

Instruction manual

Congratulations

We congratulate you on your new motorhome and would like to thank you for choosing a quality product from Dethleffs.

Whether you want to enjoy your holidays on good or bad roads, whether you want to have your "holiday home" out in the country, at the seaside or in the mountains: Your Dethleffs motorhome will always make sure that you can enjoy your holidays, because the Dethleffs team has been building caravans and motorhomes for 90 years and knows what is important. This experience shows itself in the well thought-out, cosy and yet highly functional equipment as well as in the outstanding driving characteristics.

Each Dethleffs vehicle is manufactured with great care and the quality is closely checked. This ensures that our products have a long service life. In view of these strict requirements, we guarantee top quality of our products and grant you a six year leakage guarantee of the body in accordance with our guarantee conditions (see section 1.1).

All Dethleffs vehicles fulfil the requirements of the Euro 6 emission standard.

This instruction manual deals primarily with the body of your motorhome. It will give you all important information and tips so that you can enjoy all technical advantages of your Dethleffs motorhome to the full. We have also included a chapter on maintenance – and thus on the conservation of value.

In addition, you will find the documents on the base vehicle and the various built-in appliances.

For maintenance work or whenever you need some help, please always get in touch with your authorised specialist workshop. They know your motorhome best of all, and will meet all your requests fast and reliably.

In the event of chassis-related problems with Dethleff vehicles, authorised workshops of the base vehicle manufacturer are able to provide assistance. If you encounter problems on the Fiat chassis, please call the phone number 00800 34281111.

We wish you a lot of fun with your motorhome, a relaxing holiday and safe driving at all times.

Your Dethleffs team

Instruction manual

Vehicle data
Model:
Car manufacturer/type of engine:
Initial registration:
Chassis number:
Serial number:
Purchased from company:
Start of the guarantee period:
Expiry of the guarantee period:
Customer address
Surname, Christian name:
Street, No.:
Postal code, town:
Dealer's stamp and signature



- ▷ We reserve the right to alter the construction, equipment and the scope of delivery. Special equipment is also listed that is not included in the standard scope of delivery. The descriptions and illustrations in this brochure cannot be assigned to a specific version; they are information that applies to all models. For all details, only the respective equipment list is valid.



- ▷ Observe the instructions for use and operating instructions from the chassis manufacturer.
- ▷ The terms used in these operating instructions with regard to weight specifications are explained again in detail at the end of the operating instructions (legal information on weight-related specifications).
Further details on the weight specifications can be found on our homepage in the "Weight information" section at www.hymer.com/gewichtsinformationen.

Contents

1	Guarantee 8	4.13	Road safety 53
1.1	Conditions for leakproof guarantee 8	5	During the journey 55
1.2	Water ingress test 9	5.1	Driving the motorhome 55
1.2.1	Inspection plan 9	5.2	Driving speed 56
1.2.2	Inspection records 11	5.3	Brakes 56
1.3	Further inspections 14	5.4	Seat belts 56
1.3.1	Inspection plan for annual inspection 14	5.4.1	Fastening the seat belt correctly 57
1.3.2	Inspection plan for chassis 15	5.4.2	Belt pull-out on the Alpa 7820 57
1.3.3	Gas inspection plan 15	5.5	Driver's seat and front passenger's seat 57
1.3.4	Inspection records 16	5.6	Single seat 59
2	Introduction 20	5.7	Headrests 60
2.1	General 21	5.8	Seating arrangement 60
2.2	Environmental tips 22	5.9	ISOFIX system 61
3	Safety 23	5.10	Branch block (model I) 61
3.1	Rescue card 23	5.11	Electrical window winders (model I) 62
3.2	Fire prevention 23	5.12	Electrically adjustable external mirrors (model I) 62
3.2.1	Avoidance of fire risks 23	5.13	Roman shades for windscreen, driver's window and front passenger's window 63
3.2.2	Fire-fighting 23	5.14	Writing and reading rest 64
3.2.3	Gas odour 24	5.15	Bonnet 64
3.3	General 24	5.15.1	Model I 65
3.4	Road safety 25	5.16	Filling with washer fluid (model I) 65
3.5	Towing 26	5.17	Checking the oil level (model I) 66
3.6	Gas system 27	5.18	Filling up with diesel 67
3.6.1	General information 27	6	Pitching the motorhome 68
3.6.2	Gas bottles 28	6.1	Handbrake 68
3.7	Electrical system 28	6.2	Entrance step 68
3.8	Water system 29	6.3	Wheel chocks 68
4	Before the journey 30	6.4	Supports 68
4.1	Keys 30	6.4.1	General instructions 68
4.2	Registration 30	6.4.2	Steady legs (AL-KO) 69
4.3	Payload 31	6.5	240 V connection 69
4.3.1	Terms 31	6.6	Refrigerator 70
4.3.2	Calculating the payload 34	6.6.1	Absorption refrigerator 70
4.3.3	Loading the vehicle correctly 35	6.6.2	Compressor refrigerator 70
4.3.4	Loading and unloading 38	6.7	Awning 70
4.3.5	Roof loads 39	6.7.1	Awning, manual 70
4.3.6	Fastening system in the rear area 40	6.7.2	Awning, electric 71
4.3.7	Double floor 42	6.8	Teleco satellite unit 72
4.3.8	Bike rack 43	7	Living 73
4.4	Towing 44	7.1	Doors 73
4.4.1	Tow coupling 44	7.1.1	Conversion door, outside 74
4.5	Entrance step 45	7.1.2	Conversion door, inside (with locking lever) 74
4.5.1	Mechanically operated entrance step 45	7.1.3	Driver's door, outside 75
4.5.2	Electrically operated entrance step 46	7.1.4	Driver's door, inside (without lock) 75
4.6	PVC-floor covering 47	7.1.5	Driver's door, inside (with lock) 76
4.7	Headrests 47	7.1.6	Insect screen on the conversion door 76
4.8	Television 47	7.1.7	Conversion door window (variant 1) 77
4.9	Sink cover 48	7.1.8	Conversion door window (variant 2) 77
4.10	Driver's cabin Roman shade 48	7.2	External flaps 78
4.10.1	Roman shade for driver's window and front passenger's window 49	7.2.1	Flap lock with recessed handle 78
4.10.2	Roman shade for windscreen 50	7.2.2	Turnbuckle lock 79
4.11	Central locking system for kitchen unit 50		
4.12	Snow chains 52		

Contents

7.2.3	Holding the external flaps in position . . .	80	7.16.7	Bed conversion of single beds to double bed.	132
7.3	Driver's cabin partition	81	7.16.8	Bed extensions for queen size beds . . .	133
7.4	Ventilation	82	7.17	Converting seating groups for sleeping .	134
7.5	Windows.	83	7.17.1	Converting the front bench seat with length-wise seat	134
7.5.1	Sliding window with lock (variant 1) . . .	83	7.17.2	Converting the front bench seat to a guest bed (table free-standing).	135
7.5.2	Sliding window with lock (variant 2) . . .	84	7.17.3	Converting the front bench seat to a guest bed (hooking table).	136
7.5.3	Sliding window with lock (variant 3) . . .	84	7.17.4	Converting the round seating group in the rear area	137
7.5.4	Sliding window without lock (variant 1). .	85	7.17.5	Converting the facing seating unit with longitudinal bench	138
7.5.5	Sliding window without lock (variant 2) .	85	7.17.6	Conversion of facing seating unit with longitudinal bench	139
7.5.6	Hinged window with rotary hinges	86	7.17.7	Converting the facing seating unit with longitudinal bench (with/without ISOFIX). .	140
7.5.7	Hinged window with automatic hinges . .	88	7.17.8	Converting single seats from driving into living mode	141
7.5.8	Blind and insect screen	90	7.17.9	Converting single seats from driving into living mode	142
7.5.9	Blind pleated with insect screen	91	7.17.10	Converting individual seats from driving to living areas.	143
7.5.10	Electric blind for the windscreen	91	7.17.11	Converting individual seats from driving to living areas.	144
7.5.11	Roman shade for the windscreen.	92	7.17.12	Converting individual seats from driving to sleeping	145
7.5.12	Roman shade for driver's window and front passenger's window.	93	7.17.13	Conversion of facing seating unit with longitudinal bench (with/without Isofix) (Iveco XXL A9000).	146
7.5.13	Gathered blinds	94	7.18	Bath area	147
7.5.14	Fall protection bar in the window	94	7.19	Sleeping area partition.	148
7.6	Skylights.	95	7.19.1	Sliding door	148
7.6.1	Skylight with snap latch	96	8	Gas system.149	
7.6.2	Heki skylight (mini and midi)	96	8.1	General.	149
7.6.3	Wind-up skylight	98	8.2	Gas bottles	150
7.7	Rotating seats.	99	8.3	Gas consumption	151
7.8	Tables	100	8.4	Changing gas bottles	152
7.8.1	Suspension table with fold-out leg. . . .	100	8.5	Gas isolator taps.	153
7.8.2	Suspension table (bar seating group). . .	101	8.6	External gas connection	154
7.8.3	Fixed table (movable table-top).	102	8.7	Safety gas pressure control system Caramatic DriveOne	155
7.8.4	Single-column table (movable table-top)	103	8.8	Caramatic DriveTwo switching facility . .	159
7.8.5	Table lowerable in round seating group. .	104	9	Electrical system165	
7.8.6	2-column table lowerable in the round seating group	105	9.1	General safety instructions	165
7.8.7	2-legged folding table, lowerable	106	9.2	Terms	165
7.8.8	2-legged folding table, can be lowered for the middle pull-out bed	107	9.3	12 V power supply	166
7.8.9	Folding table, lowerable and rigid	108	9.3.1	Living area battery.	166
7.9	Central locking system for kitchen unit .	109	9.4	Charging the living area battery and starter battery	168
7.9.1	Emergency unlocking of the kitchen drawers (Alpa model).	110	9.4.1	Charging using a 240 V power supply . .	169
7.9.2	Emergency unlocking of the kitchen drawers (Globetrotter model)	111	9.4.2	Charging using the vehicle engine. . . .	169
7.10	Television	112	9.4.3	Charging with an external charger. . . .	169
7.11	Radio in driver's cabin	115	9.5	AC converter.	170
7.12	Making phone calls using the hands-free system	115			
7.13	Lamps	116			
7.14	Light switch	116			
7.15	Extending the seating group	117			
7.16	Beds	118			
7.16.1	Vertically adjustable queen-sized bed . .	119			
7.16.2	Overcab bed	121			
7.16.3	Pull-down bed (model I)	122			
7.16.4	Pull-down bed (model T)	129			
7.16.5	Bunk bed	130			
7.16.6	Fixed bed (gas-pressure springs)	131			

Contents

9.6	AC converter MultiPlus	171	9.16.3	Changing the hot water level	204
9.6.1	Digital Multi Control Panel	172	9.16.4	Selecting the energy type	204
9.6.2	LED indicators at the AC controller MultiPlus and at the Digital Multi Control Panel . .	172	9.16.5	Selecting the fan level	205
9.7	Transformer/rectifier EBL 111	174	9.16.6	Setting the timer	206
9.7.1	Battery cut-off switch	175	9.16.7	Switching the lighting on and off.	207
9.7.2	Battery monitoring	175	9.16.8	Setting the time	207
9.7.3	Charging the battery.	175	9.16.9	Service menu	207
9.8	Transformer/rectifier (EBL 119).	177	9.17	System Control Display	208
9.8.1	Battery cut-off switch	178	9.17.1	Living	208
9.8.2	Battery selector switch	178	9.17.2	Private	210
9.8.3	Battery monitoring	179	9.17.3	Installation	210
9.8.4	Charging the battery.	179	9.17.4	Vehicle details	212
9.9	Transformer/rectifier (EBL 102).	180	9.17.5	Settings	213
9.9.1	Battery cut-off switch	181	9.18	Dethleffs Connect App	215
9.9.2	Battery selector switch	181	9.18.1	Connecting mobile devices with the vehicle	215
9.9.3	Battery monitoring	182	9.18.2	Dethleffs Connect App features	218
9.9.4	Charging the battery.	182	9.19	Truma iNet Box	221
9.9.5	Overvoltage protection.	182	9.20	240 V power supply	222
9.10	Transformer/rectifier EBL 402/403	183	9.20.1	240 V connection	222
9.10.1	Battery cut-off switch	184	9.20.2	Power cable for external 240 V connection	223
9.10.2	Emergency operation	184	9.21	Fuses	224
9.10.3	Battery monitoring	185	9.21.1	12 V fuses	224
9.10.4	Charging the battery.	185	9.21.2	230 V fuse	227
9.11	Electrical block EBL 31-2	186	9.22	LED Lightbar (Globebus Performance) . .	228
9.11.1	Battery cut-off switch	187	9.23	Campernet (optional extra)	229
9.11.2	Battery monitoring	187			
9.11.3	Charging the battery.	188			
9.12	SCU (System Control Unit)	188	10	Appliances	230
9.13	Panel MP 20-T.	189	10.1	General.	230
9.13.1	230 V indicator lamp.	189	10.2	Heater	231
9.13.2	12 V main switch.	189	10.2.1	Models with waste gas vent on the right- hand side of the vehicle	231
9.13.3	Batteries gauge	190	10.2.2	To heat properly.	231
9.13.4	Tank gauge.	192	10.2.3	Hot-air heater Truma Combi.	232
9.13.5	Alarms	192	10.2.4	Alde hot-water heater	233
9.13.6	Temperature display.	193	10.2.5	Heater for waste water tank and waste water pipes (winter comfort package) .	238
9.13.7	Clock gauge	193	10.2.6	Electrical floor warming/bed warming .	239
9.13.8	Reserve button	193	10.3	Roof air conditioning unit.	240
9.14	Panel MP 20-S	194	10.3.1	Roof air conditioning unit (Truma).	240
9.14.1	230 V indicator lamp.	194	10.3.2	Roof air conditioning unit (Telair)	241
9.14.2	12 V main switch.	195	10.4	Boiler	242
9.14.3	Batteries gauge	196	10.4.1	Models with waste gas vent on the right- hand side of the vehicle	243
9.14.4	Tank gauge.	197	10.4.2	Alde boiler	243
9.14.5	Alarms	198	10.4.3	Safety/drainage valve	244
9.14.6	Temperature display.	198	10.5	Cooker	245
9.14.7	Reserve button	198	10.5.1	Gas cooker	245
9.15	Panel LT 96 / LT 97	199	10.5.2	Gas oven (Spinflo)	247
9.15.1	230 V indicator lamp.	199	10.5.3	Gas oven (Dometic)	248
9.15.2	12 V main switch.	199	10.5.4	Gas oven (Thetford)	249
9.15.3	Battery voltage display.	200	10.5.5	Extractor hood	250
9.15.4	Display filling level	201	10.6	Refrigerator	250
9.15.5	Activating / deactivating the water pump	201	10.6.1	Refrigerator ventilation grill.	250
9.15.6	Alarms	201	10.6.2	Operation (Dometic 8 series).	251
9.16	Panel Truma CP plus	202			
9.16.1	Switching on and off	203			
9.16.2	Setting the room temperature	203			

Contents

10.6.3	Operation (Dometic 8 series with manual power selection MES)	253	12.7	Winter care	290
10.6.4	Operation (Dometic 8 series with automatic power selection)	255	12.7.1	Preparations	290
10.6.5	Operation (Dometic 10 series)	257	12.7.2	Winter operation	291
10.6.6	Operation (Dometic 10 series, model RM 10.5)	259	12.7.3	At the end of the winter season	291
10.6.7	Operation (Thetford)	261	12.8	Lay-up	291
10.6.8	Refrigerator door locking mechanism	263	12.8.1	Temporary lay-up	291
			12.8.2	Winter lay-up	293
			12.8.3	Starting up the vehicle after a temporary lay-up or after lay-up over winter	294
11	Sanitary fittings	266	13	Maintenance	295
11.1	Water supply, general	266	13.1	Inspection work	295
11.2	Switch for water pump (winter comfort package or special equipment)	267	13.2	Maintenance work	295
11.3	Water tank	268	13.3	Alde hot-water heater	296
11.3.1	Drinking water filler neck with cap	268	13.3.1	Checking the fluid level	296
11.3.2	Filling with water	268	13.3.2	Topping up heating fluid	297
11.3.3	Draining water	269	13.3.3	Bleeding the heating system	297
11.4	Waste water tank	270	13.3.4	Cleaning the water filter of the pressurised water pump	298
11.4.1	Waste water tank (models with double floor)	270	13.4	Diesel heater Webasto	298
11.4.2	Waste water tank (models without double floor)	271	13.4.1	Disinfection	298
11.4.3	Siphon (odour seal)	271	13.4.2	Decalcification	299
11.5	Filling the water system	272	13.4.3	Fuses	299
11.6	Emptying the water system	273	13.5	Independent vehicle heater	299
11.7	Toilet compartment	275	13.6	Roof air conditioning unit (Truma)	300
11.7.1	Vario toilet	275	13.7	Replacing bulbs and fluorescent tubes	300
11.8	Toilet	276	13.7.1	LED spotlight	301
11.8.1	Swivel toilet (Thetford)	277	13.7.2	Garage light	301
11.8.2	Toilet with fixed seat	278	13.7.3	Refrigerator light	302
11.8.3	Removing the cassette	279	13.8	AL-KO rear axle	303
11.8.4	Emptying the cassette	279	13.9	Vehicle identification plate	304
11.8.5	Macerator toilet	280	13.10	Warning and information stickers	304
11.8.6	Emptying the cassette of the macerator toilet	281	14	Spare parts	305
12	Care	282	14.1	Spare parts	305
12.1	External care	282	15	Wheels and tyres	306
12.1.1	Washing with a high-pressure cleaner	282	15.1	General	306
12.1.2	Washing the vehicle	282	15.2	Tyre selection	307
12.1.3	Windows of acrylic glass	283	15.3	Tyre specifications	308
12.1.4	Underbody	283	15.4	Handling of tyres	308
12.1.5	Waste water tank	283	15.5	Install the wheel protection ring	309
12.1.6	Entrance step	284	15.6	Changing wheels	310
12.1.7	Driver's cabin insulation mat (model I)	284	15.6.1	General instructions	310
12.2	Interior care	284	15.6.2	Tightening torque	310
12.3	Water system	286	15.7	Tyre repair kit	311
12.3.1	Cleaning the water tank	286	15.8	Tyre pressure	312
12.3.2	Cleaning the water pipes	286	16	Troubleshooting	315
12.3.3	Disinfecting the water system	287	16.1	Braking system	315
12.4	Extractor hood	288	16.2	Electrical system	316
12.5	Sink	288	16.3	Gas system	319
12.5.1	Stainless-steel wash basin/sink	289	16.4	Gas cooker/gas oven	319
12.5.2	Plastic sink	289	16.5	Heater/boiler	319
12.6	Toilets	290	16.5.1	Heater Truma	320
12.6.1	Toilet with separate water tank	290	16.5.2	Alde heater/boiler	321
			16.6	Refrigerator	322

Contents

16.6.1	Dometic refrigerator without AES	322
16.6.2	Thetford refrigerator without SES (error diagnostics)	323
16.6.3	Dometic 8 series with MES	324
16.6.4	Dometic 8 series with AES	325
16.6.5	Dometic 10 series	326
16.7	Air conditioning unit	326
16.8	Water supply	326
16.9	Body	328
17	Special equipment	329
17.1	Weight details for special equipment . . .	329
17.2	Raising (Globebus Performance)	332
18	Helpful notes	333
18.1	The most important information for motor-homes	333
18.1.1	Traffic rules in Germany	333
18.1.2	Traffic rules in foreign countries	334
18.1.3	Parking	334
18.1.4	Official inspections	335
18.1.5	Emergency equipment	336
18.2	Help on Europe's roads	336
18.3	Speed limits and permissible dimensions	336
18.4	Driving with low beam in European countries	342
18.5	Sleeping in the vehicle away from camping areas	342
18.6	Gas supply in European countries	345
18.7	Toll regulations in European countries . .	348
18.8	Tips on staying overnight safely during travel	349
18.9	Tips for winter campers	349
18.10	Travel checklists	350
19	Weight-related information	352

1.1 Conditions for leakproof guarantee

1. In addition to the legal guarantee and product warranty rights due to the customer, Dethleffs GmbH & Co. KG may also grant a guarantee of six years that the vehicles constructed by the company are sealed in such a manner that moisture cannot penetrate from the outside into the interior of the vehicle.

This applies for fittings and bodies of Dethleffs.

The guarantee obligations do not apply if the leakage is a result of improper handling of the windows, doors and skylights or damage that has not been properly repaired. Damage that is caused by forces of nature (e.g. flooding) is not covered by the guarantee. The guarantee extensions include only the correct repair work. Conversion or diminution as well as travelling expenses or other indirect costs are not covered by the guarantee.

2. When dealing with a case of leakage covered under the conditions of this guarantee, Dethleffs GmbH & Co. KG is obliged to rectify the defective vehicle part concerned by repairing it free of charge or replacing the part, depending on what is necessary to immediately to repair the damage.

Defects are to be rectified by Dethleffs GmbH & Co. KG or by an authorised specialist workshop in accordance with the guidelines of Dethleffs GmbH & Co. KG.

3. The prerequisite for this guarantee is that the vehicle must be presented once a year to an authorised specialist workshop for an inspection. The presentation must take place 2 months at the latest after the anniversary of the initial registration (or delivery).

If the inspection is not carried out according to schedule, this will nullify your warranty. It cannot be renewed by carrying out an inspection at a later time.

As proof that the inspection has been completed, there are designated coupons in the Dethleffs GmbH & Co. KG guarantee booklet where inspection stamps are to be glued and endorsed by a stamp, the date and the signature of a respective Dethleffs dealer.

4. **The guarantee begins on the day of the initial registration or taking-over of the vehicle by the customer, at the latest 18 months after delivery to the dealer, and is valid while the vehicle is in use, for 6 years at the longest.** If initial registration of the vehicle precedes taking delivery, the warranty commences on the vehicle's initial registration date (warranty qualifying date). **A change of ownership of the purchased object has no effect on the guarantee obligations of the manufacturer.** The guarantee expires if the terms outlined in Paragraph 3 are not complied with. The performance of guarantee work does not increase the guarantee period.

5. Parts installed to rectify faults are also guaranteed under the terms of the guarantee until the guarantee period expires.

6. If leakage occurs, the owner must notify Dethleffs GmbH & Co. KG or a Dethleffs dealer of this in writing within 14 days of its detection. The guarantee certificate and the corresponding guarantee stamps must be included with the notification. If notification of leakage does not occur within the time limit stated, no claims can be made under the terms of the guarantee.

Remedying of leakage will take place after approval has been given by Dethleffs GmbH & Co. KG.

7. The costs of the inspection are to be paid by the party covered by the guarantee.
8. As far as legally permissible, the court responsible for Isny will be agreed upon as the venue for jurisdiction.

1

Guarantee

1.2 Water ingress test

1.2.1 Inspection plan

Pos.	Component	Activity
1.1	Wheel housing	Visual check
1.2	Rear wall floor plateau connection	Visual check
1.2.1	Side wall in the direction of travel left connection	Visual check
1.2.2	Side wall in the direction of travel right connection	Visual check
1.3	Front wall floor plateau connection	Visual check
1.3.1	Side wall in the direction of travel left connection	Visual check
1.3.2	Side wall in the direction of travel right connection	Visual check
1.4	Side wall floor plateau right connection	Visual check
1.5	Side wall floor plateau left connection	Visual check
1.6	Connection to driver's cabin	Visual check
1.7	Base frame with base frame cut-outs	Visual check
1.8	Check the status of the outer metal sheets	Visual check
1.9	Check the status of the window rubbers, expansion joints, sealing joints	Visual check
1.10	Diverse accessories (bike rack, awning, ladder, etc.)	Visual check
2.1	Measure the floor plateau at this connection point with a moisture measuring device, write down the corresponding values with the date of the assessment. Prescribed maximum values – up to 20% normal.	Measuring If the values lie above 20%, check if it is due to accumulated condensation.
2.2	Measure inside the vehicle (walls, window sections, roof, etc.), note changes in the colour of the decor. Prescribed maximum values – up to 20% normal.	Measuring If the values lie above 20%, check if it is due to accumulated condensation.
2.3	Measure at the inner decor of the storage flaps using a moisture measuring device.	Measuring
3.1	Rear wall floor plateau connection	Spray with Dethleffs special weatherproof solution
3.2	Front wall floor plateau connection	Spray with Dethleffs special weatherproof solution
3.3	Side wall floor plateau right connection	Spray with Dethleffs special weatherproof solution

1

Guarantee

Pos.	Component	Activity
3.4	Side wall floor plateau left connection	Spray with Dethleffs special weatherproof solution
3.5	Openings/ducts for cables, gas lines and air circulation	Spray with Dethleffs special weatherproof solution
3.6	Connection of floor to chassis  ▷ In the case of an underbody made of GRP the surface is not treated with the Dethleffs special weatherproof solution, but only still the cable glands, gas lines and at cable connections to the chassis.	Spray with Dethleffs special weatherproof solution

We reserve the right to modify the inspection plan.

1

Guarantee

1.2.2 Inspection records

Delivery

Signature, date and stamp of the Dethleffs dealer:

1st year

Signature, date and stamp of the Dethleffs dealer:

Water ingress test

Paste inspection stamp here (garage).

- ☐ Water ingress test 1st year
 - ☐ No defects found
 - ☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1

Guarantee

2nd year

Signature, date and stamp of the Dethleffs dealer:

Water ingress test

Paste inspection stamp here (garage).

☐ Water ingress test 2nd year

☐ No defects found

☐ Found defects:

3rd year

Signature, date and stamp of the Dethleffs dealer:

Water ingress test

Paste inspection stamp here (garage).

☐ Water ingress test 3rd year

☐ No defects found

☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1

Guarantee

4th year

Signature, date and stamp of the Dethleffs dealer:

Water ingress test

Paste inspection stamp here (garage).

☐ Water ingress test 4th year

☐ No defects found

☐ Found defects:

5th year

Signature, date and stamp of the Dethleffs dealer:

Water ingress test

Paste inspection stamp here (garage).

☐ Water ingress test 5th year

☐ No defects found

☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1

Guarantee

6th year

Signature, date and stamp of the Dethleffs dealer:

Water ingress test

Paste inspection stamp here (garage).

- ☐ Water ingress test 6th year
 - ☐ No defects found
 - ☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1.3 Further inspections

1.3.1 Inspection plan for annual inspection



- ▷ The annual inspection is not bound to the 6-year water ingress test, but should nevertheless be carried out annually.

Pos.	Component	Activity	Interval
1	Skylights	Remove the inside frame of the skylights and tighten the screw connections of the securing clips	1st year
2	Refrigerator, heater, boiler, cooker, lighting, storage flap and door closures, toilet, seat belts	Function check	Annually
3	Windows, skylights	Function check, applying talc to the rubber seals	Annually
4	Screens and blinds	Visual check	Annually
5	Sealing strips, edges, -rubber	Check for damage	Annually
6	Water supply	Leak check (visual check) of the connections at the water taps, boiler and distributor.	Annually

1

Guarantee

Pos.	Component	Activity	Interval
7	Hot-air system	Function check, clean fan wheel if appropriate	Annually
8	Pressurised water pump	Clean the water filter (see also Chapter 13.3.4).	Annually
9	Alde hot-water heater	Check fluid level Replace heating fluid	Annually Every 2 years
10	Attachment of the floor skirt	Visual check	Annually
11	Pull-down bed mounting	Function check	Annually
12	Electrical system, outside and inside	Function check	Annually
13	Gas system	Official gas inspection	Every 2 years
14	Windscreen wipers at I models	Function check	Annually
15	Joints, hinges, flaps, doors	Lubricate	Annually

We reserve the right to modify the inspection plan.

1.3.2 Inspection plan for chassis



- ▷ The chassis inspection is not bound to the 6-year water ingress test, but should nevertheless be carried out annually. Please also observe the respective instructions of the manufacturer (AL-KO).

Pos.	Component	Activity	Interval
1	Supplementary steady legs	Cleaning	Annually
2	Connections between chassis and body	Check	Every 2 years
3	Attachment of the floor skirt	Visual check	Annually
4	Outside lighting	Function check	Annually
5	Wheel attachment	Tighten the wheel nuts, check tyre bearings	Annually
6	Slotted nut on the wheel	Check position and fit lock mechanism	Annually
7	Tyres and wheel rims	Air pressure check (see section 15.8), visual check for damage, tread depth	Annually

We reserve the right to modify the inspection plan.

1.3.3 Gas inspection plan



- ▷ In Germany the gas inspection is prescribed by law and must be carried out every two years.
- ▷ The respective local regulations apply in other counties.

1

Guarantee

Pos.	Component	Activity	Interval
1	Gas system	Official gas inspection	Every 2 years
2	Gas filter	Replace gas filter cartridge, when residues are located on the filter cartridge. At the latest every 2 years	Every 2 years

1.3.4 Inspection records

Delivery

Signature, date and stamp of the Dethleffs dealer:

1st year

Signature, date and stamp of the Dethleffs dealer:

- ☐ Chassis inspection
- ☐ Water ingress test 1st year
 - ☐ No defects found
 - ☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1

Guarantee

2nd year

Signature, date and stamp of the Dethleffs dealer:

- ☐ Gas inspection
- ☐ Chassis inspection
- ☐ Water ingress test 2nd year
 - ☐ No defects found
 - ☐ Found defects:

3rd year

Signature, date and stamp of the Dethleffs dealer:

- ☐ Chassis inspection
- ☐ Water ingress test 3rd year
 - ☐ No defects found
 - ☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1

Guarantee

4th year

Signature, date and stamp of the Dethleffs dealer:

- ☐ Gas inspection
- ☐ Chassis inspection
- ☐ Water ingress test 4th year
 - ☐ No defects found
 - ☐ Found defects:

5th year

Signature, date and stamp of the Dethleffs dealer:

- ☐ Chassis inspection
- ☐ Water ingress test 5th year
 - ☐ No defects found
 - ☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

1

Guarantee

6th year

Signature, date and stamp of the
Dethleffs dealer:

- ☐ Gas inspection
- ☐ Chassis inspection
- ☐ Water ingress test 6th year
 - ☐ No defects found
 - ☐ Found defects:

Should it be determined during an inspection that additional work is necessary, then the carrying out of this work is dependent on the customer commissioning this to be done. Please also adhere to the service intervals stipulated by the manufacturers of the individual equipment. Information is included in the service documents enclosed.

Introduction

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.

With your Dethleffs motorhome you will receive a file with the following vehicle manuals and documents:

Dethleffs documents

- Instruction manual and service book (housing body)
- List of Dethleffs dealers

Additional documents

- Operating and installation instructions of various appliances
- Complete set of documents from the chassis manufacturer
- Manufacturer's declaration for the initial inspection of LNG systems in accordance with German regulations

This instruction manual contains sections which describe model-specific equipment or special equipment. These sections are accordingly 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".
- ▶ The metric specifications are binding for physical dimensions.

2

Introduction

Should the vehicle be subjected to damage due to a failure to follow the instructions in this instruction manual, then the guarantee 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.

2.1 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.

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, minimize 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.

2

Introduction

2.2 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 toilet cassette or sewage tank at disposal stations at the camping or caravan sites, which are 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 toilet cassette or sewage tank to become too full. Empty the toilet cassette or sewage tank frequently, at the latest as soon as the 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.

The instructions address the following topics:

- rescue card
- fire prevention and what to do in case of fire
- general care of the vehicle
- road safety of the vehicle
- towing
- gas system of the vehicle
- electrical system of the vehicle
- water system of the vehicle

3.1 Rescue card

The rescue card contains vehicle-specific information and can reduce the time required for rescuing in case of an accident. The rescue card shows, for example, where the gas bottles, the fuel tank, the gas-pressure shock absorbers or the batteries are located.

Clamp the rescue card behind the driver sun visor and attach the label "Rescue card in vehicle" at the top or bottom left of the windscreen. The label is available in any ADAC branch.

You can download the respective rescue card for your vehicle from the Dethleffs homepage under "Service / Rescue cards" and print it out.

3.2 Fire prevention**3.2.1 Avoidance of fire risks**

- ▶ Never leave children in the vehicle unattended.
- ▶ Keep flammable materials clear of heating and cooking appliances.
- ▶ Lights can get very hot. When the light is switched on, there must always be a safety distance of 30 cm between light and flammable objects. Fire hazard!
- ▶ Never use portable heating or cooking appliances.
- ▶ Only authorised qualified personnel may make changes to the electrical system, gas system or appliances.

3.2.2 Fire-fighting

- ▶ Always carry a dry powder fire extinguisher in the vehicle. The fire extinguisher must be approved, tested and close at hand.
- ▶ The fire extinguisher is not included in the scope of delivery.
- ▶ Have the fire extinguisher tested at regular intervals by authorised qualified personnel. Observe the date of testing.
- ▶ Always keep a fire blanket near the cooker.

3

Safety

3.2.3 Gas odour



- ▶ Evacuate all passengers.
- ▶ Cut off the electrical power supply and disconnect from the mains.
- ▶ Make sure the area is sufficiently ventilated (open storage flaps).
- ▶ Close regulator tap on the gas bottle.
- ▶ Sound the alarm and call the fire brigade.
- ▶ Fight the fire if this is possible without risk.
- ▶ Close the gas valve. Inspection by specialised personnel.



- ▷ Acquaint yourself with the position and operation of the emergency exits.
- ▷ Keep escape routes clear.
- ▷ Observe the fire extinguisher instructions for use.
- ▷ Take the rescue card into account!

All the windows and doors that fulfil the following criteria rate as emergency exists:

- Opening outwards or moving in the horizontal direction
- Opening angle at least 70°
- Diameter of the clear opening at least 450 mm
- Maximum distance to vehicle floor 950 mm

3.3 General



- ▶ The oxygen in the vehicle interior is used up by breathing and the use of gas operated appliances. That is why the oxygen needs to be replaced on a constant basis. 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.
- ▶ 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 parts must be entered in the vehicle papers.
- ▷ 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 maximum permissible gross weight of the vehicle exceeds 4 tonnes, wheel chocks must be used when parking on gradients. The wheel chocks are provided as standard for vehicles with a maximum permissible gross weight exceeding 4 tonnes.

3

Safety



- ▷ When leaving the vehicle, it is imperative that all doors, external flaps and windows are closed.
- ▷ Carry a hazard warning triangle and a first-aid kit and/or flashing hazard warning light when this is required by law.
- ▷ 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.

3.4 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, secure the hinged pull-down bed.
- ▶ Before commencing the journey, open, lock in position and secure the shades on the windscreen and on the driver's and front passenger's windows.
- ▶ 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.
- ▶ Before commencing the journey, remove the television from the support and store it securely.
- ▶ Before commencing the journey, place the television console in the alcove to secure it from turning.
- ▶ 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 starting the journey, take the loose covers of the sink and drain basin off and store securely in the kitchen unit or wardrobe.
- ▶ During the journey, persons are only to sit on the permitted seats (see chapter 5). 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.
- ▶ It is not permitted to stay in the alcove during the journey.
- ▶ Always secure children with the children safety equipment prescribed for the respective height and weight.
- ▶ Factory-set three-point safety belts must be used when attaching child restraint systems.
- ▶ 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).

3

Safety



- ▶ 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.
- ▶ Do not operate the independent vehicle heater at petrol stations. Danger of explosion!
- ▶ Do not operate the independent vehicle heater in closed spaces. Danger of suffocation!



- ▷ Before commencing the journey, distribute the payload evenly within the vehicle (see chapter 4).
- ▷ When loading the vehicle and when taking a rest from driving, in order to load luggage or food, for example, observe the maximum permissible gross weight and axle loads (refer to vehicle documents).
- ▷ Before commencing the journey, ensure that all cupboard doors, the toilet compartment door and all drawers and flaps are secure. Engage the refrigerator door securing device.
- ▷ Before commencing the journey, lower the table and fix it to the holder on the floor of the vehicle.
- ▷ 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, 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.
- ▷ Tyres may not be older than 6 years as the material becomes brittle over time (see chapter 15).
- ▷ 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.

3.5 Towing



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

3

Safety

3.6 Gas system

3.6.1 General information



- ▶ Before starting the journey, when leaving the vehicle or when gas equipment is not in use, close all gas isolator taps and the main isolator tap on the gas bottle.
- ▶ No appliance (e.g. heating or refrigerator) that is operated with an open flame may be operational while fuel is being filled up, on ferries or in the garage. Danger of explosion!
- ▶ If an appliance is operated with an open flame, do not start the appliance up in closed areas (e.g. garages). Danger of poisoning and suffocation!
- ▶ Have the gas system serviced, repaired or altered by an authorised workshop only.
- ▶ Have the gas system checked by an authorised specialist workshop before starting up and according to the national regulations. 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 and the exhaust gas pipes also have to be checked. The gas pressure regulator has to be replaced at least every 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 the regulator tap on the gas bottle immediately. Open doors and windows and ventilate well.
- ▶ In case of a defect in the gas system: Do not smoke; do not ignite any open flames, and do not operate electric switches (light switches etc.).
- ▶ Before using the cooker make sure that there is sufficient ventilation. Open windows or the skylight.
- ▶ Do not use the gas cooker or gas oven 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 installed gas appliances are designed for use solely with propane or butane gas or a mixture of both. The gas pressure regulator as well as all installed gas devices are set 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.
- ▶ Regularly inspect the gas tube fitted to the gas bottle connection for tightness. The gas tube must not have any tears and must not be porous. Have the gas tube replaced by an authorised specialist workshop no later than 10 years after the manufacturing date. The operator of the gas system must see to it that the parts are replaced.
- ▶ Due to its function and construction, the gas bottle compartment is a space which is open to the exterior. Never cover or block the standard forced ventilation. Otherwise leaking gas cannot be dispersed to the outside.
- ▶ Do not use the gas bottle compartment as storage space. Fire hazard!
- ▶ Secure the gas bottle compartment in order to prevent unauthorised persons opening it. To do so lock the access.

3

Safety



- ▶ The regulator tap on the gas bottle must be accessible.
- ▶ Only connect gas-operated devices (e.g. gas grill) 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. Therefore keep the waste gas vents and intake openings clean and free (e.g. of snow and ice). No snow walls or aprons may be allowed to lie against the vehicle.

3.6.2 Gas bottles



- ▶ 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.
- ▶ 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.
- ▶ The gas pressure regulator or the gas tube must only be secured with a suitable gas spanner (Do **not** overtighten).
- ▶ 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. Camping gas bottles with built-in check valve (blue bottle with max. 2.5 or 3 kg content) are can be used in exceptional cases with a safety valve.
- ▶ Use the shortest possible tube lengths (150 cm max.) for external gas bottles.
- ▶ Never block the floor ventilation openings below the gas bottles.

3.7 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.

3.8 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.



- ▶ 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. Leave the water taps on in central position. Leave the safety/drainage valve (if there is one) 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.

Chapter overview

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

The instructions address the following topics:

- keys
- registration
- calculating the payload
- correct loading of the vehicle
- towing
- retracting and extending the entrance step
- switch on the EBL circuit breaker
- PVC-floor covering
- correct position of the headrests
- storing the television
- using snow chains

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

4.1 Keys

Your vehicle comes complete with all the keys required for the vehicle. These are e.g.:

Two keys each for

- ignition lock
- driver's and passenger's doors (if available)
- fuel tank
- conversion door of the body
- drinking water filler neck (only with external filler neck)
- external flaps

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

4.2 Registration

Your motorhome is a vehicle which must be registered. Observe national regulations on registration.

Please remember that certain countries require a separate national code sticker in addition to the EU plate.

4

Before the journey

4.3 Payload



- ▶ Overloading the vehicle and wrong tyre pressure can cause tyres to burst. You can lose control of the vehicle.
- ▶ Only the maximum permissible gross weight and the mass in a ready-to-drive condition, not the actual weight of the vehicle, is stated in the vehicle documents. 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.
- ▶ Adapt the speed to the payload. The stopping distance is increased if the payload is high.



- ▶ The maximum permissible gross weight stated in the vehicle documents is not to be exceeded by the payload.
- ▶ **Built-in accessories and special equipment reduce the payload.**
- ▶ Adhere to the axle load stated in the vehicle documents.

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.

Maximum permitted payloads

Description	Load (kg)
Roof load	75
Roof, can be walked on	100 ¹⁾
Bike rack ²⁾ Triple	45
Quadruple	60
Rear garage and rear storage space	150 ³⁾
Rear garage fastening rail (25 kg per fastening point)	125
Fastening rail window area side wall (per fastening point 50 kg)	100
Fastening rail living area (per fastening point 50 kg)	150
Overcab bed	200
Pull-down bed	200
Rear bed	200
Bunk beds	100
Single beds	100
Drawers	10

- ¹⁾ max. 100 kg distributed load
²⁾ Observe the specifications on the rack.
³⁾ As of Esprit class 250 kg

4.3.1 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.
- ▶ All specifications according to EU norm DIN EN 1646-2.

4

Before the journey

Maximum permissible gross weight

The maximum permissible gross weight is a value set by the manufacturer which the vehicle must never exceed, even when loaded, for safety reasons (e.g. 3,500 kg). Information on the technically permissible gross weight can be found in the registration documents (field F.1) and on the body manufacturer's name-plate attached to the vehicle.

The maximum permissible overall weight in laden condition consists of the **mass in ready-to-drive condition** and of the **payload**.

Real weighed mass of the vehicle

In order to determine the remaining payload capacity, it is important that the real weighed mass of the vehicle is known.

Upon completion of your vehicle, Dethleffs will determine the real weight of the vehicle by weighing it at the end of the production belt. This includes the mass in ready-to-drive condition plus the weight of all ordered and factory-fitted special equipment.

The remaining payload capacity for luggage or other accessories can be calculated on the basis of this real weighed mass.

Example:

Technically permissible gross weight	Real weighed mass	Passenger weight	Remaining payload option
3,500 kg	3,000 kg	225 kg (3 × 75 kg)	275 kg



- ▷ The factory calculation of the remaining payload capacity for the mass of the driver (included in the real weighed mass) and the passenger weight is a flat rate of 75 kg per seat. Due to differing body weights, the real remaining load capacity of your vehicle may be affected.
- ▷ The actual mass of the vehicle weighed at the factory can subsequently vary slightly due to weather conditions and, for example, the associated absorption or release of moisture. Any further subsequent changes to the vehicle, for example through the additional installation of accessories by the retail partner or other attachments and/or conversions, will also affect the reported actual weight of the vehicle and consequently also the remaining payload capacity. After the handover by the dealer, it is the responsibility of the owner to ensure that the technically permissible gross weight is not exceeded. If you are unsure whether the loaded vehicle complies with the maximum possible gross weight, you can have the vehicle weighed/checked at public weighbridges or at individual trading partners.



- ▷ The mass of the vehicle actually weighed by Dethleffs at the factory and the remaining payload capacity will be communicated to the trade partner with the invoice. The latter is required to pass on the notification to the owner. If this has not been done, the trading partner can be contacted and the information requested.
- ▷ Dethleffs 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.

Permitted mass

The permitted mass is the weight specified by the manufacturer when applying for granting of the national type-approval. The permitted mass may not ever exceed the maximum permissible gross weight in a laden condition.

4

Before the journey

Mass in ready-to-drive condition

The mass in ready-to-drive condition is the weight of the ready-to-drive standard vehicle.

The mass in ready-to-drive condition is made up as follows:

- Unladen weight (mass of the empty vehicle) with factory-installed standard equipment
- Driver's weight
- Basic equipment weight

Unladen weight includes lubricants such as oils and coolants which have been filled, the on-board tool set, the spare wheel and a fuel tank that is 90% full.

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:

- Water system filled up to 90% (water tank and pipes)
- Aluminium gas bottles filled up to 100%
- A full heating system
- The power cables for the 230 V power supply (cable reel)
- 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 120 l	120 kg
Gas bottles (2 x 11 kg gas + 2 x 14 kg bottle)	+ 50 kg
Boiler with 12 l	+ 12 kg
230 V power cable	+ 4 kg
Installation kit for auxiliary battery	+ 20 kg
Total	= 206 kg

The actual mass in ready-to-drive conditions including basic equipment is specified in the CoC (Certificate of Conformity).

Payload

The payload is made up as follows:

- Conventional load
- Additional equipment
- Personal equipment



- ▷ The payload of the vehicle can be increased by reducing the vehicle mass complete in a ready-to-drive condition. To this purpose it is permissible, for example, to empty the liquid tanks or to remove the gas bottles.

Explanations of the individual components of the payload are contained 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 as part of the mass in ready-to-drive condition and must **not** be calculated as part of the conventional load.

The manufacturer specifies the number of seats in Field S.1 of the vehicle documents.

4

Before the journey

Additional equipment

Additional equipment includes accessories and special equipment. Examples of additional equipment include:

- Tow coupling
- Awning
- Bike or motorcycle rack
- Satellite unit

Chapter 17 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 in the vehicle that are not included in the conventional load and the additional 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 meters

4.3.2 Calculating the payload



- ▶ Payload calculation at the manufacturer is partly based on all-inclusive weights. For safety reasons, the maximum permissible gross weight in a laden condition must not be exceeded.
- ▶ Only the maximum permissible gross weight and the mass in a ready-to-drive condition, not the actual weight of the vehicle, is stated in the vehicle documents. For your own safety, we recommend that you have your loaded vehicle (with all the items transported in the vehicle on the journey and all the passengers) weighed on a public weighbridge before you set out on your journey.

The payload (see Section 4.3.1) is the difference in weight between

- Maximum permissible gross weight in a laden condition and
- Vehicle mass complete in a ready-to-drive condition.

4

Before the journey

Example for calculating the payload

	mass in kg to be calculated	Calculation
Maximum permissible gross weight according to vehicle documents, Field F.1	3,500	
Actual mass in a ready-to-drive condition, including basic equipment according to CoC	- 3,070	
This results in a permissible payload of	430	
Conventional load, e.g. 3 persons at 75 kg each	- 225	
Additional equipment	- 40	
For the personal equipment this results in	= 165	

The calculation of the payload from the difference between the maximum permissible gross weight in laden condition and the mass specified by the manufacturer in ready-to-drive condition is however only a theoretical value.

Only if the vehicle is weighed with full tanks (fuel and water), full gas bottles and complete additional equipment on a public weighbridge, 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 4.3.3). The sum of these values is the current weight of the vehicle.

The actual payload is the difference between the maximum permissible gross weight 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.

4.3.3 Loading the vehicle correctly



- ▶ To ensure safety never exceed the maximum permissible gross weight in a laden condition.
- ▶ Distribute the load evenly between the left-hand and right-hand sides of the vehicle.
- ▶ Distribute the load evenly between both axles. Observe the axle loads specified in the vehicle documents. Additionally observe the permissible load-carrying capacity of the tyres (see chapter 15).

4

Before the journey



- ▶ Heavy loads behind the rear axle can relieve the load on the front axle through the leverage effect ($\frac{1}{2} \rightarrow \frac{1}{4}$). This applies in particular in the case of a long rear projection, when a motorbike is transported on a rear rack or when the rear storage space is loaded heavily. The unloading of the front axle has a negative effect on the driving characteristics of front-wheel-drive vehicles in particular and leads, for example, to a loss of traction, a worsened steering response (changed driving behaviour), overloading of the tyres and, as a result, to an increased risk of tyre blowouts. As a result, there is a risk that the vehicle will get out of control and endanger the occupants and other road users. A load distributed evenly over the entire vehicle leads to optimum handling during the journey.
- ▶ Securely store all the objects so that they cannot slide or slip.
- ▶ Only use suitable clamping systems to secure against slipping. Check all fastenings again before you start your journey.
- ▶ Store heavy objects (awning, canned food, etc.) close to the axles. Low-lying storage compartments whose doors do not open in the direction of travel are particularly suited for storing heavy objects.
- ▶ Store lighter objects (laundry) in the roof storage compartments.
- ▶ Properly secure the doors and flaps on the cabinets and storage areas.
- ▶ The bike rack is only to be loaded with bicycles (max. 4 pieces).



- ▶ For individual models, the body manufacturer specifies a maximum load for cupboards, drawers, storage compartments or other storage spaces. This can be seen from the stickers attached on site and must always be observed. However, the maximum permissible gross weight and the maximum permissible gross weight on the axle must not be exceeded under any circumstances.
- ▶ The maximum load shown may not be used to the full extent if this means that the maximum permissible gross weight or the maximum permissible gross weight on the axle is exceeded.
- ▶ For more information on correct loading, see "Maximum permissible gross weight" on page 32, "Maximum permissible gross weight on the axle (axle load)" on page 36 and "Fastening system in the rear area" on page 40.

Maximum permissible gross weight on the axle (axle load)

The maximum permissible gross weight 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 specified by the manufacturer which, for safety reasons, the vehicle must never exceed, even when loaded.

Information on the vehicle's axle loads can be found in the registration papers and on the body manufacturer's nameplate attached to the vehicle.



- ▶ If the maximum permissible gross weight on the axle is exceeded, the vehicle can be damaged (e.g. due to a broken axle or a burst tire) and the driving experience can be significantly impaired. This creates the risk that the vehicle will spin out of control and endanger the occupants and other road users.

We therefore recommend that you weigh the finally loaded vehicle, including all passengers, before you start your journey, so that the axle load and the maximum permissible gross weight are always guaranteed.

To do this you have the possibility to weigh/check the vehicle on public scales or at individual trade partners.

4

Before the journey



- ▷ The axle loads on the respective axles or axle groups may differ. Therefore, carefully read the information provided in the registration documents.
- ▷ The maximum permissible gross weight and the maximum permissible gross weight on the axle must not be exceeded. Especially when stowing or attaching heavy accessories or accessories that are heavily loaded at the rear (such as motorbike carriers or bicycle carriers), the axle loads must be checked and complied with. If there is any uncertainty as to whether the loaded vehicle complies with the maximum permissible gross weight and the maximum permissible gross weight on the axle, you have the possibility of weighing/testing the vehicle on public scales or at individual trade partners.
- ▷ If the vehicle exceeds the maximum permissible gross weight on the axle specified by the manufacturer during practical driving, there are legal consequences such as a fine or loss of insurance.
- ▷ It is possible that the vehicle's chassis manufacturer specifies a minimum load for the front axle in order to obtain optimum handling. Therefore, always observe the information on this from the operating instructions of the chassis manufacturer.

Large storage areas such as the rear garage are also suitable for heavy objects (e.g. motor scooters). This may result in the axle load of the rear axle being exceeded.

The individual axles may not be overloaded under any circumstances. The distance to the axles in which the load is stored is therefore important.



- ▷ The payload of the vehicle can be increased by reducing the vehicle mass complete in a ready-to-drive condition. To this purpose it is permissible, for example, to empty the liquid tanks or to remove the gas bottles.

Scales, a measuring tape, a pocket calculator and a bit of time are needed to distribute the load correctly.

Two simple equations are used to calculate the effect of the load weight on the axles:

Equations

$A \times G : R$ = 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 the axles) in cm



- ▷ Measure the distances outside the vehicle horizontally from the middle of the front wheel to the middle of the storage space or to the middle of the rear wheel.

Calculating the axle loads:

- Multiply the distance between the storage space and the front axle (A) by the weight of the load in the storage space (G) and divide the result by the wheelbase (R). This produces the weight which the load in the storage space places on the rear axis. Write down this weight and the storage space.
- In a second step subtract the weight in the storage area (G) from the weight just calculated. If the result is a **positive** value (Example 1), the front axle is **relieved** by this amount. If the result is a **negative** value (Example 2), the front axle is **burdened** by this amount. Also write down this value.

4

Before the journey

- Calculate all the storage areas of the vehicle in the same way.
- In a last step add all the weights calculated for the rear axle to the rear axle load and add/or deduct all the weights calculated for the front axle to/from the front axle load.

Section 4.3.2 describes how the rear axle load and front axle load are determined.

If the calculated value exceeds the permissible axle load, the load has to be stored differently.

If the front axle is relieved too much, the adhesion of the tyres on the road surface (traction) deteriorates, particularly in the case of vehicles with a front-wheel drive. In this case also store the load differently.

Example calculation

		Example 1	Example 2
Distance to the front axle	A	(A1) 450 (cm)	(A2) 250 (cm)
Weight in the storage area	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 area		- 100 (kg)	- 50 (kg)
Relief from the front axle (subtract from the axle load)		38.5 (kg)	
Load on the front axle (add to the axle load)			-11.5 (kg)

4.3.4 Loading and unloading

With an increase in load, the maximum permissible gross weight of the vehicle, the maximum permissible gross weight on the axle and, as a result, the remaining payload capacity for luggage, camping equipment and so on is usually increased due to a change in the chassis.

In the case of a reduction in load, in contrast to an increase in load, the maximum permissible gross weight of the vehicle, the maximum permissible gross weight on the axle and, as a result, the remaining load capacity for luggage, camping equipment and so on is reduced. There is usually no technical change to the chassis.

4

Before the journey



- ▷ Due to the changed technically permissible gross weight, increases or decreases in load can have an impact on the permitted seats, the chassis and the axle loads. If you have any questions, please contact the responsible technical test centre for advice.
- ▷ An increase or decrease in load can result in changed legal requirements resulting from the new maximum permissible gross weight of the vehicle. This applies in particular to the legal requirements from the road traffic regulations, the road traffic licensing regulations, as well as the tax and insurance regulations. An increase in the technically permissible gross weight to over 3,500 kg can, for example, affect the driving license class or lead to other speed limits or bans on driving through and overtaking. The requirements for paying tolls may also change due to the new technically permissible total weight. You should therefore find out about the applicable legal situation with regard to the new maximum permissible gross weight of the vehicle and seek advice on this from the relevant authorities. Please note that the national regulations in the country of your destination and the countries visited for transit may differ from the regulations in your home country.
- ▷ For more information on the remaining payload option, see "Real weighed mass of the vehicle" on page 32.

4.3.5 Roof loads



- ▶ Only climb onto the roof via the ladder at the rear.
- ▶ Be careful when stepping onto the ladder. There is danger of slipping if the ladder is wet or icy.
- ▶ Take care when stepping onto the roof. There is danger of slipping when the roof is wet or icy.
- ▶ Do not place too much load on the roof. The road behavior and the stopping behavior deteriorate as the roof load increases.
- ▶ Observe maximum roof load of 100 kg!



- ▷ **The vehicle roof is not suitable for localised load. Before stepping on to the roof, extensively cover the area you will be treading on. Materials with a smooth or soft surface are suitable, for example, a thick polystyrene panel.**
- ▷ 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 accessories. The authorised dealer or service centre will be happy to advise you.
- ▷ The maximum permissible roof load amounts to 100 kg.
- ▷ Secure roof loads with tension belts. Do not use rubber expanders.
- ▷ Observe the overall height of the vehicle when the roof rack is loaded.



- ▷ A clearly visible notice stating the overall height should be mounted in the driver's cabin. This eliminates the need for calculations at bridges and thoroughfares.

4

Before the journey

Rear ladder

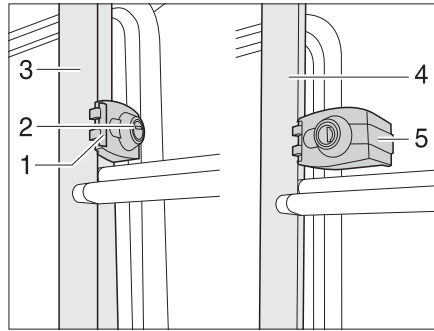


Fig. 1 Rear-ladder locking mechanism

Folding downwards:

- Insert the key into the locking cylinder (Fig. 1,2) of the rear-ladder locking mechanism (Fig. 1,1) and turn it a quarter turn until the key is vertical.
- Hold the part of the rear ladder that can fold (Fig. 1,4) and swivel out the safety catch (Fig. 1,5).
- Remove the key and fold down the rear ladder.

Folding upwards:

- Fold up the rear ladder and hold it.
- Insert the key into the locking cylinder (Fig. 1,2) of the rear-ladder locking mechanism (Fig. 1,1).
- Swivel the safety catch (Fig. 1,5) inwards around the tube of the fixed part of the rear ladder (Fig. 1,3).
- Turn the key a quarter turn until the key is horizontal.
- Check that the rear ladder is locked in place: Pull on the rear ladder lightly.

4.3.6 Fastening system in the rear area



- ▶ Observe the permissible axle loads and maximum permissible gross weight when loading the rear garage/rear storage space.
- ▶ The maximum permitted load of the rear garage/rear storage space amounts to between 150 kg and 250 kg depending on the model. Do not exceed the permissible rear axle load.
- ▶ Uneven loading or overloading has a negative impact on handling. In particular, rear-heavy loading leads to a reduction in the load on the front axle due to the leverage effect and thus, for example, to loss of traction, poorer steering response (changed driving behaviour), overloading of the tires and, as a result, an increased risk of tire bursts.

As a result, there is a risk that the vehicle will get out of control and endanger the occupants and other road users.

A load distributed evenly over the entire vehicle leads to optimum handling during the journey.

If there is any uncertainty as to whether the loaded vehicle complies with the maximum permissible gross weight and the maximum permissible gross weight on the axle, you have the possibility of weighing/testing the vehicle on public scales or at individual trade partners.

4

Before the journey



- ▶ When transporting vehicles powered by petrol, diesel, gas or other combustible material, it must be ensured that the tank of the vehicle being transported is completely empty. When transporting e-bikes, we also recommend removing the battery before starting the journey and storing it safely.
- ▶ Rear garages and rear storage rooms are not factory-designed as sleeping or lounge areas for people or animals. These spaces have no factory ventilation. There is a risk of suffocation due to lack of oxygen.



- ▷ Depending on the vehicle equipment fastening rails with fastening rings are mounted in the rear garage or in the rear storage space. Always secure the load at the fastening rings. Use fasten belts or fastening nets for fastening, but never rubber expanders.
- ▷ Before fastening the load always check that the fastening rings are seated firmly in the fastening rail. If the fastening rings are not anchored firmly in the fastening rail, intensive steering movements or braking can cause the load to move and loosen.
- ▷ Distribute the load evenly. Excessive point loads damage the floor covering.
- ▷ Before driving, ensure that the rear garage or rear storage space is properly closed.

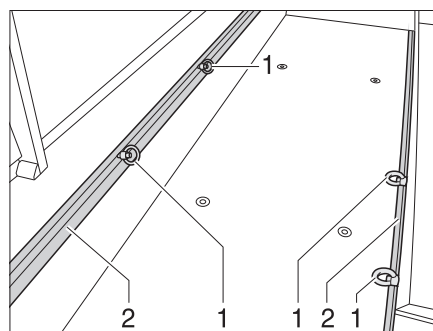


- ▷ Note the maximum permissible load in the rear garage or the rear storage space. The stated maximum permissible load of the rear garage or rear storage space can be influenced by the selection of other special equipment such as trailer hitches or frame extensions.

However, the maximum permissible gross weight and the maximum permissible gross weight on the axle must not be exceeded under any circumstances. Especially when stowing or attaching heavy accessories or accessories that are heavily loaded at the rear (such as motorbike carriers or bicycle carriers), the axle loads must be checked and complied with.

The maximum load may therefore not be used to its full extent if this would cause the technically permissible total mass or the technically permissible mass on the axle to be exceeded.

For more information on correct loading, see "Maximum permissible gross weight" on page 32, "Maximum permissible gross weight on the axle (axle load)" on page 36 and "Loading the vehicle correctly" on page 35.



- 1 Fastening ring
- 2 Fastening rail

Fig. 2 Fastening rings rear garage (variant 1)

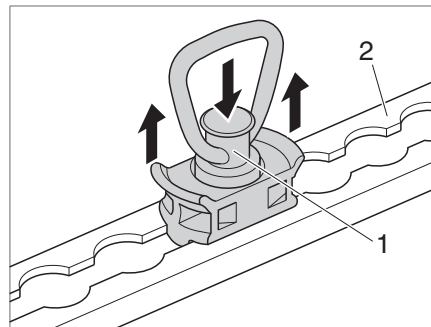
Shifting the fastening rings (variant 1):

- Turn the fastening ring (Fig. 2,1) half a rotation anticlockwise.
- Slide the fastening ring in the fastening rail (Fig. 2,2) to the desired position.

4

Before the journey

- Turn the fastening ring half a turn clockwise. The fastening ring is seated firmly again in the fastening rail.
- Check that the fastening ring is seated firmly.



- 1 Fastening eyelet button
- 2 Fastening rail

Fig. 3 Fastening rings rear garage (variant 2)

Moving the fastening rings (variant 2):

- Press the button (Fig. 3,1) of the fastening ring and lift at the two ends at the same time.
- Slide the fastening ring in the fastening rail (Fig. 3,2) to the desired position until the fastening rail narrows.
- Release the button.
The fastening ring is seated firmly again in the fastening rail.
- Check that the fastening ring is seated firmly.

4.3.7 Double floor



- ▶ Observe the permissible axle loads and maximum permissible gross weight when loading the double floor.



- ▶ Distribute the load evenly. Excessive spot loads can lead to damages of the floor covering.

4

Before the journey

4.3.8

Bike rack



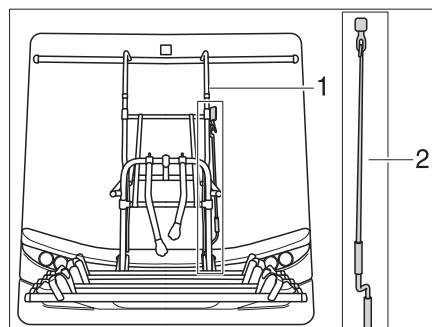
- ▶ Observe the permissible axle loads and maximum permissible gross weight when loading the bike rack.
- ▶ Bikes may not project further than the maximum width of the vehicle. Set the attachments for the bikes correspondingly.
- ▶ The bike rack is only to be loaded with bicycles (max. 4 pieces).
- ▶ Check the secure attachment of the bicycles on the bike rack after the first 10 km and then at each break in the journey.
- ▶ Observe the permissible payload (50-60 kg depending on the model).



- ▷ The licence plate and the rear lights may 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 properly folded up?
 - Are the bicycles are securely lashed to the rack using the bike rack belts?
 - Is the bike rack locked?
- ▷ Further information can be obtained in the manufacturer's instruction manual.

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.



- 1 Bike rack
- 2 Crank

Fig. 4 Bike rack adjustable

Loading the bike rack correctly:

- Depending on the model, fold the bike rack down or pull it out or lower it using the crank (stored in the rear garage).
- 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 or with the distance bracket respectively.
- Crank the adjustable bike rack back up.



- ▷ If the bike rack is loaded with **one** bicycle only, position it as closely as possible to the rear wall of the vehicle.
- ▷ Before commencing the journey fold up and fasten the unloaded bike rack.

4

Before the journey

4.4 Towing



- ▶ Care is to be taken when connecting and detaching a trailer. Risk of accident and injury!
- ▶ No persons are to be between the towing vehicle and the trailer during positioning for connecting and detaching.
- ▶ Observe the permissible nose weight and rear axle load of the towing vehicle. 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 the trailer with the overrun brake on.
- ▷ Tow coupling with detachable ball neck: If the ball neck is installed incorrectly, the trailer can break away. Observe the instruction manual issued by the tow coupling manufacturer.
- ▷ Check the rip cord and electrical connection.
- ▷ Check the lighting.

4.4.1 Tow coupling

The tow coupling can be mounted and removed after use. Attaching of a trailer is described in the manufacturer instructions.

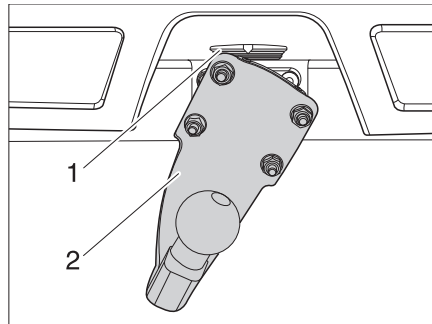


Fig. 5 Tow coupling

- Mounting:*
- Set the tow coupling (Fig. 5,2) at an angle of 90° to the latch (Fig. 5,1).
 - Swivel the tow coupling (Fig. 5,2) downwards until the latch (Fig. 5,1) latches in.
- Removing:*
- Press the latch (Fig. 5,1) upwards.
 - Swivel the tow coupling (Fig. 5,2) 90° to the left.
 - Release the latch (Fig. 5,1).
 - Remove the tow coupling (Fig. 5,2).

4

Before the journey

4.5 Entrance step



- ▶ Before starting the journey and also after short breaks check whether the entrance step has been retracted completely.
- ▶ Do not stand in the direct range of movement of the entrance step while the entrance step is being extended or retracted.
- ▶ Do not step on the entrance step until it has extended completely. Injuries and material damage possible!
- ▶ Never raise or lower persons or loads with the entrance step.



- ▷ Take note of the different step heights and make certain that the ground is firm and even when exiting.
- ▷ Do not grease or lubricate the pivot bearing and joints of the entrance step (see chapter 12).

4.5.1 Mechanically operated entrance step



- ▷ If the entrance step has not been properly retracted and locked into place, a warning tone is heard when the ignition is switched on.

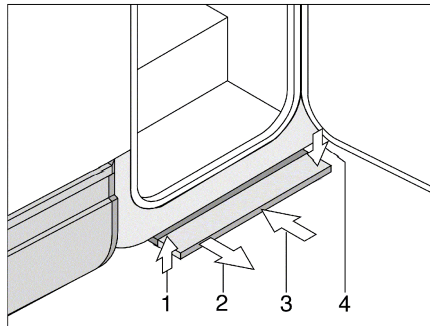


Fig. 6 Mechanically operated entrance step

Pulling out: ■ Pull the entrance step forwards (Fig. 6,2) until it latches into place.

Pushing in: ■ Slightly lift the entrance step (Fig. 6,1).
■ Push the entrance step as far as it will go under the base of the vehicle (Fig. 6,3). Ensure that the entrance step latches in place (Fig. 6,4).

4

Before the journey

4.5.2 Electrically operated entrance step



► Before the journey, switch on the battery disconnect switch (Fig. 266,11).



- ▷ If the entrance step has not been properly retracted and locked into place, a warning tone is heard when the ignition is switched on.
- ▷ Follow the warning notice on the entrance step.

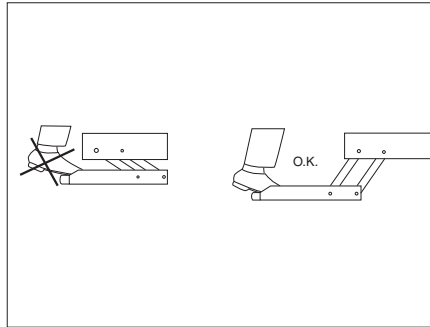


Fig. 7 Warning notice for entrance step

Before stepping on the entrance step, fully extend it (Fig. 7).

Operating switch

The switch to operate the entrance step is located on the inside of the vehicle in the area of the conversion door.

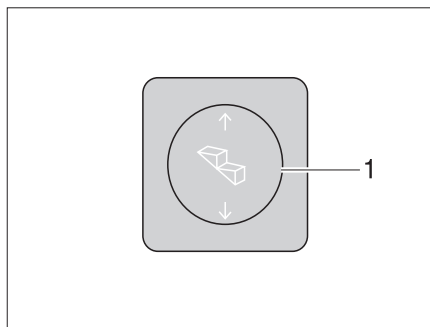


Fig. 8 Operating switch entrance step

- Extending:* ■ Press the rocker switch (Fig. 8,1) down until the entrance step has extended completely.
- Retracting:* ■ Press the rocker switch (Fig. 8,1) up until the entrance step has retracted completely.

Emergency operation

If the electric drive of the entrance step fails, follow the instructions in the instruction manual of the component manufacturer to manually retract the step.

- Push in the entrance step by hand and secure it or lock it using a suitable device.
- Contact the customer service immediately.

4

Before the journey

4.6 PVC-floor covering



- ▷ Shoes with pointed heels can leave permanent impressions in the PVC-floor covering. Never wear shoes with pointed heels in the vehicle.
- ▷ Rubber mats or long exposure to ketchup, carrot juice, ink, blood or lipstick can discolour the PVC-floor covering. If possible, remove stains from the floor immediately.

4.7 Headrests



- ▶ Before the journey, check that the headrests are in the drive position (locked position) and not in the park position (below the locked position).



- ▷ For further information on positioning the headrests, see chapter 5.7.

4.8 Television



- ▶ Before commencing the journey, remove the television from the support and store it securely.
- ▶ 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, ensure that the antenna is in park position. Danger of accidents! Park position means: The antenna points towards the back, is fully lowered and is locked in this position.



- ▷ Further information on positioning the flat screen can be obtained from chapter 7.10.

Holder in the TV cabinet

The flat screen is attached to a console in the TV cabinet.

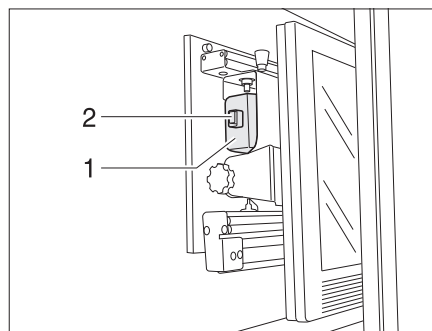


Fig. 9 Holder in the TV cabinet

Storing the flat screen:

- Rotate the television to its initial position (Fig. 9) and lock it into place.
- Use handle (Fig. 9,1) to push the holder for the flat screen backwards. The latch (Fig. 9,2) will engage.
- Close TV cabinet.

Holder with jointed arm

The flat screen is fastened to a jointed arm.

4 Before the journey

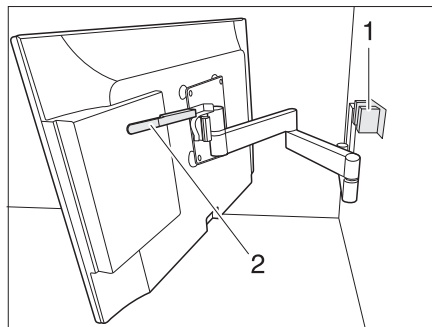


Fig. 10 Holder with jointed arm

Storing the flat screen:

- Swivel flat screen back to its initial position and lock it into place.

4.9 Sink cover



- In case of an accident or emergency braking the sink cover (Fig. 11,1) can injure the vehicle passengers. Before the journey, take the sink cover off the sink and store it securely in the kitchen block or wardrobe.

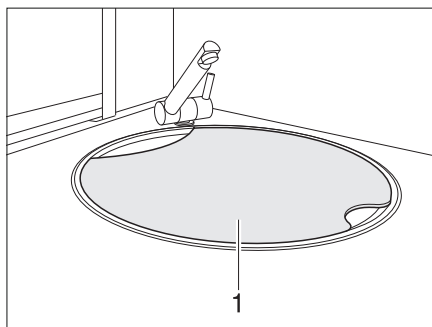


Fig. 11 Sink cover

4.10 Driver's cabin Roman shade



- During the journey the Roman shades for the windscreen, the driver's window and the front passenger's window must be opened, locked and secured.

4

Before the journey

4.10.1 Roman shade for driver's window and front passenger's window

Variant 1

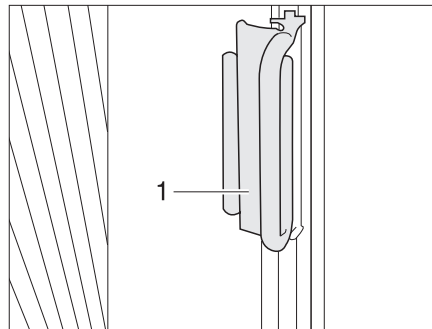


Fig. 12 Handle for Roman shades on driver's/front passenger's windows

Securing: ■ On the Roman shades for the driver's and passenger's window, push the handle (Fig. 12,1) onto the cap. The Roman shade is secured.

Variant 2

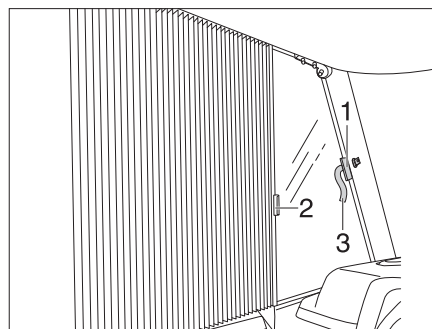


Fig. 13 Securing the Roman shades on driver's/front passenger's windows

Securing: ■ Use the handles (Fig. 13,2) to push the Roman shades for the driver's window and the front passenger's window under the covers and secure with the Velcro loops (Fig. 13,1 and Fig. 13,3). The Roman shade is secured.

4

Before the journey

4.10.2 Roman shade for windscreen

Variant 1

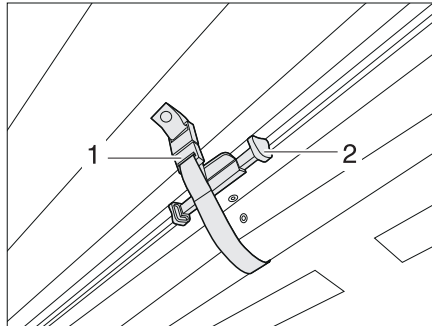


Fig. 14 Securing the Roman shade for the windscreen

- Securing:**
- Use the handle (Fig. 14,2) to push the Roman shade for the windscreen upwards until it latches it in place. Secure with the securing loop (Fig. 14,1). The Roman shade is secured.

Variant 2

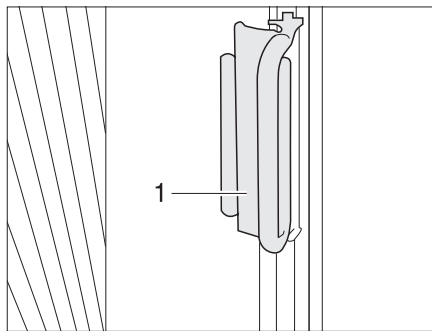


Fig. 15 Handle of the Roman shade of the windscreen

- Securing:**
- Use the handles (Fig. 15,1) to slide the Roman shades for the windscreen under covers at the A column and fasten the handle on the cover. The Roman shade is secured.

4.11 Central locking system for kitchen unit

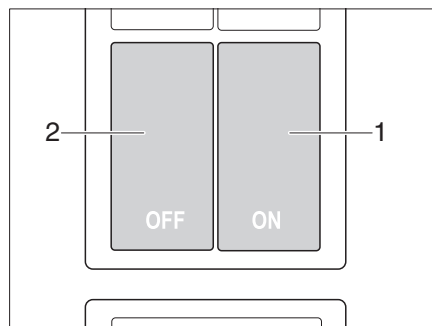


Fig. 16 Switch for the kitchen unit's central locking system

The kitchen unit is equipped with a central locking system. The flaps and drawers of the kitchen block can be locked and unlocked manually via the switch (Fig. 16).

4

Before the journey



- ▷ Before locking, check that the drawers of the kitchen unit are fully retracted.

Locking

- Press the switch (Fig. 16,2). The flaps and drawers of the kitchen block are locked.

Unlocking

- Press the switch (Fig. 16,1). The flaps and drawers of the kitchen block are unlocked.

4

Before the journey

When the engine is running

When you start the vehicle engine, the central locking system is activated automatically. The central locking unit can be disabled during the journey by pressing the switch. It is locked again after the switch has been released and the opened panel has been closed.



- ▷ If a flap or a drawer is still open when the vehicle engine is started, it is locked automatically after it is closed.

4.12 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.
- ▷ Only use snow chains approved by the manufacturer.
- ▷ Do not fit snow chains on alloy wheel rims.



- ▷ If the drive axle of the vehicle has twin tyres (2 tyres next to each other), mount the the snow chains to the outer tyres.
- ▷ In the case of I-model vehicles only fine-linked snow chains may be used.

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.

4

Before the journey

4.13 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.
- ▶ Take into account that the vehicle height changes compared to the vehicle documents in the case of pneumatic springs.
- ▶ Superstructures such as air conditioning unit, satellite antenna, etc. can influence the vehicle height.

Before commencing the journey, work through the checklist:

Base vehicle

No.	Checks	Checked
1	All vehicle documents are on board	
2	Tyres in proper condition. If spare wheel or tyre repair kit exists, check.	
3	Vehicle lighting, brake lights and reversing lights function	
4	Oil levels for engine, gearbox and power steering controlled	
5	Coolant and fluid for windscreen washers filled up	
6	Brakes function	
7	Brakes react evenly	
8	When braking, the vehicle remains in the lane	

Housing body, outside

9	Awning completely retracted	
10	Roof free of snow and ice (in winter)	
11	External connections and lines disconnected and stored away	
12	External supports removed	
13	Fitted steady legs retracted and fixed in place	
14	Wheel chocks removed and stored away	
15	Entrance step retracted (observe warning tone)	
16	External flaps closed and locked	
17	Conversion door locked	
18	Awning light switched off	
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	
20	Detachable or swivelled tow coupling removed or swung if no trailer operation takes place	

Housing body, inside

21	Windows and skylights closed and locked	
22	Television secured in the TV cabinet or removed from the support and stored securely	
23	Television antenna retracted (if one is built in)	
24	Loose parts stored away or fixed in position	
25	Open storage spaces empty	
26	No gas cartridges or other easily flammable materials stored in the roof cupboard of the awning light	

4

Before the journey

No.	Checks	Checked
27	Refrigerator door secured	
28	Refrigerator set to 12 V operation	
29	All drawers and flaps closed	
30	Living area doors and sliding doors secured	
31	Pull-down bed secured	
32	Swivel seat locking device for driver's seat and front passenger's seat locked	
33	Children's seats mounted to seats with three-point safety belts	
34	Shades in the driver's cabin opened and secured	

Gas system

35	Gas bottles firmly fixed in the gas bottle compartment so that they are unable to turn	
36	Protective cap set on top of the gas bottle	
37	Regulator tap on the gas bottle and gas isolator taps are closed (except in the case of gas systems with crash sensor)  ▷ The regulator tap must always be closed at petrol stations, also in the case of gas systems with crash sensor.	

Electrical system

38	Check the battery voltage of the starter and living area battery (see chapter 9). 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 9  ▷ Commence journey with fully charged starter and living area batteries.	
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5

During the journey

Chapter overview

This chapter contains instructions on how to drive the motorhome. The instructions address the following topics:

- driving speed
- brakes
- seat belts
- seats and headrests
- the backrest adjustment mechanism for the bench
- seating arrangement
- branch block
- electrical window winders
- electrically adjustable external mirrors
- Roman shades in the driver's cabin
- writing and reading rest
- bonnet
- windscreen washer fluid container
- checking the oil level
- filling the tank

5.1 Driving the motorhome



- ▶ 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.
- ▶ During the journey, seat belts should always be worn at the seats that have seat belts mounted.
- ▶ 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.
- ▷ Check whether the awning light is switched off.



- ▷ 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 3 have to be observed.
- ▷ If a reversing camera is installed in the vehicle, the camera is automatically switched on when driving in reverse gear.

5

During the journey

5.2 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. Because of structures and extensions at the vehicle, Dethleffs recommends a maximum speed of 120 km/h.
- ▶ The vehicle provides a large contact surface for wind. A sudden crosswind 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.

5.3 Brakes



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



- ▷ Avoid block brakings. Block braking gives the tyres "brake plates" of varying strength. This reduces driving comfort. It might even make the tyres unserviceable.

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?

5.4 Seat belts

The vehicle is equipped with automatic three-point safety belts in the living area on the seats for which seat belts are compulsory by law. National regulations apply seat-belt fastening.



- ▶ 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 belt clips.
- ▶ Inspect the screwed connections of the seat belts from time to time in order to ensure that they are correctly seated.
- ▶ 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.
- ▶ Factory-set three-point safety belts must be used when attaching child restraint systems.

5

During the journey



- ▶ After an accident, replace the seat belts.
- ▶ During the journey, do not tilt the backrest too far backwards. Otherwise the functionality of the seat belt is no longer guaranteed.

5.4.1 Fastening the seat belt 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.
- ▶ Only for the Alpa 7820: People may only buckle up on the seat with the seat belt pulled out.

The safety belt is applied correctly when a fist still fits between your body and a safety belt at the shoulder.

5.4.2 Belt pull-out on the Alpa 7820

The Alpa 7820 is equipped with a belt extension that must be pulled out before the seat belt can be fastened (Fig. 17).

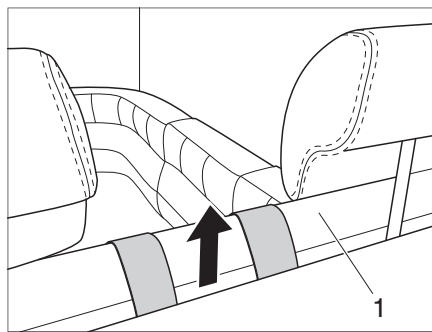


Fig. 17 Belt pull-out countersunk

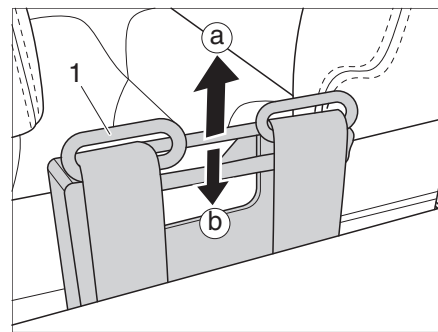


Fig. 18 Belt extension pulled out

*Pull out belt extension
(before driving)*

- Reach behind the seat (Fig. 17,1) and pull the belt extension (Fig. 18,1) up as far as it will go (a).
- Press the pull-out belt downwards (b) until it audibly engages. The seat belts can now be used.

*Lower belt pull-out (in
residential use)*

- Briefly pull the belt pull-out (Fig. 18,1) up (a) and then press it down (b) until it is sunk behind the seat.

5.5 Driver's seat and front passenger's seat



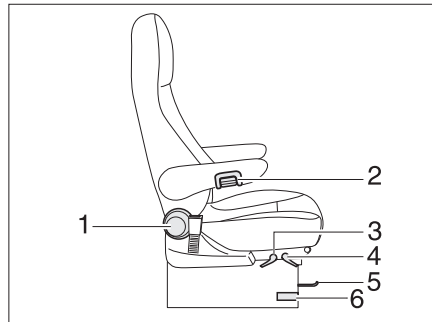
- ▶ Before commencing the journey, rotate all swivel seats in the direction of travel and lock in position.
- ▶ The seats must remain fixed in position during the journey and are not to be rotated.



- ▶ The driver's and front passenger's seat are a part of the base vehicle, depending on model and vehicle equipment. In this case the adjustment of the seats is described in the operating instructions of the base vehicle.

5

During the journey



- 1 Wheel for unlocking and adjusting the backrest
- 2 Armrest adjustment
- 3 Lever for adjusting the seat height
- 4 Lever for adjusting the seat inclination
- 5 Bar for lengthways adjustment
- 6 Release for turning mechanism

Fig. 19 Driver's and front passenger's seats

Rotating seats into driving position

The seats can be rotated in any direction. The seats can only be locked in position in the direction of travel.

- Push both armrests upward.
 - Push the driver's seat/front passenger's 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 7.
- ▶ Move the seats all the way down before turning. Otherwise, the seats cannot be turned.



Adjusting the armrest

The height of the armrests is infinitely adjustable.

- Turn the knurled wheel (Fig. 19,2) in an anticlockwise direction (when viewed from the front). The latch of the armrest is released by this.
- Move the armrest to the desired position.
- Turn the knurled wheel as far as possible in a clockwise direction.

Adjusting an appropriate seating position

The position of the driver's and front passenger's seats can be adjusted. The handles which are required for this purpose are positioned to the front, right or left of the seat.

- Pull the handle (Fig. 19,5). The seat can be moved forward or backward.
- Turn the knurled knob (Fig. 19,1). The angle of the backrest can be adjusted.
- Pull the lever (Fig. 19,4) upwards. The inclination of the seat and backrest can be set.

Adjusting the seat height

Depending on the model, the height of the seat is infinitely adjustable.

- Pull the lever (Fig. 19,3) upwards.
- Take pressure off or apply pressure to seat. The seat moves up or down.
- Release lever when the desired position is reached. The seat is locked.

5 During the journey

5.6 Single seat

The single seat can be moved, installed and removed in the rail.

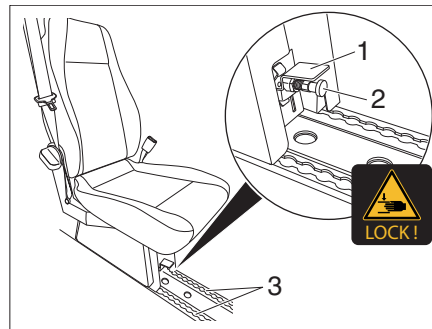


Fig. 20 Installing and removing the single seat

Install single seat

- Pull the locking lever (Fig. 20,1) up.
- Lift the single seat into the rail (Fig. 20,3).
- Check whether the single seat is properly engaged.
- Bring the single seat into the desired position.
- Pull the locking bolt (Fig. 20,2) and press the locking lever (Fig. 20,1) down.
- ▷ There is a risk of tipping over if the single seat is not locked.



Moving the single seat

- Push the locking bolt (Fig. 20,2) under the single seat slightly downwards and pull. The lock releases itself.
- Move the single seat (Fig. 20,2) and press the locking lever (Fig. 20,1) down. The single seat is locked.

Remove individual seat



The backrest is under strong spring tension.

- ▶ Make sure that no objects or limbs are between the backrest and the seat when the backrest is folded.

- Fold the backrest forwards.
- Pull the locking lever (Fig. 20,1) up.
- Lift the single seat out of the rail and set it down briefly if necessary.
- Hold the seat by the seat cushion and backrest and carry it out of the vehicle.

5

During the journey

5.7 Headrests



- ▶ The headrests are not adjustable for all models.

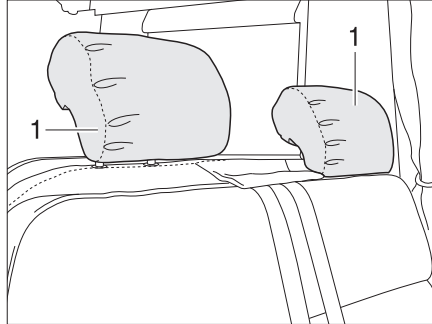


Fig. 21 Bench headrests (Variant 1)

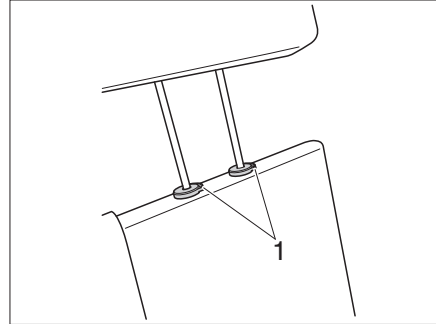


Fig. 22 Bench headrests (Variant 2)

Before commencing the journey, adjust the headrests so that the back of the head is supported at approximately ear height.

Variant 1

- Push the headrests (Fig. 21,1) upwards or downwards by hand.

Variant 2

- Press both safety catches (Fig. 22,1) to adjust or remove the headrests.

5.8 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.
- ▶ Only for the Alpa 7820: People may only buckle up on the seat with the seat belt pulled out, see also chapter 5.4.2.



Fig. 23 "Seat" symbol

Seats which may be used during travel are equipped with a sticker (Fig. 23).

5

During the journey

5.9 ISOFIX system



- ▶ Ensure that the instructions of the children's seat manufacturer are observed when fitting and removing the children's seat with the ISOFIX system.
- ▶ Never fasten other children's seats, belts or objects to the holding lugs provided for fitting the children's seat with the ISOFIX system.
- ▶ When fastening with the TOP TETHER system always fasten only one fixing belt of the children's seat to a holding lug.

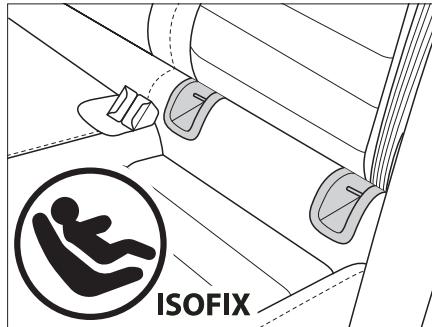


Fig. 24 ISOFIX

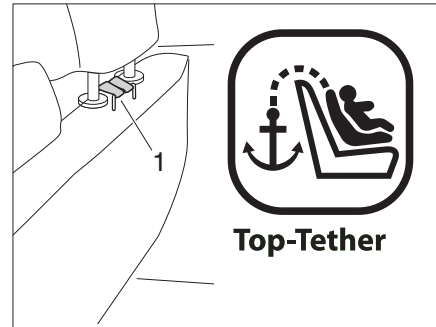


Fig. 25 ISOFIX with Top Tether system

The seats can be equipped with an ISOFIX system, on request. They are identified with labels.

There are two holding lugs for fastening a children's seat with the ISOFIX system between the seat backrest and seat surface of the back seat or of the passenger seat (Fig. 24).

The holding brackets (Fig. 25,1) for fastening the fixing belt of a children's seat to the Top Tether system are located near the headrests.

5.10 Branch block (model I)

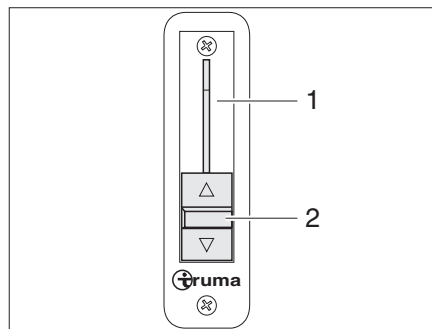


Fig. 26 Branch block

The sliding regulator (Fig. 26,2) for the branch block (Fig. 26,1) is located on the outside left of the dashboard.

Vehicle heating is coupled with room heater by the sliding regulator. Therefore the windscreen is heated when the vehicle is at a standstill.

During mobile operation, close the branch block (slide the sliding regulator all the way down) so that the complete power of the vehicle heater can reach to the front and side panes.

Close the branch block: ■ Push the lever (Fig. 26,2) completely downwards. The branch block is closed.

5

During the journey

5.11 Electrical window winders (model I)



- ▶ Remove hands and other objects from the window before closing.
- ▶ Even if you leave your vehicle just briefly, remove the ignition key from the steering lock. Otherwise children may be able to operate the window winder and injure themselves.

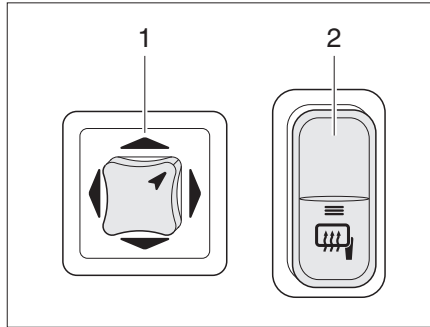


Fig. 27 Switch for electrical window winder

There is an electrical window winder (Fig. 27) on the driver's side of the vehicle.

Opening: ■ Press lower part of the switch (Fig. 27,2).

Closing: ■ Press upper part of the switch (Fig. 27,1).

5.12 Electrically adjustable external mirrors (model I)

Depending on the model, the vehicle is equipped with two electrically adjustable and heated external mirrors. The switches for external mirror adjustment and the mirror heater are on the dashboard.

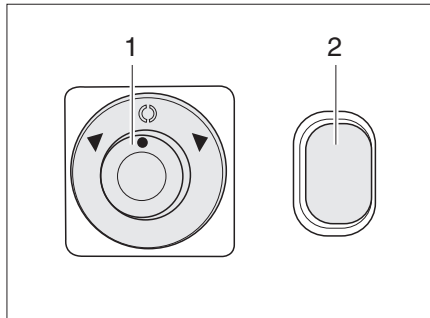


Fig. 28 Switch for electrically adjustable external mirrors and mirror heater

Adjusting: ■ Select the mirror to be adjusted. To do so, turn the rotary switch (Fig. 28,1) to the left or right.
 ■ Adjust the mirror by pressing the switch (Fig. 28,1) in the appropriate direction.

Switching on the heater: ■ Press the switch (Fig. 28,2). The switch indicator lamp lights up in orange and shows it is in operation.

5

During the journey

5.13 Roman shades for windscreen, driver's window and front passenger's window



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



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

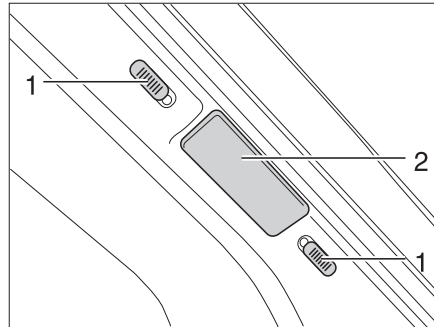


Fig. 29 Lock for the Roman shade of the windscreen

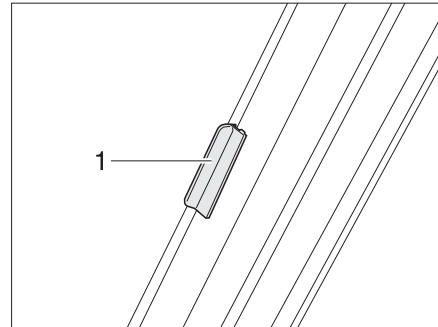


Fig. 30 Lock for the Roman shade of the windscreen (model I)

Securing the Roman shade for the windscreen:

- Use the handle (Fig. 29,2 and Fig. 30,1) to pull the two halves of the Roman shade for the windscreen outwards as far as they will go.
- Push the locking knobs (Fig. 29,1) upward or downward. If the red dot is visible, the lock is open.

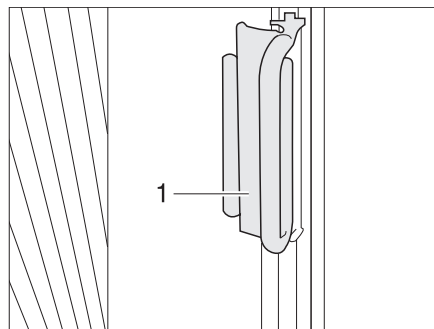


Fig. 31 Locking mechanism for Roman shades on driver's/front passenger's windows

Securing the Roman shade for the driver's / front passenger's window:

- On the Roman shades for the driver's and passenger's window, push the handle (Fig. 31,1) onto the cap. The Roman shade is secured.

5

During the journey

5.14 Writing and reading rest



- ▶ During the journey the writing and reading rest must be closed.



- ▶ If there is a passenger airbag, the writing and reading rest is locked so it cannot be opened.

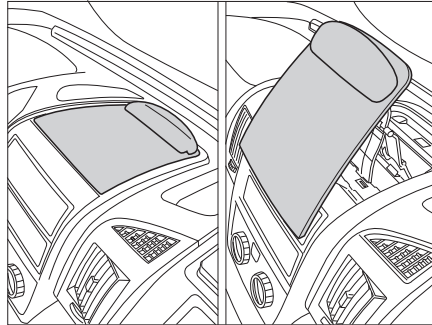


Fig. 32 Writing and reading rest

Depending on the model, the motorhome is equipped with a writing and reading rest (Fig. 32).

5.15 Bonnet



- ▶ When the bonnet is open, there is a risk of injury in the engine compartment.
- ▶ Even if the engine was switched off some time ago, it might still be hot. Danger of burns!
- ▶ Do not work in the engine compartment while the engine is running.
- ▶ The bonnet must be kept firmly closed and locked during the journey. After closing, check whether the lock has engaged. In order to carry this out, pull on the bonnet.

5

During the journey

5.15.1 Model I

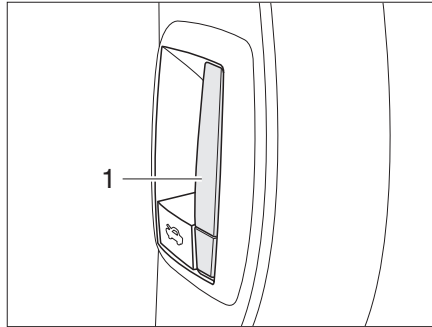


Fig. 33 Release knob on the inside of the bonnet

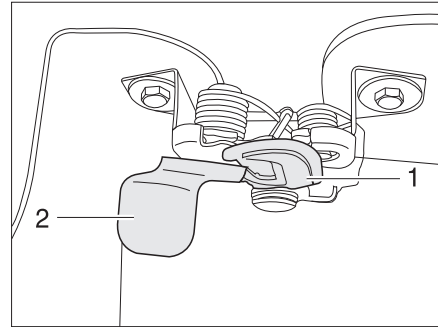


Fig. 34 Release knob on the outside of the bonnet

- Opening:**
- Pull the lever (Fig. 33,1) situated on the left-hand side of the vehicle on the dashboard. The bonnet opens as far as the safety hook allows.
 - Reach under the bonnet with one hand and actuate the safety hook (Fig. 34,1). Do this by reaching behind the plate (Fig. 34,2) and pulling it forward.
 - Move the bonnet in an arch forwards and upwards.
- Closing:**
- Move the bonnet in an arch downwards and backwards until the latch locks audibly in place.
 - Check whether the bonnet is locked correctly. In order to carry this out, pull on the bonnet.

5.16 Filling with washer fluid (model I)

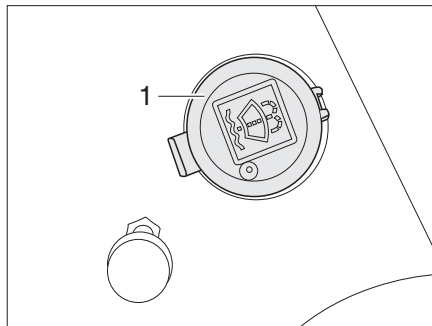


Fig. 35 Washer fluid container filler neck

- Unlock and open the bonnet.
- Remove the lid (Fig. 35,1) from the filler neck of the washer fluid container.
- Slowly fill in washer fluid.
- Push the lid onto the filler neck of the washer fluid container.

5 During the journey

5.17 Checking the oil level (model I)

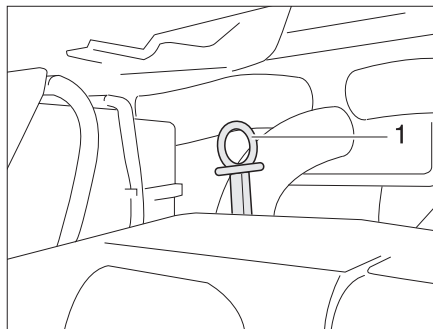


Fig. 36 Oil dipstick (I model)

The oil dipstick (Fig. 36,1) is located in the engine compartment behind the front crossbeam. The oil dipstick is marked in red.

5

During the journey

5.18 Filling up with diesel



- ▶ No appliance operated by a naked flame (e.g. heater or refrigerator) may be in operation when filling the tank, on ferries or in the garage. Danger of explosion!
- ▶ The cap for the fuel filler neck and for the drinking water filler neck are very similar in some models. Before filling the tank, always check the label.



- ▶ To operate a diesel heater, the fuel tank must be at least $\frac{1}{4}$ full.



- ▶ The fuel filler neck is labelled with the word "Diesel".

The fuel filler neck is situated on the exterior of the vehicle, at the front left. It is covered by a cover flap.

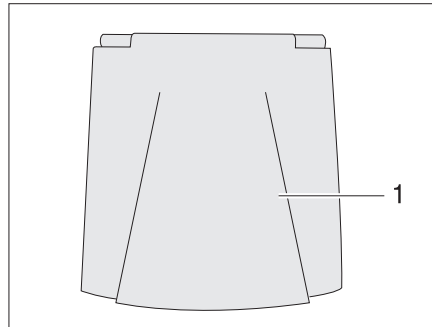


Fig. 37 Cover flap for the fuel filler neck

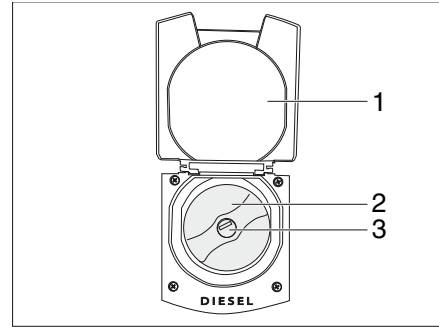


Fig. 38 Opened cover flap for with fuel filler neck

Opening:

- Open the cover flap (Fig. 37,1).
- Insert the key in the locking cylinder (Fig. 37,3) and turn it in an anticlockwise direction.
- Remove cap.

Closing:

- Place the cap on the fuel filler neck.
- Turn key in a clockwise direction.
- Remove the key.
- Check that the cap is fastened securely on the fuel filler neck.
- Close the cover flap (Fig. 38,1).



- ▶ **If the tank lid is not properly locked, there is a danger that fuel escapes. The denseness can only be ensured with closed locking cylinder.**

6

Pitching the motorhome

Chapter overview

This chapter contains instructions on how to pitch the vehicle.

The instructions address the following topics:

- handbrake
- entrance step
- wheel chocks
- operation of the supports
- 240 V connection
- refrigerator
- awning
- satellite unit



- ▷ Pitch the vehicle so that it is as horizontal as possible. Secure the vehicle to prevent it from rolling.
- ▷ Animals (especially mice) can cause great damage to the interior of the vehicle. To prevent this from happening, regularly check the vehicle for damages or animal traces after pitching.

6.1 Handbrake

Firmly apply the handbrake when parking the vehicle.



- ▷ If there is any risk of frost, release the handbrake every now and then and apply it again. This will prevent it from freezing or rusting. Prior to releasing the handbrake, secure the vehicle so that it cannot roll away.

6.2 Entrance step



- ▷ When entering the vehicle through the body door, the entry step must be used.
- ▷ In order to exit the vehicle, first fully extend the entrance step.

6.3 Wheel chocks

When parking the vehicle on slopes or inclines the wheel chocks in the vehicle must be used.

6.4 Supports

6.4.1 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.
- ▷ The support legs must not be used if the vehicle is tilted, as this will cause the vehicle to warp unintentionally. In the long term, this can lead to damage to the vehicle.
- ▷ 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.

6

Pitching the motorhome

6.4.2 Steady legs (AL-K0)



- ▷ 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.

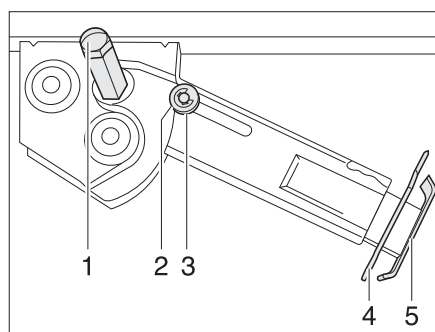


Fig. 39 Steady leg

Extending:

- Place the socket spanner on the hexagon nut (Fig. 39,1) and rotate until the steady leg is in a perpendicular downward position.
- Remove the splint (Fig. 39,4) out of the support foot extension (Fig. 39,5).
- 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. 39,1) and rotate until the steady leg is clear of the ground.
- Remove the splint (Fig. 39,4) out of the support foot extension (Fig. 39,5).
- Push in the support foot extension (Fig. 39,5) and insert the splint (Fig. 39,4) in the drilled hole in the support foot extension.
- Rotate the hexagonal nut (Fig. 39,1) with the socket spanner until the steady leg has swung upwards and the guide disc (Fig. 39,3) has completely retracted into the notch (Fig. 39,2).



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

6.5 240 V connection

The vehicle can be connected to a 240 V power supply (see chapter 9).

6 Pitching the motorhome

6.6 Refrigerator

6.6.1 Absorption refrigerator

The 12 V operation of the refrigerator is only possible when the vehicle engine is running. If the vehicle engine is switched off, set the refrigerator to 240 V operation or gas operation.

6.6.2 Compressor refrigerator

The refrigerator can also be operated with 12 V.

6.7 Awning



- ▷ In case of arising wind, strong rain or snowfall retract the awning. Material damage through overturning at wind possible!
- ▷ If the vehicle is left unattended for a longer period, retract the awning completely.
- ▷ In case of light rain reduce one of the support legs so that the water can run off.
- ▷ Only retract the awning if the cloth is dry. If the awning has to be retracted while the cloth is wet: Extend the awning again as soon as possible so that the cloth can dry.
- ▷ Before retracting the awning, remove leaves and coarse soiling from it.



- ▷ Use the awning only as protection against the sun.
- ▷ Additionally observe the manufacturer's instruction manual.
- ▷ The crank rod of the awning is located in the rear area.

Advantages of the awning

The advantages of an awning are:

- The awning provides shade.
- The awning creates a covered vestibule and thus expands the space.
- The vehicle thus becomes more homelike.

6.7.1 Awning, manual

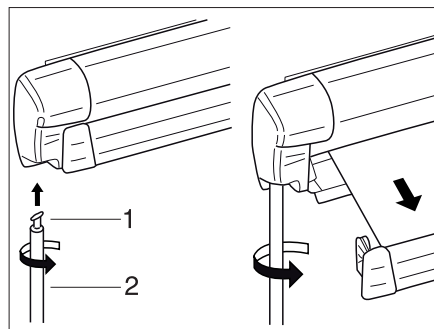


Fig. 40 Awning

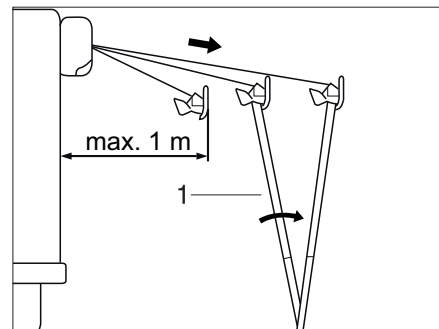


Fig. 41 Putting up the awning

Putting up the awning:

- Insert the hook (Fig. 40,1) of the crank rod (Fig. 40,2) into the lug and turn by 90°.
- Hold the crank rod with one hand at the upper end and with the other hand at the lower turning handle.
- Turn the crank rod counter-clockwise and extend the awning by a maximum of 1 m.

6

Pitching the motorhome

- Fold out the support legs (Fig. 41,1) and set them on the ground.
- Extend the awning further.
- Tension the awning using the support legs.
- Secure the support legs to the ground using tent pegs.
- Turn the crank rod by 90° and remove it.

Retracting the awning:

- Insert the hook of the crank rod into the lug and turn by 90°.
- Remove the tent pegs of the support legs.
- Hold the crank rod with one hand at the upper end and with the other hand at the lower turning handle.
- Turn the crank rod clockwise and retract the awning up to 1 m.
- Fold in the support legs.
- Retract the awning completely.
- Turn the crank rod by 90° and remove it.

6.7.2 Awning, electric



- ▷ Only operate the electric awning when the vehicle is stationary.

The awning is also available in an electrically powered design. It is controlled with a switch (Fig. 42) or a remote (Fig. 43).

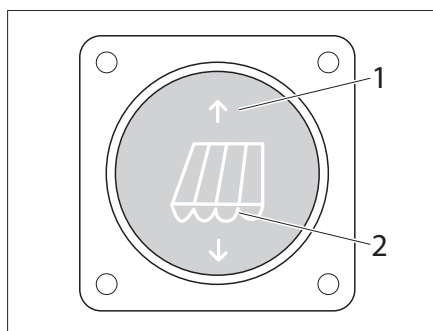


Fig. 42 Switch for electric awning

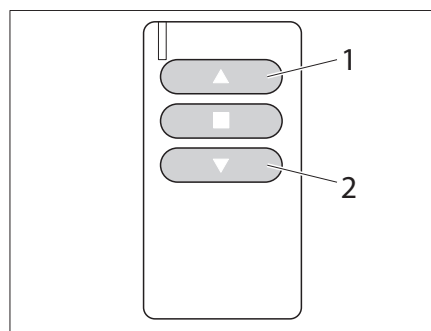


Fig. 43 Remote for electric awning

Retracting the awning:

- Press button (Fig. 42/1) or button (Fig. 43/1). The awning retracts.

Extend awning:

- Press button (Fig. 42/2) or button (Fig. 43/2). The awning extends.

6 Pitching the motorhome

6.8 Teleco satellite unit

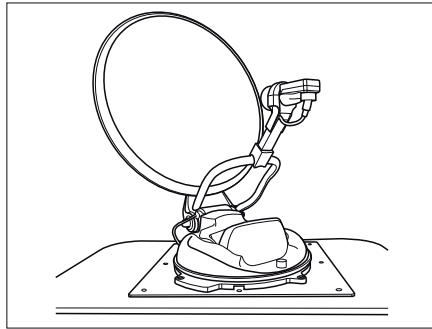


Fig. 44 Teleco satellite unit



- ▷ Retract the satellite unit before commencing your journey.
- ▷ Retract the satellite unit in case of bad weather and wind in order to avoid storm damage.



- ▷ The satellite unit is controlled and operated by the television receiver.

The panel is mounted next to the conversion door.

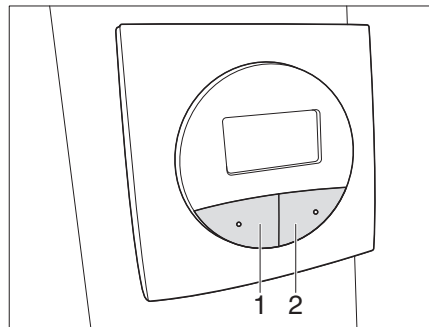


Fig. 45 Teleco satellite unit panel

Switching on and extending the satellite unit:

- Press the SAT button (Fig. 45,2) **twice**.
The satellite unit extends and searches for the set satellites automatically.

Retracting the satellite unit:

- Press the PARK button (Fig. 45,1).
The satellite unit is retracted.

Chapter overview

This chapter contains instructions about living in the vehicle.

The instructions address the following topics:

- opening and closing the doors and external flaps
- ventilation of the vehicle
- opening and closing the windows and blinds
- opening and closing the skylights
- rotating the seats
- modifying the table surfaces
- converting tables
- operating the central locking on the kitchen block
- positioning the television
- setting all the lights
- light switches
- extending the seating groups
- using the beds
- the sleeping area partition
- the sliding door

7.1 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.
- ▷ Depending on the model, the locks of the driver's and the front passenger's doors are part of the base vehicle. In this case, the opening and closing of the driver's door and the front passenger's door is described in the operating manual of the base vehicle.

7.1.1 Conversion door, outside

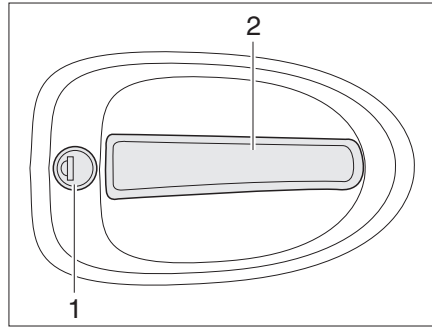


Fig. 46 Door lock of conversion door, outside

- Opening:**
- Insert the key into locking cylinder (Fig. 46,1) and turn until the door lock is unlatched.
 - Return the key to the central position and remove it.
 - Pull on the handle (Fig. 46,2). The door is open.
- Locking:**
- Insert the key into locking cylinder (Fig. 46,1) and turn until the door lock is engaged.
 - Return the key to the central position and remove it.

7.1.2 Conversion door, inside (with locking lever)



- ▷ Do not use the handle as a hook for clothes, bags and similar objects.

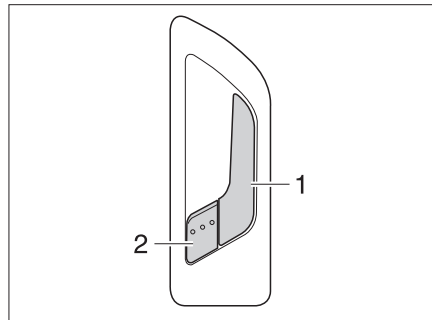


Fig. 47 Door lock of conversion door, inside

- Opening:**
- Pull on the handle (Fig. 47,1). The door lock is unlatched. The locking lever (Fig. 47,2) jumps out automatically.
- Locking:**
- Press the locking lever (Fig. 47,2).

7.1.3 Driver's door, outside

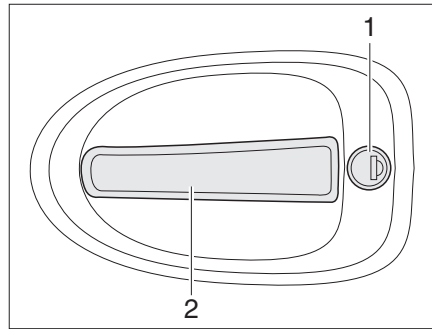


Fig. 48 Door lock of driver's door, outside

- Opening:**
- Insert the key into locking cylinder (Fig. 48,1) and turn until the door lock is unlatched.
 - Return the key to the central position and remove it.
 - Pull on the handle (Fig. 48,2). The door is open.
- Locking:**
- Insert the key into locking cylinder (Fig. 48,1) and turn until the door lock is engaged.
 - Return the key to the central position and remove it.

7.1.4 Driver's door, inside (without lock)

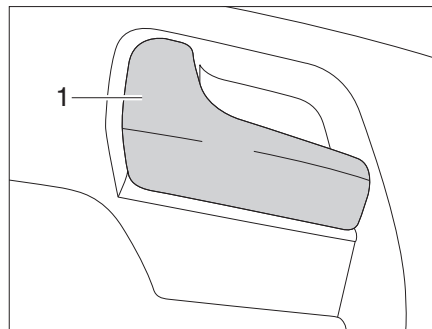


Fig. 49 Door lock of driver's door, inside

- Pull on the handle (Fig. 49,1). The door lock is unlatched.

7.1.5 Driver's door, inside (with lock)

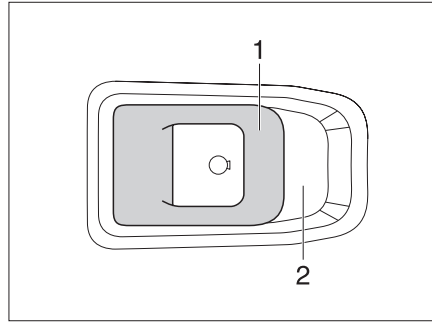


Fig. 50 Door lock of conversion door, inside

Opening: ■ Pull the handle (Fig. 50,1).

Locking: ■ Press the handle (Fig. 50,1) into the handle recess (Fig. 50,2).

7.1.6 Insect screen on the conversion door



- ▷ Material damage possible when the conversion door is closed while the insect screen is pulled out. Do not bang the conversion door shut.
- ▷ Slide the insect screen in completely before the conversion door is closed.

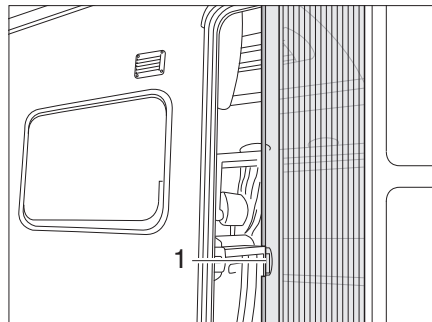


Fig. 51 Insect screen

Opening: ■ Pull out the insect screen completely by the handle (Fig. 51, 1).

Closing: ■ Slide back the insect screen by the handle (Fig. 51, 1).

7.1.7 Conversion door window (variant 1)

The conversion door window is fitted with a Roman shade.

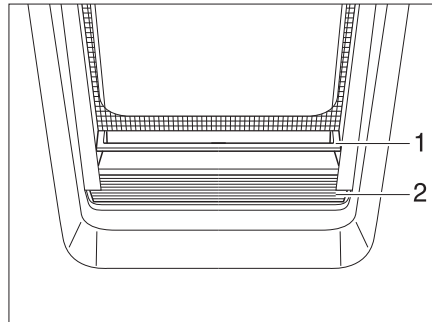


Fig. 52 Roman shade



- ▷ Do not keep the Roman shade closed over a longer period of time as that can cause increased material wear.
- ▷ If the Roman shade is completely closed, heat can accumulate between the Roman shade and the glass window when exposed to direct sunlight. The window could be damaged. For that reason, close the Roman shade only 2/3 of the way in direct sunlight.

Closing:

- Grip the Roman shade (Fig. 52,2) in the middle of the holding bar (Fig. 52,1), pull it upwards and then release it at the desired height. The Roman shade will stay at this height.

Opening:

- Grip the Roman shade in the middle of the holding bar and push it down.

7.1.8 Conversion door window (variant 2)

The conversion door window is fitted with a roller insect screen and blind.

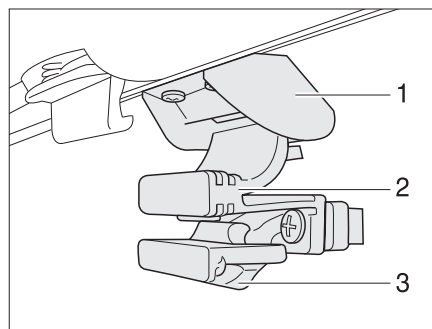


Fig. 53 Window in the conversion door

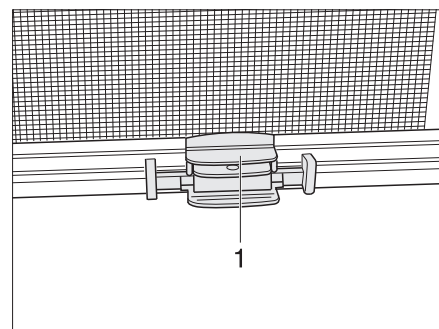


Fig. 54 Blind

Opening the window:

- Press the locking device (Fig. 53,3) to the rear.
- Press the handle (Fig. 53,2) together and push the window down.

Closing the window:

- Push the window upwards until the handle (Fig. 53,2) latches into the locking mechanism (Fig. 53,1).

Roller insect screen

To close and open the roller insect screen:

Closing:

- Grip the end rod (Fig. 54,1) of the roller insect screen in the middle and move it to the end rod of the blind.
- Let the latch latch in.
- Adjust the screen/blind continuously by moving the end rods.

Opening:

- Hold the end rod (Fig. 54,1) of the roller insect screen and press the latch.
- Return the end rod of the roller insect screen to the limit stop on the frame.

7.2 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.

7.2.1 Flap lock with recessed handle

- ▷ To open the external flap, pull all the lock handles fitted to that particular external flap at the same time.

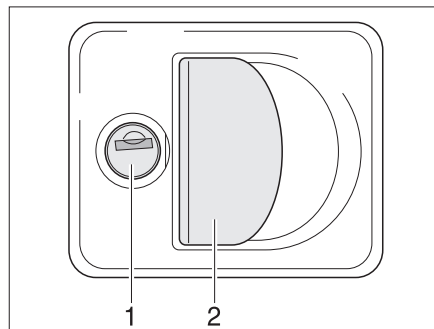


Fig. 55 Flap lock with recessed handle

Opening:

- Insert key into locking cylinder (Fig. 55,1) and turn a quarter turn. The flap lock is unlatched.
- Remove the key.
- Pull on the lock handle (Fig. 55,2). The external flap is open.

Closing:

- Firmly close the external flap.
- Insert key into locking cylinder and turn a quarter turn. The flap lock is locked.
- Remove the key.

7.2.2 Turnbuckle lock

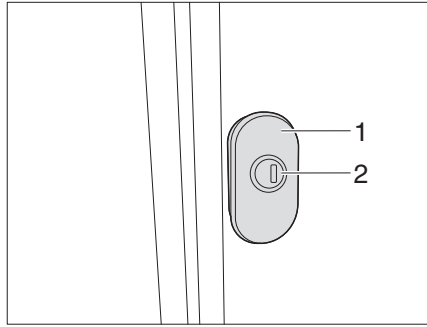


Fig. 56 Turnbuckle lock (variant 1)

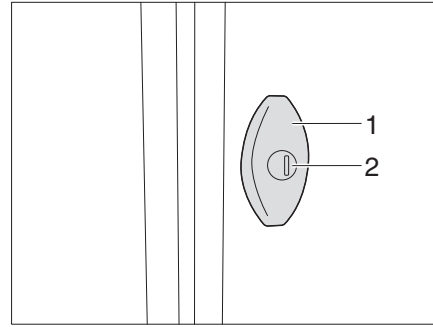


Fig. 57 Turnbuckle lock (variant 2)

With the turnbuckle lock, the bolt pulls the flap onto the seal by rotating the handle through 180°.

- Opening:*
- Insert the key into the locking cylinder (Fig. 56,2/ Fig. 57,2) and turn a quarter turn. The flap lock is unlatched.
 - Remove the key.
 - Pull on the turnbuckle lock (Fig. 56,1/ Fig. 57,1) and rotate anticlockwise through 180°. The external flap is open.
- Closing:*
- Firmly close the external flap.
 - Rotate the turnbuckle lock clockwise through 180°. The flap is pulled onto the seal.
 - Insert key into locking cylinder and turn a quarter turn.
 - Remove the key.
 - For variant 1: Push in the locking cylinder (Fig. 56,2) until it engages. The flap lock is locked.

7.2.3 Holding the external flaps in position

Variant 1

Some external flaps have a holding device that holds the flap in opened position.



- When opening the flap and holding it in position ensure that the holding device holds the flap securely. Danger of injury through flap falling shut!

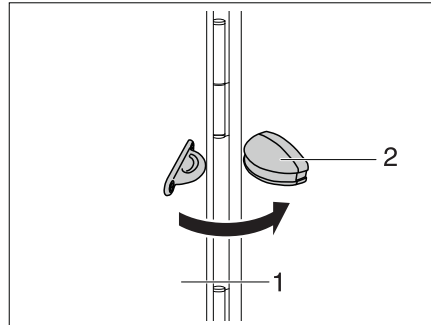


Fig. 58 Holding device external flap

Holding in position

- Open the external flap (Fig. 58,1) and swing it towards the vehicle side.
- Press the external flap into the holding device (Fig. 58,2).

Closing

- Pull the external flap (Fig. 58,1) with a firm tug out of the holding device (Fig. 58,2).
- Close the external flap.

Variant 2

Some external flaps have a securing hook on the vehicle exterior with which the flap can be held in the opened position.



- When opening the latch and holding it in position ensure that the securing hook is located correctly. Danger of injury through flap falling shut!

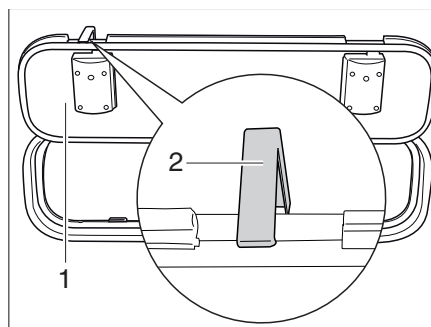


Fig. 59 Securing hook external flap

Holding in position

- Open the external flap (Fig. 59,1) and turn the securing hook (Fig. 59,2) upwards at the vehicle side.
- Open the external flap upwards and latch it into the securing hook.

Closing

- Hold the external flap in position.
- Press the securing hook (Fig. 59,2) upwards.
- Fold the external flap downwards and close it.

7.3 Driver's cabin partition

Depending on the model, the vehicle is fitted with a driver's cabin partition.



▷ Only drive with the doors (Fig. 61,1) secured.

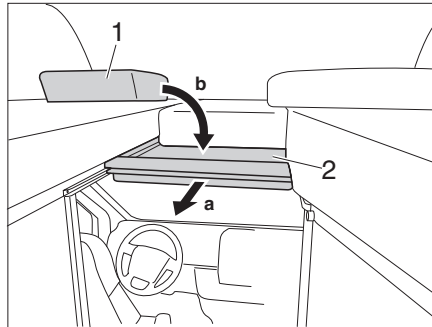


Fig. 60 Driver's cabin partition

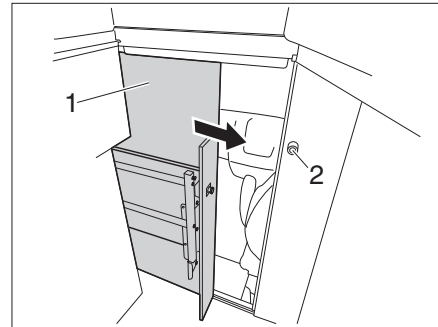


Fig. 61 Driver's cabin lock

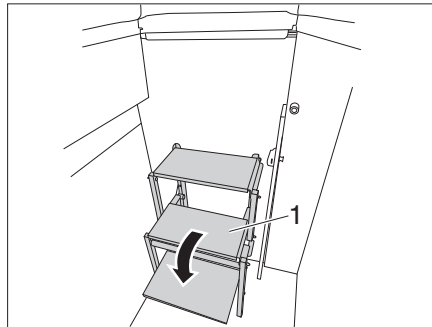


Fig. 62 Extending the step ladder

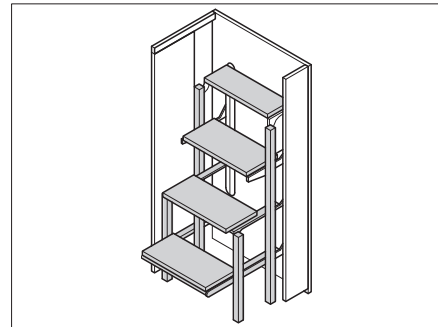


Fig. 63 4-step ladders

To close and open the driver's cabin partition:

- Closing:**
- Pull the bed foundation (Fig. 60,2) to the front at the handle.
 - Place the cushion (Fig. 60,1) onto the bed foundation.
 - Slide the door (Fig. 61,1) closed until it latches into the lock.
 - Turn the handle (Fig. 61,2) anticlockwise until the door is locked.
 - Fold out the step ladder (Fig. 62,1).

- Opening:**
- Fold in the step ladder (Fig. 62,1).
 - Turn the handle (Fig. 61,2) clockwise until the door is unlocked.
 - Slide open the door (Fig. 61,1) and secure it.
 - Lay the cushion (Fig. 60,1) to the side
 - Slide the bed foundation (Fig. 60,2) to the rear.

7.4 Ventilation



- ▶ The oxygen in the vehicle interior is used up by breathing and the use of gas operated appliances. That is why the oxygen needs to be replaced on a constant basis. 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.



- ▶ 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. mushroom-shaped vents, 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 synchronized. 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 compartments 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.

7

Living

7.5 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.**
- ▷ **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 glass window. The window could be damaged. For that reason, close the blind/Roman shade only 2/3 of the way in direct sunlight.**
- ▷ Before commencing the journey, close the windows.
- ▷ Depending on the weather, close the windows far enough to prevent moisture from entering.
- ▷ To open and close the hinged window, open or close all catch levers which are fitted to the hinged window.



- ▷ 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.

7.5.1 Sliding window with lock (variant 1)

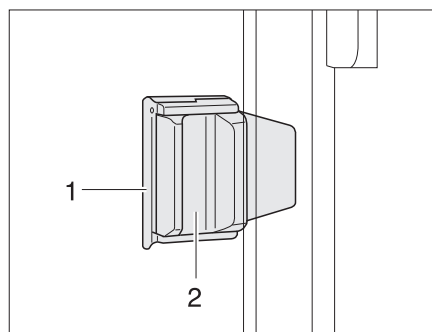


Fig. 64 Sliding window with slide lock

- Opening:**
- Pull out the lock (Fig. 64,1).
 - Press handle (Fig. 64,2) and push it forward or backward at the same time.
 - Open window half up to the required position.
- Closing:**
- Close the window as far as it can go.
 - Push in the lock.

7.5.2 Sliding window with lock (variant 2)

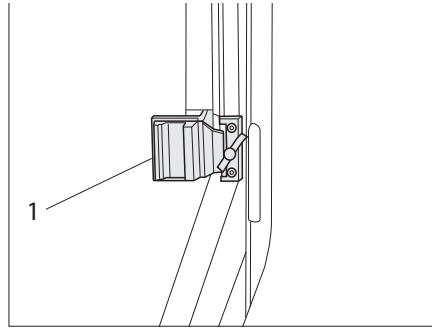


Fig. 65 Sliding window with slide lock

- Opening:*
- Turn the locking knob (Fig. 64,1) into the vertical position.
 - Press handle (Fig. 64,2) and push it forward or backward at the same time.
 - Open window half up to the required position.

- Closing:*
- Close the window as far as it can go.
 - Turn the locking knob into the horizontal position.

7.5.3 Sliding window with lock (variant 3)

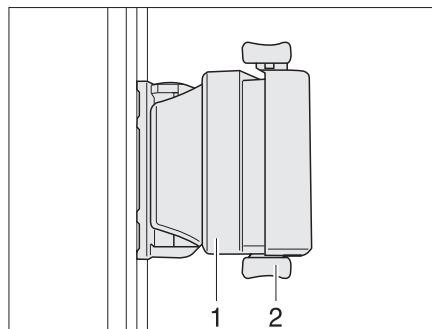


Fig. 66 Sliding window with slide lock

- Opening:*
- Turn the locking knob (Fig. 64,1) into the vertical position.
 - Press handle (Fig. 64,2) and push it forward or backward at the same time.
 - Open window half up to the required position.

- Closing:*
- Close the window as far as it can go.
 - Turn the locking knob into the horizontal position.

7.5.4 Sliding window without lock (variant 1)

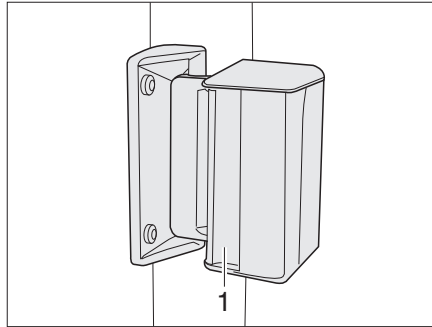


Fig. 67 Sliding window

- Opening:**
- Press handle (Fig. 67,1) and push or pull it forward or backward at the same time.
 - Open window half up to the required position.
- Closing:**
- Close the window as far as possible and let the handle lock in place.

7.5.5 Sliding window without lock (variant 2)

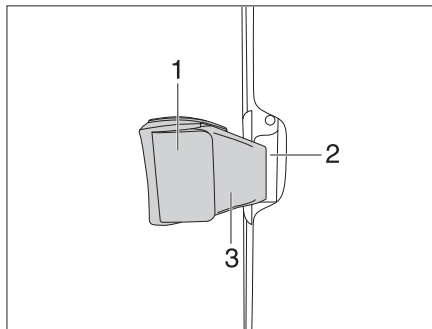


Fig. 68 Sliding window without lock

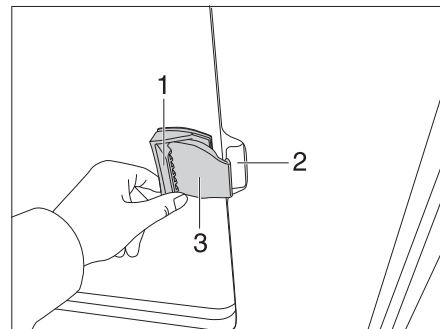


Fig. 69 Sliding window without lock

- Opening:**
- Pull the handle flap (Fig. 69,1) and push or pull the handle forwards at the same time.
 - Open window half up to the required position.
- Closing:**
- Close the window as far as possible and let the handle lock in place.

7.5.6 Hinged window with rotary hinges



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

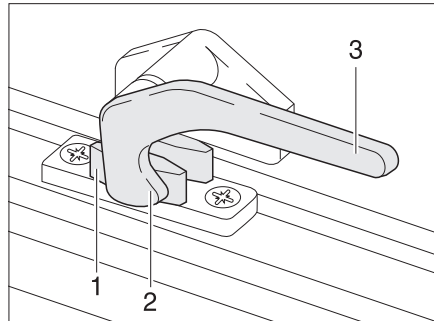


Fig. 70 Catch lever in "closed" position

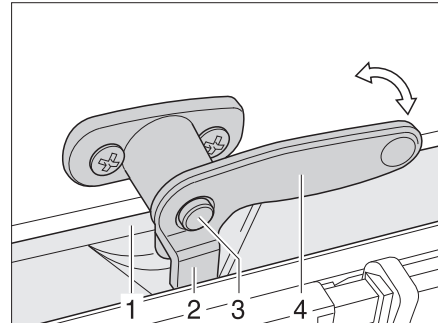


Fig. 71 Catch lever with safety knob in "closed" position

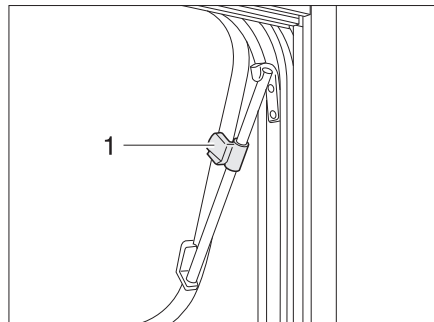


Fig. 72 Hinged window with rotary hinges, open

- Opening:**
- If it exists, press the safety knob (Fig. 71,3) down and hold it.
 - Turn the catch lever (Fig. 70,3 or Fig. 71,4) a quarter turn towards the centre of the window.
 - Open the hinged window until the required position has been reached and secure in position using the knurled knob (Fig. 72,1).

The hinged window remains locked in the required position.

- Closing:**
- Turn the knurled knob (Fig. 72,1) until the latch is released.
 - Close the hinged window.
 - If it exists, press the safety knob (Fig. 71,3) down and hold it.
 - Turn the catch lever (Fig. 70,3 or Fig. 71,4) a quarter turn towards the centre of the window frame. The locking catch (Fig. 70,2 or Fig. 71,2) is located on the inside of the window catch (Fig. 70,1 or Fig. 71,1).

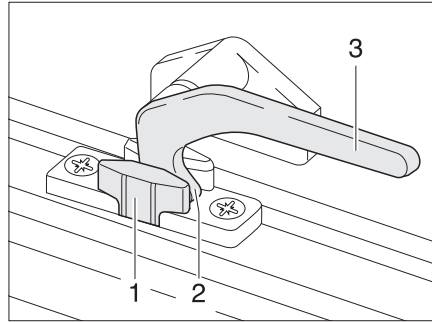


Fig. 73 Catch lever in the "Continuous ventilation" position

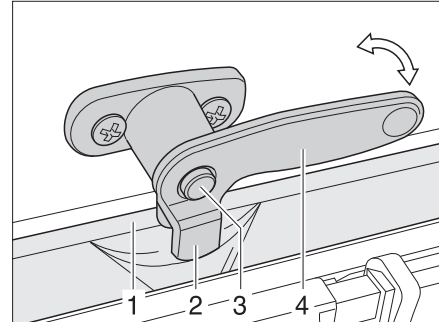


Fig. 74 Catch lever with safety knob in "Continuous ventilation" position

Continuous ventilation

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

- "Continuous ventilation" (Fig. 73)
- "Firmly closed" (Fig. 70)

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

- If it exists, press the safety knob (Fig. 74,3) down and hold it.
- Turn the catch lever (Fig. 73,3 or Fig. 74,4) a quarter turn towards the centre of the window.
- Lightly open the hinged window outwards.
- If it exists, press the safety knob (Fig. 74,3) down and hold it.
- Return the catch lever to its initial position. In the process the locking catch (Fig. 73,2 or Fig. 74,2) is retracted into the recess of the window catch (Fig. 73,1 or Fig. 74,1).
- If necessary, ensure 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 the "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.

7.5.7 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.
- ▷ If the locking lever is equipped with a safety knob, press the safety knob whenever you use the locking lever.

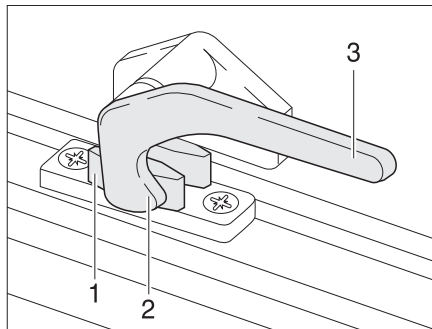


Fig. 75 Catch lever in "closed" position

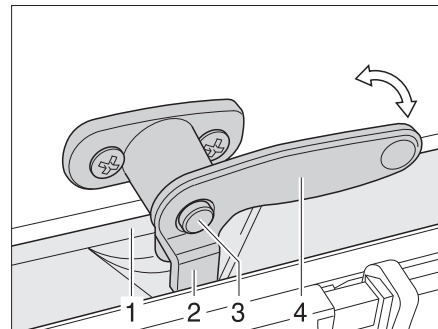


Fig. 76 Catch lever with safety knob in "closed" position

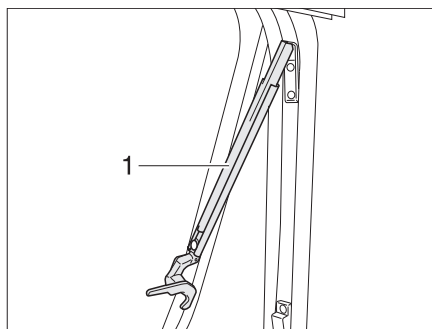


Fig. 77 Hinged window with automatic hinges, open

- Opening:**
- If it exists, press the safety knob (Fig. 76,3) down and hold it.
 - Turn the catch lever (Fig. 75,3) a quarter turn towards the centre of the window.
 - Open the hinged window to the desired latched position. The automatic hinge (Fig. 77,1) locks in place automatically.

The hinged window remains locked in the required position.

- Closing:**
- Open the hinged window as wide as necessary until the latch releases.
 - Close the hinged window.
 - If it exists, press the safety knob (Fig. 76,3) down and hold it.
 - Turn the catch lever (Fig. 75,3) a quarter turn towards the window frame. The locking catch (Fig. 75,2) is located on the inside of the window catch (Fig. 75,1).

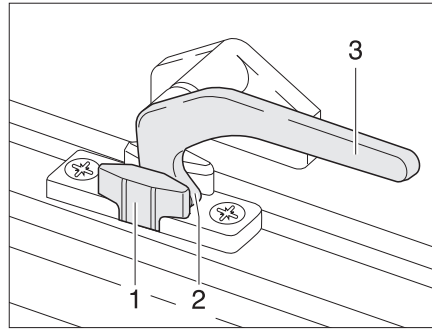


Fig. 78 Catch lever in the "continuous ventilation" position

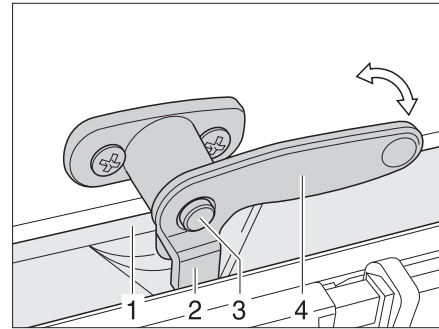


Fig. 79 Catch lever with safety knob in "closed" position

Continuous ventilation

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

- "Continuous ventilation" (Fig. 78)
- Firmly closed (Fig. 75).

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

- If it exists, press the safety knob (Fig. 76,3) down and hold it.
- Turn the catch lever (Fig. 78,3) a quarter turn towards the centre of the window.
- Slightly open the hinged window outwards.
- If it exists, press the safety knob (Fig. 76,3) down and hold it.
- Turn the catch lever a quarter turn towards the window frame. The locking catch (Fig. 78,2) has to be moved into the recess of window catch (Fig. 78,1).
- If necessary, ensure 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.

7.5.8 Blind and insect screen



- **Open blinds before commencing the journey. When the blinds are closed, vibrations can damage the spring shaft.**

The windows are fitted with a blind and an insect screen. The blind and insect screen are adjusted separately.

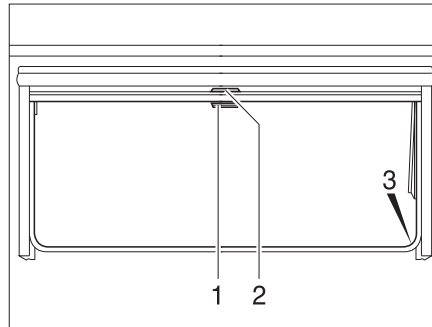


Fig. 80 Hinged window

Blind The blind is located in the upper blind box.

- Closing:*
- Pull blind at the handle (Fig. 80,2) downwards. If the blind is to be completely closed, it is suspended into the locking devices (Fig. 80,3) situated on both sides of the window frame.
- Opening:*
- If the blind is completely closed: Press handle (Fig. 80,2) downwards and, at the same time, tilt it slightly inward. The blind can be taken out of the locking devices situated on both sides of the window frame.
 - If the blind is in an intermediate position: Pull the handle (Fig. 80,2) slightly downwards until the locking device releases.
 - Use handle to return blind slowly to its initial position.

Insect screen The insect screen is located in the upper blind box.

- Closing:*
- Pull insect screen at the handle (Fig. 80,1) down and hang it into the locking devices (Fig. 80,3) situated on both sides of the window frame.
- Opening:*
- Press handle (Fig. 80,1) downwards and, at the same time, tilt it slightly inward. The insect screen can be taken out of the locking devices situated on both sides of the window frame.
 - Use handle to return the insect screen slowly to its initial position.

7.5.9 Blind pleated with insect screen

The blackout blind and the insect screen can be opened or closed by moving the two strips.

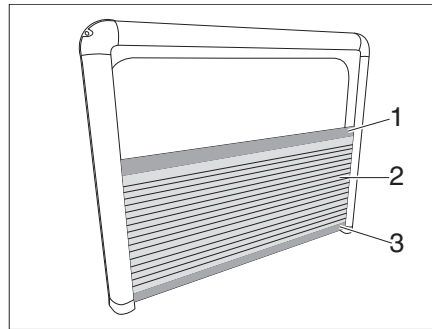


Fig. 81 Blind, pleated

Closing: ■ Pull up the blackout blind (Fig. 81,2) on the top strip (Fig. 81,1) and pull down the bottom strip (Fig. 81,3).

Opening: ■ Push down the top strip (Fig. 81,1). The opened window is protected by the insect screen.

Opening without the insect screen: ■ Push up the bottom strip (Fig. 81,3). The opened window is not protected by the insect screen.

7.5.10 Electric blind for the windscreen

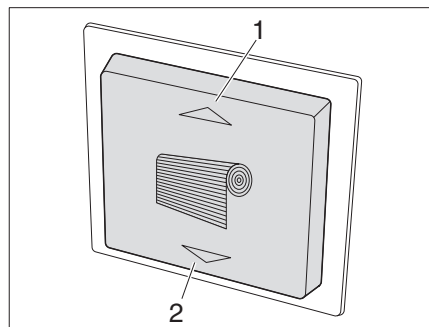


Fig. 82 Switch for blind

Closing: ■ Press the (Fig. 82/2) button. The blind (Fig. 84/3) for the windscreen rolls down.

Opening: ■ Press the (Fig. 82/1) button. The blind (Fig. 84/3) for the windscreen rolls up.

Opening and closing the blind with the emergency function

In an emergency, e.g. a power failure, the electric blind for the windscreen can be moved up or down with a crank. The crank is located in the rear garage.

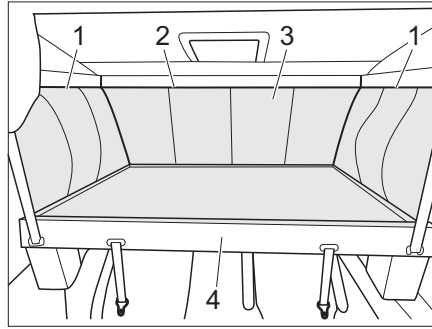


Fig. 83 Access to the blind box

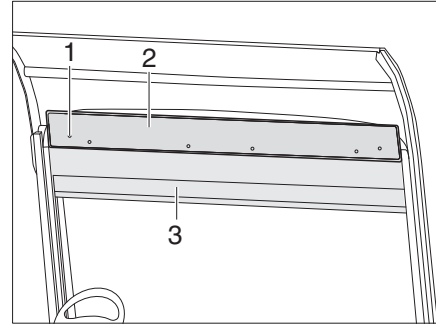


Fig. 84 Blind emergency function

- Lower the pull-down bed (Fig. 83,4) (see section 7.16.3).
- In order to release the pull-down bed sack (Fig. 83,3), open the side zips (Fig. 83,1) in the upper and front area from the front to back (Fig. 83,2).
- Remove the pull-down bed sack (Fig. 83,3) (Velcro fastener).
- Unscrew 6 screws (Fig. 84/1) on the blind box and remove the panel (Fig. 84/2).
- Hang the crank in one of the two motors and raise or lower the blind (Fig. 84/3).

7.5.11 Roman shade for the windscreen

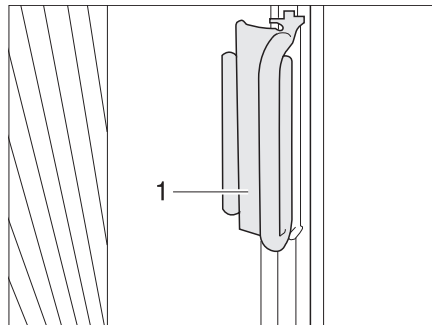


Fig. 85 Handle of the Roman shade for the windscreen

- Closing:*
- Grasp the handles (Fig. 85,2) of the Roman shades at both sides of the windscreen and draw carefully to the middle of the windscreen until the magnetic catch keeps the Roman shades closed.
- Opening:*
- Carefully push the Roman shades at the handle under the cover of the A-columns.
 - Push the handle onto the upper part. The Roman shade is secured.

7.5.12 Roman shade for driver's window and front passenger's window

Variant 1

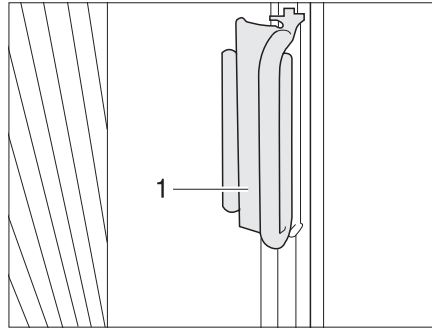


Fig. 86 Roman shade for driver's window and front passenger's window

- Closing:**
- Grasp the handle (Fig. 86,1) of the Roman shades and draw carefully forwards until the magnetic catch keeps the Roman shades closed.
- Opening:**
- Using the handle, carefully push the Roman shades back under the cover.
 - Push the handle (Fig. 86,2) onto the upper part. The Roman shade is secured.

Variant 2

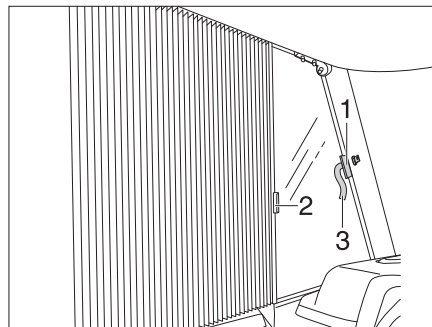


Fig. 87 Roman shade for driver's window and front passenger's window

- Closing:**
- Open the Velcro of the securing loops (Fig. 87,3) on both sides.
 - Grasp the handles (Fig. 87,1 and 2) of the Roman shades one after the other and draw carefully towards each other until the magnetic catch keeps the Roman shade closed.
- Opening:**
- Carefully push the Roman shades back at the handles (Fig. 87,1 and 2).
 - Secure the Roman shade with the Velcro of the securing loop (Fig. 87,3).

7.5.13

Gathered blinds



- ▷ The gathered blinds are made of thin fabric. When operating, pull the cord carefully and do not use excessive force..

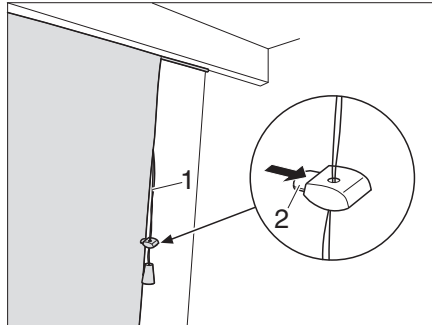


Fig. 88 Gathered blind

Depending on the model, the vehicle is fitted with gathered blinds.

Gathering the blind:

- Pull down the cord (Fig. 88,1). The cords pull up and gather the blind.
- Press the clamp (Fig. 88,2) on the holder and slide the holder into the required position.

Lowering the blind:

- Press the clamp (Fig. 88,2) on the holder.
- The gathered blind moves down.

7.5.14

Fall protection bar in the window

The fall protection bar is attached to the window and serves as a fall protection for small children. The fall protection bar can be removed to operate the window or the roller blind.

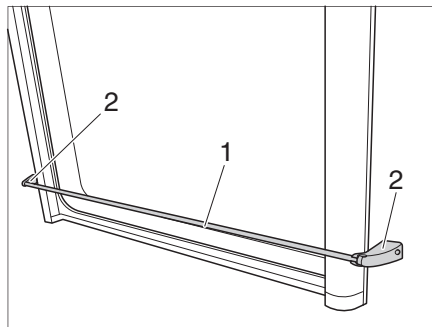


Fig. 89 Fall protection bar

Remove fall protection bar

- Grip the fall protection bar (Fig. 89,1) near the two brackets (Fig. 89,2) and pull forwards.

Insert fall protection bar

- Clip the fall protection bar (Fig. 89,1) into the two brackets (Fig. 89,2).

7

Living

7.6 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 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.**
- ▷ **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.
- ▷ Before commencing the journey, open the blinds or Roman shades.
- ▷ **Apply talc to the rubber seals of the skylights at least twice a year.**



- ▷ **When leaving the vehicle, always close the skylights.**

7.6.1 Skylight with snap latch

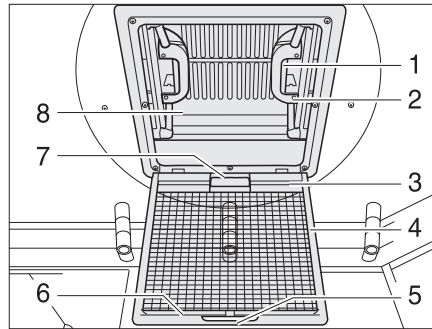


Fig. 90 Skylight with snap latch

The skylight can be pushed upwards either from one side or from both sides. Depending on the version, the skylight is fitted with a blind.

- Opening:**
- Pull on the handle (Fig. 90,5).
 - Fold the insect screen (Fig. 90,4) downwards.
 - Push the spring-loaded latch (Fig. 90,1) towards the inside of the skylight (Fig. 90,8). At the same time use the handle (Fig. 90,2) to press the skylight upwards.
 - Swing the insect screen upwards (Fig. 90,4) until it latches in place.

- Closing:**
- Pull on the handle (Fig. 90,5).
 - Fold the insect screen (Fig. 90,4) downwards.
 - Using both handles (Fig. 90,2), pull down the skylight (Fig. 90,8) with force until the two snap latches (Fig. 90,1) lock into place.
 - Swing the insect screen upwards (Fig. 90,4) until it latches in place.

Blind To close and open the blind:

- Closing:**
- Pull the handle (Fig. 90,7) of the blind and hook the hook rail (Fig. 90,3) into the retainer (Fig. 90,6) on the insect screen.
- Opening:**
- Release the hook rail (Fig. 90,3) from the retainer (Fig. 90,6) and feed the blind back slowly.

7.6.2 Heki skylight (mini and midi)

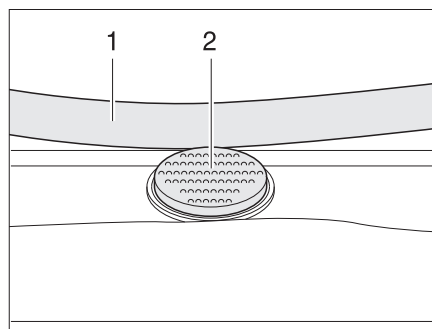


Fig. 91 Safety knob on the Heki skylight

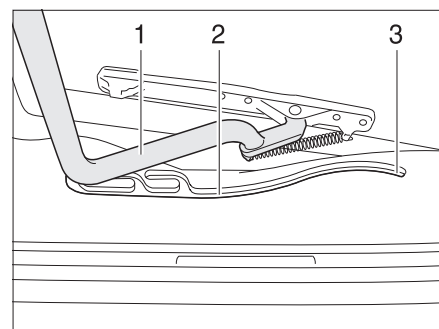


Fig. 92 Heki skylight, guide

The Heki skylight is opened on one side only.

Opening:

- Press the safety knob (Fig. 91,2) and pull the bar (Fig. 91,1) down with both hands.
- Pull the bar (Fig. 92,1) in the guides (Fig. 92,2) to the rearmost position (Fig. 92,3).

Closing:

- Use both hands to push the bar (Fig. 92,1) slightly upwards.
- Push the bar back in the guides.
- Push the bar upwards with both hands until it is above the safety knob (Fig. 91,2).

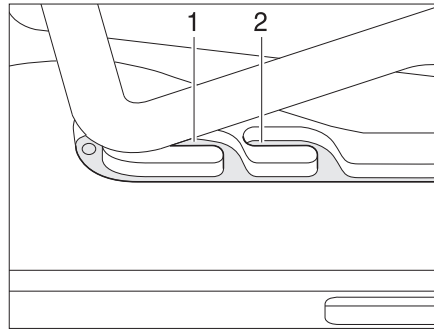


Fig. 93 Heki skylight in ventilation position

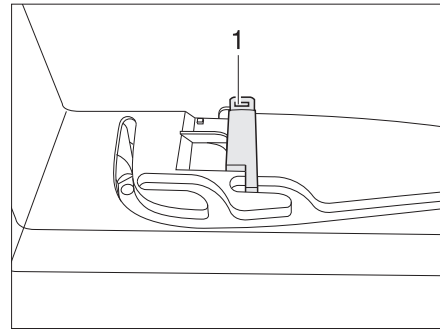


Fig. 94 Ventilation position locking mechanism

Ventilation position

The Heki skylight can be put in two ventilation positions: Bad weather position (Fig. 93,1) and central position (Fig. 93,2). Depending on the model, the skylight can be locked in the central position with the latch (Fig. 94,1).

- Press the safety knob (Fig. 91,2) and pull the bar (Fig. 91,1) down with both hands.
- Pull the bar in the guides (Fig. 92,2) to the desired position.
- Push the bar slightly upwards and into the selected guide (Fig. 93,1 or 2) and lock if necessary.

Roman shade

To close and open the Roman shade:

Closing:

- Pull out Roman shade at the handle and release in the required position. The Roman shade will stay in that position.

Opening:

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

Insect screen

To close and open the insect screen:

Closing:

- Pull the insect screen by the handle to the opposite handle of the Roman shade.

Opening:

- Press the rear part of the handle of the insect screen. The latch is released.
- Use handle to return the insect screen slowly to its initial position.

7.6.3 Wind-up skylight

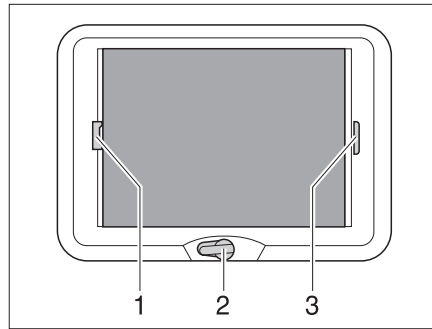


Fig. 95 Wind-up skylight

The wind-up skylight can be opened using the manual crank.

- Opening:* ■ Rotate the hand crank (Fig. 95,2) until a resistance can be felt (max. opening angle 70°).
- 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. 95,3) and release 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:* ■ Pull insect screen at the handle (Fig. 95,1) to the opposite handle of the Roman shade (Fig. 95,3) and allow to engage.
- Opening:* ■ Press the handle of the insect screen (Fig. 95,1) at the back upwards and detach the insect screen from the Roman shade (Fig. 95,3).
- Slowly push insect screen at the handle to its initial position.

7

Living

7.7 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.



- ▷ Setting the position of the seats and armrests is described in chapter 5.
- ▷ Move the seats all the way down before turning. Otherwise, the seats cannot be turned.

The lever for rotating the seat is located at the front or at the side of the seat, depending on model.

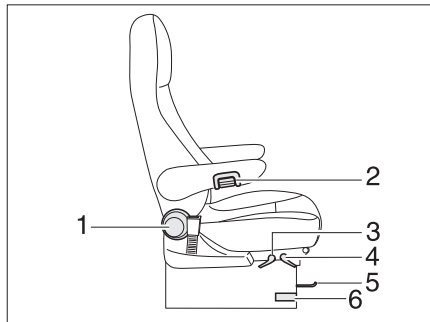


Fig. 96 Driver's and front passenger's seats

Turning:

- 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.
- Push or pull the lever to turn the seat (Fig. 96,6). The seat is released from the locking device.

The seats can be rotated in any direction. The seats can only be locked in position in the direction of travel.

7.8 Tables

7.8.1 Suspension table with fold-out leg



- ▷ Depending on the model, different table-top extensions and fold-out legs are used. Therefore the table can deviate from the type shown here. The principle of the conversion is the same for all tables.

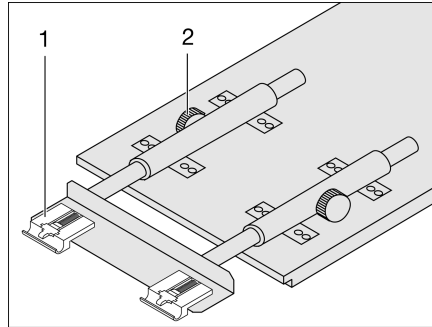


Fig. 97 Extend suspension table

The suspension table size can be enlarged by inserting a table-top extension.

Extending:

- Undo the knurled screws (Fig. 97,2).
- Lift the table-top slightly and pull out it out as far as possible. The table extension (Fig. 97,1) is fully extended.
- Set down the table.
- Insert the table-top extension in the table extension.
- Lift the table-top slightly and push it back as far as possible.
- Tighten the knurled screws.

Reducing size:

- Undo the knurled screws (Fig. 97,2).
- Slightly lift the front of the table-top and pull out.
- Remove the table-top extension and store it securely.
- Lift the table-top slightly and push it back as far as possible. The table extension (Fig. 97,1) is fully retracted.
- Set down the table.
- Tighten the knurled screws.

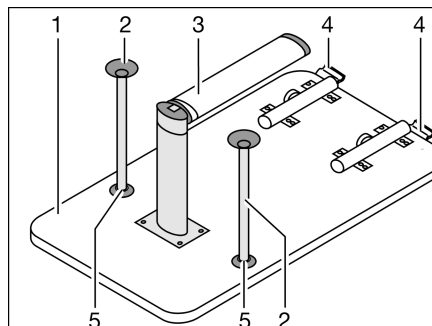


Fig. 98 Bed foundation

The table's fold-out leg enables it to be used as a bed foundation.

Conversion to bed foundation:

- Lift the front of the table-top (Fig. 98,1) by approx. 45°.
- Fold the lower part of the fold-out leg (Fig. 98,3) by 90°. Depending on the model, pull the lower part of the fold-out leg down or push the release knob.
- Press the release knob on the lock (Fig. 98,4).
- Swivel the table-top approx. 45° upward and remove the table from the retainer.
- Depending on the model, insert both additional support legs (Fig. 98,2) into the holders (Fig. 98,5) on the bottom side of the table.
- Insert the table into the lower retainer and lock it.

7.8.2 Suspension table (bar seating group)

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

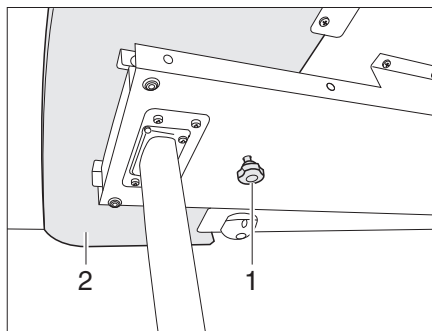


Fig. 99 Lock for table-top extension

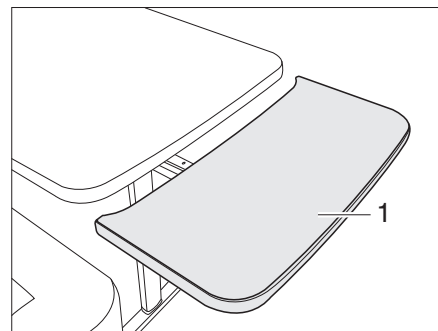


Fig. 100 Table-top extension

Extending:

- Loosen knurled screw (Fig. 99,1).
- Pull out the table-top extension (Fig. 99,2) as far as possible (Fig. 100).
- Guide table-top extension (Fig. 100,1) upwards in a circular movement. The table-top extension lies flush with the table-top.

Reducing size:

- Pull table-top extension (Fig. 100,1) away from the table-top as far as it will go and press downwards against the resistance of the retaining springs. The table-top extension moves downwards in a circular movement (Fig. 100).
- Push in the table-top extension as far as it will go.
- Tighten knurled screw (Fig. 99,1).

The table's fold-out leg enables it to be used as a bed foundation.

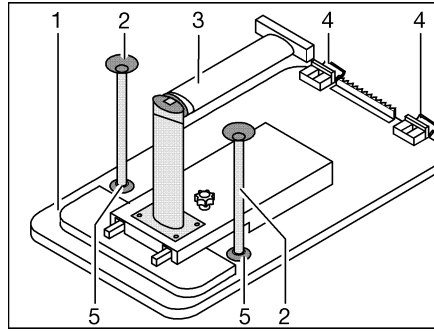


Fig. 101 Bed foundation

Conversion to bed foundation:

- Slightly raise the front of the table-top (Fig. 101,1).
- Unlock table leg (Fig. 101,3) at the hinge and fold it in.
- Push the table-top approx. 45° upwards and remove holders (Fig. 101,4) from the upper mounting rail.
- Depending on the model, insert both additional support legs (Fig. 101,2) into the holders (Fig. 101,5) on the bottom side of the table.
- Attach suspension table to the lower mounting rail and rest it onto the table leg hinge.

7.8.3 Fixed table (movable table-top)

The top of the fixed table can be moved both lengthways and crossways.

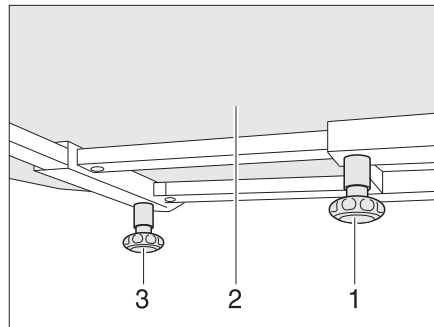


Fig. 102 Fixed table

Moving in a lengthways direction:

- Loosen knurled screw (Fig. 102,1).
- Move table-top (Fig. 102,2) to the desired position.
- Retighten the knurled screw.

Moving in a crossways direction:

- Loosen knurled screw (Fig. 102,3).
- Move table-top (Fig. 102,2) to the desired position.
- Retighten the knurled screw.

The fixed table cannot be used as a bed foundation.

7.8.4 Single-column table (movable table-top)

The top of the single-column table can be moved crossways and lengthwise.

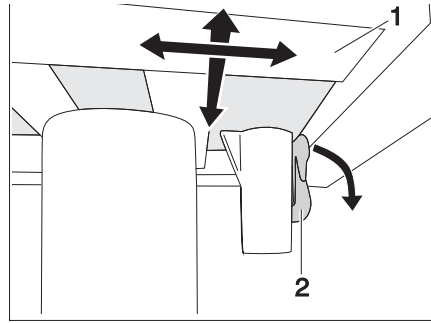


Fig. 103 Lock single-column table (locked)

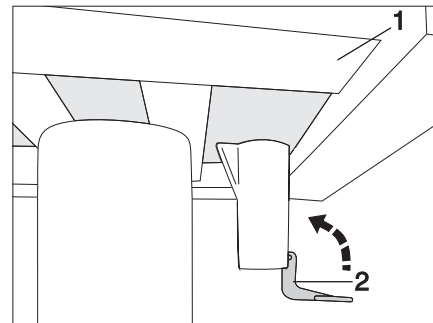


Fig. 104 Lock single-column table (unlocked)

Moving the table-top:

- Push the locking lever (Fig. 103,2) down.
- Move the table-top (Fig. 103,1) to the desired position.
- Press the locking lever (Fig. 103,2) back upwards.

7.8.5 Table lowerable in round seating group

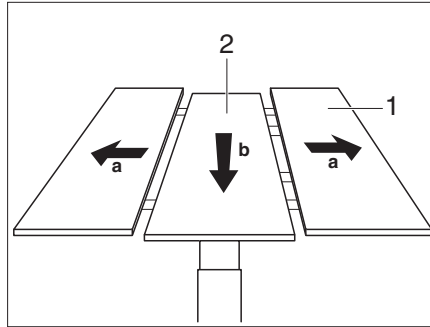


Fig. 105 Moving the middle part up

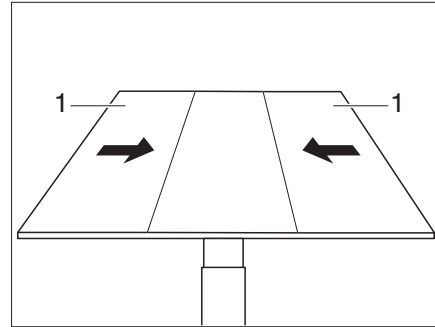


Fig. 106 Sliding the side parts against the middle part

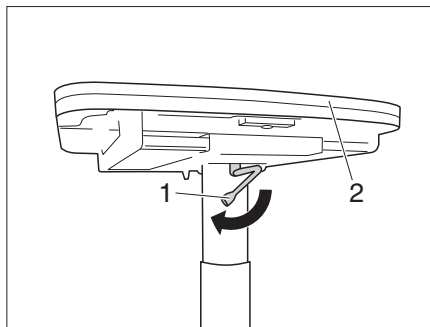


Fig. 107 Lowering the table

Extending:

- Pull the outer parts (Fig. 105,1) of the table apart.
- Push the middle part (Fig. 105,2) of the table firmly downwards. The middle part is pushed upwards through the spring force.
- Push the outer parts (Fig. 106,1) of the table against the middle part.

Reducing size:

- Pull the outer parts (Fig. 105,1) of the table apart.
- Push the middle part (Fig. 105,2) of the table firmly downwards. The middle part latches into the lower position.
- Push the outer parts of the table together.

Lowering

- Reducing the table (see above).
- Swivel the catch lever (Fig. 107,1) to the left. The lock is open.
- Press the table-top (Fig. 107,2) downwards in the middle and keep it pressed.
- Swivel the catch lever (Fig. 107,2) to the right. The lift-off table is locked.

7.8.6 2-column table lowerable in the round seating group

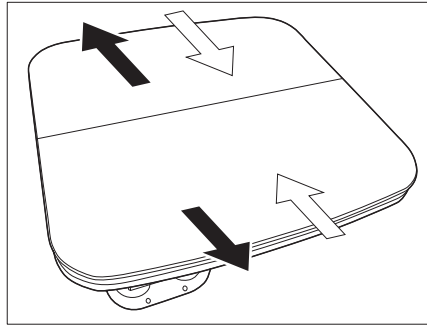


Fig. 108 Pull the outer parts apart

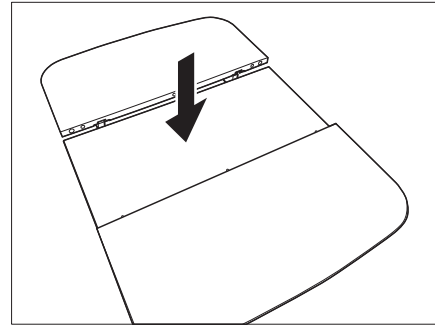


Fig. 109 Lower the middle part

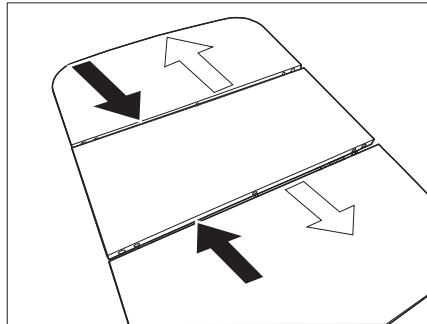


Fig. 110 Lowering the table

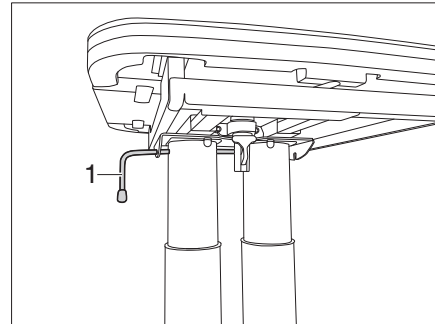


Fig. 111 Lock the table

Extending:

- Pull apart the outer parts of the table (Fig. 108 - black arrows).
- Push the middle part of the table firmly downwards (Fig. 109). The middle part is pushed upwards through the spring force.
- Push the outer parts of the table onto the middle part (Fig. 110 - black arrows).

Reducing size:

- Pull apart the outer parts of the table (Fig. 110 - white arrows).
- Push the middle part of the table firmly downwards. The middle part latches into the lower position (Fig. 109).
- Push the outer parts of the table together (Fig. 108 - white arrows).

Lowering

- Reducing the table (see above).
- Swivel the catch lever (Fig. 111,1) to the left. The lock is open.
- Press the table-top downwards in the middle and keep it pressed.
- Swivel the catch lever (Fig. 111, 1) to the right. The lift-off table is locked.

7.8.7 2-legged folding table, lowerable

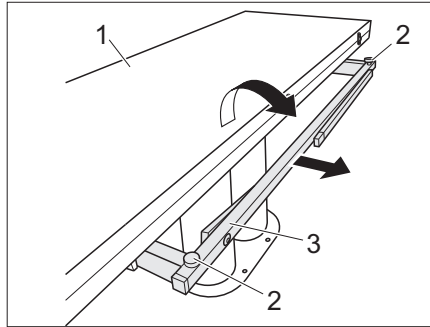


Fig. 112 Increasing the table size

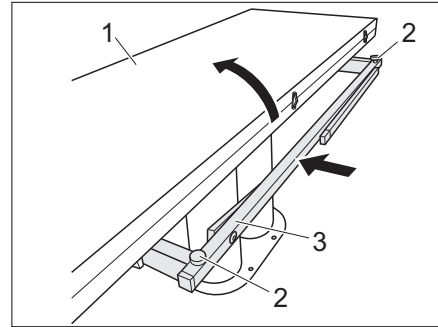


Fig. 113 Reducing the table

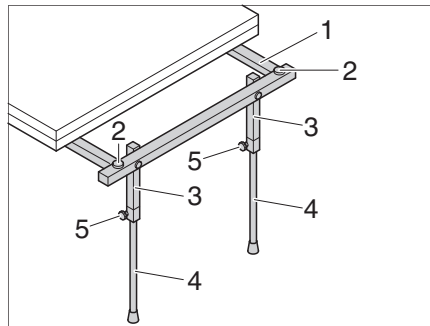


Fig. 114 Move legs into vertical position

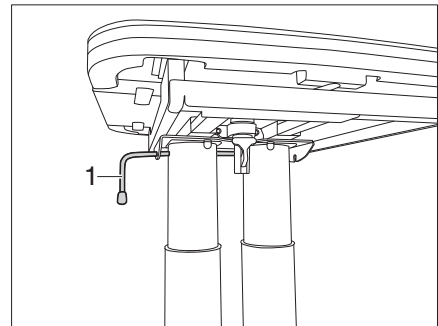


Fig. 115 Lock the table

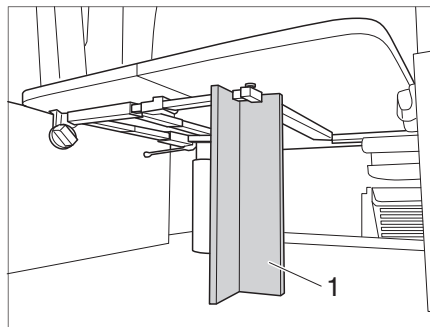


Fig. 116 Wooden support

Enlargement in the living area:

- Pull out the table base (Fig. 112,3).
- Fold out the table half (Fig. 112,1).
- Use the two adjusting screws (Fig. 112,2) to adjust the table-top to the desired height.
- Swivel the catch lever (Fig. 115,1) to the right. The lift-off table is locked.
- If necessary, extend the telescopic supports (Fig. 114, 3 and 4) to stabilise the tabletop.

Reducing the size when driving:

- Release the locking lever (Fig. 115,1).
- Fold in the table half (Fig. 113,1).
- Screw the two adjusting screws (Fig. 113,2) in.
- Push in the table base (Fig. 113,3).

Lowering for bed construction:

- Reducing the table (see above).
- Swivel the catch lever (Fig. 115,1) to the left. The lock is open.

- Enlarging table (see above).
- Slide the table top onto the support edge and place the wooden support (Fig. 116,1) under the table.

7.8.8 2-legged folding table, can be lowered for the middle pull-out bed

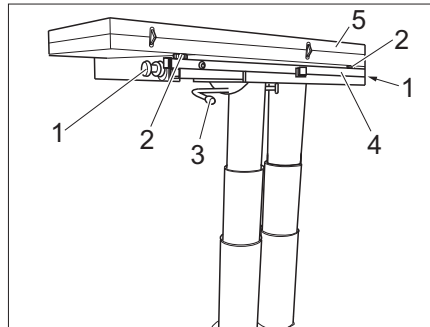


Fig. 117 Increasing the table size

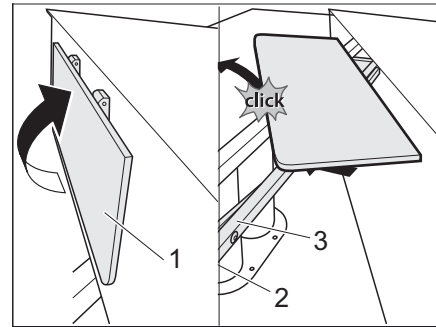


Fig. 118 Position the support edge

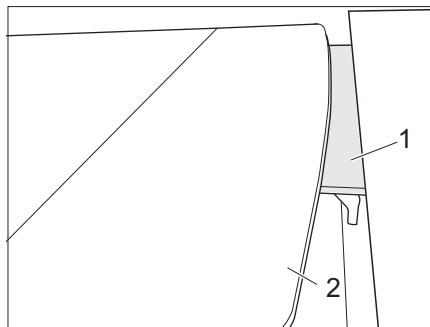


Fig. 119 Lowering the table onto the support edge

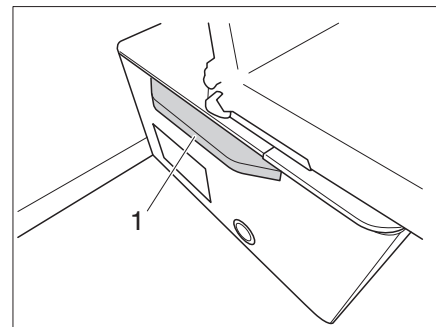


Fig. 120 Lowering the table onto the extender

Enlargement in the living area:

- Loosen knurled screws (Fig. 117,1) on both sides.
- Swivel the catch lever (Fig. 117,3) to the left. The lift-off table is unlocked.
- Pull out the table base (Fig. 117,4).
- Fold out the table half (Fig. 117,5).
- Use the two adjusting screws (Fig. 117,2) to adjust the table-top to the desired height.
- Swivel the catch lever (Fig. 117,3) to the right. The lift-off table is locked.

Reducing the size when driving:

- Release the locking lever (Fig. 117,3).
- Fold in the table half (Fig. 117,5).
- Screw the two adjusting screws (Fig. 117,2) in.
- Push in the table base (Fig. 117,4).
- Swivel the catch lever (Fig. 117,3) to the right. The lift-off table is locked.
- Tighten knurled screws (Fig. 117,1) on both sides.

Lower to convert the bed

- Reducing the table (see above).
- Swivel the catch lever (Fig. 117,3) to the left. The lock is open.
- Press the table-top downwards in the middle.
- Pull out the table base (Fig. 117,4).
- Screw the two adjusting screws (Fig. 117,2) in, if necessary.

- Swivel the catch lever (Fig. 117,3) to the right. The lift-off table is locked.
- Unlock the support edge (Fig. 118,1) and swivel it upwards until it locks into place.
- Swivel the table-top (Fig. 119,2) down onto the support edge (Fig. 119,1) or set down on the extender (Fig. 120,1) intended for this purpose.

7.8.9 Folding table, lowerable and rigid

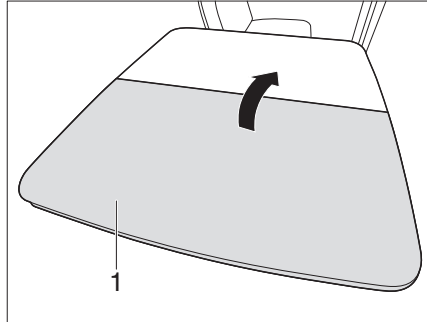


Fig. 121 Fold in the folding table

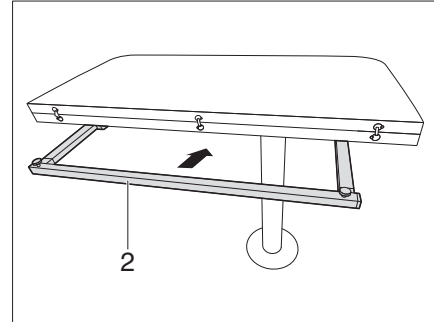


Fig. 122 Push in the folding table base

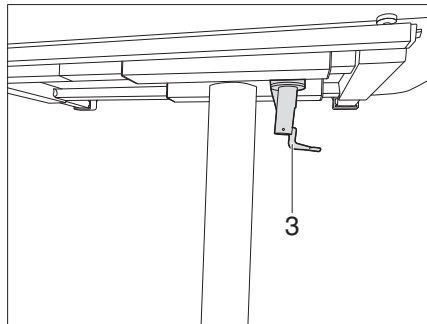


Fig. 123 Lock the folding table

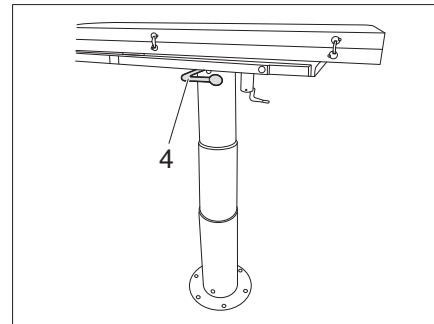


Fig. 124 Folding table, lowerable

When lowered, the folding table can be used as a bed base.

Conversion to bed foundation:

- Fold in the table half (Fig. 121,1).
- Push in the table base (Fig. 122,2).
- Swivel the catch lever (Fig. 123,3) to the right. The lift-off table is locked and can no longer be moved.
- Release the lever (Fig. 124,4) for lowering the table and press the table down.

7.9 Central locking system for kitchen unit

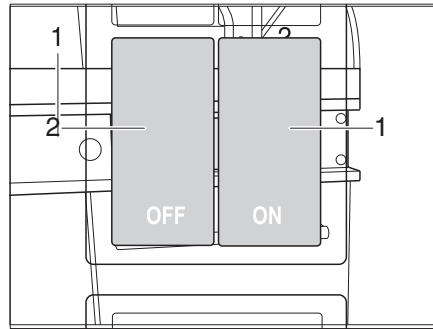


Fig. 125 Switch for the kitchen unit's central locking system

The kitchen unit is equipped with a central locking system. The flaps and drawers of the kitchen block can be locked and unlocked manually via the switch (Fig. 125). Also see chapter 4.11.

Locking ■ Press the switch ON (Fig. 125,1). The flaps and drawers of the kitchen block are locked.

Unlocking ■ Press the switch OFF (Fig. 125,2). The flaps and drawers of the kitchen block are unlocked.

7.9.1 Emergency unlocking of the kitchen drawers (Alpa model)

In case of a loss of power the kitchen drawers can be manually unlocked.

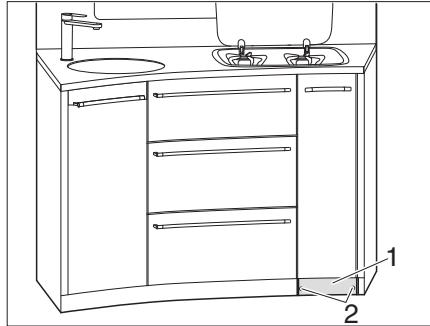


Fig. 126 Unscrewing skirting board

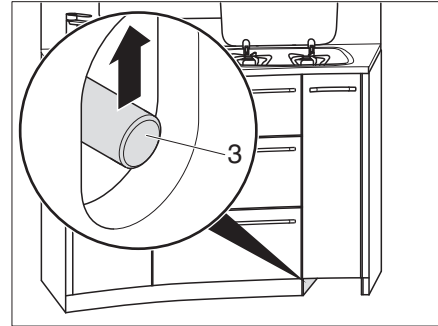


Fig. 127 Unlocking kitchen drawers

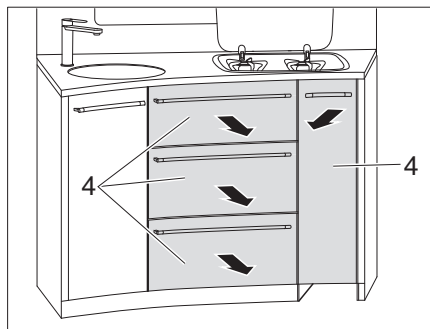


Fig. 128 Removing kitchen drawers

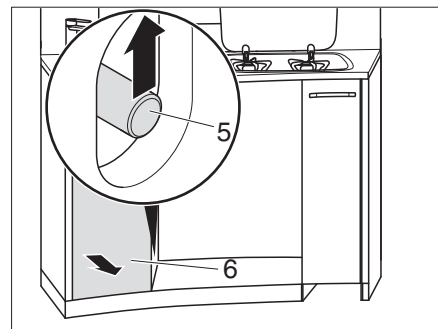


Fig. 129 Unlocking high kitchen drawers

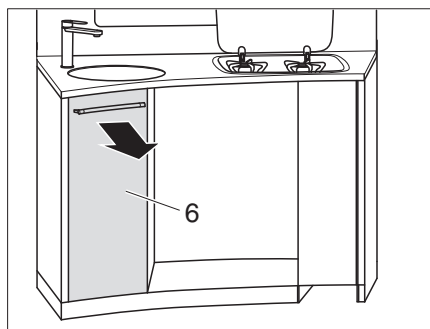


Fig. 130 Removing high kitchen drawers

Unscrew the skirting board:

- Unscrew 2 screws (Fig. 126,2) from the skirting board (Fig. 126,1).
- Remove the skirting board (Fig. 126,1).

Remove the kitchen drawers:

- Slide the push rod (Fig. 127,3) upwards.
- Remove the kitchen drawers (Fig. 128,4).
- Grasp through the opening and slide the push rod (Fig. 129,5) upwards.
- Remove the high kitchen drawer (Fig. 130,6).

7.9.2 Emergency unlocking of the kitchen drawers (Globetrotter model)

In case of a loss of power the kitchen drawers can be manually unlocked.

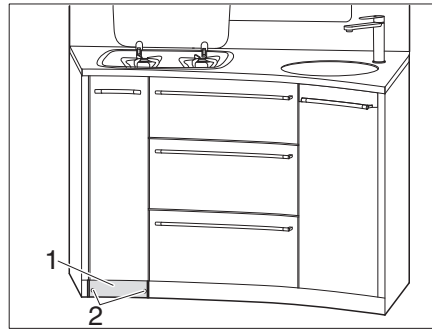


Fig. 131 Unscrewing skirting board

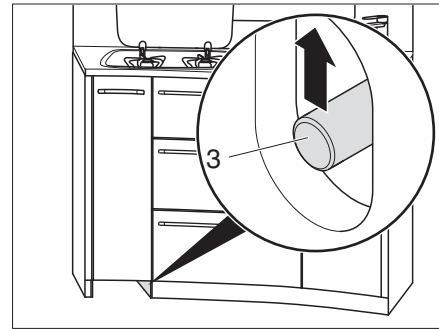


Fig. 132 Unlocking kitchen drawers

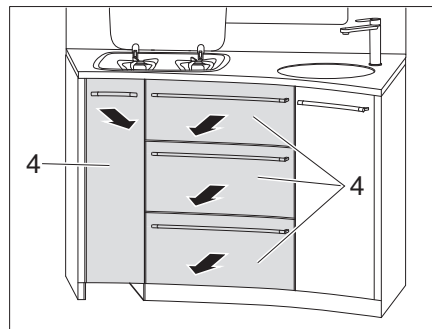


Fig. 133 Removing kitchen drawers

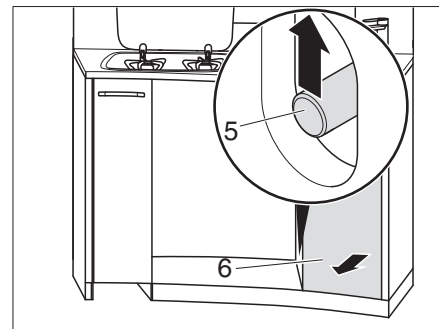


Fig. 134 Unlocking high kitchen drawers

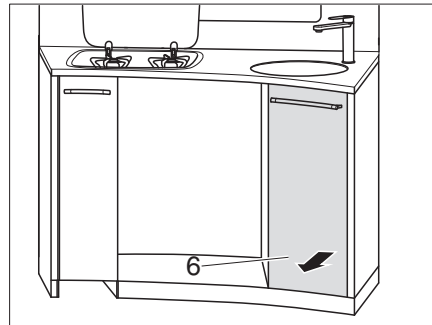


Fig. 135 Removing high kitchen drawers

Unscrew the skirting board:

- Unscrew 2 screws (Fig. 131,2) from the skirting board (Fig. 131,1).
- Remove the skirting board (Fig. 131,1).

Remove the kitchen drawers:

- Slide the push rod (Fig. 132,3) upwards.
- Remove the kitchen drawers (Fig. 133,4).
- Grasp through the opening and slide the push rod (Fig. 134,5) upwards.
- Remove the high kitchen drawer (Fig. 135,6).

7.10 Television



- ▶ Before commencing the journey, remove the television from the support and store it securely.
- ▶ 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, ensure that the antenna is in park position. Danger of accidents!

Flat screen in the TV cabinet

The flat screen is attached to a console in the TV cabinet.

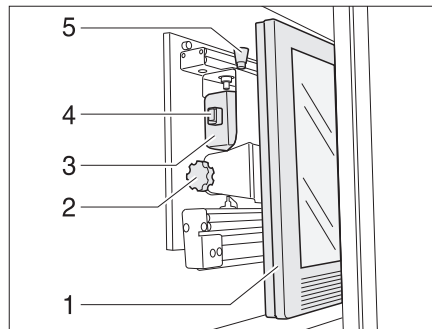


Fig. 136 TV cabinet

Pulling the television console forward:

- Press the release knob (Fig. 136,5) and pull the holder for the flat screen forward as far as possible by the handle (Fig. 136,4).

Swivelling the television console:

- Pull the release knob (Fig. 136,1) and swivel flat screen (Fig. 136,2) to the desired position.
- Loosen knurled screw (Fig. 136,3).
- Set the desired angle for the flat screen and re-tighten the knurled screw.

Flat screen with jointed arm

The flat screen is fastened to a jointed arm. Depending on the model, there are different versions of the jointed arm.

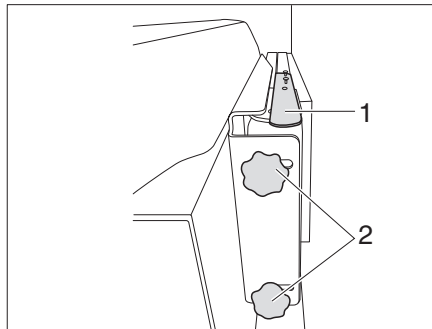


Fig. 137 Holder with jointed arm (variant 1)

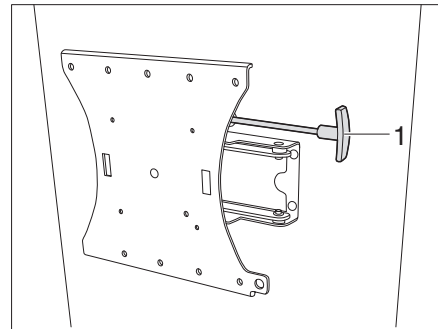


Fig. 138 Holder with jointed arm (variant 2)

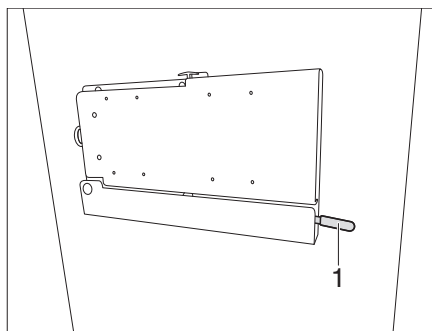


Fig. 139 Holder with jointed arm (variant 3)

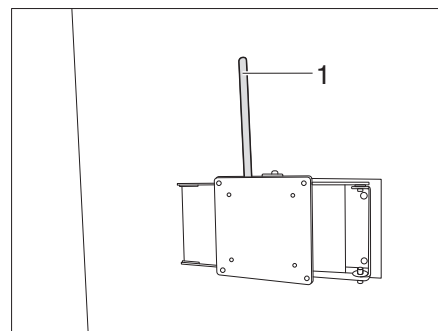


Fig. 140 Holder with jointed arm (variant 4)

- Variant 1:**
- Press the lever (Fig. 137,1) downwards to release the flat screen from the latch. Release the lever.
 - Undo the 2 knurled screws (Fig. 137,2) and swivel the flat screen into the desired position. Retighten the knurled screws (Fig. 137,2).
- Variant 2:**
- Pull the lever (Fig. 138,1) to release the flat screen from the latch.
 - Take hold of the flat screen at the top and bottom edge with both hands and set the desired angle of inclination.
 - Push the lever (Fig. 138,1) back in to lock.
- Variant 3:**
- Pull down the lever (Fig. 139,1).
 - Grip the flat screen with both hands on the top and bottom edge and set the desired position.
 - Push the lever (Fig. 139,1) back up to lock.
- Variant 4:**
- Pull the lever (Fig. 140,1).
 - Grip the flat screen with both hands on the top and bottom edge and set the desired position.
 - Push the lever (Fig. 140,1) back up into the initial position to lock.

Flat screen, lowerable

The flat screen with TV sound system (Fig. 141) can be pulled down to the desired position for watching TV.

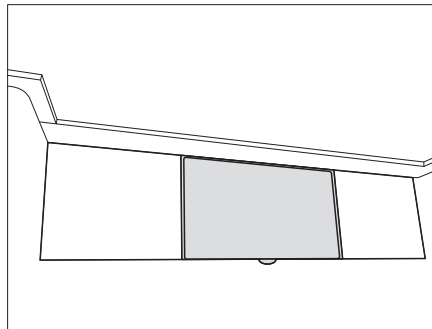


Fig. 141 Flat screen in top position

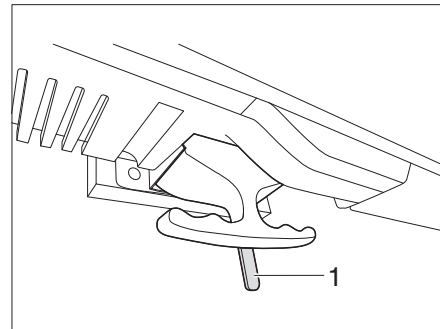


Fig. 142 Flat screen unlocking

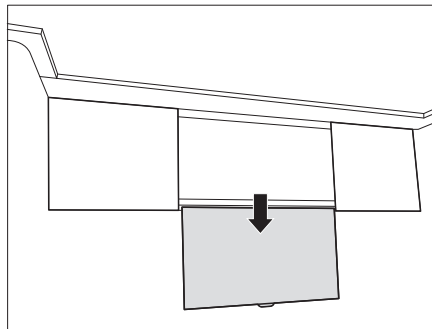


Fig. 143 Flat screen in bottom position

Lowering the flat screen

- Push the lever (Fig. 142,1) to the left. The lock is released.
- Pull down the flat screen by the handle (Fig. 143).
- Push the lever (Fig. 142,1) to the middle position. The flat screen is locked.

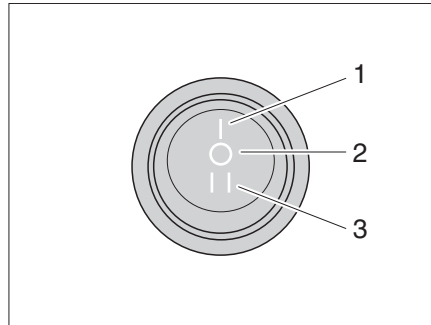
Slide the flat screen upwards

- Push the lever (Fig. 142,1) to the left. The lock is released.
- Push up the flat screen by the handle.
- Push the lever (Fig. 142,1) to the middle position. The flat screen is locked.

7.11 Radio in driver's cabin

The radio is switched on together with the engine ignition if the switch is set to Position 1 (Fig. 144,1). Current is supplied to it by the starter battery.

If you wish to run the radio while the engine is switched off, you have to set the switch to Position 3 (Fig. 144,3) continuous current.



- 1 Position 1 - Power supply by starter battery
- 2 Position 0 - Off
- 3 Position 3 - Power supply by body battery

Fig. 144 Power supply switch

7.12 Making phone calls using the hands-free system



- ▷ In Fiat-based vehicles, the front buttons on the steering wheel are not assigned to telephone functions.

The rear steering wheel buttons are configured for telephone functions (voice control/answering and hanging up calls).

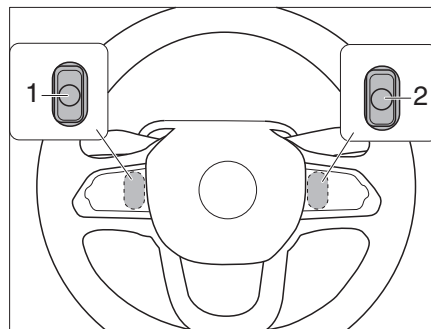


Fig. 145 Assignment of the rear steering wheel buttons (Fiat model)

Pos.	Buttons on the rear steering wheel	Function
1	left	Voice control
2	right	Answer and hang up calls

7.13 Lamps



- ▶ Bulbs and light fittings can be extremely hot.
- ▶ Let the bulbs and lamp holders cool down before touching them.
- ▶ When the light is switched on or is still hot, a safety distance of at least 30 cm to combustible material such as net curtains or curtains has to be maintained. Fire hazard!

Depending on the model the lights are equipped with halogen, fluorescents or LED lamps. For information about replacing the lamps and, if appropriate, the batteries see chapter 13.

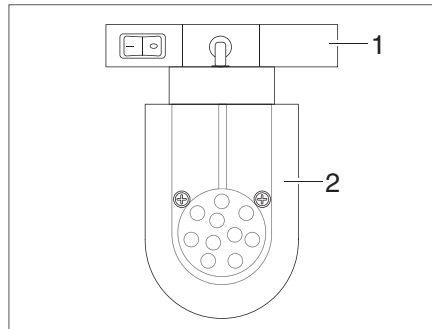


Fig. 146 LED spot light (example)

Moving the LED spotlight:

- Grasp the holder (Fig. 146,1) and turn it 90°.
- Remove the LED spotlight (Fig. 146,2) from the rail system.
- Insert the LED spotlight (Fig. 146,2) into the rail system at the desired position and turn 90°.

7.14 Light switch



- ▶ The light switches have different layouts according to the model. The light switches are located either directly on the corresponding lamp or next to the lamp, e.g. in the vicinity of the seating group.

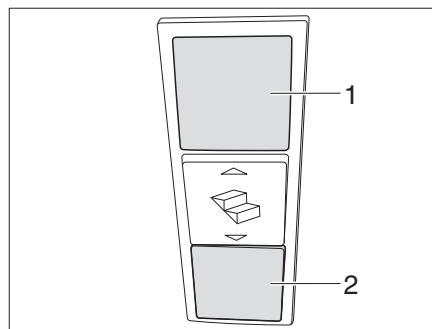


Fig. 147 Light switch

Depending on the model, the light switch for the entrance lighting (Fig. 147,1) and the exterior lighting (Fig. 147,2) is located in the entrance area.

7.15 Extending the seating group

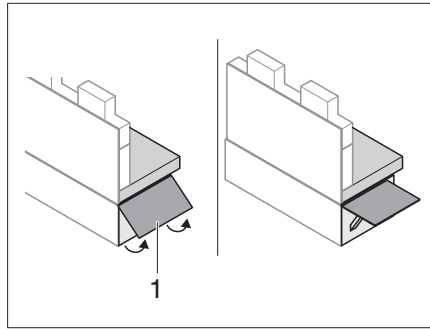


Fig. 148 Folding out bench seat extension

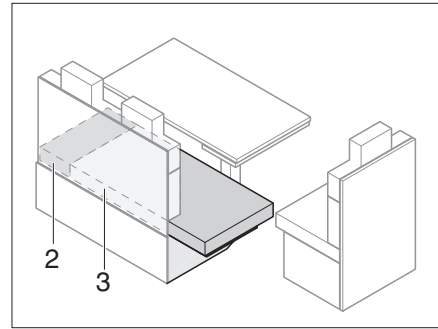


Fig. 149 After extending

Extending the seating group:

- Fold up bench seat extension (Fig. 148,1).
- Pull the seat cushions (Fig. 149,3) onto the bench seat extension.
- Lay the additional cushions (Fig. 149,2) between the seat cushions (Fig. 149,3) and the exterior wall.
- Extending the table (see Section 7.8).

Reducing seating group:

- Reducing the table (see Section 7.9).
- Remove the additional cushion (Fig. 149,2).
- Pull the seat cushions (Fig. 149,3) onto the bench seat..
- Slide in the release button and fold in the bench seat extension (Fig. 148,1).

7.16 Beds



- ▶ The maximum permitted pull-down bed load amounts to 200 kg.
- ▶ The pull-down bed is not to be used for the storage of luggage. When the bed is not being used, only place the bed linen which is required for two persons in it.
- ▶ Only use the pull-down bed if it is moved all the way down and the safety net is in position.
- ▶ After the pull-down bed has reached its position, be sure to remove the key from the operating panel.
- ▶ Ensure that no-one is on or under the pull-down bed when the pull-down bed is being moved.
- ▶ Ensure that the pull-down bed is only handled by adults or responsible persons.
- ▶ Use the pull-down bed only when the vehicle is at a standstill.
- ▶ Proceed with extreme caution when using the pull-down bed.
- ▶ Ensure that no children are within the operating range of the pull-down bed.
- ▶ Never allow small children to remain in the pull-down bed without supervision.
- ▶ Take particular care at small children of less than six years of age that they cannot fall out of the pull-down bed.
- ▶ Use separate children's beds or travel cots suitable for children.
- ▶ Make sure that the fall protection bar is mounted in front of the window (see chapter 7.5.14).
- ▶ Switch off the reading lamps on the underside of the pull-down bed when the bed is lowered. Fire hazard!
- ▶ Switch off the reading lamps in the pull-down bed before the bed is pushed up. Fire hazard!

7.16.1 Vertically adjustable queen-sized bed



- Before using the bed check whether the locking lever is located in the secured position (Fig. 153).

A storage compartment is underneath the bed. The height of the queen-sized bed can be adjusted in order to store and remove objects from the storage compartment.

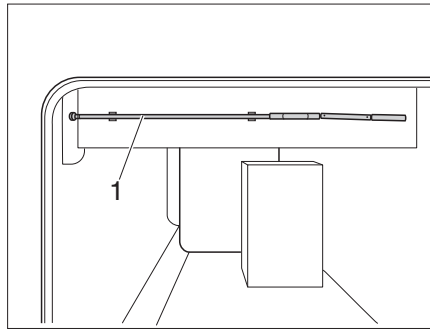


Fig. 150 Crank for height adjustment

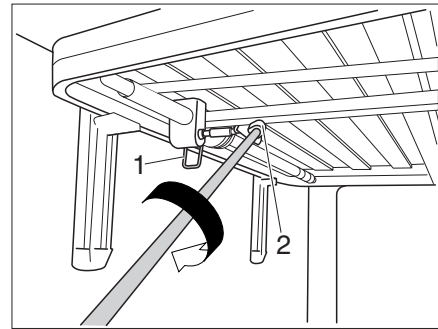


Fig. 151 Height adjustment

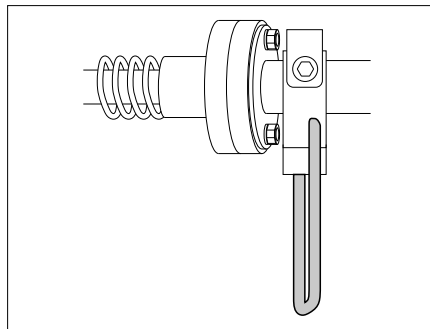


Fig. 152 Locking lever in the released position

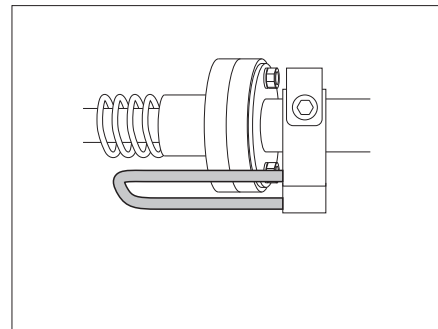


Fig. 153 Locking lever in the secured position

Adjusting the bed height:

- Remove the crank (Fig. 150,1) from the holder.
- Loosen the locking lever (Fig. 151,1). The bed can now be adjusted.
- Slide the crank into the magnetic square recess (Fig. 151,2). The height of the bed can now be changed.

Securing the bed:

- Pull the crank out of the square recess (Fig. 151,2) and keep it in the holder.
- Set the locking lever to the secured position (Fig. 153).

Adjusting the height of the queen-sized bed (new design)

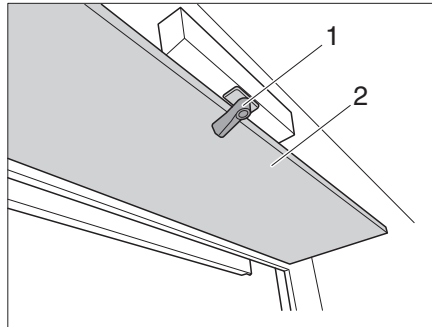


Fig. 154 Flap for the crank

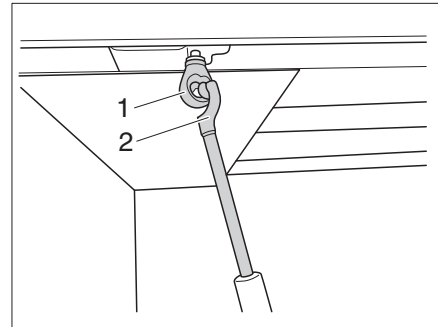


Fig. 155 Height adjustment

Adjusting the bed height:

- Release the locking mechanism (Fig. 154,1) and fold the flap (Fig. 154,2) downwards.
The crank for adjusting the height is located behind the flap.
- Remove the crank from the holder.
- Insert the crank (Fig. 155,2) into the height adjustment lug (Fig. 155,1).
- Turn the crank until the desired bed height has been reached.

7.16.2 Overcab bed



- ▶ The maximum permitted overcab bed load is 200 kg.
- ▶ Only use the overcab bed, if the safety net is set up.
- ▶ Never allow small children to remain in the overcab bed without supervision.
- ▶ But in particular with regard to small children less than 6 years of age, users should ensure that they cannot fall out of the overcab bed.
- ▶ Use separate children's beds or travel cots suitable for children.



- ▷ Do not load the overcab bed without mattress. The plastic mould part can break!

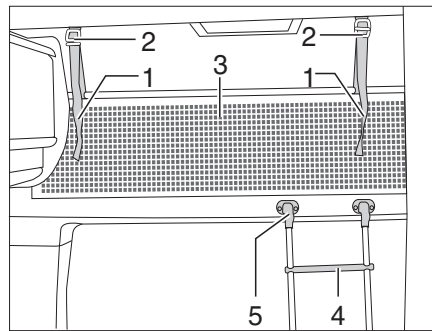


Fig. 156 Overcab bed

Access ladder

Always use the access ladder (Fig. 156,4) provided as standard to access the overcab bed.

Attaching:

- Attach the ladder with the rails to the holder (Fig. 156,5) on the alcove panel.

Safety net

The safety net (Fig. 156,3) is stored as standard between the mattress and slatted frame. Only use the safety net if persons are already in the alcove.

Setting up:

- Fasten the retaining straps (Fig. 156,1) to the holders on the ceiling (Fig. 156,2).

Folding mechanism

Depending on the model, the overcab bed can be folded upwards. This simplifies passage from driver's cabin to living area.

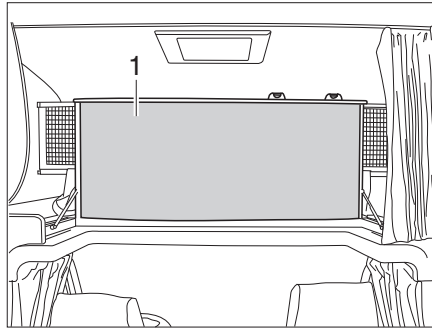


Fig. 157 Overcab bed, folded upwards

Folding upwards:

- If appropriate, open the driver's cabin partition (see section 7.3).
- Lift the mattress forwards and set it down on the panel.
- Fold the front of the overcab bed (Fig. 157,1) upwards. The overcab bed is kept in the upper position by gas-pressure springs.

Folding downwards:

- Pull overcab bed downwards.
- If necessary, push the mattress behind the panel.

7.16.3 Pull-down bed (model I)

- ▶ Before commencing the journey, secure the pull-down bed to the roof with the retaining belt. Tighten the retaining belt firmly.
- ▶ Depending on the seat model, the backrest is under strong spring tension. If there is no resistance to the backrest in these seats, it quickly moves forward after unlocking.
- ▶ Only move the pull-down bed if there are no loads or persons on it.
- ▶ If a skylight is installed over the pull-down bed, do not close the shade while the pull-down bed is in the upper position.



- ▷ When folding up the pull-down bed ensure that the bedding does not press onto the side curtains. This causes the curtains to be clamped in the rods so that they can be damaged or soiled.

Preparing the driver's cabin

Depending on equipment, the driver's and front passenger's seats have to be adjusted in different ways before lowering the pull-down bed.

Variant 1

The seats of the central seating group in opposite direction to the direction of travel are **not** equipped with headrests (**no** safety package).

- Turn the driver's seat and the front passenger's seat to the direction of vehicle travel, lock them in place and move them backwards.
- Fold the backrest back.
- Close the shade in the driver's cabin.

7

Living

Variant 2

The seats of the central seating group in opposite direction to the direction of travel are equipped with headrests (safety package). The headrests on driver's and front passenger's seats can be removed.

- Remove the headrests.
- Turn the driver's seat to the direction of travel, lock it in place and move it backwards.
- Fold the backrest of the passenger's seat back.
- Push the front passenger's seat forwards and fold the backrest back completely.
- Turn the front passenger's seat in the opposite direction to the direction of travel, so that the pull-down bed can be lowered.
- Close the shade in the driver's cabin.

Variant 3

The seats of the central seating group in opposite direction to the direction of travel are equipped with headrests (safety package). The headrests on driver's and front passenger's seats can **not** be removed.

- Push the driver's seat and the front passenger's seat forwards and fold the backrest back completely.
- Turn the driver's seat and the front passenger's seat in the opposite direction to the direction of travel, so that the pull-down bed can be lowered completely.
- Close the shade in the driver's cabin.

Variant 4

The rests of the driver's and front passenger's seats must be tipped forwards before the pull-down bed is lowered.

- Turn the driver's and the front passenger's seat to the direction of travel, lock it in place and move them backwards.
- Release the backrest and fold it completely forwards.
- Close the shade in the driver's cabin.

Manual pull-down bed (variant 1)

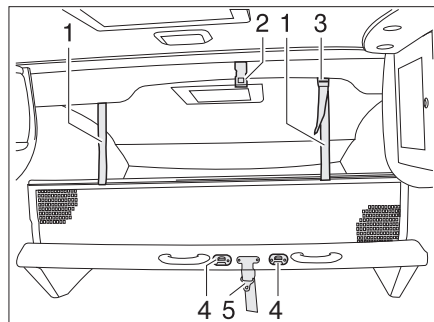


Fig. 158 Manual pull-down bed

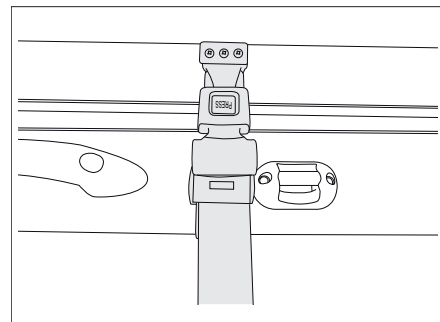


Fig. 159 Manual pull-down bed retaining belt

Lowering the pull-down bed:

- Switch off the reading lamps on the underside of the pull-down bed.
- Open the fastener of the retaining belt.
- Pull the pull-down bed down with both hands.

Folding the pull-down bed up:

- Switch off the reading lamps on the ceiling above the pull-down bed.
- Loosen the retaining straps of the safety net and lay the safety net under the mattress.
- Use both hands to push the pull-down bed upwards.
- Secure the pull-down bed to the roof (Fig. 158,2) by means of the retaining belt (Fig. 158,5).

Access ladder Always use the access ladder provided as standard to access the pull-down bed.

Attaching: ■ Hook the access ladder to the pull-down bed by attaching both brackets into the U-bolts (Fig. 158,4).

Safety net The safety net is stored as standard between the mattress and slatted frame. Only use the safety net if persons are already in the bed.

Setting up: ■ Fasten the retaining straps (Fig. 158,1) to the holders on the ceiling (Fig. 158,2).

Manual pull-down bed (variant 2)

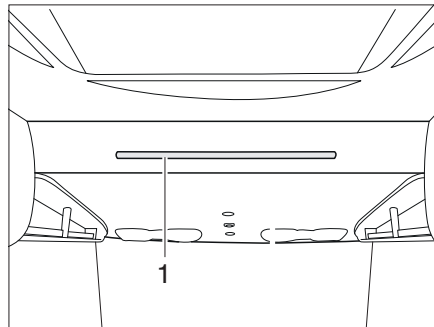


Fig. 160 Manual pull-down bed

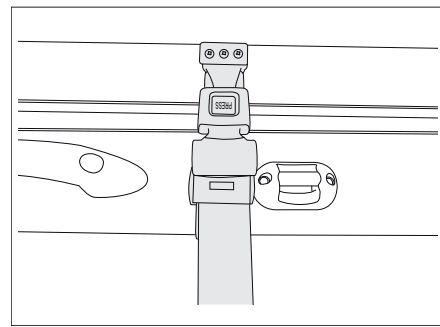


Fig. 161 Manual pull-down bed retaining belt

Lowering the pull-down bed:

- Switch off the reading lamps on the underside of the pull-down bed.
- Open the fastener of the retaining belt.
- Pull the handle lever (Fig. 160,1) downwards in order to unlock the pull-down bed.

Folding the pull-down bed up:

- Switch off the reading lamps on the ceiling above the pull-down bed.
- Loosen the retaining straps of the safety net and lay the safety net under the mattress.
- Use both hands at the bar to push the pull-down bed upwards.
- Secure the pull-down bed to the roof by means of the retaining belt (Fig. 161).

Access ladder Always use the access ladder provided as standard to access the pull-down bed.

Attaching: ■ Hook the access ladder to the pull-down bed by attaching both brackets into the bar (Fig. 160,1).

Safety net The safety net is stored as standard between the mattress and slatted frame. Only use the safety net if persons are already in the alcove.

Setting up: ■ Fasten the retaining straps (Fig. 156,1) to the holders on the ceiling (Fig. 156,2).

Electrical middle pull-down bed (variant 1)



- ▶ After the pull-down bed has reached its position, be sure to remove the key from the operating panel.
- ▶ Ensure that no-one is on or under the pull-down bed when the pull-down bed is being moved.



- ▷ Attach the safety guard.

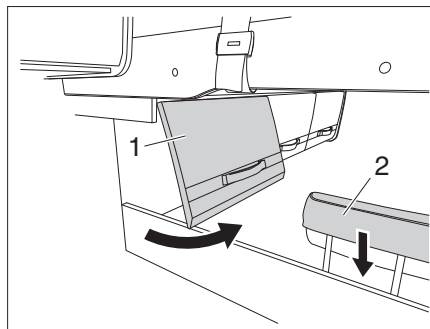


Fig. 162 Storage compartment flap and headrest

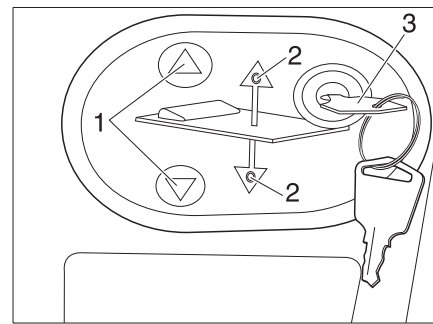


Fig. 163 Operating panel for the electrical pull-down bed

Lowering or lifting the pull-down bed:

- Open the storage compartment flap (Fig. 162,1).
- Lower the headrest (Fig. 162,2).
- Insert the key (Fig. 163,3) into the operating panel.
- Press the  or  (Fig. 163,1) button and keep it pressed. The respective LED (Fig. 163,2) lights up and the pull-down bed moves down or up.
- When the desired position has been reached, release the  or  (Fig. 163,1) button again. The respective LED (Fig. 163,2) extinguishes.
- Remove the key (Fig. 163,3).

Safety net

The safety net is stored as standard between the mattress and slatted frame. Only use the safety net if persons are already in the bed.

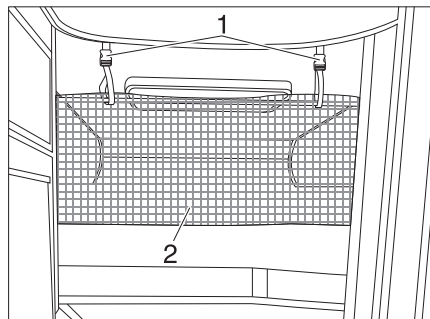


Fig. 164 Safety net

Setting up:

- Fasten the retaining straps (Fig. 164,1) to the holders on the ceiling (Fig. 164,2).

Emergency drive pull-down bed



- In the case of a power failure the electrical pull-down bed can also be moved with an emergency crank (Fig. 165). This is located behind a storage compartment flap.

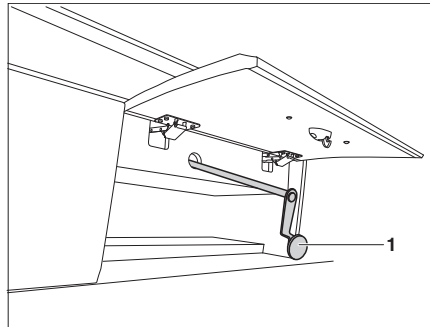


Fig. 165 Emergency operation for the electrical pull-down bed

Electrical middle pull-down bed (variant 2)



- After the pull-down bed has reached its position, be sure to remove the key from the operating panel.
- Ensure that no-one is on or under the pull-down bed when the pull-down bed is being moved.
- The safety net must be installed when the middle pull-down bed is in the middle position.

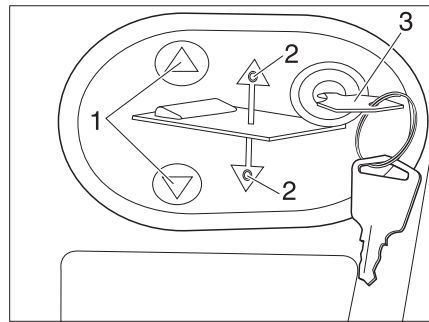


Fig. 166 Operating panel for electrical pull-down bed

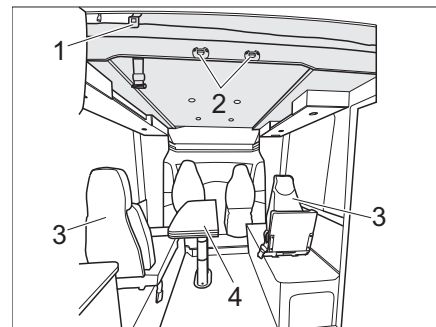


Fig. 167 Electrical pull-down bed (variant 3)

Lowering the pull-down bed into the middle position:

- Loosen the retaining belt.
- Lower the headrest beyond the notch until the back cushion stops.
- Close the cooker cover.
- Insert the key (Fig. 166,3) into the operating panel.
- Press the  (Fig. 166,1) button and keep it pressed. The corresponding LED (Fig. 166,2) will light up and the pull-down bed will lower into the middle position and remain there.

Access ladder

Always use the access ladder provided as standard to access the pull-down bed.

Attaching:

- Hook the access ladder to the pull-down bed by attaching both brackets into the U-bolts (Fig. 167,2).

Safety net

The safety net (Fig. 168,2) is stored as standard between the mattress and slatted frame. Do not use the safety net until the person is already in bed.

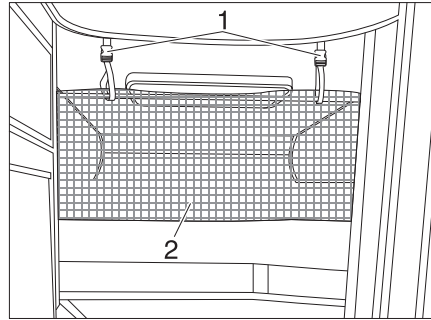


Fig. 168 Safety net

Mounting:

- Fasten the retaining straps (Fig. 168,1) to the holders on the ceiling.

Setting up sleeping areas under the pull-down bed:

Two additional sleeping areas can be set up when the pull-down bed is in the middle position.

- Lower the lowerable 2-legged folding table (Fig. 167,4) (see section 7.8.8).
- Remove 2 individual seats (Fig. 167,3) and stow them.
- Arrange the cushions on the lower sleeping areas.

Lower the pull-down bed as far as it will go:

- Lower the lowerable 2-legged folding table (Fig. 167,4) (see section 7.8.8).
- Remove 2 individual seats (Fig. 167,3) and stow them.
- Move the driver and passenger seats forward if necessary.
- Press the  (Fig. 166,1) button and keep it pressed. The respective LED (Fig. 166,2) lights up and the pull-down bed moves down as far as it will go.

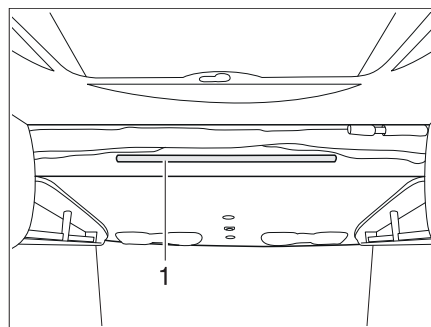
Electrical pull-down bed (variant 1)

Fig. 169 Electrical pull-down bed

Lowering the pull-down bed:

- Switch off the reading lamps on the underside of the pull-down bed.
- The pull-down bed is lowered automatically.

Folding the pull-down bed up:

- Switch off the reading lamps on the ceiling above the pull-down bed.
- Loosen the retaining straps of the safety net and lay the safety net under the mattress.

Access ladder

Always use the access ladder provided as standard to access the pull-down bed.

- Hook the access ladder to the pull-down bed by fitting both brackets into the holding bar (Fig. 169,1).

Safety net

The safety net is stored as standard between the mattress and slatted frame. Only use the safety net if persons are already in the pull-down bed.

Setting up:

- Fasten the retaining straps (Fig. 158,1) to the holders (Fig. 158,3) on the ceiling.

Electrical pull-down bed (variant 2)



- ▶ After the pull-down bed has reached its position, be sure to remove the key from the operating panel.
- ▶ Ensure that no-one is on or under the pull-down bed when the pull-down bed is being moved.



- ▶ Attach the safety guard.

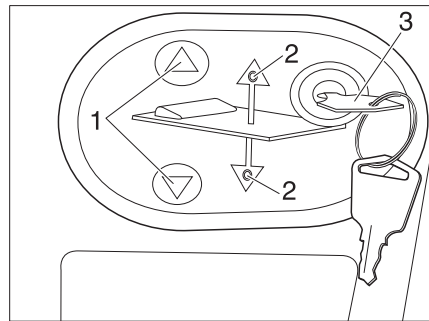


Fig. 170 Operating panel for the electrical pull-down bed

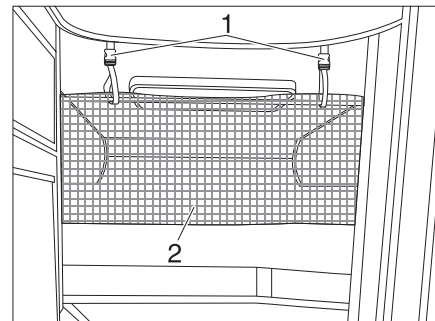


Fig. 171 Safety net

Lowering or lifting the pull-down bed:

- Insert the key (Fig. 170, 3) into the operating panel (Fig. 170, 2).
- Press the ▼ or ▲ (Fig. 170, 1) button and keep it pressed. The respective LED (Fig. 170, 2) lights up and the pull-down bed moves down or up.
- When the desired position has been reached, release the ▼ or ▲ (Fig. 170, 1) button again. The respective LED (Fig. 170, 2) extinguishes.
- Remove the key (Fig. 170, 3).

Safety net

The safety net (Fig. 171, 2) is stored as standard between the mattress and slatted frame. Do not use the safety net until the person is already in bed.

Setting up:

- Fasten the retaining straps (Fig. 171, 1) to the holders on the ceiling.

Emergency drive pull-down bed



- ▷ In the case of a power failure the electrical pull-down bed can also be moved with an emergency crank (Fig. 172). This is located in the kitchenette.

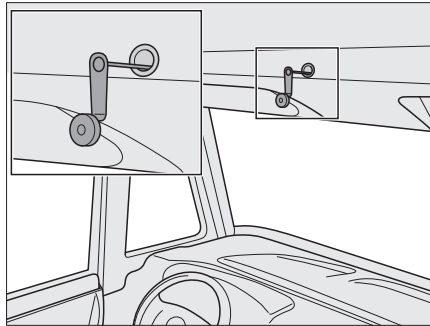


Fig. 172 Emergency operation for the electrical pull-down bed

7.16.4 Pull-down bed (model T)



- ▶ Before commencing the journey, secure the pull-down bed. Lock the pull-down bed to this purpose.
- ▶ If a skylight is installed over the pull-down bed, do not close the shade while the pull-down bed is in the upper position.



- ▷ When folding up the pull-down bed ensure that the bedding does not press onto the side curtains. This causes the curtains to be clamped in the rods so that they can be damaged or soiled.

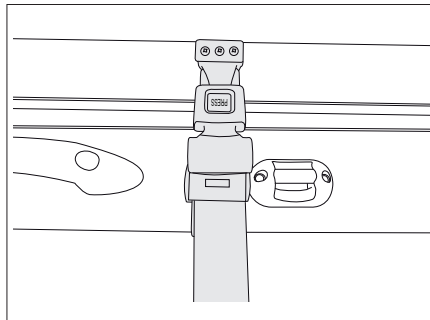


Fig. 173 Safety belt

The pull-down bed is located above the front seating group.

Opening the pull-down bed:

- Switch off the reading lamps on the underside of the pull-down bed.
- Loosen the retaining belt (Fig. 173).
- With both hands, pull the pull-down bed down as far as it will go.

Closing the pull-down bed:

- Switch off the reading lamps in the pull-down bed.
- Loosen the retaining straps of the safety net and lay the safety net under the mattress.
- Use both hands to push the pull-down bed upwards as far as it will go.
- Attach the retaining belt (Fig. 173).

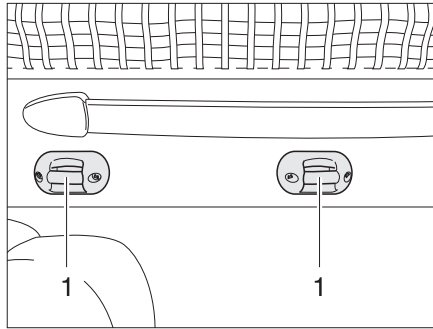


Fig. 174 Access ladder holder

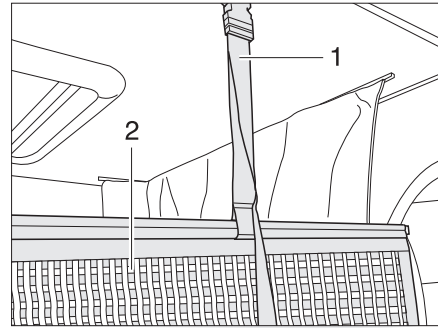


Fig. 175 Safety net holder

Access ladder Always use the access ladder provided as standard to access the pull-down bed.

- Hook the access ladder to the pull-down bed by attaching both brackets into the U-bolts (Fig. 174,1).

Safety net The safety net (Fig. 175,2) with the retaining straps is stowed under the mattress. Only use the safety net if persons are already in the pull-down bed.

Tensioning: ■ Fasten the retaining straps (Fig. 175,1) to the holders on the ceiling.

7.16.5 Bunk bed



- ▶ The maximum permitted bunk bed load is 100 kg.
- ▶ Only use the bunk bed, if the safety net is set up.
- ▶ Never allow small children to remain in the bunk bed without supervision.
- ▶ But in particular with regard to small children less than 6 years of age, users should ensure that they cannot fall out of the bunk bed.
- ▶ Use separate children's beds or travel cots suitable for children.

Depending on the model, the rear area is fitted with a bunk bed. The bunk bed can also be used as a rear garage.

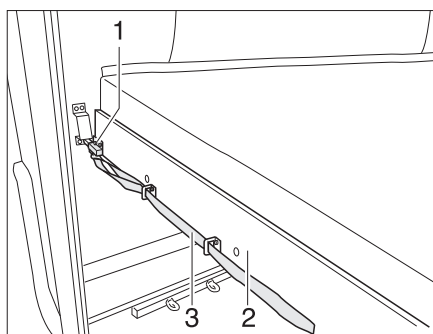


Fig. 176 Bunk bed (rear)

Converting the bunk bed into the rear garage:

- Pull on the loop (Fig. 176,3) and release the latch (Fig. 176,1).
- Pull the slatted frame (Fig. 176,2) together with the mattress forward until it latches in place.

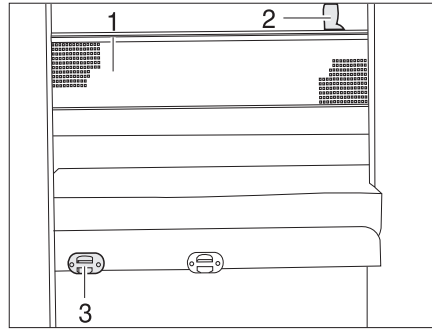


Fig. 177 Safety net

Access ladder Always use the access ladder provided as standard to reach the top bed.

Attaching: ■ Attach the access ladder with the rails to the holder (Fig. 177,3) on the panel.

Safety net The safety net (Fig. 177,1) is stored as standard between the mattress and slatted frame. Do not use the safety net until the person is already in bed.

Setting up: ■ Fasten the retaining straps (Fig. 177,2) to the holders on the ceiling.

7.16.6 Fixed bed (gas-pressure springs)

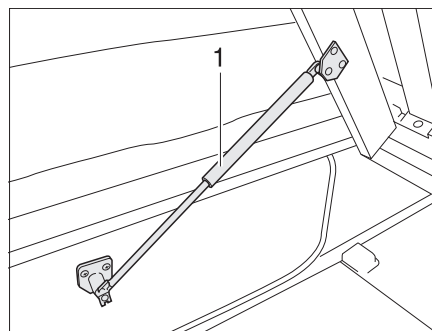


Fig. 178 Fixed bed

A storage compartment is underneath the bed. Lift up the slatted frame to place items in the storage compartment or to empty it from the inside of the vehicle.

Opening: ■ Lift the mattress forwards and set it down on the panel.
 ■ Lift slatted frame. The gas-pressure springs (Fig. 178,1) hold the slatted frame open.

Closing: ■ Press the slatted frame downwards against the resistance of the gas-pressure springs.
 ■ If necessary, push the mattress behind the panel.

7.16.7 Bed conversion of single beds to double bed

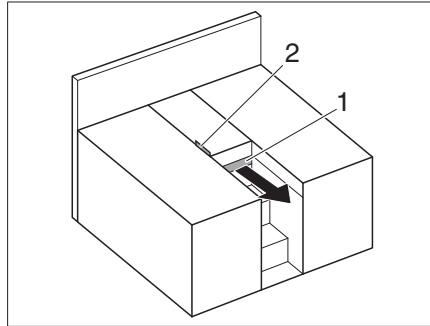


Fig. 179 Single beds

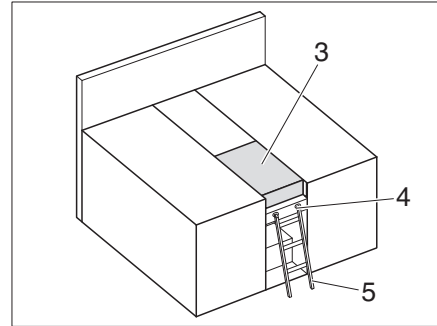


Fig. 180 Double bed

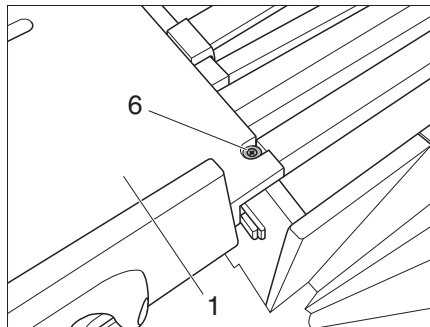


Fig. 181 Locking bolt for the pull out extension

The single beds can be converted to a double bed.

- Detach retaining strap (Fig. 179,2) and pull out extension (Fig. 179,1).
- Secure the pull out extension (Fig. 181,1) in the locking bolt (Fig. 181,6) or use the locking bolt (Fig. 181,6) as a stop for the pull out extension (depending on the floor plan).
- Place additional cushion (Fig. 180,3).

Convert from double bed to single bed

- Remove additional cushion (Fig. 180,3).
- Lift the pull out extension (Fig. 181,1) out of the locking bolt (Fig. 181,6).
- Slide in the pull-out (Fig. 179,1) and attach the retaining strap (Fig. 179,2).

Safety net

The safety net (Fig. 171,2) is stored as standard between the mattress and slatted frame. Do not use the safety net until the person is already in bed.

Setting up:

- Fasten the retaining straps (Fig. 171,1) to the holders on the ceiling.

Access ladder

Always use the access ladder (Fig. 180,5) provided as standard to reach the top bed.

Attaching:

- Attach the access ladder (Fig. 180,5) with the rails to the holder (Fig. 180,4) on the panel.

7.16.8 Bed extensions for queen size beds

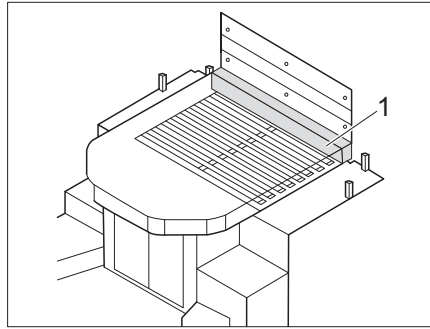


Fig. 182 Bed extension - variant 1

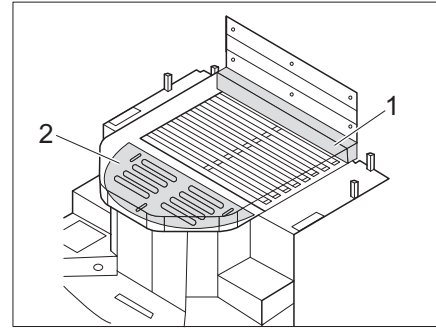


Fig. 183 Bed with mattress extension (with additional mattress and pull-out base)

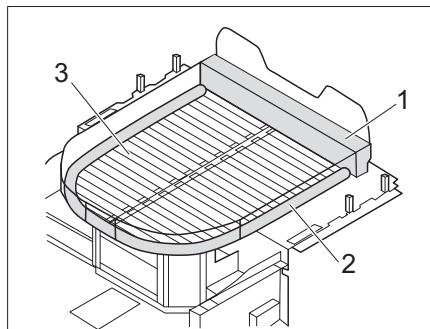


Fig. 184 Bed with mattress extension (with additional mattress and bed slats)

The queen bed can be extended with additional mattresses and other extensions.

Mattress extension with additional mattress (variant 1):

- Place additional mattress (Fig. 182,1) on the front side of the queen bed.

Bed extension with additional mattress and pull-out base (variant 2):

- Place additional mattress (Fig. 183,1) on the front side of the queen bed.
- Pull out the pull-out base (Fig. 183,2).

Bed mattress extension with additional mattress and bed slats (variant 3):

- Place the additional mattresses (Fig. 184,1 and 2) on the front side and around the queen size bed.
- Pull out the bed slats (Fig. 184,3).

7.17 Converting seating groups for sleeping



- In the event of an accident, emergency braking or on uneven road surfaces, additional cushions with reinforced undersides can be thrown through the vehicle and injure vehicle passengers. Before starting the journey, stow the additional cushions safely away or secure them with the straps provided.



- Depending on the model, the seating group can be slightly different in shape and position to the one shown here.
- Depending on the model, an enclosed additional cushion must be inserted between the seat cushions.

7.17.1 Converting the front bench seat with lengthwise seat

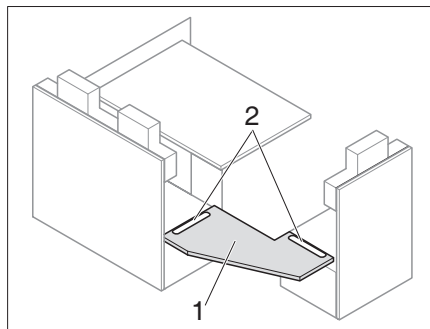


Fig. 185 Inserting the reinforcement panel

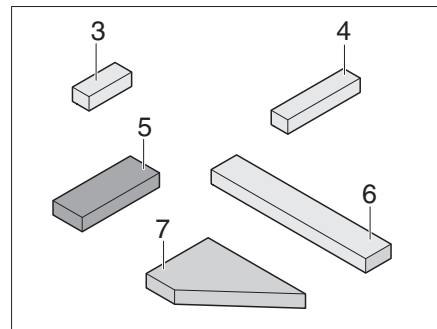


Fig. 186 Additional cushion

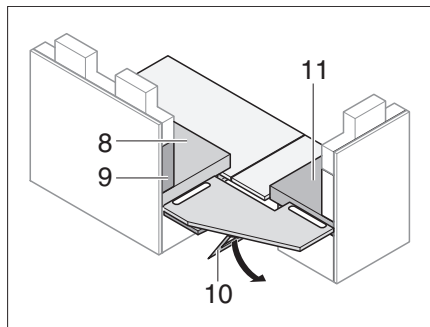


Fig. 187 Supporting reinforcement panel

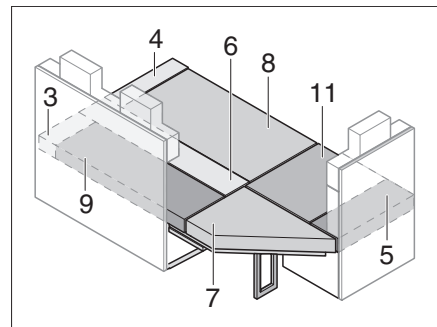


Fig. 188 After conversion

- Extend the table and convert it into a bed foundation (see Section 7.8).
- Insert the reinforcement panel (Fig. 185,1) into the grooves (Fig. 185,2).
- Fold out the support (Fig. 187,10) under the reinforcement panel (Fig. 185,1).
- Lay on the seat, backrest and additional cushions as shown in Fig. 188 (the item numbers refer to Fig. 186 and Fig. 187).

7.17.2 Converting the front bench seat to a guest bed (table free-standing)

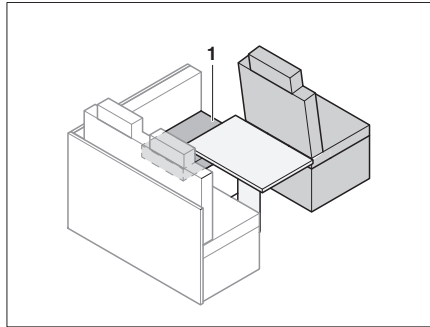


Fig. 189 Prior to conversion

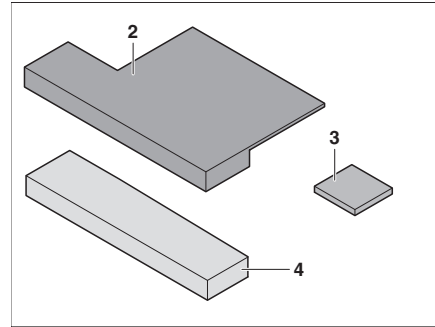


Fig. 190 Additional cushion

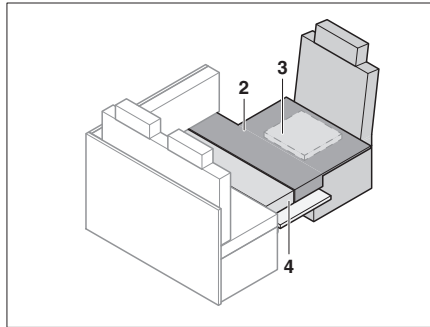


Fig. 191 After conversion

- Turn the driver's seat (by 180° to the seating group backwards) and slide it completely forwards.
- Convert the table into a bed foundation (see section 7.8).
- Lay the seat cushion (Fig. 189,1) to the side.
- If available, attach the seat wedge (Fig. 190,3) to the additional cushion (Fig. 190,2) (with hook and loop fastener).
- Lay on the additional cushion as shown in Fig. 191.
- Push back the driver's seat again.

7.17.3 Converting the front bench seat to a guest bed (hooking table)

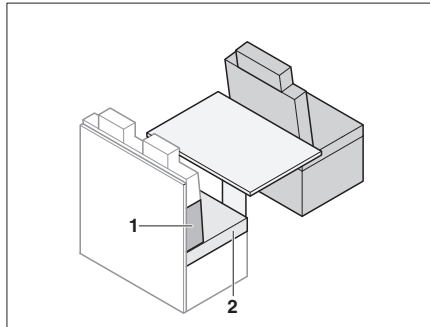


Fig. 192 Prior to conversion

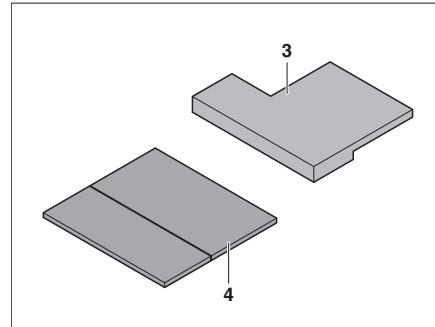


Fig. 193 Additional cushion

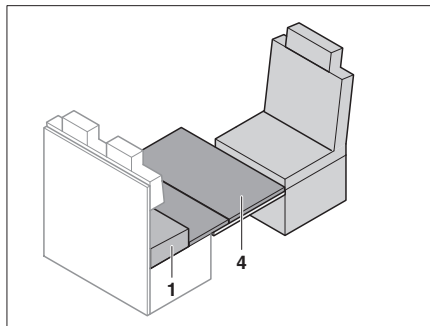


Fig. 194 Laying on the guest bed foundation

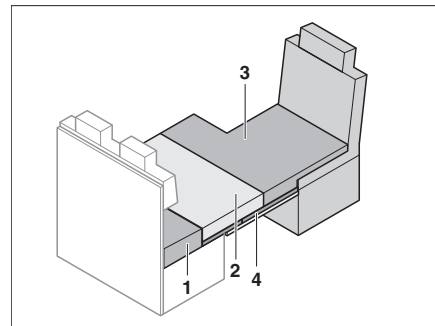


Fig. 195 After conversion

- Turn the driver's seat (by 180° to the seating group backwards) and slide it completely forwards.
- Convert the table into a bed foundation (see section 7.8).
- Remove the seat cushion (Fig. 192,2).
- Lay the guest bed foundation (Fig. 193,4) on the table. Lay the front edge of the guest bed foundation directly against the driver's seat.
- Lay the additional cushion (Fig. 195,3) on the driver's seat.
- Lay the seat cushion (Fig. 195,2) on the guest bed foundation.
- Lay the back cushion (Fig. 195,1) between the seat cushion and the rear wall. Observe the wedged form.

7.17.4 Converting the round seating group in the rear area

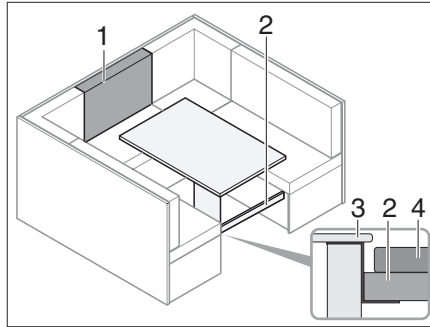


Fig. 196 Prior to conversion

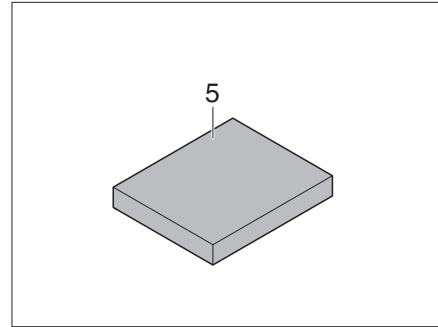


Fig. 197 Additional cushion

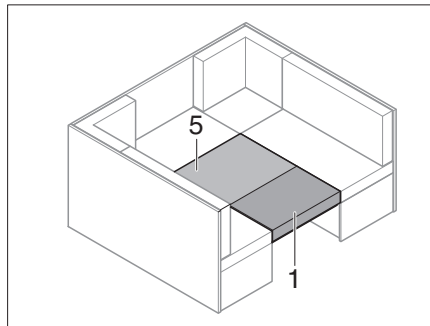


Fig. 198 After conversion

- Convert the table into a bed foundation (see section 7.8).
- Insert the cross brace (Fig. 196,2) under the chest lid (Fig. 196,3).
- Push the cross brace (Fig. 196,2) under the table, (Fig. 196,4) so that it is supported.
- Place the additional cushion (Fig. 197,5) in the middle of the table.
- Lay the back cushion (Fig. 196,1) before the additional cushion on the table.

7.17.5 Converting the facing seating unit with longitudinal bench

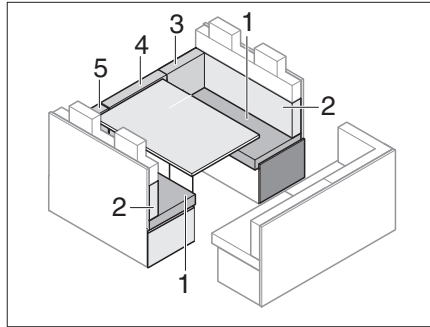


Fig. 199 Prior to conversion

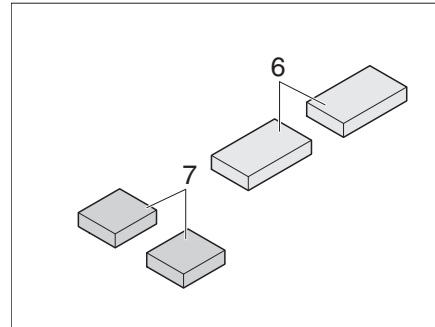


Fig. 200 Additional cushion

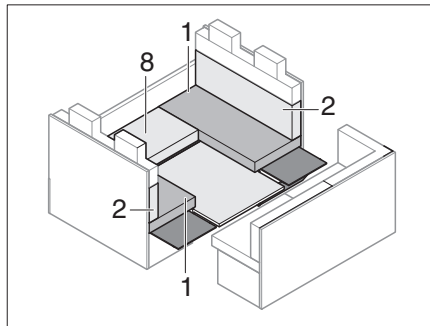


Fig. 201 During conversion

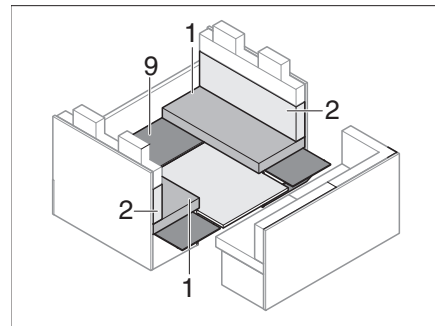


Fig. 202 During conversion

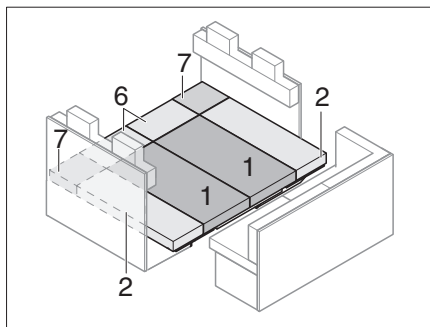


Fig. 203 After conversion

- Remove the back cushions (Fig. 199,3,4 and 5) and lay them aside.
- Fold out the bench seat extensions (Fig. 185).
- Convert the table into a bed foundation (see section 7.8).
- Remove the seat cushion (Fig. 201,8) and the base.
- Slide the converted table between the benches.
- Lay the base (Fig. 202,9) back on.
- Lay on the seat, backrest and additional cushions as shown in Fig. 203.

7.17.6 Conversion of facing seating unit with longitudinal bench

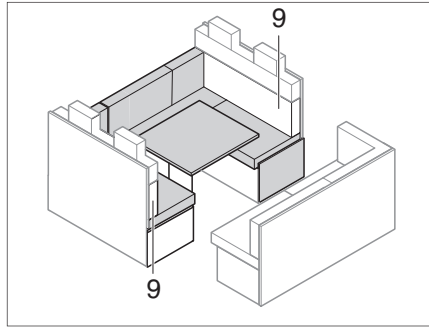


Fig. 204 Prior to conversion

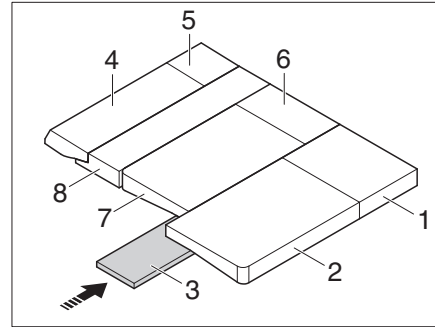


Fig. 205 Additional cushion

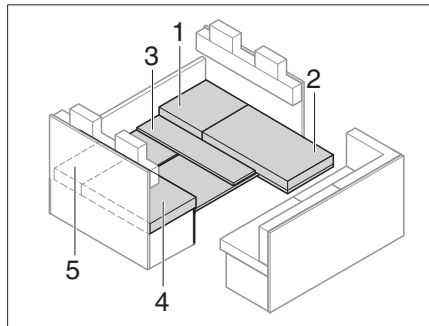


Fig. 206 During conversion

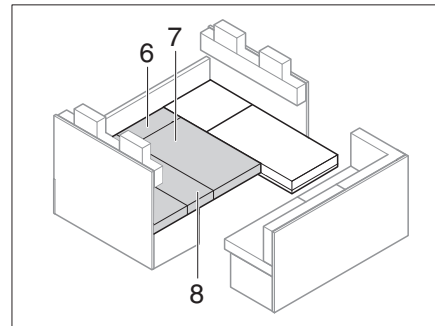


Fig. 207 After conversion

- Remove back padding (Fig. 204,9) and put to one side.
- Convert the table into a bed foundation (see section 7.8).
- Position the seat, back and additional upholstery as shown in Fig. 203 to Fig. 207.

7.17.7 Converting the facing seating unit with longitudinal bench (with/without ISOFIX)

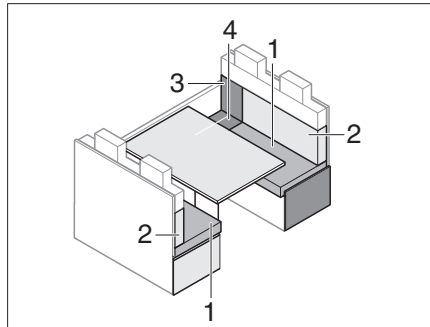


Fig. 208 Prior to conversion

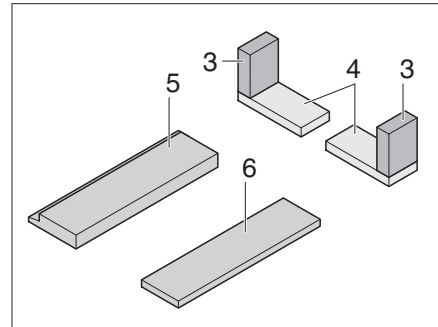


Fig. 209 Additional cushion

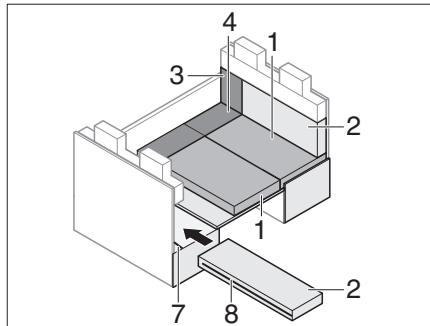


Fig. 210 During conversion

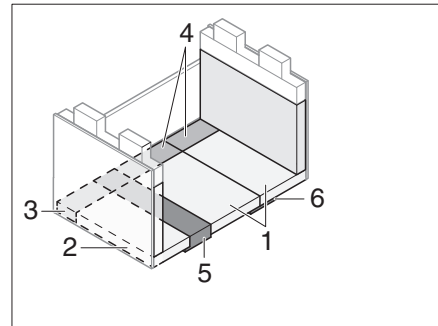


Fig. 211 After conversion

Without ISOFIX:

- Remove the back cushion (Fig. 208,2) and lay it to the side.
- Convert the table into a bed foundation (see section 7.8).
- Slide the converted table between the benches.
- Lay on the seat, backrest and additional cushions as shown in Fig. 211.

With ISOFIX:

- Remove the back cushion (Fig. 208,2) and lay it to the side.
- Convert the table into a bed foundation (see section 7.8).
- Slide the converted table between the benches.
- Open the zip (Fig. 210,8) at the back cushion.
- Put the recess in the back cushion over the ISOFIX traverse (Fig. 210,7).
- Lay on the seat, backrest and additional cushions as shown in Fig. 211.



- ▷ In order to achieve higher resting comfort, the cushion insert can be removed from the back cushion (Fig. 211,2).

7.17.8 Converting single seats from driving into living mode

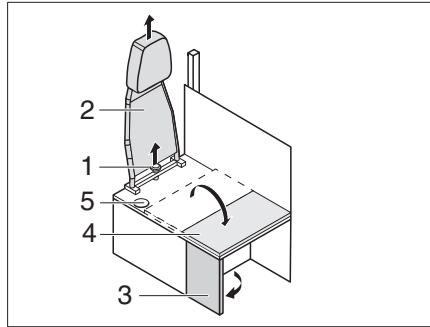


Fig. 212 Conversion drive - living mode

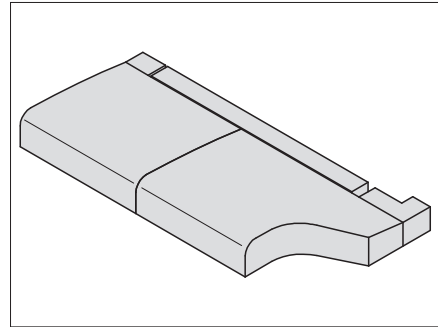


Fig. 213 Positioning seat cushions

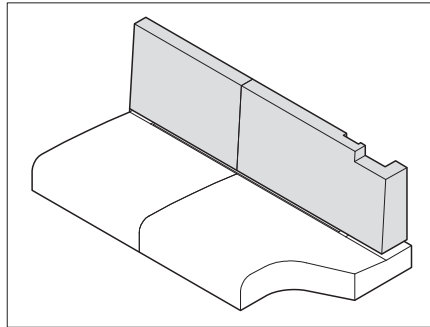


Fig. 214 Positioning back cushions

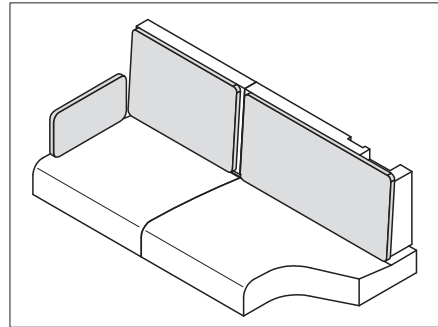


Fig. 215 Cushion for back cushions

- Remove the back cushions and lay them aside.
- Unscrew the star screw (Fig. 212,1) and remove the backrest (Fig. 212,2) towards the top.
- Fold out the side panel (Fig. 212,3).
- Fold the seat bench extension (Fig. 212,4) to the side panel.
- Lay on the seat, backrest and additional cushions as shown in Fig. 213 to Fig. 215.



- ▷ When converting from living to travel mode proceed in the reverse order. Make sure that the safety belt is lead through the opening (Fig. 212,5).

7.17.9 Converting single seats from driving into living mode

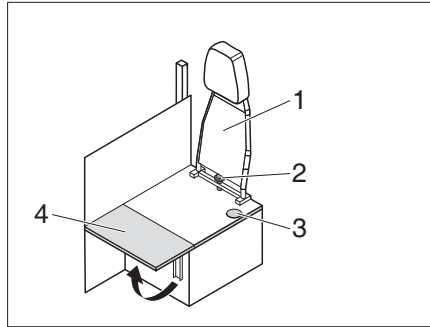


Fig. 216 Conversion drive - living mode

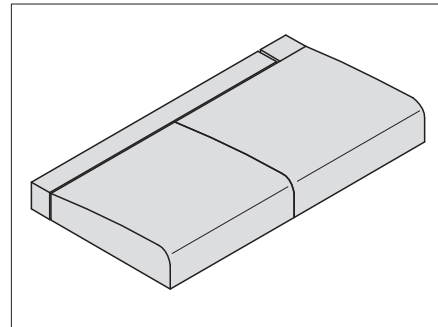


Fig. 217 Positioning seat cushions

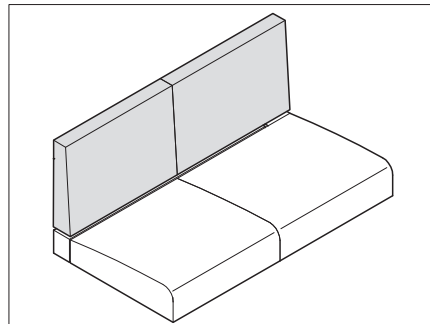


Fig. 218 Positioning back cushions

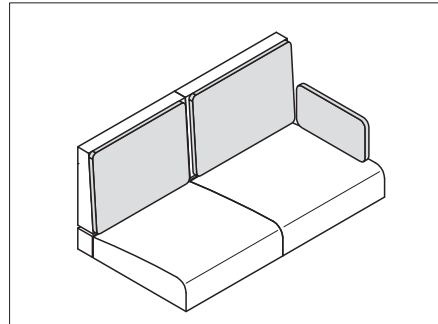


Fig. 219 Cushion for back cushions

- Remove the back cushions and lay them aside.
- Unscrew the star screw (Fig. 216,2) and remove the backrest (Fig. 216,1) towards the top.
- Fold up the bench seat extension (Fig. 216,4).
- Lay on the seat, backrest and additional cushions as shown in Fig. 217 to Fig. 219.



- ▷ When converting from living to travel mode proceed in the reverse order. Make sure that the safety belt is lead through the opening (Fig. 216,3).

7.17.10 Converting individual seats from driving to living areas

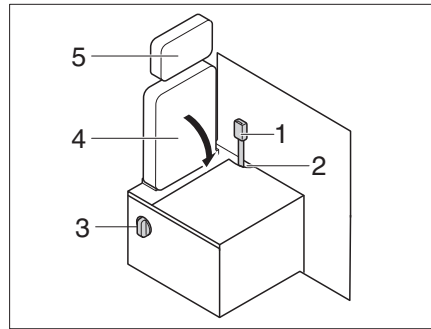


Fig. 220 Driving - living conversion

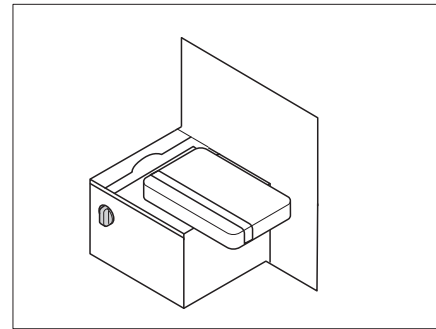


Fig. 221 Backrest folded down

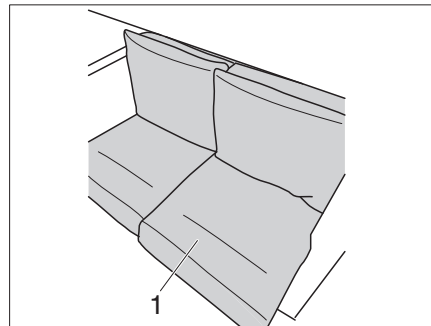


Fig. 222 Put cushion on top



The back of the seat cushion (Fig. 222,1) is reinforced by plastic.

▷ Make sure that the seat cushion with reinforcement is inserted on the right-hand side.

- Remove the back cushions and seat cushions and lay them aside.
- Remove the headrest (Fig. 220,5) (see chapter 5.7).
- Insert the seat belt buckle (Fig. 220,1) into the opening (Fig. 220,2).
- Engage the lever (Fig. 220,3) and fold down the backrest (Fig. 220,4).
- Put the cushion with reinforcement (Fig. 222,1) on top on the right-hand side.
- Put second seat cushion and back cushion on top.



▷ Repeat the process in reverse order to convert the space back from the living to driving setup. Make sure that the seat belt buckle is inserted through the opening (Fig. 220,2).

7.17.11 Converting individual seats from driving to living areas

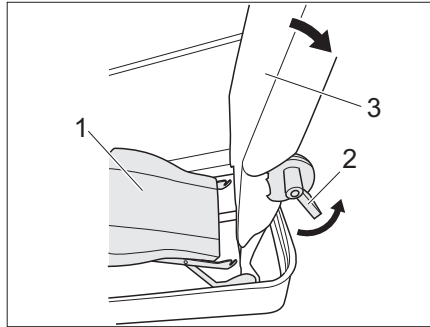


Fig. 223 Unhook the seat

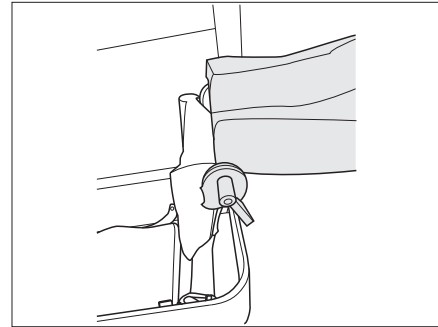


Fig. 224 Turn seat back 90° to the rear

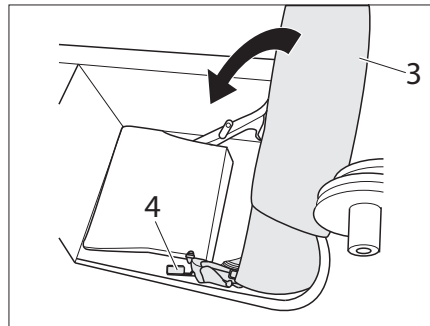


Fig. 225 Move the seat back into the storage box

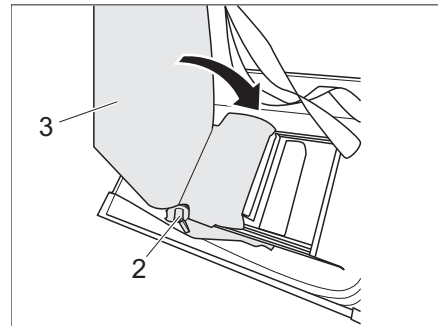


Fig. 226 Stow the seat back in the bench

- Unlock (Fig. 223,1) the seat and move it downwards.
 - Engage lever 1 (Fig. 223,2) and turn the seat back (Fig. 223,3) 90° towards the rear (Fig. 224).
 - Engage lever 2 (Fig. 225,4) and move the seat back (Fig. 225,3) into the storage box.
 - Engage lever 1 (Fig. 226,2) and fold the seat back (Fig. 226,3) inwards.
 - Put on the bench cover and arrange the back cushion and seat cushion.
- ▷ Repeat the process in reverse order to convert the space back from the living to driving setup.



7.17.12 Converting individual seats from driving to sleeping

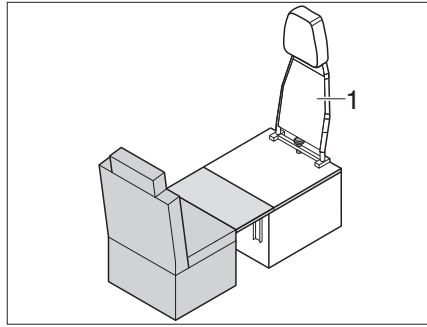


Fig. 227 Driving - sleeping conversion

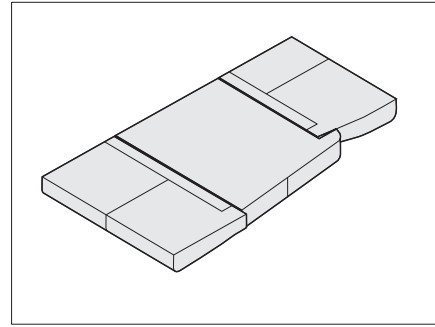


Fig. 228 Additional cushion

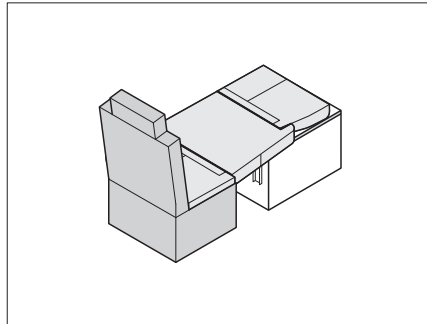


Fig. 229 Positioning the seat cushions

- Lower the table (see chapter 7.8.7).
- Remove the back cushions and seat cushions and lay them aside.
- Remove the backrest (Fig. 227,1) from the individual seat (see Chapter 7.8.7).
- Place the seat and additional cushion onto the lowered table as illustrated in Fig. 229.

7.17.13

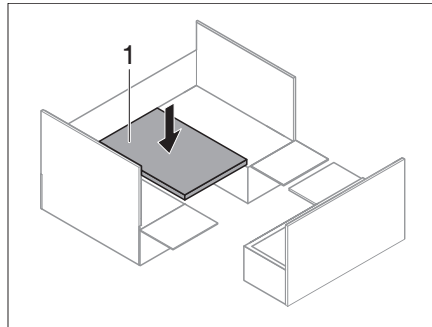
Conversion of facing seating unit with longitudinal bench (with/without Isofix) (Iveco XXL A9000)

Fig. 230 Hanging table down

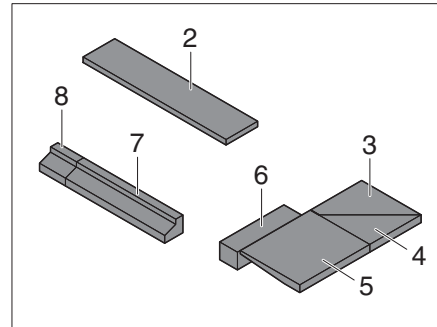


Fig. 231 Additional cushion

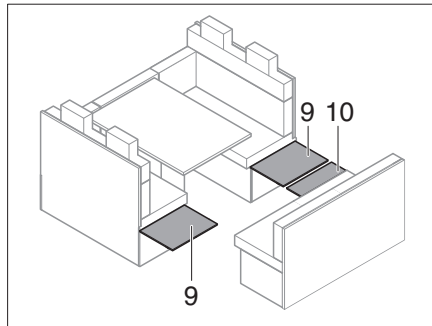


Fig. 232 Fold out the side walls

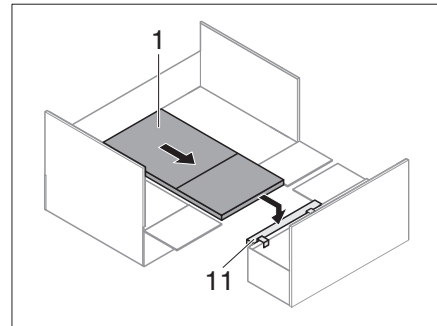


Fig. 233 Table on bed base support

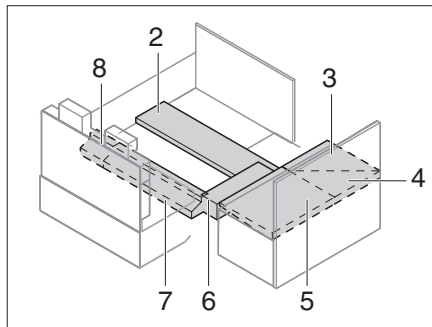


Fig. 234 Positioning the additional cushion

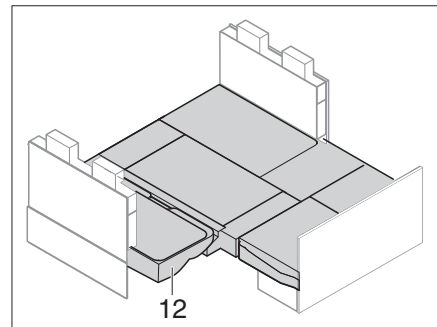


Fig. 235 After conversion

- Remove the seat cushion.
- Lower the table (see chapter 7.8.7).
- Fold out the seat box side walls (Fig. 232,9) and seat box front wall (Fig. 232,10) of the longitudinal bench.
- Hook in the bed base support (Fig. 233,11).
- Pull out the hook-in table (Fig. 233,1) and position it on the hooked-in bed base (Fig. 233,11).
- Position the additional cushion (Fig. 234). The distance results from the insert pads.
- Insert seat cushions and seat extensions. Place the back padding (Fig. 235,12) on the additional padding.

7.18 Bath area

The door of the toilet area (Fig. 236,1) can be locked into a bath area in 1-3 different opening widths depending on the equipment. Depending on the selected opening width, different room segments can be combined with each other.



- ▷ The door of the toilet area (Fig. 236,1) may not be used as a partition during the journey.
Set the door in the basic position (toilet area isolated).

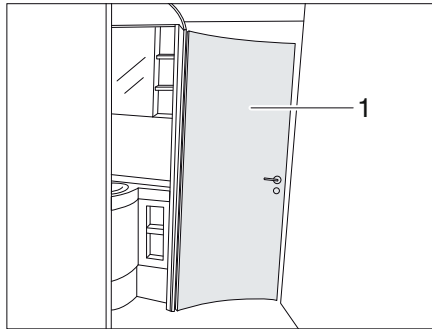


Fig. 236 Bath area

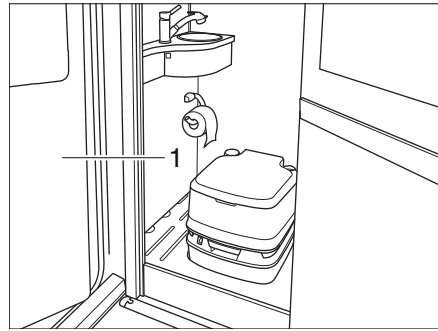


Fig. 237 EVAN bath area

Room division options

The room door allows

- the toilet area to be closed for itself.
- the toilet area and the shower area to be combined.
- the toilet area, the shower area and the wardrobe to be combined.

7.19 Sleeping area partition

The sleeping area in the rear can be partitioned off with a sliding door.



- ▷ Sliding doors can bang shut uncontrolled while travelling. Material damage can occur. Before commencing the journey open the sleeping area partition and secure it with the securing strap.

7.19.1 Sliding door

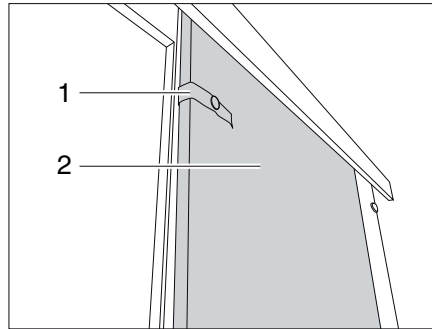


Fig. 238 Sliding door

Closing the sliding door:

- Release the securing strap (Fig. 238,1).
- Pull the sliding door (Fig. 238,2) into the closing position.

Opening the sliding door:

- Push the sliding door (Fig. 238,2) into the open position.
- Secure the sliding door with the securing strap (Fig. 238,1).

Chapter overview

This chapter contains instructions regarding the gas system of the vehicle. The instructions address the following topics:

- safety
- gas consumption
- changing the gas bottles
- gas isolator taps
- hose break guard
- external gas connection
- automatic switching facility

The operation of the gas operation appliances of the vehicle is described in chapter 10.

8.1 General



- ▶ Before starting the journey, when leaving the vehicle or when gas equipment is not in use, close all gas isolator taps and the main isolator tap on the gas bottle.
- ▶ No appliance (e.g. heating or refrigerator) that is operated with an open flame may be operational while fuel is being filled up, on ferries or in the garage. Danger of explosion!
- ▶ If an appliance is operated with an open flame, do not start the appliance up in closed areas (e.g. garages). Danger of poisoning and suffocation!
- ▶ Have the gas system serviced, repaired or altered by an authorised workshop only.
- ▶ Have the gas system checked by an authorised specialist workshop before starting up and according to the national regulations. 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 and the exhaust gas pipes also have to be checked. The gas pressure regulator has to be replaced at least every 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 the regulator tap on the gas bottle immediately. Open doors and windows and ventilate well.
- ▶ In case of a defect in the gas system: Do not smoke; do not ignite any open flames, and do not operate electric switches (light switches etc.).
- ▶ Before using the cooker make sure that there is sufficient ventilation. Open windows or the skylight.
- ▶ Do not use the gas cooker or gas oven 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 installed gas appliances are designed for use solely with propane or butane gas or a mixture of both. The gas pressure regulator as well as all installed gas devices are set 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.

8

Gas system



- ▶ Regularly inspect the gas tube fitted to the gas bottle connection for tightness. The gas tube must not have any tears and must not be porous. Have the gas tube replaced by an authorised specialist workshop no later than 10 years after the manufacturing date. The operator of the gas system must see to it that the parts are replaced.
- ▶ Due to its function and construction, the gas bottle compartment is a space which is open to the exterior. Never cover or block the standard forced ventilation. Otherwise leaking gas cannot be dispersed to the outside.
- ▶ Do not use the gas bottle compartment as storage space. Fire hazard!
- ▶ Secure the gas bottle compartment in order to prevent unauthorised persons opening it. To do so lock the access.
- ▶ The regulator tap on the gas bottle must be accessible.
- ▶ Only connect gas-operated devices (e.g. gas grill) 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. Therefore keep the waste gas vents and intake openings clean and free (e.g. of snow and ice). No snow walls or aprons may be allowed to lie against the vehicle.

8.2 Gas bottles



- ▶ 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.
- ▶ 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.
- ▶ The gas pressure regulator or the gas tube must only be secured with a suitable gas spanner (Do **not** overtighten).
- ▶ 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. Camping gas bottles with built-in check valve (blue bottle with max. 2.5 or 3 kg content) are can be used in exceptional cases with a safety valve.
- ▶ Use the shortest possible tube lengths (150 cm max.) for external gas bottles.
- ▶ Never block the floor ventilation openings below the gas bottles.



- ▶ With some models, the gas bottle compartment is located right next to the conversion door. With these models, only open the gas bottle compartment when the conversion door is closed. Danger from damages.

8

Gas system



- ▷ Screwed connections on the gas pressure regulator have left-handed threads.
- ▷ 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 connecting the gas bottles in Europe the accessories shops have corresponding Euro bottle sets.
- ▷ Information is available at the dealers and service centres.
- ▷ For information on the gas supply in Europe see chapter 18.

8.3 Gas consumption



- ▷ The data about gas consumption of the individual gas devices is standard average values.

Appliances	Gas consumption in grams/hour
Heater	Approx. 170 - 490 g/h
Cooker, per cooker	Approx. 140 - 165 g/h
Refrigerator	Approx. 18 g/h

Example

A full 11 kg gas bottle is sufficient to:

- Cook for 3 days using one flame,
- Heat for 22 hours on full output or
- Cool for 25 days.

8

Gas system

8.4 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.

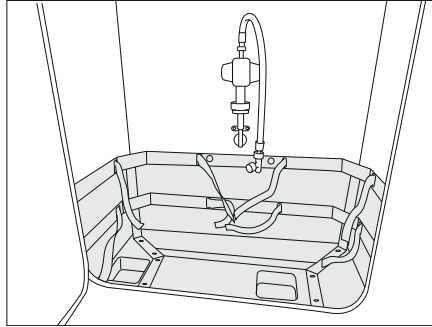


Fig. 239 Gas bottle compartment

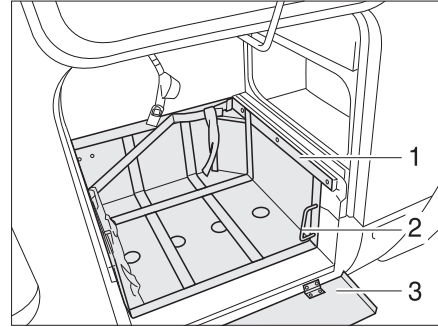


Fig. 240 Gas bottle compartment with extendable slide

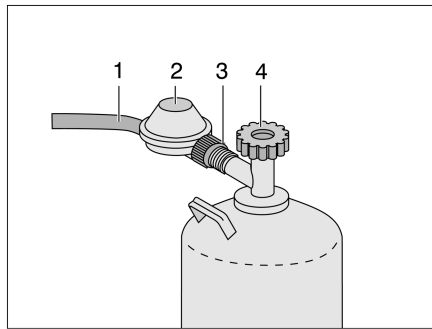


Fig. 241 Gas bottle connection

Depending on the model, the gas bottle holder can be pulled out of the gas bottle compartment:

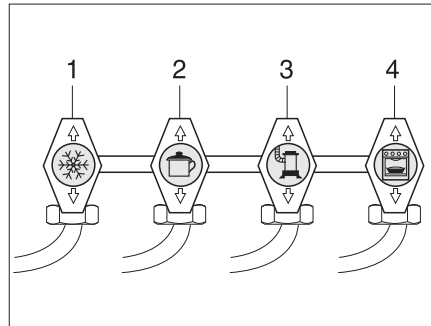
- Open external gas bottle compartment.
- If there is a guard plate (Fig. 240,3), fold it down.
- Unlock the slide (Fig. 240,1) using the handle (Fig. 240,2).
- Pull out the slide (Fig. 240,3) as far as possible.
- Turn back the handle (Fig. 240,2).
- Close the regulator tap (Fig. 241,4) on the gas bottle. Pay attention to the direction of the arrow.
- Hold the gas pressure regulator (Fig. 241,2) and open the knurled nut (Fig. 241,3) (left-handed thread).
- Remove the gas pressure regulator and the gas tube (Fig. 241,1) from the gas bottle.
- Release the fixing belts and remove the gas bottle.
- Remove the protective cap from the full gas bottle and place it on the empty gas bottle.
- Place a filled gas bottle in the gas bottle compartment.
- Fix gas bottle in place with the fixing belts.

8

Gas system

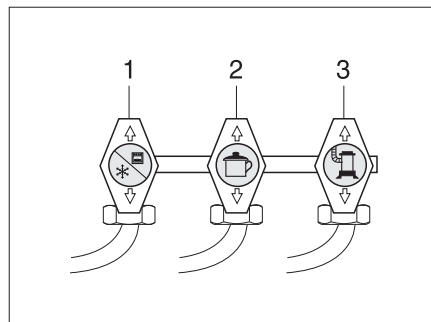
- Position the gas pressure regulator (Fig. 241,2) and the gas tube (Fig. 241,1) on the gas bottle and tighten the knurled nut (Fig. 241,3) by hand (left-handed thread).
- Unlock the slide (Fig. 240,3) using the handle (Fig. 240,2).
- Push in the slide (Fig. 240,3) as far as possible, and turn back the handle (Fig. 239,2).
- If there is a guard plate (Fig. 240,1), fold it up.
- Close the external flap (see section 7.2).

8.5 Gas isolator taps



- 1 Refrigerator
- 2 Cooker
- 3 Heater/boiler
- 4 Oven

Fig. 242 Symbols for the gas isolator taps



- 1 Refrigerator/oven
- 2 Cooker
- 3 Heater/boiler

Fig. 243 Symbols for the gas isolator taps, alternative

A gas isolator tap (Fig. 242) for every gas device is built into the vehicle. The gas isolator taps can be found on the front of the cooker.

8

Gas system

8.6 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.
- ▶ Do not use the external gas connection to fill gas bottles. Observe the information stickers on the external gas connection.

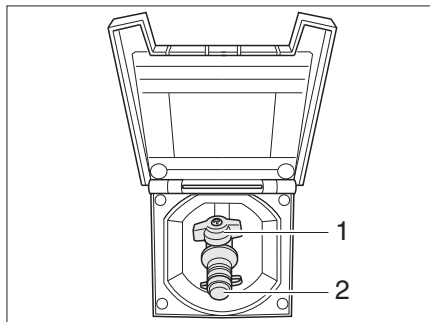


Fig. 244 External gas connection, gas isolator tap closed

The external gas connection (Fig. 244) is located at the right-hand side of the vehicle. In exceptional cases the external gas connection is also located on the left-hand vehicle side or the rear.

- Open the cover for the external gas connection. The cover is magnetically affixed to the outside wall of the vehicle.
- Connect the external gas device to the connection point (Fig. 244,2).
- Open the gas isolator tap (Fig. 244,1).

8

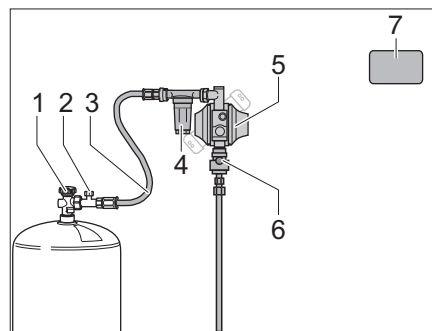
Gas system

8.7 Safety gas pressure control system Caramatic DriveOne



- ▶ Do not use the safety gas pressure control system in enclosed spaces.
- ▶ During the journey the gas system must only be operated with a crash sensor and suitable high-pressure hoses with hose break guard. Danger of explosion.

The Caramatic DriveOne is a safety gas pressure control system for operating LPG-powered gas appliances in caravans and motorhomes. The Caramatic DriveOne safety gas pressure control system is suitable for all commercially available gas cylinders from 3 kg to 33 kg.



- 1 Regulator tap
- 2 Hose rupture protection button
- 3 High-pressure hose
- 4 Gas filter
- 5 Two-stage safety pressure regulator S2SR (ÜDS)
- 6 Release button Crash sensor
- 7 Safety stickers

Fig. 245 Safety gas pressure control system Caramatic DriveOne (vertical version)

Construction of the unit

The Caramatic DriveOne safety gas pressure control system consists of an integrated low-pressure regulator with two-stage safety pressure regulator S2SR (ÜDS) (Fig. 245,5) optionally with visual indicator and a mechanical crash sensor pendulum with operating button.

A gas filter (Fig. 245,4) (optional) can be installed in front of the safety pressure regulator (Fig. 245,5) to protect the gas system from oil contamination and soiling. The main shut-off valve (Fig. 245,1) of the gas cylinder must be opened manually. The release button (Fig. 245,6) of the crash sensor is located below the safety pressure regulator.

Visual display (optional)

The Caramatic DriveOne is optionally equipped with a visual display. After commissioning the pressure regulator, the visual indicator must show GREEN. If the output pressure rises above 80 mbar, the display switches to RED.

Safety pressure regulator S2SR

The two-stage safety pressure regulator S2SR (Safety two Stages Regulator) (Fig. 245,5) is a combination of two pressure regulators connected in series. If one of the two regulator stages fails, e.g. due to dirt or other foreign matter on the valve, the other regulator stage takes over and reduces the pressure to a maximum of 150 mbar.

Commissioning the gas system:

- Open the regulator tap (Fig. 245,1) on the gas bottle.

Switching off:

- Close the main shut-off valve (Fig. 245,1) on the gas cylinder.

Changing gas bottles:



- ▶ When changing gas bottle, do not smoke or light any open flames.



- ▶ Use country-specific connection for gas bottles.



- ▶ To screw and unscrew the high-pressure hose, use the screwing aid provided (Fig. 246,1). It ensures the necessary tightening torque and prevents damage to the screw connection caused by the wrong tool.

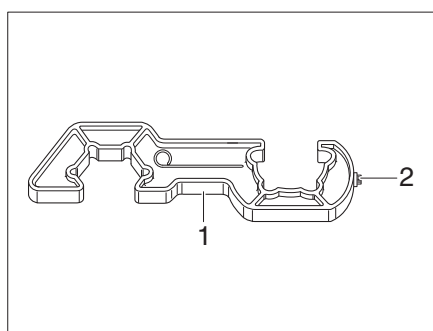


Fig. 246 Screw aid

- Close the main shut-off valve (Fig. 245,1).
- Unscrew the high-pressure hose (Fig. 245,3) from the gas cylinder using the screwing aid (Fig. 246).
- Connect the full gas bottle to the high-pressure hose (Fig. 245,3).
- Open the regulator tap (Fig. 245,1) on the gas bottle.
- Press the button (Fig. 245,2) for the hose break guard at the high-pressure hose to activate it.
- If necessary, press the reset button (Fig. 245,6) on the crash sensor.



- ▶ When using the Caramatic DriveOne safety gas pressure control system, ensure that the gas is drawn off in the direction of travel (see safety sticker (Fig. 245,7) in the gas box).

8

Gas system

Crash sensor

The crash sensor protects against unwanted gas discharge. In the event of an accident or a too high angle of the vehicle the gas supply will automatically be interrupted.



- ▷ Only use the living area heater during the journey if the vehicle is equipped with a crash sensor and suitable high-pressure hoses with hose break guard.

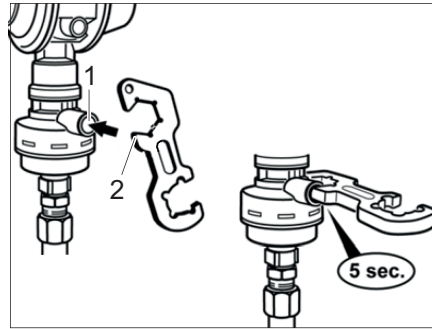


Fig. 247 Crash sensor

If the crash sensor has been triggered, it must be released manually.

Releasing:

- Using the screwing aid (Fig. 247,2) or a similar suitable object, press the release button (Fig. 247,1) and hold it for 5 seconds.

Gas filter

The gas filter (Fig. 248,1) (optional) filters out evaporation residues such as olefins, paraffins and other hydrocarbon compounds from the gas system. The filter cartridge must be checked regularly and replaced at least every 2 years.



- ▷ Pay attention to the operating and installation instructions of the gas filter.

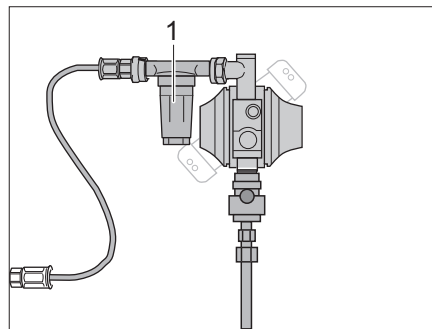


Fig. 248 Gas filter

8

Gas system

Hose break guard



The hose break guard protects against gas escaping in case of a defect or the high-pressure hose tearing off.

- ▷ When laying the high-pressure hose, ensure that the hose rises steadily (Fig. 249).

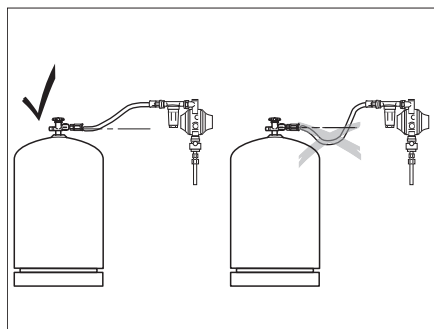


Fig. 249 Laying the high-pressure hose



- ▷ Use a suitable high-pressure hose with hose break guard and country-specific connection for gas bottles.

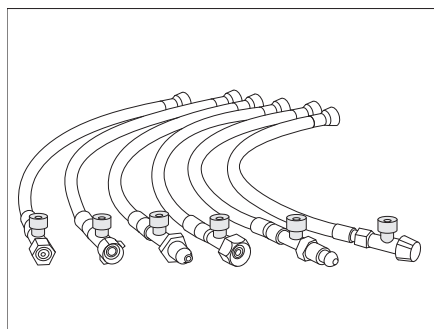


Fig. 250 High-pressure hoses with hose break guard (country-specific variants)

Activating:

- After changing the gas bottle, press the green button (Fig. 245,2) on the high-pressure hose (Fig. 245,3) firmly.

The hose break guard is activated.

8

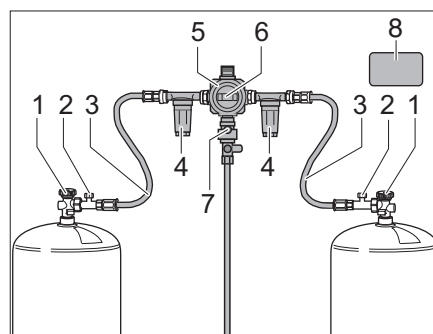
Gas system

8.8 Caramatic DriveTwo switching facility



- ▶ Do not use the switching facility in closed spaces.
- ▶ During the journey the gas system must only be operated with a crash sensor and suitable high-pressure hoses with hose break guard. Danger of explosion.

The Caramatic DriveTwo is an automatic switching facility with remote display (control unit) for a two-cylinder gas system. The switching facility automatically switches the gas supply from the operating cylinder to the reserve cylinder when the operating cylinder is empty or no longer operational. The gas appliances may still continue operation. The Caramatic DriveTwo switching facility is suitable for all commercially available gas cylinders from 3 kg to 33 kg.



- 1 Regulator tap
- 2 Hose rupture protection button
- 3 High-pressure hose
- 4 Gas filter
- 5 Changeover valve
- 6 Rotary knob changeover valve
- 7 Release button Crash sensor
- 8 Safety stickers

Fig. 251 Caramatic DriveTwo switching facility

Construction of the unit

The Caramatic DriveTwo switching facility consists of a switching valve (Fig. 251,5) and the control unit (Fig. 252). The switching valve is mounted between the high-pressure tubes (Fig. 251,3). The rotary knob (Fig. 251,6) on the changeover valve can be used to determine which gas cylinder is used as the operating cylinder and which gas cylinder is used as the reserve cylinder.

The changeover valve (Fig. 251,5) is equipped with the IceEx regulator defrosting system. This prevents damage to the gas system during the winter months.

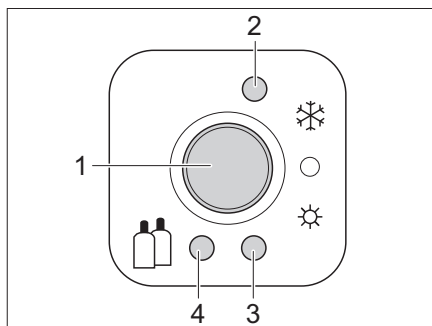
A gas filter (Fig. 251,4) (optional) can be mounted on each side in front of the changeover valve (Fig. 251,5) to protect the gas system from oil contamination and soiling.

The regulator taps (Fig. 251,1) on the gas bottles must be opened manually.

The release button (Fig. 251,7) of the crash sensor is located under the switching valve.

Operating unit

The control unit (Fig. 252) of the Caramatic DriveTwo switching system is located inside the vehicle.



- 1 Rocker switch for winter/summer operation
- 2 LED display Ice-Ex
- 3 LED indicator for withdrawal from reserve bottle (red)
- 4 LED indicator for withdrawal from operating bottle (green)

Fig. 252 Operating unit

Display of operating states on the control unit:

Operating unit	LED display/ switch position	Meaning
	- LED Ice-Ex (Fig. 252,2) off - LEDs (Fig. 252,3 and 4) off - Rocker switch (Fig. 252,1) in centre position	Remote display off
	- LED Ice-Ex (Fig. 252,2) off - LED (Fig. 252,4) on (green) - Rocker switch (Fig. 252,1) below	- Summer operation - Removal from the operating bottle
	- LED Ice-Ex (Fig. 252,2) off - LED (Fig. 252,3) on (red) - Rocker switch (Fig. 252,1) below	- Summer operation - Removing from the reserve bottle
	- LED Ice-Ex (Fig. 252,2) on - LED (Fig. 252,4) on (green) - Rocker switch (Fig. 252,1) above	- Winter operation, control heating Ice-Ex on - Removal from the operating bottle
	- LED Ice-Ex (Fig. 252,2) on - LED (Fig. 252,3) on (red) - Rocker switch (Fig. 252,1) above	- Winter operation, control heating Ice-Ex on - Removing from the reserve bottle

Operating modes

The Caramatic DriveTwo switching facility has two operating modes:

- Winter operation - Rocker switch (Fig. 252,1) above
- Summer operation - Rocker switch (Fig. 252,1) below



- ▷ When routing the high-pressure hoses ensure that the hoses rise continuously (Fig. 253).

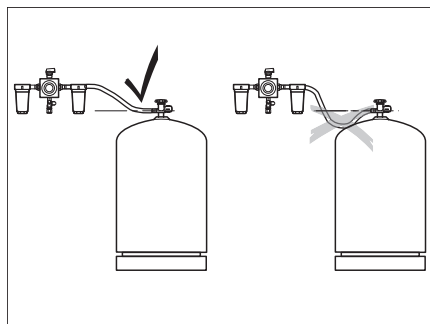


Fig. 253 Routing of the high-pressure hoses

Putting into operation:

- Open the regulator taps (Fig. 245, 1) on the gas bottles.
- Use the knob (Fig. 245,5) on the switching valve (Fig. 245,6) 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.

Switching off:

- Set the rocker switch (Fig. 252,1) in centre position.
- Close the regulator tap (Fig. 245,1) on the gas bottles.

Changing gas bottles

If the green indicator lamp (Fig. 252,4) goes out during operation and the red indicator lamp (Fig. 252,3) lights up, the gas bottle selected as the primary bottle is empty and has to be replaced. The reserve bottle continues supplying the gas appliances with gas.



- ▷ When changing gas bottles, do not smoke or create any open fire.



- ▷ Use a country-specific connection for gas bottles.

8

Gas system

Changing gas bottles:



- ▶ Use the enclosed screw aid (Fig. 254,1) to connect and disconnect the high-pressure hoses. It ensures the required tightening torque and prevents damage to the screw connection through using unsuitable tools.

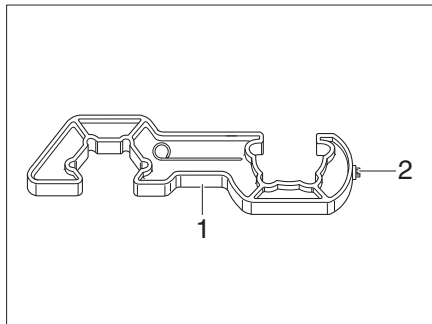


Fig. 254 Screw aid

- Close the regulator tap (Fig. 251,1) on the empty gas bottle.
- Unscrew the high-pressure hose (Fig. 251,3) from the gas bottle using the screw aid (Fig. 254).
- Connect the full gas bottle to the high-pressure hose (Fig. 251,3).
- Open the regulator tap (Fig. 251,1) on the gas bottle.
- Set the knob (Fig. 251, 5) on the switching valve (Fig. 251, 6) with half a turn, so that the newly replaced gas bottle will serve as a reserve bottle.
- Press the button (Fig. 251, 2) for the hose break guard at the high-pressure hose to activate it.
- If necessary, press the reset button (Fig. 255, 1) at the crash sensor.



- ▶ Ensure that gas withdrawal takes place towards the front in the case of Car-amatic DriveTwo switching facilities. Otherwise the high-pressure hose can be pinched or damaged in the front flap mechanism.
- ▶ Observe the safety label (Fig. 251, 8) in the gas bottle compartment.

8

Gas system

Crash sensor

The crash sensor protects against unwanted gas discharge. In the event of an accident or a too high angle of the vehicle the gas supply will automatically be interrupted.



- ▷ Only use the living area heater during the journey if the vehicle is equipped with a crash sensor and suitable high-pressure hoses with hose break guard.

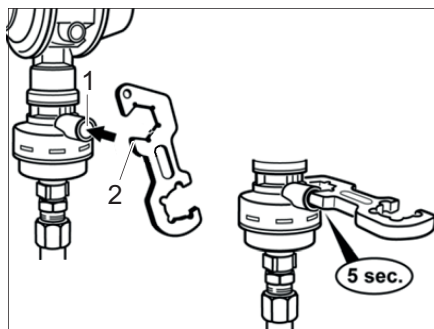


Fig. 255 Crash sensor

If the crash sensor has been triggered, it must be released manually.

Releasing:

- Using the screwing aid (Fig. 255,2) or a similar suitable object, press the release button (Fig. 255,1) and hold it for 5 seconds.

Gas filter

The gas filters (Fig. 256,1) (optional) filter out evaporation residues such as olefins, paraffins and other hydrocarbon compounds from the gas system. The filter cartridges have to be checked at regular intervals and be replaced at the latest every 2 years.



- ▷ Pay attention to the operating and installation instructions of the gas filter.

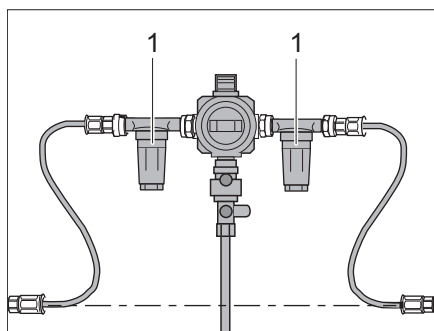


Fig. 256 Gas filter

Hose break guard

The hose break guard protects against gas escaping in case of a defect or the high-pressure hose tearing off.



- ▷ Use a suitable high-pressure hose with hose break guard and country-specific connection for gas bottles.

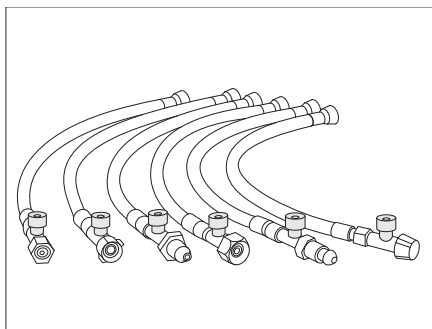


Fig. 257 High-pressure hoses with hose break guard (country-specific variants)

- Activating:*
- After changing the gas bottle, press the green button (Fig. 251,2) on the high-pressure hose (Fig. 251,3) firmly.

The hose break guard is activated.

- Releasing:*
- Using the screwing aid (Fig. 254,2) or a similar suitable object, press the release button (Fig. 255,1) and hold it for 5 seconds.

Chapter overview

This chapter contains instructions regarding the electrical system of the vehicle. The instructions address the following topics:

- safety
- explanations of terms relating to the battery
- 12 V power supply
- living area battery
- loading the batteries
- AC converter
- auxiliary charging unit
- transformer/rectifier
- panel
- 240 V power supply
- connection to the 240 V power supply
- fuse rating

The operation of the electrical appliances of the housing body is described in chapter 10.

9.1 General safety instructions



- ▶ Only allow qualified personnel to work on the electrical system.
- ▶ All electronic devices (e.g. mobile telephones, radios, televisions or DVD players) which have been retrofitted to the vehicle and are operated during the journey must have certain features: These are the CE certification, the EMC inspection (electromagnetic compatibility) and the "E1" inspection. 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.

The vehicle is a safe place during a storm (Faraday cage). However, to protect the electrical devices, disconnect the 240 V connection and retract the antennae as a precaution.

9.2 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.

Closed circuit current

Some electrical appliances, such as the clock and the indicator lamps, require continuous electric current, for this reason they are referred to as inactive appliances. This closed circuit current flows even if the 12 V power supply 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.



- ▶ **Total discharge damages the battery, recharge the battery immediately.**

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). If a battery possesses a capacity of 80 Ah, then the battery can dispense a current of 1 A for 80 hours or a current of 2 A for 40 hours.

External influences such as temperature and current drain may alter the storage capacity of the battery.

The specified rated capacity is not the same as the battery capacity actually available. The capacity that can actually be used is lower than the rated capacity.

9.3 12 V power supply

- ▷ To disconnect **all** electrical 12 V appliances from the power supply, disconnect the living area battery from the 12 V power supply. Depending on the model, either press the switch on the transformer/rectifier or activate the battery separation on the panel to do so.
- ▷ The radio in the driver's cabin and the independent vehicle heater are by default connected to the living area battery via a separate fuse. These appliances will stay operational if the living area battery is disconnected from the power supply via the battery cut-off switch of the transformer/rectifier or the battery separation on the panel.

When the vehicle is not connected to the 240 V power supply or the 240 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 240 V power supply.

During heater operation, the circulation fan is switched on and off by a thermostat control. As a result the living area battery is loaded if no 240 V power supply is connected.

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery.

The 12 V power supply can be cut off with the 12 V main switch on the panel. Depending on the model, the heater, basic light/entrance step and reserve 4 or only the electrical entrance step remain on standby. The refrigerator is then only operated with 12 V if the vehicle engine is running. This helps to prevent the living area battery from being run down too quickly.

9.3.1 Living area battery

- ▶ When changing the living area battery, 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!
- ▶ Devices with a maximum of 10 A can be connected to the sockets of the 12 V power supply. Fire hazard!



- ▷ Use the charger module provided on the transformer/rectifier to charge the living area battery. When charging externally, use a regulated charger that is suitable for the battery type and the capacity of the living area battery.
- ▷ Prior to commencing a journey ensure the living area battery is fully charged. For this reason charge the battery for at least 24 hours before commencing the journey.
- ▷ During the trip, use every opportunity to charge the living area battery.

9

Electrical system



- ▷ Charge the living area battery for at least 24 hours after the journey.
- ▷ Before a temporary lay-up charge the battery for at least 24 hours, for longer standstills 48 hours.
- ▷ Interrupt the power circuit at times if the vehicle is not used for longer than 24 hours.
- ▷ For long periods of inactivity (2 weeks or more), disconnect the living area battery from the 12 V power supply and recharge it regularly (charge for 24 hours at least every 12 weeks).
- ▷ In winter store the charged battery in a place which is cool and protected from frost and recharge every 12 weeks.
- ▷ When the living area battery is changed, only use batteries of the same type.
- ▷ Before disconnecting or connecting the terminals of the battery, switch off the vehicle engine, the 230 V and 12 V power supplies as well as all the appliances. Danger of short circuit!
- ▷ Do not use the ignition when the starter battery or the living area battery is disconnected. Danger of short circuit!
- ▷ Take note of the battery manufacturer's users and maintenance instructions.



- ▷ The battery is 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 has to be charged occasionally using a special charger.

Location

Depending on the model, the living area battery is installed either under the driver's seat, under the front passenger's seat, in the bench, in the double floor or in the garage.

Discharging

The living area battery is discharged by the closed circuit current which some electrical appliances continuously require.



- ▷ Total discharge damages the battery.
- ▷ Recharge battery in good time.

The self-discharge rate of the battery is 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.

During periods of low external temperatures, the battery will lose part of its capacity.

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.



- ▷ Appliances such as the charger, solar charge regulator and panel consume approx. 20 mA to 65 mA of electricity from the battery capacity, even when the 12 V main switch is turned off. Therefore disconnect the living area battery from the 12 V power supply, if the vehicle will not be used for a long period of time.
- ▷ Consumers such as the car radio or the navigation system should not run in standby mode over longer periods. To do so, switch the car radio switch to "0". The navigation system can be switched off via switch directly at the device. Also observe the model-specific information in the instruction manual of the devices.

Second living area battery

Depending on the model a second living area battery can be installed to extend the available battery capacity.



- ▷ Alterations to the battery system may only be carried out by an authorised dealer.
- ▷ When a second living area battery is installed, both the batteries used must be of the same manufacturer, type and age.
- ▷ The installation of a second battery or battery models with a higher capacity extends the charging time correspondingly (e.g. double the charging time at the installation of a second battery).

9.4 Charging the living area battery and starter battery



- ▶ The acid in the battery is poisonous and corrosive. Any contact with the skin or the eyes is to be avoided.
- ▶ In the case of charging with an external charger there is danger of explosion. Only charge the battery in a well ventilated area and away from naked flames or possible sources of sparks.
- ▶ Always remove the living area battery or the starter battery from the vehicle when charging them using an external charger.



- ▷ Do not connect the battery cables to the wrong poles.
- ▷ If the starter battery or living area battery are disconnected, do not apply the ignition. Danger of short circuit!
- ▷ Before disconnecting or connecting the terminals of the battery, switch off the vehicle engine as well as the 240 V and 12 V power supplies and all appliances. Danger of short circuit!
- ▷ Before charging the battery, check whether the external charger is approved for the battery type.
- ▷ Observe the instruction manuals for the base vehicle and the charger.
- ▷ Irreparable damage to the living area battery will result if it is overcharged.

The starter battery can only be fully charged with an external charger. If a 240 V power supply is used, the transformer/rectifier charges the starter battery with a float charge only. Even in mobile operation, the vehicle engine alternator is not capable of completely charging the starter battery.

9

Electrical system

9.4.1 Charging using a 240 V power supply

If the vehicle is connected to the 240 V power supply, the living area battery and the starter battery are automatically 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.

9.4.2 Charging using the vehicle engine

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery. The main charge is provided to the starter battery. When the vehicle engine is switched off, the batteries are automatically disconnected from one another by a relay in 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 charging condition of the living area battery or the starter battery can be read on the panel.

9.4.3 Charging with an external charger

When charging the living area battery and the starter battery with an external charger, proceed as follows:

- Turn off the vehicle engine.
- Switch off 12 V main switch on the panel. The indicator lamp will go off.
- Disconnect the living area battery from the 12 V power supply.
- Disconnect the mains plug from the transformer/rectifier.
- Switch off all gas appliances, all gas isolator taps and close the regulator tap on the gas bottle.
- There is a danger of short circuit when disconnecting the battery poles. For this reason, first disconnect the negative terminal on the living area battery or the starter battery and then the positive.
- Remove the living area battery or the starter battery from the vehicle.
- Check that the external charger is turned off.
- Connect the external charger to the living area battery or the starter battery. Pay attention to the polarity: First connect the positive terminal "+" to the positive pole of the battery, then connect the negative terminal "-" to the negative pole of the battery.
- Switch on the external charger.
- See the instructions for use of the connected charger for information concerning charge period required for the battery.
- See the specifications on the battery for information concerning its strength.
- Disconnect the external charger in reverse order.

9

Electrical system

9.5 AC converter



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



▷ Additionally observe the manufacturer's instruction manual.

Some models have a converter installed in the vehicle.

The AC converter supplies the 230 V sockets with voltage. When the vehicle is not connected to the 230 V supply, the connected battery supplies the voltage.

The battery has a limited power supply only. For this reason, the electrical appliances should not be operated for a long time without using the 230 V power supply.

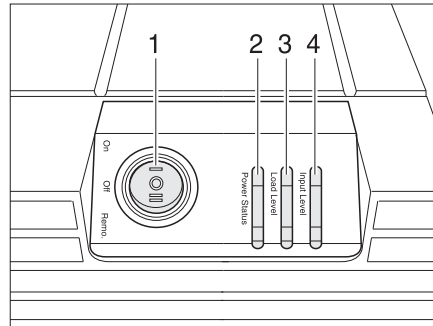


Fig. 258 Displays and operating controls

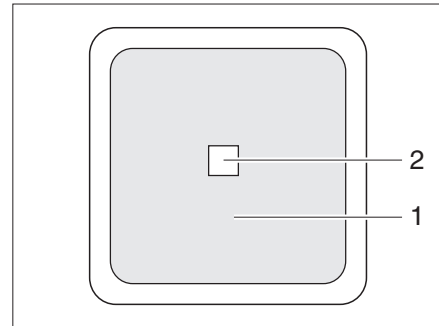


Fig. 259 External switch

The converter can be switched to two operating modes with the main switch (Fig. 258,1):

- I "On" = unit permanently switched on.
- II "Remo." = unit can be switched on and off at the external switch (Fig. 259,1).

The LEDs at the converter show the operating mode "Power Status" (Fig. 258,2), the load range "Load Level" (Fig. 258,3) and the voltage range "Input Level" (Fig. 258,4).

The external switch for the converter (Fig. 259) is located in the interior of the vehicle or in the garage. The switch is labeled with "Converter". The LED (Fig. 259,2) indicates the operating state of the converter.

9.6 AC converter MultiPlus

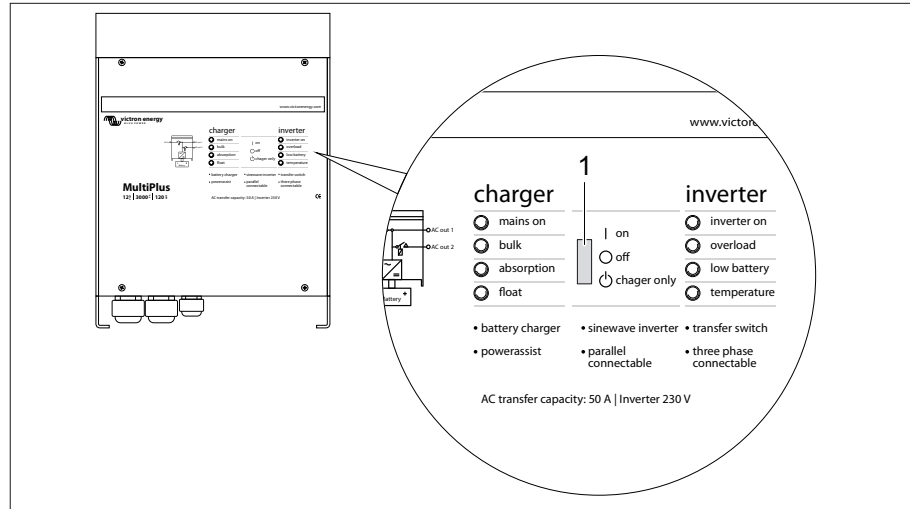


Fig. 260 AC converter MultiPlus

1 Flip switch On-Off-only charge mode

The AC converter is located in the rear garage. The switches and indicator lamps at the AC converter MultiPlus have the same function as at the Digital Multi Control Panel. See Chapter 9.6.1.

For proper functioning of the Digital Multi Control Panel the flip switch at the AC converter MultiPlus (Fig. 260,1) has to be set to "on".

Positions of the flip switch (Fig. 260,1)

- Position "off": Battery charging. The power supply of the 230-V socket outlets is switched off.
 - Position "on": With a 230 V connection the batteries are charged. Without a 230 V connection power is supplied to the 230 V socket outlets.
 - Position "charger only": With a 230 V connection the batteries are charged.
- ▷ The switching process from the position "on" to "charger only" or vice versa must be carried out rapidly. Otherwise the AC converter may be switched off.
 ▷ If no 230 V connection is active and the vehicle is not being used for a long period, the flip switch (Fig. 260, 1) has to be set to "off". Otherwise it is possible that the batteries are empty after 3–4 days at the latest.
 ▷ If only the charging function is required, the switch has to be set to the "charger only" position. In the case of an external power failure this prevents the AC converter function from being switched on and the batteries being discharged.



9.6.1 Digital Multi Control Panel

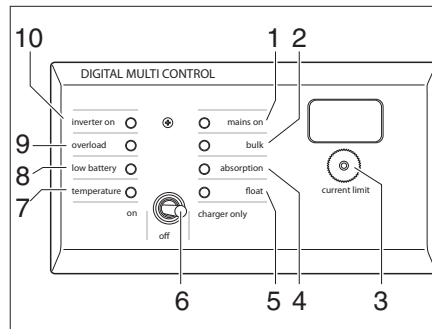


Fig. 261 Panel IT 992

- 1 Indicator lamp for the external AC (230 V) is active
- 2 Indicator lamp constant current charging phase
- 3 Controller Current limit
- 4 Indicator lamp balancing phase
- 5 Indicator lamp charge maintenance phase
- 6 Flip switch On-Off-only charge mode
- 7 Warning light temperature
- 8 Warning light battery
- 9 Warning light overload/short-circuit
- 10 Indicator lamp AC converter on

The Digital Multi Control Panel is located in the motorhome above the living area door.

The "Current limit" controller can be used to set the current value above which the AC controller supports the voltage supply of 230 V socket outlets via the batteries.

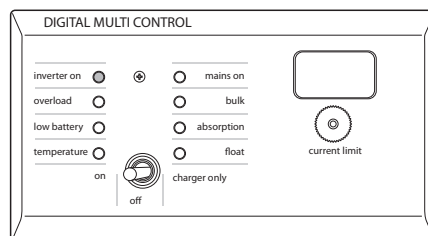
Example: If a camping site only makes 4 A available, the increased consumption is provided by the batteries at the position "4".

9.6.2 LED indicators at the AC controller MultiPlus and at the Digital Multi Control Panel

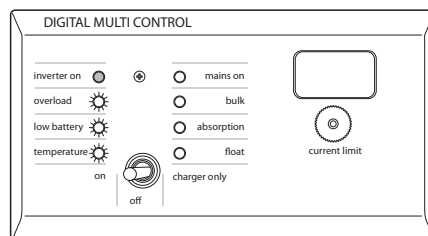
The display of the LEDs has the following meanings in the overview:

Meaning of the LED displays

- ○: LED off
- ◐: LED flashes
- ●: LED lights up



The AC converter is switched on and supplies power to the consumers.

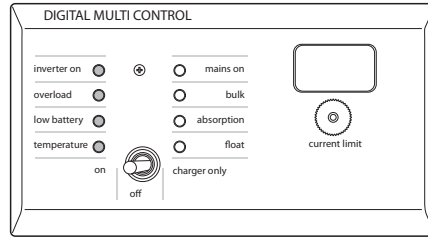


The AC converter is switched on and supplies power to the consumers. The following pre-alarms are possible:

- Overload,
- low battery voltage,
- AC converter temperature too high

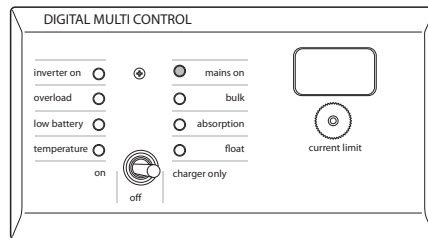
9

Electrical system

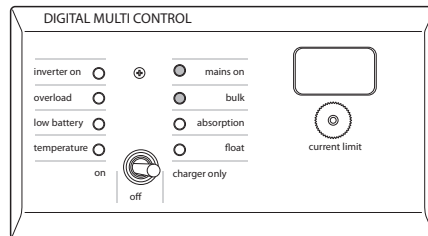


The AC converter is switched off. The following alarms are possible:

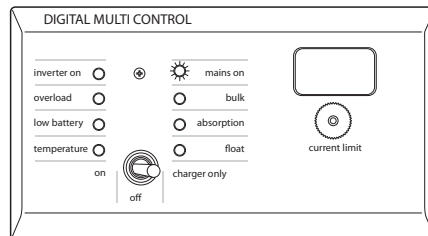
- Overload,
- low battery voltage,
- AC converter temperature too high



The 230 V voltage is applied. The charging unit operates in constant current or constant voltage mode.



The 230 V voltage is applied. The charging unit is switched off because it does not reach the reference voltage (bulk protection mode).



The 230 V voltage is applied. The charging unit operates in voltage maintenance mode.

9

Electrical system

9.7 Transformer/rectifier EBL 111



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



▷ Depending on the model, not all fuse slots are fitted with fuses.

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

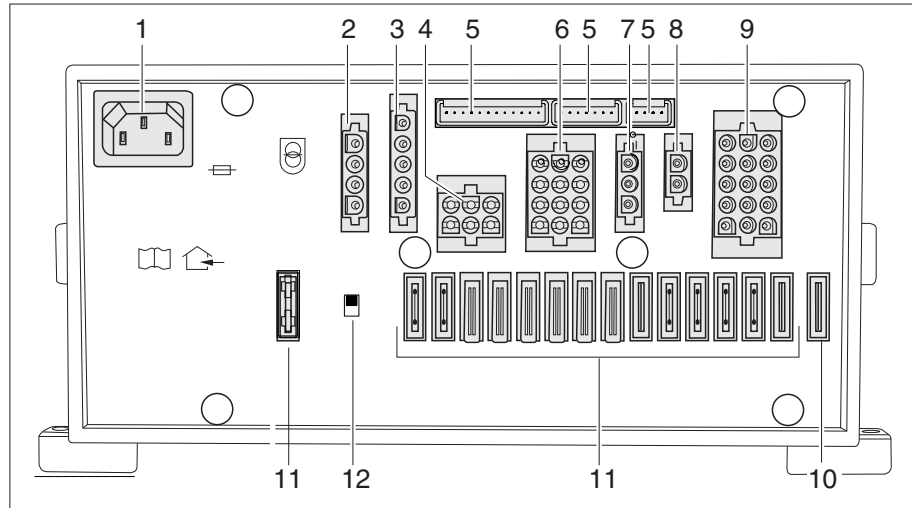


Fig. 262 Transformer/rectifier (EBL 111)

- 1 Main supply socket 230V~
- 2 Output: Block 1 - refrigerator
- 3 Output: Block 2 - Refrigerator, control lines, alternator D+
- 4 Output: Block 4 - Heater, basic light (lighting in the entrance area), entrance step
- 5 Output panel
- 6 Output: Block 5 - Display of solar cell at on-board control (if fitted), spare 2, spare 3, spare 4
- 7 Output: Block 6 - Solar charge regulator (if fitted)
- 8 Output: Block 7 - Auxiliary charging unit
- 9 Output: Block 8 - Consumer circuit1, consumer circuit 2, TV, water pump, spare 1, spare 5, spare 6
- 10 Self-resetting fuse for entrance step
- 11 Fuses
- 12 Battery cut-off switch (battery On/Off)

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 contains connections for a solar charge regulator, an auxiliary charging unit as well as other control and monitoring functions.
- When the 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 transformer/rectifier only works in conjunction with a panel.

When the transformer/rectifier is subject to a heavy load, the fitted charger module reduces the charging current. This protects the charging device against overheating. The transformer/rectifier is subject to a heavy load when e.g. an

empty living area battery is charged, additional electrical appliances are turned on and the ambient temperatures are high.

Location Depending on the model, the electrical block is located under the driver or passenger seat, in the seating area or in the garage.

9.7.1 Battery cut-off switch



- ▷ The battery cut-off switch (Fig. 262,12) disconnects all the appliances that are connected to the transformer/rectifier from the 12 V network.
- ▷ After the battery cut-off switch has been switched back on: Take basic light (lighting in the entrance area), entrance step, heater and spare4 back into operation (depending on model). To do so, switch the 12 V main switch briefly back on. This also applies if the living area battery was disconnected and then reconnected.

The battery cut-off switch switches off all the living area 12 V appliances, including the safety/drainage valve. 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).

The batteries can still be charged by the transformer/rectifier even when the battery cut-off switch is switched off.

Switching on:

- Press battery cut-off switch upward: Battery On.
- Switch on the 12 V main switch on the panel.

Switching off:

- Switch off the 12 V main switch on the panel.
- Press battery cut-off switch downward: Battery Off.

9.7.2 Battery monitoring



- ▷ **Completely recharge a discharged living area battery as soon as possible.**

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

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

Measures:

- Switch off all the electrical appliances that are not essential at the corresponding switch.
- If necessary, use the 12 V main switch to switch the 12 V power supply back on briefly. 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.

9.7.3 Charging the battery

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery. The main charge is provided to the starter battery. The living area battery cannot be charged completely during the journey. When the vehicle engine is switched off, the batteries are automatically disconnected from one another by a relay in 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 charging condition 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, the living area battery and the starter battery are automatically 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.

9

Electrical system

9.8 Transformer/rectifier (EBL 119)



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



▷ Depending on the model, not all fuse slots are fitted with fuses.

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

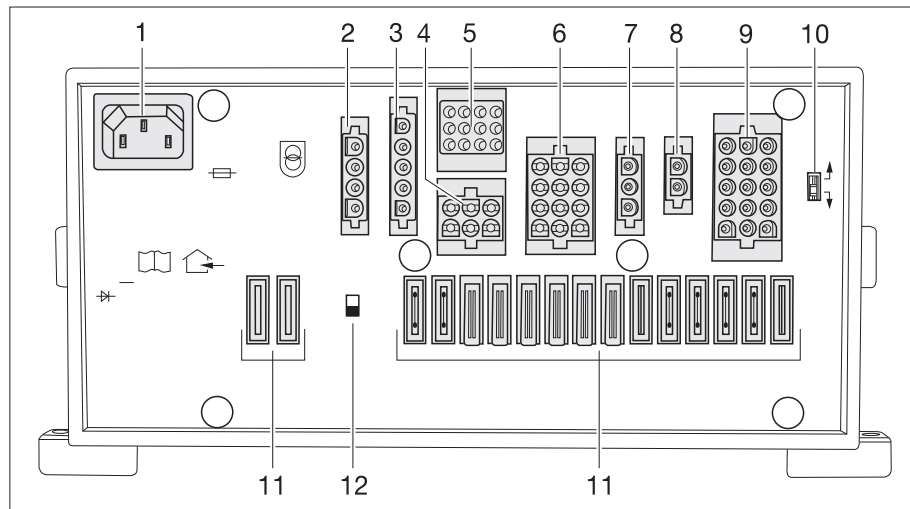


Fig. 263 Transformer/rectifier (EBL 119)

- 1 Main supply socket 230 V~
- 2 Output: Block 1 - Refrigerator
- 3 Input: Block 2 - Control lines, alternator D+
- 4 Output: Block 4 - Heater, safety/drainage valve, basic light (lighting in the entrance area), entrance step
- 5 Output: Block 3 - Panel
- 6 Output: Block 5 - Display of solar cell at on-board control (if fitted), spare 2, spare 3, spare 4
- 7 Output: Block 6 - Solar charge regulator (if fitted)
- 8 Output: Block 7 - Auxiliary charging unit
- 9 Output: Block 8 - Consumer circuit 1, consumer circuit 2, TV, water pump, spare 1, spare 5, spare 6
- 10 Battery selector switch (lead acid/dryfill/AGM)
- 11 Fuses
- 12 Battery cut-off switch (battery On/Off)

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 contains connections for a solar charge regulator, an auxiliary charging unit as well as other control and monitoring functions.
- When the 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 transformer/rectifier only works in conjunction with a panel.

When the transformer/rectifier is subject to a heavy load, the fitted charger module reduces the charging current. This protects the charging device against overheating. The transformer/rectifier is subject to a heavy load when e.g. an empty living area battery is charged, additional electrical appliances are turned on and the ambient temperatures are high.

Location Depending on the model, the transformer/rectifier is located in the seat console under the driver's seat or the front passenger's seat.

9.8.1 Battery cut-off switch



- ▷ The battery cut-off switch (Fig. 263,12) disconnects all the appliances that are connected to the transformer/rectifier from the 12 V network.
- ▷ After the battery cut-off switch has been switched back on: Take basic light (lighting in the entrance area), entrance step, heater and spare 4 back into operation (depending on model). To do so, switch the 12 V main switch briefly back on. This also applies if the living area battery was disconnected and then reconnected.

The battery cut-off switch switches off all the living area 12 V appliances, including the safety/drainage valve. 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).

The batteries can still be charged by the transformer/rectifier even when the battery cut-off switch is switched off.

Switching on/off:

- Press battery cut-off switch upward: Battery On.
- Press battery cut-off switch downward: Battery Off.

9.8.2 Battery selector switch



- ▶ If the battery selector switch (Fig. 263,10) is set incorrectly, oxyhydrogen gas (exploding gas) can form. Danger of explosion!



- ▷ Incorrect setting of the battery selector switch damages the living area battery.
- ▷ Do not change the factory setting of the battery selector switch.

The battery selector switch (Fig. 263,10) is used to set the charger module in the transformer/rectifier to the type of living area battery installed in the vehicle ("lead acid", "dryfill" or AGM).

9

Electrical system

9.8.3 Battery monitoring



- **Completely recharge a discharged living area battery as soon as possible.**

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

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

Measures:

- Switch off all the electrical appliances that are not essential at the corresponding switch.
- If necessary, use the 12 V main switch to switch the 12 V power supply back on briefly. This is only possible, however, if the battery voltage lies 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.

9.8.4 Charging the battery

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery. The main charge is provided to the starter battery. The living area battery cannot be charged completely during the journey. When the vehicle engine is switched off, the batteries are automatically disconnected from one another by a relay in 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 charging condition 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, the living area battery and the starter battery are automatically 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.

9

Electrical system

9.9 Transformer/rectifier (EBL 102)



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



▷ Depending on the model, not all fuse slots are fitted with fuses.

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

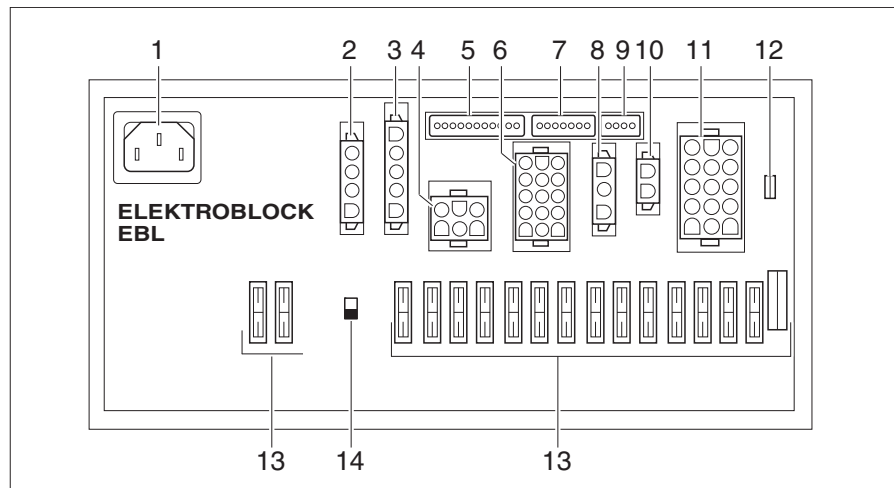


Fig. 264 Transformer/rectifier (EBL 102)

- 1 Main supply socket 230 V~
- 2 Connections block 1: Refrigerator
- 3 Connections block 2: Alternator D+, sensor/control lines, refrigerator power supply
- 4 Connections block 4: Heater, safety/drainage valve, basic light (lighting in the entrance area), entrance step
- 5 Connections block 3: Panel
- 6 Connections block 5: Spare 2, spare 3, spare 4
- 7 Connections block 9: Panel
- 8 Connections block 6: Solar charge regulator (if fitted)
- 9 Connections block 10: Display of solar cell at on-board control (if fitted)
- 10 Connections block 7: Auxiliary charging unit
- 11 Connections block 8: Consumer circuit 1, consumer circuit 2, TV, water pump, spare 1, spare 5, spare 6
- 12 Battery selector switch (lead acid/dryfill/AGM)
- 13 Fuses
- 14 Battery cut-off switch: Battery On/Off

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 protects the electrical system against overvoltage.
- 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 contains connections for a solar charge regulator and an auxiliary charging unit as well as other control and monitoring functions.
- When the 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 transformer/rectifier only works in conjunction with a panel.

When the transformer/rectifier is subject to a heavy load, the fitted charger module reduces the charging current. This protects the charging device against overheating. The transformer/rectifier is subject to a heavy load when e.g. an empty living area battery is charged, additional electrical appliances are turned on and the ambient temperatures are high.

Location Depending on the model, the transformer/rectifier (Fig. 264) is installed in the seat console under the driver's seat or in the garage or bar seating group (Globe-line).

9.9.1 Battery cut-off switch



- ▷ The battery cut-off switch (Fig. 264,14) disconnects all the appliances that are connected to the transformer/rectifier from the 12 V network.
- ▷ After the battery cut-off switch has been switched back on: Take basic light (lighting in the entrance area), entrance step, heater and spare 4 back into operation (depending on model). To do so, switch the 12 V main switch briefly back on. This also applies if the living area battery was disconnected and then reconnected.

The battery cut-off switch switches off all the living area 12 V appliances. 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).

The batteries can still be charged by the transformer/rectifier even when the battery cut-off switch is switched off.

Switching on/off:

- Press battery cut-off switch upward: Battery On.
- Press battery cut-off switch downward: Battery Off.

9.9.2 Battery selector switch



- ▶ If the battery selector switch is set incorrectly, oxyhydrogen gas (exploding gas) can form. Danger of explosion!



- ▷ Incorrect setting of the battery selector switch damages the living area battery.
- ▷ Do not change the factory setting of the battery selector switch.

The battery selector switch is used to set the charger module in the transformer/rectifier to the type of living area battery installed in the vehicle ("lead acid", "dry-fill" or AGM*) (* only at EBL 102).

9

Electrical system

9.9.3 Battery monitoring



- **Completely recharge a discharged living area battery as soon as possible.**

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

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

Measures:

- Switch off all the electrical appliances that are not essential at the corresponding switch.
- If necessary, use the 12 V main switch to switch the 12 V power supply back on briefly. This is only possible, however, if the battery voltage lies 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.

9.9.4 Charging the battery

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery. The main charge is provided to the starter battery. The living area battery cannot be charged completely during the journey. When the vehicle engine is switched off, the batteries are automatically disconnected from one another by a relay in 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 charging condition 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, the living area battery and the starter battery are automatically 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.

9.9.5 Overvoltage protection

The transformer/rectifier EBL 102 with integrated OVP (Over Voltage Protection) is suitable for applications at which the danger of overvoltages is particularly high. These can be, for example, lightning strikes into the public network, generator operation, bad electrical installations or travels in remote countries.

To this purpose an overvoltage protection is circuited internally with the OVP between the mains connection and the charger module in the transformer/rectifier EBL 102.

9

Electrical system

9.10 Transformer/rectifier EBL 402/403



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



▷ Depending on the model, not all fuse slots are fitted with fuses.
▷ Further information can be obtained in the manufacturer's instruction manual.

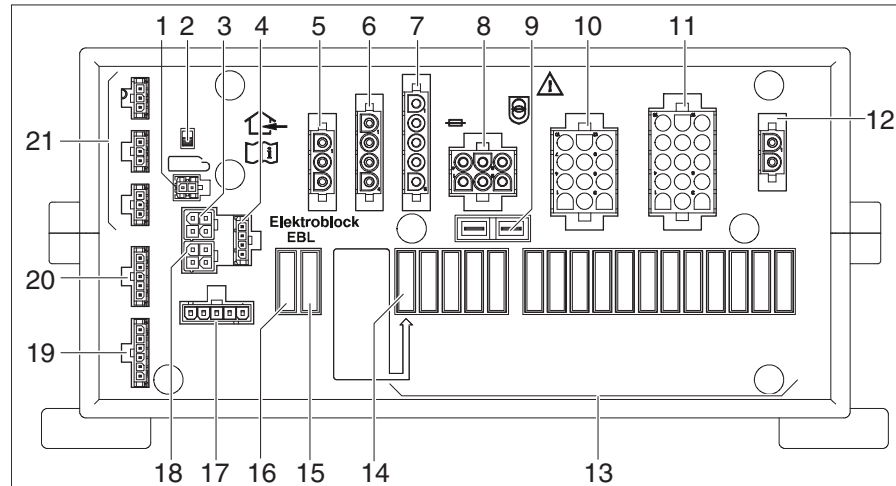


Fig. 265 Transformer/rectifier (EBL 402/403)

- 1 Connection block 3: SYNCHHAR
- 2 Battery cut-off switch: Battery On/Off
- 3 Connection block 10: Living area battery sensor
- 4 Connection block 11: LIN bus (for SCU)
- 5 Connection block 6: Solar charge regulator (if fitted)
- 6 Connection block 1: Refrigerator
- 7 Connection block 2: D+ input, refrigerator starter battery
- 8 Connection block 4: Heaters, step
- 9 Connection block 18: Independent vehicle heater
- 10 Connection block 5: 12 V consumer supply
- 11 Connection block 8: 12 V consumer supply
- 12 Connection block 7: Auxiliary charging unit
- 13 Fuses: Fuses for the 12 V consumers
- 14 Fuse: Fuse only used for AES refrigerators
- 15 Fuse: Solar
- 16 Fuse: Internal charger module (only for EBL402)
- 17 Connection block 12: SCU
- 18 Connection block S1: Fresh water probe
- 19 Connection block 9: Living area battery sensor
- 20 Connection block S2: Waste water probe
- 21 Connection blocks S4, S5 and S6: LIN bus

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 protects the electrical system against overvoltage.
- 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 contains connections for a solar charge regulator and an auxiliary charging unit as well as other control and monitoring functions.
- When the 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.

When the transformer/rectifier is subject to a heavy load, the fitted charger module reduces the charging current. This protects the charging device against overheating. The transformer/rectifier is subject to a heavy load when e.g. an empty living area battery is charged, additional electrical appliances are turned on and the ambient temperatures are high.

Location The transformer/rectifier EBL 402/403 (Fig. 265) is situated on the right in the rear garage.

9.10.1 Battery cut-off switch



- ▷ The battery cut-off switch (Fig. 265,2) disconnects all the appliances that are connected to the transformer/rectifier from the 12 V network.
- ▷ After the battery cut-off switch has been switched back on: Take basic light (lighting in the entrance area), entrance step, heater and spare4 back into operation (depending on model). To do so, switch the 12 V main switch briefly back on. This also applies if the living area battery was disconnected and then reconnected.

The battery cut-off switches off all living area 12 V appliances. 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).

The batteries can still be charged by the transformer/rectifier even when the battery cut-off switch is switched off.

Switching on/off:

- Press battery cut-off switch upward: Battery on.
- Press battery cut-off switch downward: Battery off.

9.10.2 Emergency operation

If there is no more communication on the data bus, the equipment on the data bus can no longer be controlled.

EBL 402/403 features an emergency function for this case. When enabled, it will switch to 12 V ON and the pump will be activated.

Manually activating emergency mode:

- Turn the battery cut-off switch on and off (Fig. 265,2) three times in a row.
- Leave the switch in the ON position.
Emergency mode is enabled.

9.10.3 Battery monitoring

- ▷ **Completely recharge a discharged living area battery as soon as possible.**

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

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

Measures:

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

9.10.4 Charging the battery

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery. The main charge is provided to the starter battery. When the vehicle engine is switched off, the batteries are automatically disconnected from one another by a relay in 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 charging condition 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, the living area battery and the starter battery are automatically 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.

9

Electrical system

9.11 Electrical block EBL 31-2



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



▷ Depending on the model, not all fuse slots are fitted with fuses.

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

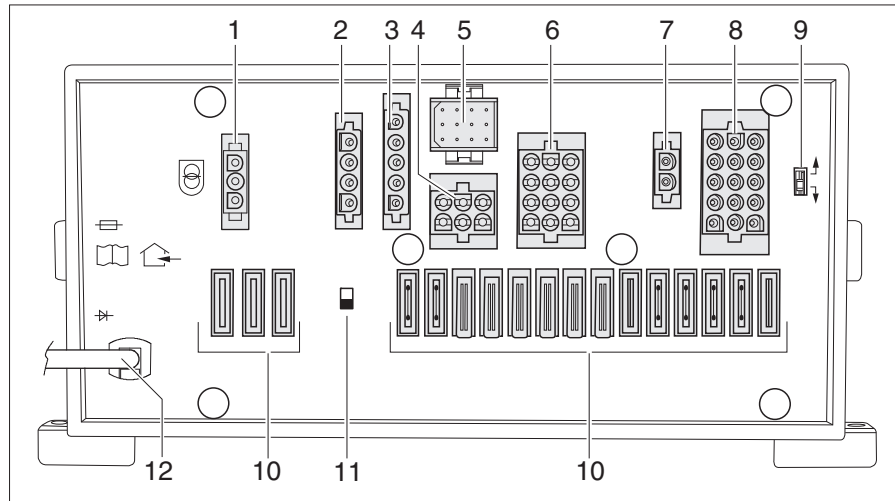


Fig. 266 Electrical block (EBL 31-2)

- 1 Connection block 6: Solar regulator
- 2 Connection block 1: Refrigerator
- 3 Connection block 2: Refrigerator supply D+, battery sensor/control lines
- 4 Connection block 4: Frost protection valve, heating and basic light/step
- 5 Connection block 3: Connection of the IT .../LT ... control panel
- 6 Connection block 5: Basic light 4B/Radio, D-heater, tank heater, USB socket
- 7 Connection block 7: Additional charger
- 8 Connection block 8: Sockets 1, Pump, Circuits 1, 2 and 3, Multimedia, Reserve 1
- 9 Lead gel/AGM battery changeover switch
- 10 Flat fuses
- 11 Battery cut-off switch
- 12 Mains connection cable with WAGO connector

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 protects the electrical system against overvoltage.
- 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 contains connections for a solar charge regulator and an auxiliary charging unit as well as other control and monitoring functions.
- When the 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.

When the transformer/rectifier is subject to a heavy load, the fitted charger module reduces the charging current. This protects the charging device against overheating. The transformer/rectifier is subject to a heavy load when e.g. an empty living area battery is charged, additional electrical appliances are turned on and the ambient temperatures are high.

Location The EBL 31-2 (Fig. 266) electrical block is located under the driver's seat or under the seat bench, depending on the model.

9.11.1 Battery cut-off switch



- ▷ The battery cut-off switch (Fig. 262,12) disconnects all the appliances that are connected to the transformer/rectifier from the 12 V network.
- ▷ After the battery cut-off switch has been switched back on: Take basic light (lighting in the entrance area), entrance step, heater and spare4 back into operation (depending on model). To do so, switch the 12 V main switch briefly back on. This also applies if the living area battery was disconnected and then reconnected.

The battery cut-off switch switches off all the living area 12 V appliances, including the safety/drainage valve. 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).

The batteries can still be charged by the transformer/rectifier even when the battery cut-off switch is switched off.

Switching on/off:

- Press battery cut-off switch upward: Battery on.
- Press battery cut-off switch downward: Battery off.

9.11.2 Battery monitoring



- ▷ **Completely recharge a discharged living area battery as soon as possible.**

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

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

Measures:

- Switch off all the electrical appliances that are not essential at the corresponding switch.
- If necessary, use the 12 V main switch to switch the 12 V power supply back on briefly. 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.

9.11.3 Charging the battery

When the vehicle engine is running, the vehicle alternator recharges the living area battery and the starter battery. The main charge is provided to the starter battery. The living area battery cannot be charged completely during the journey. When the vehicle engine is switched off, the batteries are automatically disconnected from one another by a relay in 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 charging condition 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, the living area battery and the starter battery are automatically 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.

9.12 SCU (System Control Unit)

SCU Basic

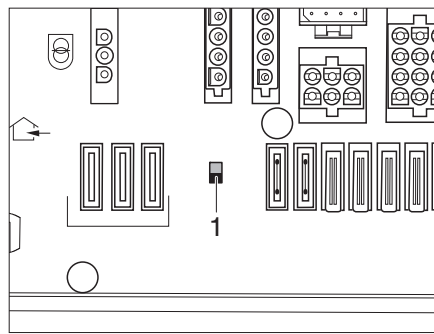


Fig. 267 Battery cut-off switch

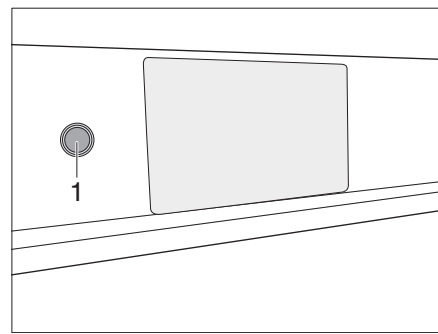


Fig. 268 Wakeup switch SCU

- Switch the battery disconnect switch (Fig. 267,1) on the EBL to "ON".
- Press the wakeup switch (Fig. 268,1) once to establish a connection to the EBL and the SCU.

Description

The SCU is responsible for the main control and monitoring functions in the vehicle.

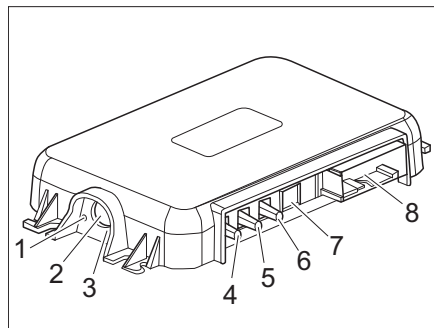


Fig. 269 SCU

- 1 Green LED notification (for qualified experts)
- 2 Coupling button for connecting blue-tooth devices
- 3 Blue LED notification (for qualified experts)
- 4 Bluetooth antennae connection
- 5 GPS antennae connection
- 6 LTE antennae connection
- 7 Diagnostics connection
- 8 Vehicle communication connection

If there is no more communication on the data bus, the equipment on the data bus can no longer be controlled.

EBL 402/403 features an emergency function for this case (see section 9.10.2).

9.13 Panel MP 20-T



- ▷ The luminance of the LEDs and the symbols adapts automatically to the ambient light.
- ▷ The displays can only be called up if the 12 V power supply is switched on.
- ▷ As soon as a button is pressed, the gauge is automatically illuminated. The display goes out 20 seconds after the last key has been pressed.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

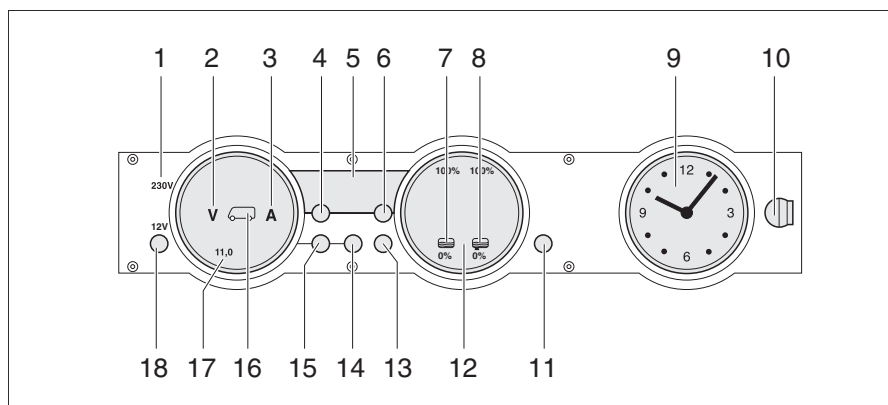


Fig. 270 Panel MP 20-T

- 1 230 V indicator lamp
- 2 Volt symbol
- 3 Ampere symbol
- 4 Interior temperature button
- 5 Digital display
- 6 External temperature button
- 7 Water tank symbol
- 8 Waste water tank symbol
- 9 Clock gauge
- 10 Lock
- 11 Reserve button (NO reset)
- 12 Tanks gauge
- 13 Tanks button
- 14 Living area battery button
- 15 Starter battery button
- 16 Symbol for starter battery and living area battery
- 17 Batteries gauge
- 18 Button for 12 V power supply (12 V main switch)

9.13.1 230 V indicator lamp

The 230 V indicator lamp (Fig. 270,1) lights up whenever line voltage is available at the transformer/rectifier input.

9.13.2 12 V main switch

The 12 V main switch (Fig. 270,18) switches the panel and the 12 V power supply of the living area on and off.

Exception: Heater, basic light (lighting in the entrance area) and entrance step remain operational.

Switching on:

- Briefly press the "12 V" button (Fig. 270,18). The 12 V living area power supply is switched on. The "12 V" indicator lights up.

9

Electrical system



- ▷ If, after switching on, the "11.0" LED of the volt indicator and the "V" volt symbol (Fig. 270,2) in the batteries gauge (Fig. 270,17) flash, the voltage of the living area battery is too low. Charge battery.
- ▷ If, after switching on, the "12 V" indicator, the symbol for the living area battery (Fig. 270,16) and the "V" volt symbol (Fig. 270,2) flash three times, battery separation is activated. Deactivate battery separation.

Switching off:

- Briefly press the "12 V" button (Fig. 270,18). The 12 V living area power supply is switched off. The "12 V" indicator goes out.

*Activating battery separation
(transformer/rectifier
without battery cut-off
switch):*

- Switch off 12 V power supply.
- Press button for living area battery (Fig. 270,14) and hold it down for approx. 10 seconds. The "V" volt (Fig. 270,2) and "A" ampere (Fig. 270,3) symbols flash three times. The living area battery is disconnected from the 12 V power supply.

*Deactivating battery
separation (transformer/
rectifier without battery cut-
off switch):*

- Press the "12 V" button (Fig. 270,18) and hold it down for approx. 5 seconds. The "V" volt symbol (Fig. 270,2) flashes three times. The living area battery is connected to the 12 V power supply. The indicator lights up after approx. 2 seconds.



- ▷ When leaving the vehicle switch off the 12 V main switch. This prevents unnecessary discharging of the living area battery.
- ▷ Appliances such as the safety/drainage valve, charger, solar charge regulator and panel consume approx. 20 mA to 65 mA of electricity from the battery capacity, even when the 12 V main switch is turned off. Therefore disconnect the living area battery from the 12 V power supply, if the vehicle will not be used for a long period of time.

9.13.3 Batteries gauge

The voltage and charging/discharging of the living area battery or the starter battery voltage can be indicated using the batteries gauge.

Displays:

- Press button for living area battery " (Fig. 270,14). The "V" volt symbol (Fig. 270,2) lights up. Depending on whether the battery is being charged or discharged, the "A" ampere symbol lights up white or red respectively. The battery voltage and current of the living area battery are displayed using the LEDs in the gauge.
- Press button for starter battery " (Fig. 270,15). The "V" volt symbol (Fig. 270,2) lights up. The battery voltage of the starter battery is displayed using the LEDs in the gauge.

The tables below will help you interpret the statuses displayed on the panel.

Volt indicator (blue)

1 LED	2 LEDs	3 LEDs	4 LEDs	5 LEDs	6 LEDs	7 LEDs	8 LEDs
< 11,0 V	11,5 V	12,0 V	12,2 V	12,5 V	12,7 V	13,0 V	> 13.5 V

Danger of total discharge (battery alarm)

Battery voltage (values during operation)	Mobile operation (vehicle moving, no 230 V connection)	Battery operation (vehicle standing, no 230 V connection)	Power operation (vehicle standing, 230 V connection)
11 V or less ¹⁾	12 V power supply overload	If appliances are switched off: Battery flat	12 V power supply overload
	The battery is not charged by the alternator, the alternator's regulator is defective	If appliances are switched on: Battery overload	The battery is not charged by the transformer/rectifier, the transformer/rectifier is defective
11.5 V to 13 V	12 V power supply overload ²⁾	Normal range	12 V power supply overload ²⁾
	The battery is not charged by the alternator, the alternator's regulator is defective		The battery is not charged by the transformer/rectifier, the transformer/rectifier is defective
Over 13.5 V	Battery is being charged (main charge)	Occurs only briefly after charging	Battery is being charged (main charge)

¹⁾ The battery guard switches all the appliances off (at 10.5 V).

²⁾ If the voltage does not exceed this range for several hours.

Values for off-load voltage	Charging condition of the battery
Less than 11 V	Totally discharged
12,0 V	0% (discharged)
12,2 V	25 %
12,3 V	50 %
12.5 V	75 %
More than 12.8 V	Full



▷ Longer total discharge damages the battery irreparably.

Ampere indicator (blue)

1 LED	2 LEDs	3 LEDs	4 LEDs	5 LEDs	6 LEDs	7 LEDs	8 LEDs
Discharging with:				Charging with:			
> 30 A	> 10 A	> 3 A	> 1 A	Approx. 0 A	> 1 A	> 3 A	> 10 A

Current displayed	System status	"A" ampere symbol
-30 A to -10 A	Battery is being heavily discharged	Lights up red
-10 A to -1 A	Battery is being discharged	Lights up white
0 A	Battery current is low or 0 A	Lights up white
+1 A to +10 A	Battery is being charged	Lights up white

9.13.4 Tank gauge

The water and waste water quantities can be indicated using the tank gauge.

Displays:

- Press the tanks button  (Fig. 270,13). The water tank  (Fig. 270,7) and waste water tank  (Fig. 270,8) symbols light up. The fill level of the water tank (left-hand scale) and the waste water tank (right-hand scale) are indicated using the LEDs in the gauge.

The table below will help you interpret the levels displayed on the panel.

Level indicator (blue)

1 LED	2 LEDs	3 LEDs	4 LEDs	5 LEDs	6 LEDs	7 LEDs	8 LEDs
	25 %		50 %		75 %		100 %

9.13.5 Alarms



- ▷ The alarm functions are only active when the corresponding display is called up. Perform checks regularly.
- ▷ It is best to perform checks in the morning, before the 12 V appliances are switched on.

Battery alarm

The "V" volt symbol (Fig. 270,2) and the "11.0" LED flash as soon as the battery voltage falls below 11 V (measured during operation) and there is the threat of a total discharge.



- ▷ Total discharge damages the battery.



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

Measures:

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

9

Electrical system

Tank alarm

The water tank symbol  (Fig. 270,7) or waste water tank symbol  (Fig. 270,8) flashes when the water tank is empty or the waste water tank is full.



- ▷ If, when the fill levels are called up, the LEDs in the scale flash in addition to the tank symbol, a sensor error has occurred. Clean tank sensors.

Measures: ■ Fill water tank or empty waste water tank.

9.13.6 Temperature display

The internal and external temperatures can be indicated using the digital display (Fig. 270,5).

- Displays:*
- Press internal temperature button " (Fig. 270,4). The internal temperature is displayed.
 - Press external temperature button " (Fig. 270,6). The external temperature is displayed.

9.13.7 Clock gauge

The clock gauge (Fig. 270,9) displays the time. The clock has its own battery and is not connected to the 12 V power supply.

Detach the clock if the battery needs to be replaced or the clock needs to be set.

- Detaching clock:*
- Turn lock (Fig. 270,10) one quarter turn. The lock is released.
 - Detach clock by pulling forwards.

- Fitting clock:*
- Install clock.
 - Lightly press lock (Fig. 270,10) and turn a quarter turn.
 - Check lock by lightly pulling on the clock.

9.13.8 Reserve button

The "Res" button (Fig. 270,11) can be used to turn the tank heater or the pressurised water pump on and off.

- Switching on:* ■ Press "Res" reserve button (Fig. 270,11). The "Res" symbol lights up.

- Switching off:* ■ Press "Res" reserve button (Fig. 270,11). The "Res" symbol goes out.



- ▷ The switch status is saved when the 12 V power supply is switched off. This means: If the tank heater was on when the 12 V power supply was switched off, the heater is also switched on when the 12 V power supply is switched back on.

9

Electrical system

9.14 Panel MP 20-S



- ▷ The luminance of the LEDs and the symbols adapts automatically to the ambient light.
- ▷ The displays can only be called up if the 12 V power supply is switched on.
- ▷ As soon as a button is pressed, the gauge is automatically illuminated. The display goes out 20 seconds after the last key has been pressed.
- ▷ Further information can be obtained in the manufacturer's instruction manual.

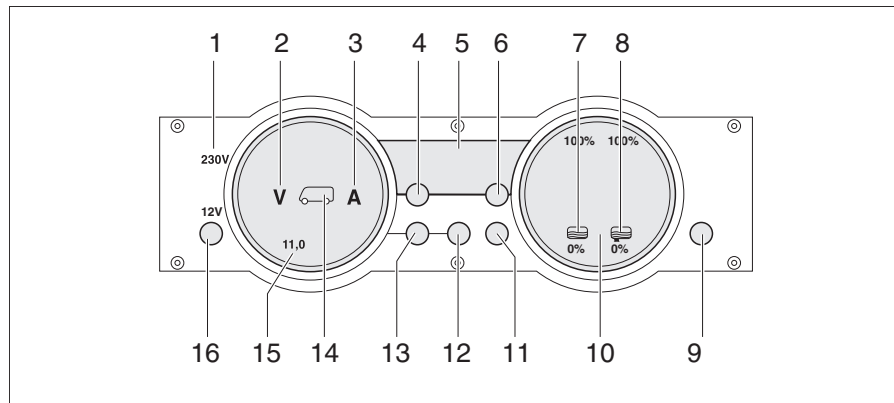


Fig. 271 Panel MP 20-S

- 1 230 V indicator lamp
- 2 Volt symbol
- 3 Ampere symbol
- 4 Interior temperature button
- 5 Digital display
- 6 External temperature button
- 7 Water tank symbol
- 8 Waste water tank symbol
- 9 Reserve button (NO reset)
- 10 Tanks gauge
- 11 Tanks button
- 12 Living area battery button
- 13 Starter battery button
- 14 Symbol for starter battery and living area battery
- 15 Batteries gauge
- 16 Button for 12 V power supply (12 V main switch)

9.14.1 230 V indicator lamp

The 230 V indicator lamp (Fig. 271,1) lights up whenever line voltage is available at the transformer/rectifier input.

9.14.2 12 V main switch

The 12 V main switch (Fig. 271,16) switches the panel and the 12 V power supply of the living area on and off.

Exception: Heater, safety/drainage valve, basic light (lighting in the entrance area) and entrance step remain operational.

Switching on:



- Briefly press the "12 V" button (Fig. 271,16). The 12 V living area power supply is switched on. The "12 V" indicator lights up.
- ▷ If, after switching on, the "11.0" LED of the volt indicator and the "V" volt symbol (Fig. 271,2) in the batteries gauge (Fig. 271,15) flash, the voltage of the living area battery is too low. Charge battery.
- ▷ If, after switching on, the "12 V" indicator, the symbol for the living area battery (Fig. 271,14) and the "V" volt symbol (Fig. 271,2) flash three times, battery separation is activated. Deactivate battery separation.

Switching off:

- Briefly press the "12 V" button (Fig. 271,16). The 12 V living area power supply is switched off. The "12 V" indicator goes out.

*Activating battery separation
(transformer/rectifier
without battery cut-off
switch):*

- Switch off 12 V power supply.
- Press button for living area battery (Fig. 271,12) and hold it down for approx. 10 seconds. The "V" volt (Fig. 271,2) and "A" ampere (Fig. 271,3) symbols flash three times. The living area battery is disconnected from the 12 V power supply.

*Deactivating battery
separation (transformer/
rectifier without battery cut-
off switch):*



- Press the "12 V" button (Fig. 271,16) and hold it down for approx. 5 seconds. The "V" volt symbol (Fig. 271,2) flashes three times. The living area battery is connected to the 12 V power supply. The indicator lights up after approx. 2 seconds.
- ▷ When leaving the vehicle switch off the 12 V main switch. This prevents unnecessary discharging of the living area battery.
- ▷ Appliances such as the safety/drainage valve, charger, solar charge regulator and panel consume approx. 20 mA to 65 mA of electricity from the battery capacity, even when the 12 V main switch is turned off. Therefore disconnect the living area battery from the 12 V power supply, if the vehicle will not be used for a long period of time.

9.14.3 Batteries gauge

The voltage and charging/discharging of the living area battery or the starter battery voltage can be indicated using the batteries gauge.

Displays:

- Press the living area battery  button (Fig. 271,12). The "V" volt symbol (Fig. 271,2) lights up. Depending on whether the battery is being charged or discharged, the "A" ampere symbol lights up white or red respectively. The battery voltage and current of the living area battery are displayed using the LEDs in the gauge.
- Press the starter battery  button (Fig. 271,13). The "V" volt symbol (Fig. 271,2) lights up. The battery voltage of the starter battery is displayed using the LEDs in the gauge.

The tables below will help you interpret the statuses displayed on the panel.

Volt indicator (blue)

1 LED	2 LEDs	3 LEDs	4 LEDs	5 LEDs	6 LEDs	7 LEDs	8 LEDs
< 11.0 V	11.5 V	12.0 V	12.2 V	12.5 V	12.7 V	13.0 V	>13.5 V

Danger of total discharge (battery alarm)

Battery voltage (values during operation)	Mobile operation (vehicle moving, no 230 V connection)	Battery operation (vehicle standing, no 230 V connection)	Power operation (vehicle standing, 230 V connection)
11V or less ¹⁾	12 V power supply overload	If appliances are switched off: Battery empty If appliances are switched on: Battery overload	12 V power supply overload
	The battery is not charged by the alternator, the alternator's regulator is defective		The battery is not charged by the transformer/rectifier, the transformer/rectifier is defective
11.5 V to 13 V	12 V power supply overload ²⁾	Normal range	12 V power supply overload ²⁾
	The battery is not charged by the alternator, the alternator's regulator is defective		The battery is not charged by the transformer/rectifier, the transformer/rectifier is defective
Over 13.5 V	Battery is being charged (main charge)	Occurs only briefly after charging	Battery is being charged (main charge)

¹⁾ The battery guard switches all the appliances off (at 10.5 V).

²⁾ If the voltage does not exceed this range for several hours.

Values for off-load voltage	Charging condition of the battery
Less than 11V	Totally discharged
12.0 V	0% (discharged)
12.2 V	25%
12.3 V	50%
12.5 V	75%
More than 12.8 V	Full

9

Electrical system



► Longer total discharge damages the battery irreparably.

Ampere indicator (blue)

1 LED	2 LEDs	3 LEDs	4 LEDs	5 LEDs	6 LEDs	7 LEDs	8 LEDs
Discharging with:				Charging with:			
> 30 A	> 10 A	> 3 A	> 1 A	approx. 0 A	> 1 A	> 3 A	> 10 A

Current displayed	System status	"A" ampere symbol
-30 A to -10 A	Battery is being heavily discharged	Lights up red
-10 A to -1 A	Battery is being discharged	Lights up white
0 A	Battery current is low or 0 A	Lights up white
+1 A to +10 A	Battery is being charged	Lights up white

9.14.4 Tank gauge

The water and waste water quantities can be indicated using the tank gauge.

Displays:

- Press the Tanks "" button (Fig. 271,11). The water tank "" (Fig. 271,7) and waste water tank "" (Fig. 271,8) symbols light up. The fill level of the water tank (left-hand scale) and the waste water tank (right-hand scale) are indicated using the LEDs in the gauge.

The table below will help you interpret the levels displayed on the panel.

Level indicator (blue)

1 LED	2 LEDs	3 LEDs	4 LEDs	5 LEDs	6 LEDs	7 LEDs	8 LEDs
25%		50%		75%		100%	

9.14.5 Alarms

- ▷ The alarm functions are only active when the corresponding display is called up. Perform checks regularly.
- ▷ It is best to perform checks in the morning, before the 12 V appliances are switched on.

Battery alarm

The "V" volt symbol (Fig. 271,2) and the "11.0" LED flash as soon as the battery voltage falls below 11 V (measured during operation) and there is the threat of a total discharge.



- ▷ Total discharge damages the battery.



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

Measures:

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

Tank alarm

The water tank symbol "☞" (Fig. 271,7) or waste water tank symbol "☞" (Fig. 271,8) flashes when the water tank is empty or the waste water tank is full.



- ▷ If, when the fill levels are called up, the LEDs in the scale flash in addition to the tank symbol, a sensor error has occurred. Clean tank sensors.

Measures:

- Fill water tank or empty waste water tank.

9.14.6 Temperature display

The internal and external temperatures can be indicated using the digital display (Fig. 271,5).

Displays:

- Press internal temperature button "☞" (Fig. 271,4). The internal temperature is displayed.
- Press external temperature button "☞" (Fig. 271,6). The external temperature is displayed.

9.14.7 Reserve button

The "Res" button (Fig. 271,9) can be used to turn the tank heater or the pressurised water pump on and off.

Switching on:

- Press "Res" reserve button (Fig. 271,9). The "Res" symbol lights up.

Switching off:

- Press "Res" reserve button (Fig. 271,9). The "Res" symbol goes out.



- ▷ The switch status is saved when the 12 V power supply is switched off. This means: If the tank heater was on when the 12 V power supply was switched off, the heater is also switched on when the 12 V power supply is switched back on.

9.15 Panel LT 96 / LT 97

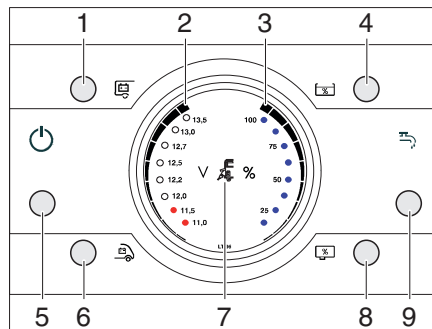
The LT 96 / LT 97 operating panel can be used to switch the 12 V power supply on and off and to query the charging conditions of the batteries as well as the water levels.

Display functions:

- Voltage of the living area battery
- Voltage of the starter battery
- Filling level of the waste water tank
- Filling level of the water tank
- Mains power supply available



- ▷ Further information is available in the separate manufacturer's instruction manual.



- 1 Living area battery button
- 2 Display of battery voltage (in 8 levels)
- 3 Display of filling level (in 4 levels)
- 4 Button filling level, water tank
- 5 12 V main switch
- 6 Starter battery button
- 7 230 V indicator lamp
- 8 Button filling level, waste water tank
- 9 Button water pump ON / OFF*

* only for LT 96

Fig. 272 Panel LT 96

9.15.1 230 V indicator lamp

The 230 V indicator lamp (Fig. 272,7) lights up whenever line voltage is available at the transformer/rectifier input.

9.15.2 12 V main switch

The 12 V main switch (Fig. 272,1) switches the panel and the 12 V power supply of the living area on and off.

Exception: Appliances that have to be supplied continuously.

Switching on:

- Briefly press the 12 V main switch (Fig. 272,1).
The 12 V living area power supply is switched on. The indicator LED lights up.

Switching off:

- Briefly press the 12 V main switch (Fig. 272,1).
The 12 V living area power supply is switched off. The indicator LED goes out.

9.15.3 Battery voltage display

The charging status of the batteries is displayed with the buttons living area battery (Fig. 272,1) and starter battery (Fig. 272,6).

Displays:

- Press button for living area battery (Fig. 272,1).
The battery charge is displayed (Fig. 272,2).
- Press button for starter battery (Fig. 272,6).
The battery charge is displayed (Fig. 272,2).
- LEDs 12.5 V and higher: Battery charged
- LEDs 12.2 V: Battery partially uncharged (below 12.4 V)
- Lower 2 LEDs: Battery empty (below 11.6 V)

The tables below will help you interpret the statuses displayed on the panel.

**Danger of total
discharge (battery
alarm)**

Battery voltage	Mobile operation (vehicle moving, no 230 V connec- tion)	Battery operation (vehicle stand- ing, no 230 V con- nection)	Power operation (vehicle stand- ing, 230 V con- nection)
11 V or less	12 V power supply overload	If appliances are switched off: Bat- tery flat If appliances are switched on: Bat- tery overload	12 V power supply overload
	The battery is not charged by the al- ternator, the alter- nator's regulator is defective		The battery is not charged by the transformer/rectifi- er, the transform- er/rectifier is defective
11.5 V to 13 V	12 V power supply overload ¹⁾	Normal range	12 V power supply overload ¹⁾
	The battery is not charged by the al- ternator, the alter- nator's regulator is defective ¹⁾		The battery is not charged by the transformer/rectifi- er, the transform- er/rectifier is defective ¹⁾
Over 13.5 V	Battery is being charged (main charge)	Occurs only briefly after charging	Battery is being charged (main charge)

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



- ▷ Longer total discharge damages the battery irreparably.
- ▷ Avoid low battery level, indicated by low voltage.
- ▷ If the power supply is overloaded, switch off a part of the appliances.
- ▷ Before laying up the motorhome ensure that no inactive appliances are connected.

Values for off-load voltage	Charging condition of the battery
Less than 12 V	Discharged or totally discharged
12,2 V	Approx. 25%
12.5 V	Approx. 50%
More than 12.7 V	Full

9.15.4 Display filling level

The water level and the waste water level can be displayed by using the buttons filling level water tank (Fig. 272,4) and filling level waste water tank (Fig. 272,8).

Displays:

- Press the button filling level water tank (Fig. 272,4).
The level of the water tank is displayed (Fig. 272,3).
 - All LEDs light up: Full
 - 6 LEDs light up: 3/4 full
 - 4 LEDs light up: 1/2 full
 - 2 LEDs light up: 1/4 full
 - No LEDs light up: Empty
- Press the button filling level waste water tank (Fig. 272,8).
The filling level of the waste water tank is displayed (Fig. 272,3).
 - All LEDs light up (the lower 6 white, the upper 6 red): Full
 - 6 LEDs light up: 3/4 full
 - 4 LEDs light up: 1/2 full
 - 2 LEDs light up: 1/4 full
 - No LEDs light up: Empty

9.15.5 Activating / deactivating the water pump

The water pump can be activated and deactivated respectively by using the button water pump ON / OFF (Fig. 272,9). The actual switching-on of the water pump is effected by the opening of a water tap while the water pump is activated. If the water pump is deactivated, the water pump remains switched off even if a water tap is opened.

Activating the water pump:

- Briefly press the button water pump ON / OFF (Fig. 272,9).
The water pump is activated. The LED lights up.
- Open a water tap to switch on the water pump.

Deactivating the water pump:

- Briefly press the button water pump ON / OFF (Fig. 272,9).
The water pump is deactivated. The LED goes out.

9.15.6 Alarms



- ▷ The alarm functions are only active when the corresponding display is called up. Perform checks regularly.
- ▷ It is best to perform checks in the morning, before the 12 V appliances are switched on.

Battery alarm

The "11.0 V" LED in the display (Fig. 272,2) flashes as soon as the battery voltage falls below 11 V (measured during operation) and there is the threat of a total discharge.



- ▷ Total discharge damages the battery.
- ▷ Avoid low battery level, indicated by low voltage.
- ▷ Carry out regular voltage check.

Measures:

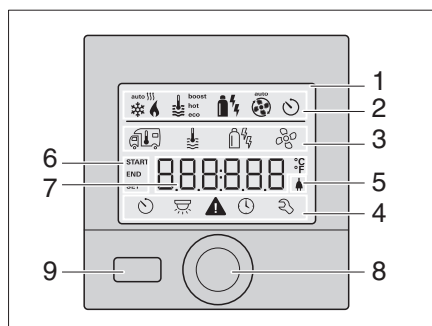
- When the battery alarm comes on, switch off the appliances and charge the battery, either by mobile operation or by connection to a 230 V power supply.

9.16 Panel Truma CP plus

The Truma CP plus operating panel is used to control and monitor the temperature (room/water temperature) and to adjust the air conditioning unit.



► Further information is available in the separate manufacturer's instruction manual.



- 1 Display
- 2 Status line
- 3 Menu line (above)
- 4 Menu line (below)
- 5 Display line voltage 230 V (mains current)
- 6 Display timer
- 7 Settings/values
- 8 Dial/push button
- 9 Back button

Fig. 273 Panel Truma CP plus

Button	Function
	Dial/push button
	Turn clockwise ● Pass through the menu from left to right. ● Increase values (+).
	Turn anticlockwise ● Pass through the menu from right to left. ● Decrease values (-).
	Tap ● Apply (store) a selected value. ● Selection of a menu item, change in the setting level.
	Pressing long ● Main switch function ON / OFF.
	Back button ● Jump out of the menu. ● Reject settings (the previous values are retained)

Menu	Description
	Change the room temperature. Adjustable temperature range: ● Heater = 5 - 30 °C (in 1 °C steps). ● Climate system = 16 - 31 °C (in 1 °C steps). ● Automatic climate control = 18 - 25 °C (in 1 °C steps).
	Change the hot water level.
	Select the energy type.

Menu	Description
	Select the fan levels.
	Set the timer.
	Switch the lighting on and off. Brightness selectable in 5 levels.
	Set the time.
	Call up the service menu.

9.16.1 Switching on and off

- Switching on:*
- Tap the dial/push button (Fig. 273,8).
Previously selectable values/operating parameters are active again after switching on.
- Switching off:*
- Press the dial/push button (Fig. 273,8) longer than 4 seconds.
The message "OFF" is shown in the display.

9.16.2 Setting the room temperature

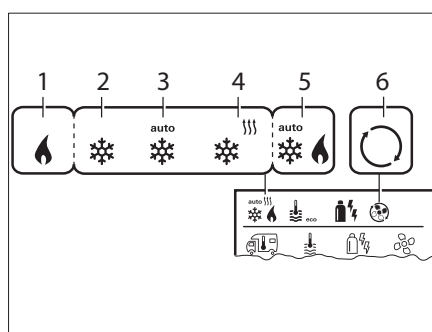


Fig. 274 Room temperature setting options

- 1 Heater* - Heater ON
- 2 COOL - Climate system ON
- 3 AUTO - Climate system set to automatic
- 4 HOT - Climate system in heating operation
- 5 AUTO - Automatic climate control* ON
- 6 VENT - Climate system in air circulation mode

* Symbol flashes until the desired room temperature is reached.

** Only if the automatic climate control was activated.

- Changing the room temperature:*
- Use the dial/push button (Fig. 273,8) to select the room temperature symbol and change to the setting level by tapping.
 - Use the dial/push button to change between the heater, climate system or automatic climate control (depending on the connected devices not all the selection options are available).
 - Confirm the selection by pressing the dial/push button (Fig. 273,8).
 - Use the dial/push button (Fig. 273,8) to select the desired room temperature.
 - Tap the dial/push button (Fig. 273,8) to confirm the value.

9.16.3 Changing the hot water level

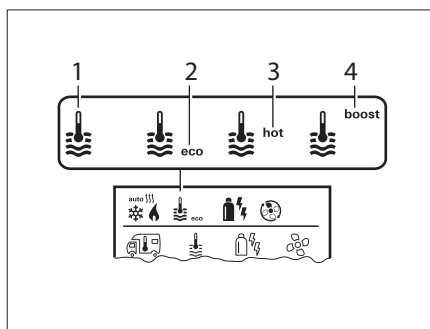


Fig. 275 Hot water setting options

- 1 Boiler* - Hot water treatment ON
- 2 eco** - Hot water temperature 40 °C
- 3 hot - Hot water temperature 60 °C
- 4 boost* - Rapid heating up of the boiler contents

* Symbol flashes until the desired water temperature is reached.

** Hot water temperature can only be kept at 40 °C for a limited period at combined room and water heating.

Changing the hot water level:

- Use the dial/push button (Fig. 273,8) to select the hot water level symbol and change to the setting level by tapping.
- Use the dial/push button (Fig. 273,8) to select the desired level.
- Tap the dial/push button (Fig. 273,8) to confirm the value.

9.16.4 Selecting the energy type

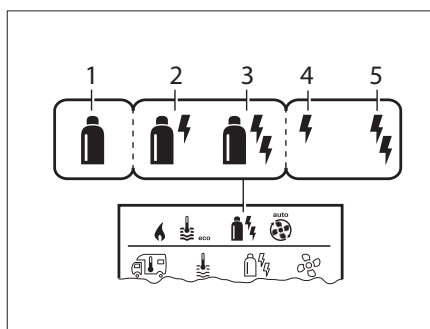


Fig. 276 Energy type setting options

- 1 Gas/diesel**
- 2 MIX 1* - Electrical (900 W + gas/diesel)
- 3 MIX 2* - Electrical (1800 W + gas/diesel)
- 4 EL 1* - Electrical (900 W)
- 5 EL 2* - Electrical (1800 W)

* Mix and electrical operation only possible at heaters with electrical heating rods.

** The output of the gas/diesel is specified in the heater instruction manual.

Selecting the energy type:

- Use the dial/push button (Fig. 273,8) to select the energy symbol and change to the setting level by tapping.
- Use the dial/push button (Fig. 273,8) to select the desired energy type.
- Tap the dial/push button (Fig. 273,8) to confirm the value.

Special points in mixed operation

Interruption of the 230 V power supply:

If the 230 V power supply is interrupted, the heater switches automatically into gas or diesel operating mode. As soon as the 230 V power supply returns, the heater switches automatically back to mixed operation.

Faults in the combustion process (e.g. lack of fuel):

Observe the instruction manual of the manufacturer.

Special points in electrical operation

If the 230 V power supply is interrupted and the 12 V supply switched on, an error code is shown on the display.

If the 230 V power supply is restored, the heater is started automatically with the previous settings. The error code extinguishes.

9.16.5 Selecting the fan level

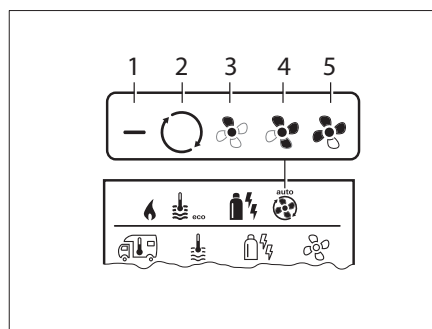


Fig. 277 Setting options fan heater

- 1 OFF - Fan OFF (no device in operation)
- 2 VENT - Air circulation (no device in operation and hot water treatment OFF)
- 3 ECO - Low fan level
- 4 HIGH* - High fan level
- 5 BOOST - Rapid room heating (if difference between selected and current room temperature >10 °C)

* Entails high power consumption, high noise level and increased motor wear.

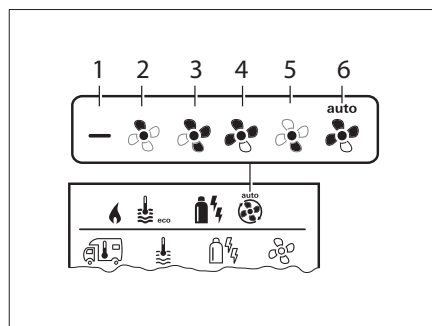


Fig. 278 Setting options fan climate system

- 1 OFF - Fan OFF (no device in operation)
- 2 LOW - Low fan level
- 3 MID - Middle fan level
- 4 HIGH - Highest fan level
- 5 NIGHT - Quiet fan operation
- 6 AUTO* - Automatic selection of the fan level

* Manual selection of the fan level is not possible at automatic climate control.

Selecting the fan level:

- Use the dial/push button (Fig. 273,8) to select the fan level symbol and change to the setting level by tapping.
- Use the dial/push button (Fig. 273,8) to select the desired fan level.
- Tap the dial/push button (Fig. 273,8) to confirm the value.

9.16.6 Setting the timer

- ▶ Danger of poisoning through exhaust gases in closed spaces (e.g. garage, workshop)!
- If the motorhome is parked in closed spaces:
- ▶ Shut off the fuel supply (gas or diesel) to the heater.
- ▶ Deactivate the timer of the control unit (OFF).
- ▶ Switch off the heater at the control unit.

Setting the timer:

- Use the dial/push button (Fig. 273,8) to select the timer symbol and change to the setting level by tapping.
- Use the dial/push button (Fig. 273,8) to set the start time.
- Use the dial/push button (Fig. 273,8) to set the end time.
- Set the room temperature. See chapter 9.16.2.
- Set the hot water level. See chapter 9.16.3.
- Select the energy type (only for heater with electrical heating rods). See chapter 9.16.4.
- Select the fan level (not at AUTO automatic climate control). See chapter 9.16.5.

Activating the timer:

- Use the dial/push button (Fig. 273,8) to activate the timer (ON).
- Tap the dial/push button (Fig. 273,8) to confirm the value.
The timer remains active until it is deactivated (OFF).
If the timer is active, the timer symbol flashes.

Deactivating the timer:

- Use the dial/push button (Fig. 273,8) to deactivate the timer (OFF).
- Tap the dial/push button (Fig. 273,8) to confirm the value.

9

Electrical system

9.16.7 Switching the lighting on and off

Switching on the lighting:

- Use the dial/push button (Fig. 273,8) to select the lighting symbol and change to the setting level by tapping.
- Use the dial/push button (Fig. 273,8) to switch on the lighting and select one of the brightness levels 1-5.
- Tap the dial/push button (Fig. 273,8) to confirm the value.

Switching off the lighting:

- Use the dial/push button (Fig. 273,8) to select the lighting symbol and change to the setting level by tapping.
- Use the dial/push button (Fig. 273,8) to select the OFF function.
- Tap the dial/push button (Fig. 273,8) to confirm the value.

9.16.8 Setting the time

Setting the time:

- Use the dial/push button (Fig. 273,8) to select the time symbol. The hours display flashes.
- Use the dial/push button (Fig. 273,8) to set the hours.
- Tap the dial/push button (Fig. 273,8) to confirm the value. The minutes display flashes.
- Use the dial/push button (Fig. 273,8) to set the minutes.
- Tap the dial/push button (Fig. 273,8) to confirm the value.

9.16.9 Service menu

Available functions:

- OFFSET = Calibrate the room temperature sensor of the heater.
- AC SET = Set the offset between cooling and heating.
- ACC = Activate or disable the automatic climate control.
- TEMP = Select the temperature display in °C or °F.
- LIGHT = Change the background lighting in 10 levels.
- 12-24 h = Change the mode of the time display.
- SPR = Set the language.
- INDEX = Display the version number.
- RESET = Reset the control unit to the default settings.



- ▷ Further information is available in the separate manufacturer's instruction manual.

9

Electrical system

9.17 System Control Display



▷ The available pages and settings may vary depending on the vehicle and variants.

The System Control Display can be used to retrieve relevant data, e.g. on lighting, the refrigerator, heater and air conditioning unit.



- 1 12 V on/off
- 2 230 V display
- 3 Water pump ON/OFF display (only when 12 V ON)
- 4 Starter battery display
- 5 Body battery display with lithium bat. in % (with AGM battery in volts)
- 6 Settings

Fig. 279 System Control Display homepage

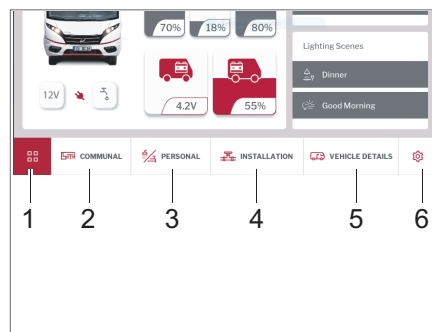


Fig. 280 System Control Display navigation bar

The navigation bar (Fig. 280) can be used to access the submenu:

- Start screen (Fig. 279)
- Living (Fig. 280,2)
- Private (Fig. 280,3)
- Installation (Fig. 280,4)
- Vehicle details (Fig. 280,5)
- Settings (Fig. 280,6)

9.17.1 Living

The following settings can be configured in the *LIVING* submenu:

- Lighting
- Refrigerator
- Satellite unit

9

Electrical system

Lighting

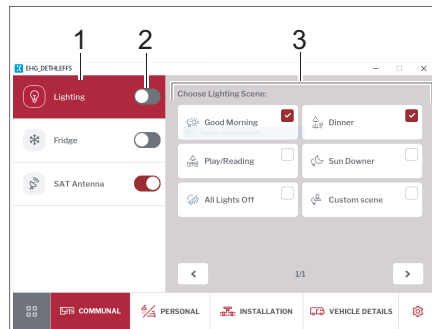


Fig. 281 Lighting

- Use the switch to turn the lighting (Fig. 281,2) on or off.
- Click on the *Lighting* (Fig. 281,1) button.
Select a lighting mode in the control panel (Fig. 281,3).

Refrigerator

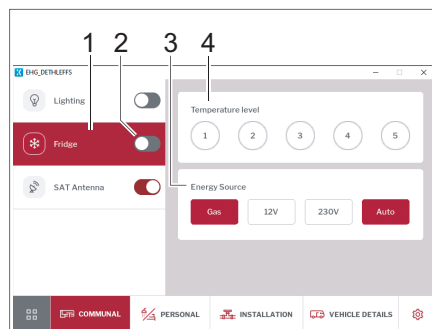


Fig. 282 Refrigerator

- Use the switch to turn the refrigerator (Fig. 282,2) on or off.
- Click on the *Refrigerator* (Fig. 282,1) button.
The cooling level (Fig. 282,4) and energy source (Fig. 282,3) can be configured in the control panel.

Satellite unit

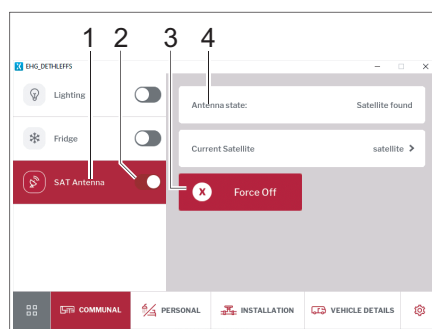


Fig. 283 Satellite unit

- Use the switch to turn the satellite unit (Fig. 283,2) on or off.
- Click on the *SAT unit* (Fig. 283,1) button.
The selected satellite will be displayed (Fig. 283,4).
- Click on the *Emergency Stop* (Fig. 283,3) button, if the unit is driving against resistance.

9

Electrical system

9.17.2 Private

Personal settings can be configured in the *PRIVATE* (Fig. 284,1) submenu, e.g. lighting mode in the *Lighting* submenu.

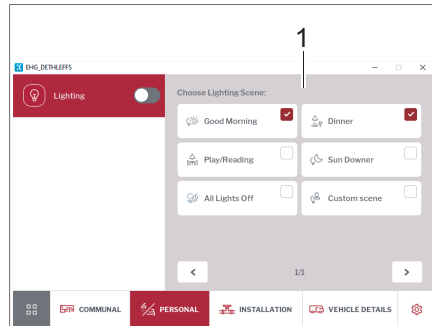


Fig. 284 PRIVATE submenu

9.17.3 Installation

The following settings can be configured in the *INSTALLATION* submenu:

- Heater
- Air conditioning unit
- 12 V and water pump

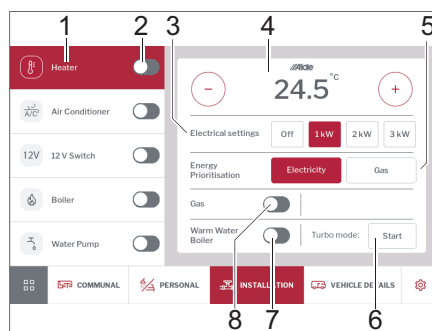


- ▶ Settings on the heater can only be configured via the System Control Display when the Alde heater control unit is in idle mode (see Section 10.2.4). Then the System Control Display will be recognised as the master.

Heater



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Never run the heater in gas operation when filling the fuel tank, on ferries or in the garage. Danger of explosion!
- ▶ Never operate the heater in gas operation in closed rooms (e.g. garages). Danger of poisoning and suffocation!



- 1 Heater button
- 2 Heater ON/OFF
- 3 Electric heat output selection
- 4 Desired living area temperature
- 5 Energy source selection
- 6 Rapid warm-up of the water boiler
- 7 Boiler ON/OFF
- 8 Gas heater ON/OFF

Fig. 285 Heater

- Use the switch to turn the heater (Fig. 285,2) on or off.
- Click on the *Heater* (Fig. 285,1) button.
The values for the Alde heating system will be displayed in the control panel. Observe the notes in Sections 10.2.4 and 10.4.
- Use the plus and minus buttons to select the desired living area temperature (Fig. 285,4).

9

Electrical system

Rapidly heat the boiler

- Make sure that the boiler contains water.
- Use the switch (Fig. 285,8) to turn on the gas heater.
- Use the switch (Fig. 285,7) to turn on the boiler.
- Push the *Start Turbo Mode* button (Fig. 285,6).
An operating note appears on how to fill the boiler with water:

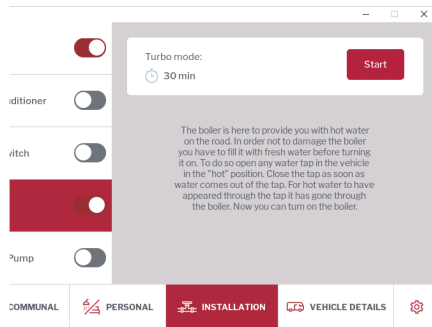


Fig. 286 Heater operating note

Air conditioning unit

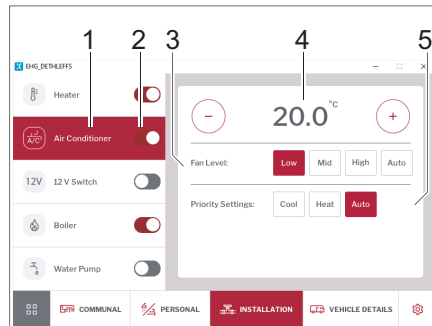


Fig. 287 Air conditioning unit

- Use the switch to turn the air conditioning unit (Fig. 287,2) on or off.
- Click on the *Air Conditioning Unit* (Fig. 287,1) button.
The control panel for the air conditioning unit will be displayed.
- Use the plus and minus buttons to select the desired living area temperature (Fig. 287,4).
- Set the desired prioritisation (cool/heat/auto) (Fig. 287,5).
- Selection ventilation level (Fig. 287,3).

12 V and water pump

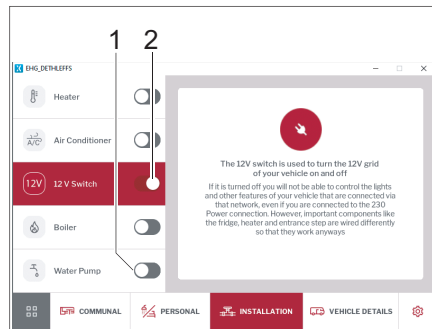


Fig. 288 12 V and water pump

- Use the switch (Fig. 288,2) to switch the vehicle's 12 V supply on and off. A note will appear indicating which consumers are affected by this.
- Use the switch to turn the water pump (Fig. 288,1) on or off. Also see Chapter 9.15.5.

9.17.4 Vehicle details

The following values can be displayed in the *VEHICLE DETAILS* submenu:

- Water supply
- Power
- Inside temperature

Water supply

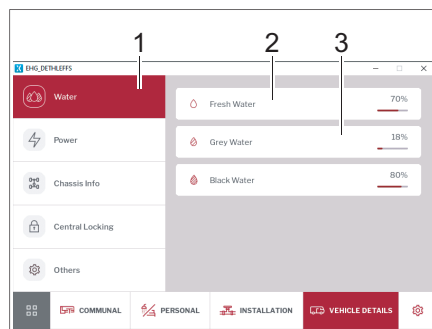


Fig. 289 Water supply

- Click on the *Water Supply* (Fig. 289,1) button. The fill level in the fresh water (Fig. 289,2) and waste water tank (Fig. 289,3) will be displayed in %.

Power and inside temperature

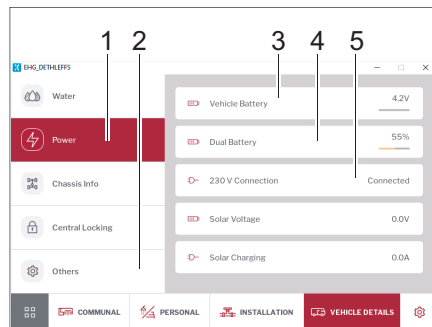


Fig. 290 Power and inside temperature

- Click on the *Power* (Fig. 290,1) button.
The vehicle's battery voltage (Fig. 290,3), the charge status of the body battery in % or charge voltage of the AGM battery in V (Fig. 290,4) and the 230 V supply status (Fig. 290,5) will be displayed.
- Click on the *Other* (Fig. 290,2) button.
The internal temperature is displayed.

9.17.5 Settings

The following settings can be configured in the SETTINGS submenu:

- Display language
- Vehicle – phone connection
- Display brightness
- Device information
- Display time

Connection

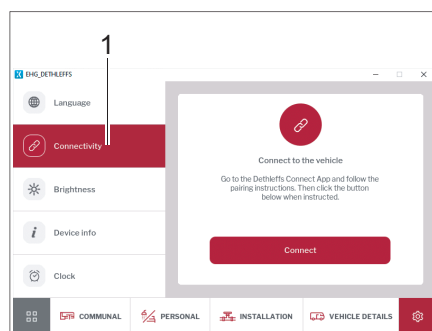
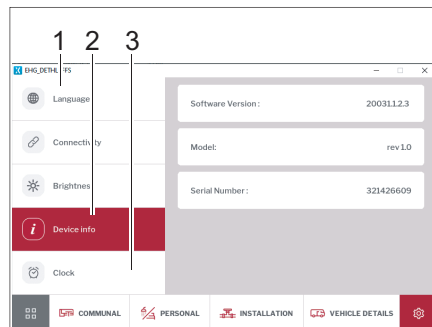


Fig. 291 Connection

- Click on the *Connection* (Fig. 291,1) button.
A notification will appear to explain how mobile devices can be connected to the vehicle, see Section 9.18.1.

Language, device
information, timeFig. 292 Language, device information,
time

- Click on the *Language* (Fig. 292,1) button and set the desired display language.
- Click on the *Time* (Fig. 292,3) button and set the time.
- Click on the *Device Information* (Fig. 292,2) button.
Information on the device (software version, model and serial number) will be displayed.

Brightness

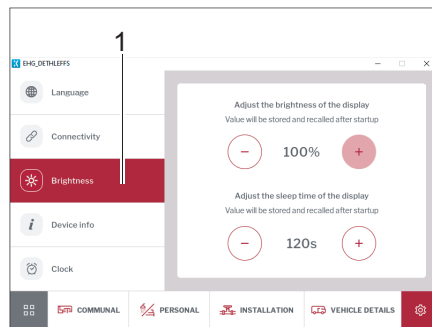


Fig. 293 Brightness

- Click on the *Brightness* (Fig. 293,1) button.
- Use the plus and minus buttons in the control panel to adjust the display brightness and lighting duration.

9

Electrical system

9.18 Dethleffs Connect App



- ▷ The Dethleffs Connect App is available free of charge in the App Store (Apple) and Play Store (Android).

In addition to the display features, the Dethleffs Connect App offers additional features such as creating lighting modes, setting options for the light colour in the vehicle as well as the option to access vehicle statuses remotely.

9.18.1 Connecting mobile devices with the vehicle

Each vehicle is assigned a mobile device which acts as the master device for the vehicle. All other mobile devices as only guests and can be managed by the master.

The master/main user of the vehicle is the first person to connect their device with the car.

The previous master must be deregistered before a new master can be connected.

Requirements

- Vehicle QR code
- Mobile device with the latest version of the Dethleffs Connect App
- Compatible Dethleffs vehicle

Connecting to the vehicle



Fig. 294 Dethleffs Connect App home screen

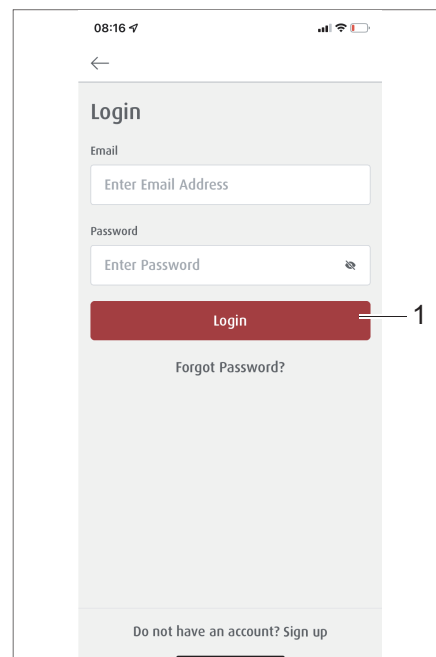


Fig. 295 Logging into a Dethleffs account

- Open the Dethleffs Connect App on your mobile device.
- Click on the *Connect with my Dethleffs* (Fig. 294,1) button. The Dethleffs account login/registration input field will appear (Fig. 295).
- Enter your email address and password or create an account.
- Click on the *Login* (Fig. 295,1) button. The vehicle connection menu will appear (Fig. 296). Any vehicles that have previously been connected are listed here.

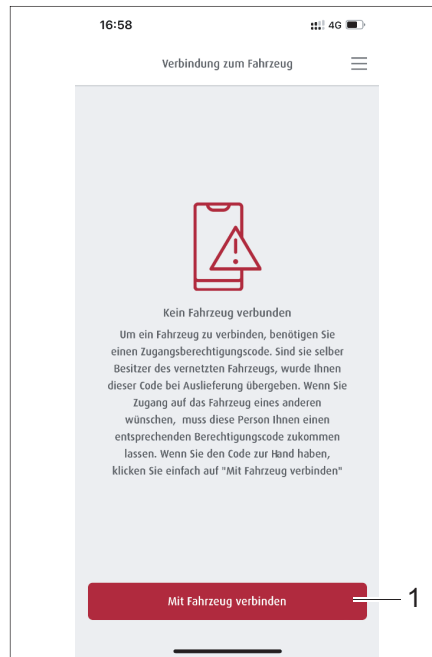


Fig. 296 Connecting to the vehicle

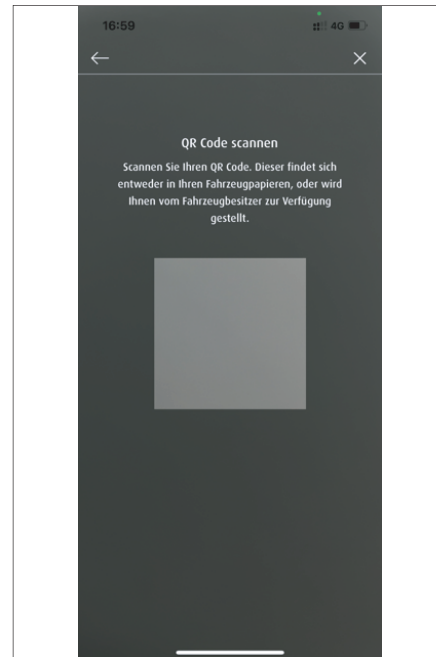


Fig. 297 Scan vehicle QR code

- Click on the *Connect with vehicle* (Fig. 296,1) button. The scan QR code menu option will appear (Fig. 297).
- Scan the vehicle QR code.

There are two ways to connect to your vehicle:

- Via the System Control Display (see Section 9.17.5)
- Via the SCU coupling button (Fig. 269,2)

Connect via the System Control Display

- Open the *SETTINGS* submenu in the System Control Display.
- Click on the *Connection* (Fig. 298,1) button. A notification will appear to explain how your mobile device can be connected to the vehicle.
- Click on the *Connect* (Fig. 298,1) button. Your vehicle and mobile device are now paired.

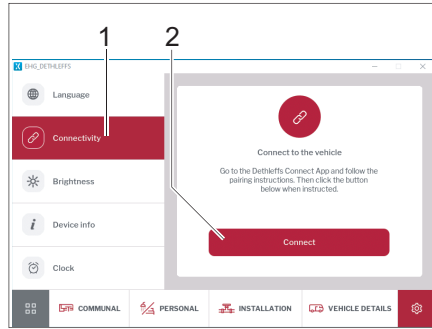


Fig. 298 Connecting via the System Control Display

Connecting using the coupling button

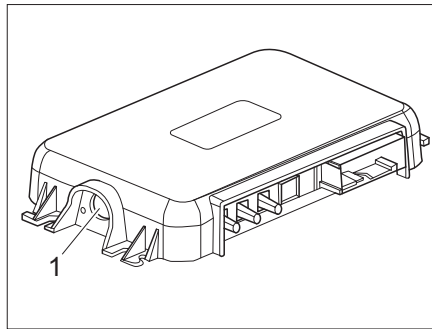


Fig. 299 Coupling button on the SCU

- Press on the SCU coupling button (Fig. 299,1).
Your vehicle and mobile device are now paired.

9.18.2 Dethleffs Connect App features



- The interface of the Dethleffs Connect App is similar to the display in the vehicle.

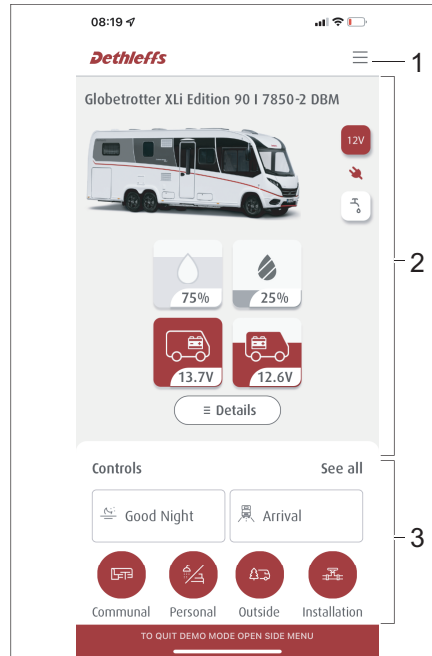


Fig. 300 Dethleffs Connect App design

The Dethleffs Connect App is split into three sections:

- Menu section (Fig. 300,1)
- Vehicle information (Fig. 300,2)
- Handling and scenarios section (Fig. 300,3)

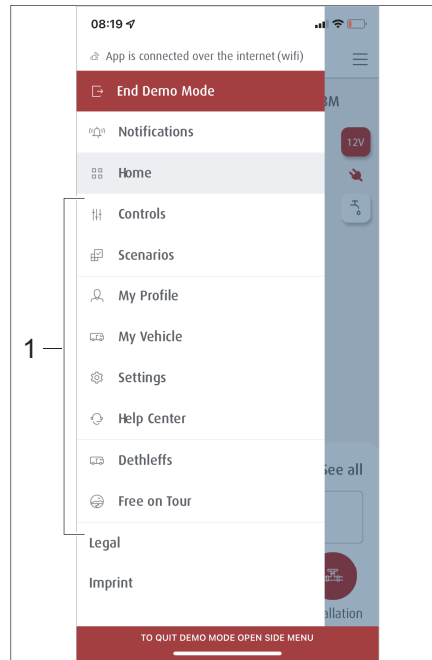


Fig. 301 Submenus

- Click on the symbol ☰ in the menu section.
The submenus (Fig. 301,1) will be displayed.

Scenarios

In the *Scenarios*, all stored scenarios can be found (Fig. 303,1). Preset scenarios (Fig. 303,2) can be viewed or new ones created (Fig. 303,3).

Load preset scenarios

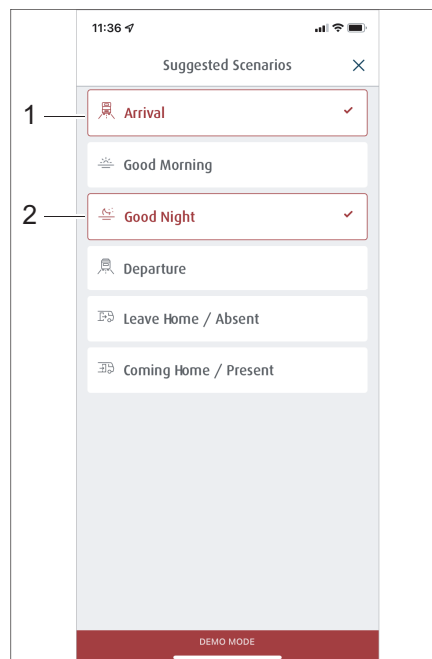


Fig. 302 Selecting preset scenarios

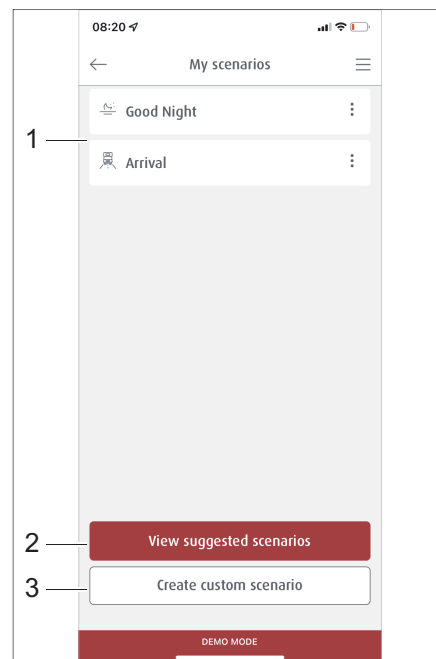


Fig. 303 Managing scenarios

- Click on *Scenarios* (Fig. 301,1) in the menu section.

Electrical system

- In the *Scenarios* menu, click on the *View Preset Scenarios* (Fig. 303,2) button. A list of preset scenarios will appear.
- Click on the desired scenarios, e. g. *Arrival* (Fig. 302,1) and *Good Night* (Fig. 302,2).
The buttons for the selected scenarios will be marked in red and transferred to the list in the *My Scenarios* menu (Fig. 303,1).

Setting the light temperature



- The light temperature can only be set if the Light Moments option is selected as a special add-on.

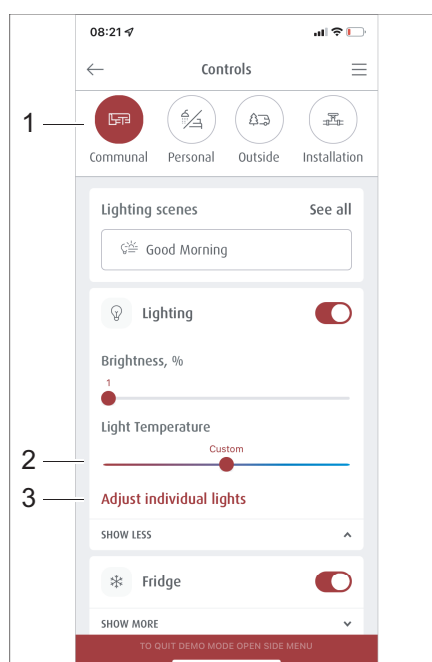


Fig. 304 Selecting preset scenarios

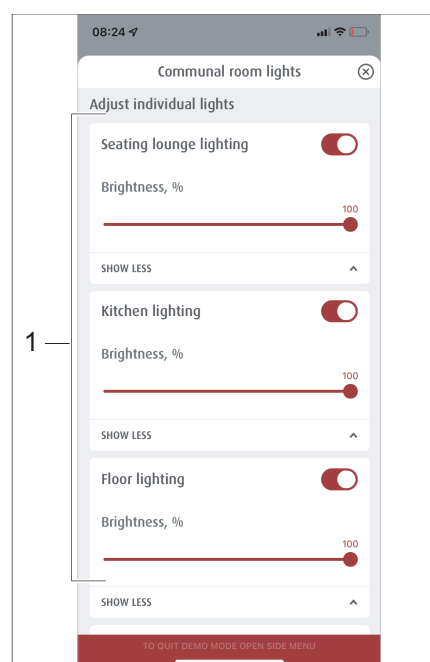


Fig. 305 Managing scenarios

- In the submenu (Fig. 301,1), select the *Operation* menu.
- In the *Operation* menu, click on the *Living* (Fig. 304,1) button.
- In the *Living* menu, click on the *Set lights individually* (Fig. 304,3) button. The *Set lights individually* menu will open (Fig. 305).
- Select the desired lighting from the available options (Fig. 305,1) and use the sliding bar (Fig. 304,2) to set the light temperature.

Retrieve information to
manage guest accesses

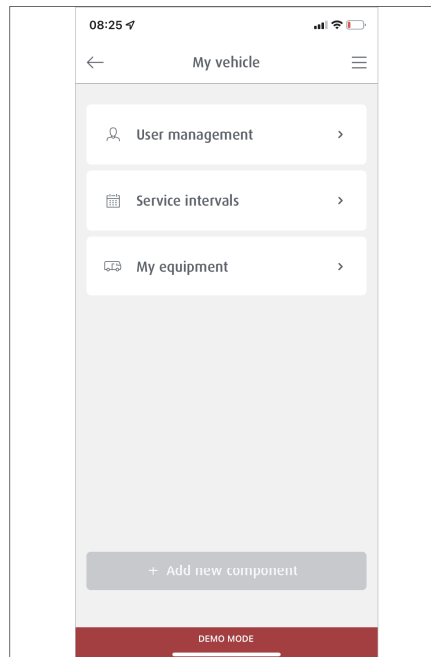


Fig. 306 My Vehicle submenu

- In the submenu (Fig. 301,1) select the *My Vehicle* menu.
Guest accesses can be setup, service appointments booked and vehicle equipment entered in the *My Vehicle* submenu (Fig. 306).

9.19 Truma iNet Box

The Truma iNet Box is the central remote control unit for networked Truma devices (Truma heating, air conditioning and Alde heater). Commissioning is performed via the Truma app.

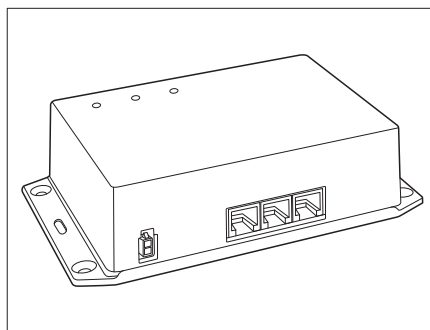


Fig. 307 iNet Box

Communication is effected via SMS or Bluetooth. The Truma iNet Box is retrofittable for all iNet-capable Truma devices.

9

Electrical system

9.20 240 V power supply



- ▶ Only allow qualified personnel to work on the electrical system.
- ▶ Have the electrical system of the vehicle checked at the latest annually by a qualified electrician.

The 240 V power supply provides electricity for:

- sockets with earth contact for appliances with maximum 16 A
- refrigerator
- transformer/rectifier
- air conditioning unit
- electrical heater

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 240 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.

9.20.1 240 V connection



- ▶ The external 240 V power supply must be protected by fuse with a fault current protection switch (FI-switches, 30 mA).
- ▶ Check the fault current protection switch at every connection to the 240 V supply, however at least every 6 months.



- ▷ For the connection points on camp sites (camping distributors) highly sensitive fault current protection switches (FI-switches, 30 mA) are obligatory.

The vehicle can be connected to an external 240 V power supply. The cable may have a length of maximum 25 m.

Check residual current circuit breaker:

- If the vehicle is connected to the 230 V supply, press the test button of the residual current circuit breaker in the fuse box. The residual current circuit breaker should trip.
- Switch the residual current circuit breaker back on.
- Insert plug.

9.20.2

Power cable for external 240 V connection



- ▶ Completely unwind the cable on cable drums to prevent overheating. Fire hazard!

Power cable

- Three-core (3 x 2.5 mm²) flexible rubber sheathed cable
- Maximum 25 m in length
- 1 plug with earth contact
- 1 socket with earth contact (plug-in devices according to EN 60309)

Connection possibilities

For your power cable, we recommend using a CEE connection cable with a CEE plug and coupling. If this type of connection is not feasible, we recommend the following combination with a safety plug:

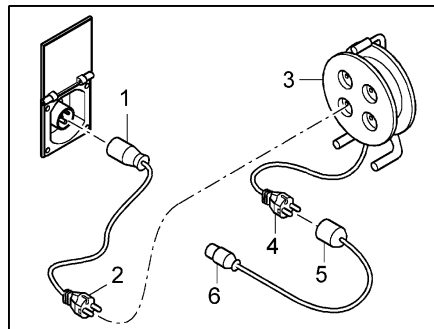


Fig. 308 Connection possibilities 240 V connection

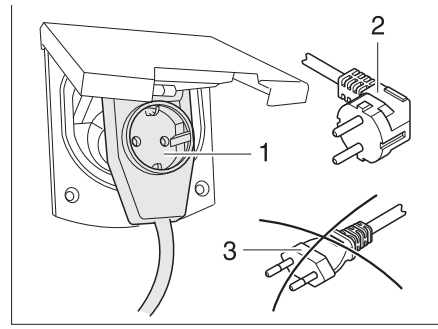


Fig. 309 Connecting an angled connector with socket

- Adapter cable:
CEE 17 socket with earth contact (Fig. 308,1) – plug with earth contact (Fig. 308,2)
- Cable reel:
Socket with earth contact (Fig. 308,3) – plug with earth contact (Fig. 308,4)
- Adapter cable:
CEE 17 socket with earth contact (Fig. 308,5) – plug with earth contact (Fig. 308,6)



- ▶ When using a CEE 17 angled connector with rear socket (Fig. 309,1) only use a rubberised and sealed IP 44 socket with earth contact (Fig. 309,2). Do not use sockets without earth contact (Fig. 309,3). Danger of electrocution!

Depending on the design, the flap for the 240 V connection is designated with the symbol "⚡".

Connecting the power cable:

- Open external flap.
- Depending on the design, tilt the cover upwards.
- Insert connector.
- ▷ Depending on the design, disconnect the connector before removing it.



9

Electrical system

9.21 Fuses



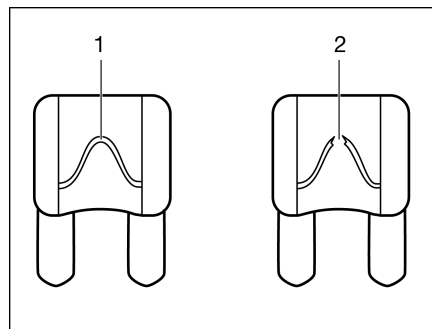
- ▶ Only replace defective fuses when the cause of the defect is known and has been remedied.
- ▶ Only replace defective fuses when the power supply is switched off. Danger of electrocution!
- ▶ Never bridge or repair fuses. Fire hazard!

9.21.1 12 V fuses



- ▶ Before changing the fuses, check the rating and colour of the fuses in question. When changing fuses, use only fuses with the same ratings as the fuses fitted at the factory.

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.



- 1 Unbroken fuse element
- 2 Broken fuse element

Fig. 310 12 V fuse

An intact 12 V fuse can be detected by the unbroken fuse element (Fig. 310,1). If the fuse element is broken (Fig. 310,2), change the fuse.

Fuses for the starter battery

The fuses are located near the starter battery or near the transformer/rectifier. For vehicles on a Fiat chassis, the fuses are installed near the starter battery and in the B-pillar at the bottom on the passenger side.

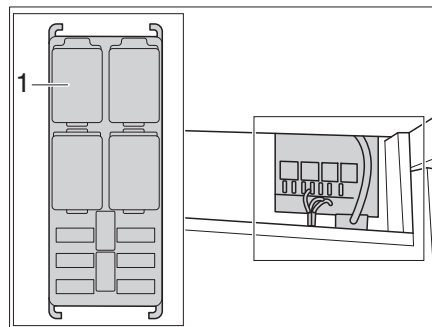


Fig. 311 Fiat fuses in the B pillar at the bottom on the passenger side

9

Electrical system

Fuses for the starter battery (Globebus Performance)

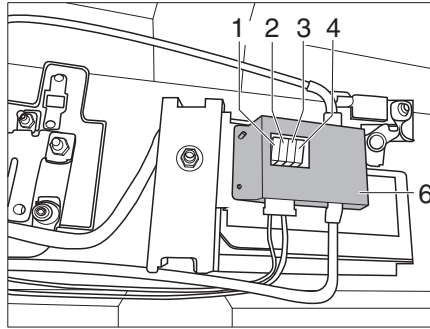


Fig. 312 Fuses Globebus Performance

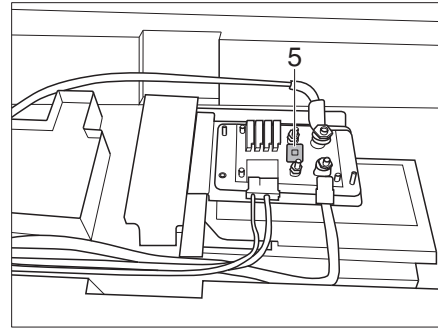


Fig. 313 Fuse charging booster (cover removed)



- To access the fuse F5 (Fig. 313,5) for the charging booster, the cover (Fig. 312,6) must be removed.

Pos. in Fig. 312 and Fig. 313	Fuse	Value (A)	Function
1	F1	2	Voltage sensor starter battery
2	F2	10	Power supply for side marker lights
3	F3	15	Trickle charge starter battery
4	F4	20	Lightbar (VW)
5	F5	50	Charging booster

Fuses on the living area battery

The fuses are fitted close to the living area battery, under the passenger seat, in the rear garage or in the raise floor.

Fuses on the living area battery (optional)

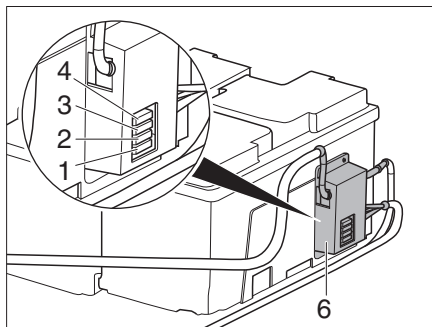


Fig. 314 Fuses for living area battery (optional)

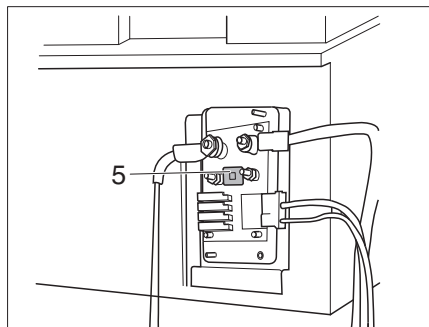


Fig. 315 Fuse charging booster (cover removed)



► To access the fuse F5 (Fig. 315,5) for the EBL supply line, the cover (Fig. 314,6) must be removed.

Pos. in Fig. 314 and Fig. 315	Fuse	Value (A)	Function
1	F1	2	Living area battery voltage sensor
2	F2	-	-
3	F3	15	Naviceiver/Radio
4	F4	20	Refrigerator
5	F5	50	EBL supply line

Fuse for the Thetford toilet (swivel toilet)

The fuse is located in the locker wall of the Thetford cassette.

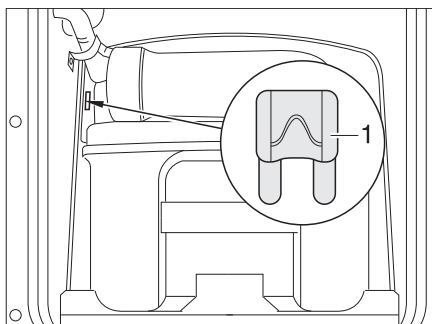


Fig. 316 Fuse for the Thetford toilet

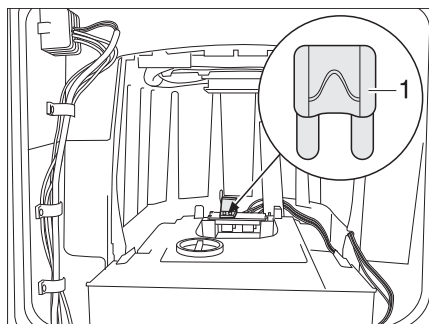


Fig. 317 Fuse for the Thetford toilet (alternative)

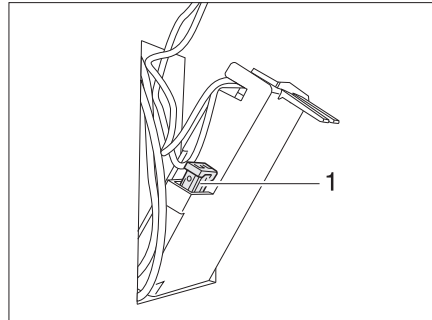
1 Flat fuse 3 A/purple

Changing:

- Open the flap for the Thetford cassette on the outside of the vehicle.
- Pull out the Thetford cassette completely.
- Replace fuse (Fig. 316,1 or Fig. 317,1).

Fuse for the Thetford toilet (fixed seat)

The fuse is located in the locker wall of the Thetford cassette.



1 Flat fuse 3 A/purple

Fig. 318 Fuse for the Thetford toilet

Changing:

- Open the flap for the Thetford cassette on the outside of the vehicle.
- Remove the Thetford cassette and swing out the flap in the housing panel.
- Replace the fuse (Fig. 318,1).

9.21.2 230 V fuse



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

The number of automatic circuit breakers may differ depending on the model and optional devices.

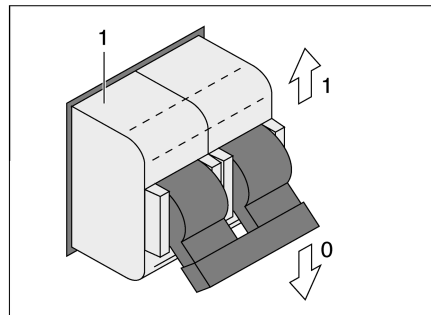


Fig. 319 230 V automatic circuit breaker

The 230 V connection is protected by one or several two-pole automatic circuit breakers (Fig. 319).

Location

The automatic circuit breaker is located in the wardrobe, in the rear garage, or under a cover in the rear area (under the slatted frame), depending on the model.

9.22 LED Lightbar (Globebus Performance)

- ▶ Glare from the LED Lightbar in traffic can be dangerous. It can lead to temporary visual impairment and increased risk of accidents.
- ▶ Use the LED Lightbar only when needed.
- ▶ Regularly check the function of the lightbar and the on/off button (Fig. 321,1).

The LED Lightbar (Fig. 320,1) is located on the roof hood above the driver's cab.

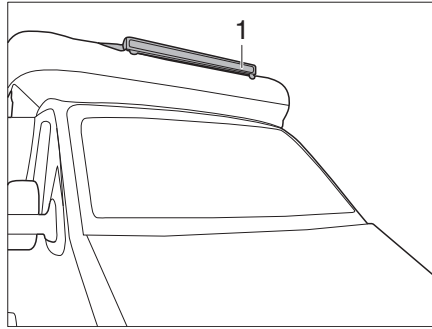


Fig. 320 LED Lightbar

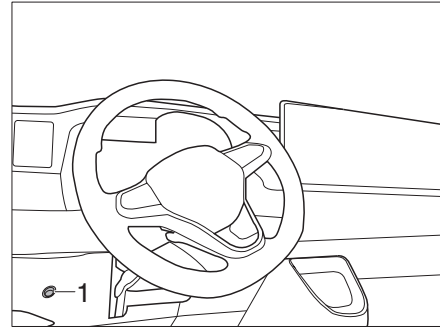


Fig. 321 On/off switch LED Lightbar



- ▶ The LED Lightbar only works when the high beam is switched on and the on/off button is pressed.

Turn on the LED Lightbar:

- Turn on high beam.
- Press the on/off button (Fig. 321,1) on the left below the steering wheel.

9

Electrical system

9.23 Campernet (optional extra)

Campernet is a Wi-Fi/LTE router system specifically designed for motorhomes to provide fast and stable internet on the go. It allows you to surf the internet, stream videos and music, and use apps and media libraries on various devices such as laptops, tablets, and televisions. The Campernet module (Fig. 322,1) is usually installed in one of the wall cabinets.

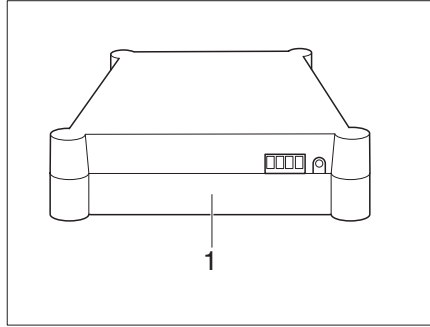


Fig. 322 Campernet (optional extra)



Fig. 323 QR code for user interface

Establish Wi-Fi connection

A Wi-Fi connection to Campernet is required for operation.

- Scan the QR code on the device.

Or

- Connect to the device manually via the WLAN menu.

Open user interface

Access the Campernet user interface as follows:

- Enter the address <http://10.10.10.10> into the browser.

Or

- Scan the QR code (Fig. 323).



- ▷ For further information, please refer to the separate operating instructions or the manufacturer's website (www.campernet.com).

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.

The instructions address the following topics:

- heater
- air conditioning unit
- boiler
- gas cooker
- gas oven
- microwave oven
- extractor hood
- refrigerator
- vacuum cleaner

10.1 General



- ▷ The heat exchanger of the Truma hot-air heater has to be replaced after 30 years. The heat exchanger of the Alde hot-water heater has to be replaced after 10 years. Only the manufacturer of the heater or an authorised specialist workshop is allowed to replace the heat exchanger. The operator of the heater must see to it that the parts are replaced.
- ▷ The heat exchanger of the Alde hot-water heater has to be replaced after 10 years. Only the manufacturer of the heater or an authorised specialist workshop is allowed to replace the heat exchanger. The operator of the heater must see to it that the parts are replaced.
- ▷ 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, refrigerator and air conditioning unit 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.

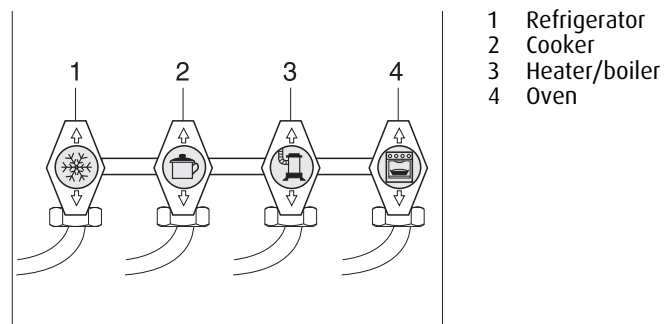


Fig. 324 Symbols for the gas isolator taps

10.2 Heater



- ▶ 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!

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.

10.2.1 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.

10.2.2 To heat properly

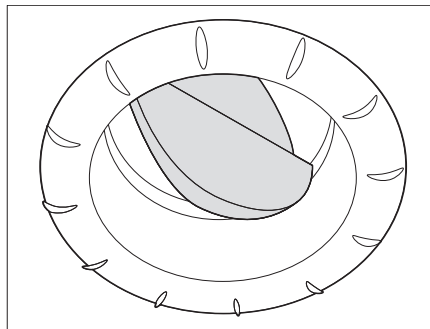


Fig. 325 Air outlet nozzle

Hot air distribution

Several air outlet nozzles (Fig. 325) 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.

10.2.3 Hot-air heater Truma Combi



- ▷ If the heater is not in operation when there is risk of frost, empty the entire heating system.



- ▶ **Do not use the space above and behind the heater as a storage compartment. Fire hazard!**



- ▷ Alternatively the Panel Truma CP plus control unit can also be installed. See Chapter 9.16.

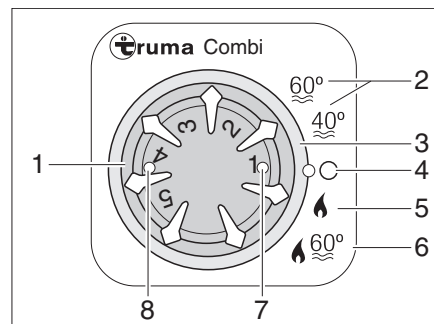


Fig. 326 Operating unit for heater/boiler

- 1 Temperature control knob
- 2 Summer operation water temperature 40 °C or 60 °C
- 3 Rotary switch
- 4 Off
- 5 Winter operation "Heater without boiler"
- 6 Winter operation "Heater and boiler"
- 7 Indicator lamp green:
Lit = "Heater in operation"
Flashing = "After-running for temperature-reduction of the device is active"
- 8 Indicator lamp yellow/red:
Lit yellow = "Boiler heating-up phase"
Flashing/lit red = "Fault"

Operating modes

The heater has two operating modes:

- Winter operation
- Summer operation

It is only possible to heat the vehicle in the "Winter" operating mode. With the "Summer" operating mode only water in the boiler is heated. It is not possible to heat the vehicle in this operating mode.

Selecting operating mode:

- Set the operating mode using the rotary switch (Fig. 326,3).

The power supply of the heater cannot be interrupted by means of the 12 V main switch.

Winter operation

The heater selects the necessary burner setting according to the set heating level. In the "Heater and boiler" (Fig. 326,6) operating mode, the water in the boiler is also heated. The heater can be operated with an empty boiler in the "Heater without boiler" (Fig. 326,5) operating mode.



- ▷ To operate a diesel heater, the fuel tank must be at least ¼ full.

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Heater/boiler".
- Turn the temperature control knob (Fig. 326,1) on the operating unit to the desired heating level.
- Set the rotary switch (Fig. 326,3) to winter operation "Heater without boiler" (Fig. 326,5) or to winter mode "Heater and boiler" (Fig. 326,6).

The green indicator lamp (Fig. 326,7) lights up.

The circulation fan automatically switches on when the heater is activated.

Switching off:

- Set the rotary switch (Fig. 326,3) to "O" (Fig. 326,4).
- Close the gas isolator tap "Heater/Boiler" and the main regulator tap on the gas bottle.

After switching off the heater, the circulation fan may still run for a moment to use up the residual heat.

Summer operation

It is not possible to heat the vehicle in the "Summer" operating mode. In this operating mode, only water in the boiler is heated.



- ▷ Further information can be obtained from the separate instruction manual "Gas heater".
- ▷ For further information about the use of the boiler see section "Boiler".

Truma iNet Box

Through the Truma iNet Box iNet-compatible devices are controlled via mobile terminal devices (for example smartphones, tablet PCs). Communication is effected via Bluetooth or GSM (see also Chapter 9.19).



- ▷ The Truma CP plus – iNet ready Panel is mandatory if a Truma Combi heater forms part of the system (see Chapter 9.16).
- ▷ Install the Truma CP plus – iNet ready in accordance with the installation instructions.
- ▷ Observe the instructions for use (in particular for the usage of the automatic climate control) and the troubleshooting instructions.

10.2.4 Alde hot-water heater



- ▷ Never run the hot-water heater without heating fluid. Observe the specifications in chapter 13.
- ▷ Never drill holes in the floor. This might damage the hot-water pipes.
- ▷ Do not use the space above and behind the heater as a storage compartment.
- ▷ Do not block storage areas by loading them completely since otherwise convection is no longer possible for the radiators. The heating air distribution is reduced.



- ▷ The circulating pump must always be turned on when the hot-water heater is in operation.
- ▷ We recommend bleeding the heating system after the initial heater operation to checking the glycol content. Observe the specifications in chapter 13.
- ▷ 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 13.
- ▷ For further information about the use of the boiler see section "Boiler".

The hot-water heater is equipped with a safety/drainage valve.

It is usually fitted below in the wardrobe.

Alde Smart Control

The Alde Smart Control can be used to control and monitor the Alde Compact heating system with a smartphone.

The following components are required for Alde Smart Control:

- Alde Smart Control module
- Smartphone with installed Alde Smart Control App
- Operating unit (see below)

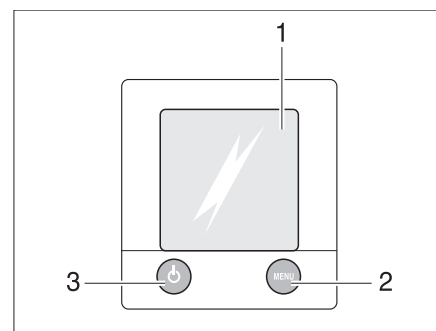


- ▷ Observe the instructions for use in accordance with the enclosed instruction manual.

Operating unit

The operating unit is divided into two sections:

- Colour display (touch screen)
- Control buttons



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

Fig. 327 Operating unit for hot-water heater



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

Control buttons

The control buttons have the following functions:

No. in Fig. 327	Button	Function
2	MENU	Open adjustment menu
3		Activate heating

Colour display

The colour display (Fig. 327,1) is designed as a touch screen. Touching the symbols calls up the relevant function.

Start screen

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

Symbol	Meaning
	This symbol appears when the circulating pump is activated
	This symbol appears when a switching facility for gas cylinders 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.

The values can be increased or reduced via the "+" or "-" symbols.

Symbol	Meaning
	Set the desired temperature from +5 to +30 °C
	Set the water temperature in the boiler
	Set the heat output in electrical operation
	Activate the function "Heating in gas operation"
	Call up the enabling menu for the tool menus

Resetting the heating to the factory setting:

- Keep the "MENU" button pressed for 15 seconds.

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 on the operating unit.

Selecting gas operation:

- Press the "On" button next to the "Δ" symbol. The gas operation is activated.

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 (1050 W) at 6 A

Level 2 (2100 W) at 10 A

Level 3 (3150 W) 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 the "☺" button. The Start screen appears in the display. The heater starts automatically.

Switching the heater off:

- Press the "☺" button. The heater is turned off.

Switch for water pump

The switch for the water pump is located under the driver's seat.

Switching on:

- Press the upper part of the rocker switch: The water pump is turned on.

Switching off:

- Press the lower part of the rocker switch "☐": The water pump is switched off.

Alde stopcock

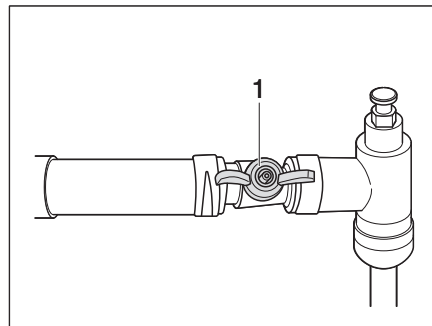


Fig. 328 Alde stopcock, opened

The heat cycle can be regulated for the cab or the sleeping area by means of the stopcock. The position of the stopcock depends on the layout. With the Iveco structure it is located in the storage compartment behind the cab.

Close the stopcock:

- Set the stopcock (Fig. 328,1) diagonally to the pipe.

Open the stopcock:

- Set the stopcock (Fig. 328,1) parallel to the pipe.

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 living area of the vehicle can be heated with the heat exchanger during travel. However, the circulating pump of the heating has to be activated **via the heater operating unit**. See "Operating unit" on page 234.

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.

The heat exchanger stopcock is located directly on the exchanger.

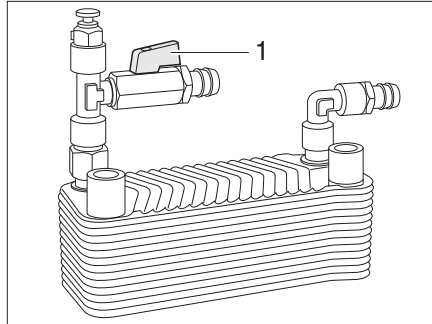


Fig. 329 Alde heat exchanger

- Turning on:* ■ Set stopcock handle (Fig. 329,1) parallel to the pipe.
- Shutting off:* ■ Set drain cock handle (Fig. 329,1) at a right angle to the pipe.

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.

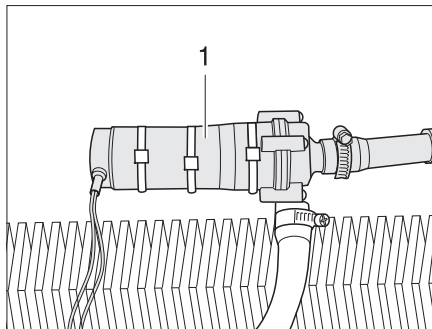


Fig. 330 Auxiliary circulating pump

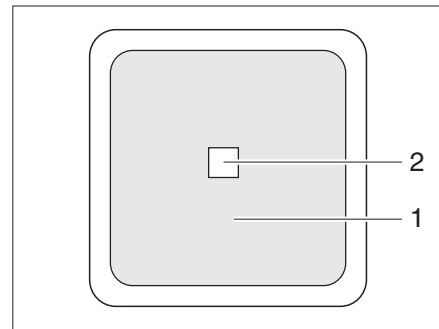


Fig. 331 Operating switch for auxiliary circulating pump

The auxiliary circulating pump (Fig. 330,1) 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.

The auxiliary circulating pump switch (Fig. 331,1) is located in the area of the seating group, or in the case of vehicles with a double floor next to the hot-water heater operating unit. The indicator lamp (Fig. 331,2) illuminates when the pump is operated.

Setting the rotational speed of the circulating pump



- ▷ Level 2 = Normal level
- ▷ Level 5 = Ventilation

Setting the output:

- Set the adjusting screw at the pump to Level 2.
- To ventilate the pump set the adjusting screw to Level 5.

240 V circulating pump

Depending on the equipment, the hot-water heater has an additional 240 V circulating pump.

If the vehicle is connected to the 240 V power supply, then it is possible to switch to the higher output of the 240 V circulating pump.

The switch for switching between the 12 V circulating pump and the 240 V circulating pump is located on the hot-water heater operating unit.

10.2.5 Heater for waste water tank and waste water pipes (winter comfort package)



- ▷ Take the battery consumption into account! Operation of the heating for the waste water and waste water pipes is only possible to a limited extent without an external power supply.

In order to prevent waste water fittings freezing up, the waste water tank and the waste water pipes can be electrically heated.

When the heater is turned on, temperature sensors monitor the temperature of the waste water tank and the waste water pipes. If the temperature falls below 5 °C, the heating elements are switched on and the waste water tank and waste water pipes are heated. If the temperature rises above a certain level, the heating elements are switched off again.

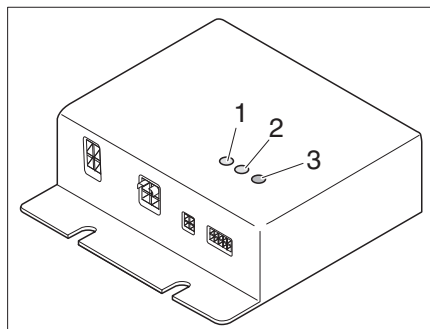


Fig. 332 Control unit

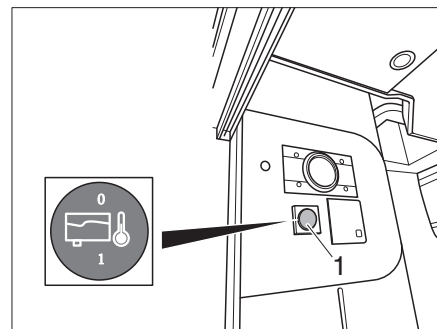


Fig. 333 Reserve switch

The control unit (Fig. 332) is installed in the wardrobe. The control lamps on the control unit have the following meanings:

- The indicator LED (Fig. 332,1) HC1 lights up in green: Heating circuit 1 is operating
- The indicator LED (Fig. 332,2) HC2 lights up in green: Heating circuit 2 is operating
- Fault LED (Fig. 332,3)

To turn it on and off, use the reserve switch for the waste water tank heater on the panel. With the exception of Panel LT 96 / LT 97.

10

Appliances



At vehicles with a double floor the reserve switch is located at the operating panel for the water pump (Fig. 333).

10.2.6 Electrical floor warming/bed warming



- ▶ On models with electrical floor warming/bed warming, never drill holes in the floor or screw in screws. Caution with sharp-edged or pointed objects. There is danger of a power cut or a short circuit due to damage to a heater wire.



- ▶ Do not cover the regulator. Danger of overheating!



- ▶ The electrical floor warming/bed warming unit only operates if the vehicle is connected to the 230 V power supply.
- ▶ The output of the electrical floor warming/bed warming unit alone is not sufficient to heat the living area.

The regulator for the electrical floor warming/bed warming unit is located in the wardrobe.

Operating levels

The electrical floor warming/bed warming unit has four operating levels:

- 0 "Off"
- 20 V "low heating level"
- 22 V "medium heating level"
- 24 V "high heating level"

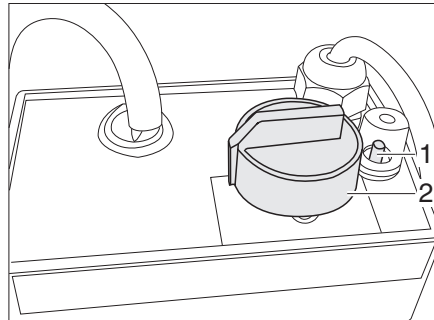


Fig. 334 Regulator for electrical floor warming/bed warming unit

Switching on:

- Connect the vehicle to the 230 V power supply (see Section 9.20.1).
- Turn the control knob (Fig. 334,2) to the desired heating level.

Switching off:

- Turn the control knob (Fig. 334,2) to the setting "0".

After switching off, the floor remains warm for a while, due to residual heat.

If the regulator is overloaded, the overload protection is actuated. The pin (Fig. 334,1) will trip.

Switching on overload protection:

- Press in the pin (Fig. 334,1) at the overload protection when the regulator has cooled down.

10 Appliances

10.3 Roof air conditioning unit

10.3.1 Roof air conditioning unit (Truma)

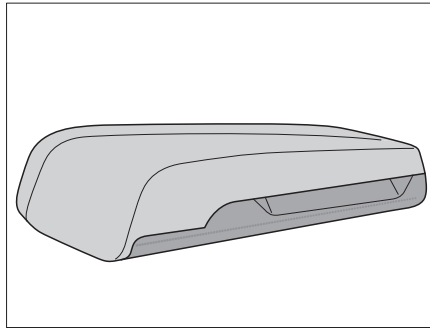


Fig. 335 Roof view

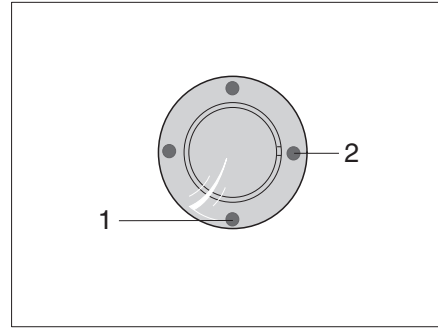


Fig. 336 Infrared receiver/function display

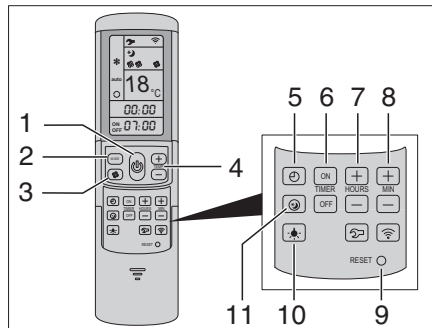


Fig. 337 Remote control

The air conditioning unit is located on the roof of the vehicle. The remote control (Fig. 337) for the air conditioning unit is located in the kitchen area.



- ▷ The roof air conditioning unit (Truma) can also be controlled with Panel Truma CP plus (optional). See Chapter 9.16.

Switching on:

- Connect the vehicle to the 230 V power supply.
The air conditioning unit is ready to operate. The blue LED (Fig. 336,1) lights up.
- To switch on press the button (Fig. 337,1) on the remote control. The blue LED (Fig. 336,1) flashes.
- Set the desired operating mode using the MODE button (Fig. 337,2).
 - "COOLING"
 - "AUTOMATIC"
 - "VENTILATION"
- If necessary, set the desired fan level by using the button (Fig. 337,3) and the room temperature by using the buttons (Fig. 337,4).

When the temperature set on the remote control is reached, the blue LED (Fig. 336,1) goes out, the compressor switches off and the circulation fan continues to run.

Switching off:

- To switch off press the button (Fig. 337,1) on the remote control again.

Timer

The integrated timer can be used to set the switching-on and -off times for the climate system up to 24 hours in advance from the current time on.

- To carry out programming, switch on the air conditioning unit by using the button (Fig. 337,1) on the remote control.
- Set the desired operating mode by using the button (Fig. 337,2) and the room temperature by using the buttons (Fig. 337,4).
- Use the buttons (Fig. 337,6) to select the desired function:
 - "ON": Switch on the timer
 - "OFF": Switch off the timer
- Use the buttons (Fig. 337,7 and 8) to select the desired switching time (15 minutes to 24 hours).
- Confirm the setting with the buttons "ON" or "OFF" (Fig. 337,6).

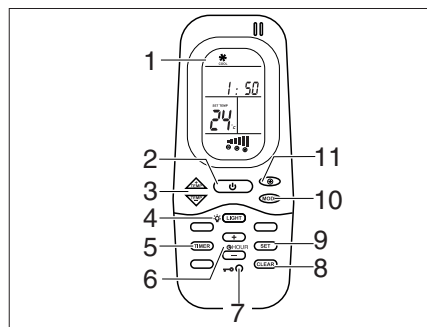
10.3.2 Roof air conditioning unit (Telair)

Fig. 338 Remote control

- 1 Display
- 2 On/off switch
- 3 TEMP (+/-) buttons for setting the temperature
- 4 LIGHT button for illumination on the diffuser
- 5 TIMER button for the timer function
- 6 HOUR (+/-) buttons for setting the time, remote control and operating and off times for the timer function
- 7 Reset button
- 8 CLEAR button for deleting the programming
- 9 SET button for setting mode
- 10 MODE button for selecting the operating modes
- 11 Selecting the fan speed levels

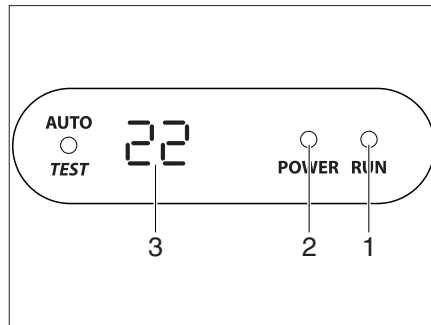


Fig. 339 Display on the diffuser

The air conditioning unit is located on the roof of the vehicle. The remote control (Fig. 338) for the air conditioning unit is located in the kitchen area.

Switching on:

- Connect the vehicle to the 230 V power supply. The air conditioning unit is ready to operate. The LED (Fig. 339,2) on the diffuser's display lights up red.
- To switch on, press the on/off switch (Fig. 338,2) on the remote control. The LED (Fig. 339,1) lights up green when the air conditioning unit is in cooling mode. The LED (Fig. 339,1) lights up red when the air conditioning unit is in heating mode.

10

Appliances

- Set the desired operating mode using the MODE button (Fig. 338,10).
 - "COOLING"
 - "HEATING"
 - "AUTOMATIC"
- If necessary, set the desired fan level by using the button (Fig. 338,11) and the room temperature by using the buttons (Fig. 338,3).

Switching off:

- To switch off, press the On/Off switch (Fig. 338,2) on the remote control again.

Timer

The integrated timer can be used to set the switching-on and -off times for the climate system up to 24 hours in advance from the current time on.

- To carry out programming, switch on the air conditioning unit with the On/off switch (Fig. 338,2) on the remote control.
- Press the TIMER button (Fig. 338,5). The ON indicator for the Start time is activated.
- Set the time with the TEMP (+/-) buttons (Fig. 338,3).
- Press the TIMER button (Fig. 338,5) again. The OFF indicator for the Start time is activated.
- Set the time with the TEMP (+/-) buttons (Fig. 338,3).
- Press the TIMER button (Fig. 338,5) again.
- Upon completing the setting, press the SET button (Fig. 338,9).
- Press the CLEAR button (Fig. 338,8) to delete the timer programming.



- ▷ Further information can be obtained from the separate manufacturer's instruction manual "DualClima 8400 H".

10.4 Boiler



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Never run the boiler in gas operation when refuelling, on ferries or in the garage. Danger of explosion!
- ▶ Never operate the boiler in gas operation in closed spaces (e.g. garages). Danger of poisoning and suffocation!
- ▶ 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.



- ▷ Dethleffs recommends that water from the boiler is not used as drinking water.

10

Appliances

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



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

10.4.2 Alde boiler

Switching the boiler on/off

The boiler is integrated in the hot-water heater. Separate operation is not possible. For information about operating the hot-water heater see section 10.2.4.

Filling/emptying the boiler

The boiler can be supplied with water from the water tank.

Filling the boiler with water:

- Switch on 12 V power supply on the panel.
- Check whether the rotary switch of the safety/drainage valve in the "Operation" position and is latched in. See chapter 10.4.3.
- Close the safety/drainage valve. See chapter 10.4.3.
- Set all the water taps to "Hot" and open them. The water pump is turned on. The hot water pipes are filled with water.
- Keep the taps open until the water flowing out of the 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 boiler.
- Open all water taps and set to the central position.
- Open the safety/drainage valve. See chapter 10.4.3. The boiler is drained to the outside using the drainage neck.
- Check whether the water has been drained completely from the boiler (approx. 12.5 litres).



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

10.4.3 Safety/drainage valve

The boiler is equipped with a safety/drainage valve (Fig. 340). The safety/drainage valve prevents water in the boiler from freezing, when there is frost and the heater is not switched on.

If there is a danger of frost (at approx. 3 °C ambient temperature), the water is drained intermittently at overpressure via a drain neck.

The safety/drainage valve cannot be closed manually until the ambient temperature lies within the frost-proof range (approx. 7 °C ambient temperature).



- ▷ If the vehicle will not be used for a longer period of time, open the safety/drainage valve and empty the boiler.
- ▷ The water pump and the water fittings are not protected against freezing by the safety/drainage valve.



- ▷ The drainage neck (Fig. 340,3) of the safety/drainage valve has to be free of dirt (e.g. leaves, ice) at all times.

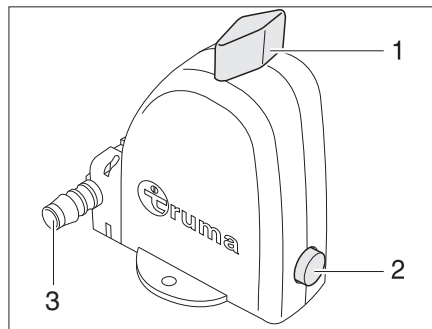


Fig. 340 Safety/drainage valve of the boiler - Operation position



- ▷ If there is a risk of frost (below 3 °C), the safety/drainage valve opens automatically.

Opening the safety/drainage valve:

- Turn the knob (Fig. 340,1) 90° lengthwise to the safety/drainage valve. The pushbutton (Fig. 340,2) jumps out. The boiler is drained to the outside by the drainage neck (Fig. 340,3) of the safety/drainage valve.

Closing the safety/drainage valve:

- Turn the knob (Fig. 340,1) 90° crosswise to the safety/drainage valve.
- Push in the pushbutton (Fig. 340,2).

10

Appliances

10.5 Cooker



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Before using the cooker make sure that there is sufficient ventilation. Open windows 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.

10.5.1 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.
- ▶ Depending on the model, the gas cooker lid is held closed by a spring. When closing there is danger of getting injured!



- ▶ Do not use the glass gas cooker lid as a hob.
- ▶ Do not close the gas cooker lid while the gas cooker is in operation.
- ▶ Do not apply pressure on the gas cooker lid when it is closed.
- ▶ Do not place hot cooking pans on the gas cooker lid.
- ▶ Keep the gas cooker lid open after cooking until the burners are cool. Otherwise the glass plate could shatter.
- ▶ Do not place hot objects such as cooking pots on the sink cover. The plastic can deform.



- ▶ 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 from the separate instruction manual "Gas cooker".

The vehicle kitchen block is fitted with a two- or three-burner gas cooker. The cooker is equipped with an electronic ignition depending on a model.

Depending on the model, the operating controls for the gas cooker are found on the operating panel or directly on the gas cooker.

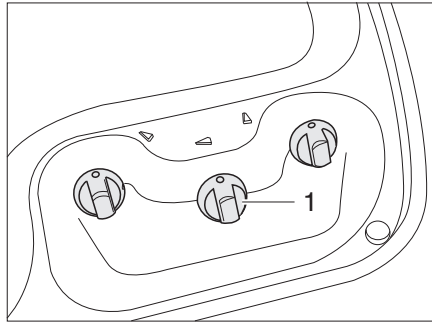


Fig. 341 Operating controls for gas cooker (without piezo ignition button)

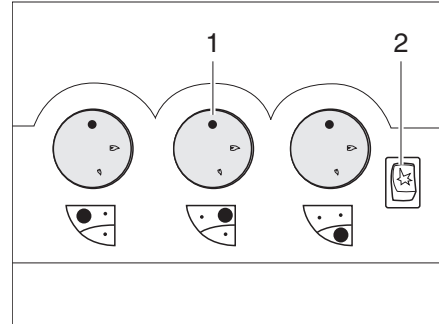


Fig. 342 Operating controls for gas cooker (with piezo ignition button)

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Cooker".
- Open the gas cooker lid.
- Turn the control knob (Fig. 341,1 or Fig. 342,1) on the burner you wish to use to the ignition position (large flame).
- Press down the control knob and hold it down.
- If the gas cooker disposes of automatic ignition: Spark is created automatically when the control knob is pressed.
- If an ignition button (Fig. 342,2) is present: Create a spark by pushing the ignition button.
- If an ignition button is not present: Ignite the burner with a gas lighter, a match or with other suitable means of lighting.
- Once the flame is burning, the control knob must be held down for 10 to 15 seconds, until the thermocouple automatically keeps the gas supply open.
- Release the control knob and turn to the desired setting.
- If ignition is unsuccessful, repeat the entire procedure.

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.

10

Appliances

10.5.2 Gas oven (Spinflo)



- ▶ Always keep ventilation apertures at the gas oven open.
- ▶ There must be no flammable objects near the gas oven when it is being lit.
- ▶ 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, switch off the oven and leave the burner off for at least 1 minute. Only then ignite it again.
- ▶ When grilling pull out the heat protector and leave the flap completely open.



- ▷ Before using the gas oven for the first time run it for 30 minutes at maximum temperature without any contents.
- ▷ When the flame fades, the thermocouple automatically cuts the gas supply.
- ▷ Further information can be obtained from the separate instruction manual "Gas oven".

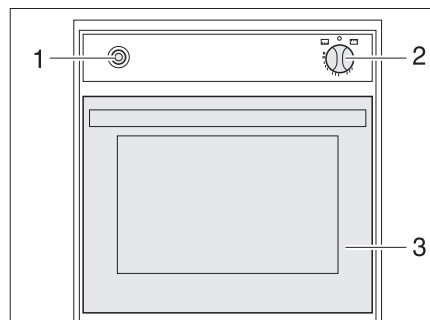


Fig. 343 Gas oven (Spinflo)

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Oven".
- Fully open the oven flap (Fig. 343,3).
- Lightly press control knob (Fig. 343,2) and set to "Oven" (oven) or "Grill" (grill).
- Press the control knob (Fig. 343,2) and hold it down for 5 to 10 seconds. Gas will stream into the burner.
- Press the ignition switch (Fig. 343,1) repeatedly until there is a flame.
- When the flame burns, hold the control knob down for 10 to 15 seconds, until the thermocouple keeps the gas supply automatically open.
- Release the control knob and turn to the desired setting.

Switching off:

- Turn the control knob (Fig. 343,2) to "O". The flame fades.
- Close the gas isolator tap "Oven" and the regulator tap on the gas bottle.

10.5.3 Gas oven (Dometic)



- ▶ Always keep ventilation apertures at the gas oven open.
- ▶ There must be no flammable objects near the gas oven 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 "O" and leave the burner off for at least 1 minute. Only then ignite it again.



- ▶ 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 fades, the thermocouple automatically cuts the gas supply.
- ▶ Further information can be obtained from the separate instruction manual "Gas oven".

The oven is equipped with electronic ignition.

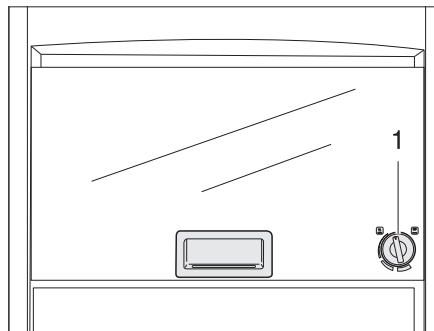


Fig. 344 Gas oven (Dometic)

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Oven".
- Gently press the control knob (Fig. 344,1) and turn left to any position.
- Press the control knob and hold it down for 5 to 10 seconds. Ignition will take place automatically.
- Release the control knob and turn to the desired setting.

Switching off:

- Turn the control knob (Fig. 344,1) to "O". The flame fades.
- Close the gas isolator tap "Oven" and the regulator tap on the gas bottle.

10.5.4 Gas oven (Thetford)



- ▶ Always keep ventilation apertures at the gas oven open.
- ▶ There must be no flammable objects near the gas oven 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.



- ▶ Before using the gas oven for the first time run it for 30 minutes at maximum temperature without any contents.
- ▶ When the flame fades, the thermocouple automatically cuts the gas supply.
- ▶ Further information can be obtained from the separate instruction manual.

The oven is equipped with electronic ignition.

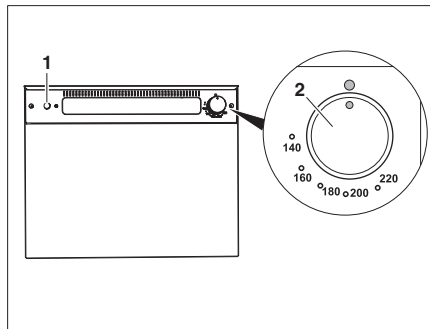


Fig. 345 Gas oven (Thetford)

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Oven".
- Gently press the control knob (Fig. 345,2) and turn left to any position.
- Press the control knob and hold it down for 5 to 10 seconds.
- Press the ignition switch (Fig. 345,1) repeatedly until there is a flame.
- Release the control knob and turn to the desired setting.

Switching off:

- Turn the control knob (Fig. 345,2) to "O". The flame fades.
- Close the gas isolator tap "Oven" and the regulator tap on the gas bottle.

10

Appliances

10.5.5 Extractor hood

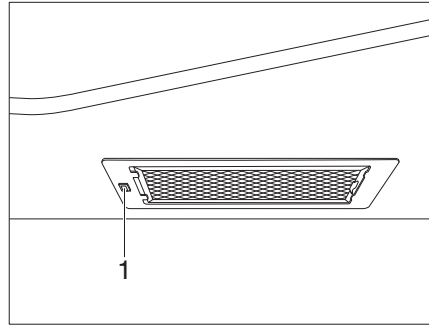


Fig. 346 Extractor hood

The cooker is equipped with an extractor hood with two-level fan. Depending on the model the cooking steam is filtered and circulated, or extracted directly outwards.

Switching extractor hood on/off:

- Use the switch (Fig. 346,1) to turn the extractor hood on and off.

10.6 Refrigerator

During the journey, only operate the refrigerator via the 12 V power supply. At high ambient temperatures the refrigerator is unable to reach its full cooling power. At high external temperatures, the full cooling power of the cooling unit is only guaranteed if the refrigerator is ventilated sufficiently. In order to achieve a better ventilation the refrigerator ventilation grill can be removed.



- ▷ When leaving the vehicle, always mount the refrigerator ventilation grill. Otherwise water can enter during rain.

10.6.1 Refrigerator ventilation grill

Dometic

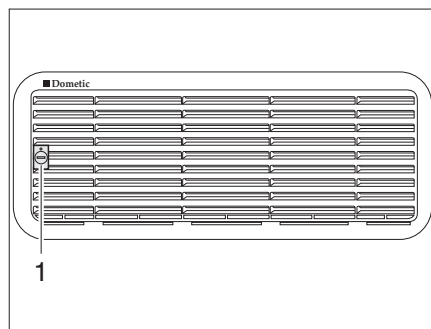


Fig. 347 Refrigerator ventilation grill (Dometic small)

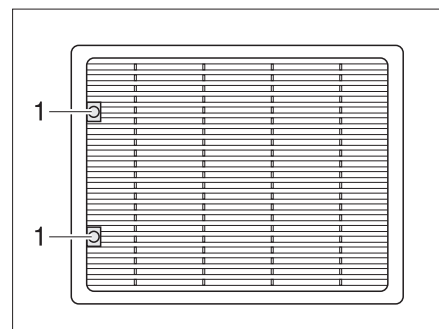


Fig. 348 Refrigerator ventilation grill (Dometic large)

Removal:

- Turn screw (Fig. 347,1 or Fig. 348,1) one quarter turn using a coin.
- Remove refrigerator ventilation grill.

Thetford

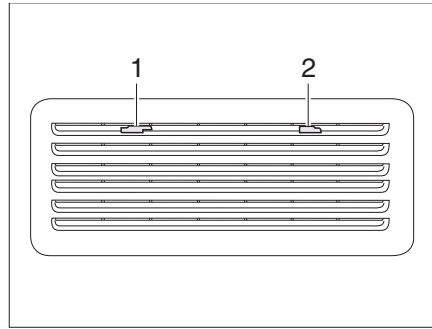


Fig. 349 Refrigerator ventilation grill (Thetford)

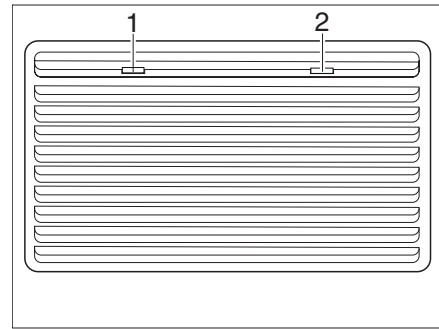


Fig. 350 Refrigerator ventilation grill (Thetford large)

- Removal:**
- Move the locking device (Fig. 349,1) to the middle.
 - Remove refrigerator ventilation grill.

10.6.2 Operation (Dometic 8 series)

Operating modes

The refrigerator has 2 operating modes:

- Gas operation
- Electrical operation (240 V AC or 12 V DC)

The operating mode is set with the operating controls on the refrigerator panel.

- ▷ Select only one energy source.



Gas operation



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ It is not permitted to operate the refrigerator with car gas.

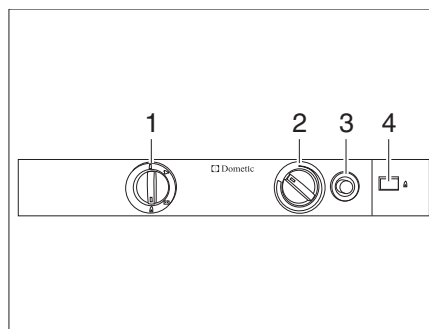


Fig. 351 Operating controls for the refrigerator (Dometic 8 series)

- 1 Energy selector switch
- 2 Control knob for setting the temperature
- 3 Gas ignition button
- 4 Flame indicator

- Switching on:**
- Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
 - Set the energy selector switch (Fig. 351,1) to "🔥".
 - Press the control knob (Fig. 351,2), turn it to the highest level and hold it down. Wait until gas gets into the burner.
 - Press the gas ignition button (Fig. 351,3) and keep it pressed. Ignition will take place automatically.

- Keep gas ignition button (Fig. 351,3) pressed down until the flame indicator (Fig. 351,4) becomes green and then release it.
- Keep the control knob (Fig. 351,2) pressed for another 10 to 15 seconds, then release it.
- Adjust the refrigerating temperature with the control knob.

Switching off:

- Set energy selector switch to "O". Refrigerator is switched off.
- Close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.

Electrical operation



- ▷ Close the gas isolator tap "Refrigerator" when the refrigerator is operated electrically.

The refrigerator can be operated with the following voltages:

- 240 V AC
- 12 V DC

Switching the 240 V operation on:

- Set the energy selector switch (Fig. 351,1) to "⏻".
- Use the control knob (Fig. 351,2) to adjust the refrigerating temperature.

Switching the 240 V operation off:

- Set energy selector switch to "O". Refrigerator is switched off.

Switching the 12 V operation on:

- Set the energy selector switch (Fig. 351,1) to "⏻".

Switching the 12 V operation off:

- Set energy selector switch to "O". Refrigerator is switched off.

When operated with 12 V, the refrigerator draws power only from the starter battery of the vehicle. The starter battery only supplies the refrigerator with 12 V when the vehicle engine is running. When the vehicle engine is not running, the refrigerator is cut off from the power supply in the living area. For this reason, change over to gas operation during prolonged driving breaks.



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

10.6.3 Operation (Dometic 8 series with manual power selection MES)

Operating modes

The refrigerator has 2 operating modes:

- Gas operation
- Electrical operation (240 V AC or 12 V DC)

The operating mode is set with the operating controls on the refrigerator panel.



- ▷ Select only one energy source.
- ▷ Even when the 12 V power supply is switched off, a small electrical power flows which puts an extra load on the living area battery. Always switch off the refrigerator for a temporary lay-up.

Gas operation



- ▶ Never let gas escape unburned due to danger of explosion.

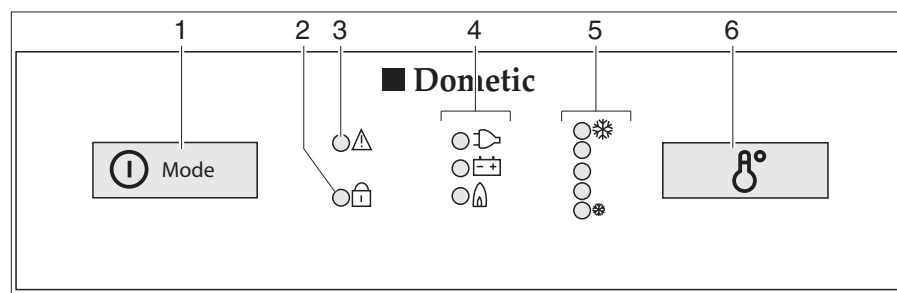


Fig. 352 Operating controls for the refrigerator (Dometic 8 series with MES)

- 1 On/off switch/energy selector switch
- 2 Display-LED "open door" (only for central locking system of the refrigerator door)
- 3 Display-LED "fault"
- 4 Operating indicators
- 5 Display-LED "temperature range"
- 6 Switch for temperature setting

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
- Press the on/off switch/energy selector switch (Fig. 352,1) down for 2 seconds in order to switch on the appliance. The LED of the operating mode chosen most recently lights up.
- If appropriate press the on/off switch/energy selector switch (Fig. 352,1) until the gas operating indicator "🔥" lights up. Gas supply is open. Ignition will take place automatically. A ticking sound can be heard until ignition has been completed successfully.
- Use switch (Fig. 352,6) to adjust refrigerating temperature.

Switching off:

- Press down the on/off switch/energy selector switch for 2 seconds. Refrigerator is switched off.
- Close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.

Electrical operation



- ▷ Close the gas isolator tap "Refrigerator" when the refrigerator is operated electrically.

The refrigerator can be operated with the following voltages:

- 240 V AC
- 12 V DC

Switching the 240 V operation on:

- Press the on/off switch/energy selector switch (Fig. 352,1) down for 2 seconds in order to switch on the appliance. The LED of the operating mode chosen most recently lights up.
- If appropriate press the on/off switch/energy selector switch (Fig. 352,1) several times until the operating indicator 240 V "" lights up.
- Use switch (Fig. 352,6) to adjust refrigerating temperature.

Switching the 240 V operation off:

- Press down the on/off switch/energy selector switch for 2 seconds. Refrigerator is switched off.

Switching the 12 V operation on:

- Press the on/off switch/energy selector switch (Fig. 352,1) down for 2 seconds in order to switch on the appliance. The LED of the operating mode chosen most recently lights up.
- If appropriate press the on/off switch/energy selector switch (Fig. 352,1) several times until the operating indicator 12 V "" lights up.
- Use switch (Fig. 352,6) to adjust refrigerating temperature.

Switching the 12 V operation off:

- Press down the on/off switch/energy selector switch for 2 seconds. Refrigerator is switched off.

When operated with 12 V, the refrigerator draws power only from the starter battery of the vehicle. The starter battery only supplies the refrigerator with 12 V when the vehicle engine is running. When the vehicle engine is not running, the refrigerator is cut off from the power supply in the living area. For this reason, change over to gas operation during prolonged driving breaks.



- ▷ Further information can be obtained from the separate instruction manual "Refrigerator".

10.6.4 Operation (Dometic 8 series with automatic power selection)

Operating modes

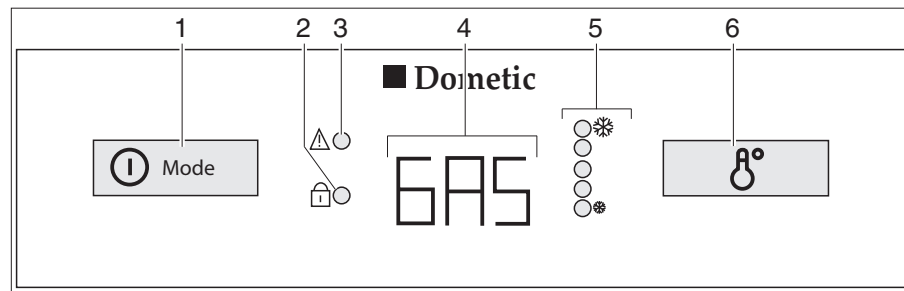


Fig. 353 Operating controls for the refrigerator (Dometic 8 series with AES)

- 1 On/off switch/energy selector switch
- 2 Display-LED "open door" (only for central locking system of the refrigerator door)
- 3 Display-LED "fault"
- 4 Operating indicator
- 5 Display-LED "temperature range"
- 6 Switch for temperature setting

The refrigerator is equipped with automatic power selection (AES). If automatic operation (AU) is selected, the AES automatically selects the optimum energy source and regulates the refrigerator operation. Manual intervention to select the type of power is possible but not required.

The AES selects from the following types of power:

- 240 V AC
- 12 V DC
- Gas

Choosing the available energy source highest on the list.

In the case of a fault, the LED display fault will flash "▲!" (Fig. 353,3).



- ▶ Even when the 12 V power supply is switched off, a small electrical power flows which puts an extra load on the living area battery. Always switch off the refrigerator for a temporary lay-up.

240 V operation

If the 240 V power supply is connected, this energy source is selected as the first priority by the AES.

12 V operation

12 V operation is only selected by the AES if the vehicle's engine is running and the alternator supplies sufficient 12 V operating power.

Gas operation



- ▶ Never let gas escape unburned due to danger of explosion.



- ▷ Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".

If the 240 V power supply is **not** connected and the vehicle's engine is **not running** the AES selects the gas supply. 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. In the case of a fault in gas operation the text "GAS" flashes in the operating indicator (Fig. 353,4).

Change-over between energy sources



- ▶ Open flames are prohibited at petrol stations. If the stop takes longer than 15 minutes, the refrigerator has to be turned off at the energy selector switch.

When changing over between the different power sources there are forced delays built in the AES. This means, that after a change-over to a new energy source the refrigerator can not be operated immediately. When changing over from 12 V operation to gas operation, a 15-minute delay is built in the AES. This prevents a change-over to gas operation when the vehicle is stopped briefly and the engine is switched off (e.g. stop to fill tank).

Refrigerating temperature control

When turned on the first time the refrigerator automatically selects the middle thermostat position. This position can be adjusted manually by using the switch for temperature setting (Fig. 353,6). The indicator LEDs (Fig. 353,5) show the selected thermostat position. The refrigerating temperature for the three types of energy is set with the switch. It takes a few hours till the refrigerator reaches its normal operating temperature. When changing over the operating mode the thermostat setting will be maintained. The refrigerating temperature is retained regardless of the type of power being used.

Manual operation

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
- Press the on/off switch/energy selector switch (Fig. 353,1) down for 2 seconds in order to switch on the appliance. The operating mode selected most recently is shown in the operating indicator (Fig. 353,4).
- Select the energy type with the on/off switch/energy selector switch (Fig. 353,1).
- Set the refrigerating temperature on the switch for temperature setting (Fig. 353,6). The indicator LEDs (Fig. 353,5) show the selected thermostat position.

When operated with 12 V, the refrigerator draws power only from the living area battery.

10

Appliances



- ▷ If the refrigerator is manually set to "12 V", 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 240 V power supply.

Switching off:

- Press down the on/off switch/energy selector switch (Fig. 353,1) for 2 seconds. All displays close.
- Close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.



- ▷ Further information can be obtained from the separate instruction manual "Refrigerator".

10.6.5 Operation (Dometic 10 series)

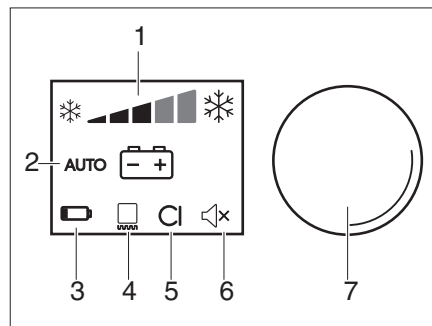
Operating modes

The refrigerator has 2 operating modes:

- Gas operation
- Electrical operation (230 V AC or 12 V DC)

The refrigerator has an automatic operating mode that automatically selects the optimum power source. Manual intervention to select the type of power is possible but not required.

Operating and display elements



- 1 Cooling power indicator
- 2 Operating mode (AC, DC, direct current, gas or AUTO)
- 3 Battery pack inserted indicator (optional)
- 4 Operating indicator, frame heater for freezer compartment
- 5 CI bus indicator (optional)
- 6 Audible signal tone on/off indicator
- 7 Control knob

Fig. 354 Operating controls for the refrigerator (Dometic 10 series)

AUTOMATIC MODE

In automatic mode, the refrigerator automatically selects the most favourable operating mode according to the following priority:

- 230 V AC
- 12 V DC
- Gas

Switching on:

- Set operating mode to "AUTO".
- Use the control knob (Fig. 354,7) to adjust the refrigerating temperature.

Switching off:

- Press the control knob (Fig. 354,7) for 4 seconds. Refrigerator is switched off.

Gas operation



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Gas operation of the refrigerator with liquefied petroleum gas is not permissible.

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
- Set operating mode to "🔥".
- Use the control knob (Fig. 354,7) to adjust the refrigerating temperature.

Switching off:

- Press the control knob (Fig. 354,7) for 4 seconds. Refrigerator is switched off.
- Close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.

Electrical operation



- ▶ Close the gas isolator tap "Refrigerator" when the refrigerator is operated electrically.

The refrigerator can be operated with the following voltages:

- 230 V AC
- 12 V DC
- ▶ If the power supply is connected to an AC network, select 230 V operation.

*Switching the 230 V operation on:*

- Set operating mode to "🔌".
- Use the control knob (Fig. 354,7) to adjust the refrigerating temperature.

Switching the 230 V operation off:

- Press the control knob (Fig. 354,7) for 4 seconds. Refrigerator is switched off.

Switching the 12 V operation on:

- Set operating mode to "🔋".
- Use the control knob (Fig. 354,7) to adjust the refrigerating temperature.

Switching the 12 V operation off:

- Press the control knob (Fig. 354,7) for 4 seconds. Refrigerator is switched off.

When operated with 12 V, the refrigerator draws power only from the starter battery of the vehicle. The starter battery only supplies the refrigerator with 12V when the vehicle engine is running. When the vehicle engine is not running, the refrigerator is cut off from the power supply in the living area. For this reason, change over to gas operation during prolonged driving breaks.



- ▶ The cooling power of the refrigerator in DC operation is slightly reduced. Operate the refrigerator on AC or gas until the desired cooling temperature is reached, then switch to 12 V operation.
- ▶ Further information can be obtained in the device manufacturer's instruction manual.

Battery pack for autonomous gas operation (optional)



The refrigerator can have an optional battery compartment in the electronics housing. The battery compartment (with battery packs) provides an independent power supply to ensure gas operation when no external DC voltage supply is available.

- ▷ The battery packs are not included in the scope of delivery.
- ▷ Further information can be obtained in the device manufacturer's instruction manual.

10.6.6 Operation (Dometic 10 series, model RM 10.5)

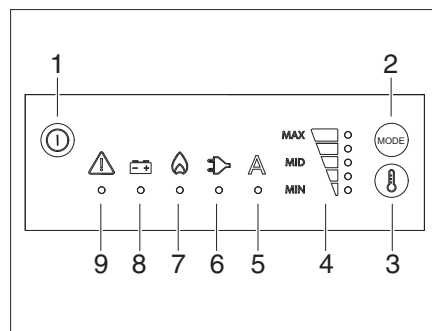
Operating modes

The refrigerator has 2 operating modes:

- Gas operation
- Electrical operation (230 V AC or 12 V DC)

The refrigerator has an automatic operating mode that automatically selects the optimum power source. Manual intervention to select the type of power is possible but not required.

Operating and display elements



- 1 On/off button
- 2 Operating mode button
- 3 Temperature selection button
- 4 Temperature display
- 5 Automatic mode
- 6 AC operation
- 7 Gas operation
- 8 DC operation
- 9 Fault notification

Fig. 355 Operating controls for the refrigerator (Dometic 10 series, model RM 10.5)

Automatic mode

In automatic mode, the refrigerator automatically selects the most favourable operating mode according to the following priority:

- 230 V AC
- 12 V DC
- Gas

Switching on:

- Press on the on/off button (Fig. 355,1) for two seconds. The refrigerator will turn on with the most recent settings.

Switching off:

- Press on the on/off button (Fig. 355,1) for four seconds. A beeping tone will sound and the refrigerator will switch off.

Gas operation



- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Gas operation of the refrigerator with liquefied petroleum gas is not permissible.

Switching on:

- Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
- Keep pressing on the operating mode button (Fig. 355,2) until the LED (Fig. 355,7) indicating gas operation lights up.
- Keep pressing on the temperature selection button (Fig. 355,3) until you reach the desired temperature level.

Switching off:

- Press on the on/off button (Fig. 355,1) for four seconds. A beeping tone will sound and the refrigerator will switch off.
- Close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.

Electrical operation



- ▶ Close the gas isolator tap "Refrigerator" when the refrigerator is operated electrically.

The refrigerator can be operated with the following voltages:

- 230 V AC
- 12 V DC
- ▶ If the power supply is connected to an AC network, select 230 V operation.

*Switching the 230 V operation on:*

- Keep pressing on the operating mode button (Fig. 355,2) until the LED (Fig. 355,6) indicating AC operation lights up.
- Keep pressing on the temperature selection button (Fig. 355,3) until you reach the desired temperature level.

Switching the 230 V operation off:

- Press on the on/off button (Fig. 355,1) for four seconds. A beeping tone will sound and the refrigerator will switch off.

Switching the 12 V operation on:

- Keep pressing on the operating mode button (Fig. 355,2) until the LED (Fig. 355,8) indicating DC operation lights up.
- Keep pressing on the temperature selection button (Fig. 355,3) until you reach the desired temperature level.

Switching the 12 V operation off:

- Press on the on/off button (Fig. 355,1) for four seconds. A beeping tone will sound and the refrigerator will switch off.

When operated with 12 V, the refrigerator draws power only from the starter battery of the vehicle. The starter battery only supplies the refrigerator with 12V when the vehicle engine is running. When the vehicle engine is not running, the refrigerator is cut off from the power supply in the living area. For this reason, change over to gas operation during prolonged driving breaks.



- ▶ The cooling power of the refrigerator in DC operation is slightly reduced. Operate the refrigerator on AC or gas until the desired cooling temperature is reached, then switch to 12 V operation.
- ▶ Further information can be obtained in the device manufacturer's instruction manual.

Battery pack for autonomous gas operation (optional)



The refrigerator can have an optional battery compartment in the electronics housing. The battery compartment (with battery packs) provides an independent power supply to ensure gas operation when no external DC voltage supply is available.

- ▷ The battery packs are not included in the scope of delivery.
- ▷ Further information can be obtained in the device manufacturer's instruction manual.

10.6.7 Operation (Thetford)

Switching on the refrigerator:

- If the refrigerator is to be operated in gas operation: Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
- Press the button (Fig. 356,1). The button lights up green. Press the button again in order to display the current settings.

Switching off the refrigerator:

- Press and hold the button (Fig. 356,1). All the lamps go out.
- If the refrigerator was operated in gas operation: Close the gas isolator tap "Refrigerator" and the regulator tap on the gas bottle.

Operating modes

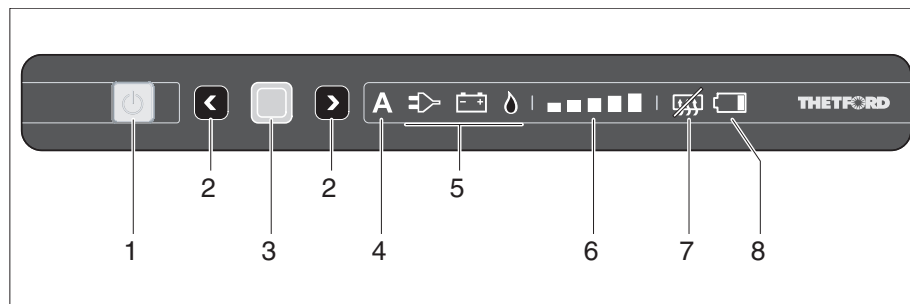


Fig. 356 Operating and display elements for the refrigerator (Thetford without SES)

- 1 ON/OFF button
- 2 Selection buttons
- 3 Confirmation button
- 4 Automatic mode display (depending on equipment)
- 5 Operating mode symbols
- 6 Cooling level display
- 7 Anti-condensation (depending on equipment)
- 8 Battery display (depending on equipment)

The refrigerator has 3 operating modes:

- Automatic mode (depending on equipment)
- Gas operation
- Electrical operation (230 V AC or 12 V DC)



- ▷ Select only one energy source.
- ▷ Even when the 12 V supply is switched off, a small electrical current flows which puts an extra load on the living area battery. Switch the refrigerator off during a temporary lay-up.

Automatic mode (depending on equipment)

The refrigerator automatically selects the best source available. The following sequence is followed: 230 V operation, 12 V operation, gas operation.

If automatic mode is selected, the automatic mode display (Fig. 356,4) and the best available source (Fig. 356,5) light up in the operating panel.

Gas operation

- ▶ Never let gas escape unburned due to danger of explosion.
- ▶ Gas operation of the refrigerator with liquefied petroleum gas is not permissible.

Selecting gas operation:

- Open the regulator tap on the gas bottle and the gas isolator tap "Refrigerator".
- Press and hold the confirmation button (Fig. 356,3).
The operating mode symbols (Fig. 356,5) begin to flash.
- Use the selection buttons (Fig. 356,2) to select gas operation and apply the selection by using the confirmation button (Fig. 356,3).

Electrical operation

- ▶ Close the gas isolator tap "Refrigerator" when the refrigerator is operated electrically.

The refrigerator can be operated with the following voltages:

- 230 V AC
- 12 V DC

Selecting 230 V operation:

- Press and hold the confirmation button (Fig. 356,3).
The operating mode symbols (Fig. 356,5) begin to flash.
- Use the selection buttons (Fig. 356,2) to select 230 V operation and apply the selection by using the confirmation button (Fig. 356,3).

Selecting 12 V operation:

- Press and hold the confirmation button (Fig. 356,3).
The operating mode symbols (Fig. 356,5) begin to flash.
- Use the selection buttons (Fig. 356,2) to select 12 V operation and apply the selection by using the confirmation button (Fig. 356,3).

When operated with 12 V, the refrigerator draws power only from the starter battery of the vehicle. The starter battery only supplies the refrigerator with 12 V when the vehicle engine is running. When the vehicle engine is not running, the refrigerator is cut off from the power supply in the living area. For this reason, change over to gas operation during prolonged driving breaks.



- ▶ Further information can be obtained from the separate instruction manual "Refrigerator".

Cooling level control*Selecting the cooling level:*

- Press and hold the confirmation button (Fig. 356,3).
The operating mode symbols (Fig. 356,5) begin to flash.
- Press the confirmation button (Fig. 356,3) again.
The cooling level display (Fig. 356,6) begins to flash.
- Use the selection buttons (Fig. 356,2) to select the desired cooling level and apply the selection by using the confirmation button (Fig. 356,3).

10.6.8 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

Dometic 8 series

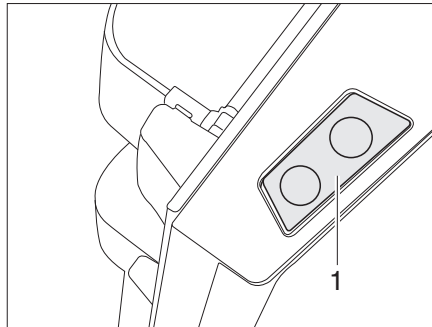


Fig. 357 Release button of the refrigerator door (Dometic 8 series)

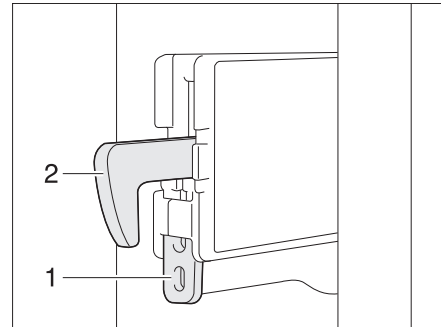


Fig. 358 Lock hook fixture

Opening: ■ Press the release button (Fig. 357,1) and open the refrigerator door.

Closing: ■ Close the refrigerator door. The lock hook engages audibly.

When the vehicle has been positioned, the lock hook can be fixed. The refrigerator door can now be opened without having to press the release button.

Fixing the lock hook: ■ Press the fixture (Fig. 358,1) upwards. The lock hook (Fig. 358,2) is pressed upwards and has no function.

Unlocking the lock hook: ■ Push the lock hook (Fig. 358,2) down. The lock hook functions again.

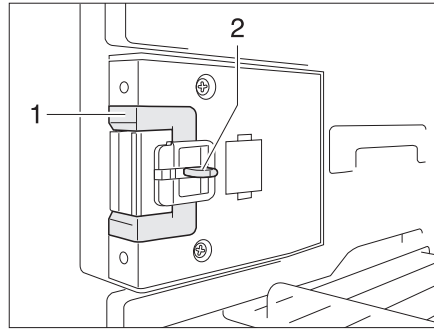


Fig. 359 Locking device in normal position

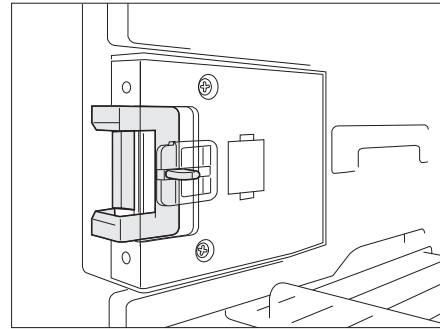


Fig. 360 Locking device in ventilation position

Locking in the ventilation position:

- Open the refrigerator door.
- Press down the unlocking device (Fig. 359,2).
- Push locking device (Fig. 359,1) forwards (Fig. 360).

If the refrigerator door is closed now, a gap will remain between the refrigerator door and the refrigerator.

Thetford, locking mechanism at top

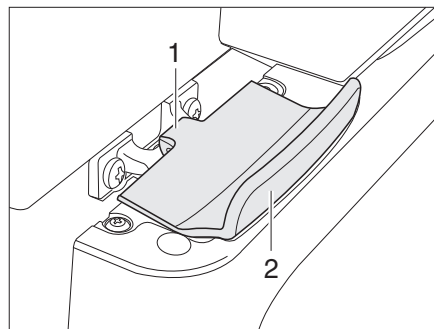


Fig. 361 Lock of refrigerator door, closed (Thetford)

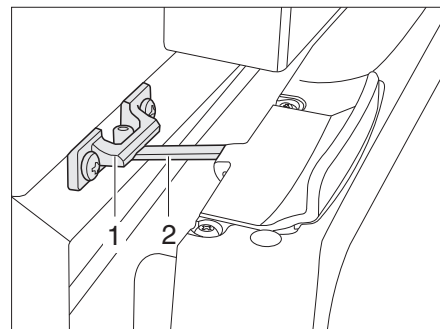


Fig. 362 Refrigerator door in ventilation position (Thetford)

- Opening:*
- Open the refrigerator door at the handle (Fig. 361,2). The lock (Fig. 361,1) is released automatically.

- Closing:*
- Fully close the refrigerator door. Ensure that the lock is engaged.

Locking in the ventilation position:

- Slightly open refrigerator door/freezer compartment door.
- Open the lock (Fig. 362,2) and snap it into the locking catch (Fig. 362,1). The refrigerator door will then stay slightly open.

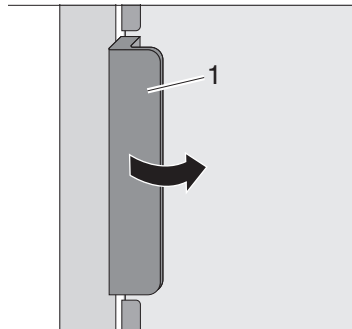
Thetford, locking mechanism at side

Fig. 363 Opening the refrigerator door

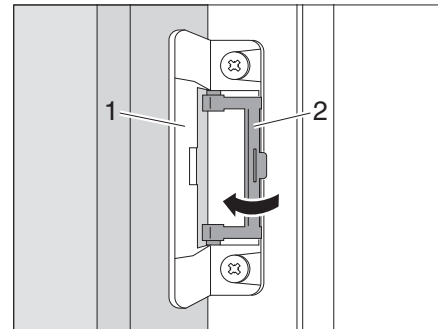


Fig. 364 Locking the ventilation position

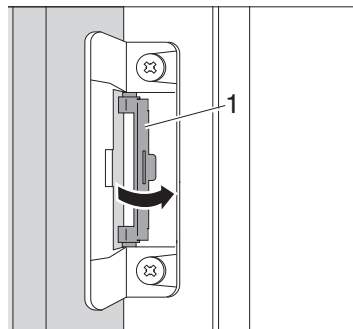


Fig. 365 Turning the latch back to the initial position

Opening:

- Open the refrigerator door at the handle (Fig. 363,1). The locking mechanism (Fig. 364,1) is released automatically.

Closing:

- Fully close the refrigerator door. Ensure that the locking mechanism is engaged.

Locking in the ventilation position:

- Open the refrigerator door.
- Fold open the latch (Fig. 364,2).
- Close the refrigerator until a click sound is heard.
- Check whether the refrigerator door is opened slightly.

Unlatching the ventilation position:

- Turn the latch (Fig. 365,1) back to the initial position.
- Check whether the refrigerator door closes.

Chapter overview

This chapter contains instructions regarding the sanitary fittings of the vehicle. The instructions address the following topics:

- the water supply in general
- the switch for the water pump
- water tank
- waste water tank
- complete water system
- toilet compartment
- toilet

11.1 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.



- ▷ 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. Leave the water taps on in central position. Leave the safety/drainage valve (if there is one) 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.
- ▷ The water pump will overheat without water and can get damaged. 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.



- ▷ Before using the water fittings, the 12 V power supply on the panel must be switched on. Otherwise the water pump will not work.
- ▷ Two different types of pump are used as water pumps depending on the model: Submerged pumps or pressurised water pumps.

11

Sanitary fittings



- ▷ In case of submerged pumps with ventilation or a ventilated non-return valve, a fine water jet is emitted between the pump cover and base of the connector when the pump is not submerged completely. This bubbling effect is the actual ventilation of the pump and thus harmless.
- ▷ The pumps were designed to be operated for max. 20 minutes at a time. Depending on the interval, a longer break must be taken. If this is not complied with, consequential damage can occur.

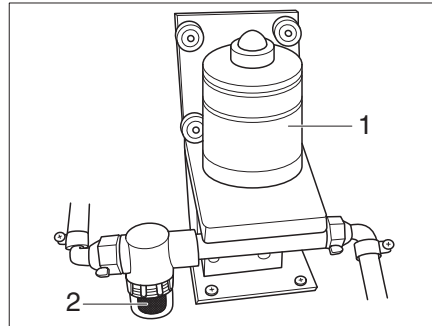


Fig. 366 Pressurised water pump

Positions of the water pumps

The submerged pumps are located in the water tank.

The pressurised water pump (Fig. 366,1) with water filter (Fig. 366,2) is mounted on the outside of the water tank.

11.2 Switch for water pump (winter comfort package or special equipment)

The switch for the water pump is installed under the driver's seat.

The water pump can be switched off with this switch.

This prevents the water pump from starting if the water system is empty and the water taps are opened. Otherwise, the water pump will run hot and discharge the living area battery.



- ▷ At the Alpa, Esprit and GLOBETROTTER models the water pump can be switched by using the "Res" button on the MP 20-T operating panel. See Chapter 9.13.8.

11

Sanitary fittings

11.3 Water tank

11.3.1 Drinking water filler neck with cap



- ▶ The cap for the drinking water filler neck and for the fuel filler neck are very similar. Before filling the tank, always check the label.

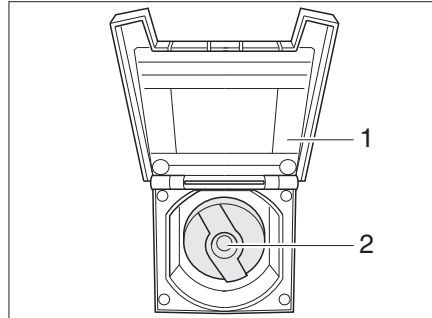


Fig. 367 Cap for the drinking water filler neck

The drinking water filler neck is on the right or left side of the vehicle, depending on the model.

In order to prevent confusion, the drinking water tank is closed with a blue cover.

Opening:

- Open the cover flap (Fig. 367,1) of the drinking water filler neck. The cover is magnetically affixed to the outside wall of the vehicle.
- Insert key into locking cylinder (Fig. 367,2) and turn a quarter turn in an anti-clockwise direction.
- Remove cap.
- Fill the water tank with drinking water.

Closing:

- Place the cap on the drinking water filler neck.
- Turn key one quarter turn in a clockwise direction.
- Remove the key.
- Check that the cap sits firmly on the drinking water filler neck.
- Close the cover flap.

11.3.2 Filling with water



- ▶ When filling the water tank, observe the maximum permissible gross weight of the vehicle. Luggage must be reduced accordingly when the water tank is full.

To fill the water tank with drinking water, proceed as follows:

- Open drinking water filler neck (Fig. 367).
- Fill the water tank with drinking water. Use a water hose, a water canister with a funnel or similar for filling.
- Close drinking water filler neck.

11.3.3 Draining water

Models with double floor

A hose line can be connected to the water drain neck under the vehicle floor.

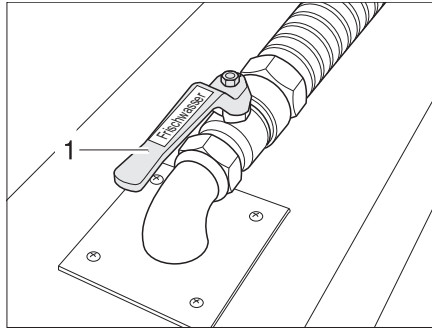


Fig. 368 Drain cock in double floor

The drain cock (Fig. 368,1) is located in the double floor. The drain cock is green and is labelled by the word "Frischwasser" (Fresh water).

Models without double floor

All models without double floor have no drain cock.

The water tank is drained either through a stopper or a drain cock.

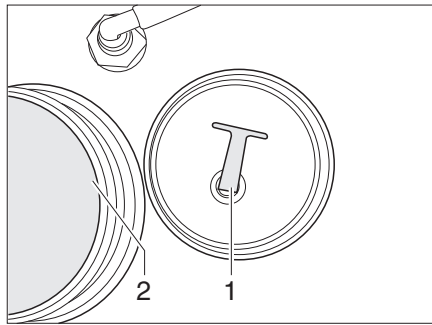


Fig. 369 Stopper

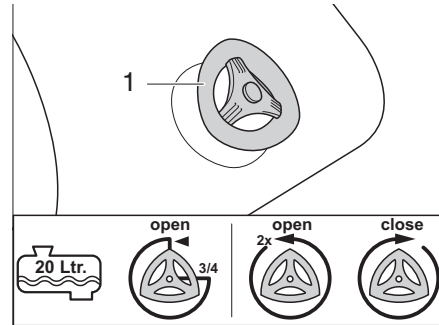


Fig. 370 Drain cock

Draining the water tank with stopper:

- Screw the stopper (Fig. 369,1) out of the drainage opening (Fig. 369,2). The water drains off.
- Screw in the stopper.
- Screw the cap onto the water tank.

Emptying the water tank with drain cock:

- Check the filling level of the water tank, see chapter 9.
- 1/2 full or less: Turn the drain cock (Fig. 370,1) 3/4 of a rotation anti-clockwise. The water drains off.
- 3/4 full and more: Turn the drain cock (Fig. 370,1) 2 rotations anti-clockwise. The water drains off.
- Close the drain cock (Fig. 370,1) clockwise.

11

Sanitary fittings

11.4 Waste water tank



- ▷ In case of frost add so much anti-freeze (such as kitchen salt) to the waste water tank so that the waste water cannot freeze.
- ▷ For models with an double floor: If the living area heater is out of order, the waste water tank no longer is sufficiently protected against frost.
- ▷ Never pour boiling water directly into the sink outlet. Boiling water could cause deformation and leaks in the waste water pipe system.



- ▷ Don't drive with a full waste water tank. A full waste water tank can lead to water leakage in the inside of the vehicle.
Empty the waste water tank before the maximum level is reached.



- ▷ Only empty the waste water tank at disposal stations, camping sites or caravan sites especially provided for this purpose.

11.4.1 Waste water tank (models with double floor)

With the models with a double floor, the waste water tank is heated by the hot air of the living area heater. This protects the waste water tank from frost when the living area heater is in operation.

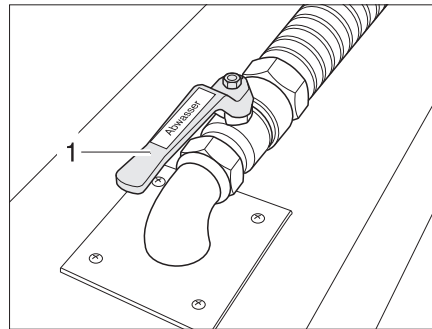


Fig. 371 Waste water tap

Depending on the model, the waste water tap for waste water disposal is located on the left or right hand side of the vehicle.

The waste water tap (Fig. 371,1) is fixed in the double floor. The waste water tap is black and is labelled with the word "Abwasser" (waste water).

Emptying:

- Mount suitable hose to the waste water drain neck or place appropriate container under the waste water drain neck.
- Open the waste water tap (Fig. 371,2). The waste water will run out.
- Close the waste water tap.
- Close the external flap.
- Replace the cap and lock it by turning it a quarter turn in an anticlockwise direction.



- ▷ At the Esprit semi-integrated/integrated model draining is effected electrically via the toilet drain flap.

11

Sanitary fittings

11.4.2 Waste water tank (models without double floor)

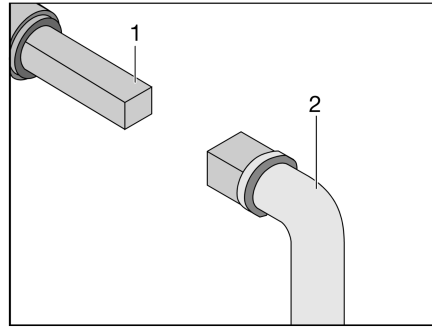


Fig. 372 Operation of the waste water tap

Depending on the model, the waste water tap for waste water disposal is located on the left or right hand side of the vehicle.

The square bolt for opening the waste water tap is directly accessible under the vehicle floor.

Emptying:

- Place key (Fig. 372,2) onto the square bolt (Fig. 372,1).
- In order to open the waste water tap, turn the square bolt a quarter turn.
- Completely empty waste water tank.
- To close the waste water tap, turn the square bolt back as far as it will go.



- ▷ With the Globeline model, emptying takes place electrically at the control unit in the rear garage.

11.4.3 Siphon (odour seal)



- ▷ For models without double floor, remove the siphon base if there is a risk of frost. This protects the siphon from freezing up.
- ▷ If the siphon base is removed and the vehicle is used: Place a suitable tank under the siphon to collect the waste water (not applicable for models with double floors).



- ▷ For motorhomes that have had "winter comfort package" special equipment installed in the factory, the waste water pipes are electrically heated. When the temperature drops below 5 °C, the frost protection equipment turns on automatically.
- ▷ The Alpa model has a key (Fig. 374) enclosed for the releasing the siphon.

11 Sanitary fittings

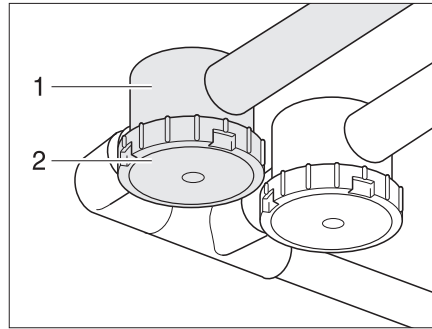


Fig. 373 Odour seal

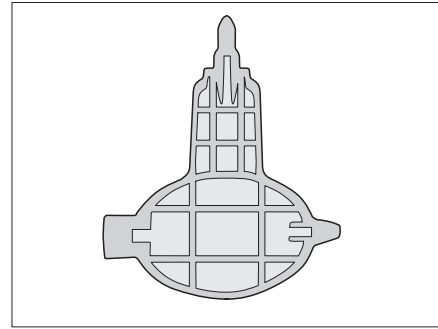


Fig. 374 Key for Siphon (only Alpa)

In order to prevent odours occurring in the waste water system, the vehicle - depending on the model - has been equipped with siphons (Fig. 373,1). The siphons are installed in the waste water pipes.

Clean the siphons every 6 months at the latest. To do so, unscrew and remove the bottom cover (Fig. 373,2).

11.5 Filling the water system



- ▶ When filling the water tank, observe the maximum permissible gross weight 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. Never operate water pump when the water tank is empty.



- ▶ Don't drive with a full water tank. A full water tank can lead to water leakage in the inside of the vehicle.
- ▶ Don't fill the water tank to more than 70 %.



- ▶ The Truma system and the Alde system (heater/boiler) each have a safety/drainage valve. If a pressurised water pump is installed, a drain cock is located next to the pressurised water pump.
- ▶ The water level can be checked on the panel while the water tank is being filled.

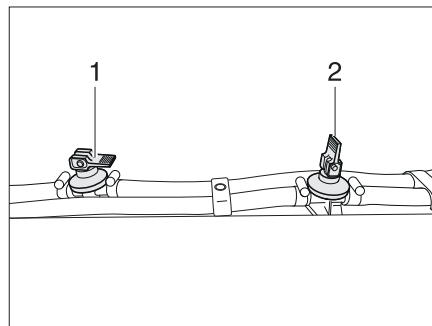


Fig. 375 Drain cock

- Position the vehicle horizontally.
- Switch on 12 V power supply on the panel.
- If necessary, switch on the water pump on the panel.

- Clean or disinfect water system.
- Close the safety/drainage valve. To do so, turn the rotary switch to the "Operation" position until it latches in and press in the pushbutton (see section 10.2.3).
If the temperature is below 7 °C, the safety/drainage valve cannot be closed. Therefore switch on the living area heater and wait until the temperature of the safety/drainage valve exceeds 7 °C.
- Close all drain cocks. Position the rocking lever (Fig. 375,1) horizontally.
- If needed, set the stopper into the drainage opening of the water tank or screw it in.
- Close all water taps.
- Fill the water tank with drinking water.
- 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 taps open until the water flowing out of the 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 taps open until the water flowing out of the taps has no bubbles in it.
- Close all water taps.
- Check that the cap on the water tank is not leaking.

11.6 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. Leave the water taps on in central position. Leave the safety/drainage valve (if there is one) 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.
- ▷ If the water pump can be turned off from the panel, always turn off the water pump from the panel before you empty the water system. Otherwise the water pump runs until it overheats or the battery is empty.



- ▷ The Truma system and the Alde system (heater/boiler) each have a safety/drainage valve.

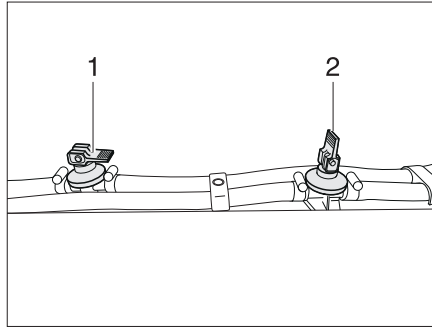


Fig. 376 Drain cock

To empty and ventilate the water system, proceed as follows. This prevents frost damage and deposits:

- Position the vehicle horizontally.
- If necessary, switch off the water pump on the panel.
- Switch off the 12 V power supply on the panel.
- Shut off the boiler (see section 10.4).
- Open all drain cocks. To do so, set the rocking lever (in Fig. 376,2) in a vertical position.
- Open the safety/drainage valve. To do so turn the rotary switch by 180° until it latches in. The pushbutton jumps out. The boiler is drained to the outside using the drainage neck (see section 10.2.3).
- For models with water drainage in the water tank:
Unscrew the cap of the water tank.
- Open the water tank drain (see section 11.3.3).
- For models with an double floor: Remove the cap from the waste water drain neck and open the drain cock.
- Open all water taps and set to the central position.
- Hang the shower handset up in the shower position.
- After fully emptying the system, drive the vehicle a few kilometres so the remaining water can run out of the tank.
- Allow the pressure pump to run for approx. 1 minute to dry it.
- Empty the waste water tank. Take note of the environmental tips in this chapter.
- Empty Thetford cassette. Take note of the environmental tips in this chapter.
- Clean the water tank and then rinse it out thoroughly.
- Blow out the hoses and lines with compressed air (max. 1.5 bar).
- Let the water system dry for as long as possible.
- After emptying, leave all water taps on in the central position.
- Leave all drain cocks open.

11

Sanitary fittings

11.7 Toilet compartment



- 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.
- Close the shower curtain completely when showering, so that no water is able to enter the area between the wash room wall and the shower tray.
- 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.
- Further information about cleaning the toilet compartment can be found in the section 12.2.

11.7.1 Vario toilet



- Only remove the inner part of the toilet door when it is closed.



- Depending on the model, the Vario toilet is installed reverse to the one shown here. The conversion is then also done reverse to the Vario toilet shown.

Depending on the model, the vehicle is fitted with a Vario toilet. A Vario toilet can be changed with few maneuvers so that when the shower is in use, the toilet is available in its own enclosed cubicle. This protects the toilet area from water spray.

Converting into a shower cubicle

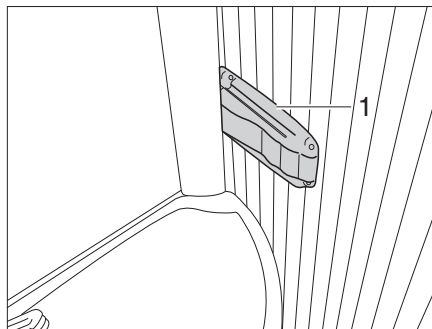


Fig. 377 Vario toilet, locking the shower wall

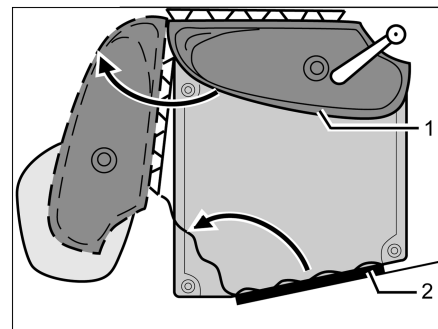


Fig. 378 Vario toilet

- Push the latch (Fig. 377,1) right on the edge of the wash basin and lightly pull the wash basin. The wash basin moves forwards with the rear wall.
- Turn the wash basin and the rear wall (Fig. 378,1) in the direction indicated.
- Enter the toilet compartment and close the toilet door (Fig. 378,2) from the inside and lock.



Fig. 379 Vario toilet, toilet door

- Put the latch (Fig. 379,1) of the toilet door in a vertical position and open the inner part of the toilet door.
- Turn the inner part of the toilet door in the direction indicated and push against the rear wall of the wash basin.

The shower compartment is completely set up and can be used.

Conversion to toilet compartment

- Turn the inner part of the toilet door and to close, place the latch (Fig. 379,1) in a horizontal position.
- Return the wash basin and the rear wall to the initial position and lock.

11.8 Toilet



- ▷ If there is any risk of frost and the vehicle is not heated, empty the sewage tank (cassette).
- ▷ 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.
- ▷ Never allow the toilet cassette or sewage tank to become too full. Empty the toilet cassette or the sewage tank before reaching the critical level.



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



- ▷ Only empty the sewage tank (cassette) at disposal stations, at camping sites or caravan sites, that are especially provided for this purpose.

11

Sanitary fittings

11.8.1 Swivel toilet (Thetford)



▷ The swivel toilet is designed for a maximum load of 100 kg.

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.

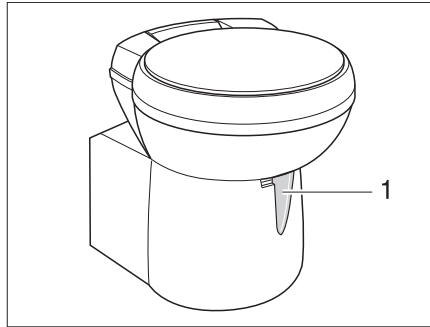


Fig. 380 Thetford toilet bowl, swivelling

The operating unit is located close to the toilet bowl.

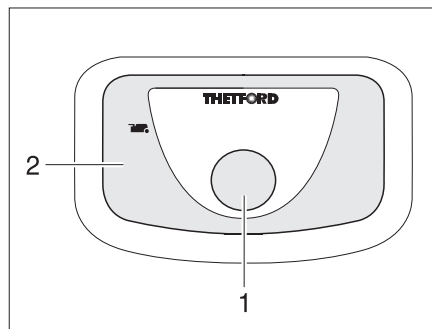


Fig. 381 Flush button/indicator lamp Thetford toilet

Flushing:

- Before flushing open the sliding trap of the Thetford toilet. To do this, push the slide lever (Fig. 380,1 or Fig. 381,1) in an anticlockwise direction.
- For flushing, press the blue flush button (Fig. 380,1 or Fig. 381,1).
- After flushing close the sliding trap. To do this push the slide lever in a clockwise direction.

The indicator lamp (Fig. 380,2 or Fig. 381,2) goes on whenever the Thetford cassette has to be emptied.

Emptying the water tank:

- Open the sliding trap. To do this, turn the slide lever in an anticlockwise direction.
- Press the flush button until water ceases to flow into the bowl.
- Close the sliding trap. To do this push the slide lever in a clockwise direction.
- Empty Thetford cassette.

Emptying the Thetford cassette:

- Push the slide lever (Fig. 380,1 or Fig. 381,1) in a clockwise direction. The sliding trap is closed. To empty, the sliding trap in the Thetford toilet **must** be closed.
- Remove the Thetford cassette and empty it as described in sections 11.8.3 and 11.8.4.

11.8.2 Toilet with fixed seat

The flushing of the toilet is fed from the water system of the vehicle.

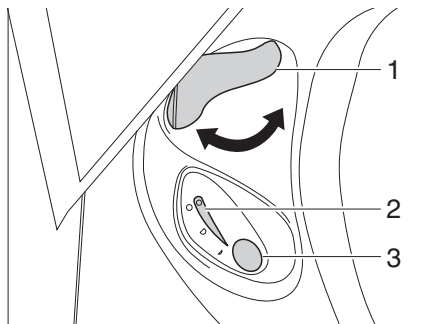


Fig. 382 Operating unit Thetford toilet

Flushing:

- Before flushing open the sliding trap of the Thetford toilet. To do this, turn the slide lever (Fig. 382,1) in an anticlockwise direction.
- For flushing, press the blue flush button (Fig. 382,3).
- After flushing close the sliding trap. To do this turn the slide lever (Fig. 382,1) in a clockwise direction.

The indicator lamp (Fig. 382,2) goes on whenever the Thetford cassette has to be emptied.

Emptying:

- Turn the slide lever (Fig. 382,1) in a clockwise direction. The sliding trap is closed. To empty, the sliding trap in the Thetford toilet **must** be closed.
- Remove the Thetford cassette and empty it as described in sections 11.8.3 and 11.8.4.

11

Sanitary fittings

11.8.3 Removing the cassette



- ▶ The sewage tank (cassette) can only be taken out if the sliding trap is closed.

The sewage tank (cassette) is accessible via a special service flap on the outside of the vehicle.

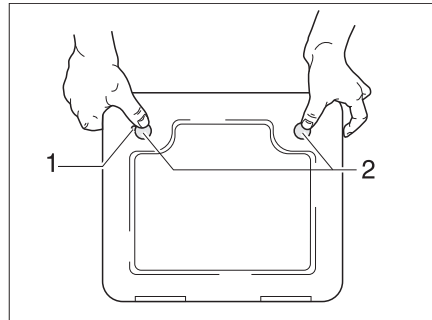


Fig. 383 Flap for the toilet cassette

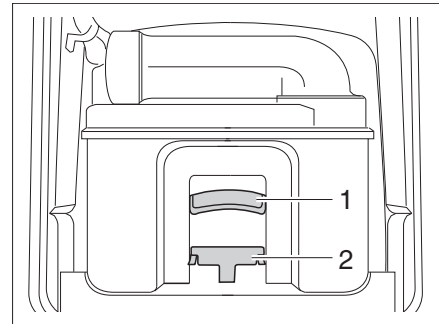


Fig. 384 Thetford cassette

- Open the flap for the cassette on the outside of the vehicle. Insert the key into the locking cylinder of the push-button lock (Fig. 383,1) and turn a quarter turn.
- Remove the key.
- Press both push-button locks (Fig. 383,2) simultaneously with your thumb and open the flap for the cassette.
- Pull the retaining clip (Fig. 384,2) forward to unlock the toilet cassette and pull out the cassette at the handle (Fig. 384,1).

11.8.4 Emptying the cassette

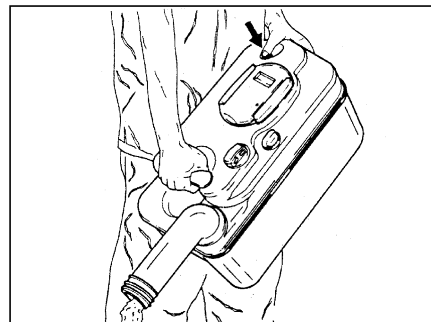


Fig. 385 Emptying the Thetford cassette

- Take the cassette to a disposal point especially provided for this purpose. As you do this, point the drainage neck upwards.
- If necessary, turn the drainage neck upwards.
- Remove the cap of the drainage neck.
- Point the cassette with the drainage neck downwards.
- For Thetford cassettes: Activate the aeration knob with your thumb. The cassette empties.
- Close drainage neck with the cap.
- If necessary, return the drainage neck to its original position.
- Push the cassette back to its original position.

- Ensure that the cassette is secured by the retaining clip.
- Lock the flap for the cassette.

11.8.5 Macerator toilet

The macerator toilet is operated via the panel.

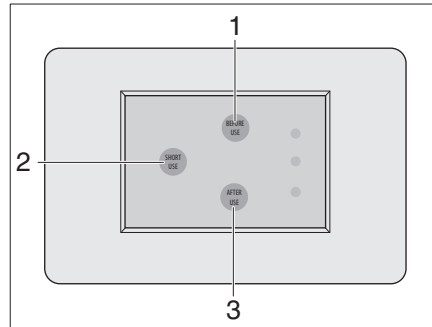


Fig. 386 Panel macerator toilet

Disposing of liquid faeces

The Short-Use button is provided for liquid faeces when no solid faeces stick to the toilet bowl.

- Press the Short-Use-button (Fig. 386,2).
The toilet is flushed and emptied, the toilet bowl remains empty.

Disposing of solid faeces

For solid faeces, the toilet bowl is filled with water before use, so that the walls of the toilet bowl are not polluted by solids or the toilet paper clogs the spout of the toilet bowl.

- Before going to the toilet, press the Before-Use button (Fig. 386,1).
The toilet bowl is filled with water.
- Using the toilet.
- After using the toilet, press the After-Use button (Fig. 386,3).
The contents of the toilet are emptied.

11

Sanitary fittings

11.8.6 Emptying the cassette of the macerator toilet



- ▷ Only empty the sewage tank (cassette) at disposal stations, at camping sites or caravan sites, that are especially provided for this purpose.

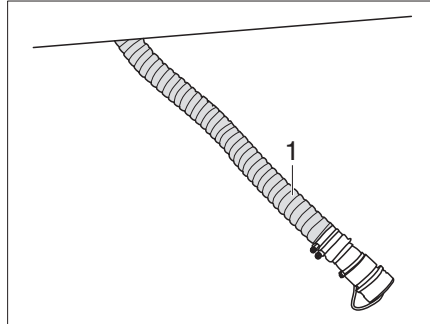


Fig. 387 Emptying the cassette of the macerator toilet

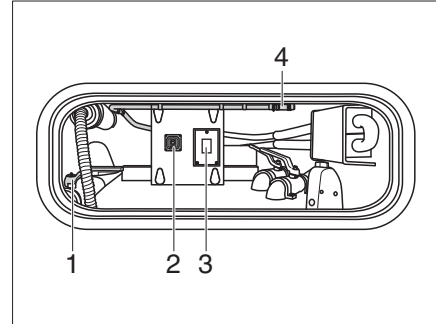


Fig. 388 Flushing the cassette of the macerator toilet (view in the storage box)

Emptying the cassette

- Detach the drain hose (Fig. 387,1) below the vehicle and position it into the disposal station.
- Open the drain cock (Fig. 388,1).
- Press the switch (Fig. 388,3).
The waste water sliding cover for the draining below the floor opens.
- Operate switch (Fig. 388,2) for the drainage pump.

Flushing the cassette

- Leave the drain hose (Fig. 387,1) in the disposal station.
- Remove the hose for tank cleaning (Fig. 388,4) in the storage box and connect it to a water connection.
- Flush the cassette.
- Remove the water connection after flushing and store the hose for tank cleaning (Fig. 388,4).
- Close the drain cock (Fig. 388,1).
- Store the drain hose (Fig. 387,1) under the vehicle.

Chapter overview

This chapter contains instructions regarding the care of the vehicle.

The instructions address the following topics:

- exterior of the vehicle
- interior
- water system
- extractor hood
- toilets
- winter operation

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.

The checklist address the following topics:

- temporary lay-up
- winter lay-up
- start-up after a lay-up

12.1 External care

12.1.1 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 instructions 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.

12.1.2 Washing the vehicle



- ▷ Never clean the vehicle in the car wash. Water can enter the refrigerator grills, the waste gas vents, the ventilation of the extractor hoods 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.
- 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.
- Clean surfaces made of glass-fibre reinforced plastic (GRP) only with mild cleansers. Cleaning agents and polishes for GRP surfaces are available in specialised stores.

12

Care

- Add-on parts made of glass-fibre reinforced plastic (GRP) require a regular follow-up treatment with a polisher. This way these parts will not turn yellow and the sealing of the surface remains intact.
- Treat rubber seals of doors and storage flaps with talc.
- Treat locking cylinder of doors and storage flaps with graphite dust.

12.1.3 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 glycerin.



- ▷ 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.

12.1.4 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.
- ▷ In the case of models which have an underbody with glass-fibre reinforced plastic use only care products which are suitable for the material.

12.1.5 Waste water tank

Clean the waste water tank after every use of the vehicle.

Cleaning:

- Empty the waste water tank.
- Thoroughly rinse out the waste water tank with fresh water.
- If possible, clean waste water sensors through the cleaning opening by hand.

12.1.6 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.



- ▷ Do not lubricate or oil the moving parts of the entrance step with grease.

12.1.7 Driver's cabin insulation mat (model I)

Clean the insulation mat for the driver's cabin with clear, lukewarm water. Remove heavier soiling with a cloth and some white spirits. Afterwards, immediately rinse the cleaned area with lukewarm water.

12.2 Interior care

- ▷ If possible, treat stains immediately.
- ▷ Acrylic glass windows are delicate and require very careful handling (see section 12.1.3).
- ▷ 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 containing sand. This procedure will help you to avoid brittleness and formation of cracks.
- ▷ 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 decalcification of the water system. Vinegar-based products may cause damage to seals or parts of the installation. Use standard decalcifying products for decalcification.
- ▷ Save water. Mop up all remaining water.
- ▷ Vacuum off carpets and cushions with a suitable brush attachment.



- ▷ For information about the use of maintenance products, our representatives and service centres will be glad to advise.
- ▷ Staining from textiles is excluded from any and every manufacturer guarantee claims. This is by no means a fault in the cover fabric, but rather a fault in the clothing for which the clothing store has to be contacted.
- 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 necessary, treat finished surfaces with furniture polish.
- Clean upholstery with dry foam specially manufactured for the use on upholstery or with the foam of a mild detergent. Do not wash upholstery, only have them cleaned. Protect upholstery from direct sunlight so that it does not lose its colour.

- Clean covers made of synthetic leather at least once a week with an absorbent cloth or sponge and with a mixture of water and mild lather. Wipe off with clear water, but do not use too much water.
Clean stubborn stains with a mixture of alcohol and water (30% alcohol and 70% water) or with 10% diluted ethanol (10% ethanol and 90% water) and then with clear water. However marks may remain.
Do not use solvent-based or scouring products, nor undiluted alcohol and/or acetone.
- Wipe off Teflon coverings with an absorbent cloth or sponge and use a mild water-based household detergent. Alternatively use a mixture of 2 table-spoons of ammonia with 1 litre of water.
Never rub wet or oily stains. Instead, dab them with an absorbent cloth. Work from the outside to the inside to prevent spreading the stain. When treating solid or dried stains, always try to scrape them off with a dull knife or scraper or remove them off with a soft brush. Afterwards, dab off any residue with a moist cloth.
- 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 cleanser for PVC floors. Do not place carpet on wet PVC-floor covering. The carpet and the PVC-floor covering may stick together.
- Never clean the sink or the gas cooker with a scourer. Avoid anything which may cause scratching or grooves.
- Clean gas cooker only with a moist cloth. Prevent any water from penetrating the gas cooker. Water may damage the gas cooker.
- Brush insect screens on doors, windows and skylights 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.

12

Care

12.3 Water system

12.3.1 Cleaning the water tank

- Clean the water tank with a plastic-compatible cleanser from specialised stores. Observe the manufacturer's instructions.

12.3.2 Cleaning the water pipes



- ▷ Only use suitable cleaning agents as sold by the specialist trade.



- ▷ Collect any emerging mixture of water and cleaning agent for correct disposal.

- Empty the water system.
- Close all drain holes 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 drain cocks open until the mixture of water and cleaning agent has reached the drain.
- Set all water taps to "Cold" and open them.
- Leave the drain cocks 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.

12.3.3 Disinfecting the water system



▷ Only use suitable disinfectants as sold by the specialist trade.



▷ Collect any emerging mixture of water and disinfectant for correct disposal.

- Empty the water system.
- Close all drain holes and drain cocks.
- Fill mixture of water and disinfectant 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 disinfectant has reached the respective drain.
- Close the drain cocks.
- Set all the water taps to "Hot" and open them.
- Leave the drain cocks open until the mixture of water and disinfectant has reached the drain.
- Set all water taps to "Cold" and open them.
- Leave the drain cocks open until the mixture of water and disinfectant has reached the drain.
- Close all water taps.
- Flush the toilet several times.
- Allow the disinfectant to act in accordance with the manufacturer's instructions.
- Empty the water system. Collect the mixture of water and disinfectant for correct disposal.
- For rinsing fill the entire water system with drinking water and empty again several times over.

12.4 Extractor hood



► Prior to carrying out work on the device, turn off the power supply.

Clean the grease filter of the range hood occasionally. How often cleaning is necessary depends on how often the range hood is used. Do not wait to clean the filter until the performance of the range hood has noticeably decreased.

Cleaning grease filter:

- If necessary, remove the lower cover.
- Remove the filter.
- Wash the filter with warm water and some washing-up liquid.
- Let the filter dry completely and re-install it.
- If necessary, put the cover back on and secure it with the two screws.

Replacing the charcoal filter:

- Remove the lower and the middle cover.
- Remove the used charcoal filter.
- Insert the new charcoal filter.
- Put the covers back on and secure them with the two screws.

12.5 Sink

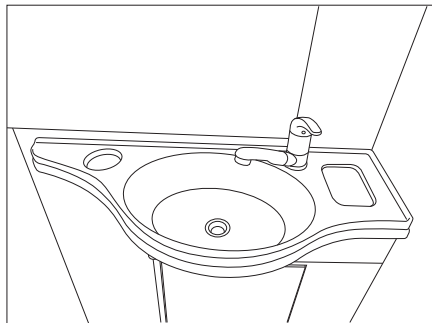


Fig. 389 Wash basin (variant 1)

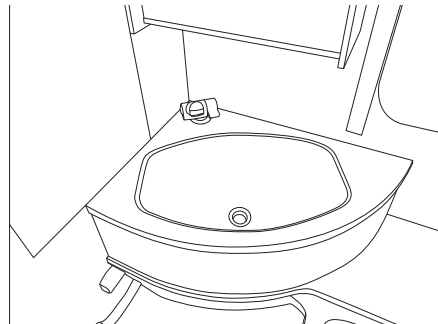


Fig. 390 Wash basin (variant 2)

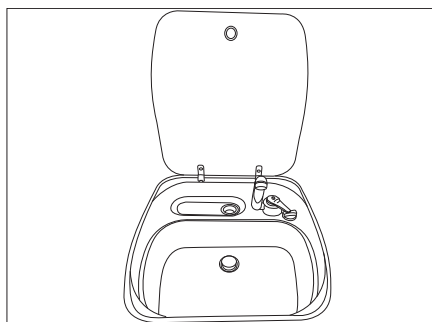


Fig. 391 Sink

12

Care

12.5.1 Stainless-steel wash basin/sink



- ▷ Do not use bleaches, products containing chloride or hydrochloric acid, baking soda or silver polish for cleaning.
- ▷ Do not use scouring milk or rough sponges.



- ▷ Before cleaning test at an inconspicuous point whether the cleanser used is suitable for the surface.
- ▷ After cleaning the surfaces, wipe thoroughly dry to avoid traces of lime.
- ▷ With brushed stainless-steel surfaces, wipe in the same direction as the polish.

- Clean and treat the wash basin/sink at least twice a year with a household stainless-steel cleaner.
- Rinse out the wash basin/sink after use and dry it with household cloths.

Removing stubborn soiling:

- Clean the wash basin/sink with a common household sponge and cleansing milk.
- Rinse out the wash basin/sink and dry it with household cloths.

Removing greasy and oily residue:

- Saturate a kitchen cloth in some white spirits and rub the wash basin/sink with it.
- Rinse out the wash basin/sink and dry it with household cloths.

Removing fingerprints:

- Clean the wash basin/sink with a cleaning solution and a leather cleaning cloth.
- Rinse out the wash basin/sink and dry it with household cloths.

12.5.2 Plastic sink



- ▷ Do not use scouring milk/scouring powder or rough sponges.



- ▷ Before cleaning test at an inconspicuous point whether the cleanser used is suitable for the surface.
- ▷ After cleaning the surfaces, wipe thoroughly dry to avoid traces of lime.

Removing normal soiling:

- Clean the sink with a conventional cleaning solution or non-scouring household cleaner.

Removing stubborn soiling:

- Apply spot salt or dishwasher salt with a moist sponge and allow it to work in for several hours.
- Remove salt and clean sink with a food-safe plastic cleaner.
- Rinse out sink.

Removing lime deposits:

- Clean the sink with vinegar or lime remover.
- Rinse out sink.

12.6 Toilets

If the toilet will not be used for a longer period of time, for example for Winter lay up, the toilet must be cleaned and completely emptied.

12.6.1 Toilet with separate water tank

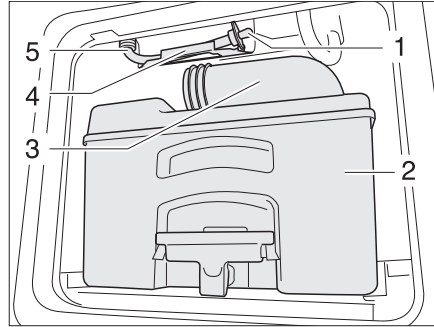


Fig. 392 Toilet water tank drain hose

Emptying the tank:

- Press the flush button, to activate the operating panel.
- Open the sliding trap and flush until no more water flows.
- Close the sliding trap.
- Empty the cassette (Fig. 392,2) at a disposal station authorized for this purpose and clean it.
- Leave the drainage neck (Fig. 392,3) open.
- Remove the drain hose (Fig. 392,5) from the holder (Fig. 392,4).
- Place a sufficiently large container under the drain hose.
- Remove the drain plug (Fig. 392,1) and let the residual water run out.
- When no more water flows out, place the drain plug in the drain hose.
- Replace the drain hose in the holder.

12.7 Winter care

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 any risk of frost, cover the outside surface of the windows with winter insulation mats.

12.7.1 Preparations

- Check the vehicle for paint and rust damage. Repair damage as necessary.
- Make certain that water cannot penetrate the automatic floor ventilation system and the heater.
- Use a wax-based rust inhibitor to protect the metal parts of the underbody.
- Use appropriate protection for external painted surfaces.

12.7.2 Winter operation

During winter operation, condensation develops when the vehicle is occupied under low-temperature conditions. To ensure good interior air quality and avoid vehicle damage from condensation, sufficient ventilation is essential.

- When heating the vehicle, the heater should be at the highest setting and roof storage cabinets, curtains and blinds should be opened. This ensures optimal ventilation.
- In the morning, lift up all cushions, air out storage boxes and dry any damp areas.



- ▷ If condensation has still developed, just wipe it off.

12.7.3 At the end of the winter season

- Thoroughly clean the underbody of the vehicle and the engine. When this is done, corrosion-inducing anti-freeze agents (salts, alkaline residues) are removed.
- Clean the exterior and use regular car wax to protect metal surfaces.

12.8 Lay-up

12.8.1 Temporary lay-up



- ▶ 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.
- ▶ 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. The animals can get into the vehicle at an opportune moment and hide from view. To keep damages from animals to a minimum or to avoid them altogether, regularly check the vehicle for damage or animal traces. This is especially important approx. 24 hours after parking the car in storage.

If animal traces are found, contact your authorised dealer or service centre. If damage to cables has occurred, they can result in short circuits. The vehicle could catch fire.

Before laying up the vehicle, go through the following checklist:

Base vehicle

Activities	Done
Completely fill fuel tank. This prevents corrosion damage within the fuel tank system	
Jack up vehicle so that the wheels do not bear any load, or move vehicle every 4 weeks. This prevents any pressure points from occurring on tyres and wheel bearings	
Protect the tyres from direct exposure to the sun. Danger of formation of cracks!	
Inflate tyres up to the recommended maximum pressure	

	Activities	Done
	Check the spare wheel or tyre repair kit respectively Always provide for sufficient ventilation in the underbody area  ▷ Humidity or lack of oxygen e.g. by covering with plastic film may cause optical irregularities to the underbody. In addition observe the notes in the operating manual of the base vehicle	
Body	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 Air the interior, all storage compartments accessible from the outside, and the parking space (e.g. garage) every 3 weeks in order to prevent the occurrence of condensation and resulting mould formation	
Interior	Place upholstery in an upright position for ventilation, and cover Clean refrigerator Allow refrigerator and freezer compartment doors to remain slightly open Search for traces of animals that have gained entry Disconnect the flat screen from the mains and, if necessary, remove it from the vehicle	
Gas system	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	
Electrical system	Fully charge living area and starter battery  ▷ Charge the battery for at least 24 hours before laying up. Disconnect the living area battery from the 12 V power supply	
Water system	Empty the entire water system. Leave the water taps on in central position. Leave the safety/drainage valve (if available) and all drain cocks open. Observe the specifications in chapter 11. Switch off the safety/drainage valve on the transformer/rectifier. Otherwise the battery will become discharged too quickly  ▷ If the safety/drainage valve is switched off, the water system is no longer protected against frost. Open the water filter of the pressurised water pump and drain the water (see Chapter 13.3.4)	

12.8.2 Winter lay-up

Additional measures are required if laying up the vehicle over winter:

	Activities	Done
Base vehicle	Clean body and underbody thoroughly and spray with hot wax or protect with varnish	
	Fill fuel tank with winter diesel	
	Check antifreeze in the cooling water	
	Rectify damage to the paintwork	
	Inflate tyres up to the recommended maximum pressure	
Body	Keep the forced ventilation open	
	Clean and lubricate the mounted steady legs	
	Clean and grease all door and flap hinges	
	Brush oil or glycerine on all locking mechanisms	
	Rub all rubber seals with talc	
	Use graphite dust to treat locking cylinders	
Interior	Position de-humidifiers	
	Remove upholstery from the vehicle and store in a dry place	
	Air the interior at regular intervals	
	Empty all cabinets and storage compartments, open flaps, doors and drawers	
	Thoroughly clean the interior	
	If there is a risk of frost, do not leave the flat screen in the vehicle	
Electrical system	Remove starter and living area batteries and store in a place protected from frost (see chapter 9)	
Water system	Clean the water system using a cleaning agent from a specialised store	
	Open the water filter of the pressurised water pump and drain the water (see Chapter 13.3.4)	
Complete vehicle	Arrange the tarpaulins in such a way that the ventilation openings are not covered, or use porous tarpaulins	

12.8.3 Starting up the vehicle after a temporary lay-up or after lay-up over winter

Go through the following checklist before start-up:

	Activities	Done
Base vehicle	Check the tyre pressure on all tyres	
	Check the tyre pressure and condition of the spare wheel or tyre repair kit respectively	
Body	Clean the pivot bearing of the entrance step	
	Check the functioning of the fitted steady legs	
	Check that the doors, windows and skylights are working properly	
	Check the function of all external locks	
	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)	
Gas system	Put the gas bottles in the gas bottle compartment, tie down and connect to the gas pressure regulator	
Electrical system	Connect to 240 V power supply using the external socket	
	Fully charge living area and starter battery	
	 ▷ Charge the battery for at least 24 hours after lay-up.	
	Connect the living area battery with the 12 V power supply (see chapter 9)	
	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 safety/drainage valve, drain cocks and water taps	
	Check the safety/drainage valve, water taps, drain cocks and water distributors for leaks	
Appliances	Check the function of the refrigerator	
	Change heating fluid of the hot-water heater every 2 years	
	Check the function of the heater/boiler	
	Check the function of the gas cooker	
	Check the function of the air conditioning unit	

Chapter overview

This chapter contains instructions about inspection and maintenance work concerning the vehicle.

The maintenance instructions address the following topics:

- Alde hot-water heater
- independent vehicle heater
- air conditioning unit
- replacing bulbs and fluorescent tubes
- AL-KO rear axle

At the end of the chapter you will find important instructions on how to obtain spare parts.

13.1 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 with this technical knowledge are available for assistance at all authorised dealers and 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.

13.2 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.

13

Maintenance

13.3 Alde hot-water heater



- ▷ Check the level of the heating fluid at the compensator reservoir every 6 months.
- ▷ 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 bleeding the heating system after the initial heater operation to checking the glycol content.
- ▷ Have heating fluid changed by an authorised dealer or a service centre at intervals of approximately two years as corrosion-protection wears off after some time.
- ▷ Top up heating system with a water-glycol mixture (60 : 40) only. This mixture offers frost protection up to -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.

13.3.1 Checking the fluid level

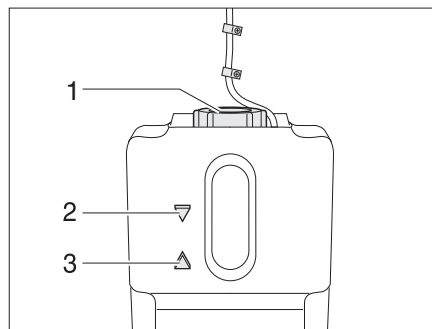


Fig. 393 Compensator reservoir hot-water heater

- Switch off the hot-water heater and allow it to cool down.
- Check if the fluid level is between the marks "MIN" (Fig. 393,3) and "MAX" (Fig. 393,2) on the compensator reservoir (Fig. 393).
- The heating fluid has to be renewed every 2 years.

13

Maintenance

13.3.2 Topping up heating fluid



▷ The heating fluid has to be renewed every 2 years.

- 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. 393,1) on the compensator reservoir.
- Slowly remove cover with circulating pump upwards.
- 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 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.

13.3.3 Bleeding the heating system

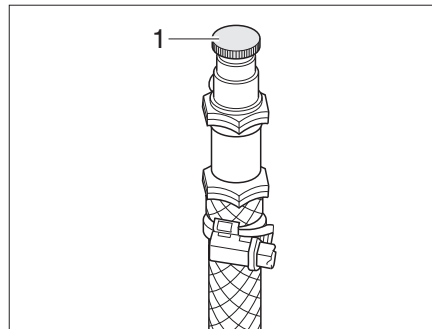


Fig. 394 Bleeding valve of hot-water heater

The bleeding valves are built in nearby the radiators.

- Switch off the hot-water heater and allow it to cool down.
- Open bleeding valve (Fig. 394,1) and leave open until no more air escapes.
- Close bleeding valve.
- Repeat this procedure at all bleeding valves.
- Check to see if the hot-water heater warms up.

13

Maintenance

13.3.4 Cleaning the water filter of the pressurised water pump

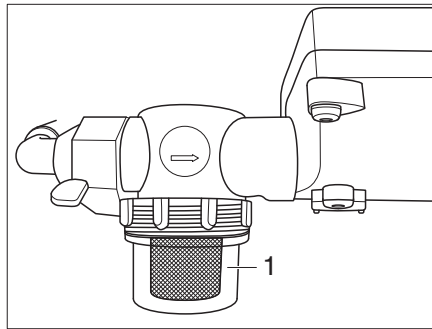


Fig. 395 Water filter of the pressurised water pump

The water filter (Fig. 395,1) at the pressurised water pump should be cleaned regularly, however at least once a year. Through the inspection glass it is possible to assess from the outside how high the degree of soiling is.

- Stop the water inflow.
- Screw off the inspection glass and empty the soiling.
- Screw the inspection glass back on.
- Restore the water inflow.

13.4 Diesel heater Webasto

13.4.1 Disinfection



- ▷ Clean and disinfect the water supply system at least once a year.

Use a sodium hypochlorite solution (NaOCl), dilution 5%, 30 °C to 40 °C (e.g. Certisil®, Puriclean) for disinfection.

- Drain the water completely and close all the water taps.
- Fill the complete water supply system with NaOCl.
- Set the mode selector (Fig. 326,3) to Summer operation, water temperature 40 °C (Fig. 326,2).
- Open the water taps in the kitchen, bath, shower, etc. one after the other (set mixer taps or single-lever faucets to "hot") until the air has been emitted completely from the water lines and NaOCl flows out of the water taps.
- Leave the unit on for 1-2 hours.
- Drain the NaOCl completely.
- Rinse the water lines once to twice using the same methods. It is not necessary to leave the unit on for 1 to 2 hours.
- Drain the water completely.

13.4.2 Decalcification

Regular decalcification depending on the respective water quality is advisable in order not to limit the water quality and the efficiency of the heater.

Use common household products such as a wine vinegar-water mixture in a ratio of 1:2 for decalcification.

- Drain the water completely and close all the water taps.
- Fill the complete water supply system with the wine vinegar-water mixture.
- Set the mode selector (Fig. 326,3) to Summer operation, water temperature 40 °C (Fig. 326,2).
- Open the water taps in the kitchen, bath, shower, etc. one after the other (set mixer taps or single-lever faucets to "hot") until the air has been emitted completely from the water lines and the wine vinegar-water mixture flows out of the water taps.
- Leave the unit on for 1-2 hours.
- Check whether the incrustations have dissolved completely in the vinegar water. If not, leave the heater on for a further 30 minutes
- Drain the vinegar water completely.
- Rinse the water lines with drinking water until you cannot smell any vinegar odour.

13.4.3 Fuses



- ▷ Before replacing a fuse ensure that the diesel heating is switched off.



- ▶ Incorrect wiring of the fuses not complying to specifications can result in fire.

The Webasto diesel heater has 3 fuses: 5 A, 15 A and 15 A. Each fuse has to be connected to the corresponding line (observe the colour).

- 5 A: red-blue line
- 15 A: red-black line
- 15 A: red line

13.5 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.

13

Maintenance

13.6 Roof air conditioning unit (Truma)



- ▶ Prior to carrying out work on the device, turn off the power supply.



- ▶ Never operate the air conditioning unit without a lint filter. Without a lint filter the evaporator becomes soiled, resulting in the performance of the air conditioning unit being impaired.
- ▶ If the condensation drain is clogged, condensate can enter the vehicle. Keep the condensation drain free of dirt, leaves and similar obstacles.

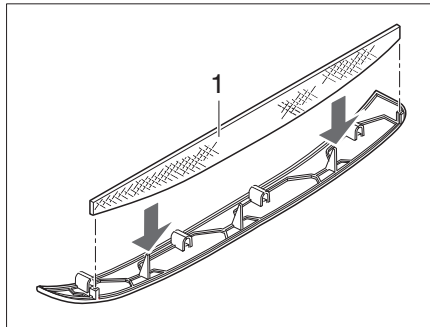


Fig. 396 Lint filter air conditioning unit

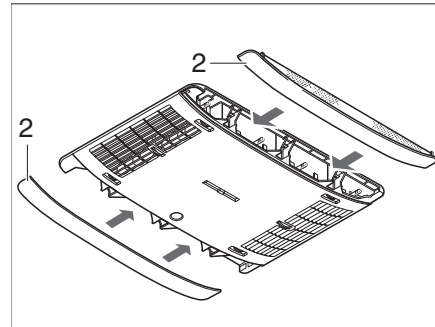


Fig. 397 Air conditioning unit panels

Two lint filters are located in the side panels (Fig. 397,2). The lint filters must be cleaned at regular intervals, at least every 6 months however, and replaced if necessary.

- Remove the panels (Fig. 397,2) from the air distribution unit and clean the lint filter (Fig. 396,1) or replace it if necessary.
- Place the panels with cleaned or new lint filter.

13.7 Replacing bulbs and fluorescent tubes



- ▶ Bulbs and light fittings can be extremely hot. Therefore, allow lights to cool down before changing bulbs.
- ▶ Shut off the power supply on the safety cut-out in the 240 V fuse box 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.
- ▶ Lights can get very hot. When the light is switched on, there must always be a safety distance of 30 cm between light and flammable objects. Fire hazard!



- ▶ A new bulb should not be touched with the fingers. Use a cloth when installing the new bulb.
- ▶ Only use bulbs of the same type and with the correct wattage.
- ▶ If LEDs in lights are defect, contact an authorised dealer or service centre.

13

Maintenance

13.7.1 LED spotlight

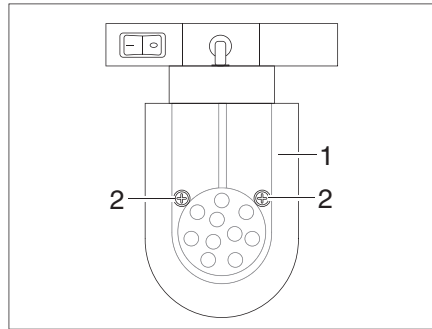


Fig. 398 LED spotlight (movable)

- Changing bulbs:*
- Loosen the fixing screws (Fig. 398,2).
 - Remove the lamp glass cover (Fig. 398,1) carefully.
 - Remove the LED lamps.
 - Insert a new LED lamp.
 - Reassemble the lamp in the reverse order.

13.7.2 Garage light

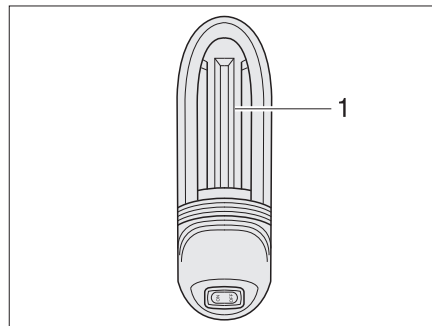


Fig. 399 Garage light

- Changing bulbs:*
- Push the light covering (Fig. 399,1) up slightly and remove it.
 - Remove bulb.
 - Put in a new bulb.
 - Reassemble the lamp in the reverse order.

13.7.3 Refrigerator light

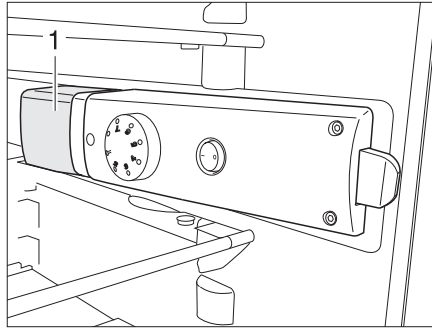


Fig. 400 Refrigerator light

Changing bulbs:

- Switch off the refrigerator at the external switch.
- Grip under the light covering (Fig. 400,1) from behind and raise the light covering approximately 3 mm.
- Remove the light covering to the side.
- Remove bulb.
- Put in a new bulb.
- Reassemble the lamp in the reverse order.

13.8

AL-KO rear axle

Fiat vehicles with AL-KO rear axle without pneumatic spring

In addition to the regulations and notes in the operator manual of the basic vehicle as well as in the maintenance manual, the rear axles must be relubricated after 20,000 km, or at least every 12 months.



- ▷ The rear axles must not bear any load while they are being lubricated.
- ▷ Use one of the following types of grease for lubrication:
Costrac GL 1501 by the firm Klüber
Cardex 3746 SP by the firm CONDA



- ▷ If the vehicle is equipped with a maintenance-free torsion bar spring axle or a rear axle with pneumatic cushioning, the two lubricator nipples are left out.

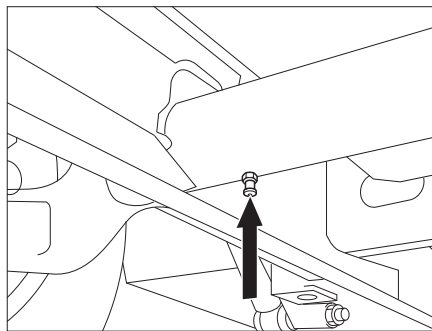


Fig. 401 AL-KO rear axle

The lubricator nipples (Fig. 401, arrow) are situated on the underside of the axle tube.

13.9 Vehicle identification plate

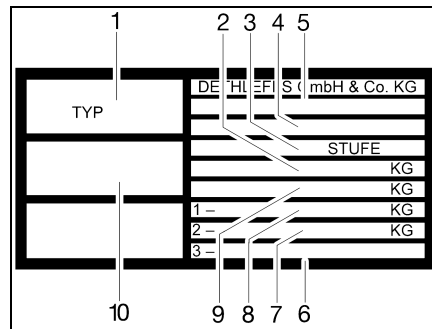


Fig. 402 Vehicle identification plate

- 1 Type
- 2 Maximum permissible gross weight of the vehicle with trailer
- 3 Manufacturer of the unit (add-on unit)
- 4 Manufacturer's code and chassis number
- 5 EG type approval number
- 6 Permissible rear axle load (for tandem axle)
- 7 Permissible axle load rear
- 8 Permissible axle load front
- 9 Maximum permissible gross weight of the vehicle
- 10 Serial number

The vehicle identification plate (Fig. 402) with the serial number is fitted on the B column on the front passenger side (models T and A) or in the entrance area (models I).

Do not remove the vehicle identification plate.

- Identifies the vehicle
- Helps with the procurement of spare parts
- Together with the vehicle documents identifies the vehicle owner

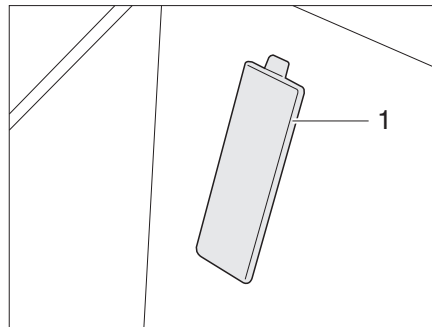


Fig. 403 Cover for chassis number (Fiat base vehicle)



- ▷ Always include the **serial number** with all inquiries for the customer service office.
- ▷ For vehicles on a Fiat chassis, the chassis number is located behind a cover (Fig. 403,1) in the entrance on the front passenger's side.

13.10 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.

Chapter overview

This chapter contains important instructions on how to obtain spare parts.

14.1 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 Dethleffs have been specially developed and supplied for your vehicle. These products are available at the authorised dealers or service centres. The authorised dealers and service centres are informed about admissible technical details and carry out the required work correctly.
- ▶ The use of accessories, parts and fittings not supplied by Dethleffs 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 Dethleffs. 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 suggestions of important spare parts:

- Fuses
- V-belt
- Windscreen blades
- 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.

Chapter overview

This chapter contains instructions regarding the tyres of the vehicle.

The instructions address the following topics:

- tyre selection
- handling of tyres
- changing wheels
- spare wheel support
- tyre pressure

At the end of the chapter there is a table you can use to find the correct tyre pressure for your vehicle.

15.1 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.



- ▷ Only check the tyre pressure on cold tyres.
- ▷ Tubeless tyres have been installed on the vehicle. Never install tubes in these tyres.
- ▷ Read the instruction manual for the base vehicle.



- ▷ Depending on the base vehicle and model the vehicles are equipped with only one tyre repair kit as standard.
- ▷ In the case of a puncture, pull over to the side of the road. Make vehicle safe with a hazard warning triangle. Switch on the warning lights.
- ▷ Tyres on vehicles with tandem axles may wear faster.
- ▷ 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: (1509) Week 15, year of manufacture 2009.

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, same brand and same style (summer and winter tyres).
- 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.

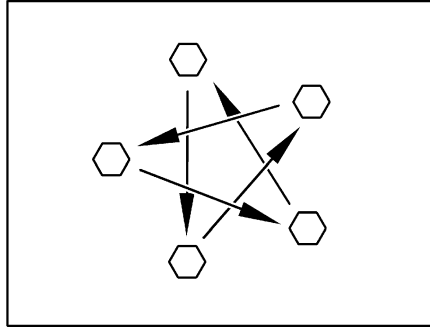


Fig. 404 Tighten the wheel nuts or wheel bolts cross-wise

- Check regularly that the wheel nuts or wheel bolts are firmly seated. Re-tighten the wheel nuts or wheel bolts of a changed wheel cross-wise (Fig. 404) after 50 km (30 miles).
- When using new or newly painted rims, re-tighten the wheel nuts or wheel bolts once again after approx. 1,000 to 5,000 km (600 miles to 3,000 miles).
- 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.
- Replace the spare wheel or tyre repair kit respectively regularly.

15.2 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.

Weight refers to the maximum permissible axle load which can be distributed on two tyres. The maximum load-carrying capacity of a tyre is indicated by its load index (= LI, load index code).

The axle geometry of a vehicle, such as wheel camber and track, is also important for tyre selection. 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.

15

Wheels and tyres

15.3 Tyre specifications

215/70 R 15C 109/107 Q

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)

15.4 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.
- If the tread wear is uneven, have the toe-in and the wheel camber checked. Driving with an incorrectly set toe-in or a one-sided wheel camber leads to a significant increase in wear.
- Avoid block brakings. Block braking gives the tyres "brake plates" of varying strength. This reduces driving comfort. It might even make the tyres unserviceable.
- 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.
- Drive in such a way as to protect your tyres. Avoid braking sharply, revving up too strongly and long journeys on poor roads.

15

Wheels and tyres

15.5 Install the wheel protection ring



- ▷ The screws must be visually inspected at regular intervals.
- ▷ Observe the instruction manual of the manufacturer.

The wheel protection ring protects the wheel from damage, e.g., from contact with curbs or rocks during off-road driving.

Preparatory work

Before installation, please note the following:

- The ambient temperature and the temperature of the parts must be above 5°C.
- Remove residues of washing solutions or cutting oils with hot water.
- If necessary, treat threaded parts with Loctite® before applying 7063 or wheel cleaner and then let it dry.
- The surfaces must be free of grease and clean.

Assembly

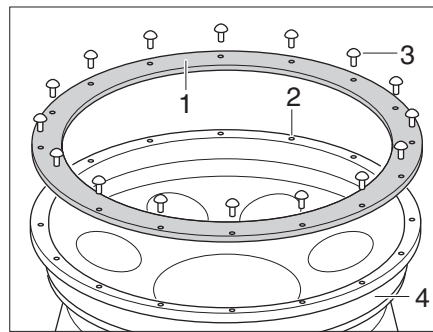


Fig. 405 Wheel protection ring



- ▷ The threadlocker attacks the surface coating of the wheel and the impact protection ring.
When applying, make sure that no residue remains outside the threaded hole under any circumstances. Residues must be removed.
- ▷ Use threadlocker according to manufacturer's instructions.
- Drop the threadlocker Loctite® 222 into the core hole (Fig. 405,2).
- Install the wheel protection ring (Fig. 405,1) to the wheel (Fig. 405,4) using the screws (Fig. 405,3).
- Tighten the screws (Fig. 405,3) with a torque of 2-3 Nm.

Disassembly

The low-strength threadlocker Loctite® 222 can be removed again using normal tools.

- Then remove any adhesive residue from the threads.

15

Wheels and tyres

15.6 Changing wheels

15.6.1 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 underneath the axle, not under any circumstances on the bodywork.
- ▶ 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 bolts when changing the wheel.
- ▶ Tighten the wheel nuts or wheel bolts cross-wise (Fig. 404).
- ▶ When changing wheels (e.g. alloy wheel rims or wheels with winter tyres), use the correct wheel bolts of the correct length and shape. The firm seating of the wheels and the function of the braking system depend on this.
- ▶ Wheel rims and tyres not permitted for use with the vehicle can jeopardize road safety.
- ▶ 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.
- ▶ Further information can be found in the instruction manual of the base vehicle.

15.6.2 Tightening torque

Wheel rim	Tightening torque
Steel wheel rim 15"	160 Nm
Steel wheel rim 16"	180 Nm
Alloy wheel rim 15" (Fiat / Citroen)	130 Nm
Alloy wheel rim 16" (Fiat / Citroen)	160 Nm

Wheel rim	Tightening torque
Alloy wheel rim 17" (light chassis)	140 Nm
Alloy wheel rim 17" (maxi chassis)	160 Nm
Alloy wheel rim Dethleffs 16" (light chassis)	140 Nm
Alloy wheel rim Dethleffs 16" (maxi chassis)	160 Nm
Iveco M14 thread, steel wheel rim (Models 30S - 35S)	144 ¹⁾ -176 Nm ²⁾
Iveco M14 thread, aluminium wheel rim (Models 30S - 35S)	200 ¹⁾ -245 Nm ²⁾
Iveco M18×1.5 thread (models 35C - 40C - 45C - 50C - 60C - 65C - 70C - 72C)	290 ¹⁾ -350 Nm ²⁾

¹⁾ Minimum value

²⁾ Maximum value

15.7 Tyre repair kit



- At models with a base vehicle from Fiat a tyre repair kit for inflating the flat tyre with foam is included as standard equipment.

15.8 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.



- ▷ Only check the tyre pressure on cold tyres.

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 is higher than in cold tyres. Therefore, check the pressure when the tyres are cold.
- ▷ Tyre pressures in bar.
- ▷ The valve used must be approved for the air pressure. We recommend the use of a metal valve for pressures greater than 4.75 bar.
- ▷ For the maximum permissible axle loads for your vehicle please refer to specific documentation.
- ▷ When a replacement is needed, Dethleffs recommends "Camping" tyres.

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, the Dethleffs dealer will be happy to provide the newest values.

Tyre pressure table (depending on the axle loads)

Tyre size	Air pressure [bar]	Axle loads [kg]						
		1500	1650	1700	1750	1850	1900	1950
215/70 R15 C (109/107R)	front	3.1	3.5	3.7	3.75	4.0	4.1	4.25
	rear	3.1	3.5	3.7	3.75	4.0	4.1	4.25
215/70 R15 CP (109R)	front	3.25	3.6	3.75	3.9	4.25	4.4	4.5
	rear	3.75	4.25	4.4	4.5	4.9	5.0	5.25
225/70 R15 C (112/110R)	front	3.0	3.1	3.25	3.5	3.7	3.8	3.9
	rear	3.0	3.1	3.25	3.5	3.7	3.8	3.9
225/70 R15 CP (116R)	front	3.0	3.0	3.0	3.25	3.3	3.4	3.5
	rear	3.0	3.0	3.5	3.6	3.9	4.0	4.1
215/75 R16 C (116/114R)	front	3.0	3.1	3.25	3.5	3.7	3.8	3.9
	rear	3.0	3.1	3.25	3.5	3.7	3.8	3.9
225/75 R16 C (116/114N)	front	3.0	3.0	3.0	3.25	3.3	3.4	3.5
	rear	3.0	3.0	3.0	3.25	3.3	3.4	3.5
225/75 R16 CP (116R)	front	3.0	3.0	3.0	3.25	3.3	3.4	3.5
	rear	3.0	3.0	3.5	3.6	3.9	4.0	4.1
235/60 R17 C (117/115R)	front	3.0	3.1	3.25	3.5	3.7	3.8	3.9
	rear	3.0	3.1	3.25	3.5	3.7	3.8	3.9
225/75 R16 C (121/120R)	front	3.0	3.0	3.1	3.2	3.4	3.5	3.6
	rear	3.0	3.0	3.1	3.2	3.4	3.5	3.6
255/55 R18 CP (120R)	front	3.0	3.1	3.25	3.5	3.7	3.8	3.9
	rear	3.0	3.1	3.25	3.5	3.7	3.8	3.9

15 Wheels and tyres

Tyre size	Air pressure [bar]	Axle loads [kg]					
		2000	2100	2200	2300	2400	2700
215/70 R15 C (109/107R)	front	4.5	–	–	–	–	–
	rear	4.5	–	–	–	–	–
215/70 R15 CP (109R)	front	4.75	–	–	–	–	–
	rear	5.5	–	–	–	–	–
225/70 R15 C (112/110R)	front	4.0	–	–	–	–	–
	rear	4.0	–	–	–	–	–
225/70 R15 CP (116R)	front	3.75	4.0	4.25	4.5	4.75	–
	rear	4.25	4.5	4.75	5.0	5.25	–
215/75 R16 C (116/114R)	front	4.0	4.25	4.5	4.75	5.0	–
	rear	4.0	4.25	4.5	4.75	5.0	–
225/75 R16 C (116/114N)	front	3.75	4.0	4.25	4.5	4.75	–
	rear	3.75	4.0	4.25	4.5	4.75	–
225/75 R16 CP (116R)	front	3.75	4.0	4.25	4.5	4.75	–
	rear	4.25	4.5	4.75	5.0	5.25	–
235/60 R17 C (117/115R)	front	4.0	4.25	4.5	4.75	5.0	–
	rear	4.0	4.25	4.5	4.75	5.0	–
225/75 R16 C (121/120R)	front	3.75	4.0	4.25	4.5	4.75	5.5
	rear	3.75	4.0	4.25	4.5	4.75	5.5
255/55 R18 CP (120R)	front	4.0	4.1	4.25	4.3	4.5	4.85
	rear	4.0	4.1	4.25	4.3	4.5	4.85
255/55 R18 (118T)	front	–	–	–	4.0	–	–
	rear	–	–	–	–	5.0	–

IVECO chassis Tyre pressure table (depending on the axle loads)

Model	Tyre size	Max. front axle load (kg)	Filling pressure (bar)	Max. rear axle load (kg)	Filling pressure (bar)
35C - 40C	195/75 R16 107/105R	1900	4.5	2600	3.5
				3100	
				3700	4.5
60C	225/65 R16 112/110R	2200	4.75	4200	
60C - 65C	225/75 R16 118/116R	2300	4.5	5000	5.0
70C	225/75 R16 121/120R	2500	4.75	5350	5.5
72C		2700	5.25		

Chapter overview

This chapter contains instructions about possible faults in your vehicle. The faults are listed with their possible causes and corresponding remedies. The instructions address the following topics:

- braking system
- electrical system
- gas system
- gas cooker
- gas oven
- microwave oven
- heater
- boiler
- refrigerator
- air conditioning unit
- water supply
- toilet
- body

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.

16.1 Braking system



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

16

Troubleshooting

16.2 Electrical system



▷ When the living area battery is changed, only use batteries of the same type.



▷ See chapter 9 for changing the fuses.

Fault	Cause	Remedy
Exterior road light system no longer functions correctly	Bulb is defective	Replace bulb. Note volts and watts specifications
	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
	Fuses in the vehicle fuse box are defective	Check the fuses in the vehicle fuse box and, if necessary, replace.
Interior lighting does not work	Bulb is defective	Replace bulb. Note volts and watts specifications
	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
The electrically operated entrance step cannot be moved in or out	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
No 230 V power supply despite connection	230 V automatic circuit breaker has triggered	Switch on 230 V automatic circuit breaker
	Fuse in the cable reel is defective	Check the fuse in the cable reel and, if necessary, replace
Starter or living area battery is not charged when operated in 230 V mode	Jumbo flat fuse (40 A) in the starter or living area battery is defective	Replace the jumbo flat fuse (40 A) on the starter or living area battery
	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

Fault	Cause	Remedy
12 V indicator lamp does not light up	12 V power supply 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 (2 A) in the living area battery is defective	Replace flat fuse (2 A) in the living area battery
No display on the panel	12 V power supply switched off	Switch 12 V power supply on
	Living area battery disconnected from the 12 V power supply	Connect the living area battery with the 12 V power supply
	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
12 V power supply does not work	12 V power supply switched off	Switch 12 V power supply on
	Living area battery disconnected from the 12 V power supply	Connect the living area battery with the 12 V power supply
	Living area battery is discharged	Charging the living area battery
	Jumbo flat fuse (40 A) on the living area battery is defective	Change the jumbo flat fuse (40 A) on the living area battery
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
12 V power supply does not work at 230 V operation	12 V power supply switched off	Switch 12 V power supply on
	Living area battery disconnected from the 12 V power supply	Connect the living area battery with the 12 V power supply
	Charger module in the transformer/rectifier is defective	Contact customer service
	230 V automatic circuit breaker has triggered	Contact customer service
	Jumbo flat fuse (40 A) on the living area battery is defective	Change the jumbo flat fuse (40 A) on the living area battery

Fault	Cause	Remedy
Starter battery is discharged at 12 V operation	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
	Living area battery disconnected from the 12 V power supply	Connect the living area battery with the 12 V power supply
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
No output voltage at the converter ("Power Status" LED shows a fault)	Input voltage too high (rapid flashing)	Check input voltage
	Input voltage too low (slow flashing)	Recharge battery
		Check cables and connections
	Thermal overload (periodical flashing)	Switch off converter and appliances, and switch back on again after approx. 5 to 10 minutes
		Improve ventilation
	Short circuit, incorrect polarity or excessive continuous load (continuous lighting)	Switch off the converter and remove the appliance. If no fault occurs after switching back on without an appliance, it is the appliance that is defective. If the fault still occurs, contact customer service.
Extractor hood does not work	230 V automatic circuit breaker switched off	Switch on 230 V automatic circuit breaker
	12 V supply device switched off	Switch on 12 V supply device on the panel
	Power pack is defective	Contact customer service
	Fuse (15 A) on the 230 V fuse box is defective	Replace fuse (15 A)
	Fuse (15 A) at the transformer/rectifier is defective	Replace fuse (15 A)
	Extractor hood defective	Contact customer service
Air conditioning unit cannot be switched on or off	230 V automatic circuit breaker has triggered	Switch on 230 V automatic circuit breaker
	Remote control battery is empty	Change remote control battery
Equipment with 12 V supply no longer works (for EBL 402/403)	Issues in the data bus	Set EBL 402/403 to emergency mode (see section 9.10.2)

16 Troubleshooting

16.3 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.).
- ▶ 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

16.4 Gas cooker/gas oven

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

16.5 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.

16.5.1 Heater Truma

Fault	Cause	Remedy
Heater does not ignite	Temperature sensor on operating unit or remote sensor defective	Pull out plug on operating unit. The heating then works without thermostat. Contact the customer service as soon as possible
Red indicator lamp "Fault" illuminates	Air in the gas pipe system	Switch off and on again. After two futile ignition attempts, wait for 10 minutes before trying again
	Lack of gas	Open regulator tap and gas isolator tap
		Connect a full gas bottle
	Defect of a safety element	Contact customer service
Red indicator lamp "Fault" is flashing	Operating voltage too low	Charge or replace the living area battery (or have it charged or replaced)
Green indicator lamp behind knob is not lit	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)
Yellow indicator lamp on the energy selector switch does not illuminate	No supply voltage	Check 240 V connection and fuses
	Overheating switch was triggered	Press overheating switch
Boiler empties, safety/drainage valve has opened	Internal temperature below 7 °C	Heat inside
	Safety/drainage valve separated from battery supply	Cancel battery separation. In order to do this switch on the battery cut-off switch on the transformer/rectifier or deactivate the battery separation via the panel
	Operating voltage below 10.8 V	Charge or replace the living area battery (or have it charged or replaced)
	Fuse is defective	Replace fuse on the transformer/rectifier

16

Troubleshooting

Fault	Cause	Remedy
Safety/drainage valve does not close when switching on	Safety/drainage valve separated from battery supply	Cancel battery separation. In order to do this switch on the battery cut-off switch on the transformer/rectifier or deactivate the battery separation via the panel
	Operating voltage below 10.8 V	Charge living area battery (or have it charged)
	Fuse is defective	Replace fuse on the transformer/rectifier
Red and green indicator lamps are not lit	Fuse is defective	Replace fuse on the transformer/rectifier
Fan wheel runs noisily or not steadily	Fan wheel is soiled	Contact Truma service department

16.5.2 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 240 V electrical operation	No 240 V power supply	Switch on the 240 V automatic circuit breaker
		Connect 240 V power supply
Heater switches off	Overheating	Allow the heater to cool. To reset the display, interrupt the 12 V power supply to the heater and switch it back on again
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

16 Troubleshooting

16.6 Refrigerator

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.

16.6.1 Dometic refrigerator without AES

Fault	Cause	Remedy
Refrigerator does not switch on when operating in 240 V mode	No 240 V power supply	Connect 240 V power supply
	240 V automatic circuit breaker has triggered	Switch on the 240 V automatic circuit breaker
	240 V operating voltage too low	Have the 240 V power supply checked by an authorised specialist workshop
Refrigerator does not switch on when operating in 12 V mode	Jumbo flat fuse (40 A) in the starter battery is defective	Replace jumbo flat fuse (40 A) in the starter battery
	Flat fuse (2 A) in the starter battery is defective	Replace flat fuse (2 A) in the starter battery
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
	12 V operating voltage too low	Have the 12 V power supply checked by an authorised specialist workshop
Refrigerator does not switch on when operating in gas mode The "GAS" operating indicator flashes yellow	Lack of gas	Open regulator tap and gas isolator tap
		Connect a full gas bottle
	Air in the gas pipe	Repeat ignition 3 or 4 times
	Cobwebs or burnt residue in the burning chamber	Remove the ventilation grill on the outside of the vehicle and clean the burning chamber

16

Troubleshooting

16.6.2 Thetford refrigerator without SES (error diagnostics)

Error code	Cause	Remedy
1	The 240 V power supply is 75 % under the required operating voltage	Contact customer service
2	The 12 V power supply is 75 % under the required operating voltage	Contact customer service
3	The refrigerator is operated at 240 V, even though no 240 V mode has been selected	Contact customer service
4	The refrigerator is operated at 12 V, even though no 12 V mode has been selected	Contact customer service
5	The refrigerator is operated in gas operation mode even though gas operation mode has not been selected	Contact customer service
6	The gas valve has been identified as open even though it should be closed	Contact customer service
7	The gas valve has been identified as closed even though it should be open	Contact customer service
8	The 240 V power supply is 20 % under the required operating voltage	Check 240 V power supply
9	The gas supply has been cut off. The flame has not been ignited within 30 seconds in gas operation mode	● Check the gas supply ● Repeat ignition 3 to 4 times ● Contact customer service
10	The refrigerator is set to 12 V mode and the vehicle engine is not running	Start the vehicle engine or select a different energy source
11	The refrigerator is set to "AUTO" mode and no energy source is available	Provide an energy source and reset the refrigerator. Switch the refrigerator off and on again for this purpose
12	–	Contact customer service
13	The temperature sensor is defective	Check whether the plug is inserted properly above the fin inside the refrigerator. If so: Contact customer service
14	The connection between operating controls and control device is interrupted	Contact customer service

16

Troubleshooting

16.6.3 Dometic 8 series with MES



▷ In the case of a fault the LED display fault will always light up "⚠".

Fault	Cause	Remedy
LED "⚡" flashes	No 240 V power supply	Connect 240 V power supply
	240 V automatic circuit breaker has triggered	Switch on the 240 V automatic circuit breaker
	240 V operating voltage too low	Have the 240 V power supply checked by an authorised specialist workshop
LED "⚡" flashes	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
	12 V operating voltage too low	Have the 12 V power supply checked by an authorised specialist workshop
LED "🔥" flashes	Lack of gas	Open regulator tap and gas isolator tap
		Connect a full gas bottle
LED "🔥" flashes	Cobwebs or burnt residue in the burning chamber	Remove the ventilation grill on the outside of the vehicle and clean the burning chamber
LEDs for display of the temperature range flash	Temperature sensor defective	Contact customer service
LED "⚡" and LEDs for display of the temperature range flash	240 V heater element defective	Contact customer service
LED "⚡" and LEDs for display of the temperature range flash	12 V heater element defective	Contact customer service

16

Troubleshooting

16.6.4 Dometic 8 series with AES



▷ In the case of a fault the LED display fault will always light up "⚠".

Fault	Cause	Remedy
Text "240 V" flashes	No 240 V power supply	Connect 240 V power supply
	240 V automatic circuit breaker has triggered	Switch on the 240 V automatic circuit breaker
	240 V operating voltage too low	Have the 240 V power supply checked by an authorised specialist workshop
Text "12 V" flashes	Fuse on the transformer/rectifier is defective	Replace fuse on the transformer/rectifier
	Disconnecter relay in the transformer/rectifier is defective	Contact customer service
	12 V operating voltage too low	Have the 12 V power supply checked by an authorised specialist workshop
Text "GAS" flashes	Lack of gas	Open regulator tap and gas isolator tap
		Connect a full gas bottle
	Cobwebs or burnt residue in the burning chamber	Remove the ventilation grill on the outside of the vehicle and clean the burning chamber
LEDs for display of the temperature range flash	Temperature sensor defective	Contact customer service
Text "HE1" flashes	240 V heater element defective	Contact customer service
Text "HE2" flashes	12 V heater element defective	Contact customer service

16

Troubleshooting

16.6.5 Dometic 10 series



- ▷ Faults are indicated by a fault code with a warning symbol "⚠" in the middle of the display.
- ▷ A table with the fault codes can be found in the manufacturer's operating instructions

Resetting faults of the ERROR type

- Press the control knob (Bild 354,7) for 2 seconds.
A beeping tone is sounded.

The error is reset.

16.7 Air conditioning unit

Fault	Cause	Remedy
Air conditioning unit does not cool	No 240 V power supply	Connect 240 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

16.8 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 switched off	Switch 12 V power supply 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
	Transformer/rectifier defective	Contact customer service
	Water pump switched off on panel	Switch water pump on
Toilet has no flush water	Water tank is empty	Replenish drinking water
	Fuse for toilet is defective	Replace fuse
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

Fault	Cause	Remedy
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)
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	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

16 Troubleshooting

16.9 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
Front bonnet swivel system is difficult to operate	Front bonnet swivel system is not (sufficiently) lubricated	Lubricate front bonnet swivel system with acid-free and resin-free grease
Heki skylight 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.

17

Special equipment

17.1 Weight details for special equipment



- ▶ The use of accessories, parts and fittings not supplied by Dethleffs 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 Dethleffs. This also applies to impermissible alterations to the vehicle.

Weight details for Dethleffs special equipment are listed in the table below. If these objects are either carried in or on the vehicle and are not part of the standard equipment, they must be taken into consideration when calculating the payload.

All weight details are approximate.

Observe the max. permissible gross weight.

Item designation	Surplus weight [kg]
Waste water tank, insulated	2
Overcab bed, foldable	2
Alcove window, hinged	2
Caravan coupling	26-46
Hinged window, driver's cabin	8
External shower	1
Outside kitchen	10
Outside storage compartment (lowered rear)	59-63
Outside storage compartment (storage compartment)	3
Automatic transmission	17-32
Car radio and CD	2
Oven	14
Chassis package (driver's cabin air conditioning unit, air-bags)	23-27
Skylight (clear glass)	1
Skylight (Midi-Heki)	10
Roof rail	10
Roof racks	15-20
"Kissenschlacht" (pillow fight) decoration package	1
Swivel console, seat	20
Extractor hood	2-5
Duo switching facility (incl. gas bottle)	26
Entrance step, electrical	2
Driver's cabin carpet	3
Driver's cabin door	17

Item designation	Surplus weight [kg]
Bike rack for 3 bicycles	9
Bike rack for 4 bicycles	10
Roman shades, driver's cabin	3
Fire extinguisher 6 kg	8
Flat screen	4-6
Floor warming/bed warming, electrical	9
External gas socket	1
Holder for flat screen	3-5
Lift-tilt skylight (Heki 3)	12-15
Trumatic C 6002 heater, electric kit	2
Insect screen door	3
Insulation mat for driver's cabin window	2
Air conditioning unit	32-40
Refrigerator, separate freezer compartment	7-20
Awning 300 cm	21
Awning 350 cm	25-35
Awning 400 cm	27-40
Awning 450 cm	32
Awning 500 cm	36
Awning 600 cm	40
Microwave oven	15
Motorcycle rack/bike rack	40
Navigation system (with cables)	9
Guest bed	3-5
Pilot seats	20
Crossbeam, roof rail	7
Radio preparation	4
Wheel trims	4
Smoke alarm	1
Reversing camera, incl. monitor and cables	5-10
Diesel particulate filter	10
Satellite unit	15-24
Switch for water pump	1
Coil springs, front, reinforced	5
Service flap	3-8
Safety kit	5
Seat covers in the driver's cabin and living area	3
Solar installation	15
Voltage transformer, air conditioning unit	3

Special equipment

Item designation	Surplus weight [kg]
Supports (2 pieces)	6-10
Chain-stitch rug, laid loosely	6-9
Table leg, free-standing	5
Sill	8
Panelling, inside	2
Awning light	1
Alde hot-water heater	30-50
Hazard warning triangle and first-aid kit	2
Alde heat exchanger	2-5
Winter covering for the refrigerator grating	1
Winter comfort package (depending on equipment)	15-75
Auxiliary battery	27
Additional heater, driver's cabin (independent vehicle heater)	7
Auxiliary lamps, inside	2
Additional pump for the Alde heater	1
Auxiliary heat exchanger (Arizona)	3

17

Special equipment

17.2 Raising (Globebus Performance)

Tightening torques of the screws for raising the Globebus Performance:

Fahrzeug / Vehicle: VW Crafter(2) Sy/SZ

Artikel / Article: 40 mm Suspension Distance Kit/ Federn Distanz Satz

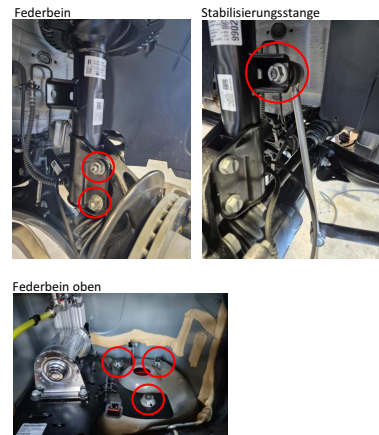


Anzugsdrehmomente / Torque

Schraubenart bolt quality	M5	M6	M8	M10	M12	M16
8.8	6 Nm	10 Nm	25 Nm	50 Nm	85 Nm	200 Nm
10.9	-	12 Nm	30 Nm	60 Nm	100 Nm	250 Nm
A2-70	5 Nm	8 Nm	20 Nm	40 Nm	70 Nm	175 Nm
A4-80	7 Nm	11 Nm	27 Nm	55 Nm	95 Nm	230 Nm

ACHTUNG: Das Anzugsdrehmoment aller Schrauben nach 1000km und danach zu jedem Kundendienst überprüfen.
ATTENTION: Check the tightening torque of all bolts after 1000km and thereafter at each service.

Vorderachse (beide Seiten berücksichtigen)



Hinterachse (beide Seiten berücksichtigen)

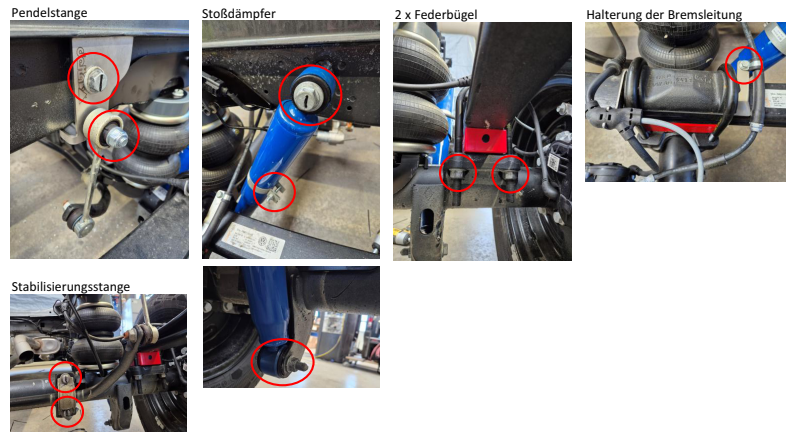


Bild 406 Tightening torques

Chapter overview

This chapter contains helpful tips for your journey.

The instructions address the following topics:

- traffic rules in Germany
- Road assistance in European countries
- Traffic rules in European countries
- Gas supply in European countries
- Toll regulations in European countries
- Safe ways to spend the night during travel
- Camping in winter

At the end of the chapter there is a checklist containing the most important equipment for your trip.

18.1 The most important information for motorhomes

18.1.1 Traffic rules in Germany

	Vehicles up to 2.8 t ¹⁾	Vehicles from 2.8 to 3.5 t ¹⁾	Vehicles over 3.5 t ¹⁾
Maximum speed			
Within built-up areas	50 km/h	50 km/h	50 km/h
Outside built-up areas	100 km/h	100 km/h	80 km/h/ 100 km/h ²⁾
Motorway	Recommended speed: 130 km/h		80 km/h/ 100 km/h ³⁾
 Overtaking forbidden For vehicles exceeding 3.5 t ¹⁾	Not applicable	Not applicable	Applicable
 Travelling prohibited For vehicles exceeding 3.5 t ¹⁾	Not applicable	Not applicable	Applicable
 Travelling without minimum distance prohibited	Not applicable	Not applicable	Applicable when vehicle travelling ahead exceeds 3.5 t ¹⁾

¹⁾ Maximum permissible gross weight

²⁾ On roads for motor vehicles, for motorhomes with a maximum permissible gross weight of between 3.5 t and 7.5 t

³⁾ For motorhomes with a maximum permissible gross weight of between 3.5 t and 7.5 t

Specifications without guarantee

18.1.2 Traffic rules in foreign countries



- ▷ The vehicle driver is required to inform himself as to the traffic rules of the countries in which he plans to travel before beginning the trip. Information is available, for example, from the automobile clubs or the country representatives.
- ▷ In some European countries warning vests must be worn when exiting the vehicle outside of towns in the case of vehicle failures or accidents.

Information about the traffic rules is particularly important, since the respective country's laws apply in case of accidents or damage. For your own safety always observe the following points when travelling abroad:

- Have your green insurance card on you.
- Take an "Accident report" form from your insurance with you.
- Always have the police record the accident.
- Do not sign documents that you have not read and understood completely.

18.1.3 Parking



- ▷ Within built-up areas vehicles with a maximum permissible gross weight exceeding 2.8 t have to be made visible with an own light source at the front and rear on the roadway side. A reflecting parking warning sign (size 423 x 423 mm) may be used instead. The parking warning sign may only be mounted while the vehicle is stopped. The upper edge of the parking warning sign may not be located at more than 1200 mm. Reflectors and licence plates may not be covered by the parking warning sign.

Parking vehicles in public areas	Vehicles up to 2.8 t ¹⁾	Vehicles from 2.8 to 3.5 t ¹⁾	Vehicles over 3.5 t ¹⁾
Basically	Allowed if not restricted by traffic signs		
On pavements with parking area markings	Parking allowed	Parking not allowed	
 Parking for all types of vehicles	Parking allowed		
 Parking on pavements	Parking allowed	Parking not allowed	
 Supplementary signs: Only passenger cars	Parking not allowed		
 Supplementary signs: Only motor-homes	Parking allowed		
 Supplementary signs: Only motor vehicles over 3.5 t ¹⁾	Parking not allowed		Parking allowed

Parking vehicles in public areas	Vehicles up to 2.8 t ¹⁾	Vehicles from 2.8 to 3.5 t ¹⁾	Vehicles over 3.5 t ¹⁾
 Supplementary signs: Only for commercial vehicles with trailer	Parking not allowed		
 Supplementary signs: Only passenger cars with trailer	Parking not allowed		
 Supplementary signs: Only for buses and coaches	Parking not allowed		

Stopping vehicles under darkness

Within built-up areas	Not applicable	Not applicable	Own light source or warning sign
Outside built-up areas	Own light source (parking light)	Own light source (parking light)	Own light source (parking light)

¹⁾ Maximum permissible gross weight

Specifications without guarantee

18.1.4 Official inspections

	Vehicles up to 2.8 t ¹⁾	Vehicles from 2.8 to 3.5 t ¹⁾	Vehicles over 3.5 t ¹⁾
General inspection (HU) TÜV/DEKRA with exhaust emission test	First HU after 36 months; thereafter every 24 months	First HU after 36 months; thereafter every 24 months	24 months; from the 7th year on: 12 months
Inspection of gas system (through gas specialist)	24 months	24 months	24 months

¹⁾ Maximum permissible gross weight

Specifications without guarantee

18

Helpful notes

18.1.5 Emergency equipment

	Vehicles up to 2.8 t ¹⁾	Vehicles from 2.8 to 3.5 t ¹⁾	Vehicles over 3.5 t ¹⁾
The following has to be carried on the vehicle:	First-aid kit, hazard warning triangle	First-aid kit, hazard warning triangle	First-aid kit, hazard warning triangle, flashing hazard warning triangle

¹⁾ Maximum permissible gross weight

Specifications without guarantee

18.2 Help on Europe's roads

Information on this can be found on the Dethleffs website.

18.3 Speed limits and permissible dimensions



- ▶ Please always observe the speed limits in the individual countries.
- ▶ Always inform yourself about the current regulations in the individual countries before commencing your journey.

For information, the speed limits (in km/h) and permissible dimensions (in m) of the countries visited most:

Country	Max. dimensions in meters		Gross weight	Speed limits		
	Width	Length		Inner city	Outside built-up areas	Motorway
Belgium	2.55	12	Up to 2.8 t	50	90/120 ¹⁾	120
			2.8t to 3.5t	50	90/120 ¹⁾	120
			3.5t to 7.5t	50	90 ¹⁾	90
			over 7.5 t	50	60/90 ¹⁾	90
Bosnia and Herzegovina	2.50	12	Up to 2.8 t	50	80/100 ¹⁾	130
			2.8t to 3.5t	50	80/100 ¹⁾	130
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80
Bulgaria	2.55	12	Up to 2.8 t	50	90	130/140 ²⁾
			2.8t to 3.5t	50	90	130/140 ²⁾
			3.5t to 7.5t	50	70	100
			over 7.5 t	50	70	100
Denmark	2.55	12	Up to 2.8 t	50	80 ¹⁾	130
			2.8t to 3.5t	50	80 ¹⁾	130
			3.5t to 7.5t	50	70/80 ¹⁾	80
			over 7.5 t	50	70/80 ¹⁾	80

Country	Max. dimensions in meters		Gross weight	Speed limits		
	Width	Length		Inner city	Outside built-up areas	Motorway
Germany	2.55	12	Up to 2.8 t	50	100 ^{1) 3)}	130 ³⁾
			2.8t to 3.5t	50	100 ^{1) 3)}	130 ³⁾
			3.5t to 7.5t	50	80	100
			over 7.5 t	50	60	80
Estonia	2.55	12	Up to 2.8 t	50	90/110 ^{1) 4)}	-
			2.8t to 3.5t	50	90/110 ^{1) 4)}	-
			3.5t to 7.5t	50	70	-
			over 7.5 t	50	70	-
Finland	2.60	12	Up to 2.8 t	50	80/100 ⁵⁾	80/100 ⁵⁾
			2.8t to 3.5t	50	80/100 ⁵⁾	80/100 ⁵⁾
			3.5t to 7.5t	50	80 ⁵⁾	80
			over 7.5 t	50	80 ⁵⁾	80
France	2.55	12	Up to 2.8 t	50	90/ 110 ^{1) 6) 7)}	130 ^{8) 9)}
			2.8t to 3.5t	50	90/ 110 ^{1) 6) 7)}	130 ^{8) 9)}
			3.5t to 7.5t	50	80/100 ^{1) 6)}	110 ⁸⁾
			over 7.5 t	50	80/100 ^{1) 6)}	110 ⁸⁾
Greece	2.55	12	Up to 2.8 t	50	90/110 ²⁾	130
			2.8t to 3.5t	50	90/110 ²⁾	130
			3.5t to 7.5t	40	80	80
			over 7.5 t	40	80	80
Great Britain ¹⁰⁾	2.55	12	Up to 2.8 t	30 [48]	60 [96]/ 70 [112] ¹⁾	70 [112]
			2.8t to 3.5t	30 [48]	60 [96]/ 70 [112] ¹⁾	70 [112]
			3.5t to 7.5t	30 [48]	60 [96]/ 70 [112] ¹⁾	70 [112]
			over 7.5 t	30 [48]	60 [96]/ 70 [112] ¹⁾	70 [112]
Ireland	2.55	12	Up to 2.8 t	50	80/ 60-100 ^{1) 2)}	120
			2.8t to 3.5t	50	80/ 60-100 ^{1) 2)}	120
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80

Country	Max. dimensions in meters		Gross weight	Speed limits		
	Width	Length		Inner city	Outside built-up areas	Motorway
Iceland	2.55	12	Up to 2.8 t	50	90 ¹¹⁾	–
			2.8t to 3.5t	50	90 ¹¹⁾	–
			3.5t to 7.5t	50	90 ¹¹⁾	–
			over 7.5 t	50	90 ¹¹⁾	–
Italy	2.55	12	Up to 2.8 t	50	90/ 110 ^{1) 8) 12)}	130 ^{8) 13)}
			2.8t to 3.5t	50	90/ 110 ^{1) 8) 12)}	130 ^{8) 13)}
			3.5t to 7.5t	50	80	100
			over 7.5 t	50	80	100
Croatia	2.55	12	Up to 2.8 t	50	90/110 ^{1) 14)}	130 ¹⁴⁾
			2.8t to 3.5t	50	90/110 ^{1) 14)}	130 ¹⁴⁾
			3.5t to 7.5t	50	80	90
			over 7.5 t	50	80	90
Latvia	2.55	12	Up to 2.8 t	50 ¹⁵⁾	90/ 110 ^{1) 2) 16) 17)}	–
			2.8t to 3.5t	50 ¹⁵⁾	90/ 110 ^{1) 2) 16) 17)}	–
			3.5t to 7.5t	50 ¹⁵⁾	90/ 110 ^{1) 2) 16) 17)}	–
			over 7.5 t	50 ¹⁵⁾	80/ 90 ^{1) 16) 17)}	–
Lithuania	2.55	12	Up to 2.8 t	50	90/ 100 ^{1) 18) 19) 20)}	110 ²⁰⁾
			2.8t to 3.5t	50	90/ 100 ^{1) 18) 19)}	110 ²⁰⁾
			3.5t to 7.5t	50	80 ^{19) 21)}	90
			over 7.5 t	50	80 ^{19) 21)}	90
Luxembourg	2.50	12	Up to 2.8 t	50	90 ^{8) 22)}	130 ^{8) 23)}
			2.8t to 3.5t	50	90 ^{8) 22)}	130 ^{8) 23)}
			3.5t to 7.5t	50	75	90
			over 7.5 t	50	75	90

Country	Max. dimensions in meters		Gross weight	Speed limits		
	Width	Length		Inner city	Outside built-up areas	Motorway
Macedonia	2.55	12	Up to 2.8 t	50	80 ¹⁾	80
			2.8t to 3.5t	50	80 ¹⁾	80
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80
Montenegro	2.55	12	Up to 2.8 t	50	80/100 ¹⁾	–
			2.8t to 3.5t	50	80/100 ¹⁾	–
			3.5t to 7.5t	50	80	–
			over 7.5 t	50	80	–
Netherlands	2.55	12	Up to 2.8 t	50	80/100 ¹⁾	130
			2.8t to 3.5t	50	80/100 ¹⁾	130
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80
Norway	2.55	12	Up to 2.8 t	50	80/100 ^{1) 2)}	90/100 ²⁾
			2.8t to 3.5t	50	80/100 ²⁾	90/100 ²⁾
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80
Austria	2.55	12	Up to 2.8 t	50	100	130 ²⁴⁾
			2.8t to 3.5t	50	100	130 ²⁴⁾
			3.5t to 7.5t	50	70	80
			over 7.5 t	50	70	80
Poland	2.55	12	Up to 2.8 t	50 ²⁵⁾	90/100 ^{1) 26)}	140
			2.8t to 3.5t	50 ²⁵⁾	90/ 100 ^{1) 26)}	140
			3.5t to 7.5t	50 ²⁵⁾	70/80 ¹⁾	80
			over 7.5 t	50 ²⁵⁾	70/80 ¹⁾	80
Portugal	2.50	12	Up to 2.8 t	50	90/100 ²⁾	120 ²⁷⁾
			2.8t to 3.5t	50	80/90 ²⁾	120 ²⁷⁾
			3.5t to 7.5t	50	80/90 ²⁾	110 ²⁷⁾
			over 7.5 t	50	80/90 ²⁾	110 ²⁷⁾
Romania	2.55	12	Up to 2.8 t	50	80/90 ^{1) 18)}	120 ^{20) 26)}
			2.8t to 3.5t	50	80/90 ^{1) 18)}	120 ^{20) 26)}
			3.5t to 7.5t	50	80/90 ^{1) 18)}	120 ^{20) 26)}
			over 7.5 t	50	80/90 ^{1) 18)}	120 ^{20) 26)}

Country	Max. dimensions in meters		Gross weight	Speed limits		
	Width	Length		Inner city	Outside built-up areas	Motorway
Russia	2.50	12	Up to 2.8 t	50	80/90 ^{1) 18)}	120 ^{20) 26)}
			2.8t to 3.5t	60 ¹⁵⁾	90 ²⁾	110 ²⁾
			3.5t to 7.5t	60 ¹⁵⁾	70	90 ²⁾
			over 7.5 t	60 ¹⁵⁾	70	90 ²⁾
Sweden	2.60	24 ²⁸⁾	Up to 2.8 t	50	70/110 ^{1) 2)}	110 ²⁾
			2.8t to 3.5t	50	70/110 ^{1) 2)}	110 ²⁾
			3.5t to 7.5t	50	80/90 ^{1) 2)}	90 ²⁾
			over 7.5 t	50	80/90 ^{1) 2)}	90 ²⁾
Switzerland	2.55	12	Up to 2.8 t	50	80/100 ¹⁾	120
			2.8t to 3.5t	50	80/100 ¹⁾	120
			3.5t to 7.5t	50	80/100 ¹⁾	100
			over 7.5 t	50	80/100	100
Serbia	2.50	12	Up to 2.8 t	50	80	80
			2.8t to 3.5t	50	80	80
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80
Slovakian Republic	2.55	12	Up to 2.8 t	50	90	130/90 ²⁹⁾
			2.8t to 3.5t	50	90	130/90 ²⁹⁾
			3.5t to 7.5t	50	80	90
			over 7.5 t	50	80	90
Slovenia	2.55	12	Up to 2.8 t	50	90/100 ¹⁾	100
			2.8t to 3.5t	50	90/100 ¹⁾	100
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80
Spain	2.55	12	Up to 2.8 t	50	80/90 ¹⁾	100
			2.8t to 3.5t	50	80/90 ¹⁾	100
			3.5t to 7.5t	50	80	90
			over 7.5 t	50	80	90
Czech Republic	2.55	12	Up to 2.8 t	50	90/110 ¹⁾	130
			2.8t to 3.5t	50	90/110 ¹⁾	130
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80

Country	Max. dimensions in meters		Gross weight	Speed limits		
	Width	Length		Inner city	Outside built-up areas	Motorway
Turkey	2.55	12	Up to 2.8 t	50	80	90
			2.8t to 3.5t	50	80	90
			3.5t to 7.5t	50	80	90
			over 7.5 t	50	80	90
Hungary	2.55	12	Up to 2.8 t	50	90/110 ¹⁾	130
			2.8t to 3.5t	50	90/110 ¹⁾	130
			3.5t to 7.5t	50	70	80
			over 7.5 t	50	70	80
Cyprus	2.55	12	Up to 2.8 t	50	100 ¹⁾	100
			2.8t to 3.5t	50	100 ¹⁾	100
			3.5t to 7.5t	50	80	80
			over 7.5 t	50	80	80

- 1) On expressways, on roads with more than one lane in each direction
- 2) According to traffic signs
- 3) Recommended speed: 130 km/h
- 4) 90 km/h applies if driving licence held for less than two years
- 5) 100 km/h for motorhomes with first registration from 1.1.1995 up to an unladen weight of 1875 kg, or for motorhomes with first registration from 1.1.1981 up to an unladen weight of 1800 kg
- 6) In wet conditions, reduce speed by 10 km/h
- 7) If you have held a driving licence for less than three years, the speed limit is 80 km/h on national roads and 100 km/h on dual carriageways
- 8) In wet conditions, reduce speed by 20 km/h
- 9) If you have held a driving licence for less than three years, the speed limit on motorways is 110 km/h
- 10) Data in km/h [mph]
- 11) On unmade roads (gravel): 80 km/h
- 12) If you have held a driving licence for less than three years, the speed limit on dual carriageways is 90 km/h
- 13) If you have held a driving licence for less than three years, the speed limit on motorways is 100 km/h
- 14) Drivers under 25 must reduce speed by 10 km/h
- 15) In residential areas, 20 km/h
- 16) From 1/12 to 1/3, max. 90 km/h
- 17) Max. 80 km/h applies to driving licences held for less than two years
- 18) If you have held a driving licence for less than three years, the speed limit is 70 km/h on national roads and 90 km/h on dual carriageways
- 19) Out of town on unpaved roads 70 km/h
- 20) If you have held a driving licence for less than three years, the speed limit on motorways is 90 km/h
- 21) 70 km/h applies if driving licence held for less than two years
- 22) If you have been in possession of a driving licence for less than one year, the maximum speed out of towns is 75 km/h

- ²³⁾ If you have held a driving licence for less than one year, the speed limit on motorways is 90 km/h
- ²⁴⁾ From 10-5 pm on the Tauern motorway (A10), Inntal motorway (A12), Brenner motorway (A13) and the Rheintal motorway (A14): 110 km/h
- ²⁵⁾ 11 pm - 5 am: 60 km/h
- ²⁶⁾ 110 km/h applies on four-lane motorways
- ²⁷⁾ If the driver has a driving licence for less than one year, 90 km/h applies; a corresponding sticker (available in ACP offices) must be visibly attached to the rear of the vehicle
- ²⁸⁾ Swedish campsites often require the motorhome to have a closed waste water system
- ²⁹⁾ On urban motorways

Date 01/2020

Specifications without guarantee

18.4 Driving with low beam in European countries



- ▷ In many countries driving with low beam is also required during the day. The regulations differ depending on the country. Information is available, for example, from the automobile clubs or the country representatives.

18.5 Sleeping in the vehicle away from camping areas

Country	Staying overnight on streets and squares*		Sleeping on privately owned lands		Comments * one night away from campsites ** On private property only only with permission of the property owner
	Yes	No	Yes* *	No	
Albania	X 1)		X 2)		1) Restricted in national parks and nature reserves; and near government buildings 2) Permission from the property owners for one to two nights
Bosnia and Herzegovina		X	X		outside of metropolitan and tourist areas, wild camping is tolerated by most authorities and residents
Belgium	X		X		a maximum of 24 hours if no road traffic is impeded
Bulgaria		X	X	X	
Denmark		X	X		
Germany	X 1)		X 1)		Regional and local prohibitions (e.g. nature conservation, forest and dyke laws) 1) One overnight stay to restore driving ability
Estonia	X 1)		X		1) Only outside built-up areas; next to farms only with the permission of the farmer
Finland		X	X		
France	X		X		Only with permission of the local authorities; partly regional bans
Greece		X		X	

Country	Staying overnight on streets and squares*		Sleeping on privately owned lands		Comments * one night away from campsites ** On private property only only with permission of the property owner
	Yes	No	Yes* *	No	
Great Britain		X 1)	X 2)		1) only with the permission of the local authorities; partly regional bans; in Scotland, sleeping in public places is largely permitted 2) not along a street
Ireland	X		X		only with the permission of the local authorities; regional restrictions; not along roads and bridges
Italy	X 1)		X 2)		1) only with the permission of the local authorities; not in national parks and state forests 2) partial local bans
Croatia		X		X	
Latvia	X 1)		X		1) Only outside built-up areas; next to farms only with the permission of the farmer
Lithuania	X 1)		X		1) Only outside built-up areas; next to farms only with the permission of the farmer
Luxembourg		X	X 1)		1) not around the Esch-sur-Sûre lake; maximum two tents; Observe regional restrictions
Macedonia		X		X	
Montenegro		X		X	Only under special circumstances and with the approval of the local authorities
Netherlands		X 1)		X	1) only in municipalities with designated places
Norway	X		X		not on land used for farming or cultivated land; minimum distance to houses: 150 m
Austria	X 1)		X		One overnight stay to restore driving ability; not in nature reserves; regional bans (e.g. Tyrol) 1) only with the permission of the local authorities
Poland	X 1)		X		not on the coast and in nature reserves 1) only with the permission of the local authorities
Portugal		X		X	
Romania	X		X		
Russia		X		X	

Country	Staying overnight on streets and squares*		Sleeping on privately owned lands		Comments * one night away from campsites ** On private property only only with permission of the property owner
	Yes	No	Yes** *	No	
Sweden	X		X 1)		not on agricultural land or near houses; observe local restrictions 1) on private property restrictions according to the number of tents and persons
Switzerland		X 1)	X		Overnight stays are tolerated at motorway service stations and in some cantons 1) only with the permission of the local authorities
Serbia		X		X	overnight stays on public or private property are only possible under special circumstances and with the permission of the local authorities
Slovakian Republic		X		X	
Slovenia		X		X	
Spain	X 1)		X 1)		only with the permission of the local authorities 1) some regional bans, especially on beaches
Czech Republic		X		X	
Turkey	X		X		only with the permission of the local authorities; regional bans
Hungary		X		X	
Ukraine	X 1)		X		1) not in nature reserves; not near border crossings
Belarus	X 1)		X		1) not on agricultural land; not within 50 metres of residential houses or government buildings

Date 01/2020

Specifications without guarantee

18.6 Gas supply in European countries

General tips

Always observe the following information:

- Only go on vacation with completely filled gas bottles.
- Use all of the gas bottles' capacity.
- Take along adapter sets (available in camping supply stores) for filling gas bottles in foreign countries and for connecting a German gas regulator to foreign gas bottles.
- During the cold time of the year observe filling with propane gas component (butane does not gas below 0 °C).
- Use blue bottles from the firm Campingaz (distributed world-wide). Only use gas bottles with safety valves.
- Buy a so-called self-filler bottle. Like a permanently installed gas tank this 11 kg bottle can be refilled at any auto gas filling station (directory available from the ADAC). Inspection at a technical inspectorate is required every 10 years.
- When bottles from other countries are used, check the gas bottle compartments to see if the gas bottles fit into them. Gas bottles from other countries do not always display the same size as the German Eurogas bottles.
- Follow the EU heating appliance directive. For information, visit www.truma.de

For your information a list of the gas supply is given below for some of the most visited European countries:

Country	Gas supply	Provider	Info tele-phone
Albania	Exchanging and filling gas bottles possible	App Park4Night (the "Additional services" icon hides tips on gas retailers and shops that exchange or refill gas cylinders)	
Belgium	Identical gas bottles	Belgian Shell and Totalfina, Brussels; Primagaz, Tessenderlo; Gasbottling, Gent; Semnickgas, Geraardsbergen	
	Exchanging and filling gas bottles possible		
Denmark	German 5 and 11 kg gas bottles are available for exchange at almost every campsite.	BP Gas offers German gas bottles Kosan Gas A/S, Hasselager Centervej 19-21, 8260 Viby J.	00 45/ 89 48 77 00
	Filling station for grey gas bottles available		
Estonia	Commercially available bottles can be filled with Euro adapters		
Finland	Finnish gas bottles available at NESTE petrol stations and country shops.	Fa. Tehokaasu Neste (www.neste.fi). Overview of suppliers at: AGA (www.aga.no)	0035 80 10 24 21
	Adapters for Norwegian gas bottles can be purchased from the AGA company		

Country	Gas supply	Provider	Info tele-phone
France	Foreign gas bottles cannot be filled or exchanged		
	French gas cylinders can be used with the help of the Euro connection set (buy already in Germany)		
Greece	German gas cylinders can be filled using the Euro connection set; exchange and filling stations mostly only in larger cities (Athens, Thessalonik, Patras and Monemvassia)		
Great Britain	German gas bottles cannot be filled	Calorgas company (www.calor.co.uk)	
	British gas bottles can be connected to German systems using an adapter (also available from Calorgas)		
Ireland	Gas bottles can be refilled	Noel Leaders Shop company, Tuam Road, Galway Calor Kosangas company, Dublin and Cork	00353 1 50 5000 00353 18 50 81 24 50 00353 28 90 45 55 88
Iceland	Gas bottles can be refilled	N1 (previously Es-so), Reykjavík	
	yellow Icelandic gas cylinders fit German systems with a rubber ring placed in the regulator connection		
Italy	Gas supply through Euro filling and connecting set		
	Discharging of liquid gas at gas stations for camping vehicles with a permanently installed gas tank is not permissible on tax grounds		
	you get gas at special exchange or filling stations		
Croatia	Gas bottles whose inspection lies less than 5 years back are filled in INA branches	INA	
	Adapter can be purchased at INA		
Morocco	Gas bottles can be refilled	Tiznit, Agadir, Nador, Mohammedia, Sidi Ifni, Safi, Taza	
	The blue bottles from Camping-gaz are also available.		

Country	Gas supply	Provider	Info tele-phone
Netherlands	only use identical gas cylinders		
	Gas bottles can be exchanged and filled (not all campsites exchange German bottles for other German bottles)		
Norway	German gas bottles can be filled at LPG Norga	AGA	0047 81 53 28 80
	Adapters for Norwegian gas bottles can be purchased from the AGA company	LPG Norge	0047 40 60 42 77
	Deposit gas bottles available		
	Norwegian 11 kg gas bottles can be used with adapter		
Austria	Identical gas bottles		
	Exchanging and filling gas bottles possible		
Poland	Identical gas bottles		
	Exchanging and filling gas bottles possible		
Portugal	German gas cylinders are refilled at the gas filling stations marked with a blue elephant (the containers must, however, remain in the bottle crate)	Repsol; Cepsa	
	Deposit gas bottles available		
Sweden	German gas bottles cannot be filled	AGA (www.aga.no)	0046 0 87 06 95 00
	Adapters for Norwegian gas bottles can be purchased from the AGA company		
Switzerland	Hiring of a Swiss gas bottle with pressure regulator possible	Shell Gas, Switzerland	00 41/ 3 27 58 75 55
	German gas bottles can be filled in exceptional cases		
Slovenia	German gas bottles can be filled	Plinarna, Ljubljana; Plinarna, Maribor; Internia DD Ljubljana, Kozina; OMV Istrabenz DOO, Koper	
	We recommend bringing along the Euro filling and connecting set		
Spain	German gas bottles cannot be filled	Repsol	00 34/ 901 10 01 00
	Hiring and filling of Spanish gas bottles possible when the gas connection has been adapted	Cepsa	00 34/ 913 37 75 29
	6 kg deposit gas bottles can be used with adapter		

Country	Gas supply	Provider	Info tele-phone
Czech Republic	German gas bottles can be re-filled	Agip, Bohemia Gas, BP, Krainpol, Pri-maplyn Flaga-Plyn	0090 21 22 32 04 00
Turkey	Sale of 2 and 12 kg gas bottles; connection possible with adapter	Ipragaz company (www.ipragaz.com.tr/tupgaz-size-en-yakin-bayi)	
Hungary	Identical gas bottles	Primagaz, Totalgaz, Shellgas, Mol	
	Exchanging and filling gas bottles possible		

Specifications without guarantee

18.7 Toll regulations in European countries

Many European countries have introduced a mandatory toll system. The toll regulations and how they are collected vary greatly from country to country. Nevertheless, ignorance is no excuse. Penalties can be quite severe.

As is the case with traffic regulations, the vehicle driver is required to be familiar with the toll formalities before starting out on a trip. For example, in Austria the vignette does not meet the toll requirements for vehicles that weigh more than 3.5 t. There, a so-called "Go-Box" must be obtained and charged.

Contact your automobile club or the Internet for further information.



- ▷ Windscreens with solar filters can affect the functioning of automatic toll collection systems (e.g. Go Box). This must be taken into account when acquiring the appropriate device (e.g. Split Go Box).

18.8 Tips on staying overnight safely during travel

Prudent behaviour is the most important protective measure for insuring a safe night in the motorhome.

The risk of thievery is reduced to a minimum when the following basic rules are observed:

- Before commencing the journey, close and lock all windows, doors and skylights.
- Secure the driver's cabin doors from the inside against opening from the outside using a tension belt or chain which passes through the handholds, armrests etc.
- If present: Switch on or activate anti-theft alarm and special door securing devices. Warning devices against gas assaults using anaesthetic gas are offered at camping supply stores.
- During high season do not spend the night at highway rest stops or parking areas located along typical vacation routes.
- If possible, stay overnight in large, occupied car parks, e.g. near a restaurant.
- Even if it is just for one night, go to a camping site.
- When parking on open space keep emergency routes clear. The way to the driver's seat should be clear. The ignition key should always be within reach.
- Only take with you those valuables which are absolutely necessary for the journey. If possible, store valuables in a small safe and not in the immediate vicinity of windows or doors.
- Always lock up the vehicle.
- Do not use parking stays.

18.9 Tips for winter campers

The following tips will help make your winter camping experience as agreeable as possible.

- Reserve your parking place in good time. Good winter camping sites are often booked up early.
- Do not start your trip without winter tyres.
- Bring snow chains.
- Choose your parking place with care. Observe the ground beneath you. Snow and ice may melt.
- When the vehicle has been positioned, release the handbrake to prevent freezing.
- No snow walls should be allowed to cover the built-in forced ventilation.
- Keep the built-in forced ventilation free from snow and ice.
- Make sure the air circulation is good. Good air circulation prevents moisture from collecting and makes it easier to heat the living area.
- Cover the single-paned driver's cabin window with insulation mats to avoid thermal bridges.
- Follow the instructions in the section "Gas supply in European countries".
- Use a two-bottle system with automatic controller for the gas system, so that the supply does not run out during the night.
- Only operate the gas system using propane gas.
- Do not use the space behind the heater as a storage compartment.
- Never operate catalytic ovens or infra-red gas radiators in the interior of the vehicle, since they consume oxygen for burning.
- Lay the 240 V power cable in such a way that the cable cannot be frozen or be damaged (e.g. during snow removal).

- When it is snowing heavily, clear the roof of the vehicle of snow regularly. A few centimetres of powdery snow serves as insulation, but wet snow quickly becomes a heavy burden.
- Before embarking on the return journey, remove all the snow from the roof to avoid impeding vehicles behind you with a "snow flag".

18.10 Travel checklists

The following checklists will help that nothing important is left at home although not everything on the checklists might be necessary.



- ▷ Do not leave checking of documents (e.g. vehicle papers and information) as well as checking the condition of the vehicle until just before commencing the trip. Planning and checking documents well in advance will save unnecessary trouble.
- ▷ For the payload observe the maximum permissible gross weight of the motor-home.

Kitchen area

✓	Object	✓	Object	✓	Object
	Wiping cloth		Cleansing agent (detergent)		Salad servers
	Mug		Dishcloths		Chopping board
	Turnspit		Set of knives and forks for grilling		Bowls
	Can opener		Coffeepot		Brush to wash the dishes
	Egg-cup		Corkscrew		Cloth to wash the dishes
	Ice cube tray		Kitchen paper		Matches
	Lighter		Spoons		Cups
	Bottle opener		Knives		Plates
	Air-tight storage boxes		Garbage bags		Thermos jug
	Breakfast plate		Frying pans		Pots
	Forks		Stirring spoons		Glasses

Bathroom/sanitary items

	Towels		Toilet brush		Toothbrush glass
	Sanitary items		Toilet paper		

Living area

	Dustbin		Insect lamp		Rain clothes
	Road atlas		Insect repellent		First aid kit
	Bath towels		Deck of cards		Travel guides/parking guide
	Bath shoes		Broom		Rucksack
	Batteries		Candles		Sleeping bags
	Bed sheets		Dust pan		Pencils and paper
	Bed linen		Coat-hangers		Shoes
	Laundry bag		Clothes brush		Shoe polish
	Books		Pillow		Vacuum cleaner
	Camping guide		Map		Flash light

✓	Object	✓	Object	✓	Object
	Spare bulbs		Medicine		Pocket knife
	Water bottle		Music cassettes		Table cloth
	Binoculars		Neck-supporting pillow		Clothes pins
	Fire extinguisher		Sewing kit		Clothesline
	Gas bottle		Radio		

Vehicle/tools

	Waste water container		Fabric tape		Screwdriver
	Adapter socket		Watering can for drinking water		Current-measuring instrument
	CEE adapter		Cable reel		Step
	Wire		V-belt		Wheel chocks
	Spare wheel		Glue		First-aid kit
	Spare lamps		Universal pliers		Vehicle jack
	Spare fuses		Compressor		Hazard warning triangle
	Replacement water pump		Luster terminals		Warning sign
	Hammer		Loops		Warning vest
	Flat wrench		Tube adapter		Flashing hazard warning light
	Gas filling adapter		Hose clips		
	Gas tube		Snow chains (winter)		

Outside

	Stay rope		Camping table		Lock
	Bellows		Luggage racks		String
	Camping chairs		Grill		Tent pegs/tightening ropes

Documents

	List of addresses		Registration book		Identity card
	Registration confirmation(s)		Driving licence		Passport
	Allergy certificate		Green insurance card		Writ of protection
	Instruction manuals		Vaccination certificate		Vignette/toll card
	Instruction leaflets for medicines		Credit card		Visa

Chapter overview

In this chapter you will find legal information on weight-related data.

The weight specifications and tests for motorhomes are regulated uniformly throughout the EU in EU Implementing Regulation No. 2021/535 (until June 2022: EU Implementing Regulation No. 1230/2012). The main terms and legal requirements from this regulation are summarised and explained below. Our dealers and the Dethleffs configurator on our website offer additional assistance for configuring the vehicle.

Maximum permissible gross weight

The technically permissible total mass (also: technically permissible maximum laden mass) of the vehicle (e.g. 3,500 kg) is a mass specification specified by the manufacturer that the vehicle must not exceed. Information on the maximum permissible gross weight of the selected model can be found in the technical data. If the vehicle exceeds the maximum permissible gross weight in practical operation, this is an administrative offense that can be punished with a fine.

Mass in ready-to-drive condition

In simple terms, the mass in ready-to-drive condition is the basic vehicle with standard equipment plus a legally fixed flat weight of 75 kg for the driver. This mainly includes the following items:

- the unladen weight of the vehicle including the superstructure, 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 bottle filled to 100 % with a weight of 16 kg;
- the fuel tank is 90 % full, including fuel;
- the driver, whose weight - regardless of actual weight - is set at a flat rate of 75 kg under EU law.

Information on the mass in ready-to-drive condition can be found for each model in our sales documents. It is important that the value given in the sales documents for the mass in ready-to-drive condition is a standard value determined in the type approval process and checked by the authorities. It is legally permissible and possible that the mass in ready-to-drive condition of the vehicle delivered to you differs from the nominal value given in the sales documents. The legal tolerance is $\pm 5\%$. In this way, the EU legislator takes account of the fact that there are certain fluctuations in the mass in ready-to-drive condition due to fluctuations in the weight of supplied parts as well as due to process and weather conditions.

These weight deviations can be illustrated by means of an example calculation:

- Mass in ready-to-drive condition according to sales documents: 2,850 kg
- Legally permissible tolerance of $\pm 5\%$: 142.50 kg
- Legally permissible range of mass in ready-to-drive condition: 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. Dethleffs makes great efforts to reduce weight fluctuations 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. Dethleffs therefore checks the real weight of the vehicle and compliance with the permissible tolerance by weighing each vehicle at the end of the assembly line.

Passenger weight

The weight of the passengers is a flat rate of 75 kg for each seat provided by the manufacturer, regardless of how much the passengers actually weigh. The weight of the driver is already included in the mass in ready-to-drive condition (see No. 2 above) and is therefore not included again. For a motorhome with four approved seats, the mass of the passengers is therefore $3 \times 75 \text{ kg} = 225 \text{ kg}$.

Special equipment and actual weight

According to the legal definition, special equipment (also: optional equipment or additional equipment) includes 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 (for example awning, bicycle or motorbike carrier, satellite unit, solar system, oven, etc.). Information on the individual or package weights of the special equipment that can be ordered can be found in our sales documents. Special equipment in this sense does not include other accessories that are retrofitted by the dealer or by you personally after the vehicle has been delivered from the factory.

The mass in ready-to-drive condition (see "Mass in ready-to-drive condition" on page 352) and the mass of the special 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 in section 13.2 of the Certificate of Conformity (CoC). Please note that this is also a standardised value. Since a legally permissible tolerance of $\pm 5 \%$ applies to the mass in running order - as an element of the actual mass (see "Mass in ready-to-drive condition" on page 352), the actual mass may also deviate accordingly from the stated nominal value.

Payload and minimum payload

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 luggage and other accessories (so-called payload) without exceeding the maximum permissible gross weight. The payload is obtained by subtracting the mass in ready-to-drive condition (nominal value according to sales documents, see "Mass in ready-to-drive condition" on page 352), the gross weight of the optional equipment (see "Special equipment and actual weight" on page 353) and the gross weight of the passengers (see "Passenger weight" on page 353) from the maximum permissible gross weight (see "Maximum permissible gross weight" on page 352). The EU regulations stipulate a fixed minimum payload for motorhomes, which must at least remain for luggage or other accessories not fitted at the factory. This minimum payload is calculated as follows:

- Minimum payload in kg $\geq 10 \times (n + L)$

The following applies: "n" = maximum number of passengers plus the driver and "L" = total length of the vehicle in metres.

So for a motorhome with a length of 6 m and 4 approved seats, the minimum payload is e.g. $10 \text{ kg} \times (4 + 6) = 100 \text{ kg}$.

Weight-related information

To ensure that the minimum payload is maintained, there is a maximum combination of special equipment that can be ordered for each vehicle model. In the above example with a minimum payload of 100 kg, the gross weight of the optional equipment for a vehicle with four authorised seats and a mass in ready-to-drive condition of 2,850 kg, for example, should not exceed 325 kg:

Example calculation

		Example
Maximum permissible gross weight		3,500 kg
Mass in ready-to-drive condition		- 2,850 kg
Weight of the passengers (3 × 75 kg)		- 225 kg
Minimum payload		- 100 kg
Maximum permissible weight of optional equipment	=	325 kg

It is important to note that this calculation is based on the standard mass in ready-to-drive condition value specified in the type-approval procedure, without taking into account the permissible weight deviations in the mass in ready-to-drive condition (see "Mass in ready-to-drive condition" on page 352).

If the maximum permissible value for the special equipment of (in the example) 325 kg is almost or completely exhausted, an upward deviation in weight may therefore result in the minimum payload of 100 kg being met mathematically using the standard value of the mass in ready-to-drive condition, but in fact there is no corresponding payload possibility.

Here, too, an example calculation for a vehicle with four seats, whose real weighed mass in ready-to-drive condition is 2 % above the nominal value:

Example calculation

		Example
Maximum permissible gross weight		3,500 kg
Real weighed mass in ready-to-drive condition (+2 % compared to the stated value of 2,850 kg)		- 2,907 kg
Weight of the passengers (3 × 75 kg)		- 225 kg
Special equipment (maximum permissible value)		- 325 kg
Actual payload possibility (< minimum payload of 100 kg)	=	43 kg

In order to avoid such a situation, Dethleffs is further reducing the permissible maximum weight of all optional extras that can be ordered, depending on the model. The limitation of the special equipment is intended to ensure that the minimum payload, i.e. the legally prescribed free mass for luggage and subsequently installed accessories, is actually available for the additional load on the vehicles delivered by Dethleffs.

Since the weight of a specific vehicle can only be determined when it is weighed at the end of the production line, in very rare cases a situation may arise in which the minimum payload at the end of the production line is not guaranteed, despite this limitation on special equipment. In order to ensure the minimum payload in these cases as well, Dethleffs will check with you and your trading partner before delivery of the vehicle, for example whether the vehicle will be loaded, seats reduced or special equipment removed.

Effects of tolerances of the mass in ready-to-drive condition on the payload

Regardless of the minimum payload, you should also note that unavoidable production-related fluctuations in the mass in ready-to-drive condition – both upwards and downwards – have a mirror-inverted effect on the remaining payload option: If, for example, you order our example vehicle (see “Passenger weight” on page 353.) e.g. with special equipment with a gross weight of 150 kg, this results in a calculated payload of 275 kg based on the standard value for the mass in ready-to-drive condition. The actual available load capacity may deviate from this value and be higher or lower due to tolerances. If the mass of the vehicle in ready-to-drive condition is, for example, permissibly 2 % higher than stated in the sales documents, the payload possibility is reduced from 275 kg to 218 kg:

Example calculation

		Example
Maximum permissible gross weight		3,500 kg
Real weighed mass in ready-to-drive condition (+2 % compared to the stated value of 2,850 kg)		- 2,907 kg
Weight of the passengers (3 × 75 kg)		- 225 kg
Special equipment ordered for the specific vehicle		- 150 kg
Actual payload capacity	=	218 kg

To ensure that the calculated payload is actually given, you should therefore take the possible and permissible tolerances for the mass in ready-to-drive condition into account when configuring your vehicle as a precaution.

We also recommend that the loaded motorhome be weighed on a non-automatic scale before each journey and, taking into account the individual weight of the passengers, determine whether the maximum permissible gross weight and the gross weight on the axle are complied with.

Index

12 V fuses	224
for the living area battery	225
for the starter battery	224
For Thetford toilet	226, 227
On the living area battery	226
12 V main switch	189, 195
12 V power supply	166
Switching on	189, 195
Troubleshooting	317
230 V automatic circuit breaker	227
230 V connection	
Troubleshooting	316
230 V indicator lamp	189
240 V connection	69, 222, 223
Power cable	223
240 V power supply	222

A

AC converter	170
Troubleshooting	318
AC converter MultiPlus	171
Digital Multi Control Panel	172
LED indicators	172
Access ladder	
Bunk bed	132
Overcab bed	124
Access ladder, bunk bed	131
Access ladder, overcab bed	121
Access ladder, pull-down bed	124, 128, 130
Accessories, fitting	24
Adapter cable	223
Add-on parts see special equipment	24
Air conditioning unit	
Troubleshooting	318
Air conditioning unit (Truma)	
Timer	241, 242
Air outlet nozzles, adjustment	231
Alde stopcock	236
AL-KO rear axle	303
Annual inspection	
Inspection records	16
Appliances	230
Manuals	24
Armrest, adjustment	58
Automatic power selection (AES)	255
Awning	70
electric	71
manual	70

B

Basic equipment	33
Bath area	147
Room division options	147
Battery alarm	192, 198
Battery cut-off switch	175, 178, 181, 187
Battery monitoring	175, 179, 182, 187
Battery see starter battery and living area battery	166
Battery selector switch	178, 181
Battery voltage, displaying	190, 196
Beds	118
Bed extensions for queen size beds	133
Conversion of single beds to double bed	132
Queen size beds, extensions	133
See Manual pull-down bed	123, 124
Vertically adjustable queen-sized bed	119
Before the journey	30
Bike rack	
Load	43
Travelling with a loaded bike rack	43
Blind, cleaning	285
Blind, skylight with snap latch	
Closing	96
Opening	96
Blind, window	
Closing	90
Opening	90
Boiler (Alde)	
Emptying	243
Switching off	243
Switching on	243
Troubleshooting	321
Water, filling with	243
Boiler (Truma)	
Safety/drainage valve	244
Troubleshooting	320
Bonnet	
Closing	65
Opening	65
Brakes	56
Check	56, 315
Braking system, troubleshooting	315
Branch block	61
Breakdown service in Europe	336
Built-in air conditioning unit (Truma)	
Maintenance	300
Bulbs, changing	300
Garage light	301
Refrigerator light	302

Index

Bunk bed	130
Access ladder	131, 132
Conversion	130
Safety net	128, 131, 132
Butane gas	27, 149

C

Cable reel	223
Campernet	229
Camping gas bottles, use	28, 150
Camping in winter	349
Cap, water drain neck	269
Capacity of the battery	166
Caramatic DriveOne switching system	155
Caramatic DriveTwo switching facility	159
Body	159
Operating unit	160

Care	282
Blind	285
Carpet	285
Curtains	285
Driver's cabin insulation mat	284
Entrance step	284
External care	282
Extractor hood	288
Furniture surfaces	284
Gas cooker	285
High-pressure cleaner, washing with	282
Hot-water heater	296
In the winter	290
Insect screen	285
Interior care	284
Interior synthetic parts	284
Lamps	284
Net curtains	285
PVC floor covering	285
Roller insect screen	285
Roman shade	285
Safety belt	285
Sink	285
Synthetic leather covers	285
Teflon coverings	285
Temporary lay-up	291
Toilets	290
Underbody	283
Upholstery	284
Washing	282
Waste water tank	283
Water system	286
Windows	283
Winter lay-up	293
Carpet, cleaning	285
Changing wheels	310
Tightening torque	310
Chassis inspection	
Inspection records	16
Checklist	53, 291
Before the journey	53
For the journey	350
Initial start-up after temporary lay-up	294
Road safety	53
Temporary lay-up	291
Winter lay-up	293
Children's beds	118, 121, 130
Circulating pump	238
Circulating pump, setting the rotational speed ...	238

Index

Cleaning	
Water pipes	286
Water tank	286
Cleaning see care	282
Closed circuit current	165
Condensation	82
On the double acrylic glass pane	83
On the screwed connections in the floor	82
Condensation water see condensation	83
Conditions for leakproof guarantee	8
Connecting cable see power cable	223
Conversion door	73, 77
Insect screen	76
Insect screen, closing	78
Roller insect screen, opening	78
Roman shade, closing	77
Roman shade, opening	77
Window, closing	77
Window, opening	77
Conversion door, inside	
Locking	74
Opening	74
Conversion door, outside	
Locking	74
Opening	74
Conversion living	
Individual seats from driving into living mode	144
Single seats from driving into living mode	141
Cooker	245
Troubleshooting	319
Curtains, cleaning	285

D

Danger of suffocation	24, 82
DEKRA	335
Dethleffs Connect App	215
Connecting mobile device with the vehicle	215
Connecting mobile devices with the vehicle	215
Features	218
Dimensions, permissible	336
Displays	
Battery voltage	190, 196
Filling level waste water tank	192, 197
Filling level water tank	192, 197
Temperature	193, 198
Time	193

Disposal	
Household waste	22
Sewage	22
Waste water	22
Door lock	74
Doors	
Conversion door	73
Driver's door	73
Lock	74
Troubleshooting	328
Double floor, load	42
Drain cock, water	269
Drain neck, water	269
Drinking water	29
Drinking water filler neck	268
Closing	268
Opening	268
Driver's cabin insulation mat, care	284
Driver's cabin partition	81
Closing	81
Opening	81
Driver's door	73
Driver's door, inside	
Locking	76
Opening	76
Driver's door, outside	
Locking	75
Opening	75
Driver's seat	57
Adjusting an appropriate seating position	58
Armrest, adjustment	58
Turning it to driving position	58
Driving speed	56
Driving the motorhome	55
During the journey	55

E

Electric blind for the windscreen	91
Emergency function	91
Electrical block EBL 31-2	186
Functions	186
Location	187
Electrical floor warming/bed warming unit	
Overload protection	239
Switching off	239
Switching on	239
Electrical pull-down bed	127

Index

Electrical system	165
230 V connection, troubleshooting	316
Entrance step, troubleshooting	316
Explanation of terms	165
Lighting, troubleshooting	316
Safety instructions	28
Troubleshooting	316
Electrically adjustable external mirrors	62
Emergency equipment	336
Entrance step	45, 68
Care	284
Extending	46
Indicator lamp	46
Pulling out	45
Pushing in	45
Retracting	46
Troubleshooting	316
Warning tone	45, 46
Environmental tips	22
Exhaust emission test (AU)	335
Extending the satellite unit	72
Exterior lighting	
Checking	53
Troubleshooting	316
External care	282
External connection see 240 V connection	69
External flaps	78
Flap lock	78, 79
Holding in position	80
External gas connection	154
External mirrors, electrically adjustable	
Adjusting	62
Mirror heater, switching on	62
Extractor hood	250
Care	288

F

Facing seating unit, sleeping conversion	139
Fault current protection switch	222
Filling the tank	67
Fire	
Extinguishing	23
Response to	24
Fire prevention	23
Fire risks, avoidance	23
First-aid kit	336
Fixed bed	131
Closing	131
Opening	131

Fixed table	
Moving in a crossways direction	102, 103
Moving in a lengthways direction	102
Flap lock	
Closing	78, 79
Opening	78, 79
With recessed handle	78, 79
Flashing hazard warning light	336
Flat screen	
lowerable	114
with jointed arm	113
Flat screen, positioning	112
Fluorescent tubes, changing	300
Folding mechanism, overcab bed	122
Forced ventilation	24, 82
Front bench seat, sleeping conversion .	134, 135, 136
Front passenger's seat	57
Adjusting an appropriate seating position	58
Armrest, adjustment	58
Turning it to driving position	58
Fuel filler neck	67
Closing	67
Opening	67
Furniture flaps, troubleshooting	328
Furniture surfaces, cleaning	284
Fuse box see 230 V automatic circuit breaker	227
Fuses	
12 V fuses	224
230 V fuse	227
240 V fuse	222
for the starter battery	224
For Thetford toilet	226, 227
On the living area battery	226
Fuses for the starter battery	
Globebus Performance	225
Fuses on the living area battery	225
Fuses see 12 V fuses and 230 V fuse	224

G

Garage light	301
Gas bottle compartment	27, 150
Gas bottles	
Changing	152
Safety instructions	28, 150
Gas connection, external	154
Gas consumption	151

Index

Gas cooker	
Cleaning	285
Switching off	246
Switching on	246
Troubleshooting	319
Gas inspection	
Inspection records	16
Gas isolator taps	153
Symbols	153, 230
Gas odour	27, 149, 319
Gas oven	247, 248
Switching off	247, 248, 249
Switching on	248, 249
Troubleshooting	319
Gas oven (Thetford)	249
Gas pressure regulator, screwed connections	151
Gas supply in European countries	345
Gas system	149
Checks	335
Crash sensor	157, 163
Defect	27, 149, 319
Gas filter	157, 163
General instructions	27
Hose break guard	158, 164
Safety instructions	27, 149
Switching automatics	159
Troubleshooting	319
Gas tube, check	27, 150
Gathered blind	94
General instructions	21
Globus Performance	
LED Lightbar	228
Raising	332
Starter battery fuses	225
Wheel protection ring	309
Guarantee	8
Guest bed	136

H

Handbrake	68
Applying	24
Handling of tyres	308
Hazard warning triangle	336
Headrests	47, 60
Heat exchanger (Alde)	
Switching off	237
Switching on	237
Heat exchanger, heater, replacement	230
Heat exchangers, heater, replacement	230

Heater	231
Air outlet nozzles, adjustment	231
Heat exchangers, replacement	230
Hot air distribution	231
Initial start-up	231
Troubleshooting	319
Heater for the waste water tank and waste water pipes	238
Heater, external mirrors	62
Heki skylight	96
Closing	97
Insect screen	97
Opening	97
Roman shade	97
Ventilation position	97
Help on Europe's roads	336
Helpful notes	333
High rate of gas consumption	27, 149, 319
High-pressure cleaner, washing with	282
Hinged window	88
Blind	90
Closing	86, 88
Continuous ventilation	87, 89
Insect screen	90
Opening	86, 88
Hot air distribution	231
Hot-air heater	
Operating modes	232
Switching off	233
Switching on	232
Troubleshooting	320

Index

Hot-water heater	
230 V electrical operation, selecting	235
Adjustment menu	235
Auxiliary circulating pump	237
Care	296
Fluid level, checking	296
Gas and 230 V electrical operation, selecting	235
Gas operation, selecting	235
Heat exchanger	236
Heater, switching off	236
Heater, switching on	236
Heating fluid, topping up	297
Heating system, bleeding	297
Maintenance work	296
Operating unit	234
Rotational speed, circulating pump	238
Safety instructions	233
Start screen	234
Tool menus	235
Troubleshooting	321

I

Independent vehicle heater	
Maintenance	299
Indicator lamp, 230 V power supply	189, 194
Indicator lamp, toilet	277, 278
iNet Box	221
Information stickers	304
Initial start-up	
After temporary lay-up	294
After winter lay-up	294
Inner door, troubleshooting	328
Insect screen, cleaning	285
Insect screen, conversion door	
Closing	76
Opening	76
Insect screen, Heki skylight	
Closing	97
Opening	97
Insect screen, windows	
Closing	90
Opening	90
Insect screen, wind-up skylight	
Closing	98
Opening	98
Inspection intervals	335
Inspection records	
Water ingress test	11
Inspection work	295

Inspections	295
Annual inspection	14
Chassis	15
Further	14
Gas inspection	15
Inspections, official	335
Inspection intervals	335
Interior care	284
Interior lighting	
Bulbs, changing	300
Troubleshooting	316

K

Keys	30
Kitchen block, central locking system	50, 109
Kitchen unit	
Central locking system	50, 109

L

Ladder	
Bunk bed	132
Overcab bed	124, 127
Ladder, bunk bed	131
Ladder, overcab bed	121
Ladder, pull-down bed	124, 128, 130
Ladder, rear	39
Lamps	116, 300
Cleaning	284
Operating	116
Lay-up	
Temporary	291
Winter lay-up	293
Leakage water inside the vehicle	326
Leakproof guarantee	
Conditions	8
Inspection plan	9
LED Lightbar (Globelux Performance)	228
LED spotlight	301
Replacing lamps	301
Lift-off table	
Conversion to bed foundation	108
Light switch	116
Lighting	
Lamps, cleaning	284
Troubleshooting	316
Lights see bulbs, changing	300

Index

Living area battery	
Battery alarm	192, 198
Charging	168
Discharging	167
Fuses	226
Instructions	166
Location	167
Troubleshooting	316, 318
Voltage, displaying	190, 196
Load	35, 38
Bike rack	43
Double floor	42
Rear garage	40
Rear storage space	40
Roof rack	39
Load rack for roof loads	39
Load see also payload	35
Lock	
Conversion door	74
Driver's cabin partition	81
External flap	78, 79
Low beam	342

M

Macerator toilet	
Emptying cassette	281
Operation	280
Maintenance work	295, 305
AL-KO rear axle	303
Built-in air conditioning unit (Truma)	300
Hot-water heater	296
Independent vehicle heater	299
Make a phone call	
Hands-free system	115
Manual pull-down bed	123, 124
Mass in ready-to-drive condition	34, 352
Maximum permissible gross weight	32, 34, 352
Mechanical steady legs	
Extending	69
Length, adjustment	69
Retracting	69

N

Net curtains, cleaning	285
No gas	319
Nose weight	44

O

Odour seal	271
------------------	-----

Off-load voltage	165
Oil level, checking	66
Operating modes	
Hot-air heater	232
Refrigerator	251, 253, 257, 259, 261
Oven see gas cooker or gas oven	245, 247, 248
Overcab bed	121
Access ladder	121, 124
Folding downwards	122
Folding mechanism	122
Folding upwards	122
Safety net	121, 124, 125
Overloading	35

P

Panel (MP 20-T)	189
12 V main switch	189
230 V indicator lamp	189
Alarms	192
Battery displays	190
Reserve button	193
Tank display	192
Temperature display	193
Time display	193
Panel LT 96 / LT 97	
12 V main switch	199
230 V indicator lamp	199
Activating the water pump	201
Alarms	201
Battery voltage display	200
Deactivating the water pump	201
Description	199
Display filling level	201
Panel MP 20-T	194
12 V main switch	195
230 V indicator lamp	194
Alarms	198
Battery displays	196
Reserve button	198
Tank display	197
Temperature display	198
Panel Truma CP plus	202
Parking	334

Index

Payload	31
Additional equipment	34
Calculating the axle loads	37
Calculation	34
Composition	33
Conventional load	33
Example calculation	35
Example calculation Basic equipment	33
Mass in ready-to-drive condition	33
Maximum permissible gross weight on the axle (axle load)	36
Permitted mass	32
Personal equipment	34
Payload see also load	31
Permissible gross weight see maximum permissible gross weight	31
Power cable for the 240 V connection	223
Pressurised water pump	
Cleaning water filter	298
switching on and off	198
Pressurised water pump, switching on and off	193
Propane gas	27, 149
Pull-down bed	122, 129
Access ladder	124, 128, 130
Closing	124, 128, 129
Electrical	127
Electrical middle pull-down bed - emergency drive 126,	129
Electrical middle pull-down bed (variant 1) ...	125
Electrical middle pull-down bed (variant 2) ...	126
Manual	123, 124
Opening	122, 125, 128, 129
Retaining straps, tensioning	130
Safety guard	125, 128
Safety net	127, 128
PVC-floor covering	47
PVC-floor covering, cleaning	285

R

Radio	115
In driver's cabin	115
Range hood	
Filter, cleaning	288
Rear axle load	44
Rear garage	40
Rear ladder	39
Folding downwards	40
Folding upwards	40
Rear storage space	40

Refrigerator	70, 250
12 V operation,	
switching on/off	252, 254, 258, 260, 262
230 V operation, switching on/off ..	258, 260, 262
240 V operation, switching on/off	252, 254
Automatic mode, switch off	257, 259
Automatic mode, switch on	257, 259
Battery pack (optional)	259, 261
Change-over between energy sources	256
Door lock	263
Gas operation	256
Gas operation, switching off ...	252, 253, 258, 260
Gas operation, switching on ...	251, 253, 258, 260
Operating and display elements	257, 259
Operating modes	251, 253, 257, 261
Operation	256
Refrigerating temperature control	256
Troubleshooting	322, 323
Ventilation grill, removal	250
Refrigerator door locking mechanism	
Closing	263, 264, 265
Locking in the ventilation position	264, 265
Opening	263, 264, 265
Refrigerator light	302
Refrigerator ventilation grill, removal	250
Registration	30
Rescue card	23
Risk of frost damage	29, 266, 273
Road safety	53
Checklist	53
Notes for	25
Roller insect screen, conversion door window	
Closing	78
Opening	78
Roman shade	
Conversion door window	77
Side pane	49
Windscreen	50
Roman shade, cleaning	285
Roman shade, conversion door window	
Closing	77
Opening	77
Roman shade, driver's cabin	63
Closing	92, 93
Opening	92, 93
Roman shade, Heki skylight	
Closing	97
Opening	97

Index

Roman shade, wind-up skylight	
Closing	98
Opening	98
Roof air conditioning unit	240
Roof air conditioning unit (Telair)	241
Roof air conditioning unit (Truma)	
Switching off	240, 242
Switching on	240, 241
Roof load	39
Roof rack, load	39
Roof rail	39
Round seating group, sleeping	
conversion	137, 138, 140

S

Safety gas pressure control system Caramatic DriveOne	
Body	155
Safety pressure regulator S2SR	155
Visual display	155
Safety instructions	23
Cooker	245
Electrical system	28
Fire prevention	23
Gas bottles	150
Gas system	27, 149
Hot-water heater	233
Road safety	25
Sleeping area partition	148
Towing	26
Water system	29
Safety net	
Overcab bed	124, 125
Safety net, bunk bed	128, 131, 132
Safety net, overcab bed	121
Safety net, pull-down bed	128, 130
Safety/drainage valve boiler	244
Sanitary fittings	266
Satellite unit	72
SCU (System Control Unit)	188
SCU Basic	188
Seat belts	56
Cleaning	285
Fastening correctly	57
Seating arrangement	60
Seating groups	117
Seats, rotating	99
Serial number	304
Shower	275

Sink	
Cleaning	288
Sink, cleaning	285
Skylight with snap latch	96
Blind	96
Closing	96
Opening	96
Skylights	95
Skylight with snap latch	96
Sleeping area partition	148
Sliding door	148
Sleeping conversion	
Facing seating unit with longitudinal bench ..	140
facing seating unit with longitudinal bench ..	139
Front bench seat	134, 135
Front bench seat to guest bed	136
Individual seats	143, 145
Round seating group	137
Round seating group with longitudinal bench	138
Single seats from driving into living mode ...	142
Sliding window	
Closing	83, 84, 85
Opening	83, 84, 85
Snow chains	52
Spare parts	305
Special equipment	329
Description	20
Designation	20
Safety instructions	24
Weight details	329
Speed limits	336
Starter battery	
Battery alarm	192, 198
Charging	168
Troubleshooting	316
Voltage, displaying	190, 196
Staying overnight	
Away from camping areas	342
On the road	349
Steady legs	69
Extending	69
Length, adjustment	69
Retracting	69
Supports see steady legs	69
Suspension table	100, 101
Conversion to bed foundation	101, 102
Extending	100, 101
Reducing size	100, 101
Switch for water pump	267

Index

Switching automatics, gas system	159
Symbols	
For instructions	20
Gas isolator taps	153, 230
Synthetic leather covers, cleaning	285
Synthetic parts in the toilet and living areas, cleaning	
284	
System Control Display	208

T

Table	100
Tables	
2-column table lowerable in the round seating	
group	105
2-legged folding table, can be lowered for the	
middle pull-out bed	107
2-legged folding table, lowerable	106
Folding table, lowerable and rigid	108
Table lowerable in round seating group	104, 105
Tank alarm	192, 198
Tank heater, switching on and off	193, 198
Tank lid see fuel filler neck	67
Teflon coverings, cleaning	285
Television	47, 112
Pulling out	112
Storing	47
Swiveling	112
Temperature display	193, 198
Thetford cassette, retaining clip	279
Thetford toilet	
Emptying	278
Flushing	277, 278
Fuse	227
Indicator lamp	277, 278
Water tank, emptying	277
Tightening torque	
Wheels	310
Time, displaying	193
Tips	333
Toilet	276
Care	290
Fuse	226
Troubleshooting	326
Water tank, emptying	290
Toilet cassette	
Emptying	279
Removing	279
Unlocking	279
Toilet compartment	275
Ventilation	275

Toll regulations in European countries	348
Total discharge	165
Tow coupling	44
Mounting	44
Removing	44
Towing	26
General instructions	44
Safety instructions	26
Traffic rules in foreign countries	334
Traffic rules in Germany	333
Transformer/rectifier (EBL 101)	180
Functions	180
Transformer/rectifier (EBL 102)	180
Location	181
Transformer/rectifier (EBL 119)	177
Transformer/rectifier (EBL 402/403)	183
Battery cut-off switch	184
Battery monitoring	185
Charging the battery	185
Emergency operation	184
Functions	183
Location	184
Transformer/rectifier (EBL 99)	177
Functions	177
Location	178
Transformer/rectifier (EBL 99/EBL 119)	
Functions	174
Transformer/rectifier EBL 111	174
Location	175
Travel checklists	350
Travel cots	118
Travel cots suitable for children	118, 121, 130

Index

Troubleshooting	315
12 V power supply	317
230 V connection	316
AC converter	318
Air conditioning unit	318
Battery	316
Body	328
Boiler (Alde)	321
Boiler (Truma)	320
Braking system	315
Cooker	319
Electrical system	316
Entrance step	316
Extractor hood	318
Furniture flaps	328
Gas cooker	319
Gas oven	319
Gas system	319
Heater	319
Hot-air heater	320
Hot-water heater	321
Inner door	328
Lighting	316
Living area battery	316
Refrigerator	322, 323
Starter battery	316
Toilet	326
Water supply	326
TÜV	335
TV cabinet	112
Tyre change see changing wheels	310
Tyre specifications	308
Tyres	306
Excessive wear	26, 53, 306, 312
General instructions	306
Handling	308
Identification	308
Load-carrying capacity	310
Tyre pressure	312
Tyre selection	307

U

Underbody, maintenance	283
Unladen weight	33
Unloading	38
Upholstery, cleaning	284

V

Vario toilet	275
Converting into a shower cubicle	275
Converting into toilet compartment	276
Vehicle identification plate	304
Vehicle manuals and documents	20
Vehicle, washing	282
Ventilation	82
Toilet compartment	275
Volume of waste water, displaying	192, 197
Volume of water, displaying	192, 197

W

Warning stickers	304
Washer fluid, filling	65
Washing with a high-pressure cleaner	282
Waste gas vent on the right hand side of the vehicle.	231, 243
Waste water tank	270, 271
Care	283
Cleaning	283
Emptying	270, 271
Filling level, displaying	192, 197
Heater	238
Troubleshooting	327
Waste water tap	270, 271
Water ingress test	9
Guarantee	11
Inspection records	11
Water pipes, cleaning	286
Water pump	266, 270, 272
Water pump, switch	236
Water supply	266
General	266
Troubleshooting	326
Water system	286
Care	286
Cleaning	286
Disinfect	287
Drinking water filler neck	268
Emptying	273
Filling	272
Safety instructions	29
Water tank	286
Cleaning	286
Draining water	269
Filling level, displaying	192, 197
Water, filling with	268
Water tank see also water system	268

Index

Weight details for special equipment	329
Weight terms	
Mass in ready-to-drive condition	33
Maximum permissible gross weight on the axle (axle load)	36
Permitted mass	32
Weight-related information	
Mass in ready-to-drive condition	352
Mass to payload tolerances	355
Maximum permissible gross weight	352
Passenger weight	353
Payload and minimum payload	353
Special equipment and actual weight	353
Wheel chocks	68
Wheel protection ring (Globabus Performance) ..	309
Wheel rim size	310
Wheel rim type	306
Wheels	306
Window winders, electrical	62
Window, conversion door	
Closing	77
Insect screen, closing	78
Opening	77
Roller insect screen, opening	78
Roman shade, closing	77
Roman shade, opening	77
Windows	83
Blind	90
Cleaning	283
Gathered blind	94
Insect screen	90
Roller insect screen	91
Roman shade	92, 93
Wind-up skylight	98
Closing	98
Insect screen	98
Opening	98
Roman shade	98
Troubleshooting	328
Winter care	290
Winter operation	291
Writing and reading rest	64

Index