



TEV User Manual

Shandong Runhorse Electric Vehicles Co., Ltd.

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Foreword

Dear Customer,

Thank you for choosing the TEV Electric Vehicle by Shandong Runhorse Electric Vehicles Co., Ltd. The TEV Electric Vehicle is powered by lithium-ion batteries, offering zero emissions, low noise, energy efficiency, and convenience, making it a modern and environmentally friendly mode of transportation.

Before driving your new vehicle, please carefully read this TEV User Manual. This manual provides essential information on operating techniques, product warranties, after-sales services, and maintenance recommendations to ensure safe driving and proper vehicle care.

This guide covers the structure, performance, and maintenance of the electric vehicle, presented in simple language with illustrations. It is a valuable resource for both users and service personnel, so please keep it in a safe place.

Due to ongoing advancements and improvements in product technology to meet diverse customer needs, the company reserves the right to make changes without prior notice.

October 2024

Shandong Runhorse Electric Vehicles Co., Ltd.

Important Notices

- . Shandong Runhorse Electric Vehicles Co., Ltd. is solely responsible for the revision and explanation of this manual and reserves the right to make product improvements after printing without further notice. Some images in this manual are for reference only; actual products may vary.
- . Please keep this manual in the vehicle for easy access. It is an integral part of the vehicle's documentation. If you sell the vehicle, ensure this manual is passed on to the new owner.
- . If any issues arise during use, do not attempt to disassemble the vehicle. Seek professional assistance. Any damage resulting from improper handling will be the user's responsibility.
- . When replacing parts, please use certified components from Shandong Runhorse's suppliers. Parts from other suppliers will not be covered under warranty, and any resulting issues will be the customer's responsibility.
- . All vehicle designs adhere strictly to industry standards. Unauthorized modifications or installations are prohibited. Any damages caused by such modifications will be the user's liability.
- . For any questions regarding this manual, please contact Shandong Runhorse Electric Vehicles Co., Ltd. or authorized service partners for further clarification. We welcome all feedback from our users.

October 2024

Shandong Runhorse Electric Vehicles Co., Ltd.

Chapter 1 Vehicle Identification Marks

1.1 Vehicle Identification Number (VIN)

The VIN is located on the right side of the vehicle, under the seat on the frame cross-member (See Figure 1).

1.2 Motor Code

The motor code is located on the rear of the electric motor (see Figure 2)

1.3 EEC Nameplate

The nameplate is riveted on the center of main frame. below the handbrake.

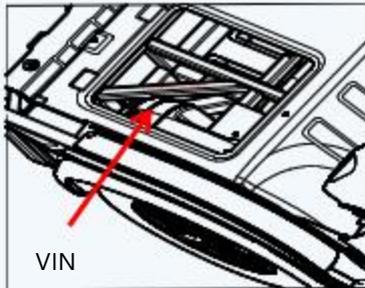


Figure 1

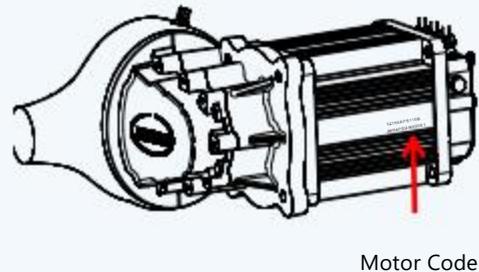


Figure 2

Chapter 2 New Vehicle "Break-In" Period

2.1 Break-In

- 1) During the break-in period, reduce load and speed, and frequently check the tightness of all vehicle components.
- 2) After the break-in period, replace the gear oil in the motor reducer during the first maintenance.

2.2 Pre-Drive Inspection

- 1) 1.Check if the battery level is above the warning mark (ensure full charge for long trips).
- 2) 2.Check for loose fasteners and connections, especially steering bolts, tire screws, and wheel hub nuts.
- 3) 3.Ensure tire pressure is adequate.

2.3 Starting and Driving the Vehicle

While stationary, set the gear selector to "N" (Neutral), turn the ignition key to the "ON" position, and wait for the dashboard to display the standby screen. Press the brake pedal, and the "READY" light will illuminate, indicating the vehicle is powered on.

While holding the brake pedal, switch the gear selector to "D" (Drive) and gently press the accelerator to move forward.

2.4 Charging

Turn off the ignition before charging. During charging, the vehicle's drive restriction feature will activate to ensure equipment safety.

- 1) Control ignition switch
- 2) Control door lock/unlock

Chapter 3 Pre-Drive Instructions

3.1 Keys and Usage

Each vehicle comes with two sets of keys (each set includes a mechanical door key and a remote control with ignition and door lock functions). One set should be stored as a backup.

Key functions: [Explanation of key functions]

3.2 Door Lock and Ignition Switch

- 1) Wait at least 2 seconds before restarting the vehicle after turning it off. Do not repeatedly turn the ignition on and off in quick succession. When driving, never turn off the ignition switch.
- 2) Door Lock/Unlock: With the ignition on, press the door lock/unlock button on the control panel. The button's light will turn on, and both doors will lock. Press again to unlock.

To unlock the door with a mechanical key, insert it into the door keyhole and turn it clockwise, then pull the door handle outward to open the door. Turn the key counterclockwise to lock the door.

When the system is off, you can use the remote control to lock and unlock the doors by pressing the respective buttons.

WARNING

- 1) To prevent the 12V auxiliary battery from discharging during storage, a battery cut-off switch is installed on the negative terminal. This switch remains off during transport and should be switched on when using the vehicle. If the vehicle is not in use for over a month, switch it off.
- 2) The vehicle's doors will automatically lock when the speed reaches 15 km/h.
- 3) When shifting gears, ensure the vehicle is fully stopped before changing gears to avoid damage to the gearbox or motor.
- 4) When starting, gently press and release the accelerator to prolong the lifespan of the motor and battery.
- 5) Tire pressure affects the vehicle's performance and comfort. Keep tire pressure around 300 kPa and replace damaged or worn tires promptly.
- 6) The motor controller and high-voltage components carry high voltage. Only qualified personnel should handle them to avoid electric shock.
- 7) The vehicle is equipped with a hill-start assist feature that prevents rollback for up to 3 seconds. For extended parking on slopes, use the parking brake.

Chapter 4 Main Technical Specifications

4.1 Speed 80km/h

Item	Parameter
Size: L×W×H (mm)	3685×1400×1910
Wheel Base (mm)	1800
Front Track/Rear Track (mm)	1120/1160
Chassis Clearance (mm)	160
Min.Turning Radius (m)	≤4.2
Speed (km/h)	80
Climbing Requirements (%)	≤25
Loading Capacity (kg)	650
No-load Braking Distance (m)	7.5
System Voltage(v)	89.6V 14.8Kw
Battery Type	Lithium iron phosphate battery(LFP)LiFeP04 230Ah/304 Ah
Front/Rear Brake Type	Disc brakes/ABS
Steering System	EPS

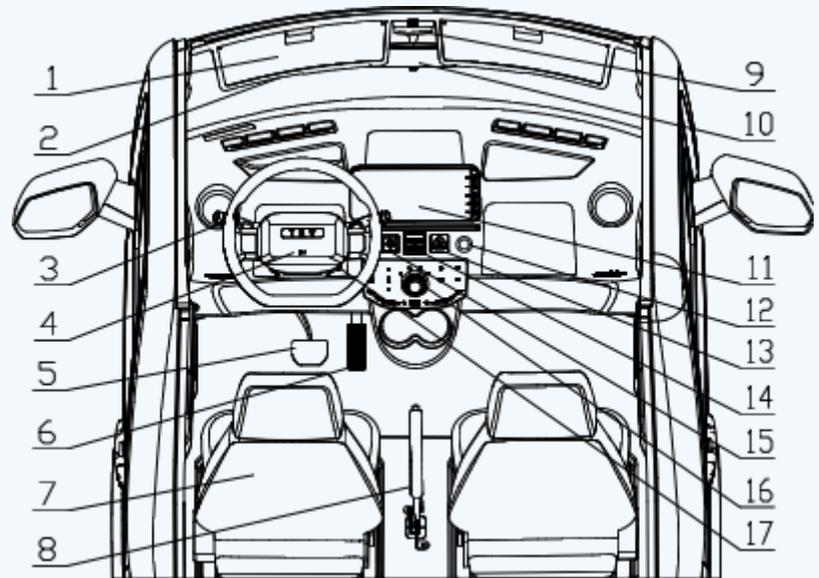
4.2 Speed 65km/h

Item	Parameter
Size: L×W×H (mm)	3685×1400×1910
Wheel Base (mm)	1800
Front Track/Rear Track (mm)	1120/1160
Chassis Clearance (mm)	160
Min.Turning Radius (m)	≤4.2
Speed (km/h)	65
Climbing Requirements (%)	≤20
Loading Capacity (kg)	600
No-load Braking Distance (m)	7.5
System Voltage(v)	89.6V 7.5Kw
Battery Type	Lithium iron phosphate battery(LFP)LiFeP04 150Ah/230/304Ah
Front/Rear Brake Type	Disc brakes/ABS
Steering System	EPS

Chapter 5 Function Overview and Operation

5.1 Component Functions and Operating Positions

1. Storage box
2. Sun visor
3. Combination switch
4. Electric horn switch
5. Brake pedal
6. Electronic accelerator pedal
7. Seat
8. Parking brake handle
9. Interior lights
10. Streaming media rearview mirror
11. Combination meter
12. Cigarette lighter socket
(12V power supply)
13. Emergency light switch
14. Window lift switch
15. Exterior mirror adjustment switch



16. Control panel
17. Ignition switch

5.2 Function and Operation Introduction

1) Ignition Switch: located on the right side of the combination switch guard below the steering wheel. turned on by a mechanical key. has 3 gears.

LOCK Gear: starting&off gear;

ACC Gear: Not activated

ON Gear: In "N" position, the high and low voltages are powered on. The MCU is precharged; step brake pedal , the vehicle is ready to drive.

Press the brake pedal and shift into gear, then can drive.

2) Combination Switch

① Light control switch on the left

In "ON" position, forward or backward mean turn right or left .

(note: low beam as daytime running lights, stay on when turned on).

The rear fog light switch is not activated.

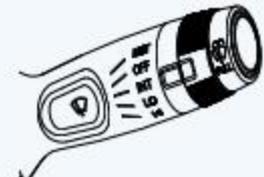
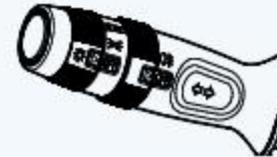
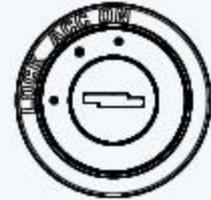
② wiper control lever on right

This wiper has two speeds and an automatic reset function.

(LO)Sets the wipers to low speed (HI)Sets the wipers to high speed

(OFF)Wiper motor stops working

Pulling the lever upward (PULL) activates the washer, spraying water to clean the windshield automatically.



WARNING

- 1) Do not dust the dry windshield with a wiper to avoid scratching the glass or damaging the wiper. Spray washing liquid before using the wiper, and do not use a scrubber when there is no washing liquid.
- 2) Remove snow and frost from the glass before using the windshield wiper in winter.
- 3) Check whether the wiper and scrubber system work normally before driving.
- 4) Use glass water as lotion, and use low temperature resistant glass water in cold season.

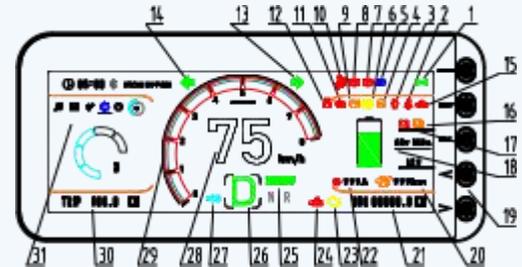
3) Horn Button

Located on the steering wheel cover, press to sound the whistle.

4) Combination Instrument

Combined instrument includes vehicle operation information and entertainment functions, driving can understand vehicle speed, battery power, running current, fault alarm and other information, as well as Bluetooth phone, MP5 and other multimedia entertainment functions, see the description for details.

- | | |
|--------------------------------|-------------------------|
| (1) Clearance indicator lights | (5) High beam indicator |
| (2) Driver seat belt reminder | (6) ABS failure |
| (3) Door open indicator light | (7) Parking indicator |
| (4) Power limit indication | |



- (8) Brake fluid level alarm
- (9) EPS Fault Indication
- (10) Driver leaving seat reminder
- (11) Power battery failure
- (12) Abnormal power battery temperature
- (13) Right turn indicator
- (14) Left turn indicator
- (15) Power system failure
- (16) Power battery low power alarm
- (17) Auxiliary battery low power alarm
- (18) Power battery voltage, power (SOC)
- (19) Multimedia key
- (20) Remaining mileage
- (21) Total mileage
- (22) Ammeter
- (23) OBD
- (24) Motor and controller overheat alarm
- (25) Ready to run
- (26) Gear position indicator
- (27) Driving mode indicator
- (28) Speedometer
- (29) Motor tachometer
- (30) Subtotal mileage
- (31) multimedia

Alarm Light and Indicator Light

	<p>High beam indicator light</p> <p>Turn on the high beam ,the indicator light will come on</p>		<p>Turn on the clearance light</p> <p>Turn on the indicator light and the indicator light is on</p>
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	<p>Left and right turn signal warning indicator light</p> <p>When the warning light switch is turned on, both left and right turn signal indicators flash; when the left or right turn signal switch is turned on, the corresponding left or right turn signal indicator lights flash</p>		<p>Ready to run</p> <p>When the system is ready, this indicator light will come on, indicating that the vehicle can be driven normally</p>
	<p>Parking indicator light</p> <p>When the handbrake is pulled, the indicator light will come on; it is strictly forbidden to drive with the handbrake pulled and the indicator light on</p>		<p>Brake level alarm light</p> <p>When the fluid level in the brake oil cup reaches the limit, the indicator light is lit</p>
	<p>Driver exit warning light</p> <p>When the driver leaves the vehicle, the light flashes and buzzes, and the N gear does not alarm.</p>		<p>Motor and controller overheating alarm light</p> <p>This indicator lights up when the motor or controller temperature exceeds the limit.</p>
	<p>ABS fault indicator light</p> <p>The ABS system is faulty and the indicator is on</p>		<p>EPS fault indicator</p> <p>The EPS system is faulty, and the indicator lights up</p>
	<p>Main driver seat belt reminder</p> <p>When the vehicle starts and the seat belt is not fastened, the seat belt warning sign of the main driver flashes; When the speed reaches 15km/h, the sign flashes and buzzes.</p>		<p>Remaining mileage mark</p> <p>The data on the right of the logo is the remaining driving range estimate, and the arrow on the left indicates that the charging port is on the left side of the vehicle</p>

	<p>Power system failure</p> <p>This fault light is lit, indicating a failure of the vehicle power system</p>		<p>Fault Alarm Indicator (OBD)</p> <p>When the fault light is on, you can use the detection device through the OBD interface to view the specific fault information</p>
	<p>Door status indicator</p> <p>Either door is opened, the indicator light is lit; When both car door locks are in second gear, the indicator lights go off.</p>		<p>Power limit indicator light</p> <p>When the battery is low or the vehicle is in the second-level fault state, this indicator light is on and the vehicle is limited in power.</p>
	<p>Power battery failure</p> <p>This light indicates that the power battery is faulty</p>		<p>Abnormal power battery temperature alarm</p> <p>The light indicates that the power battery temperature exceeds the limit</p>
	<p>Low power battery alarm</p> <p>If the power battery SOC is below 10%, this indicator lights up and blinks</p>		<p>Auxiliary battery low power alarm</p> <p>When the auxiliary battery voltage is lower than 12V, this indicator lights up and blinks</p>

Alarm lights are used to alert vehicles of failure, and indicator lights indicate vehicle functions.

Speedometer and Odometer

The speedometer displays the speed in km/h or mph, and the odometer displays the mileage in km or mile, which is divided into total mileage and subtotal mileage. The subtotal mileage can be cleared by pressing the button of the instrument.

Ammeter

The speedometer displays the speed in km/h or mph, and the odometer displays the mileage in km or mile, which is divided into total mileage and subtotal mileage. The subtotal mileage can be cleared by pressing the button of the instrument

Drive Mode

There are two driving modes, ECO and SPORT. The default ECO mode can be switched by E/S key on the center control panel.

Multimedia Key Function

There are 5 physical keys on the right side of the combined instrument, and 6 touch keys outside the control panel, 5 of which have the same function as the instrument keys, and the other is the volume key.



Key: Short press on the main interface to open the settings; short press on the settings interface to set



Key: Short press on the main interface to switch mileage units; on the setting interface to confirm



Key: Short press on the main interface to pause/play music; press to return to settings



Key: Short press on the main interface to switch to the previous song; set the left/up



Key: On the main interface, short press to switch to the next song; on the setting interface, right/down

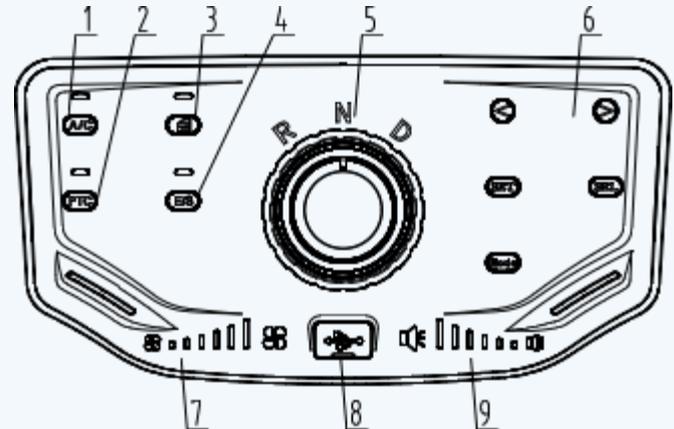
Clock setting

- (1) Press and hold the MODE button to enter the hour setting, and short press the SET button
- (2) Select the tens or units of the hour, and use the > < key to add or subtract values;
- (3) After the hour setting is completed, short press the MODE button to enter the minute setting,
- (4) Short press the SET button to select the tens or units of the minute, and use the > < key to add or subtract values; after the setting is completed, short press the MODE button to complete the time

5) Control Panel

The control panel includes switch control functions such as gear knob, air conditioning, driving mode and multimedia.

1. Air conditioning cooling switch
2. Air conditioning heating switch
3. Door lock switch
4. Driving mode
5. Shift knob
6. Multimedia button assembly
7. Air conditioning air volume button
8. Multimedia USB port
9. Multimedia volume button



Air Conditioner Switch

- a. Cooling switch: Press the  button switch, the indicator light on the top lights up, the air conditioning turns on the cooling function, press the  (large) button of the air conditioning air volume button to increase the air volume, press the  (small) button of the air volume button to reduce the air volume, press the  (small) button until the air conditioning cooling is turned off.
- b. Heating switch: Press the button switch  , the indicator light on the top lights up, the air conditioning turns on the heating function, the air volume adjustment is the same as cooling, press the  (small) button until the air conditioning heating is turned off

Door lock switch

Press this switch, the upper indicator light will light up and the door will be locked. Press it again, the upper indicator light will go out and the door will be unlocked.

Driving mode

Tap this switch when the car is parked to switch between ECO and SPORT driving modes. ECO is the default driving mode. It is recommended to drive in this economic mode unless there are special circumstances.

Gear Selector Knob

When the gear selector knob is in the "N" position, the vehicle is in neutral. Press the brake pedal, turn the knob to the right to the "D" position, then press the accelerator pedal to move the vehicle forward. To reverse, press the brake pedal, turn the knob to the left to the "R" position, then press the accelerator pedal to move the vehicle backward.

Multimedia Buttons

The multimedia button assembly functions as external media buttons for the instrument cluster, with the same functionality as the buttons on the instrument cluster.

Multimedia Volume Buttons

Press the volume up button  to increase the multimedia volume, and press the volume down button  to decrease the multimedia volume.

Multimedia USB interface

It is the signal source interface of the instrument cluster multimedia MP3 and MP5.

6) Brake Pedal

Release the accelerator pedal and depress the brake pedal to smoothly decelerate or stop the vehicle. A brake signal is also required for vehicle startup and gear shifting.

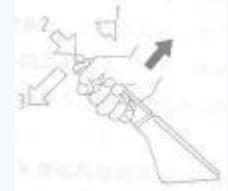
WARNING
Avoid harsh braking under non-emergency conditions to prevent potential damage to components.

7) Accelerator Pedal

Lightly press the accelerator pedal to initiate slow movement of the vehicle, controlling forward or reverse speed. Always monitor the road and pedestrians ahead and to the sides, adjusting speed as necessary.

8) Parking Brake Lever

When parking, grip the lever and pull the parking brake lever upward to its tightest position, engaging the parking brake. Before starting the vehicle, grip the lever, press the control button, and push the lever down to its lowest position to release the parking brake.



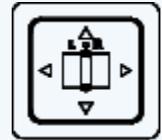
9) Hazard Warning Light Switch

In emergency situations, press this switch to activate the hazard warning lights, alerting vehicles behind you to avoid rear-end collisions.



10) Exterior Rearview Mirror Adjustment Switch

Use this switch to adjust the left and right rearview mirrors to ensure you can see the road conditions behind the vehicle from the sides. Set the switch to the "L" or "R" position and press the up, down, left, or right buttons to adjust the corresponding mirror's angle.



11) Window Lifter Switch

This switch controls the windows on doors. Press the switch to lower the window; pull the switch to raise the window. The window lifter supports one-touch up and down functionality.

12) Digital Rearview Mirror (Optional Equipment)

The digital rearview mirror displays a real-time view of the road behind the vehicle through a camera, offering a wide field of view, reducing blind spots, and enhancing driving safety.

Button Functions:

① Up Scroll Button ② Screen Off/Confirm Button ③ Ambient Light Sensor ④ Down Scroll Button

Screen Off/Confirm Button: Short press to control screen sleep or wake-up. Long press for three seconds to enter the parameter settings menu. Navigate the menu using the confirm, up scroll, and down scroll buttons located on the rear of the mirror.

Ambient Light Sensor: Automatically adjusts screen brightness based on ambient light. Do not obstruct the sensor.

Up/Down Scroll Buttons: When the screen is active, use the scroll buttons to adjust the field of view.

13) 12V Cigarette Lighter Socket

This socket functions as a 12V power outlet with a maximum load current of 10A. It is not equipped with a cigarette lighter.

14) Seat

Seat Adjustment

① Seat Position Adjustment:

Grip the adjustment lever **(1)** and turn it to the left. Apply slight body pressure to slide the seat to the desired position, then release the lever to lock the seat in place.

② Headrest Adjustment:

The headrest can be adjusted up or down using the positioner **(3)**.

③ Seat back Angle Adjustment:

Hold the seat back angle adjustment handle **(2)** and rotate it backward. Adjust the seat back according to your body's inclination, then release the handle to lock the seat back at the desired angle.



15) Auxiliary battery switch

The auxiliary battery disconnect switch is located at the charging socket of the power battery (inside the rear side panel). This switch needs to be turned off when the vehicle's low-voltage circuit is being maintained or the vehicle is not used for more than 30 days.

16) Charging Equipment

The EV charging socket is positioned on the left rear side panel of the vehicle body, at the rear end of the left front wheel.

Rotate the charging port cover to the left to remove it. Align the charging port cover with the socket card slot and rotate it to the right to tighten it securely.

This vehicle is equipped with a fully automatic intelligent charging on-board charger. The charging pile is compatible with household electricity. The external charging interface is AC 220V input, and an input current $\leq 16A$.

17) Domestic AC charging

- 1) Insert the charging gun correctly into the vehicle charging interface. Ensure a tight connection between the charging gun and the interface. Hearing a "click" indicates proper connection.
- 2) Connect the other end of the charging gun to a domestic AC charging pile or a standard 220V power socket.
- 3) At this time, the vehicle dashboard or charging indicator light will show the charging status. During the charging process, information such as battery power, charging current, real-time battery temperature, and charging time can be viewed through the vehicle display screen. (As shown in the figure).
- 4) When the vehicle is fully charged, the charging equipment will automatically stop charging.



WARNING

- 1) Insert the charging gun into the vehicle socket first, then plug in the power plug. When charging is completed, unplug the power plug first and then unplug the charging gun. It is prohibited to plug in the charging gun with load or unplug the charging gun with load during charging.
- 2) The power socket specifications are voltage of $220V \pm 15\%$, current of 16A, and the wire diameter of the copper conductor is ≥ 2.5 square millimeters.
- 3) Do not replace the power cord without authorization. A three-core cable with a grounding wire should be selected and the grounding wire should be installed correctly.
- 4) Do not charge in places exposed to rain, high-temperature and confined places, or places where sundries or flammable and explosive materials are piled up.
- 5) After driving in summer, wait for the battery to cool down before charging. Do not charge under direct sunlight.
- 6) In winter, when the battery is in a low-temperature state, the charge and discharge performance will be reduced. Charge immediately after use.
- 7) If there are abnormal sounds, odors, sparks, smoke, etc. during charging, immediately unplug the power supply and check.
- 8) Avoid children from touching the charging parts to prevent electric shock.

Chapter 6 Operating Conditions and Precautions

6.1 Conditions of Use

- 1) It is suitable for driving on flat roads and should not be driven on roads with poor road conditions for a long time.
- 2) Ambient temperature: -20°C to 40°C .
- 3) Relative humidity: $\leq 85\%$.
- 4) Air pressure: 86-106Kpa.

6.2 Driving Essentials

A. Energy Efficient Driving:

- 1) Avoid unnecessary parking.
- 2) Accelerate slowly, avoid rapid acceleration.
- 3) Maintain a stable cruising speed.
- 4) Avoid driving at high speeds.
- 5) Maintain a small load to reduce the weight of the car.
- 6) Maintain normal tire pressure.
- 7) Turn off the heating and cooling system as much as possible.

B. High Speed Driving:

- 1) The higher the speed, the longer the braking distance. Control the brake pedal according to the speed and

braking distance.

2) When passing through mountain passes, oversized vehicles or tunnels at high speed, reduce the speed to prevent side wind effects.

3) Driving at low speed on rainy and snowy days, steering and braking are out of control due to low visibility and slippery road surface.

Vehicle Load Driving:

Strictly control the load within the standard load to prevent accidents.

Wet Road Driving:

When driving in the rain, wet or snow and ice roads, the tire adhesion decreases, the speed should be reduced, avoid urgent start, rapid acceleration, rapid steering and rapid braking, use less brakes, and slow down in advance.

WARNING
<p>1) Winter snow driving can be replaced with snow tires or ordinary tires with snow chains.</p> <p>2) Snow tires are specially designed for snow and ice roads, and the replacement should be the same size as the standard tires. Pay attention to the direction of tire rotation, and install the same tires on both wheels of the rear axle to ensure safety.</p> <p>3) The use of snow chains should comply with laws and regulations, only installed on the driving wheel, the use of a small section of the chain, protrating the tire profile of about 10 mm, while driving at a low speed, do not drive on a snow-free road for a long time, so as not to damage the vehicle and roadbed.</p>

Braking and Parking

WARNING

- 1) Brake often produces whistles, should go to the company's after-sales service station to check.
- 2) Do not brake continuously for a long time or put the brake pedal to rest when driving, so as to avoid overheating failure or permanent damage to the brake.
- 3) Water, sand, dust, etc. entering the brake will reduce the efficiency, and should be cleaned and kept dry.

Vehicle Parking

If the vehicle is idle for more than one month for a long time, the precautions are as follows:

1. Park in a covered, flat, dry and ventilated area.
2. Make sure the parking brake handle is tight.
3. Turn off the auxiliary battery power switch to prevent power loss.
4. Check the electricity every month, store the lead-acid auxiliary battery on full charge, and store 40%-50% of the power lithium battery.
5. Clean and protect body paint parts with protective wax.
6. Sprinkle talcum powder on the rubber sheet of the wiper, not close to the glass.
7. Cover the vehicle with fabric or perforated plastic sheeting cover, do not use sealed plastic sheeting cover.
8. Inflate the wheel tire to 50Kpa more than normal, and check the tire pressure regularly.

Emergency handling

Once there is a dangerous emergency in the car, immediately press the danger alarm light switch, stop the car into a safe zone, and place a triangle warning sign in the direction of the car that meets the requirements of the regulations, and the reflective surface faces the direction of the car.

Take measures to:

In the event of an accident, be sure to keep calm, and then choose the treatment method according to the situation.

- 1) If not directly involved in the accident, stop at least 10 meters away from the scene of the accident.
- 2) Parking on the highway should not block emergency access.
- 3) Pull out the starting key of the accident vehicle and turn on the danger warning light.
- 4) Illuminate the accident site with headlights at night.
- 5) If the door is blocked, do not try to break the front windshield to escape, because it is difficult to break, and the side and rear Windows are easier to break.
- 6) Place a red triangle warning sign to indicate an accident at a distance where it can be clearly seen by regulations.
- 7) Call emergency organizations and report as accurate information as possible.
- 8) In the case of rear-end collision on the road, especially in the case of low visibility, the risk of being hit by subsequent vehicles is high, and you should immediately leave the car and retreat to a safe area outside the guardrail.
- 9) If you smell chemical products and other odors, do not smoke or light fires and stay away from the area.

- 10) In case of fire, even if the fire is small, use fire extinguishers, blankets or sand to extinguish the fire, do not use water.
- 11) Contact your local traffic authority for help.

Casualty Management:

Someone who is injured should never be left behind, and help should be provided if not directly involved in the accident.

- 1) Don't watch the injured.
- 2) Contact professional help and stay beside the injured person to comfort them, so that they do not panic.
- 3) Loosen or cut off the safety belt that restricts the injured person.
- 4) Do not give the injured person anything to drink, so as not to aggravate the internal injury.
- 5) Do not move the injured person except under special circumstances.
- 6) Only in the case of fire, sinking into the water, falling off the cliff and other urgent danger to remove the injured, and do not pull the limbs or bend the head when moving out, to make the body flat.

First aid kit:

The car is equipped with a first aid kit for emergency use.

Chapter 7 Vehicle Maintenance and Repair

After the vehicle is driven for a long time, the friction surface of the moving parts will be worn, and the working state of the systems and components will also change. In order to ensure the good use of the vehicle, it is necessary to carry out regular maintenance according to the regulations. The periodic maintenance table specifies maintenance items such as inspection, adjustment and lubrication, and the maintenance cycle is measured by vehicle mileage or months (see the maintenance manual). If the vehicle is often used in harsh conditions, the maintenance period should be shortened.

The items in the regular maintenance table are recommended to be maintained at professional maintenance points. Other simple items can be maintained by referring to this manual.

7.1 Personal Maintenance

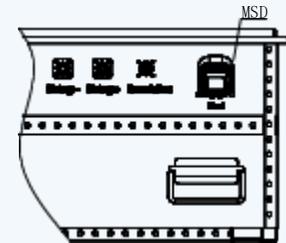
WARNING

- 1) Repairing the vehicle when the understanding of the vehicle is insufficient may damage the vehicle or bring personal safety risks.
- 2) Before carrying out maintenance work, ensure that there is sufficient knowledge and experience, and correct replacement parts and tools.

- 3) Make sure to use the correct nuts, bolts and other fasteners, the wrong use may cause parts to break or loose and cause injury.
- 4) When checking and maintaining electrical parts, it must be carried out in the case of power failure to prevent accidents.

7.2 Battery use and Maintenance

The model is equipped with a power lithium battery pack (lithium iron phosphate, nominal voltage 89.6V) and an auxiliary battery. The power battery is at the rear of the cab under the loading platform, with a service switch (MSD) at the left rear of the battery, the switch should be disconnected when the battery is inside or the vehicle electrical maintenance; The auxiliary battery is the lead-acid maintenance-free battery (12V36Ah), which is at the left behind of the power battery, and is only used for startup and central control system electricity (normal power supply). To ensure safety, the operator should observe the following precautions:



(1) Power battery use method

Battery charging

- ① Standard charging: charging with the car charger, charging when the combination of instrument charging interface start, you can view the charging status, full automatically closed.

- ② Low temperature charging: Charging below 0°C due to the need for low temperature charging heating, charging time will increase.
- ③ High temperature charging: high temperature charging in summer, put the battery pack in a ventilated and cool place to avoid direct sunlight. Charging above 45 ° C affects the battery pack service life.

Charging precautions:

- 1) Ensure that the service switch (MSD) and auxiliary battery power switch are on.
- 2) When charging, turn off the ignition switch and pull up the parking brake handle.
- 3) If you smell odor during charging, stop charging immediately and send it to the sales office for repair.
- 4) Try to use after full charge, otherwise it will cause insufficient driving range and reduced battery pack life.

It is recommended to charge the electric vehicle immediately after the end of the winter, because the system operating temperature after the battery pack discharge is above 0 ° C, charging at this time can reduce the impact of low temperature charging on the charging time.

Battery Discharge

It is recommended to use ECO mode for driving, which can reduce the high current discharge of the battery, reasonable energy recovery, increase the driving range and extend the battery life.

Battery Storage and Recharge

The storage ambient temperature of the battery is -20 ~45°C, and the optimal storage temperature is 0~25°C. The battery will lose power during storage and transportation, and will be recharged by standard charging method before use.

(2) The auxiliary battery (lead-acid maintenance-free battery) is charged automatically by vehicle. When vehicle running or power battery charging, on-board DC-DC continuously supplies power to it. When vehicle shut down and stored, vehicle control unit (VCU) regularly checks power of auxiliary battery. If it is below set value, the DC-DC will start charging automatically.

WARNING

Battery maintenance and usage precautions.

- 1) Battery replacement and maintenance must be carried out by specially personnel. forbidden to disassemble privately to prevent people from being injured by internal high voltage.
- 2) Disconnect maintenance switch before power battery maintenance.
- 3) Wear goggles, rubber gloves&shoes&work skirts when operating.
- 4) The battery interface poles must not be short-circuited. No conductive items or impurities can be placed inside.
- 5) Vehicle must not be placed in damp place or immersed in water for a long time.
- 6) Don't apply force to the battery or let it fall from high.
- 7) For lead-acid batteries, fully charge and store in dry&cool place when not in use. Lithium batteries should be stored at 40%-50% power for long. Ensure insulation, prevent heavy pressure and contact with children. Check battery power every 2-3 months and recharge if needed.
- 8) Don't discard scrapped batteries. Return them to the dealer.

7.3 Charger Maintenance

- (1) Intelligent on-board charger located rear of power battery. When charging, combination instrument lit up&display charging status and other information
- (2) The charger with automatic protection function, automatically stops when the battery is full.
- (3) Forbidden to disassemble charger for repair or commissioning, fault of charger designated maintenance point for inspection and repair.
- (4) The charger can only be used for this vehicle.
- (5) Charger's input voltage is $220V \pm 15\%$ mains frequency voltage (household electricity), with a frequency of 45-60 Hz. select 16A or above household AC power sockets . with grounded three-core cable, The wire cross-sectional area not less than 2.5 square millimeters (copper cable). Single-phase (220V) or three-phase (380V) AC charging piles are both acceptable.
- (6) Charger is prohibited in high humidity and high heat environment.
- (7) In case of abnormal situation during charging, cut off power and check immediately.
- (8) To avoid damaging charging cable, do not pull, twist or shake the cable.
- (9) Check charging system every three months. Inspect installation and wiring connection. Use clean brush or high-pressure gas to remove dust. Never wash electrical components with water.

7.4 Maintenance of Motor Controller Unit (MCU)

The motor controller is on the frame at the upper end of the motor. No user-serviceable parts. Don't open and

repair it without permission. Use it in a dry, normal temperature and clean state. Clean controller frequently to remove dirt and dust, especially corrosive substances.

Cleaning process:

- (1) Disconnect the maintenance switch (MSD) of the battery to cut off the power.
- (2) After turning off the power, wait for a few minutes to allow the filter capacitor of the controller to discharge.
- (3) Clean controller with damp cloth or high-pressure gas (do not wash with water).
- (4) Open upper cover to check fastening status of power line connection and tighten and reinforce if necessary.

7.5 Motor Maintenance

- (1) It is strictly forbidden for motor to be overloaded or stalled.
- (2) Clean dirt on motor surface frequently, especially at the heat dissipation window and the lead-out wire to ensure heat dissipation.
- (3) It is strictly forbidden for motor to be soaked in water.
- (4) Try to avoid frequently starting and stopping motor.
- (5) Check and maintain motor at least once every six months to remove dirt and accumulated dust.

7.6 Rear Axle Reducer Maintenance

Reducer without user can repair their own parts, can not open, repair or change reducer without authorization, otherwise the warranty is invalid.

The rear axle new car changes 80W-90 and GL-4 gear oil for first time in two months or 2000 kilometers, replaces it according to regulations.

Steps:

- (1) Unscrew upper oil filling screw and oil drain bolt at rear of reducer with a wrench.
- (2) After discharging gear oil, tighten the oil drain bolt clockwise;
- (3) Use small funnel to fill 1.5L gear oil at the top of reducer filling port.

Note:

- a. Inappropriate amount of gear oil can damage reducer. Excessive oil will overflow, and insufficient oil will accelerate gear wear. check the oil level accurately.
- b. Use correct type of gear oil. Wrong type will damage reducer gears.
- c. Select the appropriate type of gear oil according to local climate; otherwise it will damage rear axle.

WARNING

Lubricating oil of same grade can be used. different manufacturers or of different standards cannot be mixed. When changing oil, drain old oil first, then inject new oil. **When temperature below -26°C, the gear oil of corresponding grade needs to be replaced.**

7.7 Brake System

Check and replace brake pads regularly and fill brake hub bearing with oil.

Brake Fluid:

Brake fluid reservoir is in the middle under instrument panel in the cab. It can be seen by opening the access cover. Alcohol-based brake fluid of DOT3 or DOT4 type can be selected. The liquid level should be between upper and lower marks. When liquid level is lower than lower mark, add same type of brake fluid. Do not mix different brands.

Brake pedal:

When brake pedal is fully depressed and there are situations such as insufficient braking force, instability, large pedal stroke, blockage, noise, uneven braking, and no bouncing feeling during sudden braking, it should be checked in time.

Parking handle:

Wheels should be effectively locked when parking handle is at certain tooth between 4 and 7 ratchets. If parking brake fails or is not completely unlocked within this range, contact maintenance personnel of the after-sales service station for inspection and repair.

WARNING

Don't add the wrong fluid. Using wrong brake fluid type can damage braking system parts.

If brake fluid spills onto the frame or other parts, it may damage the surface. Wipe it off immediately.

Check and replace it every one to one and a half years to avoid reduced braking reliability and increased corrosion.

7.8 Replace the Windshield Wiper Blade

The windshield wiper blade should be checked at least twice a year for wear or breakage. The steps for removing blade are:

- a. Pull the wiper out of the windshield;
- b. Push up release card at the connection and pull down scraper assembly towards the glass to remove it;
- c. Push new blade to the wiper arm and hear a "click" sound.

7.9 Safety System

Vehicle has a main fuse and circuit fuses. If vehicle's electrical functions don't work, check insurance system first. Two fuse boxes in main circuit. One is on the right end of instrument panel, the other fuse box at the positive terminal of auxiliary battery. To replace fuse, open the cover. The fuses inside the power battery need to be checked and replaced by professionals. Reserve (10-25)A spare fuses. If main fuse blows, comprehensively check

the circuit. When replacing a fuse, it should be in accordance with the specification. Do not use substitutes. If newly replaced fuse blows in a short time, it may indicate a serious line fault and immediate repair is required.

WARNING

Replaced with fuse of the same specification. It is strictly forbidden to increase the rating or use metal wires or strips as substitutes, otherwise it will cause wire burning and fire. If fuses are frequently burned out, the cause should be identified and the fault should be eliminated.

7.10 Tyre

1) Insufficient tire pressure can lead to overheating of tires, accelerated wear, difficult driving and high power consumption.

2) Excessive tire pressure will cause severe vehicle vibration, decreased balance and severe wear in the middle of the tire.

3) When the tread wear reaches 1.6 millimeters or more, the tire needs to be replaced.

4) When using tires, do not hit obstacles such as curbs. Driving on bumpy roads for a long distance is easy to damage tires.

5) Regularly check whether there are cuts, abnormal bulges and irregular wear on the sidewalls of tires.

6) Avoid overloading when the vehicle is running to prevent serious damage to tires and affect vehicle

performance.

7) If a tire is punctured, stop safely and replace it immediately to avoid damage to tires, rims, suspensions and steering systems.

8) Even if tires are not frequently used, cracks may appear. Cracks are a sign of aging. If tires have been installed for more than 6 years, professionals should detect and judge whether they can continue to be used.

9) Tire pressure inspection should be carried out after the tires are cooled down, otherwise the reading will be incorrect.

10) When inflating, add air slowly and check the air pressure to 300KPa.

11) Replacing tires of different sizes will lead to incorrect readings of vehicle speed and mileage.

12) Impacts from foreign objects on the road surface and others can affect the wheel alignment angles and need to be corrected at the company's authorized maintenance center.

13) Please use the tire models specified by the company to ensure vehicle performance and driving safety.

Replacement tires

- a. Loosen the nuts of the tire to be replaced with a wheel wrench. Do not remove them yet.
- b. Lift the vehicle with a jack.
- c. Remove the nuts and tire.
- d. Install the new tire and tighten the nuts by hand to fix the rim.
- E. Lower the jack and tighten the wheel nuts in a crosswise sequence with a specified torque ($110 \pm 5\text{N}\cdot\text{m}$) using a wheel wrench.

7.11 Vehicle Corrosion Protection

The paint layer on the vehicle body surface is easily damaged by dirt. Substances such as salt may corrode the paint layer and should be removed as soon as possible. Clean with neutral detergent. Do not use acidic or alkaline cleaners. Rinse with clean water after washing. If the vehicle surface is damaged or the paint layer falls off, it should be repaired in time to prevent metal exposure. Moisture under the vehicle interior mat may accelerate corrosion. Check regularly to ensure cleanliness and dryness. Do not park the vehicle in a damp or poorly ventilated place. Try not to wash the vehicle in the garage.

7.12 Interior Maintenance

The vehicle interior adopts different maintenance according to different materials:

For seats and ceilings, clean with a soft cloth dipped in neutral detergent.

For plastic accessories such as the instrument panel, use clean water with a small amount of soap solution or mild detergent. Gently wipe with a sponge or soft cloth. Then, dip a clean soft cloth in clean water and repeat gentle wiping until clean.

For floor dust and debris, clean with a vacuum cleaner. For dirty areas, wipe with a soft cloth soaked in soap solution or detergent and then clean with clean water.

WARNING

1) When cleaning vehicle, don't use inflammable substances such as thinners and household cleaners with strong alkalinity or acidity.

2) When cleaning interior of the vehicle, prevent cleaning agents or water from flowing into the gaps of electrical components to prevent short circuits.

7. 13 Vehicle Cleaning and Paint Film Maintenance

(1) Precautions for cleaning vehicle:

When using a water gun to rinse the sand and debris on the vehicle body and wheels, prevent water from splashing on the vehicle wiring harness and electrical components.

For rinsing the outer surface, gently wipe with a soft cloth. Do not use hard objects. You can gently wipe with a soft cloth dipped in neutral detergent. Do not use cleaners with strong acidity or alkalinity.

After removing the dirt, immediately wash with clean water. After washing, wipe off the water droplets with a soft cloth and let it air dry naturally.

Carefully check the paint layer. If there is a scratch, first clean and dry the damaged surface, then use a small brush dipped in the same color paint to brush the wound and let it air dry completely naturally.

(2) Body paint film maintenance

- 1) Please use a special wiping cloth for cleaning.
- 2) Avoid contact with strong acids and alkalis.
- 3) Avoid prolonged contact with volatile substances such as gasoline and engine oil. If there is a small amount of contact, immediately wipe it clean with a special wiping cloth.
- 4) Avoid hard objects from contacting the paint film surface to prevent scratches.

Waxing: It is recommended that you apply wax and polishing agent one or two times a year to protect the body paint and beautify your car. Please use high-quality car wax and polishing agent and pay attention to the manufacturer's instructions.

Chapter 8 Troubleshooting

8.1 Common troubleshooting methods

In daily use, if electric control drive and other systems don't work properly, please contact the special maintenance department of the supplier.

Item	Fault Phenomenon	Failure Analysis	Method of Exclusion
The vehicle is not running properly	Instrument display system READY	In the parking brake or the parking switch is faulty	Check the parking status, check whether the parking switch is damaged or stuck, and replace it if necessary
		Brake switch damaged or loose fastening	Check brake switch fastening or replacement
		Electronic accelerator pedal malfunction	Replace the electronic accelerator pedal if there is no problem with the circuit
		Under charge	Unplug the charger
	Instrument display system READY, can not hang forward and backward gear	Gear knob is broken	Change the gear knob
		Other electrical faults	Use fault detection equipment to find and troubleshoot faults
	Instrument display system not READY	The meter indicates the specific fault	Check for specific problems based on the fault
		The meter does not indicate a specific fault	Use fault detection equipment to find and troubleshoot faults
		VCU fault	Check the VCU or replace it
Power-on abnormal	No response on startup, instrument screen is not lit	Auxiliary battery is low	Check auxiliary battery voltage and recharge separately

		Electric lock failure	Change the electric lock	
	Boot response, the instrument display is not normal	If no battery information is displayed, the specific fault information is that the central controller box is faulty	Check the central control box and the connection line, and replace the central control box if necessary	
charging system	Meter charging interface starts and lights up but does not display charging parameters	None CAN packet signal	Check CAN line connection status, OBC to BMS to VCU to meter line	
			If the BMS is not started, check the OBD fault	
	The charging interface of the instrument starts and lights up, but the charging current is zero	Check that the battery temperature on the charging screen is high	Repair the battery or replace it	
			Power battery failure	Check the OBD fault, repair the battery, or replace it
			Charger failure	Check the OBD fault, repair the charger or replace it
	VCU fault	Check the OBD fault, and repair or replace the VCU		

	Meter charging interface is not lit	Battery charging complete	After the battery is charged, the charging interface of the meter is automatically extinguished, and the SOC can be checked after the battery is turned on
		Charging AC has no input	Check whether the charging gun is plugged in place; Check the charger CC, CP control circuit is damaged or replace the charger
		The 12V signal output module of the charger is damaged	Repair the charger or replace it
Brake failure	Brake weakness	Brake line leakage	Repair or replace
		gas in the brake line	Vent gas
		Brake master pump rubber piston failure	Replace
		Brake branch pump piston failure	Replace
	ABS does not work or work inefficiently	No power supply	Check the 12V power lines and fuses
		Bad signal from wheel speed	Check the front and rear wheel speed

		sensor	sensors and wiring
		Poor brake pedal signal	Check the brake switch and wiring
	The instrument ABS failure lamp is abnormal	CAN line fault	Check ABS to instrument CAN lines
		ABS__ECU fault	Check ABS__ECU or change
	Poor parking with hand brake	The brake cable is too loose	Adjustment
Brake cable stuck		Repair or replace	
Drive system failure	Rear axle abnormal noise	Lack of gear oil or excessive gear oil	Check gear oil
		The rear axle reducer gear gap is too large or the internal gear of the reducer is damaged	Repair or replace the reducer

Chapter 9 Transport Methods, Tools and Documents

9.1 Handling Methods

The electric vehicle is carried with a forklift to pick the bottom of its vehicle and load it onto the transport vehicle.

9.2 Vehicle on-board Tools

Each vehicle is equipped with a set of on-board tools for your daily inspection and maintenance, stored in the cab.

Vehicle Tools List		
1	Tool Bag	1 piece
2	Jack (3T Hydraulic)	1 set
3	Tire Repair Sealant	1 piece
4	Tire Repair and Inflation Pump	1 piece
5	Charging Gun Component	1 piece
6.	Tire Wrench (S = 19)	1 piece
7.	Triangle Warning Sign	1 piece

9.3 On-board document

- | | |
|--------------------------------------|------|
| 1) User manual | 1pc |
| 2) Warranty manual | 1pc |
| 3) Vehicle qualification certificate | 1 pc |

Chapter 10 Trailer Operation Specifications

1.Trailer Speed Limit

The trailer speed should be less than 50Km/h. Exceeding the speed will damage the electrical components of the electronic control system.

2.Trailer Classification Operations

(1) Trailer for Normal Transportation: Turn on the electric lock to the ON gear to start the vehicle, make the vehicle in the ready state, set the gear to N , and turn on the emergency lights.

(2) Fault Trailer (Power off, not ready, high voltage power off): Turn off the vehicle, set the gear to N , and turn on the emergency lights.

Chapter 11 Electrical Schematics

