VIVID EV

OWNER'S manual

CONTENTS

Make Vivid Memories

with our Vivid EV Neighborhood Electric Vehicles

01

Introduction

Thank you for your purchase of a new Vivid EV.

This owner's manual contains information you will need to read and understand for proper operation, maintenance and care of your vehicle. A thorough understanding of this information will help you achieve the maximum enjoyment of your new Vivid EV.

If you have any additional questions or do not completely understand anything about the operation of your new Vivid EV please contact your local Vivid dealer.

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Technical Description

Model	V4	V4L	V6
System voltage	48V	48V	48V
Motor	5KW	5KW	5KW
Seats	2+2	2+2	4+2
Max. Speed *(19.5mph from the company)*	25mph	25mph	25mph
Minimum Turning Radius (m)	3.5	3.5	4.5
Max. braking distance at a speed of 20km/h	≤4m	≤4m	≤4m
Max. Climbing Capacity (loaded)	20%	20%	20%
Overall Dimensions	3110X1180X-1890mm	3110X1180X-1890mm	3620x1180x-1890mm

03

Important Labels

Safety and Instruction Labels.

WARNING

THE SAFETY ALERT SYMBOL MEANS ATTENTION! BE ALERT!
YOUR SAFETY IS INVOLVED!

WARNING

Please read the following labels carefully before operating the vehicle, and promptly replace any labels which become unreadable or removed

01. “Security Warning”

02. “Security Warning”

Operation System

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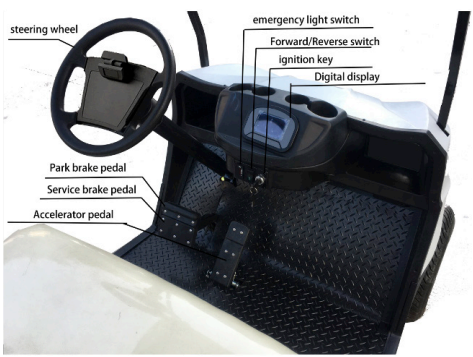
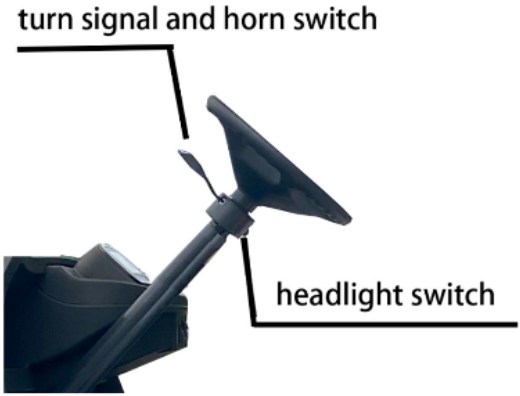
1) Schematic Figure of Operation System




turn signal and horn switch
headlight switch


Charger Receptacle

2) Functions of Operating System

Power key

1. The power key is used to switch on the electrical system of the vehicle.
2. To engage the motor and drive the vehicle, make sure the Forward/Reverse switch is in Neutral and then Insert the key and turn it clockwise to the ON position.
3. This will engage the 12V accessory system (including the headlight, turn signal, taillight, brake light and horns) at the same time allow driving of the vehicle. Choose Forward or Reverse to move the vehicle.
4. To switch the power off, make sure the brake is engaged. Turn the Forward/Reverse switch to Neutral, turn the key counterclockwise to OFF position.

Forward/reverse switch

1. This switch is a three-position switch, depressing the upper part gets the golf car move forwards while depressing the lower part gets the golf car move backwards, and the middle is neutral.

WARNING

This switch must be fully depressed into the proper position, or the electric system and motor will be damaged.

NOTE: the buzzer will beep when in the "reverse" position to give warning to the people around your golf car.

Accelerator Pedal

The accelerator pedal is used to control the speed to move the golf car. Press it down slowly to increase the speed. The car will speed up with the gradual stepping down the accelerator pedal, eventually reaching the full speed when the pedal is stepped down to the bottom. The golf car slows down with the lifting of the pedal. When the pedal is fully lifted, electric brake will function, and the golf car will stop.

Brake Pedal

The brake pedal is used in deceleration or stopping.

1. Effective braking force is around 30Kgf. The distance to step down the braking pedal is not more than 2/3 of the overall stepping-down distance of the braking pedal.
2. Effective parking force is around (200N) 20kgf. When the parking pedal is released to its free position, the parking function is released.

NOTE: the brake pedal is combined with the park brake pedal which will be elaborated as below.

Park Brake Pedal

The park brake pedal is used in braking for parking. The park brake pedal should be engaged into parking position whenever the golf car is left unattended: press down this pedal fully, then press the upper part of this pedal and release the lower part of this pedal to lock the park brake pedal into position. This operation will make the golf car stay in parking position when this golf car is unattended.

NOTE: If the park brake pedal fails to be locked in the lock position, please repeat above procedure until it is locked.

WARNING

It is prohibited to step down both the brake pedal and the accelerator pedal all together, otherwise this type of operation will damage the motor badly.

WARNING

The park brake will automatically release when the accelerator pedal is stepped down. If the power key is in ON position, stepping down the accelerator pedal may suddenly cause the golf car to move.

Steering Wheel

The steering wheel is used to control the driving direction. Please avoid any sudden or erratic turning.

Turn signal/Horn switch

This switch is used to switch on/off the lighting system including headlight, front turn signal, rear turn signal, taillight, brake light and horn.

1. To pull Button A rightwards to switch on the headlight, reverse this operation to switch off the headlight.
2. To finger move upwards Handle Lever B to switch on the right turn signal.
3. To finger move downwards Handle Lever B to switch on the left turn signal.
4. The middle position of Handle Lever B is neutral.
5. To pull Handle Lever B towards the driver switches on the horn.

Digital Display

Displays such information as battery power, speed, range, fault, light signal, fault, etc.

Emergency light switch

It is for switching on or switching off 4 turn signal at the same time in case of emergency.

Operational Process

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5.1 Start the vehicle

1. Make sure the car is in Neutral and Switch on the Power Key.
2. Select F for Forward or Reverse from F&R Switch.
3. Step down the Acceleration Pedal smoothly and the vehicle will start running.

WARNING

1. If you switch on Power Key first before selecting Forward or Reverse on F&R Button, the vehicle will not run, in this case, please switch off Power Key, then select Forward or Reverse from F&R Button, then step down Acceleration Pedal to start the vehicle.
2. Depressing the accelerator pedal before switching on the power key, the vehicle will not run. In this case, you should release the accelerator pedal first, and step it again, thus the vehicle will start running.

5.2 Stop the Vehicle

1. Step on Brake Pedal to decelerate the vehicle until it stops completely. Then lock the brake and shift F&R button to Neutral position;
2. Switch off all lights;
3. Switch off the power key and take out the key

5.3 Charge the batteries

WARNING

1. Only charge the battery in well-ventilated areas.
2. Before using the charger, please check if the battery charger you are getting to use is correctly rated as per your local AC electricity network.
3. Do not disconnect the DC output cord from the battery receptacle when the charger is ON, otherwise an arc could occur which may cause an explosion.
4. Never open the housing of the charger.
5. Only qualified electrician is allowed to open the housing of the charger.
6. The charger should be stored in safe and dry room with good ventilation.

WARNING

1. When you charge the battery, if you want to see the status of the battery power level, turn on the ignition key, the battery power meter will then display battery charge status.
2. You can also find a battery power meter just besides the lithium battery, it can also be used to refer to the status of the battery power level during the charging.

Below is the charging procedure:

Turn off the power of the whole vehicle, remove key:

a) Connect the charger(s) with AC power;

b) Turn on the charger(s);

c) Turn off the charger(s) when the batteries are fully charged, disconnect the charger(s) with AC power;

WARNING

The charging process is automatic. The charger will stop charging when it detects that the battery is fully charged. It will take around 5 hours to get the battery fully charged.

Rules for Safe Operation

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The driver should have a good knowledge of the operation system of the vehicle and its features; meanwhile follow the rules for safe operation.

WARNING

- Do not drive the vehicle off road.
- The vehicle cannot be over-loaded or tow excessive loads.
- Unqualified persons are prohibited to drive the vehicle.
- Don't overtake other vehicles at crossroad, in blind area or in other dangerous zone.

WHILE OPERATING THE VEHICLE

- Keep your entire body inside the vehicle, keep seated and holding on while the vehicle is moving.
- Do not start the vehicle until all occupants are securely seated.
- Keep your hands on the steering wheel and your eyes on the path you are going.
- Always back the vehicle slowly and watch the back carefully.
- Avoid starting and stopping suddenly.
- Avoid turning the vehicle too sharply at high speed.
- Always drive slowly up and down on the slope.
- Do not make any modification or addition which may affect the capacity or safety.
- Children are not allowed to play in the vehicle. Children should be seated between adults and protected while the vehicle is moving.

Maintenance

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Users should do maintenance as follows, which will decide the performance of the vehicle and life:

7.1 Maintenance of Battery

WARNING

KEEP IT OUT OF REACH OF CHILDREN.

1. Cleaning

- The exterior of the battery, the connection wires and bolts should always be kept clean and dry. When cleaning, please make sure all vent caps are tightly in place. Clean the battery top with a cloth or brush and solution of baking soda and water. When cleaning, do not allow any cleaning solution, or other foreign matter to get inside the battery. This should be done every week.
- Clean battery terminals and the inside of cable clamps using a post and clamp cleaner. Clean terminals will have a bright metallic shine. This should be done when it is necessary.
- Reconnect the clamps to the terminals and thinly coat them with anti-corrosive spray or gel to prevent corrosion.

WARNING

Before you disconnect any battery cable from any terminal on the battery, please always remove the power by disconnecting the main battery cable from the controller.

2. Checking the terminals and nuts

The connection of the battery should always be kept in good condition. Please check every week on whether any battery cable terminal or nut has become loose in order to prevent any damage to terminals. Please check every week on whether any battery cable is damaged or not, the damaged battery cable should be replaced immediately.

3. No foreign matter

Do not place any objects on the battery and do not connect the positive pole to the negative pole. This may cause a short circuit may cause damage to the battery or injury to your body.

4. Recharging

- As long as you use the vehicle, regardless of how long you have used it, the battery shall be recharged fully on the same day. Any delay on the re-charging will cause negative effect on the battery.
- If the vehicle is going to be kept unused for a certain long time, the battery shall be fully recharged first. After that, the battery shall be fully recharged every 2 weeks.
- When driving, the driver shall be always aware of the drop level of the battery power from the battery power meter, any drop means the battery power is diminishing. Besides, the driver shall estimate the distance needed to be taken, and recharge the battery at a proper time in case that the vehicle cannot get back to the recharging station in time for recharging.

WARNING

Please make sure the battery is recharged before the battery power meter shows 20% power is left inside the battery. Over-discharged battery will have a very short service life and will make the recharging very difficult.

WARNING

During recharging, the vehicle shall be parked in a well-ventilated area. Keep far away from any flame and sparks. Failure to do so could result in explosion or fire that could cause physical injury or damage to the property.
During recharging, please always lift the seat bottom to keep the battery compartment open to the air.

5. Battery installation

Tighten the battery cables to battery terminals with torque of 95-105lbs.inch or 10.7-11.9 N.M. Make sure there is nothing else between the battery cable lug and battery terminal post.

WARNING

When working with the battery, DO NOT put wrenches or any other metal objects across the battery terminals, otherwise, an arc can occur, and it may cause explosion of the battery and physical injury.

Insure that Battery service or maintenance is installed or replaced only by the qualified technician.

7.2 Maintenance of the Gear Box

1. The clearance for the clutch should be kept between 2-3mm.
2. The friction plate should be changed periodically; the friction value on one side should not exceed 2mm.
3. Adjust the flatness of the platen spring plate (feeling manually): first tighten the screws diagonally, use your hand to check the flatness of the spring plate. If not flat, tighten the screws for the non-flat part.
4. Change the gear oil inside the gear box periodically (for new vehicle, change the oil after one month or accumulated running distance exceed 1200kms; change the oil again two months later, then change the oil every half a year) The oil type is 85W/90GL.
5. Clean the gear box before changing the oil.

WARNING

Never mix different oils.

7.3 Maintenance of the Traction Motor

1. This traction motor is designed to use at the sea level not beyond 1200 meters and in a temperature between -25^{0}C and 40^{0}C.
2. Always insure proper battery voltage.
3. Never keep the motor running idly.
4. Never store or operate near combustible fuels.
5. Any mud, sand and other clinging objects shall often be cleaned away so as to provide good heat-radiation.

7.4 Maintenance of the Speed Controller

The speed controller of the vehicle adopts high frequency MOS technology to realize the control of speed, torque and brake with smoothness, silence, high efficiency and energy-save.

- Prevent the vehicle runs way when starts. When the vehicle starts, the controller will inspect signal from the accelerator, if signal exceeds 20%, the HPD (protection unit in the controller) will prohibit the output of controller.
- When the vehicle starts, the SRO (protection unit in the controller) will effect.

The controller will self-check when the vehicle is running. If any defect inspected, the controller will stop the vehicle to protect the operator and the vehicle.

Periodical Maintenance:

1. Check if the contact between contacting points of the contactor is in good condition, check if any contact sticks or is jammed mechanically.
2. Check if the micro switch in the accelerator can be switched on and off properly.
3. Check if the switch for turn signal can be switched on and off properly.
4. Check if all the connections between the motor, the battery, and the controller are in good condition.

Please use the following cleaning procedure for routine maintenance:

1. Turn the power key to OFF position.
2. Remove power by disconnecting the battery.
3. Discharge the capacitors in the controller by connecting a load (such as a contactor coil or a horn) across the controller's B+ and B- terminals.
4. Remove any dirt or corrosion from the connector areas. The controller should be wiped clean with moist rag. Dry it before reconnecting the battery. The controller should not be subjected to pressured water flow from either a standard hose or a power washer.
5. Make sure the connections are tight, but do not over-tighten them.

NOTES: All above checks shall be performed under power off. Above checks shall be carried out once every 3 months; after the power key turns off, the wave-filter capacitor in the controller unit shall keep discharging for a few minutes more; don't wash the electrical parts with water. It is allowed to remove dust with a brush or high–pressure air.

7.5 Maintenance of Brake System

1. Step the brake pedal with a force of 30kg or so, the pedal travel shouldn't exceed 2/3 of the full free pedal travel.
2. The clearance for the brake plate is self-adjusted. Under a force of around 20kgs, the parking brake handle should be fixed in one gear from 5 to 10 ratchet. When the brake handle is released completely, the brake function will stop.
3. Inspect and change brake shoe, add lubrication into the brake bearing periodically.

7.6 Lubrication of the Whole Vehicle

1. Use 901 vehicle brake oil DOT3 as brake oil;
2. Use 1L of 85W/90GL lubrication oil for gear box;
3. Use 1L of 90GL hypoid gear oil for the rear axle;
4. Lubrication points: a. steering gears; b. horizontal bars; c. steering ball joints; d. bearings;

7.7 Running-in of New Vehicle

In order to guarantee the performance of the vehicle and enhance its reliability and working lift, all parts in motor should experience a certain period of running-in before the motor works with its maximum capacity, thus, each new vehicle is required to give one month of running-in time, detail procedure as per the following:

1. Check the levels of battery carefully before running-in.
2. During running-in time, the speed should be limited as follows:
3. If possible, try your best to avoid driving on poor conditions roads.
4. Check and tighten regularly the fixing parts of each connecting points.

Notes

1. To avoid any damage on the brake shoe, park brake should be released to its bottom before staring the vehicle.
2. The lubricant for rear power assembly must be applied and changed as per user's manual.
3. The brake system must be adjusted once every 3 months.
4. The electricity system must be checked once every 3

months (especially main circuit) for its fastening parts and wiring connections. Meanwhile the contactor should be checked, any defective parts should be replaced immediately. Its dust should be cleaned by low pressure air.

5. The electric contactors easily become hot if their mutual contact is not in good condition, so special attention should be paid regularly to the electric contactors.
6. When changing the fuse, make sure that the new fuse is right in rated current.
7. For the sake of safety, disconnect the positive pole from the battery when maintenance is done.
8. Never step the accelerator hard and frequently, which may shorten the life of the controller.
9. It is prohibited to fill any other liquids (such as battery addictives, mineral water and tap water) into the battery, ONLY the distilled water is allowed to fill in the battery.
10. Do not drive at high speed when going downhill; slow down the vehicle when turning; and remind the passengers to hold on when turning and going downhill.
11. Children are not allowed to play in the vehicle; Children should be seated between adults and vehicled by adults when the vehicle is running.
12. Periodic Maintenance Charts

Regular maintenance is required for the best performance and safe operation of the vehicle.

WARNING

Make sure to turn off the power key and apply the park brake when you do the maintenance unless specified. If the owner is not familiar with the maintenance of this vehicle, the dealer should do the work.

1D – per day 1W – per week 1M – per month 1Q – per quarter 1Y – per year

items	Description	1D	1W	1M	1Q	1Y
Battery	1. Check the battery power	Y				
	2. Charge the battery	Y				
	3. Tighten the nut on the battery cable	Y				
	4. Check if the battery is over-discharged (the battery power meter flashing)	Y				
	5. Check if the battery is charged fully by 3 ways: a) using the hydrometer; b) checking the battery power meter;	Y				
	6. Clean the surface of battery		Y			
Charger	7. Observe the charging status, check if the charger plug becomes hot.	Y				
	8. Clean the surface of the charger. Do not get any water inside the charger.		Y			
Controller	9. Check if all terminals are tightened properly. Please do this after the power is off.				Y	
	10. Clean the surface of the controller.				Y	

	11. Check if the solenoid is in order, checking its touching point.					Y
Motor	12. Check if any water gets in. Check if it becomes too hot.	Y				
	13. Check if the carbon brush should be replaced.					Y
	14. Check if the accelerator pedal works well and if it can be released freely and automatically.				Y	
	15. Check if the brake drum and the brake shoe should be replaced or not.				Y	
	16. Check if the hand brake functions.				Y	
	17. Check if the hose and tube for the brake liquid leaking.			Y		
	18. Check if the brake liquid inside the brake liquid tank is enough.			Y		
	19. Check the air pressure inside the tire, check if the tire surface is worn, check if the nuts are tightened properly.		Y			

	20. Check if the shock absorber has any oil leaking, flat or abnormal noise.			Y		
	21. Check if there is oil leaking on the gear box and the rear end.		Y			
	22. Add the lubricant inside the wheel hub, steering system.				Y	
	23. Adjust the toe-in of the front end				Y	
	24. 25. Clean the body and seat				Y	
After above maintenance, drive the vehicle to check if the vehicle works properly.						

Storage

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Please follow the steps as below when the vehicle is stored.

WARNING

1. Recharge it fully before storing the vehicle.

Please charge the battery once a month if your vehicle will be stored more than one month.

2. Turn the power key to OFF position, remove the key, and store the key in a safe position.
3. Engage the Handbrake.
4. Check the tire pressure to make sure its pressure is set to recommended pressure.
5. Clean the exterior of the vehicle and apply the rust inhibitor.
6. Cover the vehicle with a breathable cover and store it in a dry, safe and well-ventilated place.
7. If the vehicle is planned to store for a longer time, then please check the liquid level inside the battery once a month, recharge the battery

Trouble Shooting

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There is no settled mode to diagnose and eliminate the malfunction of electric shuttle buss. During maintaining and checking, we suggest you first listen, then look and feel. Below is the diagnoses and maintenance of some common malfunctions.

1) The vehicle doesn't move.

Turn on power key, step on the accelerator pedal, the vehicle doesn't move.

Malfunction	Possible reason	Troubleshooting
Turn on power key, Voltameter has no signal	Connector(s) in Circuit is loose or open	Tighten or connect
	Fuse of controller or main circuit is open	Change fuse
	Battery cable(s) is loose or disconnected	Tighten or change
	Power key is broken	Change
	Volatmeter is broken	Change
	Battery terminals connect improperly	Adjust
Turn on power key, Voltameter has signal.	Improper operating procedure	Operate properly
	Controller Failure	Check or Change
	Solenoid Failure	Check, repair, change
	Accelerator Failure	Repair or Change
	Motor Failure	Repair or change

	Parking brake doesn't loosen	Loosen parking brake
	Over-heat protection	Check, eliminate

2) Lose control when vehicle starts running: speed cannot be adjusted

Malfunction	Possible reason	Troubleshooting
Vehicle runs at full speed when it just starts	Terminals of Solenoid stick together	Check, repair
	Controller failure	Change
	Potentiometer failure	Repair, change
Vehicle stops immediately after it starts	Internal short of Motor	Repair, change
	Motor is assembled too tight or blocked	Repair, change
	Controller failure	Repair, change
	Accelerator Failure	Repair, change
Normal at low speed Weak power at high speed	Controller Failure	Check, change
	Motor Failure	Check, change
	Accelerator Failure	Check, change

3) Vehicle cannot change direction: vehicle can only run in the one direction

Malfunction	Possible reason	Troubleshooting
Vehicle can only run in one direction	F&R switch failure	Change
	Controller Failure	Change

4) Possible reason and troubleshooting of the malfunction of electric shuttle bus mechanic system

System	Malfunction	Possible reason	Troubleshooting
Transmission System	Abnormal sound when running	Clearance of rear axle decelerating gear is too big, or the decelerating gear is broken	Adjust, change
		Transmission cross shaft wear out	Change
		Gear of transmission wear out or damage	Change
		Flange bearing damage	Change
		Motor bearing damage	Change
		Gear liquid is deficient or empty	Add Gear liquid
	Hard to shift gear, and/ or gear shift jumps in different positions	Clutch cannot separate smoothly	Adjust
		Gear shift tightwire damage	Change
		Gear inside transmission case wear out	Change
		Orientation pin loosen	Change
Steering System	Steering heavy	Pressure of front tire is deficient.	Check the pressure and Inflate
		Screw plug of Redirector is too tight	Adjust
		Lack of lube in redirector	Maintain, add lube
		Toe-in abnormal	Adjust
		Clearance of tension rod ball is too big	Change
		Steering knuckle and master pin is not lubricating	Add Lube
		Steering shaft or its plastic cover wear out	Change

System	Malfunction	Possible reason	Trouble shooting
	Steering unstable(-wheels flirt)	Rack of redirector wear out	Change Redirector
		Screw plug of Redirector is too tight	Adjust
		Toe-in adjust improperly	Adjust
		Bearing of front wheel wear out	Change
		Tie rod ball and joint wear out	Change tie rod
		Redirector loose	Tighten
Driving System	Deflected Running	The pressure of the two front tires is different	Inflate
		Toe-in is too big or too small	Adjust
		Tightness of the left and right drum bearing of front wheels is different	Adjust
		Brake of one wheel is too tight	Adjust or Change
		Spring shock absorber is abnormal	Change
		Front suspension loose	Change
		Steering shaft or its plastic cover wear out	Change
	Abnormal Tire Fray	Tire pressure is abnormal or left and right tire doesn't be exchanged for a long time	Inflate or exchange
		Toe-in is improper	Adjust
		Drum bearing loose	Change
		U type Bolt of Leaf Spring loose	Tighten
		Rim distort, frame distort	Tighten
		Brake force of each wheel is different	Adjust
		Overexert accelerate or brake frequently	Alter operation

System	Malfunction	Possible reason	Trouble shooting
Brake System	Brake fail	Master cylinder and/or wheel cylinder damage, vitta leak oil	Check, eliminate, change
		Brake fluid is insufficient or empty	Add fluid
		Air enters into oil pipe	Let air
		Free travel of Brake pedal is too long or the clearance of arrester is too big	Adjust
		Brake drum wears out or distort	Change
		Master cylinder leaks oil internally	Change
	Deflected Running	The pressure of the two front tires is different	Inflate
		Toe-in is too big or too small	Adjust
		Tightness of the left and right drum bearing of front wheels is different	Adjust
		Brake of one wheel is too tight	Adjust or Change
		Spring shock absorber is abnormal	Change
		Front suspension loose	Change
		Steering shaft or its plastic cover wear out	Change
	Braking deviation	The clearance of left brake drum shoe and right brake drum shoe is different	Adjust
		Oil one arrester's brake shoe	Dispose or change
		Tyre pressure is different	Repair or Change
		wheel cylinder's piston blocks	Adjust
		Wheel alignment improperly	Adjust
		Brake drum becomes out of round	Change

System	Malfunction	Possible reason	Trouble shooting
Brake System	Braking drag	Brake pedal has no free travel	Adjust
		Clearance between brake shoe and drum is too small or releasing spring is disable.	Adjust or Change
		Piston of wheel cylinder is ineffective	Check or Change
		Piston of master cylinder is ineffective	Change
		Parking brake is ineffective	Change spring
	Braking noise	Shoes distort	Change
		Brake facing wear out	Change
		Eyewinker in brake system	Check, Eliminate
		Brake drum breach, scrape to uneven	Change

This manual tries to be as sound and elaborate as possible in literal and figurative description as well as technical description on the basis of existent data. At the same time, our company reserves the right to alter the content of this manual and this manual is subject to change without prior notice; in addition, our company has the final say on the interpretation of this manual.

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Vivid EV Neighborhood Electric Vehicles

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