belt cover attached

- 1 Seat belt cover

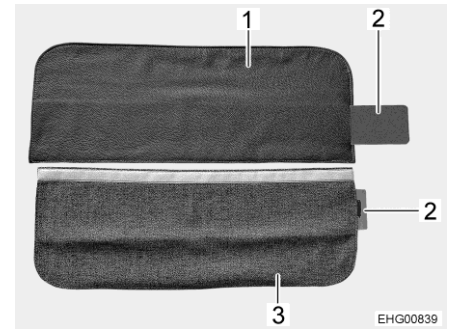


Fig. 61 Seat belt cover

- 1 Seat belt cover (leather version)
- 2 Metal reinforcement plate
- 3 Seat belt cover (fabric version)

Attaching the seat belt cover:

- Remove both headrests.
- Slide the metal reinforcement plate (Fig. 61,2) completely into the pocket of the seat belt cover (Fig. 61,1 or Fig. 61,3).
- Attach the seat belt cover over the cut-out for the seat belts (Fig. 60).

6.9 Tables

6.9.1 Lift-off table with release button



- ▷ Do not place a load onto the lowered table top until the cushions have been laid correctly on the table top (see section 6.12). Otherwise the table could be damaged.

The table top can be moved in both a lengthways and a crossways direction. Using the lifting mechanism, the table can be lowered and used as a bed foundation.

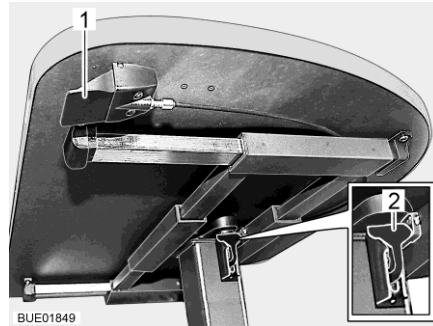


Fig. 62 Lift-off table with release button

Shifting the table top:

- Pull or press down the catch lever (Fig. 62,2).
- Push the table top to the desired position.
- Press the catch lever (Fig. 62,2) upwards.

Adjusting the table height:

- Press the release button (Fig. 62,1) and hold it down. The table top moves automatically upwards to the limit stop.
- Push the table top downwards into the desired position. Press on the centre of the table top.
- Release the release button (Fig. 62,1). The table top remains in the desired position.

Conversion to bed foundation:

- Press the release button (Fig. 62,1) and hold it down.
- Push the table top downwards as far as it will go. Press on the centre of the table top.
- Release the release button (Fig. 62,1). The table top remains in the lowest position.

6.9.2 Table with pillar table leg

The table top can be moved in both a lengthways and a crossways direction, and can also be rotated. It is not possible to convert it into a bed foundation.

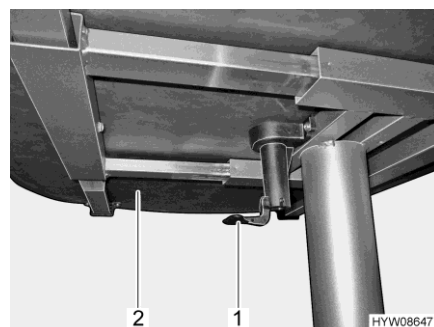


Fig. 63 Lever for moving the table top

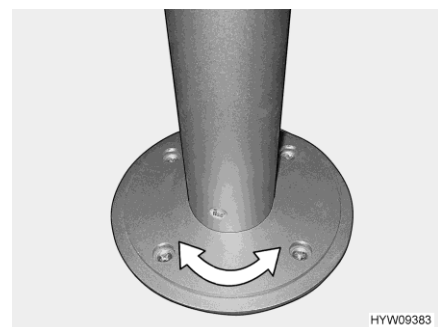


Fig. 64 Pillar table leg (rotatable)

Shifting the table top:

- Pull or press down the lever (Fig. 63,1).
- Move the table top (Fig. 63,2) to the desired position.
- Press the lever back up.

Rotating the table top:

- Rotate table top to the desired position. In order to do this, you need a little effort, because the table top rotates against the friction resistance on the pillar table leg (Fig. 64).

6.9.3 Folding worktop



- ▷ The folding worktop is designed only for minimal loads (e.g. kitchen utensils). Do not use the folding worktop as a repository for heavy objects.
- ▷ Do not place any objects that are fragile or filled with liquids on the table top. If the table top is lifted slightly when accidentally bumping into the table, the table may fold unintentionally.
- ▷ The maximum permitted folding worktop load is 5 kg.

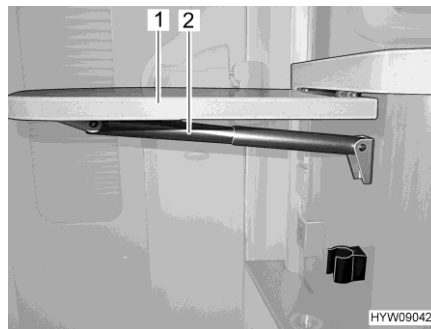


Fig. 65 Folding worktop

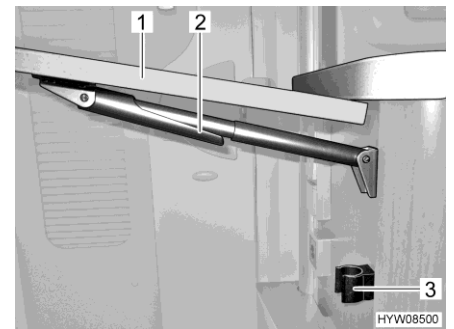


Fig. 66 Folding away the folding worktop

To increase the size of the kitchen work surface, a folding worktop can be folded out at the side of the kitchen counter.

Bringing the folding worktop into the work position:

- Hold the folding worktop (Fig. 65,1) from below and pull gently to release it from the lock position.
- Swing up the table top until the fixture of the telescopic holder (Fig. 65,2) engages. Let go of the worktop.

Bringing the folding worktop into the travel position:

- Hold the folding worktop (Fig. 66,1) at the edges and lift gently. With your other hand, swing down the fixture (Fig. 66,2) on the telescopic holder.
- Fold down the table top until the telescopic holder clicks into position in the holder (Fig. 66,3).

6.9.4 Suspension table with separable support leg



- ▷ The maximum permissible load on the swung-out table-top extension is 3 kg.



Fig. 67 Suspension table with separable support leg

The suspension table size can be enlarged by swinging out a table top extension.

- Extending:*
- Pull the knob (Fig. 67,2) of the lock down and swing out the table top extension (Fig. 67,1).

- Reducing size:*
- Swing the table top extension (Fig. 67,1) under the table top (Fig. 67,6) until the lock latches in place audibly.

The suspension table's separable support leg enables it to be used as a bed foundation.

- Conversion into bed foundation:*
- Lift the front of the table top (Fig. 67,6) by approx. 45°.
 - Pull out the lower part of the support leg (Fig. 67,4) down and lay aside.
 - Remove the table top from the upper retainer.
 - Hook the table top at a 45° angle to the supports into the lower retainer (Fig. 67,3) and place on the floor with the upper part of the support leg (Fig. 67,5).

6.10 TV unit



- ▶ Before commencing the journey, return the flat screen and the screen holder into the initial position and secure them.



- ▷ For version with **HYMER** Smart Multimedia system:
When a television is used in conjunction with the special feature "**HYMER** Smart Multimedia system", the television must have the following data in order to guarantee faultless operation:
 - TV power consumption in stand-by mode < 0.5 W
 - TV power consumption in operation ≥ 15 W (max. 30 W)
 - Headphones output (3.5-mm-jack) on the TV should have a voltage of 1.2 V_{SS} at one third maximum volume

6.10.1 Positioning the flat screen

Flat screen, movable laterally

The flat screen can be shifted sideways on a rail.

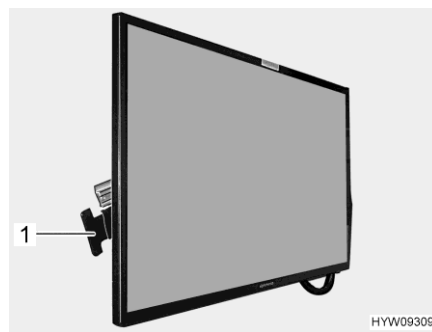


Fig. 68 Flat screen

Moving the flat screen:

- Press handle (Fig. 68,1) towards the flat screen and hold it there. The flat screen is unlocked.
- Push the flat screen to the desired position.
- Release handle. The flat screen is locked.

Flat screen, movable The flat screen can be shifted upwards and downwards or sideways.

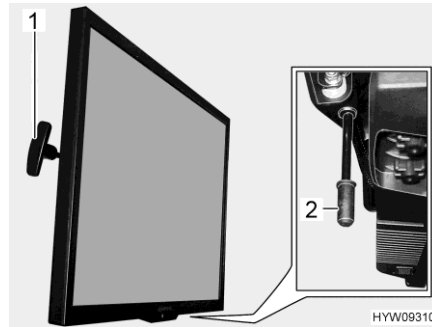


Fig. 69 Flat screen

Adjusting height of flat screen:

- Pull and hold handle (Fig. 69,1). The flat screen is unlocked.
- Push flat screen upward or downward into the desired position.
- Release handle. The flat screen is locked.

Moving the flat screen laterally:

- Pull down the handle (Fig. 69,2) and hold it there. The flat screen is unlocked.
- Push the flat screen to the desired position.
- Release handle. The flat screen is locked.

6.10.2 Satellite unit with automatic antenna alignment



- ▶ Before commencing the journey, ensure that the antenna is in park position. Danger of accidents!



- ▷ When switching on the ignition, the antenna will automatically retract into the idle position and lock there within a short period of time. However, before setting off, the driver must verify the correct position of the antenna.
- ▷ Retract the satellite antenna in case of strong wind or storm.
- ▷ Do not wash a vehicle with a satellite antenna in a brush washing system, nor in a vehicle washing installation, nor with high-pressure cleaners.

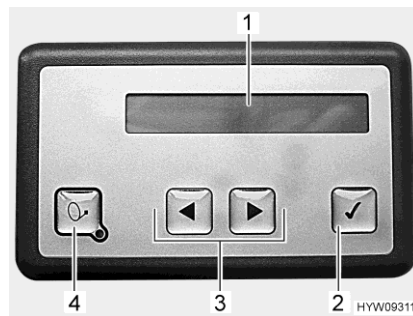


- ▷ The vehicle must be still during the satellite search. Do not walk through the vehicle.
- ▷ Pay attention to a "free visibility towards the south". From the European point of view, all the satellites are located approximately to the south.
- ▷ Satellite reception is only possible, when the antenna is positioned in direct line of sight of the chosen satellite and the view is not blocked in any way.



- ▷ The satellite unit can be adjusted with the control unit. Refer to the manufacturer's instruction manual about this.
- ▷ If the location is adjusted with the help of the list of countries, the satellite search will be accelerated.

The satellite antenna will automatically be aligned with a pre adjusted satellite if the receiver system is within the reach of this satellite. The operation of the satellite unit is not possible while the ignition is switched on.



- 1 Lighted display
- 2 OK Button
- 3 Next/Back buttons
- 4 On/Off button

Fig. 70 Control unit (satellite unit)

Position of the control unit

The control unit is installed in a wall-mounted cupboard above the seating group.

The lighted display shows information regarding the current operating status of the satellite unit. To protect the battery, the lighting goes out after a while.

Switching on, erecting and aligning:

- Switch the receiver on. The satellite antenna raises automatically after starting up the receiver (up to 90 seconds).
- Alternatively: Press On/Off button on the control unit.



- ▷ The satellite unit will start the search with the most recently adjusted position. If the vehicle's location has changed, the fully automatic satellite search will start. When the system has found the satellite, the selected TV programme appears automatically.

Switching off, retracting:

- Switch the receiver off. The satellite unit changes into idle mode. Depending on the adjustment, the satellite antenna will remain extended or will be retracted.
- Alternatively: Press On/Off button on the control unit. The satellite antenna retracts.

Stopping the satellite antenna:

- Press the OK button. The satellite antenna's movement is stopped immediately.

Selecting and changing adjustments:

- Press the Next and Back buttons until the desired menu item is displayed.
- Press the OK button. The menu item is activated.
- Press the Next and Back buttons to change adjustments.
- Press the OK button to save adjustments.
- Press On/Off button to abandon menu item without saving.



- ▷ Further information can be obtained in the manufacturer's instruction manual.

6.11 Lighting

6.11.1 Lamps with two operating levels



Fig. 71 Lamp with switch

- Switching the twilight on/off:* ■ Briefly touch the switch (Fig. 71,1). The switch will be lit as twilight.
- Switching on:* ■ Briefly touch the switch again. The lamp is switched on.
- Switching off:* ■ Briefly touch the switch again. The lamp is switched off.
- Dimmer:* ■ Touch and hold the switch.

6.12 Sleeping conversion



- ▷ Depending on the model, seating groups can be converted into additional beds.
- ▷ Depending on the model, the seating group can be different in shape and position to the one shown here.
- ▷ Depending on the model, use a second narrow additional cushion. These additional cushions are not standard for all models.
- ▷ Before converting the table into the bed foundation: Lift seat cushions or fold them upwards such that the table top does not collide with the seat cushions when moving.

6.12.1 Conversion of bench into children's bed



- ▷ Do not place a load onto the lowered table top until the cushions have been laid correctly on the table top. Otherwise the table could be damaged.

The bench can be converted into a children's bed. In doing so, the driver's seat and the suspension table are included. Two additional cushions are also needed.

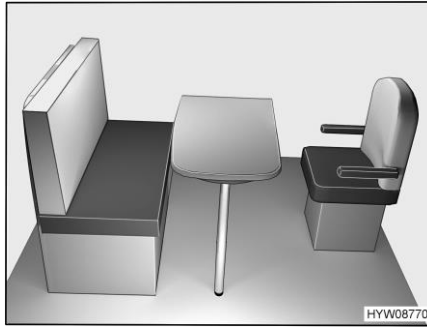


Fig. 72 Prior to conversion

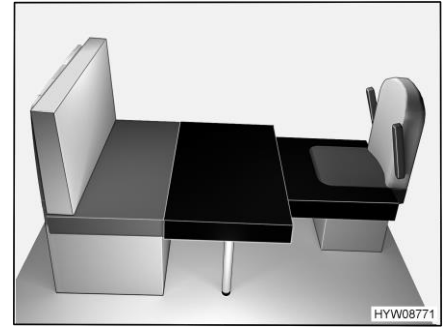


Fig. 73 After conversion

Setting up the children's bed:

- Turn driver's seat towards the table (Fig. 72).
- Convert the suspension table into a bed foundation (see section 6.9.4).
- Place big additional cushion on the table top (Fig. 73).
- Place small additional cushion on the driver's seat (Fig. 73).

6.12.2 Additional children's bed (conversion of the seating group)



- ▷ Depending on the equipment, the seating group can be converted into a further sleeping place.
- ▷ Before converting the table into the bed foundation: Lift seat cushions or fold them upwards such that the table top does not collide with the seat cushions when moving.

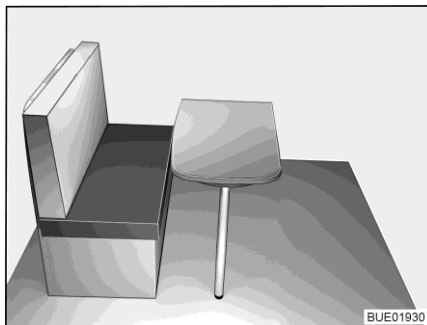


Fig. 74 Prior to conversion

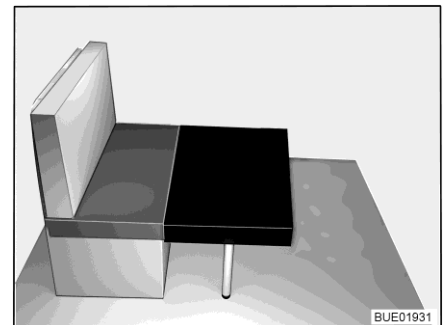


Fig. 75 After conversion

- If present, fold down the folding worktop.
- Convert the suspension table into a bed foundation (see section 6.9.4).
- Place the additional cushion onto the table in front of the seat cushion of the bench (see Fig. 75).

6.12.3 Conversion of divan and individual seat into additional bed



- ▷ Do not place a load onto the converted table top until the cushions have been laid correctly on the table top. Otherwise the table could be damaged.

Together with the individual seat on the side and the lowered table top of the suspension table, the divan can be converted into an additional bed. Two additional cushions are needed to create the lying surface. An additional board is also required, which is equipped with a fold-out support foot and a support bracket.

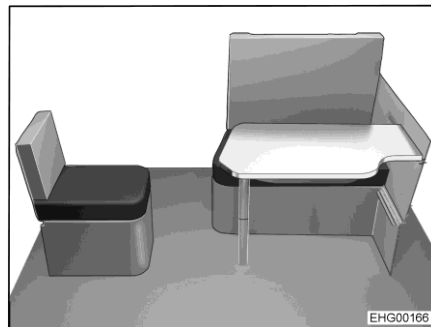


Fig. 76 Prior to conversion

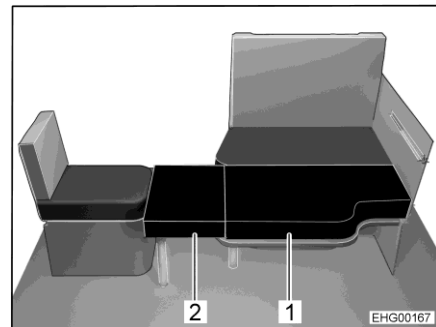


Fig. 77 After conversion

Setting up the additional bed:

- Convert the suspension table into a bed foundation (see section 6.9.4).
- Remove seat cushion from individual seat.

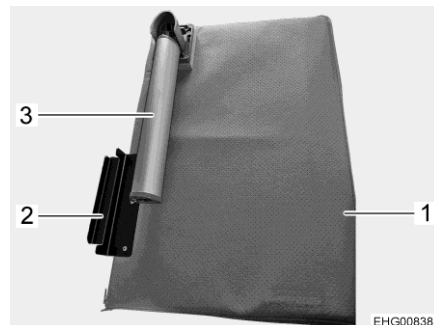


Fig. 78 Additional board

- Unfold the support foot (Fig. 78,3) on the additional board (Fig. 78,1).
- Attach the support bracket (Fig. 78,2) of the additional board to the individual seat and place the additional cushion (Fig. 77,2) on the table top.
- Place the second additional cushion (Fig. 77,1) on the table top.
- Attach the seat cushion of the individual seat again.

6.12.4 Additional sleeping possibility by also using the driver's seat

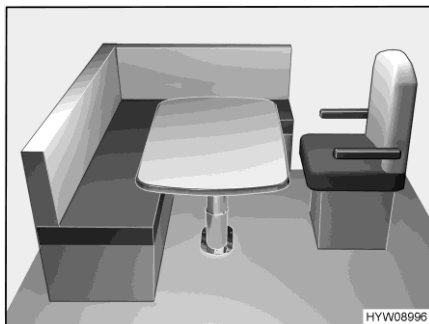


Fig. 79 Prior to conversion

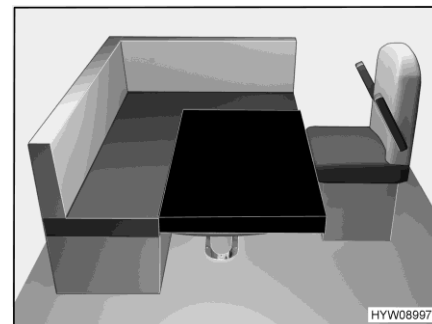


Fig. 80 After conversion

- Rotate the driver's seat towards the table.
- Move the driver's seat away from the table as far as possible in a longitudinal direction.
- Convert the lift-off table as a bed foundation (see section 6.9).
- Insert the additional cushion onto the table as shown in Fig. 80. The rounded corner faces to the front right.
- Push the driver's seat towards the table until a closed lying surface is created.
- If necessary, remove the back cushion and place it to one side.

6.12.5 Lying surface extension of rear single bed (XXL bed)

The lying surface of the single bed on the right can be extended.



Fig. 81 Lying surface extension with additional cushion

- Place the additional cushion (Fig. 81,1) on the shelf (Fig. 81,2) above the half-height wardrobe.

6.12.6 Widening single beds



▶ Do not exceed the maximum permissible load of 130 kg.



▷ The bed widening is not standard for all models.

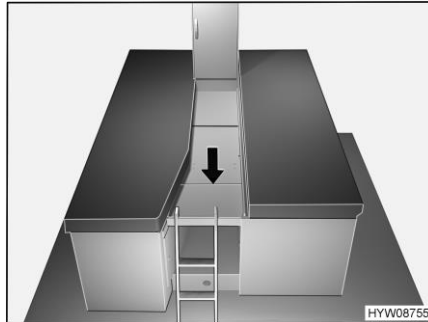


Fig. 82 Preparing the bed widening

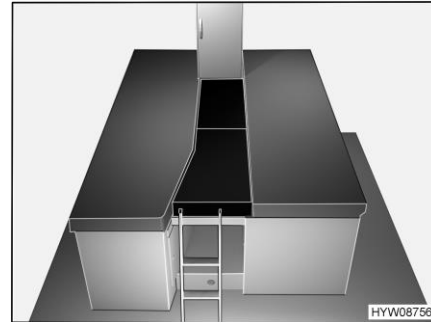


Fig. 83 After conversion

- Fold up the bed widening and place it between the single beds, as shown in Fig. 82.
- Place two additional cushions (shown in black) onto the bed widening between the single beds.
- Attach the access ladder with the two hooks to the holding bar of the bed widening. Before descending, make sure that the ladder is still fixed.



▷ The bed widening can have Velcro for protection against slipping. If there is Velcro, attach it with the corresponding matching piece.

Safety net

There may be a safety net, depending on the equipment. If there is a safety net, it must be used.

- Secure safety net to the left and right with the Velcro beneath the mattresses.
- If people are in the bed: Lift the support rail of the safety net and hook it into the holders.

Fall out protection

Depending on the equipment, a plug-in protective panel is included as fall out protection. If the bed widening is utilised, use the fall out protection.

- Plug fall out protection in between mattress and bed surround at the front of the bed widening.
- Remove the fall out protection before leaving the bed.
- If the bed widening is not used, store the fall out protection underneath the mattress.

6.12.7 Protective panel / fall out protection

The scope of delivery of vehicles with rear single beds or rear transverse beds, in which the bed is installed at window height, includes a plug-in protective panel.

The protective panel protects the blinds in the lying area from accidental damage.

In addition, the protective panel serves as fall out protection in case the window is open.

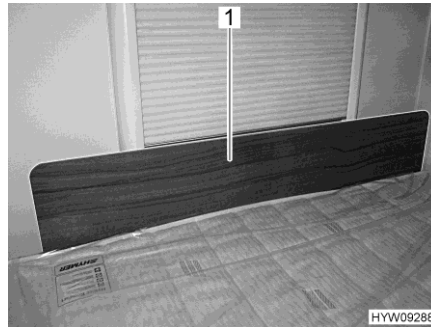


Fig. 84 Protective panel / fall out protection

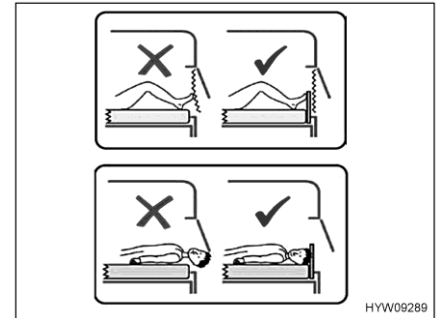


Fig. 85 Note on protective panel

Using the protective panel:

- Plug in the protective panel (Fig. 84,1) in front of the window, between mattress and window frame. The clamping effect of the mattress holds the protective panel in its position in front of the window frame.
- When the bed is not used (or before setting off), stow the protective panel underneath the mattress.

Chapter overview

This chapter contains instructions regarding the gas system of the vehicle. The operation of the gas operation appliances of the vehicle is described in chapter 9.

7.1 General instructions



- ▶ The operator of the gas system is responsible for the performance of recurring inspections and for complying with the maintenance intervals.
- ▶ If there is **no** DuoControl regulating system with crash sensor installed: Before commencing the journey, when leaving the vehicle or when the gas devices are not in use, close all gas isolator taps and the main regulator tap on the gas bottle.
If there is a DuoControl regulating system with crash sensor installed, the gas isolator taps and the main regulator tap may remain open during the journey.
- ▶ All gas/diesel-operated devices (depending on the equipment: heater, cooker, oven, grill, refrigerator) must be switched off for refuelling, on ferries or in the garage. Danger of explosion!
- ▶ Do not use gas-operated devices in closed spaces (e.g. garages). Danger of poisoning and suffocation!
- ▶ Only have the gas system maintained, repaired or altered by an authorised specialist workshop.
- ▶ Have the gas system checked by an authorised specialist workshop according to the national regulations before commissioning. This also applies for not registered vehicles. For modifications to the gas system have the gas system immediately checked by an authorised specialist workshop.
- ▶ The gas pressure regulator, the gas tubes, and the exhaust gas pipes must also be inspected. The gas pressure regulator and the gas tubes must be replaced observing the nationally defined deadlines (the latest after 10 years). The vehicle owner is responsible for seeing that this is carried out.
- ▶ In case of a defect of the gas system (gas odour, high gas consumption) there is danger of explosion! Close regulator tap on the gas bottle immediately. Open doors and windows and ventilate well.
- ▶ If the gas system is defective: Do not smoke; do not ignite any open flames, and do not operate electric switches (light switches etc.). Check the tightness of gas-conducting parts and lines with leakage search spray. Do not check with an open flame.
- ▶ Only the stipulated devices may be connected to internal connections. Do not operate any device outside the vehicle if it is connected to an internal connector.
- ▶ Before using the cooker make sure that there is sufficient ventilation. Open a window or the skylight.
- ▶ Cooking is prohibited during the journey.
- ▶ Do not use gas-operated cooking and baking facilities for heating purposes.



- ▶ If there are several gas devices, each gas device must have its own gas isolator tap. If individual gas devices are not in use, close the respective gas isolator tap.
- ▶ Ignition safety valves must close within 1 minute after the gas flame has extinguished. A clicking sound is audible. Check function from time to time.
- ▶ The built-in gas devices are exclusively meant for use with propane or butane gas or a mixture of both. The gas pressure regulator as well as all built-in gas devices are designed for a gas pressure of 30 mbar.
- ▶ Propane gas is capable of gasification up to -42 °C, whereas butane gas gasifies at 0 °C. Below these temperatures no gas pressure is available. Butane gas is unsuitable for use in winter.
- ▶ Due to its function and construction, the gas bottle compartment is a space which is open to the exterior. Never cover or block up the standard forced ventilations. Otherwise gas that is emitted can not be diverted to the outside.
- ▶ The gas bottle compartment must not be used as storage space.
- ▶ Secure the gas bottle compartment against unauthorised access. To do this, lock the compartment.
- ▶ The regulator tap on the gas bottle must be accessible.
- ▶ Only connect gas-operated devices which have been designed for a gas pressure of 30 mbar.
- ▶ The exhaust gas pipe must be fitted tightly to the heating system and to the vent and must be sealed. The exhaust gas pipe must not show any evidence of damage.
- ▶ Exhaust fumes must be able to escape into the atmosphere unhindered and fresh air must be able to enter unhindered. For this reason, keep the exhaust pipe and intake openings clean and unobstructed (e.g. free from snow and ice). For this reason, no snow walls or aprons may lie against the vehicle.

7.2 Gas bottles



- ▶ Handle full or emptied gas bottles outside the vehicle only with closed regulator tap and attached protective cap.
- ▶ Gas bottles are only to be transported within the designated gas bottle compartment.
- ▶ Place the gas bottles in vertical position in the gas bottle compartment.
- ▶ Fasten the gas bottles so that they are unable to turn or tilt.
- ▶ Connect the gas tube to the gas bottle without tension.
- ▶ If the gas bottles are not connected to the gas tube, always place the protective cap on top.
- ▶ Close the regulator tap on the gas bottle before the gas pressure regulator or gas tube are removed from the gas bottle.
- ▶ Depending on the connection, unscrew the gas tube from the gas bottle and screw it on the gas bottle again by hand or using a suitable special spanner. The screw connection on the gas bottle generally has a left-hand thread. **Do not** tighten too firmly.
- ▶ Only use special gas pressure regulators with a safety valve designed for vehicle use. Other gas pressure regulators are not permitted and cannot meet the demanding requirements.
- ▶ Use the gas pressure regulator defroster if the temperature falls below 5 °C.
- ▶ Use only 11 kg or 5 kg gas bottles. (The size of the gas bottles may vary depending on the country.) Exception: Only 5 kg gas bottles can be used with the special model Crossover.
- ▶ Use the shortest possible tube lengths (150 cm max.) for external gas bottles.
- ▶ Never block the floor ventilation openings below the gas bottles.



- ▷ The screw connections on the gas bottles generally have a left-hand thread.
- ▷ For gas-operated units the gas pressure must be reduced to 30 mbar.
- ▷ Connect gas pressure regulator complete with safety valve directly to bottle valve.
- ▷ The gas pressure regulator reduces the gas pressure in the gas bottle down to the operating pressure of the gas devices.
- ▷ For filling and connecting the gas bottles in Europe the accessories shops have corresponding Euro filling sets and Euro bottle sets.
- ▷ Information available at the dealers or service centre.

7.3 Gas isolator taps

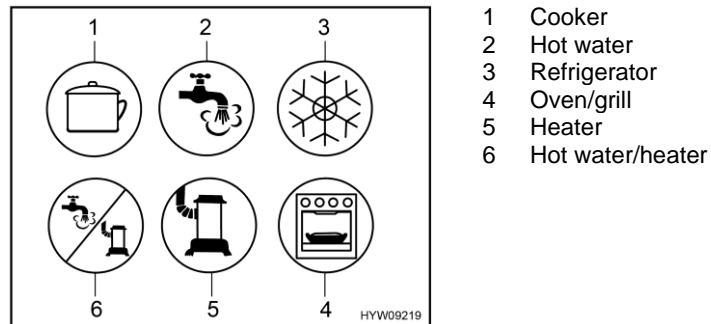


Fig. 86 Possible symbols for the gas isolator taps

A gas isolator tap (Fig. 86) for every gas device is built into the vehicle. The gas isolator taps can be found under the cooker.

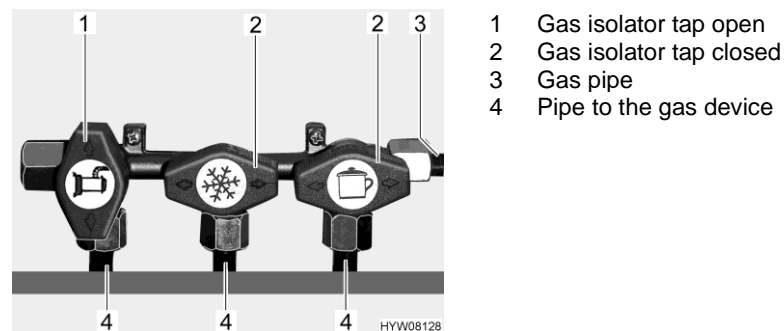


Fig. 87 Gas isolator taps position (example)

- Opening:** ■ Position the gas isolator tap of the corresponding gas device parallel (Fig. 87,1) to the pipe (Fig. 87,4) leading to the gas device.
- Closing:** ■ Position the gas isolator tap of the corresponding gas device transverse (Fig. 87,2) to the pipe (Fig. 87,4) leading to the gas device.

7.4 External gas connection



- ▶ If the external gas connection is not in use, always close the gas isolator tap.
- ▶ Only gas appliances with a suitable adapter should be connected to the external gas connection.
- ▶ Connect only external gas appliances which are designed for an operation pressure of 30 mbar.
- ▶ Once you have made the connection and opened the gas isolator tap, make sure that no gas is escaping at the connection point. If there is a leak in the external gas connection, gas will escape into the open air. Immediately close the gas isolator tap and the regulator tap on the gas bottle. Have the external gas connection checked by an authorised specialist workshop.
- ▶ When connecting an external gas appliance, make sure that there is nothing near the external gas connection that could cause a spark.
- ▶ Only connect a gas appliance to the external gas connection. Do not use the external gas connection as supply (connection of an additional gas bottle).
- ▶ Do not use the external gas connection to fill gas bottles. Observe the information stickers on the external gas connection.

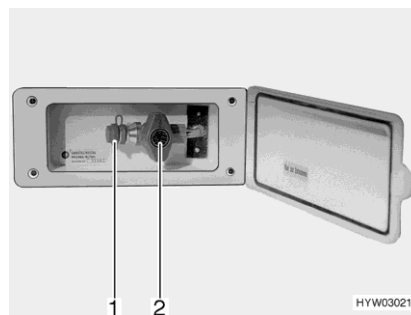


Fig. 88 External gas connection
(gas isolator tap closed)

The external gas connection is located at the rear or to the left or right of the vehicle depending on the model.

- Connect the external gas device to the connection point (Fig. 88,1).
- Open the gas isolator tap (Fig. 88,2).

7.5 Gas bottle compartment pull-out

To facilitate the changing of gas bottles, the gas bottles and the DuoControl switching facility are stored in an extractable gas bottle compartment.

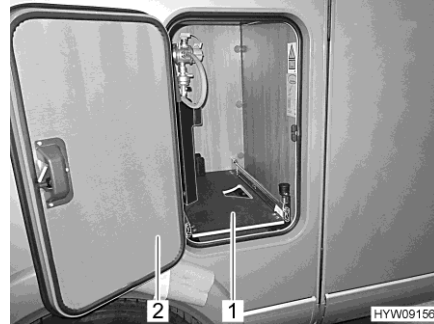


Fig. 89 Gas bottle compartment pull-out

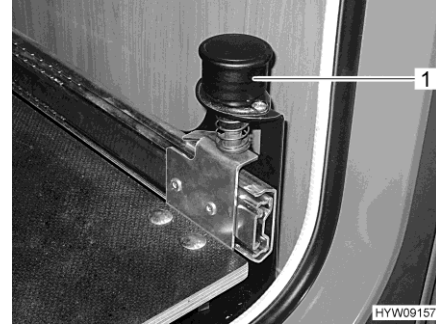


Fig. 90 Knob with locking device

Pulling out the gas bottle compartment:

- Open flap (Fig. 89,2) for the gas bottle compartment.
- Pull the knob (Fig. 90,1) upwards. The gas bottle compartment pull-out is unlocked.
- Pull out the gas bottle compartment pull-out (Fig. 89,1) until the knob engages again. Now, the gas bottle compartment pull-out is locked in this position.

Changing the gas bottle:

- Change the gas bottle as described in section 7.8.



Fig. 91 Gas bottle compartment pull-out in changing position

Pushing in the gas bottle compartment:

- Pull the knob (Fig. 91,1) upwards. The gas bottle compartment pull-out is unlocked.
- Push the gas bottle compartment pull-out inwards until the knob engages again.
- Close flap.

7.6 Gas pressure regulating system DuoControl CS



- ▷ The regulating system and the hose lines shall be changed at the latest 10 years after manufacturing date. The operator is responsible for this.
- ▷ Also read the manufacturer's instruction manual.

DuoControl CS is a safety gas pressure regulating system with automatic switching for a two-bottle gas system and with crash sensor. The DuoControl regulating system automatically switches the gas supply from the primary bottle to the reserve bottle as soon as the primary bottle is either empty or no longer ready for operation. The gas appliances may still continue operation. The DuoControl regulating system is suitable for all commercial gas bottles with liquefied gas (propane/butane) and a pressure of 0.7 bar to 16 bar.

The DuoControl regulating system ensures a constant gas pressure for the gas-operated devices, no matter which gas bottle is supplying the gas.

In the event of an accident, the crash sensor in the DuoControl regulating system will interrupt the gas flow.

The gas bottles are connected via high pressure hoses. A hose break guard prevents gas leakage in the event of a damaged hose.

The operation of gas-operated devices during the journey is permitted in all of Europe if the vehicle is equipped with a gas pressure regulating system with crash sensor and high-pressure hoses with hose break guard.

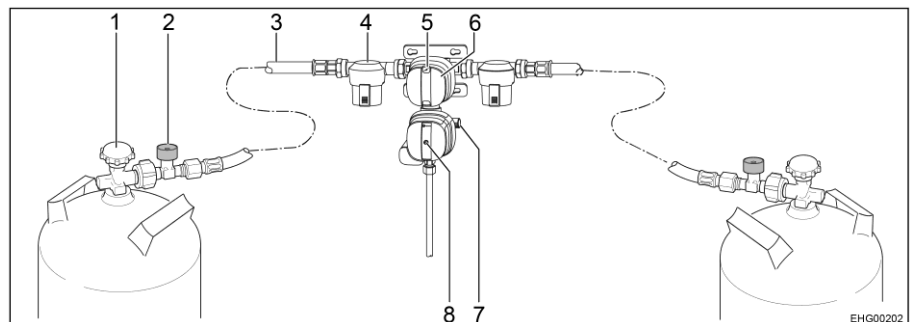


Fig. 92 Safety gas pressure regulating system DuoControl CS

- 1 Regulator tap
- 2 Hose break guard
- 3 High-pressure hose
- 4 Gas filter
- 5 Status indicator - primary bottle / reserve bottle (green/red)
- 6 Knob for primary bottle / reserve bottle change-over
- 7 Screw cap (test connection)
- 8 Reset button of the crash sensor (yellow)

Construction of the unit

The DuoControl regulating system consists of a reversing valve and a crash sensor. The DuoControl regulating system is installed between the high-pressure hoses (Fig. 92,3) with hose break guard (Fig. 92,2). The knob (Fig. 92,6) on the reversing valve is used to select which of the gas bottles is to be used as primary bottle and which is to be used as reserve bottle.

The status of the gas supply is indicated in the inspection window (Fig. 92,5):

- Green: Primary bottle
- Red: Reserve bottle.

The operation with only one gas bottle is allowed but in this case the open connection must be closed with a blind cover.

Crash sensor The crash sensor blocks the gas supply in the event of a significant impact (e.g. accident). The situation of the yellow reset button (Fig. 92,8) indicates the operating status of the crash sensor:

- If the yellow reset button (Fig. 92,8) is in the pressed-in position, the crash sensor is ready to operate.
- If the yellow reset button (Fig. 92,8) is protruding, the crash sensor is **not** ready to operate. Putting into operation, see below.

Hose break guard The hose break guard (Fig. 92,2) blocks the gas flow if the connected hose breaks. The hose break guard must be activated by pressing the green button.

Defroster The DuoControl regulating system can be heated (defroster). If winter operation is set at the operating unit, the DuoControl regulating system will be heated automatically. Thus, faults of the gas system due to frost in winter are prevented.

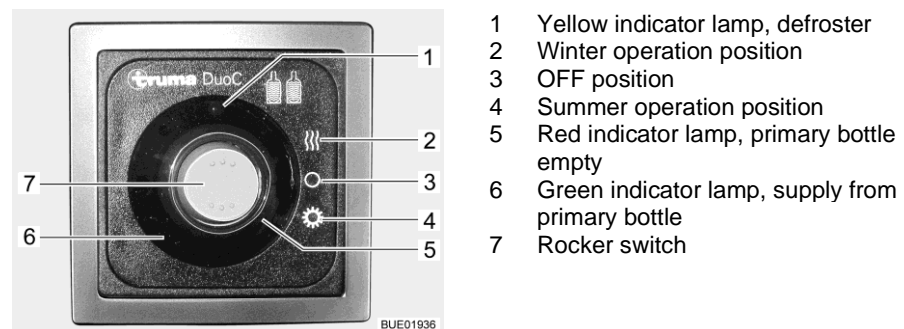


Fig. 93 Operating unit (DuoControl)

Operating unit The operating unit shows the status of the primary bottle. When the green indicator lamp (Fig. 93,6) illuminates, the primary bottle is full. When the red indicator lamp (Fig. 93,5) illuminates, the primary bottle is empty. In this case, the reserve bottle is used for the gas supply.

If the heater of the DuoControl regulating system (defroster) is active, the yellow defroster indicator lamp (Fig. 93,1) is lit.

In addition, the operating unit (Fig. 93) is also used to set summer operation or winter operation.

Setting summer operation: ■ Press lower part of the rocker switch (Fig. 93,7) (summer operation position (Fig. 93,4)).

Setting winter operation: ■ Press upper part of the rocker switch (Fig. 93,7) (winter operation position (Fig. 93,2)).

Putting into operation: ■ Connect the gas bottles.
 ■ Use the knob (Fig. 92,6) on the reversing valve to select the gas bottle which is to be the primary source of gas (primary bottle). Always turn the knob as far as it will go.

- Open regulator taps (Fig. 92,1) on the gas bottles.
- Press and hold the green button of the hose break guard (Fig. 92,2) for about 5 seconds. The green marking is shown in the inspection window (Fig. 92,5).
- If the crash sensor has triggered (the yellow reset button (Fig. 92,8) is protruding):
Press the yellow reset button (Fig. 92,8) in forcefully, turn it slightly in a clockwise direction and hold it for about 5 seconds. Make sure that the reset button remains in the pressed-in position ("ready for operation"). If it is not possible, reset the system as described: Use the Torx insert T20 on the included screwing aid to strengthen the rotary movement.

Switching off:

- Set the rocker switch (Fig. 93,7) to the OFF position (Fig. 93,3). The indicator lamps go out.
- Close regulator taps (Fig. 92,1) on the gas bottles.

Changing gas bottles



- ▶ When changing gas bottles, do not smoke or create any open fire.
- ▶ When you have changed the gas bottle, check whether gas escapes at the connection points and unions. Use a leakage search spray to spray the relevant connection point or union. These agents are available at the accessories shop.



- ▷ Use the included screwing aid to screw the high-pressure hoses on and off. The screwing aid makes the required tightening torque possible and prevents any damage caused by using the wrong tool.
- ▷ If there is a gas filter present, also change the filter pad with every change of gas bottles (see section 7.7).

If the green indicator lamp (Fig. 93,6) goes out during operation and the red indicator lamp (Fig. 93,5) lights up, the primary bottle is empty and must be changed. The red marking is shown in the inspection window (Fig. 92,5) of the associated gas bottle. The reserve bottle continues supplying the gas appliances with gas.

You may also change an empty gas bottle while gas-operated devices are in operation.

Changing the gas bottle:

- Turn the knob (Fig. 92,6) as far as it will go in the direction of the gas bottle currently used. In this way, this gas bottle is the primary bottle now, and the empty gas bottle becomes the reserve bottle. The marking in the inspection window (Fig. 92,5) changes from red to green.
- Close regulator tap (Fig. 92,1) on the empty gas bottle. Pay attention to the direction of the arrow.
- Unscrew the high-pressure hose from the empty gas bottle (normally a left-hand thread).
- Release the fixing belts and remove the empty gas bottle.
- Place a filled gas bottle in the gas bottle compartment and retain with the fixing belts.
- Connect the high-pressure hose to the filled gas bottle (normally a left-hand thread).
- Open the regulator tap on the gas bottle.
- Press the green button of the hose break guard (Fig. 92,2).

7.7 Gas filter



- ▷ If the gas pressure regulating system fails due to oiling or due to foreign substances, no warranty claim can be made for the gas pressure regulating system.

The gas filter (Fig. 94,1) must be checked periodically. When changing the gas bottles, the filter pad must be replaced (see section 12.5).

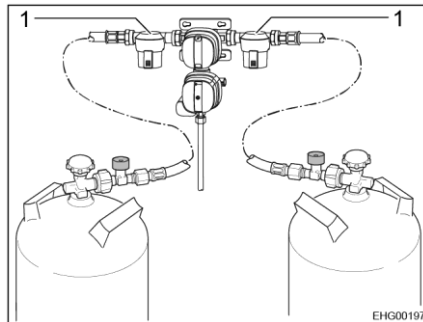


Fig. 94 Gas filter



- ▷ Further information can be obtained in the manufacturer's instruction manual.

7.8 Changing gas bottles



- ▶ When changing gas bottles, do not smoke or create any open fire.
- ▶ When you have changed the gas bottle, check whether gas escapes at the connection points and unions. Use a leakage search spray to spray the relevant connection point or union. These agents are available at the accessories shop.



- ▷ The procedure described below applies to vehicles that are equipped with a single gas connection. If the vehicle is equipped with an regulating system: When changing the gas bottle, proceed as described for the regulating system.

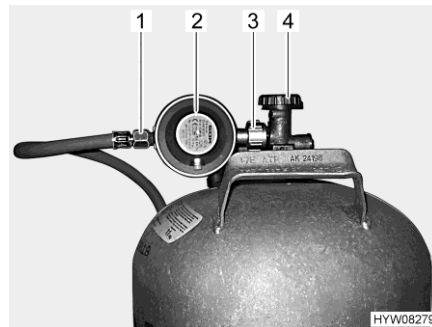


Fig. 95 Gas bottle connection

- Open flap for the gas bottle compartment.
- Close the regulator tap (Fig. 95,4) on the gas bottle. Pay attention to the direction of the arrow.
- Hold the gas pressure regulator (Fig. 95,2) and open the knurled nut (Fig. 95,3) (normally a left-hand thread).
- Remove the gas pressure regulator and the gas tube (Fig. 95,1) from the gas bottle.
- Release the fixing belts and remove the gas bottle.
- Place a filled gas bottle in the gas bottle compartment.
- Fix gas bottle in place with the fixing belts.
- Position the gas pressure regulator (Fig. 95,2) with gas tube (Fig. 95,1) on the gas bottle and tighten the knurled nut (Fig. 95,3) (normally a left-hand thread). **Do not** tighten too firmly.
- Close flap for the gas bottle compartment.

Chapter overview

This chapter contains instructions regarding the electrical system of the vehicle.

The operation of the electrical appliances of the housing body is described in chapter 9.

8.1 General safety instructions



- ▶ Only allow qualified personnel to work on the electrical system.
- ▶ All electrical devices (e.g. mobile phones, radios, televisions or DVD players) that are retrofitted into the vehicle and operated during the journey must have a CE marking and be verifiably tested according to DIN VDE 0100 721. Please contact an authorised specialist workshop.

Only in this way can the functional reliability of the vehicle be ensured. Otherwise the airbag may be triggered or interference to the on-board electronics may result.



- ▷ After the vehicle is started, delays to the output or forwarding of electrical impulses are possible.

The control unit of the basic vehicle does not release the D+ signal until the engine has reached full performance. In the event of a cold start in winter, this can take up to 15 seconds.

For this reason, output of warning signals (such as "entrance step extended") may sometimes be delayed.

The automatic retraction of a SAT antenna can also be delayed.
- ▷ During a storm, to protect the electrical devices disconnect the 230 V connection and retract the antennae.

8.2 Terms

Off-load voltage The off-load voltage is the voltage of the battery in idle condition, i. e. no current is consumed and the battery is not being charged.



- ▷ The battery must remain idle for a while before measuring. After charging the last time, or after the last current has been drained by appliances, wait approximately 2 hours before measuring the off-load voltage.

Closed circuit current Some electrical appliances, such as indicator lamps, TV unit or USB sockets, require electrical current all the time; that is why they are also referred to as inactive appliances. This closed circuit current flows even if the device has been switched off.

Total discharge Total discharge of the battery is imminent, if a battery is completely discharged by an active appliance and by closed circuit current and the off-load voltage falls below 12 V.



- ▷ Total discharge damages the battery.

Capacity Capacity refers to the amount of electricity which can be stored in a battery. The capacity of a battery is given in ampere hours (Ah). The so-called K20 value is normally used.

The K20 value indicates how much current a battery can deliver over a period of 20 hours without being damaged.

For example, if a battery can dispense 4 amps for 20 hours, then it has a capacity of $4 \text{ A} \times 20 \text{ h} = 80 \text{ Ah}$.

If more current flows, the discharging time of the battery will decrease proportionately.

External influences, such as temperature and age may alter the storage capacity of the battery. Capacity details refer to new batteries operating at room temperature.



- ▷ Depending on battery technology, capacity details have a conversion factor of 1.3 to 1.7, which lowers the real capacity by this value.
- ▷ A practical example is shown in section 8.4.4.

8.3 Bluetooth connection



- ▷ Bluetooth is a registered trademark of the Bluetooth SIG, Inc.

The Bluetooth connection is only available in combination with a multimedia system installed in the vehicle.

With the Bluetooth connection, you can connect the installed multimedia system wirelessly to a compatible mobile device (smartphone or tablet computer).

Both devices must be connected with each other before you can use the Bluetooth connection. This process is called pairing. The pairing is only required once for each mobile device.



Fig. 96 Rocker button (Bluetooth connection)

Pairing the mobile device (only if equipped with a DSP box):

- Press upper part of rocker button (Fig. 96) and hold approximately 2 seconds until the LED in the rocker button is flashing.
- Connect the mobile device within 60 seconds (refer to the instruction manual of the mobile device). The multimedia system is visible as "HY BT-DSP PP85" during pairing. The LED in the rocker button will be flashing for approximately 60 seconds. During this time, the multimedia system is in the pairing mode and can be connected to the mobile device. Once the mobile device has been paired, you can switch the connection on and off with the rocker switch.

Switching off Bluetooth connection:

- Press the lower part of the rocker button (Fig. 96). The LED goes out.

Switching on Bluetooth connection:

- Switch rocker button (Fig. 96) to the central position. The LED of the rocker button is lit.

Technical information

Distance: The devices do not need to be positioned in direct line of sight. The maximum distance between the devices must not exceed 10 m. Obstacles such as walls or other electronic devices may impair the connection.

Compatibility: The function depends on the Bluetooth technology of the mobile device (refer to the instruction manual of the mobile device).

Technical data:

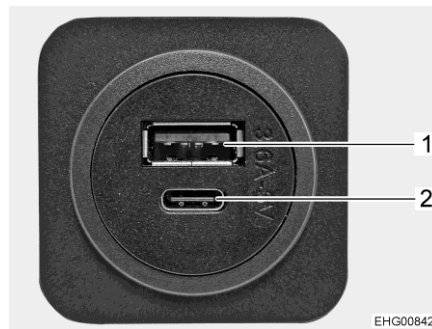
- Bluetooth standard: V3.0+DER
- Bluetooth profile: A2DP
- Bluetooth codec: SBC and aptX
- Maximum quantity of paired devices: 8

8.4 12 V power supply



- ▷ Only connect devices with a maximum of 10 A to the sockets of the 12 V power supply.

8.4.1 USB socket



- 1 USB A port
- 2 USB C port

Fig. 97 USB socket

The vehicle is equipped with several USB sockets as standard. The USB sockets each contain a connection for a USB A plug (Fig. 97,1) and a connection for a USB C plug (Fig. 97,2).

8.4.2 Starter battery

The starter battery serves for starting the engine and supplies the electrical appliances of the base vehicle as well as optional devices such as the radio, navigation system or central locking system with voltage.



- ▷ Total discharge damages the battery. The consequence may be deformation, heat development, and damage due to scorching.
- ▷ Once a battery with acid is discharged, it can freeze in temperatures of below zero. This damages the battery.
- ▷ Recharge battery in good time.

The starter battery will be totally discharged via a closed circuit current (inactive appliances). Inactive appliances are optional devices such as a radio, alarm system, navigation system or a central locking system. Inactive appliances discharge the starter battery when the vehicle engine is switched off. Low temperatures outside reduce the capacity available.



- ▷ If the radio unit is used on Mercedes-based vehicles without the vehicle engine running, the radio unit will put a load on the starter battery. However, in order to always maintain the vehicle's starting ability, it may not be possible to operate the radio (depending on the charging condition of the starter battery).

Charging

Safety instructions and information on charging the starter battery, see instruction manual of the base vehicle.

Position

The starter battery is fitted in the footwell of the driver's cabin under the floor plate.

8.4.3 Living area battery

The living area battery consists of one or more lead-fleece batteries (hereinafter called lead batteries) and - provided a **HYMER** Smart Battery System is installed - one or two HY-Tec lithium batteries 135 (hereinafter called lithium batteries).



- ▷ Lead-fleece batteries are also referred to as AGM batteries. AGM is the abbreviation for Absorbent Glass Mat.



- ▷ The living area battery may not be opened.
- ▷ Use only the built-in transformer/rectifier to load the living area battery. In order to do this, connect the 230 V connection (CEE connector) of the vehicle to an external 230 V power supply.
- ▷ Prior to commencing a journey ensure the living area battery is fully charged. For this reason charge the living area battery for at least 20 hours before commencing the journey.
- ▷ During the trip, use every opportunity to charge the living area battery.
- ▷ After the trip, charge the living area battery fully.
- ▷ Before a temporary lay-up, charge the battery fully.
- ▷ When the living area battery is changed, only use batteries of the same type and the same capacity.
- ▷ When changing the battery, always disconnect the negative pole first and, then, the positive pole. When connecting, proceed in inverted order: connect the positive pole first and, then, the negative pole.
- ▷ When changing batteries, use only batteries for which there are charging characteristics available. After changing the battery the charging characteristics must be adjusted at the transformer/rectifier or at the auxiliary charging unit.
- ▷ If several lead batteries are present, change all lead batteries. The batteries must always be the same age and have the same capacity.
- ▷ After a battery change, have the battery voltage indicators checked by an authorised specialist workshop / service centre.
- ▷ When changing batteries, use only batteries which meet the minimum capacity of the charger. Observe the separate instruction manual for the charger. Lower-capacity batteries will generate a great deal of heat when they are charged. Danger of explosion!
- ▷ If a **HYMER** Smart Battery System is installed, the lead batteries installed must have a minimum capacity of 95 Ah.
- ▷ If the living area battery is replaced and the charging unit does not provide at least 10 % of the rating of a new battery, install an auxiliary charging unit. Example: With a battery capacity of 80 Ah, the charging unit must supply at least 8 A charging current.
- ▷ Before disconnecting or connecting the terminals of the battery, switch off the vehicle engine as well as the 230 V and 12 V power supplies and all appliances. Danger of short circuit!
- ▷ If the starter battery or living area battery are disconnected, do not apply the ignition. There is a danger of short circuit from exposed cable ends.



- ▷ If there are two living area batteries: When changing, ensure that the batteries are properly installed. Install the batteries so that the positive terminal on one battery is lying next to the negative terminal of the other battery.
- ▷ If there are two living area batteries: When changing, ensure that the batteries are properly connected (see Installing the auxiliary battery).



- ▷ Depending on the model and the equipment, up to two auxiliary batteries may be connected to the lead battery.
- ▷ Lead batteries are maintenance-free. Maintenance-free means:
 - It is not necessary to check the acid level.
 - It is not necessary to lubricate the battery poles.
 - It is not necessary to refill the distilled water.
 Even a maintenance-free battery must be recharged.

Recommendation: Perform a full charging cycle every 6 to 8 weeks. Depending on the battery capacity and the charger, the charging cycle will last 24 to 48 hours.

When the vehicle is not connected to the 230 V power supply or the 230 V power supply is switched off, the living area battery supplies the living area with 12 V DC. The living area battery has a limited power supply only. For this reason, electrical appliances such as the radio and the lights should not be operated for a long time without using the 230 V power supply.

Position The living area battery is fitted under the L-seating group and can be accessed by an external flap.

Discharging The living area battery is discharged by the closed circuit current which some electrical appliances continuously require. When the battery cut-off switch is switched off, the charging condition of the living area battery can drop to approx. 40 to 80 %.



- ▷ Total discharge damages the battery. The consequence may be deformation, heat development, and damage due to scorching.
- ▷ Recharge battery in good time.

Note that even a fully charged living area battery can be fully discharged by closed circuit currents (inactive appliances).

Low temperatures outside reduce the capacity available.

The self-discharge rate of the battery is also dependant on temperature. At 20 to 25 °C the self-discharge rate is approx. 3 % of the capacity per month. The self-discharge rate will increase with rising temperatures: At 35 °C the self-discharge rate is approx. 20 % of the capacity per month.

An older battery no longer has the complete capacity available.

The higher the number of active electrical appliances, the faster the energy of the living area battery is consumed.

Charging Only use the transformer/rectifier to charge the living area battery. Therefore, connect the vehicle to a 230 V power supply system as often as possible. As a principle, only use the 230 V connection on the vehicle (CEE socket outlet) for connecting.



- ▷ Charge the battery for at least 48 hours after a total discharge.
- ▷ At temperatures below 0 °C, a living area battery consumes less power. At approx. -15 °C, there will be no more power. The living area battery can no longer be charged.
- ▷ Always connect the load and charging lines cross-wise. This is necessary to ensure the batteries always have the same line resistance to one another. This allows the charging/discharging current to be distributed equally.

Storage

This section contains instructions on the storage of the living area battery.

- Store the disconnected battery in a cool and dry place.
- In the case of a disconnected, fully charged gel battery it may suffice to recharge the battery after 6 months.

Recommendation: Also charge a gel battery for 24 to 48 hours every 4 to 6 weeks.



- ▷ If there is an "intelligent" charger with float charge functionality, have the charger connected to the battery and switched on over the entire lay-up time.

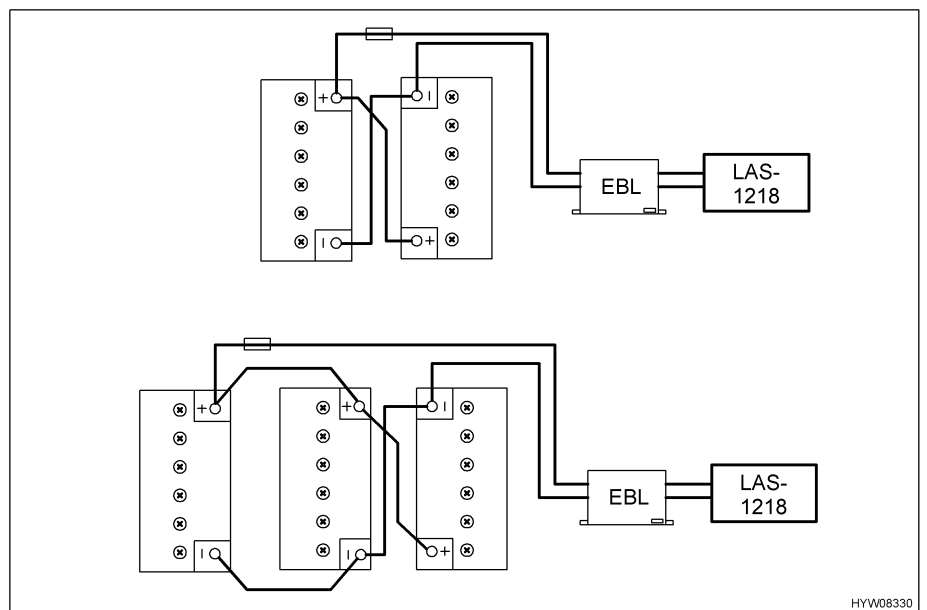


Fig. 98 Connecting auxiliary battery

Installation of auxiliary battery

To ensure that all batteries are charged or used up equally, the batteries are connected according to Fig. 98.

8.4.4 Energy balance of the living area battery

The living area battery has a limited power supply only. For this reason, the electrical appliances should not be operated without a 230 V power supply for a longer period of time.

Below, the calculation of the maximum operating time of the currently available battery capacity is described.



- ▷ The example calculation refers to a new, optimally charged battery. The actual effective battery capacity depends on the current charging condition and the age of the battery. The current battery capacity can be determined by means of special indicator units.
- ▷ If there is a second living area battery, the available capacity doubles.
- ▷ All lamps are LED lamps with very low power consumption. Approximately 2 W of power consumption can be expected per LED lamp.
- Record the daily requirement. Note the switching on times and the power output of the devices used (see table below).

Example: The television (power consumption 36 W) with satellite unit (power consumption 36 W) is in operation every day for 2 hours.

- Convert the power data into the required capacity in accordance with the following formulas:

$$\text{Power consumption [W]} : 12 \text{ V} = \text{Current [A]}$$

$$\text{Current [A]} \times \text{Operating time [h]} = \text{Capacity [Ah]}$$

$$36 \text{ W} + 36 \text{ W} = 72 \text{ W}$$

$$72 \text{ W} : 12 \text{ V} = 6 \text{ A}$$

$$6 \text{ A} \times 2 \text{ h} = 12 \text{ Ah}$$

The table for a whole day could look like this:

Appliance	Power consumption [W]	Current [A]	Operating time [h]	Capacity [Ah]
Submerged pump	42	3.5	0.1	0.35
Heater	12	1.5	3.0	4.50
Television	36	3.0	2.0	6.00
Satellite unit	36	3.0	2.0	6.00
Refrigerator control	2	0.2	24.0	4.00
Lighting (10 LED lamps à 2 W)	20	1.6	3.0	4.80
Average daily requirement				25.65

- Calculate the maximum effective energy with the following formula or determine it with a special indicator unit:
Current capacity [Ah] : Deep discharge protection = Maximum effective energy [Ah]

Balance of energy consumption (example)

Example: 80 Ah : 1.3 (gel battery) = 61.5 Ah

- Calculate the maximum operating time in accordance with the following formula:
Max. effective energy [Ah] : Daily requirement [Ah] = Max. operating time (in days)

Example: 61.5 Ah : 25.65 Ah = 2.39

The current battery capacity would be sufficient for more than two days if the daily requirement remains the same.

Solar cells The independent time period can be extended with use of the solar cells.

Two solar cells of 90 W produce the following gain:

- Summer: Approx. 60 Ah/day (independent operation reached)
- Winter: Approx. 15.5 Ah/day (in order to prolong independent operation, another living area battery must be installed)

8.4.5 Retrofitting an AC converter



- ▷ Retrofitting of an AC converter can lead to damage to the electrical system. We will not be held liable for this damage.

The installation of a 230 V AC converter results in a very high current load. For example an AC converter with a power output of 800 W on the 12 V side has a current consumption of up to 75 A.

This current is much too big for the outputs on the transformer/rectifier (see section 8.10.1).

If the AC converter is connected directly to the battery, the current consumption of the AC converter will not be indicated by panel. Due to the high discharging current, the terminal voltage in the battery drops significantly. The measuring system installed then detects undervoltage and could switch off the 12 V power supply. In addition the living area battery will be drained very quickly if an AC converter is used.

8.5 HYMER Smart Battery System

The **HYMER** Smart Battery System consists of one or more lead-fleece batteries (hereinafter called lead batteries) and one or two HY-Tec lithium batteries 135 (hereinafter called lithium batteries). Both are living area batteries.



- ▷ Do not make any changes to the installation of the lithium battery carried out at the factory.
- ▷ Do not open the lithium battery.
- ▷ Observe the recommended operating temperature between 15 and 25 °C. Take any further details on the operating temperature from the manufacturer's instruction manual.
- ▷ Fully charge the battery system every 6 months.
- ▷ Switch the transformer/rectifier off for installation and maintenance.



- ▷ Remove the fuses between lead-acid battery and lithium battery for installation and any work on the wiring.
- ▷ If the battery capacity indicator does not reach 100 % any more after a longer charging time, contact the customer service.
- ▷ Transport and dispose of the lithium battery only as prescribed by the manufacturer.
- ▷ Observe the manufacturer's instruction manual.

The lithium battery consists of six modules and is connected in parallel to the default lead battery. The lithium battery tolerates frequent charge cycles better than the lead battery and takes up most of the charge cycles. This extends the lifetime of the lead battery.

The lithium battery is equipped with a protective function against overload and total discharge.

Position The lithium battery is installed next to the living area battery underneath the L-seating group, and is accessible via an external flap.

Integrated discharge management The integrated intelligent discharge management ensures that, while discharging, the current is first drawn from the lithium battery and only then from the lead battery. When the lithium battery is providing the current, the lead battery serves as backup storage.

In case of large power requirement, the current is drawn in parallel from both, the lithium battery and the lead battery.

Charging During the charging procedure, the lead battery is charged in the first place, and then the lithium battery.



- ▷ Fully charge the battery system after recommissioning or longer periods of inactivity.

Storage



- ▷ Do not remove the fuses between the lithium battery and lead battery, otherwise the winter storage support will not work, and the lead battery may be damaged.

In the case of adequate use, the lithium battery has a lifetime of up to 10 years.

Prior to storage, fully charge the battery system and disconnect it from the transformer/rectifier (switch off battery cut-off switch on the transformer/rectifier).

At the latest, check the charge status on the display of the lithium battery after 6 months. In order to do this, switch on the battery cut-off switch on the transformer/rectifier. Charge battery if necessary.

In case of a longer storage period: charge and discharge battery several times if necessary to obtain full performance of the battery system.

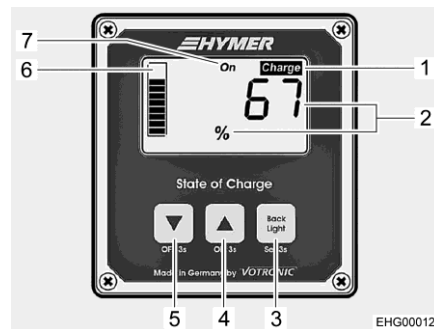
Store the battery system in a place that is dry and well ventilated.

Observe the recommended storage temperature between 10 and 20 °C. Take any further details on the storage temperature from the manufacturer's instruction manual.

8.5.1 Display panel

Voltage and charge data of the battery system are displayed on an external display panel.

Position The display panel is installed inside the vehicle (for example in a wall-mounted cupboard).



- 1 Indicator "Charge"
- 2 Display of state of charge (SoC) as a percentage
- 3 Button On/Off, call up menu
- 4 Button Back on display
- 5 Button Next on display
- 6 Display of state of charge (SoC) as a bar chart
- 7 Switching state display (not active)

Fig. 99 Display panel (display of state of charge)

Switching on/off The display panel is designed such that it is energy saving. A complete shut-down is not necessary.

The basic settings implemented by **HYMER** are preserved in case of power supply failure.

Display backlight When pressing one of the panel buttons, the display backlight is switched on automatically. If no button is pressed for 3 minutes, the backlight is switched off again automatically. The display backlight can be switched off manually by pressing the button (Fig. 99,3).

Displaying state of charge (SoC) The display shows the state of charge of the lead battery and the lithium battery (SoC). The value of the SoC is displayed as a percentage (Fig. 99,2) and, additionally, as a bar chart (Fig. 99,6).

- Switch on the display backlight by pressing any button.
- If the display is showing the voltage indicator: press button (Fig. 99,4) or button (Fig. 99,5) briefly to go to the display of the SoC (Fig. 99,2).

When SoC value drops below 20 %, the indicator "Charge" (Fig. 99,1) starts flashing. In this case, recharge the batteries.



- 1 Display of battery voltage in volts (V)
- 2 Display of state of charge (SoC)

Fig. 100 Display panel (display of battery voltage)

Displaying battery voltage

The battery voltage is displayed in volts (Fig. 100,1). The bar chart continues to show the SoC (Fig. 100,2).

- Switch on the display backlight by pressing any button.
- If the display is showing the SoC value: press button (Fig. 99,4) or button (Fig. 99,5) briefly to go to the display of the battery voltage (Fig. 100,1).



- ▷ Further information can be obtained in the manufacturer's instruction manual.

8.6 Transformer/rectifier (EBL 30)



- ▷ Do not cover the ventilation slots. Danger of overheating!



- ▷ Depending on the model, not all slots for the fuses are occupied.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

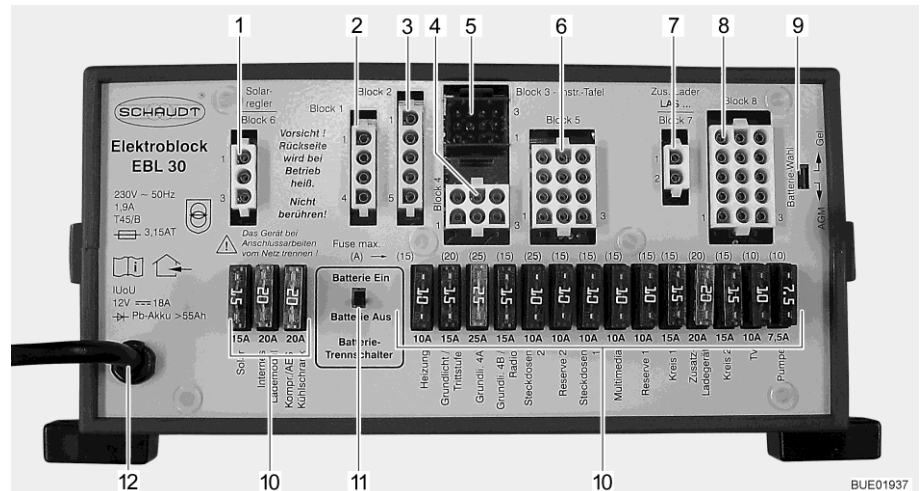


Fig. 101 Transformer/rectifier (EBL 30)

- 1 Block 6: Solar charge regulator (if fitted)
- 2 Block 1: Refrigerator
- 3 Block 2: Refrigerator power supply D+, battery sensor/control lines
- 4 Block 4: Heating, basic light (lighting in the entrance area), entrance step
- 5 Block 3: Panel
- 6 Block 5: Spare 2, sockets, basic light
- 7 Block 7: Auxiliary charging unit
- 8 Block 8: Appliances, TV, water pump, spare 1, multimedia, sockets
- 9 Battery selector switch (Gel/AGM)
- 10 Fuses
- 11 Battery cut-off switch ("Batterie Ein/Aus" (battery On/Off))
- 12 Mains connection 230 V~

Functions

The transformer/rectifier has the following functions:

- The transformer/rectifier charges the living area battery. The transformer/rectifier charges the starter battery with a float charge only.
- The transformer/rectifier monitors the voltage in the living area battery.
- The transformer/rectifier distributes the current to the 12 V circuits and secures them. Devices with a maximum of 10 A can be connected to the sockets.
- The transformer/rectifier provides connections for a solar charge regulator, an auxiliary charging unit, as well as other control and monitoring functions.
- When the vehicle engine is turned off, the transformer/rectifier separates the starter battery electrically from the living area battery. This prevents the 12 V living area appliances from discharging the starter battery.
- The battery cut-off switch in the transformer/rectifier separates all the appliances from the living area battery.

The transformer/rectifier only works in conjunction with a panel.

The current available at the transformer/rectifier (18 A maximum) is divided into charging current and current for the appliances. The charging current is always just the portion that is not being used by any appliances. If the current to the appliances exceeds the current available, then the living area battery is discharged.

Position

The transformer/rectifier is fitted under the L-seating group and can be accessed by an external flap.

8.6.1 Battery cut-off switch

The battery cut-off switch switches off **all** the appliances in the living area, even inactive ones. In the process, all appliances supplied by the transformer/rectifier are disconnected from the living area battery. Even appliances such as the entrance step, basic lighting or the refrigerator will stop working. This prevents the living area battery from slowly discharging if the vehicle is not used for a longer period of time (e.g. temporary lay-up).

Position The battery cut-off switch is located on the transformer/rectifier.

If the vehicle is connected to the 230 V power supply via the CEE socket outlet, the batteries are charged, even if the battery cut-off switch is switched off.

8.6.2 Battery selector switch



▶ If the battery selector switch is set incorrectly, there is a risk of generating oxyhydrogen gas. Danger of explosion!



- ▷ Incorrect setting of the battery selector switch damages the living area battery.
- ▷ The factory settings of the battery selector switch must not be changed.

Position The battery selector switch is located on the transformer/rectifier.

8.6.3 Battery monitor



- ▷ You must fully recharge a discharged living area battery as soon as possible.

The battery monitor in the transformer/rectifier monitors the voltage in the living area battery.

If the voltage of the batteries falls below 10.5 V, the battery monitor in the transformer/rectifier switches off all the 12 V appliances.

- Measures:*
- Switch off all electrical appliances that are not absolutely essential at the corresponding switch.
 - If necessary, use the 12 V main switch to switch the 12 V power supply back on for a short while. This is only possible, however, when the battery voltage is above 11 V. If the voltage is below this level, the 12 V power supply cannot be switched on again until the living area battery has been recharged.

8.6.4 Charging the battery

When the vehicle engine is running, a relay in the transformer/rectifier alternator switches on the living area battery and the starter battery together and recharges them with the vehicle generator. When the vehicle engine is switched off, the batteries are automatically disconnected from one another again by the transformer/rectifier. This prevents the starter battery from being run down by electrical appliances in the living area. The starting capability of the vehicle is thus preserved. The terminal voltage of the living area battery or the starter battery can be read on the panel.

If the vehicle is connected to the 230 V power supply via the CEE socket outlet, the living area battery and the starter battery are charged by the charger module on the transformer/rectifier. The starter battery is only charged with a float charge. The charging current is adapted to suit the charging condition of the battery. This ensures that it is not possible to overload the battery.

To make use of the maximum output from the charger module on the transformer/rectifier, switch off all electrical appliances during charging.

8.6.5 Retrofitting additional 12 V appliances

The electrical system in the living area of the vehicle may be equipped with optional devices. The optional devices are to be connected to the reserve outputs on the transformer/rectifier. The output of the optional devices may not exceed the rating of the fuse (e.g. 15 A). Do not use fuses on the transformer/rectifier that are higher than those stated on the transformer/rectifier.

8.7 AC converter (MSI 1812T)



- ▶ If, when the AC converter is switched on, the 230 V connection is disconnected or the 230 V main fuse is switched off, this will not activate the sockets since these are supplied by the AC converter.
- ▶ The safety cut-out in the additional fuse box for the AC converter secures and breaks the circuit only for the sockets in the vehicle.
- ▶ Only by switching off both fuse boxes and the AC converter is the mains power supply fully activated.



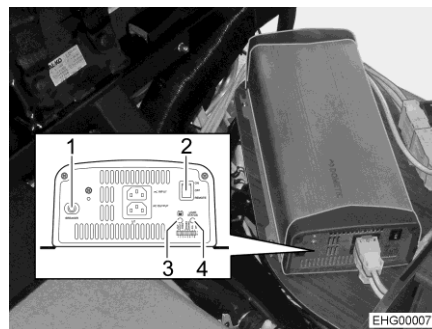
- ▷ When connecting appliances, always observe the permissible values for output power and peak output power:
 - Output power (for 10 min at 25 °C): 1800 W
 - Peak output power: 3200 W

Appliances with higher power demands must not be connected.

- ▷ Do not cover the ventilation slots. Danger of overheating!
- ▷ Do not place additional objects in the storage space of the AC converter. Danger of overheating!
- ▷ Check the fault current protection switch for each connection to the 230 V power supply, at least once every 6 months.
- ▷ If the vehicle is not connected to the 230 V power supply and no electricity is required, switch off the AC converter. Even in idle state, the AC converter still uses power from the living area battery.



- ▷ The AC converter is equipped with a 230 V priority circuit. If an external 230 V voltage is connected, it will be used primarily. Only if no external 230 V voltage is connected, the living area battery will be used for voltage supply.
- ▷ If not external 230 V power supply is connected, the AC converter draws energy from the living area battery. The living area battery has a limited power supply only. For this reason, the electrical appliances should not be operated from the electrical sockets for long periods without using the 230 V connection.
- ▷ To protect the living area battery against total discharge, the AC converter automatically switches itself off if there is undervoltage. The AC converter automatically switches itself on again when the voltage is back up to the standard value.
- ▷ In the event of overload or insufficient cooling, the AC converter switches itself off automatically. The AC converter automatically switches itself back on when there is no longer an overload and the temperature of the device is down to a safe level.
- ▷ If the appliance fuse has triggered, it must be pushed in again manually.
- ▷ Further information can be obtained in the manufacturer's instruction manual.



- 1 Appliance fuse
- 2 Main switch "ON/OFF/REMOTE"
- 3 LED input voltage range
- 4 LED "LOAD LEVEL"

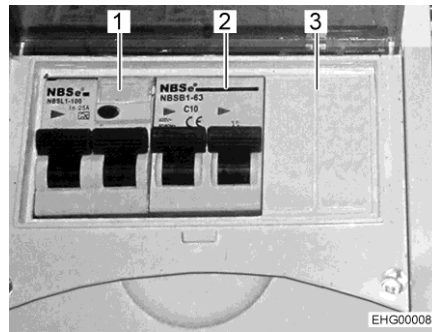
Fig. 102 AC converter (exemplary illustration)

Functions

The AC converter has the following functions:

If no external 230 V power supply is connected, the AC converter generates a 230 V voltage for all sockets in the vehicle out of the 12 V DC voltage of the living area battery.

If an external 230 V power supply is connected, this will be used to supply the sockets. In this case, the AC converter will not draw power from the living area battery.



- 1 Fault current protection switch for sockets
- 2 Safety cut-out for sockets
- 3 Fuse box

Fig. 103 Additional fuse box

The sockets are protected by a safety cut-out (Fig. 103,2) and a fault current protection switch (Fig. 103,3) in the additional fuse box (Fig. 103,1).

Position

The AC converter is installed in the bench underneath the seat lid. The additional fuse box is located at the living area battery underneath the L-seating group in an underfloor box and is accessible via an external flap.

Operating the AC converter

The operating controls are located on the front of the AC converter.

Switching on:

- Switch the main switch (Fig. 102,2) into position "ON". The input voltage range LED (Fig. 102,3) will be lit green.
- Switch the main switch (Fig. 102,2) into position "REMOTE". The control via the remote control switch will be activated.

Switching off:

- Switch the main switch (Fig. 102,2) into position "OFF". The input voltage range LED (Fig. 102,3) goes out.

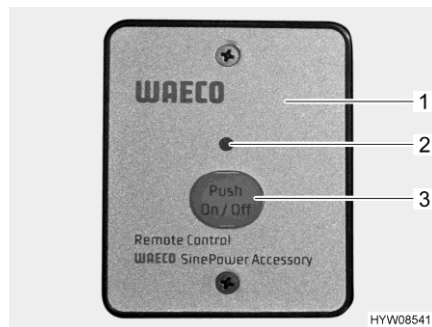


Fig. 104 External switch (AC converter)

Operation on the external switch

The external switch (Fig. 104,1) is installed in a wall-mounted cupboard on the left side.



▷ The main switch directly on the AC converter must be in the position "REMOTE".

Switching on:

- Press "On/Off" button (Fig. 104,3). The LED (Fig. 104,2) is on.

Switching off:

- Press "On/Off" button (Fig. 104,3). The LED (Fig. 104,2) goes out.

Operating and indicator elements

During normal operation, the AC converter does not require any operation except switching on and off through the external switch. The indicator elements on the AC converter are mainly used for the diagnosis of faults.

No. in Fig. 102	Designation	Function
1	Appliance fuse	Protects the AC converter against overload. Before pushing in the appliance fuse again, the cause of the fault must have been eliminated
2	Main switch	"OFF" position = AC converter switched off "ON" position = AC converter switched on "REMOTE" position = external switch enabled
3	LED input voltage range	Indicates the voltage range of the input voltage: Red, slow flashing = undervoltage (< 10.6 V) Red = undervoltage (10.6 to 11.0 V) Orange = undervoltage (11.0 to 12.0 V) Green = input voltage OK (12.0 to 14.2 V) Orange, flashing = overvoltage (14.2 to 15.0 V) Red, fast flashing = overvoltage (> 15.0 V)
4	LED "LOAD LEVEL"	Indicates the power range of the AC converter output: Off = 0 to 160 W Green = 160 to 640 W Orange = 640 to 1440 W Red, slow flashing = 1440 to 1600 W Red, fast flashing = > 1600 W

Checking the fault current protection switch:

- When the vehicle is connected to the 230 V power supply, press the test button on the fault current protection switch (Fig. 103,3). The fault current protection switch (FI-switch) must be activated.

8.8 Panel (LT 94)

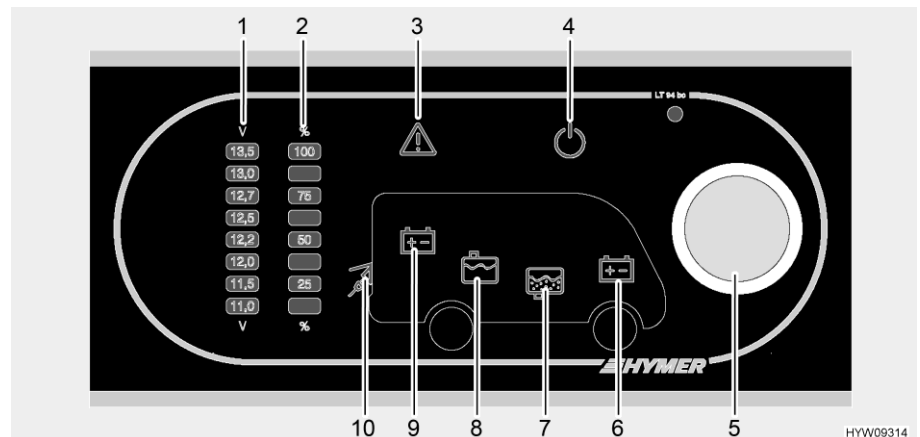


Fig. 105 Panel (LT 94)

- 1 Indicator scale for battery voltage
- 2 Indicator scale for tank fill level
- 3 Alarm warning light
- 4 12 V indicator lamp
- 5 Rotary knob
- 6 Starter battery symbol
- 7 Waste water tank symbol
- 8 Water tank symbol
- 9 Living area battery symbol
- 10 230 V indicator lamp



- ▷ Further information can be obtained in the manufacturer's instruction manual.

8.8.1 Switching the 12 V power supply on/off

The rotary knob (Fig. 105,5) switches the panel and the 12 V power supply to the living area on and off.

Exception: Heater, basic light (lighting in the entrance area), entrance step and the refrigerator are always ready to operate.

- Switching on:*
- Press the rotary knob (Fig. 105,5): The 12 V living area power supply is switched on. The 12 V indicator lamp (Fig. 105,4) lights up.
- Switching off:*
- Press the rotary knob (Fig. 105,5): The 12 V living area power supply is switched off. The 12 V indicator lamp (Fig. 105,4) goes off.



- ▷ When leaving the vehicle, switch off the main 12 V power supply at the rotary knob. This prevents any unnecessary discharge of the living area battery.
- ▷ Appliances, such as control units (e.g. solar charge regulator, defroster or panel) or fitted appliances (e.g. heater, refrigerator or step) continue to take power from the battery capacity, even if the 12 V power supply on the panel is switched off. Therefore disconnect the living area battery from the 12 V power supply via the switch on the transformer/rectifier if the vehicle will not be used for a long period of time.



8.8.2 Battery voltage display



- ▷ The panel shows the battery voltage of the entire battery system. If the vehicle has a **HYMER** Smart Battery System (special equipment), a further display panel is installed. You can read the exact voltage values on this additional display panel.
- ▷ The battery voltage will be displayed for approx. 20 seconds after it has been called up.

Use the rotary knob (Fig. 105,5) for reading the voltage of the living area battery as well as that of the starter battery. The voltage is displayed on the indicator scale for battery voltage (Fig. 105,1).

- Displays:*
- Turn the rotary knob (Fig. 105,5) until the symbol for the desired battery lights up.

Symbol	Signification
	Living area battery voltage is displayed (Fig. 105,9)
	Starter battery voltage is displayed (Fig. 105,6)

- Read the voltage from the indicator scale for battery voltage (Fig. 105,1).

The following tables will help you to correctly interpret the battery voltage display.

Notes regarding the battery voltage

Battery voltage (values during operation)	Mobile operation (vehicle moving, no 230 V connection)	Battery operation (vehicle stationary, no 230 V connection)	Power operation (vehicle stationary, 230 V connection)
Less than 11 V Danger of total discharge	No charging via the alternator	If appliances are switched off: Battery flat	No charging via the transformer/rectifier
	12 V power supply overload	If appliances are switched on: Battery overload	12 V power supply overload
11.5 V to 13 V	No charging via the alternator ¹⁾	Normal range	No charging via the transformer/rectifier ¹⁾
	12 V power supply overload ¹⁾		12 V power supply overload ¹⁾
13.5 V or more	Battery being charged	Occurs only briefly after charging	Battery being charged

¹⁾ If the voltage does not exceed this range for several hours.

Values for off-load voltage	Charging condition of the battery
Less than 12 V	Totally discharged
12.2 V	25 %
12.3 V	50 %
More than 12.8 V	100 %



▷ Total discharge causes irreparable damage to the battery.



▷ Measure the off-load voltage preferably several hours after the previous charging (e.g. in the morning) and not directly after a current drain.



8.8.3 Displaying the tank level



▷ The tank fill level will be displayed for approx. 20 seconds after it has been called up.

Use the rotary knob (Fig. 105,5) for checking the fill level of the water tank or the waste water tank. The fill level is displayed on the indicator scale for the tank fill level (Fig. 105,2).

- Displays:*
- Turn the rotary knob (Fig. 105,5) until the symbol for the desired tank lights up.

Symbol	Signification
	The level of the water tank is displayed (Fig. 105,8)
	The level of the waste water tank is displayed (Fig. 105,7)

- Read the level from the indicator scale for the tank fill level (Fig. 105,2).



- ▷ If the indicator scale displays flash while the fill level is being checked, a sensor error has occurred. Clean sensors or contact customer service.

8.8.4 Alarms

The Alarm warning light (Fig. 105,3) flashes if set limit values are exceeded or fallen below.

Battery alarm

The Alarm warning light (Fig. 105,3) flashes if the battery voltage falls below 11 V. If the 12 V power supply is switched on, the relevant battery symbol (Fig. 105,6 or 9) also lights up and "11.0" starts flashing on the indicator scale for battery voltage (Fig. 105,1). Danger of total discharge.



- ▷ Total discharge damages the battery.



- ▷ If the voltage of the batteries falls below 10.5 V, the battery monitor in the transformer/rectifier switches off all the 12 V appliances.

Measures:

- When the battery alarm comes on, switch off all appliances and charge the battery, either by mobile operation or by connection to a 230 V power supply.

Tank alarm

The Alarm warning light (Fig. 105,3) starts to flash and the corresponding tank symbol (Fig. 105,7 or 8) lights up as soon as the water tank is empty or the waste water tank is full.

Measures:

- Fill water tank or empty waste water tank.

230 V indicator lamp



- ▷ If the vehicle is connected to the 230 V power supply, the 230 V indicator lamp is lit even if the 12 V power supply is switched off via the rotary knob.

The 230 V indicator lamp (Fig. 105,10) illuminates whenever line voltage is available at the transformer/rectifier input.

8.9 230 V power supply



- ▶ Only allow qualified personnel to work on the electrical system.
- ▶ Have the vehicle's electrical system checked by a qualified electrician at least once every 3 years. If the vehicle is used frequently, an annual check is recommended.

The 230 V power supply provides electricity for the following devices (if present):

- sockets with earth contact for appliances with maximum 10 A
- refrigerator
- transformer/rectifier
- an auxiliary charging unit
- air conditioning unit

The electrical appliances connected to the 12 V power supply of the living area are supplied with voltage by the living area battery.

Connect the vehicle to an external 230 V power supply system as often as possible. The charger module in the transformer/rectifier automatically charges the living area battery. In addition to this, the starter battery is charged with a float charge of 2 A.

Depending on the equipment, optional devices are fuse-protected by their own two-pole automatic circuit breaker.

8.9.1 230 V connection (CEE socket outlet)



- ▷ Overvoltage can damage connected devices. Overvoltage can be caused by lightning, irregular voltage sources (e.g. petrol-operated generators) or power connections on ferries for example.

Requirements concerning the 230 V connection

- The connecting cable, the plug connectors at the point of supply and the plug connector to the vehicle must comply with IEC 60309. The standard designation for the plug connectors is "CEE blue".
- Use H07RN-F rubber sheathed cable with a minimum cable cross-section of 2.5 mm² and a maximum length of 25 m.
- Earth contact connectors (safety) are not permitted. The interconnection of CEE/safety adapters is also prohibited.

8.9.2 Connecting the 230 V power supply



- ▶ The external 230 V power supply must be protected by fuse with a fault current protection switch (FI-switch, 30 mA).
- ▶ To prevent overheating, the cable must be fully uncoiled from the cable reel.
- ▶ In case of doubt or if the 230 V supply is not available or is faulty, contact the operator of the power supply device.



- ▷ The 230 V connection in the vehicle is equipped with a fault current protection switch (FI-switch).
- ▷ For the connection points on camp sites (camping distributors) fault current protection switches (FI-switches, 30 mA) are obligatory.

The vehicle can be connected to an external 230 V power supply. As a principle, only use the 230 V connection on the vehicle (CEE socket outlet) for connecting.

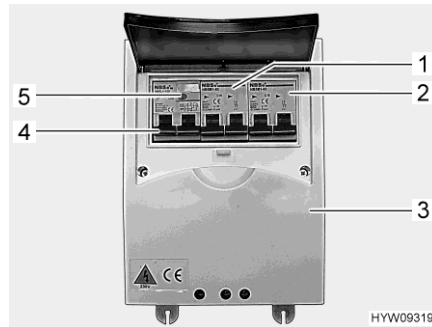


Fig. 106 Safety cut-out and FI-switch (230 V fuse box)



Fig. 107 230 V connection on the vehicle (CEE socket outlet)



- ▷ The second safety cut-out (Fig. 106,2) is optional. Whether this safety cut-out is present or not depends on the equipment of the vehicle.

Connecting the vehicle:

- Check whether the power supply device is suitable regarding connection, voltage, frequency and current.
- Check whether the cables and connections are suitable.
- Check the plug connectors and cables for visible damage.
- Switch off both safety cut-outs (Fig. 106,1 and Fig. 106,2) in the fuse box (Fig. 106,3).
- Open the cover of the 230 V connection on the vehicle (Fig. 107) and insert the plug connector. Ensure that the detent of the spring-mounted pivoting cover is engaged in position.
- Plug the connector of the connecting cable into the socket of the camping distributor. Ensure that the detent of the spring-mounted flap is also engaged here.
- Switch on both safety cut-outs in the fuse box.

Checking the fault current protection switch:

- When the vehicle is connected to the 230 V supply, press the test button (Fig. 106,5) of the fault current protection switch (FI-switch) (Fig. 106,4) in the fuse box (Fig. 106,3). The fault current protection switch must trip.
- Switch the fault current protection switch (Fig. 106,4) back on again.

Unplugging the connection:

- Switch off both safety cut-outs (Fig. 106,1 and 2) in the fuse box (Fig. 106,3).
- Loosen the detent on the camping distributor and unplug the connecting cable from the socket.
- Loosen the detent on the vehicle unplug the plug connector and close the cover of the 230 V connection.

8.10 Fuses



- ▶ Only replace defective fuses when the cause of the defect is known and has been remedied.
- ▶ Replace defective fuses only after the power supply has been turned off.
- ▶ Never bridge or repair fuses.
- ▶ Only replace faulty fuses with a new fuse with the same rating.

8.10.1 12 V fuses

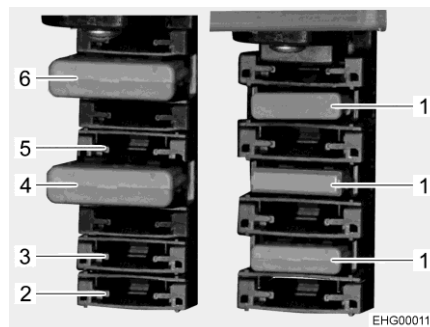
The appliances connected to the 12 V power supply in the living area are fused individually. The fuses are accessible at different positions in the vehicle.

Before changing fuses, take the function, value and colour of the relevant fuses from the following specifications. When changing fuses, only use flat fuses with the values shown below.

Some signals are protected by "Polyswitch" fuses. Polyswitch is an internal self-resetting fuse. After the overcurrent or short circuit has been remedied, the operating current is enabled again automatically. This can take a few seconds (cooling-down phase).

Fuses on the living area battery

The fuses are fitted next to the living area battery.



- 1 Flat fuse 30 A/green (for lithium battery (SA))
- 2 Flat fuse 20 A/yellow (for refrigerator)
- 3 Flat fuse 2 A/grey (for booster sensors)
- 4 Flat fuse 80 A/red (for booster)
- 5 Flat fuse 2 A/grey (for living area battery sensors)
- 6 Flat fuse 50 A/red (for transformer/rectifier)

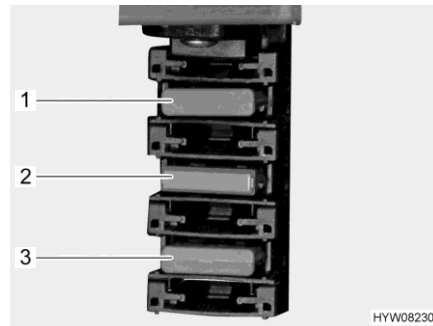
Fig. 108 Fuses (living area battery)

The three flat fuses 30 A/green (Fig. 108,1) are only present if the vehicle is equipped with a lithium battery (**HYMER** Smart Battery System, special equipment).

In case of special equipment with two lithium batteries, three more flat fuses 30 A/green are added.

Fuses on the fuse holder

The fuses are fitted next to the transformer/rectifier. The fuses are secondary fuses for spare 4 (25 A) on the transformer/rectifier.



- 1 Flat fuse 2 A/grey (refrigerator control)
- 2 Flat fuse 10 A/red (satellite unit)
- 3 Flat fuse (optional gas devices)

Fig. 109 Fuses (fuse holder)

Fuses for the driver's area

The fuses are installed behind a cover (Fig. 110,1) in the console of the left-hand driver's cabin seat.

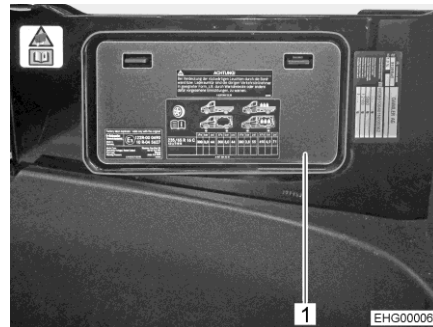


Fig. 110 Cover (left-hand seat console)

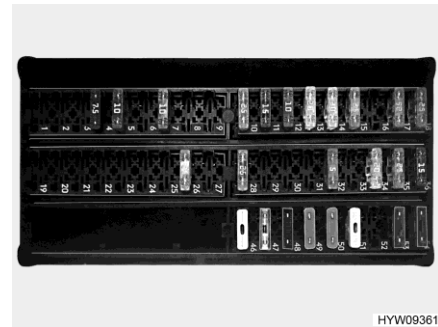


Fig. 111 Fuses (left-hand seat console)

Fuses on the transformer/rectifier

There are several fuses installed on the transformer/rectifier. The fuses are clearly identified by their colour and by the indications about function and value.

Fuse for the Thetford toilet

The toilet has a maintenance-free fuse which resets automatically.

Fuses for the hot-water heater (Alde)

The electrical system of the hot-water heater is protected by two fuses. The two 3.5 A fine fuses (glass fuses) are installed underneath a cover behind the service flap on the left side of the vehicle. This cover can be released from its lock moving it upward.

Fuse for the AC converter

The fuse for the AC converter is installed close to the living area battery.

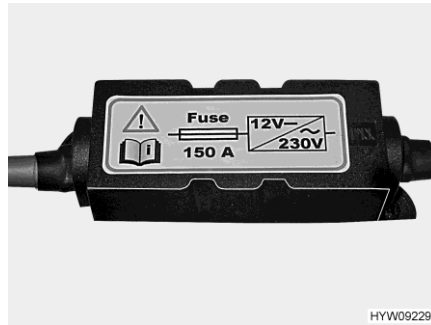


Fig. 112 Fuse (AC converter (150 A))

The fuse can be identified by its sticker.

Fuse for additional main beam (Special model Crossover)

The fuse for the additional main beam is installed in the driver's seat console.

Fuse for TV satellite unit (ten Haaft)

The fuse is located on the control unit of the TV satellite unit.
The control unit is installed in the wardrobe or in a wall-mounted cupboard.



1 10 A fuse/red

Fig. 113 Control unit (TV satellite unit, ten Haaft)

8.10.2 230 V fuse

For vehicles with and AC converter as special equipment, observe the following:



- ▶ If, when the AC converter is switched on, the 230 V connection is disconnected or the 230 V main fuse is switched off, this will not activate the sockets since these are supplied by the AC converter.
- ▶ The safety cut-out in the additional fuse box for the AC converter secures and breaks the circuit only for the sockets in the vehicle.
- ▶ Only by switching off both fuse boxes and the AC converter is the mains power supply fully activated.



- ▷ Check the fault current protection switch for each connection to the 230 V power supply, at least once every 6 months.

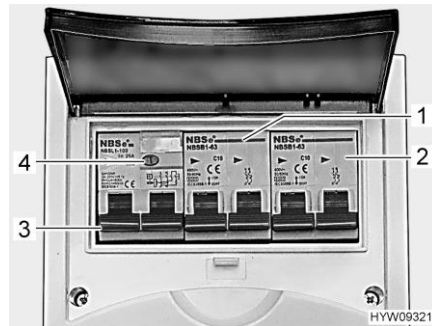


Fig. 114 Safety cutout and FI-switch (230 V fuse box)

A fault current protection switch (FI-switch) (Fig. 114,3) in the fuse box protects the complete vehicle from fault current (30 mA).

The downstream safety cut-out (10 A) (Fig. 114,1) secures the 230 V sockets, the transformer/rectifier, the auxiliary charging unit and the refrigerator.

For vehicles with special equipment, e.g. roof air conditioning unit, the device is protected by an additional safety cut-out (16 A) (Fig. 114,2).

Checking the fault current protection switch:

- When the vehicle is connected to the 230 V power supply, press the test button (Fig. 114,4). The fault current protection switch (FI-switch) must be activated.

Position The fuse box is installed in the wardrobe.

Chapter overview

This chapter contains instructions regarding the appliances of the vehicle.

The instructions refer exclusively to the operation of the appliances.

Further information about the appliances can be found in the instruction manuals for the appliances, included separately with the vehicle.

9.1 General



- ▷ For safety reasons, spare parts for pieces of heating appliances must correspond with manufacturer's instructions and be permitted by the manufacturer as a spare part. These spare parts may only be fitted by the manufacturer or an authorised specialist workshop.



- ▷ Further information can be obtained in the instruction manual for the respective appliance.

The heater, boiler, cooker and refrigerator are fitted depending on the model of the vehicle.

In this instruction manual a description is given only for the operation of the appliances and their particular features.

To operate gas appliances, first open the regulator tap on the gas bottle and the gas isolator tap corresponding to the appliance.

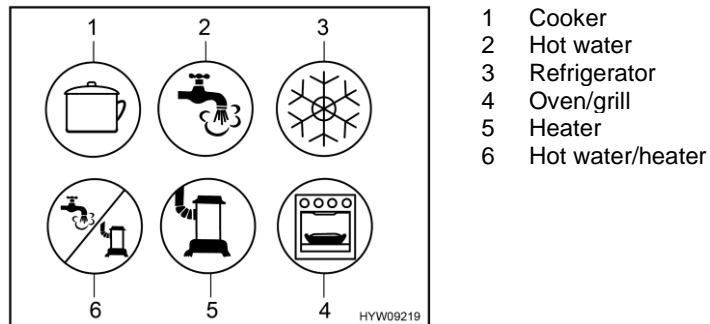


Fig. 115 Possible symbols for the gas isolator taps

9.2 Heater and boiler

The heater can both heat up the vehicle interior (heating the room air) and heat up the domestic water (boiler function). The following instructions are also valid if the heater is only used as boiler.



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Never run the heater in gas operation when refuelling, on ferries or in the garage. Danger of explosion!
- ▶ Never operate the heater in gas operation in closed spaces (e.g. garages). Danger of poisoning and suffocation!
- ▶ The waste gas vent may neither be closed nor blocked.
- ▶ Do not use the space behind the heater as a storage space.
- ▶ The water in the boiler can be heated up to 65 °C. Risk of scalding!



- ▷ Never use boiler when empty.
- ▷ If the boiler is not being used, empty it if there is any risk of frost.
- ▷ Only operate the boiler with the maximum temperature setting if you require a large quantity of warm water. This protects the boiler against the build-up of limescale.



- ▷ Do not use the water from the boiler as drinking water.
- ▷ If the power supply to the heater was interrupted, the time must be reset.

Initial start-up

When lighting the heater for the first time a small amount of smoke and odour will occur. Immediately set the operating switch of the heater to its highest position. Open doors and windows and ventilate well. Smoke and odour will disappear by themselves after a while.

9.2.1 Models with waste gas vent on the right-hand side of the vehicle



- ▶ If the awning is put up and the heater is running in gas operation, exhaust gases from the heater can escape into the awning area. Danger of suffocation! Make sure the area is sufficiently ventilated.

9.2.2 To heat properly



Fig. 116 Air outlet nozzle (hot-air heater)

Hot air distribution

Several air outlet nozzles (Fig. 116) are built into the vehicle. Pipes conduct the warm air to the air outlet nozzles. Turn the air outlet nozzles in a suitable position so the air can escape as required. To avoid draft close the air outlet nozzles on the dashboard and set the air distribution of the base vehicle to air circulation.

Adjusting the air outlet nozzles

- Fully open: Full hot air stream
- Half or partially open: Reduced hot air stream

When five air outlet nozzles are completely opened, less warm air escapes through each nozzle. However, if only three air outlet nozzles are opened, more warm air flows out of each nozzle.

9.2.3 Gas hot-air heater and boiler with CP plus digital operating unit



- ▷ If there is a risk of frost and the heater is not in operation, empty the boiler.
- ▷ The circulation fan is automatically switched on when the hot-air heater is activated, and it stays on. This puts an immense strain on the living area battery, if the vehicle is not connected to an external 230 V power supply. Take into consideration that the living area battery only has limited reserves of energy.



- ▷ The hot-air heater can even run on an empty boiler.
- ▷ If the power supply to the heater was interrupted, the time must be reset.

Maximum heat output

Gas operation	Electrical operation	Mixed operation (gas and electrical operation)
6000 W	1800 W	5800 W

Operating unit

The operating unit is divided into two sections:

- Display
- Operating buttons



- 1 Display
- 2 Rotary push button
- 3 Back button

Fig. 117 Operating unit (hot-air heater and boiler)

After being switched on, the most recently set values/operating parameters are activated.

If no button is pressed, the operating unit switches to stand-by mode after a few minutes.

If the time is set, the display in stand-by mode alternates between the time and the room temperature set.

After being switched off, the display in the control unit may remain active for several minutes since the heater is still running.

Operating buttons

The operating buttons have the following functions:

Button	Button operation	Function
Rotary push button (Fig. 117,2)	Turn to the right	Menu is run through from left to right
		Values are increased
	Turn to the left	Menu is run through from right to left
		Values are decreased
	Press briefly	Selected value is saved
Press (3 seconds)	Menu item is selected for changing values (selected menu item flashes)	
	Switch on or switch off	
Back button (Fig. 117,3)	Press	Return from a menu item without saving values

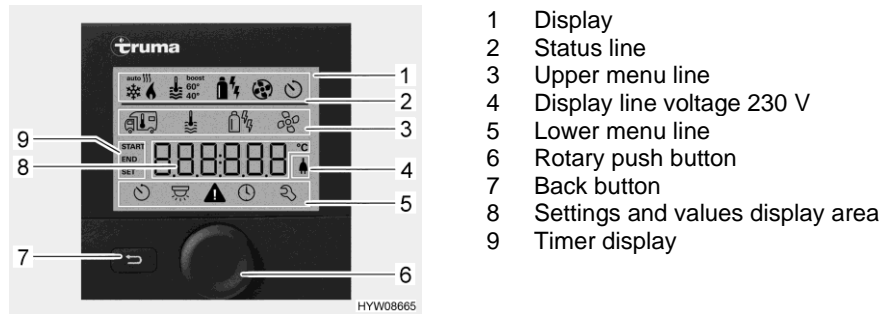


Fig. 118 Operating unit with displays

Display

The display is divided into four sections:

- Status line (Fig. 118,2)
- Upper menu line (Fig. 118,3)
- Display area (Fig. 118,8)
- Lower menu line (Fig. 118,5)

Switching operating unit on-/off:

- Press and hold the rotary push button (Fig. 118,6) for approx. 3 seconds. Both menu lines (Fig. 118,3 and Fig. 118,5) are displayed. The first symbol flashes.



- ▷ Switching the operating unit on/off actually means toggling between stand-by and setting mode. In stand-by mode, the display alternates between the room temperature and the time that have been set.

Carrying out settings:

- Turn rotary push button (Fig. 118,6) until the required menu symbol flashes.
- Press rotary push button.
- Turn rotary push button until the required value is displayed.
- Press rotary push button to save the value set. If you do not wish to change the value originally set: Press back button (Fig. 118,7).

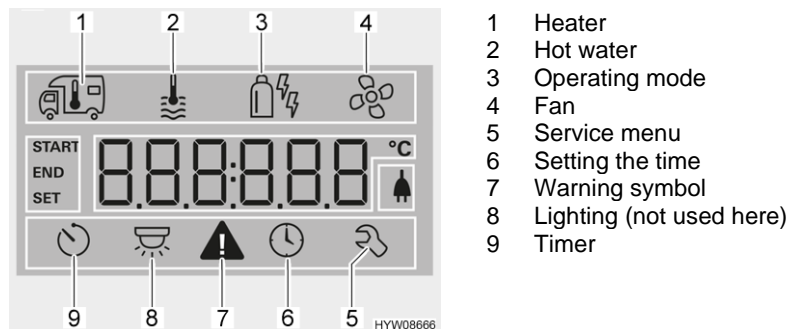


Fig. 119 Display (operating unit)

Switching on the heater:

- Open the regulator tap on the gas bottle and the gas isolator tap "Heater/boiler".
- Turn rotary push button (Fig. 118,6) until the heater menu symbol (Fig. 119,1) flashes.
- Press rotary push button.
- Turn rotary push button until required value is displayed.

- Press rotary push button to save the value set. The symbol in the status line (Fig. 118,2) flashes until the room temperature set is reached. If you do not wish to change the value originally set: Press back button (Fig. 118,7).

Switching off the heater:

- Turn temperature value back until OFF is displayed. Press rotary push button to save.



- ▷ The required room temperature can also be changed in stand-by mode by turning the rotary push button.

Switching on production of hot water:

- Open the regulator tap on the gas bottle and the gas isolator tap "Heater/boiler".
- Turn rotary push button (Fig. 118,6) until the hot water menu symbol (Fig. 119,2) flashes.
- Press rotary push button.
- Turn rotary push button until the required value is displayed:
 - OFF: Production of hot water is switched off.
 - 40°: Hot water is heated to 40 °C.
 - 60°: Hot water is heated to 60 °C.
 - BOOST: Fast heating of hot water (boiler priority) for max. 40 minutes. The water temperature is then held at a higher level for two reheating cycles (approximately 62 °C).
- Press rotary push button to save the value set. The symbol in the status line (Fig. 118,2) flashes until the hot water temperature set is reached. If you do not wish to change the value originally set: Press back button (Fig. 118,7).

Switching off production of hot water:

- Turn rotary push button until OFF is displayed. Press rotary push button to save.

Safety/drainage valve

The boiler is equipped with a safety/drainage valve (Fig. 120). The safety/drainage valve prevents water in the boiler from freezing, when there is frost and the heater is not switched on.



- ▷ When the vehicle is not used for a long period of time, open the safety/drainage valve and empty the boiler.
- ▷ At temperatures below 3 °C the safety/drainage valve opens automatically. Only if the temperature of the safety/drainage valve lies above 7 °C can it be shut again.
- ▷ The water pump and the water fittings are not protected against freezing by the safety-/drainage valve.



- ▷ The drainage neck of the safety/drainage valve has to be free of dirt (e.g. leaves, ice) at all times.

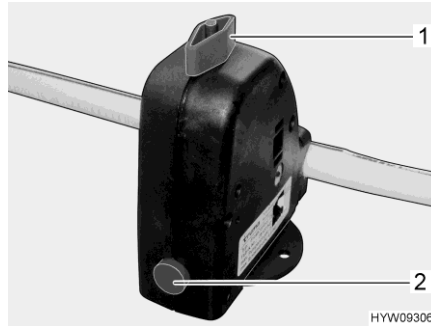


Fig. 120 Safety/drainage valve (boiler)

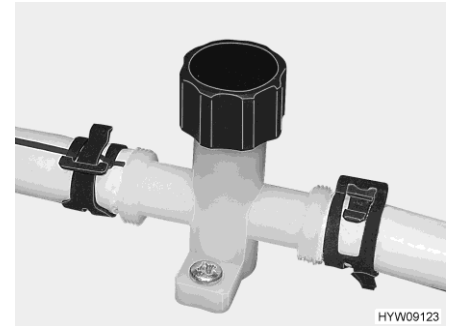


Fig. 121 Drain cock (water pipe)

Position Position of the safety/drainage valve, see section 10.6.

Filling/emptying the boiler The boiler can be supplied with water from the water tank.

Filling the boiler with water:

- Switch on the 12 V power supply on the panel.
- Close the safety/drainage valve. Turn the knob (Fig. 120,1) perpendicular to the safety/drainage valve and push the push button (Fig. 120,2) in.
- Set all the water taps to "Hot" and open them. The water pump is turned on. The warm water pipes are filled with water.
- Keep the water taps open until the water flowing out of the water taps has no bubbles in it. This is the only way to ensure that the boiler is full of water.
- Close all water taps.

Emptying the boiler:

- Switch off hot water production.
- Open the safety/drainage valve. To do this turn the knob (Fig. 120,1) parallel to the safety/drainage valve. The push button (Fig. 120,2) jumps out. The boiler is drained to the outside by the safety/drainage valve.
- Check whether the water has been drained completely from the boiler (approx. 10 litres).
- Close the drain cocks. In order to do this, turn the cap of the drain cock (Fig. 121) in a clockwise direction.

Operating modes The hot-water heater with the boiler can be operated with various energy sources.

Selecting operating mode:

- Turn rotary push button (Fig. 118,6) until the menu symbol operating mode (Fig. 119,3) flashes.
- Press rotary push button.
- Turn rotary push button until the desired operating mode is displayed:
 - Gas operation
 - Electrical operation, output level 1 (900 W)
 - Electrical operation, output level 2 (1800 W)
 - Gas operation and electrical operation output level 1 (900 W)
 - Gas operation and electrical operation output level 2 (1800 W)
- Press the rotary push button to save the set operating mode. To revert to the original setting: Press back button (Fig. 118,7).



- ▷ 230 V electrical operation is only possible when the vehicle is connected to the 230 V power supply.
- ▷ With output level 1 (900 W), the current consumption is 3.9 A. With output level 2 (1800 W), the current consumption is 7.8 A.

Setting the fan:

- Turn rotary push button (Fig. 118,6) until the fan menu symbol (Fig. 119,4) flashes.
- Press rotary push button.
- Turn rotary push button until the required value is displayed:
 - OFF: Fan is switched off.
 - VENT: Air circulation
 - ECO: Low fan setting
 - HIGH: High fan setting
 - BOOST: Fast room heating. Boost is available if the current room temperature is at least 10 °C below the selected room temperature.
- Press rotary push button to save the value set. If you do not wish to change the value originally set: Press back button (Fig. 118,7).

Setting the timer:

- Turn rotary push button (Fig. 118,6) until the timer menu symbol (Fig. 119,9) flashes.
- Press rotary push button. The start time is displayed and the hour display flashes.
- Turn rotary push button until the hour of the selected start time is displayed.
- Press rotary push button. The minute display flashes.
- Turn rotary push button until the minute of the selected start time is displayed.
- Press rotary push button.
- Proceed in the same way to set the switch-off time, the required room temperature, the hot water setting and the fan setting.
- Press rotary push button. The timer is activated. The timer symbol (Fig. 119,9) flashes when the timer is programmed and active.



- ▷ The service menu contains items that generally only need to be set once (language, background brightness, calibration), as well as information for service centres (version numbers).

Fault display

The warning symbol (Fig. 119,7) flashes in the event of a warning. The heater continues to operate. In the event of only a temporary fault, the warning symbol goes out automatically.

In the event of a warning, the control unit displays the error code for the fault. The heater is switched off. Press rotary push button to restart the heater.



- ▷ Further information can be obtained in the manufacturer's instruction manual.

9.2.4 Diesel hot-air heater and boiler



- ▶ If leakage occurs at the heater or at the exhaust gas routing, there is a risk of poisoning! If leakage is detected: switch off the diesel hot-air heater. Open windows and doors. Have the system checked by an authorised service centre.
- ▶ Observe the safety regulations and safety instructions of the manufacturer; see separate instruction manual of the manufacturer.

The function and operation are the same as for the gas-operated hot-air heater, see section 9.2.3.

Further information can be obtained in the manufacturer's instruction manual.

9.2.5 Alde hot-water heater and boiler



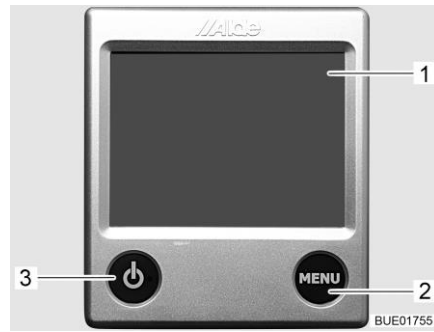
- ▷ Never run hot-water heater without heating fluid. Observe the notes in chapter 12.
- ▷ Never drill holes in the floor. This might damage the hot-water pipes.
- ▷ Make sure that there is enough fresh water in the fresh water tank to fill the boiler.



- ▷ The circulating pump must always be turned on when the hot-water heater is in operation.
- ▷ We recommend to bleed the heating system after the initial heater operation and to check the glycol content. Observe the notes in chapter 12.
- ▷ When the heater is turned on, it starts with the last settings used.
- ▷ For further information, see the separate manufacturer's instruction manual and observe the maintenance instructions found in chapter 12.

Operating unit The operating unit is divided into two sections:

- Display (touch screen)
- Operating buttons



- 1 Display (touch screen)
- 2 "Menu" button
- 3 "On/Off" button

Fig. 122 Operating unit (hot-water heater)



- ▷ When no button is pressed, the operating unit automatically switches to home position after two minutes.
- ▷ Changes to the settings are saved automatically after 10 seconds.

Operating buttons

The operating buttons have the following functions:

Pos. in Fig. 122	Button	Function
2	MENU	Open adjustment menu
3		Activate heating

Display

The display (Fig. 122,1) is designed as a touch screen. Touching the symbols calls up the relevant function.







Fig. 123 Start screen (operating unit)

Start screen

The start screen appears on the display after the heater is switched on. The start screen contains the following information:

Symbol	Signification
	This symbol appears when the circulating pump is activated
	This symbol appears when the Automatic start function of the heater is activated
	This symbol appears when the daytime automatic mode function is activated
	This symbol appears when the night-time automatic mode function is activated

Symbol	Signification
	This symbol appears when a switching facility for gas bottles is activated
	This symbol appears when a voltage of 230 V is present at the heater
	The internal temperature is displayed next to this symbol
	The external temperature is displayed next to this symbol if an external sensor is fitted








Adjustment menu

The "MENU" button calls up the adjustment menu. The meanings of the individual symbols are described in the following table.



Fig. 124 Adjustment menu (operating unit)

The values can be increased or reduced via the "+" or "-" symbols.

Symbol	Signification
	Setting the desired temperature of +5 to +30 °C
	Setting the water temperature in the boiler
	Setting the heat output in electrical operation
	Heater button in gas operation On/Off
	Tool menu button
	AC button for switching on the automatic air conditioning (only visible when the Truma Aventa air conditioning unit is installed)
	Button for activated functions

Tool menus

The various heater functions can be called up and adjusted via the tool menus. The arrow symbols are used to change between the menus. The meanings of the individual symbols are described in the manufacturer's instruction manual.



Selecting the operating mode

The hot-water heater can be operated with the following energy sources:


- Gas operation
- 230 V electrical operation
- Gas and 230 V electrical operation

The operating mode is selected from the operating unit.

Selecting gas operation:

- Press " " button. The button lights up green. The gas operation is activated.
- Press " " button again. The button lights up blue. The gas operation is switched off.

Selecting 230 V electrical operation:

- Press the "+" button next to the " " symbol until the desired heat output is reached.



- ▷ Select the output level during 230 V electrical operation in such a way that it corresponds to the 230 V connection protection:

Level 1 (1 kW) at 6 A

Level 2 (2 kW) at 10 A

Level 3 (3 kW) at 16 A


Selecting gas and 230 V electrical operation:



- Select gas operation and 230 V electrical operation on the operating unit.
- ▷ If gas and 230 V electrical operation is selected and if the vehicle is connected to the 230 V power supply, then the hot-water heater at first only operates in 230 V electrical operation. Only if the heat output is insufficient does the gas operation also automatically switch on.
- ▷ The gas operation is only possible when the regulator tap on the gas bottle and the gas isolator tap are opened.
- ▷ 230 V electrical operation is only possible when the vehicle is connected to the 230 V power supply.

When the heater is turned on, it starts with the last set operating mode.



Switching on the heater:

- Press " " button. The start screen appears in the display. The heater starts automatically.

Switching off the heater:

- Press " " button. The heater is turned off.

Setting the water temperature in the boiler:

- To set temperature level 1: Press the "+" button next to the " " symbol once. Half of the triangular symbol next to the "+" button becomes black.
- To set temperature level 2: Press the "+" button next to the " " symbol twice. The entire triangular symbol next to the "+" button becomes black. After 30 minutes, the boiler automatically switches from level 2 back to level 1.

Filling/emptying the boiler

The boiler can be supplied with water from the water tank.



- ▷ To be able to fill the boiler, sufficient fresh water must be present in the fresh water tank.

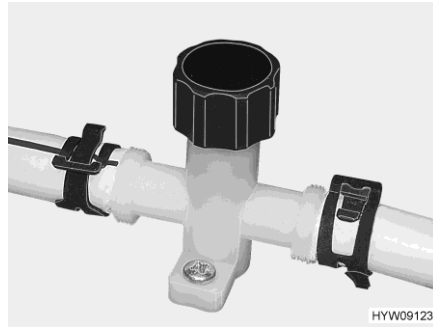


Fig. 125 Drain cock (water pipe)

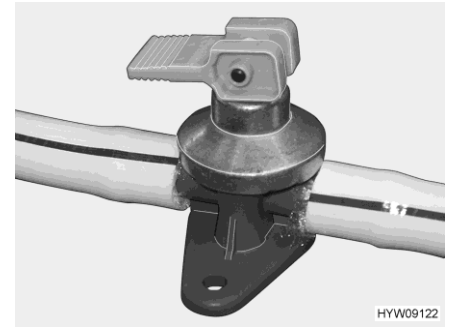


Fig. 126 Drain cock (Alde boiler)

Filling the boiler with water:

- Close the drain cocks. To do so, turn the cap (Fig. 125) in a clockwise direction and set the rocking lever (Fig. 126) in a horizontal position.
- Switch on the 12 V power supply on the panel.
- Set all the water taps to "Hot" and open them. The water pump is turned on. The warm water pipes are filled with water.
- Keep the water taps open until the water flowing out of the water taps has no bubbles in it. This is the only way to ensure that the boiler is full of water.
- Close all water taps.

Emptying the boiler:

- Switch off the boiler.
- Open the drain cocks. To do so, turn the cap (Fig. 125) in an anticlockwise direction and set the rocking lever (Fig. 126) in a vertical position.
- Check whether the water has been drained completely from the boiler (approx. 7-10 litres).



- ▷ For further information about emptying the water system see section 10.2.6.
- ▷ For further information about the boiler see the separate manufacturer's instruction manual and observe the maintenance instructions in chapter 12.

Alde heat exchanger



- ▷ The heat exchanger only works when the vehicle engine is running.
- ▷ If the heat exchanger is not being used (as in the summer), the heat exchanger on the stopcock should be shut off.

The heat exchanger can be used to heat the living area of the vehicle during travel without operating the hot-water heater in the living area.

The heat exchanger is connected to the vehicle engine's cooling circuit and thus has the same function as the vehicle heater.

Heat output is set with the living area's heating regulator.

Position

The stopcock of the heat exchanger is installed behind the living area battery, and is accessible via a service flap.

Alde auxiliary circulating pump



- ▷ The auxiliary circulating pump works only if the heat exchanger has been installed and started, and the hot-water heater is running.



Fig. 127 Start menu (auxiliary circulating pump)

The auxiliary circulating pump can be used to heat the vehicle engine when parked.

The auxiliary circulating pump is connected to the vehicle engine's cooling circuit and thus functions as an engine heater.

Starting the engine heater:

- Press the "Off" button on the display. The button turns green and the writing shows "On".
- Set the desired start time (time and day of the week). The engine heater starts at the set time. The engine heater is switched off again automatically after 60 minutes.



- ▷ The internal clock of the operating unit must be correctly set so that the engine heater starts at the right time.

Auxiliary fan

The auxiliary fan ensures improved distribution of heat throughout the vehicle.

The auxiliary fan is controlled via the operating unit (Fig. 128) of the hot-water heater.

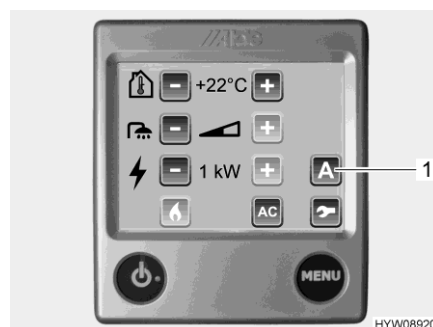


Fig. 128 Adjustment menu (auxiliary fan)

- Press "MENU" button on the operating unit.
- Press "A" button (Fig. 128,1). The functions will be displayed.



Fig. 129 Activated functions (auxiliary fan)



Fig. 130 Control (auxiliary fan)

- Press the Booster button (Fig. 129,1). The control display (Fig. 130,1) for the auxiliary fan will be displayed.
- Use the "+" and "-" buttons (Fig. 130) to set the desired fan power.

Position The radiator with integrated auxiliary fan is installed in the console of the front driver's seat.

9.2.6 Wall flue

Fresh air and exhaust gases of the heater system are conducted in a two-chamber wall flue.



- ▷ Park the vehicle such that the wall flue gets enough fresh air.
- ▷ The wall flue must be free at all times. Do not cover the wall flue.
- ▷ When camping in winter, maintain wall flue free of snow and ice.
- ▷ Check the wall flue periodically depending on the weather (snow, leaf fall, dirt, etc.). If necessary, clean the wall flue.
- ▷ When washing the vehicle do not aim the water jet directly at the wall flue.
- ▷ When disregarding this, the flawless operation of the heater can not be guaranteed.



Fig. 131 Wall flue (hot-water heater)



Fig. 132 Wall flue (hot-air heater)

The wall flue is mounted on the left side wall.

9.2.7 Hydronic radiant floor heating



- ▷ Never drill holes in the floor. This might damage the hot-water pipes.



- ▷ The floor heating can only operate if the hot-water heating system is running.
- ▷ The heat output depends on the temperature of the heating liquid in the hot-water heating system.
- ▷ Generally, the return valves are open and the heating output is regulated using the inlet valves. As an alternative, the inlet valves can be opened to regulate the heating output using the return valves.
- ▷ Only the distribution of the hot water for heating is adjusted with the inlet valves. The temperature and thereby the power of the heating itself is set at the operating unit.

Warm water from the heating system flows through heating circuits running through the floor, keeping the floor comfortably warm. The floor heating is divided into several heating circuits, which can be adjusted individually. Depending on the model, the heating circuits heat different parts of the living area.

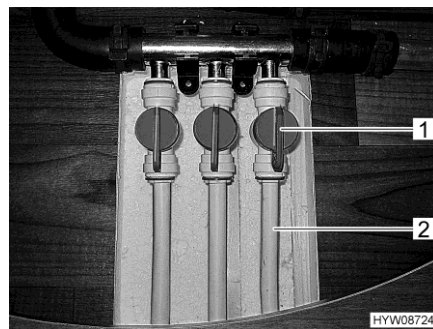


Fig. 133 Inlet valves (floor heating)

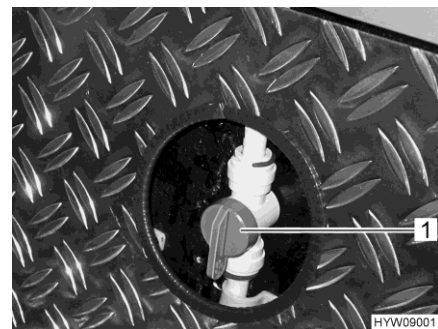


Fig. 134 Inlet valve (rear garage heating)

Switching on floor heating:

- Adjust the handle (Fig. 133,1) of the inlet valve for the chosen heating circuit (Fig. 133,2) so that it is parallel to the heating pipe. Now this floor heating circuit will operate at maximum power.

Adjusting heat output:

- Adjust the handle (Fig. 133,1) of the inlet valve of the chosen heating circuit (Fig. 133,2) to any position. This way, the heat output of this circuit can be continuously adjusted.

Switching off floor heating:

- Adjust the handle (Fig. 133,1) of the inlet valve of the chosen heating circuit (Fig. 133,2) so that it is perpendicular to the heating pipe. This floor heating circuit is now switched off.

Switching on the rear garage heating:

- Adjust the handle (Fig. 134,1) on the inlet valve for the rear garage heating so that it is parallel to the heating pipe. The rear garage heating is now working at maximum power.

Adjusting heat output:

- Set the handle (Fig. 134,1) on the inlet valve for the rear garage heating to the desired position. This enables the hot water distribution to the rear garage to be continuously adjusted.

Switching off the rear garage heating:

- Set the handle (Fig. 134,1) on the inlet valve for the rear garage heating so that it is horizontal to the heating pipe. The rear garage heating is now switched off.

Position

The inlet valves for the floor heating are located under the counter drawer. The counter drawer must be unhooked in order to gain access to the inlet valves. The inlet valve for the rear garage heating is located behind a cut-out in the front wall of the rear garage.

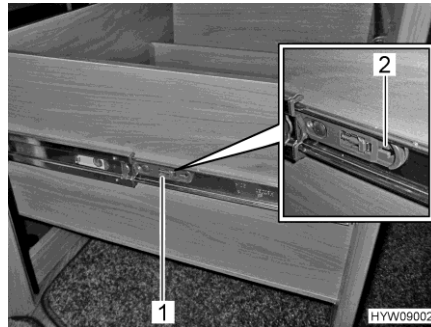


Fig. 135 Counter drawer

Unhooking the counter drawer:

- Pull out the counter drawer as far as it can go.
- On both sides of the counter drawer, pull the tongue (Fig. 135,1) in the direction of the arrow (Fig. 135,2). The counter drawer can then be pulled out beyond its stop.
- Pull out the counter drawer until access to the inlet valves is possible.
- To close the counter drawer again: Push the counter drawer all the way back in.

9.2.8 Electrical floor warming unit



- ▶ On models with electrical floor warming unit, never drill holes in the floor or screw in any screws. Careful with sharp objects. There is danger of a power cut or a short circuit due to damage to a heater wire.



- ▷ The electrical floor warming unit only operates if the vehicle is connected to the 230 V power supply.
- ▷ The output of the electrical floor warming unit alone is not sufficient to heat the living area.
- ▷ The electrical floor warming unit is switched on and off via a rocker switch (Fig. 136,1). When the floor warming unit is working, the indicator lamp (Fig. 136,2) will be lit red.

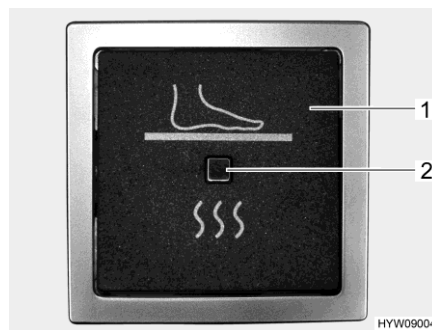


Fig. 136 Rocker switch (electrical floor warming unit)

After switching off, the floor remains warm for a while, due to residual heat.

9.2.9 Independent vehicle heater



- ▷ The optional independent vehicle heater is part of the base vehicle. Read the instruction manual for the base vehicle.

9.3 Truma Aventa air conditioning unit



- ▷ The cooling circuit may only be opened by the manufacturer or an authorised specialist workshop.
- ▷ Do not block the air inlets and air outlets.
- ▷ Do not drive on any gradients or inclines greater than 8 % when the air conditioning unit is in operation. Otherwise the compressor could be damaged.
- ▷ Do not operate the unit in cooling mode for extended periods when the vehicle is on an incline. Condensation can enter the interior.



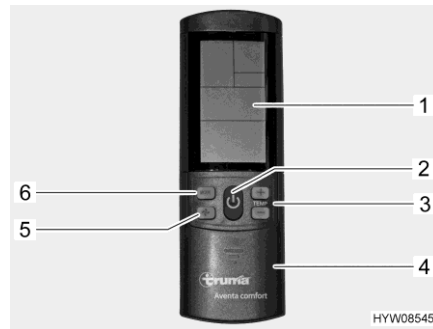
- ▷ The air conditioning unit only runs if the vehicle is connected to a 230 V power supply.
- ▷ The external 230 V power supply must be protected by a fuse of at least 6 A. It is otherwise not possible to operate the air conditioning unit properly.
- ▷ Heating at external temperatures below 4 °C is not possible, as the heating output then falls sharply. The unit switches to defrosting for a short time at temperatures between 4 °C and 7 °C. Unrestricted heating operation is possible at external temperatures above 7 °C.
- ▷ Always point the remote control at the infrared receiver when using it.
- ▷ Also read the manufacturer's instruction manual.

Operating modes

The air conditioning unit can be operated in the following modes:

- Automatic
- Cooling
- Heater
- Air circulation

Remote control All functions of the air conditioning unit can be operated via the remote control.



- 1 Display
- 2 On/Off button
- 3 Buttons "+" and "-" for temperature selection
- 4 Sliding door for field with setting buttons
- 5 Fan setting selection button (three levels)
- 6 Mode selection button

Fig. 137 Remote control (air conditioning unit)

Automatic mode In automatic mode the desired temperature merely has to be set. Depending on the room temperature, the air conditioning unit automatically selects cooling or heating mode and the fan setting.

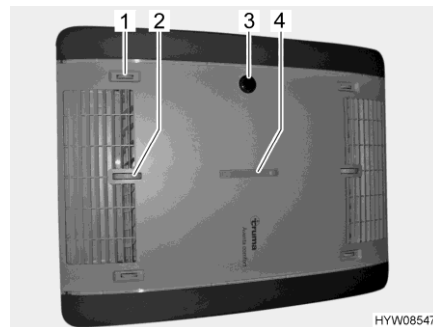
Switching on: ■ Press the On/Off button (Fig. 137,2). The last settings selected are accepted.



▷ The circulation fan runs after switching on. The compressor switches itself on after no more than 3 minutes. The blue LED (cooling) or the yellow LED (heating) flashes.

■ Use the "+" and "-" buttons (Fig. 137,3) to set the desired temperature.

Switching off: ■ Press the On/Off button (Fig. 137,2). The lighting can continue to be operated.



- 1 Air distribution right/left
- 2 Air distribution ceiling/floor
- 3 IR receiver, function display, manual on/off
- 4 Air distribution front/rear

Fig. 138 Function display and air distribution (air conditioning unit)

9.3.1 Operation and display on the unit

Certain functions can be operated directly on the unit.

- Air distribution adjustment:* ■ Set the small adjustment wheel and sliding regulator for stepless air distribution as desired.
- Switching on/off manually:* ■ Press the micro button (e.g. with a ballpoint pen if the remote control is not in reach).

Function display

Status LED	Signification
Blue LED flashes	Compressor starts up (cooling mode)
Blue LED lights up	Cooling operation
Yellow LED flashes	Compressor starts up (heating mode)
Yellow LED lights up	Heating mode
Red LED flashes	Data is transferred
Red LED lights up	Fault

Manual mode

In the manual mode, the cooling, heater, and air circulation can be set separately on the remote control.

- Switching on the cooling:*
 - Press the On/Off button (Fig. 137,2).
 - Press the mode selection button (Fig. 137,6) until the cooling symbol appears in the display (Fig. 137,1).
 - Use the "+" and "-" buttons (Fig. 137,3) to set the desired temperature.
 - Use the "🌀" selection button (Fig. 137,5) to set the desired fan level.

When the room temperature set on the remote control is reached, the compressor switches itself off and the blue LED in the IR receiver goes out. The circulation fan continues to run.

When the room temperature rises above the set temperature, the unit automatically switches itself back to cooling mode.

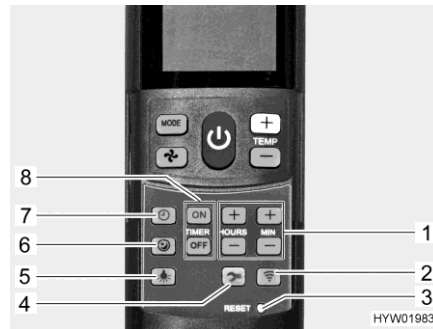
- Switching on the heater:*
 - Press the On/Off button (Fig. 137,2).
 - Press the mode selection button (Fig. 137,6) until the heating symbol appears in the display (Fig. 137,1).
 - Use the "+" and "-" buttons (Fig. 137,3) to set the desired temperature.
 - Use the "🌀" selection button (Fig. 137,5) to set the desired fan level.

When the room temperature set on the remote control is reached, the compressor switches itself off and the yellow LED in the IR receiver goes out. The circulation fan continues to run.

When the room temperature falls below the set temperature, the unit automatically switches itself back to heating mode.

- Switching on air circulation:*
 - Press the On/Off button (Fig. 137,2).
 - Press the mode selection button (Fig. 137,6) until the air circulation symbol appears in the display (Fig. 137,1).
 - Use the "+" and "-" buttons (Fig. 137,3) to set the desired temperature.
 - Use the "🌀" selection button (Fig. 137,5) to set the desired fan level.

In air circulation mode, the inside air is circulated and is cleaned by the filter. No LEDs light up in the IR receiver.



- 1 Buttons for setting the time and the timer
- 2 Send button (repeat data transfer)
- 3 Micro button "RESET" (resetting to the factory setting)
- 4 Setup button for start-up
- 5 Light button (for operating the lighting)
- 6 Soft-start button (for quiet cooling operation)
- 7 Time button (for setting the time)
- 8 "TIMER" buttons for switching time preselection on/off

Fig. 139 Remote control with setting buttons (air conditioning unit)

Activating soft-start: ■ Press the soft-start button (Fig. 139,6). The fan then runs at low speed in cooling mode, which makes it especially quiet.

Setting the time: ■ Press the time button (Fig. 139,7).
 ■ Set the hours and minutes with the buttons (Fig. 139,1).

Switching on the timer: ■ Press the On/Off button (Fig. 137,2).
 ■ Set the desired mode and temperature.

Programming the switching on time: ■ Press "ON" button (Fig. 139,8).
 ■ Press the buttons for setting the time (Fig. 139,1) until the desired time span until switch-on is reached.
 ■ Press "ON" button (Fig. 139,8).

Programming the switch-off time: ■ Press "OFF" button (Fig. 139,8).
 ■ Press the buttons for setting the time (Fig. 139,1) until the desired time span until switch-off is reached.
 ■ Press "OFF" button (Fig. 139,8).

Deactivating the timer: ■ Press the "ON" or "OFF" button (Fig. 139,8) again.

The integrated timer enables the switch-on/switch-off time for the air conditioning unit to be set between 15 minutes and 24 hours in advance (calculated from the current time).

Switching on the lighting: ■ Press the light button (Fig. 139,5). The light is switched on at the last set dimming level.

Dimming the lighting: ■ Press the light button (Fig. 139,5) and keep it pressed until the desired brightness is reached.

Switching off the lighting: ■ Press the light button (Fig. 139,5).



- ▷ The Setup button (Fig. 139,4) is used to connect the remote control with the air conditioning unit during first set-up.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

9.4 Controlling Truma appliances with mobile terminal

Depending on the equipment, a Truma iNet-Box is installed in the vehicle. With the Truma iNet-Box, the heater and the air conditioning unit can be operated from a mobile terminal (e.g. smartphone, tablet PC) via an app. The Truma app can be downloaded for common mobile terminals from the respective app stores.

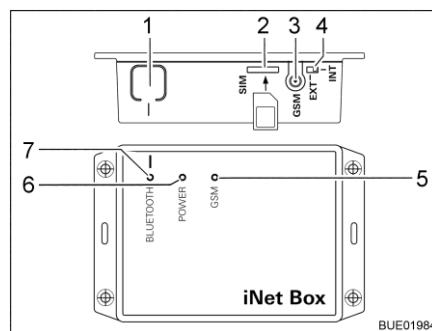
There are two possibilities for the communication between the Truma appliance and the mobile terminal:

- Bluetooth connection (limited range)
- Connection via the mobile communication network (a mini SIM card with own telephone number and sufficient credit is required; not included in the scope of delivery). Operating is carried out via SMS.

The operation of the Truma appliances is possible from multiple mobile terminals. In order to do this, the Truma app must be installed on each mobile terminal.



- ▷ When the mobile terminal has an Internet connection, the instructions for operating the Truma appliances are downloaded and stored. The instructions will then be available at any time (even without Internet connection).



- 1 BLUETOOTH button
- 2 Slot for mini SIM card
- 3 Antenna connection for external GSM antenna
- 4 External/internal GSM antenna change-over switch
- 5 GSM LED, red (lit when GSM operation is not possible)
- 6 POWER LED, green (lit when operating)
- 7 BLUETOOTH LED, blue (flashes during pairing)

Fig. 140 Truma iNet-Box

Setting up the Bluetooth connection:

- Install Truma app on the mobile terminal.
- Switch on the 12 V power supply of the vehicle on the panel.
- Switch on Bluetooth on the mobile terminal.
- Start Truma app and select the menu items "SETTINGS – Setup Truma iNet-Box – Configure Bluetooth". The individual steps are described in detail in the Truma app.
- Press the BLUETOOTH button (Fig. 140,1) on the iNet-Box for 1 second. The Truma iNet-Box will be visible in the mobile terminal for approx. 2 minutes (name: "Truma iNet-Box"). During this period, the blue BLUETOOTH LED (Fig. 140,7) will be flashing.
- Confirm the connection to "Truma iNet-Box" in the Bluetooth settings of the mobile terminal. The communication is established as soon as the blue LED on the Truma iNet-Box is permanently lit.

Setting up the mobile communication connection:

- Set up the Bluetooth connection as described above.
- After setting up Bluetooth, press the "Next" button.
- Carefully insert the mini SIM card with own telephone number and sufficient credit into the slot (Fig. 140,2) of the Truma iNet-Box as shown until it engages. The red GSM LED (Fig. 140,5) must be flashing continuously. If the red LED goes out after 20 seconds: Check mini SIM card.
- Enter PIN and telephone number of the mini SIM card in the iNet-Box, as well as a freely eligible name in the respective fields of the setup wizard.
- Press the "Ready" button.

The Truma iNet-Box automatically changes from the mobile communication network to the Bluetooth connection as soon as a stored mobile terminal is located in the Bluetooth reception range. When leaving the reception range, it will automatically change to the mobile communication network (if it has been set up). The Truma iNet-Box can also be operated without mini SIM card. In this case, operating will only be possible within a limited radius via Bluetooth.

Operating Truma appliances via Truma app:



- Press the "REMOTE CONTROL" button.
 - Carry out the operating commands.
- ▷ For proper functioning of the operation via SMS it is necessary that the standard SMS app of the mobile terminal uses its telephone number as sender and does not manipulate the text. Do not use any SMS connectors.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

Position The Truma iNet-Box is installed in the living area (e.g. in the wardrobe).

9.5 Cooker



- ▶ During operation of the gas cooker, do not leave the gas cooker unattended. Even if the gas cooker cannot be overseen for only a short time (e.g. Visit to the toilet), switch the gas cooker off.
- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Before using the cooker make sure that there is sufficient ventilation. Open a window or the skylight.
- ▶ Do not use gas cooker or gas oven for heating.
- ▶ Always protect your hands with cooking gloves or potholders when handling hot pots, pans and similar items. There is a risk of injury!
- ▶ Do not fit any curtains in the immediate proximity of the cooker. Fire hazard!
- ▶ While a burner is on, always place a pot or a pan over the flame.



- ▷ Do not place any hot objects such as cooking pans neither on the sink cover nor on the gas cooker cover nor on the work top.

9.5.1 Gas cooker



- ▶ During activation and operation of the gas cooker, no flammable objects or highly inflammable objects such as dishcloths, napkins etc. must be near the gas cooker. Fire hazard!
- ▶ The process of ignition must be visible from above and must not be covered by cooking pans placed on the cooker.
- ▶ If there is a flame protection, always put it up when using the gas cooker. Before driving, remove the flame protection and store it safely.
- ▶ The gas cooker cover is held closed by a spring. When closing there is danger of getting injured!



- ▷ Do not use the glass gas cooker cover as a hob.
- ▷ Do not close the gas cooker cover while the gas cooker is in operation.
- ▷ Do not apply pressure on the gas cooker cover when it is closed.
- ▷ Keep the gas cooker cover open after cooking until the burners are cool. Otherwise the glass plate could shatter.



- ▷ Only use pots and pans whose diameter is appropriate for the gas cooker burners.
- ▷ When the flame goes out, the thermocouple automatically cuts the gas supply.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

The vehicle kitchen unit is fitted with a three-burner gas cooker.

Flame protection

Before cooking, the flame protection (Fig. 141,2) must be attached to the window frame. The flame protection protects the area between the covers for the sink (Fig. 141,3) and the gas cooker (Fig. 141,1).

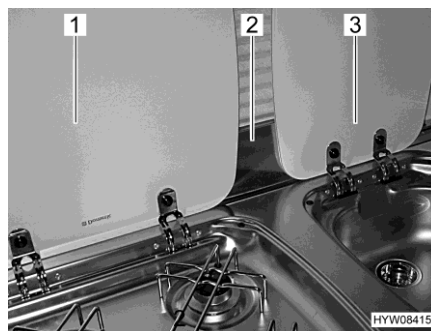


Fig. 141 Flame protection and covers

Ignition The gas cooker is equipped with electronic ignition.

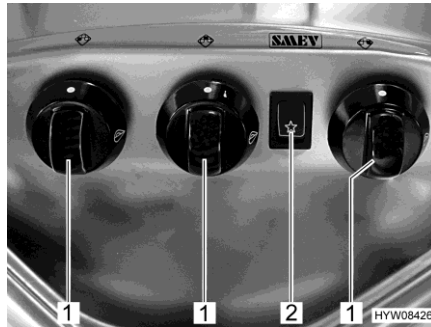


Fig. 142 Operating controls (gas cooker)

- Switching on:**
- Open the regulator tap on the gas bottle and the gas isolator tap "Cooker".
 - Attach the flame protection (Fig. 141,2) to the window frame.
 - Open the gas cooker cover (Fig. 141,1).
 - Turn the control knob (Fig. 142,1) on the burner you wish to use to the ignition position (large flame).
 - Press the control knob down and hold it.
 - Press rocker switch (Fig. 142,2). Ignition sparks are generated at the burner.
 - Once the flame is burning, the control knob must be held down for another 10 to 15 seconds, until the thermocouple automatically keeps the gas supply open.
 - Release the control knob and turn to the desired setting.

- Switching off:**
- Turn the control knob to the 0-position. The flame fades.
 - Close the gas isolator tap "Cooker" and the regulator tap on the gas bottle.

9.5.2 Gas oven with grill (Dometic)



- ▶ Keep the ventilation openings on the gas oven open at all times.
- ▶ There must be no flammable or highly inflammable objects such as dishcloths, clothes, etc. near the gas oven when it is being lit or during operation. Fire hazard!
- ▶ If ignition has not been successful, repeat the entire procedure. If necessary, check if there is gas and/or current in the gas oven.
- ▶ If the gas oven still does not work, close the gas isolator tap and notify your service centre.
- ▶ If the burner flame is accidentally extinguished, turn the control knob to "O" and leave the burner off for at least 1 minute. Then ignite it again.
- ▶ Parts of the gas oven become very hot during operation. Never touch hot parts with bare hands.
- ▶ Place the meals, wire rack and drip pan into the gas oven so that they do not come into contact with the flame.



- ▶ Only ignite the oven and grill when the oven door is open.
- ▶ Always leave the oven door half open when grilling.
- ▶ Do not use the grill for longer than 25 minutes.



- ▷ Depending on the model the gas oven may come equipped with a grill.
- ▷ Before using the gas oven for the first time run it for 30 minutes at maximum temperature without any contents.
- ▷ When the flame goes out, the thermocouple automatically cuts the gas supply.
- ▷ A safety switch prevents ignition when the oven door is closed.
- ▷ If the ignition procedure fails repeatedly, turn the control knob to "O". Wait at least 1 minute and then ignite the gas oven manually. If necessary, check if there is gas and/or current in the gas oven. If the gas oven still does not work, close the gas isolator tap and notify your service centre.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

The gas oven is equipped with electronic ignition.

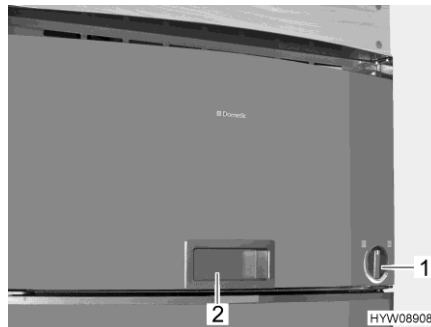


Fig. 143 Gas oven (integrated on refrigerator)



Fig. 144 Control knob (gas oven)

Switching on the oven:

- Open the regulator tap on the gas bottle and the gas isolator tap "Oven".
- Open the oven door by the recessed grip (Fig. 143,2). The safety switch then releases the ignition.
- Press and hold control knob (Fig. 143,1) and turn it to the left (☺) to the required setting. Keep control knob (Fig. 143,1) pressed for a further 5-10 seconds. Ignition will take place automatically.
- Release control knob (Fig. 143,1).
- Close oven door.

Switching on the grill:

- Open the regulator tap on the gas bottle and the gas isolator tap "Oven".
- Open the oven door to at least the first locking position (approx. 45°).
- Press and hold control knob (Fig. 143,1) and turn it clockwise to the "☺" symbol. Keep control knob (Fig. 143,1) pressed for a further 5-10 seconds. Ignition will take place automatically.
- Release control knob (Fig. 143,1).



- ▷ Do not close the oven door when grilling.

Switching off:

- Turn the control knob (Fig. 143,1) to "O". The flame fades.
- Close the gas isolator tap "Oven" and the regulator tap on the gas bottle.

9.5.3 Cooker with gas grill and gas oven

The vehicle's kitchen unit is equipped with a cooker consisting of a gas grill and a gas oven.



- ▷ A cooling system is integrated into the kitchen unit. The fans start up automatically once the gas grill or gas oven have been in operation for a few minutes. The fans continue to run for a few minutes after the appliances have been switched off.

Cooker

The vehicle's cooker is equipped with 3 gas burners and one additional electric hot plate.



- ▶ During the lighting process and once a gas burner is in operation, keep all flammable objects or highly inflammable objects such as dishcloths, napkins etc. away from the burner. Fire hazard!
- ▶ When lighting a gas burner, the burner must be visible from above, i.e. it must not be obscured by cooking pans placed on the cooker.
- ▶ If the burner flame is accidentally extinguished, turn the control knob to the "O" position and leave the burner off for at least 1 minute. Then ignite it again.
- ▶ The cooker cover is closed by spring force. When closing there is danger of getting injured!



- ▷ Do not place hot objects such as cooking pans on the sink cover. The plastic can become deformed.
- ▷ Do not attempt to cook on the glass cover of the cooker.
- ▷ Do not close the cooker cover while the cooker is in use.
- ▷ Do not apply pressure to the cooker cover when it is closed.
- ▷ Do not place hot cooking pans on the cooker cover.
- ▷ After cooking, leave the cooker cover open until the gas burners or the electric hot plate have cooled down. Otherwise the glass plate could shatter.



- ▷ Only use pots and pans whose diameter is suitable for the pan supports of the gas burners or electric hot plate.
- ▷ When the flame on a gas burner goes out, the thermocouple automatically cuts the gas supply.
- ▷ Further information can be obtained in the manufacturer's instruction manual.



Fig. 145 Cooker with gas burners and electric hot plate

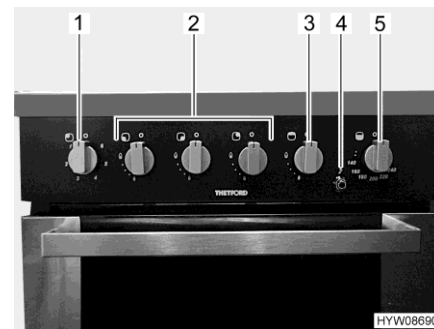


Fig. 146 Operating controls (kitchen unit)

Gas burners

The cooker is equipped with 3 gas burners (Fig. 145,2).

Turning on a gas burner:

- Open the regulator tap on the gas bottle and the gas isolator tap "Cooker".
- Open the cooker cover (Fig. 145,1).
- Turn the control knob (Fig. 146,2) on the burner you wish to use to the ignition position (large flame).
- Press the lighting knob (Fig. 146,4) until the flame appears (a maximum of 15 seconds).
- Once the flame is burning, keep the control knob pressed for another 10 to 15 seconds, until the thermocouple automatically keeps the gas supply open.
- Release the control knob and turn to the desired setting.
- If the flame fails to light, wait 1 minute and repeat the procedure from the start.

Turning off a gas burner:

- Turn the control knob to the 0 position. The flame fades.
- Close the gas isolator tap "Cooker" and the regulator tap on the gas bottle.

Electric hot plate

The cooker is equipped with an electric hot plate (Fig. 145,3).



- ▷ The electric hot plate only works when the vehicle is connected to a 230 V power supply.
- ▷ Prior to first use, switch on the electric hot plate for 3 to 5 minutes at medium to high heat, without a cooking pan, in order to harden the coating. This can result in the formation of non-toxic smoke. Open all windows and ventilate well.

Turning on the electric hot plate:

- Connect the vehicle to the 230 V power supply (see chapter 8).
- Set the control knob (Fig. 146,1) to the desired temperature.

Turning off the electric hot plate:

- Turn the control knob to the 0-position.

Gas grill The gas grill is located below the operating controls (Fig. 146).



- ▶ When the gas oven is in operation, the grill area can also become very hot, even though the gas grill itself is switched off. Never touch hot parts with bare hands.
- ▶ When lighting the grill and when grilling, the flap of the gas grill must always remain open.
- ▶ Keep all flammable or highly inflammable objects such as dishcloths, napkins, etc. away from the gas grill during the lighting process and during operation. Fire hazard!
- ▶ If ignition has not taken place, repeat the entire procedure. If necessary, check if there is gas and/or current in the gas grill.
- ▶ If the gas grill still does not work, close the gas isolator tap and notify an authorised service centre.
- ▶ If the burner flame is accidentally extinguished, turn the control knob to the "0" position and leave the burner off for at least 1 minute. Then ignite it again.



- ▷ Before using the gas grill for the first time, run it empty for 20 minutes at maximum power. This will remove any manufacturing residue. This can result in the formation of non-toxic smoke. Open all windows and ventilate well.

Switching on the gas grill:

- Open the regulator tap on the gas bottle and the gas isolator tap "Cooker".
- Open the flap of the gas grill to the fully open position.
- Lightly press the control knob (Fig. 146,3) and turn to lighting position (large flame).
- Press the lighting knob (Fig. 146,4) until the flame appears (a maximum of 15 seconds).
- Once the flame is burning, keep the control knob pressed for another 10 to 15 seconds, until the thermocouple automatically keeps the gas supply open.
- Release the control knob and turn to the desired setting.
- If the flame fails to light, wait 1 minute and repeat the procedure from the start.

Switching off the gas grill:

- Turn the control knob to the "0" position. The flame fades.
- Close the gas isolator tap "Cooker" and the regulator tap on the gas bottle.

Gas oven The gas oven is installed under the gas grill.



- ▶ When the gas oven is in operation, the grill area can also become very hot, even though the gas grill itself is switched off. Never touch hot parts with bare hands.
- ▶ There must be no flammable or highly inflammable objects such as dishcloths, clothes, etc. near the gas oven when it is being lit or during operation. Fire hazard!
- ▶ The oven flap must remain open when it is being lit.
- ▶ If ignition has not taken place, repeat the entire procedure. If necessary, check if there is gas and/or current in the gas oven.
- ▶ If the gas oven still does not work, close the gas isolator tap and notify your service centre.
- ▶ If the burner flame is accidentally extinguished, turn the control knob to the "0" position and leave the burner off for at least 1 minute. Then ignite it again.



- ▷ Before using the gas oven for the first time, operate it empty for 30 minutes at 200 °C. This will remove any manufacturing residue. This can result in the formation of non-toxic smoke. Open all windows and ventilate well.
- ▷ The temperature in the gas oven is thermostatically controlled. The temperature range is from 140 °C to 240 °C. The set temperature applies to the centre of the gas oven. The gas oven is hotter at the top and cooler lower down.

Switching on the gas oven:

- Open the regulator tap on the gas bottle and the gas isolator tap "Cooker".
- Open the flap of the gas oven to the fully open position.
- Lightly press in the control knob (Fig. 146,5) and turn to the maximum mark (240 °C).
- Press the lighting knob (Fig. 146,4) until the flame appears (a maximum of 15 seconds).
- Once the flame is burning, keep the control knob pressed for another 10 to 15 seconds, until the thermocouple automatically keeps the gas supply open.
- Release the control knob and turn to the desired setting.
- Slide the wire shelf into the gas oven at the desired height and close the oven flap.
- If the flame fails to light, wait 1 minute and repeat the procedure from the start.

Switching off the gas oven:

- Turn the control knob to the "0" position. The flame fades.
- Close the gas isolator tap "Cooker" and the regulator tap on the gas bottle.

9.6 Refrigerator

If there is no gas pressure regulating system with crash sensor present, only operate the refrigerator via the 12 V power supply during the journey. At high ambient temperatures, the refrigerator no longer achieves full cooling power or consumes more electricity.



- ▷ When leaving the vehicle, always mount the refrigerator ventilation grill. Otherwise water can enter during rain.
- ▷ The cooling power of the refrigerator depends on the vehicle setup. The cooling power can decrease if the vehicle is inclined by 5° or more. Therefore, always park the vehicle on level ground.
- ▷ Absorption refrigerators operate at normal room temperature (approx. 21 °C) within the specified temperature range. At significantly higher ambient temperatures (> 30 °C), the cooling power is reduced.

9.6.1 Refrigerator ventilation grill

At high external temperatures, the full cooling power of the cooling unit is only guaranteed if the refrigerator is ventilated sufficiently.

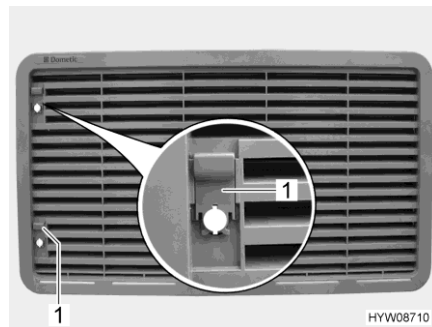


Fig. 147 Refrigerator ventilation grill

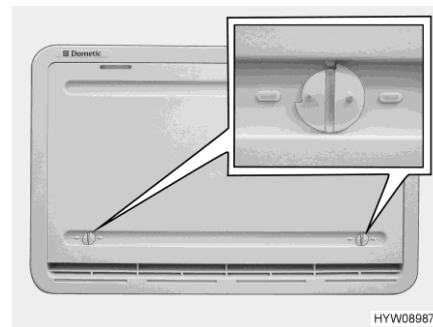


Fig. 148 Winter cover (refrigerator ventilation grill)

- Removing:*
- Push sliding trap (Fig. 147, 1) upward.
 - Remove refrigerator ventilation grill.

Winter cover

The winter covers (Fig. 148) protect the cooling unit against cold air. Place winter covers in front of both refrigerator ventilation grills when the external temperature falls below +10 °C (both for gas and electrical operation).

In the case of smaller appliances (capacity of less than 130 l) in gas operation, only use the **lower** winter cover.

In the case of very low temperatures (-5 °C to -30 °C), use the **insulated** winter cover. Use the insulated winter cover only instead of the **lower** refrigerator ventilation grill.

If the temperature raises again, remove winter covers.

- Mounting:*
- Open both locks (Fig. 148) (groove in horizontal position).
 - Put winter cover in front of the ventilation grill.
 - Lock the locks with a small coin (groove in vertical position).

- Removing:*
- Open both locks (Fig. 148) (groove in horizontal position).
 - Remove winter cover from ventilation grill.



- ▷ Remove the winter covers when the temperatures rise above +10 °C. Otherwise the refrigerator could be damaged.
- ▷ Remove the **insulated** winter cover when the temperatures rise above -5 °C. Otherwise the refrigerator could be damaged.



- ▷ The winter cover may remain mounted during the journey.

9.6.2 Thetford, series N4000

This refrigerator is an absorber refrigerator with freezer compartment.

The operating modes and settings are shown on a LED display.

Operating modes

The refrigerator is equipped with an automatic system to select the type of power. The refrigerator automatically selects the optimum energy source. Manual selection of the energy source is also possible.

The refrigerator has the following operating modes:

- 230 V operation
- 12 V operation
- Gas operation



- ▷ The refrigerator always requires a 12 V control voltage regardless of which type of energy it is using. The control voltage is present as soon as the transformer/rectifier is switched on. Therefore the closed circuit current always flows even if the refrigerator is switched off. Always switch off the transformer/rectifier for a temporary lay-up.
- ▷ Close the gas isolator tap "Refrigerator" when the refrigerator is operated electrically.

230 V operation

The refrigerator is operated via an external power supply.

12 V operation

The refrigerator is operated via the vehicle battery.



- ▷ In the automatic mode, the 12 Volt operation is only selected, when the vehicle engine is running.

Gas operation

The refrigerator is operated with gas from a connected gas bottle.



- ▷ If LPG is used, a filter must be used. The filter must be installed by a qualified technician.

Change-over between energy sources

During change-over between the different energy sources, intended delays are installed in the version with automatic power selection. This means, that after a change-over to a new energy source the refrigerator can not be operated immediately. When changing from 12 Volt operation to gas operation, the delay is 15 minutes. This prevents a change-over to gas operation when the vehicle is stopped briefly (e.g. stop to fill tank).

Stop to fill tank



- ▶ Open flames are prohibited at petrol stations.
- If the refrigerator was manually set for gas operation during the journey: switch off the refrigerator in the petrol station area or change over to 12 V operation.
- If the refrigerator was operated in the automatic mode during the journey (only in the case of the version with automatic power selection) and the stop for filling the tank takes longer than 15 minutes: switch off the refrigerator. Otherwise, the automatic power selection system will automatically change over to gas operation 15 minutes after stopping the vehicle engine.

Ignition fuse

When selecting gas operation the ignition fuse is opened automatically so gas can get into the burner. At the same time the electronic ignition is activated. If the gas flame is extinguished, e.g. by blast of wind, the ignition is activated immediately and re-ignites the gas.

Operation

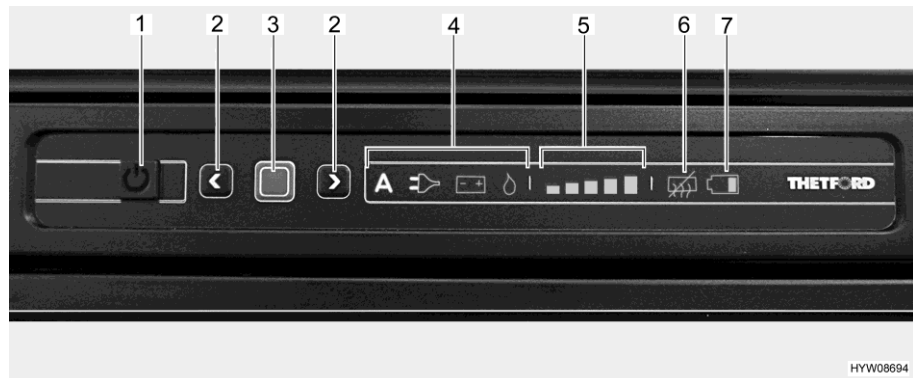


Fig. 149 LED operating panel (Thetford refrigerator)

- 1 On/Off button
- 2 Arrow keys
- 3 Confirmation button
- 4 Display of operating mode ("A" does not exist in all versions)
- 5 Cooling level indicator
- 6 Display "Anti-condensation off"
- 7 Display "Battery flat" (optional)



- ▶ If the refrigerator shall be operated with gas: open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".

- Switching on:*
- Press and hold the On/Off button (Fig. 149,1) for 1 second. The button lights up green. To save energy, after approximately 10 seconds the display is dimmed.
 - Press confirmation button (Fig. 149,3). The operating mode previously selected is displayed.

- Selecting operating mode:*
- Press and hold the confirmation button (Fig. 149,3) for about 2 seconds. The operating mode symbols flash.
 - Manual power selection: use the arrow keys (Fig. 149,2) to select the desired energy source.
 - Automatic power selection (only version with automatic power selection): use the arrow keys (Fig. 149,2) to select the operating mode "A".
 - Confirm your selection with the confirmation button (Fig. 149,3).

In the case of the version with automatic power selection, the power selection is carried out in the following order as a function of the availability of the energy sources:

- 230 V AC
- 12 V DC
- Gas

- Setting the refrigerating temperature:*
- Press and hold the confirmation button (Fig. 149,3) for about 2 seconds. The operating mode symbols flash.
 - Press confirmation button (Fig. 149,3) again. The cooling level indicator (Fig. 149,5) flashes.
 - To change the setting, press the arrow keys (Fig. 149,2) until the desired setting is displayed.
 - Confirm your selection with the confirmation button (Fig. 149,3).

- Switching off:*
- Press and hold the On/Off button (Fig. 149,1) for about 2 seconds. All lights go out. Refrigerator is switched off.
 - If the refrigerator had been operated with gas: close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.

Refrigerating temperature control

After switching it on, the refrigerator automatically selects the previously selected thermostat position. This position can be adjusted manually by using the arrow keys (Fig. 149,2). It takes a few hours till the refrigerator reaches its normal operating temperature. When changing over to another operating mode, the thermostat setting is kept.

Additional functions

Flashing lamps on the operating unit indicate a fault. For instructions regarding troubleshooting, see section 14.8.1.



- ▷ Further information can be obtained from the separate instruction manual "Refrigerator".

9.6.3 Thetford T1000



- ▶ Always keep the ventilation openings unobstructed.
- ▶ Due to technical reasons, the temperature in the refrigerator and in the freezer compartment cannot always be maintained at a constant level. Under adverse conditions, the food in the freezer compartment may thaw.



- ▷ Do not use any objects or hot air devices to accelerate defrosting.
- ▷ When the vehicle is exposed to intense sunlight: ventilate vehicle adequately.
- ▷ Before setting off, secure the products in the refrigerator against sliding.



- ▷ The refrigerator temperature depends on the ambient temperature (room temperature), the frequency the door is opened with, and the filling of the refrigerator. If required, readjust the cooling level.
- ▷ The living area battery has a limited power supply only. When the vehicle is stationary, do not use the refrigerator for long periods without it being connected to the 230 V connection.
- ▷ Check the collection tray for condensation before setting off and periodically during operation of the refrigerator.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

Operating modes

The refrigerator is only operated with 12 V DC.

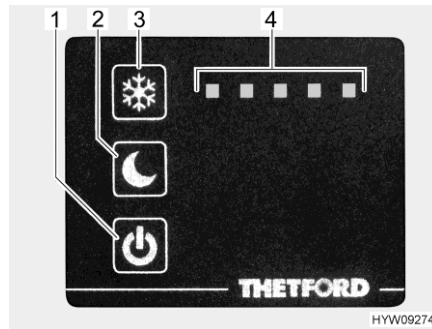
The 12 V power supply is always fed via the transformer/rectifier.

When the vehicle is in motion, the transformer/rectifier feeds the power from the vehicle generator to the refrigerator.

When the vehicle is stationary and **not** connected to the 230 V power supply, the transformer/rectifier supplies the refrigerator with power from the living area battery.

When the vehicle is stationary and connected to the 230 V power supply, the transformer/rectifier transforms the input voltage to 12 V and then supplies this current to the refrigerator.

Conversion between the individual supply types is automatic.



- 1 On/off button with blue indicator lamp
- 2 Night mode button
- 3 Temperature setting button
- 4 Display of the cooling level

Fig. 150 Operating controls (refrigerator)

Switching on: ■ Press on/off button (Fig. 150,1) and hold for approximately 2 seconds. The blue indicator lamp shows that the refrigerator is working. The display (Fig. 150,4) shows the set cooling level. This display is dimmed after approximately 10 seconds.

Switching off: ■ Press on/off button (Fig. 150,1) and hold for approximately 2 seconds. The blue indicator lamp will go out slowly.

The cooling level, with which the refrigerator cools, must be selected depending on the room temperature. A high room temperature requires a higher cooling level. At a low room temperature, a lower cooling level would be enough.

Setting the cooling level: ■ Press the temperature setting button (Fig. 150,3) and hold for approximately 1 second. The currently set cooling level (Fig. 150,4) is displayed.
 ■ Press the temperature setting button (Fig. 150,3) as often as necessary until the desired cooling level is reached.

The refrigerator has a night mode. When the night mode is switched on, the refrigerator works silently with low power.

Switching on the night mode: ■ Press the night mode button (Fig. 150,2). The blue indicator lamp shows that the night mode is active.

Switching off the night mode: ■ Press the night mode button (Fig. 150,2). The blue indicator lamp will go out. The refrigerator is working in normal mode again.

During operation, condensation may collect in the collection tray underneath the freezer compartment. The collection tray must be emptied periodically.

Emptying the collection tray: ■ Push two pins (on the left-hand and the right-hand side of the collection tray) inwards.
 ■ Pull collection tray out and empty it.

If an ice layer thicker than 3 mm has formed in several places of the freezer compartment, the refrigerator must be defrosted.

Defrosting: ■ Switch off the refrigerator.
 ■ Take all products out of the refrigerator.
 ■ Leave the refrigerator door open.
 ■ Place a suitable container underneath the drainage opening of the collection tray.
 ■ Remove the stopper from the drainage opening.
 ■ Wipe up the defrosting water with a sponge or cloth.

- When the refrigerator is defrosted: insert the stopper of the drainage opening again.
- Clean the refrigerator.

9.6.4 Refrigerator door locking mechanism

With some models, the refrigerator has a separate freezer compartment. The specifications in this section correspondingly also apply to the door of the freezer compartment.



- ▷ During the journey the refrigerator door must always be closed and locked in the closed position.



- ▷ Lock the refrigerator door in ventilation position when the refrigerator is switched off. This prevents mould forming.

There are two positions for locking the refrigerator door in place:

- Closed refrigerator door during travel and when the refrigerator is in operation
- Slightly opened refrigerator door as a ventilation position when the refrigerator is switched off



- ▷ For any further information about the locking device see the manufacturer's separate instruction manual.

Thetford The refrigerator is opened and closed with the handle on the door.

Ventilation position The refrigerator door may be locked in ventilation position with a swivelling bracket.

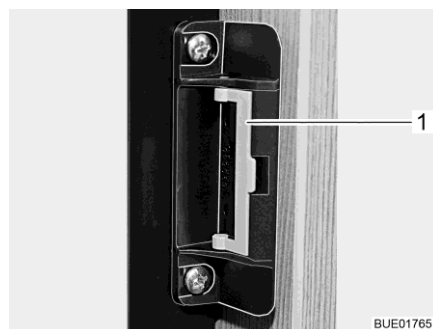


Fig. 151 Locking device (normal position)



Fig. 152 Locking device (ventilation position)

Locking in the ventilation position:

- Open the refrigerator door.
- Swing the bracket (Fig. 151,1) to the front (Fig. 152).
- Close the refrigerator door up to the first catch; then it is locked in the ventilation position.

Chapter overview

This chapter contains instructions regarding the sanitary fittings of the vehicle.

At the end of the chapter, you will find the positions of the components of the sanitary system.

10.1 Water supply, general



- ▶ Fill water tank from supply systems that have been verified to provide drinking water quality.
- ▶ Only use such hoses or containers when filling that have been approved for use with drinking water.
- ▶ Thoroughly rinse filling hose or container with drinking water before use (2 to 3 times capacity).
- ▶ Empty filling hose or container completely after use and close openings of the filling hose or container.
- ▶ Water left standing in the water tank or in the water pipes becomes undrinkable after a short period. Therefore, before each use of the vehicle, thoroughly clean the water pipes and the water tank. After each use of the vehicle completely empty the water tank and the water pipes.
- ▶ In the case of lay-ups lasting more than a week disinfect the water system before using the vehicle (see chapter 11).



- ▷ If the vehicle is not used for several days or if it is not heated when there is a risk of frost, empty the entire water system. Make certain that the water pump is switched off. Otherwise, the water pump will overheat and may get damaged. Leave the water taps on in central position. Leave all drain cocks open. Frost damage to appliances, frost damage to the vehicle and deposits in water-carrying components can be avoided in this way.
- ▷ The water pump will overheat without water and can get damaged after one minute at the latest. Never operate water pump when the water tank is empty.

The vehicle is equipped with a fitted water tank. An electric water pump pumps the water to the individual water taps. Opening a water tap automatically switches on the water pump and pumps water to the tap.

The waste water tank collects the waste water. The water level in the water and waste water tanks can be checked on the panel.



Fig. 153 Switch (water pump)



- ▷ Before the water fittings can be used, the 12 V power supply and the water pump must be switched on at the panel and on the switch (Fig. 153) respectively. Otherwise the water pump will not work.
- ▷ When the water tank is re-filled, an air bubble may form at the bottom of the pump. This air bubble will prevent water from being drawn in. Shake the water pump up and down energetically in the water.

10.2 Water system

10.2.1 Water tank

The water tank holds approx. 120 l.

Position of the water tank, see section 10.6.

Hot air from the living area heater heats the water tank. This protects the water tank from frost.



- ▷ If the living area heater is out of order, the water tank no longer is sufficiently protected against frost. If there is a risk of frost, empty the water tank and leave the drain cock open.



- ▷ For driving safety and for regulatory reasons, when the vehicle is motion the fill quantity must be reduced to approximately 20 litres. If the water is drained using the safety drainage rotary handle (see section 10.2.4), a residual quantity of approximately 20 litres will remain in the water tank.

10.2.2 Filling the water system



▶ When filling the water tank, observe the technically permissible maximum laden mass of the vehicle. Luggage must be reduced accordingly when the water tank is full.



▷ The water pump will overheat without water and can get damaged after one minute at the latest. Never operate water pump when the water tank is empty.



▷ The water quantity can be monitored on the panel while the water tank is filled.

- Position the vehicle horizontally.
- Switch on the 12 V power supply on the panel.

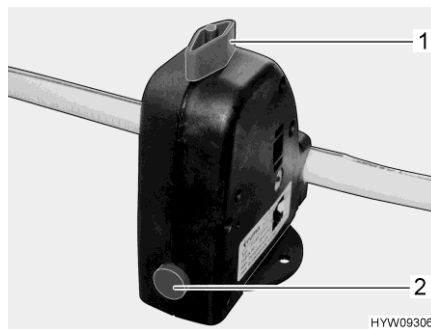


Fig. 154 Safety/drainage valve (Truma)

- Close the safety/drainage valve (Truma). Turn the knob (Fig. 154,1) perpendicular to the safety/drainage valve and push the push button (Fig. 154,2) in.
- If the temperature is below 6 °C, the safety/drainage valve cannot be closed.

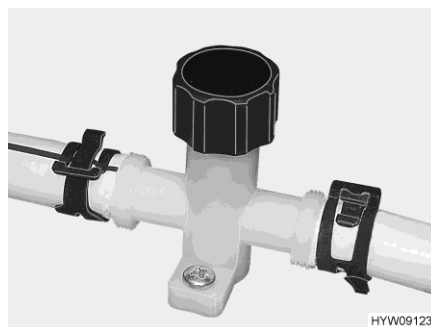


Fig. 155 Drain cock (water pipe)

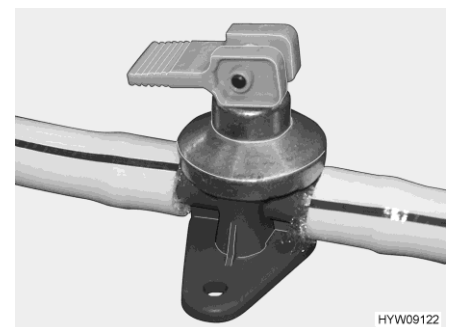


Fig. 156 Drain cock (Alde boiler)

- Close drain cocks (Fig. 155 and Fig. 156). To do so, close the caps by turning them in a clockwise direction and set the rocking lever in a horizontal position. The position of the safety/drainage valve and the drain cocks is specified in the section 10.6 at the end of this chapter.
- Close all water taps.

- Close drainage opening on the water tank.
- Open the drinking water filler neck on the outside of the vehicle.
- Fill the water tank with drinking water. Use a water hose, a water canister with a funnel or similar for filling.
- Switch on the water pump at the switch.
- Set all the water taps to "Hot" and open them. The water pump is turned on. The warm water pipes are filled with water.
- Keep the water taps open until the water flowing out of the water taps has no bubbles in it. This is the only way to ensure that the boiler is full of water.
- Set all water taps to "Cold" and leave them open. This will fill the cold water pipes with water.
- Keep the water taps open until the water flowing out of the water taps has no bubbles in it.
- Close all water taps.
- Close drinking water filler neck.
- Check that the cap on the water tank is not leaking.

10.2.3 Topping up the water



- ▶ The cap for the fuel filler neck and for the drinking water filler neck are very similar. Before filling the tank, always check the label.
- ▶ When filling the water tank, observe the technically permissible maximum laden mass of the vehicle. Luggage must be reduced accordingly when the water tank is full.

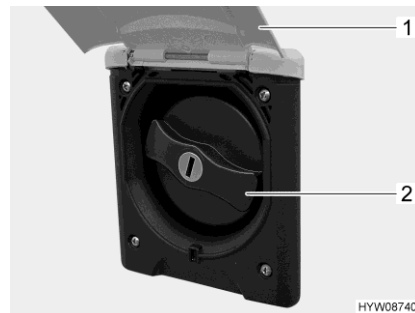



Fig. 157 Cap (drinking water filler neck)

The drinking water filler neck is on the right or left side of the vehicle, depending on the model.

The drinking water filler neck is marked by the symbol .

Opening the drinking water filler neck:

- Swivel the external flap (Fig. 157,1) upwards.
- Insert key into locking cylinder and turn a quarter turn. The cap is unlocked.
- Remove the key.
- Turn the blue cap (Fig. 157,2) one quarter turn.
- Remove the cap.

Filling with water: ■ Fill the water tank with drinking water. Use a water hose certified for drinking water for filling.

Closing the drinking water filler neck:

- Place cap on the drinking water filler neck.
- Turn cap one quarter turn.
- Insert key into locking cylinder and turn a quarter turn. The cap is locked.
- Remove the key.
- Check that the cap sits firmly on the drinking water filler neck.
- Swivel external flap downwards and close it.

10.2.4 Reducing the water quantity for mobile operation

Rotary handle The rotary handle is installed on the water tank.

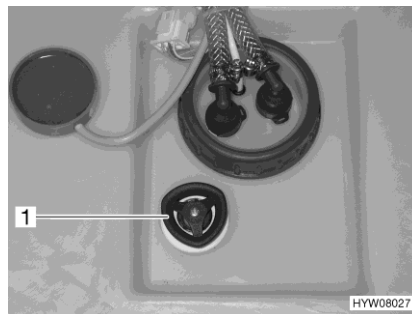


Fig. 158 Rotary handle (water tank)

Opening: ■ Turn the rotary handle (Fig. 158,1) on the water tank 3/4 of a turn in an anticlockwise direction. Excess water will drain away leaving approx. 20 litres in the tank.

Closing: ■ Turn the rotary handle (Fig. 158,1) on the water tank in a clockwise direction as far as it will go.

Position See section 10.6.

10.2.5 Draining water (safety drainage rotary handle)

- Turn the rotary handle (Fig. 158,1) on the water tank in an anticlockwise direction as far as possible beyond the resistance to fully open the drainage opening.

10.2.6 Emptying the water system



- ▷ If the vehicle is not used for several days or if it is not heated when there is a risk of frost, empty the entire water system. Make sure that the 12 V power supply on the panel is switched off. Otherwise, the water pump will overheat and may get damaged. Leave the water taps on in central position. Leave the safety/drainage valve (Truma) and all drain cocks open. Frost damage to appliances, frost damage to the vehicle and deposits in water-carrying components can be avoided in this way.



- ▷ Take note of the environmental tip in this chapter.

The position of the safety/drainage valve and the drain cocks is specified in the section 10.6 at the end of this chapter.

To empty and ventilate the water system, proceed as follows. This will avoid frost damage:

- Position the vehicle horizontally.
- Switch off 230 V power supply.
- Switch off the 12 V power supply on the panel.
- Shut off the boiler (see section 9.2).
- Open the drain cocks. To do so, turn the cap in an anticlockwise direction or set the rocking lever in a vertical position.
- Open the safety/drainage valve (Truma). To do this, turn the knob parallel to the safety/drainage valve.
- Open the water tank drain.
- Open all water taps and set to the central position.
- Hang the shower handset up in the shower position.
- Unscrew the lock ring on the water tank.
- Take water pump (fitted to the cover) as far as the connecting lines allow.
- Hold the water pump up until the water pipes are completely empty.
- Check whether the water tank is completely empty.
- Set the shower handset down in the shower tray.
- Blow out the remaining water in the water pipes (max. 0.5 bar). In order to do this, remove the water pipe from the water pump and blow into the water pipe in the direction of the appliances.
- Empty the waste water tank. Take note of the environmental tips in this chapter.
- Empty the sewage tank. Take note of the environmental tips in this chapter.
- Clean the water tank and then rinse it out thoroughly.
- Let the water system dry for as long as possible.
- After emptying, leave all water taps on in the central position.
- Leave the safety/drainage valve (Truma) and all drain cocks open.

10.3 Waste water tank

The waste water tank holds approx. 100 l.

Position and access, see section 10.6.

Hot air from the living area heater heats the waste water tank. This protects the waste water tank from frost.



▷ If the living area heater is out of order, the waste water tank no longer is sufficiently protected against frost. If there is a risk of frost, empty the waste water tank and leave the drain cock open.

▷ Never pour boiling water directly into the sink outlet. Boiling water could cause deformation and leaks in the waste water pipe system.



▷ Only empty the waste water tank at disposal stations, camping sites or caravan sites especially provided for this purpose.

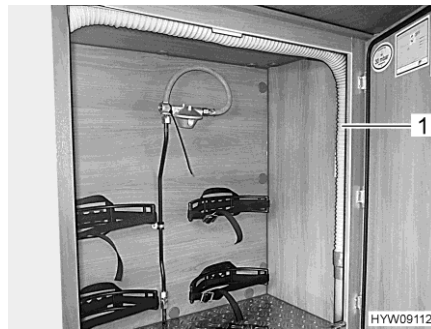


Fig. 159 Waste water hose (gas bottle compartment)



Fig. 160 Waste water hose (gas bottle compartment pull-out)

Waste water hose

The waste water hose (Fig. 159,1 or Fig. 160,1) is located in the gas bottle compartment or in the gas bottle compartment pull-out and can be plugged on the drain pipe (Fig. 161,1) as an extension.

The drain cock for waste water is operated via an operating switch.

The drain pipe with a connection for the waste water hose is located under the vehicle.

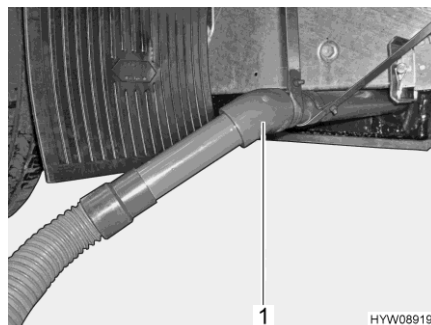


Fig. 161 Drain pipe with waste water hose

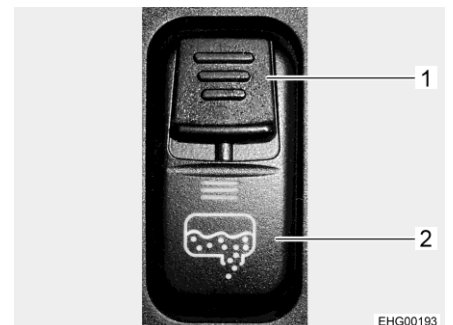


Fig. 162 Rocker switch (drain cock)

Operating switch

The drain cock for the waste water tank is opened and closed using a rocker switch of the switch panel in the driver's cabin. To prevent an unwanted opening of the drain cock, the rocker switch is provided with a safety slide button (Fig. 162,1). The drain pipe with a connection for a waste water hose is located under the vehicle.



- ▷ The operation of the waste water tank drainage using the rocker switch is only possible when the vehicle is standing and the vehicle engine is switched off.

Emptying:

- Position the vehicle over the outflow of the waste water disposal station or connect waste water hose and guide into outflow.
- Push the safety slide button (Fig. 162,1) on the rocker switch (Fig. 162,2) downwards and, at the same time, press the lower part of the rocker switch. Doing this, the waste water valve is opened and the waste water tank is emptied. The LED is lit as long as the waste water tap is open.
- Completely empty waste water tank.
- Close the drain cock again once all of the waste water has run out. In order to do this, push the operating switch (Fig. 162,1) upwards.
- Remove and store the waste water hose.

Manual drainage of the waste water tank

When drainage is not possible using the electrical operation of the waste water tap, you can open the waste water tap manually and empty the waste water tank in this way.

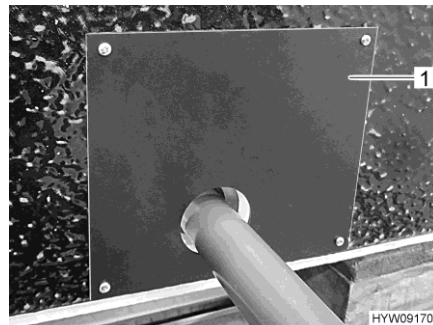


Fig. 163 Cover (waste water tank tray)

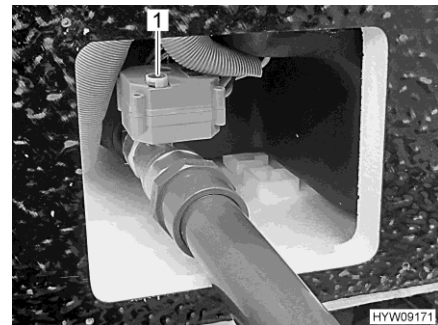


Fig. 164 Handwheel (waste water tap)

Emptying waste water tank manually:

- Position the vehicle over the outflow of the waste water disposal station or connect waste water hose and guide into outflow.
- Remove the cover (Fig. 163,1) on the waste water tank tray.
- To open the waste water tap, pull handwheel (Fig. 164,1) upwards and turn in an anticlockwise direction as far as it will go. The direction of rotation (O for opening, S for closing) is marked on the handwheel.
- Wait until the waste water tank is empty.
- To close the waste water tap, pull handwheel (Fig. 164,1) upwards and turn in a clockwise direction as far as it will go.
- Install the cover (Fig. 163,1).

10.4 Bathroom



- ▷ Do not transport any loads in the shower tray. The shower tray or other items of equipment in the toilet compartment can be damaged.



- ▷ For ventilation purposes during or after a shower, and for drying wet clothing, close the toilet compartment door and open the window or the toilet compartment skylight. This improves the air circulation.
- ▷ After taking a shower, rinse soap residue from the shower tray, otherwise cracks can appear in the shower tray over time.
- ▷ After using the shower, wipe it dry to prevent moisture from collecting.
- ▷ Pitch the vehicle so that it is as horizontal as possible. Otherwise, the water from the shower tray will not be able to drain properly.
- ▷ Further information about cleaning the toilet compartment can be found in the section 11.3.

Shower grate insert

The shower grate insert is made of solid wood. The shower grate insert protects the shower tray and provides a dry floor, even after taking a shower.



Fig. 165 Shower grate insert (example)

Observe the following for a long service life:

- Before taking a shower, take the shower grate insert (Fig. 165,1) out of the shower.
- After taking a shower, put the shower grate insert back into the shower tray.
- At least twice a year, apply a commercial solid wood oil to the shower grate insert using a lint-free cloth in fibre direction (observe the manufacturer's instructions).

10.5 Toilet



- ▷ Do not load the toilet with more than a maximum of 120 kg.
- ▷ If there is any risk of frost and the vehicle is not heated, empty the sewage tank.
- ▷ Do not sit on the lid of the toilet. The lid is not designed to bear the weight of a person and could break.
- ▷ Use a suitable chemical for this toilet. The ventilation will merely remove the odour but not germs and gases. Germs and gases will have a detrimental effect on the sealing rubbers.



- ▷ If the vehicle is equipped with an electrical ventilation system, the fan starts up automatically when opening the toilet slide valve.
- ▷ Further information can be obtained in the manufacturer's instruction manual.



- ▷ Only empty the sewage tank at disposal stations, at camping sites or caravan sites, that are especially provided for this purpose.

10.5.1 Swivel toilet

The flushing of the Thetford toilet is fed directly from the water system of the vehicle. The toilet bowl can be moved into the optimal position.

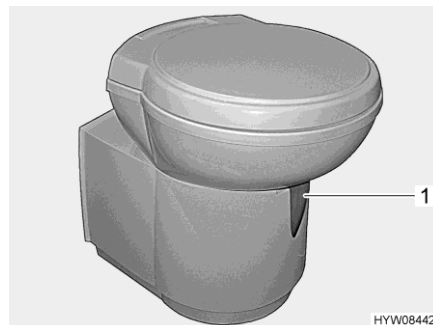


Fig. 166 Thetford toilet bowl (swivelling)

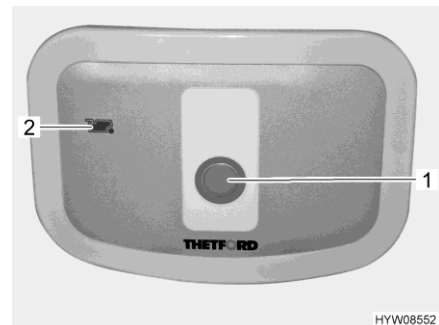


Fig. 167 Flush button/indicator lamp (Thetford toilet)

The operating unit is located close to the toilet bowl.

Flushing:

- Before flushing open the sliding trap of the Thetford toilet. To do this, push the slide lever (Fig. 166,1) in an anticlockwise direction.
- For flushing, press the blue flush button (Fig. 167,1).
- After flushing close the sliding trap. To do this, push the slide lever in a clockwise direction.

The indicator lamp (Fig. 167,2) lights up whenever the sewage tank has to be emptied.

10.5.2 Toilet with fixed seat

The flushing of the toilet is fed from the water system of the vehicle.

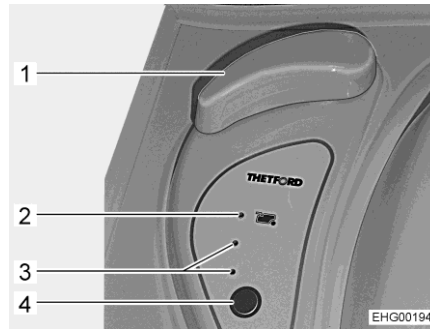


Fig. 168 Operating controls of the toilet

The toilet can be used with the sliding trap open or closed.

Opening the sliding trap: ■ Turn the rotary handle (Fig. 168,1).

Closing the sliding trap: ■ Turn the rotary handle (Fig. 168,1) back.

Flushing: ■ Before flushing open the sliding trap of the Thetford toilet. In order to do this, turn the rotary handle (Fig. 168,1).
 ■ For flushing, press the blue flush button (Fig. 168,4).
 ■ After flushing close the sliding trap. In order to do this, turn the rotary handle (Fig. 168,1) back.

The indicator lamps (Fig. 168,3) show the filling level of the sewage tank. The red indicator lamp (Fig. 168,2) lights up whenever the sewage tank has to be emptied.

10.5.3 Emptying the sewage tank



- ▷ The sewage tank can only be taken out if the sliding trap is closed.
- ▷ Take any further information from the manufacturer's instruction manual.

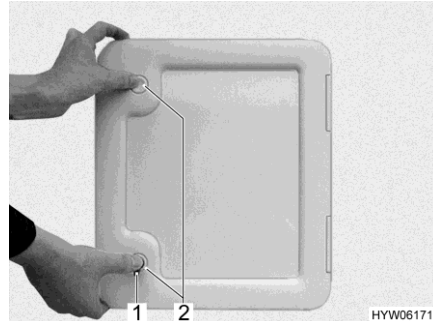


Fig. 169 Flap (sewage tank)

- Slide the slide lever on the toilet bowl in a clockwise direction. The sliding trap is closed.
- Open the flap for the sewage tank on the outside of the vehicle. Insert the key into the locking cylinder of the push-button lock (Fig. 169,1) and turn a quarter turn in a clockwise direction.
- Remove the key.
- Press both push-button locks (Fig. 169,2) simultaneously with your thumb and open the flap for the sewage tank.



Fig. 170 Sewage tank (in the vehicle)



Fig. 171 Sewage tank (example)

- Pull the safety clamp (Fig. 170,3) upwards and use the handle (Fig. 170,2) to pull out the sewage tank (Fig. 170,1).
- At a disposal station that is especially provided for this purpose, swivel the outlet pipe (Fig. 171,1) forwards and unscrew cover (Fig. 171,2).
- Press the coloured ventilation button (Fig. 171,3) and hold it there until the sewage tank is empty.
- Clean the sewage tank with fresh water.
- Close outlet pipe with cover and swivel it back.
- Push sewage tank into the disposal chute until it engages.
- Close flap for sewage tank.
- Fill in new sanitary liquid.

10.5.4 Winter operation



- ▷ Do not use anti-freeze. Anti-freeze can damage the toilet.

When the vehicle is being heated, the toilet, the water tank and the sewage tank are in a frost-protected area. This means that the toilet can also be used in winter.

If the vehicle is not being heated and there is a risk of frost in the water tank, drain off the sewage tank and the water pipes. This prevents frost damage.

10.5.5 Temporary lay-up



- ▷ If the toilet is not to be used for an extended period, empty the water tank, the sewage tank and the water pipes.

Laying up the toilet:

- Empty the water tank.
- Flush the toilet until no more water runs into the toilet. Note that the pump can get damaged after one minute at the latest if it runs dry.
- Empty the sewage tank.
- Rinse the sewage tank thoroughly.
- Leave the drainage neck on the sewage tank open.
- Let the sewage tank dry for as long as possible.

10.6 Installation positions

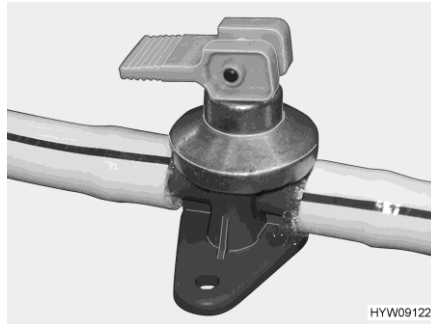


Fig. 172 Drain cock (Alde boiler)

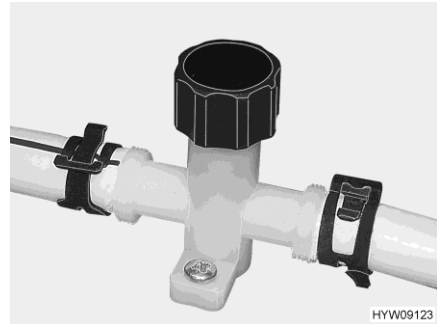


Fig. 173 Drain cock (water pipe)

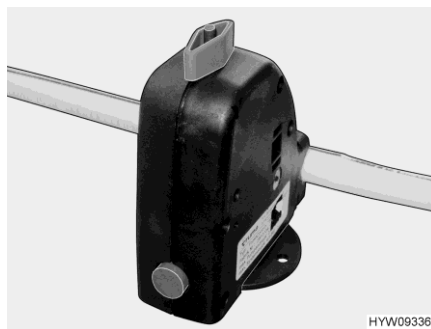


Fig. 174 Safety/drainage valve (Truma)

Depending on the model, the components of the sanitary fittings are accessible at the following positions:

Fresh water tank (access)	Waste water tank (access, cleaning)	Waste water tank (access, drain cock)	Water drain valves / safety valve
Rear garage behind cover	In the rear bed step underneath floor trap	Operating switch on the dashboard	Underneath the L-seating group behind service flap (access from outside)

Chapter overview

This chapter contains instructions regarding the care of the vehicle.

At the end of the chapter there is a checklist of measures you must carry out if you are not going to use the vehicle for an extended period of time.

11.1 General



- ▷ The vehicle is designed for recreational use. Use that goes beyond normal recreational use (permanent use) can lead to moisture forming in the interior. In addition, the interior may be affected.

11.2 External care

Standard external care consists of regular washing. The use and the environmental conditions will determine how often the vehicle needs to be washed. Wash the vehicle more frequently in areas which are exposed to heavy air pollution or heavy traffic or roads treated with de-icing salts. If the vehicle is exposed to salty and humid air (coastal areas, humid climates), wash the vehicle more frequently.

Do not park under trees if at all possible. The resin-like discharge which many trees secrete, give the paintwork a matt look and can promote the onset of corrosion.

Wash off bird droppings straight away and thoroughly, as the acid it contains is extremely corrosive.

11.2.1 Washing with a high-pressure cleaner



- ▷ Do not clean the tyres with a high-pressure cleaner. The tyres might be damaged.
- ▷ Do not spray external applications (deco-films) directly with the high-pressure cleaner. The external applications could come off.

Before cleaning the vehicle with a high-pressure cleaner, observe the operating manual of the high-pressure cleaner.

When cleaning with the nozzle for circular jet between the vehicle and the cleaning nozzle, maintain a minimum distance of approx. 700 mm.

Take into consideration that the jet of water comes out of the cleaning nozzle with pressure. The vehicle may be damaged by incorrect handling of the high-pressure cleaner. The temperature of the water should not be above 60 °C. Keep the jet of water in constant movement during the washing process. Do not direct the water jet at clearances, built-in electrical parts, plugs, seals, the ventilation grill or the skylights. The vehicle may be damaged or water may enter the interior.

11.2.2 Washing the vehicle



- ▷ Never clean the vehicle in the car wash. Water can penetrate the refrigerator grills, the waste gas vent or the forced ventilations. The vehicle could be damaged.
- Wash the vehicle only on a washing site intended for this purpose.
- Avoid full sunshine. Observe environmental measures.
- When using a cleaning agent, observe the manufacturer's instructions for use. Cleaning agent must be pH-neutral.
- First, test the suitability of the cleaning agent on an inconspicuous spot.
- Only clean external applications and synthetic parts with plenty of warm water, dish washing liquid and soft cloth.
- Wash down the vehicle with plenty of water, a clean sponge or a soft brush. In the case of stubborn dirt add dish washing liquid to the water.
- Painted exterior walls may also be cleaned with a caravan cleaner.
- Treat rubber seals on doors and storage flaps with a conventional rubber care product.
- Treat locking cylinder of doors and storage flaps with graphite dust.

11.2.3 Windows of acrylic glass

Acrylic glass windows are delicate and require very careful handling.



- ▷ Never rub acrylic glass windows dry as dust particles might damage the surface.
- ▷ Only clean acrylic glass windows with plenty of warm water, some dish washing liquid and a soft cloth.
- ▷ Never use glass cleaning agents with chemical, abrasive or alcohol-containing additives. Premature brittleness of the panes and associated cracks may result from their use.
- ▷ Avoid contact of cleansing agents used for the body (e.g. tar- or silicone-removing agents) with acrylic glass.
- ▷ Do not clean vehicle in car wash.
- ▷ Do not attach stickers to the acrylic glass windows.
- ▷ Having cleaned the vehicle rinse acrylic glass with sufficient clear water.
- ▷ Treat rubber seals with a conventional rubber care product.



- ▷ An acrylic glass cleanser with antistatic effect is suitable for a follow-up treatment. Small scratches can be treated with an acrylic glass polish. These agents are available at the accessories shop.

11.2.4 Add-on parts made of glass-fibre reinforced plastic (GRP)



- ▷ Avoid contact between polish and window rubber and piping.
- ▷ The glass-fibre reinforced plastic (GRP) may not become too hot. Therefore when polishing with a polishing machine, keep the machine in constant motion.



- ▷ In the case of large-surface GRP components, superficial cracking may occur due to ageing. This is a property of the GRP material composite with GelCoat coating that does not affect the function of the component. Therefore, there is no reason for complaint.

GRP add-on parts can turn yellow or become weather-worn due to insufficient care for the vehicle or ageing of the material.

GRP add-on parts should therefore undergo regular follow-up treatment. This way, these parts will not turn yellow and the sealing of the surface remains intact.

Follow-up treatment of GRP add-on parts:

- Wash the vehicle and allow to dry as described above. Check if the GRP add-on parts are clean and dry.
- Apply the polisher with a soft cloth evenly on the surface of the GRP add-on part.
- Wait until a light grey film forms.
- Wipe the GRP add-on part with a dry, soft cloth. Move the cloth in circles over the surface of the GRP add-on part.

We recommend using a polishing machine for this work.



- ▷ Paint protection has to be used to preserve the polish. Please read the instructions of the paint protection for details on how to apply it.

11.2.5 Underbody

The underbody of the vehicle is partly coated with an age-resistant underbody protection. Should the underbody protection be damaged, repair immediately. Do not treat areas coated with underbody protection with spray oil.



- ▷ Only use products approved by the manufacturer. Our authorised dealers and service centres will be happy to advise you.

11.2.6 Engine compartment



- ▷ Cleaning and care of the engine compartment may only be carried out while the ignition is switched on.
- ▷ Let the engine cool down before carrying out any work in the engine compartment. There is a danger of burns when touching motor components that are still hot!
- ▷ Before carrying out any work in the engine compartment, read and observe the corresponding warning and handling instructions in the operating manual of the base vehicle manufacturer.
- ▷ Have an engine washing only carried out by an authorised specialist workshop.
- ▷ Do not aim the steam jet directly at the lamp housings, actuators or seals. This may prevent humidity in the headlights and the defects resulting therefrom.
- ▷ Do not aim the steam jet at the windscreen wiper motor and the wiper mechanics.
- ▷ Only apply protective engine lacquer when the components in the engine compartment have cooled down and are clean.
- ▷ Only use lubricants, greases and fluids authorised by the base vehicle manufacturer.

The body manufacturer excludes any guarantee for damages, leaks, or the failure or electrical components that appear after an engine washing.

11.2.7 Windscreen washer system and windscreen wipers



- ▷ Only fill the cleaning agents (with/without frost protection) into the washer fluid container which are listed in the operating manual of the base vehicle manufacturer and in the mixing ratio specified therein. Do not use any radiator frost protection or other products. These products affect the cleaning effect and attack the windscreen blades.
 - ▷ Do not switch the windscreen washer system or the windscreen wipers on when the windscreen blades are frozen to the windscreen. Release the windscreen blades first using a defrosting product.
 - ▷ Do not remove the snow accumulated on the windscreen with the windscreen wipers. Remove the snow from the windscreen with a brush first.
 - ▷ Do not switch on the windscreen wipers on a dry windscreen.
 - ▷ Do not clean the windscreen wiper mechanics and the windscreen wiper motor with a steam blaster.
-
- Check the correct functioning of windscreen washer system and windscreen wipers periodically.
 - Check the filling level of the washer fluid container periodically. Only if sufficient cleaning fluid reaches the windscreen, the windscreen wipers will be able to clean it in a satisfactory way. A clear view contributes decisively to safe driving.
 - Before the frost period starts, fill the washer fluid container with windscreen cleaning product containing sufficient frost protection.

- Refill windscreen washing fluid on time. Only use clean water to dilute the windscreen cleaning product.
- Remove insect residues from the windscreen blades as soon as possible.
- Clean the windscreen blades periodically with a windscreen cleaning product. To do this, move a sponge or a cloth along the rubber strip.
- Remove car wax residues after the vehicle washing using a wax dissolving windscreen cleaning product.
- Remove dirt accumulations on the nozzles of the windscreen washer system periodically.
- After journeys on heavily soiled roads, spray clear water on the wiper nozzles to prevent incrustations.
- Clean obstructed wiper nozzles with a fine needle.

11.2.8 Air conditioning unit



- ▷ Do not clean the air conditioning unit with a high-pressure cleaner. Water entering can damage the air conditioning unit.
- ▷ Do not clean vehicle in car wash.
- ▷ Do not use any sharp or hard objects when cleaning. Otherwise the air conditioning unit and sunroof can be damaged.



- ▷ Use only the cleaning agents recommended by the manufacturer to clean the sunroof. Our authorised dealers and service centres will be happy to advise you.
- Use only water and a gentle cleaning agent to clean the air conditioning unit.
- Wipe the air conditioning unit housing and the air outlet occasionally with a damp cloth.
- Clean the remote control occasionally with a slightly damp cloth. Clean the display with a spectacles cleaning cloth.
- If necessary, clean the blinds with a mild soap solution and plenty of water.
- Remove leaves and other dirt from the ventilation openings on the air conditioning unit regularly.
- Check the condensation drain holes regularly to ascertain whether the condensation can run off freely.
- Clean the filters on both sides of the air discharge unit regularly.
- Change the active carbon filters on both sides of the air discharge unit annually.
- Inspect the profile seal to the vehicle roof for damage annually.



- ▷ Further information can be obtained in the manufacturer's instruction manual.

11.2.9 Entrance step

If the entrance step is lubricated, coarse particles of dirt can settle on the lubricant during the journey and cause damage to the operating mechanism of the entrance step. Therefore, do not lubricate the moving parts of the entrance step.

11.3 Interior care



- ▷ If possible, treat stains immediately.
- ▷ Acrylic glass windows are delicate and require very careful handling (see section 11.2.3).
- ▷ Synthetic parts in the toilet and living area are very delicate and should be treated with care. Do not use solvents, alcohol-containing cleansers or scourers. This procedure will help you to avoid brittleness and formation of cracks.
- ▷ Hair colourants, nail varnish, cigarette ash and similar substances may cause permanent stains or discolouration. For this reason, you should prevent these substances from getting onto plastic parts. If they do get onto plastic parts, you should remove these substances immediately.
- ▷ Do not pour any corrosive agents into the drain holes. Never pour boiling water directly into the drain holes. Corrosive agents and boiling water cause damage to drainage pipes and siphon traps.
- ▷ Do not use vinegar based products to clean the toilet and water system, or for descaling the water system. Vinegar-based products may cause damage to seals or parts of the installation. Use standard descaling products for descaling.
- ▷ Save water. Mop up all remaining water.



- ▷ For information about the use of maintenance products, our representatives and service centres will be glad to advise.
 - Surface and knobs of furniture, lamps and synthetic parts in the toilet and living area should be cleaned with water and a wool cloth. A mild cleanser may be added to the water. If required, use furniture polish for the painted surfaces.
 - Curtains and net curtains should be dry cleaned.
 - Vacuum clean the carpet, if necessary clean with carpet shampoo.
 - Clean PVC-floor covering with a mild, soapy cleaning agent for PVC floors. Do not place carpet on wet PVC-floor covering. The carpet and the PVC-floor covering may stick together.
 - Brush insect screen with a soft brush or vacuum with the brush attachment of the vacuum cleaner.
 - Brush blinds with a soft brush or vacuum with the brush attachment of the vacuum cleaner. Grease or stubborn dirt may be removed with a mild soap at 30 °C (curd soap).
 - Brush Roman shades with a soft brush or vacuum with the brush attachment of the vacuum cleaner. Grease or stubborn dirt may be removed with a mild soap at 30 °C (curd soap).

- Unrolled seat belts can be cleaned with warm soapsuds. The seat belt must be completely dry before being rolled up.

11.4 Kitchen installation

11.4.1 General notes on care

- Never clean the sink or the gas cooker with a scourer. Avoid anything which may cause scratching or grooves.
- The surface of the kitchen worktop is not scratch proof. When working with sharp objects, always use a pad. Only use soft cleaning agents for cleaning and care. Do not use any abrasive or scratching intensive treatment products nor scratching sponges.
- Clean the sink cover manually using water and washing-up liquid. Do not clean the sink cover in the dishwasher.
- Clean the burners on the gas cooker using a damp cloth only. Prevent any water from penetrating the burner covers. Water may damage the burners on the gas cooker.
- When cleaning the burner ring, ensure that the holes are not obstructed.
- Clean the surface of the cooker, and particularly the hob, with warm water and some washing-up liquid. Scouring agent or sharp objects damage the surface of the hob.
The surface of the hob is easier to clean when it is still slightly warm. Before cleaning, ensure that the hob is only still warm to the touch (residual heat indicator has gone out).
Always clean the hob before using it again.
- The knobs can be pulled off for cleaning.
- Clean the external surfaces of the kitchen installation with a wet cloth without abrasive, corrosive or chloride containing cleaning agents. Do not use any steel wool.
- Immediately remove acidic or alkaline substances (vinegar, salt, lemon juice, etc.).
- Let the oven and grill cool down before cleaning. Hot surfaces may be damaged due to cold water or a wet cloth. Clean enamelled surfaces only with soap water or washing-up liquid containing water.

11.4.2 Refrigerator

- Clean the exterior and interior of the refrigerator with a soft cloth and lukewarm water (containing a mild cleaning agent).
- Then, wash the refrigerator out with clear water and let it dry.
- Keep the defrosted water drain channel free of sediments.
- To prevent material changes, do not use any soap, nor any sharp, granular or soda containing cleaning agents.
- Keep oil and grease away from the door seal.

11.5 Stainless steel surfaces



- ▷ Do not clean the stainless steel surfaces with bleaching agents, with products that contain chloride or hydrochloric acid, baking powder nor with silver polish.
- ▷ Do not use scouring agent nor coarse sponges.



- ▷ Prior to cleaning, test the suitability of the cleaning product for the surface on an unobtrusive spot.
- ▷ Dry the surfaces thoroughly after cleaning to prevent scale deposits.
- ▷ In the case of brushed stainless steel surfaces, wipe in a direction of the grinding.

Removing scratches from the surface:

- Treat the stainless steel surface with a soft cleaning cloth and with a special stainless steel cleaner.
- Rinse the stainless steel surface and dry it with household wipes.

Removing stubborn dirt and burnt-in fat:

- Clean the stainless steel surface with an ordinary household sponge and with cleanser.
- Rinse the stainless steel surface and dry it with household wipes.

Removing fingerprints:

- Clean the stainless steel surface with a soft cleaning cloth and soapy water or a glass cleaning agent.
- Rinse the stainless steel surface and dry it with household wipes.

Removing coffee or tea stains:

- Treat the stainless steel surface with a baking soda solution. Allow the baking soda solution to work in for 15 minutes.
- Rinse the stainless steel surface and dry it with household wipes.

Removing rust stains:

- Clean the stainless steel surface with an ordinary household sponge and with cleanser. If necessary, use a soft cleaning cloth and stainless steel cleaner.
- Rinse the stainless steel surface and dry it with household wipes.

11.6 Cushions

The care and cleaning instructions below are for assistance only. They are not a guarantee of successful cleaning. These instructions cannot form the basis for any warranty claims.



- ▷ If possible, treat stains immediately.
- ▷ Never use household cleaners to remove marks (e.g. detergents).
- ▷ Before treating marks, test the cleaning on a hidden part of the upholstery covers. This will show you whether the cleaning will damage the materials or dyes.
- ▷ Always only dab moist or greasy marks, never rub them. It is most effective to gently press an absorbent cloth or a sponge onto the mark.
- ▷ Do not wash upholstery.
- ▷ When cleaning leather covers, make sure that the leather is not soaked through and that no water seeps through the seams of the leather covers.



- ▷ Treat the mark from the outside working inwards. This prevents the mark from spreading.
- ▷ In the case of both solid or softer contamination, first remove the coarse parts. Next, carefully scrape off the mark with a blunt knife or spatula.
- ▷ If the mark has already dried in, carefully brush off the coarse parts. Next, dab off the mark with a damp cloth or sponge.
- ▷ The upholstery will fade over time, if it is exposed to sunlight. If the temperature within the vehicle rises rapidly as well, the colour will change at an accelerated rate. Therefore, we recommend to close the shades on the windows when there is strong sunlight. Ensure that heat does not build up when you close the blind.
- ▷ Depending on the equipment, the cushions will be provided with stain protection.

Removing grease, oil, wine, milk, non-alcoholic beverages:

- Moisten a cloth with commercial water-based cleaning agent. (Alternatively, mix 2 tablespoons of ammoniac with 1 litre of water.)
- Gently dab the stain with the cloth.
- Turn the cloth frequently so that the mark only comes into contact with a clean part of the cloth.

Removing urine, sweat:

- Moisten a cloth with commercial water-based cleaning agent. (Alternatively, mix 2 tablespoons of ammoniac with 1 litre of water.)
- Gently dab the stain with the cloth.
- Turn the cloth frequently so that the mark only comes into contact with a clean part of the cloth.

Removing chocolate, coffee:

- Moisten cloth with lukewarm water.
- Dab the stain with the cloth.

Removing fruit residues:

- Moisten cloth with cold water.
- Dab the stain with the cloth.

Removing wax:

- Carefully scrape off the wax with a blunt knife or spatula.
- Cover the mark with several layers of waterleaf paper and iron.

Removing blood:

- Mix 2 tablespoons of salt and 1 litre of water.
- Moisten the stain and dab with a dry cloth.
- Dab stubborn stains with ammonia solution.

Removing (ball pen) ink:

- Moisten cloth with benzine.
- Gently dab the stain with the cloth.
- Turn the cloth frequently so that the mark only comes into contact with a clean part of the cloth.

Removing mud:

- Carefully remove as much mud as possible with a blunt knife or a spatula.
- Allow the mud to dry and then remove it with a vacuum cleaner.
- For stubborn marks, moisten a cloth with commercial water-based cleaning agent. (Alternatively, mix 2 tablespoons of ammonia solution with 1 litre of water.)
- Gently dab the stain with the cloth.
- Turn the cloth frequently so that the mark only comes into contact with a clean part of the cloth.

- Removing pencil:*
- Moisten cloth with a mild, water-free and pure fabric cleaning agent.
 - Gently dab the stain with the cloth.
 - Turn the cloth frequently so that the mark only comes into contact with a clean part of the cloth.

- Removing vomit:*
- Carefully remove vomit.
 - Wash cushion with cold water.
 - Moisten a cloth with commercial water-based cleaning agent. (Alternatively, mix 2 tablespoons of ammoniac with 1 litre of water.)
 - Gently dab the stain with the cloth.
 - Turn the cloth frequently so that the mark only comes into contact with a clean part of the cloth.

11.7 Water system

11.7.1 Cleaning the water tank

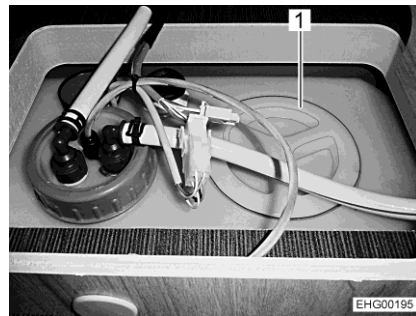


Fig. 175 Cleaning opening (water tank)

- Empty the water tank and close the drainage opening.
- Remove the cap (Fig. 175,1) of the water tank.
- Fill water tank with water and some washing-up liquid (do not use any scourers).
- Using a trade standard brush for washing dishes, scrub the water tank until there is no longer any visible deposit.
- Scrub also the pump housing.
- If possible, clean fresh water sensors through the cleaning openings by hand.
- Rinse water tank with copious amounts of drinking water.



- ▷ If, due to the design of the water tank, it is not possible to clean the water tank mechanically: Use a suitable chemical cleaning agent.

The authorised dealers would be happy to assist you in choosing a suitable cleaning agent.

Follow the cleaning agent manufacturer's instructions.

11.7.2 Cleaning the water pipes



- ▷ Only use suitable cleaning agents as sold by the specialist trade.
- ▷ The cleaning agent must meet national regulations and be approved (if required).



- ▷ Collect any emerging mixture of water and cleaning agent for correct disposal.
 - Empty the water system.
 - Close all drainage openings and drain cocks.
 - Fill mixture of water and cleaning agent into the water tank. Observe the manufacturer's instructions regarding the mixing ratio.
 - Open the drain cocks one by one.
 - Leave the drain cocks open until the mixture of water and cleaning agent has reached the respective drain.
 - Close the drain cocks.
 - Set all the water taps to "Hot" and open them.
 - Leave the water taps open until the mixture of water and cleaning agent has reached the drain.
 - Set all water taps to "Cold" and open them.
 - Leave the water taps open until the mixture of water and cleaning agent has reached the drain.
 - Close all water taps.
 - Flush the toilet several times.
 - Allow the cleaning agent to act in accordance with the manufacturer's instructions.
 - Empty the water system. Collect the mixture of water and cleaning agent for correct disposal.
 - For rinsing fill the entire water system with drinking water and empty again several times over.

11.7.3 Disinfecting the water system



- ▷ Only use suitable disinfectants as sold by the specialist trade. Observe the tolerance of humans and animals.
- ▷ The disinfectant must meet national regulations and be approved (if required).



- ▷ Collect any emerging mixture of water and disinfectant for correct disposal.

When disinfecting the water system, proceed the same way as when cleaning the water pipes (see section 11.7.2). Simply use disinfectant instead of cleaning agent.

11.7.4 Cleaning the waste water tank

Clean the waste water tank after every use.

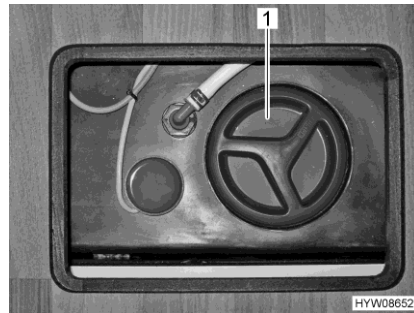


Fig. 176 Cleaning opening (waste water tank)

- Cleaning:*
- Empty the waste water tank.
 - Open the cleaning opening (Fig. 176,1) on the waste water tank and the drain cock.
 - Thoroughly rinse out the waste water tank with fresh water.
 - If possible, clean waste water sensors through the cleaning opening by hand.

Access for cleaning, see section 10.6.

11.8 Care for vehicle operation in winter

De-icing salt damages the underbody and the parts open to water spray. We recommend that you wash the vehicle more frequently during wintertime. Mechanical and surface treated parts and the underside are under particular strain, and should therefore be cleaned thoroughly.



- ▷ If there is any risk of frost, always run heater at a minimum of 15 °C. Switch the circulation fan (if there is one) to automatic. In the case of extreme external temperatures, the furniture flaps and doors should be left slightly open. The inflowing warm air can help prevent the freezing of water pipes, for example, and counteract the formation of condensation in the storage spaces.
- ▷ If there is a risk of frost, additionally cover the windows on the outside of the vehicle overnight with winter insulation mats.

11.9 Lay-up

11.9.1 Temporary lay-up



- ▶ Take into consideration that water is undrinkable after only a short time.
- ▶ Animal damage to cables can lead to short circuits. Fire hazard!

Animals (especially mice) can cause great damage to the interior of the vehicle. This is especially true if the animal remains undisturbed in a parked vehicle.

To keep damages from animals to a minimum or to avoid them altogether, regularly check the vehicle for damage or animal traces.

If animal traces are found, contact the authorised dealer or service centre. If damage to cables has occurred, they can result in short circuits. The vehicle could catch fire.

11.9.2 Recommendation for long periods of inactivity of motorhomes (Mercedes-Benz)

Take into account the instructions and information in the supplied document "Recommendation for longer standing times of motorhomes" from Mercedes-Benz.

11.9.3 General/winter lay-up

If the vehicle is to be put out of operation for a longer period of time (e.g. at the end of the travel season), some measures must be taken so that a smooth start is possible when the vehicle is put back into operation.

The focus is not only on the base vehicle or chassis, but also on the entire living area with all the components installed in it (water system, gas system, electrical system, furniture, cushions).



- ▷ On vehicles with a battery capacity indicator, the data are reset when the main switch on the transformer/rectifier is switched off. Therefore, when putting the system back into operation, a complete charging cycle must be carried out in order to calibrate the system. In addition, the date and time must be reset. If a Duomatic L Plus gas pressure control system is installed in the vehicle (special equipment), the defroster function must be reprogrammed from "Automatic" to "Off".
- ▷ At temperatures below -11 °C AdBlue® freezes. The pump and the lines for Ad-Blue® injection can be damaged. Refer to the manufacturer's documentation for information on Ad-Blue®. Do not expose the vehicle put out of operation to temperatures below -10 °C to avoid freezing of Ad-Blue®.




- ▷ To enable gear selection in the gearbox even if the starter battery is defective, the vehicle is equipped with an "emergency P battery". This emergency P battery is only charged when the vehicle engine is running. Charging via an external charger is not possible. Therefore, the emergency P battery must be disconnected from the power supply during a lay-up (see checklists).

Carry out the following measures prior to a lay-up:

Base vehicle	General lay-up measures	Done
	Completely fill fuel tank. This can prevent corrosion damage to the inner wall of the fuel tank	
	Increase tyre air pressure by 0.5 bar to prevent damage when stationary	
	Take the weight off the wheels or move the vehicle every 3 to 4 weeks. In the case of parking sites with natural soil, place suitable wooden or plastic plates underneath the wheels if necessary	
	Protect the tyres from direct exposure to the sun. Danger of formation of cracks!	
	Check the tyres. Do not continue to use worn tyres or tyres that are more than 6 years old	
	Ensure good ventilation at the parking site. Sufficient air circulation is especially important for the underbody. Moisture or lack of oxygen can lead to impairments	
	Treat rubber seals with a conventional rubber care product	
Observe the instructions in the instruction manual of the base vehicle		

Additional measures for winter lay-up	Done
For diesel vehicles, fill the fuel tank with winter diesel	
Clean body and underbody thoroughly and spray with hot wax or protect with varnish	
Rectify damage to the paintwork	
Check the radiator frost protection and top up if necessary	
Check the frost protection of the windscreen washer system and top up if necessary	

Body (outside)	General lay-up measures	Done
	All vents should be sealed with the appropriate caps and all other openings (apart from forced ventilations) should also be sealed. This prevents animals (e.g. mice) from gaining entry	
To prevent the formation of condensation and subsequently mould: ventilate the interior, all storage space accessible from the outside and the parking site (e.g. garage) every 3 weeks		

Additional measures for winter lay-up	Done
 ▷ Keep the forced ventilation open. Arrange the covers in such a way that the ventilation openings are not covered, or use porous tarpaulins	
Clean vehicle from outside thoroughly	
Clean and grease installed supports	
Clean and grease all door and flap hinges	
Brush oil or glycerine on all locking mechanisms	
Use graphite dust to treat locking cylinders	
Treat all rubber seals with a conventional rubber care product	
Use refrigerator winter covers	

Body (inside)

General lay-up measures	Done
Place upholstery in an upright position for ventilation, and cover	
Clean refrigerator (and freezer compartment) and move doors to ventilation position (see section 9.6.4)	
Disconnect the flat screen from the mains	
Open the roller blinds and thereby relieve the springs	

Additional measures for winter lay-up	Done
Set up the de-humidifier (granulate)	
Store cushions and mattresses in a dry place	
Empty all cabinets and storage compartments, open flaps, doors and drawers	
Thoroughly clean the interior	
Air the interior every 3 weeks	
If there is a risk of frost, do not leave the flat screen in the vehicle	

Gas system

General lay-up measures	Done
Close regulator tap on the gas bottle	
Close all gas isolator taps	
Always remove gas bottles from the gas bottle compartment, even if they are empty.	

Water system

General lay-up measures	Done
▷ Never operate water pump without water.	
Empty the fresh water system. Blow out residual water from the pipes (max. 0.5 bar)	
Clean the fresh water system using suitable cleaning agents from a specialised store. Open all drain cocks and water taps to empty (see section 10.2.6)	
Leave the water taps on in central position. Leave all drain cocks open.	
Clean the waste water tank (do not forget the probe) and empty it (see section 10.3), leave the drain cock open	

Additional measures for winter lay-up	Done
If possible, empty siphons at the sink and wash basin to prevent freezing	

Electrical system

The electrical system of a motorhome consists of two separate supply circuits:

- Starter battery, starter motor and alternator (generator)
- Living area battery, transformer/rectifier (EBL) and operating panel

General lay-up measures	Done
Clean the battery terminals of the starter battery	
If necessary, top up the battery water of the starter battery	
Fully charge starter battery via external charger	
Activate vehicle hibernation (see section 11.9.4)	
Observe the instructions regarding the starter battery in the instruction manual of the base vehicle	
Fully charge the living area battery via the on-board charger (the charging time depends on the equipment). Charge the battery at temperatures above 0 °C so that the battery can also absorb capacity	
Remove the fuse from the water pump on the transformer/rectifier	
Remove the fuses 31 and 32 for the emergency P battery	
Disconnect the living area battery from the 12 V power supply. In order to do this, switch off the transformer/rectifier at the main switch	
Check the voltage of the batteries periodically during the lay-up period. If the battery voltage drops below 12.5 V: recharge the battery	

Additional measures for winter lay-up	Done
Remove the starter battery and the living area battery and store them in a place protected from frost or connect the vehicle to a 230 V supply. Prior to the removal, remove the fuses on the living area battery	

11.9.4 Activating the vehicle's hibernation mode



- ▶ Comfort functions drain current from the starter battery even when the vehicle is stationary and the transformer/rectifier has been switched off. This may cause starting problems after longer periods of inactivity.

If the vehicle has been set to hibernation mode, the power consumption is reduced to a minimum. This protects the starter battery. Thereby, the vehicle can be easily started after longer periods of inactivity.

Activating the hibernation mode:

- Depending on the equipment, activate the hibernation mode on the MBUX display or on the electronic instrument cluster via the steering wheel buttons. The operation is described in the operating manual of the base vehicle.

Cancelling the hibernation mode:

- Switch on ignition. The hibernation mode ends when switching the ignition on, and must be activated again if necessary.


11.9.5 Starting up the vehicle after a temporary lay-up or after lay-up over winter



- ▷ On vehicles with a battery capacity indicator, the data are reset when the main switch on the transformer/rectifier is switched off. Therefore, when putting the system back into operation, a complete charging cycle must be carried out in order to calibrate the system. In addition, the date and time must be reset. If a Duomatic L Plus gas pressure control system is installed in the vehicle (special equipment), the defroster function must be reprogrammed from "Automatic" to "Off".

Go through the following checklist before start-up:

	Activity	Done
Base vehicle	If the vehicle has been stationary for a longer period (approx. 10 months) have the braking system checked by an authorised specialist workshop	
	Check tyre pressure of spare wheel, if present	
	Check the tyre pressure on all tyres	
Body	Clean the pivot bearing of the entrance step	
	Check the functioning of the fitted supports	
	Check that the doors, windows and skylights are working properly	
	Check the function of all external locks, e.g. the storage flaps, the filler necks and the living area door	
	Search for traces of animals that have gained entry	
	Remove the cover from the waste gas vent of the heater (if there is one)	
	Remove the winter cover from the refrigerator grills (if there is one)	

	Activity	Done
Gas system	If the vehicle has been stationary for a longer period (approx. 10 months) have the gas system checked by an authorised specialist workshop	
	Put the gas bottles in the gas bottle compartment, tie down and connect to the gas pressure regulator	
Electrical system	Connect to 230 V external power supply	
	Install the living area battery and starter battery, insert the fuses on the living area battery and fully charge the battery	
	 ▷ Charge the battery for at least 20 hours after lay-up.	
	Connect the living area battery with the 12 V power supply. To do this, switch on the battery cut-off switch on the transformer/rectifier (see chapter 8)	
	Insert the fuses 31 and 32 for the emergency P battery into the corresponding slots	
	Check that the electrical system are working, e.g. interior light, socket and all installed electrical appliances	
Water system	Disinfect water pipes and water tank	
	Check the functionality of the operating lever for the waste water tank	
	Close all drain cocks and water taps	
	Check water system for leaks	
Appliances	Check the function of the appliances	

Chapter overview

This chapter contains instructions about official inspections and inspection and maintenance work in the vehicle.

At the end of the chapter you will find important instructions on how to obtain spare parts and on our dealers and service centres.

12.1 Service and sales partners

The authorised service and sales partners are the contacts when spare parts are needed or/and repairs are required.

You will find the addresses and telephone numbers of the authorised service and sales partners at:

Hymer: on the Internet at www.hymer.com/de/de/service/haendlersuche

ALKO: on the Internet at <https://www.alko-tech.com/de/servicestuetzpunkte-0>

Mercedes: on the Internet at <https://www.mercedes-benz.de/vans/de/content-pool/apps/dealer-locator>



- ▷ Before starting your journey, check what options are available to you in the event of a breakdown.
- ▷ Observe that the manufacturer's service and mobility commitments are not valid at all destinations.
- ▷ In the case of travelling to countries without a service partner, you travel at your own risk.

12.2 Official inspections

Depending on the national legislative provisions, the following official inspections must be carried out periodically:

- Main inspection
- Emissions test
- Inspection of the gas system

The inspection intervals in accordance with the national legislative provisions must be adhered to. The inspection stickers attached to the vehicle indicate when the next inspection is required.

For Germany, for example, the following regulation applies:

From April 1st 2022, the inspection obligation for the gas system as part of the main inspection (HU) will no longer apply. Instead, an independent gas inspection (according to DVGW (German Technical and Scientific Association for Gas and Water) worksheet G 607) must be carried out for recreational vehicles (motorhomes and caravans). The gas inspection is evidenced by the correctly completed yellow inspection book and a valid inspection sticker on the vehicle.

For more information on the gas inspection and the intervals at which it must be carried out, see the following websites:

- German Federal Ministry of Digital Affairs and Transport (BMDV): www.bmvi.de
- German Technical and Scientific Association for Gas and Water (DVGW): www.dvgw.de
- German Association for Liquefied Gas (DVFG): www.dvfg.de

As long as the intervals at which the gas inspection must be carried out are not regulated by law, the DVGW recommends an inspection every two years.

Many camping site operators demand proof of a valid gas inspection when allocating a parking place.



- ▷ Any changes on the gas system must be carried out by a certified expert for gas systems.
- ▷ Even in the case of vehicles that are not registered, an inspection of the gas system is required.

12.3 Inspection work

Like any technical appliance, the vehicle must be inspected at regular intervals.

This inspection work must be carried out by qualified personnel.

Special technical knowledge, which cannot be taught within the framework of this instruction manual, is required for these tasks. Personnel possessing this technical knowledge are available for assistance at all service centres. Their experience and regular technical instruction by the factory as well as equipment and tools guarantee expert and up-to-date inspection of the vehicle.

The service centre in charge will confirm the work performed.

Have chassis inspections confirmed in the chassis manufacturer's customer service booklet.



- ▷ Observe the inspections indicated by the manufacturer and have them carried out at the specified intervals. The value of the vehicle is thus preserved.
- ▷ The confirmation of the inspection work carried out serves as valid proof in the event of damage and guarantee claims.

12.4 Maintenance work

As with every machine, this vehicle requires maintenance. The extent and frequency of the maintenance work required depend on conditions of operation and use. More difficult operating conditions make it necessary to service the vehicle more often.

Have the base vehicle and the appliances serviced at the intervals specified in the corresponding instruction manuals.

12.5 Changing the filter pad of the gas filter



- ▶ Fire hazard! Do not smoke while opening the gas filter. Do not open the gas filter near open fire.
Only open the gas filter in depressurised condition.

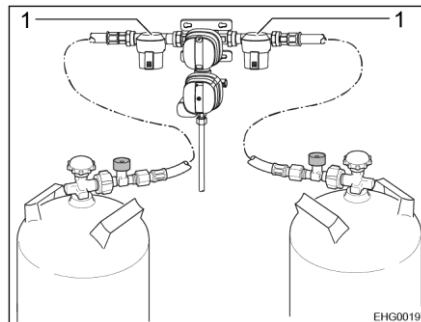


Fig. 177 Gas filter

The filter pad must be changed with every change of gas bottles. Only use original Truma filter pads.

Changing the filter pads of the gas filter (Fig. 177,1) is described in the manufacturer's instruction manual.



- ▷ The filter pads can be obtained from the authorised dealer.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

12.6 Alde hot-water heater



- ▷ Check the level of the heating fluid regularly on the compensator reservoir.
- ▷ During or after the first operating hours of the hot-water heater, the filling level may fall below the minimum mark. If this is the case, top up the heating fluid.
- ▷ We recommend to bleed the heating system after the initial heater operation and to check the glycol content.
- ▷ Have heating fluid changed by an authorised dealer or a service centre at intervals of five years as corrosion-protection wears off after some time.
- ▷ Only top up heating system with a standard G13 water-glycol mixture (60 : 40). This mixture offers frost protection up to approx. -25 °C. When topping up hot-water heaters that are connected to the engine's cooling circuit, please observe the instructions in the manufacturers' instruction manuals.



- ▷ Further information can be obtained in the manufacturer's instruction manual.

12.6.1 Changing the heating fluid

Have the heating fluid changed every five years by an authorised dealer.

12.6.2 Checking the fluid level

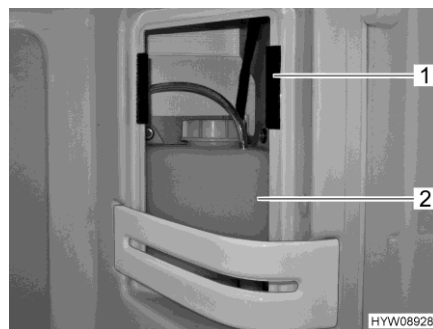


Fig. 178 Compensator reservoir (hot-water heater)

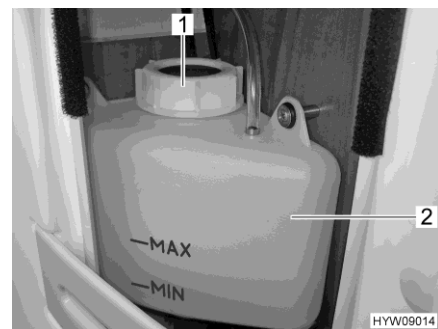


Fig. 179 Marking "MIN/MAX"

- Switch off the hot-water heater and allow it to cool down.
- Remove the cover of the compensator reservoir (Fig. 178,2) in the right-hand upper part of the shower. The cover is secured with Velcro (Fig. 178,1).
- Check if the fluid level is between the marks "MIN" and "MAX" on the compensator reservoir (Fig. 179,2).

12.6.3 Topping up heating fluid

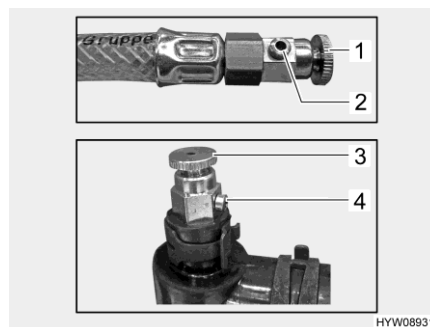
- Position the vehicle horizontally. This prevents the formation of bubbles.
- Switch off the hot-water heater and allow it to cool down.
- Unscrew or pull off the panel.
- Open the rotary lid (Fig. 179,1) on the compensator reservoir.
- Remove cover.
- Check anti-freeze with an anti-freeze hydrometer. The frost protection content must be 40 % or correspond to a frost protection of -25 °C.
- Fill water-frost protection mixture (standard G13) slowly into the compensator reservoir.



- ▷ The optimum fluid level is reached when the fluid in the compensator reservoir is 1 cm above the "MIN" mark when it is cooled down.

12.6.4 Bleeding the heating system

The bleeding valves of the hot-water heater are installed at various points in the vehicle. To gain access to the bleeding valves, it might be necessary to remove the associated ventilation grill above the convector. Sometimes the access is possible through panels (e.g. in the back cushion ventilation). Bleeding must be done on all bleeding valves.



- 1 Bleeding valve on hose extension
- 2 Valve opening
- 3 Bleeding valve on pipeline
- 4 Valve opening

Fig. 180 Bleeding valves (hot-water heater)

Bleeding:

- Switch off the hot-water heater and allow it to cool down.
- Open the bleeding valve (Fig. 180,1 or 3) and keep it open until no more air comes out of the valve opening (Fig. 180,2 or 4).



- ▷ Depending on the position, one of two bleeding valve types will be installed.

12.7 Independent vehicle heater

Use the independent vehicle heater for 10 minutes at least once a month with a cold engine and smallest fan settings.

Before the heating season starts, have the independent vehicle heater checked by an authorised specialist workshop.

12.8 Cooker/oven/refrigerator

The manufacturer recommends a yearly inspection service in a authorised specialist workshop to maintain the appliances' efficiency. After service and maintenance work, the appliance must be checked for electrical safety as well as for gas safety.

12.8.1 Refrigerator

The gas burner must be cleaned of dirt when required but at least once a year. When using LPG (tank or refillable bottles), the maintenance must be carried out half yearly, or quarterly.

Keep the records of maintenance work carried out on the refrigerator.

12.9 Replacing bulbs, external



- ▶ Xenon spotlights are under high voltage. Touching the Xenon lamp contacts can lead to serious or fatal injuries due to electric shock. Do not remove the housing cover of the Xenon spotlight.
- ▶ Have the bulbs of the Xenon spotlights changed at a qualified specialist workshop. These workshops have the necessary knowledge and the required tools. **HYMER GmbH & Co. KG** recommends the **HYMER** service centres.
- ▶ Bulbs and lamp holders can be extremely hot. Therefore, allow lamps to cool down before changing bulbs.
- ▶ Store bulbs in a safe place inaccessible to children.
- ▶ Do not use any bulb that has been dropped or which shows scratches in its glass. The bulb might burst.



- ▷ Do not touch a new bulb with bare fingers. Use a cloth when installing the new bulb.
- ▷ Use only bulbs of the same type and with the correct wattage (see section 12.9.4).
- ▷ If LEDs in lamps are defective, contact an authorised dealer or service centre.

Types of bulbs Different types are used in the vehicle. Below, we have described how to change the different types of bulbs.

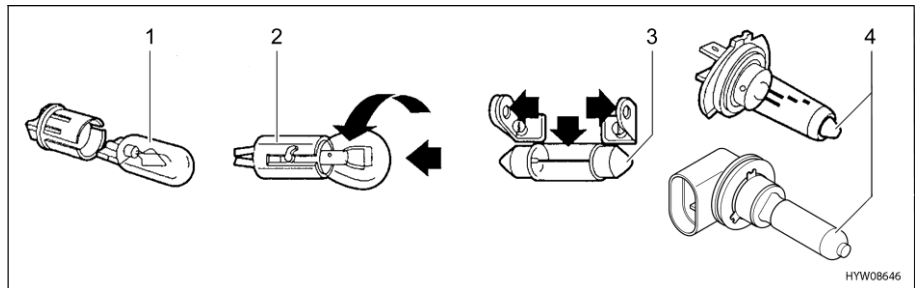


Fig. 181 Types of bulbs

Pos. in Fig. 181	Fixture type/bulb type	Changing
1	Plug-in fixture	To remove, pull out the bulb To mount, push the bulb into the socket with gentle pressure
2	Bayonet socket	To remove, press the bulb down and turn in an anticlockwise direction To insert, place the bulb in the socket and turn in a clockwise direction
3	Cylindrical bulbs	To remove and to insert, carefully bend the contacts of the lamp holder outwards
4	Halogen bulb	To remove, release the retaining spring / release the bayonet fitting After inserting, reattach the retaining spring /insert the halogen bulb into the bayonet fitting

12.9.1 Front lights



Fig. 182 Front lights

The front lighting is part of the base vehicle. Replacement of light bulbs is described in the instruction manual of the base vehicle.

12.9.2 Rear lights



- ▷ To change the lamps equipped with LEDs, contact an authorised dealer or a service centre.

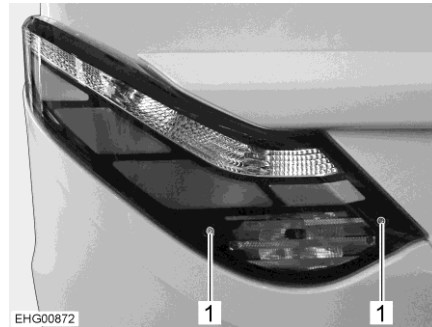
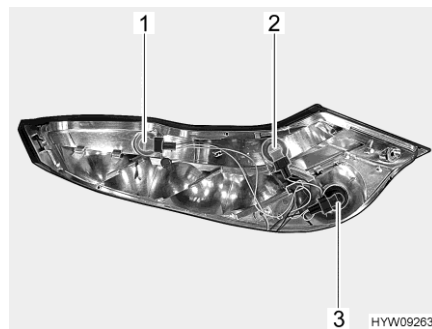


Fig. 183 Rear lights unit

- Loosen the hexagon socket screws (Fig. 183,1).
- Remove rear lights unit.



- 1 Direction indicator
- 2 Reverse light
- 3 Fog tail light

Fig. 184 Rear lights unit (removed)

- Turn defective bulb (Fig. 184) in an anticlockwise direction to unlock the bayonet socket.
- Change the faulty bulb.

Licence plate light/third brake light

The licence plate light and the third brake light are equipped with LEDs. To change the LEDs, contact an authorised dealer or a service centre.

12.9.3 Side lights



- 1 Awning light
- 2 Side marker light
- 3 Direction indicator
- 4 Marker light

Fig. 185 Side lights

- Side marker light**
- Use a suitable tool (e.g. a screwdriver) to lever out the cover.
 - Remove the housing.
 - Change the faulty bulb

Direction indicator The direction indicator is part of the base vehicle. Replacement of light bulbs is described in the instruction manual of the base vehicle.

Marker light The lamp is glued in. If the bulb is faulty, contact an authorised dealer or service centre.

Awning light The lights have LEDs. To change the LEDs, contact an authorised dealer or a service centre.

12.9.4 Types of bulbs for exterior lighting

Front The bulb types are described in the instruction manual of the base vehicle. To change the clearance lights, contact a dealer or service centre.

	No. in Fig. 184	Exterior lighting	Type of bulb
Rear	1	Direction indicator	P 12 V 21 W
	2	Reverse light	P 12 V 21 W
	3	Fog tail light	P 12 V 21 W
	-	Brake light	Contact a dealer or service centre
	-	Rear light	Contact a dealer or service centre
	-	Licence plate light	Contact a dealer or service centre
	-	Third brake light	Contact a dealer or service centre

	No. in Fig. 185	Exterior lighting	Type of bulb
Side	1	Awning light	Contact a dealer or service centre
	2	Side marker light	C 12 V 5 W
	3	Direction indicator	Contact a dealer or service centre
	4	Marker light	Contact a dealer or service centre

12.10 Lighting for living area



- ▶ Do not replace the LEDs in lamps with standard light bulbs. Risk of fire due to intense heat build up.

All of the lights in the living area are equipped with LED technology. LED lights are economical, low-maintenance and have a very long life. It is not normally necessary to replace a light.



- ▷ If LEDs in lamps are defective, contact an authorised dealer or service centre.

12.11 Spare parts



- ▶ Every alteration of the original condition of the vehicle can alter road behaviour and jeopardize road safety.
- ▶ The special equipment and original spare parts recommended by **HYMER GmbH & Co. KG** have been specially developed and supplied for your vehicle. These products are available at the authorised dealer or service centre. The authorised dealer or service centre is informed about admissible technical details and carries out the required work correctly.
- ▶ The use of accessories, parts and fittings not supplied by **HYMER GmbH & Co. KG** may cause damage to the vehicle and jeopardize road safety. Even if an expert's report, a general type approval or a design certification exists, there is no guarantee for the proper quality of the product.
- ▶ No liability can be assumed for damage caused by products which have not been released by **HYMER GmbH & Co. KG**. This also applies to impermissible alterations to the vehicle.

For safety reasons, spare parts for pieces of equipment must correspond with manufacturer's instructions and be permitted by the manufacturer as a spare part. These spare parts may only be fitted by the manufacturer or an authorised specialist workshop. The authorised dealers and service centres are available for any spare parts requirement.

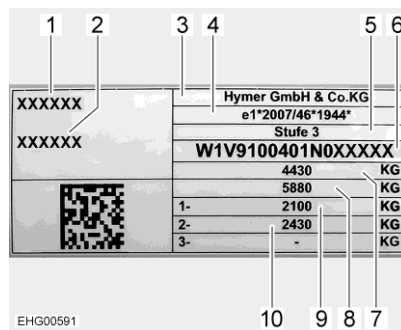
Here are some examples of important spare parts:

- Fuses
- Bulbs
- Water pump (submerged pump)

When ordering spare parts, please indicate the serial number and the vehicle type to the authorised dealer or service centre.

The vehicle described in this instruction manual is built and equipped to factory standards. Special equipment is offered depending on its purpose or use. When fitting special equipment check if such equipment has to be entered in the vehicle documents. Observe the max. permissible gross weight. The authorised dealer or service centre will be happy to advise you.

12.12 Vehicle identification plate



- 1 Vehicle type
- 2 Consecutive serial number
- 3 Manufacturer
- 4 Vehicle type approval
- 5 Body stage
- 6 Chassis number
- 7 Technically permissible maximum mass
- 8 Permissible total towing mass (with caravan coupling option)
- 9 Permissible axle load for axle 1
- 10 Permissible axle load for axle 2

Fig. 186 Vehicle identification plate

The vehicle identification plate with the serial number is attached to the right-hand wall in the centre of the bottom area.

Do not remove the vehicle identification plate. The vehicle identification plate:

- identifies the vehicle
- helps with the procurement of spare parts
- together with the vehicle documents identifies the vehicle owner



- ▷ Always include the **serial number** with all inquiries for the customer service office.

12.13 Warning and information stickers

There are warning and information stickers on and inside the vehicle. Warning and information stickers are for the sake of safety and must not be removed.



- ▷ Replacement stickers can be obtained from an authorised dealer or a service centre.

12.14 Dealers

Contact your authorised dealer or service centre whenever spare parts are needed for the vehicle.

You can find the addresses and telephone numbers of the authorised dealers and service centres:

- In the brochure, which is included separately with the vehicle
- In the Internet at <http://www.hymer.com>

12.15 Replacement keys

To order replacement keys make a note of the following:

Locks for:	To order keys you need:	Obtainable at:	Telephone information:
Mercedes-Benz base vehicle	Chassis number	Mercedes-Benz authorised workshop	–
Body	Serial number, chassis number, second key or key number	Dealers	–

Chapter overview

This chapter contains instructions regarding the tyres of the vehicle.

At the end of the chapter there is a table you can use to find the correct tyre pressure for your vehicle.

13.1 General



- ▶ Check tyre pressure before a journey or every 2 weeks. Wrong tyre pressure causes excessive wear and can lead to damage or even to tyre burst. You can lose control of the vehicle (see section 13.9).



- ▷ Check the tyre pressure on cold tyres. Do not reduce the higher tyre pressure when the tyres are warm.
- ▷ Tubeless tyres have been installed on the vehicle. Never install tubes in these tyres.
- ▷ Read the instruction manual for the base vehicle.
- ▷ The maximum depth of a body of water that a vehicle can pass through without being damaged is called the "wading depth". The maximum wading depth is determined by the lower edge of the bumper, but is a maximum of 40 cm. This applies to all loading conditions. Never cross deeper bodies of water. Water and dirt can damage the vehicle. The driver must make sure that that no equipment can be damaged before driving through bodies of water or mud and before driving over raised obstacles. For further details, refer to the Mercedes Benz instruction manual.



- ▷ Depending on the model, the vehicle may only be equipped with a tyre repair kit as standard.
- ▷ In the case of a puncture, pull the vehicle over to the side of the road. Make vehicle safe with a hazard warning triangle. Switch on the warning lights.
- ▷ Tyres must not be older than 6 years as the material will become brittle over time. The four-digit DOT number on the tyre flank indicates the date of manufacture. The first two digits designate the week, the last two digits the year of manufacture.

Example: 0722 Week 07, year of manufacture 2022

- Observe:**
- Check the tyres regularly (every 2 weeks) for equal tread wear, tread depth and external damage.
 - Replace tyres at the latest, when the minimum depth of tread stipulated by law is reached.
 - Always use tyres of the same model on one axle.
 - Observe the instructions in the vehicle documents.
 - Only use tyres approved for the wheel rim type fitted. The permitted rim and tyre sizes are quoted in the vehicle documents and the authorised dealer or service centre will always be glad to give you advice.
 - Run-in new tyres for approx. 100 km (60 miles) at low speed since only then do they reach full strength.

- Check regularly that the wheel nuts or wheel bolts are firmly seated.
- For lay-ups or long periods of inactivity, keep the tyres and tyre bearings free from pressure points:
Jack up the vehicle so that the wheels do not bear any load, or move the vehicle every 4 weeks in such a way that the position of the wheels is changed.

13.2 Tyre selection



▶ A wrong tyre can damage the tyres during the journey and even cause it to burst.



▷ If tyres that are not approved for the vehicle are used, then the type approval for the vehicle and subsequently the insurance coverage can lapse. The authorised dealer or service centre will be happy to advise you.

The tyre sizes approved for the vehicle are given in the vehicle documents or can be obtained from the authorised dealers or service centres. Each tyre must fit the vehicle on which it will be driven. This applies to the external dimensions (diameter, width), which are indicated with the standardised size designations. In addition, the tyres must meet the requirements of the vehicle with regard to weight and speed.

The weight is based on the technically permissible maximum mass on the axle, which is distributed between two tyres. The maximum load-carrying capacity of a tyre is indicated by its load index (= LI, load index code).

The maximum permissible speed for a tyre (with full load-carrying capacity) is indicated by the speed index (= SI). Together, load index and speed index form the operating code of a tyre. This is an official component of the complete, standardised dimensions description which appears on every tyre. The information on the tyres must correspond to the specifications which appear in the vehicle papers.

13.3 Tyre specifications

**215/70 R 15C
109/107 Q (example)**

Description	Explanation
215	Tyre width in mm
70	Height-to-width proportion in percent
R	Tyre design (R = radial)
15	Rim diameter in inches
C	Commercial (transporter)
109	Load index code for single tyres
107	Load index code for twin tyres
Q	Speed index (Q = 160 km/h)

13.4 Deep tread tyres – LT 245/75 R16 120/116 S (Special models)



- ▶ Do not drive the vehicle faster than 120 km/h although the tyre has an approval for up to 180 km/h (= speed index S).
- ▶ Please note that, when using the tyre LT 245/75 R16 120/116 S, the braking distance is longer compared to the standard tyres. The function of the emergency brake assistant may be restricted.
- ▶ Please note that the standard side wind assist is deactivated and, thus, is without function.
- ▶ Observe further safety instructions regarding tyres and wheels in the instruction manual of the vehicle.



- ▷ The Mercedes Sprinter with four-wheel drive has been designed as traction four-wheel vehicle and not as off-road four-wheel vehicle. If the vehicle is driven off road, the chassis may be damaged. This is true particularly in the case of driving in ruts (e.g. in the forest).

Required tyre pressures, see section 13.9.

13.5 Handling of tyres

- Drive over kerbs at an obtuse angle. Otherwise the flanks of the tyres may get pinched. Driving over a kerb at a sharp angle can damage the tyre and result in it getting ruptured.
- Drive over high manhole covers at a slow speed. Otherwise the tyres may get pinched. Driving over a high manhole cover at high speed can damage the tyre and result in it getting ruptured.
- Check the shock absorbers regularly. Driving with poor shock absorbers significantly increases wear.
- In the event of an uneven thread wear, contact customer service.
- Do not clean the tyres with a high-pressure cleaner. The tyres can suffer serious damage within just a few seconds and rupture as a result.

13.6 Spare wheel

The spare wheel is in the rear storage space or in the rear garage.

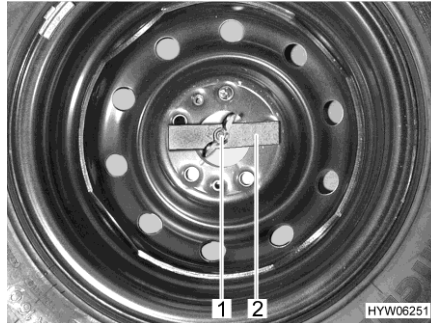


Fig. 187 Spare wheel in the rear storage space

Removing the spare wheel:

- Loosen the wing nut (Fig. 187,1) and unscrew it.
- Remove the pad (Fig. 187,2).
- Remove the spare wheel.



- ▷ In the case of models with four-wheel drive, the spare wheel is attached to the rear wall.

13.7 Spare wheel on rear wall



- ▶ To avoid injury from the spare wheel falling off: Always remove the spare wheel from the spare wheel support or attach it to the spare wheel support together with a second person.



- ▷ The spare wheel can be removed from or attached to the spare wheel support using the vehicle's own tools.

13.8 Changing wheels

13.8.1 General instructions



- ▶ The vehicle must be on level, firm ground, secure from slipping.
- ▶ Go into first gear. In the case of automatic transmission, change gear to "P" position.
- ▶ Before jacking up the vehicle firmly apply the handbrake.
- ▶ Prevent the vehicle from rolling away by blocking the opposite wheel with the wheel chocks.
- ▶ Under no circumstances jack the vehicle with the fitted supports.
- ▶ If a trailer is connected: Detach the trailer before lifting the vehicle.
- ▶ Position the vehicle jack at the designated mounting points (see section 13.8.3).
- ▶ Never overload the vehicle jack. The maximum permissible load is specified on the vehicle jack's identification plate.
- ▶ Use the vehicle jack only for lifting the vehicle briefly while changing the tyre.
- ▶ Do not start the motor while the vehicle is jacked up.
- ▶ Whilst the vehicle is in a jacked up position, persons must not lie down under it.



- ▷ Do not damage the thread of the thread bolt or wheel bolt when changing the wheel.
- ▷ Tighten the wheel nuts or wheel bolts cross-wise.
- ▷ When changing wheels (e.g. alloy wheel rims or wheels with winter tyres), use the correct wheel bolts of the correct length and shape. Otherwise the wheels may not be securely fixed or the braking system may not work correctly.
- ▷ All 4 wheels must be of the same model and size and be approved for the vehicle.
- ▷ Wheel rims or tyres that are not approved for the vehicle can jeopardize road safety and they must be separately inspected and approved by an accredited test centre.
- ▷ Do not replace wheels cross-wise.



- ▷ Protect the vehicle according to the national regulations, e.g. with a hazard warning triangle.
- ▷ Before changing the wheel, check the wheel rim and tyre size, the max. tyre load and the speed index on the tyres. Only use the wheel rim and tyre sizes stated in the vehicle documents.
- ▷ The on-board tool set is adapted to the mounted wheel nuts or wheel bolts. When alloy wheel rims are mounted, carry an appropriate tool for the spare wheel (steel wheel rim) in the vehicle.
- ▷ Further information can be found in the instruction manual of the base vehicle.

The on-board tool set is stored in the footwell of the driver's cabin under the floor plate.

13.8.2 Tightening torque

Wheel rim	Tightening torque
Steel wheel rim	250 Nm \pm 20 Nm
Alloy wheel rim	190 Nm \pm 20 Nm

13.8.3 Changing a wheel



- ▶ The footplate of the vehicle jack must be levelly positioned on the ground.
- ▶ Only drive to the nearest workshop with the spare wheel.



- ▷ The wheel you have replaced should be repaired immediately.
- ▷ Take note of the general instructions in this chapter.

- Park the vehicle on as even and stable a surface as possible.
- Go into first gear. In the case of automatic transmission, change gear to "P" position.
- Apply the handbrake.
- Place chocks or other appropriate objects beneath the vehicle to secure it.
- Remove the spare wheel from the spare wheel support.
- If the ground is soft, place a stable support such as a wooden board beneath the vehicle jack.
- Refer to the base vehicle's operating manual for the vehicle jack attachment point.
- Using the wheel brace, turn the wheel bolts several times to loosen them, but do not remove them.
- Lift the vehicle until the wheel has been lifted 2 to 3 cm above the ground.
- Remove the wheel bolts and take off the wheel.
- Place the spare wheel on the wheel hub and adjust.
- Screw in the wheel bolts and slightly tighten them cross-wise.
- Crank down the vehicle jack and remove it.
- Using the wheel brace, tighten the wheel bolts evenly (see section 13.8.2 for tightening torque).

13.8.4 Changing a wheel with alloy wheel rims



- ▶ Alloy wheel rims and steel wheel rims require different wheel bolts. When alloy wheel rims are mounted, the spare wheel (steel wheel rim) is accompanied by suitable wheel bolts.

Wheels with alloy rims are changed in the same way as wheels with steel rims (see section 13.8).

13.9 Tyre pressure



- ▶ Tyres overheat if the tyre pressure is too low. This can cause serious tyre damage.
- ▶ Check tyre pressure before a journey or every 2 weeks. Wrong tyre pressure causes excessive wear and can lead to damage or even to tyre burst. You can lose control of the vehicle.
- ▶ Use only valves that are approved for the specified tyre pressure.



- ▷ Check the tyre pressure on cold tyres. Do not reduce the higher tyre pressure when the tyres are warm.

The payload and the durability of tyres is directly dependent on the tyre pressure. Air is a volatile medium. It is unavoidable that it will escape from tyres.

As a rule of thumb it can be assumed that a filled tyre loses pressure at a rate of 0.1 bar every two months. To prevent the tyres becoming damaged or burst, check the tyre pressure regularly.



- ▷ The information on pressure levels is valid for cold tyres and loaded vehicles.
- ▷ Pressure in hot tyres must be 0.3 bar higher than in cold tyres. Recheck the pressure when the tyres are cold.
- ▷ Tyre pressures in bar.
- ▷ Over 4.75 bar requires a metal valve.
- ▷ The tyre pressure tolerance is +/- 0.05 bar.
- ▷ Refer to the vehicle documents for the maximum permissible axle loads.
- ▷ Only the tyre inflation pressure values **in this instruction manual** apply even if the base vehicle manufacturer indicates other values.

The vehicles are constantly brought up to the newest technical standards. It is possible that new tyre sizes are not yet included in this table. If this is the case, any authorised dealer or service centre will be happy to provide the newest values.

Rear-wheel drive

Tyre size	Tyre manufacturer	Air pressure front axle		Air pressure rear axle	
		Perm. axle load 1860 kg	Perm. axle load 2000 kg	Perm. axle load 2250 kg	Perm. axle load 2430 kg
235/65 R16	All	3.5 bar	3.8 bar	4.5 bar	4.9 bar
235/60 R17	All	3.8 bar	4.0 bar	4.6 bar	5.0 bar

Four-wheel drive

Tyre size	Tyre manufacturer	Air pressure front axle		Air pressure rear axle	
		Perm. axle load 1860 kg	Perm. axle load 2000 kg	Perm. axle load 2250 kg	Perm. axle load 2430 kg
225/75 R16	All	3.5 bar	3.7 bar	4.3 bar	4.9 bar
LT 245/75 R16 (deep tread)	All	3.6 bar	3.6 bar	4.8 bar	4.8 bar



▷ Permissible axle loads, see the vehicle identification plate.

Depending on the model, the vehicle will be equipped with a spare wheel. If different air pressure values are specified for front and rear axle: use the higher of both values for the spare wheel.

Chapter overview

This chapter contains instructions about possible faults in your vehicle. The faults are listed with their possible causes and corresponding remedies. The specified faults can be remedied with relative ease and without a great deal of specialised knowledge. In the event that the remedies detailed in this instruction manual should not be successful, an authorised specialist workshop must find and eliminate the cause of the fault.

14.1 Braking system



- ▶ Have defects on the braking system immediately remedied by an authorised specialist workshop.

14.2 Electrical system




- ▷ When the living area battery is changed, only use batteries of the same type and the same capacity.



- ▷ See chapter 8 for changing the fuses.

Fault	Cause	Remedy
Road light system does no longer work correctly	Bulb is defective	Replace bulb. Note volts and watts specifications
	Fuse is defective	Replace fuse
Interior lighting does not work	Illuminant, plug connector or cable faulty	Contact customer service
The electrically operated entrance step cannot be moved in or out	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
The entrance step does not extend or only partially (in the winter)	The mechanics are iced up. The protection device (pinch protection) has triggered due to a overload current	Clean the entrance step, remove ice
No 230 V power supply in spite of connection	230 V automatic circuit breaker has triggered	Switch on 230 V automatic circuit breaker

Fault	Cause	Remedy
Starter or living area battery is not charged when operated in 230 V mode	Flat fuse on the starter battery or on the living area battery faulty	Replace flat fuse on the starter battery or on the living area battery
	No mains voltage	Switch on automatic circuit breaker in the vehicle
	Transformer/rectifier is overheated	Ambient temperature too high or transformer/rectifier ventilation hindered
	Too many appliances are switched on	Switch off appliances that are not required
	Charger module in the transformer/rectifier is defective	Contact customer service
Living area battery is not charged during vehicle operation	Fuse on terminal D+ of the alternator is defective	Replace fuse
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
12 V indicator lamp is not lit	12 V power supply is switched off	Switch 12 V power supply on
	Battery cut-off switch on the transformer/rectifier is switched off	Set battery cut-off switch to on
	Starter or living area battery is not charged	Charge the starter or living area battery
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
	Flat fuse on the living area battery is defective	Replace flat fuse on the living area battery
12 V power supply does not work	12 V power supply is switched off	Switch 12 V power supply on
	Battery cut-off switch on the transformer/rectifier is switched off	Set battery cut-off switch to on
	Living area battery is discharged	Charge the living area battery
	Flat fuse on the living area battery is defective	Replace flat fuse on the living area battery
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service

Fault	Cause	Remedy
12 V power supply does not work in 230 V operation	12 V power supply is switched off	Switch 12 V power supply on
	Battery cut-off switch on the transformer/rectifier is switched off	Set battery cut-off switch to on
	230 V automatic circuit breaker has triggered	Contact customer service
	Charger module in the transformer/rectifier is defective	Contact customer service
	Flat fuse on the living area battery is defective	Replace flat fuse on the living area battery
Mains check symbol does not light up even though 230 V mains supply is connected	The mains connection is de-energised	Check external mains connection
	230 V automatic circuit breaker upstream of transformer/rectifier has tripped or is switched off	Reset 230 V automatic circuit breaker
No voltage at a connected appliance	Self-resetting Polyswitch fuse has tripped	Check plug connectors and cables. Switch off 12 V power supply for approx. 2 minutes, then switch it back on
	Self-resetting Polyswitch fuse has tripped several times (3 times), system has deactivated corresponding output permanently	Remedy cause of Polyswitch tripping Cancel permanent switch-off (switch on 12 V power supply for living area, press rotary knob and keep it pressed for minimum 3 seconds)
Starter battery is discharged in 12 V operation	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
	Battery cut-off switch on the transformer/rectifier is switched off	Set battery cut-off switch to on
No voltage is supplied by the living area battery	Living area battery is discharged	Charge living area battery immediately  ▷ Total discharge damages the battery. If the vehicle is to be laid up for a long period, fully charge the living area battery beforehand Discharging is caused by inactive appliances (see chapter 8)

Fault	Cause	Remedy
Battery charge through solar module not working	Electrical connection to solar module interrupted	Check plug connectors and cables
	Fuse is defective	Replace fuse on the transformer/rectifier
	Solar charge regulator defective	Contact customer service
Living area battery overloaded ("hot")	Battery selection switch set wrongly	Move position of battery selection switch
	Defective load sensor or relay	Pull out the flat fuse on the living area battery, then contact customer service

14.3 AC converter

Fault	Cause	Remedy
Sockets without voltage (for special equipment AC converter)	The AC converter has switched itself off due to a fault	Observe the LEDs on the AC converter
	The circuit breaker in the additional fuse box has tripped	Switch the circuit breaker on
LED "LOAD STATUS" (AC converter) is flashing red quickly	Input voltage too high	Contact customer service
LED "LOAD STATUS" (AC converter) is flashing red slowly	Input voltage too low	Charge the living area battery
LED "LOAD STATUS" (AC converter) is flashing red periodically	AC converter too hot	Reduce load, ensure better ventilation of the AC converter
LED "LOAD STATUS" (AC converter) is lit red permanently	Short circuit, incorrect polarity or excessive load	Reduce load, eliminate short circuit or switching error, push appliance fuse in again
		Contact customer service

14.4 Gas system



- ▶ In case of a defect of the gas system (gas odour, high gas consumption) there is danger of explosion! Close regulator tap on the gas bottle immediately. Open doors and windows and ventilate well.
- ▶ If the gas system is defective: Do not smoke; do not ignite any open flames, and do not operate electric switches (light switches etc.). Check the tightness of gas-conducting parts and lines with leakage search spray. Do not check with an open flame.
- ▶ Have the defective gas system repaired by an authorised specialist workshop.

Fault	Cause	Remedy
No gas	Gas bottle is empty	Change gas bottle
	Gas isolator tap closed	Open the gas isolator tap
	Regulator tap on the gas bottle is closed	Open regulator tap on the gas bottle
	External temperature is too low (-42 °C for propane gas, 0 °C for butane gas)	Wait for higher external temperatures
	Built-in appliance is defective	Contact customer service

14.5 Cooker

Fault	Cause	Remedy
Ignition fuse does not operate (flame does not burn after the control knobs are released)	Heat-up time is too short	Keep control knob pressed for approx. 15 to 20 seconds after ignition
	Ignition fuse is defective	Contact customer service
Flame extinguishes when being reduced to its minimum setting	Thermocouple sensor is incorrectly set	Correctly reset thermocouple sensor (do not bend). The sensor tip should protrude by 5 mm beyond the burner. The sensor neck should not be more than 3 mm away from the burner ring; if necessary, contact customer service

14.6 Heater/boiler

In the event of a defect contact the nearest customer service workshop of the relevant appliance manufacturer. The list of addresses is enclosed with the accompanying appliance documentation. Only authorised qualified personnel may repair the appliance.

14.6.1 Heater/boiler with CP plus digital operating unit

Fault	Cause	Remedy
Heater does not ignite	Temperature sensor on operating unit or remote sensor defective	Pull out plug on operating unit. The heater then works without thermostat. Contact the customer service as soon as possible
No display on the operating unit	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
	Fuse in the electronic control unit has been triggered	Contact customer service
	Living area battery defective	Charge or replace the living area battery (or have it charged or replaced)
Fault with error code is displayed	See table "Fault search instruction"	See table "Fault search instruction"
Boiler empties, safety/drainage valve has opened	Internal temperature below 8 °C	Heat inside
Safety/drainage valve cannot be closed	Temperature at safety/drainage valve below 8 °C	Heat inside
Fan wheel runs noisily or not steadily	Fan wheel is soiled	Contact Truma service department

Fault search instruction

Error code	Cause	Rectification
# 17	Summer operation with empty water container	Switch off the device and allow it to cool down. Fill the boiler with water
	Warm air louvres blocked	Check outlet openings
	Air circulation suction system blocked	Remove blocking of air circulation suction system
# 18	Gas pressure regulator iced up	Use regulator heater (defroster if available)
	Proportion of butane gas in gas bottle too high	Use propane gas (butane gas is unsuitable for heating especially for temperatures under 10 °C)
# 21	Room temperature sensor or cable defective	Contact customer service
# 24	Risk of undervoltage Battery voltage too low < 10.4 V	Charge the battery
# 29	Short circuit in heating element for frost control	Remove plug of heating element on electronic control unit. Replace heating element
# 41	Electronics blocked	Contact customer service
# 42	Safety switch has triggered	(Not used here)
# 43	Overvoltage > 16.4 V	Check battery voltage and voltage sources (e.g. charger)
# 44	Undervoltage Battery voltage too low < 10.0 V	Charge battery. Replace outdated battery if required
# 45	No 230 V power supply	Check external mains connection
	230 V automatic circuit breaker has triggered	Switch on 230 V automatic circuit breaker
	Overheating protection has triggered	Reset overheating protection. Allow heater to cool, remove connection cover and press reset button
#112, #202, #121, #211	Lack of gas	Open regulator tap and gas isolator tap
		Connect a full gas bottle
#122, #212	Combustion air inlet or exhaust gas outlet closed	Check openings for dirt (slush, ice, leaves etc.) and clean if necessary
#255	No connection between heater and operating unit	Contact customer service
	Cable defective	Contact customer service

If these measures do not rectify the fault, contact customer service.

14.6.2 Alde heater/boiler



▷ If a fault occurs in the system, the cause is shown on the display.

Fault	Cause	Remedy
Heater does not ignite with gas operation	Lack of gas	Open regulator tap and gas isolator tap Connect a full gas bottle
Heater does not ignite	Battery voltage too low	Charge battery. If the battery voltage rises above 11 V, the heater is switched on automatically
Heater does not ignite at 230 V electrical operation	No 230 V power supply	Switch on 230 V automatic circuit breaker Connect 230 V power supply
Heater switches off	Overheating	Allow the heater to cool. Disconnect and connect the 12 V power supply to the heater again to reset the indicator
Heater running, but no heat at the convectors	Circulating pump does not work	Switch on room thermostat Contact customer service
Heater and circulating pump running, but no heat at the convectors	Air in the heating system	Bleed hot-water heater

14.7 Air conditioning unit

Fault	Cause	Remedy
Air conditioning unit does not cool	No 230 V power supply	Connect 230 V power supply
	Fuse is defective	Check fuse and replace if necessary
	Temperature below 16 °C	-
	Temperature has been set incorrectly	Adjust the temperature
	Air filter contaminated	Replace air filter

14.8 Refrigerator

14.8.1 General

In the event of a defect contact the nearest customer service workshop of the relevant appliance manufacturer. The list of addresses is enclosed with the accompanying appliance documentation. Only authorised qualified personnel may repair the appliance.



- ▷ Further information can be obtained in the manufacturer's instruction manual.

Fault	Cause	Remedy
Refrigerator does not refrigerate sufficiently	Insufficient ventilation of unit	Check if ventilation grills are covered; remove covers if necessary
		Remove ventilation grills and clean the space behind them (of leaves etc.)
	Thermostat adjusted too low	Adjust higher value on thermostat
	Cooling fins heavily iced-over	Check if refrigerator door closes correctly
	Too many warm foods stored in a short period of time	Let warm foods cool down before storage
	Appliance has not been running long enough	Check again after 4 or 5 hours if the refrigerator cools
	Ambient temperature is too high	Remove the ventilation grills periodically
	The vehicle is not in a horizontal position	Set the vehicle up in a horizontal position
Refrigerator does not refrigerate in gas operation	Lack of gas	Connect a full gas bottle
		Open regulator tap and gas isolator tap
	Air in the gas pipe	Switch appliance off and start it up again (if necessary, repeat procedure 3 to 4 times)
Refrigerator does not refrigerate in 12 V operation	Fuse is defective	Replace fuse
	Battery is discharged	Check and charge battery
	Ignition switched off	Switch on ignition
	Heating element is defective	Contact customer service


Fault	Cause	Remedy
Refrigerator does not refrigerate in 230 V operation	Fuse is defective	Change fuse; switch fuse on again at fuse box
	No 230 V power supply	Connect 230 V power supply
	Heating element is defective	Contact customer service
Refrigerator changes into gas mode in spite of mains connection	Line voltage too low	Check line voltage (refrigerator will automatically change into 230 V operation in case of correct line voltage)

14.9 Water supply

Fault	Cause	Remedy
Leakage water inside the vehicle	A leak has occurred	Identify leak, re-connect water pipes
No water	Water tank is empty	Replenish drinking water
	Drain cock not closed	Close drain cock
	12 V power supply is switched off	Switch 12 V power supply on
	Switch for water pump is off	Switch water pump on
	Fuse of the water pump is defective	Replace fuse on the transformer/rectifier
	Water pump defective	Exchange water pump (have it exchanged)
	Water pipe snapped off	Straighten water pipe or replace
Toilet has no flush water	Transformer/rectifier defective	Contact customer service
	Water tank is empty	Replenish drinking water
Display for water and waste water indicates a wrong value	Measuring probe in the waste water or water tank is soiled	Clean water/waste water tank
	Measuring probe is defective	Replace measuring probe
Waste water tank cannot be emptied	Drain cock is clogged	Open the cleaning cap on the waste water tank and drain the waste water. Rinse the waste water tank well
Drain on the single lever mixer tap is clogged	Perlator calcified	Unclip the perlator, de-calcify in vinegar water (only for products made from metal)

Fault	Cause	Remedy
Water jets on the shower nozzle clogged	Water jets calcified	De-calcify shower nozzle in vinegar water (only for products made from metal) or rub off soft nozzle burling
Water drains from the shower tray slowly or does not drain at all	The vehicle is not in a horizontal position	Position the vehicle horizontally
Milkiess of the water	Tank filled with dirty water	Clean water tank mechanically and chemically; then disinfect and rinse copiously with drinking water
	Residues in the water tank or water system	Clean water system mechanically and chemically; then disinfect and rinse copiously with drinking water
Any change in the taste or odour of the water	Tank filled with dirty water	Clean water system mechanically and chemically; then disinfect and rinse copiously with drinking water
	Fuel filled into the water tank by mistake	Clean water system mechanically and chemically; then disinfect and rinse copiously with drinking water. If not successful: Contact a specialist workshop
	Microbiological deposits in the water system	Clean water system mechanically and chemically; then disinfect and rinse copiously with drinking water
Deposits in the water tank and/or water-carrying components	Water excessively long in the water tank and in water-carrying components	Clean water system mechanically and chemically; then disinfect and rinse copiously with drinking water

14.10 Body

Fault	Cause	Remedy
Flap hinges/door hinges are difficult to operate	Flap/door hinges are not (sufficiently) lubricated	Lubricate flap hinges/door hinges with acid-free and resin-free grease
Hinges/joints in the bathroom unit/toilet compartment are difficult to operate/make a grating noise	Hinges/joints are not (sufficiently) lubricated	Lubricate hinges/joints with solvent-free and acid-free grease  ▷ Spray cans often contain solvents
Storage compartment hinges are difficult to operate/make a grating noise	Storage compartment hinges are not (sufficiently) lubricated	Lubricate storage compartment hinges with acid-free and resin-free grease
Wind-up skylight is difficult to operate	Threaded spindle not lubricated	Lubricate threaded spindle
	Threaded spindle defective	Have threaded spindle replaced



▷ The authorised dealers and service centres are available for any spare parts requirement.

15.1 Weight details for special equipment



- ▶ The use of accessories, parts and fittings not supplied by **HYMER GmbH & Co. KG** may cause damage to the vehicle and jeopardize road safety. Even if an expert's report, a general type approval or a design certification exists, there is no guarantee for the proper quality of the product.
- ▶ Every alteration of the original condition of the vehicle can alter road behaviour and jeopardize road safety.
- ▶ No liability can be assumed for damage caused by products which have not been released by **HYMER GmbH & Co. KG**. This also applies to impermissible alterations to the vehicle.

Depending on the model series, different special equipments are offered. You can find out which special equipments are available for your vehicle in the accessories list, which is available separately. There you will also find information on the weights of the individual special equipments.

16.1 Technical data



- ▷ Only the details provided in the actual vehicle documentation shall be binding with regard to the technical data.
- ▷ The measurements as well as the net weight of the vehicle may change when mounting accessories or special equipment. Differences due to manufacturing tolerances (+/- 5 %) are possible and admissible.

16.2 Dimensions and permissible number of persons

ML-T	Wheel-base in cm	Length in cm	Width in cm	Height in cm	Permissible number of persons Regular/additional
560	367	674	222-230	290-315	2 + 1
570	367	674	222-230	290-315	2 + 1
580	367	699	222-230	290-315	2 + 1
620	433	765	222-230	290-315	2 + 1

Refer to the vehicle documents or the instruction manual of the base vehicle for further information on technical data. The authorised dealers and service centres will also provide information if necessary.

The weight specifications and tests for motorhomes are uniformly regulated throughout the EU in EU Implementing Regulation No. 2021/535 (until June 2022: EU Implementing Regulation No. 1230/2012). We have summarised and explained the key terms and legal requirements from this regulation for you below. Our dealers and the **HYMER** configurator on our website offer you additional assistance in configuring your vehicle.

1. Technically permissible maximum laden mass

The technically permissible maximum laden mass of the vehicle (e. g. 3,500 kg) is a mass specification set by the manufacturer which the vehicle must not exceed. Information on the technically permissible maximum laden mass of the model you have chosen can be found in the technical data. If the vehicle exceeds the technically permissible maximum laden mass in everyday driving, this constitutes an administrative offence which may result in a fine.

2. Mass in running order

In simple terms, the mass in running order is the basic vehicle with standard equipment plus a legally fixed standard weight of 75 kg for the driver. This essentially includes the following items:

- the unladen weight of the vehicle together with the bodywork, including operating fluids such as greases, oils and coolants;
- the standard equipment, i.e. all equipment items that are included as standard in the factory-fitted scope of delivery;
- the fresh water tank filled to 100 % in driving mode (driving fill according to manufacturer's specifications; 20 litres) and an aluminium gas cylinder filled to 100 % with a weight of 16 kg;
- the fuel tank, which is 90 % full, including fuel;
- the driver, whose weight – regardless of the actual weight – is generally specified as 75 kg in accordance with EU law.

Information on the mass in running order can be found for each model in our sales documents. It is important to note that the value for mass in running order given in the sales documents is a default value determined in the type-approval procedure and verified by the authorities. It is legally permissible and possible for the mass in running order of the vehicle delivered to you to deviate from the nominal value stated in the sales documents. The legally permissible tolerance is $\pm 5\%$. In this way, the EU legislator accounts for the fact that certain fluctuations in the mass in running order occur due to variations in the weight of supplied parts as well as due to processes and weather conditions.

These weight deviations can be illustrated by means of an example calculation:

- Mass in running order acc. to sales documents: 2,850 kg
- Legally permissible tolerance of $\pm 5\%$: 142.50 kg
- Legally permissible range of mass in running order: 2,707.50 kg to 2,992.50 kg

The specific range of permissible weight deviations can be found for each model in the technical data. **HYMER** makes great efforts to reduce weight variations to the minimum that is unavoidable for production reasons. Deviations at the upper and lower end of the range are therefore very rare; however, they cannot be completely ruled out technically, even with all optimisations. The real weight of the vehicle and compliance with the permissible tolerance is therefore checked by **HYMER** by weighing each vehicle at the end of the line.

3. Mass of the passengers

The mass of the passengers is set a standard value of 75 kg for each seat provided by the manufacturer, regardless of the actual weight of the passengers. The mass of the driver is already included in the mass in running order (see no. 2 above) and is therefore not included again. In the case of a motorhome with four permitted seats, the mass of the passengers is therefore $3 \times 75 \text{ kg} = 225 \text{ kg}$.

4. Optional equipment and actual mass of the vehicle

Optional equipment (also: additional equipment) includes, according to the legal definition, all optional equipment parts not included in the standard equipment which are fitted to the vehicle under the responsibility of the manufacturer – i.e. ex works – and can be ordered by the customer (e. g. awning, bicycle or motorbike carrier, satellite system, solar system, oven, etc.). Information on the individual or package weights of the optional equipment that can be ordered can be found in our sales documents. Optional equipment in this sense does not include other accessories that are retrofitted by the dealer or you personally after the vehicle has been delivered ex works.

The mass of the vehicle in running order (see no. 2 above) and the mass of the optional equipment fitted to a specific vehicle at the factory are together referred to as the actual mass. You will find the corresponding information for your vehicle after handover under item 13.2 of the Certificate of Conformity (CoC). Please note that this specification also represents a standardised value. Since the mass in running order – as an element of the actual mass – is subject to a legally permissible tolerance of $\pm 5 \%$ (see no. 2), the actual mass may also deviate accordingly from the stated nominal value.

5. Pay-mass and minimum pay-mass

The installation of optional equipment is also subject to technical and legal limits: Only so much optional equipment can be ordered and fitted at the factory that sufficient free weight remains for baggage and other accessories ("pay-mass") without exceeding the technically permissible maximum laden mass. The pay-mass is calculated by subtracting the mass in running order (nominal value according to sales documents, see no. 2 above), mass of the optional equipment and the mass of the passengers (see no. 3 above) from the technically permissible maximum laden mass (see no. 1 above). The EU regulations stipulate a fixed minimum pay-mass for motorhomes, which must remain as a minimum for baggage or other non-factory-fitted accessories. This minimum pay-mass is calculated as follows:

Minimum pay-mass in kg $\geq 10 \times (n + L)$

Where: "n" is the maximum number of passengers plus the driver and "L" is the overall length of the vehicle in metres.

For a motorhome with a length of 6 m and 4 approved seats, the minimum pay-mass is therefore e. g. $10 \text{ kg} \times (4 + 6) = 100 \text{ kg}$.

To ensure that the minimum pay-mass is maintained, there is a maximum combination of optional equipment that can be ordered for each vehicle model. In the above example with a minimum pay-mass of 100 kg, the total mass of optional equipment for a vehicle with four permitted seats and a mass in running order of 2,850 kg should not exceed 325 kg:

3,500 kg technically permissible maximum laden mass
 - 2,850 kg mass in running order
 - 3 x 75 kg mass of the passengers
 - 100 kg minimum pay-mass
 = 325 kg maximum permissible mass of optional equipment

It is important to note that this calculation is based on the default value for mass in running order as defined in the type-approval procedure, without taking into account the permissible weight deviations for mass in running order (see no. 2 above). If the maximum permissible value for the optional equipment of (in the example) 325 kg is almost or completely exhausted, an upward weight deviation can therefore result in the minimum pay-mass of 100 kg being met mathematically using the default value for the mass in running order, although in fact there is no corresponding load capacity. Here, too, an example calculation for a vehicle with four seats, whose real weighed mass in running order is 2 % above the nominal value:

3,500 kg technically permissible maximum laden mass
 - 2,907 kg real weighed mass in running order (+ 2 % compared to the stated value of 2,850 kg)
 - 3 x 75 kg mass of the passengers
 - 325 kg optional equipment (maximum permissible value)
 = 43 kg actual load capacity (< minimum pay-mass of 100 kg)

In order to avoid such a situation, **HYMER** further reduces the maximum permissible weight of the total optional equipment that can be ordered on a model-specific basis. The limitation of optional equipment is intended to ensure that the minimum pay-mass, i.e. the legally prescribed free mass for baggage and retrofitted accessories, is actually available for the vehicle load capacity of the vehicles delivered by **HYMER**.

Since the weight of a specific vehicle can only be determined when it is weighed at the end of the line, in very rare cases a situation may arise in which the minimum pay-mass at the end of the line is not guaranteed, despite this limitation of optional equipment. In order to guarantee the minimum pay-mass even in these cases, **HYMER** will check together with your trade partner and you before delivery of the vehicle whether, for example, the vehicle is loaded up, seats are reduced or optional equipment is removed.

6. Effects of tolerances of the mass in running order on the pay-mass

Regardless of the minimum pay-mass, you should note that unavoidable production-related fluctuations in the mass in running order – both upwards and downwards – have a mirror-image effect on the remaining load capacity: If you order our example vehicle (see no. 3. above), for example, with optional equipment with a total weight of 150 kg, the calculated pay-mass based on the default value for the mass in running order is 275 kg. The load capacity actually available may deviate from this value due to tolerances and may be higher or lower. If the mass in running order of your vehicle is, for example, permissibly 2 % higher than stated in the sales documents, the load capacity is reduced from 275 kg to 218 kg:

3,500 kg technically permissible maximum laden mass
- 2,907 kg real weighed mass in running order (+ 2 % compared to the stated value of 2,850 kg)
- 3 x 75 kg mass of the passengers
- 150 kg optional equipment ordered for the specific vehicle
= 218 kg actual load capacity

As a precaution to ensure that the calculated pay-mass is actually given, you should therefore take the possible and permissible tolerances for the mass in running order into account when configuring your vehicle.

We also recommend that you weigh the laden motorhome on a non-automatic scale before each journey and, taking the individual weight of the passengers into account, determine whether the technically permissible maximum laden mass and the technically permissible maximum mass on the axle are observed.

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