apollo

Apollo Phaze E-bike
Front Motor Drive System
Workshop Manual

Contents

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Safety information

⚠ WARNING

There is an increased risk of injury – even fatal – if you do not follow instructions.

⚠ WARNING

There is a risk of serious injury – even fatal – if you do not follow instructions.

Managing the battery

- Use only batteries and chargers from EVERGRAND with your bike. Use of other battery packs can cause injury and involve a risk of fire. If you use other battery packs, EVERGRAND will assume no liability or warranties.
- Do not throw the battery pack into a fire.
- The battery must not be exposed to direct sunlight, or charged or stored in the vicinity of high temperatures.
- Do not use the battery for any other purpose.
- Avoid contact with metal objects (paper clips, coins, keys, nails, screws or other small metal objects, as this may cause a short-circuit. Shorts caused in this way will invalidate any warranty claims.
- Do not open the battery pack. This could cause a short circuit. Opening of the battery package will invalidate any warranty claims.
- Do not connect, or disconnect the battery pack / charger with wet hands.
- Keep the battery / charger out of reach of children/animals.

How safe riding is ensured

- While riding, do not focus your attention too much on the screen, as this can lead to accidents.
- Ensure that the wheels are securely attached to the bike before you begin your trip. If the wheels are not securely attached, the bike may fall over, causing severe damage.
- When riding a power-assisted bike, be sure that you are completely familiar with the starting characteristics of the bike before riding on multi-lane roads and footpaths. If the bike suddenly switches on, accidents can happen.
- If applicable, check that the bike lights are working before you ride at night.

How safe maintenance is ensured

- Remove the battery pack from the eBike before you start working on it (e.g., assembly work, maintenance, working on the chain, etc.), before transporting it by car or plane, or before storing it. There is a risk of injury in case of accidental activation of the eBike system.
- Be sure to remove the battery before you perform wiring or installation work on the bike. Otherwise there is a danger of electric shock.
- When you install this product, be sure to follow the instructions given in the user manual. We also recommend that you use only genuine EVERGRAND parts. If nuts and bolts are left loose or the product is damaged, the bike may fall over suddenly and cause serious injury.
- After you have carefully read the user manual, store it in a safe place for later reference.
- Ensure that unused connections are provided with caps.
- Contact the retailer for installation and adjustment of the product.
- To allow riding in wet weather, the product is designed to be completely waterproof. Nevertheless, do not expose the product intentionally to water.
- Do not expose the bike to high-pressure cleaning. If water should penetrate into one of the components, operating problems or rust may result.

Managing the battery

- Do not subject the battery or the charger to physical shocks, e.g., by dropping.
- Fluid that leaks from the battery pack may cause skin irritation or burns. In the event of accidental contact, rinse with water. If fluid gets in your eyes, seek medical advice.
- If you detect a strange odour or smoke, pull the plug.
- Ensure that the power plug is fully inserted into the wall outlet.
- Pull on the plug instead of the cable to unplug the power cord from a wall outlet.
- Do not place anything on the cable. Do not lay anything on the cable.
- Do not bend the cable. The cable must not be rolled up while charging.
- It is dangerous to use a single outlet for multiple devices.
- If the cable or plug is damaged, replace the parts with new ones. Contact your authorized dealer.
- Always keep your charging set away from flammable gases when charging.
- The charger can be hot. Do not cover the charger.
- The charger can be hot. Do not place the charger on floor coverings such as carpets, tatamis, etc.
- The charger can be hot. Avoid long skin contact with the charger.
- Do not immerse the battery or the charger. Do not use in rain.
- Do not charge the battery for more than 24 hours continuously.
- If the battery is not fully charged after six hours, disconnect it immediately from the output to stop the charging process and contact your place of purchase. This can lead to overheating, bursting, or ignition of the battery.

⚠WARNING

There is a danger of personal injury or property damage

How safe riding is ensured

Follow the instructions in the user manual of the bike to ensure a safe ride.

Managing the battery

- The battery comes with a 40% charge. Discharge and charge the battery fully, twice to reach an optimum range.
- Charge the battery before riding.
- The charger can be used with an input voltage in the range of 100V to 240V AC.
- After charging pull the cable from the battery and from the wall outlet.
- Keep the power plug clean and dust free. The charger should be cleaned regularly.
- Do not rotate the pedals while the battery is being charged and the battery is on the battery holder.
- Provide ventilation/venting while the battery is charging in enclosed spaces.
- During storage keep the battery at a charge level of at least 40%.
- Charge the battery at room temperature between 5°C and 35°C (41°F and 95°F).

Safe use of the product

- Examine the battery charger regularly for damage, especially the cable, plug and housing. If the battery charger is damaged, it must only be used after it has been repaired.
- This product must not be used by persons (including children)□with reduced physical, sensory or mental capabilities, or who lack experience and knowledge, unless they are supervised by a person responsible for their safety, or instructed in the use of the product.
- Do not let children play near the product.

Riding the E-Bike

1

Fit the battery and push the display ON/OFF button

2

Switch on the bike

Note:

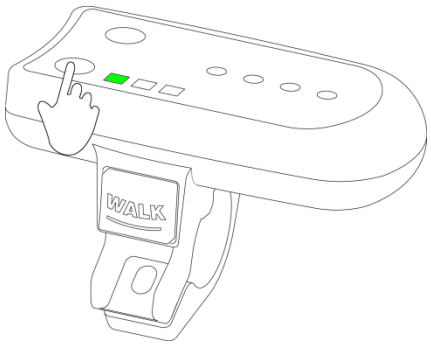
If the battery is not used for more than 24 hours, it goes into 'sleep mode' to protect the battery. To wake the battery you must first press the power button on the battery.

Press 2 sec.

The handlebar display goes through a self-check routine, where all LEDs flash. The number of permanently lit red LEDs indicates the state of charge of the battery. The MODE defaults to 'LOW'.

3

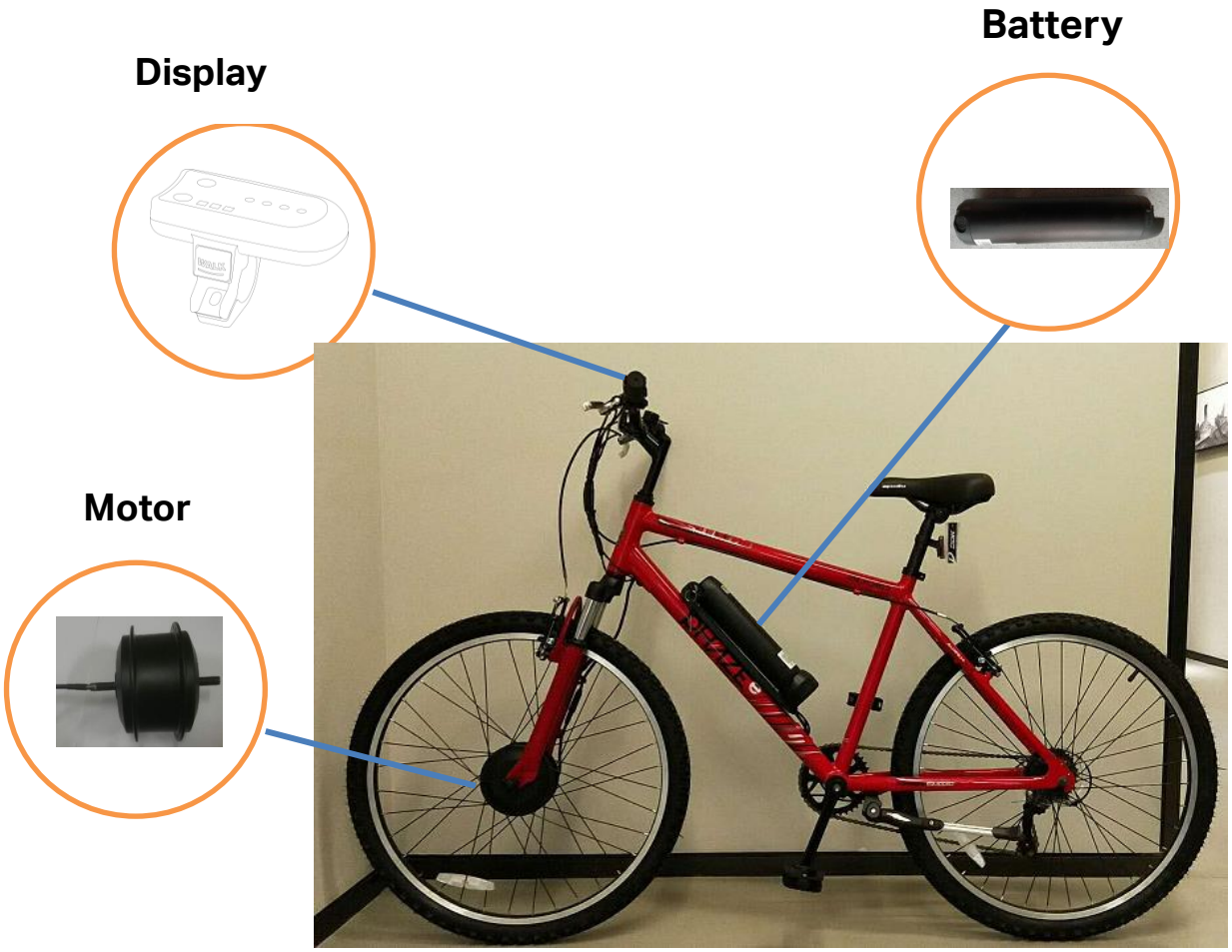
Select mode



4

Start riding

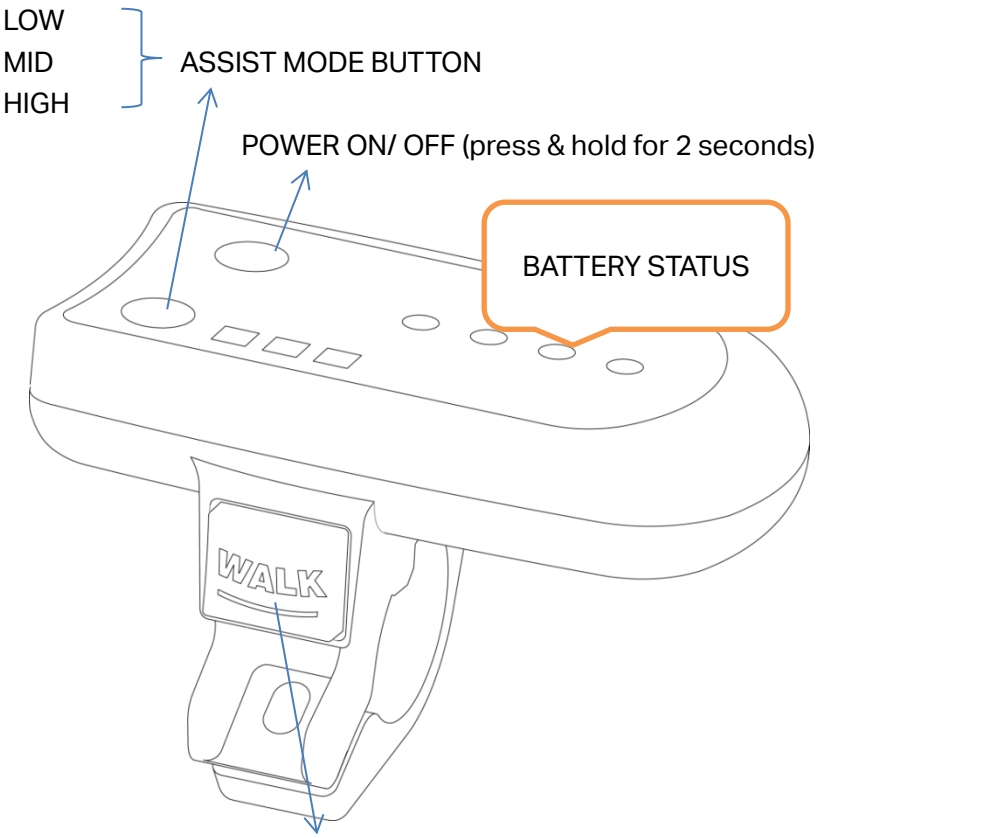
Product characteristics



Product specification

Operating temperature range during discharge	-15℃ to 60℃
Operating temperature range during charge	0℃ to 45℃
Storage temperature (battery)	-20℃ to 60℃
Humidity (storage)	up to 80%
Charging voltage	100V to 240VAC
Charging time	approx. 5 hours
Battery type	Lithium ion battery
Capacity	208. 8Wh
Nominal voltage	24VDC
Motor type	Front-wheel drive
Motor type	Brushless DC Motor
Nominal motor power	250W
Maximum motor power	350W
Torque	35Nm

Display



For WALK assistance press and hold the button
Assistance will stop as soon as you release the button

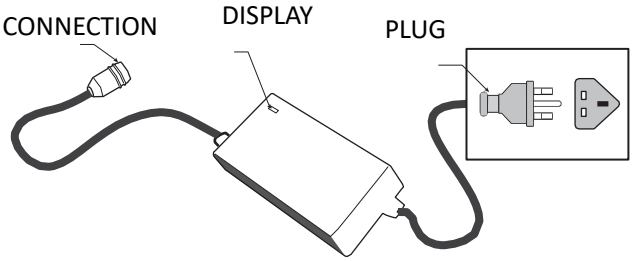
Battery

Battery **Power** **Charging port**

Important!
Your bike is supplied with two battery lock keys; please keep the spare key safely. We can order you a replacement if you can provide the key number.
Please note your key number here-

- If the E-Bike not in use, remove the battery and store it at a temperature between 0°C and 40°C in a dry environment.
- Do not store the battery with low capacity for a longer period.
- For storage, the battery should have a capacity of at least 40%.
- It is recommended to discharge the battery below 20% and then fully charge it. It is better to do this action once every 3 months.

Battery charger



⚠WARNING

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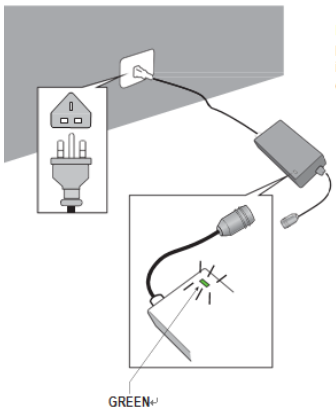
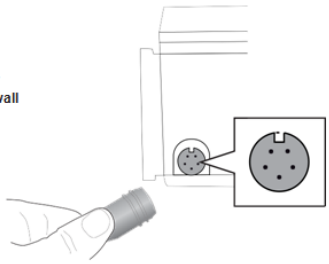
- The battery must not be exposed to direct sunlight, or charged or stored in the vicinity of high temperatures.
- Avoid contact with metal objects (paper clips, coins, keys, nails, screws, or other small metal objects, as this may cause a short- circuit. Shorts caused in this way will invalidate any warranty claims.
- Do not open the battery pack. This could cause a short-circuit.
- Opening of the battery package will invalidate any warranty claims.
- Do not connect, or disconnect the battery pack/charger with wet hands.
- Keep the battery/charger out of reach of children and animals.

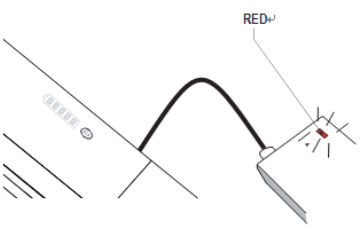
Charging the battery

Battery must be switched ON before charging



Ensure that the power plug is fully inserted into the wall outlet.





The LED on the charger changes to green when the battery is fully charged.

WARNING

- Do not subject the battery or the charger to physical shocks, e.g., by dropping. Rinse in the event of accidental contact with water. If fluid gets in your eyes, seek medical advice. Fluid that leaks from the battery pack may cause skin irritation or burns.
- Do not bend the cable. The cable must not be rolled up while charging.
- The charger can be hot. Do not wrap the charger and place it on floor coverings such as carpets, etc.
- If the battery is not fully charged after five hours, disconnect it immediately from the output to stop the charging process and contact your place of purchase. This can lead to overheating, bursting, or ignition of the batter

Battery LED indicators

State of current charge

The lights with different colors will be light while you are charging the battery

	Red LED Flashing : < 10% SOC
	Red LED Light : < 33% SOC
	Green LED Light : 33% ~66% SOC
	Blue LED Light :66% ~100% SOC

Battery fault indication

Error Condition	Catalog	How to do
Cannot turn on battery (these LEDs have not flash from red,	Push button malfunction	Battery pack needs to be returned to the manufacturer for repair.
Turn on the battery pack, and the battery cannot work (these LEDs have flash from red, green, to blue)	Battery pack voltage too low	Check battery pack output voltage. If its output voltage is lower than 29V, please charge the battery
	Over current protection	Remove the battery pack from its frame and check motor controller is broken or not.
	Cannot discharge	Battery pack needs to be returned to the manufacturer for repair.
	Battery pack temperature too high	Touch battery pack outside surface. If its temperature is too high, waiting for the battery's temperature cool down to normal.
	Battery pack temperature too low	Touch battery pack outside surface. If its temperature is too low, try to make battery pack getting warmer. Please do not charge battery pack when the environment temperature is lower than 0 degree C.
When the charger plug-in without charging normally (these LEDs have not flash from red, green, to blue)	BMS have some problem	Battery pack needs to be returned to the manufacturer for repair
When the charger plug-in without charging normally (these LEDs have flash from red, green, to blue)	Over voltage protection	Do not charge the battery pack, Check if the charger is the right one or is normal or not. Keep it discharge until over voltage protection removed
	Battery pack temperature too high	. Touch battery pack outside surface. If its temperature is too high, waiting for the battery's temperature cool down to normal.
	Battery pack temperature too low	Touch battery pack outside surface. If its temperature is too low, try to make battery pack getting warmer. Please do not charge battery pack when the environment temperature is lower than 0 degree C
	Over current protection	Remove charger from the battery and check charger is broken or not
Turn off the power during riding	Battery pack voltage too low	Check battery pack output voltage. If its output voltage is lower than 29V, please charge the battery
	Over current protection	Remove the battery pack from its frame and check motor controller is broken or not.

Battery capacity remaining indication

If you press the 'SOC' button, the LEDs will indicate the remaining total capacity of the battery.

	Red LED Flashing : < 10% SOC
	Red LED Light : < 33% SOC
	Green LED Light : 33% ~66% SOC
	Blue LED Light :66% ~100% SOC

Battery complete shut down

Power On	Ÿ SOC/Wake-up Button Ÿ Charger-In and when charger's voltage is 2V higher than battery pack voltage
Power Down (or Shutdown)	Ÿ SOC/Wake-up Button is pressed and hold for 3 sec until LEDs are flashing Ÿ Pack is idle for 10 minutes, idle means no discharge or no charge current. Press SOC button to restart battery.

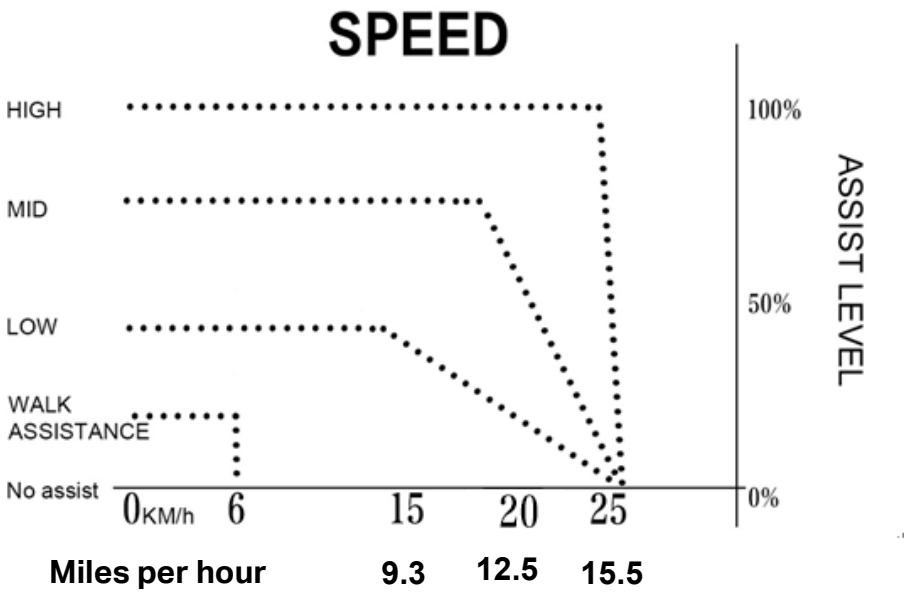
Fitting the battery

Place the battery from the left side of the carrier and rotate it towards the right side. You will hear a "click" sound as the lock engages, then lock the battery with the key and remove the key after that

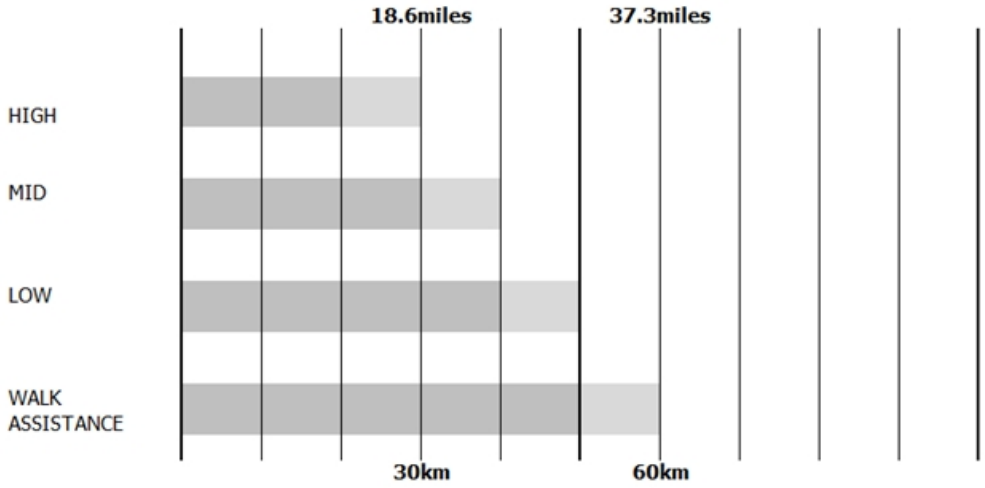
Removing the battery

Unlock with the key & rotate the battery to the left.

Assistance levels and speed



Range

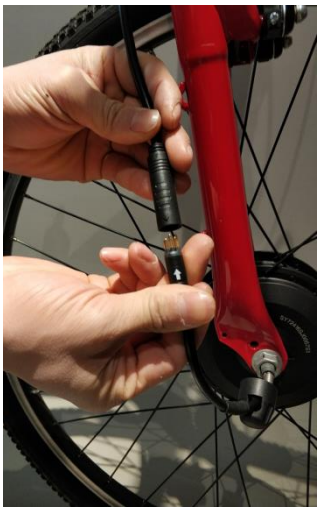


Factors which affect the range

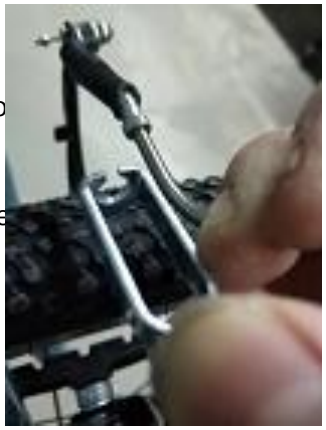
The above figures are based on a speed of 20 km/h on a level road at 15°C–20°C. The range is influenced by many factors:

- Weight of the rider
- Weight of the luggage
- Selection of path
- Experience and concentration of the rider
- State of maintenance of the E-Bike
- Type, condition and air pressure in the tires
- Nature of the route
- Speed, average speed and changes in speed
- Traffic flow, for example, stop and go
- Wind direction and wind speed

Removing the Front Wheel (to repair a puncture)



- Unplug the two parts of the cable connector. You will need to 'wiggle' these parts to overcome the grip of the waterpro seal of this connector.
- Release the two 'arms' of the front V brake by pulling on the front brake cable 'noodle' & releasing it from the 'cage' on the top of the arm



- Remove the rubber caps from both rear wheel nuts & loosen the nuts (19 mm spanner). You may need to remove the nuts to release the wheel.

- Having repaired puncture, refit the front wheel. Take care to ensure the motor cable is pointing directly downwards to align the anti-rotation toothed washers on the wheel axle with the dropout slots.
- Firmly tighten both wheel nuts to 40 +/-5 Nm

- Push the two parts of the motor cable connector together, making sure that the moulded arrows are aligned
- Replace the rubber wheel nut caps & clip / cable tie the motor cable back under the chainstay.

EC Declaration of Conformity

The equipment which accompanies this declaration is in conformity with the following EU Directives:-

83/37/EC Machinery Directive
2006/95/EC Low Voltage Directive
2004/108/EEC Electromagnetic Compatibility Directive
2001/95/EC General Product Safety Directive
2012/19/EU Waste Electrical and Electronic Equipment Directive
2006/66/EC Batteries Directive

Manufacturer:- EVERGRAND BICYCLE VIETNAM CO., LTD Block R1 & R2, Street D6 & N11, Nam Tan Uyen Industrial Park, Khanh Binh Ward, Tan Uyen Dist., Binh Duong Province

Represented in the EU by:- Halfords Plc, Redditch, B98 0DE.
A copy of the Technical file for this equipment is available from the EU address above.

Description of Equipment
Halfords Apollo Phaze 250 W Rear Motor Drive System, 8.7Ah Li-Ion Battery & Battery Charger

The following harmonized standards have been used:-
EN 15194:2009 + A1:2011 Cycles – Electrically power assisted cycles – EPAC Bicycles
EN ISO 4210-2:2014 Safety requirements for bicycles. Requirements for mountain bikes..

Other key standards used:-
UN/DOT 38.3 UN Manual of Tests and Criteria Transportation Testing Li Batteries.

Authorised signatures of *manufacturer and EU representative*

	Manufacturer	EU representative
Signature:		
Name of signatory:	*Billd Lee*	*Chris Hall*
Position in company:	*QC Manager*	*Head of Quality*
Place and Date:	*Vietnam Feb 2019*	*Redditch UK Feb 2019*

Halfords e-bike specific warranty conditions

Your Apollo Phaze e-bike is guaranteed against manufacturing defects arising from faulty workmanship or materials for 2 years from the original date of sale.

Providing that the cycle:

- Has been properly cared for, regularly serviced and maintained.
- Has not been ridden as part of a commercial use (e.g. hire, courier or delivery service, etc.).
- Has only been fitted with parts recommended by Halfords.
- Has not been modified or altered in any way, in particular no modifications to the motor
- Has not been damaged by accident or misuse.

Any failure caused by normal wear and tear or a lack of servicing and maintenance is excluded.

Under the terms of this guarantee Halfords will bear the cost of the replacement parts and labour to carry out the repair.

Important: This guarantee applies only to cycles used under normal riding conditions.
This guarantee does not affect your statutory rights.

Battery pack specific warranty conditions

The battery pack is guaranteed over the warranty period to provide a minimum of 500 charging cycles and to hold at least 60% of its nominal battery capacity.

This is dependent upon the correct use, regular re-charging, correct preparation for storage and storage (as detailed in the EVERGRAND Owner's Manual).
Halfords will be able to confirm the exact number of charge cycles and whether the battery has been correctly charged / stored from the information that is recorded in the battery pack monitoring and control electronic circuit.

Information on Waste Disposal for Consumers of Electrical & Electronic Equipment

This mark on a product and/or accompanying documents indicates that when it is to be disposed of, it must be treated as Waste Electrical & Electronic Equipment (WEEE).
Any WEEE marked waste products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used.
For proper treatment, recovery and recycling; please take all WEEE marked waste to your Local Authority Civic waste site, where it will be accepted free of charge.
If all consumers dispose of Waste Electrical & Electronic Equipment correctly, they will be helping to save valuable resources and preventing any potential negative effects upon

human health and the environment, of any hazardous materials that the waste may contain.

Please recycle your spent batteries.

Batteries should not be disposed of in unsorted municipal waste, but separately collected to facilitate the correct treatment and recycling of the substances they contain. The recycling of batteries ensures the recovery of these valuable materials and prevents any potentially harmful effects upon both the environment and human health. Please contribute to battery recycling by segregating all spent batteries and actively participating in their collection and recycling. Various battery collection schemes will be in operation in different areas of the country. However, battery collection bins will be available at retail stores that sell batteries as well as at schools, libraries and other public buildings.

Installation for sensor

1. Set the speed sensor in the BB part. Please pay attention to the installation side of the sensor, as the picture shows above. Then mount crank.

2. According to those pictures, to close the connectors push the two sides together, this will require some “wiggling” of the connector to overcome the resistance of the sealing.

Installation for front wheel motor

Motor

1. Installing wheel and motor and lock it tightly by tool.

1) 

2) 

2. Please take note, install the wheel and washer at the same time, and pay more attention to the direction of the washer.

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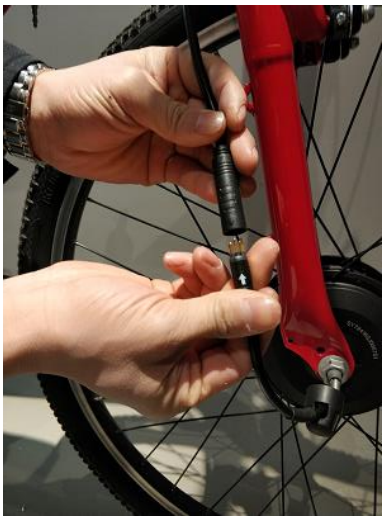
10) 

11) 

2. Install the motor wheel set according to the sequence as the photos above. Notice that the screws shall be locked to avoid accidence during the riding.

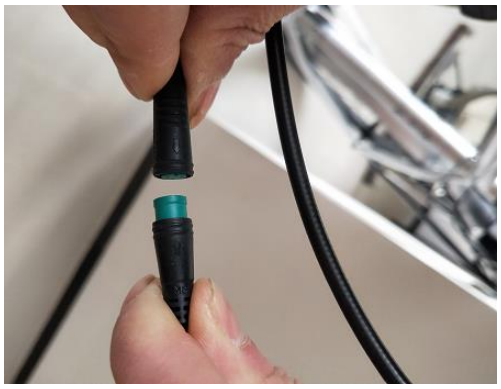


1. To close the connectors push the two sides together, this will require so me ‘wiggling’ of the connector to overcome the resistance of the sealing.

   Making sure that the moulded arrows are aligned

Installation for display

1. Install the display on the handlebar, adjust the angle of it to the suitable place and lock the screws.



2. To close the connectors push the two sides together, this will require some ‘wiggling’ of the connector to overcome the resistance of the sealing.
   Making sure that the moulded arrows are aligned

Installation for controller

1) 

2) 

3) 

4) 

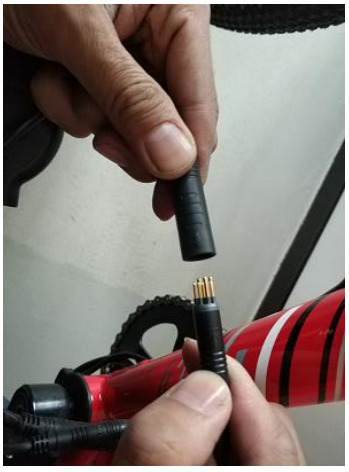
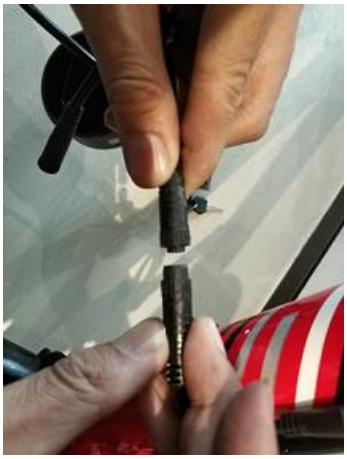
5) 

6) 

7) 

8) 

Install the controller according to the sequence as the photos above then tight the nuts by tool.

9)   

10）

Insert the plug according to the sequence as the photos above, install the controller box on the frame then tight it by tool.

How to take out the battery

Unlock with the key & rotate the battery to the left.

Spare parts list

Part name	Model	Image	spec
Display	KING-METER 791		W/O LIGHT WIRE W/ WALK BUTTON CABLE LENGTH 250mm
Motor	SHENGYI DGW07C-FA		24V 250W Front motor with Length:200mm+800mm

Battery	HWT DC-2C 214.5		24V 8.7AH 7S3P SAMSUNG cell
Controller	CD DRIVE		24V sine wave controller
Charger	KEYU		24V 2.0A , UK plug BK

Frequently asked questions

Fault	Possible cause	Cause	Solution
Drive cannot be switched on with the on/off switch on the display.	Battery has no capacity.	The battery is not charged.	Check the indicator light directly on the battery. Charge the battery if the battery indicator flashes.
	The E-Bike was not used for 48 hours or longer.	If the battery is not used for 48 hours or longer, it will automatically go into sleep mode.	Press the power button on the battery for three seconds.
	Charging cable	The connector consists of magnetic parts that attract iron particles.	Clean the connectors of the charging cable on the bike frame and the battery.
	Remove the battery from the holder and check the indicator lights again.	Then you can check if the battery is charged or if the problem is to be found between the battery and the control unit.	Check the battery, the connection cable to the control unit and the control unit. Replace defective parts.
	No signal between the control unit and the display	Connection problem between the control unit and the display.	Check the connections on the control unit, display bracket and display plugs.
No assist for speeds between 0 and 25 km/h.	Motor assistance only turns on when pressure is applied to the pedals and they are stepped.	The system has a rotation and torque sensor.	Depress the pedals with sufficient pressure.
The display is on, but there is no assist.	Assist mode "NO" is selected.	There is no assist.	Set a different mode.
	Note: If the speed is higher than 25 km/h there will be no assist.	With a Pedelec, assist stops after a speed of 25 km/h.	There is only assist at speeds between 0 and 25 km/h.
	The battery is nearly empty and the indicator light begins to flash.	Assistance is not uniform in this case, or non-existent.	Charge the battery.
	An error code appears on the display: Err " "	During the automatic verification of the E-Bike system an error was detected.	Compare the code with the error code list for further proceedings.

	A reset is required.		1) Restart the E-Bike system. 2) Remove the battery for at least 60 seconds, put the battery back in and start the system again. 3) Check all cable connections.
	No signal between the control unit and the display	Problems with the motor cable or the motor cable connections.	Check the connections of the motor cable to the motor and the control unit.
	The sensor emits no signal.	Sensor defective or connection problem.	Check the connections of the sensor unit in the control unit. Replace the sensor unit.
The push assistance does not work.	A reset is required.		Switch off the E-Bike system and then back on.
	Check whether the assist works while riding.	This way you can check that the motor and the control unit are working.	Replace the display holder. Replace the control unit.
	Wired handlebar remote control defective.	Wired handlebar remote control defective.	Replace the sensor unit.
The assist is too weak.	Check battery capacity.	Checking with the switch on the battery.	Charge the battery or fully discharge and recharge the battery.
	Error in the sensor unit.	The sensor measures the pressure with which the pedal is depressed.	Replace the sensor on the chain wheel.
	Transmission damage or bearing defect.	The motor moves heavily.	Replace the motor.
	The control unit does not work.	The control unit regulates assistance.	Replace the control unit.
The motor is running roughly.	Problem with the connection of the motor cable.	Loose connection	Check and/or clean the connectors, especially the connection of the motor cable.
	Transmission damage or bearing defect.		Replace the bearing or the engine.
	Fault in the sensor unit.	The sensor measures the pressure with which the pedal is depressed.	Replace the sensor on the chain wheel.
	Uneven performance of the control unit.	Faulty part in the control unit.	Replace the control unit.
Sudden shutdown of the system.	Check or replace the recharging connector.	The connector consists of magnetic parts that attract iron particles.	Clean the connectors of the charging cable on the bike frame and the battery.
	Problem with the cable connection.	A poor connection interferes with signal transmission.	Check all connectors in the E-Bike system.
	Problem with the display connections.	Check the connections on the display.	Replace the display or the display holder.
	Twisted battery holder.	Twisted mechanical interface.	Adjust the battery holder.
Short range	Check battery age and recharge cycles.		Check with the switch on the battery.
	Check the battery capacity. Charge the battery if needed.	The range is reduced with poor road conditions.	Check the remaining capacity of the battery, either on the display or on the battery.
	The range depends on various factors, including: maintenance of the wheel, starting and stopping, gear selection, assist mode, tire pressure, weight of the rider, terrain, temperature and wind direction.		Check general conditions as described under "possible causes."
	Charger defective.	The charger is not charging properly.	Check the charger.
	The battery was charged at a cold temperature.	The battery should be charged at room temperature.	Charge at room temperature.
	Low temperatures.	Performance decreases below 15°C.	Lithium-ion batteries have up to 40% less capacity at temperatures below 0°C.

	Maintenance status of the E-Bike.	Irregular service on the E-Bike can reduce the range significantly.	Check all standard functions of the E-Bike, such as brakes, tires, etc.
The lighting does not work.	The 6V needed for lighting are not available.		Check whether the control unit supplies 6V. Measure the voltage on the red and black wires of the control unit. Replace the control unit if 6V are not measured.
	Lighting is activated with the "I" button on the remote control.		Press "I" for two seconds.
	The lighting system is defective.	A short circuit in the wiring can cause the problem.	Check the lighting unit and the cable.
	The E-Bike system is turned off.	The lighting only works if the E-Bike system is turned on.	Switch the system ON.
No change of riding mode is possible.	The button on the remote control does not work.		Replace the display and/or the holder.
	The control unit does not work.		Replace the control unit.
The speed display is faulty or irregular.	The signal between the speed sensor in the motor and the display is distorted.	Poor contact.	First check the connections of the motor cable. Then check the connections to the control unit. Check the cable to the display and the connections to the holder.
	The speed sensor is faulty.		Replace the "internal motor."
Distance is not being saved.	Faulty control unit.	The functions of the speedometer are stored in the control unit.	Replace the control unit.
The system will not switch off.	Power button on the display.	Press the power button for about two seconds.	Replace the display holder or control unit.