



Freedom E-Bikes Owners Manual

Electric Bicycles that will transform the way you travel



Specific exclusions from normal use are:

- Carrying excess load – more than 130kg in total mass (bicycle, rider & luggage)
- Incorrect installation of the system
- Use of any third party electrical component (motor, controller, battery, throttle etc)
- Failure to comply with instructions in this manual
- Failure to attend to regular maintenance & routine checks or to take action in response to indications of impending failure (eg loose components, accident or impact)

Battery failure means that the battery no longer has sufficient charge to propel the bike or has suffered more than a 30% loss of capacity within the first 3 months of normal use or more than 60% loss within the first 6 months of normal use.

Guidelines For Normal Use

The rider must pedal whenever the motor is in use.

The battery pack must be disconnected from the controller once you are finished riding.

Once the battery does not have enough charge to power the motor under load, the battery pack must be immediately disconnected from the controller and then recharged at the earliest opportunity.

The battery pack should be disconnected from the charger once the green “full charge” light comes on.

The controller and battery must be enclosed within a bag attached to the bike and should not be directly attached to the bike.

The kit, including battery has not suffered physical impact or other physical or electrical damage (incl short circuit).

When total weight of rider + bike and luggage (incl trailer) exceeds 120kg two battery packs are used in parallel

Total weight of rider + bike and luggage (incl trailer) does not exceed 150kg.

Contents

Introduction.....	4
About Freedom E-Bikes	4
Introduction to the Kit	5
Simple Instructions on Installation & Use.....	6
Installing on Narrow Fork Bikes	7
Notes on Use of Your Kit.....	9
Battery Use Guidelines	12
Warranty.....	13
Guidelines For Normal Use	14

Introduction

Thank you for choosing a Freedom E-Bikes kit to convert your bike to an E-Bike (electric motor assisted bike). When fitted and used correctly in accordance with this manual, the Freedom E-Bikes system will transform the way you travel.

Please read this manual carefully to get the best performance and life out of your Freedom E-Bike.

About Freedom E-Bikes

Freedom E-Bikes has developed the world's lightest e-bike kit supporting virtually any bicycle, including folding bikes like Brompton and Dahon. The patented kit turns your bike into a freedom machine that makes even the steepest hills feel like a gentle incline. Our solution uses custom developed nanotechnology battery packs that are more powerful than any other ebike battery on the market, yet is smaller, lighter and faster to charge.

Freedom E-Bikes gets you to your destination quicker, cheaper, fitter and greener than any other transport option. We sell our kits worldwide from the high tech centre of the world – Israel.

Warranty

Kit Warranty

All kits carry a 12 month guarantee: if any part of our kit fails within the first 12 months in normal use - we will replace it free of charge except for shipping costs.

As our kit is modular its easy to replace parts.

In all cases the faulty part(s) must be returned to us or our dealer.

In addition if you're not happy with your kit we'll allow you to return it within 2 months of purchase and get your money back (excluding shipping and installation costs).

Please note that installation of any bicycle electric assist kit may adversely impact on the manufacturer's warranty for the bicycle itself.

Battery Warranty

If a battery pack fails in normal use in the first 12 months we will replace it free of charge, except for shipping costs.

If a battery pack fails in normal use in the second 12 months we will replace it for 40% of the current retail standalone price plus shipping costs.

In both cases the original battery must be returned to us or our dealer.

Please note that as with all electronic devices including mobile phones and laptops, batteries are a consumable item and will suffer loss of efficiency over their lifetime.

Battery Use Guidelines

The cells used in the Freedom E-Bikes battery pack are supplied fully charged and balanced and should not require regular cell balancing if the following guidelines (“battery use guidelines”) are followed:

- total load (bike, rider & luggage) does not exceed 105kg with one battery pack or 120kg with two battery packs wired in parallel.
- The rider pedals with at least moderate effort whenever the motor is engaged.
- The motor is only engaged once the bike is moving.
- Battery packs are recharged immediately after use.
- The rider ceases to use the battery (and either replaces or recharges it) once it is discharged to the point where the motor starts to cut out under load.

If battery packs are used outside of the above guidelines you should perform cell balancing using the two white balancing connectors on the battery pack

Occasional cell balancing will extend cell life and improve performance.

Balancing Battery Packs

The batteries can be balanced where necessary with a charger balancer combination specifically designed to charge & balance 12 LiFe A123 cells (eg. MegaPower Infinity 960SR or Hyperion EOS0610I Duo II-Dual Port).

Introduction to the Kit

The Freedom E-Bikes conversion kit consists of 5 components: battery, motor, throttle, controller, and charger. The kit is intended for installation by the customer or bike shop.

The kit is plug and play and the parts interconnect like this:



(iPhone not included 😊)

Simple Instructions on Installation & Use

For bikes with standard 100mm forks installation is very simple:

1. Just fit the motorised wheel to the bike (cable exiting from the left as you sit on the bike). Ensure that the axle (with straight edges) fits snugly into fork and that the axle can't turn or move in the fork drop-out. Make sure you fit the torque washer with the lug fitting into the hole on the fork.
2. Install the throttle on the right handlebar by using a hex screw to loosen and then tightening when fitted.
3. The battery and controller go in a front or center mounted bag.
4. Connect the red plugs (sparking is normal) and the big black plugs together and notice that the red, yellow and green lights on the throttle light up. You're good to go.
5. When you've finished riding or when the battery is low (green light does not stay lit) plug the charger into the mains and connect the battery using the red plugs. The battery has no memory and does not need to be fully discharged. It is advisable to disconnect the battery once its fully charged

NB: The controller cuts off the motor once the battery voltage drops to 30V. However, the controller continues to draw a small amount of current regardless of whether its connected to the motor or not and if left connected for a prolonged period of time (several hours or more), it may drain the battery completely, effectively rendering it useless. For this reason we recommend disconnecting the battery from the controller whenever its not in use.

gear at a good speed up the hill.

Whenever you stop and get off the bike, disconnect the black plugs so an accidental or curious turn of the throttle will not turn the front wheel. This will protect you and others.

Whenever you leave the bike disconnect the red plugs to prevent the battery discharging. We recommend you take the bag with the battery and controller with you. This means they are more secure and can be charged in a safe, convenient environment, perhaps while you work, have lunch or even coffee.

Care & Feeding of Battery Packs

Freedom E-Bikes battery packs use the latest in lithium ion cells with nano-technology to provide superior performance and safety to traditional lithium cells.

The battery pack has 2 types of connectors:

- Red (female) main power connector – connects to controller & charger
- Two white balancing connectors for occasional balancing of cells.

The battery packs should only be charged with the battery charger provided or a specialised charger described below.

Each battery pack is 91Whrs (“watt hours”) which means its below the 100Whr limit for transport of lithium batteries under IATA and ADR transport regulations. This means you can take your Freedom E-Bike kit on an airplane or transport it by courier.

Installing on Narrow Fork Bikes

For bikes with a narrow fork (75mm-80mm), such as Brompton, Dahon, do the following:

First check to see whether the bike’s front fork needs to be modified (eg Brompton, Dahon).

It may be necessary to stretch the fork moderately to accommodate the wider hub of the motor, as well as to widen the actual dropouts to accommodate the thicker axle (eg. Bromptons).

1. Widening the dropouts is best done with a power tool such as a Dremel or even with a hand file (although much slower). First establish how much needs to be ground away by measuring the axle against the dropouts and then slowly grind/file away the dropouts evenly on each side until the required width is achieved and the torque washer is able to fit in snugly.
2. Using a 100-110mm screw and a couple of nuts and washers, slowly turn the screws against the fork thus forcing them apart.
3. Once the screw is removed, the fork will spring back. You will need to chock the fork with a piece of wood or something before removing the screw.
4. Fit the wheel into the fork with the cable on the left hand side of the wheel as you sit on the bike. Make sure you fit the torque washer with the lug fitting into the hole on the

fork.

5. (Brompton Only) With the wheel fitted, the tricky part is getting the hook in place due to the thicker axle. Short of bending the hook around the axle, it might be easier to grind/file out the inner part of the hook until it fits snugly around the axle. The cable should pass back through the hook thus keeping it secure and out of the way.



6. With the wheel in place, simply slide the throttle onto the handle bar and fasten with the hex screw under the indicator lights. You may need to cut off the existing handle bar cover if its glued on.
7. Place the battery/controller unit together in the rear pocket of your carrier bag. Connect the plugs and you're off.

Notes on Use of Your Kit

The Freedom E-Bikes kit is designed to be used to assist pedaling and not as the only source of motive power.

Riding Style – Tips on getting best range.

The best way to use the Freedom E-Bikes kit is to use it to accelerate to cruising speed (20-25kmph) faster and with less effort and to maintain speed and use less effort, when riding up hills. If you ride slower than cruising speed and use the motor all the time you will get less range from your battery.

When starting off, pedal normally and twist the throttle at the same time. You'll notice significant assistance at lower speeds which should allow you to accelerate quickly to cruising speed.

Once you're at cruising speed release the throttle and you'll notice that the motor is no longer providing power. You may notice a slight drop in resistance. Then ride normally until the next restart or hill.

Its best to ride in the higher gears on your bike so that you are putting in a reasonable amount of effort yourself and not having the motor do all the work.

As you approach a hill ride normally until you begin to slow below cruising speed and then instead of dropping down the gears just twist the throttle and you can keep riding in high