

Owner's Manual

Operation and Maintenance Instructions

We strongly recommend that you read this entire manual before using your vehicle for the first time

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General Instructions Before Riding

- 1) To ensure the vehicle is functioning correctly, do a quick check of the vehicle's tyres and insure the brakes offer a firm grip. (For more detailed maintenance instructions see the Maintenance Schedule). Your vehicle has been thoroughly checked by our engineers before delivery but on the spot checks are equally important.
- 2) When the key is inserted and turned to the "ON" position, the power indicator will illuminate. When persistent current is over 60A, the power will be automatically cut off to avoid over-heating. Wait for one minute and then press the red button (see pg.7 symbol V) to restart the vehicle.
- 3) To avoid the vehicle running away, always turn the key to the off position before dismounting or leaving the vehicle unattended.
- 4) **SAFETY NOTICE:** *ensure that you are seated on the vehicle and stands are clear of the floor before touching the throttle handle. If you twist the throttle before you are ready to go or whilst you are mounting the vehicle it may run away from you and could lead to an accident.*

- 5) This vehicle can be ridden both in wet conditions and rain, but be sure to avoid soaking it during cleaning so you avoid damaging any of the electric components.
- 6) The vehicle should not be left in strong, direct sunlight for long periods as some of the electric components may overheat.
- 7) Motorcyclists must abide by the same traffic rules and regulations as other motorists. Before taking your motorcycle on a public road, be familiar with traffic rules and regulations and any special requirements for motorcycles.
- 8) **Never drink and ride.** Alcohol slows reflexes and greatly limits your ability to operate a motorcycle. Even a very small amount of alcohol will reduce your ability to operate a motorcycle safely.

Point Inspection before every use

Item	Action
Front Brake	Squeeze right hand Brake and push the vehicle to see whether it rolls easily. If it does then the brake must be tightened. Tighten the bolt until the vehicle will no longer move with the brakes applied.
Rear Power/Disc Brake	Listen for any noticeable grinding or squealing from the tyres while the brake is applied. If so, contact the supplier.
Brake Fluid	Check fluid gauge on the right handlebar to ensure that the brake fluid is above the indicated level. If not, top it up with a good brand of brake fluid.
Electric Switch Handle	Turn Throttle counter clockwise then release; the Throttle should spring back to stop position. If not, contact your supplier.
Tire	Check the tyre's pressure is 36 PSI
Controller/ Motor	Check the usage and condition
Battery	Check the power level by looking at the gauge or with a BDI panel (100%-75%)
Signal	Check to make sure your lights are working.
Nuts and Bolts	Check to make sure that all nuts and bolts are tightened and secured.

Important Notes

1. Always perform a routine maintenance check. Doing so will enable you to better protect yourself and your vehicle.
2. Any damage to parts, whether normal or abnormal, please check with the supplier before riding.

Assembly Instructions

Installing the mirrors

1. Mirrors can be easily fixed to the handle bars between the grips and the brake handle.
2. Screw in the mirror clockwise. The mirror that goes on the left controller is curved to the left and the mirror that goes on the right controller curves to the right.
3. Secure mirror by tightening the bolt.
4. Clean and adjust both mirrors before you ride. Adjust each mirror so you can see the lane behind you and as far as possible the lane next to you. When the mirror is properly adjusted you can see the edge of your arm and shoulder.

Technical Specifications

Motor Power	1500W / 2000W with Brushless Hub Motor
Battery	DC 48V/38Ah, DC 60V/20Ah & 38Ah with the green saver (silicone power) batteries
Charger	5A,110V~250V/50 Hz ~60Hz , 8A,110V~250V/50 Hz ~60Hz
Charging Time	6~10 Hours based on 5A charger and 2~4 Hours based on 8A charger
Life of Battery	400 Deep Cycles
Wheelbase	10 Inches
Torque	18.45 Foot Pounds
Top Speed	50km/H for 1500W Motor and 65km/H for 2000W motor
Single Charge	Max 90km based on 38AH battery ,Depending on Terrain and Load
Climbing Capacity	1:5 gradient

Maximum Weight Capacity	128kgs
Tyre	Front:3.50-10.00 Inch 6PR Rear:3.5-10.00 Inch 6PR, tubeless tyres
Gross Weight	115kgs with 38AH48V battery and 108kgs with 20AH60V battery
Net Weight	70kgs (not including the battery)
Battery Weight	45kgs
Product Size	L 70" x W 27" x H47"
Brake System	Front: Disk /Back: Drum

Parts List

- A. Horn
- B. Throttle and Front Brake Handle
- C. Rear View Mirror
- D. Head Lamp
- E. Dash Board
- F. Odometer (Kilometre/Mileage)
- G. Shift gear Position
- H. Under seat storage
- I. Rubber Blanket
- J. Tail Lamp
- K. Front Disk Brake
- L. 2 speed Mode shift gear
- M. Turning Signal Lamp
- N. Front Shock Absorber
- O. Center Stand
- P. Kick Stand (this automatically cuts off the power so the vehicle will remain stationary)
- Q. Front Mud Fender
- R. Rear Power Drum Brake
- S. Front Wheel
- T. Controller

- U. Charging Plug
- V. Anti-overheat circuit breaker
- W. Battery Box
- X. DC /DC Voltage Transducer
- Y. Temporary Helmet Pothook
- Z. Vehicle lift/Rear Box shelf

Front Display

Part	Item	Function
A	Head Lamp Light	Light is illuminated when switch key and head lamp are 'ON'
B	Power Meter	Shows battery consumed
C	Indicator	Light is on when indicator is on
D	Speedometer	Indicates speed
E	Odometer	Indicates mileage
F	Critical Battery	Red light is illuminated when the battery is discharged
G	Low Battery	Yellow light is on when battery is low (around 25%-50%)
H	Full Battery	Green light is illuminated when battery is full (50%-100%)
I	Current Meter (Only Erato-004)	Shows Amperage being used

Ignition Key Position

Key Position	Description
On	Key cannot be taken out when power is on. To prevent theft please turn the front handle bar to the lock position and remove key from ignition.
Off	Key can be taken out when power is off
Lock handle bar	Turn the Handle Bar to the far left and turn the key into the lock position. The key can be taken out when handle bar is in the lock position.
Opening the seat	Turn the key to the right position and the locking mechanism of the seat will be released.

Left handle bar controls

Headlight Switch	High Beam – Push switch up Low Beam – Push switch down
Horizontal Switch	Left Turn Signal – Slide switch to the left Right Turn Signal – Slide switch to the right Turning off Signal – Press central release button
Horn Button	Sounds Horn – Push yellow button
Rear Brake Lever	When Brake Handle is compressed the rear wheel will slow to a stop and power will be cut off. Power will flow once lever has been released. To start, turn the throttle counter clockwise.

Right handle bar controls

Front Brake Lever	When brake handle is compressed the front wheel will slow to a stop and power will be cut off. Power will flow once lever has been released. To start, turn the throttle counter clockwise.
Throttle	Turn throttle counter clockwise to increase speed.
Parking Lights	The dashboard lights, headlight, and taillight will turn on when the switch is in the middle position.
Head Light	The dashboard lights, headlight, and taillight will turn on when the switch is in the left position.

Power Boost Button

The vehicle has a 2 speed shift gear to ensure good climbing ability, a fast speed and high efficiency.

1. When the red button is depressed, the vehicle is in CLIMBING MODE or START MODE. This will give you a speed of less than 20mph but will offer you very good torque for low speed acceleration and climbing hills. We therefore recommend that you use this mode on a slope or starting toride it.
2. When you push down the green button, the vehicle is in HIGH SPEED mode. Now you can reach the vehicle's top speed and we recommend you use this mode on flatter roads.
3. **When the light of battery gauge turns to yellow, push the red button and keep speed at a 20mph cruise speed. To ensure the vehicle travels for a further 5 miles.**

Using the Power Boost Button

1. Do not use your left hand to push either speed button.
2. Do not turn the throttle while pressing either button as this may damage the vehicle's electronic controller.
3. Do not change into CLIMBING MODE when the speed is faster than 20mph, as this may also damage the controller.
4. Be sure that the button is firmly in one of the two positions at all times.

Accelerating and Braking

Throttle Tips

1. Turn the key to the 'ON' position, then turn the Throttle gradually to accelerate.
2. To prevent losing control of the vehicle, please turn the Throttle slowly until the speed increases.
3. Do not turn the Throttle until you are in the position to drive.
4. To stop, release the throttle and apply the front and rear brake simultaneously.
5. To move, release the brakes and turn the Throttle gradually.
6. The Brushless motor makes a small electromagnetic noise when turning the Throttle to start. This is normal.
7. Please, for your safety and security, take the key out when you are not riding.

Braking Tips

For safety, this vehicle has a circuit brake system. When the front and rear brake is applied, the controller will disable the circuit; release the throttle back to the start position then accelerate again.

Battery Gauge and Charging Instructions

Color	Description
Green	While riding, when the battery is fully charged the gauge light will be green.
Green (2 nd)	This light indicates that the battery is 75% of full charge
Yellow	When power is low (around 50%) the battery gauge will turn to yellow.
Red	When the battery is discharged the battery gauge will be red, and the motor will be automatically cut off. <i>This means that there is less than 25% charge remaining. You should push the red button and drive slowly if you want to maximise the distance you can travel at this time.</i>

Charging

- ♦ The battery for this vehicle is a sealed, maintenance free D/C battery. The owner must use the factory-supplied charger with an 110V (or 240V) outlet.
- ♦ Turn off all switches while charging the battery. Plug one side to an 110V (or 240V) outlet and the other to charging plug on the vehicle (located under the seat- looks like a kettle socket).
- ♦ The average charging time is 8 hours (90%) for the 1500W and 3 hours for 2000W. To fully charge the battery, charging time will be 10 or 4 hours.
- ♦ After charging, turn the ignition to the 'On' position and unplug the charger from both sides.
- ♦ To keep the battery in good condition, charge it after each trip. Please charge the battery fully once a month, even when the vehicle has not been ridden.

Battery Longevity

The driver should, if possible, charge the scooter after every trip as this will help the battery's life. The life of the Green saver battery is 400 deep cycles (100% discharged), but if you charge the battery every time or when its capacity falls below 50%, the battery life will be greatly increased. Therefore we advise the rider to charge the vehicle as frequently as possible.

Performance

1. The distance and speed depend upon various elements of the rider's style and the road conditions. A 20mph constant speed will ensure the longest range but our figures include going flat out too. Other factors include weather, vehicle condition, and battery charge. Drivers must be cautious when driving on rough roads, in poor weather, or when the battery capacity is low.
2. This vehicle has a circuit brake system to protect the vehicle when the brake is applied.
3. After each journey the driver should turn off the vehicle, take out the key and charge the battery. This battery does not have memory (i.e. you do not have to run it down completely to achieve a good charge. On the contrary, regular charging will prolong the life of the battery) and can be charged at anytime within the life-cycle of the battery.
4. Always check the battery gauge while you are riding and be sure that it does not get too low too often.

Maintenance

This electric moped represents a new generation of environmentally friendly two wheeled means of transportation. Therefore, good maintenance will play a major role in keeping your vehicle in good working condition and prolonging the life of the batteries. Please follow these suggestions:

- To prevent rust always keep your vehicle dry and clean.
- Regularly check the front and rear tyres, suspensions and body frame and all fasteners.
- When riding in rain do not go through deep puddles or muddy areas; excessive water will cause the motor and other electrical components to suffer undue harm.
- To prevent rust from forming on the vehicle, avoid parking your vehicle in high humidity and corrosive areas.

- To avoid damage to the electrical parts of this vehicle, especially the controller, do not park the vehicle in direct sunlight or in heavy rain.
- Due to the complexity of the electronic manufacture of this vehicle, customers should never attempt to take out any of the parts, or attempt major maintenance without consulting the supplier (this will invalidate the warranty).
- Never overload and ride the vehicle for an extended period of time, prolonged use with excessive weight could cause serious damage to the electronic and mechanic parts.
- Always check your vehicle and perform necessary routine maintenance-tyres, brakes, nuts and bolts.
- For customer safety, performing a routine check and maintenance of your vehicle will lower the potential for damage and pollution.

Maintenance Schedule

Mileage	400	1000	2000	3000	4000	5000	6000	Maintenance
Battery			C				C	
Charger			C				C	
Tire Pressure	C	C	C	C	C	C	C	A
Tire Wear							C	
Brake System	C		C		C		C	A
Brake Pad							A	
Nuts and Bolts	T		T				T	
Mileage		7000	8000	9000	10,000	11,000	12,000	Maintenance
Battery			C				C	
Charger			C				C	

Tire Pressure		C	C	C	C	C	C	A
Tire Wear			C				C	
Brake System			C		C		C	A
Brake Pad			A				A	
Nuts and Bolts			T				T	

A: Adjust C: Check T: Tighten

Frequently Asked Questions

1. Fully charged, what is the range of the electric vehicle?

- A. The Range is affected by the weight of rider, the type of terrain and the speed in which the vehicle is driven. Under optimal conditions (push red button and keep 20mph rate speed), a range of **100 km** has been recorded on a single charge.
- B. See the specification sheet for the full range and speed of the models.

2. Is riding an electric vehicle a comfortable riding experience?

- A. Riding an electric vehicle is indescribably more comfortable than riding a gasoline motor vehicle. The silence and the smoothness of a direct drive electric-motor-powered vehicle are incomparable.
- B. Quick accelerating---speed from 0 to 62km/H takes only 5 seconds (with the EFV 200)

3. Do you have to warm-up the electric vehicle before riding it?

- A. When the driver turns the ignition key, three beeps will immediately follow telling the driver that the vehicle is ready to drive. There is absolutely no warm-up time needed. Just turn the key and you are ready to go. It cannot be any easier.

4. What about maintenance?

- A. This moped is designed for minimum maintenance. Considering the fact that this vehicle has no combustion engine, no transmission, no belts, no chains, no gasoline, no lubricants, no ignition plugs, no carburetor, etc. Modular designed components are practically maintenance free. The unique design of the direct drive system and the total absence of belts or chains make this vehicle much easier to maintain than other electric scooters. Practically any scooter dealer can do most of the maintenance that may be required. The brushless motor is precisely that so there is never a need to change the brushes.

5. What about parts, is it a problem getting parts for the moped?

- I. ALL parts can be purchased directly from the supplier including batteries, tyres, bulbs, body shells, seats etc.
- II. We supply a one year warranty for all parts (subject to due care from the driver) excluding batteries (3000km) and tyres.

6. Can the electric vehicle be cleaned or washed with water without any concern?

- A. Due to its Direct Current source and 48V / 60V system design, there is no danger when the vehicle gets wet.

B. However, one should be careful not to pour water directly into the charger outlet, the controller and the internal battery set when washing or cleaning.

7. Do you need to wear a helmet to drive the electric vehicle?

A. For safety reasons we always advise the use of a helmet. However, local law dictates whether or not riding vehicle law obligates a helmet.

8. Is it easy to recharge the batteries?

A. Yes, it is very easy. The user just needs to insert the input plug of the Battery Charger into any regular wall outlet of AC110V (or AC220V) and the output plug into the inlet on the right rear side of the vehicle, which is clearly marked. This will start to recharge the batteries. Daily charge of the battery will lengthen its life cycle, up to 1000 deep charges from 400 occasional charges.

9. How long will the batteries last, what is the batteries life cycle?

A. The battery's life cycle will be reduced or damaged if an insufficient charge level is retained for a long period of time. Depending on the user's operation, between 400 and 1000 cycles. Normally the batteries should last between two and three years if the user charges it regularly.

10. How can I know the batteries condition and energy level?

A. The display panel includes a row of LED lights, which clearly indicate the power level of the batteries in your vehicle.

I. FULL: First green light is on.

II. 75% FULL: Second green light is on.

III. 50% LEFT: Yellow light is on and you also hear a Warning Beep (At this level, charging is highly recommended).

IV. Low 25% LEFT : Red light is on (Immediate charging is necessary).

11. If one of the batteries has a problem do I need to change all the four batteries?

A. Not necessarily. Simply check the condition of all four batteries and only replace the battery which shows lack of charge.

12. Can a rider get burned while riding the electric vehicle?

A. Riders will not get burned from riding the electric vehicle. The vehicle does not have an exhaust pipe like in gasoline scooters. Nothing heats up.

13. Why is this product the best available in the world today?

It has a Brushless motor. We emphasize "brushless" not just because this is the latest technology, but because these permanent magnet motors are supremely reliable! These more expensive motors produce high torque at low speeds, keeping an acceptable balance of torque and energy across the whole speed range. In addition to not wasting energy at idle, the motors offer the advantage of using the permanent magnet motor's energy recovery capability during deceleration (regenerative braking), so the batteries recharge during deceleration. Often other types of electric vehicles on the market today will still use sealed brush-type motors that are dependant upon brush life that build up brush dust (residue) and susceptible to wear over time which may affect maximum speed and electrical noise or become problematic in other ways.

Because these brush-type motors are sealed, it often takes an expensive motor replacement to get them working again.

14. What is the Manufacturer Warranty?

ONE YEAR unlimited mileage warranty for all parts except batteries (3000km) and tyres. This warranty is subject to the customer/rider/owner taking due care and maintenance of the vehicle at all times.

Special Maintenance Warning Signals

If the moped is not working, look at the trouble light (break down lights) above the speedometer, as follows:

- Flash 2 or 3 times, problem is with brake (brake cut off)
- Flash 4 times, problem with throttle, it didn't come back to position.
- Flash 5 times, problem with throttle, throttle is broken
- Flash 6 times, problem with voltage, too low voltage on battery.
- Flash 7 times, problem with voltage, too high voltage on battery.
- Flash 8 times, problem with motor, hall inside broken.
- Flash 9 times, problem with motor, wrong motor (48V and 60V have been confused).
- Flash 10 times, overheat protection, leave to cool.
- Flash 12 times, problem on controller current sensor.

Troubleshooting

Problem	Condition	Check	Solution
When I turn my vehicle on nothing happens.	1. Power indicator light is off while riding.	1. Check power connection and battery level.	1. Fasten connections.
	2. Indicating light on motor is not illuminated.	2. Check battery and motor connection.	2. Recharge battery.
		3. Assess the weather for humidity.	3. Loosen connection and wipe down with a damp rag and dry and fasten again. Contact the supplier.
		4. Check regulator.	4. If there is any corrosion replace. Contact the supplier.

		5. Battery level is low.	5. Change or replace damaged part. Contact the supplier.
The Throttle does not work or switch on, the vehicle moves without acceleration.	The Throttle does not return to stop position.	1. Check the grip for damage	1. Use a flat head screwdriver to adjust the gap between the rubber handle and the cover.
		2. Check the Throttle spring.	2. Readjust the Throttle spring position. Contact the supplier.
		3. The Throttle handle is loose.	3. Lubricate the Throttle spring. Contact the supplier.
The batteries do not take a charge.	Charger light is off	1. Check the charger plug position.	1. Check by unplugging charger and plugging in again.
		2. Check the fuse in the charger box.	2. Unplug the charger and replace the fuse. Contact the supplier to order a new charger fuse/charger.

		3. Charger has blown a fuse.	3. Replace the charger fuse. The fuse box is located on the floorboard, unscrew the two screws and open the fuse case, and replace scooter. Contact the supplier to order a new fuse.
		4. A bad connection exists between the charger and the battery.	4. Unplug and plug in again. Otherwise contact the supplier.

Fashion Style



Parst Location



