
MDC-Symmetric D2 Metal Detector

User Manual



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1 Overview

Congratulations on your purchase of this metal detector. We recommend that you read this manual carefully as soon as possible.

This manual describes all the functions that can be used in principle with this machine. As the version is updated, we will add, delete or modify some features.

1.1 Principles used

The machine is designed according to the latest mechanical and electronic engineering technology and with reference to relevant safety regulations. The machine can only be used to transport products that meet specifications and perform metal detection on it, and cannot be used for other purposes, especially for human transmission.

1.2 Precautions for use

In order to achieve the above purposes, users need to pay attention to the following items during transportation, operation and maintenance (repair). Please put this manual next to the machine so that users can read it at any time.

1.2.1 User

Non-users are not allowed to use the machine.

New users must read this manual first. After receiving comprehensive training, they need to use the machine under the supervision of an experienced person for a period of time.

Users should often receive supervision and training to ensure that they understand and abide by the instructions in this manual and other related systems and laws.

The user is not allowed to wear long hair, wear wide clothes or wear jewelry, otherwise the user may be caught by the moving parts and pulled into the machine, causing serious injury.

1.2.2 Transportation

When using industrial trucks for short-distance transportation, please support the rack to prevent the machine from tilting. It is forbidden to support the conveying unit, probe, motor or screen.

When transporting to a truck for long-distance transportation, please hold the upper part of the wooden box to prevent the machine from tilting.

1.2.3 Operate

Please confirm that the surrounding environment is safe before starting operation.

The probe is a high-precision sensitive measuring instrument, as far as possible to avoid the vibration or movement of metal objects in its range. It is forbidden to place items on the conveying table and probe.

Before turning on the motor, please make sure that it will not cause any danger to anyone after turning on it.

Keep a sufficient safety distance from the parts that may move (such as conveyor belts, rollers, timing belts, motors, rejection devices, etc.) at all times.

If there is a fault, please eliminate it as soon as possible; if it is dangerous, please cut off the power immediately.

When changing shifts, please observe whether the machine is operating normally, and report any abnormalities to the supervisor immediately.

1.2.4 Maintenance and repair

Please reserve enough space around the machine for maintenance and repair.

Please arrange for regular inspection and maintenance by skilled technicians according to the time interval recommended in this manual.

When performing maintenance or repairs, in the off state, it must be ensured that no one will suddenly turn on the machine; in the turned on state, it must be ensured that no one will suddenly click the "start" button.

After completing the maintenance or repair, please fasten all the screws and buckles that were loosened during the maintenance or repair.

If you need to replace the probe, please contact our after-sales service personnel. These operations can only be performed by our after-sales service personnel or qualified personnel authorized by our company.

2 Structure Introduction and Installation

2.1 Structure introduction

The following schematic diagram (Figure 2-1) is the overall structure of the machine (there may be differences in the rejection system).



Figure 2-1 Metal detector machine structure diagram

- (1) USB interface (2) touch screen display (3) emergency stop button (4) start-stop button (5) power switch (6) indicator light (7) conveyor belt (8) probe (9) photoelectric sensor (10) machine Frame (11) Casters (12) Foot

2.2 Install

Before the machine is installed, please do not disassemble the wooden box, and place it upright in a clean and dry room.

When preparing to install, please choose an installation location without vibration. Use industrial handling vehicles to transport the wooden box to the vicinity

of the installation site. Open the wooden box, transport the machine to the installation site, and take out the other items in the wooden box.

When installing, perform mechanical installation first, then electrical installation, and pay attention to observing the mechanical and electrical regulations.

2.2.1 Mechanical installation

Please follow the steps below for mechanical installation:

1) Place the metal detector, and then place the outfeed conveyor at the exit of the metal detector (Figure 2-2). Keep the distance between the two conveyor belts at 1~3mm, and the other parts will not touch each other.

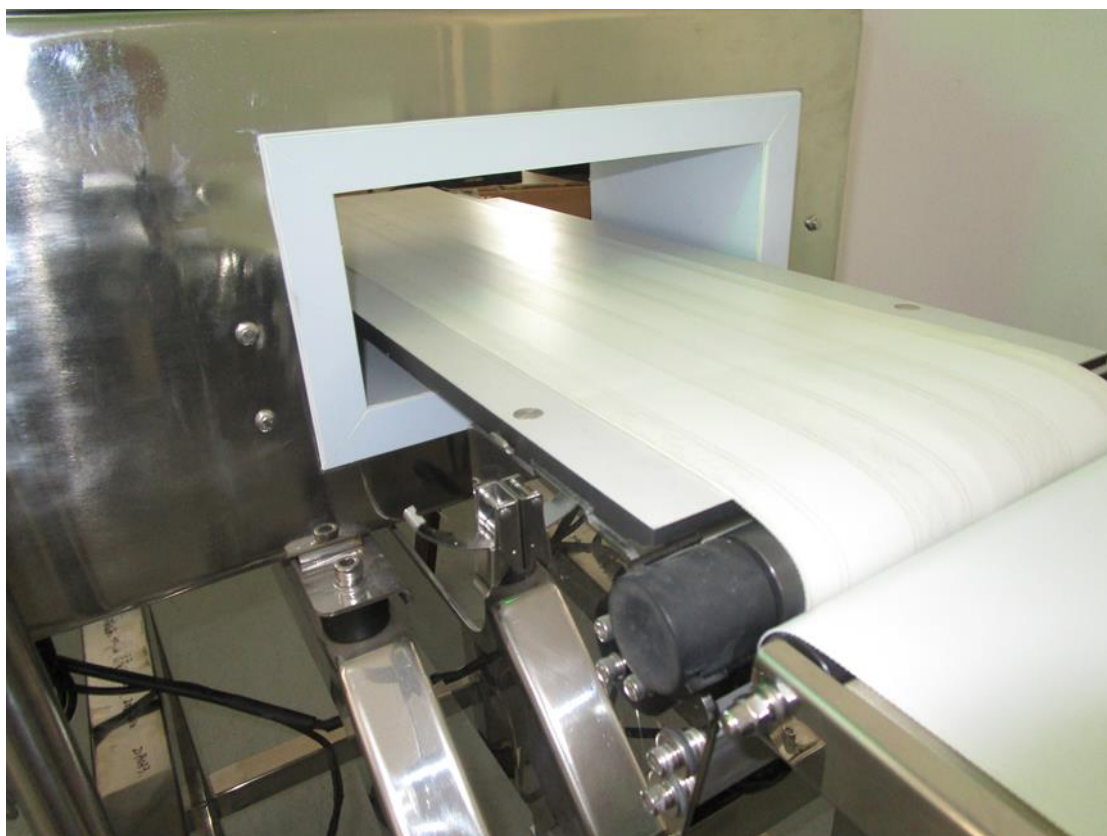


Figure 2-2 The placement of metal detectors and outfeed conveyor

2) Adjust the height of the conveying surface by adjusting the bottom screw of the foot and use the bubble level as a reference to keep it level (Figure 2-3).



Figure 2-3 Determine whether the conveying surface is level by the bubble level

4) Tighten the top screws of the feet (Figure 2-4), paying attention to all the feet to be evenly stressed.



Figure 2-4 Foot

5) Clean the whole machine, and don't let any sundries stay on the machine.

2.2.2 Electrical installation

It needs to be connected to the electrical box through a cable (Figure 2-5).



Figure 2-5 Connect the rejector part to the electrical box

Choose a gas pipe whose length and quality meet the specifications. After connecting the air pipe (Figure 2-6), observe the pressure gauge to adjust the air pressure to between 0.4 and 0.6 MPa, and then adjust the throttle valve to make the cylinder of the rejector reach a proper operating speed.

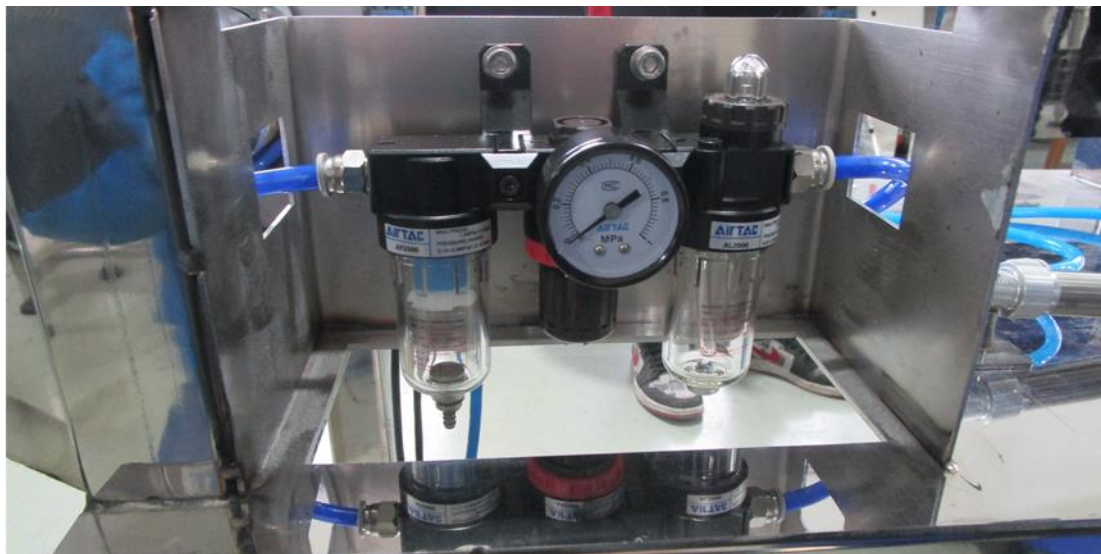


Figure 2-6 Air pipe connection

Before connecting the power supply, please confirm the following:

- 1) Whether the power supply matches the power supply information on the nameplate of the machine.
- 2) Whether the power supply is well grounded.
- 3) Whether the current intensity of the power cable matches the rating of the fuse.
- 4) Whether the wiring of the power cable is fixed to the power socket.

3 Interface Introduction

3.1 Main interface

After the system starts, the screen will automatically jump to the main interface (Figure 3-1a). During this process, the main indicator will flash green. After the product parameter initialization is completed and the main indicator light stops flashing and turns to a steady green light, the user can start to operate the screen.

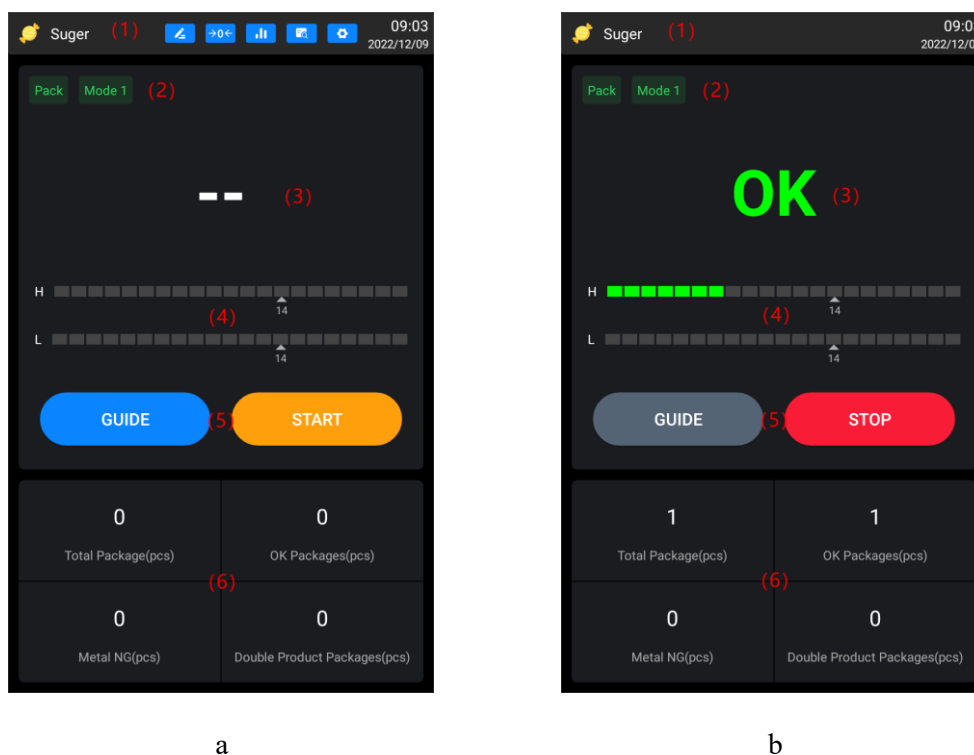








Figure 3-1 Main interface





- (1) Title bar (2) Mode display area (3) Status display area (4) Test strip area (5) Function button area (6) Counting area
a. Not tested; b. Testing

The left side of the title bar at the top of the interface displays the icon (such as ) and name (such as pp) of the selected product. The five blue buttons on the right represent product editing , counting reset , data statistics , data printing , and system settings . The current system time is displayed on the right.

Located in the mode display area at the upper part of the main interface, the current product inspection method (such as packaging inspection) and metal detection mode (such as mode 2) are respectively displayed from left to right.

Below the mode display area is the status display area. During the inspection process, the current state will be judged as one of the four states: Pass, Metal NG, Continuous, and None (Table 3-1).


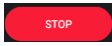
Table 3-1 Current state table


State	Icon	Illustrate
Pass		During packaging inspection, it means that no metal foreign objects are detected in the package; during bulk inspection, it means that no metal foreign objects are currently detected; during defect inspection, it means that the package contains missing accessories with metal components.
Metal NG		During packaging inspection, it means that metal foreign bodies are detected in the package; during bulk inspection, it means that metal foreign bodies are currently detected; during defect inspection, it means that there are no accessories with metal components in the package.
Continuous		The distance between adjacent products is too small
None		It will only appear before the completion of the inspection of the first package of products during packaging or defect inspection


Below the status display area is the detection strip area, including the high-frequency detection strip at the top and the low-frequency detection strip at the bottom. The triangles of the two metal detection strips respectively indicate the metal judgment limits of the current product at high and low frequencies.

In the function button area in the middle of the main interface, there are two function buttons: GUIDE  and  START  STOP.

Before clicking the "START" button , please make sure that there are no objects on the gold inspection conveying part and the discharge conveying part.

After clicking the orange "START" button , the button changes to red "STOP"  and the five blue buttons in the title bar disappear. After waiting for a few seconds, the user can import the product from the entrance of the gold inspection conveying part.

In the counting area located at the bottom of the main interface, the value of the "Total Packets" counter is the sum of the two counters: "Qualified Packets" and "Metal NG Packets". The three counters of "Qualified Packages", "Metal NG Packages", and "Continuous Packages" respectively accumulate the number of products in these three states. The administrator can click the "Clear Counter" button  in the title bar to reset all counter values in the current product counting area.

There are five situations that lead to the end of the test: ① After the user clicks the "STOP" button ; ② When the "Disqualified Product Processing Method" in the Product Edit-"Rejector Parameters" is set to "Stop", a substandard product is detected; ③ When the "reject confirmation" in the product edit-"rejector parameters" is in the open state, the unqualified product has not been rejected into the recycle bin or the number of products in the recycle bin reaches the set full bin quantity; ④ When the "Continuous unqualified alarm and shutdown" in the system settings-"Other parameters" is in the on state, and the number of unqualified products continuously appearing reaches the set number of continuous unqualified; ⑤ During the detection process, if an emergency occurs, be sure to press the emergency stop button immediately. At this time, the test will end immediately and a warning will pop up on the screen (Figure 3-2). After confirming the safety of personnel, the user can pull out the emergency stop button. Then, the user can press "Reset" at the bottom of the window to make the warning window disappear.

When the system fails, the fault code will be displayed below the product icon, and the possible fault codes are shown in Table 3-2.

Table 3-2 List of fault codes

Error code	Illustrate
Err#0x_1	Communication failure (1: IO board, 2: metal detection board)
Err#0x_2	Motor failure (1: a; 2: b; 3: a+b;)
Err#0x03	Rejector failure

a. Metal detection conveying part; b. Rejector conveying part

3.2 Product management

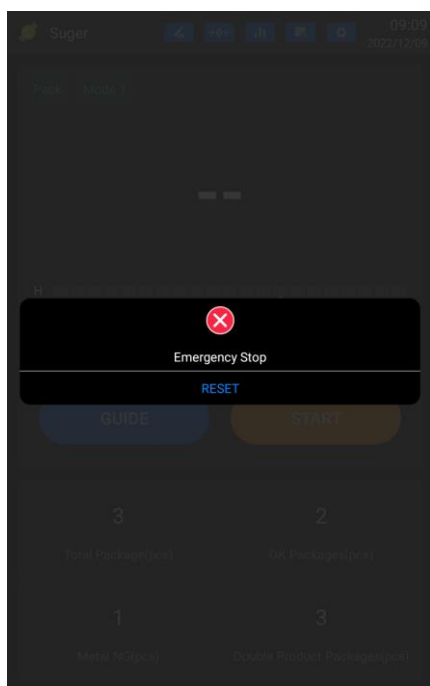


Figure 3-2 Emergency stop pop-up window

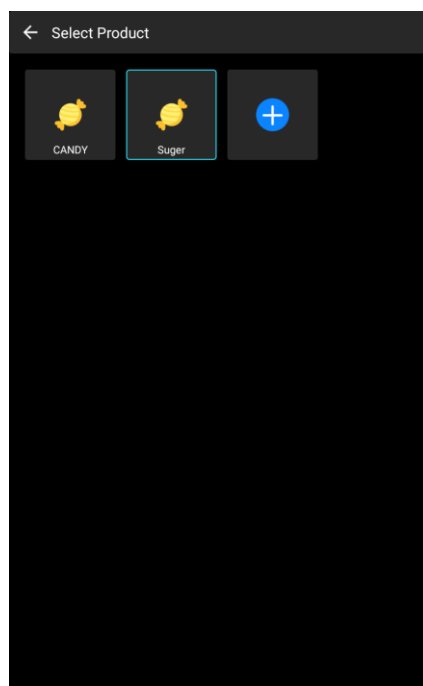





Figure 3-3 Product management interface

Click the product icon (such as ) in the title bar of the main interface to enter the product management interface (Figure 3-3). The product block of the current product will have a blue check box. Click the back button  on the left side of the title bar at the top of the interface to return to the main interface. This operation will not switch products.

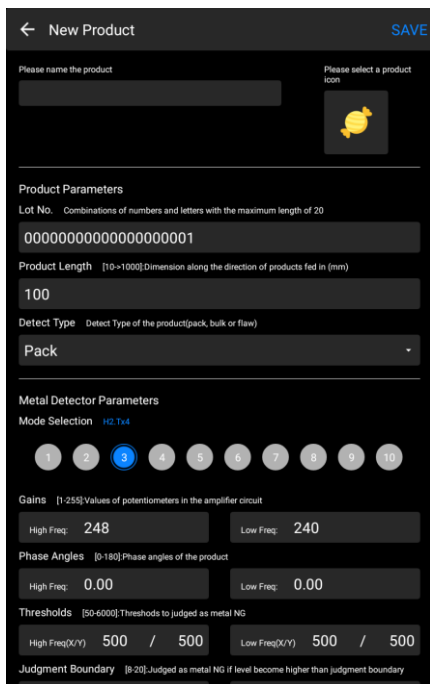
3.2.1 New product added

Click the New Product button  to enter the new product interface (Figure 3-4).

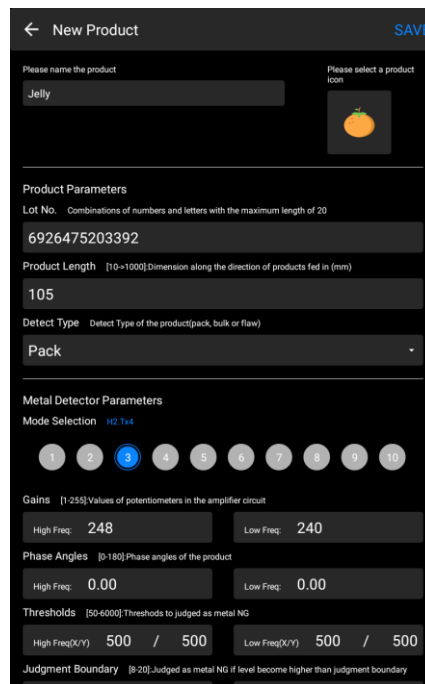
After clicking the edit box under "Please name the product", a keyboard will appear at the bottom of the page, and you can enter the product name in the edit box through the keyboard (1-8 Chinese characters are recommended). If the product name is not filled in, click "Save" in the upper right corner and it will prompt "The product name is empty".

Click the icon (such as ) under "Please select product icon" and the icon selection interface will pop up (Figure 3-5). The currently selected icon will have a blue check box. Click "Finish" or "Close" to exit the icon selection interface. Click "Close" in the upper left corner to cancel all operations in the icon selection interface.

Click "Finish" in the upper right corner to create a new product icon in the product interface It will change to the icon selected this time (Figure 3-4b).



a



b

Figure 3-4 New product interface

- a. The product name and icon have not been set; b. The product name and icon have been set

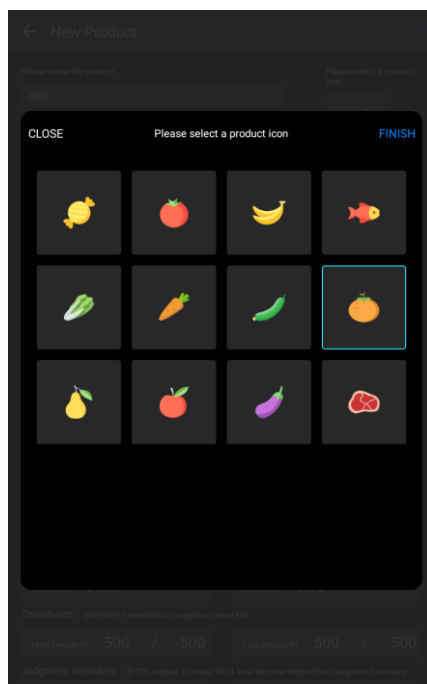



Figure 3-5 Icon selection interface

The remaining content of this interface is the same as the product edit page, which will be introduced in detail in 3.3.

It is recommended not to set the gold inspection parameters and the rejector parameters first, only the product parameters and motor parameters.

When you click "Save" to successfully jump to the product management interface, it will prompt "Save successfully".

3.2.2 Product delete

Long press any unselected product block to enter the product delete state. In this state, you can click the product block to select the product to be deleted, and you can select multiple product blocks (Figure 3-6a). A green tick  in the upper left corner of the product block means that the block is selected, otherwise it means that the block is not selected, and the title bar will display the number of blocks that have been selected. After selecting, click "Delete" on the right side of the title bar and a confirmation window will pop up (Figure 3-6b), click "OK" to execute the deletion and prompt "Delete successful", click "Cancel" to exit the product deletion without executing the deletion state.

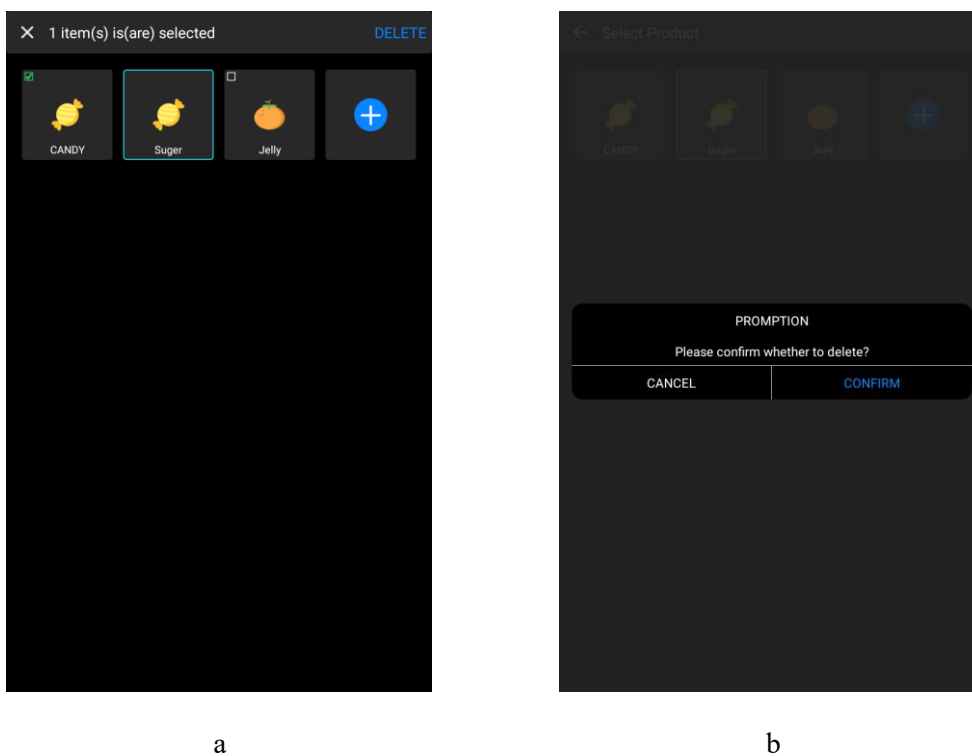



Figure 3-6 Product deletion



a. Select the product that needs to be deleted; b. Delete confirmation

Click the close button  on the left side of the title bar to exit the product deletion state directly.

3.2.3 Product switching

Click any product block to switch to this product and enter the main interface. Next time you enter the product management interface, the product block corresponding to this product will have a blue check box.

3.3 Product editor

Click the product edit icon  in the title bar of the main interface to enter the product edit interface (Figure 3-7), and the name of the currently selected product will be displayed in the title bar. Click the return button  on the left side of the title bar of the interface to return to the main interface. This operation will not save the modification of product parameters. Click "Save" on the right side of the title bar of the interface to return to the main interface and save all parameter configurations.

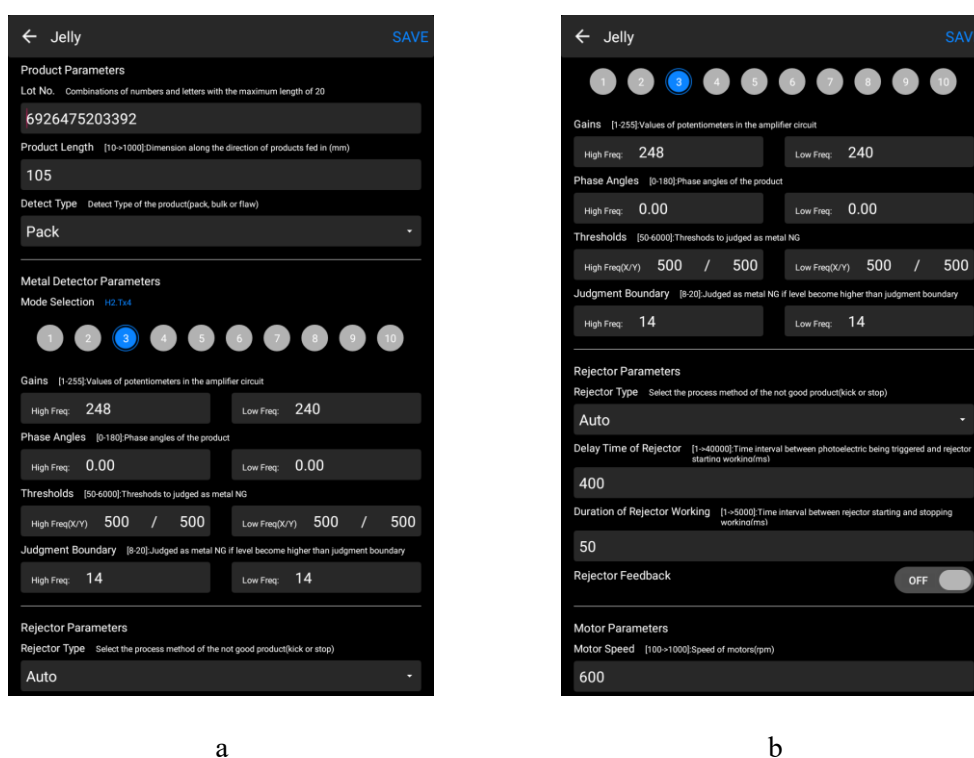


Figure 3-7 Product editing interface

a. The upper part of the interface; b. The lower part of the interface

3.3.1 Product parameter

These parameters include product batch number, product length, and detection method.

"Inspection Method" can be selected from "Package Inspection", "Bulk Inspection" and "Defect Inspection". Among them, "packaging inspection" and "bulk inspection" are used to detect metal foreign bodies in products, and meet the requirements of product length not exceeding 1000mm, product spacing exceeding 200mm, and products that can correctly trigger the photoelectric sensor. It is recommended to use the packaging method for detection. The remaining products only Bulk testing can be used; "defect detection" is used to detect missing accessories with metal components in the product.

3.3.2 Metal detection parameters



These parameters include mode, gain, phase, threshold, and decision limit.

In addition to the "judgment limit", other parameters are recommended to be automatically adjusted by the user through guidance. After the guidance, please import the standard products several times and modify the judgment limit according to the metal detection level.

3.3.3 Rejector parameters

These parameters include the processing method of unqualified products, the delay time of the rejector and the duration of the rejector.



"Unqualified product processing method" can choose "reject" and "stop". When selecting the rejection method, please adjust the "Rejector Delay Time" and "Rejector Duration" so that unqualified products can be rejected into the recycling bin.

Press the button at the end of the "removal confirmation" line to switch the function between off state  and on state . After this function is turned on (Figure 3-8, a photoelectric sensor needs to be installed at the entrance of the recycling bin), if the rejected product is not correctly rejected into the recycling bin or the number of products rejected in any recycling bin reaches the set "Full box quantity" after the start of detection, the system will automatically stop.

3.3.4 Motor parameters

After modifying the "motor speed", it is necessary to guide again and adjust the parameters of the rejector.

3.4 Statistics

Click the data statistics icon  in the title bar of the main interface to enter the data statistics interface (Figure 3-9). Click the back button  on the left side of the title bar of the interface to return to the main interface.

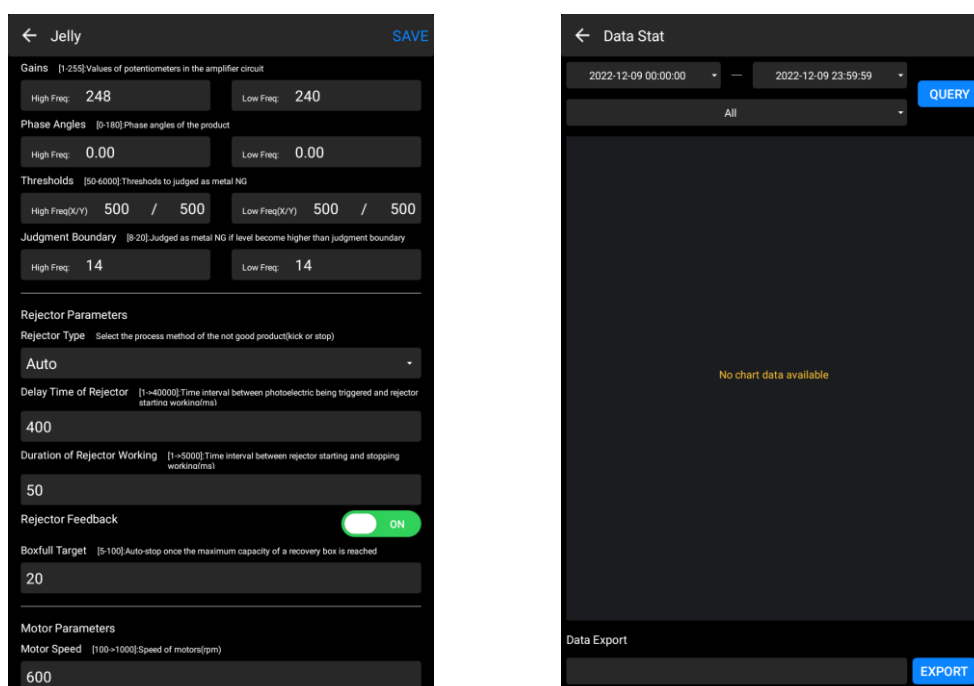
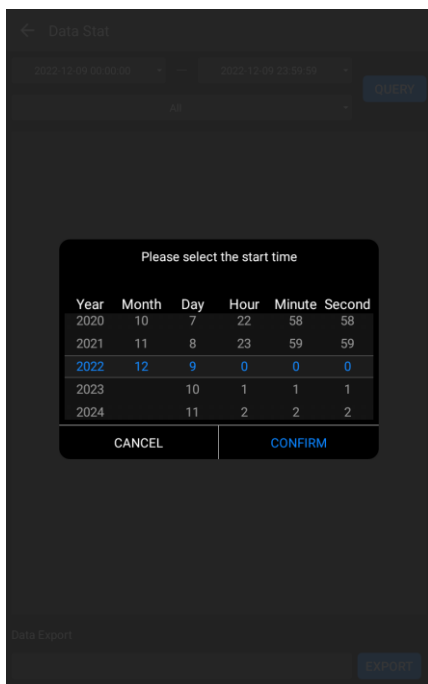


Figure 3-8 Reject confirmation

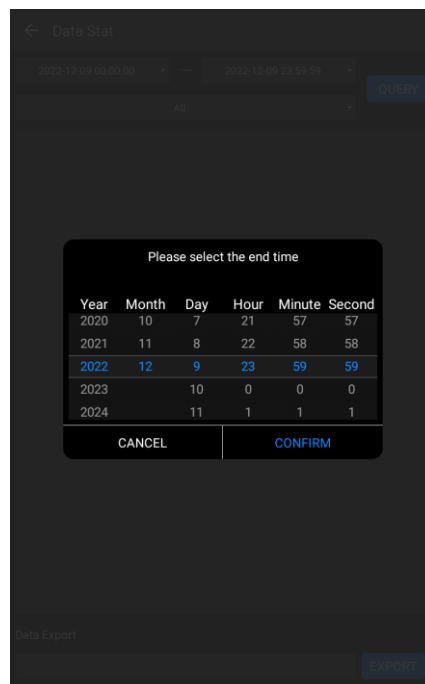
Figure 3-9 Data Statistics Interface
(not queried)

3.4.1 Statistics inquire

Click the start time or end time below the title bar, and a time selection window will pop up (Figure 3-10). In the time selection window, you can slide up and down to select the "year", "month", "day", "hour", "minute", and "second" to be queried. Click "Cancel" or "OK" to return to the data statistics interface, click "Cancel" will not save the modification to the time, click "OK" to update the start time or end time.



a



b

Figure 3-10 Time selection window

- a. Select the start time; b. Select the end time

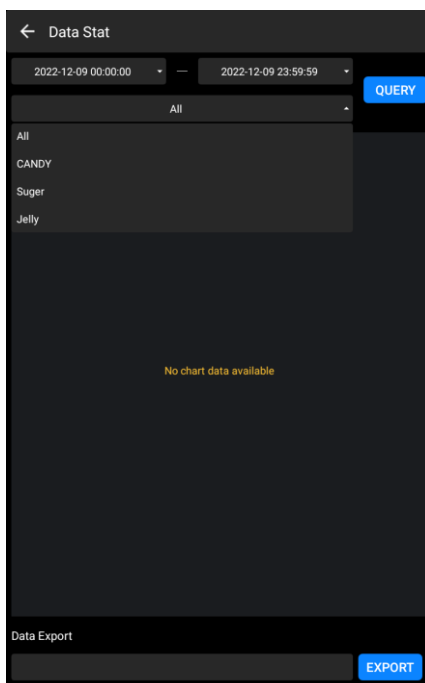


Figure 3-11 Product name drop-down list

Clicking on the product name below will display a drop-down list (Figure 3-11).


After selecting the product name to be queried, and clicking the query button  on the right, the number statistics pie chart will appear in the place where "No Data" was originally displayed (Figure 3-12). If you previously selected "All" in the drop-down list, all products that meet the conditions will be queried at this time, and the quantity ratio of each product will be calculated (Figure 3-12a); if you previously selected a single product (such as pp) in the drop-down list, only that product will be queried at this time, and the ratio of the number of such products as qualified to metal NG (Figure 3-12b) will be calculated.



Figure 3-12 Data Statistics Interface (Queried)

a. Query all products; b. Query a single product

Clicking on the colored areas representing different products in the two statistical graphs will display more detailed information (Figure 3-13), and then clicking on the blank areas will hide this information.

3.4.2 Data output

The user can unscrew the cover of the USB interface located on the left side of the chassis and insert the U disk into the interface.

When the USB flash drive is not inserted, click the blank path bar under "Data Export" and it will prompt "Please insert the USB flash drive". After inserting the USB flash drive, the path bar will display as "U flash drive" (Figure 3-14). Click this path bar to enter the path selection window.

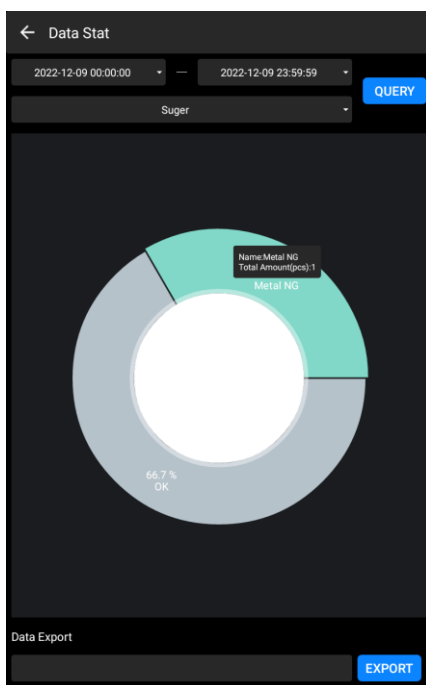


Figure 3-13 shows more detailed information

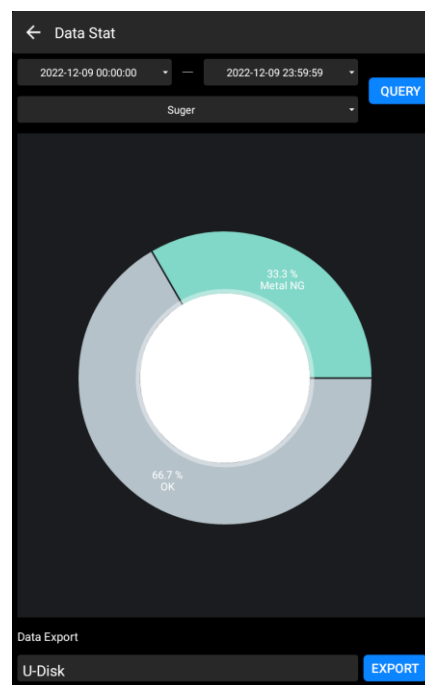




Figure 3-14 Data Statistics Interface (U disk has been inserted)

In the path selection window, click a folder  (such as System Volume Information) to locate the folder, and click "U Disk >" in the path bar to return to the root directory of the U disk (Figure 3-15). Click "Close" or "Finish" in the title bar of the window to return to the data statistics page. Clicking "Close" will not save changes to the path. Clicking "Finish" will update the path in the path bar in the data statistics interface.

Click the "EXPORT" button , and the data will be written to the U disk named "metal Data_" followed by the current time table, the table suffix named csv. The data in the table includes product name, time, product batch number and product partition (Figure 3-16).

After the prompt "Export successful" disappears completely, the user can pull out the U disk, and the system will prompt "USB disconnected".

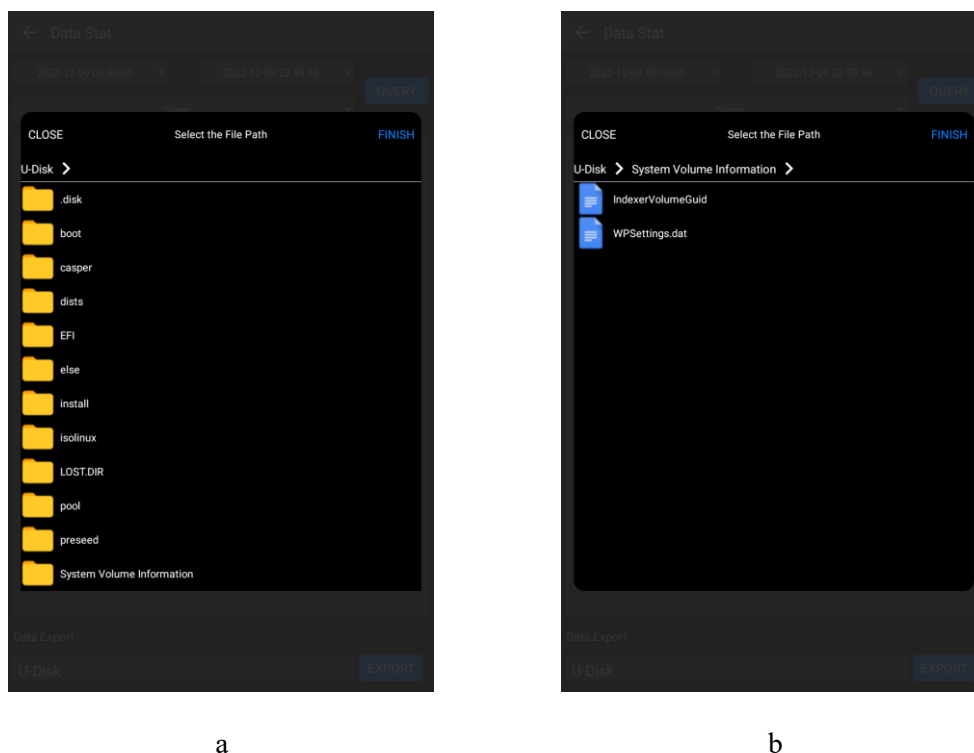




Figure 3-15 Path selection window

a. U disk root directory; b. System Volume Information directory

	A	B	C	D	E	F
1	Product Name	Time	Lot No.	Product Divisions		
2	Suger	2022/12/9 9:03	1 OK			
3	Suger	2022/12/9 9:05	1 Metal NG			
4	Suger	2022/12/9 9:06	1 OK			
5						
6						
7						

Figure 3-16 Export result

3.5 Data printing

Click the data print icon  in the title bar of the main interface to enter the data print interface (Figure 3-17a). Click the back button  on the left side of the title bar of the interface to return to the main interface.

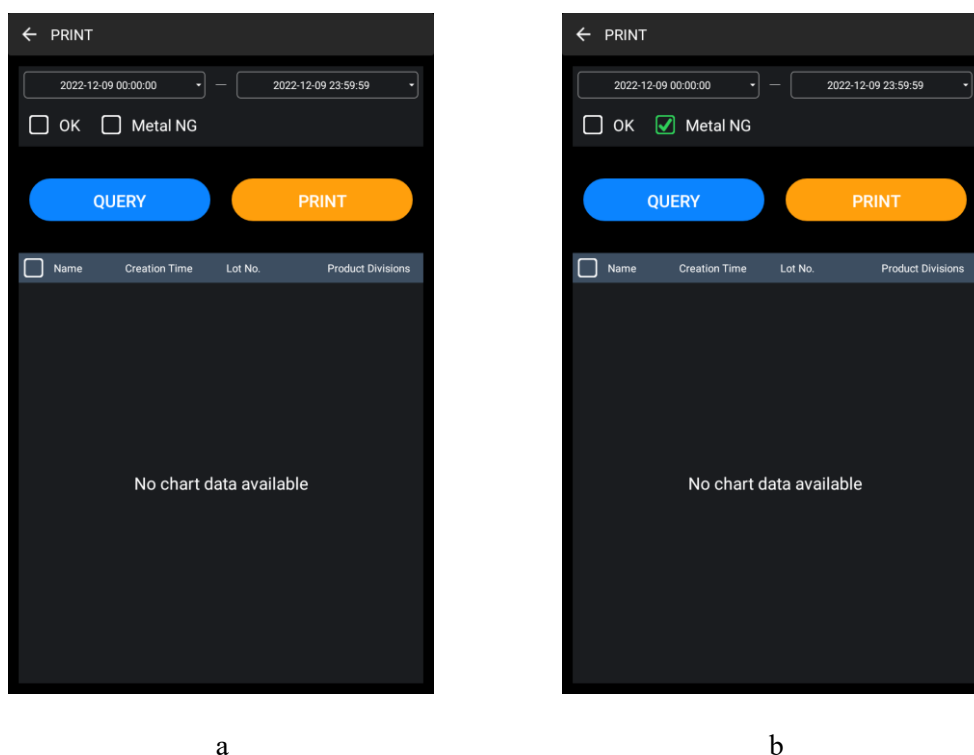



Figure 3-17 Data print interface

a. Product status is not selected; b. Product status is selected





3.5.1 Data query


Similar to the data statistics interface, select the start time and end time of the query.

After checking the product status to be queried (Figure 3-17b) and clicking the "QUERY" button  below, the product data will be displayed in the place where "No Data" was originally displayed (Figure 3-18).


3.5.2 Select print

The printer can be connected through the printing interface on the left side of the chassis.

Click the radio button at the beginning of each data row to switch this row of data between the unselected state  and the selected state ; click the radio button at the beginning of the header row to make all the data on this page unselected Switch  between and selected state .

After selecting the data to be printed, click the "PRINT" button  to print the selected data.

3.6 System settings

Click the icon in the title bar of the main interface  and a password input window will appear (Figure 3-19).

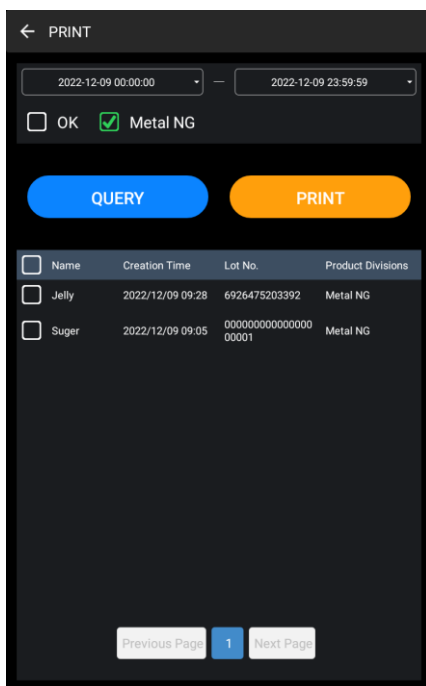


Figure 3-18 Data print interface (queried)

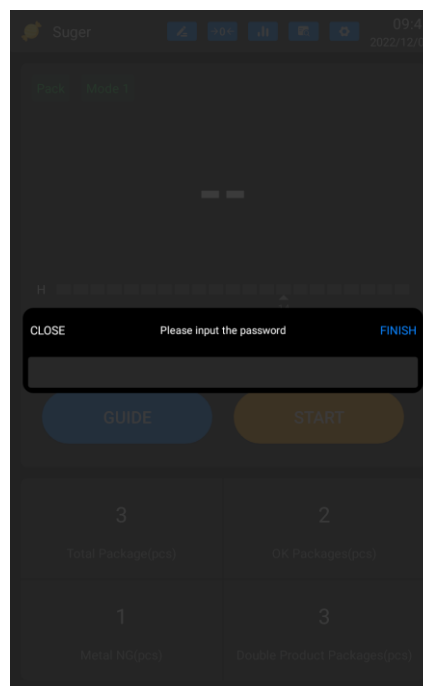



Figure 3-19 Password input window

In the password input window, click the gray input box to start entering the password. After the input is complete, click "Finish" in the title bar. If the password is correct, it will enter the system setting interface (Figure 3-20). If the password is wrong, it will return to the main interface and prompt "Password input error"; click in the title bar "Close" will directly return to the main interface.

In the system setting interface, click the return button  or "save" in the title bar to return to the main interface, click the return button to not save the system parameters, click "save" to execute the changes to the system parameters.

3.6.1 General parameters

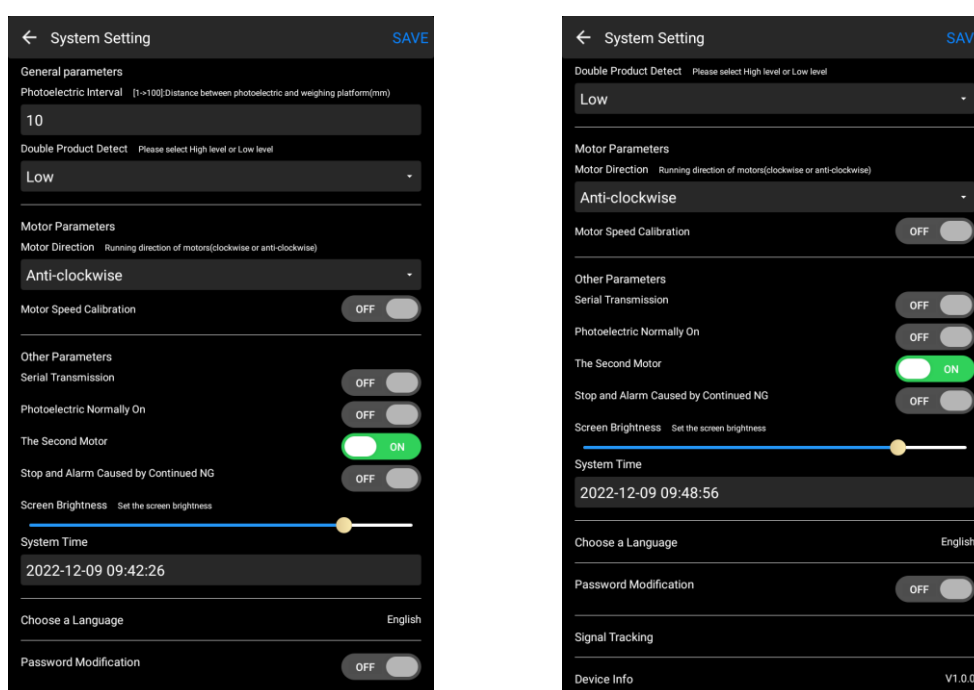
These parameters include scale infrared distance and continuous package detection.

Please do not modify the "infrared spacing" at will after leaving the factory.

"Continuous package inspection" can choose "high-end" and "low-end". When selecting "high-end", the continuous package inspection is more stringent.

3.6.2 Motor parameters

After leaving the factory, please do not modify the "motor direction" or use the motor speed calibration function at will.



a

b



Figure 3-20 System Setting Interface

a. The upper part of the interface; b. The lower part of the interface

3.6.3 Other parameters

You can adjust the brightness of the screen by dragging the white dots on the progress bar under "Screen Brightness" left and right.

Click the time box under "System Time" to enter the system time modification window (Figure 3-21). In the system time modification window, you can slide up and down to modify the "year", "month", "day", "hour", "minute", and "second". Clicking "Cancel" or "OK" will return to the system settings interface, clicking "Cancel" will not save the modification, and clicking "OK" will update the time in the system time box in the system settings.

In the "Other Parameters", the options of "Serial Port Transmission", "Infrared Normally Open", "Second Conveyor" and "Continuous Failure Alarm Shutdown" can be switched between "Off"  and "On" .

The computer can be connected through the serial port on the left side of the chassis. After the serial port transmission function is turned on, the test results can be displayed on the computer in real time.

The infrared normally open function is only suitable for adjusting the position of the infrared sensor, please turn off this function before detection.

If you have not purchased a conveyor downstream of the metal detector, please keep this function off.

After enabling the continuous unqualified shutdown function (Figure 3-22), you can modify the number of unqualified products required to trigger an alarm shutdown.

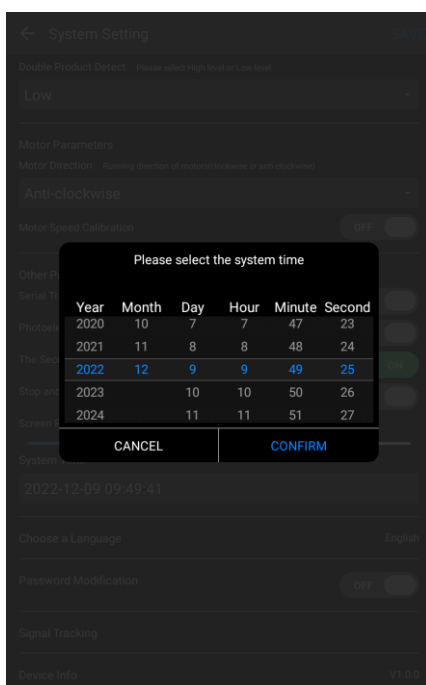


Figure 3-21 System time modification window

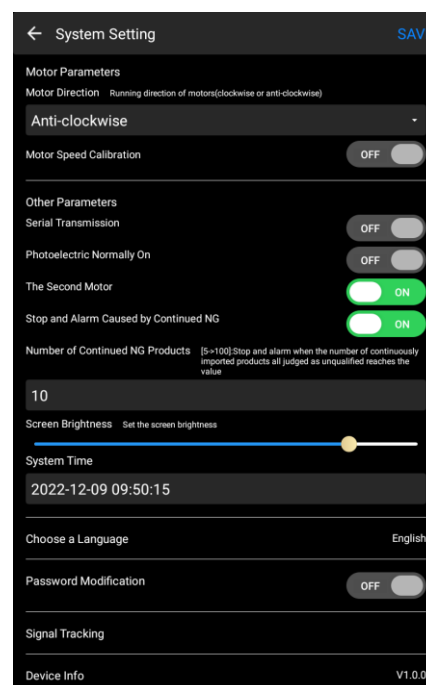




Figure 3-22 Continuous unqualified alarm and shutdown

3.6.4 Language selection

The "Language Selection" line shows the name of the current interface language on the far right. Click "Language Selection" to enter the language selection window (Figure 3-23).

In the language selection window, clicking "Close" or "Finish" in the title bar will return to the system setting interface, clicking "Close" will not save the language selection, clicking "Finish" will update the language name in the system setting interface, The language switch will only take effect after saving the system parameters and entering the main interface. With a blue check box, it means that the language block is currently selected.

3.6.5 Change password

This option can be switched between the "off"  and "on"  states.

After the password modification function is enabled, the user can enter the password in the "Please enter a new password" and "Please enter the password again" (Figure 3-24). If the two entered passwords are inconsistent, clicking "Save" in the upper right corner of the interface will prompt "The two entered passwords are inconsistent", and the interface will not jump.

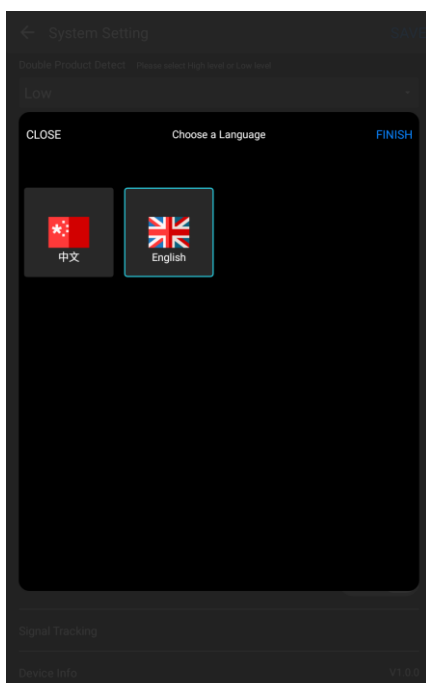


Figure 3-23 Language selection window

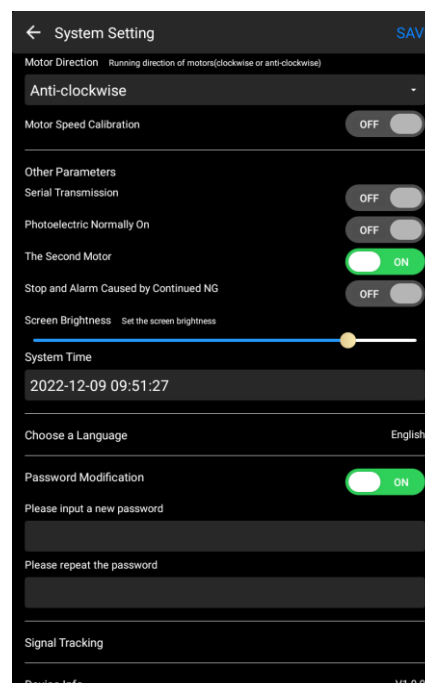


Figure 3-24 Password modification

3.6.6 Signal tracking

Click "Signal Tracking" and the signal tracking interface will pop up (Figure 3-25).

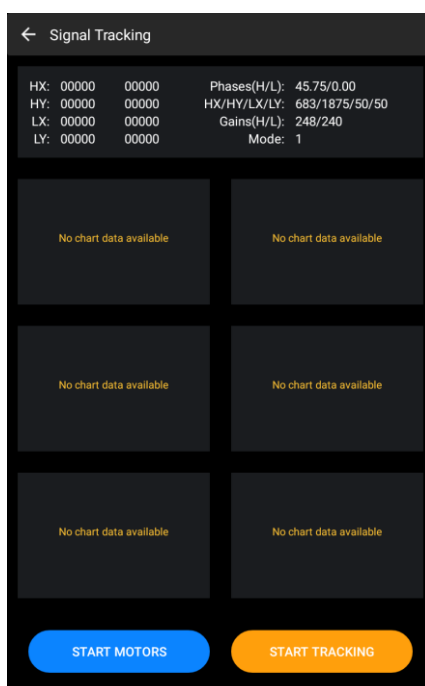


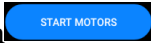


Figure 3-25 Signal tracking interface (tracking not started)

In the signal tracking interface, click the return button  on the left side of the title bar to return to the system setting interface and stop the motor.

Below the title bar is the gold inspection information area. The left side of the gold inspection information area records the signal values on the high-frequency X-axis, high-frequency Y-axis, low-frequency X-axis, and low-frequency Y-axis from top to bottom. The right side shows the current product gold inspection parameters from top to bottom. The phase, threshold, gain, and mode of the device.

After clicking the "START TRACKING" button  at the bottom of the interface, four waveform graphs and two curve graphs will appear at the place where "No Data" was originally displayed under the gold inspection information area. Among them, the blue waveform represents the signal on the high-frequency X-axis, the red waveform represents the signal on the high-frequency Y-axis, the yellow waveform represents the signal on the low-frequency X-axis, the green waveform represents the signal on the low-frequency Y-axis, and the curve on the left is high. The low-frequency Lissajous curve, the right curve is the low-frequency Lissajous curve.

Before clicking the "START MOTORS" button , the maximum signal values appearing in the four waveform graphs will be continuously updated in the position corresponding to the first column on the left side of the gold inspection information area (Figure 3-26a); after clicking on the "Turn on the motor", The signal value of the first column on the left side of the gold inspection information area stops updating, and the second column is constantly updated to a larger signal value (Figure 3-26b).

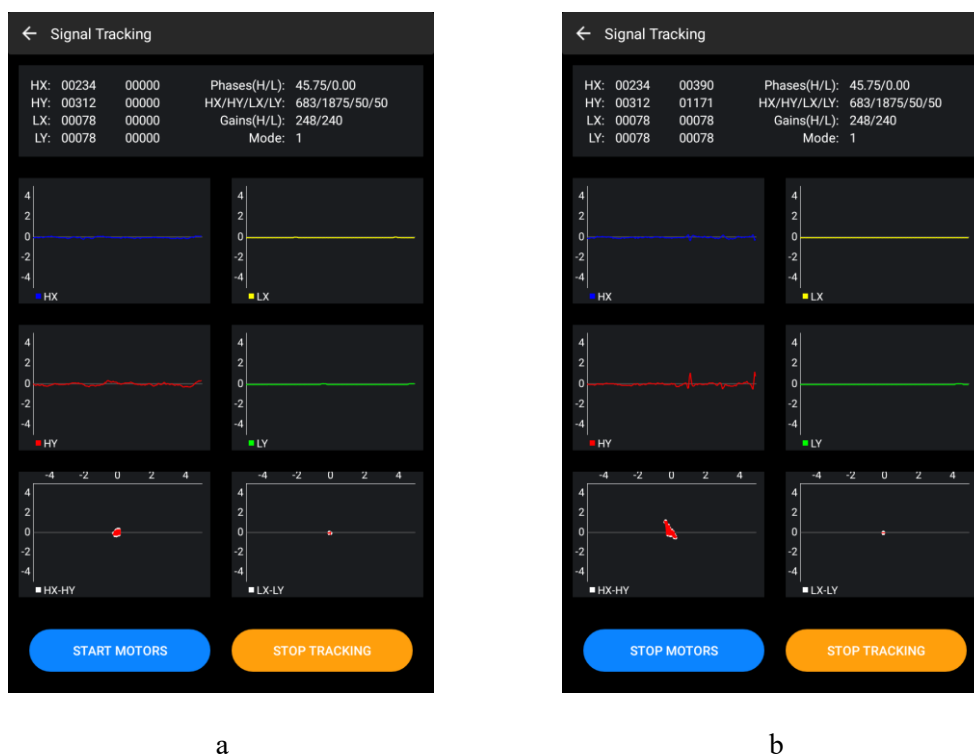


Figure 3-26 Signal tracking interface (start signal tracking)

a. The motor is not turned on; b. The motor is turned on

3.6.7 Device information

The current software version is displayed on the far right of the "Device Information" line. Clicking "Device Information" will pop up the device information interface (Figure 3-27), showing the device model, software version, and copyright. Click the "OK" button to return to the system setting interface.

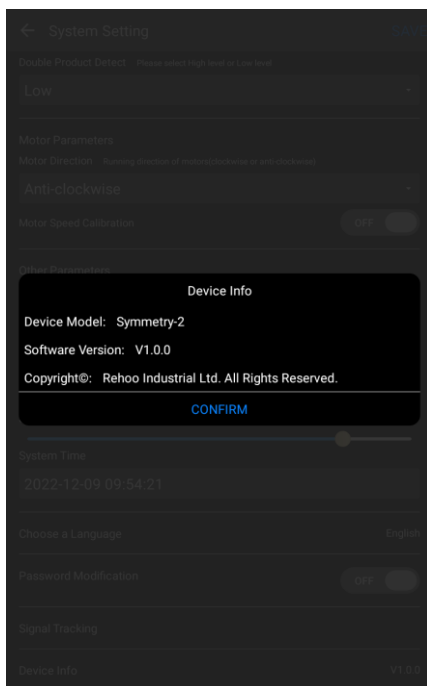

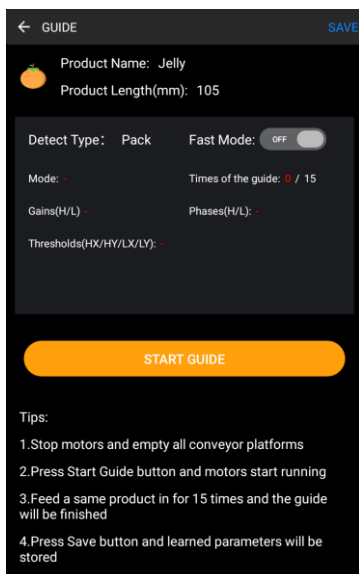


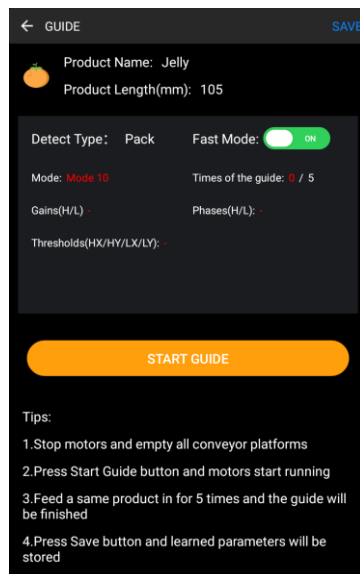
Figure 3-27 Device information

3.7 Guide

Click the "Guide" button  in the function button area of the main interface to enter the guide interface (Figure 3-28a).




a





b

Figure 3-28 Boot interface

a. Full mode; b. Fast mode

In the guide interface, click the back button  on the left side of the title bar to return to the main interface.

Below the title bar is the product information area, and the product icon, product name, and product length are displayed on the left. On the right side of the information area, the red number at the "number of guides" represents the number of guides that have been carried out, and the white number represents the number of target guides. When the red value reaches the white value, the guide is completed. When the "quick mode" is in the "off"  state, it will be fully guided, and the white value below is 15 (Figure 3-28a); when the "quick mode" is in the "on"  state, it will be based on the current gold inspection mode. For quick boot, the white value below is 5 (Figure 3-28b). It is not recommended to use it for the first boot of a new product.

Please follow the "prompt" at the bottom of the interface to guide the user. After the guide is completed, the learning parameters will be displayed in the area below the product information area (Figure 3-29).

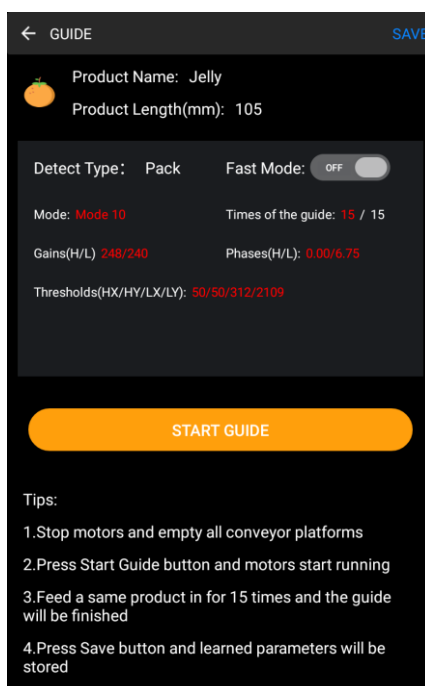


Figure 3-29 Boot completion

4 Daily Maintenance

Before maintenance and repair, make sure to turn off the machine and cut off the power and air supply.

4.1 Periodic inspection

1) The following content is recommended to be checked once a day (usually only visual inspection is required):

Check whether the conveying platform is clean. If not, please use a soft damp cloth dipped in a mild water solvent or detergent to wipe.

Check whether the conveyor belt is operating normally. If the conveyor belt is in contact or friction with any baffle, please adjust the tensioning device; if the conveyor belt is damaged, please replace it immediately.

Check whether the reading of the air pressure gauge or electronic barometer is normal. If not, please adjust to 0.4~0.6 Mpa.

2) The following contents are recommended to be checked once a week:

Check whether the conveyor belt is flexible enough. If the elasticity is too small, the conveyor belt will slip under the normal load (typical products are placed on the conveyor belt), please replace it immediately. There is no need to check those soft and elastic conveyor belts, because this conveyor belt will stretch and cannot be pulled too tightly with a tension screw.

Check whether the compressed air is clean and dry. Otherwise, it will affect the function of pneumatic components (such as rejectors) and cause excessive wear.

Check all air pipes for wear or even damage. If it is, replace the damaged part immediately.

4.2 Conveyor belt and timing belt replacement

Conveyor belts or synchronous belts will be damaged due to aging or other reasons after being used for a certain period of time. Once they appear, please replace them immediately.

The replacement method of the conveyor belt is as follows:

1) From the side of the driven roller, fold up the quick release part (Figure 4-1, note that it is a roller, not a belt).

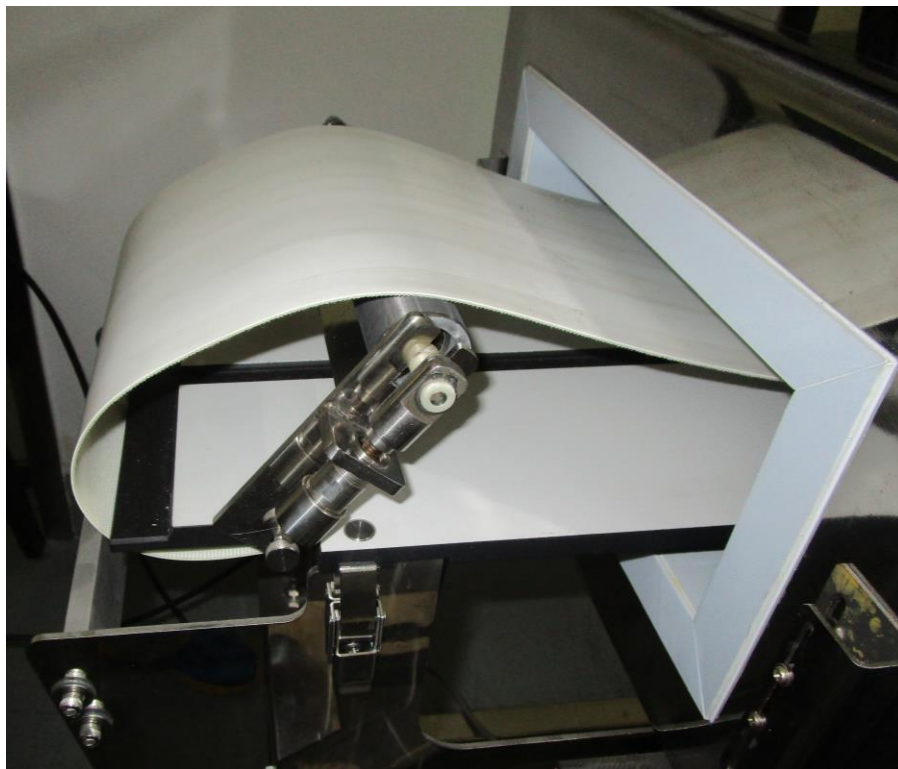


Figure 4-1 Fold up the quick release part of the driven roller

2) Open the buckles on both sides of the conveying device (Figure 4-2).

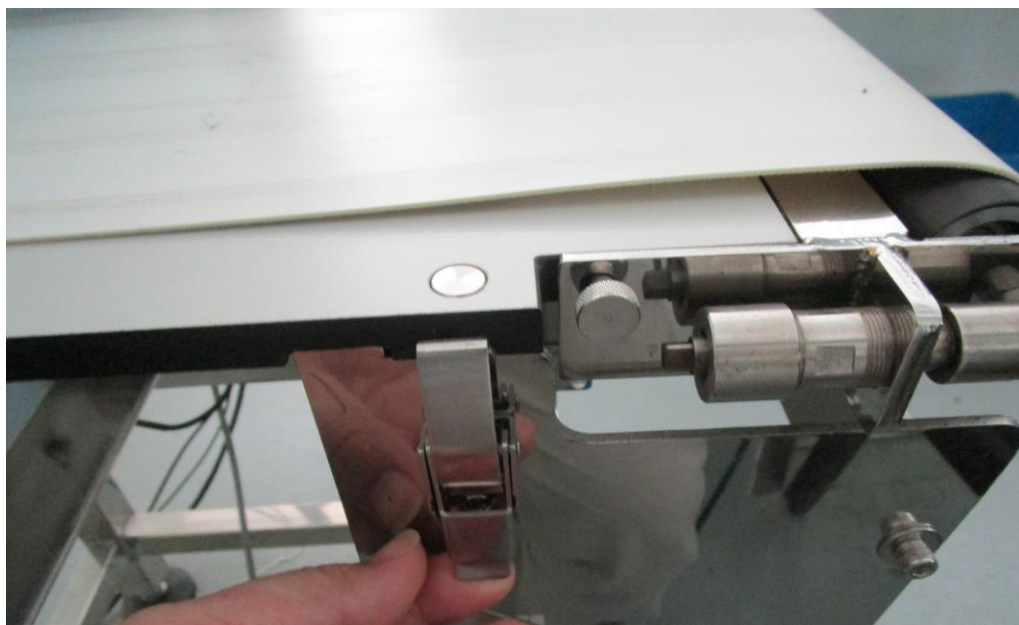


Figure 4-2 Opening the buckle

3) Lift the conveying unit as a whole, so that the platen is separated from the surrounding positioning grooves (Figure 4-3).



Figure 4-3 Leaving the positioning slot

4) From the driven roller side, separate the conveyor belt from any side and take out the table (Figure 4-4).

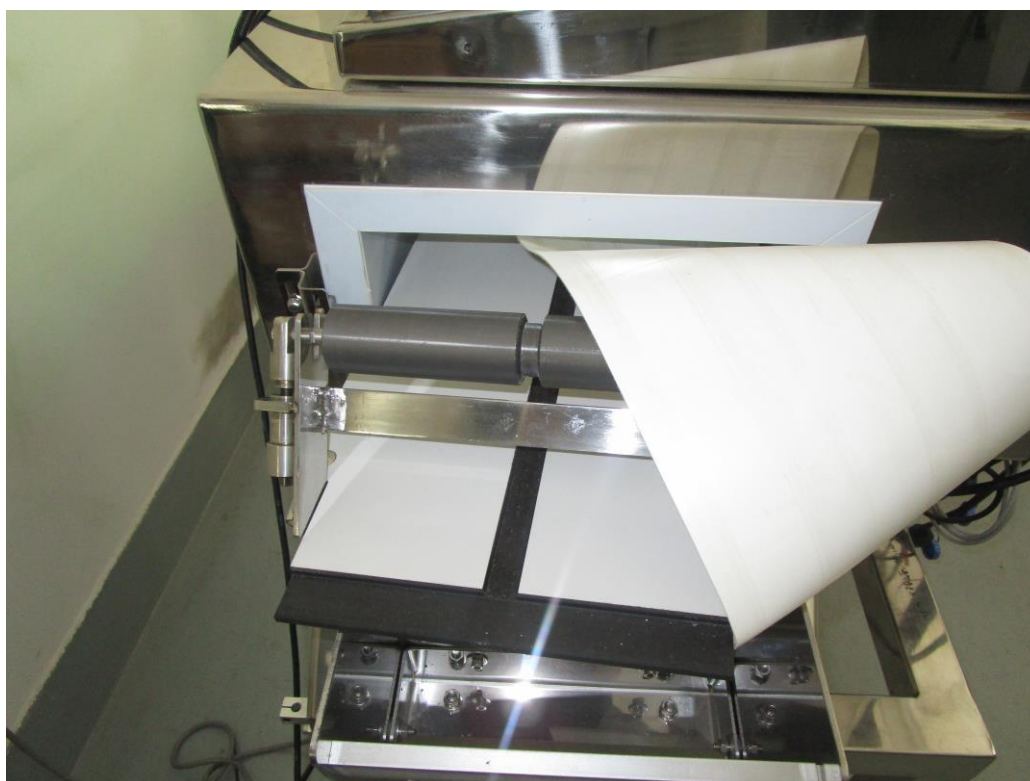


Figure 4-4 Separate the conveyor belt and take out the table

5) Gently pick up the unfixed side of the driving roller and take out the conveyor belt (Figure 4-5).

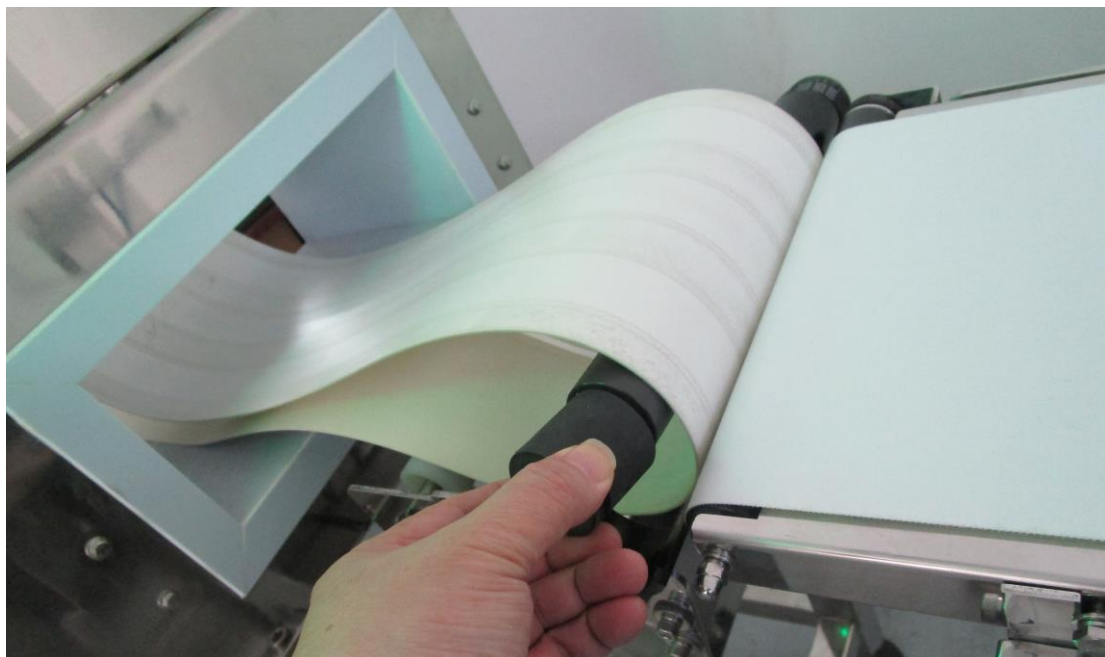


Figure 4-5 Take out the conveyor belt

6) Put on a new conveyor belt, install the table, and pay attention to aligning the 4 positioning slots on both sides of the table. (Figure 4-6)

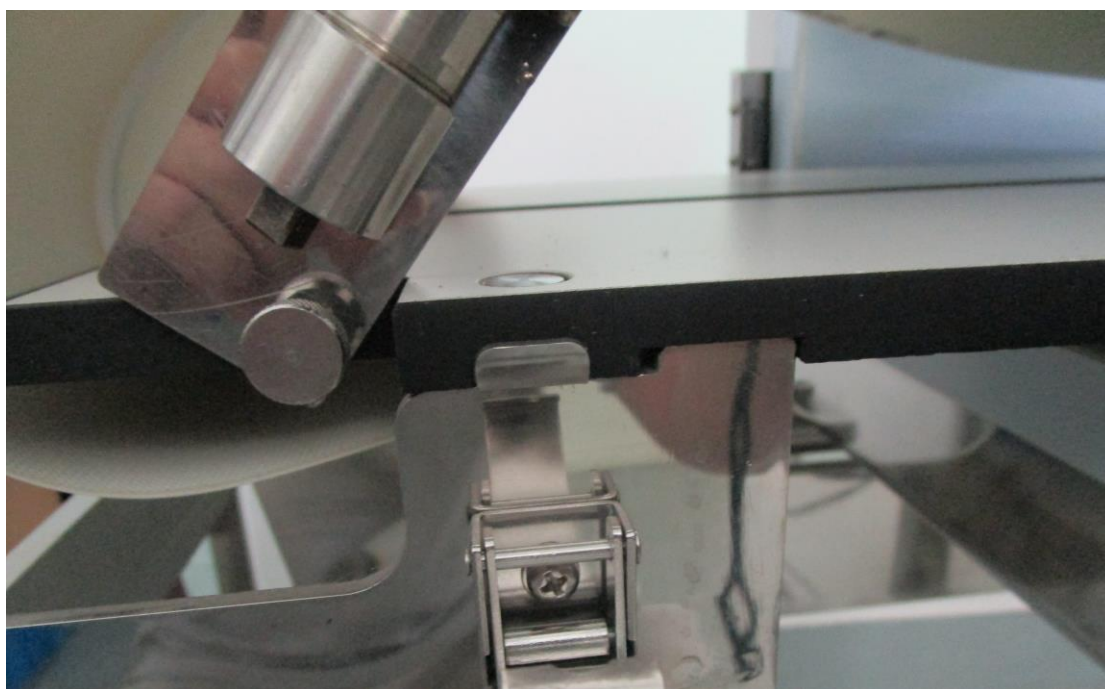


Figure 4-6 Align the positioning groove

7) Fasten the 4 buckles on both sides of the platform (Figure 4-7).

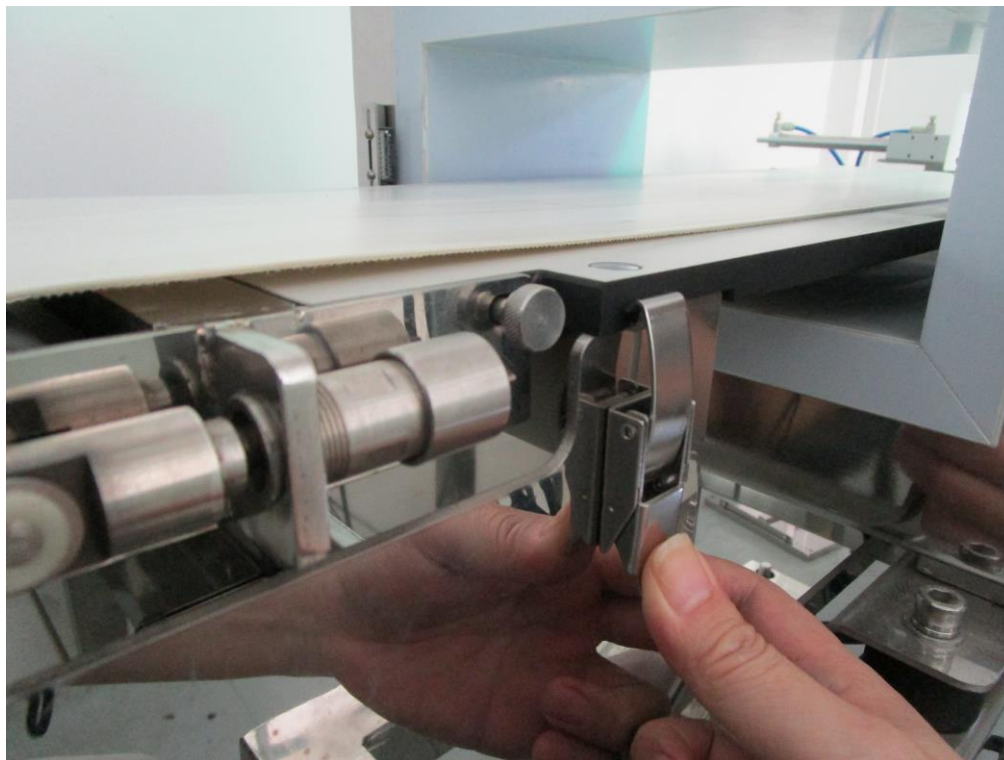


Figure 4-7 Fasten the buckle

8) Install the conveying device, and pay attention to keeping the installation positions of the driving roller and the driven roller the same as before the replacement. Adjust the tension screws on both sides of the conveyor unit to make the conveyor belt tight. (Figure 4-8)

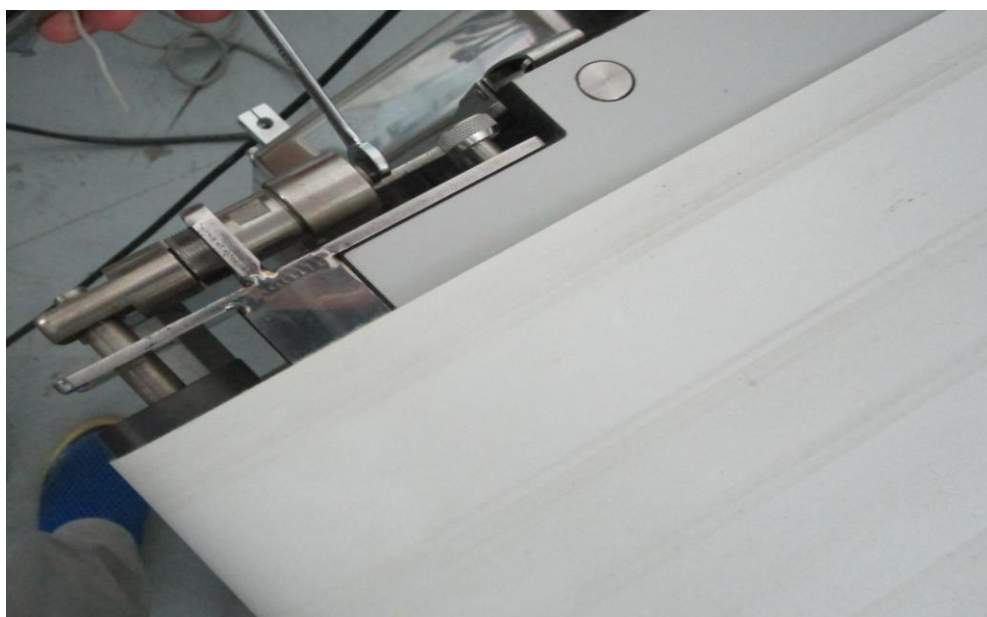


Figure 4-8 Adjusting the tension screw

The replacement method of the synchronous belt is as follows:

1) Remove the synchronous belt cover on the side of the conveyor (Figure 4-9), and keep the removed cover and fixing screws.

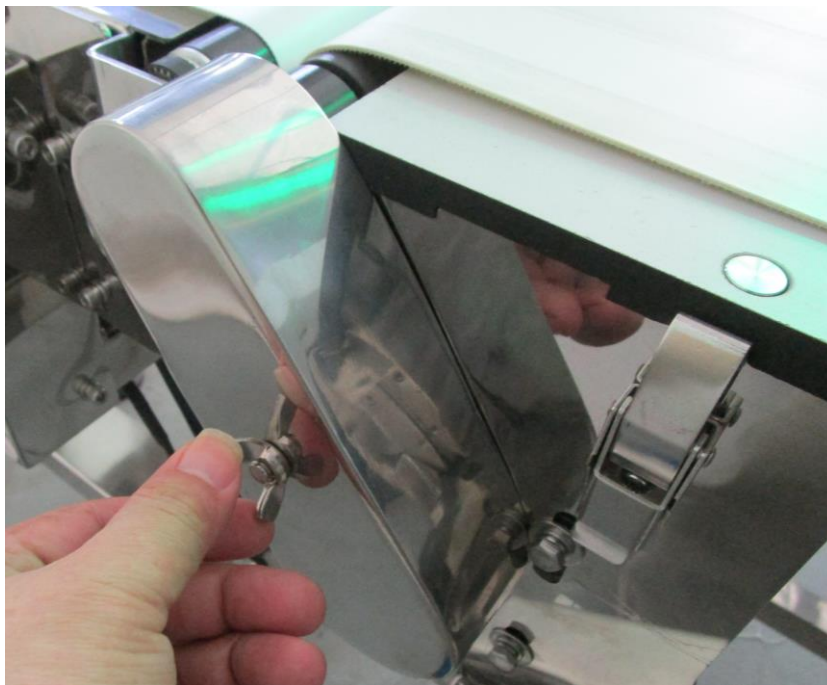


Figure 4-9 Remove the timing belt cover

2) Loosen the motor fixing screws. (Picture 4-10)

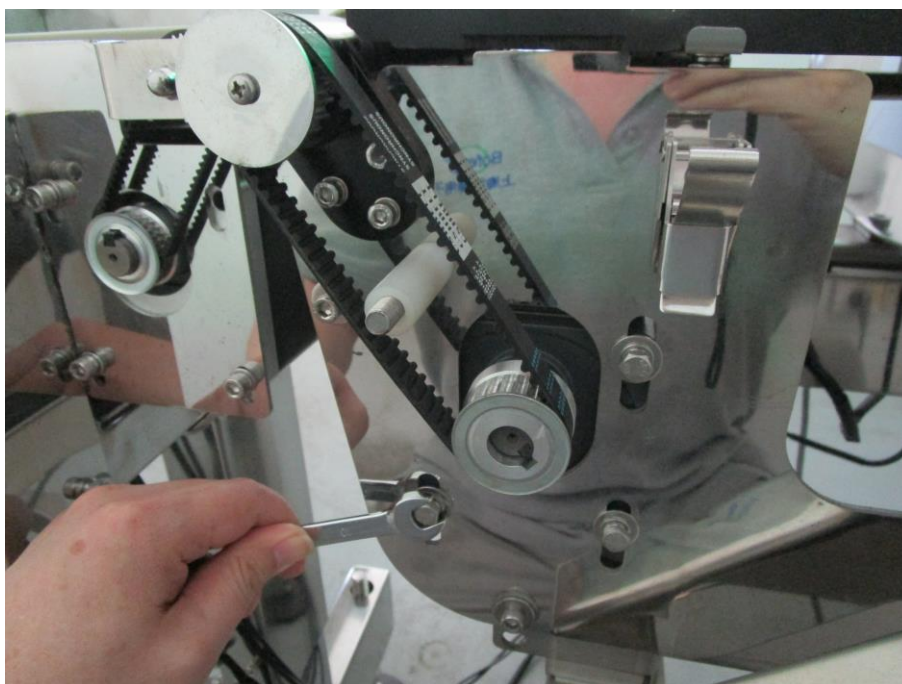


Figure 4-10 Loosen the motor fixing screws

3) Lift up the motor and take out the timing belt. (Figure 4-11)

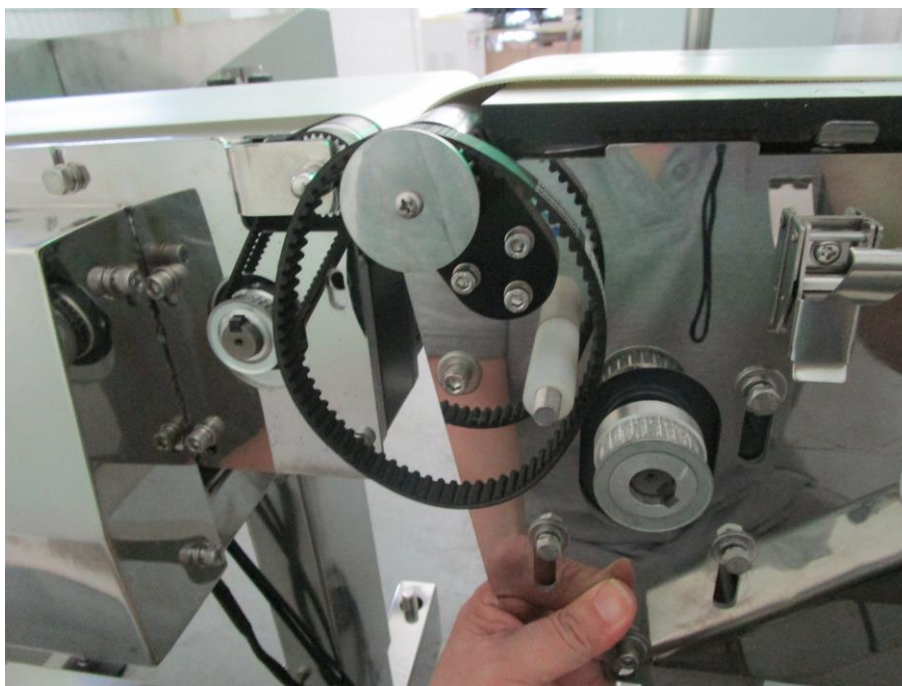


Figure 4-11 Hold up the motor and take out the timing belt

4) Replace the timing belt. (Figure 4-11, note that the synchronous belt models must be the same)

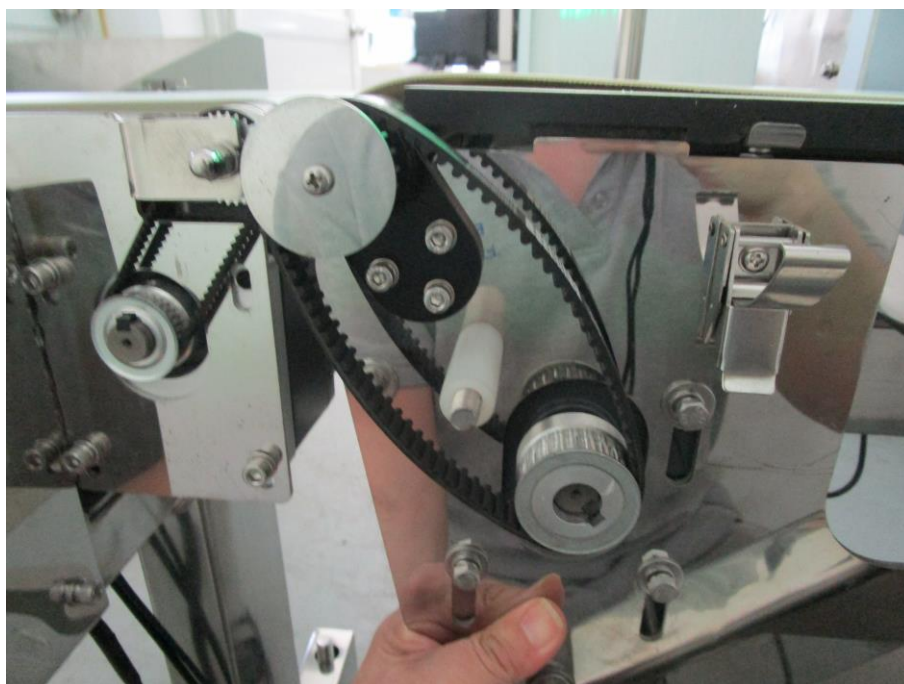


Figure 4-11 Installing the timing belt

5) Adjust the tightness of the timing belt by adjusting the position of the motor (Figure 4-12). After adjusting the timing belt to the proper tightness, tighten all the fixing screws on the motor bracket.

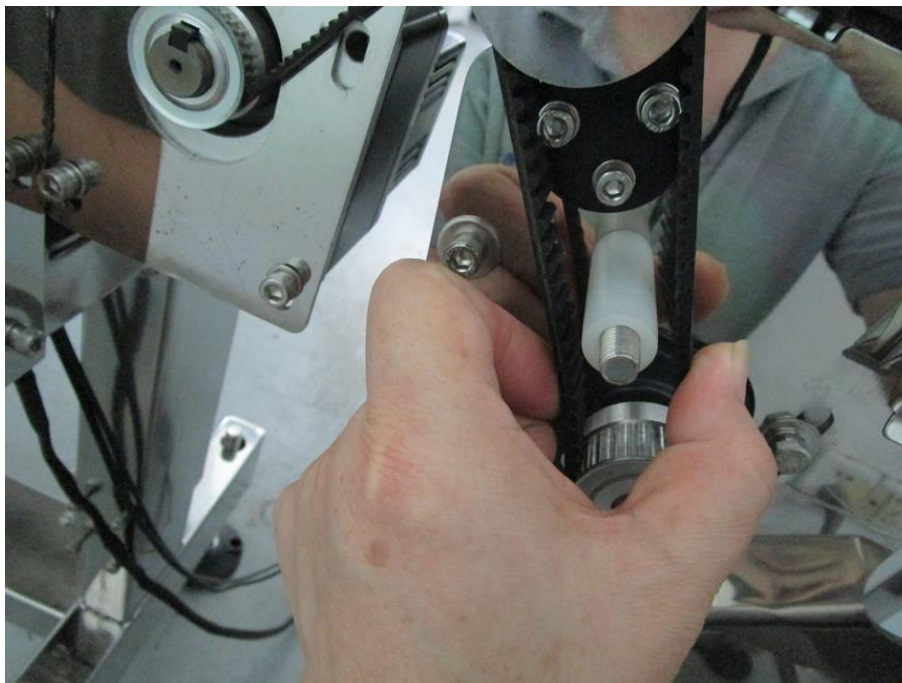


Figure 4-12 Adjusting the timing belt

6) After the adjustment of the conveyor belt is completed, install the timing belt cover (Figure 4-13), taking care not to rub the rotating parts.

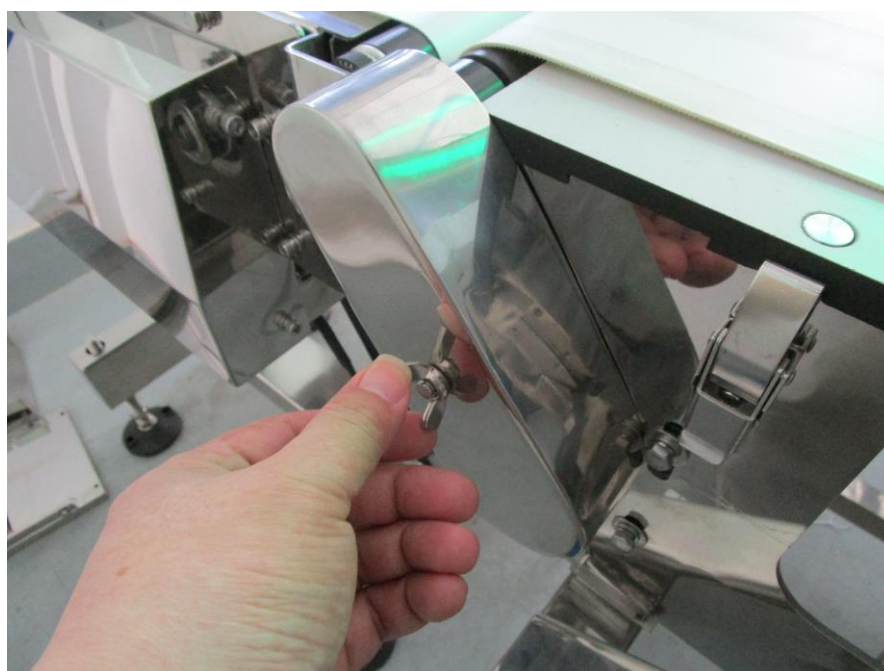


Figure 4-13 Installing the cover

5. Technical Parameter

Table 5-1 Technical Parameters of Metal Detector

Product Size (mm)	Width-no more than belt width
	High-no more than the distance from the top of the probe to the belt
Mast sensitivity (mm)	Fe ball $\phi 0.8$
	SUS304 ball $\phi 1.5$
Conveyor speed (m/min)	17~95
Standard design materials	The metal part of the whole machine is made of stainless steel
	And made of aluminum alloy with hard anodized surface treatment
Machine protection	Dustproof and waterproof grade is IP54
Operating temperature	0°C~40°C (32°F~104°F)
Working humidity	35%~85% (No frost and no dew)
Noise at work	Less than 70dB(A)
Rated electrical performance	220 V (AC) 50/60 Hz single-phase
Compressed air (MPa)	0.4~0.6

6 Appendix

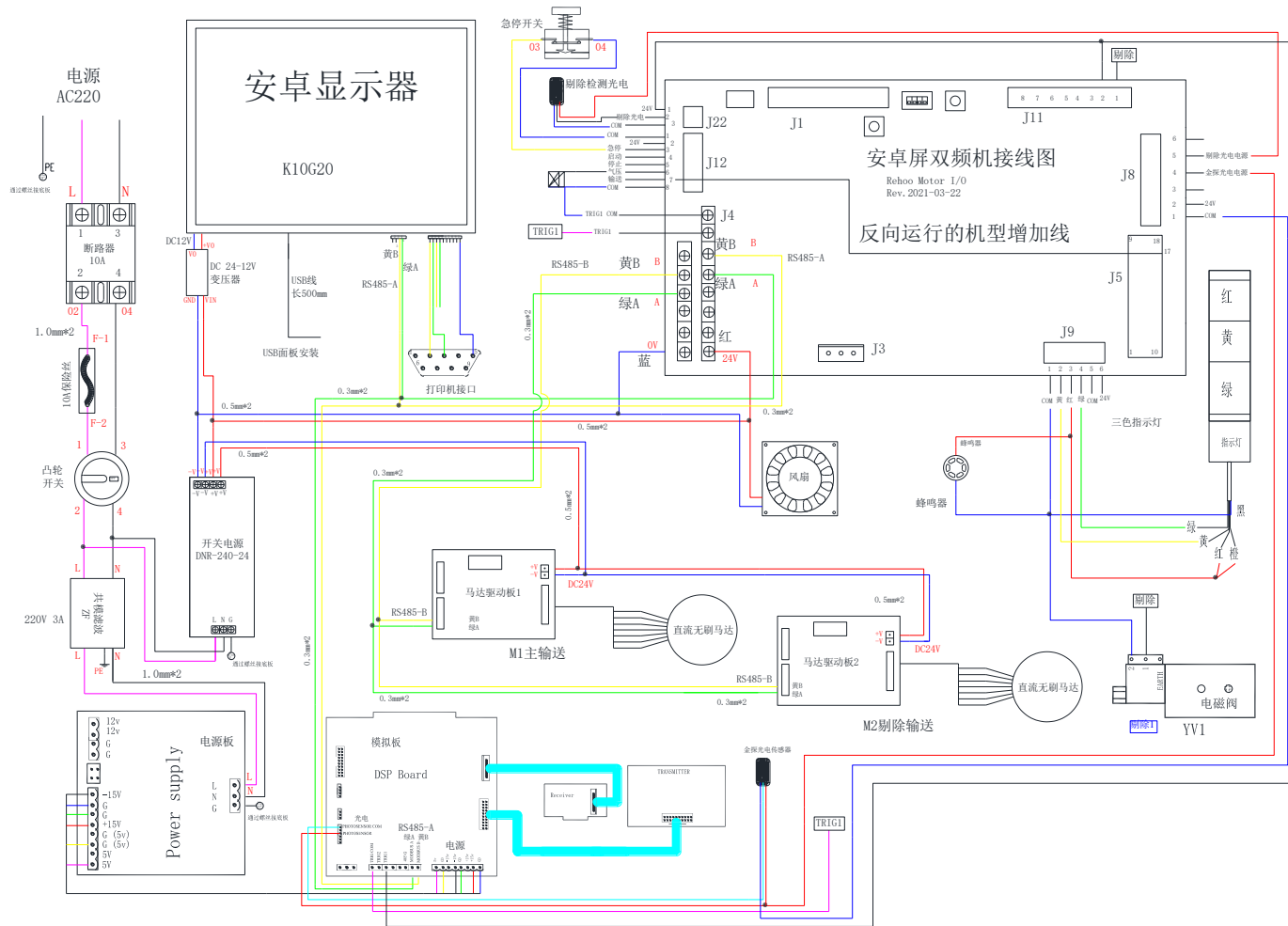
Table 6-1 List of accessories in the kit

Goods	Specification	Qty
Test card (iron and stainless steel)	Optional on demand	
Allen key	4#	1
Allen key	5#	1
Allen key	6#	1
Open spanner	5.5-7	1
Open spanner	8-10	1
Open spanner	24-27	1
Gradienter	300 mm	1

Table 6-2 Common spare parts for metal detectors

Serial number	Name	Brand	Model	Qty
1	Metal detection conveyor belt	HABASIT		1
2	Metal detection timing belt	MITSUBOSHI		1
3	Motor	TAIBANG		1
4	Touch screen	My control	K10G20	1
5	Main control board	Rehoo	Rev.2021-03-21	1
6	Metal detection board	Rehoo	Symmetric X DSP Rev.2021-02-04 X10	1
7	Switching power supply 1	MEAN WELL	NDR-240-24	1
8	Switching power supply 2	Rehoo	PWR SYD 2020-01-11	1
9	Motor drive	AiKong	AQMO2408BLS-M	1

The wiring diagram is as follows.



7. Contact Information

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