

Safety Statement Consistency

Dear customers,

Darad Innovation is a company located in Taiwan. Our products sold in the market are developed based on innovated ideas and structures. The following is the description of the product:

Product: **Electric Bike E-Bike**

Function: **Pedelec**

Model: **BESV PSF1**

This product is designed based on unified European standards and observes applicable and important EU directives. The EU directives involved are shown below, including any amendments that are in place:

- 2006/42/EC on machinery, including EN 15194:2009 + AI:2011 + IEC 62133:2002
- EMC Directive 2004/108/EC, including EN 15194:2009 + AI:2011
- 2006/42/EC on machinery, including EN 15194:2017

The battery charger of the product is described as follows:

Product: **Battery charger**

Function: **Batter y charger for the electric bike**

Model: **BESV-072-0360**

The product is designed and manufactured based on EU, USA and Australian Communications and Media Authority (ASMA) standards, as well as relevant and important directives of EU.

- EU Low-Voltage Directive IEC 60335 and Electromagnetic Compatibility Directive EN 55014
- USA Directive UL 1012 and FCC Part 15B
- Australian RCM Directive AS/NZS CISPR-14

Modification of this bike without our prior approval will render the warranty invalid. PS:

Darad Innovation is short for Darad Innovation Corporation.



Introduction Start Riding

It is advised to read this user's manual thoroughly and familiarize yourself with the operations of the bike before riding it for the first time. Please follow the instructions and warning provided in this manual. Failure to do so may lead to damage to the bike or risk of your personal safety. This user's manual provides you quick and accurate understanding of the major functions of your electric bike.

Your bike may be somewhat different from the descriptions and images depending on model, order, country or optional accessories. Darad Innovation is committed to constantly innovation of craftsmanship and products, and reserves the rights for changes in following parts, such as design, electronic system and features of equipment or technology. If you are to sell your bike to another user, please pass this manual onto him/her. Darad Innovation and its team hope to bring you safe and pleasant riding experience.

Environmental Protection Topics

Environmental protection topics are part of green product policy published by Darad Innovation. The purpose is to encourage cautious use of natural resources, which are the building blocks of the plant we live on, and to take the needs of nature and human being into consideration. As a responsible person for environmental protection, you may protect the environment by starting to ride an electric bike.

The consumption of energy is related to the power controller system, gear change system, brake system, drive system and tires installed on the bike. It all depends on how the electric bike is used and how you ride the bike. In addition, it is advised to keep in mind the potential influences of how the bike is used and how you ride the bike on environmental protection.

How the bike is used

- Make sure the tire pressure is normal.
- Do not carry extra weight that is unnecessary
- Pay attention to battery consumption
- Riding the bike as it is intended to helps protect the environment
- Have an authorized professional distributor perform repair or service to your bike.

How you ride your bike

- Ride the electric bike carefully and keep a proper safe distance with the vehicle in the front.
- Avoid frequent, sudden acceleration.



A reminder for environmental protection: Recycle the waste battery for greener world. Please go to an authorized bike distributor for repair and service.

Production Information

Darad Innovation recommends you to use the power controller system, gear change system, brake system, drive system and electric bike parts recognized and approved by Darad Innovation. Darad Innovation has a series of rigorous tests and verification processes on these systems and electric bike parts to ensure the reliability, safety and comfort of the product. Darad Innovation is not in the position to evaluate other parts despite existing survey reports available in the market. Therefore, Darad Innovation is not responsible for using these parts on our products. Do not use parts that are not approved by Darad Innovation, as they may compromise the safety of you riding the bike.

Approved parts and replacement service, as well as technical advices, are available at professional distributors authorized by Darad Innovation. In a professional sense, these parts are fit for your electric bike.



User's Manual

Please read this manual carefully before riding this bike for the first time, and allow yourself to familiarize with this bike. For the safety and longevity of your electric bike, please follow the instructions and warnings given in this manual. Failure to do so may result in damage of the bike or risk of your safety.

You may select an electric bike that meets your specific needs based on the model and standards provided in the manual, but there may be slight differences depending on countries. In some cases, your bike may not have all the features described for it due to system, function and safety. Therefore, your bike may be somewhat different from the descriptions and images. For any question regarding the bike itself and how it is operated, please consult with your professional distributor authorized by Darad Innovation. The following are covered in the delivery of the electric bike:

- Battery
- Charger
- User's manual



Ride Safely

- Important safety warning
- Accidents or falling objects
- Tipping over of bike

The following ways of riding may lead to sudden malfunction of parts; for example:

- Damage of handle bar or saddle when riding the electric bike

- Malfunctioning brake

These present the risks of accident and injury. When something like this happens, it is important to have your bike checked by a professional distributor authorized by Darad Innovation immediately. When riding the electric bike, the bike is subject to heavy loads and wearing. Parts respond to these loads differently, and fatigue and wears are possible at various speeds. If the life cycle expires, the part may fail suddenly and there is a risk of accident or injury.

- Please have a professional distributor authorized by Darad Innovation perform routine checkups on your bike.
- Check for signs of cracks, scratches or color change, since any of these are indications that the part may be expired.
- Have a professional distributor authorized by Darad Innovation replace the fatigued or worn part(s).

Parts that may be compromised are:

- Handlebars and stem
- Saddle and seat post
- Frame and fork
- Tyres and wheels
- Pedals and Pedalcranks
- Brake Pads and discs
- Chain
- Battery

The electric bike and the power controller system may cease to function if handled incorrectly. Modification to the power controller system may lead to the inability to correct the system back to normal and eventually malfunction. A power controller system that does not work properly will compromise your safety while riding the electric bike. Therefore, you should always go to a professional distributor authorized by Darad Innovation for service of used and malfunctioned parts.

Do not perform any servicing or machining work on the bicycle frame or any of the load-bearing parts on your own, such as drilling, welding or forging. These behaviors will impact the service life of the parts and the stability of use. In addition, part of your body or clothing may be caught in moving or rotating parts such as wheels, chain, pedals or pedal cranks. Make sure that any part of your body, clothing or objects you are carrying will not be caught in these parts as they are moving or rotating. Also, scarf is not recommended.

A few parts on this bicycle may become very hot after braking, such as the braking system, front fork quick release, fast rotating electronic control system and the nut on the axle, particularly after long hours of riding. Touch these parts only after they cool down. It is not allowed to ride the e- bike without an operational lighting system. This is the law in many countries.



Qualified and Authorized Professional Service

A professional distributor that is qualified and authorized has the skills, tools and qualification to provide service for your electric bike, in particular when it comes to the safety of riding the bike. Therefore, it is advised to go to a qualified and authorized distributor for the following services:

- Safety-related service
- Maintenance and service
- Repair
- Correction, installation and upgrade
- Replacement of electronic components: power controller system, gear change system, brake system and drivesystem
- Darad Innovation recommends that you go to an authorized professional distributor for service and repair in order to keep your electric bike in a good working condition.

Correct Use

Familiarize yourself with the following information before riding your electric bike:

- Safety notes given in the user's manual
- Technical data provided in the user's manual
- Traffic regulations and rules
- Legal and safety standards regarding electric bikes

The structure of the e-bike should comply with the regulations of your country when you bought it. Or, it may be illegal in your country to ride this e-bike. The structure of this bicycle may be adjusted to the regulations of individual country if necessary. Please read thoroughly the laws and regulations applicable to e-bikes for the following key points:

- The power output of the motor and the maximum aided speed
- Accessories required to ride on highway
- Obligation to have a license
- The minimum age to ride an electric bike legally
- Requirement to wear a helmet while riding

The e-bike is designed for riding on roads and alleys with asphalt pavement. The tires maintain their traction on such a pavement. However, this bicycle is not designed to ride or jump over obstacles such as the curbs on roadsides. Similarly, it is not designed to carry more than one (1) person, i.e. no passenger other than the rider him/herself. Besides, it is not a racing bicycle .

The e-bike is capable of carrying 95kg (209lbs) including the rider, accessories and luggage. Do not carry more than the total weight allowed. The BESV e-bike is not designed to be a towing vehicle, nor allowed to ride behind a towing vehicle, tow another bike or pull another bike with a bike linking system.

Make sure that your e-bike is used correctly as it is intended. If the bike is not used in the way it is designed to, the parts may break down, leading to accident or injury.

The e-bike is not intended to set limits on the size, senses or intelligence of certain people. However, children under 14 are not recommended to ride this bike.

rear-mounted or portable design. Therefore, please remove the battery before the bicycle is transported. In addition, it is recommended to remove parts that cannot be fastened with bolts before transportation, such as the gauge, as they may become loose and missing during the transportation.

Electric Bike

The electric bike of Darad Innovation is an electrically assisted bike that provides assistance when you are pedaling. The rpm sensor located on the pedal crank bearing detects how hard you are pedaling the bike and determines how much power the motor should provide to give you a ride. The electric motor is turned off as soon as you stop pedaling. At the maximum aided speed, the motor starts to reduce its power output until the aided pedals are turned off. For example, the maximum aided speed is 25km/hr (15.5mph) in European countries. You may ride faster than this maximum aided speed if you turn off the assisted pedaling function.

Torque sensor on the Bearing of Pedal Cranks

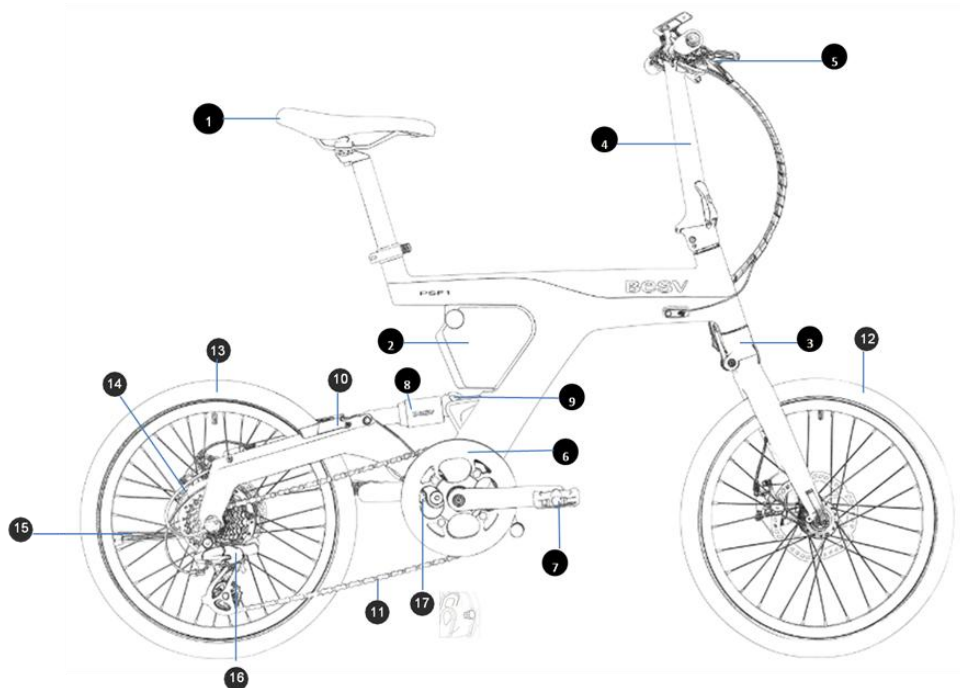
The torque sensor that determines the pedaling force may lose its electronic calibration and that leads to the malfunctioning of assisted pedaling. Therefore, keep magnetic and metal objects, such as a hammer, away from the crank bearing.

The Serial Number of New Darad Innovation Bike is in the Warranty Card

The serial number of your new Darad Innovation bike and its frame number validate your after- sale (warranty) service. Therefore, check that the serial numbers of the bike and the frame are intact when you are going to buy a bike. Do not buy a bike with a sign that these numbers are tampered with!

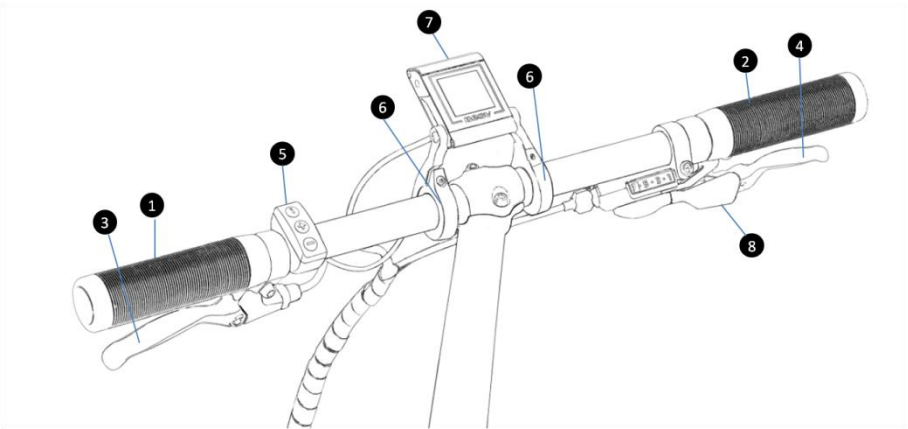
- The new bike serial number is found in the warranty card.
- The frame serial number is found on the base of bottom bracket shell, the rear drop-out of the frame, or downtube.

Over view



Component introduction

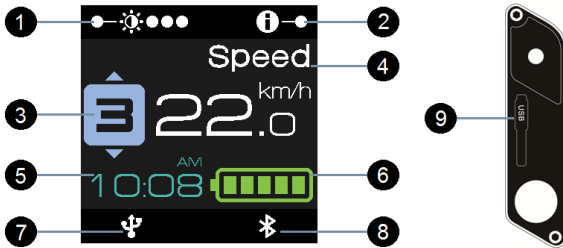
1. Saddle	2. Battery	3. Folding Fork	4. Folding Stem
5. Break System	6. Crank	7. Pedal	8. Rear Suspension
9. Rear Suspension Joint	10. Supporting Stand	11. Chain	12. Front Wheel
13. Rear Wheel	14. Motor	15. Kickstand	16. U-shaped Socket
17. Shaft Pull in			



Component introduction

1.Left Grip	2.Right Grip	3.Rear Break Lever	4.Front Break Lever
5.Function Switch	6.HMI Bracket	7.HMI	8.Derailleur Lever

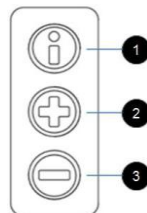
HMI introduction



1.Backlight Brightness	2.Information Option	3.Assistant Mode	4.Riding Information
5.Time	6.Battery Remaining Capacity	7. USB-charging indicator	8.Bluetooth-connection indicator
9. USB charging port			

Instrument Switch Button

1. Information selection/Entry menu
2. Up/Increase
3. Down/Reduce





Safety

Please read the information of qualified and authorized professional distributors in the user's manual.

Safety Equipment

It is recommended to turn the light on even when riding at daytime. As an electrically assisted bike, the Dar fon Innovation bike is subject to road traffic regulations, such as the German Straßenverkehrs-Zulassungs-Ordnung (StVZO). The Darad Innovation bike is equipped with the lighting system required for active and passive parts when riding on a road, and an adequately designed brake system as well. The lighting system features that following:

- Front reflector, white
- Rear reflector, red
- Reflectors on the wheel spokes
- Yellow reflectors on the pedals

For the safety of rider, please go to a BESV-authorized dealer for regular service of the e-bike.

Proper Accessories

You may need a helmet to ride an electric bike depending on the country you are in. However, Darad Innovation recommends you to wear a helmet that fits you and protective eyewear regardless the requirement of helmet. Wear bright-colored clothing that catches attention when on a Darad Innovation bike for a joyride, and a comfortable pair of shoes that are fit for pedaling. Familiarize yourself with local traffic rules and requirements and keep them in mind when riding on a road. It is for the safety of yours and others on the road.

Pre-riding Check Check

the Tires and Wheels

While riding an electric bike, the tire valve may break if you sit one-sidedly on the bike. If this happens, the tire will lose pressure and there is a risk of accident. Therefore, always check that the valve is at the correct location. It has to extend from the edge of tire inclining towards the right hand side. Correct the valve immediately if the position is off. Check the following every time before you mount your bike:

- Check that the tires and wheels are intact without damage and whether the tires are pierced by any foreign object. Damaged tire will lose pressure and further damage.
- The depth of tire treads.
- Normal activation refers to the two wheels rotating freely. If a wheel is not rotating in a perfect circle, it is possible that the tire broken, has a damaged axle or worn spoke.

In addition, investigate the source of any unusual noise if necessary, and check the loads carried and the tightened connection.

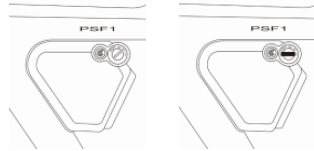
Check the Chain and Chain Cover

While riding an electric bike, the chain and cover that are not tightened may be slacking and cause accident and injury. Make sure that the chain is engaged and tightened and that the cover is secured every time before riding the bike. Check also that the chain and chain cover are installed correctly to prevent falling off or sliding.

Handle the chain as instructed, particularly every time when the rear wheel is removed or installed. Be extra careful in these situations to prevent damage to the chain and chain guard.

Check the Battery and Battery Lock

Check that the battery lock is correctly and completely engaged on the bicycle every time before you ride it, and turn the battery lock to the red “ON.” There is a risk of accident if the battery is not secured with this lock, since the battery may fall off from the battery mount.



Check the Operation of Brake System

Test the brakes before riding the bike every time. Check the brake lever with 2 fingers. Pull the lever to make sure the amount of force is adequate. The brake levers should not touch the handle bar. The brake levers should always keep a proper distance with the handle even with the largest force your hands can provide.

Check braking system wearing

The brake discs, motor, couplings that spin rapidly and the nuts of axle become very hot after frequent braking particularly on a descending road for an extended period of time, and there is a risk of injury. Do not touch them until they are cooled off. Check that the brake shoes are installed and test the brakes every time before you ride the bike:

- A good disc has to be free of any wearing, grease and dirt.
- All bolts shall be fastened at the current positions.
- Make sure that brake cables are not entangled and check the cables for signs of cracking.

Check the Bolted Parts

Check that the following parts are tightly secured every time before you ride a bike:

- Check the coupler of front wheel quick release is secured in place and the word “CLOSED” is clearly visible. It shall not rotate.
- Check that the rear wheel and motor are installed and secured properly. All bolted connections shall be fastened so tightly that they do not budge under extra pulling or pushing of the rear wheel.
- Check that handle bar and brake levers are secured in place. It shall be impossible to rotate the handle bar and brake levers.
- Make sure that the saddle and seat post are secured in place. The attempt to pull or incline the saddle shall not cause it to move.
- Check that the luggage carrier is secured in place.
- All bolted connections shall be fastened securely.

ATTENTION

Check all below joints are locked to the end correctly

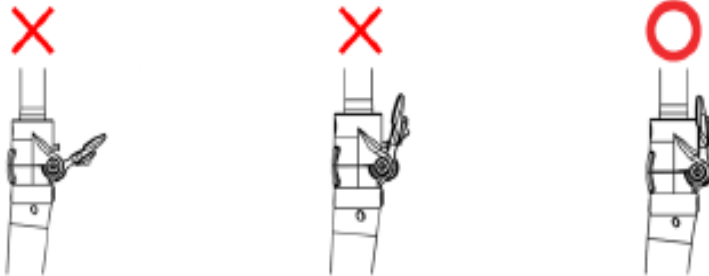
- 1.Folding Fork Lock
- 2.Folding Stem Lock
- 3.Rear Suspension Lock

ATTENTION!

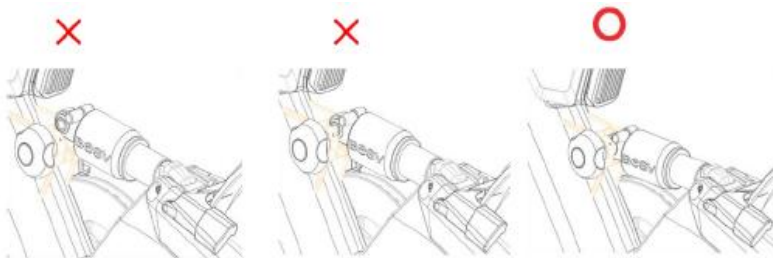
Check all below joints are locked to the end correctly

- 1.Folding Fork Lock
- 2.Folding Stem Lock
- 3.Rear Suspension Lock

Please make sure that the folding fork joint/folding stem joint must be completely locked to the end correctly. Any extra push and pull will not move it unless the safety lock is properly released according to the correct unlocking steps. Please be sure to confirm it carefully, otherwise there will be an accidental risk.



Please make sure that the rear suspension joint must be completely locked to the end correctly. Any extra push and pull will not move it unless the safety lock is properly released according to the correct unlocking steps. Please be sure to confirm it carefully, otherwise there will be an accidental risk.



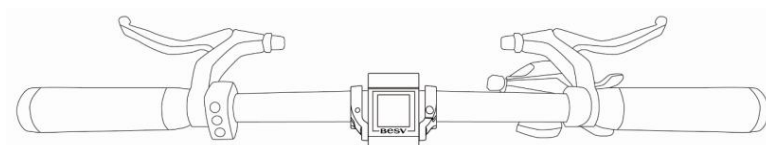
Adjust the Saddle, Grips and Brake Levers

If you pull the seat post and the seat tube is too far away, the screw clamp may not support the seat post safely. In bad weathers, the seat post will be slacking or damaged. This will lead to a risk of accident and injury. Do not exceed the minimum insert depth when pulling the seat post.

- adjust saddle height and position Minimum insert depth: the seat post has to be inserted at least 10cm (3.9”) into the seat tube no matter how it is marked. Adjust based on personal needs. Do not go beyond the maximum range shown when moving the saddle back and forth.



Adjust the grips, brake levers and gear change levers Adjust the handle bars so that they fit snugly in your hands, and move them to the position that fits you. Adjust the brake levers so that they make proper contact with the handle bars. A proper distance shall be kept between the handle bar and brake lever. The gear change lever is located below the handle bar where your thumb can easily control.



When braking hard by pulling the brake levers towards the handle bars, you should not push the braking force to its upper limit. Or, the braking distance will be extended and there is a risk of accident. Adjust the brake levers as mentioned above.
















Instrument Control

The use of the e-bike gauge while riding the bike will cause distraction in traffic, compromise your control on the e-bike and possibly result in accident. Use the gauge only when the traffic allows it. If this is not possible, just park the bike somewhere safe before dealing with the gauge.


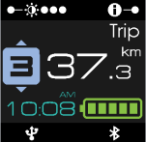







- ON: Make sure that the battery is installed on the bike and the battery lock is switched to “ON (red).” The screen starts to display. Check that the system is on. The instrument enters the main page as shown, including speed, assistance level, battery power, total distance and calorie.
- Note: the instrument backlight will turn off automatically in 10 seconds to save power.

- OFF: Switch the battery lock to “OFF (white)” and the instrument display will turn off. Check that the system is off.
- Note: for increased safety, turn the lamps on every time you turn on the system. It is recommended to ride the bike with lamps on.

Usage

	<ul style="list-style-type: none"> • Enters the main screen and provides the user's required riding information including power level, speed, riding distance, battery usage, time, calories, cadence, total mileage, remaining distance, etc • Press the button on the left side of HMI  to switch the brightness of the screen. There are three sections. Please adjust it according to the usage situation • Press the button on the right side of HMI  to switch between different ride information displays. • As battery remaining indicator, each section represents 20% capacity. • For example, the remaining capacity was displayed as followings: 5 sections : 100% 1 section : 20% 1 section with flashing : below 10% 1 section with battery icon flashing : below 5%
	<ul style="list-style-type: none"> • Switch button use [] [] [] • Press the button [] to enter the information settings, such as speed, trip, calories, cadence, total mileage, remaining distance, etc. Use [] or [] to adjust the option and press the [] button to set the completion. • Use [] or [] the set assist level can be adjusted ※ [] : Increase [] : Decrease. The assist mode has four segments, including 0-1-2-3 segments and S Smart Mode

Information Select




		
<p>• Speed : The speed of the bike.</p>	<p>• Trip : A total distance during a trip.</p>	<p>Calorie : The exhausted calorie during a trip.</p>
		
<p>• Power :The inputting human power</p>	<p>• RPM : The cycling cadence</p>	<p>• ODO : Total experienced distance</p>
		
<p>• MAX : The maximum speed during a trip.</p>	<p>• AVG : The average speed during a trip.</p>	<p>• Range : A remaining range which is estimated by recent riding behavior and environment.</p>

Function Settings

	<h3>The menu page</h3> <ul style="list-style-type: none"> • This page is a menu of all the function settings of system • To enter this menu page, please long-press the information button  • After entering the menu page, you can use "assistance mode +" and "assistance mode -" to change the selection, and press the information button  again to enter the next page. • If you want to leave menu page, please move your selection to  and press the information button  to return main page.
	<h3>About me</h3> <ul style="list-style-type: none"> • This function is to show the software information of controller, HMI and battery. • Press the information button  go back main menu page.
	<h3>Clear trip data</h3> <ul style="list-style-type: none"> • This function is for clearing trip record • Move the selection to the "clear" and then press the information button  • Move the selection to  and then press the information button  to go back main menu page. • Clearing trip data will also clear "calorie", "Max speed", "Average speed" information.
	<h3>Information select</h3> <ul style="list-style-type: none"> • With Info selection, you can multi-choose you mostly used information to show on main display. • Move the selection to information you want, and then press the information button  to select. You can do this repeatedly until all your necessary  information is selected • You can choice page 1 and page 2 of info selection by select "next" and "back". • Move the selection to "set complete" and then press the information button  to complete the setting. • Move the selection to  and then press the information button  go back main menu page.









Change unit

- This function is for changing the displayed unit.
- Move the selection to the unit you want and then press the information button 
- Move the selection to  and then press the information button  go back main menu page






Time Setup

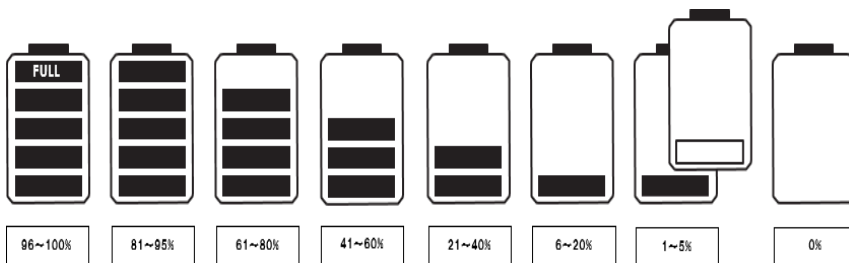
- This function is for changing 12/24 hours method to represent.
- Move the selection to select "24h" or "12h" and then press the information button 
- Move the selection to the "hours" and then press the information button . The "hours" will start to flash and be able to adjusted by "assistance mode +" or "assistance mode -" buttons. When you finish the adjustment, please press the information button  again to confirm.
- You can adjust the "minutes" as the same process as "hours", and then press the information button  to finish the setting.
- Move the selection to  and then press the information button  go back main menu page.



Bluetooth

- This function is to enable the Bluetooth to connect with smart phone device.
- Move the selection to select "on" to enable Bluetooth, or "off" to disable Bluetooth, and then press the information button  to finish the setting.
- Move the selection to  and then press the information button  go back main menu page.

- **Battery power indication:** This provides the information of how much is left in your battery when the system is on. The battery sign on the screen will tell you how much power is left. When you see a full battery and the word FULL, the battery is 100% charged. The following illustration shows how much power is left.



Control of Front and Rear Lamps

The use of the e-bike gauge while riding the bike will cause distraction in traffic, compromise your control on the e-bike and possibly result in accident.

Use these gauge only when the traffic allows it. If this is not possible, just park the bike somewhere safe before dealing with the gauge. The gauge support on the e-bike is designed exclusively for this purpose and does not work on other products. Its adjustment requires appropriate tools. Make sure that the gauge sits squarely and securely in the support.

Notes for Kickstand

The stand is not designed to support human weight. Do not sit on the e-bike while it is parked on the stand. When the e-bike is not in use, put it on the stand or it will fall down, which leads to the risk of accident and injury. Lift the stand when pushing or riding the bike. The e-bike may fall down and become damaged if parked on a downward slope or soft ground. Park the e-bike on solid ground whenever it is possible.

Keep an eye on the stand. If you are pushing the bike backwards while the stand is extended, the pedals will rotate backwards and get caught with the stand. To prevent this, lift the stand before moving the bike forwards or backwards.

Notes for rear luggage carrier (optional)

A loaded luggage carrier will alter the characteristics of riding the bike. The ability of riding or braking will be weakened, and the braking distance, as well as the risk of accident, will increase.

- Keep the center of gravity of your load as low as possible. Riding a bike with lower center of gravity of a heavier load is faster than with a lighted load.
- Bend your body when making a turn and be careful while doing it.
- Consider a longer braking distance.
- Keep in mind the added weight when stopping or parking the bike.
 - Poorly placed load may fall off the carrier, and worse, the falling object may get caught by the rear wheel or chain, causing serious accident and injury.
- Transport loads only using an electric bike with a luggage carrier or wire net.
- Always secure the object you are about to carry, or the object may fall off causing accident and injury.
- Always check before every trip that the rear luggage carrier is securely fastened, or the carrier may separate from the bike and fall off, causing risk of accident and injury.
- Check that the screws holding the luggage carrier are secured before every trip.
- Do not modify the luggage carrier and its fixing points.

If the luggage carrier is overloaded, the cargo may fall off the bike, causing the risk of accident and injury.

The maximum weight allowed on the luggage carrier is 10kg (22lbs). When carrying objects on the luggage carrier of the e-bike, make sure that the tail light and reflectors are clearly visible to others on the road. The rear luggage carrier on the e-bike is not designed to carry a person or child. Therefore, passenger is not allowed.

Riding Manual

Electric Power

Levels for Electrically Assisted Riding

In case of slippery pedals or riding on a slippery surface, the rear wheel may skid and lose traction when you accelerate, and there is a risk of accident. Please turn the pedaling assistance off when on a smooth or slippery surface. The Darad Innovation electrically assisted bike is designed to provide assistance when you pedal hard. The motor is turned off when you stop pedaling.

The pedaling assistance is turned off if you exceed the maximum aided speed (depending on countries). The assistance power depends on the level of assistance you select. The higher the level you select, the less force you have to apply to maintain a specific speed. By pushing the left pedal, the rpm sensor will receive the pedaling force more effectively and the power controller system is activated more quickly for your aid. This gives you an advantage when riding on an up slope.

Assistance level	Riding condition
None	Riding on leveled ground / with tail wind
1	Riding on a leveled surface
2	Riding on an up slope or against the winds
3	Riding on a very steep slope or against high winds

Brake System

The Darad Innovation Electrically Assisted Bikes are all equipped with mechanical disc brake of the same level. It brings you quick and safe stop if necessary. The disc brake reacts much quicker than drum brake particularly on slippery roads. The mechanical disc brake gives you very good braking results with only very little force from your hands. To evenly distribute the braking force in both wheels, please brake both wheels at the same time. The following are some notes for braking the bike:

- On a slippery road, the friction is reduced between the surface and tires. The water reduces the braking effects of the brake shoes and disc. As a result, the braking distance will be longer and there is a risk of accident.
- When riding on a wet surface, brake early to keep a longer braking distance. Be extra careful not to allow the brake to lock the wheels up.
- The rear wheel may be airborne when you hit the front brake too hard, and there is a risk of accident.
- Always slow down or stop the bike with both the front and rear brakes. Carefully maintain your balance during a sudden brake.

The motor-assisted pedals are brake-controlled (or if you stop pedaling) for interruption. If you are not yet familiar with the braking power of the mechanical disc brake, please do so on a surface with good traction and away from traffic. Avoid braking consecutively. When on a long down slope, use both brakes in a steady burst of short braking actions. The brakes will cool down when you apply them intermittently. Stop the bike at any sign of overheating. The symptoms of overheating include extra braking force required, a concentration of burning smell and loud noises.

Allow the braking system to cool down before riding. A wet condition reduces the braking effect and easily causes the tires to skid.

Always keep a longer braking distance on a wet road surface. Ride slowly and brake carefully.

Wearing of Brake System

The wearing of brake shoes and discs is the result of friction. The more you ride the bike in a mountainous terrain or in rain or mud, the more worn the bike will be. The wearing of brake shoes and discs cannot be evaluated from the brake rods alone. Therefore, it is necessary to check before riding. Always go to a qualified distributor for replacement of brake shoes.

Replacement of new brake pads

New brake shoes must be inserted when they reach their best braking performance. To do that, you need to accelerate the bike up to 25km/hr (15.5mph) and apply the brakes. The replacement is done when the force you apply to the brakes stop reducing.

Battery Protection Mode

For any of the following, the battery will switch to the protection mode:

- The bike has not be used for two months.
- The battery has depleted and not charged within one week.

When the battery is in the protection mode, you need to start the battery after a complete charging cycle.

Notes for Battery

The following instructions helps improve the longevity of battery:

- Ideally, the battery should be charged at 20°C (68°F). Please allow plenty of time for the battery to reach this temperature before charging.
- Avoid frequent discharging completely. It is preferred to discharge locally. Li batteries are not known for the memory effect. Loss of capacity after a period of use is common in every Li battery. The oxidation of cores occurs as the result of long period of use and aging, and leads to loss of capacity.
- Deep discharging of a battery will lead to irreversible damage and loss of capacity. If the battery is expected not to be used for an extended period of time, it is advised to charge the battery to its full capacity at least every 3 months.

Important Safety Notes for Battery Charging

- If the power cable or plug is damaged, wet or dirty, there is a risk of electric shock or even mortal injury.
- Use only the battery charger delivered with the product.
- Use only dry charger, undamaged power cable and charger.
- Replace damaged power cable and charger immediately.
- Remove any possible foreign object from the charging socket, such as dusts, ice or snow before plugging in.
- Using any battery charger other than the one delivered with the product may cause overheating of the battery or even a risk of explosion.
- Deep discharging of battery may result in internal damage.
- There is a fire risk if the temperature of battery rises up to a dangerous level.
- Avoid deep discharging of battery while in use or storage.
- If not in use, the battery should be charged fully at least every 3 months.
- Do not expose the battery in a storage temperature lower than -20°C (-4°F) or higher than 60°C (140°F). Please note that the internal structure of battery may be overheated to damage due to high temperature greater than 60°C, particularly exposed to direct sunlight.
- Do not use the charger at a humid place or an ambient temperature lower than -10°C (14°F) or higher than 40°C (104°F).
- Do not put the battery in water.
- The battery and charger are maintenance-free. Do not attempt to disassemble or modify the battery or charger.
- Do not expose the battery to high voltage.
- It is advised not use battery with damaged casing.
- Keep the battery out of children's reach.

- If you detect that the battery becomes very hot, emits a strong odor, starts to deform or performs in an unexpected way while in use, being charged or in storage, please stop using the battery immediately
- The battery and charger should be placed on fire-retardant surface while charging is in progress. If you are charging the battery while it is still mounted on the bike, make sure that the bike is parked on an incombustible surface.
- Do not charge the battery while it is on a carpeted floor.
- Do not cover the battery or the charger while charging is in progress.

Notes for Battery Charger

The charger provided is suitable for voltage ranging from 100V to 240V. The charger does not have to be switched to the associated voltage range, as it detects the voltage automatically. There is no on/off switch on the charger. Make sure to unplug for energy saving if no charging is required.

Connect the Charger

Connect the battery charger as illustrated. Connect the charger to the battery and the shining red indicator light on the charger indicates the charging is underway. It takes approximately 5 hours to fully charge the battery. Once the battery is charged, the green indicator light on the charger will light up. While the battery is being charged on the bike and you wish to check how much it is charged, you may turn the system on and the instrument will show the battery level. If you are done charging, disconnect the charger from the battery before removing the power plug from power socket.

- There is no on/off switch on the charger. Make sure to unplug for energy saving if no charging is required.
- Do not pedal the bike while the battery is being charged, or there is a risk of damaging the charging socket on the bike.
- The battery can be charged onboard or independently.

Do not move or pedal the bike while the battery is being charged onboard.



Install the Battery

The battery is not safe if the lock cylinder of battery is not connected correctly. The battery may fall out of the battery seat while riding and this could produce a risk of accident.

Connect the battery charger as illustrated. Connect the charger to the battery and the shining red indicator light on the charger indicates the charging is underway. It takes approximately 6 hours to fully charge the battery. Once the battery is charged, the green indicator light on the charger will light up. While the battery is being charged on the bike and you wish to check how much it is charged, you may turn the system on and the instrument will show the battery level. If you are done charging, disconnect the charger from the battery before removing the power plug from power socket.

Store the Battery

To remove the battery, pull the clip up as shown in the picture, or the battery cannot be removed. Always place the battery on a stable foundation with the charging socket facing upwards, or the charging socket and connector plug to the battery seat may be damaged in other way.

- Deep discharging of the battery may lead to internal short-circuiting, and the battery may become very hot, resulting in a fire hazard.
- Avoid deep discharging of battery while it is in use or storage.
- If not in use, the battery should be charged fully at least every 3 months.

- Do not carry a deeply discharged battery on the electric bike.

If the electric bike or battery is not expected to be used for an extended period of time, please follow the following instructions:

- Do not expose the battery in a storage temperature lower than -20°C (-4°F) or higher than 60°C (140°F).
- Do not expose the battery in an environment of temperature fluctuation. The ideal temperature of storage is between 10°C (50°F) and 25°C (77°F).
- Protect the battery against moisture, as it may result in corrosion at electric contacts. Keep the battery at a dry place.
- Do not store the battery in the vicinity of combustible materials.

Notes for the Chain

If the chain is installed or handled incorrectly, such as bent or twisted, there may be an internal damage unseen to naked eye. Damage like this may lead to unexpected rupture of chain, and you will slip off the pedals, causing accident and serious injury.

Please be extra careful when handling the chain and follow exactly the instructions. Damaged chain has to be replaced immediately by an authorized distributor.

Riding on a surface covered in snow/ice

When riding on a surface covered in snow/ice or mud, the chain may be clogged up, causing it to bounce or slip and eventually damage. Damage like this may lead to unexpected rupture of chain, and you will slip off the pedals. Therefore, do not ride on a surface covered in snow/ice or mud, or there is a risk of accident and serious injury.

Tires and Wheels

The water jet coming from a high-pressure cleaning machine may lead to damage to the chain that is superficial but unseen to naked eye. A part that is so damaged may malfunction and lead to a risk of accident. Therefore, do not use a high-pressure cleaning machine to clean your bike. The tires and chain must be replaced immediate if damage is detected.

Your electric bike is manufactured and delivered through meticulous processes, but this does not prevent the loss of tension in the chain after the first km of riding. The rider should always check chain tension and re-tension it as needed.

Tire Pressure

In case that the tire pressure keeps dropping, please check if there is any foreign object on the tire or whether there is a leak at the valve. Low tire pressure will compromise the maneuverability of the bike, and cause you to fall. Risk of accident may come from any of the following:

- Replace damaged tubes always.
- Remove all foreign objects in the tires before installing a new tube.

Check tire pressure regularly or at least every 14 days. The recommended tire pressure is found in the “technical data.”

Transport the Electric Bike

Check that the drive chain is free of foreign objects when transporting the bike. There is a specific requirement of the load on luggage carrier as part of the weight and frame design for this bike. An inadequate luggage carrier may malfunction during your trip or cause the bike to be unsafe. Check the information in the instruction manual for the electric auxiliary bicycle load.

Repair and Maintenance

Cleaning and Maintenance

Regular and appropriate maintenance works help maintain the value of your electric bike. It is advised to dispose of the empty package materials and cleaning wipes in an environmentally responsible manner.

High-pressure cleaning equipment

Do not use high-pressure cleaning equipment to clean the bike. Replace the tires and chain if damage is detected. The water jet coming from a high-pressure cleaning machine may lead to damage to the tires or driving belt that is superficial but unseen to naked eye. The water may seep into bearings or damage the electric parts of the power controller system. A part with such damage may malfunction and result in a risk of accident.

Manual Cleaning

The braking efficiency will decrease after washing the bike, and there is a risk of accident. Make sure that the brakes work proper after washing until the braking efficiency is fully restored.

- Washing the bike with water should be kept to a minimum and the electric contacts shall be protected against water.
- Use rubber covers to cover the electric contacts on the battery mount.¹
- Use soft sponge or brush to clean the bike.
- Use moist wipe to clean the battery mount.
- Check the electric connections after washing and allow the bike to dry completely before riding.

Maintenance

Darad Innovation recommends you to have your bike checked by an authorized professional distributor once every year.

Before every trip	Action
Check tires and wheels Check the chain Check the battery lock Check the operations of brake system Check the operations of power controller system and instrument Check the wearing of brake system Check bolt and screw connections	Test before riding

Every 300-500km (186-310 miles)	Action
Check the wearing of chain and tension of spokes Clean the chain of smudge Check all bolt and screw connections are fastened securely Measure the wearing of brake discs	Perform repair and maintenance works

Every 3000km (1864 miles)	Action
Check and, if necessary, replace the following parts: Headset Wheel hubs Pedals Chain Power controller cables	Repair, maintenance and service at an authorized distributor

Every year	Action
Check all bolt and screw connections for tightening torque Check headset and brake settings Check the wearing of chain and tension of spokes Check tyres and wheels Check the wearing of parts under high stresses	Repair, maintenance and service at an authorized distributor

Troubleshooting

Please read the troubleshooting information provided in the user's manual.

Instruments and Power Controller System

Symptom	Possible cause/consequence and solution
System or screen is not on.	Battery is low. • Check the battery for capacity if necessary.
	Battery is not installed correctly on the battery seat. • Remove and reinstall the battery. The contact of lock cylinder has to be secured.
	Instrument is not installed correctly, causing the electric connection to come loose. • Check that the instrument, buttons, electric connectors on the handle bar, and the cables/wires around the motor and controller are connected correctly.
	If the symptom persists after performing the checks above; • Have an authorized distributor to check the bike.

Symptom	Possible cause/consequence and solution
The screen keeps flashing	Controller or instrument is not working properly. • Have an authorized distributor check the power controller system.

Symptom	Possible cause/consequence and solution
The assistance system is not consistent when pedaling.	Incorrect version of program • Have an authorized distributor upgrade the program
	Interference between brake and wheels • Adjust the brake system
	Tire pressure inappropriate or problematic • Inflate the tire or replace if it is flat

Symptom	Possible cause/consequence and solution
The assistance level goes back to 0 when pedaling.	Poor connection between wire and controller • Reconnect or have an authorized distributor check the power controller system
	Motor is damaged • Have an authorized distributor check the power controller system

Batter System

Symptom	Possible cause/consequence and solution
The screen does not show the battery is “full” even though a complete charging cycle is performed.	The battery may be subject to surrounding temperature. The battery becomes hot while being charged. • Allow the battery to cool down before repeat the charging cycle. • Follow the correct charging steps.

Symptom	Possible cause/consequence and solution
The battery does not charge.	The battery may be poorly connected. • Make sure the battery is connected correctly before repeating the charging cycle.
	The indicator on the charger is not on. • Have an authorized distributor to check the charger.
	The battery is damaged. • Have an authorized distributor to check the battery.

Brake System

Symptom	Possible cause/consequence and solution
Poor braking performance	The brakes are not inserted.
	Insert the brakes <ul style="list-style-type: none"> • There is grease stain on the brake disc or shoes. If the brake disc or shoes are covered in grease, the braking distance will be longer and the risk of accident and injury increases. When this happens, please go to an authorized distributor immediately. • Clean the brake disc with alcohol. • Change the brakeshoes. • Bring the dirty disc or shoes to an authorized distributor for examination.

Symptom	Possible cause/consequence and solution
Poor braking performance and not distinctive braking action	Uneven clearance between brake pads in the calipers and brake disc <ul style="list-style-type: none"> • Recalibrate the calipers. Go to an authorized dealer for help.
	Alien objects in the brake cable <ul style="list-style-type: none"> • Squeeze the brake to get a feeling. If it feels gritty and the braking is not smooth, then the brake cable has to be reinstalled. Go to an authorized dealer for help.

Symptom	Possible cause/consequence and solution
Metallic noises come out of brakes and it is rough to decelerate.	Worn brake shoes will lead to longer braking distance and the risk of accident increases. When the brake shoes are worn beyond the minimum thickness, the shoe supports will grind into the friction ring on the brake disc. <ul style="list-style-type: none"> • Have the brake shoes and brake disc, if necessary, changed by an authorized distributor

Remove/install the Front Wheel

Remove the Front Wheel

Release the brake calipers after the front wheel is removed. The Mechanical brake must not be operated with the wheels removed. Or, the brake pistons will be fully extended and make contact with one another. The caliper piston position may be damaged. Only push back the brake caliper pistons and install brake shoes.

Install the front wheel

Make sure that the lever of the front wheel quick release is in 90° angle with the front wheel axle before every trip and the lever shall not deviate from its original position. Please refer to the instructions for the front fork. If the pre-tensioning is low for the quick release, chances are the front wheel may become loose during the trip and the risk of accident increases. Install the wheel as instructed.

Remove/install the Rear Wheel

Remove the Rear Wheel

When disassembling the rear wheels, turn the car upside down for operation. Disconnect the motor wires, undo the nut, and pull the rear gear change wire downwards. The chain comes loose now, and you can lift the wheel up. The Mechanical brake must not be operated with the wheels removed. Or, the brake pistons will be fully extended and make contact with one another. The caliper piston position may be damaged. Only push back the brake caliper pistons and install brake shoes.

Install the Rear Wheel

When disassembling the rear wheels, turn the car upside down for operation. Place the wheel in the rear slot and brake caliper and tighten the nut. Connect the motor wires and adjust the chain. Then, adjust the gear change wire as appropriate. Install the rear wheel as instructed. Make sure that the tire aligns with the center of rear wheel axle before every trip.

Tighten and Adjust the Chain

If the chain is not adjusted properly, the chain itself and other parts may be damaged. You need to bring the bike to an authorized distributor for tensioning if chain is slacking. If the links are incorrect, the bearing and seals in the frame may be damaged, and the overall wearing and abrasion of gear change system will increase.

Remove/install Brake Pads and Discs

Remove Brake Pads

The Mechanical brake must not be operated with the wheels removed. Or, the brake pistons will be fully extended and make contact with one another. The caliper piston position may be damaged. Only push back the brake caliper pistons and install brake shoes.

Install Brake Pads

The fixing pin of brake shoe has a single-purpose thread lock. The pin may come loose during a trip if it is used repeatedly. This can lead to brake malfunction and risk of accident. Once the pin becomes loose, it has to be replaced immediately. The used pin shall be discarded immediately.

Install Brake Disc

The bolt that holds the brake disc in place has a single-purpose thread lock. The bolt may come loose during a trip if it is used repeatedly. This can lead to brake malfunction and risk of accident. Once the bolt becomes loose, it has to be replaced immediately. The used bolt shall be discarded immediately.

Key to the Battery Lock

Your electric bike is delivered with two keys to the battery lock, so make sure you keep one at a safe place and write down the key number. In case you need to replace the key, consult with an authorized distributor for the key number.

Set the Light Range

Please refer to the requirements of the country you are in for the adjustment of light range.

Technical Information

Front and Rear Wheels	Specifications
Tire model	DURO DB7023 PD-1 20"x1.5
Tire size (inch)	20"x1.5
Valve type	Shrader
Tube model	20"x1.75 , butyl
Front tire pressure (kpa)	241~551kpa (2.5~5.45 bar / 35~80psi)
Rear tire pressure (kpa)	241~551kpa (2.5~5.45 bar / 35~80psi)

Weight	Specifications
Net weight	18.5 kg(40.7lbs)
Gross weight with accessories	20kg (44lbs)

Brake System	Specifications
Brake shoe type	IS type
Front brake disc diameter	160mm (6.29in)
Rear brake disc diameter	160mm (6.29in)
Wearing limit for disc thickness	Origin 1.8mm(0.07in)/limit 1.6mm(0.06in)

Motor	Specifications
Continuous output	250W
Max. speed	25km/h (15.5mph)
Max. Torque	12Nm (8.49 1lb-ft)
Working temperature	-10°C(14°F) to 40°C(104°F)

Battery	Specifications
Voltage	36V
Capacity	10.2Ah
Charging time	Approximately 6 hours (with 2A Charger)
Working temperature	-10°C (14°F) to 40°C (104°F)
Storage temperature	-20°C (-4°F) to 60°C (140°F)
Temperature at charging	0°C (32°F) to 40°C (104°F)