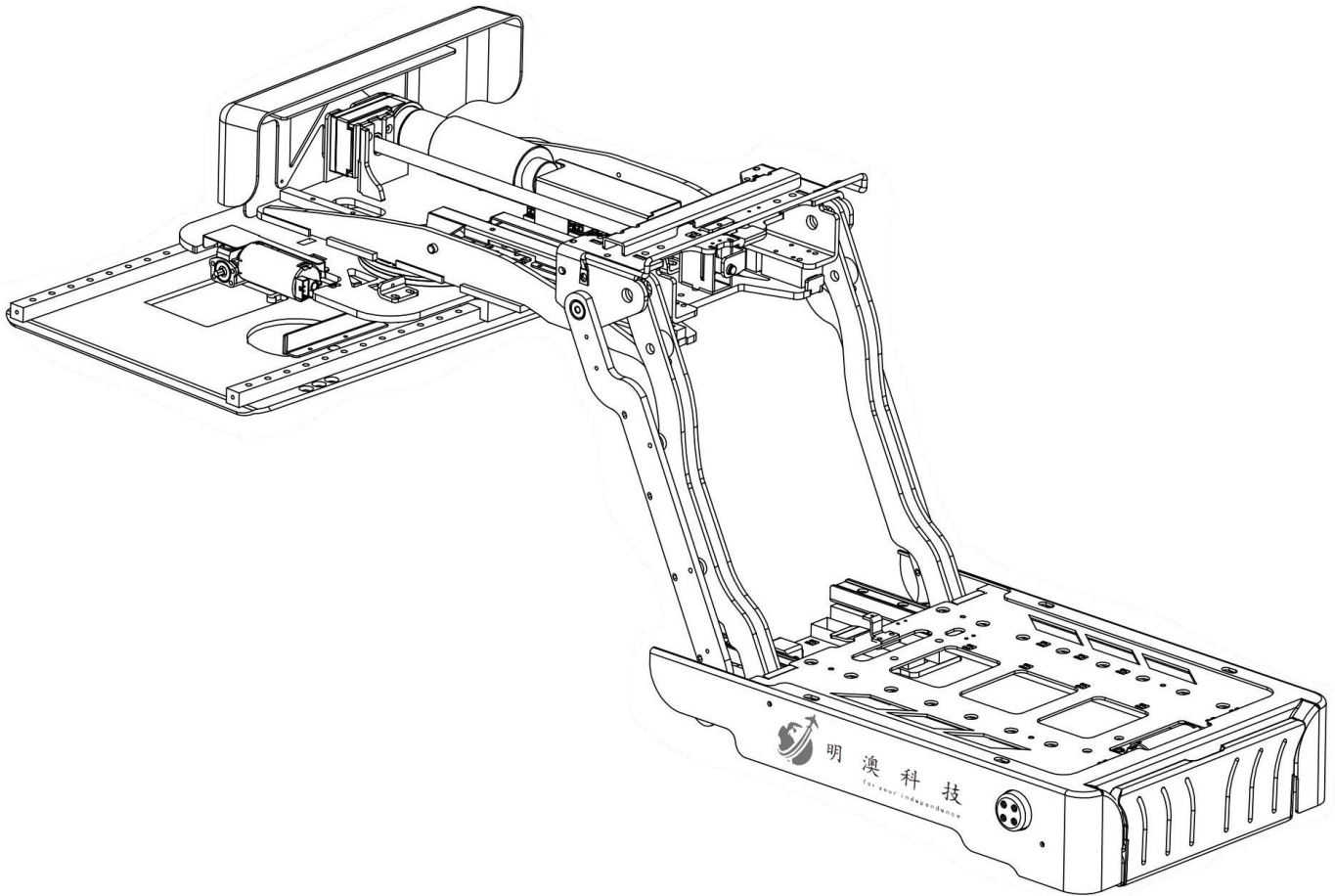




Ming Ao Technology

for your independence

# MA-RL-M Mechanical lifting and rotating seat



Product usage guide



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## Company Profile

First of all, thank you for choosing the products produced by Shandong Mingao Automobile Technology Co., Ltd. In the next daily life travel, Hope that the company's products will bring you unprecedented independence, comfort and ease!

The company was established in 2015 and has passed the EU CE quality system certification. It won the Excellent Modification Scheme Award in the Grand Prix Competition in 2020, won the Most Influential Channel Brand of Yasen Exhibition in 2021, and won the eighth in June 2021. Honorary certificate of the Golden Horse Award, won the utility model patent certificate in August 2021, won the AAA level of EU credibility in December 2021, became a member of the Automobile Dealers Chamber of Commerce of the All-China Federation of Industry and Commerce in January 2022, and was elected in June 2022 It is an excellent supplier for government procurement and a leader in China's automotive barrier-free products. It can provide customers with product research and development, production, system debugging and on-site services.

The company has hundreds of barrier-free products serving the 2021 Xi'an Games. During this period, it was recognized by the industry and received unanimous praise.

Main products: Wheelchair lifts, wheelchair boarding guides, swivel seats, lift swivel seats, separate electric wheelchairs, assisted driving devices for disabled people, wheelchair fixing devices, seat quick release & fixing devices, wheelchair storage devices, etc. Use accessible products.

Product exports: Italy, Russia, the United States, Turkey, Saudi Arabia, India, Malaysia, Indonesia, Japan, South Korea, Thailand, Vietnam, South Africa and more than 10 countries and regions.

This manual can guide you how to install and debug the product. During your installation, if you have any questions, please contact us, we will provide you with timely and satisfactory solutions.

The description in this manual is for reference only. If there is any discrepancy with the product status, please refer to the actual product. If you have any questions about the manual or would like a copy, please contact our company.

Thank you again for choosing us and wish you a happy life!

Version number of this manual: V2.2.

### **Shandong Mingao Automobile Technology Co., Ltd.**

☎ Company Phone: 400-833-6602

💻 After-sales phone: 18364060737

😊 Website: [www.mingao.top](http://www.mingao.top)

✉ E-mail: [Jonfeng@mingao.top](mailto:Jonfeng@mingao.top)

📍 Address: Zhuoda Industrial Park, Changjiang East Road, Dingtao District, Heze City, Shandong Province

## 1、 product statement

Mingao Technology guarantees to the original purchaser of the product that it will repair or replace any faulty parts due to material defects or workmanship problems free of charge during the product warranty period, as follows:

### 1.1 warranty period

- Warranty period: 12 months from the date of delivery by the supplier;
- Repair or replace any faulty parts due to defects in materials or workmanship during the warranty period;
- The parts that need to be replaced can be obtained by contacting our company;

### 1.2 After-sales service

- If there is a problem with the product, please contact our company in time (after-sales phone: 18364060737, 15701182765). Our company will analyze the cause of the problem within 24 hours and provide a solution to the problem. If the problem is caused by material defects or workmanship, our company will Free parts replacement;
- If you need to repair product parts, please notify in advance and give a reasonable repair time. The cost of returning the product must be borne by the customer, Mingao Technology does not accept cash on delivery. Mingao Technology will bear the transportation costs of new maintenance parts or products;
- This warranty does not apply to the following situations: failure damage of product parts due to accident, misuse, lack of proper maintenance, negligence, wrong adjustment, alteration, modification of vehicle mechanical condition, road hazard, overloading, failure to follow operating instructions or natural causes ( such as weather, lightning, flood);
- The responsibility of Mingao Technology's guarantee is limited to the repair and replacement of faulty parts during the guarantee period:
- Mingao Technology shall not be responsible for the accompanying or consequential expenses or losses.

### 1.3 Precautions

- Mingao Technology recommends that the product be inspected at least once every six months, and necessary maintenance should be done. For detailed maintenance steps, please refer to the maintenance instructions;
- There are strict specifications for product design and manufacture. Modifications to any aspect of the product are dangerous;
- The warranty will be void if: any changes are made to the original design of the product without the written authorization of Mingao Welfare Technology;
- Mingao Technology is not responsible for any personal injury or property loss caused by the use of modified Mingao Technology products. Without the written authorization of Mingao Technology, no individual or company can change the design of the product.

#### Notice

**Please do not change the design of the product without authorization, otherwise it will directly affect your enjoyment of after-sales service!**

## 2、Product Structure and Labeling

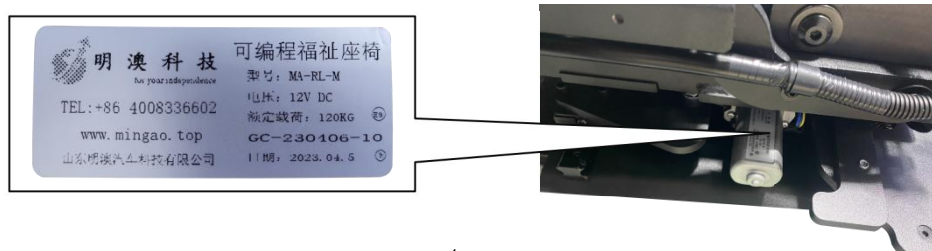


### 2.1. Product Structure Introduction

Serial number	Name	Describe
1	Institution ontology	The welcab seat mechanism body can realize movement, rotation and descent
2	4 key round switch	The right side of the mechanism can be used to operate the forward and backward movement of the seat mechanism and adjust the angle of the backrest (only for electric seats)
3	2 key round switch	The left side of the mechanism can be used to rotate and lift the operating mechanism
4	Hand switch	Can be used for programming, operation, transfer and backup between program and controller
5	Pedals	Ccollapsible,for placing the feet
6	Seat	Backrest can be adjusted manually or electrically

### 2.2. Product Identification Description

When the product leaves the factory, it will have a unique number for identification, and the label is attached to the upper end of the rotating motor. As shown in the figure:



### 3、 Normal operating mode

#### Notice

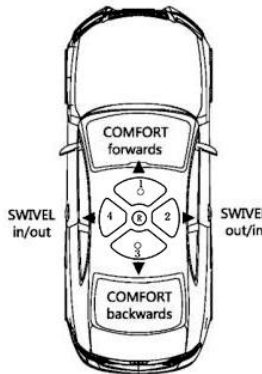
In the normal operation mode, after the seat is installed, the seat is screwed in and out according to the programmed route set by the user and the backrest is adjusted ; if the product seat selected by the customer does not have the function of electric backrest adjustment, the seat backrest needs to be adjusted manually.

#### 3.1. Hand Switch Screen Icons Overview



Door indicator icon, when the door is open , this icon will be displayed, when this icon disappears, it means that the door has been closed and the seat cannot be swung out.

#### 3.2. Description of Handheld Switch Buttons



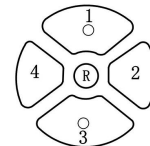
When the door is opened:

2: Swivel out the seat 4: Screw in the seat

When the doors are closed:

1: Move the seat forward 2: Inoperable

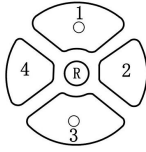
3: Move the seat back 4: Cannot operate



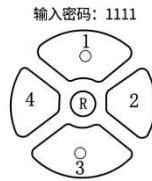
#### Notice

The button adopts the operation mode of pressing and stopping;  
When the button is operable, the corresponding button indicator light will be green;  
In this manual, the right-handed seat is used as a reference for description , and the actions of keys 2 and 4 of the left-handed mechanism are reversed.

### 3.3. Switch Chinese and English



Hold down the "R" key  
for 5 seconds



After jumping out of the password  
input interface, enter: 1111

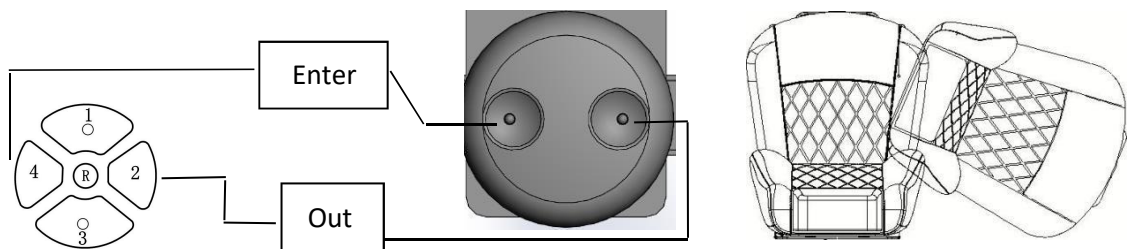
Ming Ao Welcab



It will automatically jump into the  
English interface as shown in the  
figure

### 3.4. Automatic entry and exit operation

- When the automatic seat rotation procedure starts, the seat will run according to the preset programmed route, and at this time, the manual adjustment function of the front, back and backrest of the seat will be prohibited;
- When the seat screw-in procedure is executed, the seat will be screwed in in the opposite direction. When the seat is fully screwed in, the seat will automatically return to the position of the seat back and the front and rear positions before the last screw-out procedure was performed (i.e. automatically return to the user's "comfort position");



#### Notice

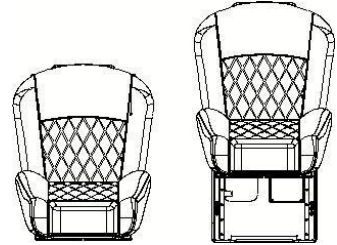
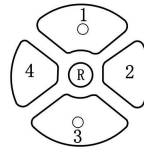
This function requires the door to be open, otherwise the out and in keys will not work.



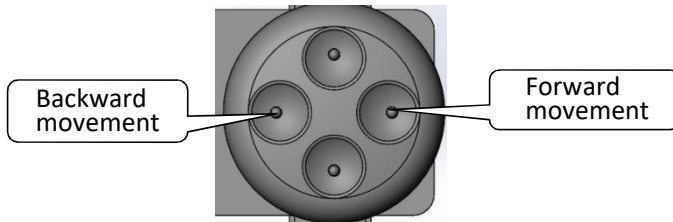
### 3.5. Adjusting the seat forward and backward

- This function will be disabled when the seat is activated in or out procedure;
- The user can freely adjust the front and rear positions of the seat only after the seat is fully screwed in;

Button 1 moves the seat forward;  
Button 3 moves the seat backwards.

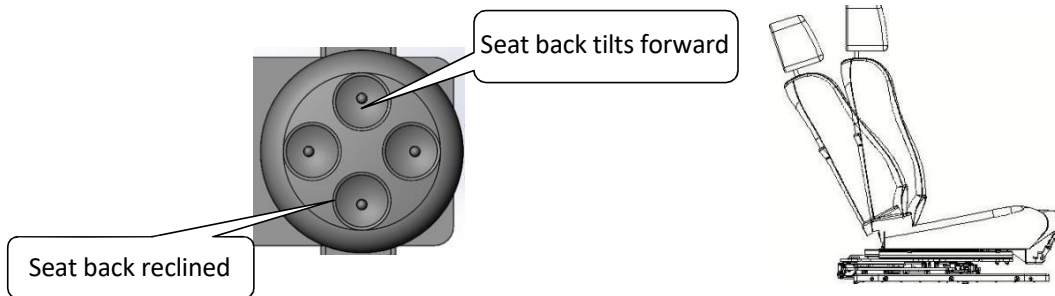


- Customers can also adjust the front and rear movement of the seat through the front and rear two buttons of the 4-button button on the right side of the seat;



### 3.6. Adjusting the seat back angle

- When the seat starts to rotate in and out, this function will be disabled;
- The user can freely adjust the seat back angle only after the seat is fully screwed in;



### 3.7. Programming mode

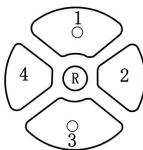
User can use hand switch to enter manual operation mode.

The manual operation mode has two main functions:

- Every movement of the seat can be manually operated in an emergency situation, when the seat will no longer follow the assigned route.
- When the seat program is out of order, the seat program can be re-corrected by manually operating the seat to return to the programming position.
- If the user needs to reprogram the seat path, the manual mode must also be used to return the seat to the programmed position.

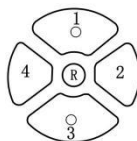


### 3.7.1 Menu in manual mode

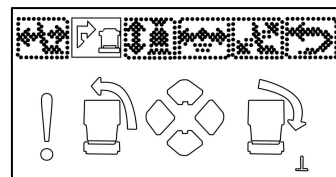


Hold down the "R" key  
for 5 seconds

Enter password: 1112

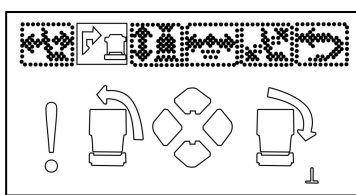


After jumping out of the password  
input interface, enter: 1112

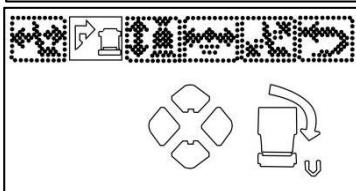


Manual mode main interface

### 3.7.2 Menu in manual mode

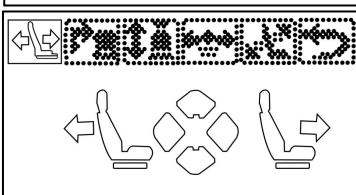


6 menu interfaces, buttons 1 and 3 can switch menus



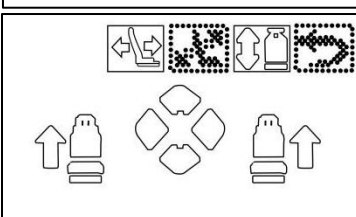
#### Seat swivel

"2" key, the seat is screwed out; "4" key, the seat is screwed in;



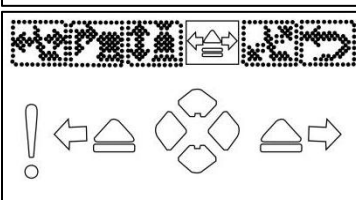
#### Seat front and rear adjustment

"2" key, the seat moves forward; "4" key, the seat moves backward;



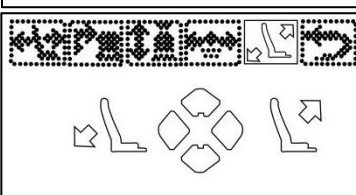
#### Seat lift motor extends and retracts

"2" key, the seat is stretched out; "4" key, the seat is retracted; before retracting, it is necessary to adjust the lifting motor to fully retract, and then adjust the second floor translation motor to retract;



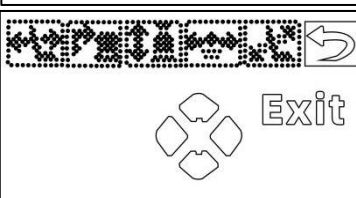
#### The upper translation motor extends and retracts

Press "2" to extend; press "4" to retract, the icon will turn gray when extending and retracting the maximum stroke;



#### Seat back adjustment

"2" key, the backrest leans forward; "4" key, the backrest leans back;



#### Exit directly

Operate each movement of the seat independently, and return the seat to the programmed position in manual mode and calibrate it before exiting;

### 3.7.3 Use manual mode in emergency


For example, when using the manual mode to operate the seat alone, the seat will deviate from the original programmed route. The most logical thing to do is to return the seat to the programmed position and calibrate in manual mode.

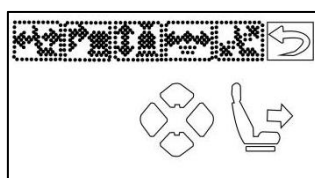
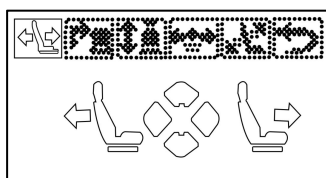
### 3.7.4 Aligning the seat using manual mode

If the following situations occur, the user needs to use the manual mode to correct the seat:


- Motor replacement or other accessories replacement.
- Route disorder caused by motor encoder failure.

Correcting the seat in manual mode requires the following steps:

- First make sure that the seat is fully retracted and screwed into the vehicle (refer to chapter 6.7.2 to manually rotate the seat back into the vehicle).
- Next, move the seat from front to back until the exit icon lights up (refer to Chapter 6.7.2).
- Finally, exit the manual mode directly (if you can exit normally, it means that the calibration is successful).
- If the programming bit mark appears in the lower left corner of the screen , it means the calibration is successful.



## 4、Hibernation mode

- Door control icon on hand switch screen when car door is closed  will disappear;
- When the door is closed and the seat is not adjusted, after 30 seconds, the seat will go to sleep while maintaining a low quiescent current;
- Press the buttons on both sides of the seat to wake up the seat system immediately, if there is no action within 30 seconds, it will continue to sleep.

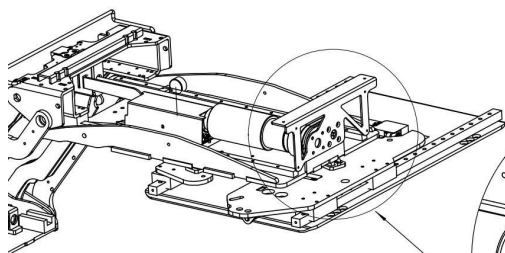
## 5、 Manual emergency operation

### Notice

When the seat is unscrewed out of the vehicle, if the vehicle or the electrical components of the seat fail suddenly, the seat can be retracted into the vehicle through manual emergency operation; Please operate under the guidance of the company's technical staff. Do not operate privately to avoid damaging the parts! When this happens, the vehicle should be sent to the maintenance point for maintenance in time to avoid more serious accidents;

When this product provides temporary manual emergency operation, it needs to operate 4 mechanisms to achieve:

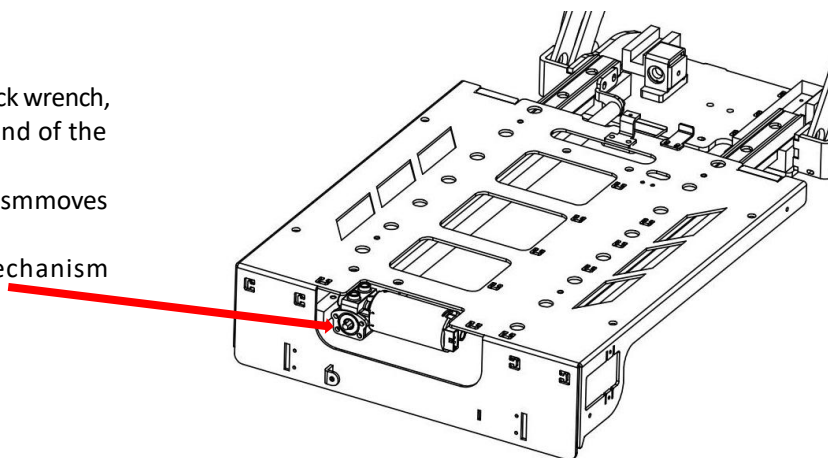
### 5.1. Product drop and lift



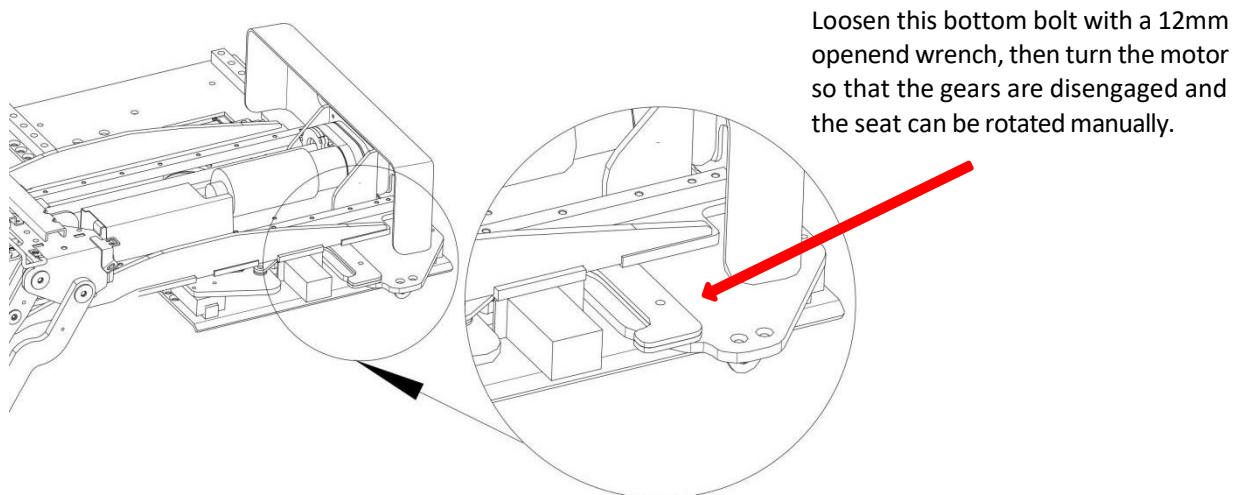
Install the 10mm socket on the quick wrench, Insert the rotary shaft at the end of the lift motor:  
Rotate clockwise , the mechanism moves forward and descends;  
Rotate counterclockwise, the mechanism moves back and lifts;

### 5.2. Forward and backward movement of the upper translation

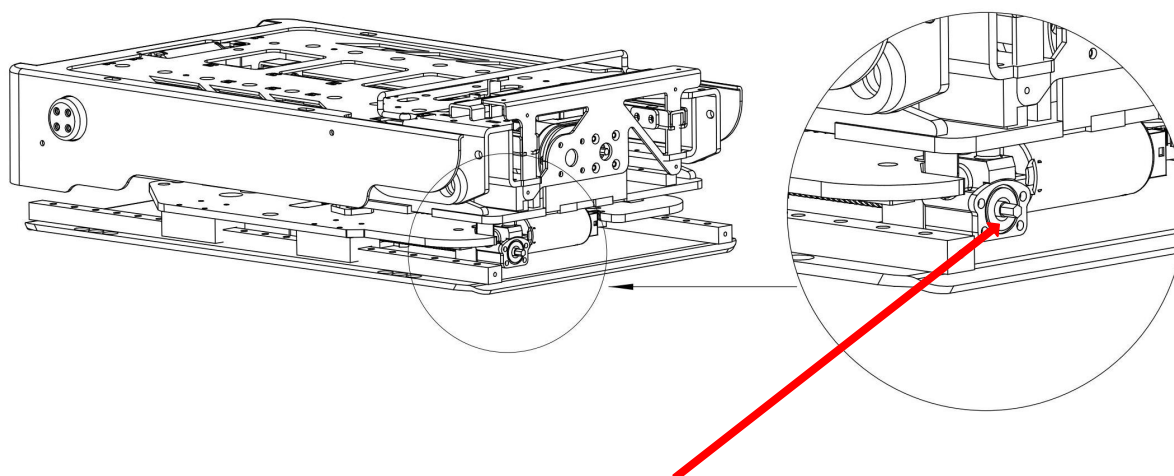
Install the 6mm socket on the quick wrench, Insert the rotation axis at the end of the translation motor:  
Rotate clockwise, the mechanism moves backward;  
Rotate counterclockwise, mechanism moves forward



### 5.3. Product rotation



### 5.4. Forward and backward movement of the underlying mechanism



Install the 6mm socket on the quick wrench,  
Insert the rotary shaft at the end of the motor:

Clockwise rotation, the mechanism moves forward;  
counterclockwise rotation, the mechanism moves backward

## 6、Daily maintenance

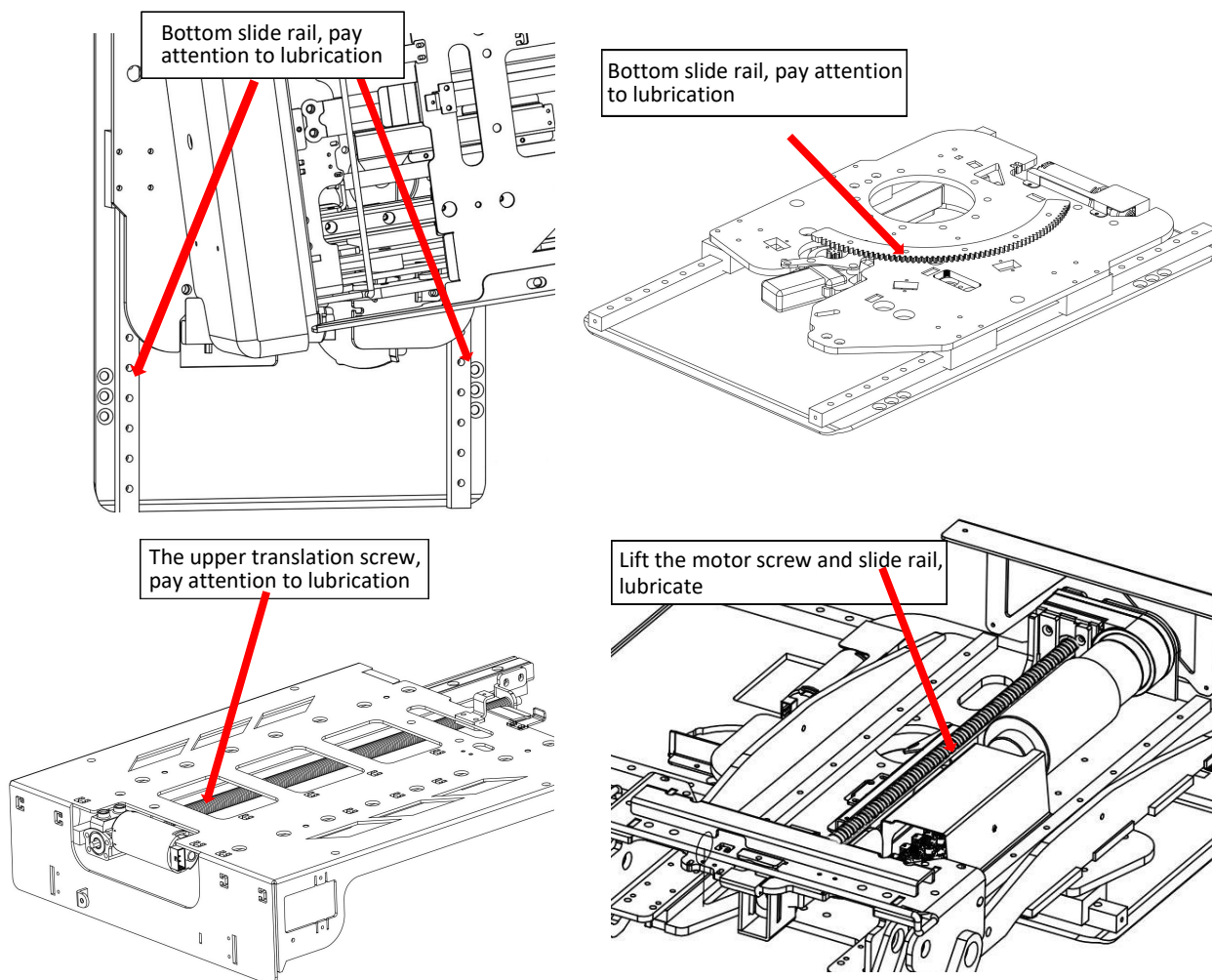
### Notice

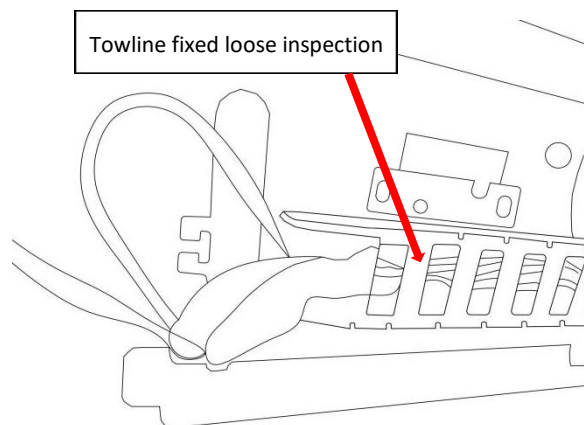
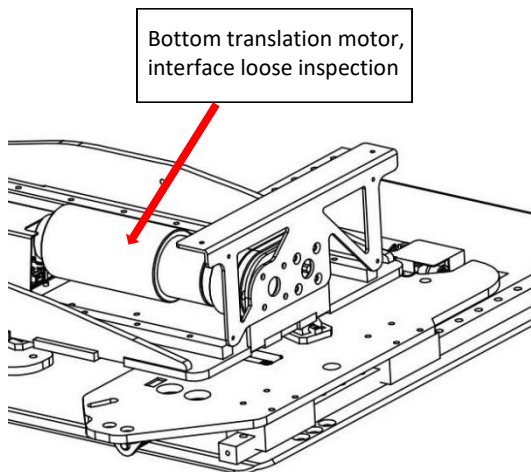
Regular maintenance of the seat will maximize the performance of the product and reduce the number of repairs.

The seat products should be cleaned and maintained regularly to prevent the dirt in the car from falling into the seat mechanism, causing jamming and damage to the mechanism. It is recommended to clean and maintain at least once a month.

### 6.1. Seat maintenance

The daily maintenance of the seat mechanism is mainly reflected in the lubrication of the mechanism, and checking whether each connection point and harness interface is loose or falling off. It is recommended to lubricate and inspect at least once every 6 months. The lubrication and inspection points include the following:





## 7、Fault diagnosis and troubleshooting

### Notice

When the seat is unscrewed out of the vehicle, if the vehicle or the electrical components of the seat fail suddenly, the seat can be retracted into the vehicle through manual emergency operation;  
When this happens, the vehicle should be sent to the maintenance point for maintenance in time to avoid more serious accidents;

### 7. 1. Transmission error

This message indicates a loss of communication between the hand switch and the seating system.

**Possible cause:** The wiring between the controller and the hand switch is disconnected, and the controller is faulty.

**How to repair:** Check whether the communication line is damaged, or try to replace the controller. After repairing, this fault message will disappear automatically.



### 7. 2. Motor current protect

This message indicates that the running current of the motor exceeds the set limit. The interface will display the current running motor and running direction

- Rotating motor overcurrent protection (including screw-in, screw-out)



- Extend motor overcurrent protection (including extend, retract)



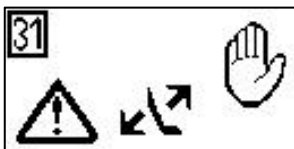
**Possible reasons:** The motor is blocked by an obstacle, the seat is locked, or the motor is short-circuited, or the encoder is wrong.

**How to fix it:** Remove obstacles check the seat lock status, re-enter manual mode for correction (refer to Chapter 3.7), and check if the motor wire is damaged.

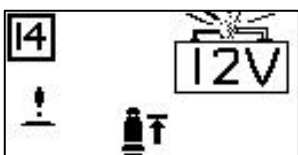
- **Front and rear motor overcurrent protection (including forward and backward)**



- **Backrest motor overcurrent protection (including backward and forward tilt)**



- **Hoist motor overload**



**Possible reasons:** The motor is blocked by an obstacle, the seat is locked, or the motor is short-circuited, or the encoder is wrong

**How to fix it:** Remove obstacles, check seat lock status, re-enter manual mode for calibration (refer to chapter 3.7), check motor wires for damage.

**How to fix it:** Make sure there are no obstructions and try again with an empty seat. If the fault persists, please contact the installation technician

### 7. 3. Motor wire short circuit to ground

**Possible reasons:** The motor wire is damaged or the motor body is faulty.

**How to fix it:** Check the motor wires, replace the motor.

### 7. 4. Motor coding error

The motor code error means that the controller cannot receive the pulse feedback given by the motor, and this information will indicate the current motion motor and motion direction. Check the motor wires, replace the motor.

- **Rotating motor coding error (including screwing in, screwing out)**



- **Extended motor code error (including extend, retract)**



**Possible reasons:** The motor wire is disconnected, and the motor encoder wire is disconnected.

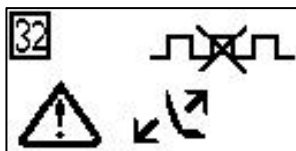
**How to fix it:** Check the motor wires and motor encoder wiring.



- Front and rear motor coding error (including forward and backward movement)



- Wrong encoding of backrest motor (including backward and forward tilt)



**Possible reasons:** The motor wire is disconnected, and the motor encoder wire is disconnected.

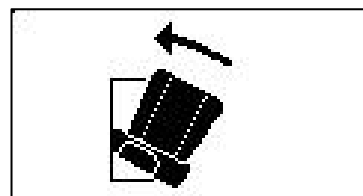
**How to fix it:** Check the motor wires and motor encoder wiring.

## 7. 5. Please return initial bit error

This error occurs when the user tries to enter program mode or transfer mode

**Possible reasons:** Calibration failed before entering programming mode or transfer mode (refer to Chapter 3.7). Or the programming bit sensor is damaged.

**How to fix it:** Re-enter manual mode for calibration. Check home position sensor.



## 7. 6. Very low voltage error

When the voltage of the car battery is lower than 10.5V, this error will be displayed. At this time, the seat will prohibit all actions until the detected battery voltage exceeds 10.5V. The current actual voltage of the battery will be displayed on the screen (such as "9.4V")

**Possible reasons:** The battery voltage is too low

**How to fix it:** Re-enter manual mode for calibration. Check home position sensor.



## Affix: After-sales service card

Customer Profile			
Client's name		Client address	
Phone number		Facsimile	
Zip code		E-mail	
product data			
Purchased product		Purchased model	
Quantity		Product serial	
Place of purchase		Purchase time	

Client Signature:

---

### Note:

- After the above information is filled in, it must be signed and confirmed by the customer;
- All customers must fill in the above information according to the requirements after purchasing the company's products. After completing the "After-sales Service Card", hand it over to the dealer or send it directly to the company;
- After the company or designated dealer receives the "After-sales Service Card" filled in by the customer, it will be responsible for tracking and investigating the use of the company's products purchased by the customer and providing three guarantees in time;
- After the customer purchases the company's products, he fails to fill in the "After-sales Service Card" and submit it to Mingao Technology or the designated dealer. As a result, Mingao Technology fails to provide services in time and causes unnecessary losses to customers, and Mingao Technology is not responsible;
- If you want to know more about Mingao Technology's products, please scan the QR code below.

