

FD MOTORS

F3-A & F5-A E-SCOOTER

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 tires and check that the brakes are working. (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. If current drain is over 80A, the power will be automatically cut off to avoid over-heating.
- 3) To avoid unplanned acceleration, always turn the key to the "OFF" position before dismounting or leaving the bike unattended.
- 4) SAFETY NOTICE: Be sure that you are seated on the bike and stands are clear of the floor before touching the throttle handle. If you twist the throttle before you are ready to go or while you are mounting the bike it may run away from you and could lead to an accident.
- 5) **Be careful.** The side stand is automatic rebound.
- 6) This vehicle may be ridden in wet conditions, but be sure to avoid soaking it during cleaning to avoid damaging any of the electric components.
- 7) The vehicle should not be left in strong, direct sunlight for long periods as some of the electric components may overheat.
- 8) 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.
- 9) **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.
- 10) Frequently ride at economical speed will be great help on battery life and range. Especially at crowded city traffic.

Point Inspection before every use

Item	Action
Front Brake Right brake only control the 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 Brake Left brake control front and rear brake together.	Listen for any noticeable grinding or squealing from the tires while the brake is applied. If so, contact the supplier. Set the bike upon the middle stand, and turn the rear wheel by hand. If it does not turn freely, adjust rear disc to avoid electric consumption.
Brake Fluid	Check fluid gauge on the left handlebar to ensure that the brake fluid is above the indicated level. If not, top it off with a good brand of brake fluid.
Electric Handle Switch	Turn Throttle counter clockwise then release; the Throttle should spring back to stop position. If not, contact your supplier.
Tires	Check the front tire pressure is 220/2.2 Kpa/bar, rear tire is 240/2.4 Kpa/bar.
Controller/ Motor	Check the usage and condition
Battery	Check the power level by looking at the SOC on the dashboard . and how many % left.
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.Regularly perform a routine maintenance check. Doing so will help protect yourself and your vehicle.
- 2.If any parts are damaged, 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.

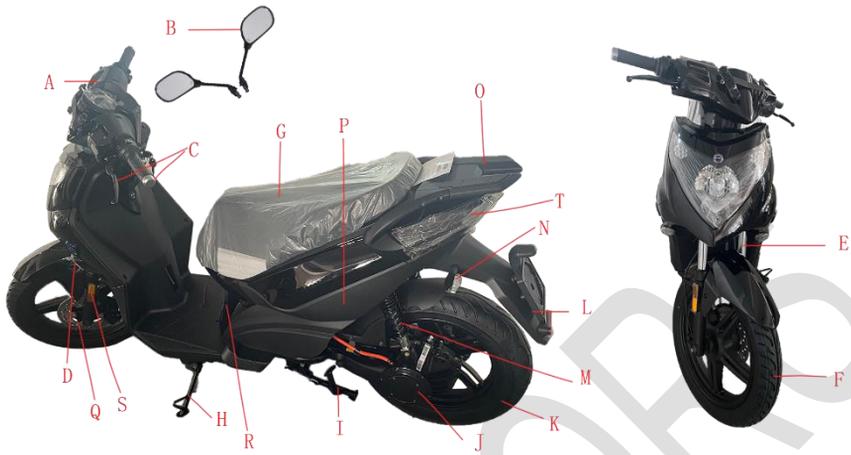


5. Charge the battery.

Technical Specification

F3 TECHNICAL DATA rear wheel side motor		
Motor (W)	72V 1500W	
Battery (V)(AH)	60V/35Ah Lithium battery	
Communication System	CAN	
Speed	speed	range
	25KM/h	60KM
	45KM/h	55KM
E-mark certificate No.	e13*168/2013*00689*00	
Category	L1e-B	
Charger Input Voltage	110V-230V	
Charger	60V 5A	
Charging Time	7-8 hours	
Max.Load	261 Kg	
Climbing Capacity	15%	
Brakes (F/R)	disc/ disc with CBS	
Brake Control	hand brake	
Tire front/ rear	FR: 100/80-16 RR: 120/80-14	
	FR: 90/80-16 RR: 100/70-14	
	FR: 90/80-16 RR: 110/80-14	
Wheel base	1435mm	
Net Weight	111kg	
Gorss Weight	125kg	
Apparent size	1995*690*1115mm	

F5 TECHNICAL DATA rear wheel side motor		
Motor (W)	72V 3000W	
Battery (V)(AH)	60V/45Ah Lithium battery	
Communication System	CAN	
Speed	speed	range
	75KM/h	87 KM
E-mark certificate No.	e13*168/2013*00691*00	
Category	L3e-A1	
Charger Input Voltage	110V-230V	
Charger	84V 10A	
Charging Time	4.5 hours	
Max.Load	265 Kg	
Climbing Capacity	15%	
Brakes (F/R)	disc/ disc with CBS	
Brake Control	hand brake	
Tire front/ rear	FR: 100/80-16 RR: 120/80-14	
	FR: 90/80-16 RR: 100/70-14	
	FR: 90/80-16 RR: 110/80-14	
Wheel base	1435mm	
Net Weight	115kg	
Gorss Weight	129kg	
Apparent size	1995*690*1115mm	



Parts List

- A. Head Lamp
- B. Rear View Mirror
- C. Throttle and Brake Lever
- D. Front Turning Signal Lamp
- E. Front Shock Absorber
- F. Front Tire
- G. Seat
- H. Side Stand
- I. Center Stand
- J. Rear Side Motor
- K. Rear Tire
- L. Rear Reflector
- M. Rear Shock Absorber
- N. Rear Turning Signal Lamp
- O. Rear Carrier
- P. Battery Box
- Q. Front disc Brake
- R. Charging Socket
- S. Rear Side Reflector
- T. Taillight

Dashboard

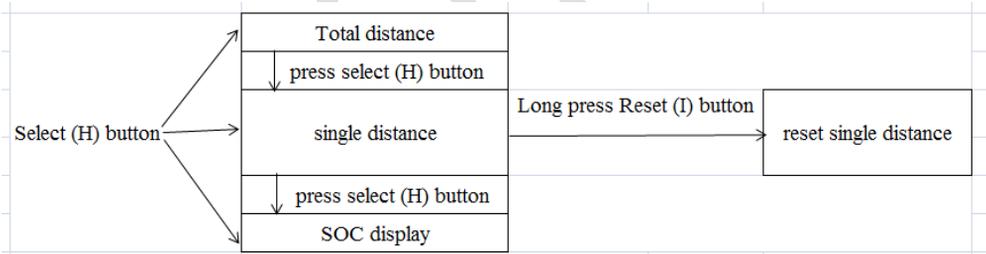
Part	Item	Function
A	Left Indicator	Light is on when indicator is on +12V, green color
B	Right Indicator	Light is on when indicator is on +12V, green color
C	High beam	Light is on when high beam is on +12V, blue color
D	MCU light	Light is on when there is any problem amber color, with CAN function
E	Battery SOC	Total 10 grid
F	Three mode	SOC%; ODO; TRIP
G	Speedometer	Indicates speed



1. Battery SOC: the battery SOC% is controlled by CAN communication.

LCD display	SOC(%) by CAN
1 st segment light on	0~10
1 st -2 nd segment light on	11~20
1 st -3 rd segment light on	21~30
1 st -4 th segment light on	31~40
1 st -5 th segment light on	41~50
1 st -6 th segment light on	51~60
1 st -7 th segment light on	61~70
1 st -8 th segment light on	71~80
1 st -9 th segment light on	81~90
1 st -10 th segment light on	91~100

2. Select(H) button: (Unspecified, long press 3 seconds)



2.1 With CAN function, if there is an error code when displaying ODO, long press Select(H) button to enter the display error code, the error code is displayed in sequence, if the error is repaired, the display mode will be exited; if it is not repaired, press Select(H) button in 5S to exit the error display.

2.2 Adjust backlight brightness: Press Reset to adjust the brightness of 4 level backlight (100%->75%->50%->25%->100%)

2.3 Press Reset and Select 3S simultaneously to switch metric system

2.4 LCD characteristics:

1. Operating temperature: $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$

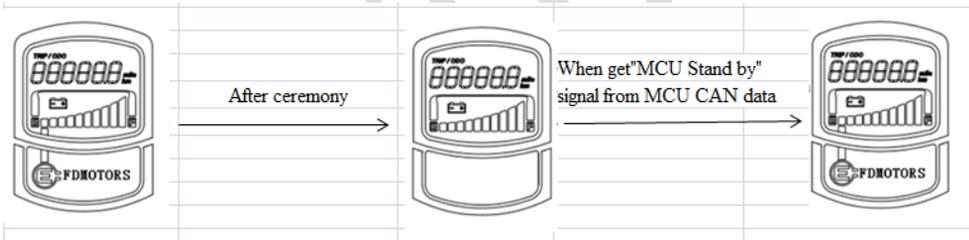
Display effect check method:

- (1) When there is no backlight, there is no obvious base shadow at the lower 30 degree angle; the lower 60 degree angle number is easy to recognize.
- (2) When there is no backlight, the vertical viewing angle should not be dim.

2.5 Backlight color: blue (the backlight level is the brightness saved in the last shutdown, the default backlight level is 100%)

3. MCU CAN

3.1.LCD SEGMENT OPERATION



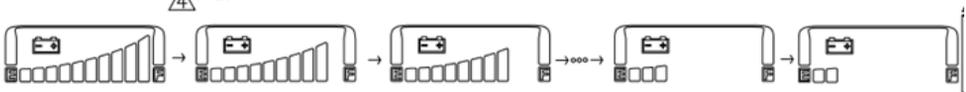
3.2.BUZZER OPERATION:

After KEY is ON, if get MCU Stand by, the buzzer beeping sound one time for 2 second. And the "FD motors" appear. It means it ready to go.



4. BATTERY CAPACITY WARNING SEGMENT:

(When entering 0~20% SOC by can)



6. DTC (Diagnostic Trouble Code)

6-1. BATTERY

DTC Express at the speedometer		CAN_Messa ge		Troubles Name
Battery 1	Battery 2	Byte	Bit	
A10	F10	No data		BMS CAN Signal Failure
A11	F11	1	0	Charging Over Voltage
A12	F12		1	Charging Over Current
A13	F13		2	Discharging Under Voltage
A14	F14		3	Discharging Over Current
A15	F15		4	Short circuit
A16	F16		5	Charging Over Temperature
A17	F17		6	Discharging Over Temperature
A18	F18		7	Charging Under Temperature
A19	F19	2	0	Discharging Relay Failure
A20	F20		1	Charging Relay Failure

6-2. MCU

DTC Express at the speedometer	CAN_Message		Troubles Name
	Byte	Bit	
C10	No data		MCU CAN Signal Failure
C11	5	0	Identification error
C12		1	Over voltage
C13		2	Low voltage
C14		3	-
C15		4	Motor did not start
C16		5	Internal volts fault
C17		6	Over temperature
C18		7	Throttle error at power-up
C19	6	0	-
C20	6	1	Internal reset
C21		2	Throttle open or short
C22		3	-
C23		4	-
C24		5	-
C25		6	Motor over-temperature
C26		7	Hall Galvanometer sensor error

Ignition Key

Key Position	Description
On	Key cannot be taken out when power is on.
Off	Key can be taken out when power is off
Lock handle bar	To prevent theft, 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.



When you want to change the oil. Please follow above picture. It need 125 ml gear oil.

Left handle bar controls

Headlight Switch	High Beam – Push switch up Low Beam – Push switch down
Signal 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 the button on the left.
Left Brake Lever (CBS)	When left Brake Handle is compressed the front/rear wheel will brake together to a stop

Right handle bar controls

Right Brake Lever	When right brake handle is compressed the front wheel will brake to a stop. To start, turn the throttle counter clockwise.
Throttle	Turn throttle counter clockwise to increase speed.
Warning Light	1. Slide switch to the left , front and rear turn light on. 2. Slide switch to the right, front and rear turn light off.
Reverse	1. Press down (red button), the vehicle runs in backward condition. 2. Press again (red button), the vehicle runs in forward condition



Accelerating and Braking

Throttle Tips

1. Turn the key to the 'ON' position, Press the starting button and you will hear a beeping sound. it means it is ready to go. And **FD motors** will be appear on dashboard. .then you can start to run the scooter.
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. The motor makes a small electromagnetic noise when turning the Throttle to start. This is normal.
6. Please, for your safety and security, take the key out when you are not riding.

Braking Tips

1. For safety, this vehicle has a CBS system, when braking rear brake lever, front and rear brake pump working together, when braking front brake lever, only front brake pump working.
2. Less frequent sudden braking will increase range entirely. **If running under top speed, do not continually operate at full throttle. Frequently releasing the throttle and running with inertia will help to much increase your range. This motor has good torque and the inertia momentum is enough to run some distances without electric power.**

Battery Gauge and Charging Instructions

Grid	Description
10 grid	While riding, when the battery is fully charged the dashboard shows 10grid.
1 grid	When the dashboard shows 2 grid, that means there is not much power remain in battery. Ride at " Lower speed" you can get more range and find the nearest charging point.

Charging

- ◆ The battery for this vehicle can be charged on the vehicle or be taken out, maintenance free D/C battery. The owner must use the factory-supplied charger with an 110V (or 220V) outlet.
- ◆
- ◆ Turn off ignition switches while charging the battery. Plug one side to an 110V (or 220V) outlet and the other into the charging plug on the vehicle (located under the seat).
- ◆ The charging time is 3.5hour (80%) for lithium battery. To fully charge battery, charging time will be 5 hours.

To keep the battery in good condition, charge it if the SOC lower than 10%. Please keep the battery in 50% to 60% of SOC.if the vehicle has not been ridden for a long time .

Always check the battery SOC while you are riding and be sure that it does not get too low too often .

Battery Longevity

The driver should, if possible, charge the scooter if the SOC lower than 10% as this will help the battery's life. The life of the Lithium battery is 1000-1200 deep cycles (100% deep discharged).

Note: Pls stop the charging when the charging display is around 90%. It would be extended battery life .

Performance

 A range of 70Mile (100km) has been recorded, yet the distance and speed depend upon various elements of the rider's style and the road conditions. A 45km/h 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 charge is low.

 After each trip, 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 lengthen the life of the battery) and can be charged at any time in the cycle of the battery.

Maintenance

This electric motorbike represents a new generation of environmentally friendly two-wheeled 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 tires, suspension 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 mechanical parts.
 - Always check your vehicle and perform necessary routine maintenance - tires, brakes, nuts and bolts.
 - For your safety, perform routine maintenance on your vehicle. This will lower the potential for damage.

Maintenance Schedule

Mileage	500	1000	2000	3000	4000	5000	6000	Maintenance
Battery			C				C	
Change motor oil	yes		yes			yes		
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	
Change motor oil.		yes			yes			
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 at which the vehicle is driven. Under optimal conditions keep a steady 45km/h rate speed), a range of (93 **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

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

A. When the driver turns the ignition key, two 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 throttle and you are ready to go. It cannot be any easier.

4. What about maintenance?

A. This motor bike 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 F3 and F5?

I. ALL parts can be purchased directly from the supplier including batteries, tires, bulbs, body shells, seats etc.

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

A. Due to its waterproof wiring bundle and Direct Current source and 72V 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. 90% of SOC charged of the battery will lengthen its life cycle .

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, 1000-1200 Deep Cycles for lithium battery.

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

A. The dashboard, which clearly indicate the power level of the batteries in your vehicle.

I. FULL: 10 grid



II. Low Voltage:  start to blink, SOC lower 20%.

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

A. necessarily. If it is in warranty. Take it back to the seller to change.

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. 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?

Go to www.fdmotors.cn for warranty information on this model.

Troubleshooting

Problem	Condition	Check	Solution
When I turn my vehicle on nothing happens. (lights off, speedometer off, horn off)	1. Light off, horn off, press starter button, throttle, motor can work	1.Check DC-DC input and output voltage is work or not, check the plug is tighten or not, check the fuse is fusing or not.	1.Change DC-DC convertor , Fasten plugs, or change fuse.
	2. Light off, horn off, press starter button, throttle, motor can not work	2.Check battery connectors is loosen or not, ignition lock connectors is loosen or not, and check the battery output voltage is normal or not.	2. Re-connect all connectors, or change a battery to check.
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 an inner hexagonal tool to adjust the throttle or change a new one.
	The throttle can work, but vehicle can't work	Check the connectors between throttle and MCU is loosen or not.	Re-connect the connectors.
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.
Remark: Pls contact local dealer if u can't solve the problem.			

