

Handheld Screw Pulling & Locking Machine Manual



Thank you for choosing our product.

Please read this manual carefully before operation.

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Chapter 1 Equipment Overview

1.1 Equipment Features

This equipment is developed to replace the tedious manual screw picking operation. Operators only need to pour an appropriate amount of bulk qualified screws into the machine feeding port. After power and air supply are connected, the equipment can automatically arrange and blow out screws in order, which effectively improves production efficiency and reduces labor intensity.

The main features of the equipment are listed as follows:

- ◆ Equipped with an LCD human-machine control system with user-friendly interface and password lock function.
- ◆ All parts and accessories are manufactured in accordance with national standards with fine workmanship, featuring stable performance and low operating noise.
- ◆ Simple operation with low learning cost; workers can master the operation within ten minutes to improve production efficiency and reduce labor burden.
- ◆ Smooth operating performance; the feeder rarely causes screw jamming except for abnormal screws, with ultra-low noise.
- ◆ Screws are delivered to the chuck of handheld electric screwdriver or fixed electric screwdriver by compressed air. The feeding speed is up to 0.5 seconds per screw without inverted screws or material jamming. The equipment supports long-term continuous stable operation.
- ◆ Dual feeding modes are available: automatic torque feeding mode and manual button feeding mode.
- ◆ Screws do not need manual contact during feeding, avoiding product quality risks caused by sweat and dirt on human hands contaminating screws.
- ◆ Built-in multi-fault alarm system and counting function. The alarm light and buzzer will be triggered automatically in case of material shortage, material jamming and other abnormalities. It supports single product counting and total screw counting for production statistics.
- ◆ Applicable to deep-hole screw locking, supporting hole depth within 120mm.

1.2 Equipment Purpose

This equipment is widely used in automatic screw locking stations for various production lines, including power strip production lines, electric toy production lines, solenoid valve production lines and other electronic assembly scenarios.

1.3 Applicable Scope and Screw Requirements

1. Applicable screw size: M1.0~M5.0
2. Screw specification requirement: The ratio of total screw length (including screw head) L to screw head diameter D shall be greater than 1.3 ($L/D > 1.3$).
3. Applicable screw head types: slotted, Phillips, triangular, Torx, inner hexagon, H-head and other custom types.
4. Applicable screw surface treatments: nickel plating, black oxide, color zinc plating, white zinc plating, copper plating, etc.
5. Applicable screw materials: iron, copper, stainless steel and other metal materials.
6. Applicable locked workpiece materials: plastic, iron, aluminum and other common assembly materials.

Notes:

1. Corresponding matching accessories shall be replaced for different screw specifications.
2. The handheld pull-type structure is only applicable to iron and stainless steel screws.

1.4 Technical Parameters

No.	Item	Parameters & Specifications
1	Discharge Mode	One-out-one
2	Working Voltage	AC 220V/50HZ
3	Working Air Pressure	0.5-0.7MPa
4	Rated Power	300W
5	Feeding Efficiency	0.5-1.0s per screw
6	Conveying Distance	Standard 1.8m
7	Push-Pull Stroke	10-120MM (Customized according to customer products)
8	Feeder Capacity	M3.0*8/2000PCS
9	Overall Dimensions	415*230*280mm
10	Net Weight	13KG
11	Accessory List	1 IEC power cord, 2 screwdriver bits,

		1 conveying tube, 1 spring, 1 3# hex wrench
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Chapter 2 Installation Instructions

2.1 Unpacking Inspection

1. Check if the equipment is damaged or scratched during transportation.
2. Check if the equipment is inverted.
3. Check if the equipment specification is consistent with the order.
4. Check if the packing list is consistent with the actual items.

If any of the above phenomena occur, do not use the equipment and contact the dealer or our company in time.

2.2 Safety Regulations

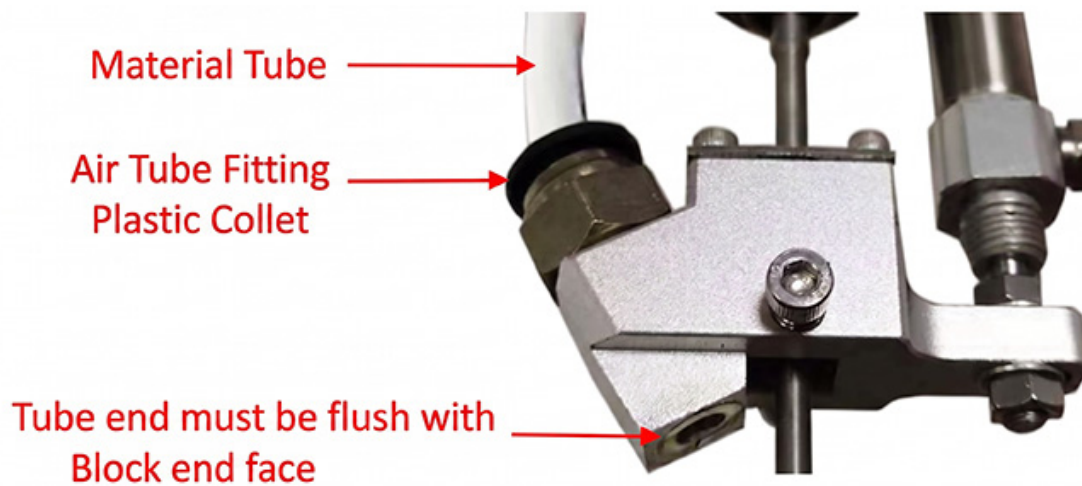
1. Before using this equipment, please read the manual carefully and understand the relevant safety signs and operation steps to ensure safety.
2. Check if the power supply voltage is consistent with the provided specification, and the power supply must be well grounded.
3. Non-professionals are not allowed to open the door or cover of the equipment to prevent electric shock.
4. Do not scratch the panel display screen of this equipment with sharp objects.
5. The user shall not modify the circuit or parts of this equipment without permission; otherwise, the quality guarantee of our company shall be invalid, and we shall not be liable for any consequences arising therefrom.

2.3 Installation Requirements

1. This equipment shall be placed on a horizontal and stable workbench; if it is uneven, it shall be adjusted first.
2. The ambient temperature for the use of this equipment is $25\pm 10^{\circ}\text{C}$, and the relative humidity is $50\pm 30\%\text{RH}$.
3. There shall be a distance of more than 50 centimeters between this equipment and the wall and any other machines.
4. This equipment shall be away from heat sources and corrosion sources.
5. When this equipment is working, it shall be connected to a 220V/50Hz $\pm 10\%$ power supply with good grounding.
6. This machine needs to be connected to a pure air source of 0.5~0.7MPa.

2.4 Installation Steps

1. After the equipment arrives, unpack and inspect it for damage or scratches, and check if the accessories are complete.
2. Insert the electric screwdriver signal cable into the corresponding port on the equipment. Note that the port is fool-proof and can only be inserted when aligned with the reference.
3. Insert the black, blue and white 6*4 air tubes on the electric screwdriver into the corresponding black, blue and white air tube connectors on the equipment.
4. Insert the other end of the electric screwdriver signal cable into the corresponding port on the electric screwdriver, same as step 2 above.
5. Insert the conveying tube into the corresponding air tube connector on the chuck fixing block, as shown in the figure below.



Notes:

1. The air tube must be inserted in place (the end of the air tube must be flush with the other end of the chuck fixing block), otherwise it will cause screw jamming here.
2. When pulling out the air tube, you must press down the plastic ferrule of the air tube connector before pulling out the air tube.
6. Take the air tube from the accessories and insert it into the corresponding air tube connector of the air source processing component at the back of the equipment (with a barometer at the back of the equipment).
7. Take the 220V IEC power cord from the accessories and insert it into the IEC power socket at the back of the equipment.
8. Check if the power supply and air source connected to the equipment are consistent with the equipment requirements, remember.
9. Open the manual air slide valve and the power switch, and check if the equipment operates normally.

Note: If the installation cannot be completed according to the above steps, contact our after-sales service for a more detailed installation video.

Chapter 3 Operation Guidelines

3.1 Equipment Structure and Introduction

3.1.1 Overall Appearance Diagram



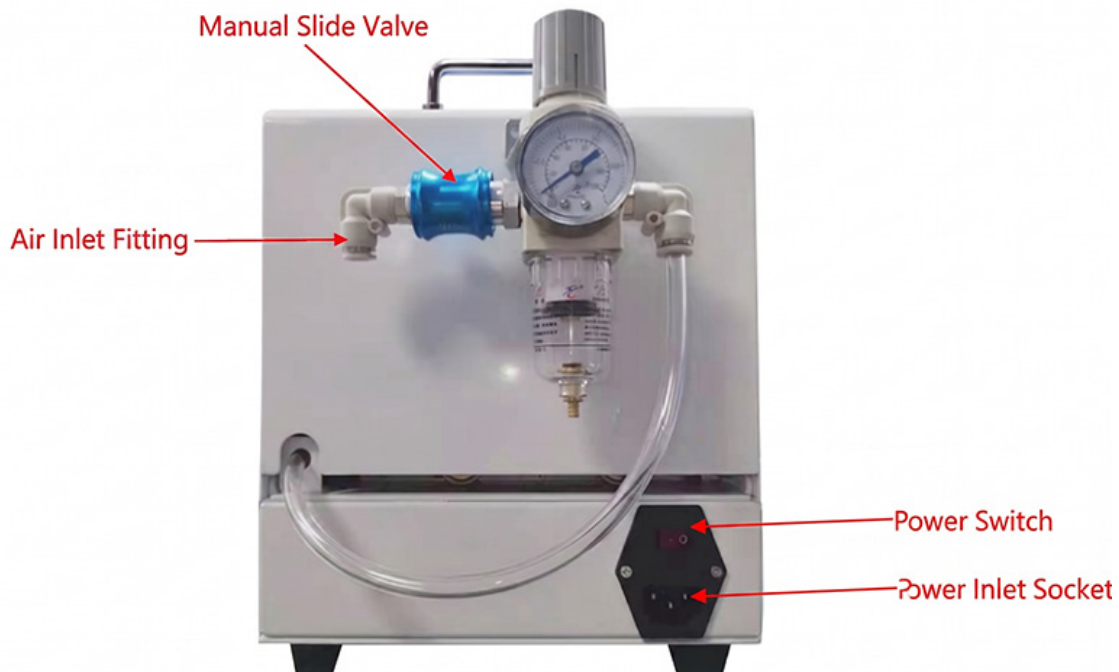
Hopper, Intelligent Electric Screwdriver, Touch Screen, Chuck Part, Electric Screwdriver Connection Line and Connecting Air Tube, Handle

3.1.2 Front Panel Diagram of the Equipment



Handheld Screw Locking System, Touch Screen, Work Parameter Setting Management, Equipment Information, Push-Pull Cylinder Air Tube Connector, Electric Screwdriver Wiring Port, Power Indicator Light

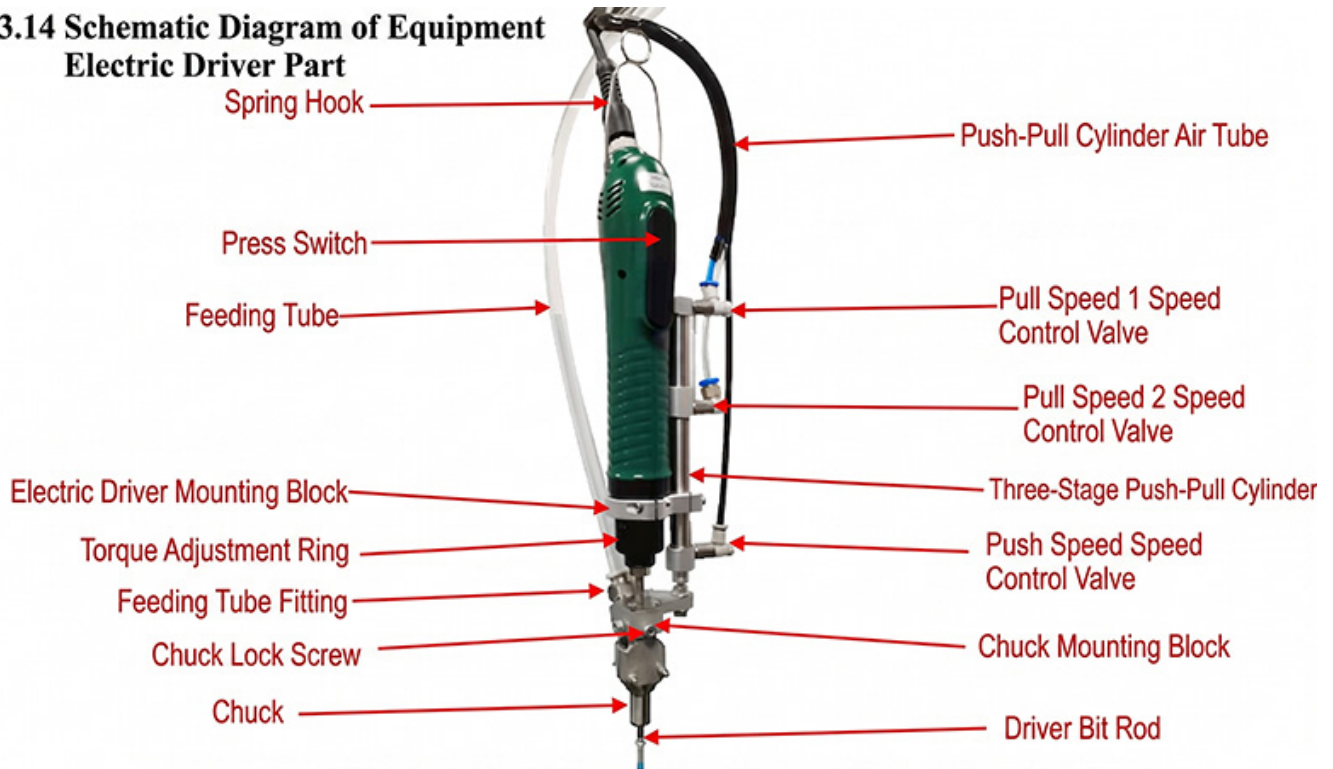
3.1.3 Rear Panel Diagram of the Equipment



Manual Slide Valve, Air Inlet Tube Connector, Power Switch, IEC Power Socket

3.1.4 Electric Screwdriver Part Diagram of the Equipment

3.14 Schematic Diagram of Equipment Electric Driver Part

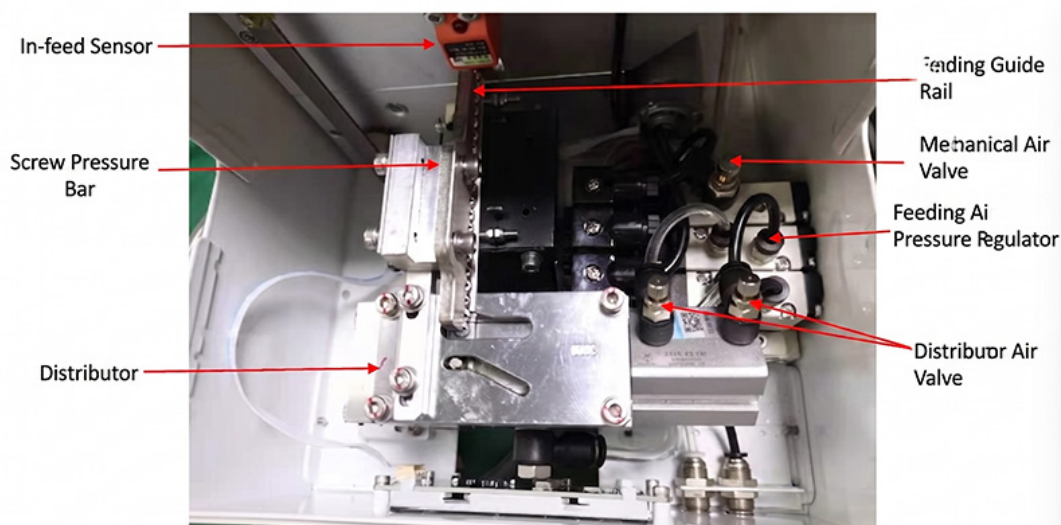


(Intelligent High-Speed Brushless Electric Driver)

Spring Hook, Push-Pull Cylinder Air Tube, Press Switch, Pull Speed 1 Regulating Valve, Conveying Tube, Pull Speed 2 Regulating Valve, Three-Section Push-Pull Cylinder, Torque Adjustment Ring, Push Speed Regulating Valve, Conveying Tube Connector, Chuck Fixing Block, Chuck Locking Screw, Chuck, Screwdriver Bit (Intelligent High-Speed Brushless Electric Screwdriver)

3.1.5 Equipment Feeding Part Diagram

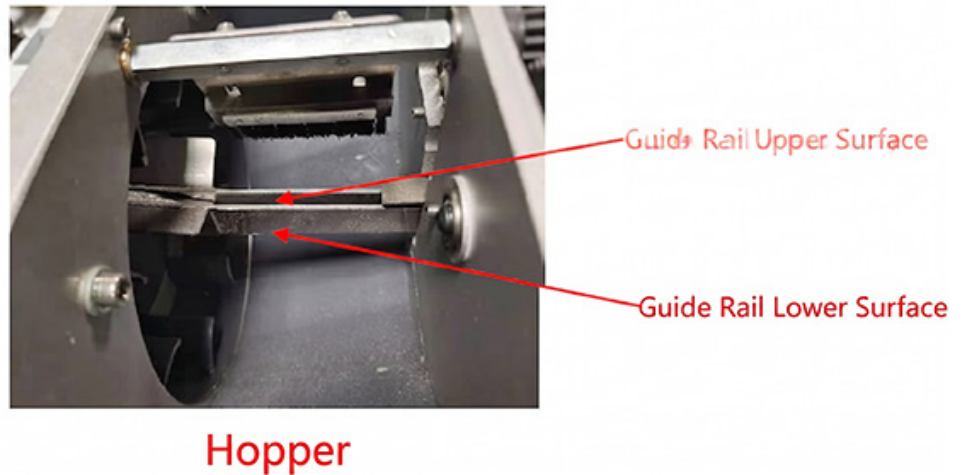
3.15 Device Feeding Part Schematic



Feeding Inductive Switch, Conveying Guide Rail, Screw Press Strip, Mechanical Air Regulating Valve (Adjust Conveying Tube Air Pressure), Splitter Air Regulating Valve, Splitter, Upper End Surface of Guide

Rail, Lower End Surface of Guide Rail, Hopper

3.2 Equipment Operation and Adjustment Instructions



1. Add screws to the hopper; the screws shall not exceed the lower end surface of the guide rail (as shown in the figure above).
2. Open the air source switch (manual slide valve) and the power switch; the machine starts to operate normally.
3. Electric screwdriver switch: Double-click the electric screwdriver switch, and the equipment will discharge screws; long-press the electric screwdriver switch, and the electric screwdriver will start to rotate for screw locking operation. After the screw is locked, the electric screwdriver will brake and stop rotating. After the electric screwdriver is moved away from the product, release the electric screwdriver switch, and the screw will be discharged automatically.
4. Push-pull cylinder adjustment: To adjust the speed of the push-pull cylinder's round trip, you can adjust the pull speed regulating valve and the push speed regulating valve respectively, which can solve the problems of screw jamming in the chuck and skewed or inclined screw discharge.
5. Torque adjustment: The torque of the electric screwdriver can be adjusted by the torque adjustment ring on the electric screwdriver; rotate upward to increase the torque, and vice versa to decrease it.
6. Conveying tube air pressure adjustment: Adjust the mechanical air regulating valve; rotate upward to increase the air pressure, and vice versa to decrease it; it can solve the problem of slow or no conveying.

3.3 Disassembly and Replacement of Wearing Parts

3.3.1 Replace Conveying Tube

1. First turn off the equipment's air source and power supply, then loosen the screw that tightens the conveying tube's air tube connector on the splitter, and remove the end of the conveying tube connected to the splitter.
2. Press down the plastic of the conveying tube connector on the chuck fixing block and pull out the air tube outward at the same time.

3. Replace the conveying tube of the same specification according to the above steps.

Notes:

1. The air tube connector between the conveying tube and the splitter has a limit; pay attention to the installation direction. Otherwise, the conveying tube will have no air pressure or insufficient air pressure, resulting in no feeding.
2. For the air tube connector between the conveying tube and the chuck fixing block, the air tube must be inserted in place (the end of the air tube must be flush with the other end of the chuck fixing block), otherwise it will cause screw jamming here.

3.3.2 Replace Chuck

1. First turn off the equipment's air source and power supply, then loosen the chuck locking screws (both sides of the chuck fixing block must be loosened).
2. Gently pull out the chuck with force.
3. Blow off the residue on the new chuck with an air gun and wipe it clean, then install the chuck according to the above steps.

3.4 Touch Screen Operation Instructions

3.4.1 Adjust Vibration Intensity

Blow-Feeding Screw Feeder System

Screw Count	80	Clear
Workpiece Count	20	Clear

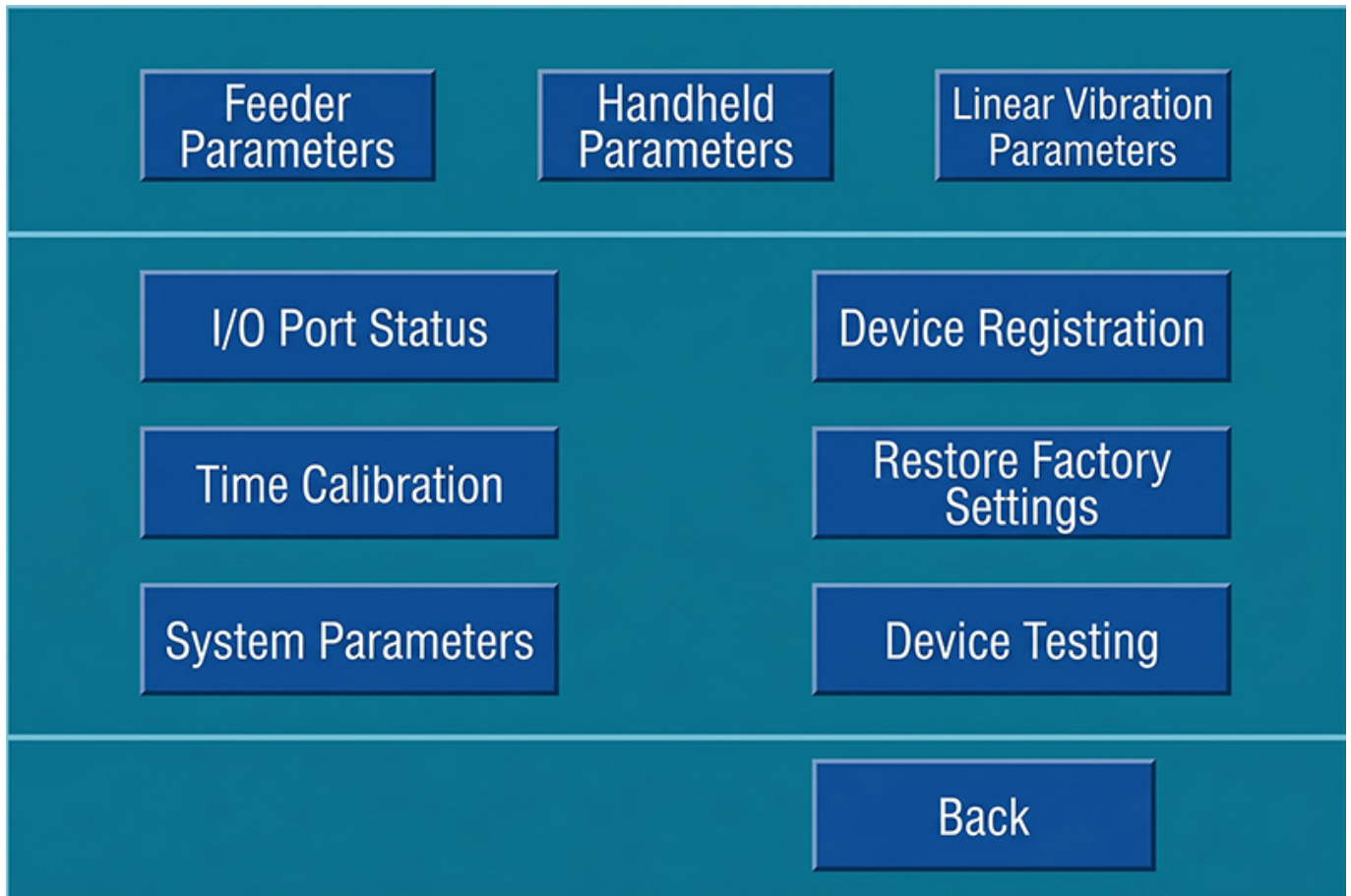
Equipment Single-Feed Blow-Feeding Feeder, Drum Mode
Parameters: Internal Direct Vibration Control, Half-Wave, 18%

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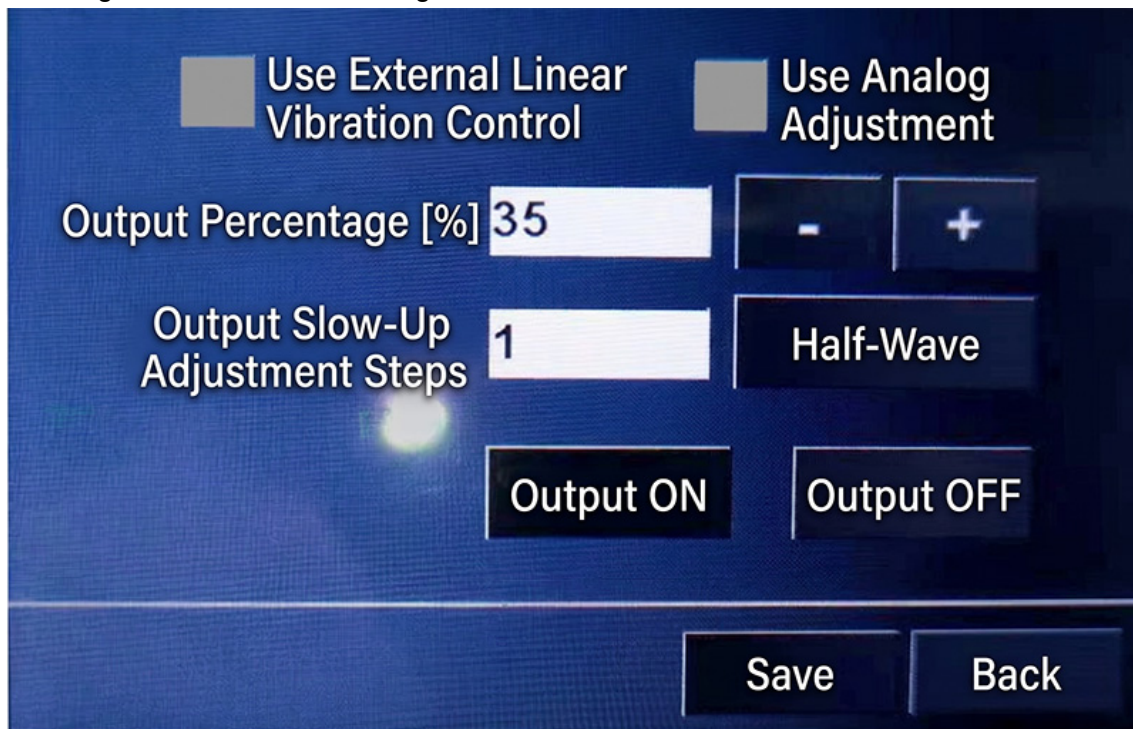
Operation
Parameters

Equipment
Management

Equipment
Information



Working Interface Device Management Interface



1. Click the [Equipment Management] button on the [Work Interface], then enter the equipment management password to enter this interface (the equipment password is 888888, and the password of the previous version is 666666).

2. Click the vibration parameters on the equipment management interface to enter the vibration interface; the larger the output percentage value, the greater the vibration, and vice versa.

Notes: 1. The output ramp adjustment step must be set to half-wave (there is no vibration or slight vibration in full-wave).

2. If the conveying guide rail does not feed or feeds slowly, the vibration can be adjusted to solve the problem.

3.4.2 Adjust Conveying Tube Blowing Time and Splitter Scraping Time

1. Click the [Equipment Management] button, then enter the equipment management password to enter this interface (the equipment password is 888888, and the password of the previous version is 666666), then click the feeder parameters to enter the main interface.

Scraping action delay [ms]	250	Drum Mode
Blowing action delay [ms]	120	Work Mode
Blowing delay before scraping [ms]	10	Screw Signal Mode 1
Vibration delay OFF [ms]	1000	
Sweeping delay OFF [ms]	1000	Screw ready signal pulse width [ms]
Test interval [ms]	600	200
Previous Page		Next Page
Save		Back

Scraping Action Delay [ms] 250, Drum Mode, Blowing Action Delay [ms], Blowing Delay Scraping [ms] 120, 10, Working Mode, Vibration Delay Off [ms] 1000, Screw Signal Mode 1, Broom Delay Off [ms] 1000, Screw Preparation Signal Pulse Width [ms], Test Interval [ms] 600, 200, Previous Page, Next Page, Save, Return

2. Adjust the scraping action delay to adjust the speed of the splitter action; the smaller the value, the faster the splitter action; vice versa, the slower.

3. Adjust the screw preparation signal pulse width, which can basically solve the problem of electric screwdriver jumping. The larger the value, the smaller the probability of electric screwdriver jumping; vice versa, the larger. (If the jumping fault cannot be solved here, you can request the after-sales service to replace the electric screwdriver)

3.4.3 Adjust Push-Pull Cylinder and Electric Screwdriver Activation Time

Push-pull cylinder time [ms]	100	Debouncing [ms]	2
Electric driver open time [ms]	400	Pneumatic driver duration [s]	0.3
Double-click interval [ms]	50	Workpiece beep duration [ms]	600
Torque trigger delay [ms]	100	Workpiece beep count [times]	1
Retraction delay backup [ms]	5	☐ Enable handheld mode	
☒ Push-pull mode	☐ External enable control	☐ Auto torque feeding	
Save		Back	

Push-Pull

Cylinder Time [ms] 100, Electric Screwdriver Single-Click Anti-Shake [ms] 2, Electric Screwdriver Activation Time [ms] 400, Air Screwdriver Key Minimum Duration [s] 0.3, Electric Screwdriver Double-Click Interval [ms] 50, Workpiece Buzzer Duration [ms] 600, Torque Trigger Delay [ms] 100, Workpiece Buzzer Times [times] 1, Pull Delay Retreat [ms] 5, Enable Handheld Mode, Push-Pull Mode, External Enable Control, Torque Automatic Feeding, Save, Return

1. Click the [Equipment Management] button, then enter the equipment management password to enter this interface (the equipment password is 888888, and the password of the previous version is 666666), then click the handheld parameters to enter the main interface.
2. Adjust the push-pull cylinder time to adjust the speed of the push-pull cylinder action; the smaller the value, the faster the push-pull cylinder action; vice versa, the slower (if the screw discharge from the chuck is slow, this value can be adjusted).
3. Adjust the electric screwdriver activation time to adjust the speed of the electric screwdriver action; the smaller the value, the faster the push-pull cylinder action; vice versa, the slower (if the screw is stuck in the chuck or the screw cannot be pushed out, this value can be adjusted).

Remarks: 1. Do not arbitrarily modify other parameters in the screen.

2. If the fault cannot be solved through the above adjustments, you can contact the after-sales service for remote video solution.

Chapter 4 Troubleshooting

1. The feeder has no power:
 - a. Damaged power switch
 - b. Loose power cord
 - c. Damaged power supply
 - d. Blown fuse
2. Screw jamming on the feeder track:

- 2.1 There are abnormal screws or impurities; just take them away.
- 2.2 The screw is stuck at the hopper door; clean the screws and observe whether the broom can sweep down the horizontal screws; if not, please adjust the broom downward.
- 3. The touch screen has no response; turn off the power switch and restart it.
- 4. The feeder does not convey screws and keeps alarming: Observe the barometer to see if there is air source input.
- 5. The splitter cannot push the screws through: Unplug the air source and check if there is any foreign matter blocking the discharge port.
- 6. The splitter keeps pushing screws down, and the feeder alarms after several times: The metal proximity switch at the discharge port is damaged; please contact the after-sales service to replace it in time.
- 7. When there is a screw under the metal inductor at the hopper door, the metal inductor does not light up:
 - 7.1 Adjust the height of the metal inductor to an appropriate position.
 - 7.2 The metal proximity switch is damaged and needs to be replaced.
- 8. When the feeding metal inductor does not light up and there is no screw underneath, the drum motor does not rotate:

The drum motor is damaged and needs to be replaced.
- 9. Troubleshooting for push-pull chuck screw jamming: Toggle the manual slide valve to cut off the air source. Pull the elastic pin on the chuck outward, then take out the chuck, remove the screws inside, and insert it back.
- 10. Troubleshooting for guide rail screw jamming: Just open the screw press plate and take away the abnormal screws.
- 11. Troubleshooting for splitter jamming: Toggle the manual slide valve to cut off the air source. Push the splitter slider to the far left from the side, then use a magnetic screwdriver bit to absorb the abnormal screws.

Chapter 5 Daily Maintenance

- 1. Regularly inspect the electric screwdriver and cylinder: Check if the fixing screws are loose, and regularly clean dust and iron filings to extend the service life and ensure smooth operation.
- 2. The chuck needs to be inspected regularly, and foreign objects and iron filings should be cleaned in time. Otherwise, it will cause the chuck to not clamp tightly, and the discharge will be skewed or jammed.
- 3. Splitter part: This part is mainly used for screw splitting and feeding; inspect it regularly, and clean foreign objects and oil stains in time to ensure the stable operation of this system.
- 4. For the compressed air source, drain water regularly to ensure the purity of the air source.