

# ARCC

## MOULTON TSR ELECTRIC

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USER GUIDE





# ARCC

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# Innovation from every angle

The world's most advanced bicycle frame meets the world's most innovative power system. The Moulton® TSR bicycle, with its outstanding efficiency, speed, comfort and responsiveness, can now be fully integrated with the unique ARCC e<sup>2</sup>-pod Intelligent Drive System.

First produced by Dr Alex Moulton CBE in the '60s, the basic Moulton® concept is to improve ride comfort and efficiency by using small wheels with high-pressure tyres, supported by a rigid frame with carefully engineered rubber suspension units.

Available with or without ARCC's renowned e<sup>2</sup>-pod Intelligent Drive System, and in a range of colours, there's a configuration to suit all riders.

The system combines variable power levels with automatic hill/gradient compensation and launch control. This allows commuting cyclists to choose the amount of effort both they and the motor provides, automatically compensates for hills and gradients, and provides 'launch control', for safety when moving away from traffic lights and crossings in heavy traffic.

Whether used for commuting or pleasure, the Moulton® TSR equipped with the e<sup>2</sup>-pod Intelligent Drive System delivers a well-tuned, responsive ride everywhere you go.

To find out more or to book a test ride, visit [arccbikes.com](http://arccbikes.com)





# Safety

## Introduction

Before using your ARCC bike please read this manual, noting the sections on safety in particular. While this manual is intended as a guide to the bicycle, it is not a comprehensive guide to cycling or bicycle maintenance.

If you carry out any adjustments or maintenance work yourself, please read the relevant sections of this manual along with any other accompanying documents first, in order to avoid damaging your bike.

This manual contains some tips and advice for using your ARCC bike but if you are ever unsure of how to maintain your bike, please contact the retailer where you made your purchase or call ARCC for expert advice.

## Intended use

The bike is designed for use on roads and well-made paths, carrying a maximum load not exceeding 120kg (rider and luggage weight included).

The bike is not intended for drops of more than 100mm, stunts, cross-country riding, or extreme sports. Misuse may lead to failure of some components and void your ARCC warranty.

## Specification

This bike and manual conforms to ISO 4210-2 and EN 15194. For electric bikes, the motor assistance is limited to a maximum continuous power rating of 0.25 kW (250 W) and a maximum speed of 25km/h (15.5mph). The A-weighted emission sound pressure level at the driver ears is less than 70dB(A).

## For your safety

Before riding your ARCC bike please consider the following:

- Take the time to familiarise yourself with the operation of the bicycle in a quiet place away from traffic and hazards, before riding your bike on open roads.
- We recommend the use of an approved cycling helmet.
- Read and follow the national legal requirements of the country where you are riding and comply with all applicable traffic laws.
- Check brakes, tyres and steering regularly.
- Keep brakes and gears properly adjusted and operating cables in good condition.
- In rainy conditions, roads may be more slippery and the brakes less effective, so ensure to brake sooner.
- Check that all wheel nuts are properly tightened (see 'Torque settings').
- Note that in the UK, the left hand brake lever operates the rear brake and the right hand lever operates the front brake, but this varies from country to country.

- When riding in the dark, ensure you wear reflective clothing and use front and rear lights; check to ensure that your lights comply with local laws.
- Ensure that the seat post clamp is secured (see 'Torque settings') and the saddle is at the correct height.
- Ensure you do not drop the battery as it could cause damage.
- Please fully charge the battery before first use.
- Ensure the battery is properly secured before using the bike.
- Read and follow the national legal requirements of the country where you are riding in relation to cycling, bicycles, and electric assist bicycles, and comply with all applicable traffic laws.
- Do not use the bike if there is any problem with the e<sup>2</sup>-pod Intelligent Drive System. Organise for the bike to be taken to ARCC Bikes or to the retailer from which you purchased your bike, for inspection.

### **Initial service**

Within the first 6-8 weeks of owning your ARCC bicycle, we recommend an initial service performed by an expert at ARCC Bikes, free of charge, or alternatively by a qualified bicycle technician at your local bike shop.

### **General services**

We recommend that your bicycle is serviced every six months by a qualified bicycle technician to ensure that it is safe to ride.

### **Routine replacements**

Routine replacements are advised to ensure both safety and good performance. The suggested intervals between replacements are for bicycles subjected to normal use; the most appropriate timing depends on the conditions of use and riding style. We recommend only genuine replacement parts for safety-critical components.

**Brake cables** do not have an indefinite life and should be checked and replaced if damaged. New outer cables should be exactly the same length as the original; ensure to check the 'Specification list' and have them fitted at ARCC Bikes or by a certified bicycle technician. Cables that are the incorrect length could affect the safety and performance of your bicycle.



# Warning

As with all mechanical components, bicycles are subjected to wear and high stresses. Different materials and components may react to wear or stress fatigue in different ways. If the design life of a component has been exceeded, it may suddenly fail, possibly causing injuries to the rider. Any form of crack, severe scratches or change of colouring in highly stressed areas indicate that the life of the component has been reached and it should be replaced.

If the bicycle is fitted with an e<sup>2</sup>-pod, the electrical system including the software should not be modified or tampered with. The hub-motor, Bluetooth controller and e<sup>2</sup>-pod should not be opened, tampered with or modified in any way, doing so will invalidate your warranty.

You should stop using the bike immediately and have the bike inspected by a bicycle technician if it has been subject to a crash or impact. Damaged components should be replaced before the bike is ridden again.

**Note:** We recommend that genuine replacement parts are used for safety-critical components. See 'Specification list' for details.

Please call us for expert advice if you are uncertain on any of the above.

# Component names





Handlebars

Brake switches

Bluetooth controller

Bosch rechargeable Lithium-ion industry standard battery

Frame

USB-C ports fully compliant for phone charging

ARCC e<sup>2</sup>-pod

Pedal

250W Motor

Front wheel

# Gears

## **Shimano Alifne features**

- A two-way self-returning lever
- Gear indicator window helps you to see which gear to select
- Available in single speed, 8-speed, 11-speed

## **Using the Shimano Alifne gearing**

The shifter uses a simple-to-use self-returning lever to change between gears. Pushing it down with your thumb will shift into an lower gear and flicking the lever upwards with the back of the thumb will shift into a higher gear. It is important to stop pedalling or back pedal slightly when changing gear. The indicator window shows you which gear is selected.

## **Shimano 22-speed features**

- 11-speed Shimano cassette paired with a 2-speed chainring

## **Rohloff features**

- A smooth twist motion to change gears (Grip Shift)
- Gear indicator markings are clearly marked on the shifter
- 14-speed

## **Using the Rohloff gearing**

The shifter is manually operated using a twisting motion to switch between gears. It is important to stop pedalling or back pedal slightly when changing gear. The marks on the grip shift indicate which gear is selected.

## **SRAM Automatix features**

- Automatic shifting hub
- Available in 2-speed, 4-speed

## **Using the SRAM Automatix gearing**

This hub automatically shifts up gears around 7/8mph and back down again If your speed reduces below 7/8mph.

## **SRAM derailleur features**

- Derailleur allows for freedom in gear ratios
- 9-speed

### **Sturmey Archer features**

- A smooth twist motion to change gears (Grip Shift)
- Gear indicator markings are clearly marked on the shifter
- 5-speed

### **Using the Sturmey Archer gearing**

The shifter is manually operated using a twisting motion to switch between gears. It is important to stop pedalling or back pedal slightly when changing gear. The marks on the grip shift indicate which gear is selected.



# Washing and cleaning your bike

When cleaning your bike - electric or non-electric - **do not** use a jet wash or high pressure hose to clean the bike, e<sup>2</sup>-pod, battery, motor, bottom bracket or rear hub (indicated by fig.1) as this will force water inside of it, removing the grease and/or damaging any electronics, causing premature failure. You should hand wash only with a suitable bike cleaner or warm soapy water and a damp cloth.

Whilst the e<sup>2</sup>-pod Intelligent Drive System has been designed for use in all weathers, the electrical components of the bicycle such as the motor, bottom bracket, battery and the e<sup>2</sup>-pod must not be submerged in water.

## **Battery and charger**

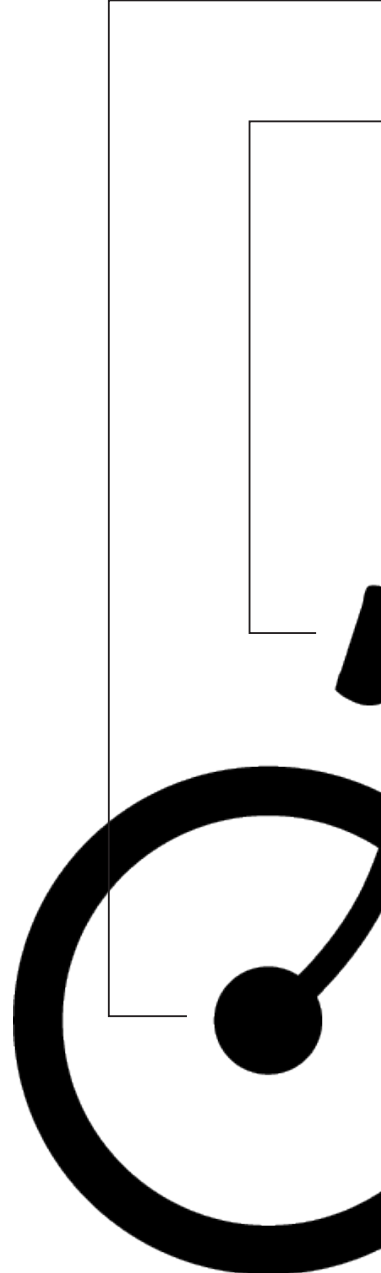
See the accompanying Bosch battery and charger manuals for recommendations on cleaning.

The charger must be unplugged from the mains outlet socket before cleaning.

## **Bike frame and components**

The battery should be removed before cleaning the bike frame and its components.

After cleaning allow all components to dry off completely before attempting to fit the battery to the bike.



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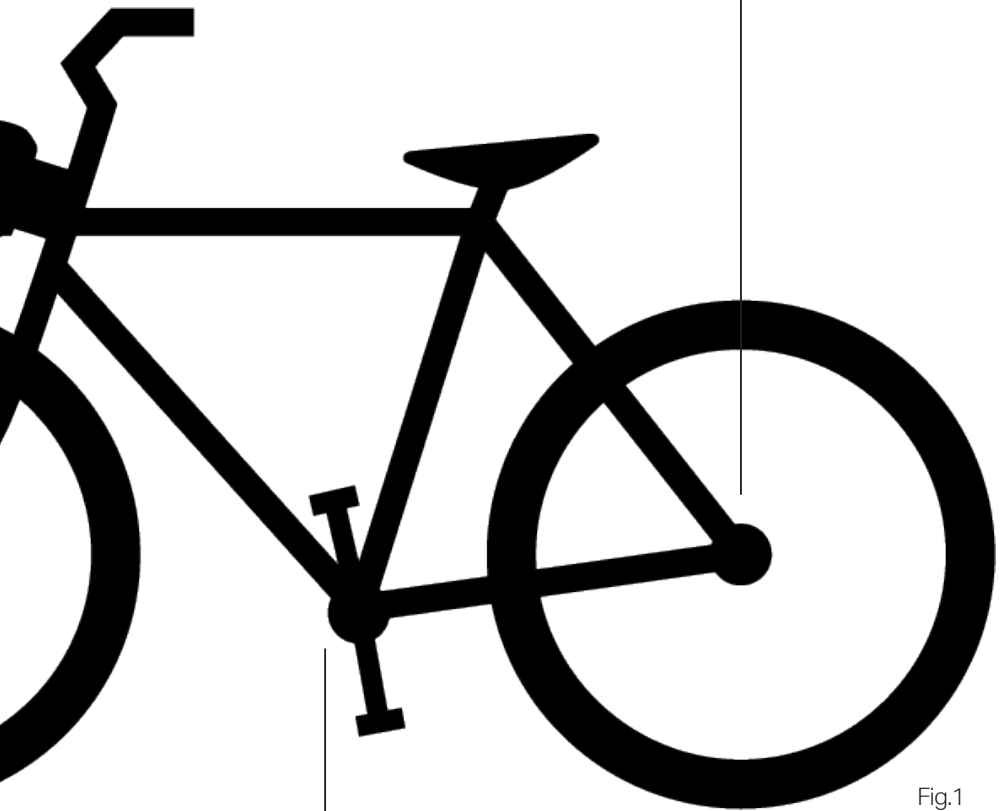


Fig.1

# Front wheel removal



Cable clip

Motor electrical connector

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1. Locate the motor electrical connector on the bicycle forks. Pull the cable gently to remove it from the lower cable clip. Hold each side of the connector and pull apart in a straight line, taking special care not to twist the connectors.



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2. Squeeze the brake arms together and unhook the cable noodle out from the yoke to release the V-brake arms. This will give clearance for the tyre to pass through them.



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3. Remove the wheel nuts, washers and fork supports (shown above) from both fork ends.



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4. Remove the wheel from the forks.

# Front wheel fitting



Note: ensure this drive washer is orientated with the drive dog at the bottom facing outwards.

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1. Insert the wheel into the forks ensuring the drive washer is located on the inside of the forks with the dog at the bottom sitting inside the fork slot. Then fit the fork supports, washers and wheel nuts to both sides (see above).



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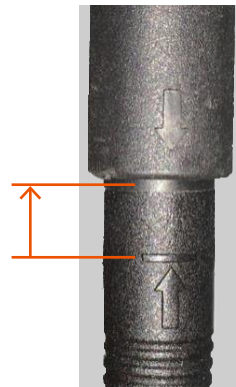
2. Ensure the wheel nuts are tightened to the correct torque as specified in the Moulton TSR Owners Guide.



3. Squeeze the brake arms together and re-connect the cable noodle to the yoke.



Cable clip



4. Reconnect the motor electrical connector. Ensure the arrows on each connector are aligned (as shown above) and push firmly together, taking special care not to twist the connectors. Then gently push the cable back into the cable clip on the forks.

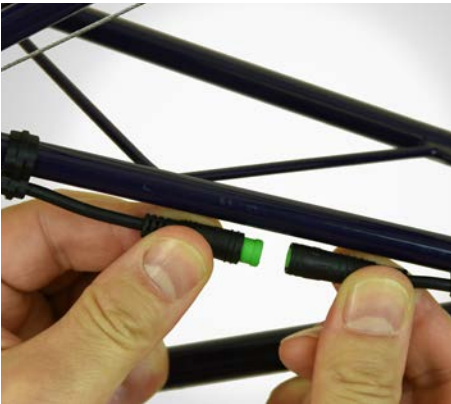
# Frame separation

See section 4.6 of the Pashley – Moulton TSR Owners guide for instructions on separating and re-assembling the frame, gearing and brake cables. Additionally the Torque sensor cable should be connected / disconnected as shown below.



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1. Locate the torque sensor cable connectors (indicated above).



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2. To disconnect, hold one half of the connector in each hand and pull apart firmly, taking special care not to twist the connectors, as this could cause damage.



3. Unscrew the nurl nut and slide this along with the silver cup away from the threaded section.



4. To re-connect, return the silver cup and tighten the nurl nut. Then ensure the arrows on each connector are aligned (as shown above) and push firmly together. Once connected there should be no gap between the two connectors. Take special care to not twist the connectors as this could cause damage.

# Bottom bracket

**We strongly advise that in the unlikely event that the bottom bracket of your bike becomes loose, you do not attempt to tighten, as this could cause severe damage to your bike.**

**Please contact ARCC or a local qualified Bike Technician if you have any problems with the bottom bracket of your bike, ensuring you provide them with the accompanying Standard Operating Procedure supplied with this user guide.**



# Torque settings

<b>Component</b>	<b>Torque</b>
Brake levers	9Nm
Bottom bracket (electric)	Please see 'Bottom bracket' page
Calliper mount	8Nm
Chain ring bolt	12Nm
Crank set	35Nm
Gear levers	9Nm
Handlebar clamp	8Nm
Steerer tube stem	9Nm
Motor nuts	30Nm
Saddle clamp	22Nm
Seat post clamp	8Nm
Shimano hub quick release	5-7Nm
Stem face plate	8Nm
Wheel nuts	25Nm

# Specification list

Description	Specification
e-bike classification	Pedelec
Bike manufacturer / model	Pashley / Moulton TSR
Motor	Brushless 220/250W 36V DC 280 RPM front wheel drive
Front drop-out	100mm
Rear drop-out	135mm
Battery	Bosch Lithium Ion 36V 4.0Ah (144 Wh) Bosch Lithium Ion 36V 6.0Ah (216 Wh) Bosch Lithium Ion 36V 9.0Ah (324 Wh) - Available online and in tool stores, unavailable from ARCC.
Mains charger	Bosch AL 3640 CV professional charger or Bosch GAL3680CV 36volt Li-ion 30 minute charger  Bosch AL 36100 CV professional charger for use with 9.0Ah battery - Available online and in tool stores, unavailable from ARCC.
Battery charge time	4.0Ah – 35-80 minutes full charge dependant on charger used. Please refer to the Bosch documentation supplied with this user guide for further information.  6.0Ah – 50-105 minutes full charge dependant on charger used  Please refer to the Bosch documentation supplied with this user guide for further information.  9.0Ah – up to 50 minutes full charge using suggested charger.
Control pod	CNC machined Peraluman 470 aluminium grade 5083/AlMg 4.5Mn. Black hard anodised finish

# Specification list

<b>Description</b>	<b>Specification</b>
Control pod USB interfaces	1 x USB-C 2.0 charging/data port 5V-1500mA 1 x USB-C 2.0 charging/data port 5V-500mA 1 x USB-C 2.0 charging port 5V-500mA
Bottom bracket	Thun torque sensor BB cartridge X-Cell RT square taper 68mm shell/119mm spindle
Brake switch	Safety cut-off switches, front and rear
Assisted range	4.0Ah up to 35km depending on riding style
Maximum assisted speed	Power assist limited to 15.5mph/25km/h
Assistance controls	Bluetooth controller
System status indicators	2 x tri-colour LED's
Build standards	Conforms to EN15194 & EN14764/BS EN ISO 4210
Frame finish	Powder coated
Front suspension	Leading link front fork
Rear suspension	Dry cone rear suspension
Headset	Miche Team threadless

# Specification list

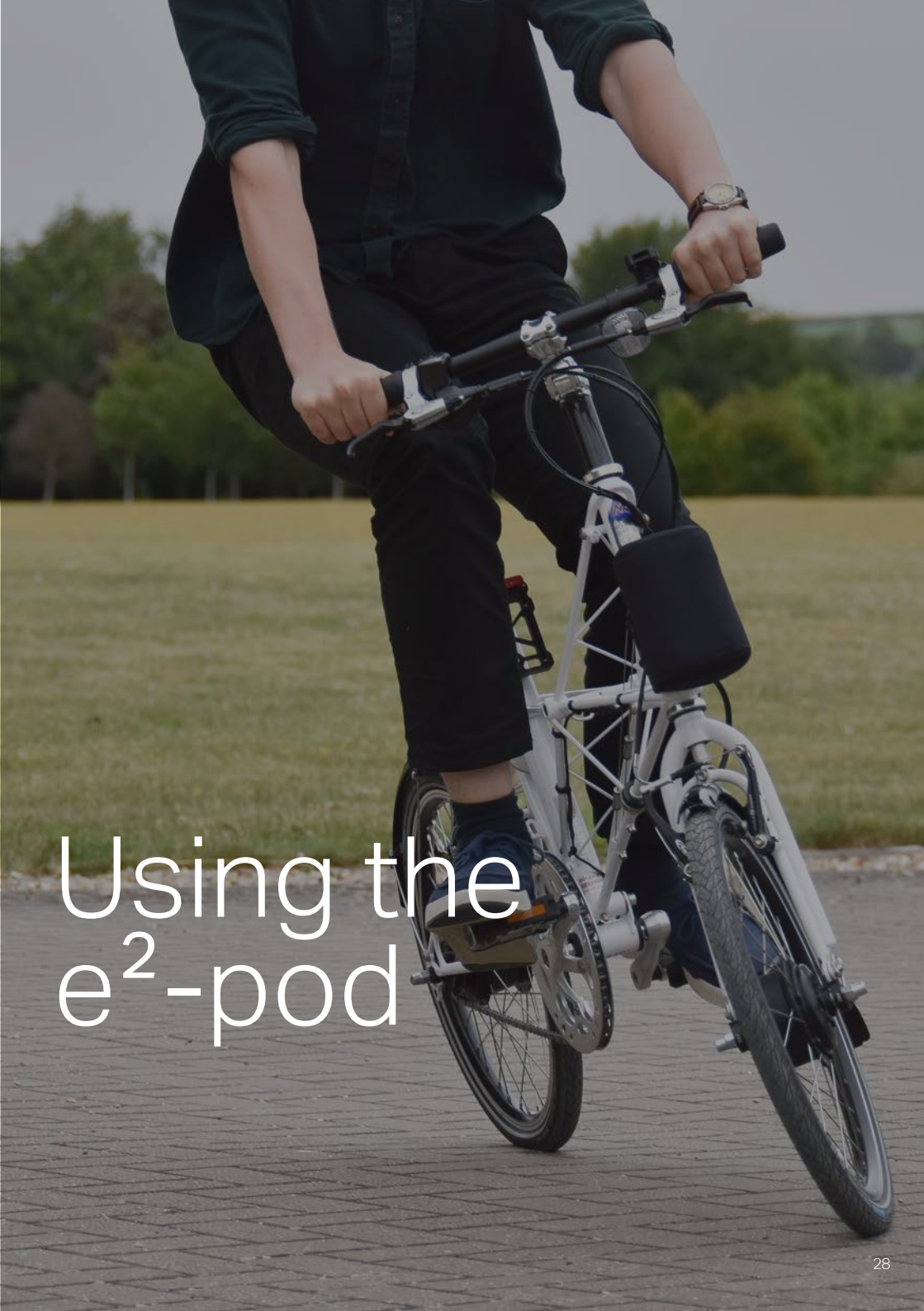
Description	Specification
Gearing - all bikes	<p>Single speed (4.65 metres of development) Gear ratio 3.12 53t/17t</p> <p>2 Speed SRAM Automatix with low gearing (4.65-6.32 metres of development) Gear ratio 3.12-4.24 53t/17t</p> <p>2 Speed SRAM Automatix with high gearing (4.94-6.71 metres of development) Gear ratio 3.31-4.51 53t/16t</p> <p>4 Speed SRAM Automatix with twin front chain ring &amp; two speed SRAM Automatix rear hub with low gearing (3.42-6.32 metres of development) Gear ratio 2.29-4.24 39-53t/17t</p> <p>4 Speed SRAM Automatix with twin front chain ring &amp; two speed SRAM Automatix rear hub with high gearing (3.63-6.71 metres of development) Gear ratio 2.44-4.51 39-53t/16t</p> <p>11 Speed Shimano Alfine (2.37 – 9.61 Metres) 54t chain ring – 18t sprocket – Rapidfire Shifter/Microshift Drop Bar Shifters (Gear ratio 1.59 – 6.45)</p> <p>22 Speed Shimano 105 (1.82-7.18 metres of development) Gear ratio 1.22-4.82 39-53t/11-32t</p>
Gearing - flat bars only	<p>5 Speed Sturmey Archer (2.81-6.84 metres of development) Gear ratio 1.88-4.59 53t/18t</p> <p>8 Speed Shimano Alfine (2.37-7.24 metres of development) Gear ratio 1.59-4.86 54t/18t</p> <p>9 Speed SRAM X5 (2.51-7.31 metres of development) Gear ratio 1.69-4.91 54t/32t</p> <p>14 Speed Rohloff (1.73-9.10 metres of development) Gear ratio 1.16-6.11 54t/13t</p>

# Specification list

<b>Description</b>	<b>Specification</b>
Gear shift	SRAM Apex double shifter (drop bars only) Microshift 11 Speed STI Shifters 8 / 11 Speed Shimano: Rapid-fire shifter (right hand) Sunrace friction shifter (flat bars only) SRAM Rival front derailleur Shimano tensioner Alfine CT-S500 14 speed: Grip shifter (right hand)
Chain	SRAM PC850 SRAM PC1 SRAM PC951
Brake levers	Avid FR-5 - flat bar Microshift STI SRAM Apex - drop bars
Brakes	Avid Single Digit 5 - flat bars Genetic mini V - drop bars
Pedals	VP607 alloy with rubber tread MKS SUPERIOR EZY quick release
Seat post	Kalloy SP265
Saddle	Selle Royal Viper Brooks B17 Leather Brown
Handlebar stem	Uno Adjustable
Handlebar	Kalloy AL-007 DB flat bar Deda Piega 44cm drop bar
Handlebar grip/tape	Rubber moulded grip - flat bar SRAM cork tape black - drop bar
Rims	Mach ER10 20"
Wheel size	20"
Spokes	14g stainless steel

# Specification list

<b>Description</b>	<b>Specification</b>
Tyre/pressures (max.)	20" x 1.5" Schwalbe Marathon / 100 PSI 20" x 1.35" Marathon plus / 100 PSI 20" x 1.35" Kojak / 95 PSI
Inner tubes	Schwalbe 20" Presta valve
Bicycle weight (no motor, e <sup>2</sup> -pod, battery, accessories)	13kg
Bicycle dimensions (LxWxH)	1560mm x 220mm x 1014mm (without pedals)
Packaged size (boxed LxWxH)	1576mm x 236mm x 1030mm (without pedals)
Spare battery holder (e-bike)	CNC Machined Peraluman 470 aluminium grade 5083/AlMg 4.5Mn anodised
Mudguards	Black SKS Chromoplastic 42mm
Rear rack	Black Moulton TSR Full Rack Black Moulton Day Rack
Colour	White, Black, Midnight Blue, Pastel Blue, Dusk Blue, Orange, Royal Red, Bright Red, and Golden Yellow



Using the  
e<sup>2</sup>-pod

# e<sup>2</sup>-pod

## Intelligent Power

The e<sup>2</sup>-pod Intelligent Drive System comprises of a compact, lightweight 250W geared brushless hub motor that is fitted in the front wheel. This connects via waterproof cable connectors, with a cable from the bottom bracket torque sensor to the machined aluminium pod, clamped securely on to the head tube. Also feeding into the e<sup>2</sup>-pod are the cables from the brake sensors. All these items along with the Bosch battery add around 3.9kg to the weight of the unpowered bike.

The e<sup>2</sup>-pod, battery latch, pod side lever, Bluetooth controller and cradle components are all CNC-machined from solid billets of Peraluman 470 Aluminium Grade 5083/AlMg 4.5Mn, polished, anodised and weather-sealed.

For when power assistance is not required, the battery can be left off the bike or the LED assistance can be dialled all the way down so that none of the LED indicators are lit, meaning no assistance will be given to the bike.

State of the art surface-mounted technology is used throughout. Smooth but responsive digital control of the motor is assured by a 32-bit ARM® microcontroller. This can access 150 million instructions per second to improve system performance intelligently. Highly efficient power supplies are used to minimise battery usage. A 3-axis accelerometer uses micro electromechanical technology to determine how steep the hill/gradient is at any moment and automatically adjusts power accordingly.

Three fully compliant USB-C ports are located on the side of the e<sup>2</sup>-pod for phone and accessory charging.





# Technology, meet simplicity

The e<sup>2</sup>-pod Intelligent Drive System comes with the choice of a 4.0 Ah or 6.0 Ah Bosch battery which are readily available from most tool retailers and online. The 4.0 Ah battery gives a typical range of up to 35km and the 6.0 Ah battery up to 50km. The Bosch 9.0 Ah battery is also compatible with the e<sup>2</sup>-pod and gives a range of up to 75km. They cost less than conventional e-bike batteries; are robust (rated for a 3m drop onto concrete), charge between 35-105 minutes dependant on the charger used, and have a two-year warranty from Bosch.

With the 4.0Ah and 6.0Ah batteries weighing just 1.3kg and measuring 158 x 97 x 76mm, a spare can be carried for any extended trip. The battery pack slides onto the e<sup>2</sup>-pod, locating with a positive click where it sits with the charge level display visible. When the battery is removed, the bike reverts to its standard configuration and can be used as a regular bike.

Using the accompanying Bluetooth controller or the e<sup>2</sup>-pod app, the user has complete control of the level of assistance received from the e<sup>2</sup>-pod Intelligent Drive system whilst on the go.

There are two power modes. 'M' gives a conventional torque sensor type power output: the motor cuts in immediately as you pedal. The result is a very natural cycling action, but with the sensation of being given a gentle boost.

The 'A mode' utilises the in-built "Inclinometer/Accelerometer" sensor which allows the e<sup>2</sup>-pod to recognise hills and gradients, and accordingly provide automatic compensation by increasing or decreasing the power delivered. This results in the rider's exertion levels remaining more constant whilst tackling gradients, as if travelling on the flat.

The system also features a traffic light/hill start launch control function. This can be activated by applying both brakes and pressure to the left pedal. When the brakes are released and the rider pedals, the e<sup>2</sup>-pod delivers maximum power to the motor for a period of three seconds. This enables an effortless get-away when moving away from traffic lights and crossings in heavy traffic.

# Unboxing the e<sup>2</sup>-pod

## What's in the box:

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### **Bosch 36volt battery**

Dependant on your selection, you will have either a 4.0 Ah or 6.0 Ah Bosch battery supplied with your bike.

Please ensure you register your battery with BOSCH to obtain your two year warranty.

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### **Bosch AL3640CV 36volt Li-on charger**

**OR**

### **Bosch GAL3680CV 36volt Li-on 30 minute charger**

For use with the 4.0 Ah and 6.0 Ah Bosch batteries.

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### **Battery cover**

A protective neoprene cover to shield your Bosch battery from every day weather.

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**Bluetooth controller with Micro USB to USB-C cable included.**

# Checking and charging the battery



## Battery charge status

Press the red 'On' button to check the battery charge. The battery is fully charged when the three Green LED's light up.



## Charging the battery

Ensuring the battery cover is removed, plug the battery charger into a suitable mains power socket and insert the battery into the charger.



## Fault indicator

Flashing/continuous red light: see Bosch trouble shooting guide.

## Charging indicator

Flashing green light: charging.



## Charging Indicator

Continuous green light: fully charged.

# Docking the battery



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1. Holding the battery securely, locate the battery on the e<sup>2</sup>-pod and slide down until it is in position.



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2. With the battery located on the e<sup>2</sup>-pod, push the battery down firmly until it clicks and locks.

# Removing the battery



Locked

Unlocked



## Unlocking the lever

(Security lock versions only) If the lever is locked, use the security key to unlock the lever.

## Disconnecting the battery

Rotate the lever to disconnect the battery. Please note, do not use excessive force on the battery release lever.



## Removing the battery / turning the battery power off

Rotate and hold the lever, whilst sliding the battery up, to remove the battery.

**This must always be done when the bike is not in use to prevent the battery from becoming discharged.**

# Switching on the e<sup>2</sup>-pod Power button edition



1. Place the battery onto the pod as described in 'Docking the battery' (page 37).



2. Press and hold the power button located on the top of the e<sup>2</sup>-pod until the LEDs flash and the battery LED illuminates.



To switch the system off, simply press and hold the power button until the LEDs turn off.

If the system is inactive for 20 minutes, then the e<sup>2</sup>-pod will automatically switch itself off, although we do advise that the battery is removed when not in use.

If the battery voltage drops too low, then the system will automatically switch off to prevent any damage to the battery.

Please note that when the system is turned-off, the USB ports won't provide any charge.

# Switching on the e<sup>2</sup>-pod Magnetic keyring edition

If your bike came complete with the keyring pictured below please follow these steps to turn your e<sup>2</sup>-pod on and off. Please note that you can also use your Bluetooth remote to activate the e<sup>2</sup>-pod.



1. Place the battery onto the pod as described in 'Docking the battery' (page 37).

## METHOD 1

2. Locate the power symbols on the e<sup>2</sup>-pod and keyring. Align the symbols and hold until the LEDs flash and the battery LED illuminates.



## METHOD 2

2. Locate the power symbols on the e<sup>2</sup>-pod and back of the Bluetooth controller. Align the symbols and hold until the LEDs flash and the battery LED illuminates.

To switch the system off, simply repeat step two and hold until the LEDs turn off.

# Using the USB-C ports

Mobile devices can be charged via the USB-C Ports located on the side of the e<sup>2</sup>-pod. USB-C Ports are fully compliant with all USB-C compatible devices.

## **Charging devices while the bike is being ridden**

When the bike is in either M or A mode, any device plugged into the USB-C port will automatically begin charging.

Please note that when the system is turned-off, the USB-C ports won't provide any charge.



# LED indicators

## 'A' Status Indicators

### Flashing green:

Drive active

Please note that the assist level LEDs on the Bluetooth controller will also flash green to indicate that drive is active.

### Amber:

Launch control selected

### Flashing amber (for 3 seconds):

Launch control active

### Red:

Fault detected (see trouble shooting guide)

## Battery Status Indicators

A steady light indicates that the system is ready. The colour of the light indicates battery charge status.

### Green:

Fully charged

### Yellow:

Charge medium

### Amber:

Charge low

### Red:

Charging required



# Using the e<sup>2</sup>-pod app

The e<sup>2</sup>-pod app works with both the Gen I e<sup>2</sup>-pod and Gen II e<sup>2</sup>-pod, and gives the user control of the e<sup>2</sup>-pod via their smart device.

The app can be downloaded from the App Store on Apple devices. Simply open up the App Store and search for 'e2pod'. Then download the app to your device.

The mobile is then connected via Bluetooth pairing and is registered by entering the serial number located on the bottom of the e<sup>2</sup>-pod.

## The app:

- Indicates what mode the pod is in.
- Allows the user to select the assist level given.
- Shows the speed and distance covered.
- Indicates the battery level at all time.

Please note that the e<sup>2</sup>-pod app is not currently available for Android devices.

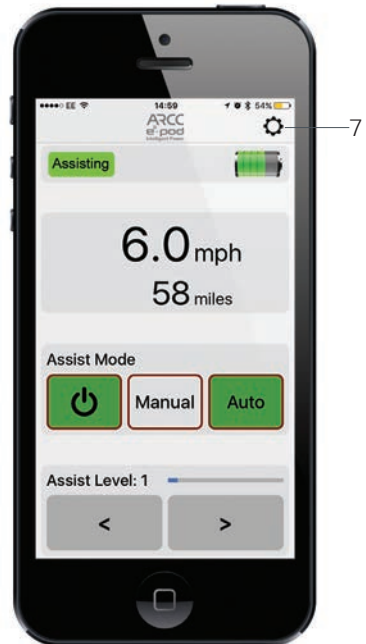
Please also note that the imagery and wording currently refers to the Gen I e<sup>2</sup>-pod - despite this, the app can also be used to control your Gen II e<sup>2</sup>-pod.



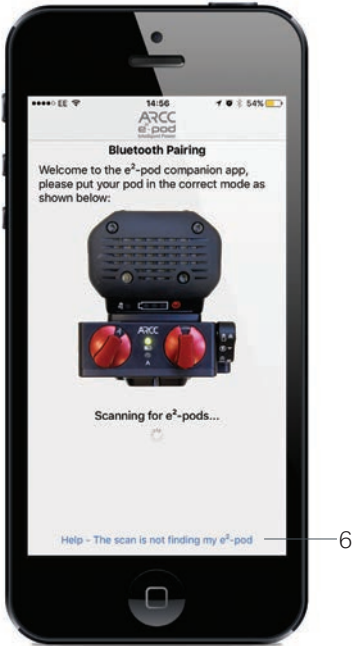
1. Loading Screen



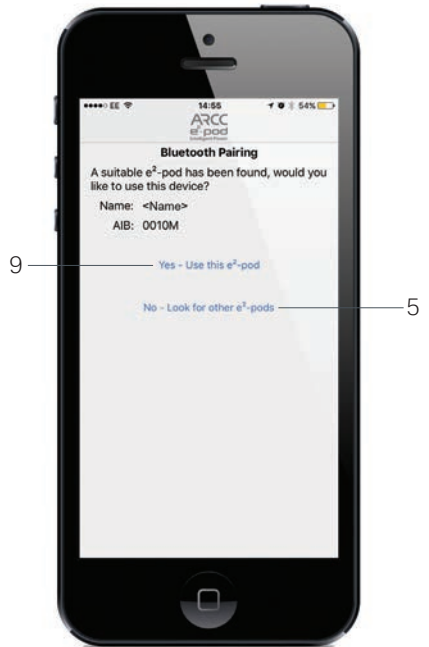
4. Main screen



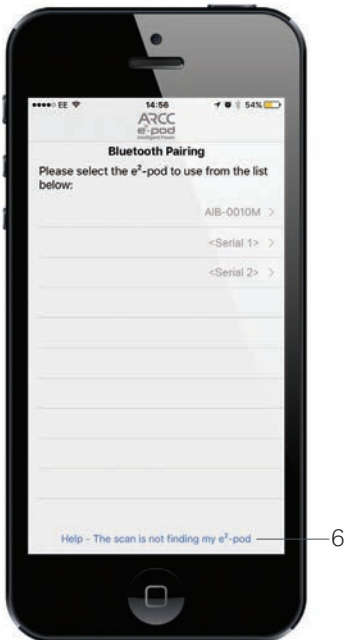
## 2. Pairing - Scanning



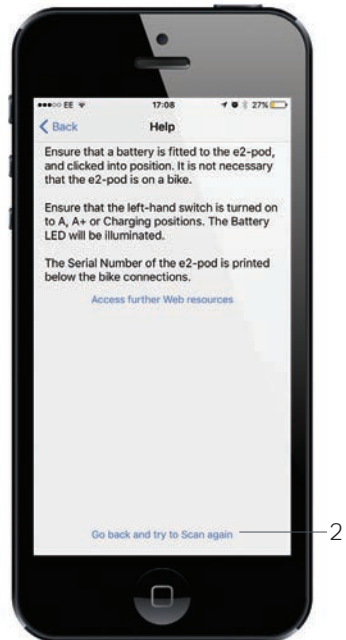
## 3. Pairing - One device found



## 5. Pairing - Multiple devices found



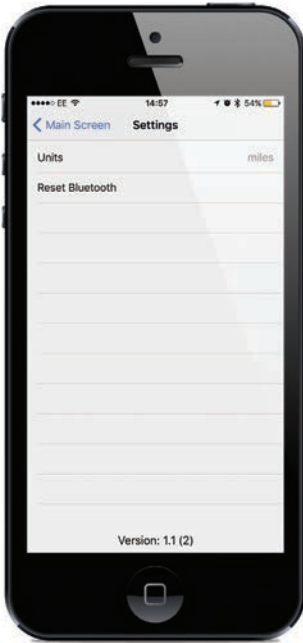
## 6. Pairing - Help



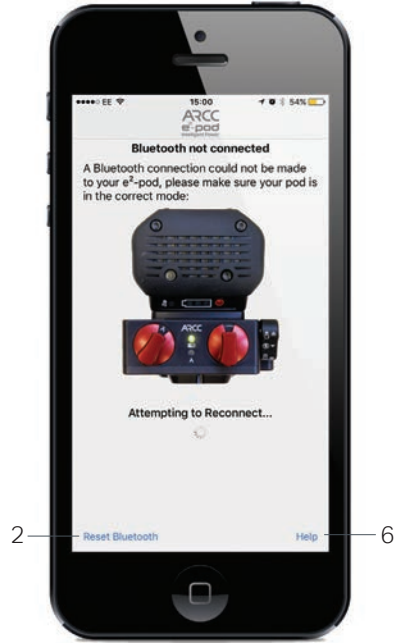
iOS Confirmation - 9

Opens safari page

7. Settings Screen

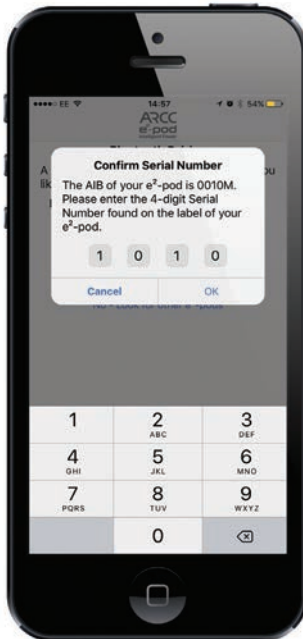


8. Not Connected Screen



Automatically returns to main screen whenever Bluetooth reconnects.

9. iOS Bluetooth Confirmation Dialogue



Code Correct





# Using the Bluetooth controller

The Bluetooth controller allows the e<sup>2</sup>-pod mode selection / assist level to be changed.

When the Bluetooth controller is powered off or the connection between the remote and the e<sup>2</sup>-pod is lost, the e<sup>2</sup>-pod will run at half power.

## Bluetooth controller operation:



**Power/Mode selection button:** Holding the power / mode selection button will turn the remote on/off. A short press of the button allows you to switch between M and A modes.



**Assist level buttons:** These allow you to increase/decrease the assist level from minimum to maximum (indicated by the assist level LEDs).



**Assist level LEDs:** These LEDs indicate the assist level selected (selectable using the assist level buttons).



**Manual Mode LED:** This LED illuminates solid green when the M mode is selected (selectable using the power/mode selection button). There are two power modes. 'M' gives a conventional torque sensor type power output: the motor cuts in immediately as you pedal and its output matches your own input. The result is a very natural cycling action, but with the sensation of being given a gentle boost.



**Automatic Mode LED:** This LED illuminates solid green when the A mode is selected (selectable using the power/mode selection button). The 'A mode' utilises the in-built "Inclinometer / Accelerometer" sensor which allow the e<sup>2</sup>-pod to recognise hills and gradients, and accordingly provide automatic compensation by increasing or decreasing the power delivered. This results in the rider's exertion levels remaining more constant whilst tackling gradients, as if travelling on the flat.



**Bluetooth LED:** This LED will illuminate solid blue when the Bluetooth controller is successfully paired with the e<sup>2</sup>-pod.



**Battery LED:** When the controller battery level drops and the requires charging, the battery LED will illuminate solid red. Whilst in charge mode, the battery LED will flash red. When charging is complete / charging is not required, the LED will turn off.

## Initial Bluetooth pairing

- Turn on the Bluetooth controller by pressing the power button.
- With the Bosch battery located in the e<sup>2</sup>-pod, push the battery down firmly until it clicks and locks.
- On the Bluetooth controller press and simultaneously hold the two assist level buttons and power mode button until the six assist level LEDs light up, then release.
- Wait for the 'A' LED on the e<sup>2</sup>-pod to flash three times.
- Following the three flashes the blue Bluetooth LED will illuminate on the Bluetooth controller. This indicates that the Bluetooth pairing has successfully been completed.

**Note:** you have a two minute time period to complete the pairing process. If this time expires, turn the controller and e<sup>2</sup>-pod off and on before re-attempting.

After the initial pairing of the Bluetooth controller to the e<sup>2</sup>-pod, it will automatically connect in subsequent operations when the e<sup>2</sup>-pod and Bluetooth are powered up together.

## Charging the Bluetooth controller

Using the Micro USB to USB-C cable supplied, plug the Micro USB into the Bluetooth controller, then the USB-C into a port on the side of the e<sup>2</sup>-pod.

The red battery LED will flash on the Bluetooth controller whilst the unit is charging. Once fully charged the red LED will turn off.

Please note that the controller can also be charged from any USB device / wall socket using a suitable USB cable.

## Launch control:

- In order to initiate launch control, pull the brakes. The two outer assist level LEDs will then illuminate, as well as the 'A' LED on the e<sup>2</sup>-pod which will flash.
- When pressure is placed on the pedal - all 6 assist LEDs along with the 'A' LED will illuminate.
- As the brakes are released, the launch control mode is operated. This is indicated on the Bluetooth controller by all six assist level LEDs flashing for the period of the boost.
- The e<sup>2</sup>-pod will deliver maximum power to the motor for a period of three seconds, enabling an effortless get-away to be achieved for safety, when moving away from traffic lights and crossings in heavy traffic.

**Note:** the launch control function will be cancelled if there is hesitation in pedalling or any brake is applied.

## Tip:

When the LED assistance is dialled all the way down, so that none of the LED indicators are lit, the e<sup>2</sup>-pod will go into standby mode. This means that no assistance will be given to the bike, allowing it to be ridden as normal whilst also saving the battery.



# Trouble shooting guide

The e <sup>2</sup> -pod isn't working	<p>Check the battery is fully charged.</p> <p>Check the battery is correctly clicked into position.</p> <p>Ensure that the e<sup>2</sup>-pod is turned on. (Power button edition)</p> <p>Check brake switch function. Pull each brake lever in turn, the corresponding red LED indicator should illuminate on the brake switches when the brake is applied.</p>
The automatic hill and gradient power detection doesn't deliver power when I go up a hill or incline.	<p>Check that A mode is selected.</p>
Launch control isn't working	<p>Ensure you release the brakes and apply pressure to the left pedal at the same moment when moving off.</p> <p>Not enough pressure applied to the left pedal.</p> <p>One or both brake switches are not working/faulty. Pull each brake lever in turn, the corresponding red LED indicator should illuminate on the brake switches when the brake is applied.</p> <p>Brake switch cable is disconnected. Reconnect it.</p> <p>Torque sensor cable is disconnected. Reconnect it.</p>
The e <sup>2</sup> -pod lever doesn't move/is locked	<p>Use the security key provided to unlock the lever.</p>

Continuous red light on the battery	Place the battery into the charger for a few seconds, then remove from the charger and place the battery onto the e <sup>2</sup> -pod and wait for 5 seconds, remove the battery and place back onto the charger. The battery should now start to charge.
Continuous red light on the charger	Battery is over temperature. As soon as battery reaches allowable temperature, charging will commence.
Flashing red light on the charger	Battery malfunction. Remove battery from charger and see the trouble shooting guide in the Bosch battery user manual.

## EC DECLARATION OF CONFORMITY

**The Manufacturer:** ARCC Innovations Ltd  
Pampisford Road  
Great Abington  
Cambridge, CB21 6AH  
United Kingdom  
+44 122 389 3290

**Hereby declares that:**

**Product Models:** ARCC Abington EPAC  
ARCC Rosemont EPAC  
ARCC Moulton EPAC  
ARCC Brompton EPAC  
ARCC e<sup>2</sup>-Pod Intelligent Power System

**Comply with all the relevant requirements of:**  
2006/42/EC Machinery Directive  
2014/30/EU Electromagnetic Compatibility Directive (EMC)

**The following technical standards have been applied:**  
EN 15194:2017 Cycles - Electrically Power Assisted Cycles - EPAC Bicycles  
ISO 4210-2 Cycles - Safety Requirements for Bicycles

Technical documentation filed at address above



Rai Virciglio  
Director  
ARCC Innovations Ltd  
29th April 2019



Mark Wortley  
QA  
ARCC Innovations Ltd  
29<sup>th</sup> April 2019

# Warranty

In the unlikely event that your e<sup>2</sup>-pod Intelligent Drive System has a manufacturing defect, we will replace the defective part free of charge if we are notified within 5 years of the purchase of the bike or system.

If you encounter any problems with the e<sup>2</sup>-pod, it is covered by our 5 year warranty. Terms and conditions apply.

## **Serial and frame numbers**

The label at the bottom of the seat tube displays the 5 digit bike serial number, the e<sup>2</sup>-pod Intelligent Drive System serial number can be found on the bottom of the e<sup>2</sup>-pod. The frame number can be found on the Moulton TSR information sticker usually located on the bottom of the seat tube. If the serial or frame number is removed or tampered with, the warranty will be invalidated.

## **How to claim your warranty**

To claim your warranty simply call us on 01223 893 290 or email us at [info@arcc.co.uk](mailto:info@arcc.co.uk)

We will need the following details:

**Your name**

**Bike serial number**

**Frame number**

**e<sup>2</sup>-pod serial number**

**A description of the fault**

# Warranty terms and conditions

Thank you for choosing an ARCC bike. Your bike is the product of ARCC's use of proven engineering, extensive research and testing, superior reliability, safety and performance. You should ensure that your bike is regularly serviced by a qualified bicycle technician, in accordance with the recommendations in this user guide. Please keep records of all maintenance carried out on your bike and ensure these records are available, if requested, whenever service, repair or warranty work is undertaken on your ARCC bike.

## Guarantee of goods

The bike frame and pod system are covered by a 5 year warranty. This 5 year warranty excludes the following components of the bike frame and e<sup>2</sup>-pod system: (a) tyres, (b) inner tubes, (c) chains, (d) sprockets, (e) brake pads, and (f) brake cables. The e<sup>2</sup>-pod system does not include the motor which is covered by a separate 2 year warranty. The Bosch battery is covered by a 2 year manufacturer's warranty which the customer must sign up for upon purchasing. Bottom Bracket warranty of 10,000km.

This guarantee does not apply to any defect in the goods arising from:

- fair wear and tear
- wilful damage, abnormal storage or working conditions, accident negligence by you or a third party
- if you fail to operate or use the goods in accordance with the user instructions
- any alteration or repair by you or by a third party who is not one of our authorised repairers

These warranties are in addition to, and do not affect, your legal rights in relation to the goods that are faulty or not as described.

If our system has been fitted by us to a bike which has been supplied by a third-party the above guarantees and exclusions detailed above are not affected with the exception of the 5 year frame warranty.

We will however honour your remaining manufacturer's warranty or a minimum of 1 year in the event that the manufacturer's warranty has expired provided proof of purchase has been validated by ARCC Innovations Ltd.

## Disclaimer of warranties; limitation of liability

We do not guarantee, represent or warrant that your use of our service will be uninterrupted, timely, secure or error-free.

We do not warrant that the results that may be obtained from the use of the service will be accurate or reliable.

You agree that from time to time we may remove the service for indefinite periods of time or cancel the service at any time, without notice to you.

You expressly agree that your use of, or inability to use, the service is at your sole risk. The service and all products and services delivered to you through the service are (except as expressly stated by us) provided 'as is' and 'as available' for your use, without any representation, warranties or conditions of any kind, either express or implied, including all implied warranties or conditions of merchantability, merchantable quality, fitness for a particular purpose, durability, title, and non-infringement.

In no case shall ARCC Bikes, our directors, officers, employees, affiliates, agents, contractors, interns, suppliers, service providers or licensors be liable for any injury, loss, claim, or any direct, indirect, incidental, punitive, special, or consequential damages of any kind, including, without limitation lost profits, lost revenue, lost savings, loss of data, replacement costs, or any similar damages, whether based in contract, tort (including negligence), strict liability or otherwise, arising from your use of any of the service or any products procured using the service, or for any other claim related in any way to your use of the service or any product, including, but not limited to, any errors or omissions in any content, or any loss or damage of any kind incurred as a result of the use of the service or any content (or product) posted, transmitted, or otherwise made available via the service, even if advised of their possibility.

### **Cancellation of the contract**

Unless the goods have been personalised or otherwise made to your specification or you have ordered custom fit products, you may cancel the contract at any time after you place your order up to 14 calendar days from the day of delivery of all the goods.

If you cancel the contract in accordance with the clause above and you have made payment in advance for the goods we will refund these amounts to you within 30 calendar days from the date of your cancellation or within 30 calendar days of receipt of the returned goods direct to the payment method you originally used for your purchase minus any associated standard initial delivery or collection costs.

If you cancel an order for goods in accordance with the clause above which we have already dispatched to you, we will not be able to cancel your order until the goods are returned to us and inspected by us. In these circumstances, you will be required to return the goods to us in accordance with our Refund Policy and we will charge you the costs of collection or you will have to pay the cost of returning the goods back to us. This will not affect your refund for the goods themselves, but we will deduct from the refund that is due to you any charges for delivery, collection and/or charges relating to damage to the goods following our inspection.

You have the right to cancel this contract if we are affected by an event outside of our control.

In the event that we have to cancel an order before the goods are delivered, due to an event outside of our control or the unavailability of stock, we will promptly contact you to let you know;

if you have made any payment in advance for the goods that have not been delivered to you, refund these amounts to you;

that we will not charge you anything where we have already started work on your order for made to measure goods or customer fit products by the time that we have to cancel.

## Notice to cancel

Should you exercise your right to cancel you must provide us with a clear statement of your decision to cancel the contract either:

- by writing to us at the address outlined below.
- by calling us on telephone number 01223 893290; or
- by sending an email to the address below.

If you have any concerns or need to contact us please email us at [info@arcc.co.uk](mailto:info@arcc.co.uk) or write to us at ARCC Innovations Ltd, Pampisford Road, Great Abington, Cambridge CB21 6AH.

## Return of goods

You must take reasonable care of the goods whilst they are in your possession.

If you are returning the goods they will be your responsibility until they are received by us, in a satisfactory condition, and we would recommend that you used a recorded delivery method such as an insured delivery service when returning the goods.

Your right to return the goods to us will not apply to any goods that we have made or customised specifically for you, including but not being limited to any custom fit products, however, this does not affect your statutory rights.

You may return faulty goods for a full refund or exchange, at no additional cost, however please note that our Refund Policy lasts 30 days.

If you cancel your order and we have delivered the goods to you, you are not permitted to use or attempt to fit/assemble the goods aside from your need to assess them for suitability and you will need to return all product packaging with the goods to repackage the goods appropriately to ensure that we receive them in a satisfactory condition by us at ARCC Innovations, Pampisford Road, CB24 6AH. Where goods have not been received by us and you have not supplied any proof of posting to us within 14 days of your notice of cancellation we will: contact you to arrange to have the goods collected at a mutually convenient time during the following 14 calendar days (excluding Saturdays and Sundays); advise you of the cost of collecting the goods; deduct the cost of collecting goods from any refund that we may owe you; and we shall not be liable to refund you if the goods are not received back and no proof of postage is supplied to us.

You are required to return the goods as soon as we receive your written notice of cancellation.

If you believe that you have received damaged or faulty goods or we delivered incorrect or substituted goods, where the substituted item(s) were not agreed prior to despatch, you will need to either return the goods to us at your cost, or alternatively allow us to collect the goods, for examination to take place at our premises. The reasonable cost of packaging and carriage of goods returned by you will be reimbursed by us if the goods are found to be damaged or defective and you shall be liable to pay us for any reasonable costs incurred by us collecting goods found not to be defective. To enable us to inspect the goods, we ask that you give us a reasonable opportunity to inspect the goods.

If, after we inspect the goods we agree that the goods are damaged or faulty, we shall either replace the goods (or the part in question) found to be defective at our cost or refund to you the price (or a proportionate part of the price) of the relevant part of the goods found to be damaged or faulty.

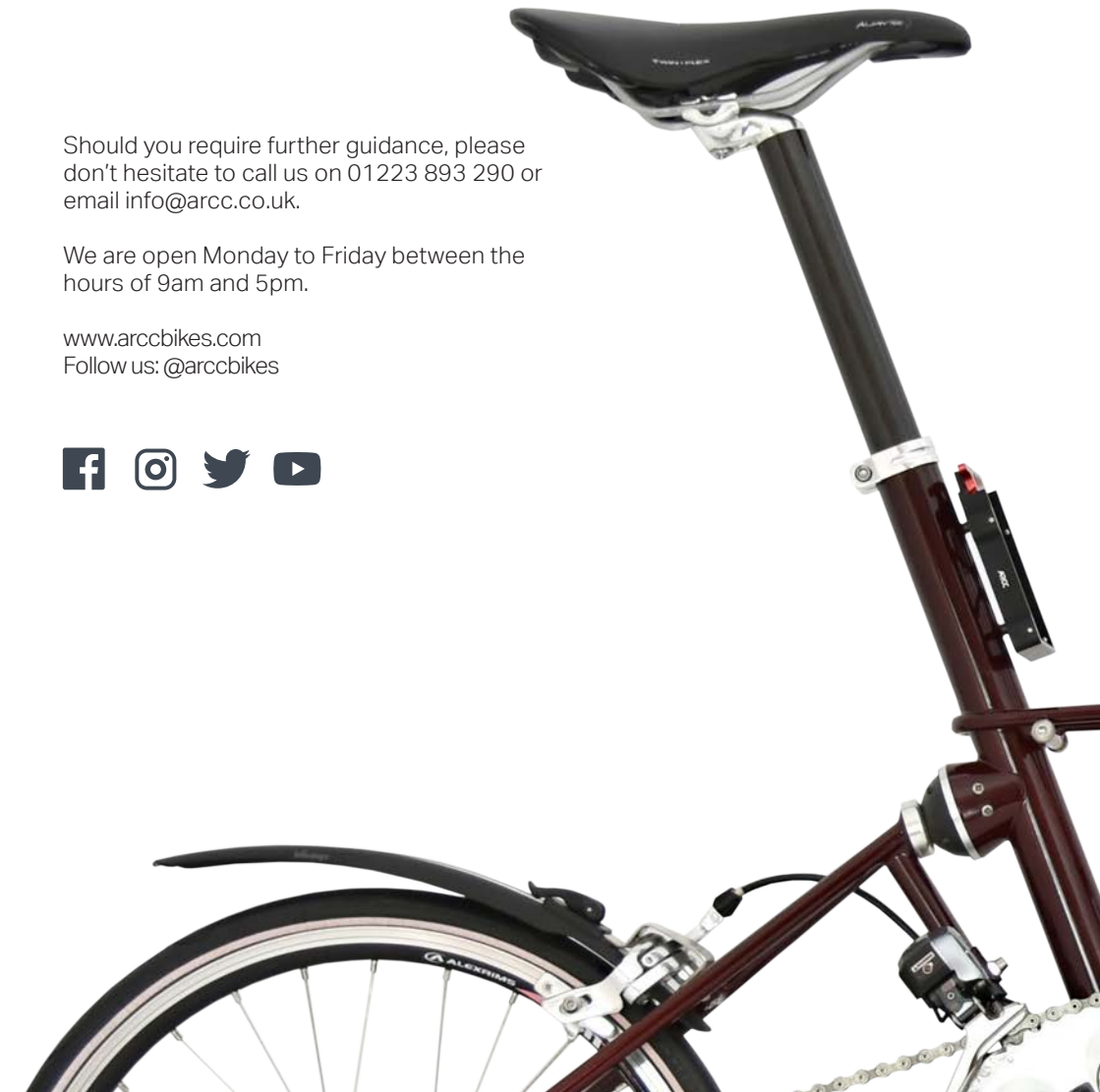
Please see our full Terms of Service on our website: [www.arccbikes.com](http://www.arccbikes.com)

# Contact us

Should you require further guidance, please don't hesitate to call us on 01223 893 290 or email [info@arcc.co.uk](mailto:info@arcc.co.uk).

We are open Monday to Friday between the hours of 9am and 5pm.

[www.arccbikes.com](http://www.arccbikes.com)  
Follow us: @arccbikes



**Disclaimer:** There may be changes to products and services after the publication date of this manual. ARCC reserves the right to make design modifications and allow for discrepancies in colour tones. The illustrations may contain equipment, optional accessories or other services that are not part of the standard delivery. Colour deviations are due to technical factors.

# About ARCC

Based in Cambridge in the United Kingdom, we are a Research and Development centre invested in keeping engineering and design in the UK. As well as designing and developing our own bikes and systems, we also provide assistance and mentoring to university graduates, and act as an incubator facility to assist start-ups in establishing and growing their business.

ARCC is a not-for-profit corporation owned by a team who have achieved great success, and now want to help others with the same vision and ambition realise their objectives here in the UK, rather than elsewhere.

ARCC Bikes began following the success of our electric Intelligent Drive system, the e<sup>2</sup>-pod, designed to transform standard bikes into e-bikes. We have since gone on to design and develop our own sleek, lightweight town bikes, the Abington and Rosemont.

Visit [www.arccinnovations.com](http://www.arccinnovations.com) to find out more about ARCC Innovations and ARCC Bikes.



ARCC



# ARCC

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Follow us: @arccbikes

