FIT
E-BIKE SYSTEM
INTEGRATION

USER MANUAL

FIT BAT BUDDYPACK 240 48 V

501631

CONNECTED
TAILOR-MADE
SMART

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1 FOREWORD

Dear FIT customer,

The FIT System offers many interesting features and possibilities, and we're delighted that you have chosen it.

To ensure safe operation and a quick start, please read the user manual carefully. We hope you enjoy exploring FIT's features and wish many enjoyable rides.

Thank you very much for your trust.

Your FIT Team

2 ABOUT THIS USER MANUAL

2.1 MANUFACTURER

Rotax Bike Technology AG
Schwende 1
CH-4950 Huttwil
fit-ebike.com/

2.2 EU IMPORTER

Rotax Bike Technology Europe GmbH
Im Höning 5
DE-63820 Elsenfeld

2.3 LANGUAGE

The original user manual is written in German. A translation is invalid without the original user manual.

2.4 DECLARATION OF CONFORMITY

Rotax Bike Technology AG hereby declares that the products described in this user manual comply with EU directives. The full text of the EU Declaration of Conformity is available at the following internet address: fit-ebike.com/service/declaration/

2.5 IMPORTANT INFORMATION

To make the user manual easier to read, various symbols are used throughout.

2.6 WARNING NOTICES IN THIS USER MANUAL

Warning notices indicate dangerous situations and actions. You will find the following warning notices in the user manual:

DANGER

Failure to comply may result in serious injury or death. Moderate level of risk.

CAUTION

Failure to comply may result in minor or moderate injuries. Low level of risk.

NOTICE

Failure to comply may result in damage to property.

3 SAFETY INSTRUCTIONS

3.1 GENERAL

Please read all the safety instructions carefully. Failure to observe the residual risks and follow the instructions may result in electric shock, fire and/or serious injury.

Keep the user manual in a safe place and ensure it is readily available. Make sure you give these instructions to anyone else you let use your e-bike.

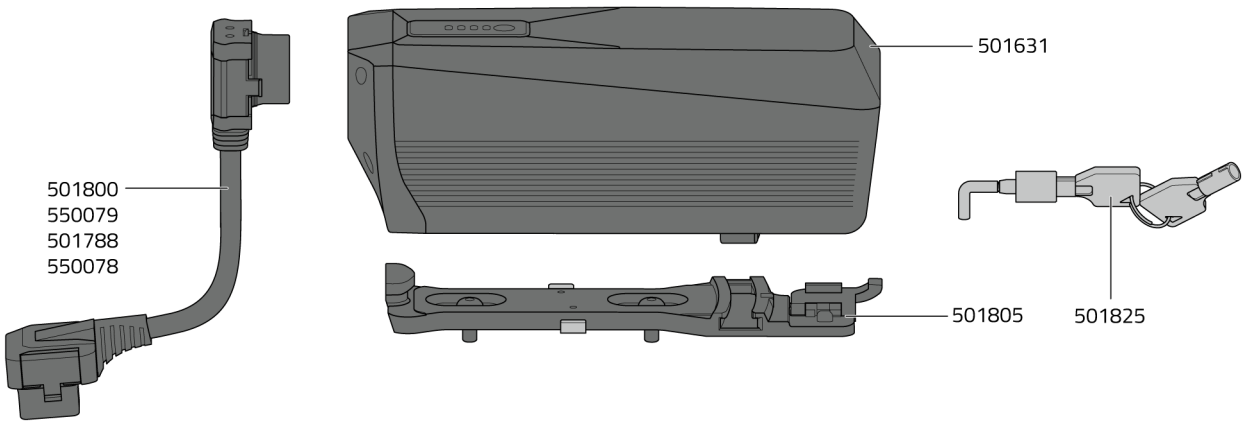
The generic terms used in this user manual (e.g. control, motor, battery, etc.) refer to all genuine FIT e-bike components.

3.2 BATTERY

- Remove the battery from the e-bike before you start carrying out any work on it (e.g. inspection, repair, assembly, maintenance, work on the chain, etc.), before transporting it by car or plane, or if it is not going to be used for a prolonged period. If the e-bike system is activated accidentally, there is a risk of injury.
- Do not open the battery. There is a risk of a short circuit.
- Protect the battery from heat (e.g. including prolonged exposure to direct sunlight), fire and immersion in water. Do not store or use the battery near hot or flammable objects. There is a risk of explosion.
- Keep the unused battery away from paper clips, coins, keys, nails, screws or other small metal objects that could cause a short circuit between the contacts. A short circuit between the battery contacts may result in burns or a fire.
- Avoid mechanical stress. This could damage the battery cells and lead to the leakage of flammable substances.
- Do not place the charger or the battery near flammable materials. Only charge the batteries when they are dry and in a fire-safe place. There is a risk of fire due to the heat generated during charging.
- The e-bike battery must not be left to charge unattended.
- If used incorrectly, fluid may leak from the battery. Avoid coming into contact with this fluid. In the event of accidental contact, rinse off with water. If the fluid gets into your eyes, seek medical attention as well. Leaking battery fluid can cause skin irritation or burns.
- If the battery is damaged or used incorrectly, vapours may be released. Let some fresh air in and see a doctor if you feel unwell. The vapours may irritate the respiratory tract.
- Only charge the battery using genuine FIT chargers. If non-genuine FIT chargers are used, the risk of fire cannot be ruled out.
- Only use the battery with e-bikes with a FIT system. This is the only way to protect the battery from dangerous overloading.
- Only use genuine FIT batteries that have been approved by the manufacturer for your e-bike. Using other batteries may result in injury or a fire hazard. FIT accepts no liability or warranty if other batteries are used.
- Keep the battery out of the reach of children.
- Our e-bike batteries are lithium-ion batteries, developed and manufactured using state-of-the-art technology. When fully charged, lithium-ion batteries have a high energy capacity. In the event of a fault (which may not be visible from the outside), lithium-ion batteries may, in very rare cases and under unfavourable circumstances, catch fire.

4 PRODUCT AND PERFORMANCE DESCRIPTION

4.1 INCLUDED ITEMS



- FIT BAT Buddypack 240 48 V (501631)

Required accessories:

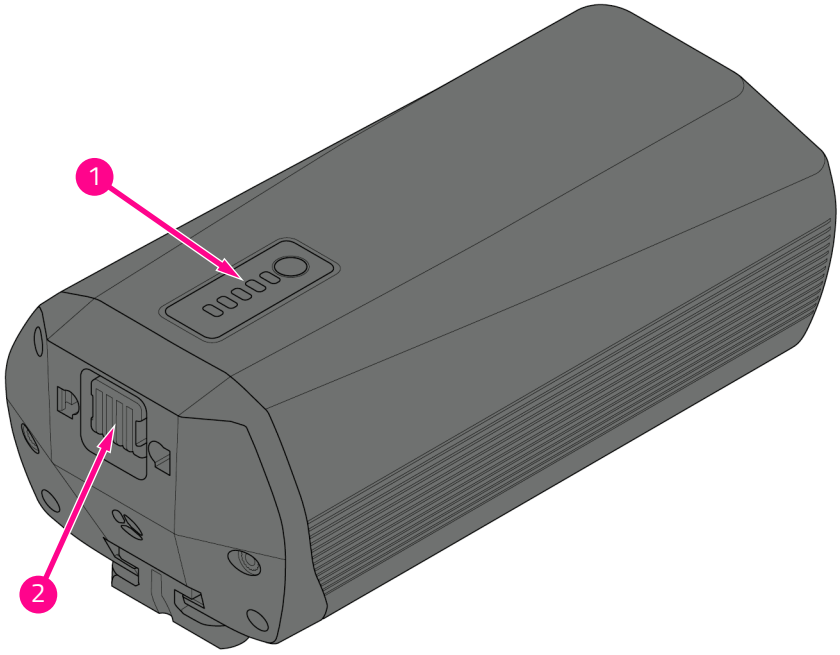
- FIT BAT Buddypack battery mount incl. screws (501805)
- FIT BAT Buddypack battery lock (501825)
- FIT BAT Buddypack connection cable:
  - 150 mm (501800)
  - 200 mm (550079)
  - 400 mm (501788)
  - 550 mm (550078)

Optional accessories:

- FIT BAT Buddypack Multi-Base (501807)
- FIT Buddy Pack maintenance cable (550010)

4.2 FIT BAT BUDDYPACK 240 48 V

With the FIT Buddypack, you can extend your trip. It gives you more range should you ever need to go further. Thanks to its compact design and light weight, it is particularly well suited to mountain biking. The casing is made of black plastic and features an LED battery level indicator.
For maximum security, the battery comes with a lock so that it can be securely locked in place.



1 Battery level indicator
2 Charging socket

NOTICE

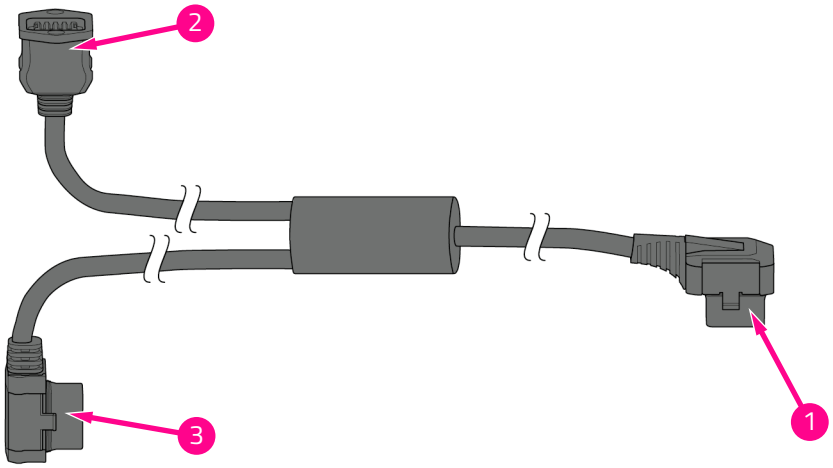
You can tell whether the Buddypack is compatible with a particular e-bike model by looking at the recesses in the charging socket (see **REQUIREMENTS FOR RETROFITTING [▶ 10]**).

- Compact battery for extra range, the size of a water bottle
- Attaches to the FIT BAT Buddypack battery mount (501805)

- Connects to the charging socket via a connection cable; available in various lengths

NOTICE

Before the Buddypack can be used, it must first be connected to the maintenance tool and updated. This must be carried out by a specialist dealer or the OEM. You will need cable 550010 for this, and it should be connected as shown in the illustration below.



1 Connection to the bike's charging socket
2 Connection to the maintenance adapter
3 Connection to the Buddypack

NOTICE

This cable can also be used to charge both batteries via a charger.

NOTICE

The maintenance cable must only be used to connect the e-bike and the Buddypack to the charger or maintenance tool. Use for any other purpose is not permitted.

4.3 INTENDED USE

All instructions and checklists in this user manual must be followed. Only use genuine FIT batteries that have been approved by the manufacturer for your e-bike.

The batteries are intended solely to power the e-bike motor and must not be used for any other purpose.

4.4 IMPROPER USE

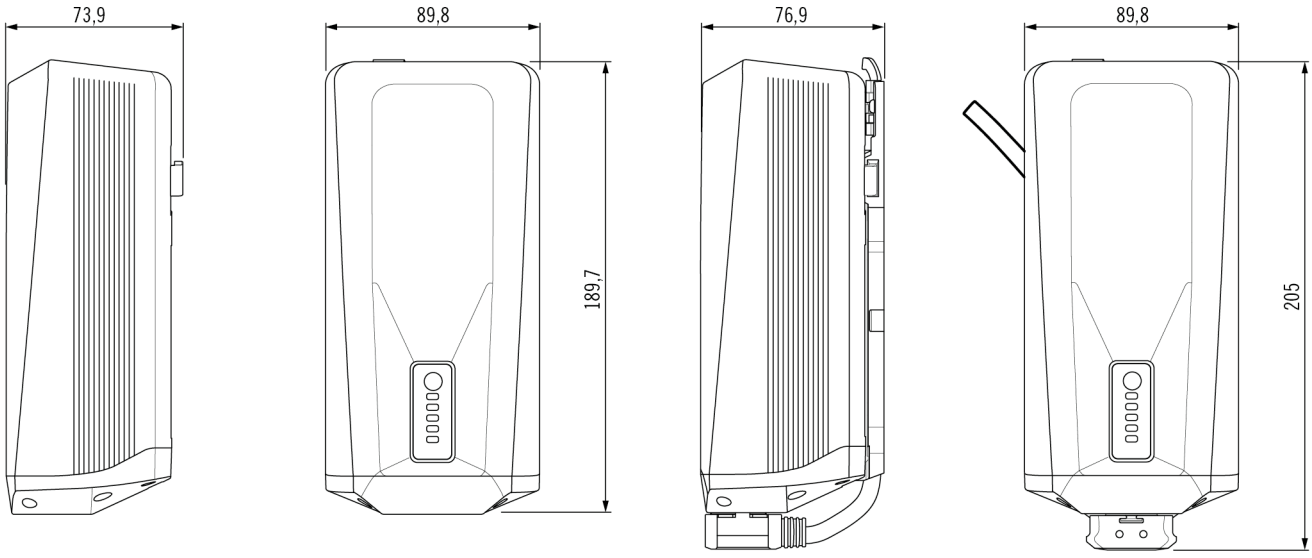
Any use that is not described under **INTENDED USE [▶ 8]** or that goes beyond this is considered to be improper.

4.5 TECHNICAL SPECIFICATIONS

4.5.1 FIT BAT BUDDYPACK 240 48 V

Battery		FIT BAT BUDDYPACK 240 48 V
Product code		501631
Battery type		Lithium-ion
Cell configuration		13S1P
Energy (nominal value)	Wh	234
Capacity (nominal value)	Ah	5
Energy (rated value)	Wh	225
Capacity (rated value)	Ah	4.8
System voltage	V	48
Charging current (maximum value)	A	4.8 A
Discharge temperature	°C	-20 to +60
Charging temperature	°C	0 to +45
Storage temperature (recommended)	°C	23 ±2 °C
Weight (including bracket), approx.	kg	1.6

The FIT BAT Buddypack 240 48 V battery (501631) has the following dimensions:

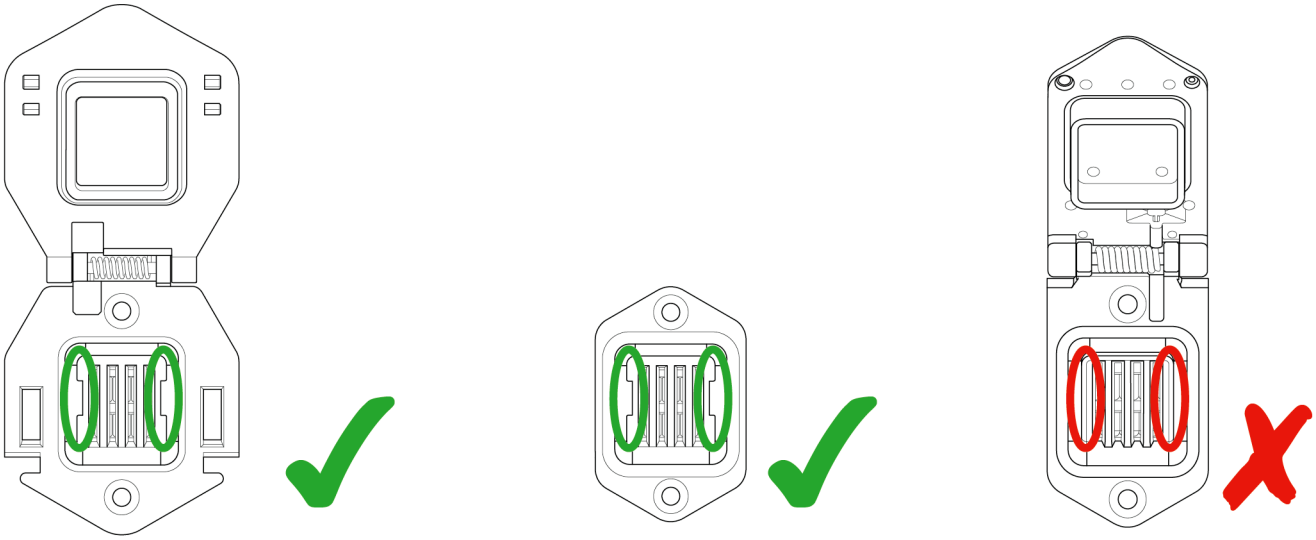


Dimensions of the FIT BAT Buddypack 240 48 V: left: battery only; right: including mount and plug (dimensions in mm)

5 FITTING

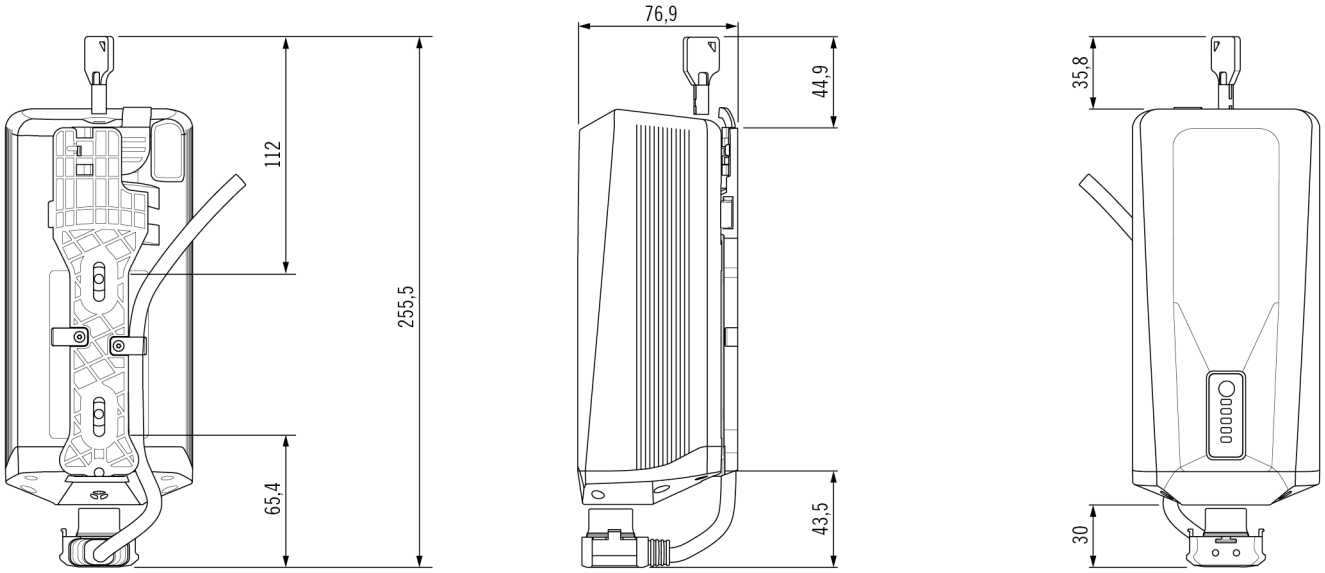
5.1 REQUIREMENTS FOR RETROFITTING

CHECKING BUDDYPACK COMPATIBILITY



- Before fitting, make sure that your bike model is compatible with the Buddypack. This can be determined by checking the charging socket.
  - ⇨ The charging socket must have two notches on the side for the bike to be compatible with the Buddypack. The charging sockets shown in the top left and centre of the illustration are compatible.
  - ⇨ Charging sockets without notches, as shown in the example in the top right-hand corner of the illustration, are not compatible with the Buddypack. Incompatible charging sockets cannot be converted to compatible ones.
  - ⇨ The threaded inserts on the frame must be able to withstand a weight of at least 1.7 kg.

5.2 SPACE REQUIREMENTS FOR THE BATTERY



Space required for plugs and keys

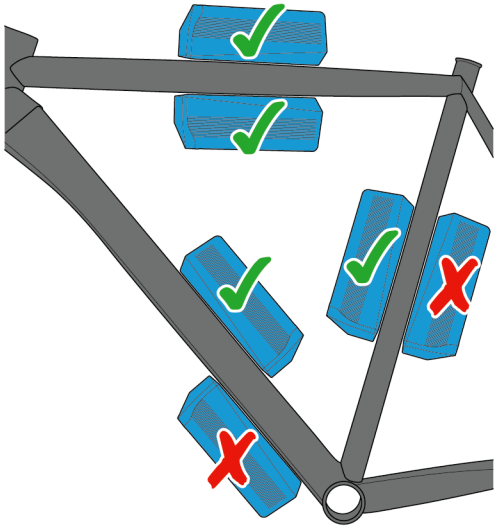
There should be sufficient space, on the plug side of the battery, to insert and remove the plug (see illustration above).

Please note that the cable runs towards the frame. So make sure you leave enough space for the cable. The bending radius of the connection cable must not be less than 15 mm.

To ensure compatibility with the battery lock, there must be sufficient space at the front of the battery (see illustration above).

All components must be at least 5 mm away from rotating parts such as the crank, chainring, etc.

5.3 PERMITTED POSITIONING



Battery positioning

The battery can be fitted in the frame triangle or on the top tube. It can be fitted horizontally, vertically or suspended (see illustration above). The battery must not be fitted to the underside of the down tube or to the rear of the seat tube, as this could damage it.

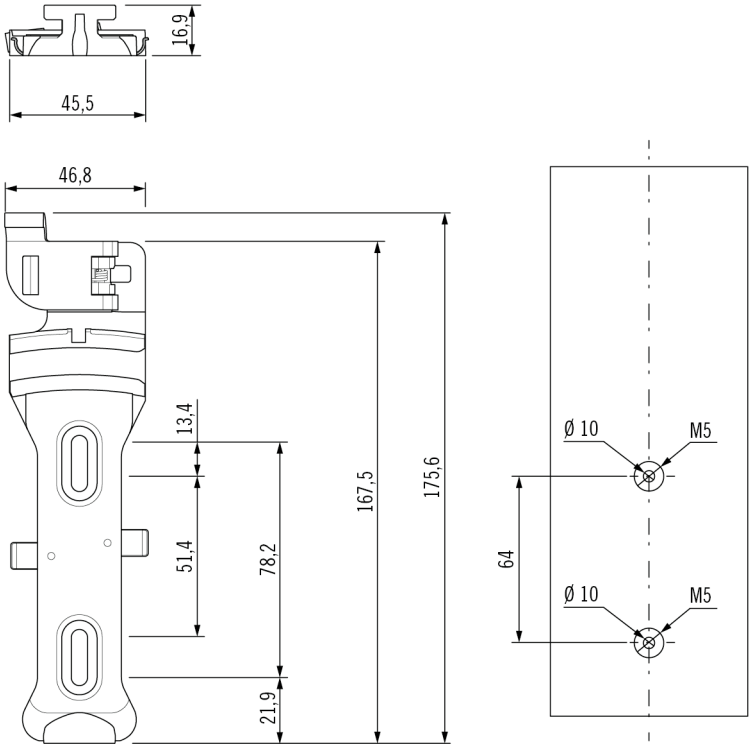
5.4 FITTING THE FIT BAT BUDDYPACK BATTERY MOUNT

The FIT BAT Buddypack battery mount (501805) must be secured to the bottle cage's mounting points using the two M5 screws supplied with the mount. The threaded inserts on the frame must be able to withstand a weight of at least 1.7 kg. It is therefore recommended to use threaded inserts with a flat head of at least 10 mm in diameter (see figure below) and a thread length of at least 6 mm.

The mount does not need to rest on the frame.

NOTICE

When the mount is fitted, the locking mechanism must be on the top.



Dimensions of the mount (left) and the recommended frame interface (right) (dimensions in mm)

NOTICE

There must be sufficient space inside the frame for the threaded insert.

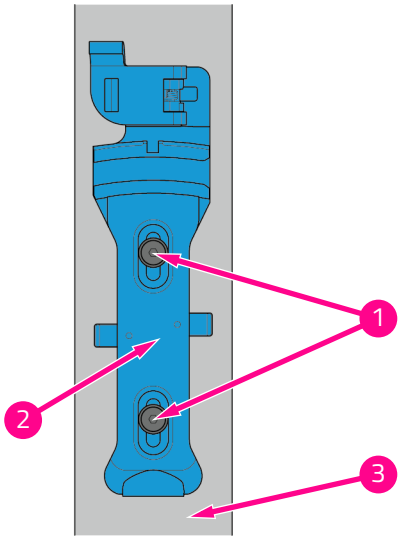
- Check for a possible collision with the main battery.

NOTICE

Failure to comply with this position may result in electrical faults throughout the e-bike system due to water build-up. There is also an increased risk that the battery will fall on the floor and be damaged when it is removed.

The FIT BAT Buddypack battery mount and the lock must be installed as follows:

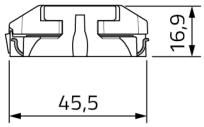
Only use original M5×12 machine screws; recommended tightening torque: 2–2.5 Nm

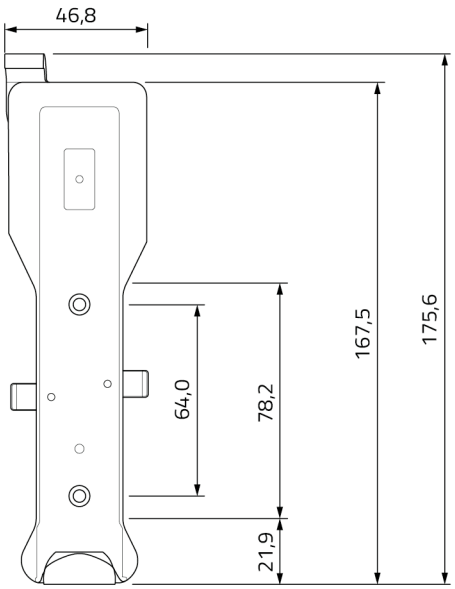


1 M5x12 machine screw
2 FIT BAT Buddypack battery mount
3 Frame

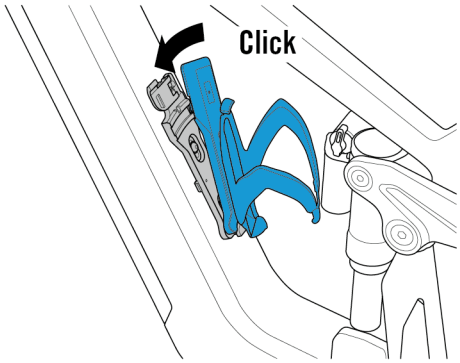
5.5 FIT BAT BUDDYPACK MULTI-BASE

A bottle cage adapter is available which can be attached to the FIT BAT Buddypack battery mount (501805). The FIT BAT Buddypack MULTI-BASE (501807) is suitable for standard bottle cages.





When used with a water bottle, the FIT BAT Buddypack MULTI-BASE may be larger than the FIT BAT Buddypack and may therefore not fit into every bike frame.

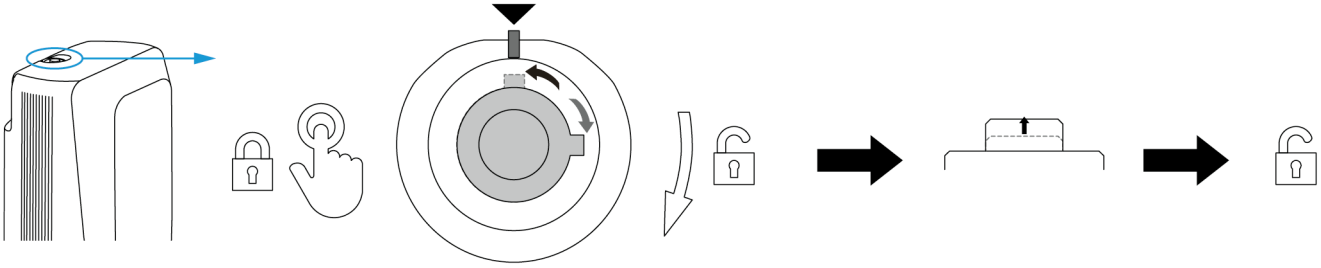


6 OPERATION

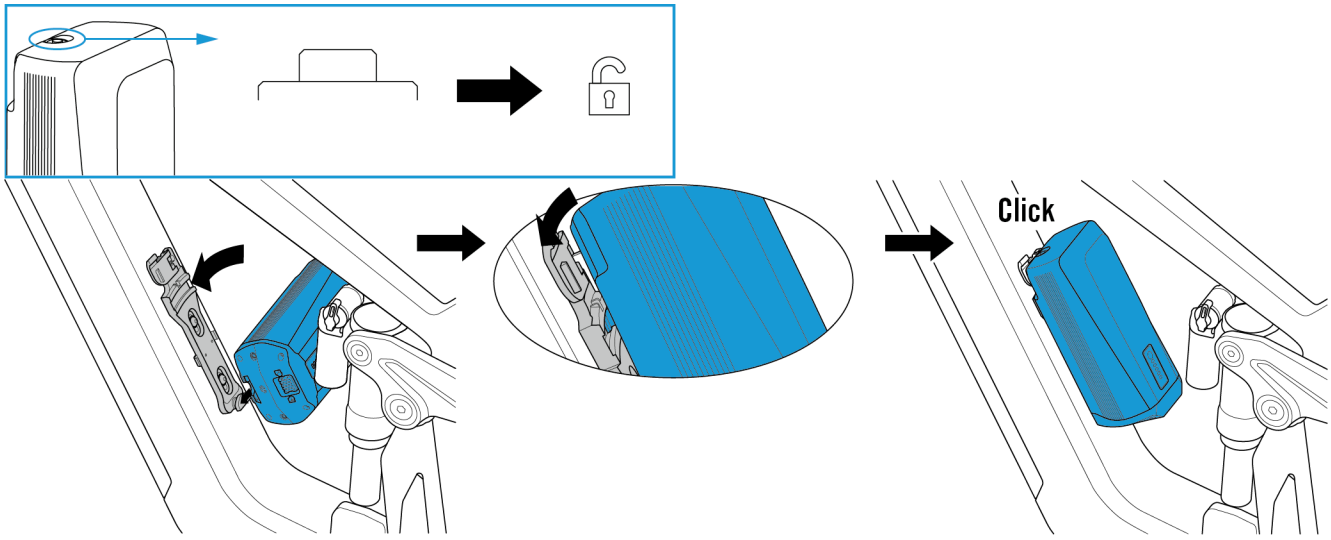
6.1 INSERTING THE BATTERY AND LOCKING IT IN PLACE

Provided that compatibility with the Buddypack has been confirmed and the mount is fitted, the battery can be inserted as follows:

✓ Before inserting the battery, make sure the lock is unlocked. If the lock on the top of the battery has a protruding pin, the battery is unlocked. If the pin is pushed in, the lock is engaged.

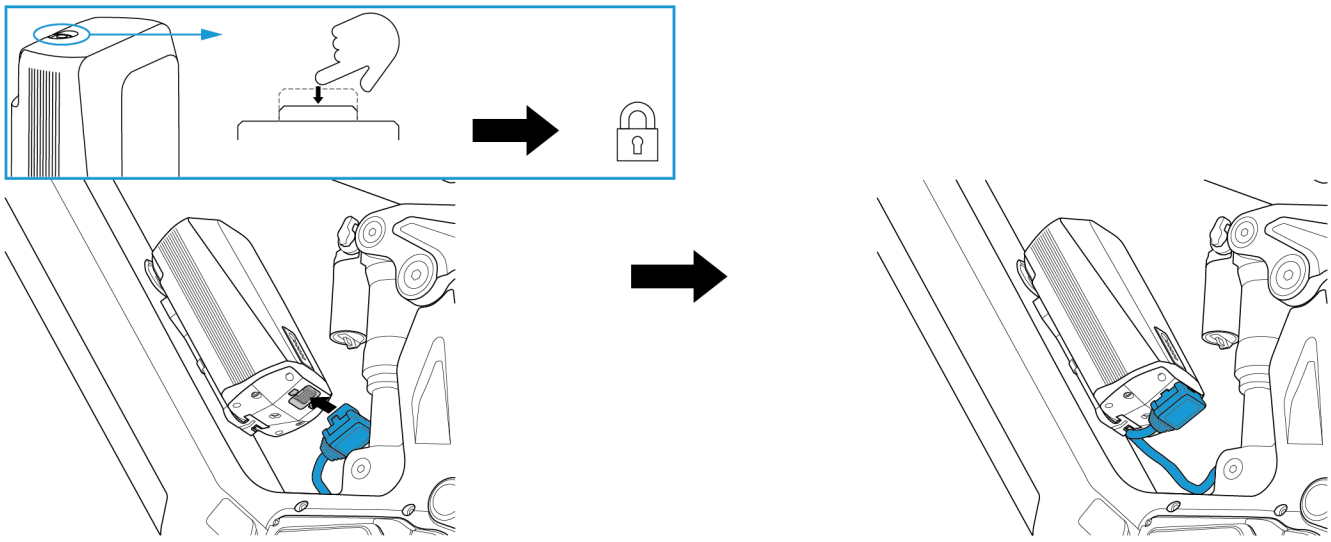


1. To unlock the lock, insert the key and turn it clockwise. When inserting the key, ensure that it is inserted correctly into the notch. Then turn the key back to the start position.

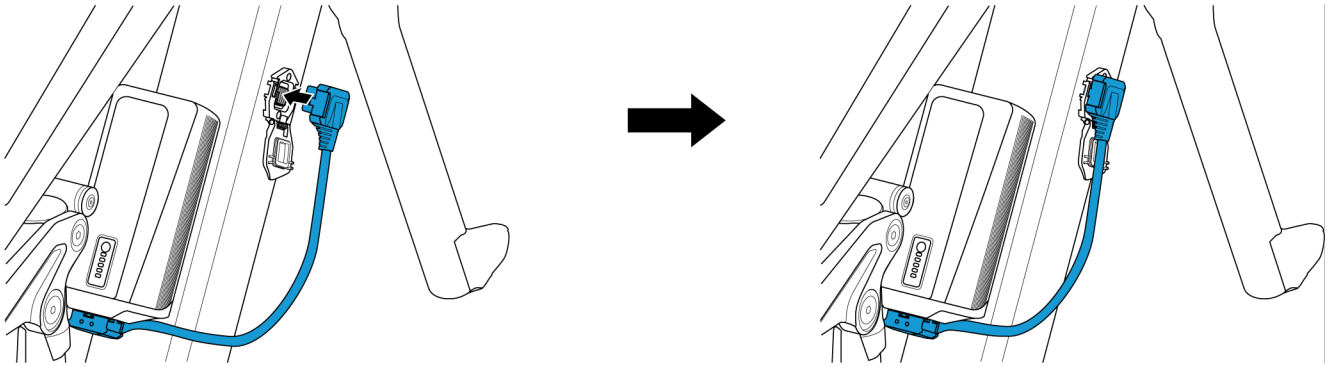


2. Place the lower part of the battery into the mount and swing the battery in from right to left until it clicks into place (you should hear a `click´ when it is fully engaged).
3. Make sure that the battery rail slides into the mount and that the battery is securely seated in the mount.

4. Press the pin on the battery lock inwards to lock the battery. It is not necessary to lock the battery in place for the journey, as it is secure enough even without being locked.



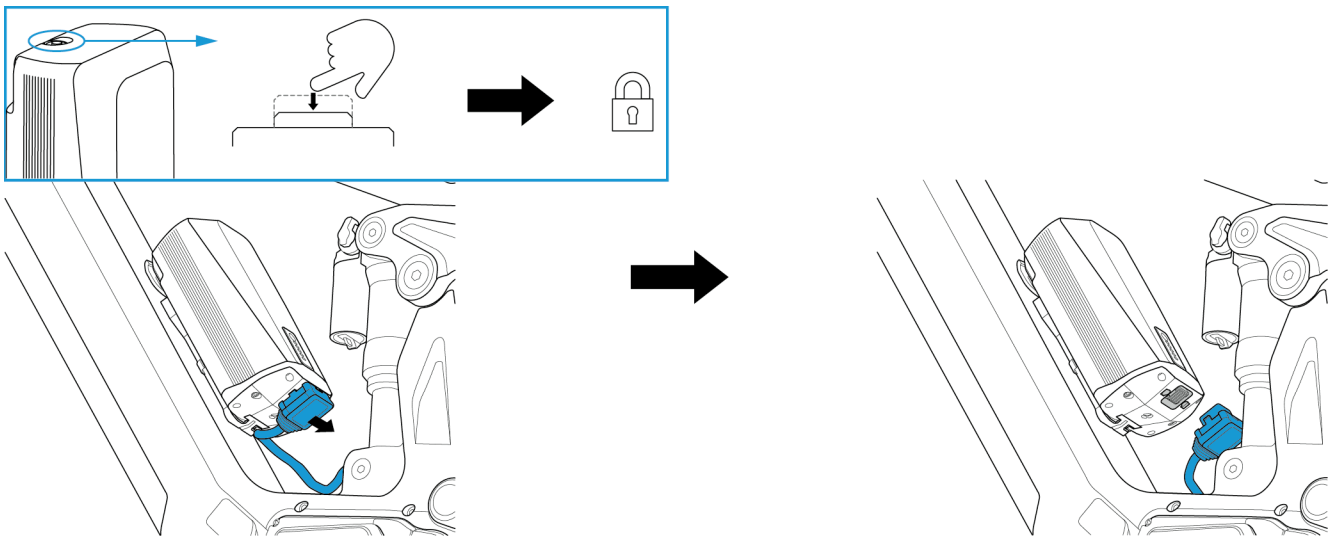
5. Use the connection cable to connect the battery to the charging socket on the Buddypack.



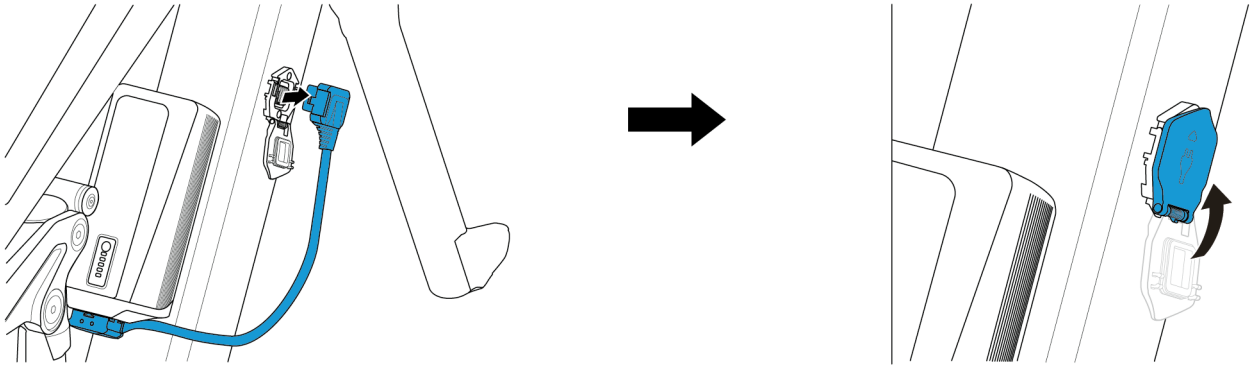
6. Connect the other end of the connection cable to the charging socket in the bike frame.

⇨ The battery is ready for use.

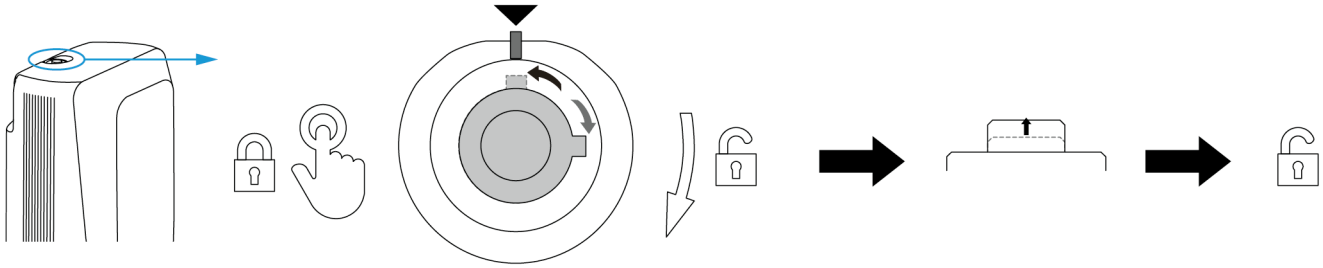
6.2 UNLOCKING AND REMOVING THE BATTERY



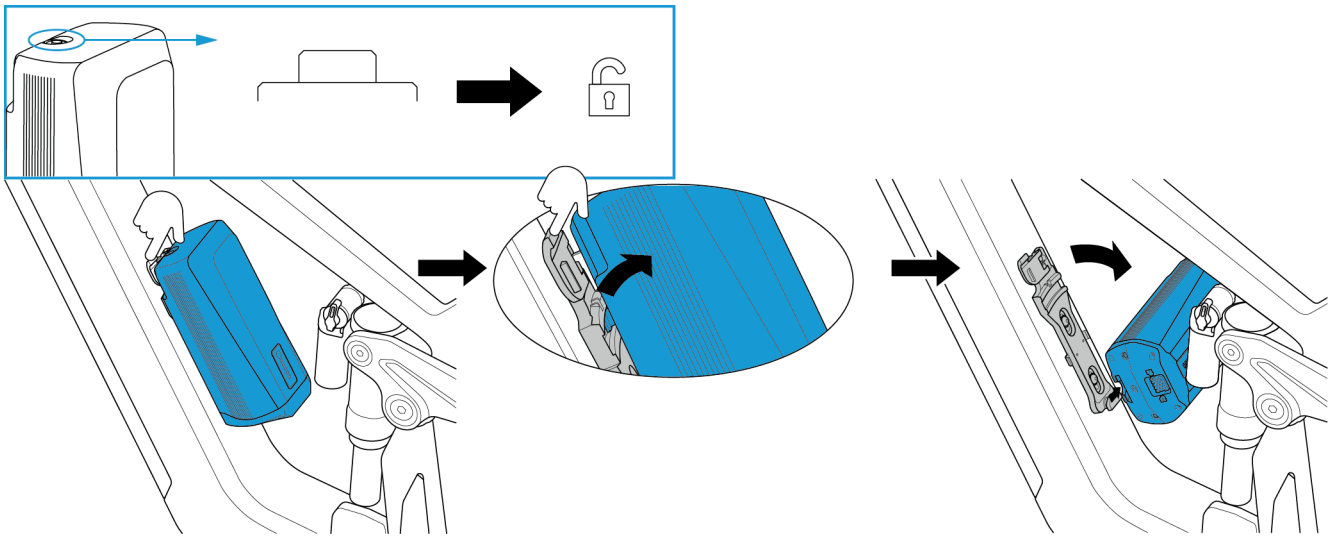
1. Unplug the connection cable from the Buddypack.



2. Unplug the connection cable from the charging socket in the bike frame and close the charging socket.



3. To remove the battery, make sure it is unlocked. If the battery lock is not unlocked, insert the key, turn it clockwise and then turn it back to the starting position



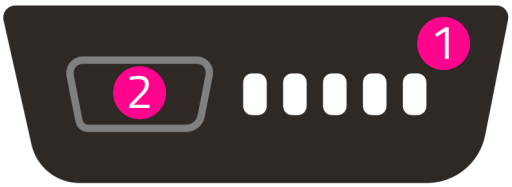
4. Use one hand to press the button on the mount and, with the other hand, swing the battery out from left to right.

6.3 DISPLAY AND SETTINGS

6.3.1 CHARGING THE BATTERY

The battery can be charged in conjunction with the main battery using the maintenance cable (550010), or directly via the charger without the maintenance cable.

6.3.2 CHECKING THE BATTERY CHARGE LEVEL



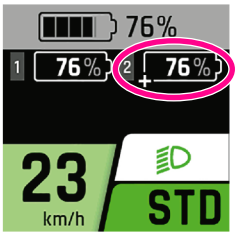
1 Battery charge level LEDs:
These indicate the remaining capacity of the e-bike battery. If an error occurs, an error code is displayed (see **BATTERY ERROR CODES [▶ 22]**).

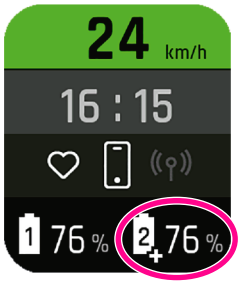
2 Battery level check button:
Lights up the battery level LEDs to check the remaining battery capacity or to check for any faults with the battery itself.

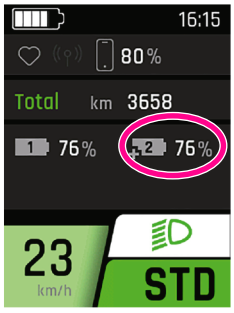
Each lit battery charge level LED represents approximately 20% of the battery capacity. If the battery is completely flat, this is indicated by a rapidly flashing LED.

6.3.3 BATTERY LEVEL CHECK ON THE DISPLAY

The Drive screen displays the battery levels of the main battery and the Buddy Pack (if connected). The Buddypack is marked with a ˋ+ˊ to indicate that it is an additional battery, as shown in the illustrations below.







NOTICE

Discharge process

The batteries are always discharged in parallel (together) as soon as the voltages of the two batteries are approximately the same. Due to the different cell types in the Buddypack and the main battery, the batteries may discharge to different charge levels. A difference in battery levels during parallel discharge does not therefore indicate a fault. It may also happen that, after a restart (particularly following longer periods of inactivity), the battery levels differ slightly from those before the restart; this is normal. Due to cross-current flow between the main battery and the Buddypack, one battery may charge the other during parallel operation until both voltages have fully equalised.

7 CLEANING AND MAINTENANCE

7.1 BASIC CLEANING

7.1.1 CLEANING THE BATTERY

CAUTION

Fire and explosion caused by water ingress

The battery is only protected against splash water. Water ingress can cause a short circuit. The battery may catch fire and explode.

- Never clean the battery with a high-pressure cleaner, a water jet or compressed air.
- Keep the contacts clean and dry.
- Never immerse the battery in water.
- Never use cleaning products.
- Remove the battery from the e-bike before cleaning it.

NOTICE

- Never clean the battery with solvents (e.g. thinner, alcohol, oil or rust inhibitor) or cleaning agents.
- Clean the battery's electrical connections with a dry cloth or brush.
- Wipe the decorative surfaces with a slightly damp cloth.

8 TRANSPORT AND STORAGE

8.1 TRANSPORT

CAUTION

There is a risk of injury if the drive system is switched on accidentally.

- Remove the battery before transport.

8.1.1 TRANSPORTING AN E-BIKE

Never use bike racks where the e-bike is secured upside down by its handlebars or frame. During transport, they exert excessive forces on the components. This can cause the load-bearing parts to break. The specialist dealer will advise you on how to choose the right carrier system and use it safely. When transporting the e-bike, take its weight (when ready to ride) into account.

Protect the electrical components and connections on the e-bike from the weather using suitable protective covers.

Transport the battery in a dry, clean place, away from direct sunlight.

8.1.2 TRANSPORTING THE BATTERY

Batteries are subject to dangerous goods regulations. Undamaged batteries may be carried by members of the public while on the road. Commercial transport requires compliance with the regulations governing the packaging, labelling and carriage of dangerous goods. Any exposed contacts must be covered and the battery must be securely packed.

NOTICE

Lithium-ion batteries of this size must not be transported on passenger aircraft. Please contact your airline for further details.

8.1.3 SHIPPING THE BATTERY

The battery is classified as a dangerous good and must only be packed and shipped by trained personnel. Contact your specialist dealer.

8.2 STORAGE

CAUTION

- Store your e-bike, display, battery and charger in a dry, clean place, away from direct sunlight. To extend their service life, do not store them outdoors.
- The ideal storage temperature for your e-bike is between 10 and 20 °C.
- Temperatures below -10 °C or above +40 °C must always be avoided.
- Store the e-bike, display, battery and charger separately.

8.2.1 STORAGE MODE

The battery features the power-saving storage mode STORAGE MODE, which minimises battery discharge.

In the battery settings, set the storage mode to STORAGE MODE. The FIT service cable (550010) is required for this. Alternatively, the battery can be stored with a charge level of between 30% and 60%. See **PREPARING FOR A PERIOD OF NON-USE [▶ 21]**.

8.3 PERIOD OF NON-USE

NOTICE

The battery discharges when not in use.

This may damage the battery.

- The battery must be recharged every 6 months.

If the battery is left connected to the charger for a prolonged period, it may be damaged. Never leave the battery connected to the charger for long periods.

If the e-bike is to be taken out of service for more than four weeks, preparations must be made for the period of non-use.

8.3.1 PREPARING FOR A PERIOD OF NON-USE

- Remove the battery from the e-bike.
- Charge the battery to between 30 and 60% (storage mode).
- If the e-bike is to be left unused for long periods, it is advisable to have it inspected, thoroughly cleaned and preserved by a specialist dealer.

8.3.2 INSTRUCTIONS FOR PERIODS OF NON-USE

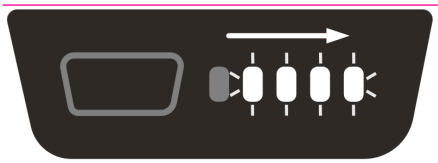
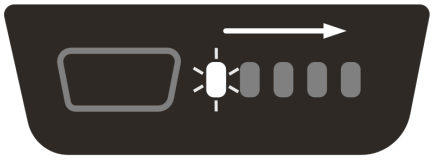
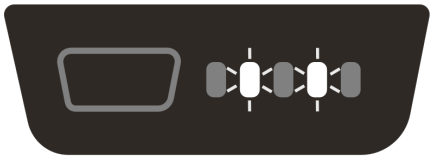
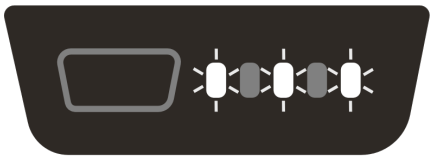
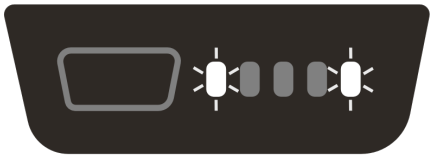
Store the e-bike, battery and charger in a dry and clean place. We recommend storing the product in unoccupied rooms fitted with smoke alarms. Dry places with an ambient temperature of around 10 to 20 °C are ideal.

Check the battery charge level after 6 months. If only one LED on the charge level display is still lit, recharge the battery to around 30 to 60%.

9 TROUBLESHOOTING, FAULT RESOLUTION AND REPAIR

9.1 TROUBLESHOOTING AND FAULT RESOLUTION

9.1.1 BATTERY ERROR CODES

Flashing patterns of the battery level LEDs after pressing the battery level check button	Description	What to do
 A non-illuminated LED runs from left to right.	**Persistent faults** There is a persistent fault with the battery.	The battery needs to be replaced. Take the e-bike to your specialist dealer. In this condition, the battery is classified as having an unknown fault and must not be transported either by vehicle or by post. It's best to get in touch with your specialist dealer.
 An illuminated LED runs from left to right.	**Charging error** The battery has been overcharged and there may be a fault with the charger.	Take the e-bike to your specialist dealer.
	**Power error** Cell error – there may be a fault in the motor or charger, or the battery may have been deeply discharged.	Take the e-bike to your specialist dealer.
	**Temperature error** The battery temperature is outside the permitted range.	If the light continues to flash after the system has not been used for a while, it will need to be replaced. Take the e-bike to your specialist dealer. In this condition, the battery is classified as having an unknown fault and must not be transported either by vehicle or by post. It's best to get in touch with your specialist dealer.
	**Authentication error** An authentication error may have occurred.	Check the connections for dirt. If the flashing continues even after you have cleaned the connections and left the battery unused for a while, take the e-bike to your specialist dealer.

9.1.2 NON-STARTING DRIVE SYSTEM OR DISPLAY

If the display and/or the drive system do not start up, proceed as follows:

1. Check that the battery is inserted correctly. If not, insert the battery correctly.
2. Start the drive system.
3. If the drive system does not start, remove the battery, check the charge level and recharge it if necessary.
4. Clean all contacts with a soft cloth.
5. Insert the battery.
6. Start the drive system.
7. If the drive system fails to start, contact your specialist dealer.

NOTICE

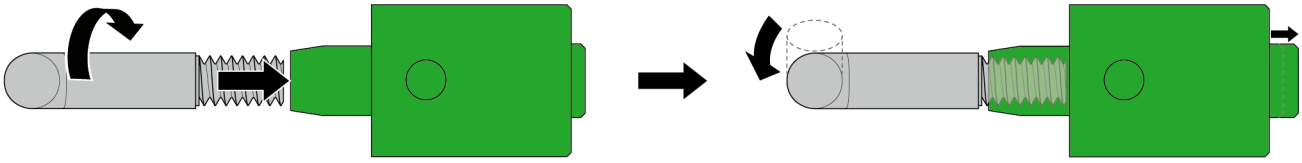
- If the battery contacts are heavily soiled or oxidised, take your e-bike to a specialist dealer for a thorough check.

9.1.3 ASSISTANCE ERRORS

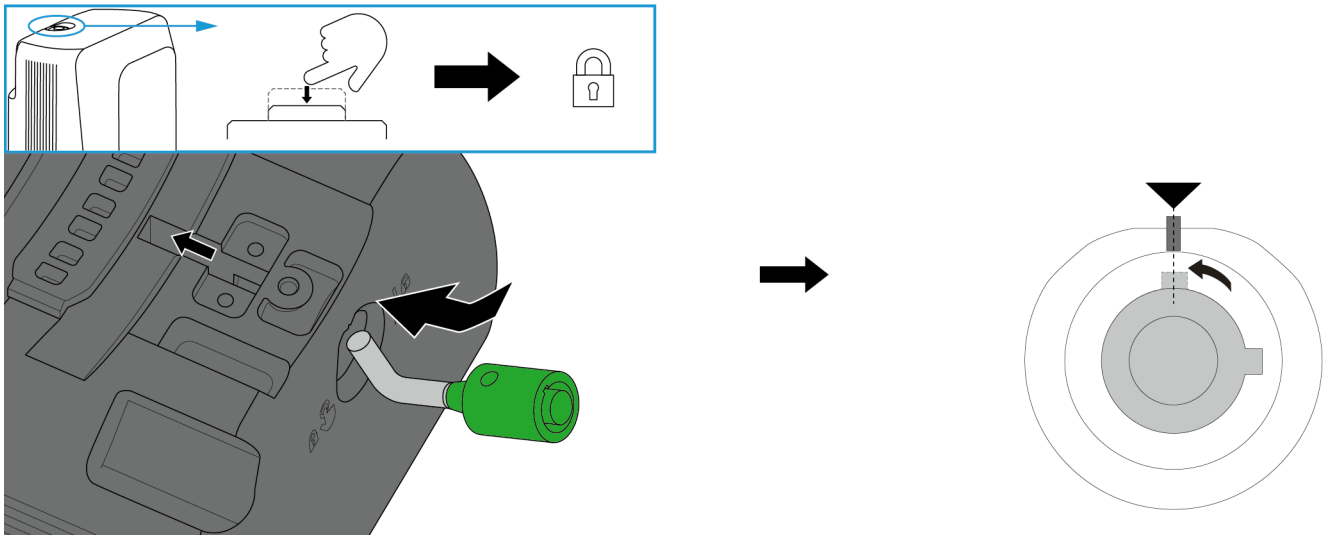
Symptom	Cause/Possible reason	Remedy
No assistance is provided.	Is the speed too high?	▪ The motor assistance is only active up to the maximum speed for which the e-bike is approved. You can view your current speed using the optional FIT Drive Screen in the FIT E-Bike Control App.
	Is the battery sufficiently charged?	1. Check the battery charge. 2. If the battery is nearly flat, recharge it.
	Driving in high temperatures, on long uphill stretches or for a long time with a heavy load may cause the motor to overheat.	1. Switch off the drive system. 2. Wait a while and check again.
	The battery, the FIT Master Node Basic or the control may be connected incorrectly, or there may be a problem with one or more of them.	▪ Contact your specialist dealer.
	Is the bike being pedalled?	▪ An e-bike is not a motorbike. Pedal the bike.
	Is the system switched on?	▪ Press the **On/Off button** (control) to switch the system on.
	Is the assistance level set to **OFF**?	1. Enable assistance by selecting one of the available assistance levels (except **OFF**). 2. If you still feel that no assistance is being provided, please contact your specialist dealer.
The assisted range is too short.	Battery performance deteriorates in winter weather.	This does not indicate a problem.
	The range may be reduced depending on road conditions, the assistance level and the total time the lights have been in use.	1. Check the battery charge. 2. If the battery is nearly flat, recharge it.

Symptom	Cause/Possible reason	Remedy
	Is the battery fully charged?	▪ If the total distance that can be travelled on a fully charged battery has decreased, the battery may be faulty. Replace the battery with a new one.
	The battery is a wear component. Repeated charging and prolonged periods of use cause the battery to deteriorate (loss of performance).	▪ If the distance that can be travelled on a single charge is very short, replace the battery with a new one.
The pedals are hard to pedal.	Are the tyres inflated to the correct pressure?	▪ Pump up the tyres.
	Is the assistance level set to **OFF**?	▪ Enable assistance by selecting one of the available assistance levels (except **OFF**).
	The battery may be low.	1. Check the battery charge. 2. If the battery is nearly flat, recharge it.
	Was the system switched on while your foot was on the pedal?	1. Without applying any pressure to the pedals, switch the system back on. 2. If assistance is still not provided, please contact your specialist dealer.

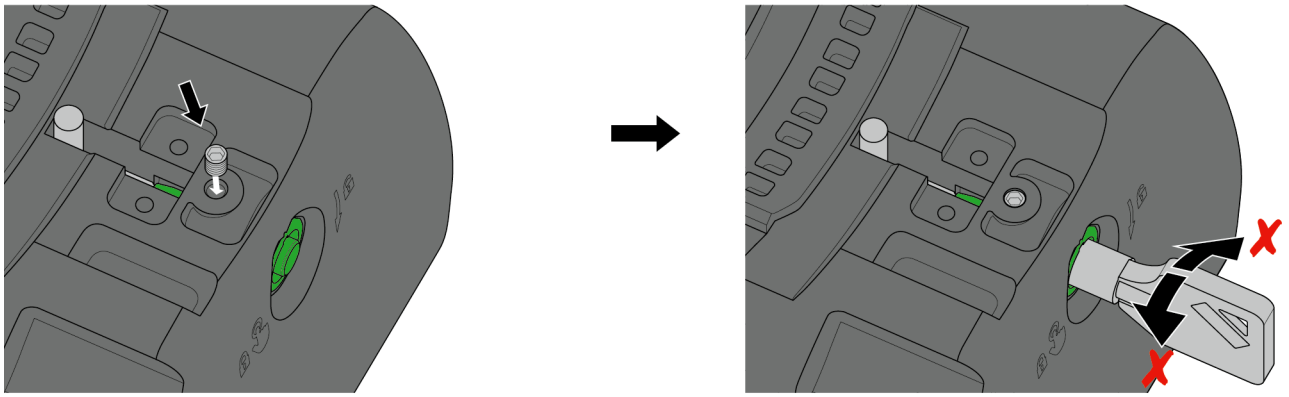
9.2 LOCK FITTING



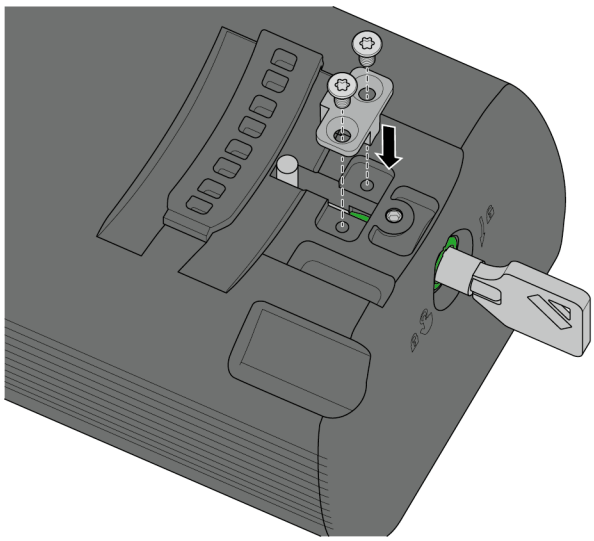
1. Screw the locking bolt (grey) into the lock (green) by hand and tighten it. Then turn it in the opposite direction until the end face of the locking bar is flush with the fixed bore in the lock (it must be turned back by at least 70 degrees).



2. Press the lock pin and insert the assembled lock diagonally into the lock opening from the end of the locking bolt. Insert the key into the keyhole to correct the orientation and align the lock with the arrow markings.



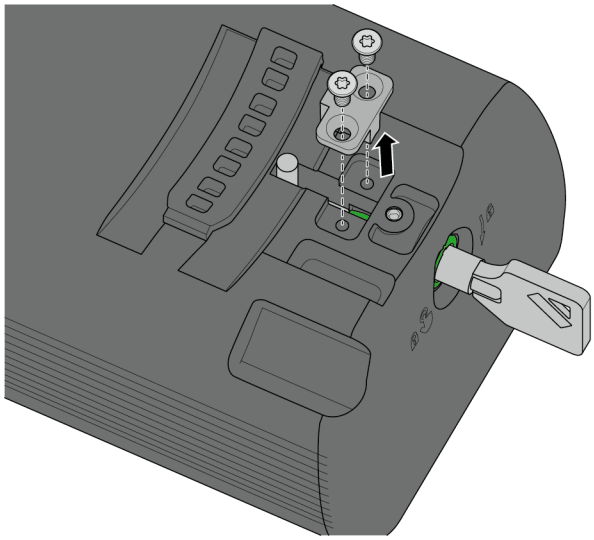
3. Check that the lock's positioning hole is centred. Install the M3 positioning screw using a 1.5 mm Allen key and tighten it to 0.4–0.5 Nm. Use the key to verify that the lock has been installed correctly.



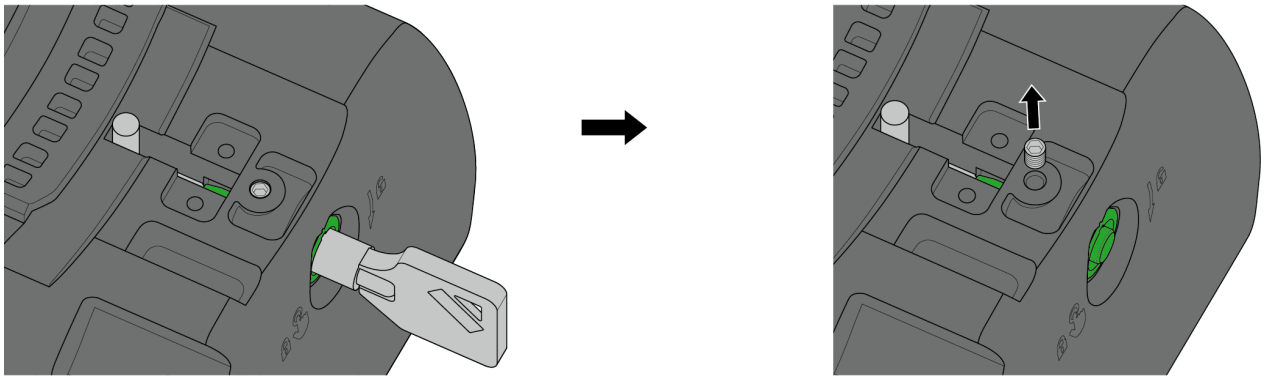
4. Install the locking bolt pressure plate and secure it using two M3×10 mm screws with a T10 Torx screwdriver. Recommended tightening torque: 0.4–0.5 Nm.

9.3 LOCK REMOVAL

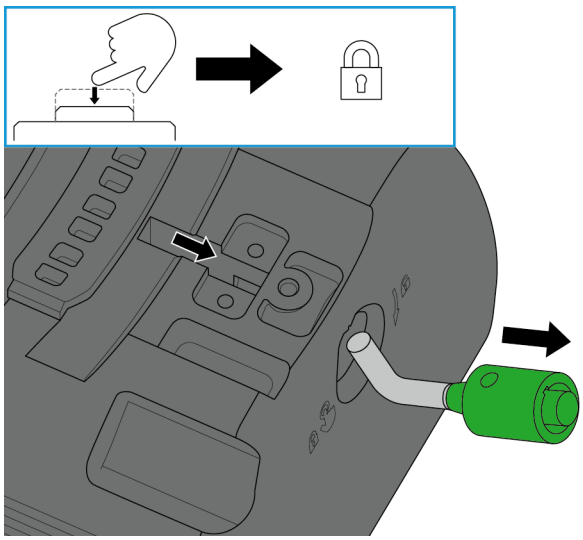
The lock can be removed as follows:



1. Using a T10 Torx screwdriver, remove the two screws and take off the pressure plate.



2. Remove the M3 positioning screw using a 1.5 mm Allen key.



3. If the lock is locked, press the locking bolt to remove the lock in the direction of the arrow, then pull out the locking bolt. Alternatively, if the lock is unlocked, insert the key and turn it anti-clockwise until the locking bolt disengages from the lock, then pull it out.

9.4 REPAIR

Many repairs require specialist knowledge and tools. Therefore, repairs must only be carried out by a specialist dealer.

9.4.1 ORIGINAL PARTS

The individual components of the e-bike have been carefully selected and are designed to work together seamlessly. Only genuine parts may be used for maintenance and repairs. Refer to the user manual of the new components.

10 RECYCLING AND DISPOSAL

10.1 DISPOSAL

Mechanical and electrical equipment, accessories and packaging should be sent for environmentally responsible recycling. Don't put them in the household waste!

For EU countries only: In accordance with European Directives 2012/19/EU and 2006/66/EC, and their transposition into national law, defective or end-of-life electrical and electronic equipment, rechargeable batteries and non-rechargeable batteries must be collected separately and sent for recycling in an environmentally responsible manner.