

USER MANUAL *SIGNATURE SERIES*



ARIES ELECTRIC VEHICLES

CE CERTIFICATION

Compliant with ANSI ILTVA Z130.1

Before operating this vehicle, please read and fully understand the contents of this manual.

PREFACE

Dear User,

Thank you for purchasing our company's golf cart!

This product is designed in accordance with the ANSI/ILTV Z13.01-2012 Golf Car Safety and Performance Specifications. It incorporates advanced technologies from Europe and the United States, delivers excellent performance, and features a modern, distinctive design. Key components are sourced from imported brands or specialized manufacturers, the paintwork uses premium automotive-grade baked enamel, and the chassis is welded using high-strength materials. This series offers advantages such as light weight, strong hill-climbing capability, zero emissions, low noise, convenient charging, and reliable braking performance. It is one of the most advanced, aesthetically pleasing, and cost-effective golf cars in the industry today.

To ensure correct operation, safe use, and an extended service life of the vehicle, we have specially prepared this manual. It provides detailed information on the vehicle structure, operating procedures, routine maintenance, and essential safety precautions. Before your first use, please read this manual carefully and keep it for future reference. Should you encounter any questions during operation, you may consult the guidance in this manual or contact our after-sales service team. If minor differences exist between the actual vehicle and the manual, please refer to the actual vehicle.

Reproduction of this Operation & Maintenance Manual is not permitted without the written consent of our company.

Note: This vehicle is intended for use on golf courses.

Sincerely,



IMPORTANT INFO

Particularly important information will be highlighted using the following markings.



SAFETY WARNING

Caution! Stay Alert! Concerning Your Safety!

WARNING

Failure to follow these warnings may lead to serious injury or even death to users or passengers, people near the vehicle, and maintainers and inspectors.

CAUTION

This message contains special information to avoid unnecessary damage to the vehicle.

WARNING

Before operating the vehicle, please read and fully understand the contents of this manual.

NOTES

This message contains additional important information. We will irregularly update and improve related models (components). This User Manual may be revised without prior notice, your understanding will be appreciated!

This manual strives to provide complete and detailed text, images, and specifications based on all available information. Our company reserves the right to make changes to this manual without prior notice. If you have any questions regarding this manual, please contact our authorized distributor.

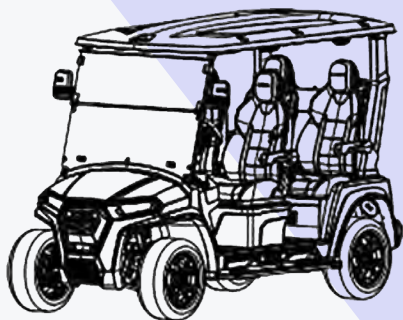
This manual should be regarded as an integral part of the vehicle and shall remain with the vehicle at the time of sale.



CONTENTS

SECTION	PG #
Important Signs	5
Operational Safety	6
Vehicle Structure	7
Brake System	10
Operation & Control	11
Operation Prep	17
Maintenance	19
Transport & Store	31
After-Sale Service	32
Troubleshooting	33
Fault Codes	34
DN Controller	41
Appendix	42

IMPORTANT SIGNS



SAFETY AND INSTRUCTION LABELS

WARNING

Before operating the vehicle, please carefully read the labels below and promptly replace any labels that are damaged or missing.

OPERATING ESSENTIALS



Brake Pedal



Accelerator Pedal

- Read the labels and this User Manual before driving.
- Ensure all passengers are seated properly and have fastened their seat belts.
- Select the appropriate forward or reverse gear.
- When starting the vehicle, gently press the accelerator pedal; when stopping, gently press the brake pedal.
- Control the speed reasonably according to the terrain and

visibility, and do not drive too fast. Be especially careful when driving in crowded areas, reversing, and on slippery roads.

- When switching between forward and reverse gears, be sure to do so after the vehicle has been stationary for two seconds.
- Do not press the brake pedal and the accelerator pedal simultaneously while driving!



WARNING / AVERTISSEMENT

EXPLOSIVE GASES

When the battery is being charged or discharged, explosive gases may be released. Keep the area well ventilated and stay away from open flames.

LITHIUM BATTERY HAZARD

Do not damage, puncture, crush, or expose the battery to excessive heat or fire. Do not disassemble or modify the battery. If the battery becomes damaged, overheated, swollen, leaking, or produces an unusual odor, stop using the vehicle and contact an authorized service technician.

BATTERY SHORT CIRCUIT

A battery short circuit may cause a fire. Do not attempt to connect the positive and negative terminals of the battery.



WARNING

- Be sure to read the operating essentials on the steering wheel before driving.
- The number of passengers must not exceed the rated capacity.
- Do not start the vehicle before passengers are seated securely.
- Drive slowly or step on the parking pedal to extreme when turning.
- Drive slowly and go straight up and down on hills, slopes, and inclined pavements.
- Before leaving the vehicle, pull up the handbrake lever tightly.
- When the vehicle is left unused, turn off the main switch and remove the key.
- Passengers should sit in their seats and hold the handrails or handles firmly.
- Do not stretch your hands or feet out of the vehicle in the driving process.

WARNING



The windshield does not provide protection from other flying objects.

OPERATIONAL SAFETY

Our company's electric vehicles are designed to be simple and easy to operate, but please note the following operational safety guidelines.



PRECAUTIONS

Before Operation

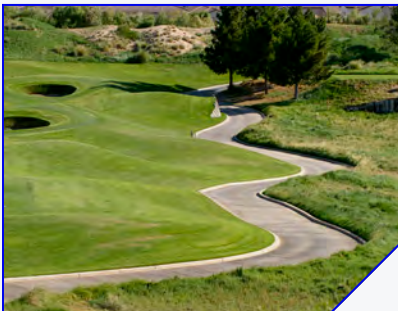
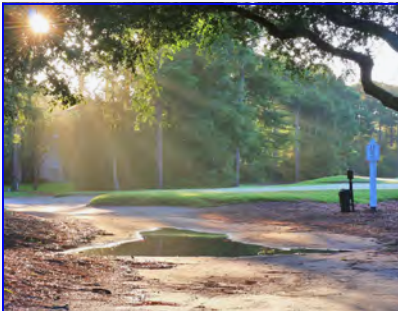
1. Carefully read this manual and the vehicle's safety guidelines before operating.
2. People without a valid driver's license are not allowed to drive this vehicle.
3. The number of passengers (including the driver) must not exceed the rated capacity.
4. Do not operate this vehicle under the influence of alcohol or drugs that impair vision and judgment, otherwise risks may occur.
5. Do not make any modifications or additions to the vehicle's safety operation and passenger capacity, or make any changes not in accordance with this manual. Unauthorized modification of any parts of this vehicle is strictly prohibited.



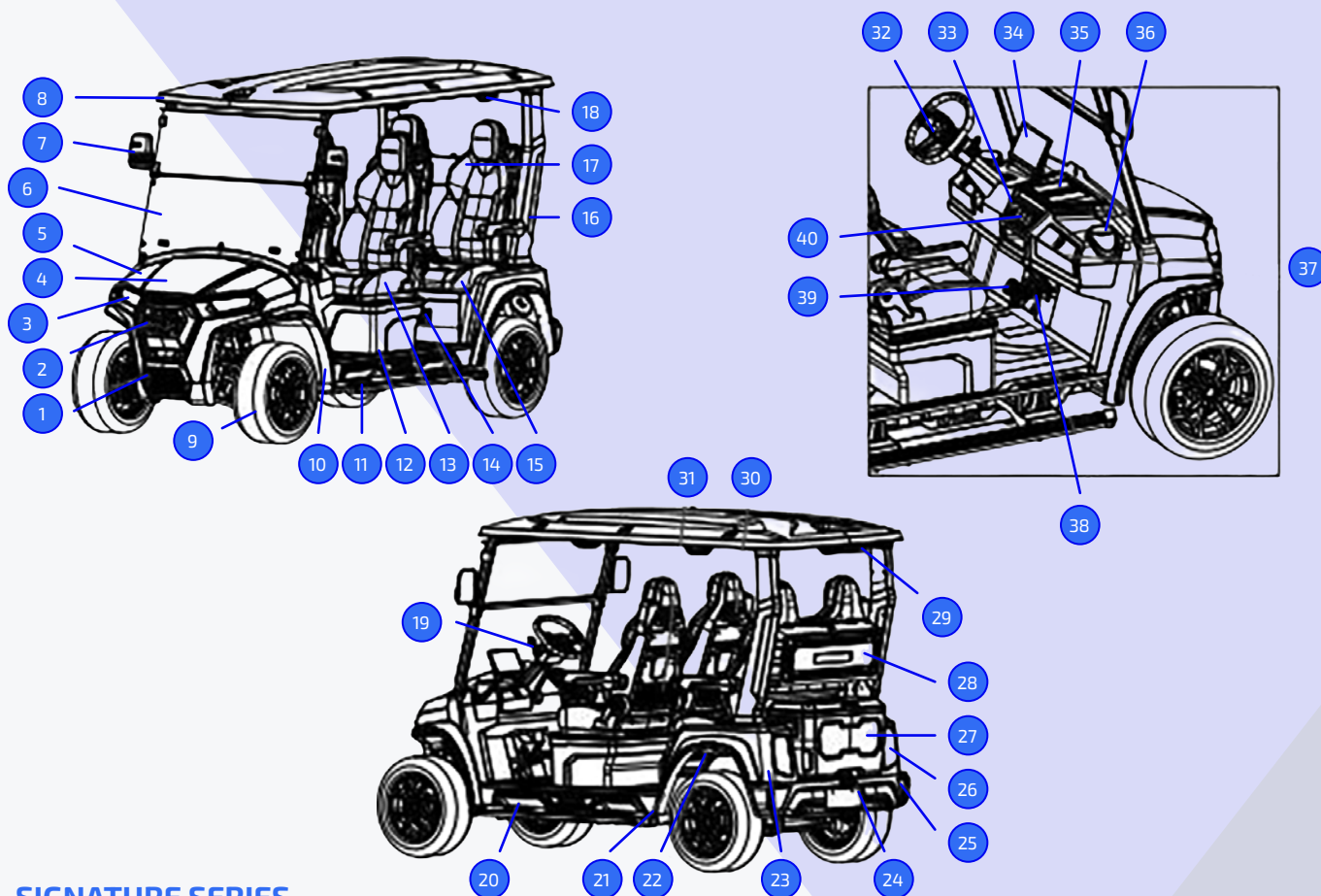
PRECAUTIONS

During Operation

1. Keep your body inside the vehicle. Sit firmly and hold steady when the vehicle is moving. Do not start the vehicle until all passengers are seated properly.
2. Keep both hands on the steering wheel and eyes straight ahead on the road.
3. Do not drive on highways, as it is illegal and extremely dangerous.
4. Driving on streets may cause collisions with other vehicles, refer to local laws.
5. Be extra cautious when reversing in busy areas, watch carefully and back up slowly.
6. Avoid sudden starts or hard braking.
7. Accelerate or decelerate according to road conditions.
8. Do not overload the vehicle, as this may reduce braking performance and cause damage to electrical components, creating potential safety hazards.
9. Do not turn steering wheel too sharply when driving at high speeds.
10. Drive within the approved slope range.



VEHICLE STRUCTURE



SIGNATURE SERIES Vehicle Structure

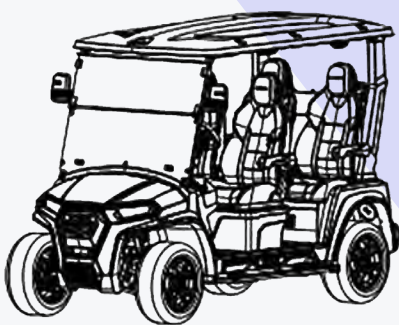
- | | | |
|-------------------------------|---------------------------------------|--|
| 1. Front Bumper | 15. Rear Seat Cushion Assembly | 28. Rear Cover Cargo Box |
| 2. Front Grille | 16. Rear Canopy Support Frame | 29. High Mounted Brake Light |
| 3. Front Headlight | 17. Rear Backrest Assembly | 30. Backrest Handle |
| 4. Front Hood | 18. Roof Armrest | 31. Backrest Net Pocket |
| 5. Front Cover | 19. Column-Mounted Combination Switch | 32. Steering Wheel |
| 6. Foldable Front Windshield | 20. Side Trim | 33. Usb Car Charger + Communication Port |
| 7. Rearview Mirror with Light | 21. Rear Wheel Eyebrow | 34. Multimedia Car System |
| 8. Roof | 22. Reflector | 35. Insulation Box |
| 9. Tires | 23. Rear Cover | 36. Cup Holder |
| 10. Front Wheel Eyebrow | 24. Reversing Camera | 37. Storage Compartment |
| 11. Side Step (Optional) | 25. Rear Bumper | 38. Accelerator Pedal |
| 12. Seat Bucket | 26. Rear Tail Light | 39. Brake Pedal |
| 13. Seat Assembly | 27. Rear Insulation Box | 40. Rocker Switch |
| 14. Charging Socket | | |

48V CONFIGURATION

SIGNATURE SERIES 2WD (48V POWERTRAIN)

Configuration & Parameters

Standard configuration and parameter table (specific configuration is subject to the contract).

		ELECTRICAL SYSTEM	Controller		DN AC controller LEVD1-07M45F4/450A
			Battery		Dedicated lithium iron phosphate battery 51.2V/105AH (8kwh)
			Electric Motor		Dedicated AC asynchronous motor 48V / 5KW
			Charger		Intelligent on-board charger 48V/25A, wide voltage input 110~220V + Bluetooth communication, charging time < 8 hours
			DC Converter		High-power wide voltage DC converter 30V~90/12V-500W
BODY CONFIGURATION	Front Windshield & Wiper		Acrylic organic foldable glass	Floor	Anti-slip floor injection-molded with automotive engineering PP material
	Seats		Front independent ergonomic seats with three adjustments (forward/backward & backrest angle); Rear integrated seats with leather fabric and three-point seat belts		
	Roof		Double-layer roof (automotive ABS plastic suction-molded outer roof + injection-molded inner lining) with aluminum alloy roof frame; equipped with 4 audio speakers		
	Rearview Mirrors		One manually adjustable, foldable exterior mirror on each side, with turn signal		
	Lighting & Warning Signals		LED front combination lamps (low beam, high beam, turn signals); LED position lamps; rear license plate lamp; lighted grille LED rear taillights (reverse lamp, brake lamp, position lamp, turn signals); snail horn, reversing horn		
	Body		Front cowl, seat bucket, and body panels are made of automotive-grade PP injection molding; aluminum roof pillars		
	Instrument Panel		Injection-molded instrument panel, multi-function column switch, hazard warning switch, cup holder, storage pocket, Type-C + USB communication port, one-button start switch (including RKE, PKE induction remote key, NFC card induction)		
	Multimedia Configuration		10.1-inch instrument + car system (IP67 waterproof), fault diagnosis information display, Bluetooth phone, radio, music, video, USB playback, reversing image		
	Steering System		Bi-directional rack-and-pinion steering system with automatic clearance compensation; electric power steering and manual height-adjustable column system		
	Brake System		Dual-circuit four-wheel hydraulic brake, four-wheel disc brake + EMB electromagnetic parking system		
	Front Suspension System		Front double-wishbone independent suspension; coil spring + tubular hydraulic shock absorber		
	Rear Suspension System		Integral rear axle, gear ratio 14:1, coil spring + hydraulic tube shock absorbers		
	Tire Specification		225/45 R14 tire (22.83" diameter), 14*7 (ET+15) aluminum wheel rim, PCD: 114.3*4		
	Rated Passengers (Persons)		4 persons (including the driver)		
MAIN TECHNICAL SPECS					
1. Dimensions (L x W x H) = 118.31" x 54.53" x 80.35"		5. Driving Range = 59-68 Miles (flat road, avg. speed 15.5 MPH)		10. Wheel Track = Front 45.08" / Rear 45.47"	
2. Wheelbase = 86.02"		6. Min. Turning Radius = 5.05m		11. Braking Stability = 1.6m	
3. Total Weight (w/Battery) = 1,653 lbs		7. Safe Climbing Gradient = 15%		12. Rated Occupants = 4	
4. Max. Speed at Full Load = 25 MPH		8. Min. Ground Clearance = 8.07"		13. Energy Consumption / 100 km = 9kwh	
		9. Braking Distance = <6m			

72V CONFIGURATION

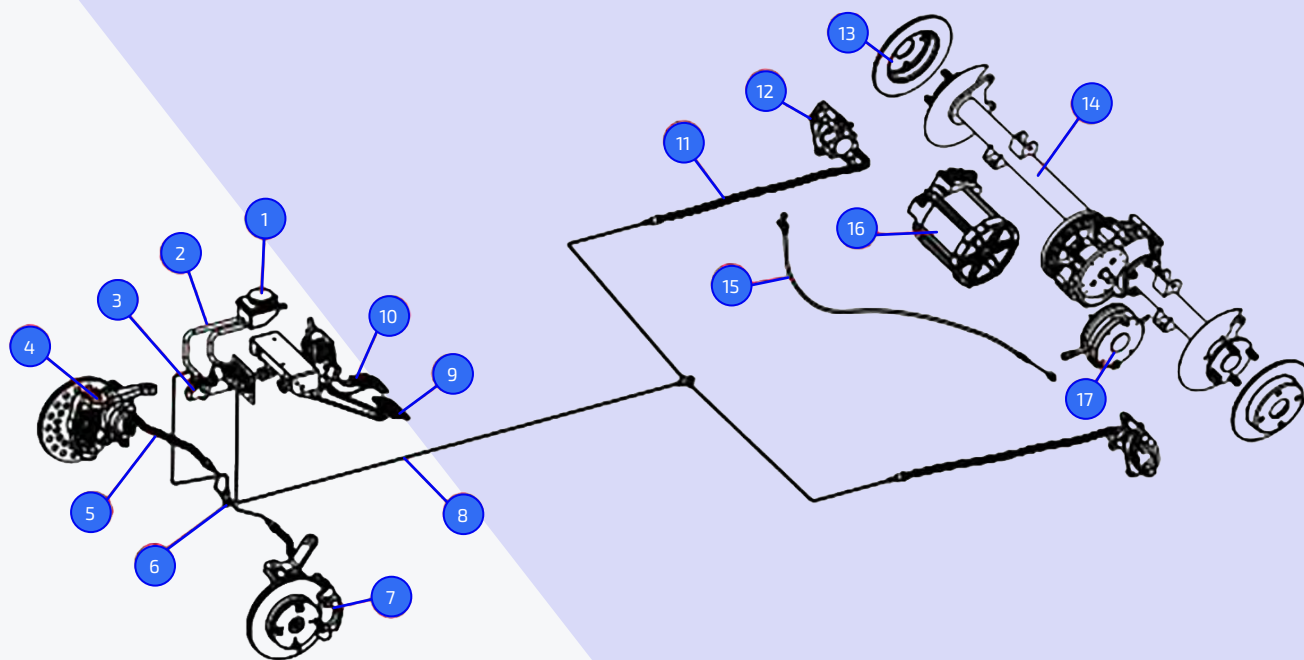
"SIGNATURE SERIES AWD (72V POWERTRAIN)

Configuration & Parameters

Standard configuration and parameter table (specific configuration is subject to the contract).

		ELECTRICAL SYSTEM	Controller		Dual DN permanent magnet synchronous motor controller A2P-QC-6452R-C160
			Battery		Dedicated LiFePO4 battery 76.8V/105AH
			Electric Motor		Dual permanent magnet synchronous motor 72V/7.5KW
			3-in-1 Unit (Charger + Inverter + DC Converter)		Input: AC110V/1200W;AC220V/2600W; Output: AC110V/1500W; AC220V/3000W; DC72V/13.8V-500W
BODY CONFIGURATION	Front Windshield & Wiper		Acrylic organic foldable glass	Floor	Anti-slip floor injection-molded with automotive engineering PP material
	Seats		Front independent ergonomic seats with three adjustments (forward/backward & backrest angle); Rear integrated seats with leather fabric and three-point seat belts		
	Roof		Double-layer roof (automotive ABS plastic suction-molded outer roof + injection-molded inner lining) with aluminum alloy roof frame; equipped with 4 audio speakers and starry sky top		
	Rearview Mirrors		One manually adjustable, foldable exterior mirror on each side, with turn signal		
	Lighting & Warning Signals		LED front combination lamps (low beam, high beam, turn signals); LED position lamps; rear license plate lamp; lighted grille LED rear taillights (reverse lamp, brake lamp, position lamp, turn signals); snail horn, reversing horn		
	Body		Front cowl, seat bucket, and body panels are made of automotive-grade PP injection molding; aluminum roof pillars		
	Instrument Panel		Injection-molded instrument panel, multi-function column switch, hazard warning switch, cup holder, storage pocket, Type-C + USB communication port, one-button start switch (including RKE, PKE induction remote key, NFC card induction)		
	Multimedia Configuration		10.1-inch instrument + car system (IP67 waterproof), fault diagnosis information display, Bluetooth phone, radio, music, video, USB playback, reversing image		
	Steering System		Bi-directional rack-and-pinion steering system with automatic clearance compensation; electric power steering and manual height-adjustable column system		
	Brake System		Dual-circuit four-wheel hydraulic brake, four-wheel disc brake + EMB electromagnetic parking system		
	Front Suspension System		Front double-wishbone independent suspension; coil spring + tubular hydraulic shock absorber		
	Rear Suspension System		Integral rear axle, gear ratio 14:1, coil spring + hydraulic tube shock absorbers		
	Tire Specification		225/45 R14 tire (22.83" diameter), 14*7 (ET+15) aluminum wheel rim, PCD: 114.3*4		
	Rated Passengers (Persons)		4 persons (including the driver)		
MAIN TECHNICAL SPECS					
1. Dimensions (L x W x H) = 118.31" x 54.53" x 80.35"		5. Driving Range = 59-68 Miles (flat road, avg. speed 15.5 MPH)		10. Wheel Track = Front 45.08" / Rear 45.47"	
2. Wheelbase = 86.02"		6. Min. Turning Radius = 5.05m		11. Braking Stability = 1.6m	
3. Total Weight (w/Battery) = 1,819 lbs		7. Safe Climbing Gradient = 15%		12. Rated Occupants = 4	
4. Max. Speed at Full Load = 25 MPH		8. Min. Ground Clearance = 8.07"		13. Energy Consumption / 100 km = 10kwh	
		9. Braking Distance = <6m			

BRAKE SYSTEM



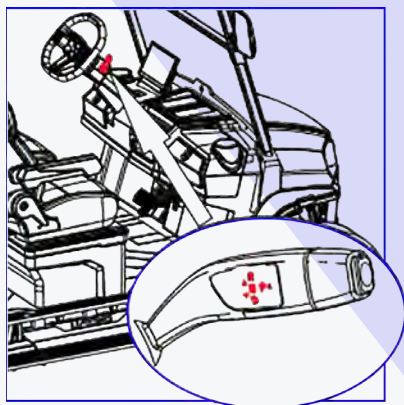
SIGNATURE SERIES

Brake System Diagram

- | | |
|---------------------------------|--|
| 1. Disc Brake Fluid Reservoir | 14. Rear Axle |
| 2. Reservoir Hose | 15. Manual Release Device |
| 3. Master Brake Cylinder | 16. Permanent Magnet Synchronous Motor |
| 4. Front Knuckle Disc Assembly | 17. Emb Brake |
| 5. Front Soft Oil Pipe | |
| 6. Disc Brake Three-Way | |
| 7. Front Brake Caliper Assembly | |
| 8. Brake Iron Oil Pipe | |
| 9. Brake Pedal | |
| 10. Accelerator Pedal | |
| 11. Rear Soft Oil Pipe | |
| 12. Rear Brake Caliper Assembly | |
| 13. Rear Brake Disc | |

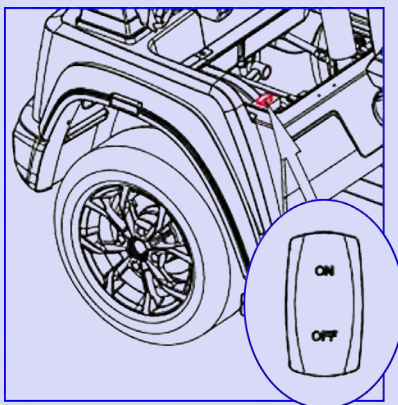


OPERATION & CONTROL



48V POWER Switch

1. Open the seat cushion on the rear cover; a power switch is located on the right side.
2. Switch the power switch to the ON position, then press the one-button start switch, and the vehicle will be powered on normally.
3. Switch the power switch to the OFF position; the one-button start will not work, and the vehicle cannot be powered on (suitable for long-term parking to prevent power leakage).

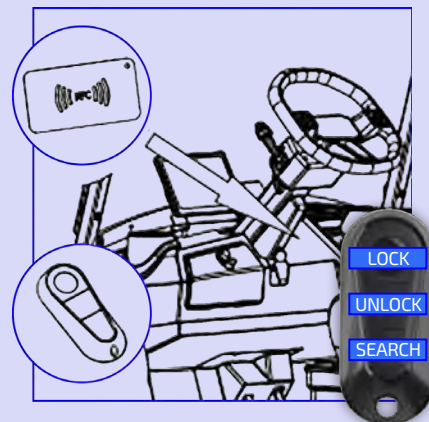


FORWARD / REVERSE Switch

Operate the forward / reverse switch according to the needs of forward or reverse driving. Push the switch down for forward gear, pull up for reverse gear, and the middle position is neutral. When reverse gear is selected, a reversing buzzer will alarm; press the P button on the right when parking.

⚠ WARNING

When shifting between forward and reverse gears, the vehicle shall be brought to a complete stop before switching. Move the gear switch to the middle parking position first, wait for 2 seconds, and then select forward or reverse gear. Do not switch the gear too abruptly, as doing so may affect personal safety or cause vehicle damage.



ONE-BUTTON Start System

The key works in two ways:

1. Remote (RKE): Manually operate key to unlock, lock, or find vehicle.

Key contains CR2032 battery, approx. life of 12 months. Replace with same model.

2. NFC: Place NFC card close to NFC induction module to unlock and lock vehicle.

INSTRUCTIONS BEFORE USE

1. Confirm host is correctly paired before use. Failed pairing or wrong key (or NFC card) will cause vehicle to fail to unlock. If host is not paired, enter learning mode to complete pairing.
2. Confirm power supply battery voltage within normal range before use. Low battery may affect normal use.

BATTERY TYPE	NORMAL OPERATING INPUT VOLTAGE
48V Battery Pack	20-63V
72V Battery Pack	60-100V

OPERATION & CONTROL

OPERATING INSTRUCTIONS

1. Vehicle Unlocking

In the locked and armed state, carry the key close to the vehicle and press the [Unlock] button manually, or place the NFC card close to the NFC induction area (optional). The start button light flashes twice to indicate successful unlocking.

2. Vehicle Arm / Lock

In the unlocked state, press the [Lock] button manually, or place the NFC card close to the NFC induction area (optional). The vehicle is armed and locked. The start button light flashes once to indicate successful locking.

3. Vehicle Finding

Press the [Find Vehicle] button manually. After successful operation, the start button light and vehicle lights flash 6 times to prompt the vehicle location.

Note: Locking via key or NFC is unavailable during driving. Turn off the vehicle before locking.

FUNCTION DESCRIPTION

1. Main Unit Low Voltage Sleep

When the vehicle battery voltage falls below the sleep threshold, the main unit enters sleep mode. In this state, pressing the start button will not activate the system; the start button indicator will flash slowly three times to indicate low battery voltage. Once the battery voltage returns above the threshold, the system exits sleep mode. When the main unit is connected to the battery for the first time, it automatically determines the [Battery Type] according to the [Input Voltage Range].

BATTERY TYPE	INPUT VOLTAGE RANGE	SLEEP THRESHOLD
48V Battery Pack	30-63V	39V±1V
72V Battery Pack	63-100V	59V±1V

- When the vehicle is in the started state, the system does not perform low-voltage monitoring and will not enter sleep mode.
- When the vehicle is shut down, low-voltage monitoring begins. If the voltage drops below the sleep threshold, the system enters sleep mode.

2. Key (or NFC Card) Learning

Keys (or NFC cards) are matched with the host via learning. There are two learning modes: ordinary key (or NFC card) learning and administrator key (or NFC card) learning. Insert the learning button into the auxiliary port of the start button connection cable, and operate the learning button to enter the learning mode.

- Ordinary key (or NFC card) learning: Press and hold the learning button for 5 seconds; the start button light turns on and the vehicle lights flash to enter learning mode. Press any button ([Find Vehicle]/[Unlock]/[Lock]) on the key to match the host. Place the NFC card close to the NFC induction area for 1 second to match. Up to 2 ordinary keys (or 3 NFC cards) can be learned each time. The start button light turns off once for each successful learning. The host automatically exits learning mode after learning 2 keys (or 3 NFC cards). Each host can match up to 2 ordinary keys and 3 NFC cards respectively. All previous ordinary key or NFC card information will be cleared after each successful matching, making them unable to operate the vehicle. The mode exits automatically if no operation is performed within 10 seconds.
- Administrator key (or NFC card) learning: Press the learning button briefly 5 times; the start button light flashes once then turns on, and the vehicle lights flash to enter learning mode. The matching method is the same as above. Up to 10 keys or 3 NFC cards can be learned in this mode.

OPERATION & CONTROL

Note: Keys and NFC cards cannot be matched and learned simultaneously in learning mode. After entering learning mode, if a key is sensed first, only keys can be learned and matched in this session; if an NFC card is sensed first, only NFC cards can be learned.

NFC cards can also enter the NFC card learning mode conveniently by pressing and holding the [Unlock] and [Lock] buttons on the key simultaneously until the start button flashes, enabling faster matching between NFC cards and the host without using the learning button.

COMBINATION SWITCH

1. Turn signals

Push the control lever forward to activate the right turn signal; the right turn indicator light will illuminate on the dashboard. Pull the lever backward to activate the left turn signal.

2. Low beam headlights

The front half of the control lever can be rotated. After the vehicle is powered on, rotate the lever forward two positions to turn on the low beam headlights. Rotate the lever backward to turn off the lights.

3. High Beam

Lift the lever upward (toward the steering wheel) to flash the high beam. When released, the lever returns automatically and the high beam turns off. To keep the high beam on continuously, first switch on the low beam, then lift the lever upward; it will stay in position without returning automatically.

4. Horn

The button at the tip of the lever operates the horn; press lightly to sound it.

INSTRUMENT CLUSTER & VEHICLE INFOTAINMENT SYSTEM

The digital instrument panel and intelligent infotainment unit integrate audio-visual entertainment, video monitoring display, and multimedia functions, featuring a minimalist and modern design with a full-screen touch interface.

Functions & System Specifications

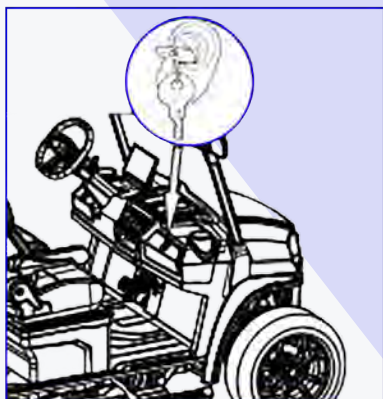
- **Bluetooth Phone & Music:** Built-in Bluetooth module supports making and answering calls, audio channel switching, call log synchronization, and music playback
- **Radio:** Supports FM/AM bands
- **Music Playback:** Supports MP3, WAV, FLAC, AAC, and other audio formats
- **Video Playback:** Supports AVI, MP4, FLV, MOV, M4V, MKV, and other video formats
- **Gallery:** Supports image browsing
- **Microphone:** Supports Bluetooth phone audio input
- **System Settings:** Supports configuration of Bluetooth, Wi-Fi, audio, display, date and time, and other system functions
- **Mobile Phone Connectivity:** Connectivity via Bluetooth and Wi-Fi hotspot, compatible with both Apple and Android; enables phone navigation, music playback, call functions, and more
- **Vehicle Information:** Supports vehicle information display with built-in CAN protocol and diagnostics
- **USB Drive:** Supports USB 2.0 for multimedia playback; maximum output current $\leq 1.5\text{A}$
- **Reverse View:** Supports reverse camera view and reversing guide lines
- **Wi-Fi Network:** Built-in Wi-Fi functionality
- **Power Amplifier:** Rated power: 4×18W
- **System:** RK3326S (dual-core) Cortex-A35 processor
- **Operating System:** Android 11
- **Display:** 10.1-inch, 1280×720 resolution
- **Capacitive Touchscreen:** 10.1-inch capacitive touch panel

OPERATION & CONTROL

#	NAME	OPERATION	DESCRIPTION
1	Back	Short press	Return to the previous screen
2	Home	Short press	Click to return to the main screen
3	Recent Applications	Short press	Click to display the recent applications screen
4	Application Menu	Short press	Click to display the secondary application screen
5	Volume -	Short press	Click to decrease volume by one level
6	Volume +	Short press	Click to increase volume by one level
7			Left turn signal indicator green highlighted
8	SPR/LOW		High-speed mode/Low-speed mode
9			Low beam light green highlighted
10			Front lighting indicator green highlighted
11			Brake system fault warning light
12			Electronic parking status indicator
13			High beam light blue highlighted
14			Steering system fault indicator, turns yellow when there is a fault
15			Power battery fault alarm light
16			Vehicle fault information indicator, click the icon to display the vehicle fault warning information screen
17			Right turn signal indicator green highlighted
18	 50%		Battery charge level
19	R N D		Reverse gear / Neutral / Forward gear mode
20	 0.00 V		Battery voltage
21	TRIP		Trip odometer. Description: 1. Record the short-distance travel, which refers to the accumulated mileage from point A to point B (typically a segment of the journey). 2. When the host is powered off and restarted, the accumulated mileage will reset to zero automatically.
22	ODO		Total mileage traveled



OPERATION & CONTROL



GLOVE BOX LOCK

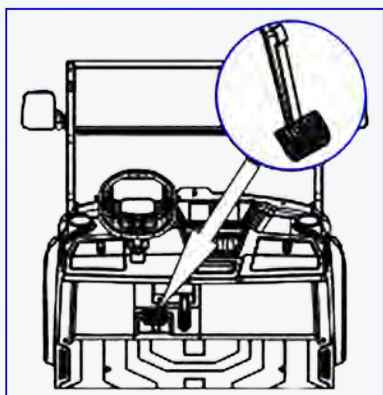
The dashboard has a storage pocket on both the left and right sides that can be used to hold small items. When the pocket lid is not locked, press down on the lock cylinder to pull the lid open.

UNLOCKING

Insert the key into the lock cylinder and turn it clockwise to unlock, then remove the key.

LOCKING

Close the pocket lid, insert the key, and turn it counterclockwise to lock the lid; the key can then be removed.



BRAKE PEDAL

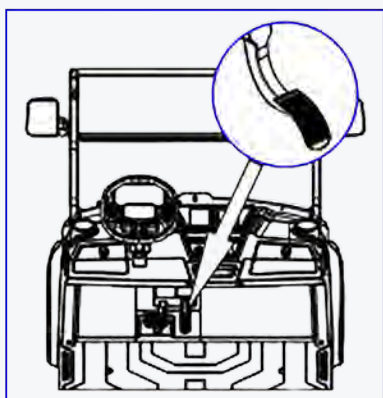
When the vehicle needs to slow down during travel, move your right foot to the brake pedal and press it down gently and smoothly. This will reduce the vehicle's speed until it comes to a stop.

Note: Avoid emergency braking!

ACCELERATOR PEDAL

After turning on the ignition to start the vehicle, select a gear. Then release the brake pedal, place your right foot on the accelerator pedal, and press down slowly to set the vehicle in motion.

Note: Do not slam the accelerator pedal!



WARNING

When shifting between forward and reverse gears, the vehicle shall be brought to a complete stop before switching. Move the gear switch to the middle parking position first, wait for 2 seconds, and then select forward or reverse gear. Do not switch the gear too abruptly, as doing so may affect personal safety or cause vehicle damage.

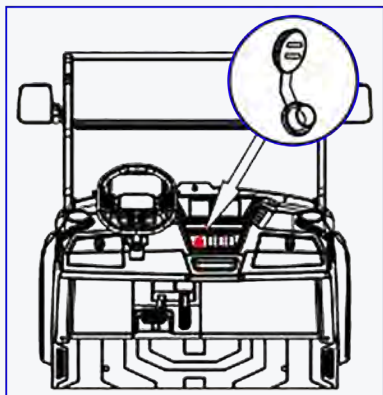
OPERATION & CONTROL



STEERING WHEEL HEIGHT ADJUSTMENT SWITCH

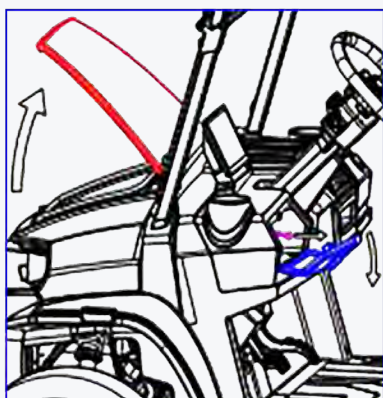
Lift the handle under the steering wheel to adjust the steering wheel height up and down. Release the handle after adjusting to a proper position to fix the steering wheel.

Note: Do not adjust the steering wheel during driving!



CHARGING PORT

The instrument panel is equipped with a USB + communication port, providing 5V2A DC power for electronic devices and communication connection for the car system.



FRONT HOOD INNER POCKET

Open the driver's storage pocket; there is a front hood cable on the inner side. Pull the cable backward to open the front hood.

OPERATION PREP

Always perform an inspection before using this vehicle. Please develop this good habit.

⚠ WARNING

Before performing the operational inspection, ensure that the start key has been removed to avoid accidental activation, and make sure the parking function is engaged to prevent unintended movement.

PRE-OPERATION INSPECTION CHECKLIST

Check the following items before each use:

- ✓ Battery
- ✓ Tire condition
- ✓ Steering system
- ✓ Reverse warning
- ✓ Pedal operation
- ✓ Body and Chassis

SEAT

Lift the seat to perform inspection and maintenance

BODY AND CHASSIS

Before each use, carefully inspect the body and chassis for any damage or missing parts.

BATTERY

For detailed charging procedures, please refer to Chapter 6: Maintenance.

Check whether the batteries are placed securely to prevent damage caused by vibration. Ensure that no battery covers are missing to avoid leakage of acidic electrolytes. Inspect the battery terminals for signs of corrosion.

TIRE CONDITION

Tire Pressure: Check the tire pressure before use

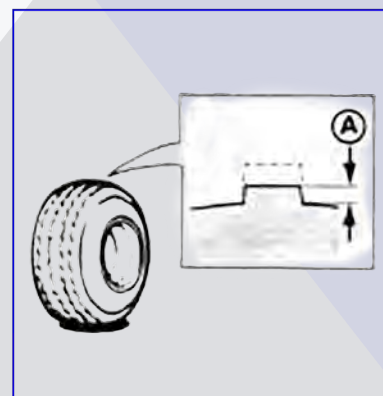
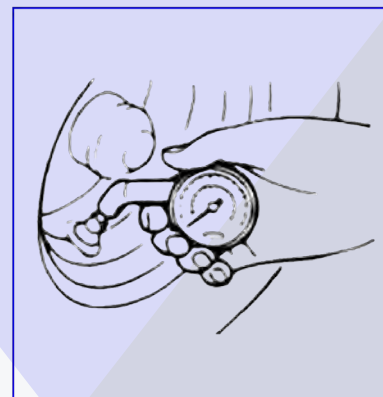
TIRE PRESSURE RANGE

26~30PSI

TIRE WEAR LIMIT

Check the tire surface for damage, cracks, and foreign objects. When the tread depth wears down to below 0.04" (1 mm), replace the tire promptly.

A Wear limit



OPERATION PREP



STEERING SYSTEM

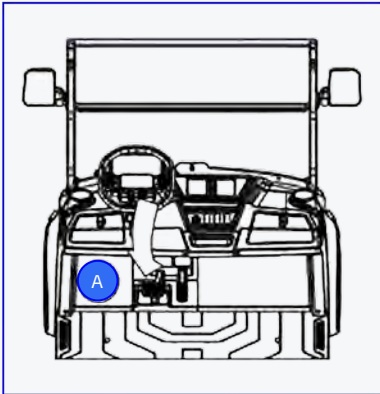
Check for excessive free play in the steering system:

- Move the steering wheel up, down, forward, and backward
- Turn the steering wheel gently to the left and right

If excessive free play or abnormal noises are detected, it indicates potential component issues. Please contact your dealer immediately.

REVERSE WARNING

Shift the direction selector switch to Reverse and check the reverse warning buzzer.



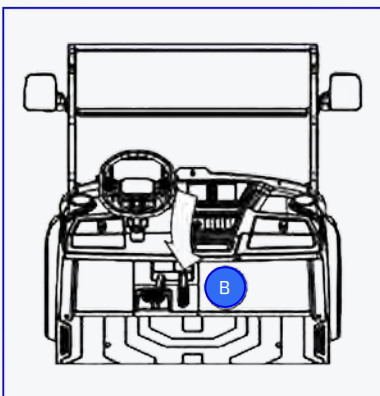
PEDAL OPERATION

Check whether the following pedal operations are functioning properly; if not, please contact your dealer.

BRAKE PEDAL

Ensure that when you press the brake pedal, it feels firm and returns to its original position when released.

A Brake Pedal



ACCELERATOR PEDAL

Check that the accelerator pedal is flexible and reliable, and returns smoothly to its original position after being pressed.

B Accelerator pedal

WARNING

Before checking the accelerator pedal, make sure the vehicle's power is switched off.

MAINTENANCE

BATTERY MAINTENANCE

Lithium Iron Phosphate Batteries

The service life of the lithium battery is not only related to product quality and the system configuration of the electric sightseeing vehicle, but also greatly influenced by the user's operating and maintenance habits. Therefore, understanding and mastering basic knowledge of lithium battery use and maintenance is essential for extending battery life.

EMERGENCY HANDLING

1. Personnel leave the vehicle quickly and call the police according to the site conditions.
2. Under the premise of ensuring personnel safety, perform the following operations if possible: Use a carbon dioxide or dry powder fire extinguisher to extinguish a battery wire harness fire; use a high-pressure water gun to extinguish a battery fire from a long distance. Seek medical attention immediately if smoke is accidentally inhaled.
3. Contact our company for further handling instructions. Tip: If a fire is caused by abnormal charging, cut off the power immediately before extinguishing the fire.

TERM EXPLANATION

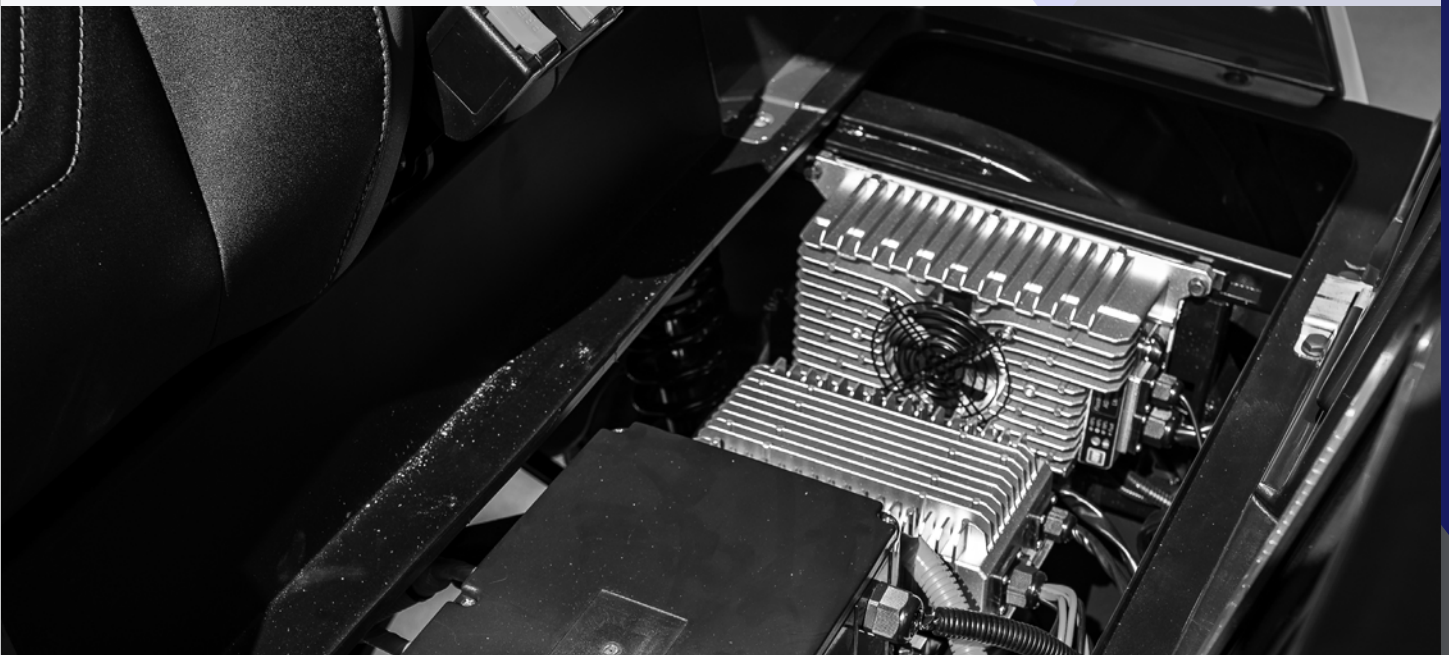
- **SOC**
State of Charge, the remaining battery power percentage
- **Normal Operation Vehicle**
Vehicle used and charged daily
- **Long-term Idle Vehicle**
Vehicle stored unused for more than 15 consecutive days
- **Flexible Operation Vehicle**
Vehicle with irregular usage frequency.

To ensure the long-term and efficient operation of your battery system, please comply with the following regulations:

BATTERY SYSTEM

Temperature Requirements

- **Operating Ambient Temperature**
-4°F to 122°F
- **Storage Ambient Temperature**
-22°F to 140°F
- **Optimal Charging / Discharging Temperature**
77°F to 122°F



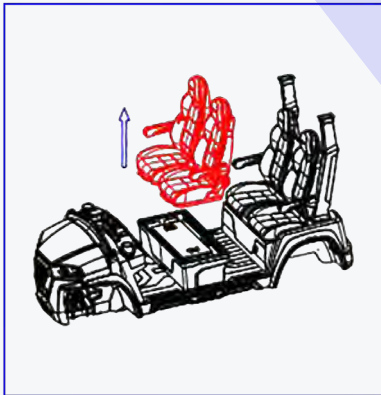
MAINTENANCE

BATTERY REMOVAL & INSTALLATION

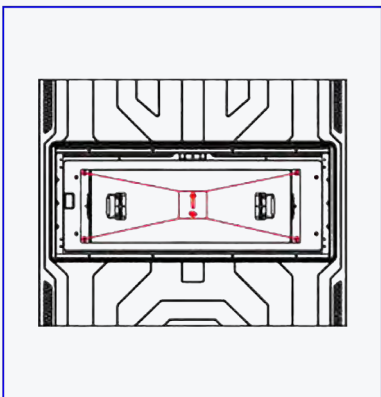
Ensure the power switch is off before checking the battery status.

BATTERY REMOVAL

1. Remove the front seat assembly.



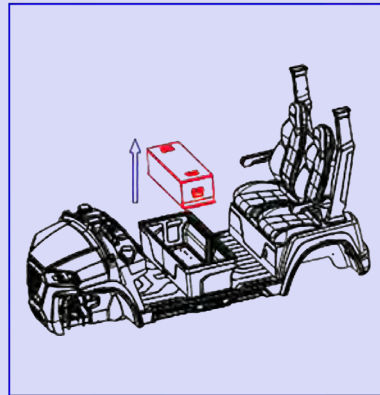
2. The installer wears insulating gloves, removes the battery connection wires, and removes the four (0.31" × 1.18") screws at the positions shown in the figure.



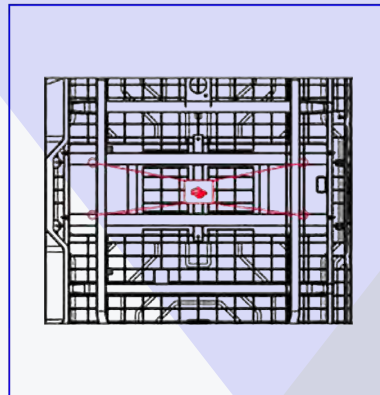
3. Lift/hoist the battery to a safe place.

BATTERY INSTALLATION

1. The installer wears insulating gloves and lifts/hoists the battery into the front seat bucket.



2. Check for missing clip nuts (circled positions in the figure).



3. Fix the lithium battery (refer to Battery Removal STEP2 for fixing positions).
4. Connect the power cord to the battery, confirm correct connection of the discharge interface and communication interface (firm and loose-free), then turn on the battery power switch. The battery can be used normally after confirming the above steps and status.

MAINTENANCE

INSPECTION BEFORE DRIVING

Confirm the vehicle power switch is off (to avoid damaging the relay when turning on the battery). Fully charge the battery to 100% SOC before first use. Check the dashboard to confirm normal battery status without alarm information.

SOC > 50%: Good status; it is recommended to fully charge before starting.

SOC < 30%: Low battery power; charge to at least 50% before operation.

REQUIREMENTS FOR NORMAL OPERATION VEHICLES

Perform a full charge at least once every half month. Conduct battery maintenance every two months to avoid damage to the battery system.

SYSTEM TRANSPORTATION & USAGE REQUIREMENTS

Avoid severe vibration, large external impact, throwing, rolling, inversion and extrusion during loading, unloading and transportation. Prevent rain exposure during transportation; disconnect the battery/battery pack from loads and charging equipment before transportation (no charging/discharging).

SYSTEM STEPS

Power-On

Switch the two-speed switch to ON, unlock the vehicle with the remote key, turn on the one-button start switch; the BMS powers on and wakes up, the battery system performs self-check. The discharge relay closes if no fault is found; the discharge relay opens and a fault is reported if the self-check fails or a serious fault occurs.

SYSTEM STEPS

Power-Off

Turn off the one-button start key; the BMS powers off and controls the discharge relay to open, and the vehicle powers down. The one-button start enters standby mode for vehicle finding. Switch the two-speed power switch to OFF for long-term parking to reduce power battery discharge.

STORAGE FOR LONG-TERM IDLE VEHICLES

Optimal storage SOC: 50%-80%.

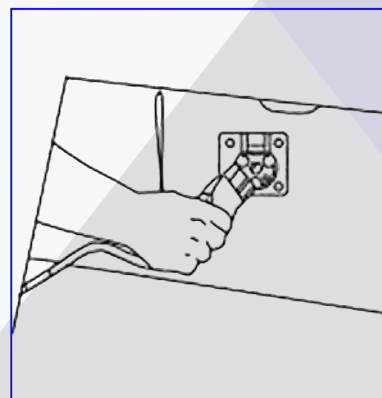
Optimal storage environment: Ventilated, dry, free from direct sunlight and rain, away from heat sources. Perform a cycle every six months: Discharge to 15%, charge to 100%, then discharge to 50%-80% (optimal storage SOC).

BATTERY MAINTENANCE OPERATION

Maintenance site requirements: Spacious, flat, safe, with charging equipment.

Maintenance operation process:

1. Adjust the battery power to 25%-40% SOC.
2. Park the vehicle steadily, turn off the power, and ensure all electrical equipment in the vehicle is off.



MAINTENANCE

CHARGING PRECAUTIONS

- Turn off the one-touch start button before charging.
- Choose a relatively safe environment for charging (e.g., avoid areas with liquids or open flames).
- Avoid charging under direct sunlight.
- Ensure that necessary fire-extinguishing equipment is available near the charging device so emergency fire response can be carried out in extreme situations. Battery charging
- Before charging, ensure that the charging gun and charging socket are free of dust, water, or any foreign matter. If any debris is present, clean it thoroughly before charging; otherwise, poor contact may occur, causing heat buildup and even fire.
- Do not modify or disassemble the charging port or charging equipment, as this may lead to charging failures and could cause a fire.
- After charging is completed, do not disconnect the charging equipment with wet hands or while standing in water, as this may result in electric shock and personal injury.
- If charging shall be stopped during the process, first press the stop button. When the current drops to 0A, then disconnect the charging plug. Disconnecting under load may damage the relay and burn the connector terminals.
- When the battery level drops below 15%, recharge promptly. Over-discharging is strictly prohibited (charging is recommended at around 30% remaining capacity).
- The battery should be recharged promptly after use; in particular, ensure it is fully charged when used in low-temperature environments.

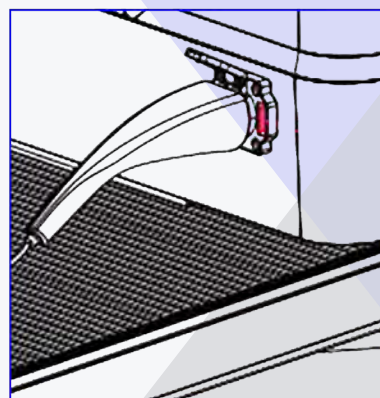
CHARGING METHOD

1. Check the lithium battery connections to ensure they are correct and that all wiring is firmly secured.
2. Connect the charging plug to the battery pack interface first.
3. Connect the charging plug to the 220V AC power supply.
4. When fully charged, check the charger indicator for full status before unplugging (unplug the power supply first). Troubleshoot if the indicator is abnormal.

CHARGING INDICATOR LIGHT

Diagnostics & Fault Handling

As shown in the diagram below, the red part is the charging socket indicator light. During charging, the indicator light is solid red. When the indicator light turns yellow, it indicates that the battery charge is greater than 80%. Once the battery is fully charged, the indicator light turns green.



Solid Red Light

Indicates the battery charge level is below 80%.
Flashing Light Indicates a fault.

MAINTENANCE

Solid Yellow Light

Indicates the battery charge level is above 80%.

Solid Green Light

Indicates the battery is fully charged.

Red Light Flashes Once Repeatedly (1-Second Intervals)

Low or unstable input voltage. Check if the charging plug is securely connected. Verify the input voltage level (refer to Charging Plug instructions above).

Red Light Flashing Twice Repeatedly

Battery not connected; battery reversed polarity; or charger and battery are incompatible.

1. Check whether the charger's output cable is firmly connected to the battery and whether polarity is reversed at the battery end.
2. Check whether the charger matches the battery. If it matches, the battery may be over-discharged and its voltage too low.

Red Light Flashing Three Times Repeatedly

Communication fault.

1. Check whether any charging-plug pins are loose.
2. Check whether the positive and negative terminals of the charging plug are reversed.
3. Check whether the charging plug pins are reversed.

Red Light Flashing Four Times Repeatedly

Charger internal over-temperature protection.

1. Check whether the charger's fan is working properly and whether it is placed as required.
2. Wait for the charger to cool down before restarting.

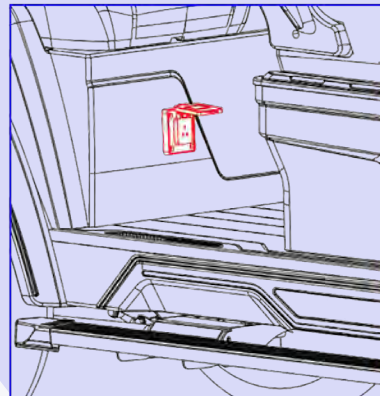
Red Light Flashes Rapidly

Short circuit protection.

1. Check whether the charger output side is short-circuited.

2. Check whether there is a short circuit at the battery end.
3. Check whether the battery is functioning properly.
4. Confirm that none of the above issues are present. Power off, shut down, and restart the charging process.

AC EXTERNAL DISCHARGE



The external discharge socket is located at the lower right of the rear seat cushion, providing 220V AC (GB/EU standard) or 110V AC (US standard) power.

Note: The AC external discharge function is only available for 72V 4WD models.

CORE PRECAUTIONS

1. Power limitation

Strictly prohibit exceeding the maximum discharge power specified for the vehicle (3 kW for GB and EU standards, 1.5 kW for US standard). Overload will trigger the vehicle's protective power-off and may damage the discharge module over time. The total power is prone to exceeding the limit when multiple high-power electrical appliances are used simultaneously.

MAINTENANCE

2. Grounding safety

To ensure personal safety, especially in humid environments or when using high-power electrical appliances (such as rice cookers, kettles), it is strongly recommended:

- Use a special discharge socket strip with a leakage protector.
- Ensure the electrical appliance itself is well grounded.

3. Inspection before use

- Check whether cables and plugs are damaged or aged.
- The vehicle shall be in the "READY" or "ON" state, and the power battery shall be sufficiently charged (above 20% is recommended). Do not use the discharge function when the power is extremely low to prioritize vehicle driving range.

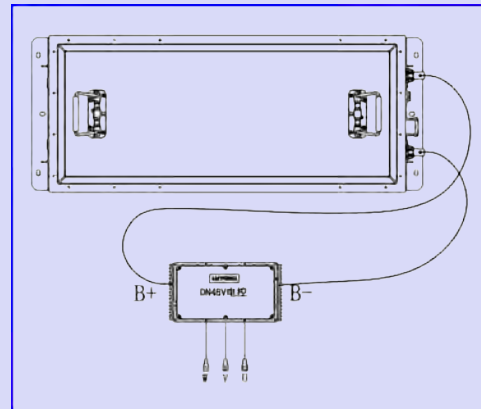
4. Safety During Use

- Place discharge equipment in a dry, ventilated and cool place, away from flammable materials, water sources and high-temperature exhaust outlets.
- Do not stay away from the vehicle for a long time during use, and monitor the central control screen for overload, overheating or other alarms.

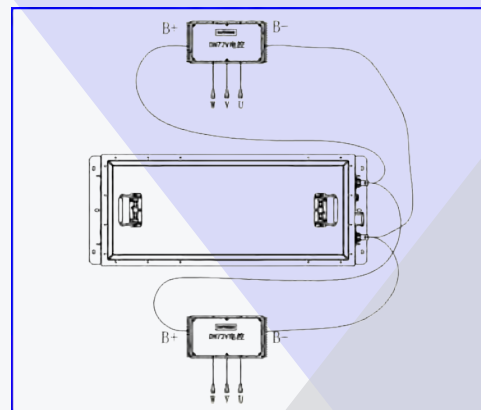
PROHIBITED BEHAVIORS (HIGH RISK!)

1. It is prohibited to use the external discharge to charge other electric vehicles.
2. It is prohibited to use the discharge function during charging.

For 48V lithium batteries on D202.4S models, connect the wires according to the diagram



For 72V lithium batteries on D202.4S models, connect the wires according to the diagram.



⚠ WARNING

When installing the battery: Be cautious when handling the discharge wires and let them hang down, ensuring that they do not simultaneously touch both terminals of the battery. Remove the negative (-) terminal first during removal; install the negative terminal last during installation. Do not tighten the battery screws too tightly (<10N.m) to avoid damaging the battery shell.

MAINTENANCE

WARNING

Before operating the vehicle, please carefully read the label below and promptly replace any labels that are damaged or missing.

WARNING: LONG-TERM STORAGE FOR STORAGE LONGER THAN 7 DAYS

1. FULLY CHARGE THE VEHICLE



2. UNPLUG THE CHARGING CABLE



3. TURN OFF THE AUXILIARY BATTERY.



(Switch located inside passenger glove compartment).

ARIES EV
PN58765-EV

MAINTENANCE



CAUTION

Before performing any tire or brake system maintenance, ensure the power switch is turned off.

REPLACING A TIRE

1. *Preparation before replacement:*

Park the vehicle on level ground where it does not obstruct traffic and allows for a safe wheel replacement. Before replacing the tire, switch on the vehicle's hazard warning lights and place a triangular warning sign at an appropriate distance to prevent traffic accidents.

2. *Lifting the vehicle:*

Before lifting the vehicle, place suitable wheel chocks in front of and behind the wheel diagonally opposite the one being replaced. Then use a wrench to loosen the lug nuts of the wheel to be replaced by half a turn. Position the jack at the designated jacking point next to the wheel to be replaced, and lift the vehicle.

3. *Replacing the spare tire:*

Use the wheel-nut wrench to remove the lug nuts, then take off the tire. Clean any dirt from the hub surface, then install the spare tire. Tighten the wheel nuts in a crisscross pattern until the wheel is seated firmly against the brake hub. Lower the vehicle to the ground and remove the jack. Using the same crisscross pattern, fully tighten the wheel nuts. The specified torque shall be used when tightening the wheel nuts.

⚠ WARNING

Do not place the jack anywhere other than the designated lifting points. Improper jack positioning can result in vehicle body damage or accidents due to sudden body collapse.

⚠ WARNING

Regularly check the spare tire pressure and keep it within the specified range to ensure it is ready for emergency use at any time. If the spare tire has not been used for many years, please contact our company to confirm that it is still safe to use.

TIRE NUT TIGHTENING TORQUE

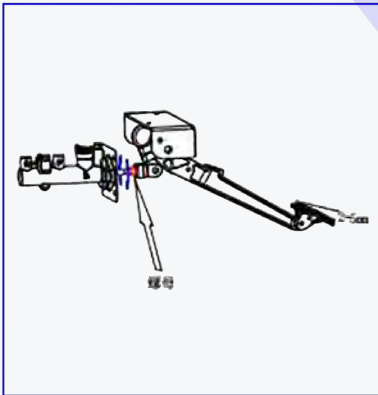
90NM-105NM

MAINTENANCE

ADJUSTING THE BRAKE SYSTEM

CAUTION

Step on the brake pedal by foot several times to adjust the brake freely.



FREE ADJUSTMENT OF Brake Pedal Free Travel

1. First, loosen the lock nut on the push rod of the brake master cylinder, then turn the push rod counterclockwise to change the length of the push rod, thereby increasing the pedal free travel. After adjusting the free travel of the brake pedal to an appropriate level, lock the nut in a timely manner to prevent it from loosening.

2. The free travel of the brake pedal can be freely adjusted, but it should not be changed frequently. It is recommended to adjust it between 0.08" and 0.20". Just increase the push rod length by 0.04–0.08".

⚠ WARNING

If you suspect there is a problem with the brakes, please contact the dealer before use, as brake failure can cause serious accidents.

CAUTION

When the brake fluid level in the reservoir becomes too low, air may enter the brake lines. Even if brake fluid is added afterward, braking performance will not improve. At this point, all air within the brake system shall be completely purged.

DETERMINING IF AIR HAS ENTERED THE BRAKE SYSTEM LINES

On the first press of the brake pedal, if it feels soft and spongy, and after several consecutive presses the pedal gradually rises, eventually becoming firm and unable to be pressed down, this indicates that air is present in the brake system. Air entrapment may occur easily, so the hydraulic actuating mechanism shall be bled.

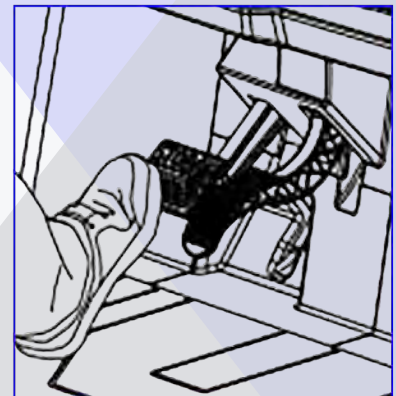
BRAKE LINE BLEEDING METHOD

1. For manual bleeding, two people shall work together. The order of expelling air should be from the farthest wheel to the nearest in relation to the master

brake cylinder: typically right rear wheel → left rear wheel → right front wheel → left front wheel.

2. Remove the dust cap from the bleeder valve on the wheel cylinder. Install a transparent hose of appropriate length onto the bleeder valve, placing the other end into a container. The end of the hose shall remain submerged below the fluid surface.

3. One person should press the brake pedal several times, then press and hold it firmly. The other person loosens the bleeder screw on the wheel cylinder by about half a turn. At this moment, the air will be expelled together with the brake fluid. When the brake pedal drops to the end of its travel, immediately tighten the bleeder screw. Accurate coordination between the two operators is essential.



4. Repeat the above procedure to expel all air from the brake system until brake fluid flows out without bubbles. Then

MAINTENANCE

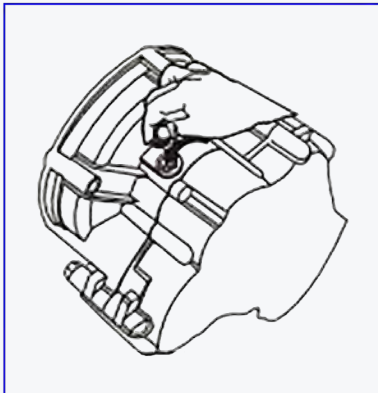
tighten the bleeder screw and reinstall the dust cap.

5. During the bleeding process, frequently check the brake-fluid level in the reservoir and replenish it in a timely manner if it becomes low.

⚠ WARNING

The discharged brake fluid shall not be reused, as it may have been exposed to air for an extended period and absorbed moisture, which would reduce braking efficiency.

CHECKING THE GEARBOX GEAR OIL



1. Park vehicle on level surface.
2. Remove the gearbox oil cap;
3. If the oil level is insufficient, slowly add (GL-4) 75W/90 gear oil until it reaches 2/3 of the gearbox volume.

4. Do not add filter gear oil.

5. Reinstall the gearbox oil cap.

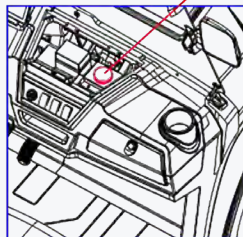
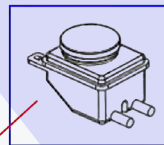
RECOMMENDED

(GL-4) 75W/90 gear oil Gearbox capacity: 0.85L

CAUTION

Do not allow any foreign material to enter the gearbox

BRAKE OIL RESERVOIR



1. The fluid level in the reservoir should be checked once per month. Ensure that the brake-fluid level is between the MAX and MIN marks. The brake-fluid reservoir is located beneath the front hood; lift the hood to inspect it. If the fluid level is at or below the MIN mark, the brake system shall be checked for leaks, and the brake pads should be examined for excessive wear.

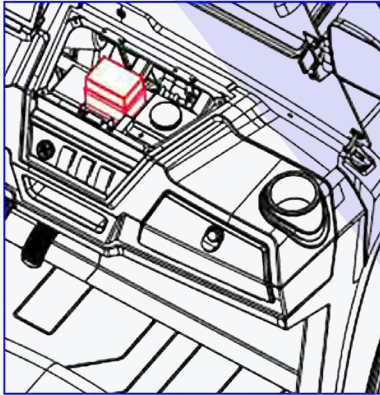
2. Brake fluid absorbs moisture from the air. Excessive water content can cause corrosion damage within the brake system, and the boiling point of the brake fluid will drop significantly. The brake fluid shall be replaced in accordance with the periodic maintenance schedule.

⚠ WARNING

1. Always use the brake fluid specified by our company or a DOT3 synthetic product of the same grade that is packaged in a sealed container approved by our company. Different types of brake fluid shall not be mixed.
2. Do not mix brake fluid with liquids containing mineral oil (such as engine oil or gasoline). Mineral oil will damage the seals and rubber components of the brake system.
3. Brake fluid is toxic and shall be kept out of reach of children. If accidentally ingested, seek medical attention immediately.
4. Brake fluid is corrosive and shall not come into contact with painted surfaces. If it spills onto paint, rinse immediately with plenty of water.
5. Brake fluid can harm the skin. If it splashes onto the skin or into the eyes, rinse thoroughly with plenty of water. If discomfort occurs, seek medical attention immediately.

MAINTENANCE

REPLACING FUSES



1. Fuse Box Location

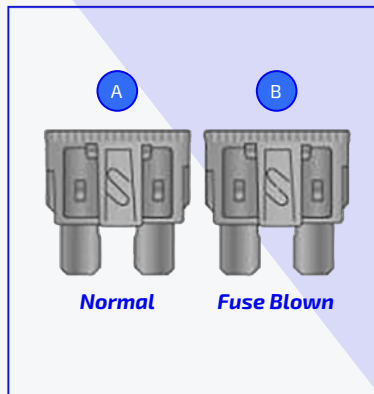
Facing the front of the vehicle, the fuse box is on the right side of the oil pot. Open the box cover by releasing the left and right buckles to check the fuses.

2. Inspecting the Fuses

Fuses protect the vehicle's electrical equipment by preventing overloads in the circuit. A blown fuse indicates that a fault has occurred in the circuit it protects, causing that circuit to stop functioning. If you suspect a fuse problem, pull out the fuse and check whether it has blown.

3. Replacing the Fuse

Locate the blown metal element inside the fuse. If the fuse is blown, replace it with a spare fuse of the same or lower amperage rating. If you use a lower-rated spare fuse and it blows again, replace it with a fuse of the correct rating. If a fuse of the correct rating blows again in a short period of time, this indicates the vehicle may have a serious electrical fault. Please contact our company as soon as possible.



4. Fuse Locations & Corresponding Electrical Components

- TF006-10-B Fuse Box Cover Sticker (2WD 48V)

F01 15A	EPS	F07 5A	Wake-Up Power	R02
F02 15A	EPS	F08 5A	Instrument	
F03 15A	BCM	F09 5A	Instrument	
F04 15A	BCM	F10 15A	Spare	R01
F05 5A	Brake Switch	F11 10A	Spare	
F06 15A	USB	F12 5A	Spare	

- TF006-10-B Fuse Box Cover Sticker (4WD 72V)

F01 15A	BCM B+	F07 15A	Spare	R02
F02 15A	BCM B+	F08 10A	Spare	Flasher
F03 10A	Instrument	F09 5A	Accelerator Pedal	
F04 10A	BMS 12V B+	F10 10A	Switch Power	R02
F05 5A	Ignition Lock Constant Power	F11 5A	Instrument	12V ON Power Relay
F06 10A	EPS B+	F12 15A	USB	

MAINTENANCE

REGULAR MAINTENANCE CHART

Regular inspections are mandatory to achieve optimal driving performance and safe operation.

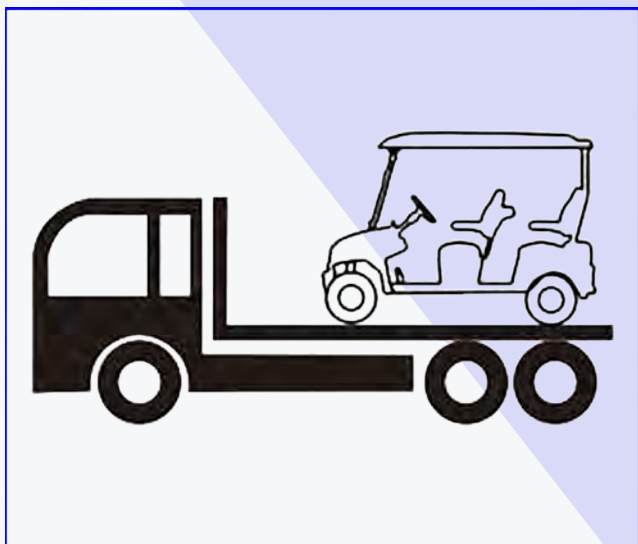
C = Check CA = Check & Adjust R = Replace S = Service CL = Clean & Lubricate L = Lubricate

	REMARKS	BEFORE OPERATION	MONTHLY (20 CYCLES / 20 H / 100 MI / 160 KM)	HALF YEAR (125 CYCLES / 125 H / 600 MI / 1,000 KM)	ANNUAL (250 CYCLES / 250 H / 1,200 MI / 2,000 KM)	EVERY 2 YEARS (500 CYCLES / 500 H / 2,500 MI / 4,000 KM)	EVERY 4 YEARS (1,000 CYCLES / 1,000 H / 5,000 MI / 8,000 KM)
BEFORE OPERATION	Charging Abnormality	S	S	S	S	S	S
	Clean around the battery and check the tightness of the screws	S	S	S	S	S	S
	Inspect the brakes	C	CA	CA	CA	CA	CA
	Steering System Check	C	C	C	C	C	C
	Check tire pressure, tread depth, and surface damage	C	CA	CA	CA	CA	CA
	Body and Chassis Inspection	C	C	C	C	C	C
	Check the tightness of the screws	C	C	C	C	C	C
	Check the reverse warning buzzer	C	C	C	C	C	C
MONTHLY	Check the electrolyte level		C	C	C	C	C
	Check Electrical Contact Points for Damage		C	C	C	C	C
	Clean and lubricate the pedal control area		CL				
EVERY 6 MONTHS	Check for cracks or damage in the insulation			C	C	C	C
	Inspect shock absorbers for oil leakage and spring damage			C	C	C	C
ANNUALLY	Perform a discharge test				S	S	S
	Apply electrode protectant				S	S	S
	Check brake pad thickness and rear axle				C	C	C
	Check steering free play and adjust the wheels				CA	CA	CA
	Check wheel bolt tightness and front / rear wheel bearings				C	C	C
	Check gearbox oil level and leakage				C	C	C
	Check and adjust brakes				CA	CA	CA
	Replace steel plate rubber sleeves						R
EVERY 4 YEARS	Replace the transmission gear oil						R
	Check lubrication leakage and adjust gearbox if needed						CA

If there is no reference, an authorized dealer or an eligible technician will be responsible for maintenance.

TRANSPORT & STORE

TRANSPORTATION



Disassembly instructions

1. During shipment, drive the vehicle onto the transport vehicle's cargo platform or into the cargo box through the factory's lift-type shipping platform, then disconnect the vehicle's power supply and apply the handbrake for parking. Additionally, place fixed chocks in front of and behind the wheels and secure with straps to ensure safe transportation.
2. When unloading, remove the entire vehicle. Ensure that when the main beam is lower than the side edgings, use two wooden planks (4" x 4") to avoid damaging the vehicle with the forklift. Alternatively, drive the vehicle directly onto the ground via a bridge board. Ensure that the operation is carried out by a licensed driver.
3. For short distances, the vehicle can be towed with the front wheels on the ground. It is prohibited to tow with the rear wheels on the ground to avoid damage to the motor and gearbox during transportation.

STORAGE

If the vehicle shall be parked for an extended period, the following measures should be taken. Proper measures will prevent deterioration of the vehicle's condition and make it easier to restart later. It is recommended to store the vehicle indoors.

Notes: Press the emergency stop switch, remove the key and store it in a safe place.

Vehicle Body Preparation

1. Check that the tire pressure of standard models reaches 36~40 psi; Check that the tire pressure of lifted models reaches 16~20 psi.
2. Clean the vehicle body; anti-rust oil may be applied.
3. Cover the vehicle with a cloth and store it in a dry, well-ventilated place.

Battery preparation

1. Charge the battery at least once a month.
2. Switch the power switch to the OFF position for long-term storage.
3. Use soda water to clean the stains on the surface of the battery to avoid corrosion.

CAUTION

Do not allow any foreign material to enter the gearbox

AFTER-SALES SERVICE

To protect the interests of customers and provide them with excellent after-sales service, please read the followings carefully:

- Warranty content
- Object
- Period

WARRANTY CONTENT

After purchasing the product from our authorized distributor, please read the instruction manual carefully and operate the product correctly in accordance with the manual. Within the warranty period, for product quality issues caused by materials, manufacturing, or design, our company commits to repair or replace defective components.

WARRANTY OBJECT & CONTENT

As of the production date:

1. We will provide free maintenance service according to Aries EV Warranty Regulations for Electric Vehicles.
2. Tires, seat cushions, backrests and other consumable parts are not included in the warranty period. In case of damage, contact the manufacturer.

3. For quality issues identified by batches, we will send technical staff to repair or recall defective products (including domestic and overseas products).

4. We will paid lifelong maintenance service after one year.

Quality issues arising from the following situations are not included in the warranty period:

1. Not used according to the manual.
2. Repairs not conducted at the company's authorized service centers.
3. Exceeding the warranty period.
4. OEM parts are not used;
5. The product is refit without permission.
6. The product exceeds the maximum carrying capacity;
7. Damage is caused by force majeure factors such as typhoon, flood, earthquake or war.

VALIDATION OF WARRANTY

The purchaser must complete the warranty card truthfully at the purchase center with seal and signature. Domestic users should send it to the Company, and overseas users should send it to the dealer. The dealer should enter related information into the system in the specified form and email it to the Company. The Company should make a confirmation on validation of warranty.

IMPORTANT

If damage to the product occurs due to failure to operate it in accordance with the instruction manual, such damage is not covered by repair or replacement.

TROUBLESHOOTING

DIAGNOSIS

The controller provides fault diagnosis information to assist technicians in troubleshooting. Fault information can be obtained in the following ways:

1. Observe the buzzer/fault indicator light and look up the fault code via the fault code table.
2. Connect a debugger and read fault information through the fault diagnosis menu. When a fault occurs in the controller, the controller will alert the user to timely obtain and clear the fault through the buzzer with different beep frequencies or the fault light with different flashing frequencies. The controller fault alarm can only indicate one latest fault. When multiple faults occur, other faults can only be indicated after the latest fault is cleared.

The user can also connect the controller to a handheld DS13 debugger, DS14 PC debugging software, or a wireless debugger to view all current real-time faults and previous historical faults through the fault diagnosis function. When a fault occurs, the controller will take the following actions to handle the fault:

Fault Action Name	Action
Motor Shutdown	Stops the motor from running
Main Contactor Shutdown	Opens the main contactor
Electromagnetic Brake Shutdown	Activates the electromagnetic brake
Throttle shutdown	Keeps the throttle at 0%
External Drive Shutdown	Stops the output of the external drive
Motor Braking	Puts the motor in a fully braked state

FAULT DIAGNOSIS

For example, one long beep and three short beeps indicate a current sensor fault (fault code: 0x13, displayed as fault 19 on the host computer). The controller buzzer or indicator light flashes in cycles to indicate the occurred fault. When multiple faults occur, fault indication will be performed according to the ID sequence.

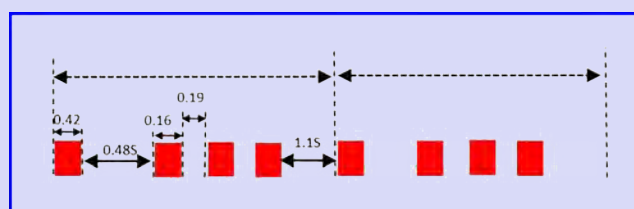


Figure 7-1 Buzzer/Indication Cycle Diagram

FAULT CODES

Access the fault diagnosis menu through the debugging system to view real-time and historical faults of the controller. The real-time fault list displays faults currently present in the controller, and the historical fault list displays all faults that have occurred since the historical faults were last cleared.

FAULT HANDLING

When a fault occurs in the controller, the controller will handle the fault in accordance with the fault troubleshooting table to ensure system safety.

FAULT DIAGNOSIS TABLE

FAULT CODE	FAULT CODE	FAULT NAME	POSSIBLE CAUSES	FAULT ACTIONS	CLEAR CONDITION
0X12	0x0C	Controller overcurrent fault	1. Short circuit in the external wiring of U, V, W phases of the motor cables 2. Improper motor parameter settings 3. Damaged controller 4. Excessive noise from the speed encoder	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X13	0x0D	Current sensor fault	1. Short circuit between motor phases and the vehicle frame 2. Controller fault.	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X14	0x0E	Pre-charge fault	The main contactor is not closed yet, but there is an external load or short circuit at the rear end of the capacitor bank, making the capacitor bank unable to charge normally. The battery voltage and capacitor voltage can be observed in the monitoring parameters	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X15	0x0F	Controller severe low temperature	1. The controller operates in an extreme environment 2. Incorrect controller temperature detection	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X16	0x10	Controller severe overheating	1. The controller operates in an extreme environment 2. Excessive motor load 3. Incorrect controller temperature detection 4. Unsatisfactory controller heat dissipation conditions	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause

FAULT CODES

0X17	0x11	Severe undervoltage	1. Mismatch between battery parameter settings and the battery pack 2. The battery pack is drained by non-controller components 3. Excessively high resistance of the battery pack 4. The battery is accidentally disconnected while the controller is driving the motor 5. Blown B+ fuse of the battery pack or tripped main contactor	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown	The capacitor bank voltage rises above the severe undervoltage limit and restart the controller
0X17	0x22	Key switch severe undervoltage	1. Excessive non-controller load connected to the key switch wire, causing voltage drop 2. Excessively high resistance in the key switch circuit 3. The key switch is accidentally disconnected while the controller is driving the motor 4. Blown key switch fuse	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Drive output shutdown	The key switch voltage rises above the undervoltage threshold
0X18	0x12	Severe overvoltage	1. Mismatch between battery parameter settings and the battery pack 2. Excessively high battery resistance for a given regenerative current 3. The battery is accidentally disconnected while the controller is in regenerative braking mode	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	The capacitor bank voltage drops below the severe overvoltage limit and restart the controller
0X18	0X02	Key switch severe overvoltage	1. High voltage applied to the key switch 2. Mismatch between battery parameter settings and the battery pack 3. Excessively high battery resistance for a given regenerative current 4. The battery is accidentally disconnected while the controller is in regenerative braking mode	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	The key switch voltage drops below the severe overvoltage limit
0X22	0x16	Controller high-temperature current reduction	1. The controller operates at the high-temperature current reduction temperature point 2. The controller operates in an extreme environment 3. Excessive motor load 4. Unsatisfactory controller heat dissipation conditions 5. Incorrect controller temperature detection	1. Power limitation	Restart the key switch after the temperature returns to normal or the cause is eliminated

FAULT CODES

0X23	0x17	Undervoltage current reduction	1. Normal operation, low battery power, battery charging required 2. Mismatch between battery parameter settings and the battery pack 3. The battery pack is drained by non-controller components 4. Excessively high resistance of the battery pack 5. The battery is accidentally disconnected while the controller is driving the motor 6. Blown B+ fuse of the battery pack or tripped main contactor	Power limitation	The capacitor bank voltage rises above the user-set undervoltage limit
0X24	0x18	Overtvoltage current reduction	1. Normal operation, the controller is in regenerative braking, raising the battery voltage 2. Mismatch between battery parameter settings and the battery pack 3. Excessively high battery resistance for a given regenerative current 4. The battery is accidentally disconnected while the controller is in regenerative braking mode	Power limitation	The capacitor bank voltage drops below the user-set overvoltage limit
0X28	0x1C	Motor high-temperature current reduction	1. Normal operation, the motor temperature exceeds the user-set motor high-temperature current reduction temperature, and the current will be attenuated 2. Incorrect motor temperature sensor settings 3. Incorrect motor temperature detection 4. Motor overloading	Power limitation	The motor temperature drops below the user-set motor high-temperature current reduction temperature
0X29	0x1D	Motor temperature sensor fault	1. Incorrect motor temperature sensor connection 2. Short circuit or open circuit of the motor temperature sensor 3. Incorrect motor temperature detection	Power limitation	The input pin voltage of the motor temperature sensor returns to normal
0X31	0x1F	Drive 1 open/short circuit	1. Short circuit or open circuit of the drive 2. Poor contact or wiring error	Drive 1 shutdown	Restart the key switch after eliminating the cause
0X31	0x1F	Main contactor open/short circuit	1. Open circuit or short circuit of the main contactor 2. Dirty connector pins of the controller or main contactor coil 3. Poor connector wiring or wiring fault 4. Poor contact or wiring error	1. Main contactor shutdown 2. Electromagnetic brake shutdown 3. Throttle shutdown 4. Motor braking	Restart the key switch after eliminating the cause
0X32	0x20	Drive 2 open/short circuit	1. Short circuit or open circuit of the drive 2. Poor contact or wiring error	Drive 2 shutdown	Restart the key switch after eliminating the cause

FAULT CODES

0X32	0x20	Electromagnetic brake open-circuit / short-circuit	1. Open circuit or short circuit of the electromagnetic brake 2. Dirty connector pins of the controller or electromagnetic brake coil 3. Poor connector wiring or wiring fault	1. Electromagnetic brake shutdown 2. Throttle shutdown 3. Motor braking	Restart the key switch after eliminating the cause
0X33	—	Tow mode activated	Tow switch is turned on	1. Throttle shutdown 2. Motor shutdown	Turn off the tow switch (not yet added)
0X36	0x24	Encoder malfunction	1. Encoder damaged 2. Poor contact or wiring error	1. Motor shutdown 2. Electromagnetic brake shutdown	Restart the key switch after eliminating the cause
0X37	0x25	Motor open circuit	1. Damaged or unconnected motor 2. Poor contact or wiring error	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X38	0x26	Main contactor sticking	1. Stuck closed contacts of the main contactor 2. Open circuit of motor U-phase or V-phase 3. Existence of a voltage path (e.g., external pre-charging resistor) supplying current to the capacitor bank (B+ connection terminal)	1. Motor braking 2. Throttle shutdown	Restart the key switch after eliminating the cause
0X39	0x27	Main contactor failure to close	1. The main contactor fails to close 2. Oxidized, burnt or poor contact of the main contactor contacts 3. External load preventing capacitor bank charging connected to the B+ connection terminal 4. Blown B+ fuse 5. Unreasonable settings of the main contactor pull-in voltage and holding voltage parameters 6. The main contactor is accidentally tripped after pull-in, e.g., vibration or contact oxidation 7. Main contactor malfunction	1. Motor braking 2. Electromagnetic brake shutdown 3. Throttle shutdown	Restart the key switch after eliminating the cause
0X41	0x29	High throttle signal voltage	1. Excessively high throttle signal voltage 2. Improper throttle high threshold parameter settings	Throttle shutdown	The throttle signal voltage drops below the set high threshold voltage
0X42	0x2A	Low throttle signal voltage	1. Excessively low throttle signal voltage 2. Improper throttle low threshold parameter settings	Throttle shutdown	The throttle signal voltage rises above the set low threshold voltage
0X42	0x2A	Throttle variation fault	Poor throttle ground wire connection	Throttle shutdown	Restart the key switch after eliminating the cause
0X43	0X63	High Pot2 signal voltage	1. Excessively high Pot2 signal voltage 2. Improper Pot2 high threshold parameter settings	Motor Braking	The Pot2 signal voltage drops below the set high threshold voltage

FAULT CODES

0X44	0X63	Low Pot2 signal voltage	- Excessively low Pot2 signal voltage - Improper Pot2 low threshold parameter settings	Motor Braking	The Pot2 signal voltage rises above the set low threshold voltage
0X46	0x2E	EEPROM fault	- Mismatch between the controller program and EEPROM parameter version - Out-of-range EEPROM configuration parameter data - Failure to write data to EEPROM	- Throttle shutdown - Motor shutdown - Main contactor shutdown - Electromagnetic brake shutdown - External drive shutdown - Motor braking	Restart the key switch after eliminating the cause
0X47	0x2F	High pedal/start sequence fault	- Incorrect start sequence of key switch, interlock, direction, and throttle - Wiring error of key switch, interlock, direction, and throttle	Throttle shutdown	Restart the key switch after eliminating the cause
0X47	0x44	Gear switch fault	D/R gears are active simultaneously	Throttle shutdown	D/R gears are active
0X47	0x45	Charging throttle fault	Throttle signal detected during charging	Throttle shutdown	Release the throttle signal
0X49	0x31	Parameter change fault	When some safety-related parameters are set, the controller must be restarted to control motor movement for safety, thus triggering this fault	- Throttle shutdown - Motor shutdown - Main contactor shutdown - Electromagnetic brake shutdown - Motor braking	Restart the key switch after eliminating the cause
0X51	0X33	Controller temperature sensor fault	- Short circuit or open circuit of the controller temperature sensor - Incorrect controller temperature detection	- Throttle shutdown - Motor shutdown - Main contactor shutdown - Electromagnetic brake shutdown - Motor braking	Restart the key switch after eliminating the cause
0X52	0X4A	Controller low-temperature current reduction	- The controller operates at the low-temperature current reduction temperature point - The controller operates in an extreme environment - Incorrect controller temperature detection	Power limitation	The controller temperature rises above the low-temperature current reduction temperature threshold
0X53	0X2D	Throttle switch signal fault	- No output from the accelerator switch signal - Poor connection or wiring error of the accelerator switch - Incorrect parameter settings	Throttle shutdown	Restart the key switch after eliminating the cause
0X54	0X5C	Low battery power	Excessively low battery power	Speed limitation according to the low battery speed limit value	The battery power rises above the user-set minimum allowable battery power threshold
0X55	0X2C	Severe motor overheating	- Normal operation, the motor temperature exceeds the user-set maximum allowable motor temperature - Incorrect motor temperature sensor settings - Incorrect motor temperature detection	- Motor shutdown - Main contactor shutdown - Electromagnetic brake shutdown - Throttle shutdown - Motor braking	The motor temperature drops below the user-set maximum allowable motor temperature

FAULT CODES

0X56	0x56	Throttle high reference fault	Abnormal Pot High voltage	Throttle shutdown	The Pot High voltage returns to the normal range
0X57	0X50	Software fault	Internal software fault	Warning only	Warning only
0X61	0X63	MOS fault	Internal hardware fault	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X66	0X63	Motor voltage error	Abnormal phase voltage sampling circuit	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. External output shutdown 6. Motor braking	Restart the controller after eliminating the cause
0X72	0X3F	PDO timeout	CAN PDO reception timeout	Throttle shutdown	CAN PDO data is received again
0X73	0X49	Motor stalled	1. Motor stalling 2. Motor encoder fault 3. Poor motor wire connection 4. Abnormal 5V power supply to the encoder	1. Motor shutdown 2. Electromagnetic brake shutdown 3. Throttle shutdown	Restart the key switch; replace the controller if the fault cannot be cleared
0X87	0X57	Motor identification fault	1. Abnormal motor temperature sensor 2. Motor high-temperature current reduction fault 3. Controller high-temperature current reduction fault 4. Controller low-temperature current reduction fault 5. Undervoltage current reduction fault 6. Severe overvoltage fault 7. No speed data from the encoder 8. Identified motor parameters out of range	1. Motor shutdown 2. Main contactor shutdown 3. Electromagnetic brake shutdown 4. Throttle shutdown 5. Motor braking	Restart the key switch after eliminating the cause
0X88	0X24	Encoder pulse setting fault	Mismatch between the Encoder Steps parameter and the actual motor encoder	1. Throttle shutdown 2. Motor shutdown 3. Main contactor shutdown 4. Electromagnetic brake shutdown 5. Motor braking	Restart the key switch; replace the controller if the fault cannot be cleared (not supported temporarily)
0X90	0x2B	Brake fault	Brake signal and throttle signal are active simultaneously	Throttle shutdown	Release the throttle signal
0X91	0x2B	Handbrake fault	Handbrake signal and throttle signal are active simultaneously	Throttle shutdown	Release the throttle signal
0X92	0X60	Electromagnetic brake engagement failure	1. Motor movement detected after the electromagnetic brake is engaged 2. Insufficient electromagnetic brake torque causing motor movement	Warning only	1. Restart the throttle when EM Brake Type=2 2. Restart the interlock when EM Brake Type=1
0X93	0X5A	Charging prohibited	Charging prohibited signal received	Interlock shutdown	Clear the charging signal and restart the controller

FAULT CODES

0X93	0X5A	BMS charging prohibited	Charging prohibited signal received	InterLock shutdown	Clear the charging signal and restart the controller
0X94	0X01	BMS stop fault	Severe fault signal requiring shutdown received from BMS	Throttle shutdown	Severe BMS fault cleared
0X95	0X01	BMS fault Level 2 speed limitation	Level 2 speed limitation fault signal received from BMS	Speed limitation according to BMS limited 2	BMS Level 2 speed limitation fault cleared
0X96	0X01	BMS fault Level 1 speed limitation	Level 1 speed limitation fault signal received from BMS	Speed limitation according to BMS limited 1	BMS Level 1 speed limitation fault cleared
0X97	0X01	BMS alarm	Alarm fault signal received from BMS	Warning only	BMS alarm fault cleared

DN CONTROLLER

MAINTENANCE

There are no user-serviceable parts inside the M- series controller. Do not attempt to open, repair, or modify the controller by any means. Otherwise, the controller may be damaged and the warranty will be voided.

It is recommended to keep the controller and its connections clean and dry, and to regularly check and clear the controller's fault history file.

CLEANING

Regular external cleaning of the controller helps prevent corrosion and potential electronic control problems caused by dirt, dust, and chemicals commonly present in the operating environment and battery- power systems.



SAFETY WARNING

Appropriate safety precautions shall be taken when working around any battery- power system. These precautions include, but are not limited to: proper training, wearing eye protection, avoiding loose clothing, and removing jewelry.

Use the following cleaning procedures for routine maintenance. Never use a high - pressure washer to clean the controller.

1. Disconnect the battery to cut off power.
2. Discharge the capacitors inside the controller by connecting a load (e.g., contactor coil) across the B+ and B- terminals of the controller.
3. Remove dirt or corrosion from the power and signal connector areas. Wipe the controller clean with a damp cloth. Dry it thoroughly before reconnecting the battery.
4. Ensure all connections are tight. Refer to the Installation and Wiring chapter for the maximum tightening torque specifications for battery and motor connections.

FAULT HISTORY

The DS14 PC debugging system, handheld DS13 debugger, or wireless debugger can be used to access the controller's fault history file. The debugger will read all faults encountered by the controller since the fault history file was last cleared. Contactor faults may be caused by loose wiring; the contactor wiring shall be carefully inspected. Overheating faults may be caused by operator habits or overloading.

After diagnosing and correcting the problem, it is good practice to clear the fault history file. This allows the controller to accumulate new fault records. When checking the new fault history file later, you can easily determine whether the problem has been truly resolved.

APPENDIX

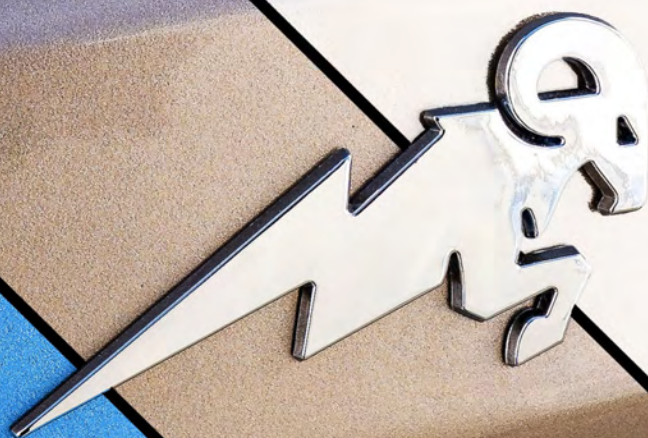
Contents & Methods of Self-Inspection & Comprehensive Inspection

NO.	INSPECTION ITEM	INSPECTION METHOD	SELF-INSPECTION	COMPREHENSIVE INSPECTION
1	INSPECTION ITEM	Whole-vehicle appearance	✓	✓
2		Primary load-bearing structural components	—	✓
3		Major components	✓	✓
4		Nameplates and markings	—	✓
5		Power system	✓	✓
6		Driving system	✓	✓
7		Steering and operating system	✓	✓

APPENDIX

Contents & Methods of Self-Inspection & Comprehensive Inspection

8	INSPECTION ITEM	Brake system	Inspect and verify whether the service brake and parking brake are effective, and whether the hydraulic brake system has any leakage.	✓	✓
9		Electrical and control system	Check whether all electrical connectors and plugs are secure and whether any wiring is damaged.	✓	✓
10		Safety protection and protective devices	Check whether the seat belts, safety rails, and handrails are intact, and verify that the seat belt attachment devices and buckles are firmly connected.	✓	✓
11	TEST ITEMS	Steering performance	With the vehicle in an unladen condition, turn the steering wheel to the maximum angle and hold it; operate the vehicle at the minimum stable speed; trace the outermost trajectory of the vehicle body and measure the minimum outer turning radius. Measure twice for front-left, front-right, rear-left, and rear-right, and average the values for each side. Verify whether the vehicle's turning radius meets performance requirements.	—	✓
12		Braking performance	With the golf cart in an unladen condition, perform an emergency stop at maximum vehicle speed and use a tape measure to record the braking distance to verify whether the braking distance is abnormal. On a road section with the maximum gradient allowed on the route, apply the parking brake in both uphill and downhill directions under full load, and visually check whether the vehicle slips within 5 minutes.	—	✓
13		Electrical safety	Use a 500 V insulation resistance tester to measure the insulation resistance between the battery terminals and the vehicle frame. The insulation resistance shall not be less than 50 k Ω. Operate the emergency power-off device to verify whether it can disconnect the main power supply and reset normally.	—	✓
Note: “√” indicates “required”, and “—” indicates “not required”.					



ARIES EV

[P] (866) 274-3738
[E] info@ariesev.com
[W] ariesev.com

ADDRESS

1540 N Frontage RD, STE 108
Plant City, FL 33563 USA