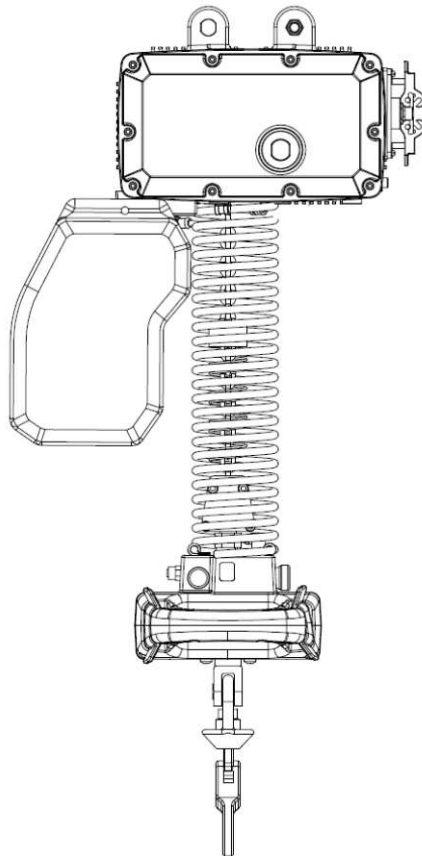


Alekcrane Intelligent Chain Hoist

User Manual

V0.0



March 2018

Preface

Thank you for choosing our product! The *User Manual* provides related information of the Alekcrane intelligent chain hoist, covering the following respects:

Safety

Product overview

Initial start

Basic function

Operation mode

Equipment parameters

Tips

If this is the first time you use this product, please carefully read this *User Manual*. For any doubt with regard to functions or performance, please don't hesitate to contact our technicians for assistance.

Please make this *User Manual* readily accessible for reference at any time.

We are committed to continuous improvement on chained intelligence lifting equipment, and hence changes may occur to any information provided by us without prior notice, and we appreciate your understanding.

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Chapter I Safety

1.1 Safety precautions

1. The users must be familiar with and abide by the following safety matters before the storage, installation, operation, inspection and maintenance of the products.
2. Hint: Non-conformance to the safety precautions may cause severe personal injury or even death or damage to the equipment.
3. Please make sure you are familiar with this *User Manual* before any operation.
4. Do not operate the equipment in case of any discomfort.
5. An operator must focus on the equipment during operation.
6. DO NOT lift any weight beyond the rated capability of the equipment.
7. DO NOT use any lifting hook without a safety buckle or that is damaged.
8. This product is not designed and manufactured for man riding but for products, hence man riding is prohibited.
9. DO NOT have anyone stay in the activity range of load lifting.
10. DO NOT suspend the load in the air for an extended period, otherwise the service life of steel wire will be shortened and the risk of personal injury may increase.
11. DO NOT operate any chained intelligence lifting equipment with any electrical or mechanical defect.
12. Please do not cut off the power supply during lifting.
13. DO NOT install any object on the handle ends, otherwise it may become an obstruction to the normal operation of the equipment.
14. Please do not wash the equipment or clean it with wet rag.
15. Please do not frequently switch on and off the equipment.
16. Please do not conceal or remove any sign attached to the equipment.
17. Please do not dismantle or fix the product unless you are a professional maintenance man.
18. DO NOT maintain the equipment if it's electrified.
19. Check whether the lifting hook and the load chain are damaged or not before use.
20. The load chain needs to be kept clean and in good condition.
21. A load chain provided by us is needed when modifying one.
22. Please press the emergency button ONLY in case of an emergency if the equipment is operating in a high speed.
23. Upon installation of a lifting hook, its thread must be screwed to the depth of 40 mm to avoid risks as a result of insufficient installation depth.
24. A limit switch is to prevent lifting movement beyond the position limit and shall not be used as a stroke limit.

1.2 Safety signs

1.3 Safety protection device

A safety protection device is designed to prevent accidents of chained intelligence lifting equipment, including stroke limit switches that control the movement and devices that prevent the device from overloading.

1.3.1 Limit switch

The chained intelligent lifting device is equipped with a stroke limit switch (Figure 1. 1), to ensure the safe and reliable operation of the equipment. Both ends of the chain are equipped with chain springs and limit baffles. The system stops running when the load moves upwards 10CM before the limit baffle which would trigger the upper limit switch. The deceleration is to prevent the load from being off the hook by sudden stop. The system stops running when the load moves upwards to the limit baffle triggering the upper limit switch. At this point, the load can be only moved downwards. The system stops running when the load moves downwards 10CM before the limit baffle which would trigger the lower limit switch. The system stops running when the load moves downwards to the limit baffle triggering the lower limit switch. At this point, the load can be only moved downwards.

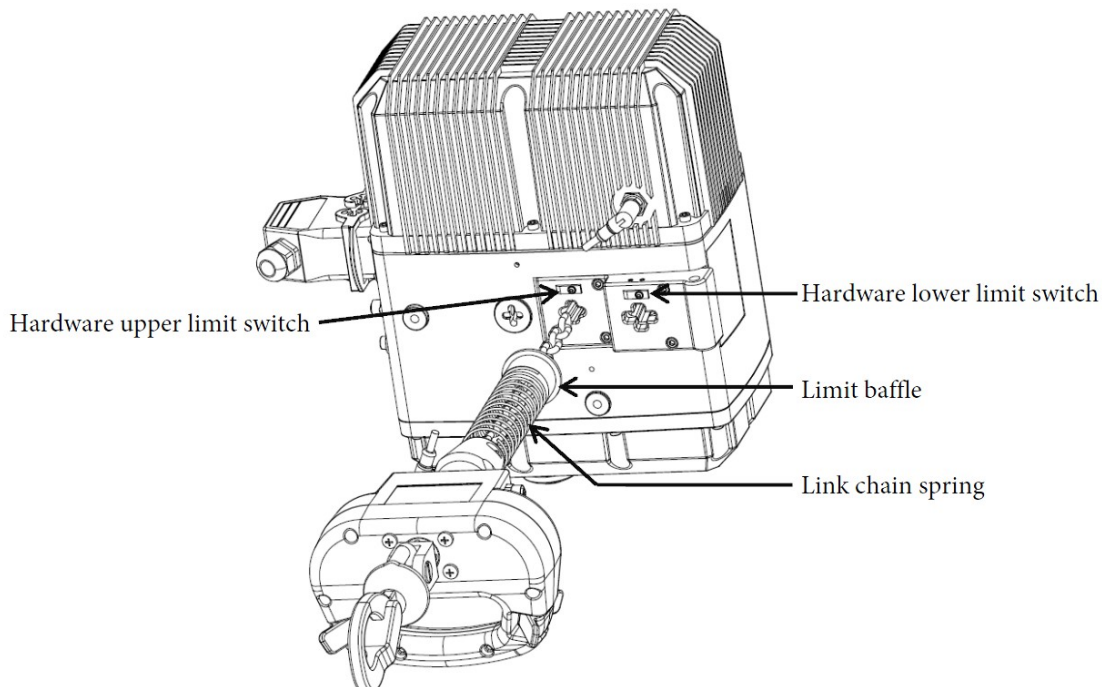


Fig. 1. 1. Limit switch

1.3.2 Overload prevention device

The Alekcrane intelligent chain hoist is equipped with weight sensor (Figure 1. 2). When the weight to be lifted exceeds the set value or rated bearing capacity, lifting will stop and an alarm will be given with red light on, in such case, the equipment can be operated downward only.

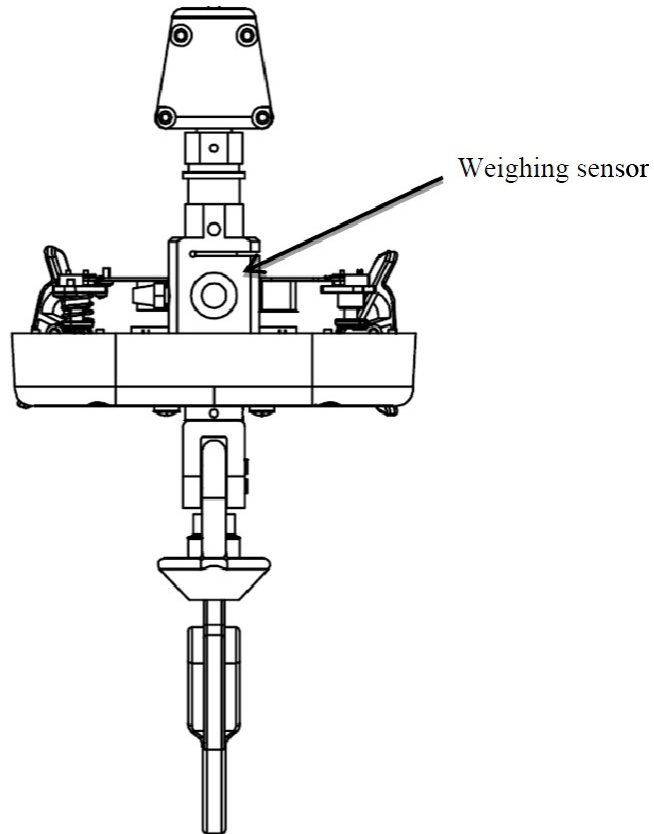


Fig. 1. 2 Weighing sensor

Chapter II Overview

2.1 Introduction

As a material handling equipment complying with ergonomics, the chained intelligent lifting device, composed of an electric motor, a speed reducer, a sensor, a control module, and structural parts, is controlled by the microprocessor. The chain serves as the lifting medium of the Alekcrane intelligent chain hoist, which outperforms the wire rope in terms of wear resistance, maintenance and service life; the chain is driven by the chain wheel inside the equipment, so the lifting stroke of the equipment will not be limited. The equipment features easy operation, high precision, intelligence, controllable speed, etc., providing it with the ability to maximize production efficiency and minimize occupational risks to operators. The Alekcrane intelligent chain hoist produced by our company is divided into four types: 120KG, 250KG, 500KG, and 1,000KG according to rated load lifting capacity.

2.2 Major application and scope

Automobile industry (including engines, gearboxes, new energy battery assembly, etc.)

Energy industry

Machinery manufacturing and processing

Precise assembly

Handling work with high repeatability

Parts assembly

Warehouse loading and unloading

Product sub-packaging

2.3 Basic interface

2.3.1 Dial type

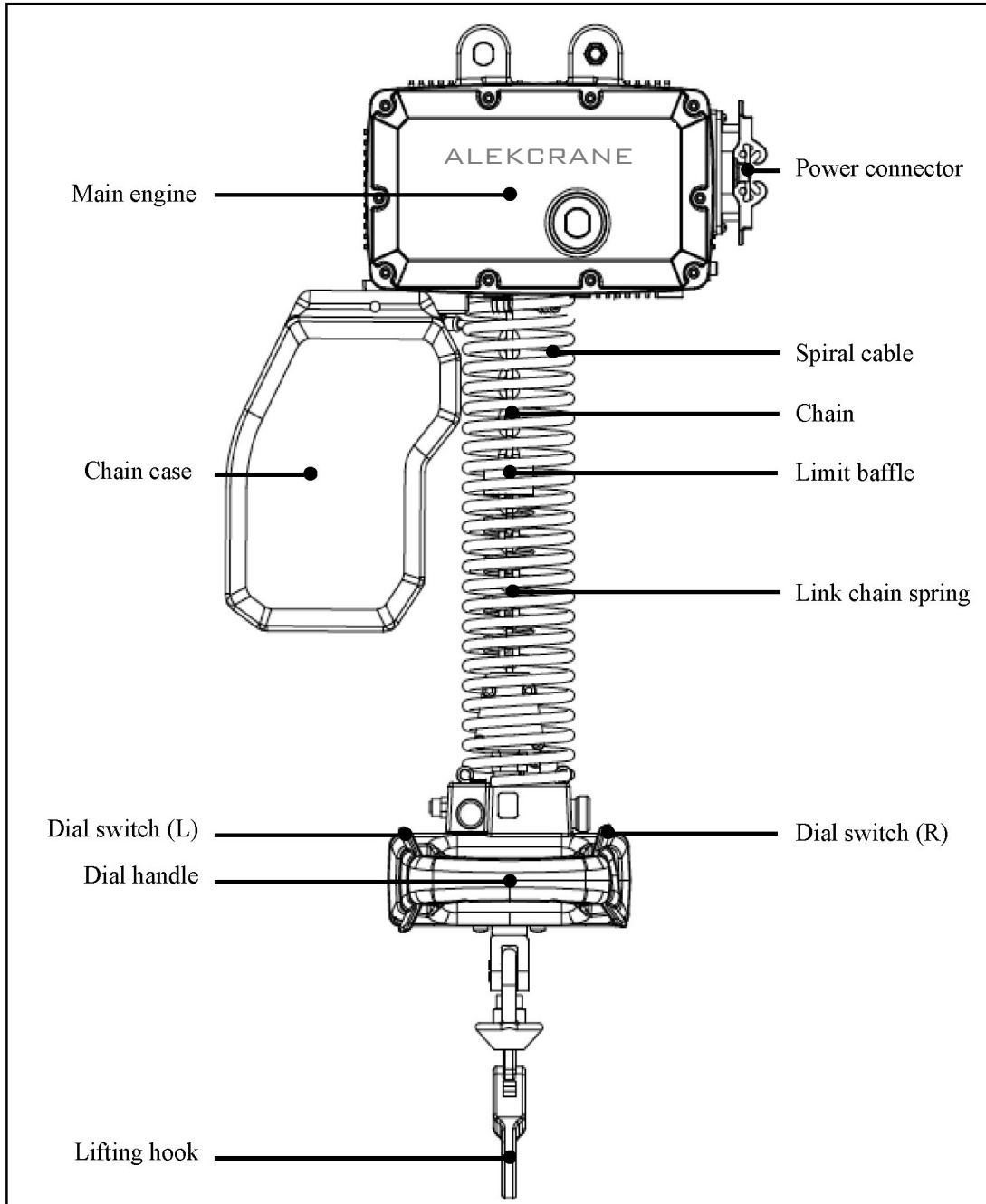


Fig. 1 Dial handle type

Note: 1. There are limit baffles and chain springs in the chain box.

2. Select the main engine according to the load.

3. Select the appropriate chain box and spiral cable according to the stroke and the suspension height.

2.4 Major parts

2.4.1 Main unit

There are motor, control module, speed reducer in the main engine (Fig. 2). It is designed to provide power necessary for the device to achieve accurate control and lifting, and to process signals.

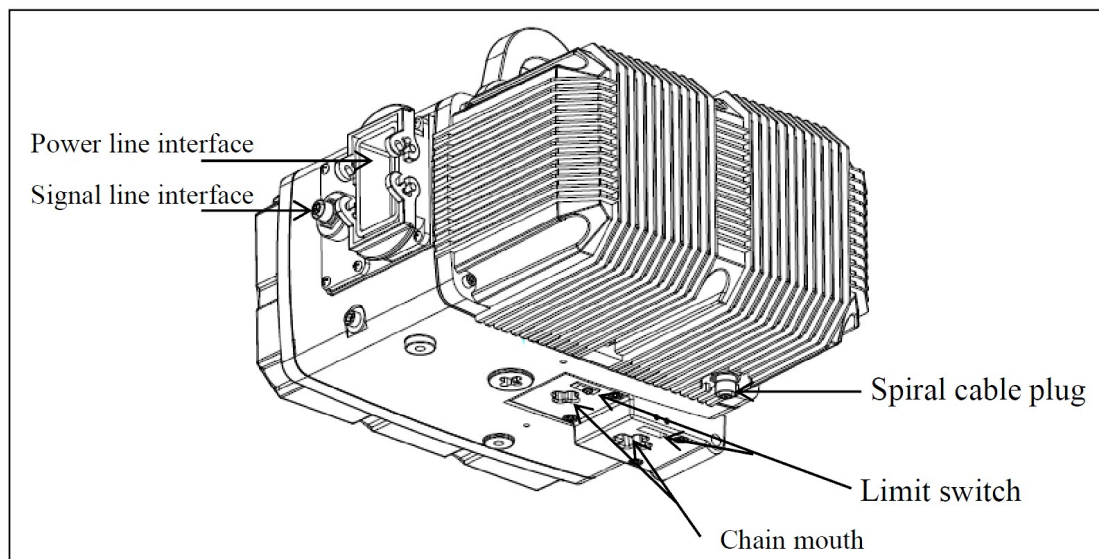


Fig. 2 Main engine

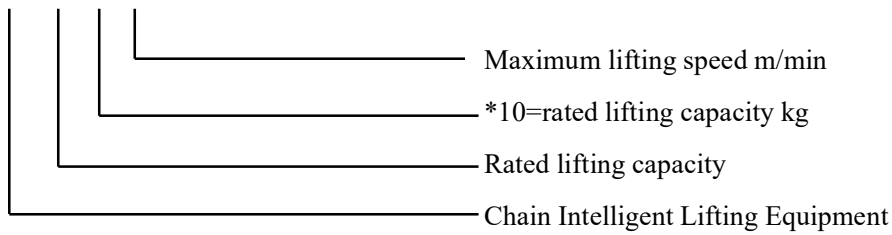
2.4.1.1 Main engine model

Table 1

Model	Input voltage	Rated load KG	Power KW	Lifting height (m)	Speed (m/min)
IADC-H01232	Three-phase 380V	120	0.75	3.00-10.00	32.00
IADC-H02516	Three-phase 380V	250	0.75	3.00-10.00	16.00
IADC-H02523	Three-phase 380V	250	1.9	3.00-10.00	32.00
IADC-H05016	Three-phase 380V	500	1.9	3.00-10.00	16.00
IADC-H10016	Three-phase 380V	1000	3.5	3.00-10.00	16.00

2.4.1.2 Main engine model definition

IADC-H 012 23



2.4.2 Dial handle

The dial handle (Fig. 3) is the main interaction interface between the operator and the lifting equipment. The user controls the lifting of the equipment by the dial switch, and at the same time the operator enters the suspension mode by pressing the suspension button and obtains corresponding information through the indicator light and the nixie tube.

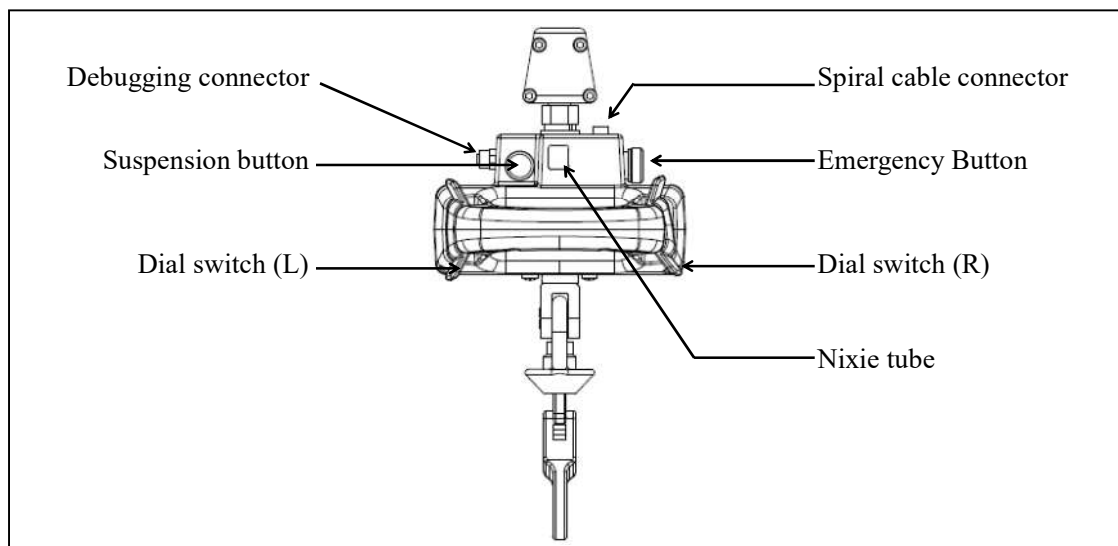


Fig. 3 Dial handle

2.4.3 Spiral cable

The role of the spiral cable (Fig. 4) is to transmit data between the main engine and the controller, including the lifting direction, lifting speed, weight data, emergency stop signals, and fault signals.

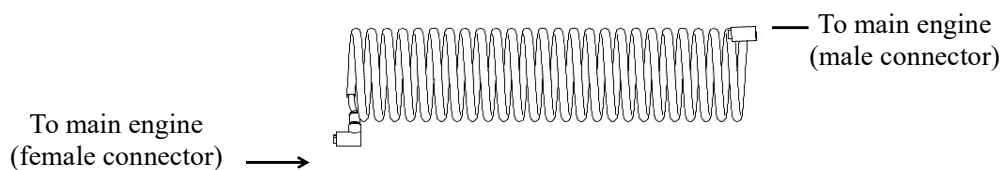


Fig. 4 Spiral cable

2.4.4 Chain

The Alekcrane intelligent chain hoist is equipped with a high-strength alloy chain with a grade of G80. We offer chains with different surface treatment according to customer requirements, such as blackening and galvanizing. Sizes are shown in

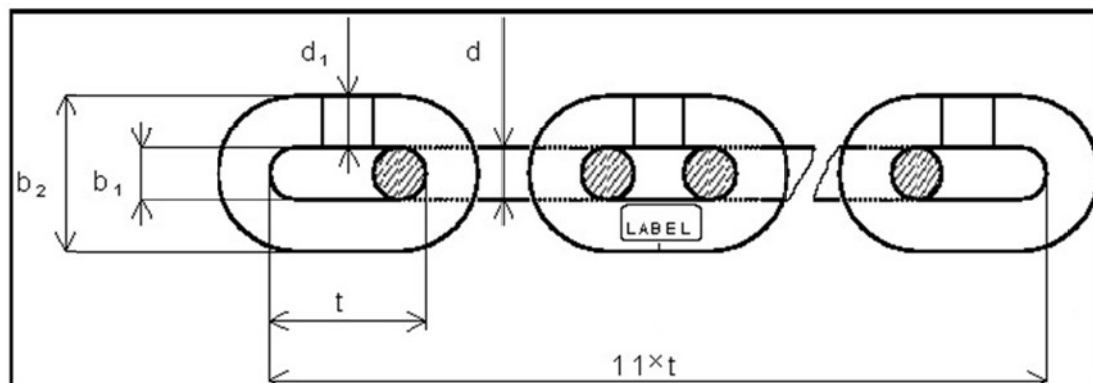


Fig. 5Chain

Main engine model	Chain specifications	Diameter (d) mm		Pitch (t) mm		11t length mm		Weld width d1max mm	Chain internal width b1min mm	Chain external width B2max mm	Weight Kg/m
		+0.1	-0.1	+0.20	-0.00	+0.70	+0.20				
IADC-H01232	5*15	5	-0.1	15	-0.00	165	+0.20	5.3	6.0	16.8	0.55
IADC-H01216	5*15	5	+0.1	15	+0.20	165	+0.70	5.3	6.0	16.8	0.55
IADC-H02532	5*15	5	-0.1	15	-0.00	165	+0.20	5.3	6.0	16.8	0.55
IADC-H05016	7*21	7	+0.1	21	+0.30	231	+1.00	7.5	8.4	23.5	1.08
IADC-H10016	5*15	9	-0.3	27	-0.20	297	-0.50	9.7	10.8	30.4	1.77

2.4.4.1 Chain safety factor

Alekcrane intelligent chain hoist model	Rated lifting capacity (KG)	Chain specifications	Chain number	Safety factor
IADC-H01232	120	5*15	1	26
IADC-H01216	250	5*15	1	13
IADC-H02532	250	5*15	1	13
IADC-H05016	500	7*21	1	12
IADC-H10016	1000	9*27	1	10

2.4.5 Chain case

2.4.5.1 Short chain case

Suitable for the chain of 5*15 model with a maximum length of 22M, or 7*21 model with maximum length of 12M.

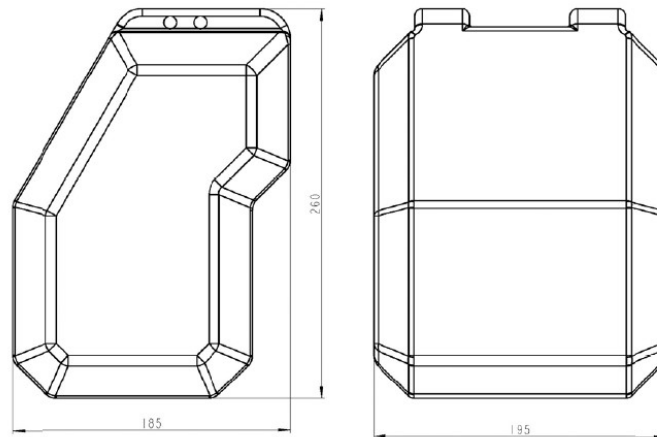
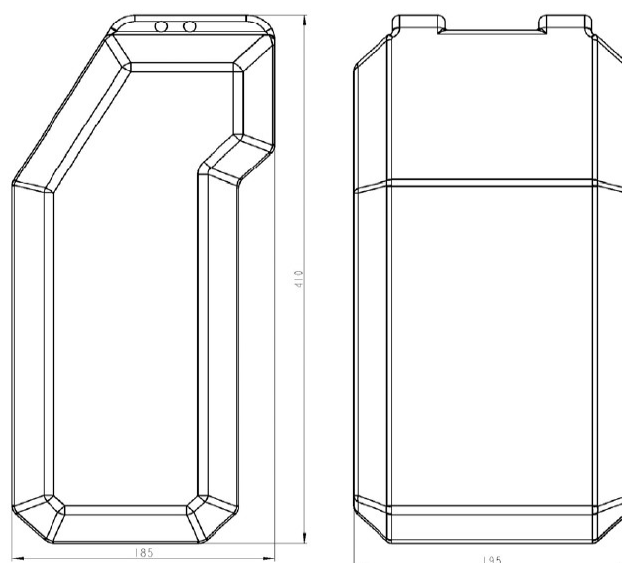


Fig. 6 Short chain case

2.4.6 Long chine case

Suitable for the chain of 5*15 model with a maximum length of 40M, or 7*21 model with maximum length of 21M.



2.5 Adapter

The adapter (Fig. 7) is for connecting the handle and the hook.

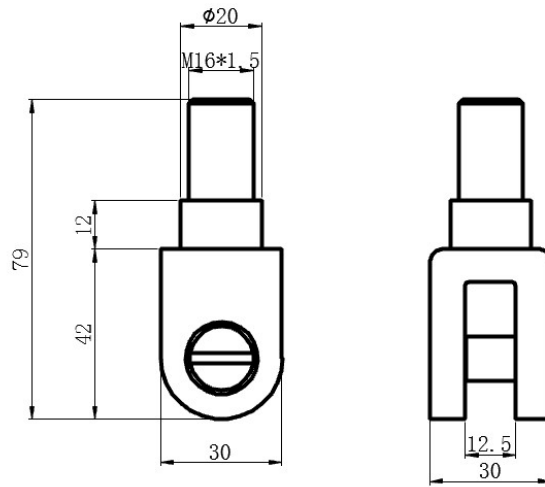


Fig.7 The adapter

2.6 Lifting hook

The application method of the hook on the Alekcrane intelligent chain hoist is shown in Fig.8.

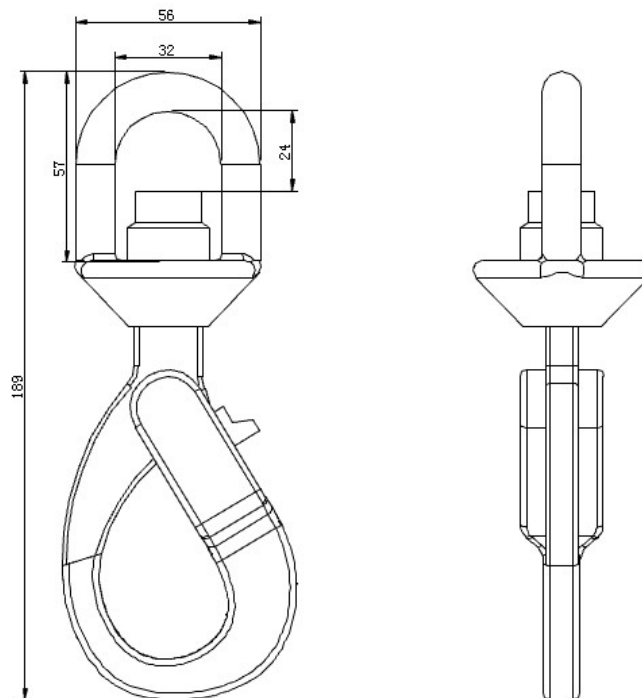



Fig. 8 Lifting hook

2.7 Nameplate identification and meaning

Alekcrane Intelligent Chain Hoist	
Specification/model: IADC-H01232	Input voltage: Three-phase 380V
Rated load: 120KG	Rated power: 0.75KW
Lifting height: 3m-10m	Operating speed: 32m/Min
Product No.:	
Date of manufacture: MM/ YY	

Specification/model: The type and model of the said main engine.

Input voltage: Main power supply needed by the equipment.

Rated load: Rated lifting capacity of the equipment.

Rated power: The rated power of the said type.

Lifting height: The lifting stroke range of the equipment.

Operating speed: The maximum operation speed of the equipment.

Chapter III Initial start

3.1 Initial connection

The following aspects should be conducted before assembling the equipment:

1. Check that whether the power supply is three-phase 380V or not.
2. Make sure that the current carrying capacity of the cable that powers the device meets the requirements.
3. The short circuit protection device needs to be configured.

3.2 Preparation before power-on of the machine

Before final connection to power, check the entire equipment to ensure all connections are complete without bending or loosening and the following connected shall be checked:

4. Connection interface for the spring wire and main engine.
5. Connection interface for the spring wire and the handle.
6. Power connection interface

Note:

The equipment must be grounded.

3.3 Initial start

When the power is turned on, the device starts to operate and the green indicator on the handle flashes.

Release the emergency button on the front side of the handle.

Standard operation - dialing operation: Hold the grip on the handle end and use the thumb to operate the dialing switch on the left (right) for several time to adapt to the equipment operation.

Chapter IV Basic function

4.1 Mode of manual hold

4.1.1 Operation mode

The operator holds the handle and uses the thumb operate dial switch to move the equipment upwards and downwards. The dial switch has an intermediate zero position. The further operator operates the dial switch away from the middle range, the faster the device moves up and down.

4.1.2 Infrared sensor

The infrared sensor is installed on the handle of the Alekcrane intelligent chain hoist. (Fig.9) When the operator is not detected by the sensor, the operator can't control the system to move up and down through the dial switch. When the operator is detected by the sensor, the operator can control the system to move up and down through the dial switch. The system has a manual timeout value setting, when the sensor detects the operator, but the operator does not operate the sliding handle for a time longer than the set value, the operator cannot control the system to go up and down at this time, and the operator needs to leave and re-hold the sliding handle.

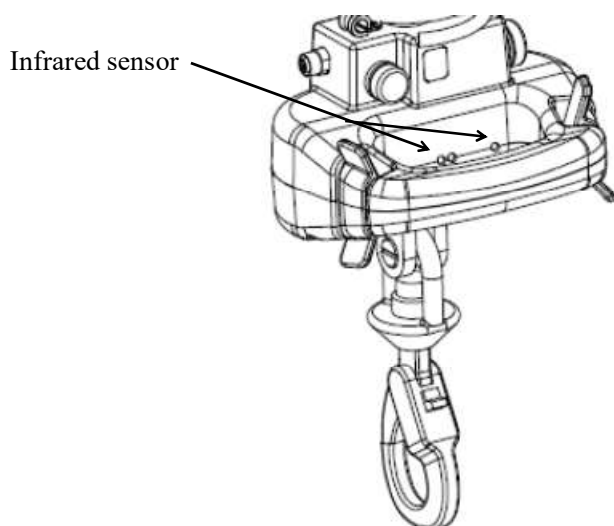







Fig. 9 Infrared sensor

4.1.3 Adjust the maximum operating speed in mode of manual hold

In the mode of manual hold, the maximum operating speed is divided into 10 levels, and the maximum speed in each stage is the number of stages \times 10% of the maximum speed. The user may set the maximum operating speed in the mode of manual hold through the speed setting in the menu according to the demand. Specific methods of operation are as follows:

1. Run the client-side of the chained intelligence lifting equipment, click the pull-down menu at the upper right , select the connection management , and connect the device to be debugged.
2. Click the pull-down menu in the upper right , select “Device Parameters  > Work Parameters” to enter the equipment operating parameters interface.
3. Setting line parameters in the “Manual Speed Setting” menu, and then click the pull-down menu  on the right to set the desired speed threshold, then setting is completed.

4.2 Suspension mode

In this mode, the operator may raise or lower the load by applying an upward or downward external force to the load. The greater the force applied, the greater the speed at which the load moves.

4.2.1 Operation mode

The following is the operation flow of suspension mode:

1. Lift the load to the proper height in mode of manual hold.
2. Ensure that the client device parameter of the Alekcrane intelligent chain hoist > operating parameters> suspension function switch is set to "ON".
3. Press the green suspension button, then the system enters the suspension mode, and the built-in indicator of the green suspension button is always-on.
4. Grasp the load after the suspension mode is on.
5. Applying an upward force to the load end will lift the load, while applying a downward force to the load end will lower the load.
6. The greater the force applied to the load end, the faster the equipment will operate in the suspension mode.

7. Repeat several times until you are familiar with the suspension mode.

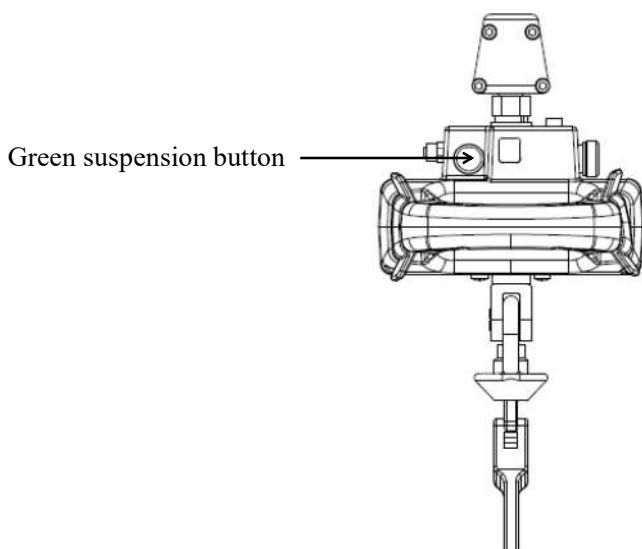


Fig. 10 Suspension button

4.2.2 Anti-rebound mode

The anti-rebound function is to prevent the lifting hook from colliding with any other object by moving upward (downward) at a certain speed to or prevent the load falling from the equipment caused by the abrupt change in the load weight in the suspension mode. There are three anti-rebound modes: Over-force, overrun, and no supporting.

Overrun: The operation will be terminated when the load operating speed in the suspension mode reaches 90% of the maximum suspension speed, and the LCD will display “over speed” alarm, and then the equipment will exit to the locked mode.

Over-force: If the operating force exerted on the load by operators exceeds the “Max. Over-power” or the reduced weight of load as tested, the operation will terminate, and the LCD will show “overload alarm”. Other than the over-speed testing, the equipment may operate at the maximum speed in the suspension mode.

No supporting: No protection mode is available in suspension mode;

4.2.3 Precautions

1. Triggering the infrared sensor will cause exiting the suspension mode under suspension mode.
2. Do not apply additional force to the load during start of the suspension mode. The extra force will cause the system to record a larger or smaller reference weight. After removing the extra force, the load may move in the opposite direction.
3. In the suspension mode, the system will exist the suspension mode when the operator

does not apply external force to operate the load for longer than the set suspension timeout value.

4. Every time the weight of the load changes, the suspension mode shall be restarted.







4.3 Automatic suspension mode

This feature allows the inverter chain hoist to automatically enter the suspension mode without pressing the green suspension button when the load meets the following conditions.

Detection weight: Used to determine the weight conditions for entering the automatic suspension. $|\text{Load weight} - \text{Detection weight}| \leq \text{Operating force} - 0.5$. If the set detection weight is 50KG and the operating force threshold is set to 2KG, the weight condition for entering the automatic suspension mode is 48.5-51.5KG.

Detection time: Used to determine the time conditions for entering the automatic suspension. If the detection time is set to 2S, the system will automatically enter the suspension mode when the load weight meets the automatic suspension condition for 2 seconds.

4.3.1 Operation mode






1. Run the client side of the chained intelligence lifting equipment, click the pull-down menu at the upper right , select the connection management , and connect the device to be debugged.
2. Click the pull-down menu in the upper right , select "Device Parameters  > Work Parameters" to enter the equipment operating parameters interface.
3. Set line parameters in the "Auto suspension - On/Off" menu, and click the pull-down menu on the right to set it to "On" status. 
4. Lift the load so that the load is suspended and static in the air. Click the load weight on the right side of the "Auto suspension - weight detection 1" menu, to save the weight settings. 
5. With a maximum of 10 sets of weights
6. Set line parameters in the "Auto Suspension - Time Detection (seconds)" menu, inputting the desired time.
7. When the automatic suspension setting is completed, the equipment automatically enters into the suspension mode if the detected weight and time meet requirements.

4.4 Soft limit

The Alekcrane intelligent chain hoist is equipped with a software limit function, which can easily achieve such 5 functions as fixed-point upper soft limit, lower soft limit, downward deceleration, upward deceleration, and upward speed recovery. The soft limit has two sets - soft limit 1 and soft limit 2. Soft limit 1 includes five functions: upper soft limit 1, lower soft limit 1, downward deceleration point 1, upward deceleration point 1, and upward speed recovery point 1, the setting parameter of which is only valid in the holding mode. Soft limit 2 includes five functions: upper soft limit 2, lower soft limit 2, downward deceleration point 2, upward deceleration point 2, and upward speed recovery point 2, the setting parameter of which is only valid in the holding mode.

4.4.1 Operation mode

Take the settings of the upper soft limit 1 in soft limit 1 as an example:

1. Run the client side of the chained intelligence lifting equipment, click the pull-down menu at the upper right , select the connection management , and connect the device to be debugged.
2. Click the pull-down menu in the upper right , select "Device Parameters  > Work Parameters" to enter the equipment operating parameters interface.
3. Set the line parameters in "soft limit 1" menu and click on the record position  on the right, to save the current position settings.
4. The equipment stops operating when the operating handle moves upwards to the set position of upper soft limit 1. In such case, the equipment can move downwards only.

4.4.2 Precautions

When using soft limit, the following points need to be understood by the user.

1. When the equipment reaches the upper software limit and lower software limit, the system stops its operation and can only move in the opposite direction.
2. When the system does not set the slowdown point, the system decelerates automatically when the system default distance is about 13cm from the upper (lower) limit point at full speed; the deceleration distance of the system becomes shorter as the speed decreases.
3. When the upper soft limit and lower soft limit set points coincide, the equipment will not move.

4. The upward slowdown point shall be set below the upward speed-up point. If it is set at the top, it will lose its effect.
5. If the slowdown point is set to reduce the impact of load docking in the air, you must ensure that the load is set at the slowdown point before the docking point and the slowdown point must be at least 10 CM away from the docking point.

Chapter V Software operation

5.1 Mobile APP installation

5.1.1 APP acquiring





There are the following ways to obtain the latest client of the Alekcrane intelligent chain hoist:

1. Log into the official website of Shaoxing Henghui Robot Technology Co., Ltd. and download the client from the Download webpage.
2. Obtain the client from the salesperson and after-sales personnel of Shaoxing Henghui Robot Technology Co., Ltd.

5.1.2 Installation process

After downloading, click the installation program of the "Alekcrane intelligent chain hoist" to install.

5.2 The first time use of the APP

Click the Client of the Alekcrane intelligent chain hoist, main interface (Fig. 11) toolbar and work area. The toolbar displays Return (Exit) , Connection Status **No connection**, Alarm Display , Privilege Management , and Pull-down Menu from left to right . The work area displays such information as count, mode, weight, position and current speed, etc. The connected equipment can be operated up and down through a manual control lever.

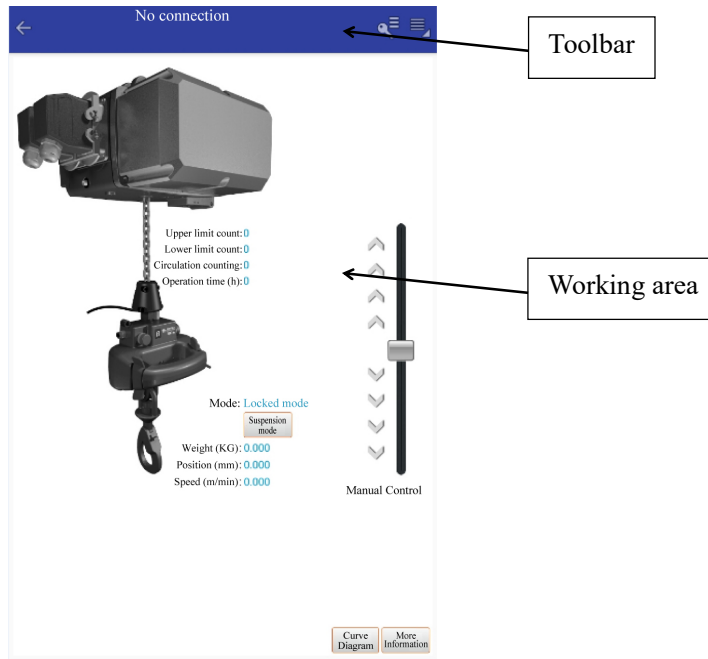


Fig. 11 Main interface

5.2.1 Return (Exit)



If the Client clicks  on the non-main interface of the Alekcrane intelligent chain hoist, the Client will directly exit to the previous interface; if the Client clicks  on the main interface, the interface will display the question of "Confirm the exit of the application?" (Fig. 12), click "Confirm" to exit the Client, or click "Cancel" to cancel the operation.



Fig. 12 Exit prompt

5.2.2 Connection status

The status shows whether the Client is connected to the equipment or not, if there is no connection **No connection**, then corresponding status would be showed; if there is a connection, then the connected status and the name of the connected device will be displayed **Connected U-PC**.

5.2.3 Alarm display

The alarm symbol will not be displayed on the toolbar when the Client is not connected to the Alekcrane intelligent chain hoist or the Client is connected to the equipment but the equipment

does not give any alarm; when the equipment is connected to the Client and there is an alarm, then the alarm symbol will appear on the toolbar with the alarm transmission capacity (Figure 13).



Fig. 13 Alarm indicator

5.2.4 Permission management






You can log into the Client as an administrator or developer for higher operating privileges.

5.2.5 Drop-down menu

Click the pull-down menu which will display 5 submenus from top to bottom, including Connection Management, Device Information, Device Parameters, Program Upgrade Setting, and About;


5.3 Connection administration

5.3.1 Equipment connection steps

1. Run the client-side of the chained intelligence lifting equipment, then click the pull-down menu  at the upper right to select the connection management  to enter the equipment connection interface.
2. The interface displays the connection status, history records, and search equipment from top to bottom and click the “search equipment ”.
3. The content displayed in the work area will change from history records to available devices. The software will automatically search for Bluetooth that can be connected in the vicinity. During the search process, you can click Stop  on the right side to stop searching for Bluetooth. After stopping searching, you may click “Search ” again for available Bluetooth.



4. Select the Bluetooth of the equipment that needs to be adjusted, and input the password for connection.
5. The interface displays "Synchronizing parameter". After the synchronization, the Client will complete the connection to the equipment.
6. The connection status and the number of the connected equipment will be displayed at the toolbar.

5.3.2 Equipment disconnection


In the connection management workspace, click Disconnect , the interface will display the message "Device is disconnected" and click "Close".

5.4 Permission management


Login through authority management, you can obtain higher operating authority for equipment commissioning and maintenance. The operation permission is in the order of developer > administrator > not logged in. In the option management, that not logged in displays

 and the successful login displays .


5.4.1 Login administrator

Click authority management  in the main interface toolbar, select the administrator, enter the password and click the login button to log in.



5.4.2 Login developer

Click authority management  in the main interface toolbar, select the developer enter the password and click the login button to log in.

5.4.3 Logout

Click authority management  in the main interface toolbar, and click the logout button to log out.

5.5 Equipment parameters

Click the pull-down menu , select the equipment information , it pops up the equipment information interface (Fig. 14). The work area shows the equipment model, version information, and serial number.

Model: The main engine model of the connected equipment.

Version information: Display the handle version number and main engine version number.

Serial number: The unique code of the main engine of the equipment.

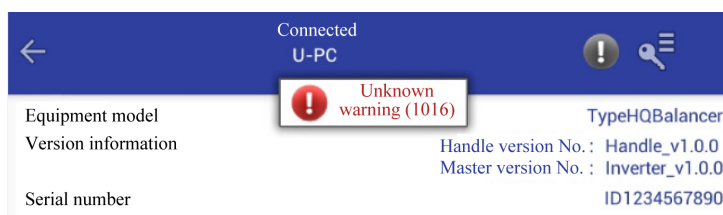




Fig. 14 Equipment information interface

5.6 About

Click the pull-down menu , select about, it pops up the interface to view client software version number. Click the version update in the work area to perform an online upgrade of the client.

Chapter VI Parameter setting

6.1 Information display

The following is displayed in the work area of the Alekcrane intelligent chain hoist client main interface: information such as count, mode, weight, position and speed. Click the more information  button to view more information (Fig. 15).

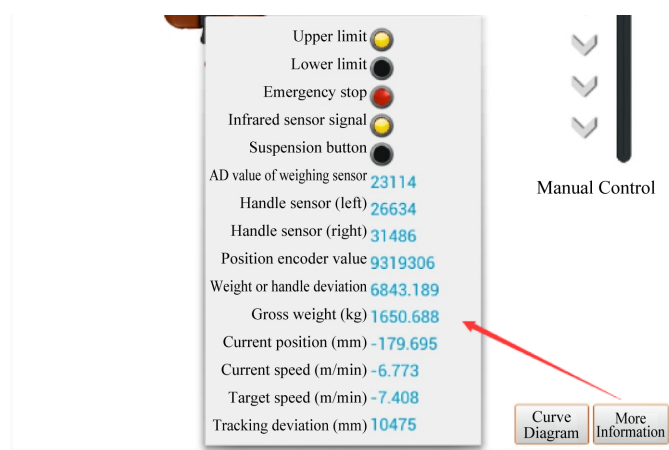


Fig. 15 more information




The information is defined in Table 2.

Table 2

Information name	Meaning
Upper limit count	Record the number of times equipment has passed the upper limit position.
Lower limit count	Record the number of times equipment has passed the lower limit position.
Circulation counting	Record the cycle times of equipment.
Operation time (h)	Display the total running time of equipment (unit: H), where the running time is defined as the total period of time when the equipment is switched on.
Mode	Display the current mode of the equipment.
Weight (KG)	Display the current load weight (relative to the set weight zero point).
Position (mm)	Display current position.
Speed (m/min)	Display current speed.

Upper limit	Indicate the hardware upper limit state and when the hardware upper limit is triggered, the yellow indicator light is on.
Lower limit	Indicate the hardware lower limit state and when the hardware lower limit is triggered, the yellow indicator light is on.
Emergency stop	Indicate the emergency stop status and when the emergency stop is valid, the red indicator light is on.
Infrared sensor signal	Indicate the infrared sensor state and when the infrared sensor is triggered, the yellow indicator light is on.
Suspension button	Indicate the suspension button state and when the button is pressed, the yellow indicator light is on.
AD value of weighing sensor	The sampled value of the weighing sensor.
Handle sensor (left)	AD value on the left side of the handle sensor.
Handle sensor (right)	AD value on the right side of the handle sensor.
Position encoder value	Display the absolute value encoder.
Weight or handle deviation	Display the deviation of the handle sensor AD value from the set zero point value.
Gross weight (kg)	Display the total weight weighed by the weighing cell.
Current position (mm)	Display current position.
Current speed (m/min)	Display current speed.
Target speed (m/min)	Display the command speed.
Tracking deviation (mm)	Display the difference between the instructed position and the actual position.

6.2 Equipment parameters

Click the pull-down menu , select the equipment parameter , to enter the equipment information parameter (Fig. 16). The working area of the parameter setting interface can include 6 parameters such as working parameters, reset soft limit 1, reset soft limit 2, weight reset, position zero point, and floor height reset, and  in the working parameter setting row indicates that there are sub-item settings.

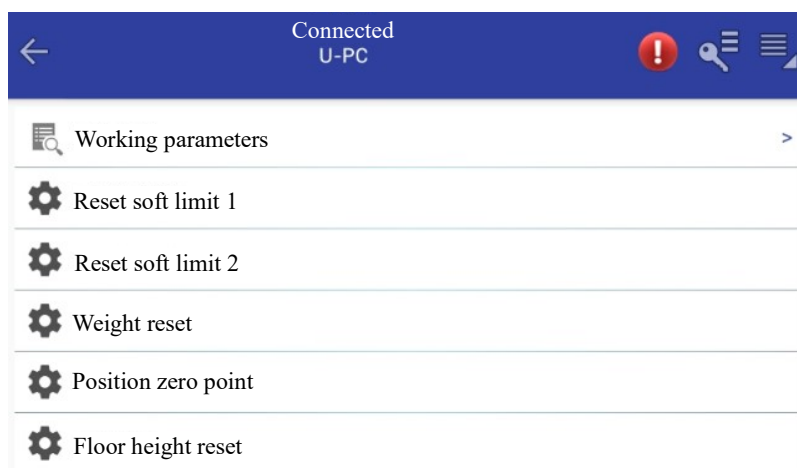


Fig. 16 Parameter interface setting

Work parameters: Click **>** to enter working parameter interface to set the relevant parameters.

Reset soft limit 1: reset all of the 5 functions in soft limit 1 to invalid.

Reset soft limit 2: reset all of the 5 functions in soft limit 2 to invalid.

Position zero point: Set current position as position zero point. (Restart valid)

Layer height reset: Rest the height data in Layer 1 to 20 in the stacking function.

Working parameters are listed in Table 3.

Table 3

Upper software limit 1	Set the upper soft limit position in soft limit 1 to which the equipment reaches it will stop.
Upper software limit 2	Set the upper soft limit position in soft limit 2 to which the equipment reaches it will stop.
Lower software limit 1	Set the lower soft limit position in soft limit 1 to which the equipment reaches it will stop.
Lower software limit 2	Set the lower soft limit position in soft limit 2 to which the equipment reaches it will stop.
Downward slowdown point 1	Set the downward slowdown position in soft limit 1 to which the equipment drops it will start to slow down.
Downward slowdown point 2	Set the downward slowdown position in soft limit 2 to which the equipment drops it will start to slow down.
Upward slowdown point 1	Set the upward slowdown position in soft limit 1 to which the equipment drops it will start to slow down.
Upward slowdown point 2	Set the upward slowdown position in soft limit 2 to which the equipment drops it will start to slow down.

Upward speed-up point 1	Set the upward speed-up position in soft limit 1 to which the equipment rises it will start to speed up. (Such point shall be set above the upward slowdown point t be effective)
Upward speed-up point 2	Set the upward speed-up position in soft limit 2 to which the equipment rises it will start to speed up. (Such point shall be set above the upward slowdown point t be effective)
Handle speed setting	Select the maximum running speed in the mode of manual hold of equipment, with [1-10] corresponding to the minimum and the maximum speed respectively.
Suspension speed setting	Select the maximum running speed in the suspension mode of equipment, with [1-10] corresponding to the minimum and the maximum speed respectively.
Unloading speed setting	Select the maximum running speed in the unloading mode of equipment, with [1-10] corresponding to the minimum and the maximum speed respectively.
Suspension lift sensitivity	Set the acceleration in the suspension mode, with [1-5] corresponding to the minimum and the maximum acceleration respectively.
Function switch of suspension	Allow or prohibit operating relevant functions of suspension mode.
Anti-bounce settings	<p>Switch the anti-rebound testing mode between over-speed and over-load.</p> <p>Anti-rebound function: When the load weight of equipment in the suspension mode reduces, it will be avoided that the hook moves upwards and collides with an object or push the equipment resulting in dropping down of the load.</p> <p>Detection of overspeed: When the operating speed of the load reaches 90% of the maximum speed in the suspension mode, the operation will stop, and LCD will display “overspeed alarm”.</p> <p>Detection of overload: If the operating force exerted on the load by users exceeds the “Max. Over-power” or the reduced weight of load as tested, the operation will terminate, and the LCD will show “overload alarm”. Other than the over-speed testing, the equipment may operate at the maximum speed in the</p>

	<p>suspension mode.</p> <p>Default max. over-power is 10KG.</p> <p>The reduced weight refers to the value tested when operators separate their hands from the loads (tools) and start accelerating the operation of the equipment upwards. Where users try to prevent the loads or tools acutely swinging, the test capability may be reduced.</p> <p>Where the total lifting weight (such as tools and parts) is less than the maximum limit, the over-speed testing should be made.</p>
Upward over-pressure value	Set anti-bounce upward max. over-power.
Downward over-pressure value	Set anti-bounce downward max. over-power.
Automatic suspension - detection time	Time condition under which the entering into the automatic suspension mode is made possible. When the load meets the weighting condition, the system will automatically enter into the suspension mode if the continuous duration reaches the time period set before.
Automatic suspension - detection weight 1 (kg)	Weighting condition under which the entering into the automatic suspension mode is made possible. When the current weight value meets (set value of detection weight - operating over-power threshold value + 0.5KG < current weight value < set value of detection weight + operating over-power threshold value), the system will begin timekeeping with regards to the “detection time”.
Automatic suspension - detection weight 2 (kg)	Ditto.
Automatic suspension - detection weight 3 (kg)	Ditto.
Automatic suspension - detection weight 4 (kg)	Ditto.
Automatic suspension - detection weight 5 (kg)	Ditto.
Automatic suspension - detection weight 6 (kg)	Ditto.

Automatic suspension - detection weight 7 (kg)	Ditto.
Automatic suspension - detection weight 8 (kg)	Ditto.
Automatic suspension - detection weight 9 (kg)	Ditto.
Automatic suspension - detection weight 10 (kg)	Ditto.
Automatic suspension - whether to open	Select the turning-on/turning-off of automatic suspension mode.
Overload threshold (kg)	<p>Set an overload threshold value. When the weight value of the load exceeds the set overload threshold value, the system will raise an “overload alarm”, during which period of time, the equipment is unable to lift the load upwards, but can lower it. The setting range is [10-110% of rated loading capacity]</p> <p>1. The load weight which causes the system to enter into “overload alarm” \geq overload threshold value + operating over-power threshold value.</p>
Operating over-power threshold value (KG)	<p>For system, pushing or pulling force of operator is an extra load. This menu sets a limit value of operating overload for users to reduce the possibility of error-reporting detection of overload. The limit value shall not be too big, and otherwise it will reduce the overload detection capability. The operating over-power threshold value is between 2 and 11KG.</p>
Overload testing sensitivity	<p>Attention! The test on the varied weight may go wrong due to the overload as thought. (Example: In the system, lifting imbalanced or slender tools will easily cause swing, or excessive vibration will be induced if not using rigid support structure. When the load in operation does not reach the limit value of overload, adjust the sensitivity parameters to reduce protective error detection. However, in actual application, if not necessary, there is no need to reduce the sensitivity. Low sensitivity extends the time taken to test normal overloads, which can easily cause the damage to equipment or report errors.</p> <p>The detection sensitivity is between 1 (low) and 5 (high).</p>

Manual time-out value (s)	Set a manual time-out value (1-59s).
Time-out value of suspension (s)	Set a time-out value (1-5min) of suspension. Such setting will have no impact on the automatic suspension mode.
Upper limit of circulation counting (mm)	Edit the upper limit position for circulation counting.
Lower limit of circulation counting (mm)	Edit the lower limit position for circulation counting.
Model settings	Set the main engine type.
Types of handle	Check the corresponding handle type.