



USER'S MANUAL

CARAVAN

N - CROSS

Fabryka Przyczep Niewiadów Sp. z o. o. Sarmacka 19/172 02-972 Warsaw



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1. INTRODUCTION

Thank you for purchasing a caravan made by Fabryka Przyczep NIEWIADÓW Sp. z o.o. With more than fifty years' experience, we can provide you with a durable and safe product. Our caravans are constantly being improved, so we reserve the right to make modifications to our equipment and technology without updating this manual. We would also like to point out that our manual reflects various configurations of the equipment which are not always available in the basic version and includes descriptions of accessories that were known up to the time of printing. We ask you to understand that this document does not cover all individual variants.

Before operating the caravan, please read this manual carefully and follow the instructions given herein. Any use of this caravan inconsistent with the instructions given here will void the warranty.

We wish you a safe journey!

2. TECHNICAL DATA:

	N-Cross 3 seater	N-Cross 4 seater
Overall length	5610 mm	
Overall height	2530 mm	
Total allowable weight	900-1300 kg	
Body length	3750 mm	
Overall width	2230 mm	
Interior width	2050 mm	
Interior height	1850 mm	
Wheel base	1870 mm	
Number of beds	3	4
	front: 205	50x1300 (mm)
Dimensions of beds	- rear: 2000x650 (mm)	- rear: two beds 2000x650 (mm) Attention!-max. load of the upper bed 70 kg
Unloaded weight	770 kg	795 kg

Please be advised that some deviations may occur from the specifications given in the description regarding caravan weight, dimensions and sleeping areas. However, these deviations do not constitute grounds for a complaint.



NOTE !!!

Optional equipment purchased for the caravan increases its unloaded weight.



3. EQUIPMENT

3.1. BASIC EQUIPMENT

-	Keys for the front door and for the drawbar container	3 pcs.
_	Caravan support wheel	1 pc.
_	A crank for the supports	1 pc.
_	Water tank	1 pc.
_	Rubber ties or straps for the gas cylinder	3 pcs.
-	Gas cooker with a service manual	1 pc.
-	Sink	1 pc.
_	Gas heating with a service manual	1 pc.
_	Refrigerator with a service manual (230V/12V)	1 pc.
_	Electric heater (5l) 230V with a service manual	1 pc.
-	Shower and toilet with a toilet cassette and a service manual	1 pc.
-	Front window roller blind	1 pc.
-	USB socket – 2.1A	1 pc.
-	USB socket – 1 A	1 pc.
-	Connecting cable 230V 25 metres long	1 pc.
-	Electric water pump	1 pc.
_	Caravan service manual	1 pc.
_	Caravan step	1 pc.
-	Battery charger with a service manual	1 pc.
_	Axle shock absorbers	2 pcs.

3.2. ADDITIONAL EQUIPMENT

Fabryka Przyczep NIEWIADÓW Sp. z o.o. offers the following additional equipment for its caravans, available at an extra charge:

- Spare wheel
- Spare wheel holder
- Battery (60 Ah or 80 Ah)
- Bicycle rack
- Gas boiler
- Underfloor heating
- Heating system with hot domestic water
- A set of window blinds
- Grill oven
- A mosquito net for the door
- Outdoor awning
- Vestibule
- Second vestibule trim
- Silver hubcaps a complete set 2 pcs.



- AKS ball hitch
- Aluminium wheels

3.3. N-CROSS INTERIOR LAYOUT - three-seater version

Daytime layout:



Nighttime layout:





3.3. N-CROSS INTERIOR LAYOUT - four-seater version

Daytime layout:



Nighttime layout:





4. CARAVAN OPERATION

4.1. HOOKING UP

- 1. The caravan must be hitched to the towbar of the vehicle using the caravan's ball coupling. The correct way to hitch the caravan to the towbar of the vehicle is given in section 5.2 of this manual.
- 2. The breakaway cable must be attached in such a way that it will apply the caravan brakes if the coupling comes unstuck from the ball hitch. The method of attachment depends on the type of towbar.
 - -For a fixed towbar, make a loop in the cable, place it around the shank under the ball hitch and fasten the lanyard in such a way that the cable cannot slip off the shank, as shown in Figure 1.
 - -For a removable towbar, fasten the breakaway cable to a dedicated holder on the fixed part, as shown in Figure 2.
- 3. Connect the caravan's wiring to the socket of the towing vehicle. The caravan has a 13-pin connector according to ISO 11446.





Figure 1- Method of attachment of the breakaway cable- fixed tow hitch

 $\textbf{\textit{Figure 2-Method of attachment of the breakaway cable-removable tow hitch}\\$



NOTE !!!

The ball of the car towbar should be $\emptyset 50_{-0,39 \text{ mm}}$, and its horizontal axis should be at a height of $350 \div 420$ mm from the ground when the car is loaded to its maximum permissible gross vehicle weight (GVW).

The pressure on the ball should be approximately 4% of the actual weight of the loaded caravan, but a load of approximately 25 kg will ensure proper driving behaviour. Higher pressures are permissible, but should not exceed the maximum values specified in the vehicle documents and the certificate of conformity of the caravan.

4.2. LOADING

The caravan is not designed to carry large loads. It is only permitted to carry light items (cutlery, sleeping bags, etc.), clothing or bedding, secured against movement, in cupboards, cabinets, drawers and bench compartments. A gas cylinder may only be carried in the designated space in the caravan.



NOTE !!!

Carriage of loads against the rules specified above may lead to negative pressure on the coupling and consequently to the coupling becoming detached from the ball. Damage caused by transporting loads in a way other than specified in section 4.2 is not covered by the warranty.



4.3. BEFORE DRIVING:

- 1. Check that the coupling is correctly fastened to the ball of the car towbar.
- 2. Check that the breakaway cable is fastened correctly.
- 3. Check that the caravan lights are working properly.
- 4. Put the tables in the night-time position.
- 5. Turn off the valve on the gas cylinder and switch off all gas appliances.
- 6. Check that the lugs on the road wheels are tightened to the correct torque see section 5.4 Road wheels/Wheel change.
- 7. Detach the support wheel or pull it upwards as far as possible, pointing the wheel towards the caravan and lock it in position.
- 8. Lift the foldable supports as high as possible.
- 9. Check that all doors, windows and the roof vent are properly closed.

4.4. WHEN DRIVING

When driving, remember that:

- the braking distance of the car-caravan combination is greater than that of the car alone;
- it is necessary to maintain an appropriate speed and keep a larger distance from other vehicles in order to be able to accelerate in the event of lateral swaying;
- care must be taken on downslopes, especially in wet conditions.



NOTE !!!

When driving, remember that

- the roof vent and windows must be tightly closed;
- the water tanks must be emptied;

4.5. DETACHING

- 1. Disconnect the electrical wiring, place the plug in the holder.
- 2. Disconnect the breakaway cable.
- 3. Unhook the caravan from the car's towbar.

Use the support wheel to rest the drawbar on the ground after unhitching. When unhitched, the towbar ball should be covered for protection against dirt and greased.



NOTE !!!

When using the caravan on uneven terrain, it is necessary to place chocks under both wheels and apply the parking brake. When parking the caravan on soft ground, it is advisable to place pads sized 200x200 mm as a minimum under the foldable supports.

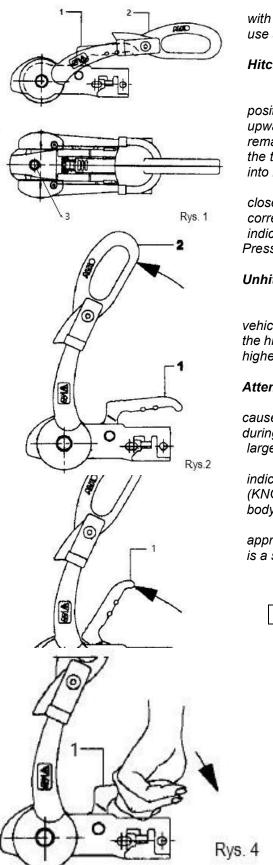
5. OPERATION, SERVICE AND MAINTENANCE OF THE CHASSIS

5.1. GENERAL INFORMATION

Before each trip, use a torque spanner to check that the wheels are properly tightened. The force with which they should be tightened is specified in section 5.4 (Wheel change).



5.2. BALL HITCH



Depending on the version, Niewiadów caravans can be fitted with stabiliser ball couplings from KNOTT or AL-KO. The correct way to use such a coupling is described below:

Hitching the caravan:

The stabiliser lever (2) must be open (Fig. 2), or placed in the top position. Open the coupling by pulling the handle (1) upwards, in the direction of the arrow (Fig. 3). The hitch mechanism remains open until the hitch is attached to the towbar ball at the rear of the towing vehicle. The hitch handle must then automatically snap back into its original position, as signalled with an audible click.

Now, press the handle (1) with your hand. The mechanism closes and fastens automatically (Fig. 4). The ball of the towbar is correctly inserted into the coupling when the green edge of the hitch indicator (item 3 in Fig. 1) is visible.

Press the stabiliser lever (2) until it stops. (Fig. 5)

Unhitching the caravan:

Backtrack the steps listed above to detach the caravan from the vehicle. Raise the stabiliser lever (2) as far as it will go (top position). Open the hitch handle (1) and remove the coupling from the vehicle towbar. For higher loads, use the support wheel when hitching and unhitching.

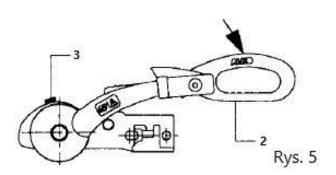
Attention:

The friction pads are pressed against the towbar ball. The torque caused by the pressure dampens the lateral swaying of the caravan during travel and causes the pads to wear out. The friction pads have large wear surfaces to ensure a long service life.

KNOTT couplings and some ALKO couplings have hitch indicators. When correctly coupled, the indicator will be switched to green (KNOTT) or a green field will appear above the spherical part of the hitch body (AL.-KO).

When the ball coupling is engaged, there should be no appreciable play between the coupling and the ball. If there is play, this is a sign that the ball or coupling is worn and should not be used.

RYS FIGURE





5.3. SUSPENSION

All NIEWIADÓW caravans are fitted with axles with rubber shock absorbers. The suspension system does not require maintenance, but should be serviced according to the rules set out in section 8.

5.4. ROAD WHEELS

Correct and safe driving is ensured when each road wheel in the caravan has equal pressure. The optimum tyre pressure for caravans loaded to their maximum permissible gross weight should be between 0.19 +/-0.01 MPa.

If you want to ensure a long service life for your tyres, you should:

- maintain the required wheel pressure:
- avoid driving over curbs:
- when storing the caravan during periods of disuse, support it so that the wheels do not touch the ground;
- avoid prolonged static loading;

Use a 19 mm socket spanner to tighten the wheels. The tyre treads should show equal amounts of wear when in regular use. If you notice uneven tread wear, have the caravan suspension checked.

Wheel change:

- 1. When changing a wheel, make sure the towing vehicle is attached if possible.
- 2. Park the combination on a level and firm surface and, in the event of a tyre puncture on a public road, switch on the hazard warning lights and set up a warning triangle.
- 3. In the towing vehicle, apply the handbrake, set the wheels straight, put the gearshift in 1st gear or, in the case of automatic transmission, in the P position.
- 4. Apply the handbrake to the caravan, leave the support wheel in the running position and raise the hitch stabiliser lever (Attention !!! DO NOT OPEN ALL THE WAY).
- 5. Place chocks or wooden blocks under undamaged front and rear wheels to prevent any roll-back of the caravan.
- 6. The spare wheel is fixed to the caravan holder.
- 7. Prop the jack on the axle or on the frame of the wheel to be replaced. If the ground is soft, place a firm object such as a plank under the lack.
- 8. Loosen the lugs by giving them a single turn anti-clockwise, but do not remove them completely.
- 9. Raise the vehicle so that the wheel is 2-3 cm above the ground.
- 10. Remove the wheel lugs and remove the wheel.
- 11. Put the spare wheel on the wheel hub and position it so that the lug holes in the wheel line up with the lug holes in the hub.
- 12. Tighten the wheel lugs, one at a time, diagonally.
- 13. Lower the jack and remove it.
- 14. Tighten the wheel lugs evenly using a wheel spanner to the required torque value 110 Nm for steel rims and - 120 Nm for aluminium rims.
- **15.** Release the handbrake and lower the stabiliser lever again.



NOTE !!!

Following a wheel change, the tightening torque of the wheel lugs must be checked with a torque spanner after 50 km of driving and, if necessary, corrected to the value specified in point 14 above.



5.5. BRAKING SYSTEM

The caravans manufactured by Fabryka Przyczep NIEWIADÓW Sp. z o.o. have an overrun braking system which consists of:

- an overrun device,
- a linkage system,
- a wheel braking mechanisms.

When braking the vehicle, the inertia force of the caravan exerts pressure on the overrun device which actuates the braking mechanisms in the caravan wheels via the linkages. The design of the braking mechanisms allows reverse travel without additional preparatory measures. When switching from reverse to forward travel, the braking system is automatically ready to brake.

The caravan is equipped with a parking brake system, which is activated by pulling up the hand lever located at the overrun device. It ensures that the caravan brakes on gradients of up to 16%. However, it is only effective when the hand brake lever engages the last tooth. If the lever is pulled too low, the caravan will brake in the forward direction without providing adequate braking in the rearward direction.

It is recommended that, in addition to applying the handbrake, wheel chocks are placed under the wheels if the vehicle is parked on a slope for an extended period.

The caravan braking system requires maintenance and adjustment according to the rules set out in section 8.

5.6. SUPPORT WHEEL

The support wheel is designed to support the front of the caravan when rolling, hitching to a car or replacing a road wheel. Care must be taken to ensure that the lug on the support wheel, which is visible when the wheel reaches its maximum extension, is always lubricated with grease.

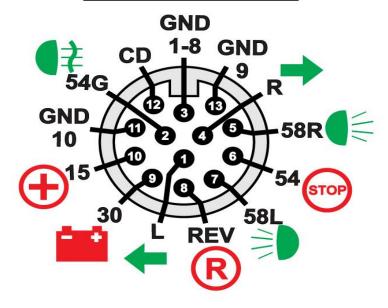


5.7. CARAVAN SIGNALS

The caravan is fitted with a 12 V signalling system. Shown below is a drawing of a 13-pin connector and the colour-coded wires used to power the lights.



GNIAZDO 13-STYKOWE



The caravan uses LED lights.

6. BODYWORK

6.1. KITCHEN FURNISHINGS

The kitchen furnishings include a gas cooker and a sink. These have dark glass lids. The cooker is designed to burn propane-butane gas and can only be connected to a gas cylinder via a suitable pressure regulator (30mbar).

When the caravan cooker is in use, there should be a continuous exchange of air to ensure that there is sufficient air for the gas to burn and for the fumes to escape (open vents or window).

To light up the burners:

- open the valve on the gas cylinder and the corresponding valve on the kitchen cabinet see section 6.5.3 for a description of the valves.
- turn on the burner of the gas cooker as specified in the instructions.



When not using the cooker, the gas cylinder valve should be closed.



NOTE !!!

Operation of the cooker must accord with the information in the relevant user manual, which is supplied with the caravan. It is forbidden to connect the cooker directly to the cylinder without using the correct regulator.

The cooker and sink are covered by their manufacturer's warranty.



6.2. REFRIGERATOR

The refrigerators used by Fabryka Przyczep NIEWIADÓW Sp. z o.o. can be supplied with 230 V and 12 V electricity.

A detailed description of the operating conditions and technical data of the refrigerator can be found in the relevant user's manual, which is supplied with the caravan. The refrigerator is covered by its manufacturer's warranty.

6.3. INTERIOR HEATING

Caravans are fitted with interior heating equipment powered by propane-butane gas with a working pressure of 30 mbar.

In order to start heating, it is necessary to:

- connect the gas cylinder via a suitable regulator;
- open the heating valve located in the kitchen cabinet see section 6.5.3 for a description of the valves;
- turn on the heater as specified in the relevant user's manual



When not using the heating, the supply valve to the appliance in the kitchen cabinet should be closed.

A detailed description of the operation, use and technical data of the heater can be found in the user's manual. The heater is covered by its manufacturer's warranty.

6.4. SEATING AND SLEEPING AREA

In order to create a seating area, it is necessary to:

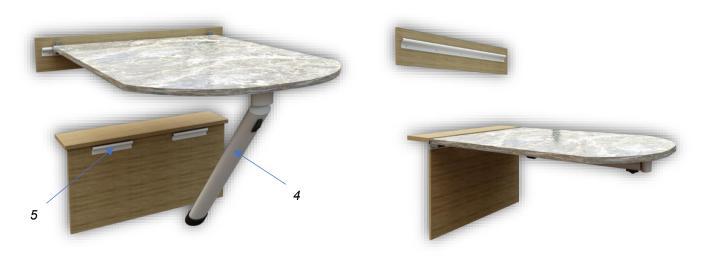
- place the table hooks (fixed at the edge of the table) on the aluminium bar (2) on the wall of the caravan and extend the table leg (4) by moving the button (3). Then press the buttons (1) on the table hooks.



In order to create a sleeping area, it is necessary to:

- press the buttons (1) on the table hooks, fold the table leg (4) by moving the button (3),
- remove the table from the aluminium bar (2) and place it on the ledge (5), while also placing the table on the edge of the beds.





6.5. WIRING AND PIPING

6.5.1. ELECTRICAL WIRING - 12 V

The 12V system is used to power the refrigerator; the water pump and the indoor lighting. The refrigerator can also be powered by 230V

A voltage of 12 V is drawn from the power supply or from the car battery. The installation is connected to the vehicle using a 13-pin connector according to ISO 11446.

6.5.2. ELECTRICAL WIRING - 230V

The 230 V system is used to power the electric boiler, refrigerator and 230 V electrical sockets.

To start the 230V system, connect the caravan to an external 230V power supply using the cable supplied with the caravan – for the first time on a new caravan it may be necessary to switch on the residual current breaker located in the switch cabinet next to the power supply – see Figure 3. The power supply powers the caravan and charges its battery.

The operating modes of the power supply display are confirmed by briefly pressing the 'status selection' button. The available modes are as follows:

- voltage displays the current battery charging voltage
- current displays the current charging current
- charging phase displays the current charging phase

In addition, the display can indicate that the unit is overheating by displaying the '-P' sign. This sign is displayed in case of reverse connection to the battery. In LFP mode, the charger can operate as a stabilised source of power - 12V (13.8; 14.2; 14.6) or 24V (27.6; 28.4V; 29.2V)

The charger is designed for indoor use and must be used as intended. It should not be used near flammable materials or substances, close to sources of fire or exposed to direct sunlight. The housing may become hot under full load. In the event of fire, use a fire extinguisher suitable for extinguishing electrical appliances.



NOTE !!!

Before connecting the caravan to an external 230V power source, the trailer must be disconnected from the vehicle system, i.e. first remove the 13-pin connector from the vehicle plug socket, and then plug the 230V socket connector into the caravan. Disconnection from the 230V system must be done in reverse order.

Failure to follow these rules risks damaging the battery and is not repairable under warranty.





Figure 3-Power supply with switch cabinet

6.5.3. GAS PIPING

Before starting any of the appliances, the gas cylinder must be connected to the system via the regulator (see Figure 5). The valves in the kitchen cabinet should be closed during this time. The gas cylinder is not supplied with the caravan.

After connecting the cylinder and checking for leaks as described later in this section, open the appropriate valve in the kitchen cabinet depending on which appliance or appliances you wish to use. The valves are marked with the graphic symbols of the appliances they supply – see Figure 4.



Figure 4-Designation of the purpose of gas valves





Figure 5- space for gas cylinder including fixing straps, flexible hose and regulator



NOTE !!!

All gas appliances in caravans are designed to burn a 30mbar propane-butane gas mixture, so the regulator must also be set for this pressure in order for these appliances to work properly.

6.5.3.1. INSTALLATION OF GAS CYLINDERS

Rules for connecting gas cylinders:

- Place the gas cylinder in the container provided, then secure it to the container with rubber ties or straps.
- When there is a warranty seal film on the cylinder valve, remove it by making a slight cut and tear it off.
- The reducer connection on the valve has a left-hand thread. Use a 27 spanner to unscrew the plastic nut and turn it clockwise. Screw the reducer nut on by turning it to the left (counterclockwise).



NOTE !!!

Check beforehand that the cylinder valve is closed before removing the plastic cap on the cylinder valve.

We recommend that the gas cylinder should be connected by a person certified for gas work.



Rules for checking the tightness of the connection:

- 1. Each time the cylinder is connected to the regulator, check the tightness of all connections. To do this, lubricate the connection points of the line, the valve and the connection of the valve to the regulator with soapy water or spray and then open the valve. The absence of gas means the piping is leak-free.
- 2. If gas is found to be escaping from the system,:
 - close the cylinder valve;
 - extinguish all sources of open flame;
 - do not use equipment that causes sparks (electrical plug sockets, power switches, radios, televisions, etc.):
 - open doors and windows and ventilate the room thoroughly (LPG, being heavier than air, accumulates in the lower parts of the room).
- 3. In the event of a fire, if possible, turn off the valve and remove it from the room to free air. If this is not possible, cool the cylinder as much as possible with a jet of water or heavy wet rags. Immediately notify the



emergency services of the fire and inform the fire brigade of the presence of the gas cylinder in the room on fire.



NOTE !!!

- It is forbidden to check for leaks using a flame.
- It is forbidden to cover ventilation grilles.



NOTE !!!

- Regularly check the condition of the gas hose connecting the gas cylinder to the piping. If necessary, and always before the expiry date printed on it, replace it with a new one that is approved for gas system use. We recommend that this is carried out by an Authorised Service Centre - a list of these can be found at ww.niewiadow.pl/serwis
- Place an ABC type fire extinguisher of at least 1 kg capacity near the front door and a fire blanket near the kitchen appliance and refer to their user's manuals. The fire extinguisher and blanket are not supplied with the caravan.



NOTE !!!

The use of any gas appliance inconsistent with these instructions or with the service manual supplied with the relevant appliance may result in the escape of significant quantities of gas or its poor combustion, resulting in a fire or exhaust gas poisoning. Poisoning from exhaust fumes containing carbon monoxide manifests itself in tinnitus, heaviness, accelerated pulse, dizziness, vomiting and general weakness. If these symptoms occur, call the emergency services immediately and:

- take the affected person to fresh air;
- make it easier for the affected person to breathe by unbuttoning their clothes;
- cover the person with a blanket and do not allow them to fall asleep;
- continuously supervise the person until the arrival of the emergency services.

6.5.4. WATER PIPING

The water system includes:

- water supply pipes;
- water tank with a capacity of 30 litres;
- drain line;
- sink tap, basin tap, shower;
- electric pump;
- electric boiler.

The water container is located in the left front bench seat. To activate the water system, fill it with water and place the pump inside. Water comes out of the tap when the valve is turned

Dirty water is discharged through a system of pipes under the caravan. When in a campsite, place a dirty water container under the drainage pipe or, where possible, position the caravan over a designated drainage grate so that the outflowing dirty water does not spill over the sides.

6.5.5. VENTILATION

Air vents and grilles are caravan components that allow air to flow freely inside the vehicle. They are essential for maintaining the right level of humidity and also for providing fresh air inside. This is especially important to bear in mind during post-season parking so that dampness does not develop inside.

With proper ventilation, you will prevent a musty smell. To do this, place your side windows and roof window in the ventilation position. Also use the ventilation position for the fridge and freezer.



6.5.6. TOILET CASSETTE

The caravan is equipped with a toilet cassette. The cassette has a tank which can be accessed from outside the caravan through a special door.

A detailed description of the operation and use of the toilet cassette can be found in the manual that is supplied with the caravan. The toilet cassette is covered by its manufacturer's warranty,



Figure 6- ejected toilet cassette visible through the open access door

7. CARAVAN MAINTENANCE

Maintenance involves keeping the caravan clean. The body should be washed with a soft wet cloth and rinsed thoroughly with water. Rough cleaning materials may scratch the surfaces, especially the windows - such defects are not covered by the warranty. The materials used for the bodywork do not require additional waxing and we recommend that no protective coatings are applied to the walls or windows. Any discolouration caused by this is not covered by the warranty.

Wash mattress covers and curtains using normal laundry detergents.

Wash the floor with warm water and detergent additives. From time to time, the floor should be polished with a floor care product.

After the end of the season you should:

- wash the caravan body:
- protect the plug contacts of the 230 V supply cable with a temporary protection agent (e.g. WD40);
- empty the water system, the toilet cassette and the travel toilet of any residual water
- charge the battery and then, using a 13 mm spanner, disconnect the cables from the battery, first the one whose terminal is marked with a (-) sign and then the one whose terminal is marked with a (+) sign.



NOTE!!!

The process of charging the battery can cause it to heat up. Before disconnecting the terminals, make sure that the battery is not hot to avoid burns.

Before the season starts, connect the battery in reverse order.

8. INSPECTION

In order to use the caravan safely and reliably, it is necessary to carry out periodic inspections.

Interval	Type of measure
every 10,000 km or 12 months	Inspection, adjustment and lubrication of the brake system. Lubrication of the bearing bushes of the overrun device



9. USER TIPS



When towing a caravan:

- keep a reasonable distance from any vehicles in front of you when towing a caravan so that you can increase the speed when the caravan starts slipping sideways;
- keep cautious on downslopes especially in wet weather;
- the braking distance of the car-caravan combination is longer than that of the car alone;
- when the caravan is parked on sloping ground, place wheel chocks under the wheels and, if the caravan is equipped with a brake system, apply the brakes using the hand lever;
- the permissible total weight of the caravan must not exceed the value stated in the towing vehicle's documents even if the legal regulations allow higher values.