Parts Catalog

60/76XEND
Scissor working platform

杭叉集团股份有限公司

HANGCHA GROUP CO., LTD

Contents

Point

Before operating the machine, please read, understand and abide by these safety rules and operating instructions. Only well-trained and authorized personnel are allowed to operate the machine. This manual should be regarded as part of the machine and always kept with the machine. If in doubt,

Please contact Hangcha Group Co., Ltd.

Please contact us:

Address: China-No.666 Xiangfu Road, Lin'an District, Hangzhou , Zhejiang Province

Internet URL: https://www.zjhc.cn

Email: hcjt@zjhc.cn

Service Hotline: 400-884-7888

Fax: 0571-88144682

Hangcha Group Co., Ltd.

Product performance parameters

Parameter item		unit	60XEND	76XEND
Dimensions	length	m	1.44	1.52
	width	m	0.76	0.81
	Height (folded guardrail)	m	1.71	1.81
	Height (guardrail not folded)	m	2.08	2.18
Ground clearance		m	0.069	0.069
Ground clearance (anti-tip device open)		m	0.011	0.011
Total Weight		kg	900	1270
Working size	Max platform height	m	3.90	5.60
	Max platform height	m	5.90	7.60
	Max horizontal extension	m	0.60	0.60
Safe working load		kg	250	230
Extended platform safety load		kg	113	113
Max number of employees		people	Indoor 2 / Outdoor 1	Indoor 2 / Outdoor 1
wheelbase		m	1.06	1.15
Wheelspan		m	0.66	0.71
Turning radius	Inner wheel	m	0.40	0.45
	Outer wheel	m	1.55	1.60
Max allowable lateral force		N	Indoor 400N Outdoor 200N	Indoor 400N Outdoor 200N
Platform size	length	m	1.29	1.37
	width	m	0.70	0.70
Tire size	diameter	mm	230	230
	width	mm	100	100
Hydraulic system pressure		MPa	15	16
System voltage（DC）		V	24	24
Battery capacity		Ah	80	80
Driving speed	Car receiving state	km/h	4	4
	Lifting status	km/h	0.50	0.60
Gradeability		%	30	30
Max allowable wind speed		m/s	Indoor 0 Outdoor 12.5	Indoor 0 Outdoor 12.5
Max allowable inclination	Front and back	°	3	3
	left and right	°	2	1.5

Vehicle description

1、Platform access

2、Platform guardrail

3、Seat belt fixing point

4、Platform control handle

5、file box

6、Extended platform

7、Extension platform brake pedal

8、Transport fasten part

9、Entrance ladder

10、rear wheel

11、steering wheel

12、Maintenance arm

13、Power switch

14、Battery

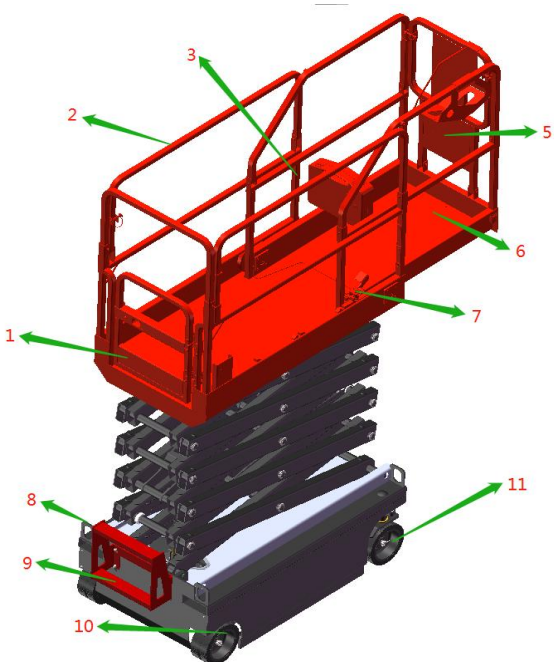
15、Ground control panel

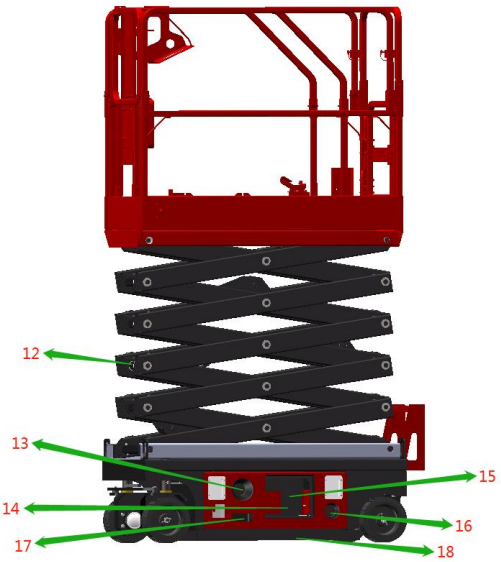
16、Manual release valve

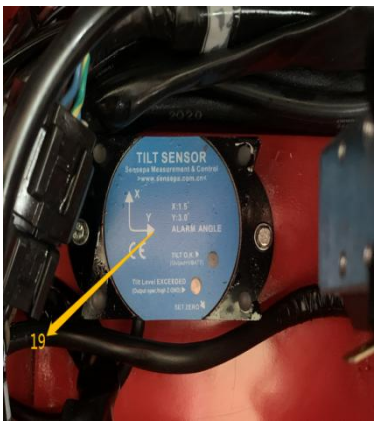
17、Battery charger

18、Anti-tilt mechanism

19、Level sensor







Conditions of Use

- The working ground should be solid and level, and the ground should not sink during the operation;

1、 The ambient temperature is -20℃~40℃;
2、 The relative humidity of the environment should not be greater than 90% (at 20℃);
3、 The altitude should not exceed 1000m;
4、 The wind speed should not be greater than 12.5m/s;
5、 The allowable fluctuation of power supply voltage is ±10%.

Storage conditions

1、 The scissor platform should be stored in an environment free from rain, sunlight and corrosive gas;
2、 When the scissor platform is stored, it should be stowed to the lowest position and placed on a solid ground, so that its front, rear, left and right are level. If the walking wheels are pneumatic tires, the wheels should be kept off the ground;
3、 After being out of service for a long time (more than one month), check, repair and maintain it according to the instruction manual before use.

Safety rules

Danger

- **Failure to follow the instructions and safety rules in this manual will result in death or serious injury.**

Before proceeding, ensure that:

You have understood and practiced the rules for safe operation of the machine in this operating manual.

1、 Always perform a pre-operation check.
2、 Always perform a functional test before use.
3、 Check the workplace.
4、 Use the machine only according to its design intent.

★Read, understand and follow the manufacturer's instructions and safety rules, operating manuals and machine labels.

★Read, understand and abide by user safety rules and workplace regulations.

★Must read, understand and comply with all applicable government regulations.

★You have been properly trained to operate the machine safely.

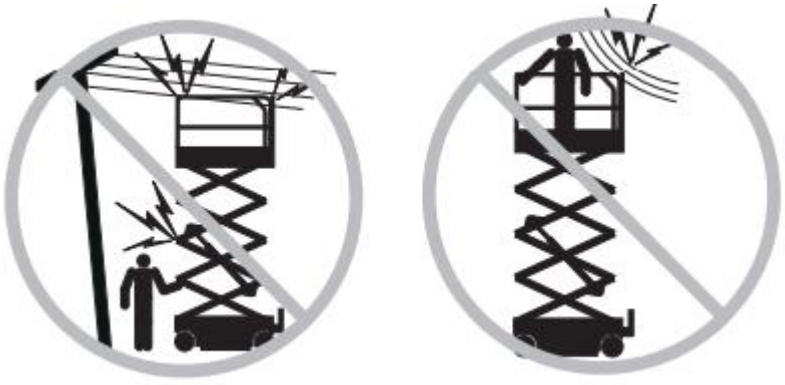
Hazard classification

The meanings of the symbols, color codes and symbols used in the product labels of Hangcha Group Co., Ltd. are as follows:

-  Safety warning signs-used to indicate the existence of potential personal injury. Observe all safety instructions behind this sign to avoid possible personal injury or death.
-  Red flag-used to indicate that there is an emergency hazard situation, if not avoided, it will cause death or serious injury.
-  Orange sign-used to indicate that there is a potentially dangerous situation, if not avoided, it will cause death or serious injury.
-  Yellow and safety warning signs-used to indicate the existence of a potentially dangerous situation, if not avoided, it may cause minor or moderate personal injury.
-  Yellow no safety warning sign-used to indicate the presence of potentially dangerous situations, which may cause property damage if not avoided.
-  Green logo-used to prompt operation or maintenance information.

Risk of electric shock

- This machine is not insulated and does not have the function of electric shock protection.



Keep a safe distance from the power cord and equipment in accordance with the government regulations used and the instructions in the table below.

Voltage	Minimum safety distance
0~50kV	3.05m

50kV~200kV	4.60m
200kV~350kV	6.10m
350kV~500kV	7.62m
500kV~750kV	10.67m
750kV~1000kV	13.72m

- Considering that the platform is moving, the wires are swaying or sagging, beware of strong winds and gusts. Do not operate the machine when there is lightning or heavy rain.
- If the machine comes into contact with live wires, please stay away from the machine. Before the power is cut off, personnel on the ground or platform are prohibited from touching or operating the machine.
- Do not use the machine as a ground wire during welding operations.

Danger of tipping

- The personnel, equipment and materials on the platform shall not exceed the maximum carrying capacity of the platform.
- Maximum load capacity of 60/76XEND platform

Platform indentation		250kg/230kg
Platform extension-extension only		113kg
Maximum indoor load 250kg/230kg=		maximum 400N
2 people	90kg/70kg	
Maximum outdoor load 250kg/230kg=		maximum 200N
1 people	170kg/150kg	

The platform can only be raised or extended when the machine is on a firm, flat

ground.

Don't use the tilt alarm as a level indicator. The tilt alarm on the platform will sound only when the machine is severely tilted.

If the tilt alarm sounds:

Lower the platform. Move the machine to a firm, level ground. If the tilt alarm sounds when the platform is raised, lower the platform very carefully. It is forbidden to change the level or limit switch.

When the platform is raised, the driving speed should not exceed 0.6km/h.

When the platform is raised, the machine cannot drive on uneven terrain, unstable surfaces or other dangerous conditions.

Do not operate the machine in strong or gusty wind, and do not increase the surface area of the platform or load. Enlarging the area exposed to the wind will reduce the stability of the machine.
In the stowed state, when the machine is driving on uneven terrain, gravel, unstable or smooth

surfaces, near openings, steep slopes, etc., be careful and reduce the speed.

Do not drive the machine on a slope that exceeds the maximum climbing capacity of the machine. The maximum climbing capacity of 30% (16.7°) is suitable for the machine in the stowed state.

It is forbidden to change the limit switch.
Do not push or pull any objects outside the platform.
The maximum allowable lateral force is: Indoor 400N
Outdoor 200N

Do not change and prohibit the use of any machine parts that may affect safety and stability.

Do not use parts of different weights or specifications to replace key parts that affect the stability of the machine.

Do not modify or modify the aerial work platform without the manufacturer's prior written permission. Install additional devices for placing tools or other materials on the platform and guardrail, which will increase the weight of the platform and the surface area of the platform or increase the load.
Do not place or tie any overhanging load on any part of this machine.

Do not place ladders or scaffolds in the platform or lean against any part of the machine.

Do not use the machine on moving or moving surfaces or vehicles. Ensure that all tires are in good condition and the slotted nuts are tightened and the split pins are intact.

Do not use batteries that are heavier than the original batteries. The battery not only provides power, but also acts as a counterweight, which is essential to maintain the stability of the machine.

Used for: The weight of each battery for 60XEND and 76XEND must reach 26kg.

Do not use the machine as a crane.

Do not use the platform to push the machine or other objects.

Do not let the platform touch neighboring objects.

Do not tie the platform to nearby objects.

Do not place the load outside the platform.

Do not operate the machine when the side door is open.

Do not use the platform control handle to lower the platform when the platform is tripped, stuck, or other objects nearby prevent it from moving normally. If you plan to use the ground control panel to lower the platform, you must do so after all personnel have left the platform.

Danger of falling

- People on the platform must wear seat belts or use safety facilities that comply with government regulations. Tie the lanyard to the fixed point of the platform.
- Do not sit, stand or climb on the protective fence of the platform, and stand on the platform floor stably at all times.

When the platform is raised, please do not climb off the platform.

Keep the platform floor unobstructed.

Do not enter or exit the platform unless the machine is in the fully stowed position.

Close the entrance door before operation.

If the guard rail is not installed correctly, or the entrance door is not closed, do not operate the machine.

Danger of collision

When starting or operating the machine, pay attention to the sight range and blind spots.

Please pay attention to the position of the extension platform when moving the machine.

Check the work area to avoid obstacles or other possible hazards above your head.

When grabbing the platform guardrail, beware of the danger of squeezing. Pay attention to observe and use the platform control handle and the color-coded direction arrows on the chassis controller for driving, lifting and steering functions.

Users must abide by user rules on "use of personal protective equipment", workplace rules and government rules.

The platform can only be lowered when there are no people and obstacles in the lower area.

Limit driving speed based on ground conditions, congestion, slope, location of people, and any other factors that may cause a collision.

Do not operate the machine on any crane or moving elevated route unless the crane controller is locked or precautions have been taken to prevent any potential collision.

When operating the machine, please do not drive dangerously or play around.

Danger of crushing

Do not put your hands and arms close to parts that might be cut.

When the maintenance arm is not in the supporting position, do not work on the platform or in the scissor parts.

When using the controller to operate the machine on the ground, please maintain normal judgment and plan. Maintain a proper distance between the operator, machine and fixed objects.

Danger of component damage

Do not use any battery or charger larger than 24V to start the device.

Do not use the machine as a ground wire during welding operations.

Risk of explosion

Do not use the machine or charge the battery in a dangerous place or where flammable and explosive gases or particles may exist.

Risk of machine damage

Do not use damaged or malfunctioning machines.

Before each job change, a thorough pre-operation inspection should be carried out and all functions should be tested. Damaged or malfunctioning machines should be marked immediately and stop operation.

Ensure that all maintenance operations have been performed in accordance with the regulations in this manual and the corresponding maintenance manual.

Ensure that all labels are properly positioned and easily identifiable.

Ensure that the operation manual and maintenance manual are intact, easy to read, and kept in the storage box on the platform.

Risk of physical injury

Do not operate the machine when there is hydraulic oil leakage or air leakage. Hydraulic oil leaks or leaks may penetrate and burn the skin.

Wrong contact with any component under the machine's sealing plate will cause serious injury. Only trained maintenance personnel can open the side door to repair the machine.

Recommendation: Only during the pre-operation inspection, the operator should perform the inspection. During operation, the side door of the chassis must be kept closed and locked.

Safe welding

Read, understand and follow all warnings and instructions attached to the power unit.

The welding wire or cable can only be connected after the power unit is turned off.

The welding operation can only be carried out after the cable is correctly connected.

Lock after each use

1、Choose a safe parking location, which can be a firm level ground, no obstacles, and avoid heavy traffic.
2、Lower the platform.
3、Turn the key switch to the "off" position and remove the key.
4、Cushion the wheel with a wedge.
5、Charge the battery.

Battery safety

Do not expose the battery or charger to water or rain during charging.

Turn off the power of the whole vehicle before charging.

Danger of explosion

The storage battery can produce explosive gas. It is forbidden to approach the storage battery with sparks, flames or lighted cigarettes.

Do not use tools that may cause sparks to touch battery terminals or cable clamps.

Risk of component damage

Please use the charger specified by the manufacturer to charge the battery.

Risk of electric shock

Only connect the charger to a grounded two-phase AC power outlet.

Check whether the wires are damaged daily, and replace damaged items before operation.

To avoid electric shock due to contact with battery terminals, remove all rings, watches and other accessories.

Danger of tipping

Do not use batteries that are heavier than the original batteries. The battery not only provides power, but also acts as a counterweight, which is essential to maintain the stability of the machine.

Used for: The weight of each battery for 60XEND and 76XEND must reach 26kg.

Danger when ascending

When lifting the battery, please use an appropriate number of personnel and lifting methods.

Pre-delivery inspection

- **Note:** It is necessary to perform pre-shipment preparations.
- This step must be performed before each shipment to find out whether there are obvious errors before the platform is put into use.
- Platforms that are damaged or malfunctioning should not be used. Once a damaged or abnormal platform is found, it must be labeled and removed.
- The maintenance platform must be completed by qualified maintenance personnel in strict accordance with the maintenance manual.
- Routine maintenance must be completed by qualified operators in accordance with the provisions of this manual.

Description:

- Use the operating manual of this platform.
- The pre-shipment preparations include pre-shipment inspections, maintenance procedures and functional inspections. Record the inspection results. If any inspection result is N, you must stop using the platform and re-inspect the platform after maintenance, and indicate R.

Notes:

Y—Yes, the platform is intact

N—No, the platform is faulty

R—Repaired, the platform has been repaired

Preparation work record sheet before shipment			
Item	Y	N	R
Check before shipment			
Maintenance procedures			
Function check			

Type
Serial number
Date
User

Verifier signature
Inspector position
Inspector unit

Maintenance record table:
Type
Serial number
Date
User
Verifier signature
Inspector position
Inspector unit

Check before operation

Before proceeding, ensure that:

You have understood and practiced the rules for safe operation of the machine in this operating manual.

1、 Avoid dangerous situations and know and understand the safety rules before proceeding to the next step.
2、 Always perform a pre-operation check.
3、 Always perform a functional test before use.
4、 Check the workplace.
5、 Use the machine only according to its design intent.

The basic principle

Performing "pre-operation inspection" and routine maintenance is the responsibility of the operator.

The pre-operation inspection is a very intuitive inspection process, which is performed by the operator before each changeover. The purpose of the inspection is to find whether there are obvious problems with the machine before the operator performs the functional test.

The pre-operation inspection can also be used to determine whether routine maintenance procedures are required. The operator can only perform the routine maintenance items specified in this manual.

Please refer to the list in the machine and parts and check each item and location for changes, damage, looseness or missing parts.

Machines that have been damaged or changed should not be used. If damage or any change from the factory state is found, the machine should be marked and stopped.

According to the manufacturer's regulations, only qualified service technicians can repair the machine. After the repair, the operator must perform another pre-operation check before performing the function test.

According to the manufacturer's regulations and the requirements listed in the responsibilities manual, regular maintenance inspections should be performed by qualified maintenance technicians.

Symbol description

The following symbols are used in this manual to help express the relevant meanings in the instructions.

 Indicates that tools are required to execute this procedure.

 Indicates that new parts are needed to execute this procedure.

Check parts

Check the following components or areas for damage, improper installation, loose or missing parts, and unauthorized changes:

1、 Electrical components, wiring and cables
2、 Power unit, joints, hoses, hydraulic cylinders and valve blocks
3、 Battery pack and its connection
4、 Drive motor and brake device
5、 Emergency drop valve
6、 Tires
7、 Maintenance arm
8、 Potentiometer and horn
9、 Alarm and indicator light
10、Nuts, bolts and other fasteners
11、Platform entrance door
12、Anti-tilt device
13、Platform extension
14、Scissor arm pins and fasteners
15、Platform control joystick

Check the wires

- Maintaining the wires is essential to the normal work and safe operation of the platform. Failure to timely discover and replace burnt, damaged, corroded or broken wires may lead to unsafe operation and even cause serious injury.
- ⚠ 警 告 Contact with live wires can cause serious injury or death. Remove all earrings, watches and other jewelry.

1、 Check the following areas for burns, frays, corrosion and loose wires:
Battery harness

Charger harness
Scissor arm wire harness
Power unit wiring harness
Ground controller junction box
Platform controller junction box

2、 Check each movable connector to confirm that there is no looseness and the sensor circuit is not damaged.

Check the rims and tires(including mounting nuts)

- Maintaining rims and tires is essential to the normal and safe execution of the platform. Problems with rims or tires may cause the platform to tip over, and parts may be damaged if not found and repaired in time.
- The platform uses solid tires and does not require inflation.

1、 Check all tires for cuts, cracks, punctures and abnormal wear.
2、 Check and confirm that each wheel rim is free from damage, distortion and weld cracking.
3、 Remove the split pin and check to make sure that the mounting nut has been tightened with the correct torque.

- 注 意 When checking the fixing nut, the split pin needs to be replaced.

4、 Replace the split pin and bend it to the locked position.

Check the bottom slider

- Maintaining the slider is essential to the safe operation of the platform. The bottom slider slides on the channel steel surface to form friction. Inappropriate sliders or continued use of old sliders may cause damage to the scissor fork, resulting in property damage and personal injury.
- 注 意 The fork arms of the scissors should be fully retracted before performing this procedure.

1、 Measure the distance between the bottom surface of each slider at the sliding end and the center of the mounting shaft.
2、 Measure the distance between the axis of the fixed end and the mounting base plate.
3、 Compare the difference between the two distances.

✧ Result: The slider needs to be replaced when the distance difference is greater than 0.5mm.

Check the machine

Check the entire machine to find:

☆ Cracks in welds or structural components
☆ Dent or damage to the machine
☆ Serious rust, corrosion or oxidation
☆ Ensure that all structural parts and other key components are complete, and all related fasteners and pins are in the correct position and fully tightened

☆ Support the side rails of the platform and snap into the bolts to fix

Check hydraulic oil level

- Maintaining the hydraulic oil at a proper oil level is very important for the work of the machine. If the hydraulic oil is at an improper level, it will damage the hydraulic components. Through daily inspections, inspectors can determine changes in hydraulic oil level, which can indicate problems in the hydraulic system.
- 注 意 With the platform in the retracted state, perform the following procedures:

1、 Open the side door, unscrew the power unit fuel tank cap, and visually check the liquid level.
2、 Add oil as needed, do not add too much.

Hydraulic oil grade
Normal temperature area (-10℃～40℃): L-HM46;
Cold area (-30℃～-10℃): L=HV32;
High temperature area (>40℃): L-HM68;
Extremely cold area (<-30℃): a special plan needs to be determined;
Different hydraulic oil can be filled according to customer requirements when leaving the factory, and L=HV32 is used by default.

Check the battery

- A good battery condition is essential to good machine performance and safe operation. Inappropriate electrolyte level or damaged cables and wiring may cause component damage and cause dangerous situations.

Handle battery display	Electricity ratio	Description
6 cells	90-100%	The battery is full
5 cells	70%	70% battery POWER
4 cells	50%	50% battery power
3 cells	30%	30% battery power
2 cells	20%	The battery is low and must be charged immediately
1 cells	10%	The battery power is very low, the platform movement slows down or even stops

- ⚠ 警 告 Risk of electric shock. Contact with electrical circuits may result in death or serious personal injury. Take off all rings, watches and other accessories.
- 注 意 Perform this check after fully charging the battery.

1、 Wear protective clothing and protective glasses.
2、 Ensure that the wiring of the battery cable is not corroded.
3、 Ensure that the battery is firmly fixed and the cable connection is tight.

- 注 意 Adding terminal protectors and anticorrosive sealants will help eliminate

corrosion on the battery connection terminals and cables.

Function test

Before proceeding, ensure that:

You have mastered and practiced the machine safe operation rules in this operation manual.

1、 Avoid dangerous situations.
2、 Always check before operation.
3、 Always perform a functional test before use.
4、 Know and understand functional testing before proceeding to the next step.
5、 Check the workplace.
6、 Use the machine only according to its design intent.

The basic principle

1、 The purpose of functional testing is to find faults before starting to use the machine. The operator must test all functions of the machine step by step according to the instructions.
2、 The use of malfunctioning machines is prohibited. If a malfunction is found, the machine must be marked and stopped. According to the manufacturer's regulations, only qualified service technicians can repair the machine.
3、 After maintenance, the operator must perform pre-operation inspections and functional tests again before starting to use the machine.

Preparation before test

1、 Choose a test area that is sturdy, level and free of obstacles.
2、 Ensure that the battery pack is connected.

For ground control panel

1、 Pull out the red "emergency stop" switch on the platform and the ground to the ON position.
2、 Turn the key switch left to the ground control position.
✧ Result: The relevant indicator lights are on and no error message is displayed.

Test the key switch

- Flexible use of the key switch is essential to the safe operation of the platform. Failure of the key switch may cause dangerous operation.
- There is a key switch on the ground control panel of the platform, which is used to control the power on/off and the choice of upper and lower platforms.

注 意 When performing the inspection, please operate on the ground and do not stand on the platform.

1、 Release the emergency stop switch of the upper and lower platforms.
2、 Switch the key switch to the next control position.
✧ Result: The power indicator lights up and the on-stage control is invalid.
3、 Switch the key switch to the upper control position.

✧ Result: The power indicator lights up and the down control is invalid.

4、Turn the switch to the neutral position ("OFF").

✧ Result: All actions cannot be executed.

Test up and down function

1、 Start up function.

✧ Result: The platform should rise.

2、 Start the lowering function.

✧ Result: The platform should lower and the lowering alarm should sound.

Test emergency descent function

1、 Start the ascent function and raise the platform to the highest level;

2、 Pull out the emergency lowering handle (located on the right side of the control panel).

✧ Result: The platform should descend, and the platform stops descending after releasing the handle. The alarm does not sound when the platform is lowered.

For the platform control handle

Test emergency shutdown

The function of the emergency stop button is essential to the safe operation of the platform. The failure of the emergency stop button will not be able to stop the power unit and stop the operation of the platform function, which will cause danger to the platform and ground personnel.

1、 Turn the lower stage selector switch to the platform control handle.

2、 Press the platform's red "emergency stop" switch inward to the OFF position.

✧ Result: all functions will not run.

3、 Pull out the red "emergency stop" switch to the ON position.

✧ Result: all functions can operate normally

- 注 意 The emergency stop switch on the ground and the platform can stop all actions of the platform, even if the key switch is turned to the platform controller.

Test horn

The horn function is essential to the safe operation of the platform. Press the horn button on the platform controller, and its sound rang on the underframe to warn ground personnel. Failure of the horn function will not enable the operator to send a warning signal to the ground personnel.

1、 Press the horn button.

✧ Result: The horn should sound.

Test enable switch

1、 Do not press the enable switch of the control handle, move the control handle in the direction of the arrow.

✧ Result: All functions cannot be operated.

Test the up/down function

1、 Press the lift button, the button becomes brighter.

2、 Hold the control handle and push the control handle forward in the direction of the arrow to activate the ascending function.

✧ Result: The platform should rise and the anti-tip mechanism should be deployed.

3、 Release the control handle.

✧ Result: The platform should stop rising.

4、 Hold the control handle and push the control handle backward in the direction of the arrow to start the lowering function.

✧ Result: The platform should lower and the lowering alarm should sound.

注 意 All tests should be completed in one cycle.

Test turn

1、 Press the walk and turn buttons, the buttons should light up.

2、 Press and hold the left steering button on the control handle.

✧ Result: The tire turns to the left.

3、 Press and hold the right steering button on the control handle.

✧ Result: The tire turns to the right.

Test the braking function

- 注 意 The correct braking device is essential to the normal and safe operation of the platform.
- Braking requires smoothness, no impact and no noise.
- The platform is braked by the rear wheel brakes.
- 注 意 The vehicle is empty and in a driving state.

1、 Switch the key switch to the platform control position.

2、 Operate the handle to drive the vehicle on a flat road at maximum speed, and quickly release the handle.

3、 Measure the braking distance of the vehicle. The braking distance is required to be less than 0.5m.

- 注 意 On any slope that the machine can climb, the brakes must be able to stop it and not slide down.

4、Lift the vehicle with full load and drive on a flat road at the maximum allowable speed. Quickly release the handle and the stopping distance of the vehicle should be less than 0.05m.

Test walking speed(the platform is raised)

- A reasonable driving speed is essential to the safe operation of the platform. The drive function should respond quickly and smoothly to the operation of the operator, without shaking, impact and abnormal noise.
- The platform is placed on a flat, level, unobstructed solid ground.

1、Draw two lines on the ground with a distance of 12m from the start point to the end point.

2、Switch the key switch to platform control.

3、Raise the platform to a distance of about 2m from the ground, open the pothole protection device, and the platform is in working condition.

4、Operate the control handle, drive the vehicle from the starting point to the end point, record the time and convert it into speed.

✧ Result: The vehicle travels at a speed of 0.5km/h. (76XEND is 0.6km/h)

5、Toggle the high and low speed selector switch (turtle symbol) once, push the control handle to the maximum position, and drive the vehicle from the starting point to the end point.

✧ Result: running at low speed 0.5km/h (76XEND is 0.6km/h)

- Note: There is no difference in the speed of the tortoise and the hare when the platform is raised.
- 注 意 If the machine speed is greater than 0.5km/h (76XEND is 0.6km/h), it should be stopped immediately and marked, and the maintenance personnel should check or modify the parameters.

Test walking speed(the platform is folded)

- 注 意 The platform is placed on a flat, level, unobstructed solid ground.

1、Draw two lines on the ground with a distance of 12m from the start point to the end point.

2、Switch the key switch to platform control.

3、The platform is in a fully retracted state, the pothole protection device is in a retracted state, and the platform is in a transport state.

4、Drive the control handle, drive the vehicle to run from the start to the end, record the time and convert it into speed.

✧ Result: running at a high speed of 4km/h.

5、Toggle the high and low speed selector switch (turtle symbol) once, push the control handle to the maximum position, drive the vehicle from the start point to the end point, record the time and convert it into speed.

✧ The result: low speed operation (1.8km/h).

Test level sensor

- 注 意 Use the platform control handle to control the equipment on the ground, do not stand inside the platform to operate.

1、 Lower the platform safely.

2、 For 60XEND and 76XEND, place two wood blocks with a height of 21mm and a length of 50x100mm under the two wheels on the left (or right) side of the machine, and then drive the machine onto these two boards.

3、 Convert the walking function to the platform lifting function, press the handle to raise the platform for about 2m.

✧ Result: The platform should stop moving. At the same time, the tilt alarm sounds. The platform and ground display should show LL.

4、 Lower the platform, switch to walking function, remove the working platform, and remove the wooden block.

5、 Place two wooden blocks with a height of 100mm and a length of 50x100mm under the two wheels at the front (or rear) of the machine, and then drive the two wheels of the machine onto the two boards.

6、 Convert the walking function to the platform lifting function, press the handle to raise the platform for about 2m.

✧ Result: The platform should stop moving and the tilt alarm will sound. The platform and ground display should show LL.

7、 Lower the platform, switch to walking function, remove the working platform, and remove the wooden block.

Test the anti-tip device

- 注 意 When the platform is raised, the anti-tip mechanism should be automatically deployed. The anti-tilt mechanism activates two limit switches to restrict the machine's travel. When the platform rises to the fork seat and leaves the anti-tilt mechanism lever, if the anti-tilt mechanism is not deployed, the alarm will sound and the machine cannot rise and drive to walk.

1、 Raise the platform.

✧ Result: When the platform is raised until the fork seat leaves the anti-roll mechanism lever, the anti-roll device should be automatically deployed.

2、 Push the left/right anti-roll plate hard.

✧ Result: The anti-roll plate cannot be turned inward.

3、 Lower the platform.

✧ Result: The anti-tipping mechanism should retract automatically.

4、 Place a wooden board with a height of 50mm and a length of 50x100mm under the guard plate of the anti-tip mechanism and raise the platform.

✧ Result: When the platform is raised until the fork base leaves the anti-roll mechanism lever, the alarm will sound and the platform and ground control panel display screen will display 18. The machine cannot be raised and driven.

5、 Lower the platform and remove the wooden block.

Work site inspection

Before proceeding, ensure that:

You have mastered and practiced the machine safe operation rules in this operation manual.

1、 Avoid dangerous situations.
2、 Always check before operation.
3、 Always perform a functional test before use.
4、 Check the workplace.

- Know and understand the above principles before proceeding to the next step.

5、 Use the machine only according to its design intent.

Beware and avoid the following dangerous situations:

- ✧ Steep slope or cave
- ✧ Protrusions, ground obstacles or debris
- ✧ Inclined surface
- ✧ Weak or smooth surface
- ✧ Aerial obstacles and high-voltage wires
- ✧ Dangerous location
- ✧ Surface supports that are insufficient to support the full load force applied by the machine
- ✧ Gust and strong wind conditions
- ✧ Unauthorized personnel appear
- ✧ Other possible unsafe conditions

Instructions

Basic principle

- The "Operation Instructions" section provides specific instructions for all aspects of machine operation. It is the operator's responsibility to follow all safety rules and instructions in the operation manual.
- It is unsafe and even dangerous to use this machine for other purposes, except for lifting people and tools to the aerial workplace.
- Only well-trained and authorized personnel are allowed to operate the machine. If more than one operator uses the same machine at different times in the same work shift, they must all be qualified operators and follow all safety rules and instructions in the operation manual. This means that each new operator should conduct pre-operation inspections, functional tests and workplace inspections before using the machine.

The following operations can refer to the function test section.

Emergency stop

- Press the red "emergency stop" button on the ground control panel or platform control handle

inward to the OFF position, and all functions will stop.

- This machine has a red "power off switch" button located on the chassis, press the button to the OFF position, the system is powered off, and all functions will stop.
- To restore any operating function, pull out the "emergency stop" button to the ON (open) position and execute the power-off switch at the "ON" position.

Emergency descent

1、 Pull out the emergency lowering handle.

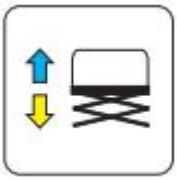
Operate from the ground

1、 Turn the key switch to the ground control position.
2、 Pull out the red emergency stop button to the ON position.
3、 Please make sure that the battery is connected before operating the machine.
4、 Follow the button instructions on the controller to go up/down.

- 注 意 The walking and steering functions cannot be used through the ground control panel.

Operate from the platform

1、 Turn the key switch to the platform control position.
2、 Pull out the "emergency stop button" on the ground and platform to the ON position.
3、 Make sure the battery is connected before operating the machine.
4、 Press the lift button, the button becomes brighter.
5、 Press and hold the enable switch on the control handle.
6、 Move the handle according to the lift mark on the control panel.

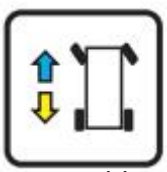


Turn the steering

1、 Press the walking steering button, the button becomes brighter.
2、 Hold the enable switch on the control handle.
3、 Use the thumb rocker switch located on the top of the control handle to turn the steering wheel.

- 注 意 Use the color-coded direction arrows of the platform control handle to determine the direction of wheel rotation.

Drive



1、 Press the walking steering button, the button becomes brighter.
2、 Press and hold the enable switch on the control handle.
3、 Increase speed: slowly move the handle to make it deviate from the center position.
4、 Decrease speed: slowly move the anti-loose control handle to the center position.

5、 Stop: Return the control handle to the center position or release the enable switch.

- Use the color-coded direction arrows on the platform control handle to determine the direction of machine travel.
- The movement speed of the machine is restricted when the platform is raised.
- 注 意 The state of the battery will affect the performance of the machine. When the platform display indicates that the battery is insufficient, the driving speed and lifting speed of the machine will decrease.

Select drive speed

- In the stowed position, the drive controller can operate in two different drive speed modes. When the walking low speed button (turtle) light is on, the slow drive speed mode is active. If this light is off, it will default to high-speed walking mode.
- Press the walking low speed button to select the required driving speed.
- 注 意 When the platform is raised to the opening of the anti-tilt mechanism, the walking low-speed button (turtle) light is always on to indicate that the raised driving speed is low.

Extend and indent the platform

1、 Depress the pedal.
2、 Grasp and carefully push the extension platform guardrail to extend the extension platform.

- 注 意 Do not stand on the extended part of the platform when extending the platform. The extension platform can be positioned at the card slot, do not stand on the extension platform when the extension platform is not fixed.

3、 Step on the pedal and pull back the platform to retract the platform. Release the pedal to fix the extended platform at the slot.

Raise and fold platform guardrail

The platform guardrail can be folded for easy transportation. Support the platform guardrail when in use. The platform guardrail system includes a folding guardrail part of an extended platform and a folding guardrail part of a fixed platform. All parts are fixed in place by several cylinder head bolts.

1、 Lower the platform completely and retract the extended platform.
2、 Remove the platform control handle.
3、 From the inside of the platform, pull up to extend the front guardrail of the platform and fold the front guardrail. Do not put your hands where they might pinch your hands.
4、 Similarly, pull up and fold the guardrails on both sides of the extension platform, and don't put your hands where they might pinch your hands.
5、 Open the door carefully and move to the ladder or the ground.
6、 Pull up and fold the door and entrance guardrail together as a device. Do not put your

hands where they might pinch your hands.

7、 Fold the guardrails on both sides. Do not put your hands where they might pinch your hands.

- When in use, support the platform guardrail in the reverse order. When supporting each side guardrail, clamp the slot into the cylinder head bolt in place to ensure accurate installation.
- Refer to the description of the whole vehicle for the position relationship of the platform guardrail.

Use the controller to operate from the ground

- A safe distance must be maintained between the operator, the machine, and fixed objects.
- Pay attention to the direction of travel of the machine when using the controller.

Battery level indicator

- Use the diagnostic reading display on the platform to determine the battery level.

Charge the battery

- Do not use an external charger.
- Charge the battery in a well-ventilated area.
- Use the correct AC input voltage indicated on the label for charging.

1、 Make sure the battery is connected before charging.

2、 Connect the battery charger to a grounded AC circuit.

3、 Observe whether the indicator light on charging is normal.

4、 The charger will give a reminder when the battery is full.

Transport and lifting instructions

Obey：

- When using a forklift (above 1.5t) or crane to lift the machine, please maintain normal judgment and plan to control the movement of the machine.

1、 Transport vehicles must be parked on level ground.

2、 When loading the machine, the transport vehicle must be secured to prevent rolling.

3、 Ensure that the vehicle capacity, loading surface, belts or ropes are sufficient to support the weight of the machine.

4、 When folding the guardrail, prevent the guardrail from falling. Always hold the guardrail firmly when folding the guardrail. After folding, the guardrail is fixed firmly to prevent free jumping during transportation.

- After the machine is loaded, lock the wheels to prevent the machine from rolling.
- Ensure safe transportation using trucks or trailers

1、 Before transportation, turn the key switch to the "off" position, and then remove the key.

2、 Check the machine thoroughly to prevent loose or unfixed parts.

3、 Ensure that the chain or belt has sufficient load strength.

4、 Use at least 2 chains or belts.
5、 Adjust the lock to prevent damage to the chain.

Transfer machine with forklift

1、 Ensure that the extension platform, controller and underframe components are safe and reliable. Remove all loose parts from the machine.
2、 Lower the platform completely. The platform must remain lowered during all shipments.
3、 Use forklift notches on both sides of the ladder.
4、 Align the forklift with the forklift notch.
5、 Drive forward until the fork is fully inserted.
6、 Raise the machine by 0.4m, and then tilt the fork back slightly to keep the machine fixed.
7、 Make sure the machine is level when lowering the fork.

- 注 意 Lifting the machine from the side can cause component damage.

Hoisting guidance

- Lower the platform safely. Ensure that the extension platform, controller and underframe components are safe and reliable. Remove all loose parts from the machine.
- 注 意 In order to protect the platform guardrail, choose a spreader of appropriate length.
- Only connect the rigging to the designated lifting point on the machine. Adjust the rigging to avoid damage to the machine and keep the machine level.

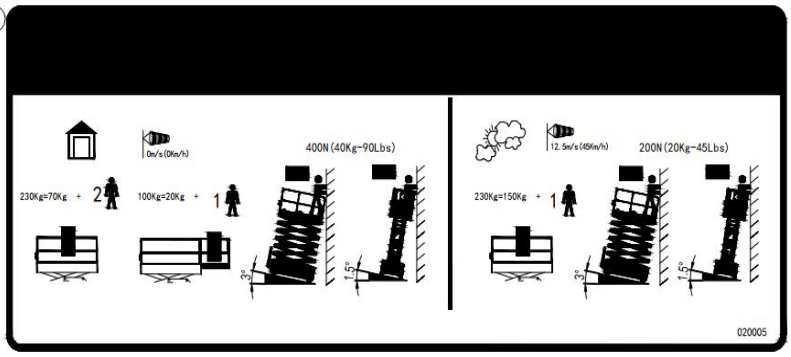
Label description

- Use appropriate inspection methods to check that all labels are easily identifiable and in proper positions. Replace any missing or damaged safety signs. Use neutral soap and water to clean the safety signs.
- Do not use solvent-based cleaners, because such cleaners may damage safety marking materials and paint.
- The following is a list of labels with quantity and description.

For labels, please contact Hangcha Group Co., Ltd.

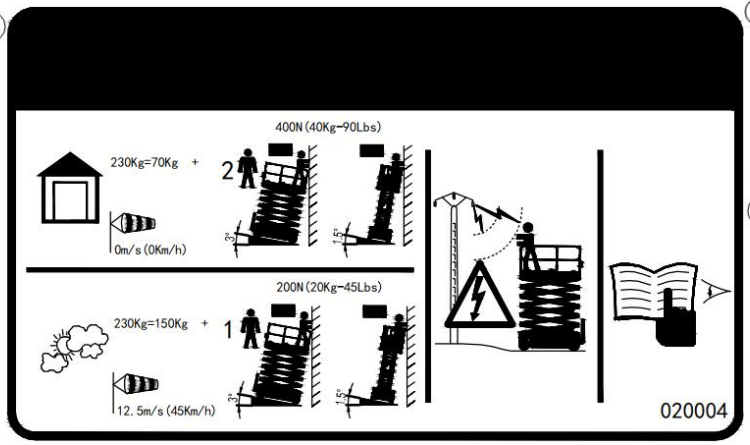
① 60 XEND ⑬ 76 XEND

②

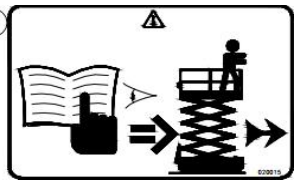


⑤

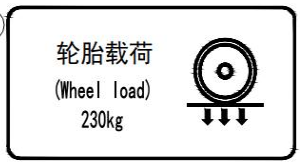
③



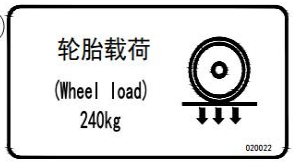
⑦



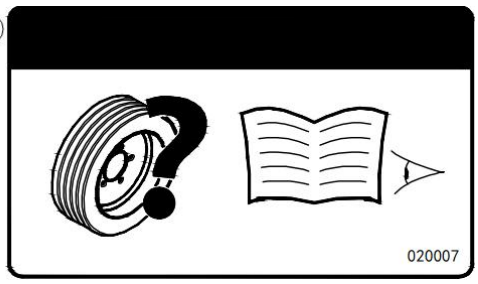
⑧



⑮

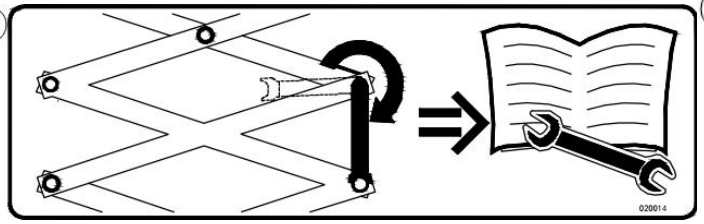


④



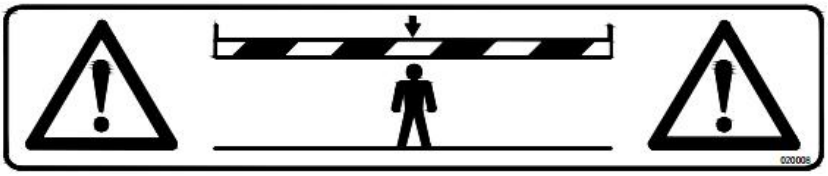
⑨

⑥



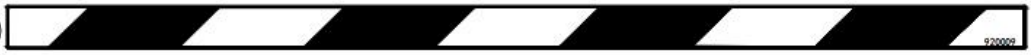
⑩

⑪



⑭

⑫



Repair and maintenance

Obey：

- Maintenance procedures should be performed by qualified personnel who have received professional maintenance training.
- Label and remove damaged or malfunctioning platforms in time.
- Before operating the platform, make sure that it has been repaired and all malfunctions of the platform have been eliminated.

Before starting maintenance:

- Read, understand and follow the safety rules and operating instructions in the 60/76XEND operating manual.
- Prepare all necessary tools and spare parts.
- Read all procedures and manuals completely, and omit any steps may cause dangerous situations.

Unless otherwise specified, the maintenance procedures for this platform should be performed according to the following tips.

1、 The platform is parked on a flat, level surface.
2、 The platform is in full receipt.
3、 The key switch is in the "OFF" position and the key is removed.
4、 Lock the wheels.

Description

Most of the procedures in this part can only be carried out in a dedicated repair service center. Appropriate maintenance procedures should be selected after fault detection.

Symbol legend


Safety warning signs-used to indicate the existence of potential personal injury. Observe all safety prompts behind this sign to avoid personal injury or death.

Red flag—used to indicate that there is an emergency hazard situation, if not avoided, it will cause death or serious injury.

Orange sign—used to indicate that there is a potentially dangerous situation, which, if not avoided, will result in death or serious injury.

Yellow and safety warning signs-used to indicate the existence of potentially dangerous situations, if not avoided, it may cause slight or moderate personal injury.

Yellow no safety warning sign—used to indicate the existence of a potentially dangerous situation, which may cause property damage if not avoided.

Green logo-used to prompt operation or maintenance information.

Platform components

1.How to remove the platform electric control box

⚠ 警 告 Contact with dotted circuits may result in death or serious injury. Remove all earrings, watches and other jewelry.

注 意 This operation should be performed when the scissor arm is fully retracted.

1、 Disconnect the external power supply and place the emergency stop switches of the platform controller and ground controller to the "OFF" position.
2、 Locate the cable linked to the bottom of the control box.
3、 Disconnect the cable from the bottom of the control box and mark it.
4、 Remove the platform control box assembly and mounting bracket.
5、 Remove the platform control box assembly from the platform.

2.How to remove the platform

1、Lower the platform to the fully retracted position, disconnect the power supply, set the emergency stop switch of the platform control panel and the ground control panel to the "OFF" position, and find the cable connected to the bottom of the platform control box assembly.
2、Disconnect the cable from the bottom of the control box. Remove the platform control box assembly and mounting bracket, and move the control cable away from the work platform.
3、Remove the bolts from the fixed end slider in the slide groove at the bottom of the platform.
4、Lift and push the platform to make the slider reach the gap of the platform.
5、Remove the platform.

3.How to remove the extension platform

1、Remove the platform and view 2.
2、Loosen the fastening bolts of each protective fence, remove the fence, and put it aside.
3、Loosen the bolts that fasten the rollers on both sides of the extension platform.
4、Loosen the baffle fixing bolts on the fixed platform and remove the baffle.
5、Lift the extension platform from the front and rear ends of the extension platform and put it aside.

Scissor arm parts

1.How to remove the scissor arm as a whole

注 意 This operation should be performed when the scissor arm is fully retracted.

1、 Remove the platform and the platform electrical (see the platform section).
2、 Disconnect the wiring with the chassis and the oil pipe from the scissor arm.

注 意 When removing the hose and pipe joint, the O-ring at the end of the hose or pipe joint must be removed and marked at the same time.

3、 Use a crane to fix the scissor arm.
4、 Unscrew the set bolt that fixes the pin shaft.
5、 Use auxiliary tools to pull out the pin.

⚠ 当心 Operate carefully to prevent hitting or pinching hands.

6、 Move the car in parallel and move the slider out of the chute.
7、 Remove the scissor arm as a whole.

2.How to remove the lifting cylinder

- ⚠ 当心 Hot or sprayed liquid may cause harm to human body. Therefore, it is necessary to confirm that the hydraulic oil has cooled before removing the hydraulic cylinder pipe joint.

1、 Fix the scissor arm with a crane and lift the arm to support the maintenance arm.
2、 Use the repair arm to support the scissor arm.
3、 Label, disconnect the pipe joint, and plug the hose on the hydraulic cylinder.
4、 Use tools to unscrew the fixing bolts of the cylinder pin at the piston rod guide sleeve of the cylinder.
5、 Remove the pin.

- ⚠ 当心 Operate carefully, cushion the cylinder with spacers to prevent the cylinder from falling.

6、 Use a tool to unscrew the fixing nut at the joint between the tail of the cylinder and the fork arm.
7、 Remove the bolts.
8、 Use a brass rod or other auxiliary tool to knock out the pin.
9、 Pull out the cylinder carefully.

Underframe parts

1.How to remove the walking motor

注意 When installing the removed bolts, the specified torque must be followed. The removed split pin cannot be reused and must be replaced.

1、 Remove the rear tire cotter pin. The cotter pin cannot be reused.
2、 Remove all the electrical wiring connected to the walking motor.
3、 Remove the slotted nut for fixing the tire and remove the rear wheel.
4、 Stickers.
5、 Loosen the nuts connecting the walking motor to the chassis and rear wheel.
6、 Remove the nut.
7、 Remove the fastening bolts of the traveling motor.
8、 Remove the walking motor.

2.How toremove the battery

注意 Before removing the battery, the charger power supply and the working power supply of the whole machine must be cut off.

1、 Open the side door.
2、 Label, disconnect the wire connected to the battery.
3、 Remove the battery fixing device.
4、 Remove the battery.

3.How to remove the hydraulic valve block

⚠ 当心 Hot or sprayed hydraulic fluid may cause harm to human body. Therefore, it is necessary to confirm that the hydraulic oil has cooled before removing the hydraulic valve block.

注意 When installing the removed hoses and pipe joints, they must be tightened according to the specified torque.

1、 Open the door on the side where the valve block is installed.
2、 Label, disconnect, plug the hose and pipe joints on the valve block.
3、 Unscrew the fixing screw installed at the bottom of the valve block.
4、 Remove the valve block.

4.How to remove the hydraulic power unit

⚠ 当心 Hot or sprayed hydraulic fluid may cause harm to human body. Therefore, it is necessary to confirm that the hydraulic oil has cooled before removing the hydraulic valve block.

注意 When installing the removed hoses and pipe joints, they must be tightened according to the specified torque.

1、 Open the side door and find the power unit.
2、 Label, disconnect the cable on the power unit.
3、 Label, disconnect, plug the hose and pipe joints on the hydraulic pump.
4、 Remove the power unit.

5.How to remove the front wheel steering cylinder

注意 When installing the removed hose and pipe joints, they must be tightened according to the specified torque.

1、 Label, disconnect, plug the hose and pipe joints on the steering cylinder.
2、 Remove the pin shaft, split pin and retaining ring connecting the steering link and the steering cylinder.
3、 Remove the pin shaft, split pin and retaining ring connecting the cylinder bracket and the steering cylinder.
4、 Remove the steering cylinder.

6.How to remove the front wheel bracket

- 注意 When installing the removed hose and pipe joints, they must be tightened according to the specified torque.
- Before removing the front wheel bracket, fix the frame on a suitable shelf or place a jack with sufficient capacity under the floor of the frame.

1、 Remove the nut and washer connected to the front wheel steering linkage.
2、 Unscrew the front wheel bracket fixing bolt or retaining ring.

3、 Remove the front wheel bracket from below.

Hydraulic system

Electrical system

1.Use of maintenance-free batteries

a、 Safety instructions for battery installation

- Always wear protective clothing, gloves and protective goggles when handling batteries
- Do not smoke near the battery, keep the battery away from sparks, flames and metal objects
- When connecting the battery, a rubber handle wrench should be used

- Please check whether the cable connection with the terminal is firm, too tight or too loose connection may cause damage, melting or fire on the pole
- To prevent short circuits, please do not place objects on top of the battery
- During the charging process, the battery must be charged in a well-ventilated area
- Please always keep the battery upright

b、 Battery connection instructions

1、 Battery cable and torque value

The battery cable provides the connection between the battery, the device and the charging system. Use softer cables to connect the battery, charging system, and equipment. Incorrect connection may result in poor performance and terminal damage, melting or fire.

Tightening torque of cable fixing nut:

M8 tightening torque 9～11/Nm,

M10 tightening torque is 18～23/Nm.

Too tight a connection to the terminal may cause damage to the terminal, and a loose connection may cause melting or fire.

- **⚠WARNING** When connecting the battery, a rubber handle wrench should be used

2、 Terminal protection

If the terminals are not kept clean and dry, they may continue to be corroded. To prevent corrosion, apply a thin layer of Vaseline or use a terminal protector.

c、 Preventive maintenance

1、 Check

- Check the appearance of the battery, the top of the battery and the terminal connection should be kept clean, free of dust, corrosion and dry
- Check the connection of the battery cable and other parts, tighten all loose connections
- Replace damaged cables

2、 Clean

- Use a cloth or brush and a mixture of baking soda and water to clean the top, terminals and connections of the battery. Do not let the cleaning fluid enter the battery
- Rinse with water and dry with a cloth, apply a thin layer of petroleum jelly or use a terminal protector
- Keep the area around the battery clean and dry

d、 Recharge

Correct charging is a prerequisite for maximizing battery performance. Undercharge or overcharge can greatly shorten the battery life. Most chargers are automatic and pre-programmed. Some chargers allow the user to set the voltage and current values. The information about proper charging is as follows:

- The charger of this device is automatic and pre-programmed, without user intervention in the charging process
- The battery should be fully charged after each use
- Before charging, please check whether the positive and negative cables of the charger and battery are properly fixed on the battery
- Only charge in a well-ventilated area
- Avoid charging at temperatures above 49°C

e、 Storage

- ✧ Charge the battery before storing it
- ✧ Store the battery in a cool, dry place that is not affected by the weather
- ✧ Disconnect the power plug to eliminate potential parasitic loads that may cause battery leakage

The battery will gradually self-discharge during storage. The specific gravity or voltage is monitored every 4-6 weeks. The comparison table of charging status, specific gravity and open circuit voltage is as follows:

Charge percentage	proportion	Open circuit voltage		
		Battery unit	6V	12V
100	1.277	2.122	6.37	12.73
90	1.258	2.103	6.31	12.62
80	1.238	2.083	6.25	12.50
70	1.217	2.062	6.19	12.37
60	1.195	2.040	6.12	12.24
50	1.172	2.017	6.05	12.10
40	1.148	1.993	5.98	11.96
30	1.124	1.969	5.91	11.81
20	1.098	1.943	5.83	11.66
10	1.073	1.918	5.75	11.51

- The stored battery should be quickly charged when it is at 70% or lower
- After removing the battery from the storage, recharge it before use
- Storage in hot environment (above 32℃)
- Avoid directly exposing the battery to heat sources during storage. The self-discharge rate of the battery in a high temperature environment is faster. If the battery is stored in the hot summer, please monitor the specific gravity or voltage more frequently (about every 2 to 4 weeks)
- Storage in cold environment (below 0℃)
- During storage, avoid placing the battery in a place where the temperature is expected to reach the freezing point. If it is not fully charged, the battery may freeze at low temperatures. If you store the battery in the cold winter, you must fully charge the battery, which is very important.

2.Troubleshooting

The platform on which this system is installed has two display screens, which are located on the lower ECU controller and the upper control box, to display platform parameter information and fault types.

Display	Fault description	Movement restriction	Fault check
01	System initialization failure	Stop all actions	The ECU may be faulty, replace the ECU.
02	System communication failure	Stop all actions	Check whether the communication cable is plugged in. If the cable is connected, replace the ECU and PCU.
03	Invalid mode setting failure	Stop all actions	Set the appropriate options for the machine.
04	Calibration failed	Stop all actions	Please re-calibrate or check whether there is a problem with the angle sensor.
09	GPS communication failure	Stop all actions	Check the connection of the communication line and other lines. If the problem still cannot be solved, try to replace the GPS module or ECU.
12	Chassis lift switch	Limit chassis movement	Check the wiring harness of the chassis lift switch and check whether the switch is stuck.
18	Pothole protection failure	Stop lifting and walking	Check whether the pothole protection is deployed and check the pothole protection switch. Check the wire harness of the pothole protection and the drop-in detection switch.
31	Pressure sensor failure	Stop all actions	Check the wiring harness of the pressure sensor and the pressure sensor. At the same time, check to confirm that the correct platform mode has been selected.
32	Angle sensor failure	Stop all actions	Check the wiring harness of the angle sensor and the angle sensor. At the same time, check to confirm that the correct platform mode has been selected.
36	Low battery warning	Limit walking speed	Low battery, please charge.
37	Shut down when the battery runs out	Stop all actions	Recharge.
42	Left turn button failure	Only display fault information	Confirm that the left turn button has been pressed before powering on. If it is pressed, please consider replacing the handle and PCU.
43	Turn right button failure	Only display fault information	Confirm that the right turn button has been pressed before powering on. If it is pressed, consider replacing the handle and PCU.
46	Enable button failure	Stop platform movement	Confirm that the handle has been pressed to enable before powering on. If it is pressed, please consider replacing the handle and PCU.

47	The handle is not in the zero position error when starting	Limit walking speed	Confirm that it is in the neutral position before powering on. If it is already in the neutral position, consider replacing the handle and PCU. Check whether the middle position parameter of the handle has been set through the LabView program. If it has been set, consider replacing the handle and PCU.
52	Forward solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
53	Back solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
54	Up solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
55	Down solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
56	Right turn solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
57	Left turn solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
58	Brake solenoid valve failure	Stop lifting and walking	Check whether the wiring harness connected to the solenoid valve connector has been inserted tightly, and check whether the solenoid valve has been short-circuited or short-circuited.
68	Low voltage	Stop all	Check the battery voltage and charge it. Check

	failure	actions	whether the battery cable is connected tightly. Check the voltage of ECU and PCU.
80	80% weight alarm	Alarm only	The platform load is close to the rated weight, it is recommended not to increase the load.
90	90% weight alarm	Alarm only	The platform load is very close to the rated weight. It is recommended not to increase the load.
99	99% weight alarm	Alarm only	The platform load has reached the rated weight, do not increase the load.
OL	Platform overload failure	Stop all actions	If the platform is overloaded, remove the excess weight.
LL	Machine tilt failure	Stop lifting and walking	If the platform has been tilted, make sure that the platform is level before operating. If the platform is level, check whether the wiring harness of the level switch has been connected and whether the level switch is faulty.

3. Basic troubleshooting

Failure phenomenon	Cause of issue	Troubleshooting
The power indicator does not light up	The device is not powered on	(1) The key switch is in the center position (2) The emergency stop switch on or off stage is in the pressed state (3) The controller is abnormal or the power is not cut off after downloading the program (4) The next controller is abnormal or the power is not turned off after downloading the program
Power indicator does not light up	CAN device dropped	(1) Whether the leads of power and communication are inserted wrongly or firmly (2) Whether the connection of each pin of the plug of the upper and lower connection cable is consistent with the drawing (3) Whether the upper stage plug or the upper stage connection cable plug is in good contact (4) Is there any abnormality in the upper controller? (5) Whether the plug connection of the next controller is firm and wrong
Invalid step down operation	The key switch is not switched to the lower platform operation	(1) The key switch is not in the chassis control position (2) After the next controller re-downloaded the program, the system did not power off once
Invalid operation on stage	The key switch is not switched to	(1) The key switch is not in the platform control position

	the upper platform operation	(2) After the upper controller re-downloaded the program, the system did not power off once (3) Is there any abnormality in the upper controller?
The horizontal state tilts always alarm	The level switch is not connected or faulty	(1) Whether the horizontal switch is inserted wrongly or firmly (2) Whether the level switch is abnormal
No load and level, can't drop down	Down valve failure	(1) Whether the switch input plug is inserted wrongly or firmly (2) Whether the plug switch wiring is abnormal (3) Whether the lead wire of the down valve is connected wrongly, and whether the down valve is abnormal
Cannot descend when there is no alarm	2m down limit	Reset the handle to perform the lowering operation again
No load, the platform is at the lowest and level, the platform cannot rise	Height calibration error/up valve failure	(1) Whether the switch input plug is inserted wrongly or firmly (2) Whether the plug switch wiring is abnormal (3) Recalibrate the height (4) Whether the lead of the rising valve is wrongly connected, and whether the rising valve is abnormal
Cannot rise to the maximum when the room is empty	The height is not calibrated/the potentiometer is set incorrectly	(1) Recalibrate the height (2) Change potentiometer setting calibration
The platform does not rise after rising to a certain position	Wrong potentiometer	Reset the potentiometer so that its voltage is within the effective range
Overweight alarm when no load	Load is not calibrated/first lift	(1) Re-calibration load factor (2) Forced lift several times
No forward function when there is no alarm	The forward function is abnormal	(1) Whether the PWM plug of the next controller is inserted wrongly and firmly (2) Whether the wiring of the walking motor is connected wrongly or abnormally (3) Whether the next controller is abnormal
No back function when there is no alarm	The back function is abnormal	(1) Whether the PWM plug of the next controller is inserted wrongly and firmly (2) Whether the wiring of the walking motor is connected wrongly or abnormally (3) Whether the next controller is abnormal
There is no alarm when it reaches the minimum. No high speed	Pothole protection	The micro switch is not installed properly/abnormal
Tilt phenomenon	Abnormal level switch	(1) The level switch is set to zero and not in the horizontal position

		(2) The wiring of the level switch is incorrect or not inserted firmly (3) The down controller is abnormal
No overload alarm	The load is not calibrated or the height is wrong	(1) The sensor is not calibrated (2) Load sensor wiring error (3) Bad sensor
Go and stop for a while	Insufficient battery / incorrect calibration	(1) Recalibrate parameters (2) The battery is dead, the fuel gauge can only be used for reference
After the parameters are set, multiple saves are invalid	Storage exception	(1) Parameter over line (2) The down controller is abnormal

4.60/76XEND common fault codes and solutions

Fault code 02: System communication error

Reason: the handle adapter cable is broken; the handle adapter cable connector is loose; the PCU board is faulty

Solution:

1、 Check whether the handle spiral end and the handle adapter cable connector are loose or broken;

2、 Use a multimeter to check whether the handle connection line is broken (mainly check the No. 2 and No. 5 pin connections);

3、 Whether the upper and lower controller connection line plug-ins are in poor contact;

4、 Replace the PCU.

Fault code 18: Pothole protection error

Reason: anti-tip switch problem

Solution:

If the lifting height of the platform should be fully opened in the anti-rolling mechanism (the scissor is separated from the anti-rolling lever), it is an anti-rolling related problem. First check whether the mechanical structure of the anti-rolling bar is normally opened, and if it is opened, check Whether the anti-tipping micro switch is in the normally closed state (the vehicle is normally closed when the anti-tipping micro switch is separated from the mechanism, check with a multimeter, the switch should be a normally closed signal at this time, corresponding to 20, 23 on the main wiring harness No. connector).

Fault code 42: Turn left button error when starting

Fault code 43: Turn right button error when starting

Fault code 46: The handle moves incorrectly when starting

Fault code 47: The handle is not at the zero position error when starting

Reason: The button on the handle may be pressed by a foreign object when starting, and it may deviate from the original position

Solution:

When starting up, check whether something is pressing the button on the handle. After confirming that it is not pressed, check whether the relevant switch is off. If it is not normal, replace the corresponding switch.

Fault code 52: forward coil error

Fault code 53: Back coil error

Fault code 54: Error of hoisting coil

Fault code 55: Error of lifting and lowering coil

Fault code 56: Wrong steering coil

Fault code 57: Left steering coil error

Reason: It is possible that the wire on the coil has been forgotten, or the wire connecting the main harness and the coil is broken or the coil is broken.

Solution:

Check whether the coil is connected to the corresponding wire. If not, connect it. If the fault code is not displayed, the fault will be eliminated; if the fault code is still displayed, measure the coil resistance, if the resistance is infinite, it means the coil is broken; Check whether the wire connecting the main harness and the coil is disconnected. If it is disconnected, replace the wire.

Fault code 68: Low voltage error

Reason: battery voltage is too low

Solution:

Recharge.

Fault code LL: The machine tilt exceeds the safety limit error

Reason: The vehicle is tilted or the tilt switch is malfunctioning.

Solution:

1、 If the longitudinal tilt angle of the vehicle exceeds 1.5 degrees or the lateral tilt angle exceeds 3 degrees, the platform height must be lowered and the vehicle must be driven to a horizontal position.

2、 If the longitudinal inclination angle of the road is less than 1.5 degrees or the lateral inclination angle is less than 3 degrees, check whether the inclination switch is working normally (the indicator light is on), if it is abnormal, you need to replace the inclination switch or check whether the wiring is correct.

3、 If it is normal, you need to drive the vehicle to a horizontal position and reset the tilt switch to zero again (insert a thin needle into the zero hole of the tilt switch until the indicator light flashes alternately, the zero setting is successful).

Fault: The vehicle does not respond when the power is turned on

Reason: The power signal line is not normally conducted

Solution:

1、 Check whether the fuse is burned out;

2、 Check whether the main power switch of the power side door is normally closed

3、 Check whether the emergency stop switch on the bottom control panel is normally closed;

4、 Check whether the key switch on the bottom control panel is normally closed (with 24V power supply);

5、 Check whether the charging protection connector on the charger is normally closed (with 24V power supply);

6、 Check whether the No. 2 pin (relay coil) on the relay has 24V power supply, if not, check the handle wire (No. 3, 4 wire), handle wire connector, and handle emergency stop switch is normal;

7、 Check whether the relay switch is closed (with 24V power supply). If the above parts are abnormal, check whether the wiring is loose or broken or replace the corresponding parts.

Failure: When the vehicle starts, the motor has no action and no fault alarm

Reason: drive or motor related failure

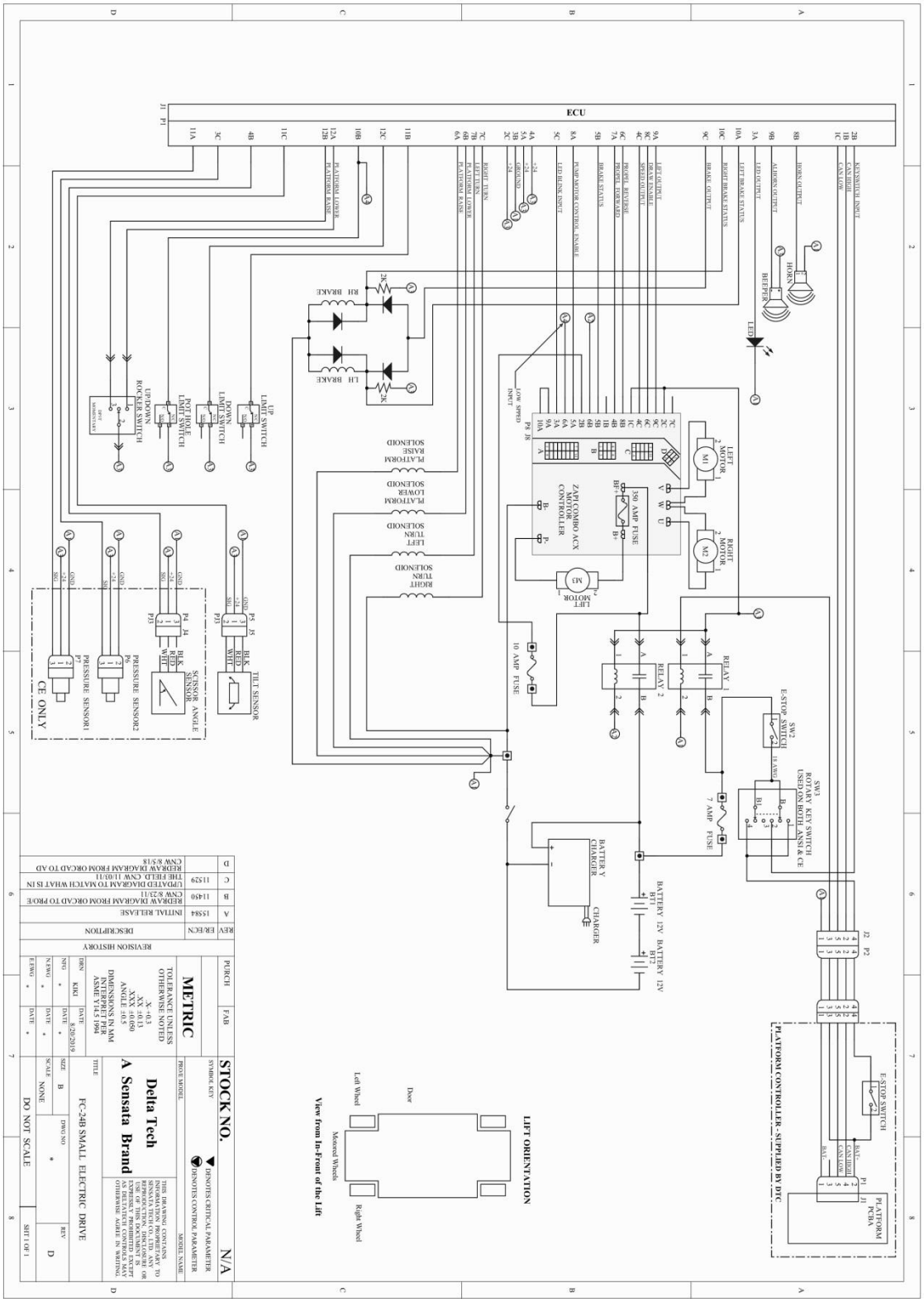
Solution:

1、 Check whether there is 24V power on the J1 pin on the driver when the vehicle is moving (or the chronograph has a signal to indicate that the ECU has a normal output at this time, so the pin has no signal, check the circuit);

2、 Check if the J3 pin on the driver has 0-5V power when the vehicle is moving;

3、 Check whether the 35 square millimeter cables are properly connected, if all are normal, it may be that the drive or motor is faulty, and the relevant accessories need to be replaced.

5.Electrical schematic



Maintenance Record

Date	Maintenance & repair content	Autograph

杭叉集团股份有限公司
HANGCHA GROUP CO., LTD.

Service hotline：400-884-7888

■ Add：浙江省杭州市临安区相府路 666 号
■ Tel：86-571-88926666（switchboard）85191117
■ Fax：86-571-85131772 ■ postal code：311305
■ Web：http://www.zjhc.cn ■ E-mail：sales@zjhc.cn