



Kalkhoff Agattu Pedal Assist and Battery Owner Manual

Dear customer:

You have decided in favor of a Pedelec (Pedal Electric Cycle)- a bicycle that is equipped with an electric motor to give you additional assistance when riding.

Properties

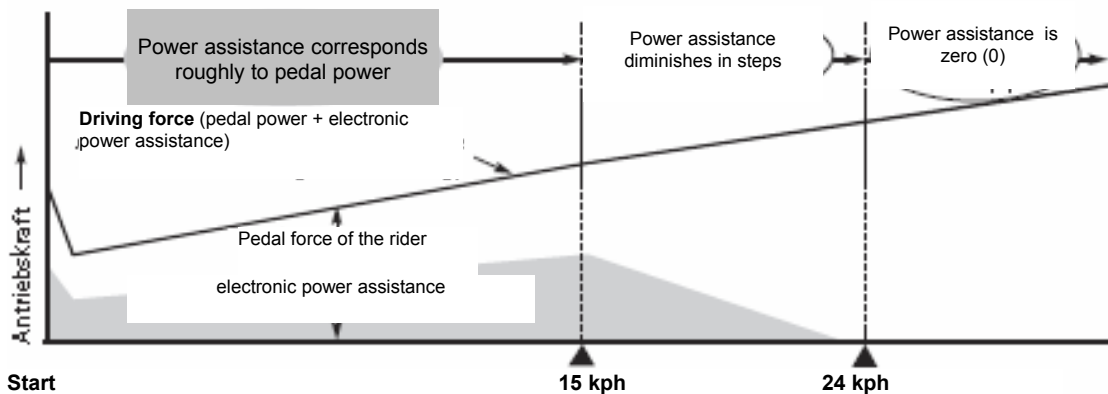
1. With this bicycle you can make better progress in headwinds, when transporting heavy loads or on steep slopes.
2. You can select the level of power assistance required according to the weight of your load and/or the prevailing road conditions,

The effectiveness of the power assistance depends on your pedal power and the level of assistance selected. Before switching on the electric assistance system, please read the chapter "Charging the battery". The battery must be fully charged before the motor is switched on.

Mode of operation and extent of electronic power assistance

As soon as you switch on the electric assistance system and begin pedaling, electronic power assistance is available. The necessary pedal power reduces in proportion to each increase in the level of assistance (see p. 6, Selection of assistance level) by approximately 60%, 50%, or 30%.

Changing the level of electronic power assistance



Power assistance is not available if:

- pedal power is too weak
- the battery light is blinking
- when riding at more than 24 kph in 7th gear
- when riding at more than 18 kph in 4th gear
- when riding at more than 14 kph in 1st gear

Charging the battery

The charging time given in this manual is the time that is necessary for charging after the capacity of the battery has been used up. This is indicated by the blinking of the battery charge status LED.

! To avoid shortening the service life of the battery you should not charge the battery longer than 48 hours.

Removing the battery

In order to charge the battery, you must remove it from the bicycle.



1. Hold the battery firmly and open the lock with the key in an anti-clockwise direction.



2. Tilt the battery slightly to the side.

3. Lift the battery with both hands and remove it from the holder.



Attention: For reasons of safety you should make sure that you have removed the key.

Charging process



1. Plug the charging device into a 220 volt socket. Grasp the battery and insert it into the slot provided for it on the charging station.

2. The LEDs of the battery light up. When all 5 LEDs are glowing red, the battery is fully charged.

3. Remove the battery from the charging station.

4. Unplug the charging station.

Installing the battery



1. Place the battery in the battery mount, tilted outward on the left hand side by about 45°.
2. Use the guides on the side of the battery when inserting it into the battery holder.
3. Tilt the battery toward the bicycle until it engages the lock.
4. Check that the battery is firmly seated. The key is not required for installation.

Remarks

- Make sure that the battery is fully charged before the first ride or after the bicycle has not been used for longer than one month. The battery is not charged when delivered.
- Make sure that the battery is charged for at least 3 hours before its first use.
- Charge the battery at an ambient temperature of 0-40°C. If the outside temperature of the battery is below 0°C or above 40 °C, the charger will remain in the standby mode and the battery cannot be charged.

Before starting to ride

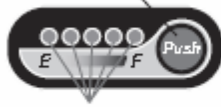
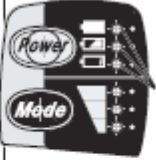



Check the remaining capacity of the battery to determine whether it is sufficient for riding to your destination. If the button on the display panel marked “Push” is pressed, this will show the remaining capacity of the battery. This is an approximate value.



Battery status indicator

- In very cold weather, after a trip through mountains or if the battery has not been used for a long time, the power assistance will not operate even though the indicator light is on. In this case, the battery must be placed in the charger in order to recharge it.
- In winter the travelling range is reduced in relation to the battery's original capacity.
- The range may vary depending on the road and driving conditions.

If all diodes flash one after another or in groups (2-3 diodes) , the battery is damaged.

	Battery	available capacity					operating field	
		20	40	60	80	100		
Check battery status	Akkuladestand prüfen							Akkuladestandsanzeige-LED
Battery status indicator LED All five (5) LEDs on 80-100%	Alle fünf (5) LED leuchten					ca. 80 - 100 %		Alle drei (3) LEDs leuchten ca. 70 - 100 %
Four LEDs on 60-80%	Vier (4) LEDs leuchten					ca. 60 - 80 %		Zwei (2) LEDs leuchten ca. 40 - 70 %
Three LEDs on 40-60%	Drei (3) LEDs leuchten					ca. 40 - 60 %		Eine (1) LED leuchtet ca. 10 - 20 %
Two LEDs on 20-40%	Zwei (2) LEDs leuchten					ca. 20 - 40 %		LED blinkt langsam - blinkt schnell - aus ca. 0 - 10 %
One LED on 10-20%	Eine (1) LED leuchtet					ca. 10 - 20 %		
One LED blinking 10-0%	Eine (1) LED blinkt					ca. 10 - 0 %		

Battery status indicator LED

All three LEDs on means about 70-100% capacity remains

Two LEDs on about 40-70%

One LED is on, about 10-20%

LED blinks slowly – blinks quickly - off about 0-10%

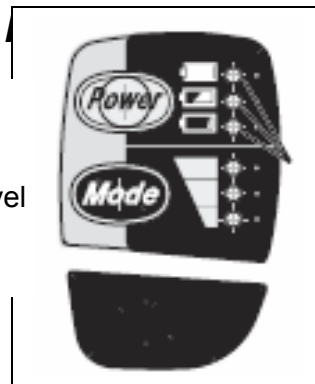
Operation

The electronic power assistance is switched on and off by using a switch mounted on the handlebars ("Power")

Control

On/Off switch

Selection of assistance level "Mode"



Battery charge status indicator LED

Switching on the power assistance

Press the on/off switch on the control panel ("Power")

The LEDs on the control panel light up for about two seconds and then go out again. Do not use the pedals when the LEDs are on. The torque sensor is configuring the control programme.

- After this, the battery status indicators light up and show the remaining capacity of the battery. If the lower power LED is blinking, you must charge the battery immediately before use (see section on LED light mode when riding).

- 10 minutes after the bicycle is brought to a halt, the current supply is automatically switched off (“Automatic cut off”). When you start riding again, repeat the procedure described above.

(!) The torque sensor of the bicycle is automatically reconfigured every time you change the riding mode. This extends the useful life of the battery.

If the LED does not light up during operation, check whether the battery is charged and securely mounted.

LED light mode when riding

During the trip, monitor the status of the light emitting diodes (LEDs).

If they blink, this is a precise indication that the battery capacity is very low and that charging will soon be necessary.

LED status on the control panel

LEDs on	The battery has a charge sufficient for your trip. The available battery capacity is indicated by the lighting up of the corresponding LED
Blinking slowly	The battery charge has dropped to a low level. The remaining battery power is 9% of capacity. Recharging is recommended.
Blinking rapidly and goes out after about 3 minutes	The battery is completely dead. A recharge is necessary immediately.

Other forms of LED status are explained in the chapter “Self diagnosis”

! The LED can show when an excessively high drain of energy is being consumed on a constant basis (e.g. when riding uphill) or if the battery has not been used for a long time. Should this occur, press the on/off switch (“Power”) in order to switch off the current and then press it again to continue operation.

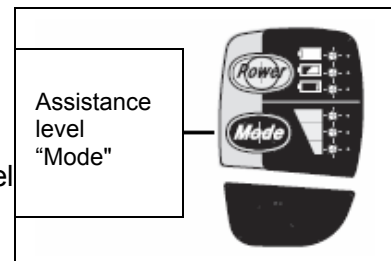
Selection of assistance level (Mode)

You can change the mode settings after the motor is switched on.

Every time you press the mode switch, the assistance level accordingly.

The following three modes are available:


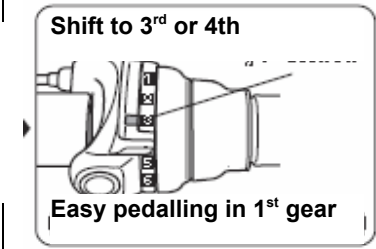





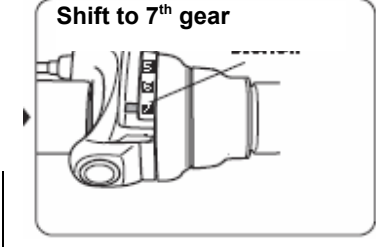

high 1:1.3
medium 1.1
low 1: 0.5



Low assistance (energy-saving mode)

If you select a low assistance level you will have a greater range and if you select a high assistance level, your range will be smaller.

! When necessary, set the accessory motor to high mode. If no pedalling is necessary when riding downhill, the accessory motor will switch off automatically.

	<i>recommended gear</i>	<i>recommended mode</i>	
Level road 			Set mode to low
Uphill 			Set mode to high
Downhill 			Set mode to low

(!) You can adjust the optimal position of the gearshift and/or the accessory mode corresponding to your physical capabilities, whether you are going uphill or downhill, whether you have a headwind or tailwind.

For stopping

Neither the gearshift nor the mode switch should be activated.

- First activate the rear wheel brake or front wheel brake and rear wheel brake simultaneously.
- Stop.
- Press the on/off switch to interrupt the current flow.

Care and maintenance/information on the battery

Have the electric drive system checked regularly by your dealer. Do not perform any repair operations on the electric drive system or battery. Lack of specialist knowledge can lead to serious accidents.

Battery tips

The bicycle that you have purchased is operated with the following battery types:
Model: Li-Ion-battery (Ni-Li) NKY224B02
Capacity: 10 Ah

This battery can be charged and discharged about 500 times. A battery should always be considered as a part which is subject to wear. This means that the initial capacity diminishes with increasing age and according to the frequency with which the battery is charged. If the travel range of your bicycle is no longer sufficient for you, we advise you to replace your battery.

Battery sleep mode

When delivered, the battery is in the so-called sleep mode. Therefore, the battery must be fully charged before it is operated for the first time because otherwise it can produce no current. In the sleep mode, the operating panel is inactive.

If the capacity of the battery drops below 50% and if the battery remains uncharged for longer than two weeks, the sleep mode returns.

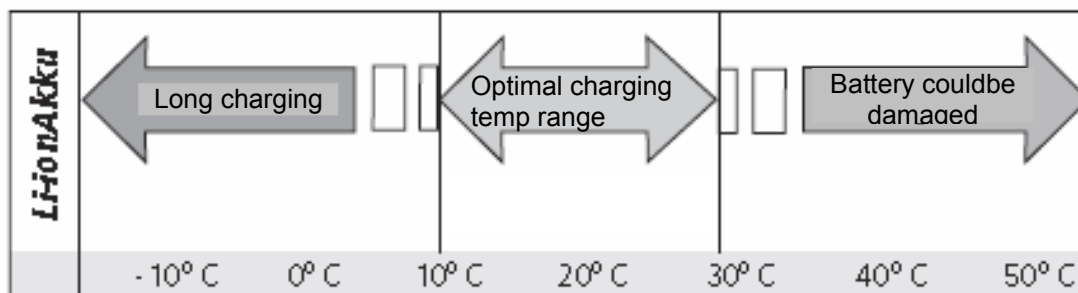
Also, the battery self-discharges over time and it will enter the sleep mode after a down time of approx. 4 months, even if it is fully charged.

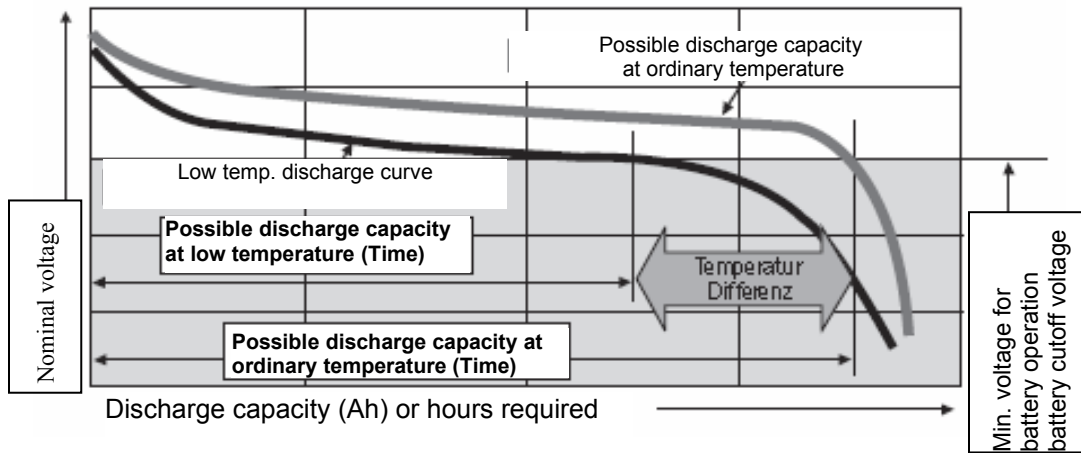
! The battery must be fully charged at least every six months - otherwise irreparable damage may occur.

Batteries cannot be disposed of with regular domestic waste.

- Do not charge your bicycle battery in any other charger. Charging other batteries in the charging station delivered with the system is also not permitted. There is a risk of explosion!
- Please do not store the battery outside and only install it just before starting to ride.
- Do not throw the battery into a fire or expose it to a heat source, because it could explode and cause serious injuries.
- Please use only a damp cloth without chemical cleaners for cleaning the battery housing.
- Never attempt to open the battery.
- Check the battery housing regularly for cracks, breaks or unusual deposits on the contacts. A battery with a damaged housing may no longer be used.

Charging the battery



Discharge characteristic curve (temperature)

Regardless of whether it is a NiCd, NiMH or Li ion battery, charging is accomplished by a chemical reaction of the substances inside the battery. Since the chemical reaction in the battery takes place slowly at low temperatures, the discharge capacity, regardless of the type of battery, tends to diminish in comparison to that at ordinary temperature.

In actual use, it has been noted that, as the figure shows, the accessory motor may stop prematurely despite some remaining battery capacity, since the discharge voltage tends to remain at a lower level at a low temperature. This does not mean a malfunction and the battery will regenerate itself when the temperature rises.

(!) On several consecutive days in winter, the discharge capacity may drop due to the low temperatures with the result that the range may be suddenly reduced.

General information on the charger

The delivery includes the type NKJ38 charger.

Before use, take the charger out of the cardboard box and remove the plastic wrapping.

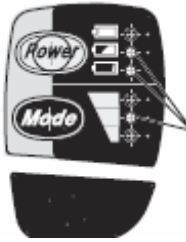
If you do not do this, the outside of the charger can be deformed by the heat. Store the charger in a dry place if you are not charging the battery.



! Inexpert handling can cause serious accidents or injuries.

- Never bring the contacts of the charger together during the charging process.
- Do not attempt to disassemble the charger or alter it.
- Do not use the charger in damp spaces.
- Do not continue using a damaged charger or accessories (e.g., housing, cables, plugs)! Risk of electric shock, short-circuit or fire!
- Keep it away from children – risk of electric shock.
- Please make sure that the plug is properly inserted into the socket.
- Plug and contacts of the charger should be kept free of dust, clean and dry.

- The charger can only be connected to a 220-230 V socket.
- Avoid prolonged direct skin contact with the charger during the charging process. During this time the device heats up to about 40-60°C. Risk of burns!
- The charger should only be set up in a secure stable position on a suitable surface.
- Do not cover the charger or place objects on it - risk of overheating or fire!



Self diagnosis

The control unit of the control panel has a self-diagnosis mode. With the aid of self-diagnosis, any improper function of the electrical system can be determined.

The error code is identified by different modes of blinking (number and frequency) of the diodes.

Error search

Problem	Cause	item to be checked	Problem	Cause	item to be checked
current cannot be switched on	1) no remaining battery capacity	1) check the battery charge status indicator	Weak support	1) capacity drop due to battery ageing	1) have the voltage on the battery terminal checked after the charging process is completed
	2) battery switch activated, fuse (safety) burnt out	2) have the voltage on the battery terminal checked by the dealer		2) incorrect setting at the starting point of the torque sensor	2) did you have your foot on the pedal when switching on?
	3) Malfunction of control switch/cable break	3) check whether the covering foil of the control switch is damaged and if the cable is in bad condition. If so, contact your dealer.		3) motor defect or drive problem	3) contact your dealer
support not given	1) Indicator error control switch	1) See self-diagnosis of the control switch	battery LED does not come on	battery LED does not come on	1) have the battery tested at your dealer's
	2) automatic switch-off activated	2) check whether more than 10 minutes have elapsed since the pedals were used		2) Malfunction of control switch	2) check whether the cover foil of the control switch is damaged. If so, contact your dealer
	3) malfunction, control switch	3) check whether the label on the controls has been torn off or has peeled off. If so, contact your dealer	charging error standby continued	1) severe discharge due to prolonged storage	1) have the battery terminal voltage checked
	4) motor defect or drive problem	4) contact your dealer		2) battery switch activated, safety fuse burnt out	2) have the battery terminal voltage checked
				3) outside the temperature range (0-40°C)	3) Was the battery charged outside in the winter/ shortly after riding?

<i>Problem</i>	<i>Cause</i>	<i>Item to be checked</i>
Range is reduced	1) Aging, end of service life of battery 2) Overload (carrying heavy loads, climbing, gear use) 3) Poor bicycle maintenance 4) Deactivation due to prolonged storage 5) incomplete charge due to abnormal termination of charging process	1) Check the useful life of the battery. 2) Are you driving with the bike when the gear is at "middle" or "fast"? 3) Do the tyres have too little air, is a brake rubbing? 4) have the battery terminal voltage checked 5) please repeat charging process
Battery charge status indicator	1) ageing, end of service life of battery	1) Check the useful life of the battery.
<p>! Replace the electrical components on your bicycle only with parts tested for the corresponding model.</p>		

**We wish you a lot of pleasure
when using your new bicycle!**

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Technical data

Drive	Motor	Motor type: Brushless pedal bearing motor Power output 250 W Control by a force sensor i.e. at assistance level 1:1, the drive feeds the same power into the system that the rider himself applies
	Battery	Removable, rechargeable Lithium ion manganese battery 26 V 10 Ah (260 Wh) 8 Ah weight 2.2 kg 10 Ah weight 2.4 kg Service life: 3-4 years, 500 charging cycles
	Charger	Charging time approx. 3 hours / first charge: at least 4 h. Weight of charger 530 g Current supply: 220 V (50 Hz) alternating current Power: 62 W
range/distance		up to 80 km (*in the case of average use, optimal conditions and fully charged battery)



This bicycle satisfies the requirements of the following EEC Guideline Compatibility (89/336/EEG). (73/23/EEC and 93/68/EEC).