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### KIP inspection

Your caravan includes a 6 year warranty against water ingress and a 3 year warranty on the electrical system. To make a claim against this warranty, your KIP must undergo an annual inspection by an authorised KIP retailer.

In the unusual event that water ingress does occur, your KIP retailer can take appropriate actions to resolve the issue quickly.

The electrical system inspection is intended to guaranty the safety of the installation.

On the following pages are 5 vouchers which you may give to your retailer to be filled out and submit annually.

## 1 INTRODUCTION

### 1.1 General

We would like to help you to make optimal use of your new Kip caravan.

We therefore recommend that you study this manual carefully.

### 1.2 Safety aspects

#### General

- The caravan is not suitable for use when the interior temperature is below freezing or higher than 45°C
- The caravan is equipped for recreational use and is therefore not appropriate for permanent habitation
- Modifications and additions to the caravan installations should only be completed by authorised retailers using KIP Caravans B.V. approved materials
- Consult the user manuals included with the various appliances before attempting to use them
- At least once per year, allow the caravan to be serviced according to the prescribed BOVAG guidelines; this contributes to the safety and longevity of the caravan. Delayed maintenance can result in serious defects and costs.

#### Electrical system

- Each month, check the operation of the earth leakage circuit breaker by pressing the test button
- **When the caravan will be connected to the 230V-net, the 13-pin plug must first be disconnected**
- Unroll the outside cable completely and then insert the connector first into the caravan junction box and then into the 230V connection point at the caravan site
- The maximum approved length of the outside cable is 25 meters with a 3x2.5 mm<sup>2</sup> cross-section. Use neoprene cable H07RN-F (VDE or HAR approved).
- Use only the specified fuses. Incorrect fuses can lead to equipment damage.
- Adding electrical appliances to the 12V system will affect the power consumption of the Central Energy Regulating System, hereafter referred to as CERS. The maximum consumption is dependant on the specific CERS. For CERS 20M, a maximum consumption of 20 Amp, divided proportionally into 3 groups, is permissible. For the CERS 30D, a maximum of 3x10 Amp is permissible.

#### Gas supply

- Always use the included standard pressure regulator (30mBar)
- Petrol is not permitted to be used for the various gas appliances (propane is preferred)
- The gas burners are to be lit from above. A direct line of vision to the burners may not be obscured by a pan.
- Ensure proper ventilation while cooking. Set the kitchen window to the ventilation position and open the blind
- When the burners are not being used and are cool, place the hob's glass cover in the horizontal position
- Never attempt to repair the gas system yourself
- Never use a gas appliance while tanking the motor car or when the caravan is in an enclosed space
- All gas bottles are to be closed prior to driving with the motor car/ caravan combination
- Use an approved gas hose. Replace the hose every 2 years

#### Heating

- In the winter, snow must be removed from the flue prior to attaching the space heater
- **If the exhaust from the space heater is located on the same side as the door then you may not install an awning (KV 41ETD)**
- The shelf in the bottom of the hanging cupboard should only be removed for maintenance or repair by an authorised KIP retailer. The space may not be used as storage

#### Ventilation

- The ventilations holes in the front locker near the gas bottles should always remain open
- Never block the caravan's permanent ventilation openings
- When in storage, while cooking or during winter sports, always ensure sufficient ventilation.
- For caravans with raisable roofs, the caravan may only be used when the roof has been raised; this for the necessary ventilation.

#### Water supply

- When storing in winter, ensure that the entire drinking water circuit is empty. Drain the circuit and the water heater (if present).
- The caravan water system is not suitable for direct attachment to the water network
- Never turn the water heater on when empty

#### Driving with the caravan

- Pay attention to the hand brake, the breakaway cable and the road lighting.

- Regularly check the tyre pressure and condition.
- Tyres more than 6 years old should be replaced regardless of their condition.
- After being changed, the wheel bolts should be re-checked after  $\pm 50$  km
- For steel rims, the torque of the wheel bolts is 90 Nm.
- For aluminium rims, the torque of the wheel bolts is 140 Nm.
- When replacing an aluminium rim with the steel rim reserve wheel, the included loose wheel bolts must be installed in place of the aluminium rim wheel bolts.
- If a bicycle rack is installed on the back of the caravan (max. 2 bicycles which together may not weigh more than 40 kg), we advise to always install a stabiliser to compensate for negative influences on the towing behaviour. A strut pressure greater than 50 kg contributes to better towing behaviour.
- When installing a bicycle rack, always follow the factory supplied assembly guidelines
- When the stabiliser (AKS 1300, AKS 3004) is not correctly coupled, the trailer can disengage from the towing vehicle
- It is strictly prohibited to paint the brake drums - even heat resistant paint is not permitted.
- It is not permitted to lubricate the wheel bolts prior to installation.
- Roof rails (decorative bars on the roof) may not be used as luggage racks

**N.B. The acrylic windows are slightly diffusing. As a result, the air between the interior and exterior window may contain a slight amount of moisture. Under certain conditions this moisture can condense. When this occurs, the moisture forms very small droplets on the coldest surface; often the outside window. This is a normal phenomenon of physics. After a short time, when the temperature rises, the condense will again disappear.**

**N.B. Changes in version and composition reserved.**

**N.B. Due to material properties and changes in temperature, the roof plate may warp slightly.**

### 1.3 Important points

- Place heavy object as near to the axle as possible. Use upper cupboards for light objects and ensure the load is distributed as evenly as possible. Do not place loose objects on the floor.
- Ensure your caravan stays clean; regularly wash your caravan and do not forget to immediately remove all salt from the underside of the chassis after a winter vacation!
- Clean light metal rims regularly with soap.

## 2 PREPARING FOR THE ROAD

### 2.1 General

#### Installing the hitch

The motor car must be foreseen with an approved towing hitch.

Do not forget to secure the breakaway brake cable (fig. 01). This cable may never be attached to the towing ball, but instead to an eye specifically designed for this purpose.

#### Electrical wiring

Let your motor car retailer install the electrical wiring for the lighting, etc. In section 7.15 you find the correct connections. A proper earth connection is required.

Ensure that a 13-pin plug type Multicon West and the specified wiring is installed in/on your motor car (N.B. refrigerator 2 x 4,0 mm<sup>2</sup>, permanent power cable 2 x 2,5 mm<sup>2</sup>).

#### Side mirrors

The driver of a motor car with a caravan must be able to see past both the left and the right side of the caravan. For this reason, in many cases extra exterior mirrors are installed on the motor car.

#### Travel insurance

The attached caravan is insured by the motor car's Liability Insurance. When not connected, however, the Liability Insurance does not insure the caravan. A separate insurance is required for this.

**N.B. Installation of a sunscreen or other additions may pose problems during police inspections. The customisation resulting from the addition no longer agrees with the details on the registration certificate.**

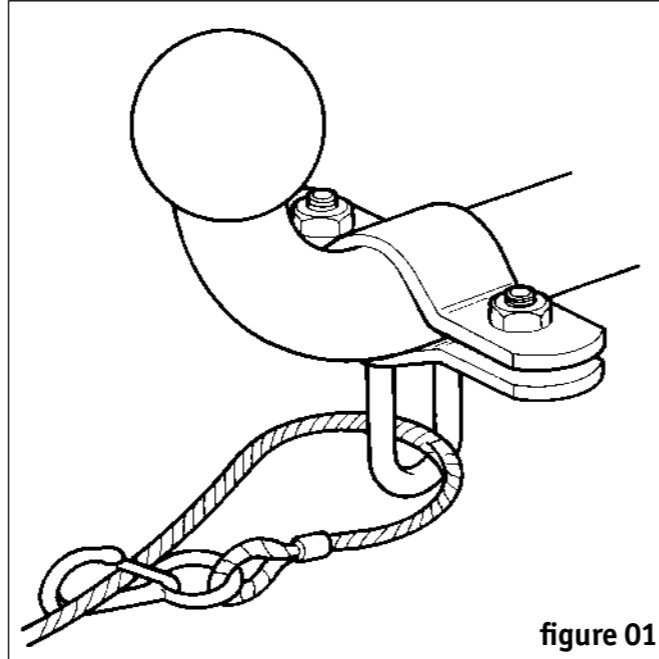


figure 01

### 2.2 Readyng the caravan

#### 2.2.1 Controls

If the caravan has been stored for a longer period of time, prior to travelling with the caravan do the following:

- Check the general condition of the caravan, allow any problems to be resolved by an authorised Kip retailer, wash the caravan with water and a good auto shampoo (with the exception of any installed solar panels; these may only be cleaned with water and a mild, wax-free detergent).
- Check the electric system, particularly the battery (if present); see also section 3.3.2, "Electricity mains supply".
- Check the operation of the road lighting on the motor car and the caravan.
- Fill the water system.
- Check the gas system for leakages.
- Check the tyre pressure, also the reserve wheel.

### Service Record

Date of Service .....	Date of Service .....
Retailer Stamp .....	Retailer Stamp .....
Date of Service .....	Date of Service .....
Retailer Stamp .....	Retailer Stamp .....
Date of Service .....	Date of Service .....
Retailer Stamp .....	Retailer Stamp .....
Date of Service .....	Date of Service .....
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Retailer Stamp .....	Retailer Stamp .....
Date of Service .....	Date of Service .....
Retailer Stamp .....	Retailer Stamp .....

## DECLARATION OF CONFORMITY WATER SYSTEM

Kip caravans B.V. declares that the water systems in the caravan models indicated below for model year 2007 conform to the water system of caravan KG 47TDB tested by the Water Inspection Service on Friday, 30 June 2006.

### Model Series

KIP Kompakt variotop (KK)  
KIP Kompakt hardtop (MK)  
KIP Vision (KV)  
KIP Sky Line (KS)  
KIP Grey Line (KG)  
KIP Hy Line (KH)

Avento Avance (AA)  
Avento Avance Esclusivo (AAE)  
Avento Gran Turismo (AGT)

Hoogeveen, 04 July 2006

KIP Caravans B.V.

- Check the wheel bolts are correctly torqued (steel rims 90 Nm, aluminium rims 140 Nm).
- Check the awning and/or sunscreen.
- Load the caravan; see section 2.2.2.

Tyre coding

### 2.2.2 Loading

Many caravans are too heavily loaded. This can lead to dangerous situations on the road, material damage and overloading can lead to revocation of the warranty.

Therefore, do not overload the caravan.

Load the caravan as follows:

- Place heavy objects as close to the caravan axle as possible.
- Using special light-weight carriers/ racks, bicycles can be placed both on the front as well as on the rear of the caravan. If the bicycles are **light-weight** and the total weight of 2 bicycles does not exceed **40 kg**, then transporting bicycles is not difficult. Structural provisions are included in the rear wall to aid installation.
- Ensure the strut remains at an acceptable level and adjust it for the load accordingly.
- Place light objects in the upper cupboards.
- If possible, place all loose objects in the bottom of the caravan into light cardboard boxes. In this manner you create order and it is easier to find things.

As always: Keep an inventory list!

This ensures you will not forget something.

**N.B. Contact with solvents can cause the floor covering to yellow. It is therefore advised not to lay any objects on the floor covering that may weep solvents. This may be, for example, mats or carpets with a so-called foam backing or a reserve wheel. (If you want to lay a mat in the caravan, then choose a jute rug!)**

### 2.2.3 Tyres

Information such as the manufacturer, size and type can be found on the side of the tyre. In addition to information about the carrying capacity, maximum speed and production date, you can also find here the safety specifications the tyre meets.

Load index table (LI)			
Li	Kg	Li	Kg
65	290	93	650
66	300	94	670
67	307	95	690
68	315	96	710
69	325	97	730
70	335	98	750
71	345	99	775
72	355	100	800
73	365	101	825
74	375	102	850
75	387	103	875
76	400	104	900
77	412	105	925
78	425	106	950
79	437	107	975
80	450	108	1000
81	462	109	1030
82	475	110	1060
83	487	111	1090
84	500	112	1120
85	515	113	1150
86	530	114	1180
87	545	115	1215
88	560	116	1250
89	580	117	1285
90	600	118	1320
91	615	119	1360
92	630		

Speed symbol	Max. speed (km/h)
N	140
P	150
Q	160
R	170
S	180
T	190
U	200
H	210
V	240
W	270
Y	300
ZR	240>



Nominal section  
in mm

Height/width proportion in %

Tyre Construction  
(r = radial)

Rim diameter code

Load index

Speed symbol

### Tyre Pressure

A caravan tyre functions under more extreme conditions and therefore requires a higher pressure than if installed on a motor car. Caravan tyres have higher pressures due to lower maximum speeds. The tyre pressure must always conform to that recommended by Kip Caravans. The indicated pressure has been determined in cooperation with the tyre supplier. This tyre pressure is stated on the sticker located just above the caravan axle. The following tyre pressures are recommended:

Caravan model	Tyre size and type		Advised pressure in bar
KK and MK models	185/65 R14 GT2	86T	3.0
KV models	195/65 R15 GT3	91T	3.0
KS models	185 R14 commercial	102/100Q	4.25
KG models	205/65 R15 commercial Cargo G26	102/100T	4.25
KH models	205/65 R16 commercial Marathon	107T	4.25

**N.B. The reserve wheel is equipped with a steel rim (if mounted as standard).**

The tyre pressure must be regularly checked and always again prior to beginning a long trip. Remember to also check the reserve tyre. Always measure your tyres when they are cold since the pressure increases as the tyre warms up with use. Low pressure causes overheating which can lead to internal damage. This ultimately results in the tyre being unusable.

### 9. WEIGHT (in kg)

Caravan type	Version	Unladen	Allowable maximum mass	Loading Capacity	
<b>Kompakt</b> KK 37EKV	travel	720	950	230	
	special	735	950	215	
MK 37EK	travel	735	950	215	
	special	750	950	200	
<b>Vision</b> KV 41T	travel	820	1100	280	
	special	835	1100	265	
	KV 41ETD	travel	850	1100	250
	special	865	1100	235	
KV 41EKR	travel	855	1100	245	
	special	870	1100	230	
	<b>Starline</b> KS 41TDB	travel	900	1300	400
special		950	1300	350	
KS 44TDB	travel	960	1300	340	
	special	1010	1300	290	
KS 47TDB	travel	1020	1350	330	
	special	1070	1350	280	
KS 47TEB	travel	1020	1350	330	
	special	1070	1350	280	
KS 47TK	travel	1020	1350	330	
	special	1070	1350	280	
<b>Greyline</b> KG 44EKL	travel	1080	1500	420	
	special	1110	1500	390	
	KG 44TDB	travel	1140	1500	360
special		1170	1500	330	
KG 47TCB/TEB	travel	1210	1500	290	
	special	1240	1500	260	
KG 44TDB	travel	1210	1500	290	
	special	1240	1500	260	
KG 53TDB/TEB	travel	1310	1700	390	
	special	1340	1700	360	
<b>Hy-Line</b> KH 50TDB	standard	1365	1800	435	
	premium	1425	1800	375	
KH 53TDB/TEB	standard	1400	1800	400	
	premium	1460	1800	340	

A deviation of up to 5% in the unladen weight is possible.



## 8. CHASSIS TYPES

	KK/MK 37	KV 41	KS 41/44	KS 47	KG 47	KG 53	KG 50	KH 53	KH
Axle type	B850-10	B1200-3	B1200/ SI-N12	B1200/ SI-N12-3	SI-N14-1	SI-N14-1	SI-N14-3	SI-N18	SI-N18
Brake type	1637	2051/A	2051/A	2051/Ab	2051/Ab	2051/Ab	2361	2361	2361
Tyres	185/65 R14	195/65 R15	185 R14 commercial	185 R14 commercial	205/65 R15 commercial	205/65 R15 commercial	205/65 R15 commercial	205/65 R16 commercial	205/65 R16 commercial
Steel rims Alu. rims	5,5Jx14 6Jx14	6Jx15 6,5Jx15	5,5Jx14 6Jx14	5,5Jx14 6Jx14	6Jx15 6,5Jx15	6Jx15 6,5Jx15	6Jx15 6,5Jx15	----- 6,5Jx16	----- 6,5Jx16
Wheel bearings 1637	30/60-37	-----	-----	-----	-----	-----	-----	-----	-----
Wheel bearings 2051	-----	39/72-37	39/72-37	39/72-37	39/72-37	39/72-37	-----	-----	-----
Wheel bearings 2361	-----	-----	-----	-----	-----	-----	42/82-42	42/82-42	42/82-42

### Regular checks

Regularly check your tyres for damage, wear, blistering, etc. If foreign objects puncture the tyre from outside, interior damage can also occur. Cracks on the side wall surface are not need for concern (see photo). They have no influence on durability or safety. These cracks are signs of aging and entirely normal for tyres that are not frequently used, such as caravan or reserve tyres.



### Aging

Tyres age according to the laws of chemistry and physics. They age faster when they are never or only incidentally used. When tyres are in permanent use, the rolling action of the tyres causes the activation of anti-aging materials. As a result, the rubber does not harden as quickly and fewer small superficial cracks will appear. European legislation has clear standards for external tyre damage. No steel belt threads may be visible on the outside of the tyre. The small aging cracks are superficial so the steel belt threads are not visible through them. Acceptable tyres are approved by the Police and by APK. Always replace the tyres if they are more than 6 years old.

### Tread profile

The developed tread profile is the result of studies completed over several years and experience. Every usage style requires a specific profile construction; a stable, fixed-track caravan tyre appears very different from a high speed tyre for extremely sportive driving behaviour. Kip caravans are therefore equipped with the optimal tyre for each type.

The tread depth must be checked regularly; the smaller the tread depth, the greater the risk of slipping. If the tread depth is at 3mm, it is recommended to drive carefully on wet roadways. There are indicators in the tread that show when the tyre is completely worn. These are visible when the minimum tread depth of 1,6 mm has been reached. You are then legally required to replace the tyres.

### Tyre problems

If you encounter a flat tyre, you should stop as soon as possible and exchange the tyre. For obvious reasons, driving with a low tyre can also cause structural damage. Flat tyres must always be removed from the wheel to check for additional damage.

If it is necessary to repair the tyre, this must be done as quickly as possible by a tyre specialist to avoid incurring structural damage.

#### TYRE PRESSURE:

**Tyres are pressurised using nitrogen gas. This dry air ensures a more constant tyre pressure and better driving characteristics.**

**All Kip retailers are equipped with a special device to allow filling and/or re-filling with nitrogen.**

### 3 TRAVELLING

#### 3.1 Coupling

When coupling the caravan, follow this procedure (fig. 02A/02B - caravan coupling/brake system):

1. Apply the hand brake in the motor car.
2. Turn the caravan support as high as possible with the help of the included crank.
3. Raise the coupling using the extendable jockey wheel and locate the coupling above the tow ball. Apply the caravan parking brake (fig. 02A). The handbrake handle must be forcibly pulled over the the deadlock (see indicated area). The pressure arm or hydraulic strut stiffens automatically when reversing. Releasing:  
The handbrake handle must be fully pushed back over the deadlock (see indicated area) to the end position.
4. Place the opened coupling over the ball of the tow hitch and lower the coupling onto the tow hitch using the jockey wheel crank. At the same time, pull the coupling handle up and then release the handle (fig. 02B:B) when the coupling is resting on the tow ball. This should now slide back to the initial position automatically. Closing and latching occur automatically.

**N.B. Check via the latching post (fig. 02B-A).**

**Green: Correctly coupled**  
**Red: Incorrectly coupled**

#### NB Driving with the caravan

- Pay attention to the hand brake, the breakaway cable and the road lighting.
- Regularly check the tyre pressure and condition.
- Tyres more than 6 years old should be replaced regardless of their condition.
- After changing the wheels, the wheel bolts must be checked after  $\pm 50$  km
- For steel rims, the torque of the wheel bolts is 90 Nm.
- For aluminium rims, the torque of the wheel bolts is 140 Nm.
- When replacing an aluminium rim with the steel rim reserve wheel, the included loose wheel bolts must be installed in place of the aluminium rim wheel bolts.
- If a bicycle rack is installed on the back of the caravan (max. 2 bicycles which together may not weigh more than 40 kg), we advise to always install a stabiliser to compensate for negative influences on the towing behaviour. A strut pressure greater than 50 kg contributes to better towing behaviour.
- When the stabiliser (AKS 130 AKS 3004) is not correctly coupled, the trailer can disengage from the towing vehicle
- It is strictly prohibited to paint the brake drums - even heat resistant paint is not permitted.
- It is not permitted to lubricate the wheel bolts prior to installation.
- Roof rails (decorative bars on the roof) may not be used as luggage racks

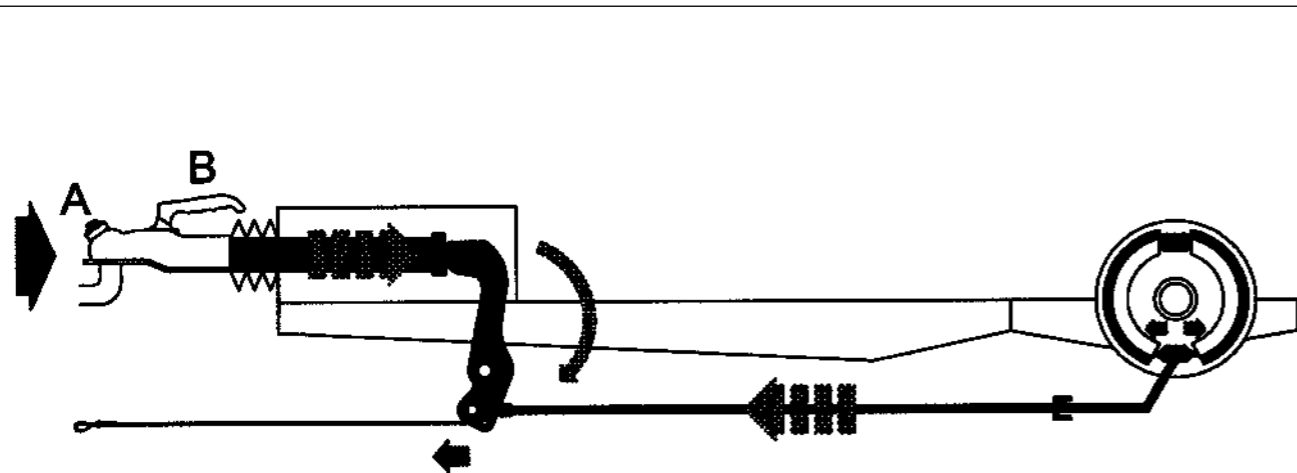


figure 02B

### 7.16 Kip Caravans wiring bundle colour coding - 12 volt

#### Road lighting

##### 13-BRANCH CABLE

colour		function
yellow	(1/L)	left turn indicator
blue	(2/54G)	fog lamp
white	(3/31)	earth
green	(4/R)	right turn indicator
brown	(5/58R)	right rear position lamp
		right side marker lamp
		right side yellow marker lamp
		right side red/white marking lamp
		right number plate lamp
red	(6/54)	left stop lamp
		right stop lamp
		3rd stop lamp
black	(7/58L)	left rear position lamp
		left side marker lamp
		left side yellow marker lamp
		left side red/white marking lamp
		left number plate lamp
yellow/white		(8) reversing lamp
blue	(9)	CERS permanent power cable
grey/red	(12)	
blue/white	(10)	refrigerator permanent power cable
white/blue	(11)	refrigerator permanent earth cable
white/green	(13)	CERS permanent earth cable

##### 8-BRANCH CABLE

yellow	(1/L)	le
--------	-------	----

##### ASSEMBLY CABLE

yellow	(1/L)	left turn indicator
blue	(2/54G)	fog lamp
white	(3/31)	earth
green	(4/R)	right turn indicator
brown	(5/58R)	right rear position lamp
		right side marker lamp
		right side yellow marker lamp
		right side red/white marking lamp
		right number plate lamp
red	(6/54)	left stop lamp
		right stop lamp
		3rd stop lamp
black	(7/58L)	left rear position lamp
		left side marker lamp
		left side yellow marker lamp
		left side red/white marking lamp
		left number plate lamp

##### 2-BRANCH CABLE

brown	(10)	refrigerator permanent power cable
blue	(11)	refrigerator permanent earth cable

##### INTERIOR

###### 230V INSTALLATION

Wall plugs	
brown	phase-cable
blue	0-cable
green/yellow	earth cable

Floor heating and Truma Therme water heater switch	
brown	phase-cable
green	0-cable
yellow	switch/ phase-cable
white	switch/ 0-cable

###### 12V INSTALLATION

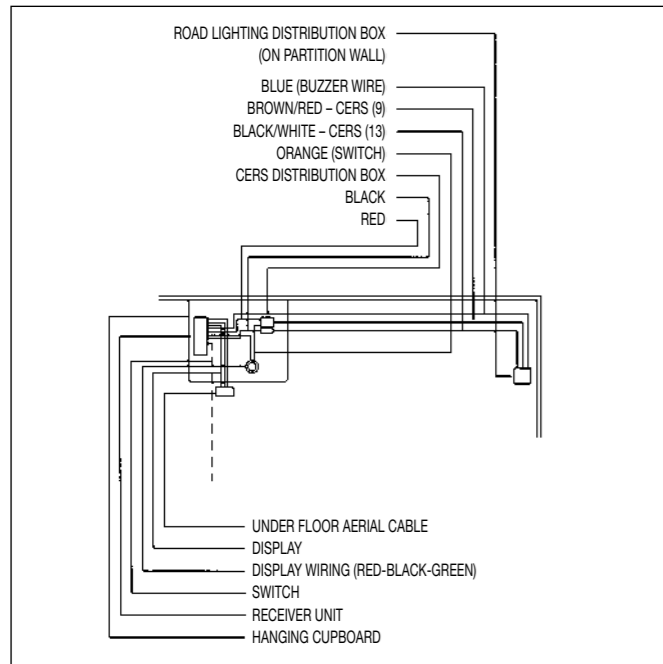
red/yellow	(+)	motor car battery – permanent power cable
orange	(+)	group 1
blue	(+)	group 2
red	(+)	group 3
black/white	(-)	common earth
brown/red	(+)	solar panel
red (1 mm <sup>2</sup> )	(+)	consumer
black (1 mm <sup>2</sup> )	(-)	earth consumer
red (4 mm <sup>2</sup> )	(+)	leisure battery
black (4 mm <sup>2</sup> )	(-)	leisure battery earth

###### Alde-installation

red	(+)	circulation pump (hanging cupboard)
black	(-)	circulation pump (hanging cupboard)



**7.12 TPMS system connections in the motor car**



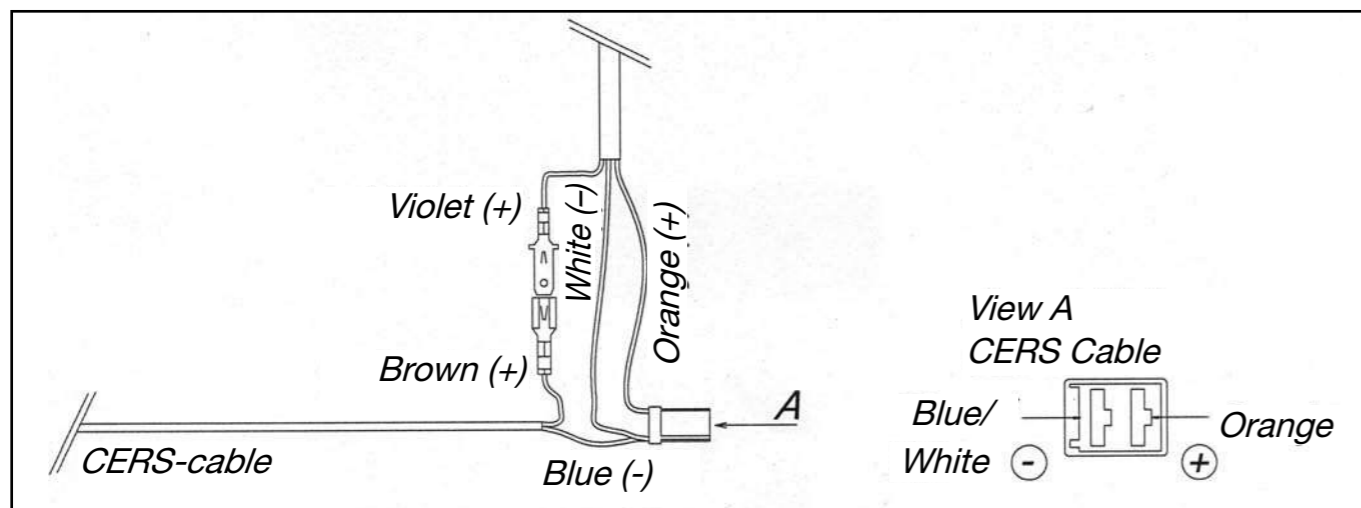
**7.13 Road lighting lamp guide**

Description	Socket	Watt	Caravan type				
			KK	KV	KS	KG	KH
Rear position lamp	BAY 15D	21/5	•	•	•	•	•
Stop lamp	BAY 15D	21/5	•	•	•	•	•
Turn indicator	BA 15S	21	•	•	•	•	•
3rd stop lamp	T5	2,3	•				
3rd stop lamp	LED		•	•	•	•	•
Fog lamp	BA 15S	21	•	•	•	•	•
Reversing lamp	BA 15S	21	•	•	•	•	•
Number plate lamp	SV 8,5-8	5	•	•	•	•	•
Red/white side marking lamp	C5W	5		•	•	•	•
Yellow side marking lamp	LED			•	•	•	•
Side marker lamp	SV 8,5-8	5	•	•			
Side marker lamp	W3W	3			•	•	•

**7.14 Overview of installed fuses**

230V	Earth leakage device		C 10A/30mA	Location in cupboard	
12V	CERS 30D	Consumer groups	Buck converter (auto.)	10A	CERS interior side
		Network input	Silicon fuse	4A	CERS interior side
		Battery input	Blade fuse	40A	CERS underside
	CERS 20M	Consumer groups	Blade fuse	25A	Mascot 2044 exterior side
		Network input	Silicon fuse	4A	Mascot 2044 interior side
		Battery input	Blade fuse	25A	Mascot 2044 exterior side
	Battery		Blade fuse	40A	In fuse housing near battery
Floor heating					In accommodation transformer
Thetford					In fuse housing near switching unit
Electric slatted bed			Blade fuse	15A	In fuse housing near battery

**7.15 ATC Connections**



- Place the jockey wheel into the highest position.
- Connect the 13-pin caravan plug to the motor car.
- Secure the brake breakaway cable to the specially mounted attachment eye on the motor car. Check that the breakaway cable has sufficient slack.
- Check all lighting on the caravan is working.
- Check all lamps and electric taps in the caravan are turned off.
- Check the gas supply is turned off.
- Switch the refrigerator to 12V while driving and carefully close and latch the refrigerator door.
- Close the caravan windows, roof hatch and door.
- Adjust the motor car mirrors so the combination is seen in a straight line.
- Disengage the handbrake before driving away.

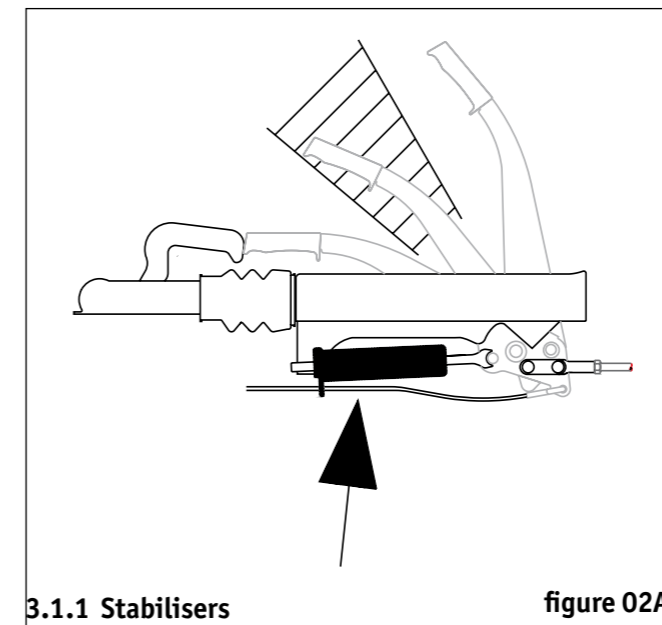
**Coupling:**

**Ball hitch**

Opening the ball hitch - to open the hitch, pull the ball hitch handle (fig. 03B, pos. 3) up in the direction indicated by the arrow. The coupling mechanism has an opening which remains in the open position so long as the AKS 1300 is not placed on the tow ball of the vehicle. The tow hitch handle must automatically and audibly return to its original position. Then push the handle (fig. 03B, pos.3) down by hand. Latching and securing occur automatically.

**Activating the stabiliser**

Starting position: the AKS 1300 is coupled to the tow ball. Turn the hand wheel (2) clockwise until the hand wheel torque limiter can be heard and felt rattling. Push the stabiliser handle (03C, pos. 1) down until the mark on the handle aligns with the mark on the stabiliser housing (03C, pos.5 - horizontal position of the stabiliser handle). The AKS 1300 is now ready for travel.



3.1.1 Stabilisers

figure 02A

**AKS 1300**

**Preparations for coupling or uncoupling**

To couple or uncouple the caravan, the handle of the stabiliser (1) must be in the fully upright (open) position and the hand wheel (2) must be turned open (anti-clockwise) until it reaches the stopper (fig. 03A)

**N.B. Do not use excessive force when turning the hand wheel (2) against the stopper.**

**Uncoupling**

Uncoupling is achieved by reversing the steps. Pull the stabiliser handle up until the mark on the handle aligns with the mark on the stabiliser housing (03C, pos. 6 - stabiliser handle end stop). Turn the hand wheel open (anti-clockwise) until it reaches the stopper. Open the ball hitch handle and remove the AKS from the towing vehicle. For higher tow ball forces, coupling and uncoupling can be accomplished using a jockey wheel.

**N.B. When the green edge of the safety indicator (fig. 03C, pos.4) is visible, the tow ball is located entirely within the hitch housing. The coupling mechanism is correctly latched when the ball hitch handle (fig. 05C, pos. 3) can not be pushed further downwards by hand.**

AKS 3004

**Preparations for coupling and uncoupling, respectively:**

During coupling and uncoupling, the stabiliser handle (fig. 04A/item 2) must be in the fully upright (open) position.

Coupling:

**Ball hitch**

Opening the ball hitch - to open the ball hitch (figure 04B/ item 1) pull the handle up in the direction of the arrow. The coupling mechanism has an "open" position. This means that so long as the AKS 3004 is not placed on the tow ball, the coupling mechanism remains open. Place the opened hitch on the tow ball of the towing vehicle. The ball hitch handle should now automatically and audibly click into the original position.

Push the ball hitch handle (fig. 04C/ item 1) down fully by hand. Closing and latching occur automatically.

**ATTENTION:** The ball hitch is correctly attached when the green edge of the safety indicator (fig. 04c/ item 3) is visible.

**Stabilising equipment**

The AKS 3004 is coupled to the tow ball. Push the stabiliser handle (fig. 04C. item 2) down past the raster point until the stopper is reached.

**Uncoupling:**

Uncoupling the trailer from the towing vehicle is achieved by reversing the steps: Pull the stabiliser handle up until it reaches the stopper (upward most position of the stabiliser handle) Open the ball hitch handle and tilt the AKS 3004 upward and away from the towing vehicle's tow ball. Large height differences when coupling and uncoupling can be assisted by the use of the jockey wheel.

**NB**  
Also refer to the AL-KO usage guidelines.

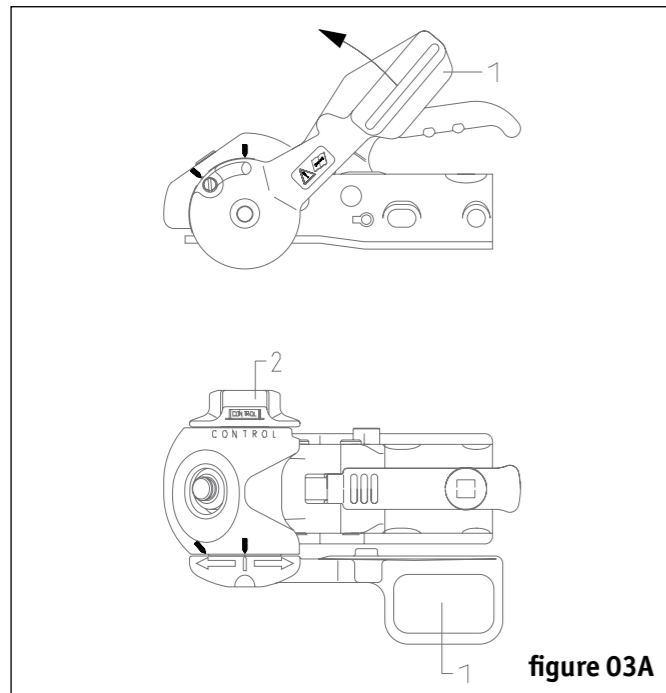


figure 03A

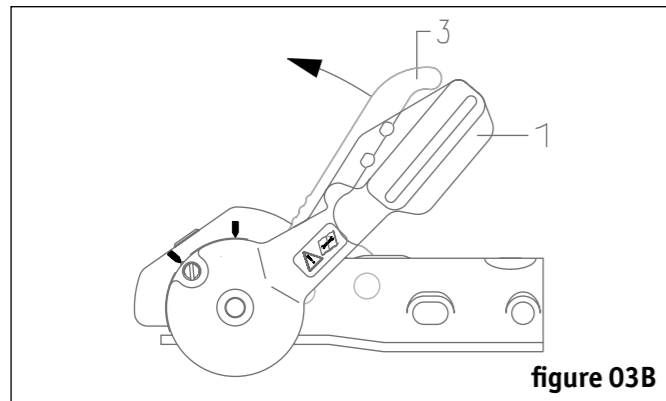


figure 03B

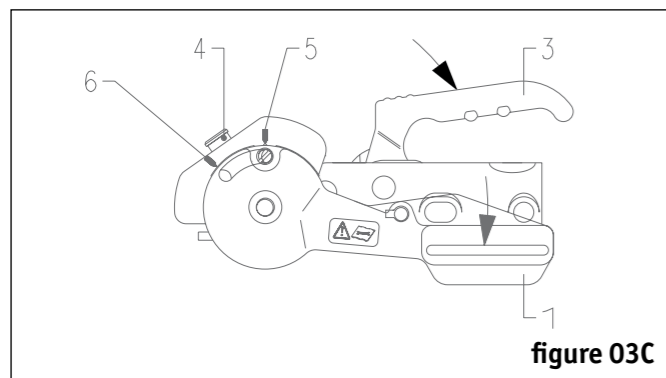
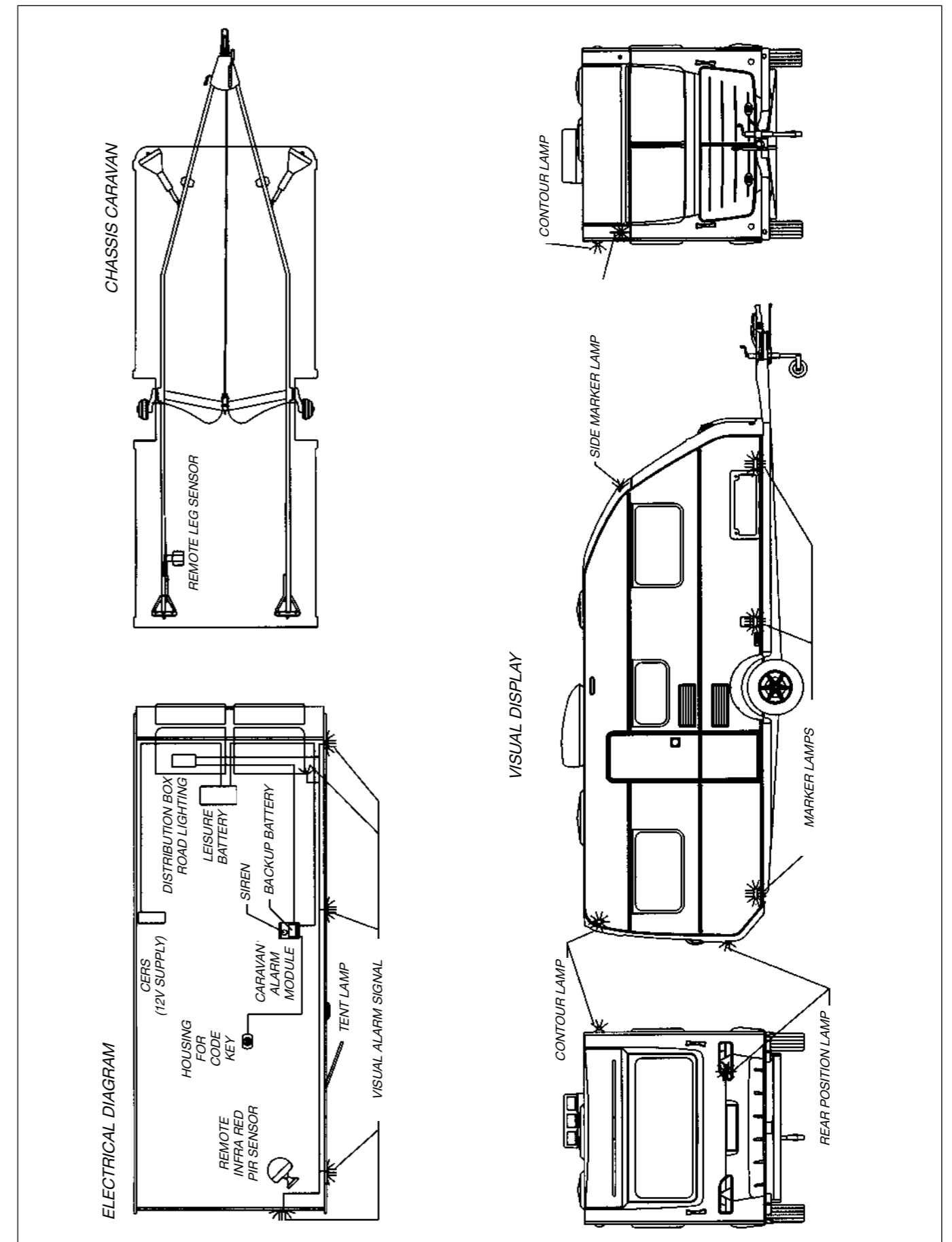
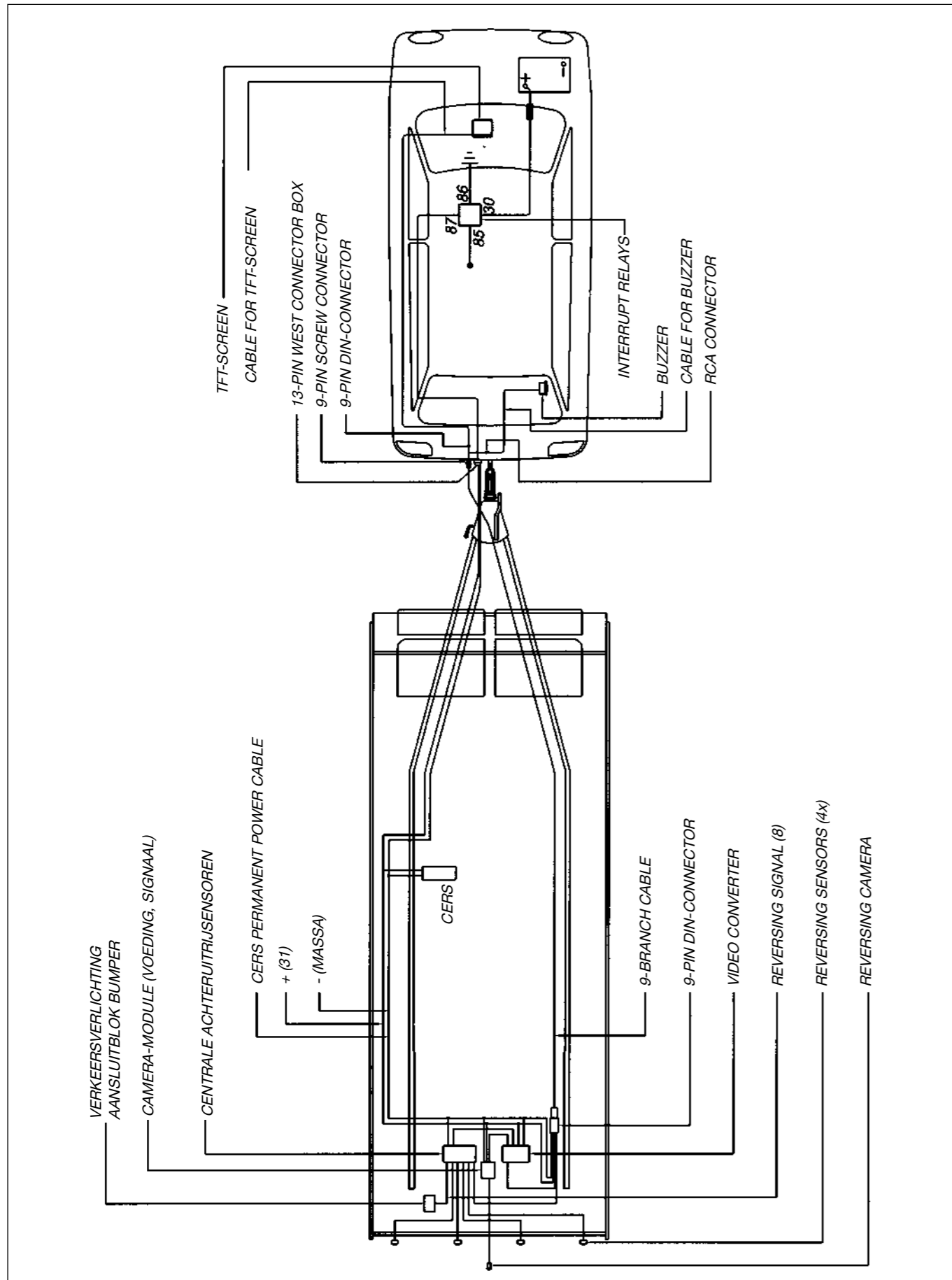


figure 03C

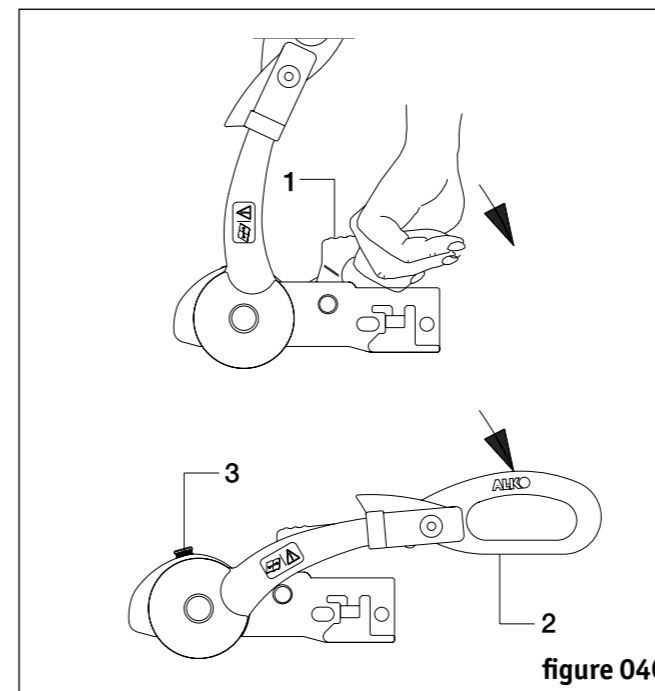
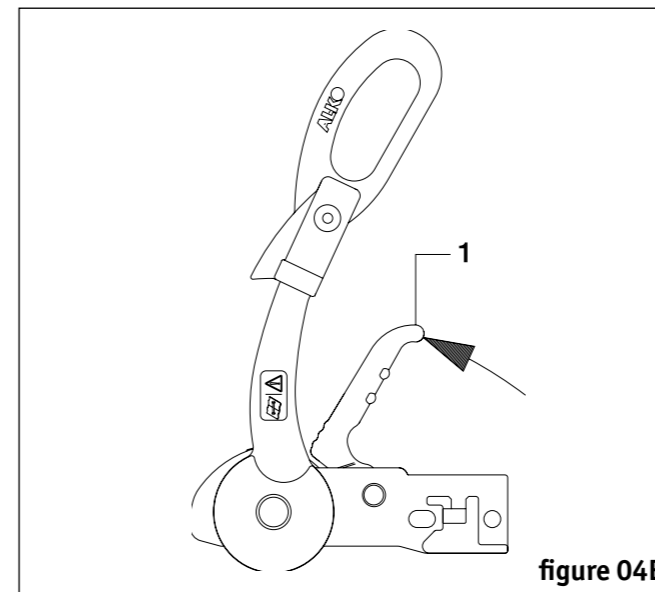
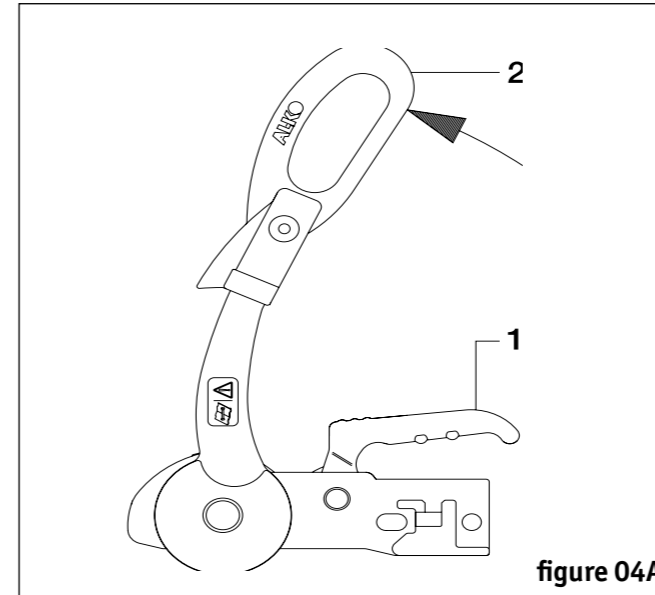
7.11 Alarm installation



7.10 Look Behind & Parking System - installation



3.1.2 Tyre Pressure Monitoring System TPMS (optional)



The system.

1. Connect the caravan and the 13-pin plug. If the motor car is equipped with a relay to interrupt the permanent power cable, the motor car key must be placed in the on position.
2. Set the external switch to "1" to activate the system. The switch is mounted near the display. The system only works if the switch is on "1" and the motor car key is in the on position.
3. The system will indicate the pressure and the temperature of both tyres (left and right).
4. If the conditions are good, the display will show "SCH" and the 2 square tyre LEDs will light up in green.
5. Normally the switch should be on "1". If a tyre is punctured, the system can be shut off until the tyre is replaced.
6. Set the external switch to "0" if the display must be switched off. The entire system is disabled in this manner. Stored details remain in the memory.

Note:

Before travelling, check that the tyre pressure and temperature are acceptable by briefly pressing and holding the sensor knob on the display. The external switch must be on "1".

Display.

Green:

The tyre pressure and temperature of both tyres are good.

Signal: None.

Orange:

Condition: The tyre pressure is less than 75% of the pre-set value.

Signal: The orange LED blinks for 15 seconds in a sequence of on for 0.2 seconds and off for 0.8 seconds. The buzzer in the motor car (and caravan) gives the same signal sequence for 15 seconds.

After one minute, the LED remains lit in Orange. After 10 minutes, this warning will repeat once. On the display, the "Pressure Alert" LED will illuminate.

**Red:**

Condition 1: Tyre pressure less than 50% of the pre-set value.

Signal: The LED blinks Red for two minutes in a sequence of on for 0.2 seconds and off for 0.8 seconds. The buzzer in the motor car (and caravan) gives the same signal sequence for 15 seconds. On the display, the "Pressure Alert" LED will illuminate.  
The signalling will repeat every 10 minutes until the problem is resolved or the system is switched off.

Condition 2: Tyre pressure 125% above the indicated value shown in the caravan manual.

Signal: The LED blinks Red for two minutes, but twice as fast in a sequence of on for 0.1 second and off for 0.4 seconds. The buzzer in the motor car (and caravan) signals in the same sequence. On the display, the "Pressure Alert" LED will illuminate.  
The signalling will repeat every 10 minutes until the problem is resolved or the system is switched off.

Condition 3: Temperature above 85°C.

Signal: The LED blinks Red for two minutes, but twice as fast in a sequence of on for 0.05 second and off for 0.2 seconds until the condition improves. The buzzer in the motor car (and caravan) signals in the same sequence. On the display, the "Temperature" LED will illuminate.

Condition 4: Leakage of greater than 0.2 Bar within 1 minute.

Signal: The LED blinks Red in a sequence of on for 0.05 second and off for 0.2 seconds until the condition improves. The buzzer in the motor car (and caravan) signals in the same sequence. On the display, the "Fast Leaking" LED will illuminate.

**The display.**

When the buzzer in the motor car sounds, the caravan must be brought to a stop in a safe place as quickly as possible and the display in the caravan must be checked. Resolution of the issue is then dependent on the problem.

**Note:**

Before travelling with the caravan, check the display to ensure the tyres are in good condition. This can only be accomplished when the caravan is hitched up to the motor car and the power is switched on.

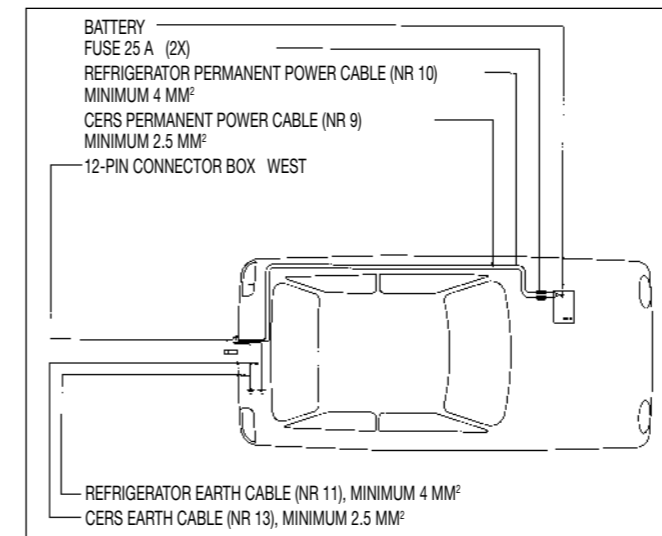
**NB**

1. The system only works if the external switch is in position "1" and must remain on when the driving with the caravan.
2. After turning the system on and completing the test cycle, the display again shows "SCH"
3. If the Left and Right positions on the display alternately blink in red, green and orange, then the reception is poor or the sensor battery is empty.
4. If the key of the motor car is not in the on position and the vehicle is equipped with a relay to interrupt the permanent power supply, the constant power to the caravan is switched off. When starting the motor car, a confirmation signal (buzzer) indicates the system is switched on.
5. It is not possible to replace the battery in the wheel sensors. The lifespan of the batteries is ± 6 years.
6. The tyre pressure monitoring system is designed to check the tyre pressure and temperature and to inform the driver.
7. TPMS does not take any corrective actions; it is the responsibility of the driver to take corrective actions as soon as possible.
8. TPMS can not foresee a sudden blow-out or other defect and warn the driver prior to the event.
9. Besides the tyre pressure and temperature, TPMS does not check any other conditions, such as tyre wear or hairline cracks.
10. The driver is expected to ensure that the system completes a "self test" each time the motor car's key is placed in the on position.

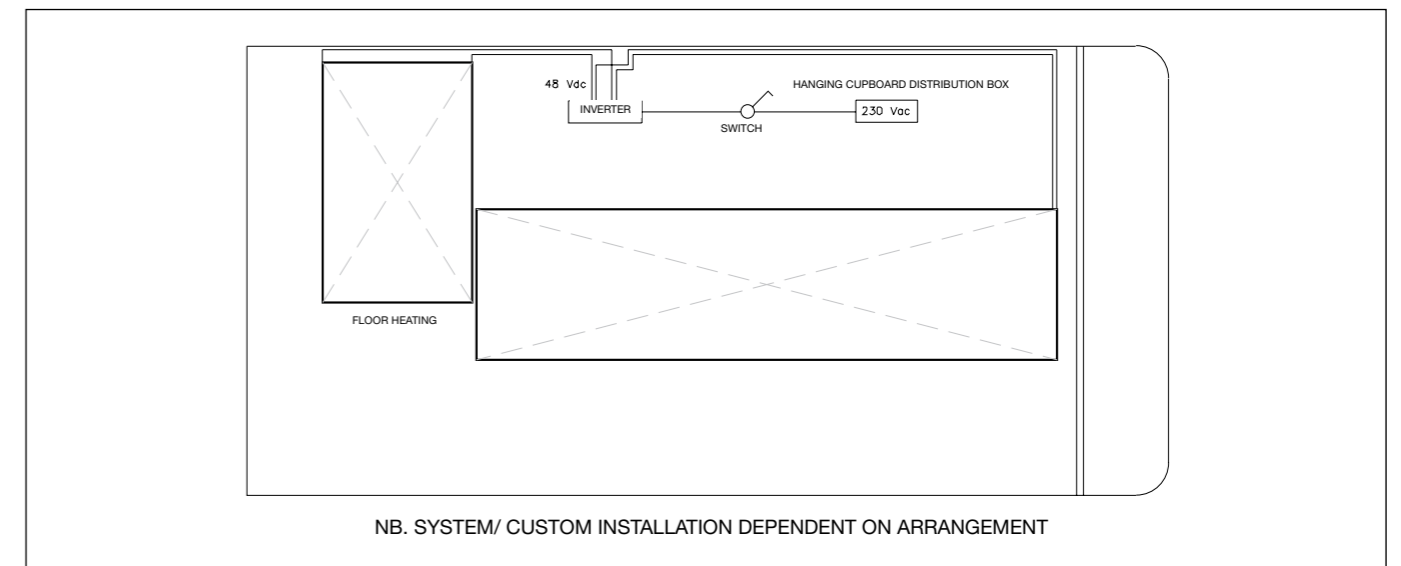
**NB.**

For additional information, refer to the manual and installation instructions included with the TPMS system

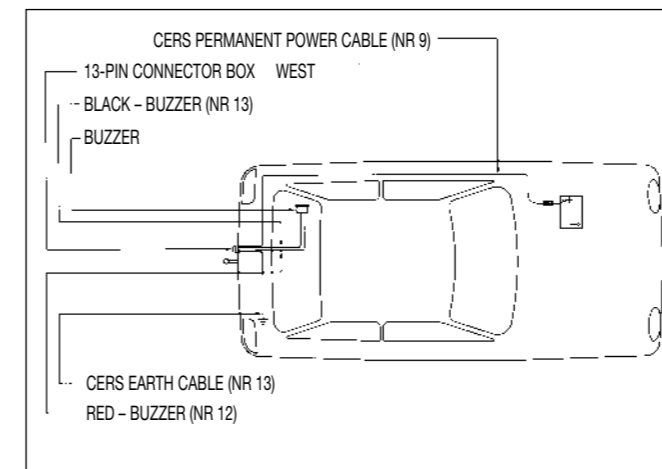
**7.7 Connecting the permanent power cable and refrigerator in the motor car**



**7.8 Floor heating diagram**

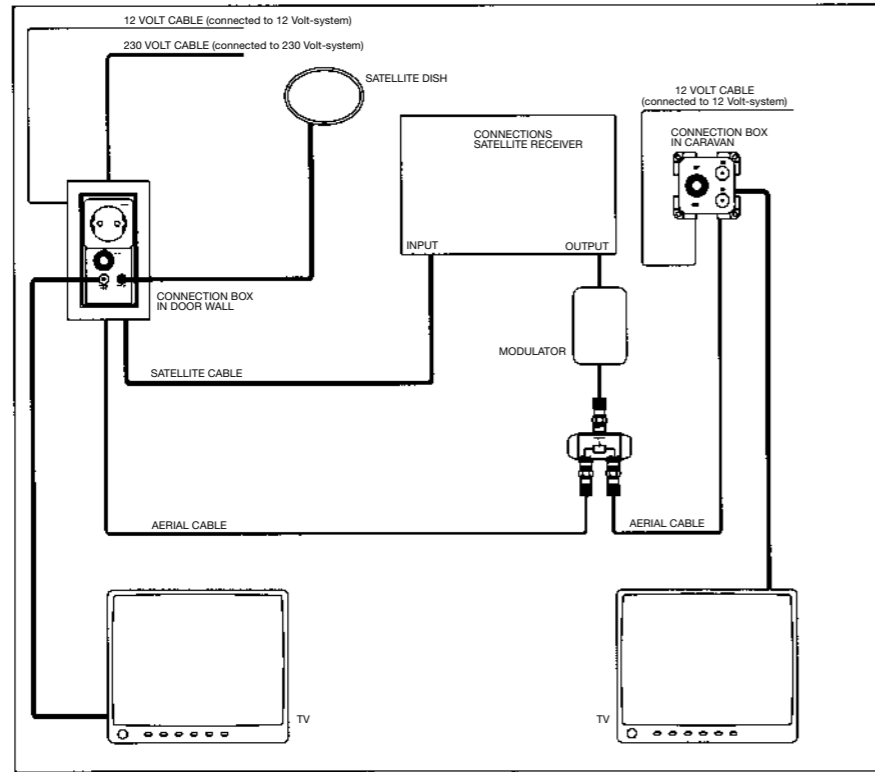


**7.9 Tyre pressure control system buzzer connection (optional)**

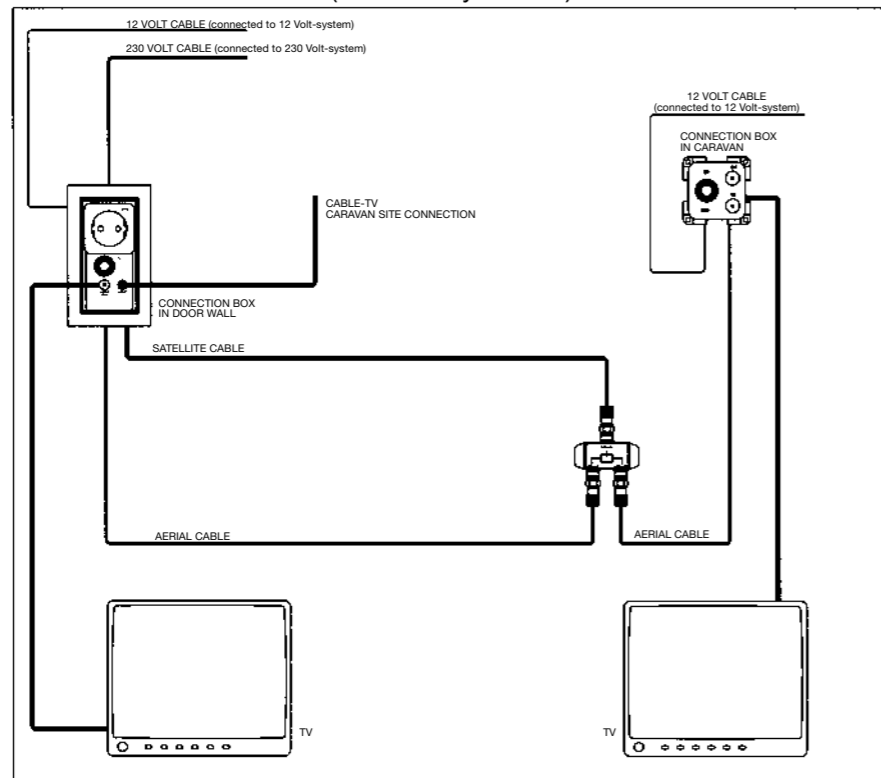




**SATELLITE RECEIVER CONNECTION OPTION  
DISH VIA COMBI-WCD \* NOT STANDARD  
(installed by retailer)**



**CABLE-TV CONNECTION OPTION AT CARAVAN SITE  
VIA COMBI-WCD \* NOT STANDARD  
(installed by retailer)**



**3.1.3 Look Behind & Parking System (Optional)**

*System description*

The KH-models come standard equipped with this set. The set has the following functions:

- Look behind camera; the display gives a clear picture of what is happening behind the caravan while driving.
- Back-up sensors for use when manoeuvring the caravan in reverse with the motor car. The display indicates the distance to an object. A buzzer in the motor car will also give a repeating signal. When the signal becomes a constant tone, the distance to the object is near enough that reversing must stop.

*Assembly components for the motor car*

- Display
- Motor car wiring set, including buzzer
- DIN-connector mounting plate, inc. connector box and wiring)

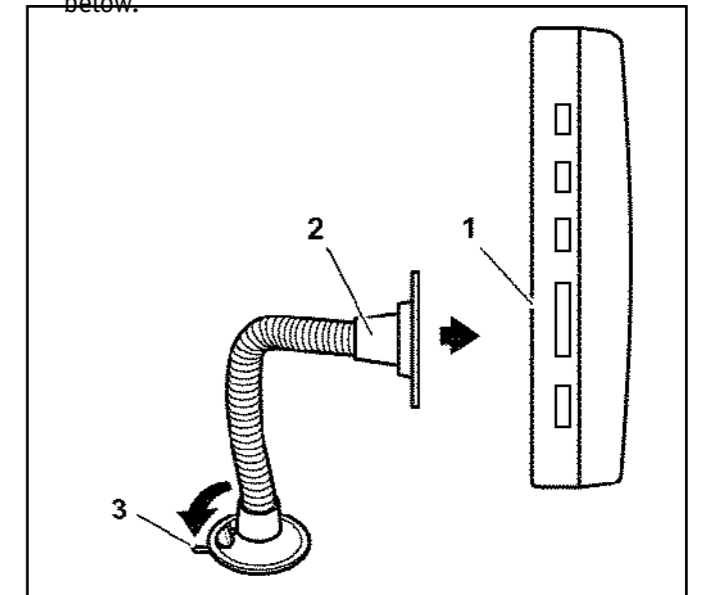
*Motor car mounting set (wiring, connection boxes, display, refer also to the electric diagram in section 7)*

- 13-pin connection box disassembled from mounting plate; wiring still attached
- Mounting plate to position 9-pin DIN-connector in place of 13-pin connection box



- Re-install 13-pin connection box; by fixing the 13-pin connection box the mounting plate is also secured.
- Lead the included 9-branch cable from the connection box to the motor car's interior via a small hole and close the opening with an electrical gasket.
- Direct the included display cable from the connector in the vehicle baggage compartment to the location of the display (if the connection is to be permanent, lead the cable to the display through the cable troughs already present)

- Connect the included buzzer to the appropriate connector on the 9-branch cable in the vehicle's baggage compartment
- Interrupt the permanent power cable (nr. 9) to the caravan with an interrupt relay which ensures the permanent power is only supplied with the motor car is started and the power is switched off when the motor car engine is shut off..
- Affix the display adapter (see figure below, item 3) to the windscreen
- Place the display on the adapter. The adapter is equipped with a small magnet which attaches to the metal display housing. See items 1 and 2 in the figure below.



*Connecting*

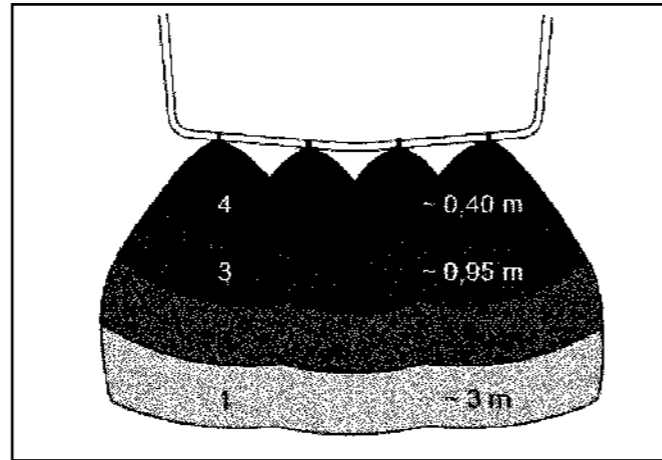
- Connect the 9-pin caravan screw connector to the 9-pin screw connector box next to the 13-pin connection box.

*Look behind camera*

- Activating
  - Start the motor car; the power for the installation is switched on via the permanent power cable no. 9
  - Activate the display by briefly pressing and holding the knob; the system is now operational



- Operation
  - Buttons
    - Display
      - \* On/off button
      - \* Menu-button selects the menu
      - \* Remote control with the following selection choices
        - \* On/off button
        - \* Brightness button
        - \* Colour adjustment button
        - \* Contrast button
        - \* Volume button
  - Via the display menu using the following parameters:
    - Brightness
    - Colour adjustment
    - Contrast
    - Tint
    - Volume
- Switching off
  - Switch off the display by holding the button for more than 2 seconds
  - Turn off the motor car engine. The installation power supply is switched off by the relay.
  - If desired, disconnect the DIN-connector



- Total distance
  - Indicates the distance to the object
- Sound
  - From a distance of 2.00 metres, a repetitive beep signal
  - The speed of the beep signal repetition increases as the object is approached
  - A continuous beep signal means the object is dangerously close and reversing should be stopped
- When the display shows a red bar and a continuous beep is heard, stop reversing

**Reversing sensors**

- Detection
  - Activated when the reverse gear in the motor car is selected. Objects up to 3.00 metres away are detected.
- Signal
  - Display
    - 4 vertical bars. Depending on the position of the obstacle, the bars will show the following signal on the display
      - \* In zone 1, only large objects are detected. The distance is shown on the display and the buzzer will sound
      - \* Green (zone 2) – objects outside of the danger zone are detected
      - \* Green (zone 3) – objects within the danger zone are detected
      - \* Red (zone 4) – dangerously close to object; stop reversing

**NB**

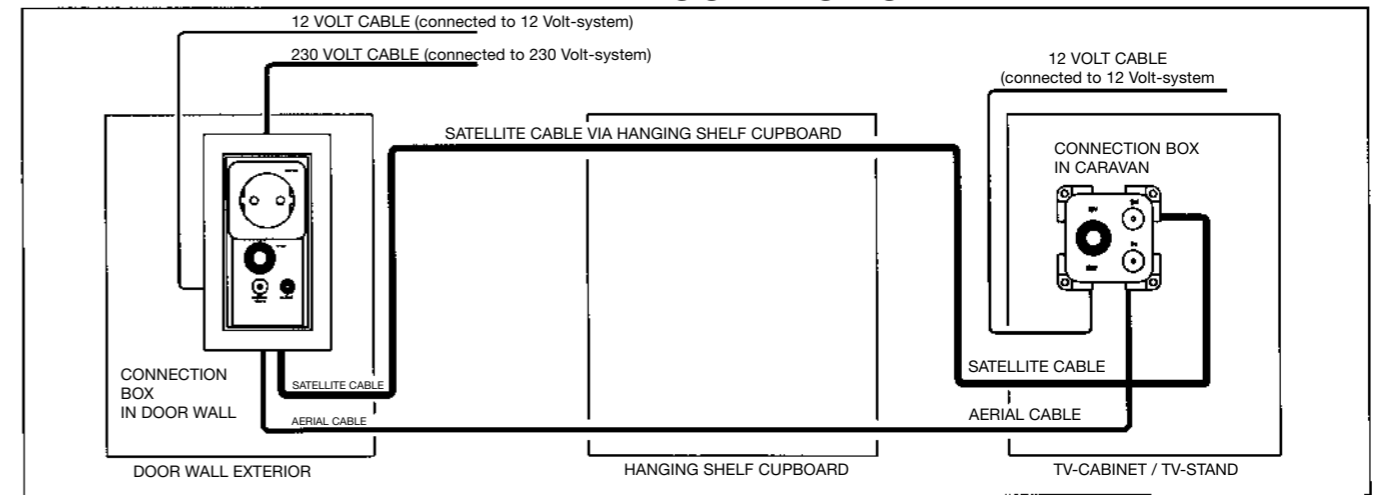
- Installation must be completed by authorised KIP-retailers
- Use of exterior mirrors with adequate visibility is still required
- Position the monitor such that it does not obstruct visibility while driving
- Electro-magnetic disturbances can cause poor picture quality
- The included supplier manual is to be read and adhered to

**3.1.4 AL-KO Trailer Control (KH and optional)**

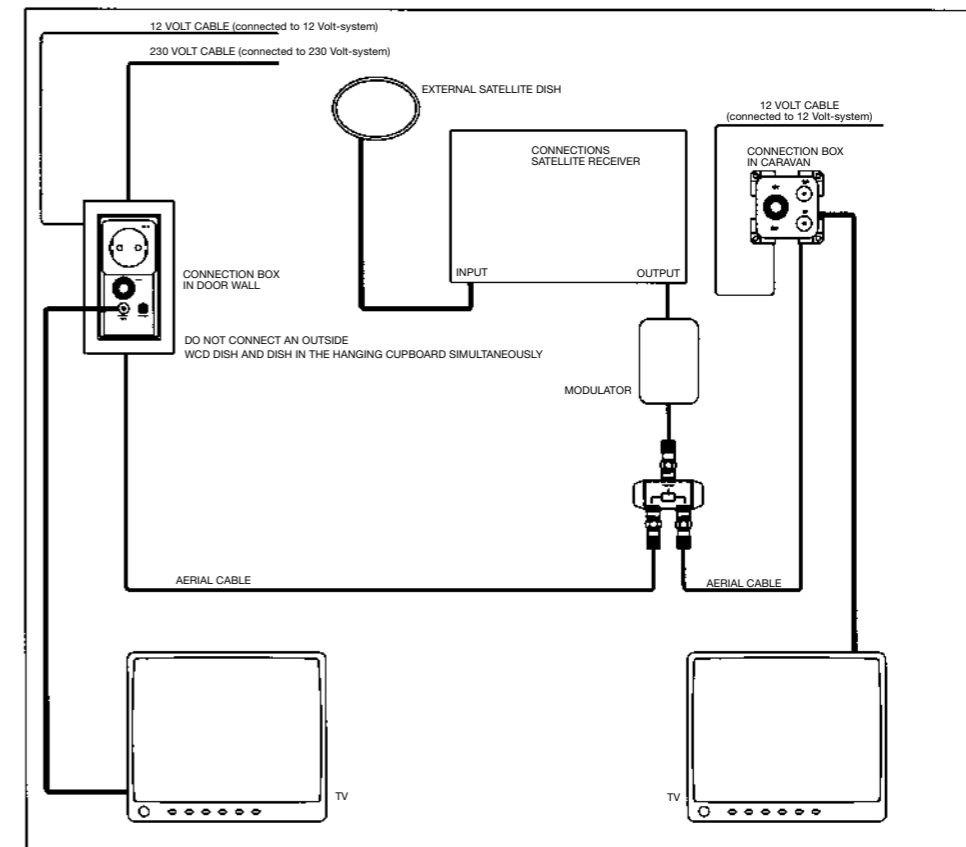
DeAL-KO Trailer Control (ATC) is a safety system for caravans. It automatically detects hazardous pendulum movements in the caravan and slows the vehicle/ caravan combination when the movement exceeds the critical limit.

**7.6 TV-aerial connection diagram**

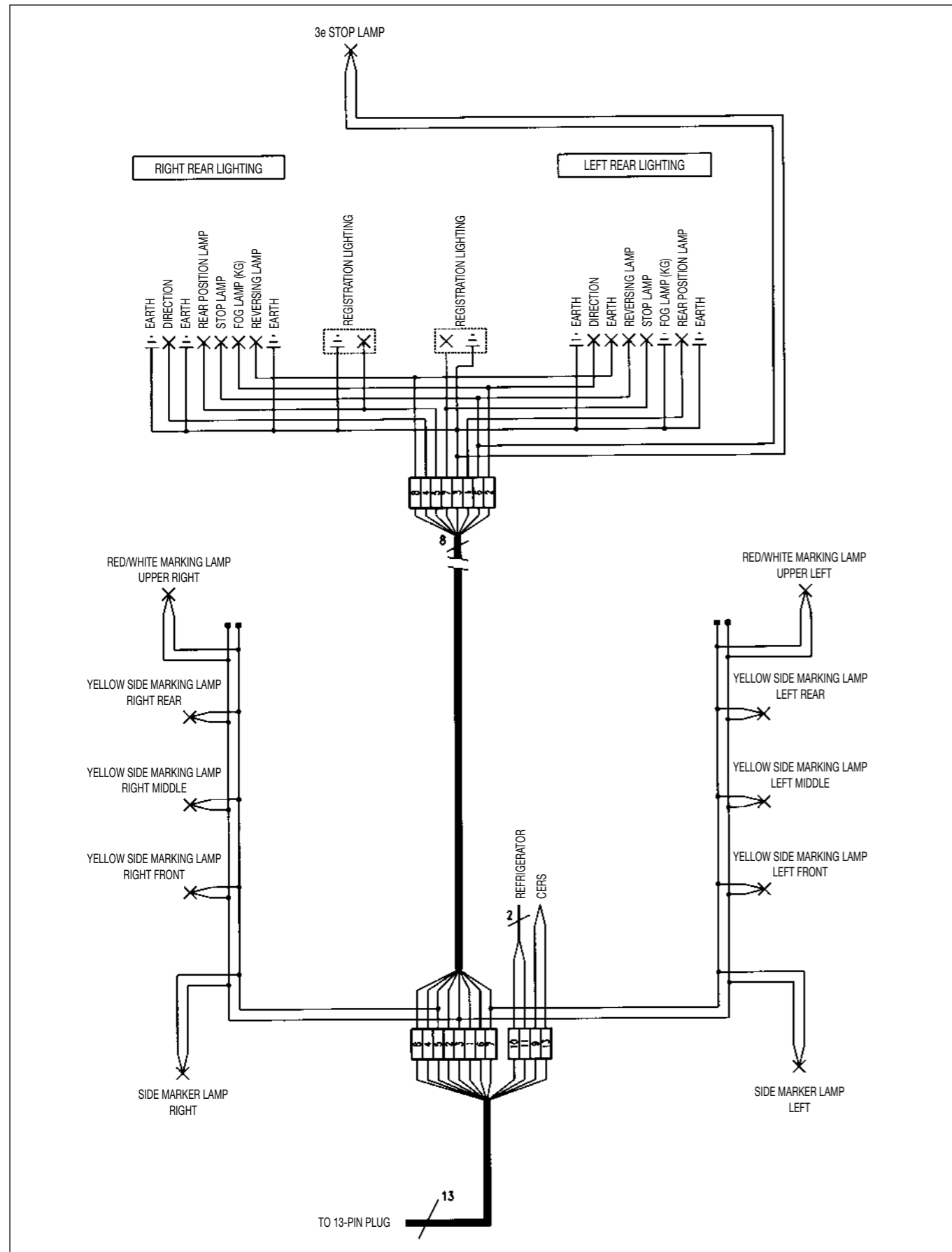
**TV-AERIAL CONNECTION**



**SATELLITE RECEIVER CONNECTION OPTION  
DISH VIA COMBI-WCD \* NOT STANDARD  
(installed by retailer)**



### 7.5 Road lighting, CERS permanent power cable and Refrigerator 1 through 13



**N.B.**

- Before applying the ATC, read the ATC manual for usage information and to resolve potential problems with the system
- The increased security of the ATC system is not a reason to take increased risks
- Always adjust your speed to suit the road conditions
- The function of the ATC is dependent on the condition of the tyres

*Connecting the ATC*

1. Couple the caravan
2. Connect the 13-pin plug to the motor car
3. Check the caravan lighting
4. Check the DUO-LED (located on the plastic portion of the inertia brake). When the connection to the ATC is first made, a selftest starts immediately. The LED illuminates in red. The ATC attempts to control the brakes. If the system functions properly, the LED will illuminate in green. The motor car/ caravan combination is ready for travel.

*LED-indicators*

Indication	Status	Consequence	Action
Green	ATC is active	None	--
Red	ATC is non-functional	Continued driving is possible	<ul style="list-style-type: none"> <li>• Disconnect the 13-pin plug and reconnect it after approx. 5 seconds</li> </ul>
Blinking red	ATC is braking	Continued driving is forbidden	<ul style="list-style-type: none"> <li>• Disconnect the 13-pin plug and reconnect it after approx. 5 seconds</li> <li>• When the indicator does not change, there is danger of the brakes overheating. The pressure arm must be checked</li> </ul>
Out	ATC has no power supply	Continued driving is forbidden	Determine the cause of the problem and resolve it

### 3.2 Driving with the caravan

#### General

When driving with the caravan, keep the following in mind:

- A caravan is often wider than a motor car and thus requires more space when overtaking. The longer length (motor car + caravan) and the reduced acceleration mean, when overtaking, a noticeably longer time and more space must be available than when driving without a caravan.
- A caravan has the tendency to cut-off corners. Remember this particularly when manoeuvring through narrow entrances and exits and during tight turns.
- Generally a caravan is higher than a motor car. Measure the distance between the road surface and the highest point of your caravan. Note this and keep it in mind when passing under fly-overs and such.  
The maximum speed limit may vary between countries.

#### Driving in the mountains

To drive in the mountains, the motor car and the caravan must both be in good condition. Particularly climbing demands much from the motor car with respect to the engine and the drive train. A climb of only a few percent requires such a great amount of pulling force that often the engine power and torque are lacking. Downshifting to a lower gear is the only method a driver can use to assist the situation.

In terms of engine power and torque, downshifting does not carry any adverse effects. For safety reasons, it is sensible to reduce the vehicle's speed at the same rate as when increasing speed. When decreasing speed, the driver of the caravan combination must choose a gear such that while slowing, it is not necessary to use the motor car's brake system.

When the inertia damper is working properly, any braking-action made by the driver will result in activation of the inertia brake. This can cause a reduction in speed depending on how strongly the motor car brake is activated. After releasing the motor car brake, in many cases, the continued forward force of the caravan may cause the inertia brake to not return to its starting position. When an inertia damper is not working properly, the weight of the caravan pushing on the motor car while descending an incline may cause the inertia brake to activate. This will not lead to a reduction in speed as the motor car is not being braked. In these situations, the caravan will be descending the incline with dragging brakes. As a consequence, high temperature increases of up to 500 °C can result. This can lead to serious damage to the brake drums such as burnt

brake linings, bearing damage, etc.

If the situation has arisen whereby the speed had to be decreased by applying the motor car brakes, it is advised to stop the caravan combination fully causing the inertia brake to disengage when again setting off.

### 7.4 Specifications CERS 30

Specifications CERS 30D	
Input voltage range	198-264Vac"
Input voltage frequency	45-66Hz
Input current	≤ 1.8A at 230Vac in and 360W out
Efficiency	≤ 84% at 230Vac in and 360W out
Output voltage charging circuit (leisure battery battery)	14,2Vdc at 25oC (Absorption) 13,2Vdc at 25oC (Float)
Charging current	20Adc maximum with IUoUp charge characteristic (3-step profile)
Booster capacity	8,5-14,2V / 6,0A max. charging current
Solar capacity	110W / 6,0A max. charging current
User groups output voltage	12.5Vdc ± 5%
User groups output current	10Adc max. per group
Total output power	360W max.
100 Hz output voltage ripple	≤ 100mVpp at 230Vac and max. output power
Earth leakage (discharge current)	≤ 10mA
Controls	Control panel via a 4-branch RJ-11 telephone cable
Group protection	3 outputs: 10A via buck-converter
Network voltage protection	4A (slow) protected against peak voltage
Leisure battery charging direction protection	40A-fuse Inversion protection The charging circuit is switched off when the battery temperature reaches 50°C; battery service LED illuminates The charging circuit is switched off when the terminal voltage is lower than 10.5 V; battery service LED illuminates Reset possibilities in case of error situation
Safety	EN 60335-2-29
EMC	EN 50081-1; EN 60555-2; EN 55022, class B; EN 50082-11;
Cooling	Natural convection cooling

#### Remarks:

- \* To avoid overheating ensure the CERS is sufficiently ventilated.
- \* A defective leisure battery as well as an incorrect battery connection can trigger the internal fuse. In this case, the CERS should be taken to the retailer for repair.
- \* The maximum charging current is dependent upon the total power requested at the CERS outputs. Pmax=360W.

### 7.3 Specifications CERS 20M

Specifications CERS 20M	
Input voltage range	198-264Vac"
Input voltage frequency	47-63Hz
Input current	≤ 1.3A at 230Vac in and 240W out
Efficiency	≥ 83% at 230Vac in and 240W out
Output voltage charging circuit (leisure battery battery)	14.7Vdc at 25°C (Absorption) 13.7Vdc at 25oC (Float)
Charging current	20Adc maximum (3-step profile)
User groups output voltage	12.5Vdc ± 5%
User groups output current	20Adc maximum (distributed over 3 groups)
Total output power	240W max.
100 Hz output voltage ripple	≤ 100mVpp at 230Vac and max. output power
Earth leakage (discharge current)	≤ 0.5mA when main switch is off Mascot 2590
Controls	Main switch on Mascot 2590
Group protection	25A fuse on Mascot 2044
Network voltage protection	4A (slow, internal Mascot 2044)
Leisure battery charging direction protection	25A fuse on Mascot 2044
Safety	EN 60335-2-29
EMC	EN 50081-1; EN 50082-1; EN 55014
Cooling	Natural convection cooling

- Remarks:
- \* To avoid overheating ensure the CERS is sufficiently ventilated.
  - \* A defective leisure battery as well as an incorrect battery connection can trigger the internal fuse. In this case, the CERS should be taken to the retailer for repair.
  - \* The maximum charging current is dependent upon the total power requested at the CERS outputs. Pmax=240W.

### 3.3 Connecting

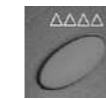
When the caravan has reached its destination, it can be connected to the local available facilities.

#### 3.3.1 ECS system (semi automatic horizontal steadies; KH/optional)

The ECS system uses a remote control to electronically extend, park and retract the corner leg steadies.

##### Starting the system

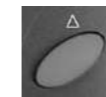
- Turn the key to the right
- "Power on" lights up
- A choice can then be made between the following options:



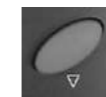
Automatically retract all steadies (one-by-one)



Automatically extend all steadies (one-by-one)



Individually retract steadies 1, 2, 3 and 4



Individually extend steadies 1, 2, 3 and 4

##### Function "EXTEND"

- Starting condition:  
The caravan is disconnected from the vehicle and is lengthwise horizontal or slightly down at the nose



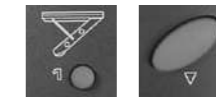
Press the button (briefly)

- System start:  
All 4 steadies are independently extended one by one. The steadies work independently with a maximum of 2 at once. The process lasts approximately 4 minutes.

When the steady touches the ground, the drive system for the particular steady is switched off automatically.

- Extending:

Press the buttons one by one. The steady continues the extend so long as the button is (continuously) held.



Using a spirit level, continue the process until the desired position is achieved.

##### Function "PARKING"

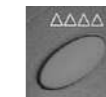
- Starting condition:  
The caravan is connected to the vehicle



Press the button (briefly)

- System start:  
All 4 steadies are independently extended one-by-one and stop when a pre-programmed upward force is reached.

##### Function "RETRACTING"



Press the button (briefly)

- System start:  
All 4 steadies are independently retracted one at a time until they reach the stopper. To reduce tension on the steady, the system re-extends the steady 10mm.

**N.B. If no further requests are made via the remote within one minute after starting 2 processes, the system will switch off automatically. The system can again be started via the normal procedure. For further information, refer to the included AL-KO manual.**



### 3.3.2 Electricity mains supply

#### General

The onboard network can be powered in various ways, dependent on the version:

- By the mains supply via the 230 V external plug on the caravan.
- By the motor car battery
- By the leisure battery (if present)
- Via a solar panel on the roof (if present).

See chapter 7 for the electrical installation diagrams.

#### N.B. Electrical system

- Each month, check the operation of the earth leakage circuit breaker by pressing the test button
- Before connecting the caravan to the 230V net, check the following:
  - The 13-pin plug must be disconnected
  - The voltage, frequency and maximum current
  - The earth leakage circuit breaker must be switched off
- Unroll the outside cable completely and then insert the connector first into the caravan junction box and then into the 230V connection point at the caravan site
- The maximum approved length of the outside cable is 25 meters with a 3x2.5 mm<sup>2</sup> cross-section. Use neoprene cable H07RN-F (VDE or HAR approved).
- Use only the specified fuses. Incorrect fuses can lead to equipment damage.
- The addition of consumers to the 12V system has consequences for the CERS current consumption. The maximum consumption is dependant on the specific CERS. For CERS 20M, a maximum consumption of 20 Amp, divided proportionally into 3 groups, is permissible. For the CERS 30D, a maximum of 3x 10 Amp is permissible.

#### 230 V connection:

A plug is mounted on the exterior of the caravan. The onboard network can be connected to the 230 V mains supply via this plug. Insert the plug first into the connection point on the caravan and then to the connection box at the caravan site. Unroll the cable completely.

#### Earth leakage device

An earth leakage device is located in the caravan. This is a combination of an earth leakage switch and a system device. The earth leakage device is located in the bench against the side wall near the exterior connection box.

The earth leakage switch measures the amount of current passing through it to the equipment connected to it, and also measure the amount of current that is returning. If voltage is accumulated in an appliance due to a disturbance, a small amount of leakage current can pass to the earth via the defective appliance. The earth leakage switch must be checked regularly. To check the device press the test button T; the earth leakage switch must switch off immediately. If this does not occur, contact your retailer or an authorised electronics technician. After testing the earth leakage switch, do not forget to turn it back on. Re-set the handle which was just "tripped", back to its original position.

The system device ensures that defective wiring or appliances in the caravan can not damage the electrical system. When too much current passes through the wiring, the system device shuts the power off.

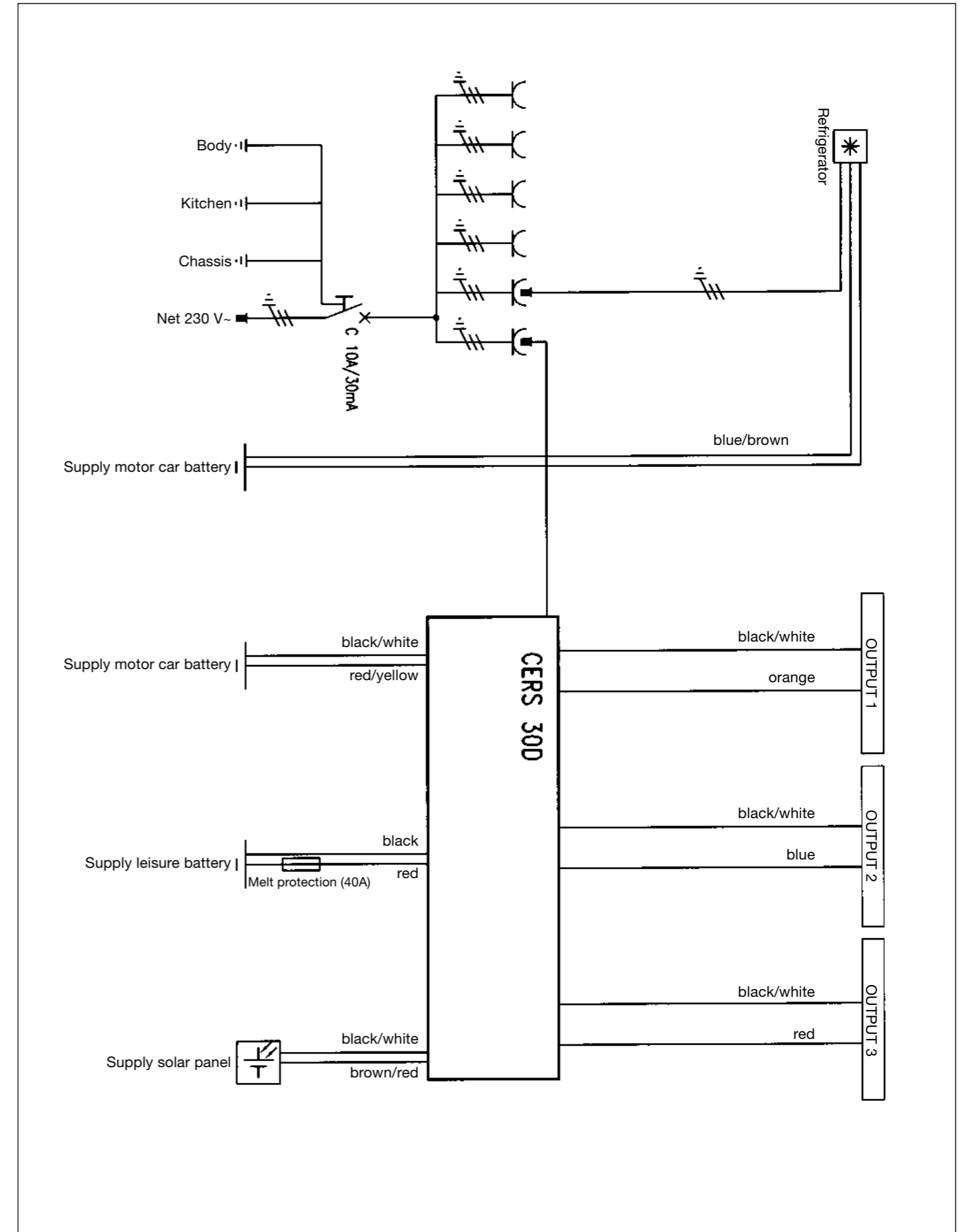
When the current is too high, the wiring could melt or even start a fire. Also when too many appliances are used at one, which causes the current requirement to be too high, the system device will shut the power off. A high current can also result from a short circuit. Within a fraction of a second, the current is switched off by the system device. Before you switch the system device back on, the defect must first be identified and repaired. If the defect can not be found, contact your retailer or an authorised electronics technician.

#### The motor car battery

The caravan's 12 V onboard network is connected to the motor car battery via the 13-pin plug near the towing hitch. The refrigerator in the caravan can only be powered by the motor car battery when driving with the motor car/caravan combination; otherwise your battery will quickly be drained!

**N.B. When not present as standard, a motor car battery protection feature may be installed which automatically switches the refrigerator off before the motor car battery is drained while the engine is turned off (Battery Guard).**

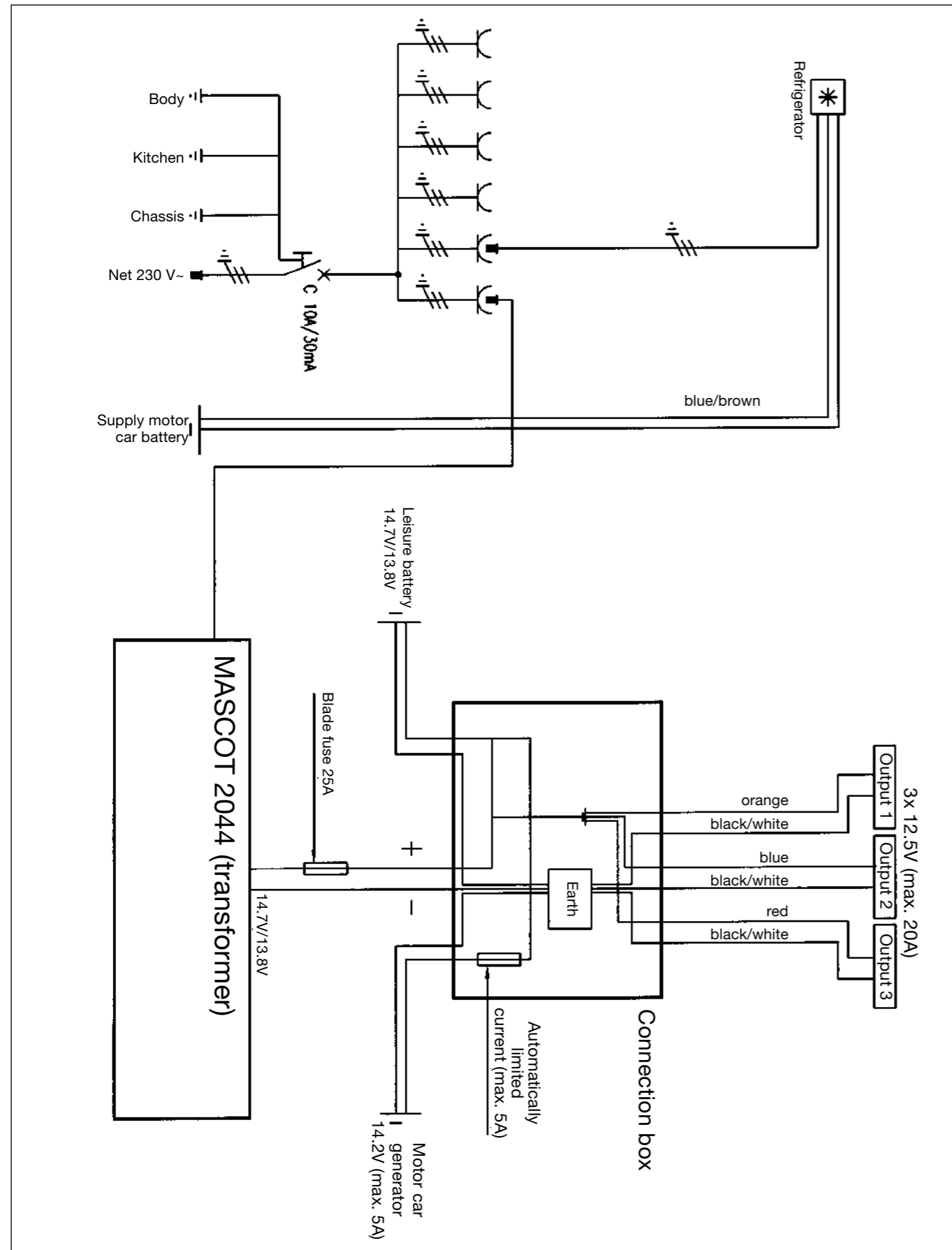
### 7.2 12 V/230 V installation (CERS 30D)





## 7. ELECTRICAL SYSTEMS

### 7.1 12 V/230 V installation (CERS 20M)



### The leisure battery

#### Charging

The caravan is equipped with a Central Energy Regulating System (CERS). This system makes it possible to use a leisure battery in the caravan. The leisure battery is charged by the mains supply (230V), the motor car or a solar panel, depending on the CERS connections.

#### Battery type

Not every battery is suitable for use in the caravan. Batteries are designed for a specific purpose. Motor car batteries are made to deliver a large current during a short period to start the engine.

Deep-cycle batteries and solar batteries can be used as leisure batteries if gradual discharge is possible. If higher discharge over a relatively short time period is required (i.e. to allow use of a blower or the ECS-system) then a semi-traction battery with sufficient capacity to supply the required voltage must be used.

#### N.B. Use leisure batteries in combination with a blower

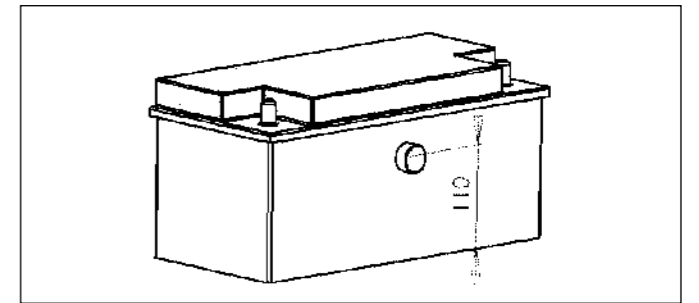
- Install a semi-traction battery that is based on the total weight of the caravan. The minimum capacity for a caravan up to 1360 kg is 75Ah discharge for 5 hours and 85Ah discharge for 5 hours for caravans with a total weight greater than 1360 kg.
- The use of a blower can reduce the lifespan of the battery
- Connecting the blower incorrectly can have serious consequences for the CERS
- Poor connections between the blower wiring and the battery terminals can cause sparking and have serious consequences.

#### Installation instructions

- The leisure battery should be placed in a well ventilated area. Place the battery in the intended location in the caravan and secure it.
- Switch off all 12V current users before connecting the leisure battery. All users can be switched off using the 230V-switch from the CERS.
- When connecting the battery, pay attention to the correct connection of the positive and negative terminal poles:
  - o Red battery clamp (large) on the positive battery terminal
  - o Green battery clamp (small) on the negative battery terminal.

Assemble to battery clamps as shown in figure 05. Ensure that the fuse holder is just outside the battery box.

- The CERS 30D is equipped with a safety device for the leisure battery. A component of this is the monitoring of the leisure battery temperature. A temperature sensor is to be fitted for this purpose. Mount the leisure battery temperature sensor in the middle of the long side about 110 mm from the bottom of the battery. The sensor is foreseen with double-sided tape. After removing the protective layer from the tape, the sensor can be affixed to the leisure battery.



- Always use the gas ventilation cap with a ventilation tube. The tube must pass through the floor of the caravan and exhaust to open air. The ventilation cap is to be installed in the battery cover.

#### N.B.

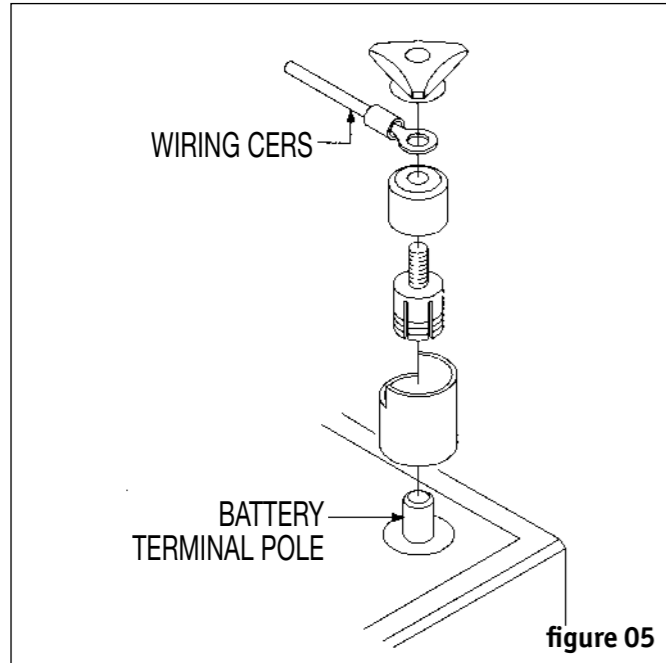
- \* Before installing the leisure battery, read the manual from the battery manufacturer!
- \* When the battery is being used as the only power source, limit the consumption to avoid the battery being fully drained. When the voltage is <10.5V, the CERS 30D will switch off the power source to protect the battery.

#### Maintenance

To optimise the lifespan of the leisure battery, during the caravan usage period, the battery should be checked once per month:

- Check the battery voltage  
Batteries with a voltage below 11V may not be used. If this is the case, the battery must be first charged prior to use. It is possible that a battery with a voltage below 11V is already defective and will no longer take a charge.  
Batteries with a resting voltage (measured at least 3 hours after the battery was either charged or discharged) lower than 12.4V must be charged.

- Check the fluid level monthly. If required, top up with distilled water to the max. mark. Do not top up with acid or tap water!



- Check the battery terminals:  
The battery terminals must be checked for tightness and filth. Copper rust on the battery terminal is a sign of poorly connected terminals. Clean the terminal posts, lubricate with acid-free grease and connect. Do not use any oil-bearing products to protect the battery terminals.
- Check the battery ventilation  
During the monthly checks, the battery ventilation should also be inspected. Attention must be given to the ventilation tube pass through in the floor, the tube connection to the cover and the presence of the cap in the battery cover.

*When the caravan is not in use*

A few instructions to minimise self-discharge when the caravan, and thus also the battery, are not used for longer periods (i.e. during the winter):

- Disconnect the positive terminal from the battery.
- Keep the leisure battery preferably in a cool, frost-free location. A cool storage place reduces the discharge. Before storing the battery, charge it to its maximum.
- Also during this period, check the battery monthly. When the voltage drops below 12.4V, the battery must be re-charged to its maximum. Preferably this will be accomplished using a regulated charger.

*Battery condition*

The CERS 30D is equipped with a protected leisure battery charger. In case of a poorly functioning battery, the CERS 30D will switch off the charging current. The CERS 30D checks the charging voltage, the charging current within a specific time period and the temperature of the battery.

**The solar panel**

If your caravan is not equipped with a solar panel, this can still be installed (max. 2 x 55 W). Your Kip-retailer can install a panel on your caravan on the condition that the caravan is equipped with a CERS 30D.

A solar panel gives you more mobility: you are not dependent on a site with a net-connection.

As long as sufficient light (thus not, per se, sun) falls on the panel, this will feed the onboard net and load the leisure battery (if present). In this manner on a summer's day in The Netherlands, one can capture and store about 200 Wh and about 50 to 60 Wh on an cloudy day. (Dependent on the number of solar panels).

For comparison, various often used electrical devices are shown in the table below.

Device (12 V)	Power	Average daily use	Daily consumption during the stated period
Xenon lamp	5 W	3 hours	15 Wh
Water pump	25 W	0.1 hours	2.5 Wh
Small b/w TV	25 W	3 hours	75 Wh
Small C TV	50 W	3 hours	150 Wh
Radio	3 W	6 hours	18 Wh
Refrigerator	100 W	24 hours	2400 Wh

From the above it can be seen that the refrigerator and the colour TV are not appropriate for connection to the solar panel and/ or the leisure battery.

**6. WINTER TIPS**

**Extra material to take with**

- Snow chains for the motor car.
- Shovel, broom, snow plough.
- 20 metre rubber electricity cable.
- Blocks to place under the steadies.
- Wheel (wedge)blocks.
- 2 full 6kg gas bottles for underway in case of delay due to weather conditions.
- Extension for the space heater roof exhaust.
- Heating element for the gas pressure regulator (in case a large gas bottle must be placed outside of the caravan). Ensure a connection for this. At the same time, ensure the gas hose exits the caravan via a separate opening (not via the front locker flaps)
- A hard mat or wooden planking to lay in the winter tent (it can quickly become slippery in the tent).
- Long wire nails to secure the winter tent (available in every accessories shop).
- A reserve space heater (low electricity consumption) in case of issues with the space heater.

When arriving at the caravan site, there normally exists the possibility to place the caravan in its location using of the ever-present tractor.

- Situate the caravan such that the side with the sitting area will have the best view and will receive the most sun. You will spend more time in the caravan than during the summers.
- Level the caravan. Look for the hard, supportive foundation. It is best to brush or shovel away loose snow and the place blocks under the steadies. This offers the least risk during thaw. For security, install wheel (wedge)blocks.
- Release the hand brake in case of freezing.
- If possible, do not lay the electricity cable in the snow (the cable is normally warmer than the environment, sinks into the snow and then freezes in place). If nothing else is possible, pull the cable loose every day.

- **Ensure the caravan is well-ventilated.**  
**When there is insufficient ventilation in the caravan during winter, condensation quickly forms as a result of damp clothing, etc. Keep all potential ventilation locations open.**  
**At night, do not set the heater thermostat too low. Damp air condensates more quickly in a cold space.**
- Check or ask the how many amperes may be used via the caravan site electricity network. This is in connection with the necessary electrical appliances.  
Watt = Volt x Ampere
- On average, in winter one uses 3 kg gas per day. Keep this in mind when purchasing gas bottles, which are available at every winter caravan site.

**N.B. Refer also to the A.N.W.B. manual.**

**Cleaning after winter transport**

Methods used to combat wintry road conditions, such as salt and chemical fluids, are aggressive to the surfaces of the caravan components. The zinc-coated chassis and the body must be cleaned immediately after winter transport. Claims in regard to corrosion resulting from the reasons mentioned above can not be honoured.

**N.B. When the caravan is not connected to the motor car, do the following:**

1. Set the caravan handbrake.
2. Extend the steadies on the side which does not require the wheel to be exchanged and/or raised.
3. Place the wheel (wedge) blocks in front and behind the wheel that is not being exchanged and/or raised.
4. Exchange the wheel.

**N.B. If required, tyres on light metal rims should be re-installed by a qualified company. Torque moment 140Nm.**

**Allow transport by a towage service i.l.o. having a collision or accident**

If it appears that the caravan is so damaged that it no longer can be pulled by a motor car in a responsible manner, then the caravan must be transported by an authorised salvage company. In most cases, the salvage company in these situations will be notified by the police. To place the caravan on the salvage transport and avoid further damage to the caravan, the following procedure should be followed:

- connect to the winch
- use a loose towing bar (tow ball is foreseen with a stub mounted with a towing eye)
- use a towing belt around the axle
- pull the caravan onto the salvage vehicle using a winch; check the angle of inclination while pulling the caravan up with the winch; prevent the rear of the caravan from touching the ground

The solar panel is very user-friendly: maintenance can be kept to minimum. Occasional cleaning with water and a bit of mild wax-free detergent will suffice.

**Solar panel specifications**

- Power : 55 W ( $P_{nom}$ )
- Voltage : 17,8 V (at max. power point)
- Current : 3.1 A (at max. power point)
- Material : Chemically hardened glass
- Cells : Mono-crystalline/ 36 pieces
- Panel dimensions : 455 x 995 mm

If present, the CERS 30D in the onboard network makes adjustments to the voltage.

In such a situation, besides the 230 V supply, 12 V is also available.

**12V supply**

The 12V supply is provided by a Central Energy Regulating System. There are 2 models: CERS 20M and CERS 30D. In the table below you will find which model is installed in your caravan.

Caravan type		CERS model
KK	Kompakt	CERS 20M
KV	Vision	CERS 20M
KS	Skyline	CERS 20M
KG	Greyline	CERS 30D
KH	Hyline	CERS 30D

Both models are lightweight thanks to the most modern techniques.

**CERS 20M**

The CERS 20M consists of a 230V/12V transformer and a connection box. The connection box has the following connections:

- 3 outputs
 

The maximum total demand from the 3 outputs is 20 Amp. The blade fuse (25A) to prevent overloading is located on the transformer. Within the connection box itself, there are 2 fuses to prevent excessive demand from a single output. The current consumption for the equipment is also evenly distributed over the 3 outputs (3x6.67 Amp).
- Power supply connection
 

The supply via the motor car may be used to power the 12V appliances in the caravan. The caravan must then be coupled to the motor car. Pay attention

that the consumption does not become excessive when the motor car engine is switched off. This can cause problems when starting.

If present, the leisure battery will also be charged when the motor car engine is switched on.

- Leisure battery connection
 

The leisure battery can be charged via the transformer or the automatic charger. If no 230V supply is present, the 12V-circuit can be powered with the help of the leisure battery. A leisure battery is not part of the standard delivery package.
- Transformer connection
 

The power supply from the 230V network goes through the transformer.

**N.B. Though the disturbance level of the CERS-installation is below the legal guidelines and meets the European requirements, the reception of short wave senders may not always be disturbance free or even not possible. It is dependent on the strength of the signal and the frequency at which it is sent. If you wish to receive short wave signals in the caravan and if a battery is present, it is advised to temporarily turn off the CERS 230 Volt switch.**

**CERS 30D**

Control panel

- **230V POWER ON/OFF**

To switch the network voltage on or off; when switched on the green LED will illuminate. If 230V is not present, the LED will blink.
- **12V POWER ON/OFF**

To switch groups 1,2 and 3 on or off; when switched on the green LED will illuminate.
- **DISPLAY / LEDS**

This switch offers the possibility to switch the display lighting and the LEDs on or off, the switch functions remain active.





### • BATTERY SERVICE

If there is a problem with the battery (battery temperature > 50 °C or battery voltage less than 10.5V) this will illuminate in red. This status can be cancelled by resetting after the issue is resolved.

- At the same time, the display shows the following;
  - **VOLTS**  
Battery voltage
  - **AMP**
    - The leisure battery charging current (positive) if the 230V Power is switched on
    - The leisure battery discharge current (-)
  - **°C INSIDE**  
Interior temperature in degrees Celsius
  - **°C OUTSIDE**  
Exterior temperature in degrees Celsius

### Overload protection

If overloading occurs, the LED for the group concerned will blink (10 seconds) and the CERS will immediately switch the group off. The LED shuts off. If the overload situation is resolved within these 10 seconds, the group will remain switched on and the LED will remain illuminated.

**N.B. When connecting to the 230V net, the installation automatically switches over from "leisure battery use" to "net use".  
At the same time, the leisure battery is charged.**

### Battery protection

If the battery working and the voltage is less than 10.5V or if the battery temperature is above 50°C, the CERS switches the 12V consumer groups 1,2 and 3 off. In this situation, the BATTERY SERVICE LED will illuminate (red). If the issue was a too high leisure battery temperature, the 12V system will again function when the leisure battery temperature has sufficiently decreased. Prior to this, the reset procedure described hereafter must be completed.

If the display and LEDs are switched off and a battery service situation occurs, this will not be visible.

After switching on the **Display/LEDS**, the battery service led will illuminate.

### Reset

After resolving the issue, the system can be reset by simultaneously holding the switches **12V Power 1, 2, 3** and **Display/LEDS** in. Press the Display/LEDS button last. Also release the Display/LEDS button first.

**N.B. Replacing halogen lamps/xenon lamps in the "Tube-light":**

1. Carefully lift the stainless steel end cap opposite the switch with a narrow flat object (small flat screwdriver)
2. Hold the glass plate and remove the SS endplate
3. Remove the glass plate
4. Discard the defective lamp
5. Install the Xenon lamp; Xenon lamps are less fragile, may not be handled with bare hands and last noticeably longer
6. Replace the glass plate
7. Replace the SS endplate

### 12 Volt lighting

The lights under the wall cupboards in the Grey Line, Hy Line and Sky line caravan models are divided into groups. Each group is turned on or off with a central switch. The groups are subdivided as follows:

- Front wall cupboards
- Rear wall cupboards
- Kitchen wall cupboards

The lamps can not be operated separately.

### Current limiter 230 V

KH models are standard equipped with a current limiter/peak voltage protection. The current limiter monitors the consumption level that you have set and, when the usage is greater than the established value, the current limiter automatically switches off.

This prevents failure of the caravan site fuse, see expanded manual/specifications.

A current limiter can be installed in all KIP-models. Speak to your KIP-retailer for more details.

### Controls

With the "Up" button, the current is set in an upward direction.

With the "Down" button, the current is set in a downward direction.

The button "Reset/Light", has two functions:

1. Switch the lighting/controls on/off
2. When overloaded, after resolving this situation, to reset the device.

The display shows the calibrated current in Amperes. The current limiter always begins with the last set value.

## 5. ADDRESSING CARAVAN ISSUES

### Tyre problems

A punctured tyre on the caravan is usually noticed late and after quite some damage has occurred. Repair is then often no longer possible.

As soon as you notice the tyre on the caravan is punctured, do the following:

- Drive, if possible, to the emergency lane or the hard shoulder.
- **Leave the caravan connected to the motor car.**
- **Set the handbrake in both the motor car and the caravan.**
- Place a red warning-triangle at the side of the motorway at least one hundred metres behind the caravan.
- If present, remove the wheel cover.
- Loosen the wheel bolts on the wheel to be exchanged such that these can be further loosened by hand when the caravan is jacked up.
- **Place the wheel (wedge) blocks in front of and behind the wheel that is not being exchanged.**
- Place the jack in the jack support near the wheel to be exchanged (fig. 13). If the caravan is not equipped with a jack support, the jack must be placed under the chassis beam near the wheel to be exchanged.
- Place the jack directly under the caravan.
- **N.B.** raise the caravan with the jack.
- Pull the reserve wheel holder (fig. 14) toward you and down (dependent on the version).
- Remove the reserve wheel from the holder.
- Further loosen the wheel bolts on the "punctured" wheel by hand and remove it from the axle.
- Install the reserve wheel and tighten the wheel bolts by hand in a crosswise pattern (do not forget the wheel cover).
- Lay the "punctured" tyre in the reserve wheel holder and slide this back in place.
- Lower the jack.
- Remove the jack.
- Secure the wheel bolts using a torque wrench (90Nm).  
For aluminium rims, the torque is 140Nm.
- Store all tools and wheel (wedge) blocks well.
- Retrieve your warning-triangle and store this as well.
- Have the "punctured" wheel repaired or replaced by a garage as soon as possible. When nitrogen filling is not available, fill with pressurised air and let the tyre be re-filled at the next service.
- Release the handbrake before driving away.

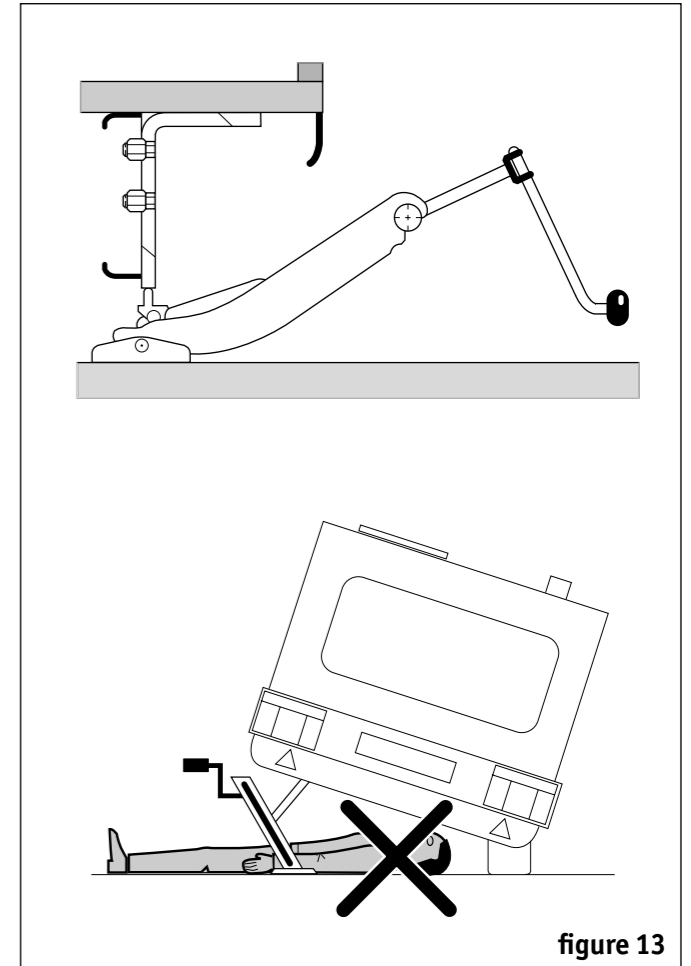


figure 13

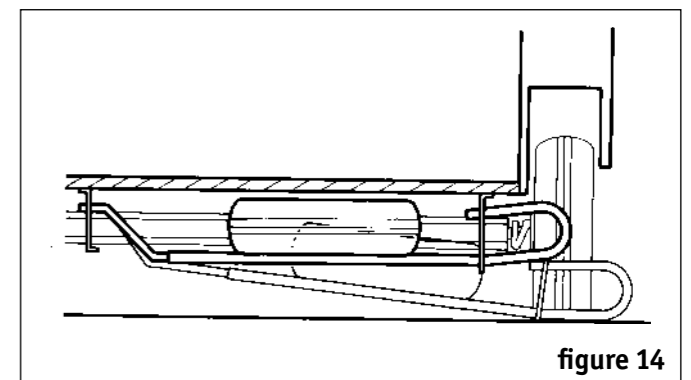


figure 14

**N.B. Carry a proper size wheel wrench for the wheel nuts (normally 17 mm or 19 mm). Installation torque for steel rims is 90 Nm.  
Installation torque for aluminium rims is 140 Nm.**

Cause	Treatment	
	Fresh stain	Old stain
ice cream	A	A
liquorice/sour candies/chocolate	A	A
alcoholic drinks	A	C
soft drinks	A	A
warm drinks	A	A
perspiration/blood	A	A
vomit A	A	
urine	B	B
gravy	D	A
soup/catsup	A	A
meat sauce/butter	D	D
oil/cheese (fondue)	D	D
salad dressing/mayonnaise	H	H
nail polish	C	F
lipstick/perfume	C	F
make up	A	A
mascara	D	D
ink: fountain pen	A	A
ball pen/felt marker	C	C
paint: oil paint	D	D
latex (wall)paint	A	D
glue: textile-velpon/bison-col	D	G
contact cement/bison kit	F	F
photo glue	I	I
polystyrene	E	E
P.V.C. glue	G	G
wood glue (white)	F	F
arabic gum	A	A
beeswax	D	D
furniture wax/furniture oil	D	D
shoe polish	F	F
lubricant/ oil	D	D
candle wax		
(iron, "wool" setting with tissue,) then:		D
A warm water with washing-up liquid (1 tablespoon to 1 litre)		
B warm water with salt (50 gram to 1 litre)		
C alcohol (70%)		
D white spirit (not turpentine)		
E cleaning spirit (fire hazard)		
F acetone (or remover)*		
G trichloroethylene*		
H white kitchen vinegar		
I toluene*		

**Apply with a cotton bud**

\* acetone, trichloroethylene and toluene can damage the foam under the upholstery, as well as upholstery made from synthetic fibres; also, not all dyes in albumin or cellulose materials are resistant to these cleaning products; thus always first try in an inconspicuous location!

### Furniture Material Microfibre

#### Lipstick

Dab cotton wool in ethyl alcohol and remove the stain; if required, wipe with hydrogen peroxide.

#### Ink

Using cotton wool dipped in ethyl alcohol, rub the stain out; if required, wipe with hydrogen peroxide.

#### Coffee

Use a neutral detergent; rinse the detergent out of the fabric well.

#### Grass

Using cotton wool dipped in ethyl alcohol, rub the stain out; if required, wipe with hydrogen peroxide.

#### Oil

Dissolve with ethyl alcohol, dab dry and if necessary rinse with a neutral detergent; rinse the detergent out of the fabric well

#### Chocolate

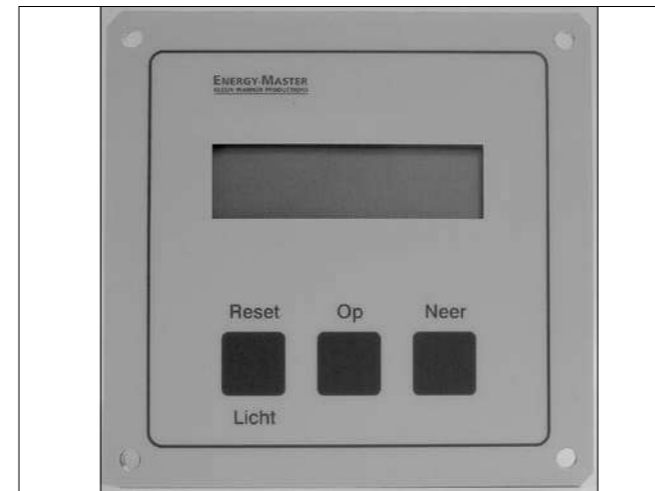
Remove the stain with a neutral soap; if required, wipe off with hydrogen peroxide

#### Chewing gum

Remove as much chewing gum as possible by hand; then, using cotton wool dipped in hydrogen peroxide, remove the rest.

#### Spirits

Remove the stain with a neutral detergent; if required, wipe off with hydrogen peroxide



### Battery Guard

An automatic switching unit can be installed as an accessory in the caravan.

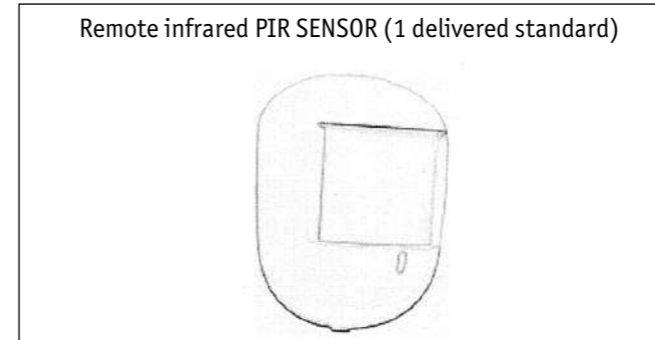
The Battery Guard protects the motor car battery by switching the refrigerator off when stopping. When you begin driving again, the refrigerator is automatically switched on again.

### Alarm installation

#### Sensors

Passive remote infrared sensor

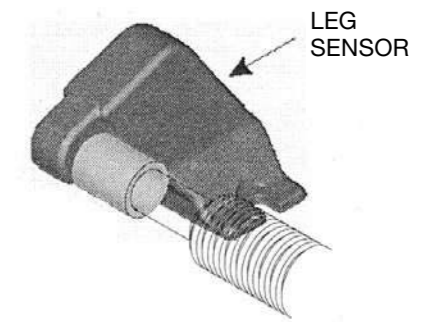
The remote infrared sensor detects movement in your vehicle and, when detected, sends a radio signal to the alarm system whereby the system is activated and a siren sounds.



#### Sensors for the steadies

This sensor detects when someone uses the steadies to relocate your caravan. When someone uses the steady where the sensor is located, it will send a radio signal to the alarm. The siren will sound. The sensor is completely enclosed so debris and water have no adverse affect.

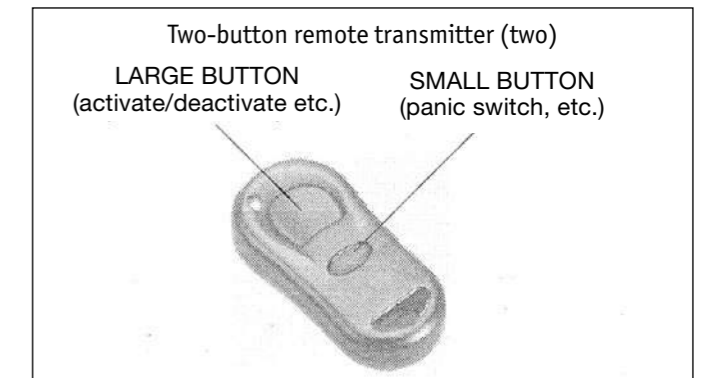
Remote steadies sensor (1 delivered standard)



### Standard operation

#### Activating the system (turning on)

Briefly press the large button on the remote control. A tone is heard. You have 15 seconds to leave the vehicle before the system becomes active. The red blinking LED on the code key housing will illuminate every 2 seconds to indicate that the system is activated.



#### Deactivating the system (turning off)

Briefly press the large button on the remote control. A double tone is heard. The red blinking LED will go out.

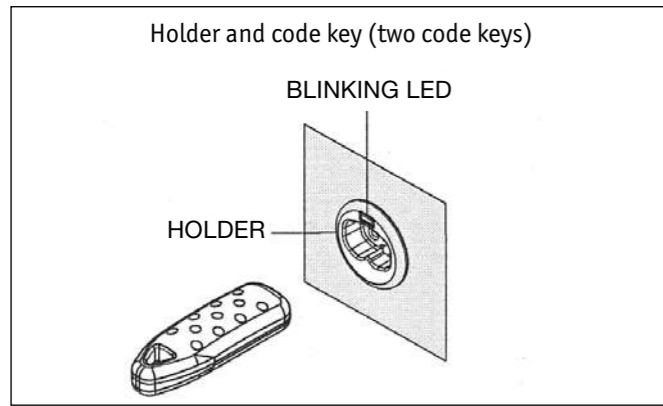
#### Panic situation

Press and hold the small button on the remote control for a few seconds. The siren will sound for 30 seconds to bring attention to your situation.

#### Cancelling a panic situation

The siren is switched off if one of the buttons on the remote control is pressed. The alarm can also be shut off by placing the code key in the holder.





Putting the system into “at home” mode  
If the alarm system is in this mode, the infrared pir sensors will not detect movement in the vehicle but other sensors such as those monitoring the steadies will remain active and will thus react should someone attempt to take the caravan.  
Activate the system by pressing the large button on the remote control. When, within 2 seconds, the large button on the remote control is again pressed, you will hear two tones. The 1st tone is the standard tone and the 2nd tone indicates that the “at home” mode is active. The LED will blink twice. You can now move freely about your caravan. The other sensors are still active.

The alarm system battery voltage is low  
The LED on the holder will indicate when the alarm system battery is nearly or entirely empty.

- The LED blinks twice (continuously) when the voltage of the emergency battery is low.
- The LED blinks once (continuously) when the voltage of your caravan’s main battery is low.

**N.B. For more information, refer to the included alarm installation manual**

### 3.3.3 Water supply

#### General

The water supply to the kitchen and toilet areas exits from a storage tank that is located in the caravan storage room.

There is an electric submersible pump in the tank powered by the 12V onboard network and which starts working immediately when a tap is opened.

#### Usage tips

- Ensure that the water taps are fully closed when no water is being requested.
- Never let the pump run in an empty storage tank.
- Always keep the tank and the waterlines in the caravan clean.
- Ensure the water taps are fully closed when storing the caravan for winter and while driving (note: the water taps can turn on due to pressure build-up from the solar panel, if present).

#### Cleaning the water system

Caravans produced by KIP Caravans B.V. are equipped with a plumbing system certified according to ISSO 55.1. This states that the plumbing system is suitable to use for drinking water. However the following conditions apply:

1. Clean the plumbing system when the caravan is removed from winter storage for use.
2. Clean the water system if the caravan has not been used for 6 weeks.

The system is to be cleaned with Herlisil. Herlisil ensures the material in the lines (the so-called bio-film) is dissolved. This product is certified by the KIWA. One set of Herlisil is delivered with new caravans.

#### Herlisil usage instructions:

1. Remove the water from the system via the drainage cocks. The taps must be open. Mixing taps must be opened to the middle position. The 12V group controlling the taps must be switched off. After draining, close all taps again.
2. Fill the water tank until approximately 1 litre of fluid can still be added.
3. Put on protective gloves!
4. Carefully open the large bottle, install the spout and pour the contents into the water tank.

### 4.4 Upholstery maintenance instructions

The fabric upholstery is sensitive to sunlight (fading), sharp objects, rowdy children and pets (thread damage). If a loop is pulled loose, never pull this out but instead push it back into the fabric. On piled fabric, that is to say fabrics where the threads stick out, never attempt to scratch filth out since this will also pull the pile out.

#### General

- Regular maintenance:  
Hoover with a smooth plastic attachment in slow movements. On piled fabrics, do not go against the pile; if necessary brush with a furniture brush, then wipe the arms and upper portion of the back support with a chamois first dipped in water then well wrung-out (also remove any fluff).
- If required, clean with a well-known dry foam, self-made foam\* or, if the upholstery is quite filthy, soda water\*\*. Always clean with as little water as possible!!!

#### Draperies

- Do not wash with water or rinse - do not bleach.
- Do not place in the tumble dryer.
- Iron on stand 1 (lowest temperature).
- Dry-clean (no added water or detergent).

#### Cushions and the bedspread

- Dry-clean (no added water or detergent).

#### Lace curtains

- Use plenty of water (i.e. the bath or another large washing-up container) no warmer than 30 °C. For every 8 buckets of water, add a measure of washing powder (do not use liquid soap). Fold the curtains carefully, lay them folded in the soapy water and tap upon them lightly. Let them then soak for approx. 15 minutes in the soapy water.  
Rinse the curtains 2-3 times with clean water to remove all the soap and foam residue. When rinsing for the last time, when there is no more soap or foam residue in the curtains, add a bit of fabric conditioner. Hang the clean curtains on the wash line. Let the curtains drip out well then hang them, while still slightly damp, in the window.

#### \* Self-made foam

Mix one level tablespoon soda with 1 part washing-up liquid and 18 parts water. Squeeze a hard plasticsponge (polyurethane) repeatedly until a strong foam forms.  
Lightly rub the foam evenly into the upholstery; on piled fabric, in the direction of the fibres.  
Allow the foam to work for one minute then rub the area clean with a white cotton cloth.

#### \*\* Soda water

Dissolve 5 tablespoons of soda in 1 litre of warm water.  
Dip a cloth in the mixture, wring out well and wipe the upholstery. Rinse the cloth regularly. Finish by wiping with warm water that has a dash of white cooking vinegar added.

### 4.5 Triplex furniture cleaning advice

Clean the triplex furniture with water and a non-solvent and non-abrasive detergent only.

### 4.6 Treating stains in the furniture upholstery

Using a spoon, remove the spilled substance as quickly as possible; work from the edges of the stain toward the centre. Take care that the substance is not pressed into the material. Dry damp areas. Repeat the treatment 3-5 times.  
If required, finish with warm soda water (5 tablespoons to one litre), dab dry, moisten with white cooking vinegar, dab dry again, moisten with warm water, again dab dry and finish with a hair-dryer.

**N.B. Tables positioned for the night lay on the seat rails. When making the bed, avoid point loading. Table panels are hollow (honeycomb structure) and vulnerable to point loading.**

**N.B. The caravan cushion upholstery is always a bit sensitive to fading from sunlight. Thus avoid placing the cushions in direct sunlight as much as possible and when leaving the caravan in sunny weather, close the combination shades.**

*Use*

The product is easier to apply than all others. After cleaning and degreasing the base, rinse off the soap residue. Apply ShineProtector with tap water 1 to 10. If the caravan or camper is wet, apply with a sponge or sprayer. Rinse well with water and dry if necessary. The surface is now protected for approx. 4 months.

3. Cleaning/polishing

It is advised not to treat the painted surface with cleaner and/or polishing paste. The tops of the embossed plating can be polished off, allowing corrosion to occur.

**Polyester**

Polyester components must be polished using wax with a UV-filter. It is advised to repeat the application twice per year. This maintains the shine and prevent decolourisation.

**Removing residue from tar/resin, etc.**

Tar, resin and other organic material residues can be removed with cleaning spirits. More aggressive solvents, such as products containing ester or ketone, are strongly discouraged.

**Removing insect residue**

Clean in the same manner as indicated under "cleaning", after first allowing the insect residue to soak and then removing with a sponge inserted into a nylon stocking. Cleaning with a so-called microfibre cloth also gives good results.

**Damages**

Damages must be immediately repaired using the specified repair system to avoid corrosion.

**Important points**

Also areas not in immediate sight, such as the roof plate, etc., must be cleaned.

**Note**

Your caravan's double window is made of acrylic, a plastic that is somewhat softer than glass. Never clean the windows with a dry cloth or a hard brush as this can lead to scratches. If scratches do occur, use an auto cleaner to remove these as much as possible. Never wash the windows with spirit, use a wax-free shampoo.

**After a winter vacation:**

Immediately spray the caravan chassis and body **off** to remove the salt.

**N.B. Clean light metal rims regularly with soap.**

**N.B. The underside of the caravan is treated with a durable coating and requires no further treatment.**

**4.2 Required annual maintenance**

**Allow a MINIMUM OF ONCE PER YEAR, service to be carried out according to the specified BOVAG guidelines.**

**4.3 Winter storage location requirements**

Storing for winter in a location without a roof is hard on your caravan. Over time this can result in leakage and deterioration of the construction.

Placing the caravan under a roof for winter storage always has benefits. The fact that the wind blows through is actually an advantage instead of a disadvantage since it keeps your caravan dry.

Always provide for GOOD VENTILATION during storage.

**N.B. Important points regarding winter storage:**

- 1. Charge the battery a few times while in storage. If necessary, keep in a frost-free location outside of the caravan to regularly check the fluid level and top up as required.**
- 2. Drain the water system including the water heater.**
- 3. Empty the cassette toilet.**
- 4. Wax the caravan.**

**N.B. To be valid for the 6 year warranty, the caravan must be inspected for water leakage annually (see warranty terms).**

**N.B. A poorly functioning roll blind can be caused by a tight raising mechanism. This can be resolved using silicone spray. Your retailer can resolve this for you during a service appointment.**

5. Open the small bottle of blue liquid and also pour this into the water tank.
6. Open the taps and close these until blue coloured water is seen. Then close the taps immediately.
7. Let the solution soak for 30 minutes.
8. Remove the blue solution from the water system. Open the taps (place mixing taps in the middle position) inc. the drain cocks until the the entire solution disappears from the water tank. Switch the taps' 12V group out which will also cause the piping system to empty. The fluid can be carried away by the sewage system. After draining, close the taps and the drain cocks.
9. Fill the water tank, repeatedly if necessary, with clean drinking water and open the taps. Rinse the water lines until there is no blue colour perceivable.
10. The drinking water system is now cleaned.

**N.B. For more detailed information, refer to the included Herlisil users documentation**

**N.B. Do not use any products containing chlorine to clean the drinking water system since chlorine can damage the water lines.**

**Warning:**  
**During the winter ensure that the entire drinking water circuit is empty if the caravan is not to be heated. Drain the circuit and the water heater (if present). When draining, switch off the 12 Volt system by switching off the CERS. Open the taps. Set mixing taps to the middle position. In most cases, the drain cock and the aeration tap are mounted under the service hatch in the kitchen furniture; in some cases this is not possible due to the construction and instead the taps are placed near the water heater.**

**Water heaters (optional)**

**Water Heater BS 10 - Truma gas**

*Warm-up time*

The time required to warm water entering the system at approximately 15 °C to a warm water temperature of 70 °C: for 10 litres approximately 30 minutes.

*Filling the water heater*

When using for the first time after draining.

**Fig. 07C:**

- 1 Check if the safety valve (14) in the cold water supply (19) is closed (lever is horizontal, see fig. 7A: lever position f).
- 2 Switch on the power to the water pump (main switch or pump switch).
- 3 Open the warm water tap in the bath and/or kitchen, when using a mixing tap or taps with 1 operating knob, set these to "warm". Leave the taps open until the water heater is filled water by the air pressure and water comes out of the hot water tap. By frost, filling can be difficult due to water still in the system. By briefly warming the water heater (maximum 2 minutes), it can be thawed. Frozen water lines can be thawed by warming the cabin interior.

*Usage*

- 1 Remove the flue cover (fig. 07B:9).
- 2 Open the gas bottle and the shut-off valve on the gas line.
- 3 Using the switch, set the water heater to the desired water temperature.
- 4 If the gas line is filled with air, it can take ± 1 minute before the gas reaches the burner. If, during this time, the water heater operation switches to "fault" then the start procedure can be repeated by switching the system off - wait at least 5 minutes! - and again switching the system on.

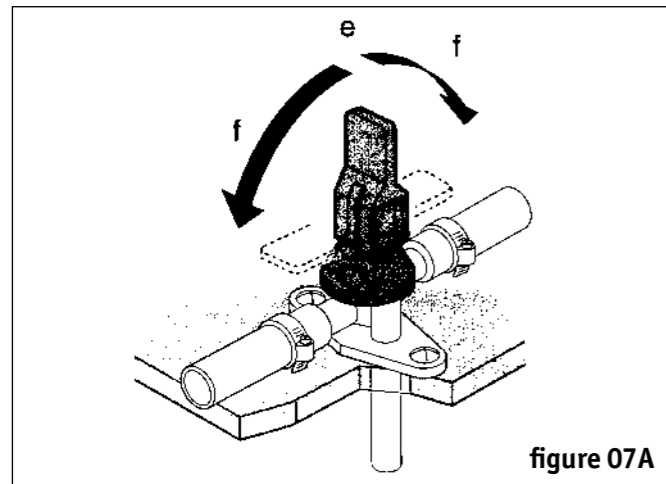
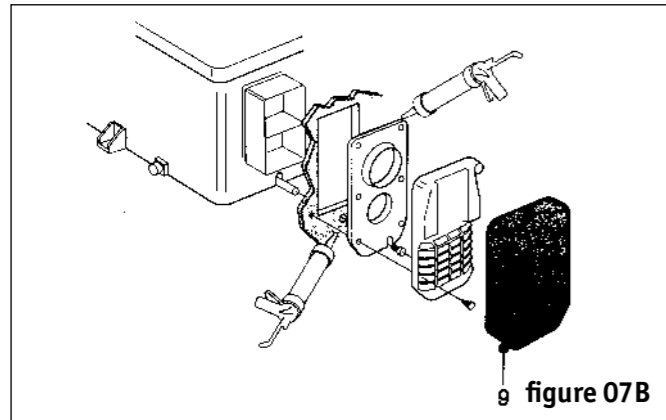


figure 07A



9 figure 07B

#### Safety/drain valve

e = Lever position "drain"  
f = Lever position "closed"

#### Switching off

Turn the water heater off using the switch. Place the cover on the flue. When there is danger of freezing, drain the water heater. When away for longer periods, close the shut-off valve in the gas line. Close the tap on the gas bottle.

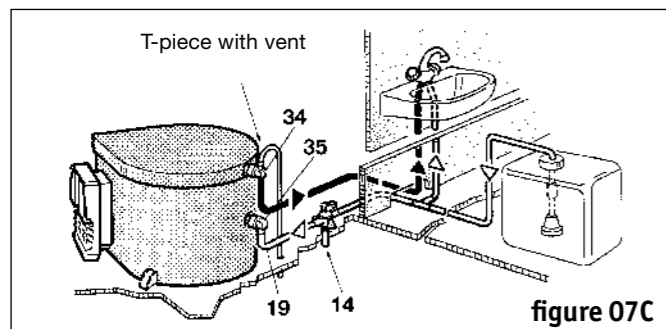


figure 07C

#### Red "fault" lamp

When a fault occurs, the red lamp will illuminate. Possible causes include, for example, incorrect gas pressure, air in the lines, defective safety fuse, etc. The fault can be resolved by switching off - wait at least 5 minutes! - and then switching on again.

#### Draining the water heater

##### Fig. 07C:

- 1 Switch off the 12V supply to the taps using the CERS.
- 2 Remove the submersible pump from the water tank to prevent water spillback.
- 3 Open the mixing taps in the kitchen and toilet to the middle position.
- 4 Open the safety/drain valve (fig. 07C14) - lever horizontal, see fig. 07A, level position e.
- 5 The water heater is now drained through use of the safety/drain valve (14). Check that all of the water is out of the system. The vent (34) prevents water from remaining in the water heater.
- 6 After draining the system, close the mixing taps.

#### Maintenance

To decalcify the system, bring vinegar or formic acid into the water heater via the water supply. Allow for sufficient soak time and then rinse well. To disinfect the water heater, we recommend "certisil". Other products, particularly those containing chlorine, are not suitable.

#### Warning:

**Before using the water heater, be sure to read the operating instructions!**

#### Attention:

**When not in use, always place the cover on the flue. When danger of freezing is present, the water heater is to be drained via the safety valve. There is no warranty against frost damage! After an unsuccessful attempt to switch the water heater on, wait at least 5 minutes before attempting again!**

**N.B. Refer also to the Truma operating instructions.**

#### Truma Thermo Water Heater

The water in the electric water heater is warmed by the 230V mains supply.

#### Filling the water heater:

- Open the warm water tap. Leave the tap open until the water heater is full and air no longer escapes from the tap.
- Flip the switch on the control panel to the "on" position. The check lamp indicates if the water heater is working. The water temperature is automatically set to 60 °C.

## 4 MAINTAINENCE

Good maintenance prevents problems and costs. You can complete a few maintenance tasks yourself.

#### General:

- Regularly check the tyre pressure, consider filling with nitrogen.
- Check the condition of the tyres; as a rule, under normal circumstances the tyres have a lifespan of 6 years. This is also dependent on the number of kilometres driven. Replace the tyres in a timely manner.
- When a service or repair has been completed, after approximately 50 km, check that the wheel bolts are still properly secured (90Nm). For aluminium rims use 140Nm.

#### N.B.

**It is strictly prohibited to paint the brake drums. Even heat resistant paint is not permitted! The assembly of the rim may not be possible as a result.**

### 4.1 Maintenance of polyester and/or painted surfaces/windows

#### Maintenance

The maintenance of pre-coated polyester or acrylic paint as well as polyester components on a caravan is not substantially different to that of a motor car. In general, it is limited to cleaning and applying a protective wax.

Cleaning should occur whenever the painted surface is soiled. It is worth recommending that filth not be allowed to remain on the painted surface as certain substances can have an unfavourable influence on the colour and/or shine. This can occur by, for example, bird excrement, certain berries, salt from the coast, heavy pollution, etc.

For touring caravans, cleaning must always be undertaken prior to storing the caravan for winter while the need for interim cleaning is strongly dependent on the usage conditions.

In general, the caravan should be waxed only once per year, prior to winter storage waxing is required.

#### N.B.

**As a general rule, the exterior should be cleaned regularly, particularly after experiencing sea air, and should be waxed prior to the winter period.**

#### Cleaning

Cleaning should be completed in the following manner:

1. rinse the plated areas painted with polyester or acrylic paint with warm water;
2. then clean the painted surface with an appropriate cleaning solution (i.e. Wash&Shine from Valma or caravan shampoo from System) and a brush (Heavily soiled areas may be treated with products such as caravan cleaner from System or Flash);
3. rinsethe cleaned surface with fresh water;
4. to prevent water spots, after air-drying you may wish to wipe the caravan with a chamois or a soft cloth;
5. if a solar panel is installed, it may only be cleaned with water and a wax-free shampoo!

#### Superficial protection

1. Wax your caravan (liquid)

There are several products on the market (i.e. from Valma, Turtle, Flash and System) to wax the painted surfaces.

The products are to be used according to the manufacturer's instructions.

For stucco embossing, use a soft brush.

2. ShineProtector extends the life of caravans/campers. Together with VanParts, the supplier of original KIP-parts, USP International has brought a new surface protectant to the caravan/camper market. PAEC Caravan & Camper Protector. The product extends the life of the outside of, among others, caravans and campers. It is the best product to prevent attachment of filth. It protects for four months and makes cleaning a simple, incidental task.

#### Reduced attachment of filth

The liquid is mainly comprised of active polymers (plastic) that form an invisible, smooth film. The surface is then protected for four months against water, dust, algae, etc. as they can not attach to the film. Due to the smooth surface, cleaning is even faster and easier. The product will break down biologically.

#### Extended life

Treated surfaces remain newer longer and the film reduces the opportunity for corrosion and oxidation. It also protects against most acids and solvents and gives a long-lasting shine.



### Use as two single beds

The caravan is delivered in this configuration. The slat bottom is pushed back completely providing adequate access to both beds. The top of the slat bottom may be used as a shelf for a clock-radio or a book.

### Use as a double bed

To create the double bed, the slat bottom must be carefully pushed into place. Lay the included cushions on the slat bottom. The bed can now be dressed.

## 3.6 Cassette toilet

### Type C-200 (rotating)

#### Use

1. Rotate the toilet in the desired direction
2. Allow a bit of water to enter the toilet by pressing the flush switch or open the valve by pulling the valve handle under the toilet bowl toward you. The cassette toilet is now ready for use.
3. After use, open the sealing valve (if still closed) and flush the toilet by pressing the flush switch. After flushing, close the sealing valve.

#### Storage

Before storing or when your cassette toilet is not to be used for a time, follow this procedure:

1. Drain the water system as described in chapter 3.3.3
2. Press the flush switch until the remaining water is pumped out.
3. Empty the waste tank.
4. Do not re-place the cover on the waste tank spout; this allows the tank to dry out.

### Type C-402 (fixed)

#### Use

1. Allow a bit of water to enter the bowl by pressing the flush switch or open the valve by turning the valve handle on the toilet bowl anti-clockwise. The cassette toilet is now ready for use.
2. After use, open the sealing valve (if still closed) and flush the toilet by pressing the flush switch. After flushing, close the sealing valve.

#### Storage

1. Open the sealing valve by turning the handle on the toilet anti-clockwise.
2. Press the blue button until water stops flowing into the bowl. Close the sealing valve.

3. Open the door on the outside of the caravan.
4. Twist the water fill funnel outward.
5. Remove the cap and empty the water supply funnel by turning it anti-clockwise one-quarter turn.
6. Remove the waste tank and empty into an appropriate approved location.
7. Set the waste tank back in place and open the sealing valve by moving the handle on the toilet to the left.

**N.B. Also refer to the user instructions from Thetford.**

#### Threshold

When a screen door is mounted, an inlay profile is included for the threshold. This inlay profile must be placed in the threshold when dust is to be swept out of the caravan via the door.

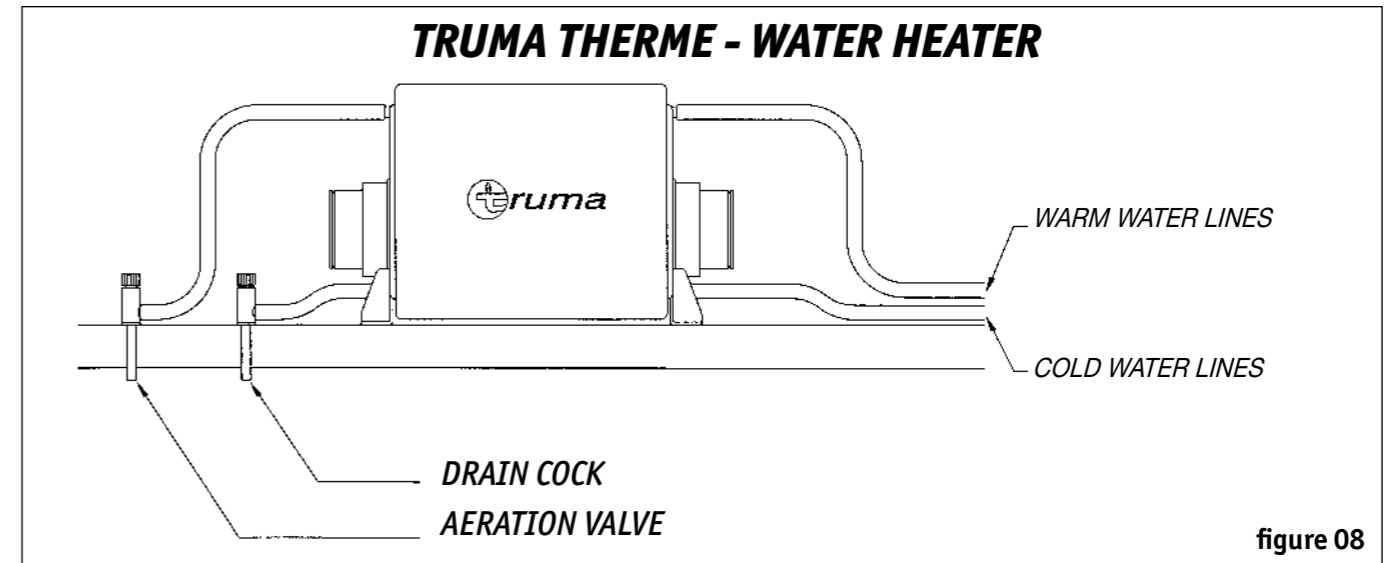


figure 08

#### NB

**The electricity for the water heater may never be switched on when the water heater is empty. If the caravan is not being used, do not forget to switch off and drain the water heater. Also drain the water heater when there is danger of freezing. While draining, ensure the caravan is level.**

#### Draining the water heater

If during colder temperatures the caravan is not to be kept frost-free or if the water heater is not switched on, then the water heater must always be drained via the drain valve.

1. Switch off the 12V supply to the taps using the CERS.
2. Remove the submersible pump from the water tank to prevent water spillback.
3. Open the mixing taps in the kitchen and toilet to the middle position.
4. Open the water heater drain cock and the aeration valve (see figure 08); check that the water is exiting the water heater
5. After draining the system, close the mixing taps.

#### Technical information

- Water capacity: 5 litres
- Working pressure: max. 1,2 bar (only use pumps that don't have a repercussion valve)
- Electric heating element: 230V/300W/1.3A
- Water thermostat: 60 °C
- Overheating thermostat: 85 °C

#### Water heater ALDE-system

The ALDE glycol heating system is also equipped with a water heater. Operate according to the instructions in section 3.4.3

#### Filling the water heater

1. Ensure that the drain cock (figure 09) is closed.
2. Fill the water tank.
3. Open the mixing tap. Leave the tap open until water appears.

#### Draining the water heater

1. When not in use, always drain the water heater.
2. Switch off the 12V supply to the tap using the CERS.
3. Remove the submersible pump from the water tank to prevent water spillback.
4. Open the mixing taps in the kitchen and toilet to the middle position.
5. Open the drain cock.
  - e. lever position "drain"
  - f. lever position "closed"
6. Check that water is passing through the drain pipe.
7. After draining the system, close the mixing taps.

#### Electrical elements

The heating unit has 2 electrical elements with a maximum power of 2 KW. Select the desired power via the menu on the control panel (figure 12, pg. 35).

#### N.B.

- Also refer to the ALDE user manual.
- The hot water is not suitable for drinking.
- Do not use the hot water for cooking.
- The water in the water heater must be replaced every month to ensure an air pillow is created in the water heater. The air pillow is required to stabilise pressure differences in the water heater.
- Drain the water heater when there is frost danger.



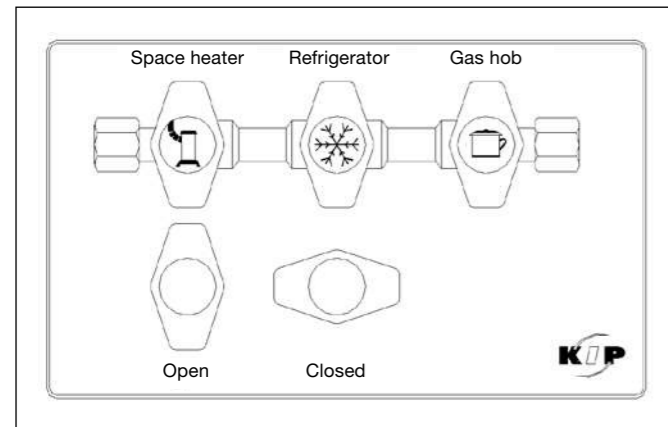
### Waste water

The waste water from the sinks (kitchen, toilet) exits the caravan through a central point in the floor. This waste water point is normally found on the window side of the caravan.

### 3.3.4 Gas supply

Two types of gas may be used in the caravan, butane or propane. Your Kip retailer can give you more information about the most suitable gas bottles for your caravan! (when frost is present, use propane).

The gas bottles are located in the front locker and can be accessed via the locker flap. The gas distribution block is located under the service hatch in the kitchen furniture. The arrow on the operating knobs indicates the direction of the gas (see figure).



### N.B. Gas supply

- Always use the included standard pressure regulator (30mBar) This adjusts the pressure perfectly for the appliances installed in the caravan. The pressure regulator is to be replaced after 10 years.
- Petrol is not permitted for use with the various gas appliances. Propane gas is preferred over butane gas.
- The gas burners are to be lit from above. A direct line of vision to the burners may not be obscured by a pan.
- Ensure proper ventilation while cooking. Set the kitchen window to the ventilation position and open the blind
- When the burners are not being used and are cool, place the hob's glass cover in the horizontal position
- Never attempt to repair the gas system yourself
- Never use a gas appliance while tanking the motor car or when the caravan is in an enclosed space
- There is a ventilation hole in the floor of the front locker. The purpose of this hole is to allow gas to escape if there is a leakage (gas is heavier than air). Never block this opening.
- Never block the permanent ventilation openings (in the bench, bed, under refrigerator, etc.) in the caravan
- For caravans with raisable roofs, the caravan may only be used when the roof has been raised; this for the necessary ventilation.
- Use an approved gas hose. Replace the hose every 2 years.

### 3.5 Other functions

#### LCD-screen (KH and optional)

A hanging bracket is installed for the LCD screen. The bracket is located near the work surface. Other required connection (230V, 12V, aerial) are also located in the same place. The LCD-screen must be slid into the holder and can be removed by the same movement in the opposite direction.

**N.B. While driving, in winter storage or when the caravan is not used for long period, the screen must be removed from the holder and stored at room temperature in a dry location.**

#### Opening the front window

The large front window can be opened to various positions by using the special stays. An audible click indicates another position. The window can be closed again by first opening the window completely to unlock the stays. The window can also be closed by opening it just past an audible click which will also unlock the stays.

#### Raisable roof on KIP Kompakt/KIP Vision

Close the raisable roof while the exterior door is open to ensure over pressurising does not occur which can cause the fabric to be pushed outward.

#### Combination roller shades

The spring loading can be increased. If the tension is too low, let your retailer repair this. While driving, the combination roller shades are to be rolled up to prevent them from popping out of the guides due to caravan movements.

In high temperatures, ensure the shades are not fully closed. The heat between the window and the shade can lead to excessive temperatures causing permanent deformations in the acrylic window.

#### Remis roof hatches

##### Operating the roof hatch

- Before the roof hatch can be opened, you must first check that opening will not be hindered by the outside situation (obstacles, snow, etc.).
- To open the roof hatch, unlock the crank by pressing the button next to the crank in the direction of the arrow. This action causes the crank to lower.

- The crank must then be positioned in the operating location. By now turning to the right, the roof hatch can be opened to the desired position. When opened to the maximum position, the crank gives a ratchetting sound to indicate that turning must be stopped.
- By turning the crank to the left, the roof hatch is again closed. When the roof hatch is closed completely, the crank gives a ratchetting sound. The crank will need to be turned slightly further to again place it in the depression in the roof hatch cassette.

##### Operating the blind

Using the blind catch, pull the pleats to the desired position or to the catch on the insect screen. Clip the catches together using the hook profile integrated in the catch.

##### Operating the insect screen

Using the insect screen catch, pull the roll to the blind catch. Both catches clip together via the integrated hook profile. To unlock the catches, push the the insect screen catch up slightly. The catch must be held until the screen is rolled up completely.

#### Permanent bed

The double bed and the single bed are both manufactured with a foldaway slat bottom. The double bed slat bottom can be opened by tilting it up. Use the tape on the slat bottom to aid in tilting up. An automatic stay ensures the slat bottom remains open. The slat bottom can be closed again by tilting up slightly to unlock the stay. The slat bottom can now be set on the support.

**N.B. The permanent beds mounted on the bench tops (optional) are not equipped with a locking arm system.**

#### TCB Combi-bed

The KG 47TCB is equipped with a combination bed and can be set-up in the following arrangements:

- Two single beds
- Two person transverse sleeper

Take the following precautions to avoid problems and to limit the risk to yourself and others:

- Always wait a few minutes (at least 3) before trying to re-start the air conditioner after switching it off. This will protect the compressor from damage.
- Ensure the air inflow and outflow are not blocked by tea towels, paper or other objects.
- Never place your hands or other objects within the openings.
- Do not spray the air conditioner with water.
- Keep flammable materials away from the air conditioner.

#### Adjusting the airflow

Position the air flaps so as to direct the airflow as desired.

#### Description of the operating controls.

**N.B. Also refer to the DometicBlizzard 1500 user documentation.**

	<b>Main switch</b>	ON - OFF	Position  air conditioner ON
	<b>Alternating switch warm/cold</b>	Warm - Cold	Position  warm air Position  cold air
	<b>Thermostat</b>	Air temperature (18°C-40°C)	Turning the knob clockwise increases the temperature (40°C) Turning the knob anti-clockwise decreases the temperature (18°C)
	<b>Fan switch</b>	Air speed	Position  low speed Position  high speed

### 3.4 Using and maintaining the equipment

In this section, information follows regarding the operation of the gas hob, the refrigerator and the space heater.

#### 3.4.1 Gas hob

A Cramer gas hob is installed in the caravan.

##### Controls

If you wish to turn on the gas hob, follow this procedure:

- Open the tap on the gas bottle.
- Open the gas distribution tap in the kitchen cupboard.
- Turn the individual gas tap for the burner you wish to light from the zero position, clockwise, to the position for "large flame" or "small flame"; then press and hold the knob in.
- Then immediately light the burner using a match or a piezo-electric lighter.
- When the burner lights, continue holding the control knob in for an additional 15 seconds.
- Turn the control knob to the desired burner position (large flame = high setting; small flame = low setting).
- As soon as the burner is correctly set, place the pan (recommended pan diameter: 10 to 20 cm) on the lit burner.

**Ensure the pan is placed in the middle of the burner grate so the flames do not spread out along the sides of the pan.**

- Ensure there is sufficient ventilation.
- Use pans with a flat bottom.

In the following **situations**, the gas hob may not be used:

1. The ventilation holes are blocked.
2. The caravan is located in an enclosed area.
3. Petrol is being tanked.

##### Maintenance

###### Exterior cleaning

Never use chemical or abrasive detergents **when** cleaning the exterior of the gas hob. Clean the appliance occasionally with water, a mild detergent and a cloth.

###### Cleaning the burners

The burners are not to be disassembled for cleaning. Clean the burners with water and a bit of detergent. Take care to ensure no detergent enters the burner.

###### Inspection

Allow the appliance to be checked, and repaired if required, by an expert at least once per year; see chapter 4.2, "MAINTENANCE".

##### Warning:

**Do not leave the flame protectors in the recesses while driving with the caravan, but instead store them in a safe place.**

#### 3.4.2 Refrigerator

Dometic refrigerators are installed in Kip caravans.

General advice for using these refrigerators:

- **NEVER use more than 1 energy source at a time (either 12V or 230V or gas).**
- Secure the door while driving and leave slightly ajar when the caravan is being stored.
- If the refrigerator is in use, level the caravan as best possible.
- Open the refrigerator as infrequently and as quickly as possible.
- Do not place any warm food or drinks in the refrigerator.
- Do not place any poisonous or volatile (flammable) liquids in the refrigerator.

###### Cleaning

Before using the refrigerator, it is advised to first clean the inside and outside of the appliance.

- Use a soft cloth with warm water and a mild detergent.
- Next, wash with clean water and let the appliance dry fully.
- Remove the dust from the cooling element annually with a brush or a soft cloth.
- Do not use soap or strong, corrosive or soda-based detergents.
- Ensure the door seal does not come in contact with oil or fat.

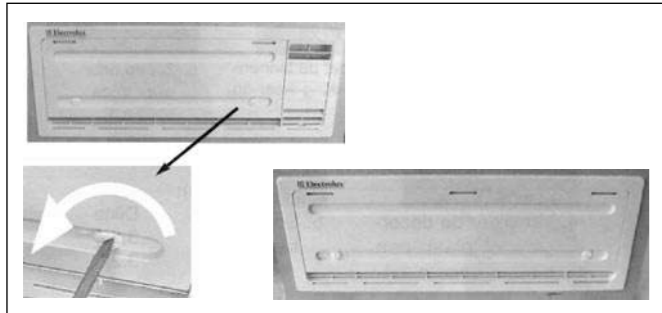
### Switching on

- When the appliance is first switched on, it is possible that an odour will be released which will dissipate after a few hours.  
Ensure the living area is well-ventilated.
- Within one hour from switching the refrigerator on, the freezer compartment must be cold.
- It takes a few hours before the refrigerator has reached the proper temperature.

Caravan type	Refrigerator type	Ignition	Lighting	Energy source indicator
Kompakt (KK)	Dometic RM 4230	Piezo		
Vision (KV)	Dometic RM 4230	Piezo		
Skyline (KS)	Thetford N97	Electronic	•	•
Greyline (KG)	Dometic RM 7390L	Piezo	•	
Hyline (KH)	Dometic RM 7391L	Electronic	•	•

### Winter usage

- Check that the ventilation grate and the exhaust is not blocked by snow, leaves or other debris.
- If the temperature around the refrigerator is below 8°C, you should install the winter covering.  
The covering protects the appliance from the cold air. Install this covering and secure it.



It is also advised to install the winter covering when the vehicle will not be used for longer periods.

**Cover the refrigerator ventilation opening if you are cleaning the caravan or if the outside temperature is low.**

### Maintenance

During the annual service of your caravan, also have the refrigerator checked for proper function, gas leaks and have everything cleaned, including the burners.

**N.B. See also separate instructions - Dometic**

### Switching off the gas supply to the appliances

If you do not use the refrigerator for a long period, close the refrigerator valve and the valve from the gas bottle.

**N.B. While driving, the refrigerator may not run on gas. In this case, connect the refrigerator to the 12V. The 12V power source should only be used when the engine is running to prevent draining the motor car battery. The refrigerator is never connected to the caravan's 12 V installation and only works from the motor car battery when the caravan is coupled to the motor car and the refrigerator is switched to 12 V.**

### Operation RM4230

#### Operating controls

The refrigerator can work on 230V, 12 V or bottled gas. The type of energy source can be chosen using the operating control shown below in figure 10.

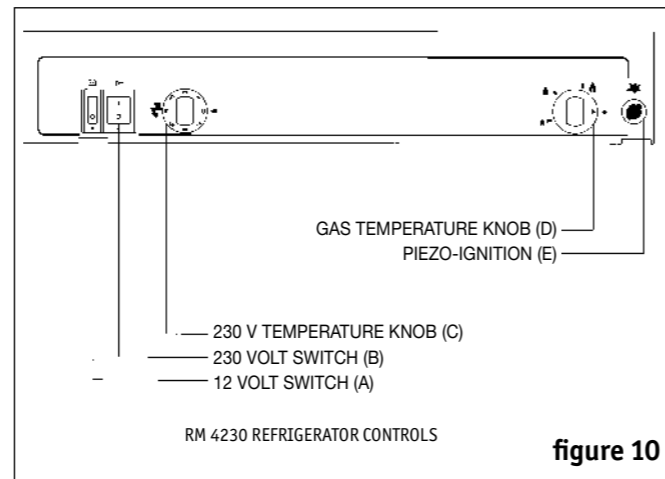


figure 10

Two contact switches determine the choice of voltage: one for 230 V (B) and one for 12 V (A).

When using 230V, the refrigerator temperature is regulated by the thermostat (C).

The gas supply can be opened or closed by turning the knob (D).

The refrigerator is provided with a safety that automatically stops the gas supply should the flame go out. The safety can be opened again by pressing on the knob (D).

The gas flame on model RM 4230 is lit using a manual piezo-electric lighter. Pressing the knob (F) will create sparks in the burner.

- Press the “+/**ON**” button (A) or “-/**OFF**” button (D) to set the correct power (0kW, 1kW or 2kW); the display indicates the chosen value via the electricity symbol (6).
- By pressing button ◀ (B), the setting is accepted.

### Display

- (7) This lights up when the circulation pump is working
- (8) This display indicates the 230V is switched on
- (9) Indicates the inside temperature again

### Additional functions

In the ALDE manual, the functions that will not be used often are clarified:

- Setting the clock
- Externally starting of the heating system
- Manually setting the night temperature
- Automatically setting the night temperature
- Switching on the heater system's automatic start-up
- Calibrating the temperature settings
- Switching the audible signals on or off
- Changing the pump from 230V to 12V

### N.B.

- The gas water heater and the electrical devices may be switched on at the same time**
- The space heater may be used when the water heater is not filled**
- Turn off the water heater's main switch when the caravan is not being used**
- The water heater may not be switched on when the system is not filled with coolant**
- When switching off from the 230V net, if a leisure battery is present, the coolant circulation will be taken over by the 12V circulation pump**
- The electrical elements use 1kW (4,6 Amp) or 2kW (9,1 Amp) based on 230V voltage.**
- Regularly check the fluid level in the expansion tank in the hanging cupboard. If the coolant level is low, it can be topped up (60% water, 40% glycol) by your retailer**
- A minimum of 1x per year, vent the system using the ventilation valves**
- The coolant should be changed once every 2 years to prevent corrosion from forming in the lines**
- Also refer to the ALDE user instructions**

### N.B.

- The hot water is not suitable for drinking**
- Do not use the hot water for cooking**
- The water in the water heater should be replaced every month to ensure an air pillow is created in the water heater. The air pillow is required to stabilise pressure differences in the water heater.**
- Drain the water heater when there is danger of frost.**

### 3.4.4 Air conditioning (KH/optional)

#### Description of the air conditioning

This air conditioner is designed and manufactured for installation in vehicles (i.e. caravans, campers) to improve the temperature conditions. The air conditioner expels cool, dehumidified air in the summer and warm air in the winter without replacing the heating system in the vehicle. In both cases, the temperature is determined by the user.

#### How to use the air conditioning

The air conditioner will perform better if a few simple conditions are met:

- Improve the vehicle's warmth insulation by closing all openings and covering all glass surfaces with reflective blinds.
- Avoid opening and closing doors and windows unnecessarily.
- Choose the most appropriate temperature and speed.
- Position the air flaps correctly.



#### Technical information

- Trans 230V/42-48V
- Power: 80W/m<sup>2</sup>
- Average consumption: 3m<sup>2</sup> floor heating panel X 80 W = 240 W I = 240 W/230V = 1,04 A

#### ALDE Compact 3010 – glycol heating system

The ALDE glycol heating system is built-in as standard in the HY-line models. The ALDE heater is a combi system. It is used for the heating and the warm water in the caravan. The caravan is heated according to the principles of convection and natural air circulation via the convectors on the side walls. The warm water system is described in section 3.3.3.

The system has 2 energy sources, a gas burner and a choice between one or two electric heating elements. The gas burner and the electrical heating elements may also be used together. With the help of the control panel, a choice can be made as to which source is applicable:

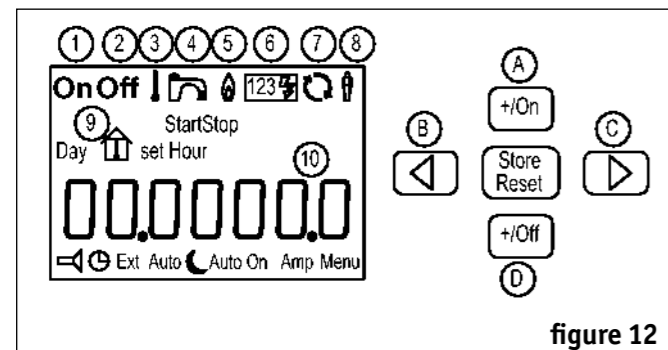


figure 12

#### Switch the heating on using the same setting as during the last use

- Press the button ► (C); on the display, the “OFF” signal (2) will blink
- Press the “+/ON” button (A); on the display, the “ON” signal (1) will blink
- Press the button ◀ (B); on the display, the “ON” signal (1) will illuminate; the heating is switched on

#### Turning the heating off

- Press the button ► (C); on the display, the “ON” signal (1) will blink
- Press the “+/OFF” button (D); on the display, the “OFF” signal (2) will blink
- Press the button ◀ (B); on the display, the “OFF” signal (2) will illuminate; the heating is switched off

#### Setting the desired temperature

The inside temperature can be set between +5°C to +30°C in intervals of 0.5°C. To adjust the temperature, the following is to be done:

- Press the button ► (C)
- Press the ► (C) button again; on the display, the temperature symbol (3) will blink; the display will show the current set temperature.
- Set the desired temperature using the “+/ON” button (A) or the “+/OFF” button (D)

#### Setting priority for warm water

When more warm water is required, the priority for this can be set in the following manner:

- Press the ► (C) button
- Press the ► (C) button again until the warm water symbol (4) on the display blinks; on the display, “OFF” (10) is displayed.
- Press the “+/ON” button (A); on the display, the “ON” signal (10) will blink. The maximum water temperature will now be temporarily raised from 50°C to 65°C. This setting switches off the circulation pump. After 30 minutes, the system returns to the normal settings. The warm water symbol disappears.
- The warm water priority is cancelled by pressing the “-/OFF” button (D) while the warm water symbol is blinking.
- By pressing the ◀ (B) button 3 times, the system returns to the normal settings.

#### Setting the gas heating

To light the gas burners, do the following:

- Press the ► (C) button
- Press the ► (C) button again until the flame symbol (5) on the display blinks; on the display, “OFF” (10) is displayed.
- Press the “+/ON” button (A); on the display, the “ON” signal (10) appears and the flame symbol (5) illuminates.
- The gas heating is cancelled by pressing the “-/OFF” button (D) while the flame symbol is blinking.
- By pressing button ◀ (B) 4 times, the setting is accepted.

#### Setting the heating with electrical elements

To light the gas burners, do the following:

- Press the ► (C) button
- Press the ► (C) button again until the electricity symbol (6) on the display blinks; on the display, “OFF” (10) is displayed.

In the refrigerator, on the left and near the bottom, there is an inspection window. If the burner is working, the blue glass flame can be seen through this window.

#### Starting the refrigerator

The position indicators are in reference to figure 10.

**Attention! Only switch on one energy source.**

#### Bottled gas operation

When starting for the first time, it may take some time until the gas flame ignites. The cause, air in the line, can be removed more quickly by first lighting another gas driven appliance, such as the cooking hob.

Before you switch on the gas:

1. Open the tap on the gas bottle and any other taps between if necessary. Of course it is presumed you are certain the bottle is not empty.
2. Check that the net- and 12 V use are switched off.
3. Turn the gas regulator (D) to “max”.
4. Press and hold the safety knob (D) in while you press the piezo-electric igniter (F) a few times.
5. Look through the inspection window to see if the burner is working.
6. Continue to hold the safety knob in for 10 to 15 seconds.
7. Release the safety knob and again check if the burner is working.

The gas usage is switched off by turning knob (D) to • .

#### 230V Operation

- If necessary, switch off the gas or 12 V usage.
- Turn the knob on the thermostat (C) to the highest setting.
- Switch the contact switch (B) to the ON position “I”.

#### 12 V Operation

Operating on 12 V may only occur while driving, that is to say, while the engine is running. If the engine is not running, the battery will be discharged quickly.

- If necessary, turn off the gas usage.
- Switch the contact switch (A) to the ON position “I” and if necessary, turn off switch (B).

#### Adjusting the temperature

The position indicators are in reference to figure 8. It takes a few hours for the refrigerator compartment to become cool after switching the refrigerator on. When using 230V, the internal temperature is regulated by a thermostat. Turn the thermostat knob (c) to the position 3-5. If a lower temperature is desired, turn the knob to a higher number. When on 12 V operation, the refrigerator runs continuously. The gas function should always be switched to the “max” position using the knob (D). If the temperature in the immediate environment is 25 °C or higher and/or the refrigerator door is opened often, the knob should remain in this position. Under 25 °C, the knob should be set to “mid” and under 10 °C, at “min” to prevent the main refrigerator compartment from going below the freezing point.

#### Out of service setting

When the refrigerator is not used for longer periods, then a few preventive measures must be taken.

1. Set the electronic switch to 0.
2. Set the gas tap (D) to position • .
3. Close the gas supply using the intermediate tap (in the caravan).
4. Empty the refrigerator, defrost and clean as described previously. Set the door to the refrigerator and the freezer ajar, if necessary with the door lock.

If the vehicle is to be stored for a longer period (i.e. during the winter months), it is recommended to install the winter coverings on the ventilation grates.

#### Door lock

Be certain the door lock is correctly positioned for travel before you begin driving with the caravan.

The door lock at the top of the door can be set in two positions. The first position holds the door closed while driving, the other position holds the door ajar to allow circulation of fresh air when the refrigerator is not being used.

**N.B. The refrigerator grates are removable. At higher temperatures, the refrigerator can function better as a result.**

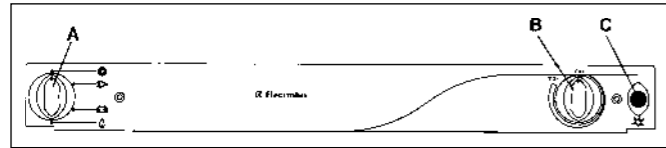
**N.B. gas pressure 30mbar.**



**Controls RM 7390 and RM 7390L**

*Controls*

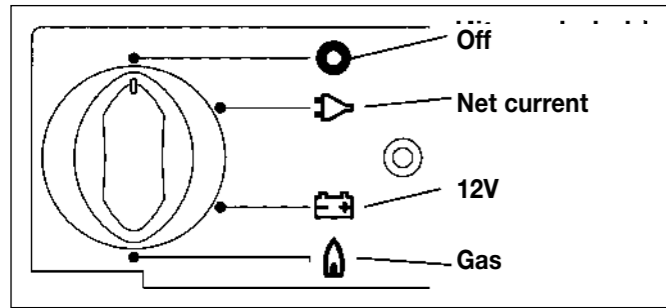
**Manual ignition (RM7290)**



- A = Energy source selector
- B = Gas/electric thermostat
- C = Knob for manual ignition (piezo-electric).

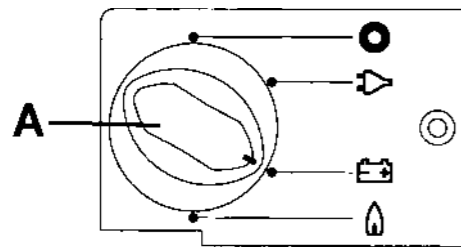
*Note:*

The refrigerator can work on 230V, 12 V or liquid gas. You select the desired power source using the energy choice switch (A). This switch (A) has 4 positions: net-current, direct current (12 V), gas (liquid gas) and 0 (off).



*12V Operation*

- The refrigerator can only be used via the external power source when the engine of the motor car is running.
- Set energy choice switch (A) to:

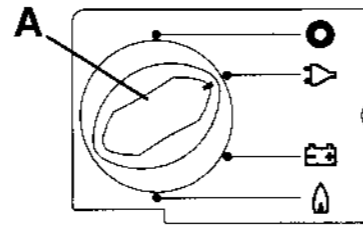


The refrigerator now works without temperature control (runs continuously).

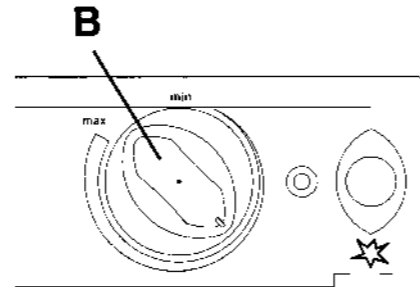
*230V Operation*

This option can only be used if the voltage delivered by the main connection agrees with the value on the information plate. Any other value can damage the appliance.

1. Set power selection switch (A) to



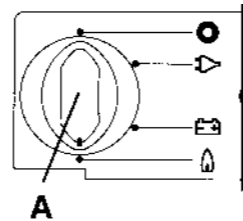
2. Set the main compartment temperature with the rotary switch (B).



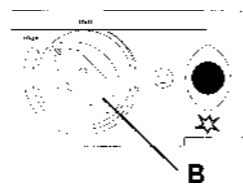
*Gas operation*

- The refrigerator may only be operated on liquid gas (propane or butane).
- Gas operation is forbidden around petrol stations and similar areas.

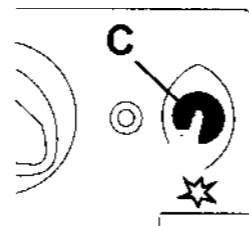
1. Open the valve on the gas cylinder.
2. Open the valve on the gas supply.
3. Set power selection switch (A) to Gas



4. Press and hold the rotary switch (B) in



5. Activate the piezo-electric ignition several times, pausing between attempts for 1-2 seconds.



2. Shut-off (for example manual operation/heating on Trumatic S 3002 P space heaters) (fig. 11B-b)
3. Automatic operation (heating) (fig. 11B-c)

The power is infinitely adjusted to the space heater warmth output. The highest power can be limited as desired by the rotary knob. The regulation between the set value and the slow rotating speed occurs automatically.

*Technical information*

Power supply: 12V  
 Consumption: 0.3 to 1.0A  
 Volume of air movement: max. 180.000 litre/h (with ÜR ø 65 mm ventilation tube)  
 max. 205.000 litre/h (with ø 72 mm ventilation tube)

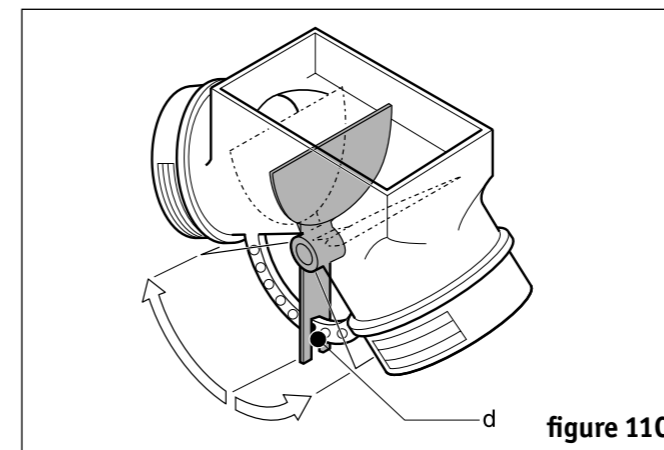
**N.B. Before using, read users manual!**  
**The vehicle owner is responsible for ensuring the appliance can be operated correctly.**

**N.B. Repairs may only be completed by a technically capable fitter.**

*Air flap (fig. 11C)*

The air flap (fig. 11C-d) can be used to independently regulate the volume of warm air distributed. In the middle position, the warm air is divided as 50% at both exits. The flap is located in the Y-piece on the blower, behind the space heater and under the shelf in the hanging cupboard.

*Air mix*

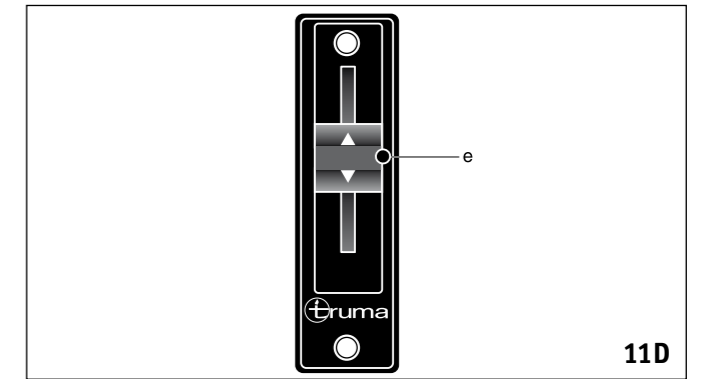


Recirculation via the space heater:  
 Set the sliding knob to the top position (red arrow).

Outside air:  
 Set the sliding knob to the bottom position (blue arrow).

Mixing position:  
 When heating, the sliding knob may not be open more than 1/4 downward. Otherwise the function of the TrumaVent could be disrupted.

In the summer, fresh air can be brought in without using the space heater by placing the sliding knob in the bottom position and setting the blower to position a (fig. 11A) and selecting the desired fan speed.



*Floor heating (Colfax 42/48V weak current)*

If the caravan is equipped with foil elements under the floor covering, the following applies:

- avoid punctures from sharp objects placed in the caravan's walking areas.
- foil element(s) warm the floor surface via energy transfer.
- the floor heating can be switched on/off via a switch.

1. Do not turn the floor heating on when large, heavy objects (i.e. awning) are placed on the floor for long periods. This is due to the high level of heat developed between the object and the floor covering.
2. An automatic thermal protection button is located on the transformer. After cooling down, the system can be switched on again by pressing the button.
3. Do not drill or screw into the floor covering in the walking area.
4. The transformer is located in the bottom of the hanging/shelf cupboard

The floor heating can be turned on using the LED-indication switch which normally is located in the side panel of the hanging shelf cupboard. The floor heating is not thermostatically regulated. Section 7.8 shows a schematic of the floor heating connections.

### Operation

- 1 Open the tap on the gas bottle. Open the shut-off valve in the gas supply line.
- 2 Turn the operating knob to thermostat position 1-10 and push the knob in fully. At the same time, press the ignition several times in quick succession until the pilot flame lights.
- 3 Hold the operating knob in for approximately 10 seconds to switch on the ignition protection.
- 4 After approximately 10 seconds, use the inspection window to check that the flame has not gone out due to air in the lines (caused by a closed valve or changing of the bottles).

### N.B. Heating

- In the winter, snow must be removed from the flue prior to attaching the space heater
- If the exhaust from the heater is located on the same side as the door then you may absolutely not install an awning (KV 41TVB, KV 41ETD)
- The shelf in the bottom of the hanging cupboard should only be removed for maintenance or repair by an authorised KIP retailer. Do not use the space as storage

### Attention:

1. Wait at least 2 minutes before trying to ignite again or a small internal gas explosion may occur! This is also true when the flame in a space heater already in use goes out and must be re-lit.
2. By extremely low night temperatures, it is recommended not to set the heating fan on automatic, but on manual (4 or 5). This ensures a constant air flow through the pipes. It is important to direct warm air toward, for example, the front locker and the kitchen (or past locations where the water lines are mounted). "Pinch" the other air flow exits closed as much as possible.

**3. N.B. The exhaust vent pipe and all connections must be checked regularly, especially after small internal gas explosions. The exhaust vent pipe must rise over the entire length and be fit well with various pipe clamps. Under no circumstances may objects be placed on the exhaust vent pipe as this can lead to damage. The exhaust vent pipe must be connected to both the space heater as well as the flue securely and be exhaust gas-tight. Space heaters with incorrectly installed or damaged exhaust vent pipes may not be used!**

### Thermostat

Set the desired temperature (from 1 to 10) using the control knob. For an average temperature of approximately 22 °C, we recommend the position 3-5 when not using the Trumavent fan or 4-8 when using the fan.

### Switching off

Set the operating knob to "0". If the appliance is not to be used for a longer period, close the shut-off valve in the gas line. Close the tap on the gas bottle.

### Fan for warm air distribution and aeration

#### Trumavent TEB with automatic speed 12 V- (fig. 11B)

1. Manual operation (fig. 11B-a) (i.e. for ventilation).
- Select the desired power with the rotary knob (fig. 11B.1-5).

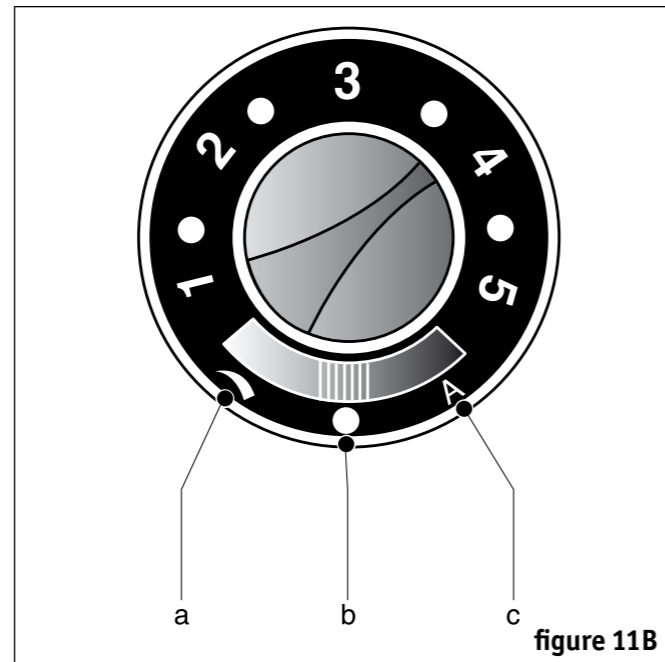
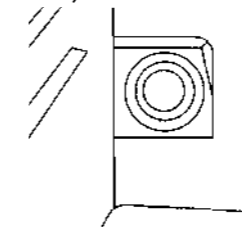


figure 11B

6. Check if there is a flame behind the inspection window (the inspection window is located on the bottom left inside the refrigerator).



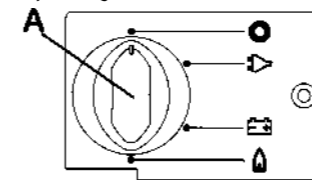
7. Hold the rotary switch (B) in for 10-15 seconds and then release the switch.
8. Check if the flame behind the inspection window is lit.
9. If the flame goes out, repeat the entire process.
10. Set the main compartment temperature with the rotary switch (B).

**N.B. All refrigerators are equipped with automatic flame protection. This protection automatically interrupts the gas supply 30 seconds after the flame goes out.**

**If you are using the refrigerator with gas for the first time, or if you have changed the gas bottle, the gas lines may contain air. By using the refrigerator or other gas appliances (such as the gas hob or the space heater) briefly, you allow the air to escape from the gas lines. The gas can then immediately be ignited.**

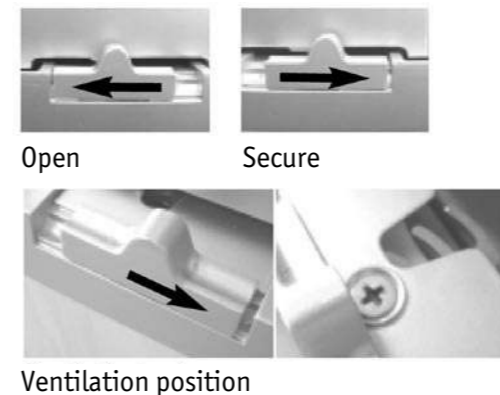
### Switching off

1. Set power selection switch (A) to 0 (off). The appliance is now shut off completely.



2. Using the lock, fix the door open. The door is now ajar. This prevents mildew from growing in the appliance.

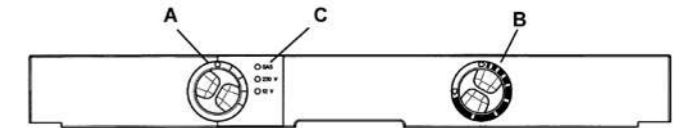
### Door latch



Ventilation position

### Controls RM 7391L

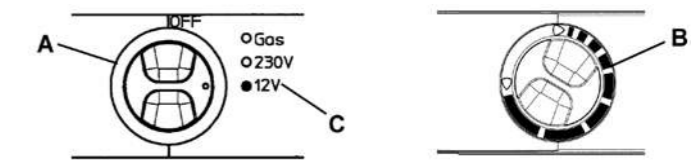
The RM 7291L is equipped with a manual energy source selector (MES - see figure below).



- A = Energy source selector
- B = Gas/electric thermostat
- C = Status indicator (3 LEDs)

**N.B. The CERS 30 must be switched on to operate with MES.**

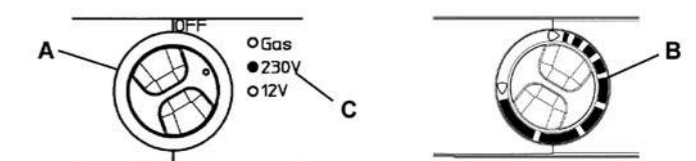
### 12V Operation



1. Set the selector for energy source 'A' to 12V.
2. The status indicator 'C' -12V- illuminates in green. The device is functioning.
3. Regulate the temperature in the cooling compartment with switch 'B'.

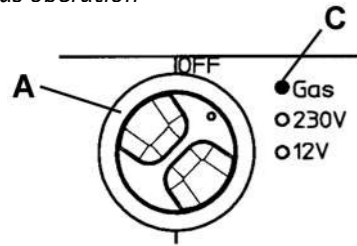
### 230V Operation

Select this mode only when the voltage provided by the power connection agrees with the value indicated on the type plate. Deviations can cause damage to the appliance.



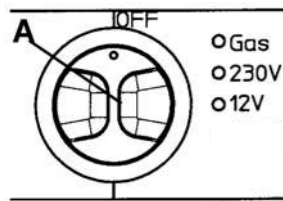
1. Set the selector for energy source 'A' to 230V.
2. The status indicator 'C' -230V- illuminates in green. The device is functioning.
3. Regulate the temperature in the main cooling compartment with rotary switch 'B'.

Gas operation



1. Open the shut-off valve on the gas bottle in the front locker.
2. Open the gas tap in the kitchen block under the service hatch.
3. Set the energy source selection switch 'A' to the 'GAS' position.
4. Set the rotary switch 'B' to the 'MAX' position. Ignition occurs automatically (a ticking sound can be heard) for approx. 30 seconds. If the ignition is successful, the status indicator 'C' illuminates -GAS- in yellow.
5. Regulate the temperature in the main cooling compartment with the rotary switch 'B'.

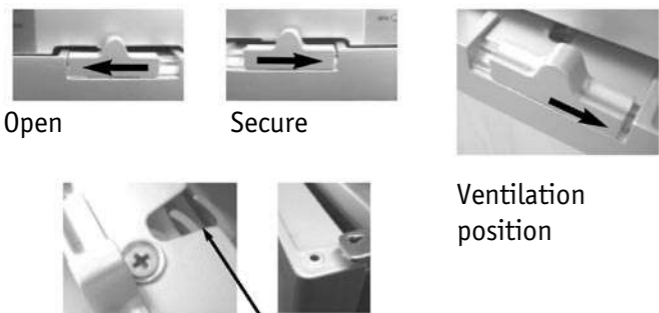
Switching off



Set the energy source selector switch 'A' to -OFF-. The appliance is now shut off completely.

**N.B. When the status indicator does not illuminate, the device is not working. For fault analysis, refer to the refrigerator user instructions.**

Door latch



Using the lock, fix the door open. The door is now ajar. This prevents mildew from growing in the appliance.

Controls Thetford N97

Smart Energy Selection (SES)

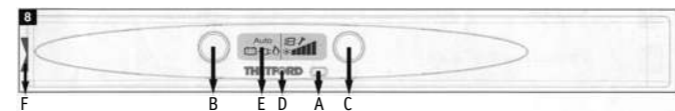
The refrigerator is equipped with a so-called SES-system. When starting the refrigerator in "AUTO" mode, the SES-system chooses the best of the three energy sources using the following priority sequence:

1. Net voltage 230V
2. Direct current 12V (motor car)
3. Liquid gas

If an energy source with higher priority than the source the refrigerator is currently working from becomes available, the system automatically switches over to the source with the highest priority. If no energy sources are available, the LED on the main switch will blink.

**N.B. The CERS must be switched on while using the refrigerator. Also while driving with the combination.**

With the help of button B, if desired, a different energy source may be selected.



- A = Main switch (on/off)
- B = Mode selection switch
- C = Cooling level selection switch
- D = Function LED
- E = LCD-display

Switching the refrigerator on

1. Turn on the electrical system (230V or 12V)
2. Open the shut-off valve on the gas bottle in the front locker.
3. Open the gas tap in the kitchen block
4. Press the main switch A. The LED illuminates in blue.
5. Using the Mode knob (B), select the "AUTO" mode or other desired energy source (230V, 12V or gas). The LCD-display shows the selected option.
6. Set the desired cooling level using the switch for cooling level selection (C). The LCD-display shows the setting.

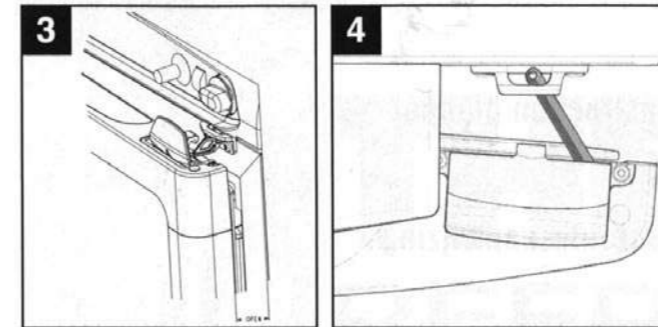
Each change in the setting is stored in the SES-system memory. This allows the SES system to start the next time using the same settings.

Switching off

Switch the refrigerator off using the main switch (A).

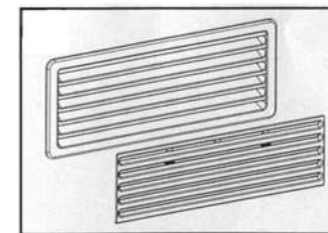
Door lock

There is an automatic lock on the top of the refrigerator door (see picture). Press hard when closing the refrigerator door. When the refrigerator is not to be used for longer periods (i.e. in the winter period), set the door ajar using the special hook integrated in the lock (see picture). Twist the hook one quarter turn and secure it with the pin.



Refrigerator grates

The refrigerator grates can be removed by sliding the tabs on the top side toward each other. Securing occurs by sliding the tabs away from each other. The winter cover is fastened using a click attachment and is easy to remove with a coin.



**N.B. Before using the refrigerator, read the included refrigerator manual.**

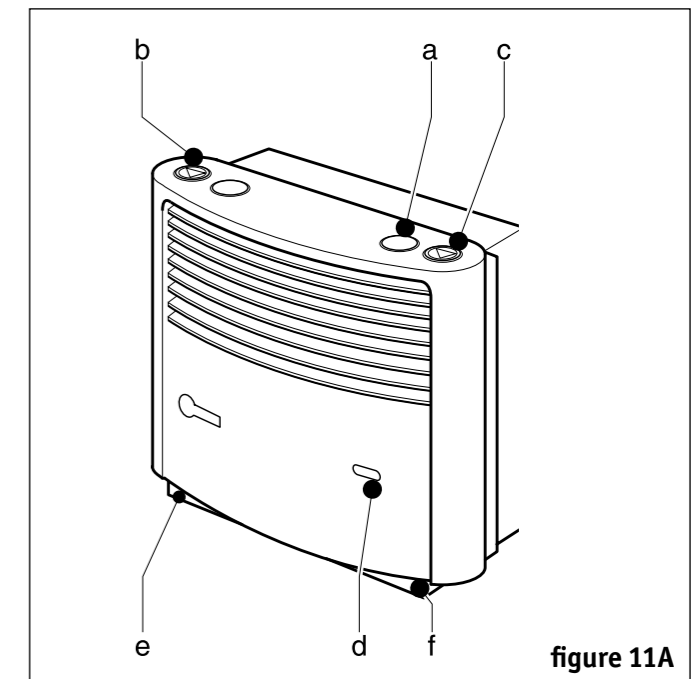
3.4.3 Heating

Truma S 3002 P space heater

Gas heater with piezo-electric ignition and thermostat.

Caravan type	Truma space heater	Truma central heating	Alde glycol heating system
Kompakt (KK)	Optional	Optional	n/a
Vision (KV)	Travel	Optional	n/a
Sky Line (KS)	Travel	Optional	n/a
Grey Line (KG)	Travel and Special	Travel and Special	n/a
Hy Line (KH)	n/a n/a	Standard	

The gas supply working pressure (30 Mbar) must be the same as the working pressure for the appliance (see manufacturer's plate, fig. 11A-e).



**Fig. 11A:**  
a Control knob  
b Trumavent fan TEB integrated control panel  
c Ignition button  
d Pilot flame inspection window  
e Manufacturer plate (remove the cover)  
f Temperature sensor

On left hand installations, the components are located on the opposite side.