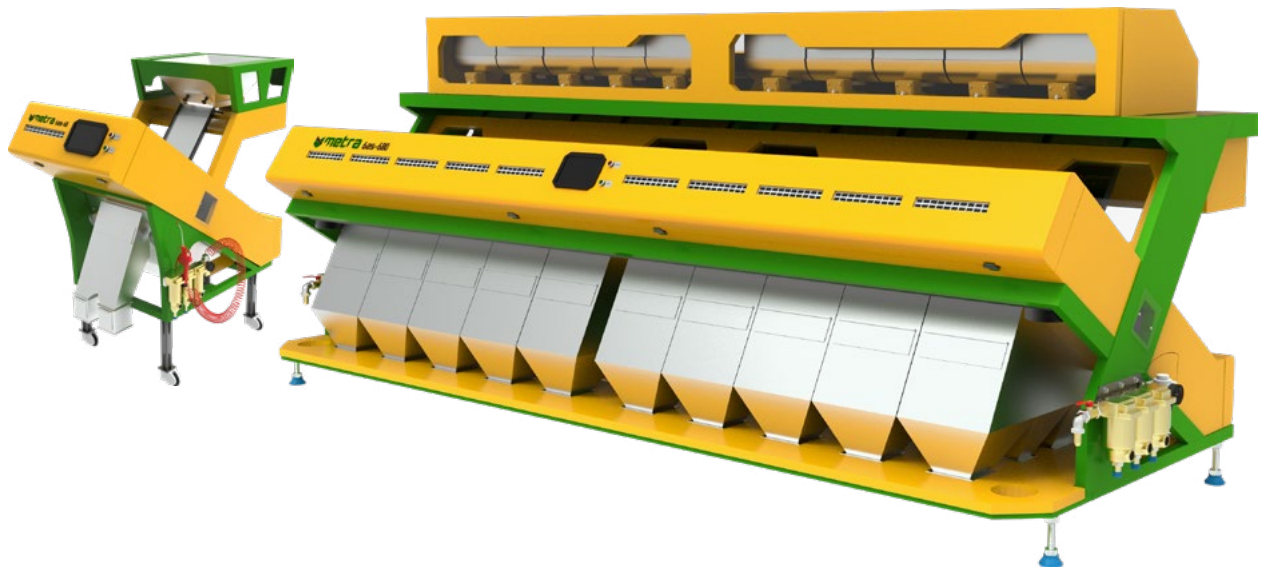




GRAIN COLOR SORTER

USER'S MANUAL

Please read this Manual carefully before use and keep it properly.



METRA GROUP INC.

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PART I: PRODUCT INTRODUCTION

Chapter 1 Product Overview

The color sorter is used to sort good materials and bad materials in materials according to color, shape, material of materials, for example, removing moldy rice in a pile of rice or removing grey stones in a pile of white marble. The color sorter of Metra Group is currently the leading color sorting equipment in the domestic market. It adopts the most advanced high-tech product integrating light, machine, electricity, air and camera in the industry. It also uses the company's latest intelligent color touch display, which has a simple and intuitive operation interface and can be easily identified and automatically adjusted. The dual-view lens structure is designed to easily identify small chromatic aberrations. Infrared camera with compound use strengthens performance of the color sorter and improves flexibility and applicability during use. The distributor has low noise, small jitter, large vibration and more uniform material distribution. The mechatronics design makes the structure of the whole machine more stable, improves the service life and makes maintenance easier. With advanced self-injection nozzle and valve drive mode, it features fast response speed, more accurate impact, small take-out ratio, large output and reduced air consumption. At present, the color sorting technology is leading in the world, and is widely used in the sorting of bad materials with color difference in rice, grains, industrial raw materials and other materials.

This is a high-tech product with strict requirements for installation, operation, use and maintenance. Therefore, it must be operated by qualified personnel. The operator must be trained according to the training requirements of the company and must operate in accordance with the instructions of installation, operation and maintenance.

For any unsettled affairs in this book, please contact our company for consultation: After-sales service +1(800)272-2045.

It is subject to change without notice due to the improvement of the machine performance and technology.

Chapter 2 Product Model and Significance

Significance is the trademark of the company



Description of agricultural machinery number

6AS-68 is the model of the color sorter of the company

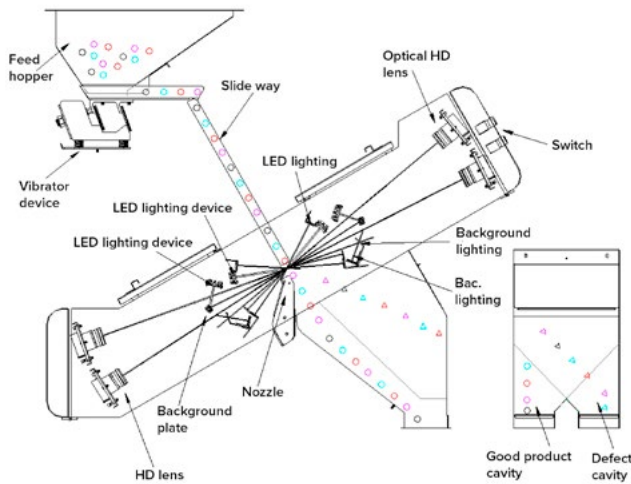
"6AS": color sorter

"68": indicates number of nozzle units

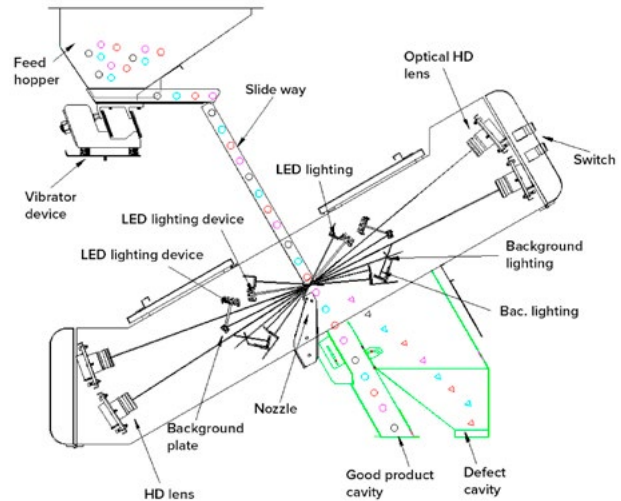
A number of channels of the color sorter: One channel is corresponding to one group of nozzles and one group of nozzles is 68 nozzle units. If two channels are corresponding to 136 nozzles, ten channels are corresponding 680 nozzle units.

Chapter 3 Working Principles and Product Structure

The working principle: the materials enter the machine from the hopper in the top and are sent to the top of the slide way through the vibration of the vibrator device. The materials accelerate down along the slide way, enter the observation area in the sorting box, and pass through the LED light and the background plate. Under the scanning of the HD lens, the system generates an output signal, drives the solenoid valve to work, and blows the materials with the color difference into the defect cavity of the receiving hopper through the self-injection nozzle, and the good materials fall into the good product cavity of the hopper to achieve the sorting effect. Diagram 1-1 shows working principle of small color sorter and small color sorter includes multi-functional micro color sorter, single-channel slide color sorter, double-channel color sorter, three-channel slide color sorter. Diagram 1-2 shows working principle of large color sorter and large color sorter includes four-channel slide color sorter to ten-channel slide color sorter.



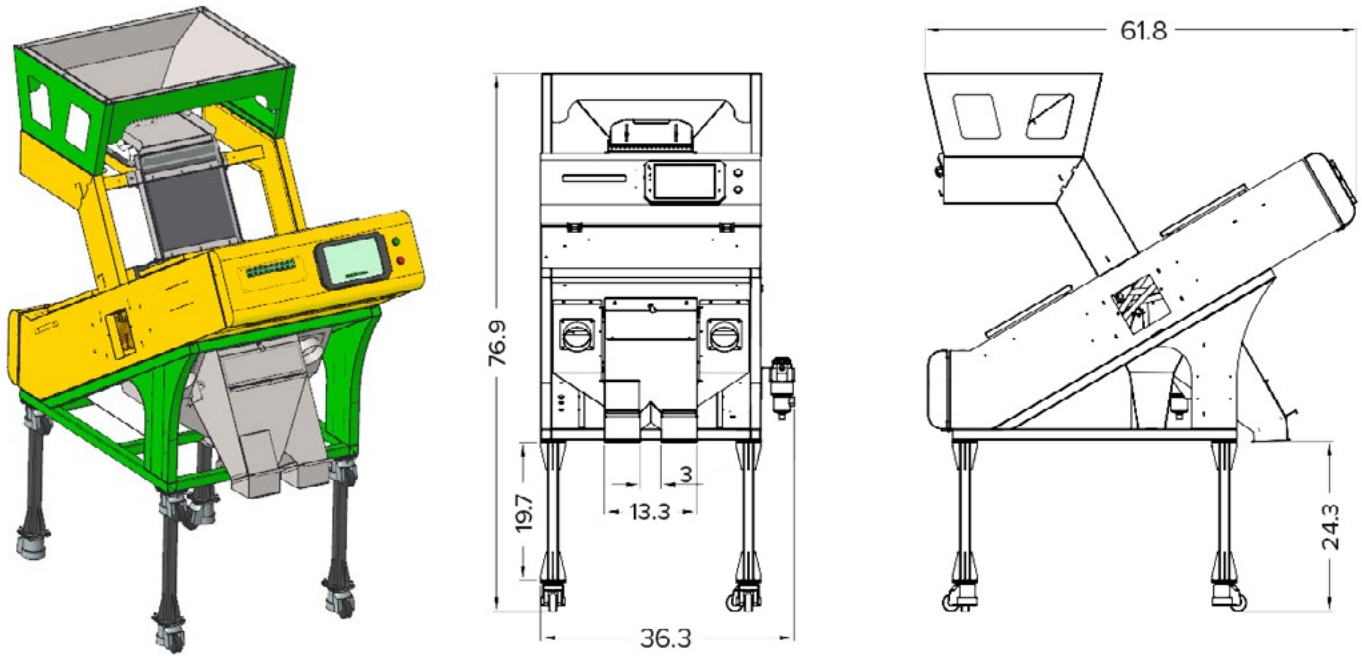
1-1 Working Principle Diagram of small Color Sorter



1-2 Working Principle Diagram of large Color Sorter

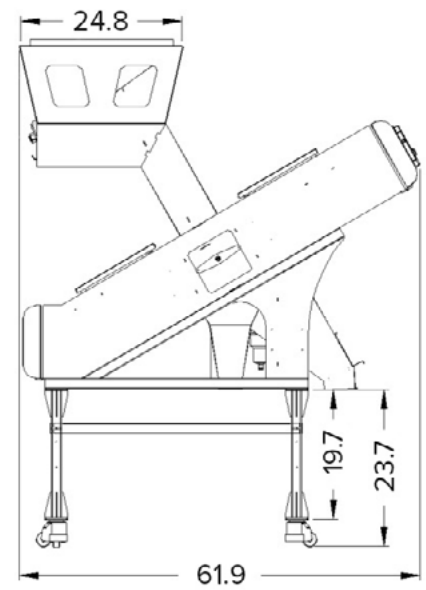
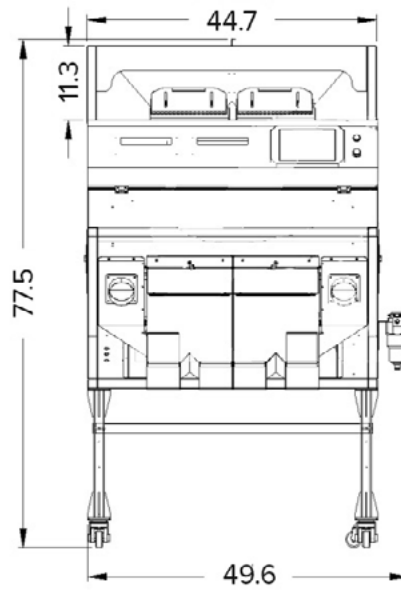
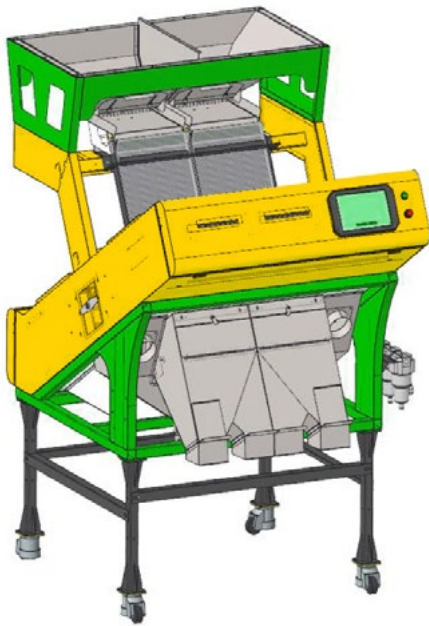
Properties and Parameters Table of Machine					
No.	Raw material	Impurity content (%)	Selection rate (%)	Carryover	Note: The above performance parameters are based on 5% impurities, and the specific indicators will vary due to impurities. Remark: The parameters are subject to change without notice! Carryover: 3:1 refers to blowing out 3 defective products may have 1 non-defective product in average.
1	Rice	5	≥ 99.99	6:1	
1	Peanut	5	≥ 99	3:1	
1	Corn kernels	5	≥ 99	3:1	
1	Pistachio	5	≥ 99	3:1	

Chapter 4 Model parameters Metra 6AS-68 single-channel slide color sorter



Metra 6AS-68 Parameters of Single-Channel Slide Color Sorter				
Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-68	68	40-80 bushels/hour 1.0-2.0 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
0.4-0.5	0.4-0.6	<20 CFM <500 L/min	595 lb 270 kg	36.3*61.8*76.9 in 922*1569*1953 mm

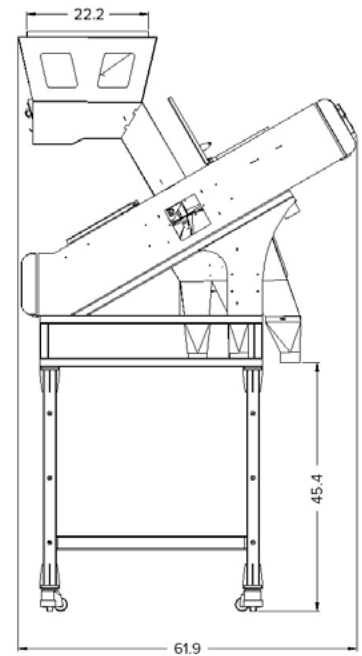
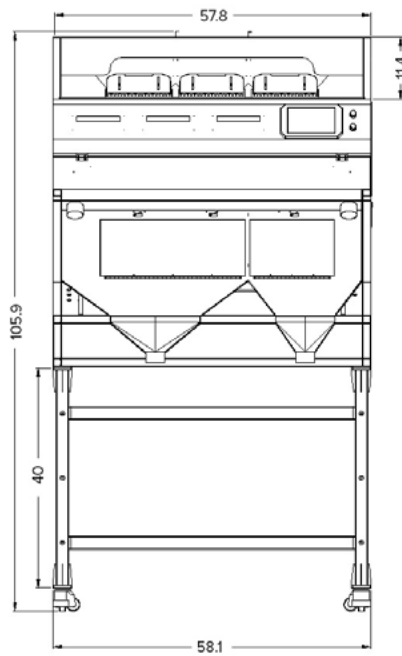
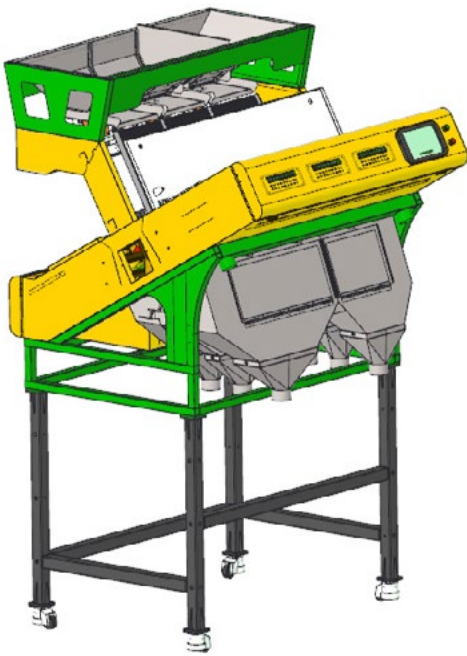
Metra 6AS-136 double-channel slide color sorter



Metra 6AS-136 Parameters of double-channel slide color sorter

Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-136	136	80-160 bushels/hour 2-4 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
0.8-0.9	0.4-0.6	<35 CFM <1000 L/min	816 lb 370 kg	49.6*61.9*77.5 in 1259*1571*1969 mm

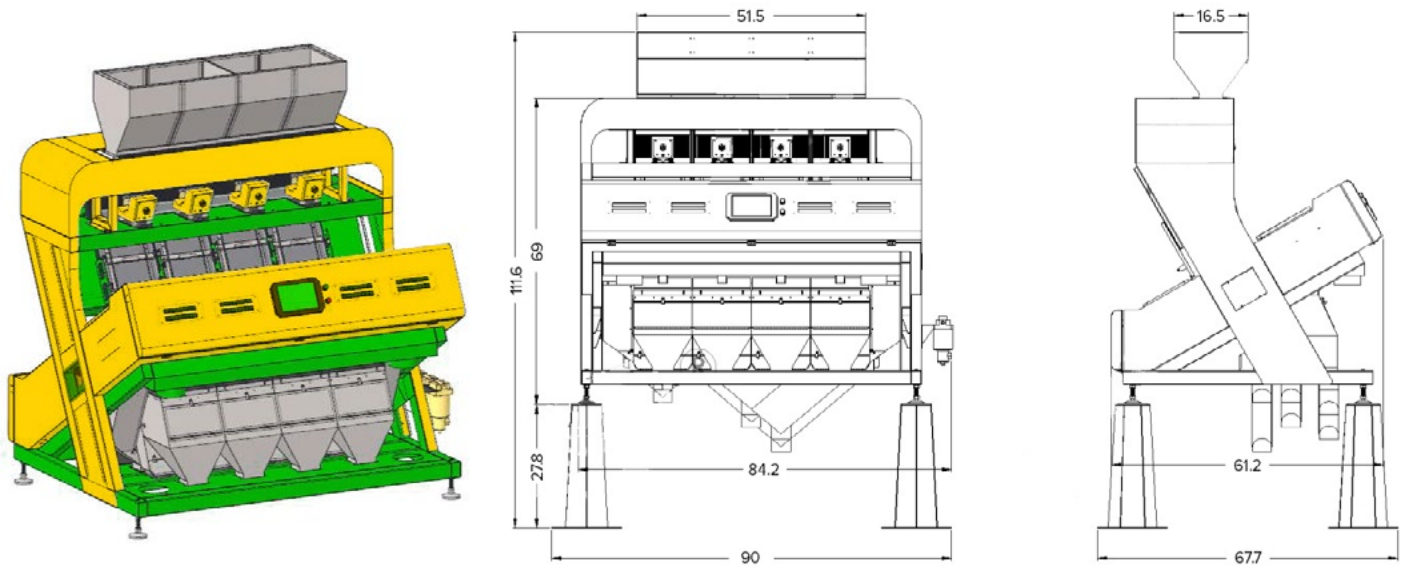
Metra 6AS-204 three-channel slide color sorter



Metra 6AS-204 Parameters of three-channel slide color sorter

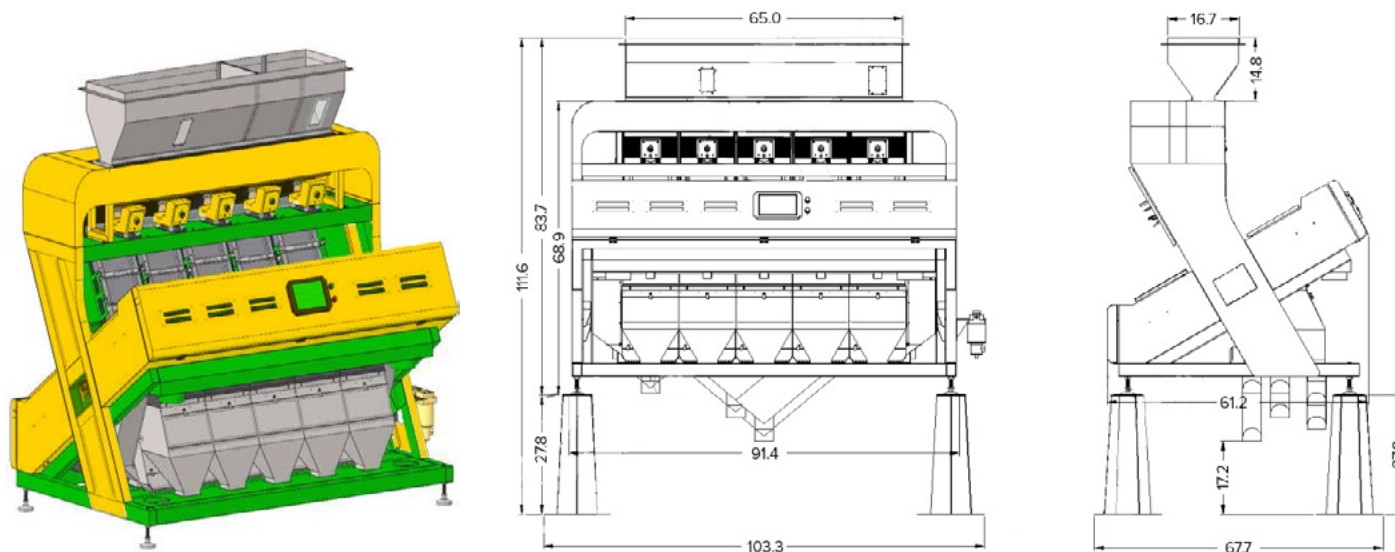
Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-204	204	120-240 bushels/hour 3-6 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
1.2-1.3	0.4-0.6	<53 CFM <1500 L/min	1059 lb 480 kg	58.1*61.9*105.9 in 1476*1572*2691 mm

Metra 6AS-272 four-channel slide color sorter



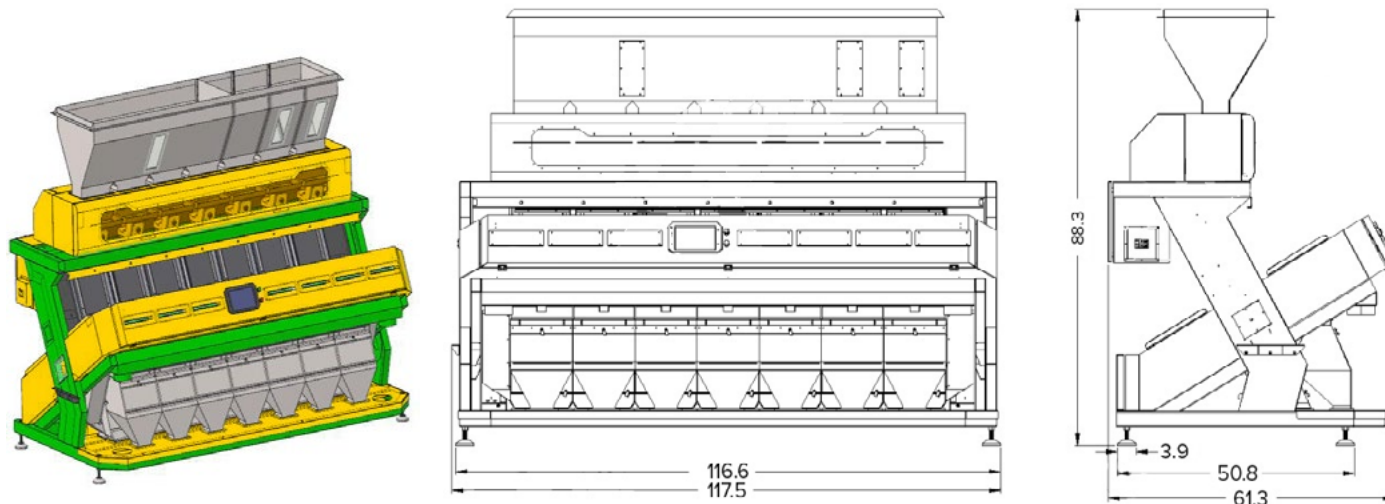
Metra 6AS-272 Parameters of four-channel slide color sorter				
Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-272	272	160-320 bushels/hour 4-6 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
4.2-4.6	0.6-0.8	<70 CFM <2000 L/min	2117 lb 960 kg	90*67.8*111.5 in 2286*1720*2834 mm

Metra 6AS-340 five-channel slide color sorter



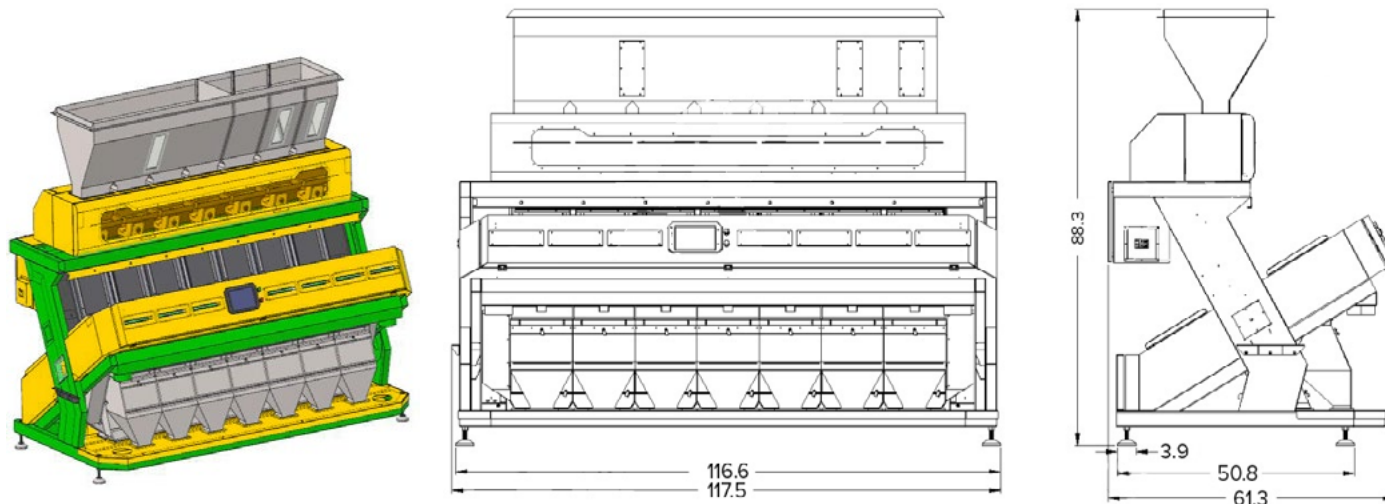
Metra 6AS-340 Parameters of five-channel slide color sorter				
Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-340	340	200-400 bushels/hour 5-10 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
4.3-5.0	0.6-0.8	<88 CFM <2500 L/min	2359 lb 1070 kg	103.3*67.7*111.5 in 2624*1720*2834 mm

Metra 6AS-476 seven-channel slide color sorter



Metra 6AS-476 Parameters of seven-channel slide color sorter				
Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-476	476	280-560 bushels/hour 7-14 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
6.6-6.8	0.6-0.8	<125 CFM <3500 L/min	3197 lb 1450 kg	117.5*61.3*88.3 in 2984*1556*2242 mm

Metra 6AS-680 seven-channel slide color sorter



Metra 6AS-680 Parameters of seven-channel slide color sorter

Machine system	Agricultural machinery number	Number of execution units (pcs)	Production (depending on the material)	Power supply voltage (V/Hz)
Fifth generation system	6AS-680	680	400-800 bushels/hour 10-20 tons/hour	220/50
Power (Kw)	Air source pressure (Mpa)	Air consumption	Machine weight	Dimensions
9.5-10.0	0.6-0.8	<175 CFM <5000 L/min	4850 lb 2200 kg	172.8*62.6*115.3 in 4390*1590*2928 mm

PART II: INSTRUCTIONS FOR PRODUCT INSTALLATION

Chapter 1 Safety Precautions and Installation Instructions

The color sorter is a high-tech product integrating light, mechanical, electricity and air, and has strict requirements for installation, operation, use and maintenance, especially the use of air source and power source. There are warnings on this manual and on the machine. All installation, operation and maintenance personnel must read this manual carefully, install and operate it in strict accordance with the regulations.








1.1 Safety signs





The safety signs are divided into four categories: prohibition, warning, instructions and prompts, which are applicable to all contents in this manual.

All machines have clearly labeled safety signs in hazardous areas, including the following three types:

1. Red mark: used to prohibit certain actions;
2. Yellow mark: used for some hazard warnings;
3. Blue mark: used to specify mandatory behavior.

1.2 Safety signs and degree of danger

No.	Graphic mark	Content
1		Warning 1. Only qualified personnel are allowed to open, or potentially the color sorter will not work properly. 2. The precision main control circuit of the color sorter is built in the electrical box. Do not open it in order to prevent dust from entering.
2		Warning 1. For your safety, please ensure reliable grounding. 2. The power supply must be properly grounded.
3		Attention The display is the main monitoring component of the color sorter. It is fragile and easily damaged. Please wipe the screen with a soft cloth. Do not apply too much force and do not tap.
4		Hoisting operation A yellow hazard symbol attached to the feeder frame indicates that the lifting of the unit is prohibited.
5		Hot surface A yellow hazard symbol attached to the surface of an LED lamp assembly or other object that may cause overheating indicates a high temperature in the area.
6		Rotating gear Attached to the large electrical box of the machine, indicating that the machine has a rotating gear, and the operator shall pay attention to avoid injury.
7		Mind your hands Attached to the location where injury may take place, indicating that the instructions in the Manual should be strictly followed in this location.

No.	Graphic mark	Content
8		Ground wire Attached to the bottom of the machine, indicating that the shell in this place should be connected to the ground wire.
9		Air outlet A red prohibition mark on the filter assembly indicates the air pressure limit of the machine.
10		No electric drill Indicates that drilling on the rack is prohibited
11		Refer to the Manual A blue round mark attached to the discharge hopper of the machine indicates that the manual should be viewed before replacing the dusting brush or other operations that may occur in the optical color sorting area.

1.3 Installation instructions

1. Please pay attention to safety during unpacking and inspection! Avoid unnecessary damage when unpacking, check the number of parts according to the packing list, and keep them safe to avoid loss.
2. The lifting position of the whole machine is shown in Figure (2-1); please check whether the lifting ring is loose when lifting the vibrating feeding assembly. If it is loose, please tighten it immediately to prevent accidents.
3. This product should not work in any environment with low temperature, high temperature, high humidity, strong magnetic field, strong light, or dust.
4. After 8 hours of continuous operation, the product must be shut down for dust removal.
5. Grounding method: Weld with copper core screw, and the welding points must be wrapped with asphalt; the production method is as shown below.
6. To prevent static interference from the machine, the user must use the iron pipe instead of plastic pipes or other non-metallic pipes for the feed pipe and the exhaust pipe.
7. The air compressor provided by the user shall comply with the relevant national laws, regulations and standards.
- 8.

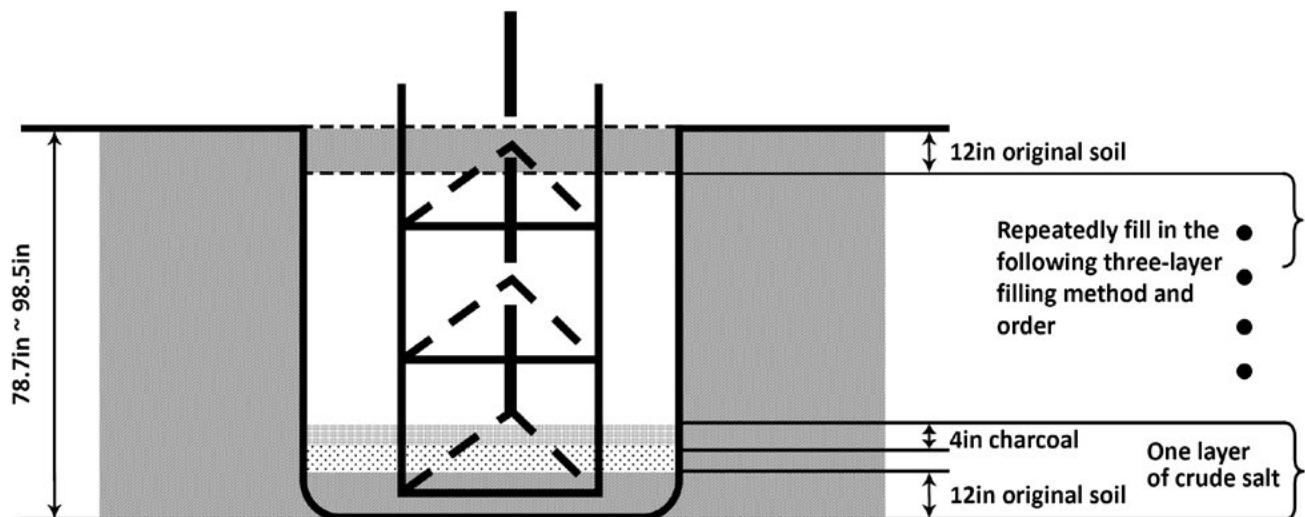


Fig. 1-1 Grounding wire production diagram

Chapter 2 System composition of color sorter

2.1 Feeding system

It consists of components such as the feed hopper and the vibrating feeder chute. The materials enter the machine from the hopper in the top and are sent to the top of the slide way through the vibration of the vibrator device. The materials accelerate down along the slide way, enter the observation area in the sorting box. The vibrator controls its vibration amplitude by an electrical box to achieve overall flow regulation. In addition to providing raw materials to the color sorter, the feeding system can also control the output of the color sorter per unit time by adjusting the flow control plate of the feed hopper and the vibration amount of the vibration hopper.

2.2 Photoelectric system

The photoelectric system is the core part of the color sorter and is mainly composed of LED lights, background plate, lens and related auxiliary devices. LED lights provide stable uniform illumination for the material measuring and background plate. The lens captures the signal of the material being tested in the material detection area and feeds the signal back to the control panel. The background plate provides a reference signal for the electronic control system, which compares the color difference with the good material and eliminates defect material.

2.3 Sorting system

The sorting system consists of the discharge hopper, high-speed electromagnetic jet valve, air compressor (optional) and air filter purifier. The discharge hopper consists of front and rear cavities, receives the finished products and defective products of the color sorting materials according to the custom color sorting mode. There are dust suction ports on both sides, and the diameter of the discharge port is $\varnothing 4.7$ in. Since the kinetic energy of the material after being sprayed through the high-speed injection valve is large, the hopper space should be large enough, and shock absorbing measures should be taken at the contact portion between the material and the discharge hopper in order to prevent the materials entering the observation area. The high-speed electromagnetic jet valve ejects compressed air when receiving the execution command to blow out the defect in the selected material. The Pneumatic high-speed injection valve has proved by trial and error that the interval and the number of valves are one of the key factors affecting the accuracy of the color sorter.

2.4 Dust removal system

The dust removal system consists of a rodless cylinder and a cleaning device. As the material will produce dust and other impurities that may adhere to the glass during the color sorting process, once too much dust and impurities are attached to the window glass, the photoelectric system that sorts and detects the material through the window glass is prone to chain problems such as false detection. It may affect the color sorting accuracy and color sorting ratio, and even cause the jet valve to work frequently, reducing the life of the jet valve and control system, and even burning the valve control system. The cleaning device is installed on the rodless cylinder, and the master control system pushes the cylinder piston

to regularly clean the dust on the glass by controlling the cylinder valve switch at preset time.

Note: The user must install a vacuuming device (the suction fan is provided by the user) to reduce dust in the enclosed cavity, or else it will directly affect the life of the machine and the color sorting effect.

2.5 Human-machine interface

A large-screen wide-angle color touch operation platform is used to preset multiple color sorting modes for customers. A friendly human-machine interface is established, achieving convenient and quick adjustment according to the specific conditions of the material.

2.6 Electrical control box

The electrical control box is fully sealed to protect against lightning, short circuit and electric leakage. It is mainly a control system composed of a microcomputer, which is the control core of the machine. The system automatically collects, amplifies and processes digital signals. The control system sends a command to drive the jet valve, ejects compressed air, blows out the rejects, completes the color sorting function and achieves the refining purpose. The electronic control part has the functions of sensitivity (color sorting accuracy) adjustment, flow adjustment, automatic cleaning timing adjustment, air pressure warning, heater control, fault self-test and jet valve inspection. The pneumatic system is equipped with a filter valve, a distribution valve and a pressure regulating valve to provide high-purity compressed air to the machine.

Chapter 3 Installation (mechanical part)

Note: The color sorter and air supply system of METRA Photoelectric are installed by the user by referring to the drawings. Our engineers can provide telephone guidance, the company's personnel are responsible for debugging, and the user hall check and accept on site.

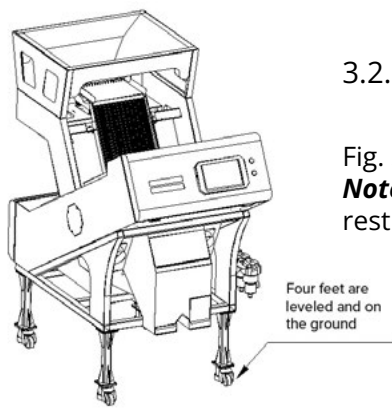
3.1 Machine installation instructions

The ground should be flat and all the feet of the machine should be on the ground. Make sure that the ground wire is properly connected. When installing stands over 20in, the connector between stands should be fixed.

Note: If the installation location is not properly selected, it may cause the machine to work abnormally or even cause injury.

3.2 Machine installation

Machine shall be installed in practice according to actual diagram and real situation. The following is general installation method of small machine and large machine, single-channel slide machine and ten-channel slide machine are examples in detail.



3.2.1 Installation of single-channel slide machine

Fig. 3-2 Installation and Platform Size of The METRA Grain Color Sorter

Note: If this installation requirement can't be met due to site restrictions, please call our company.

3.2.2 Installation of ten-channel slide machine

Note: The above is installation diagram of ten-channel slide machine. Installation method is not unique and the machine shall be installed according to actual demand of client.

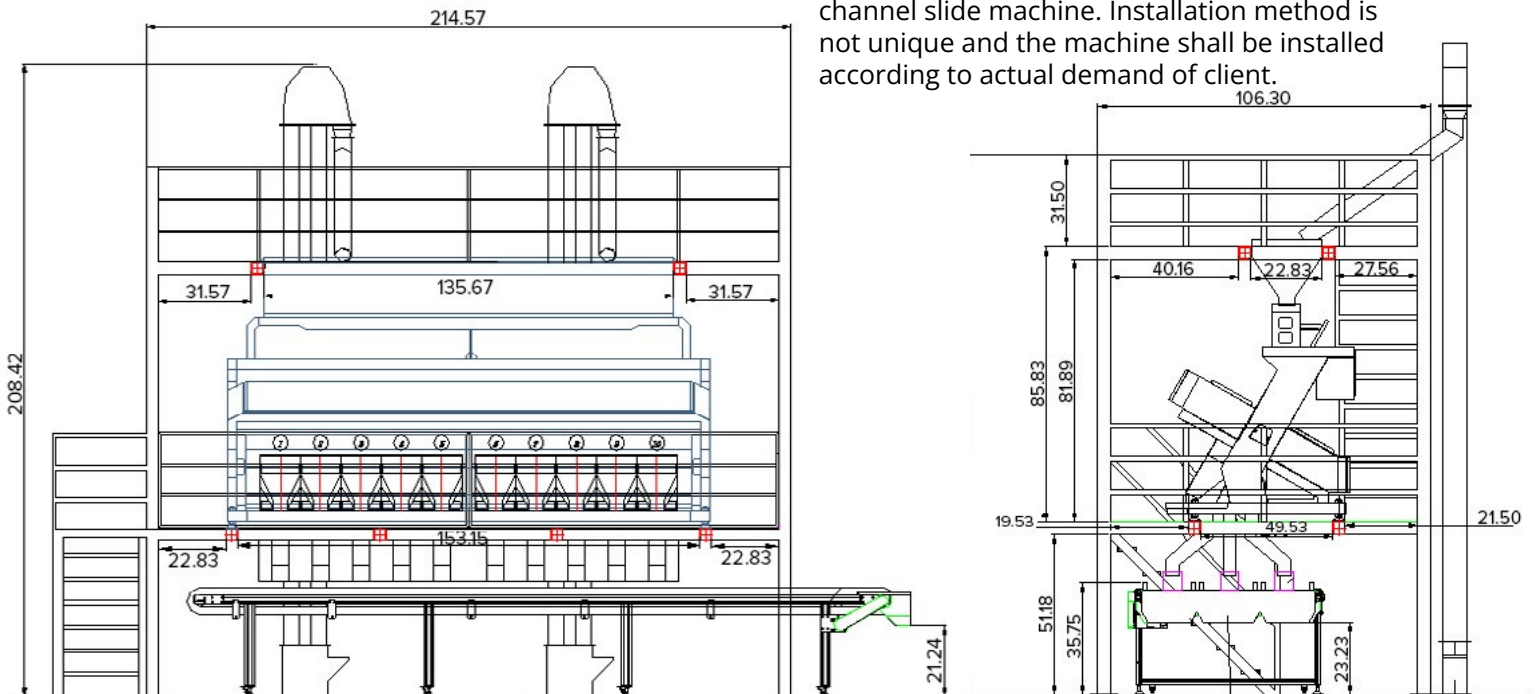


Fig. 2-3 Installation of 6AS-680 color sorter

Chapter 4 Electrical Installation Instructions

4.1 Air source installation

The user must use oil-free anhydrous air compressor and configure a water-oil filter (some users must use a multi-stage high-precision filtration system if using a screw air compressor, and periodically replace the filter element). Connect the air path components with Ø1 (Dg25mm) in galvanized pipe or higher grade pipe. It is recommended to install the air compressor in an isolated room that is closer to the machine (up to 50ft / 15m) so as to reduce noise and supply sufficient pressure.

Warning - The air storage tank is a pressure vessel. According to the Special Equipment Safety Supervision Regulations issued by the State Council, "the user shall register the pressure vessel to the local special equipment supervision and management department (Technical Supervision Bureau) and check regularly before putting it into use or within 30 days after being put into use". Please inform your company or individual to make necessary filing procedures in accordance with this regulation.

The installation and operation of the air path supply system should pay attention to the following matters:

1. Before all the pipes are connected, the debris and dust in the pipeline must be cleaned, and when connecting to the main channel interface of the color sorter, the impurities and dust in the pipeline should be properly discharged to prevent entering the pipeline of the color sorter.
2. Pipeline connected from the air compressor should be connected with high-energy hose (6.5ft) in order to avoid the impact of vibration. The pipeline connected to the color sorter also uses a high-energy hose (9.8ft);
3. The air filtration system provided on the machine is a supplement to the user's engineering air filtration system and can't be used as the only filtration method. Make sure the air supply is off before connecting and disconnecting the pipeline and the fittings;
4. The operating temperature of air compressors and filters is generally 32-104°F; however, in winter (especially in the north), the room temperature will drop below 32°F, hence they should be drained of sewage and air-dried at the end of each operation, and insulation measures should be taken to keep the room temperature above 32°F. Otherwise, it may cause the filter element and the pipe to freeze, which will not only block the flow of air, but also damage the filter element and cause high maintenance costs;
5. The place where the air compressor is placed should be well ventilated, with a clean environment, flat ground level, low air humidity and ambient temperature below 104°F; at least 20in service space should be reserved from the wall, and avoid direct sunlight and rain;
6. The length of the pipeline between the air compressor and the air storage tank should be greater than 10ft, and the air compressor and the air storage tank should be installed in different spaces;
7. The pre-stage filter equipped with the machine should be kept away from the air compressor as far as possible to ensure that the function of the filter can be fully exerted;
8. If it is found that the pressure gauge on the color sorter shows a significant drop in air pressure (more than 0.1 MPa), the filter element on the pre-stage filter should be replaced in time. Never remove the filter element, or else it will seriously affect and damage the filter element in the precision filter of the latter stage;

Diagram 2-4 to Diagram 2-6 provide connection diagram of compressed air cleaning system of multi-functional micro machine, single-channel to ten-channel machine. Refer to the connection for the equipment that needs to be added by the user. It is subject to the actual situation. Please consult the qualified personnel when installing on site.

4.2 Electric installation

4.2.1 Main isolation switch

Some countries require that the mains of the power supply must be connected through a separate isolation switch, so the customer shall provide a separate isolation switch in advance.

4.2.2 Isolation transformer, voltage regulator and ground rod

In the case of unstable power supply voltage or subject to other heavy equipment and other factors, the following precautions are recommended in order to achieve the maximum reliable use of the color sorter:

1. Install a power conditioner with built-in isolation device or an isolation transformer with a power conditioner between the power supply and the machine;
2. In order to ensure the safety of power supply and the reliability of machine operation, high-quality grounding connection is required. The grounding resistance should be as low as possible ($<1\Omega$). It is recommended that each machine must have a dedicated grounding.

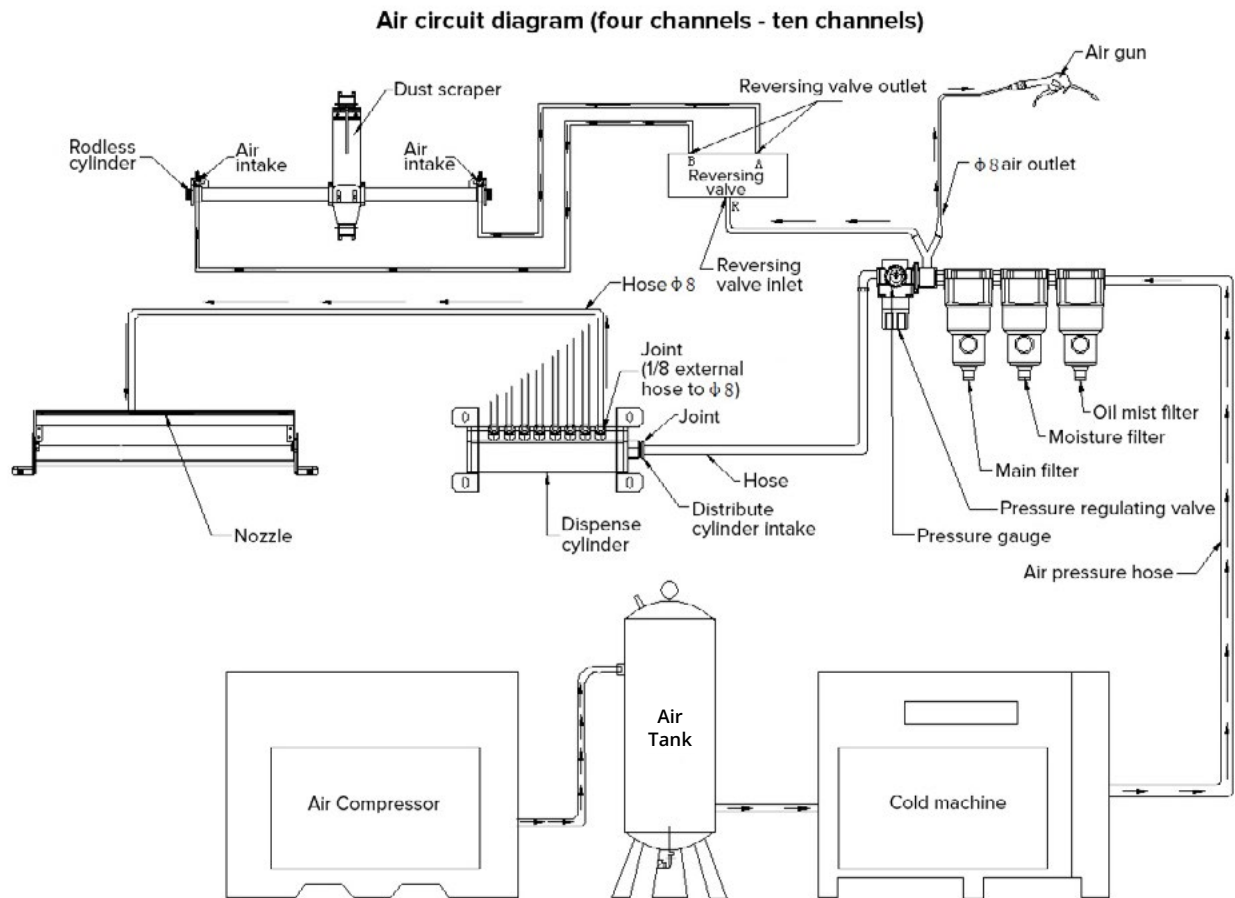


Diagram 2-4 Air Diagram (single-channel, multi-functional micro machine)

I. Isolation transformer and voltage regulator installation

Overvoltage protection is required.

II. Ground rod installation

For reliable grounding, the grounding rod must meet the following conditions:

1. There must be a high quality connection or bonding between the ground rod and the ground cable;
2. The resistance value of the grounding cable should be as low as possible;
3. The grounding of the machine frame with the surrounding metal parts, the machine itself, the power conditioner and the isolation transformer must have a high quality connection or bonding;
4. Isolation from ground currents of other equipment.

Air circuit diagram (two-channel, three-channel)

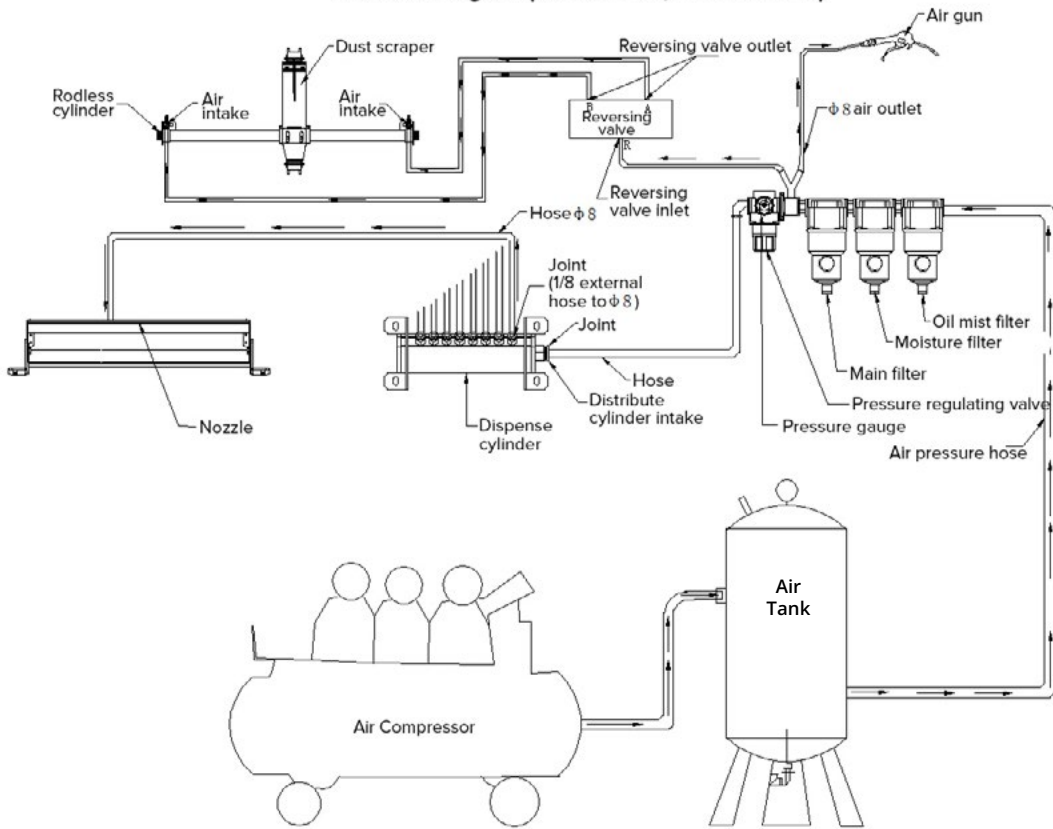


Diagram 2-5 Air diagram (double-channel, three-channel slide machine)

Air circuit diagram (single channel, multi-function microcomputer)

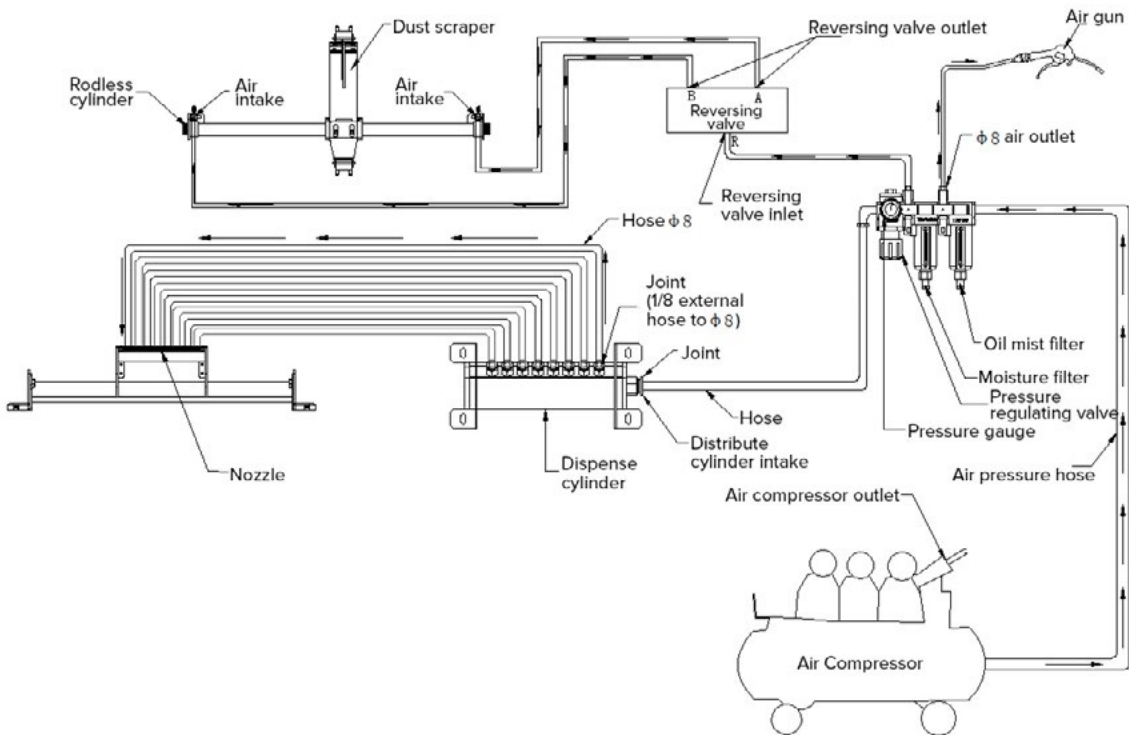


Diagram 2-6 Air diagram (four-channel to ten-channel slide machine)

In order to ensure high-quality grounding, a good grounding rod must be provided. The grounding should be kept moist as dry ground cannot provide low-resistance grounding. The ground rod will rust over time and needs to be replaced since the resistance of the grounding will increase in dry weather. After the grounding rod is installed, the grounding resistance must be checked.

All power and grounding must be done by a qualified electrician. The machine grounding input (machine power input) must be well connected to ensure thorough grounding. All machine frames must be connected to any support frame and grounded independently. The support frame must also be connected to the feeding and discharging device. Where there is no support rod, the machine must be grounded directly and independently. Any other conductors close to the machine must also be grounded. It is strongly recommended that the feed, discharge or suction lines be made of metal and must be properly grounded to avoid static electricity.

In order to improve the safety of the power supply and the reliability of machine operation, a high quality ground connection is required. The grounding resistance should be as low as possible. Theoretically, the resistance should be less than 1Ω . It is recommended that each machine must have dedicated grounding.

Here's how to implement all of these conditions:

- 1. Connection of ground rod to ground cable** The connection between the grounding rod and the grounding cable is to crimp the grounding cable into a ring and secure it to the grounding rod with nuts and bolts. The connection point should be treated with anti-corrosion sealing.
- 2. Ground cable** The cable connecting the machine to the ground rod usually requires a separately insulated copper stranded cable.
- 3. Connection to the machine frame** It is best to buckle the cable between the grounding cable and the machine frame and fasten it to the wire hole of the machine with M8 bolt and washer.
- 4. Connection to surrounding metal parts** The ground studs of the machine frame must be joined to the surrounding metal parts, preferably with nut and bolt.

4.2.3 Host power supply

The external power supply of the main unit used in this machine is single-phase AC $220V\pm 10\%$, 60HZ. It is required to be equipped with electric control cabinet facilities within 16.4ft of the mains AC power inlet.

4.2.4 Circuit board used by the host

According to the various functions that the machine is to achieve, the machine mainly has the following types of boards:

Channel board, solenoid valve drive board, vibrating cleaning board, panel light board.

The functions implemented by each board:

- 1. Channel board:** Controls the rotation of the beam splitter, receives the signal sent from the trigger board, and forwards spray valve and panel light parameters.
- 2. Solenoid valve drive board:** Controls and drives the solenoid valve.
- 3. Vibrating cleaning board:** Controls the vibration frequency of the vibrator and the cleaning brush, the valve and the feeding power switch.
- 4. Panel light board:** Displays the valve status of front and rear channel plate in real-time.

PART III. OPERATION INSTRUCTIONS

Chapter 1 Operating Notice

1.1 Operating Notice

1.1.1 Overview

Where the Warning is marked, it is an instruction. If it is not observed, it may cause accidental personal injury and unnecessary machine damage. Where the Note is marked, it is a suggestion. If it is not observed, it may damage the equipment or add unnecessary processing.

The plane interface shown in the manual is for reference only, the version number, figure and function shall be subject to actual product. Man-machine interface may be renewed or upgraded according to conditions of the company. If any operation problem, please contact after-sales service of the company.

1.1.2 Warning

1. The power supply and air supply must be cut off before disassembling all the components or maintaining the machine, except as otherwise provided in the manual;
2. Some circuits inside the machine have high voltage power, and any circuit maintenance must be completed by professional after-sales personnel;
3. Do not move any protective devices while the machine is powered. The replacement of the protective devices should be carried out before operating the machine, except as otherwise provided in the manual;
4. Only professionally trained personnel can operate or maintain the machine. Before operating the machine, you must read the relevant operating instructions and understand all common safety signs for controls, warnings and cautions.

Chapter 2 Operation Guide

2.1. Introduction

This chapter describes how to start the machine and operate the machine in a clean and tidy working environment, and how to use the "Operation Interface" and related devices. You must read this chapter carefully before using the machine. Newly updated operation interface has support mode settings and may be allocated freely. It supports image display, materials pixel positioning, intelligent simulation analysis and complete copying function of whole data, one-key machine relocation and other functions. If the machine is already installed, you can sort the material color. Please refer to the following instructions for details.

2.2. Overview

The commonly used parameters of the machine have been adjusted before leaving the factory and stored in the machine's circuitry in different modes. When you are using the machine normally, the material color sorting can be automatically performed by some simple interface operations, which does not require much manual operation.

2.3. Operating level

In order to meet the color sorting of different materials or different color sorting requirements, the required information is stored in the machine in different color sorting modes.

2.4. Display

When the machine is in color sorting mode, the "Main Screen" of the display will display the "Machine Running", "Memory Screen", "Background Waveform Screen", "Setup Selection Screen", and "Refresh" buttons. By touching these buttons on the display, you can open the corresponding interface and functions, or you can manually set some parameters.

2.5. Confirmation before the machine runs

(a) Tips This machine has been carefully and strictly debugged and tested according to the testing standards of the product before leaving the factory. Due to the vibration in the process of loading, unloading and transportation, the adjusted values may be affected. The commissioning engineer of the company will provide further debugging according to the materials selected by the user on site. Once the machine is debugged, it is strictly forbidden for other unrelated personnel to disassemble and repair it. Otherwise, it will affect the service life of the machine and the normal operation of the color sorter. If this happens, the required maintenance and other expenses will be borne by the customer.

(b) Content of confirmation

1. Check if there is any foreign matter in the feeding hopper, clean it up if yes;
2. Turn on the air compressor, and wait until the pressure displayed by the pressure gauge of the air compressor reaches 0.6MPa or above (in general, the initial pressure of the air compressor can be adjusted to 0.7MPa);
3. Remove the waste from the air compressor every time you turn on the air compressor. Especially when using in winter, if there is moisture in the pressure regulating valve, it may lead to frost, resulting in poor airflow. In this case, it can be warmed up with a heat source ($\leq 112^{\circ}\text{F}$). Avoid adjusting the pressure regulating valve frequently to avoid damage to some important spare parts in the pressure regulating valve;
4. Check if the air path leaks. If there is air leakage, insert the joint at the leaking part; however, it is normal if there is slight airflow in the jet valve and the pipe;
5. Check if the waste liquid of the filter can automatically discharge;
6. Check the glass surface of the tray channel and sorting chamber on the vibrator, and the upper end of the channel for debris or dust. If yes, remove with an electrostatic air gun or a lint-free cloth. Do not use hard objects such as metal to remove it, or else it will seriously scratch the surface of the channel and affect the color sorting effect. When installing other components, it is strictly forbidden to splash the welding slag onto the chute to avoid damage to the chute;
7. Check if the AC power connection of the color sorter is correct.

2.6 Operation steps

2.6.1. Boot process

Step 1: Check the status of each valve, turn on the air compressor, and make sure the air tank has reached operating pressure.




Air compressor

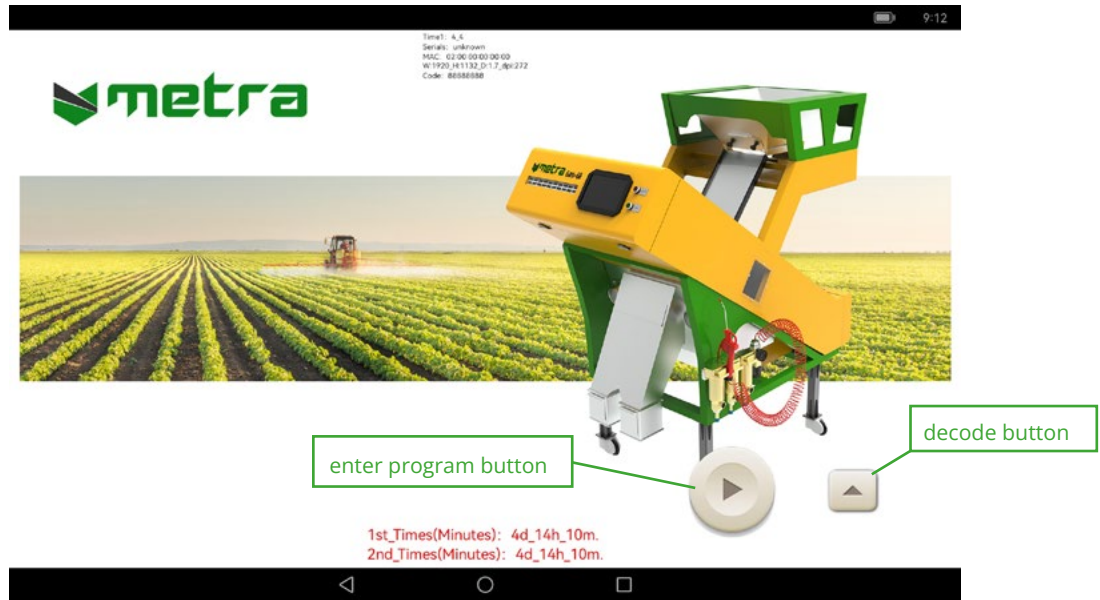



Air tank (optional)

Step 2: Connect the machine to the power supply. Be sure to connect according to the operating voltage of the machine.
Step 3: Press the START switch on the front of the machine to turn on the power of the machine.



Step 4: After the machine is powered on, turn on the tablet, check the Wi-Fi to see if it is connected to the machine router, and open the software if the connection is normal. Click the button  to enter the system.



Step 5: Click the button  to make the system automatically deliver the data (Fig. 1) and enter the main interface after the delivery is completed (Fig. 2).

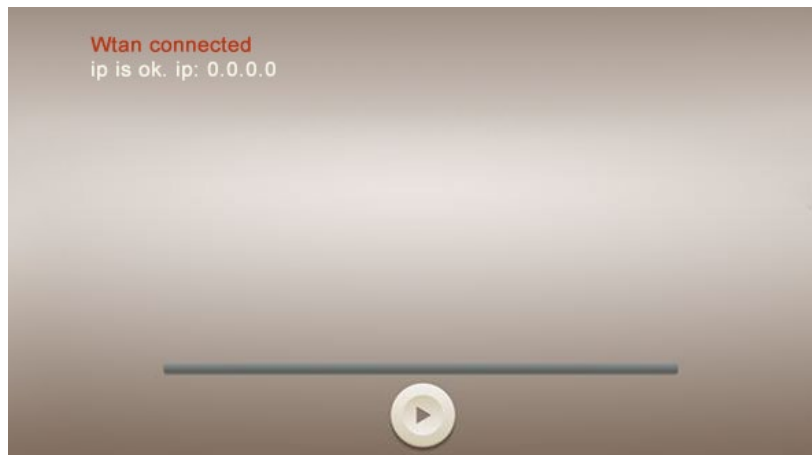


Fig. 1 Free configuration

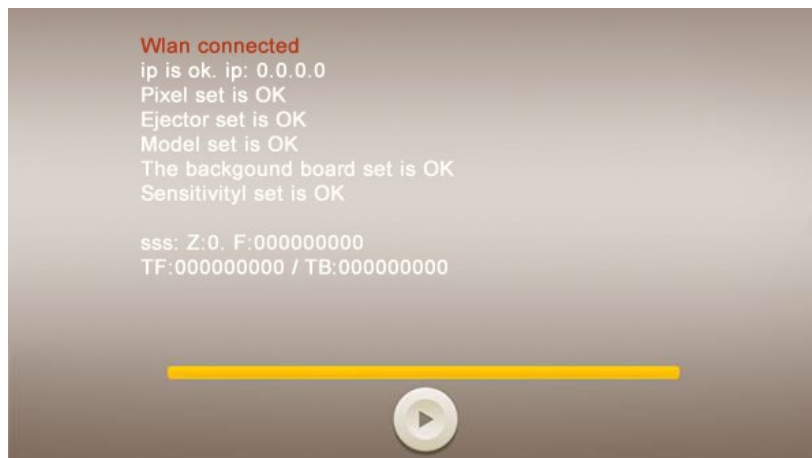


Fig. 2 Free configuration



Fig. Main interface

Note: Before starting the machine, please make sure that the door panels of all parts of the machine are closed and locked to prevent dust from affecting the color sorting effect.

Step 6: Select memory mode required, click Main Interface and return to main interface.



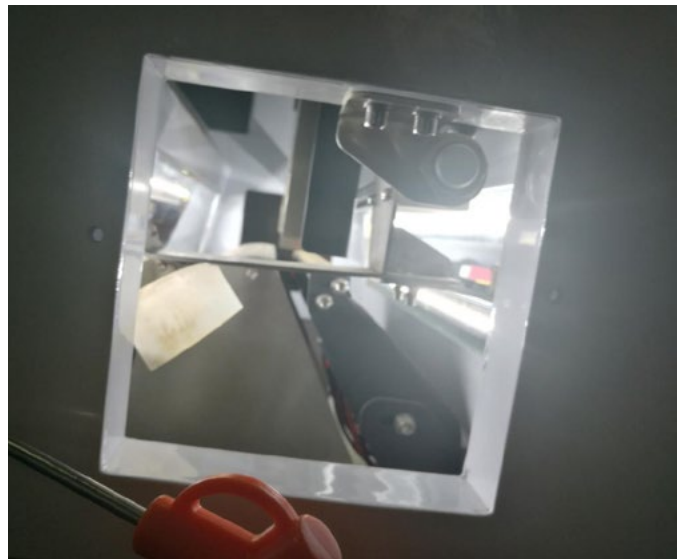
Step 7: After parameters settings completed, click [power button], machine operation will become [play button], sorting begins.

2.6.2. Shutdown process

1. Click the button [play button] to change to [power button], the machine shuts down, close the software, and then press the SHUT OFF button on the front of the machine to turn off the power.
2. Clean dust and foreign objects from the machine with an air gun.
3. Turn off the power of the air compressor and close the valve.



Dust and foreign matter of vibrator platform and vibrating bucket



Air nozzle, hopper surface and interior




Color sorter surface



Fig. 3-13 Initial interface of software

2.6.3. Authorization - Steps as follows:

1. Click key  on initial interface of software in Fig. 3-13 and enter decoding interface.
2. Send string of plaintext numbers in Fig. 3-14 Decoding interface to the company, keep the page and do not exit. The company will send a string of authorization code to you, click confirm after entering code.

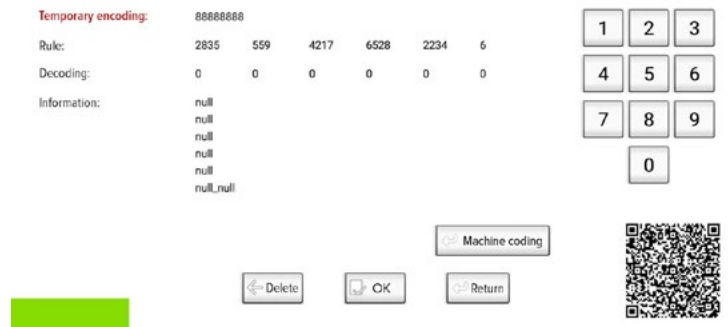


Fig. 3-14 Decoding interface

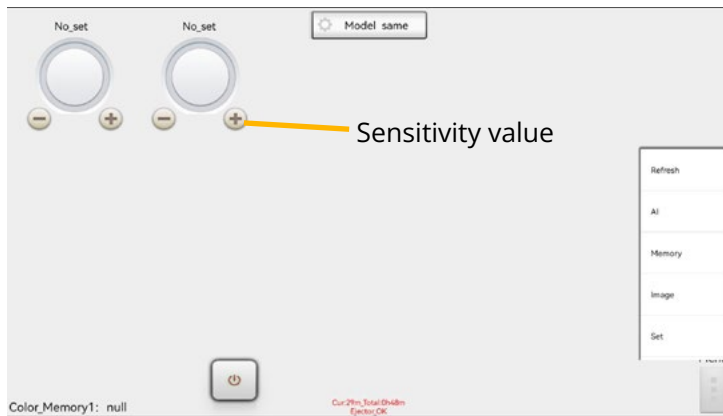




Fig. 3-15 Main interface of software

2.6.4. Main operation interface

- (1)  Machine operation. Click this key after parameters settings of machine, it becomes , this means that machine has started.
- (2) Sensitivity: Click "+" and "-" to adjust sensitivity of lens
- (3) Menu: Remote OFF, AI, Memory, Image, Settings

2.6.5. Menu->Memory

Menu->Memory, enter interface in following figure after clicking;
 Each set of memory has the following contents: memory image settings (the photo of current alternate material can be set as a memory image for easy identification), title (displayed in the lower right corner of the main interface), and description (brief description of the memory and debugging details to facilitate subsequent maintenance).

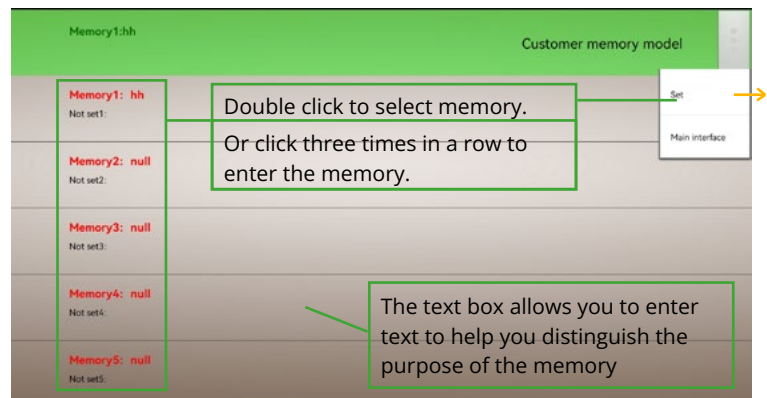


Fig. 3-16 Memory interface

Customer memory mode: In the current mode, you can perform the “Settings” operation as follows: Set the title - description - image of the customer memory group.

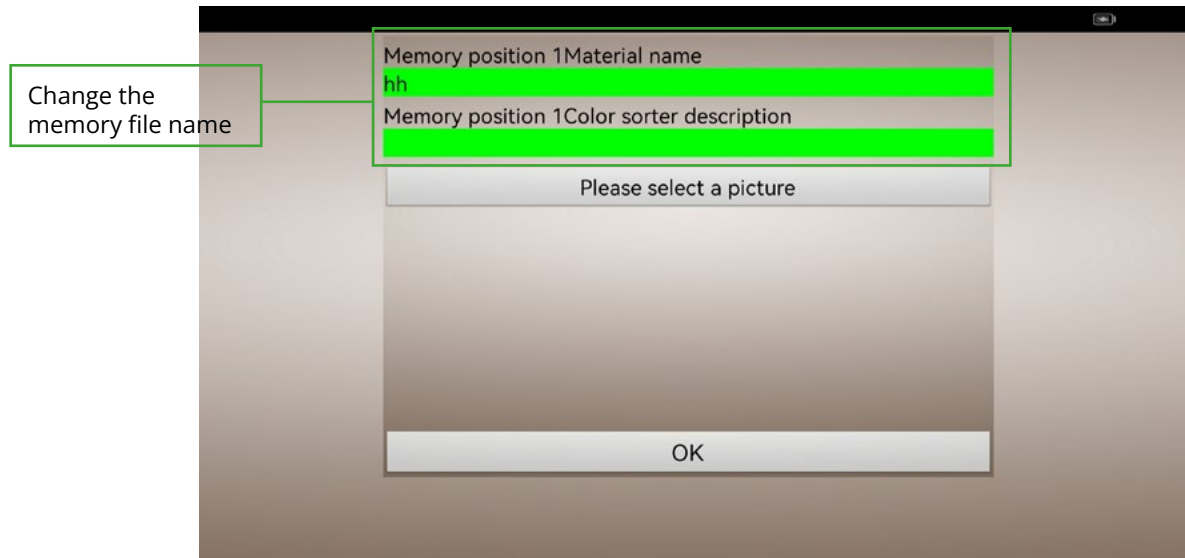


Fig. 3-16 Memory interface

2.6.6. Menu->Image

Click “Capture” on image surface, user may upload real-time materials image of the page lens on interface. “Eagle vision”-intelligent analysis function. Explanation as follows: (Guarantee the correct configuration of external environment settings and the consistence of whole lens) Image collection display and picture display share window. Click key “Refresh” to shift to picture display function, gesture supports image enlarging on left side, collect pixels, double click to enlarge quadruple, double click again to enlarge eight times, double click for three times and initial image shows.

System may show and save 6-frame image captured normally and image with judgment result. This may be shown on 6-frame picture location in upper right corner.

If normal feeding picture is required to be saved, user shall click key “Normal” ->“Capture” and select the image location which is required to save picture, observe P: 1X-N: 2X. If number changes, it will be saved in real time. Click key “Capture”, image of current lens is displayed in upper right corner in real time, image shows P:1X-N:2X. P:1X indicates frame number of refreshed image; N:2X indicates real-time data of accepting image of current frame, numbers are refreshed and displayed cyclically.

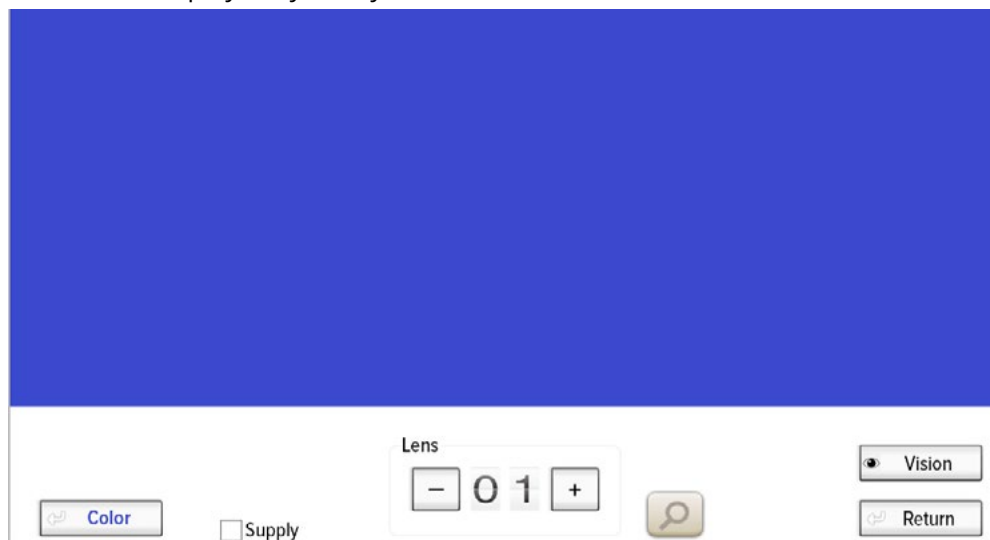


Fig. 3-18 Image interface

Click "Save" to save picture to "MYAPP" photo album in pad. Only save operation of save location 1 is supported currently.

Operation steps:

1. "Trigger + Refresh"---machine AI intelligent trigger + refresh-image. If the key is clicked, after corresponding lens receives command, it means current lens of machine is prepared well, if materials fall, current lens may capture in real time and the captured image may not be updated. Click key "Capture" to upload automatic trigger image signal of color sorter to pad. (Numbers of N:2X may change in real time, this means image data is uploading), select save location of image to save the triggered image currently, image may be saved on 6 save location.

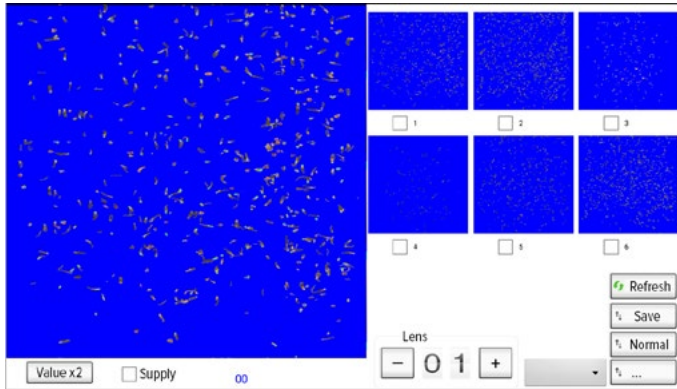


Fig. 3-19 Eagle Vision interface

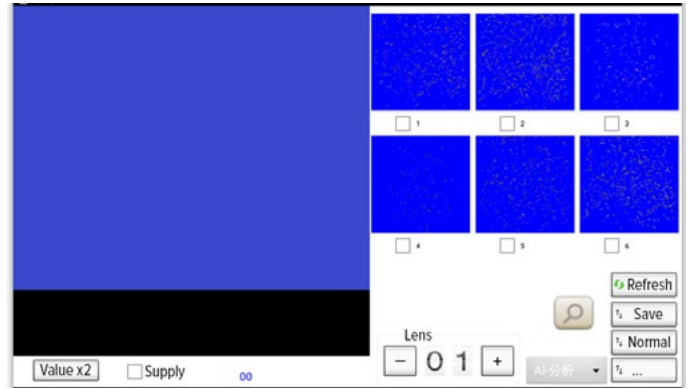


Fig. 3-20 Trigger refreshing

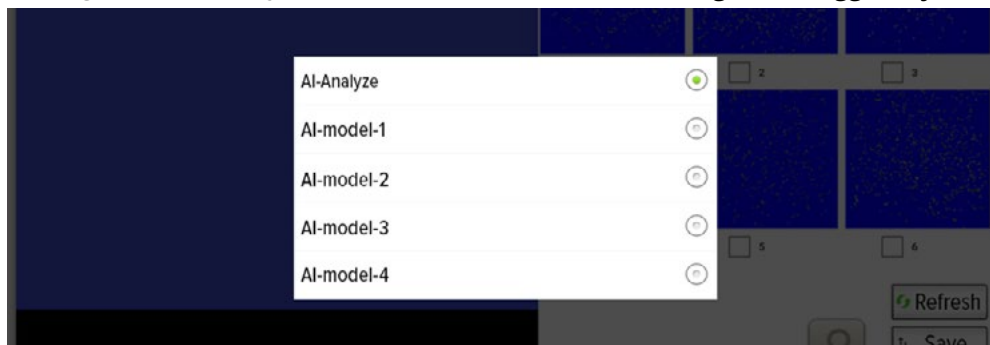



Fig. 3-21 Select AI mode and enter AI analysis interface

After steps mentioned above, select specific memory location for AI analysis and skip to AI intelligent analysis interface.

2.6.7 Menu->AI

Operation steps of AI analysis interface: Check one pattern from 6 patterns collected (Fig. 3-22)→Click  and enter AI advanced interface algorithm selection (Fig. 3-23)→Define good materials and bad materials (Fig. 3-24)→Click AI analysis and get simulation result (Fig. 3-25)→Save parameters of simulation sample (Fig. 3-26)→AI precision adjustment of main interface Click key "AI" and enter AI analysis advanced settings interface:

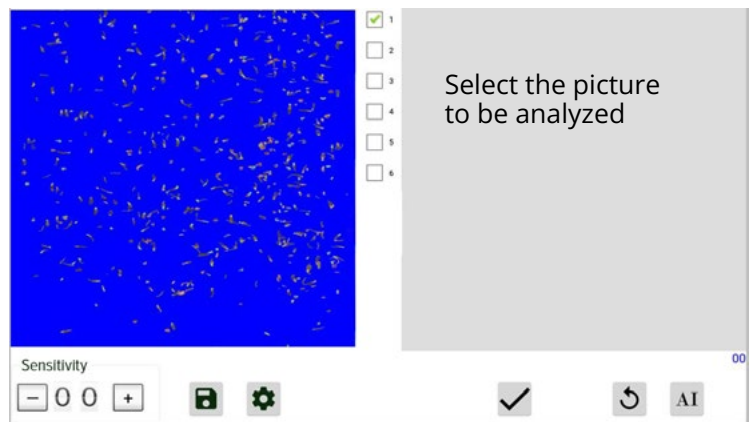


Fig. 3-22 AI analysis of single photo

Algorithm selection:

Define good materials and bad materials: Click left picture and take the materials to be defined, check if the positioning of "+" in right picture is accurate or (Fig 3-24, if materials are too small to Select the picture to be analyzed 44 / 61 be defined, user may use gesture of two fingers to click the left side to enlarge and position (Fig. 3-25, click ✓ for good materials and click ✗ for bad materials. The materials selected will be colored, if user selects the wrong sample, click withdraw and select again. Sample collection of good and bad materials is more comprehensive, simulation result is better.



Fig. 3-23 AI analysis advanced settings interface

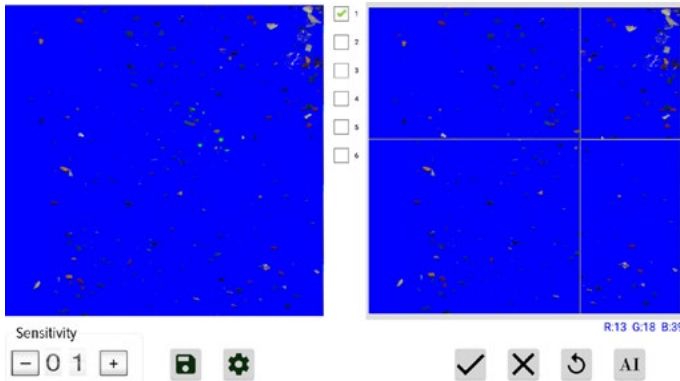


Fig. 3-24 Define good materials and bad materials

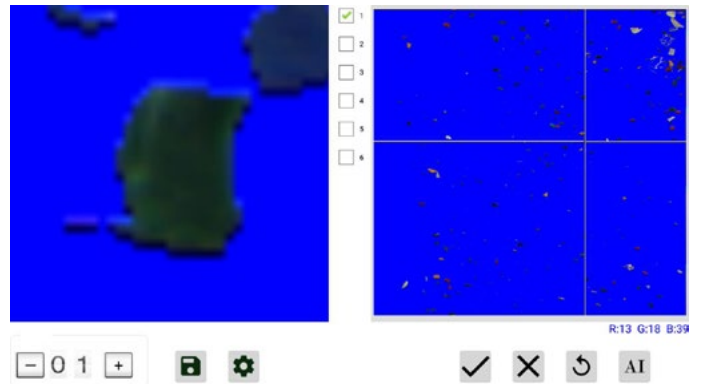


Fig 3-25 Simulation result

Simulation result interface: Click AI after collecting good and bad materials, the colored materials shown in simulation result on right side are the removed materials. Add or subtract number of sensitivity on left side to add or subtract precision, right side shows simulation result.

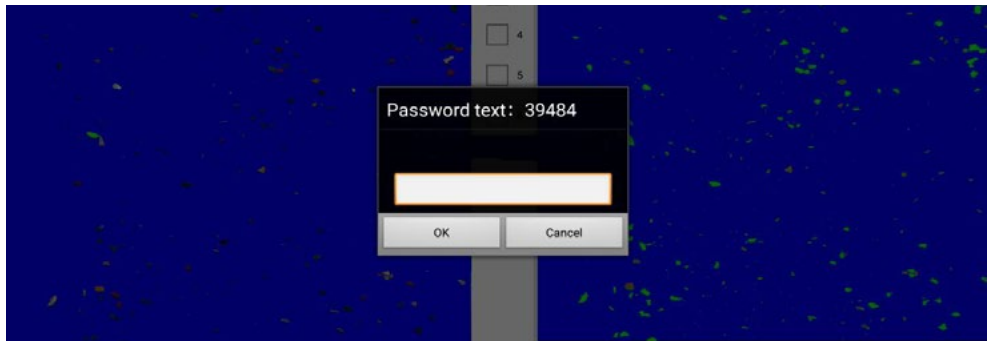


Fig. 3-26 Save parameters of simulation sample

2.6.8 Menu->Settings->Client settings

Flow settings-Capture waveform-Single sensitivity-Valve test-Version test. Interface shift supports left and right slide and shift operation with gesture. Interface is as following figure.

Flow settings page

Demand may be satisfied with flow settings of 60% normally. Add or subtract vibration frequency properly according to size, weight, dirt percentage of materials. Value is larger, vibration amplitude of vibrator is larger Subtract frequency Add frequency 46 / 61and feeding is faster. Whereas value is smaller, vibration amplitude is smaller and feeding is lower.

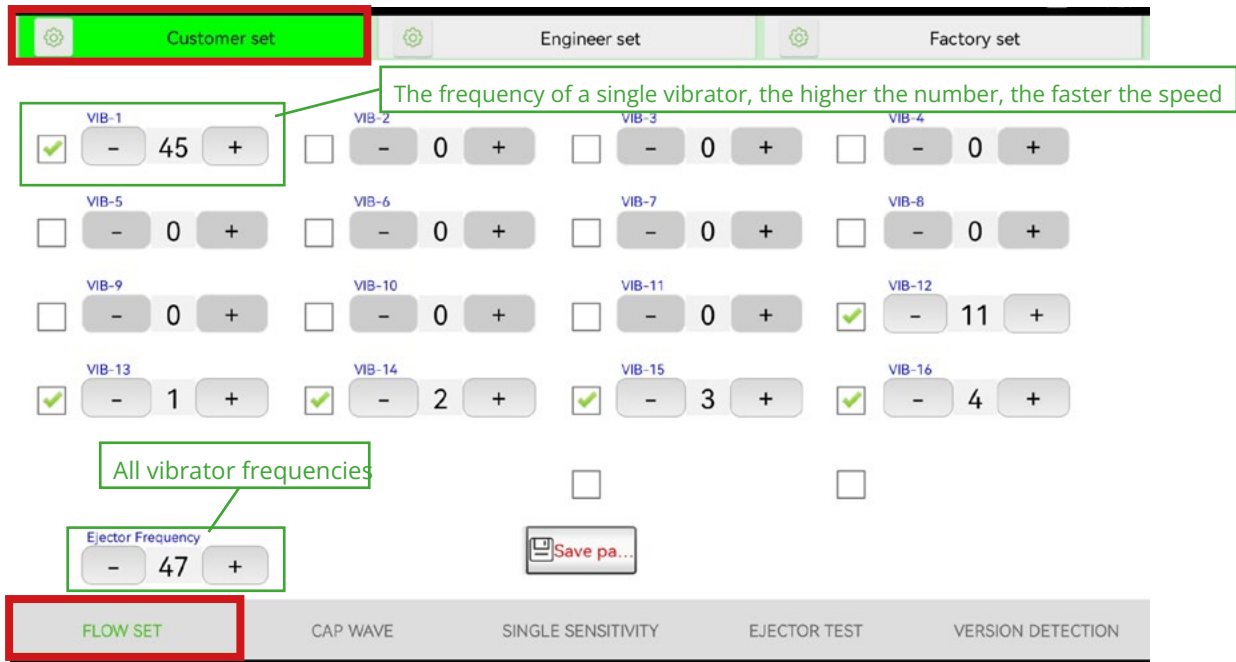


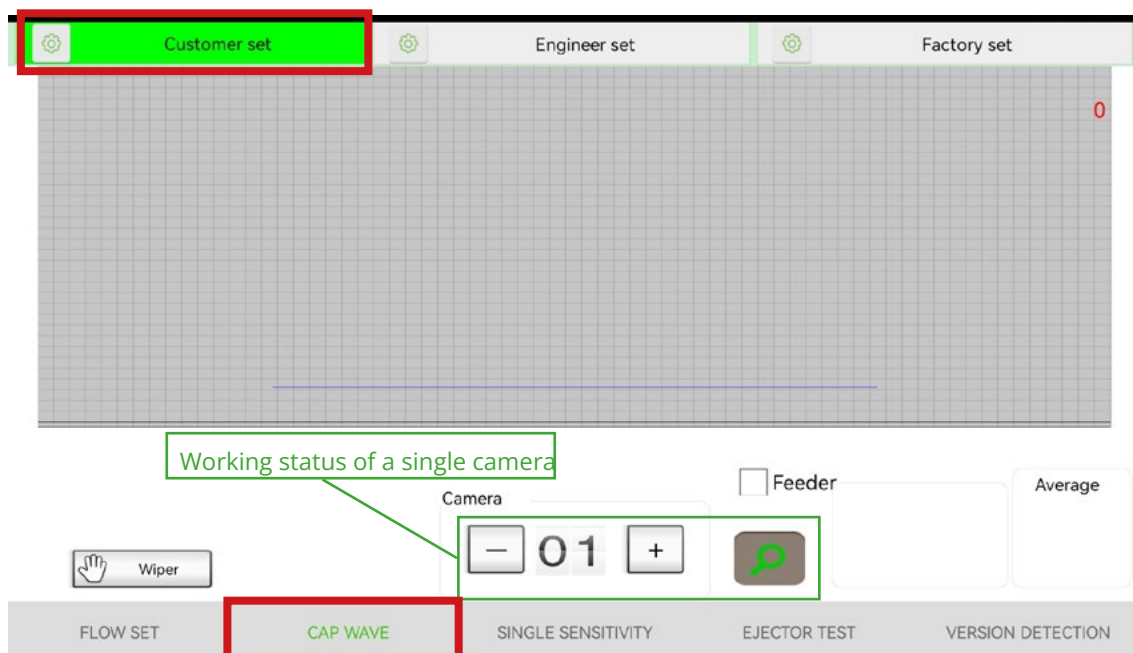


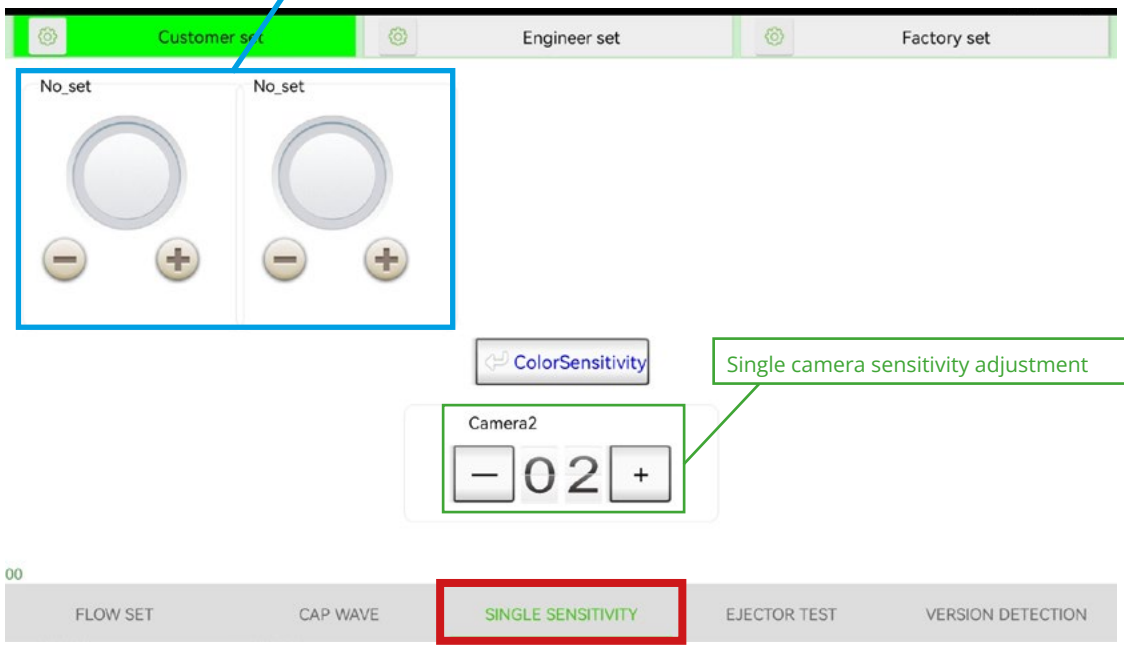
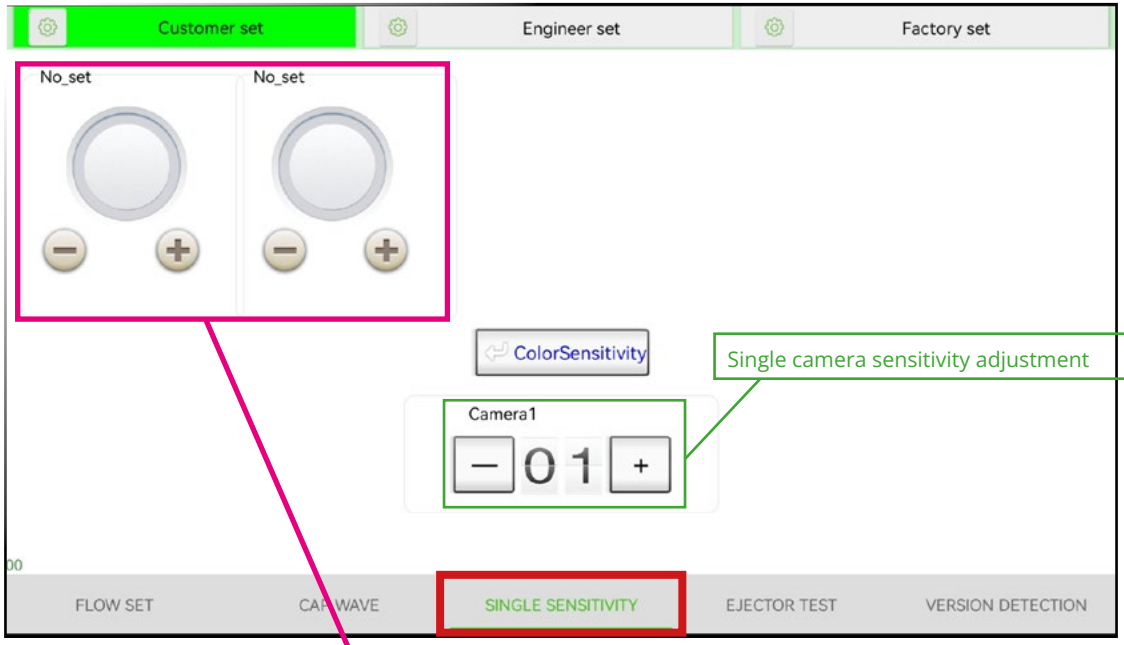
Fig. 3-27 Flow settings

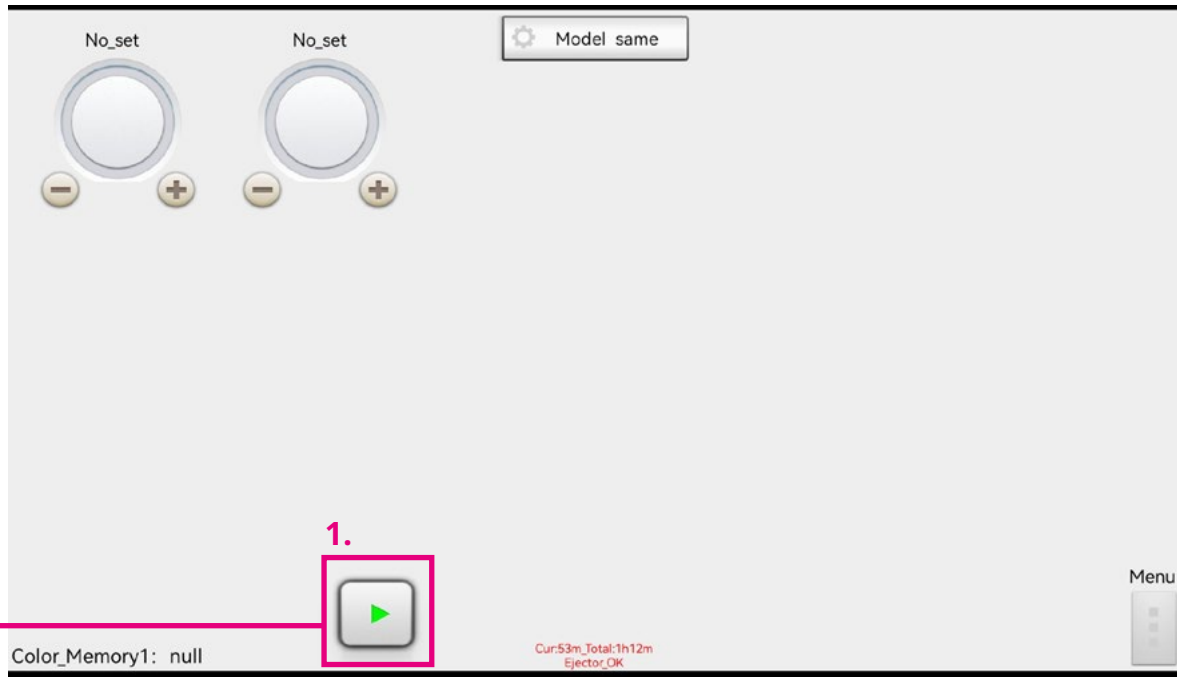
Waveform capture page

In the picture, the buttons — / + can be used to switch lens; when you click  and turns it into , you can view the waveform of each lens.



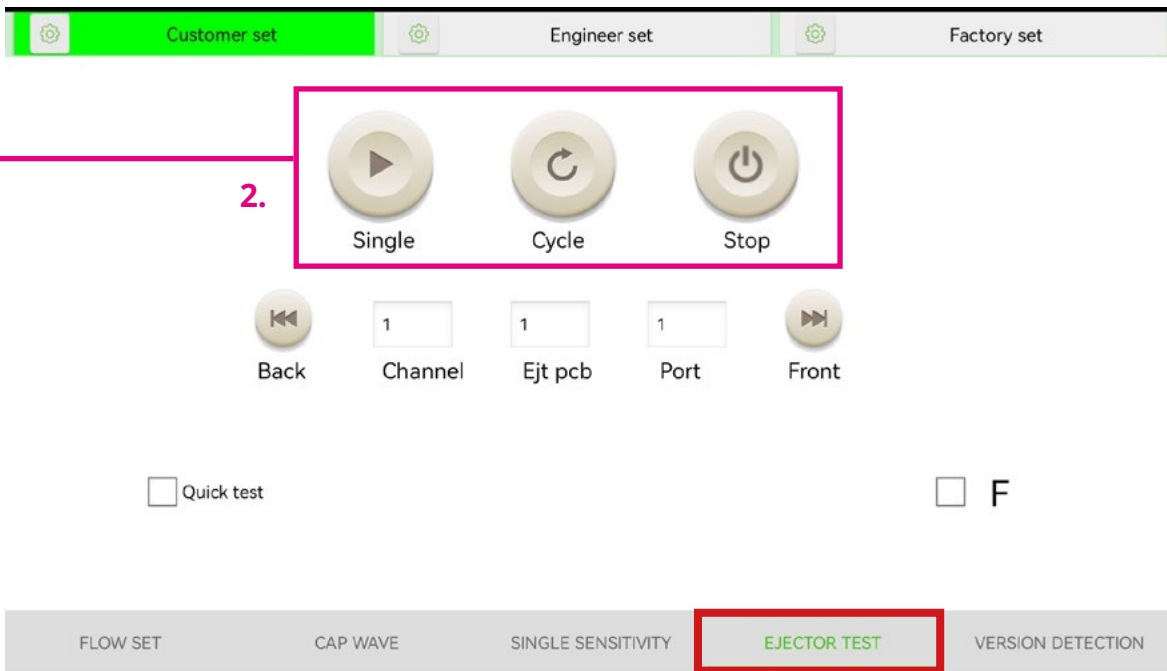
Single sensitivity page










Increase or reduce the sensitivity of a single lens by clocking \oplus/\ominus . The sensitivity setting on the main screen is to increase/reduce all lenses, while this option is for single lens. The flashing frequency of the lamp is adjusted through the signal light on the panel. As each lens has different mounting position, the tightness of the lock will cause slight deviation between lenses.

Air valve detection

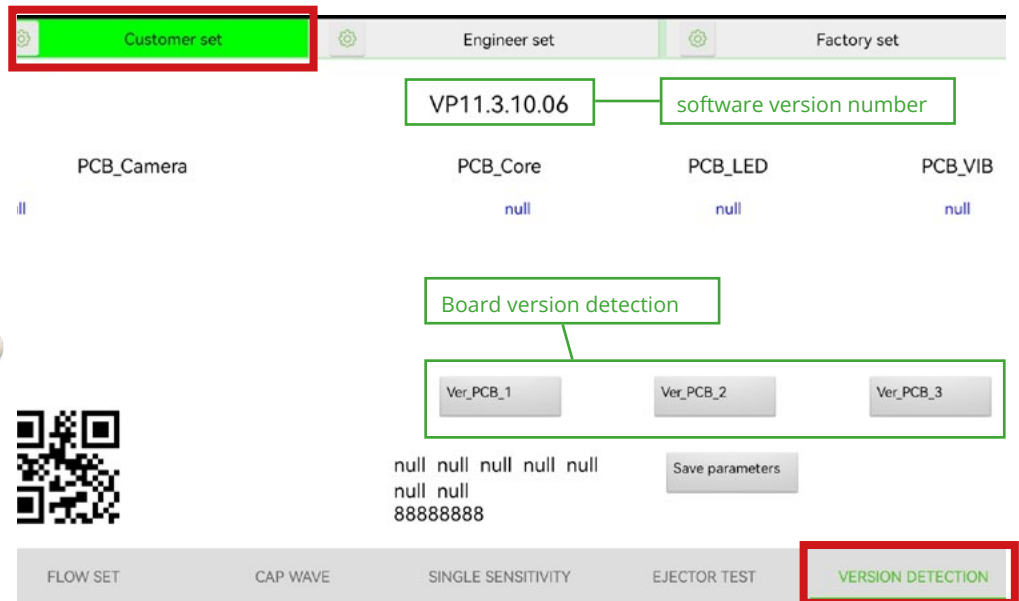


Version detection

Through this screen, you can test the quality of each valve. There are two modes. The first is automatic cycle test.

Click  to start the automatic cycle test, and click  to stop. The second is single valve test. Click   to select the valve to be tested, and then click the button  to perform a single test.

The data in the version detection can be used to verify the version.



2.6.9 Menu->Settings->Engineering settings (use with caution)

Note: This part shall be set by engineer or used under instruction of engineer.

Valve settings



Delay: The time required for the material to pass from the lens detection point to the nozzle position, adjusted according to the actual situation.

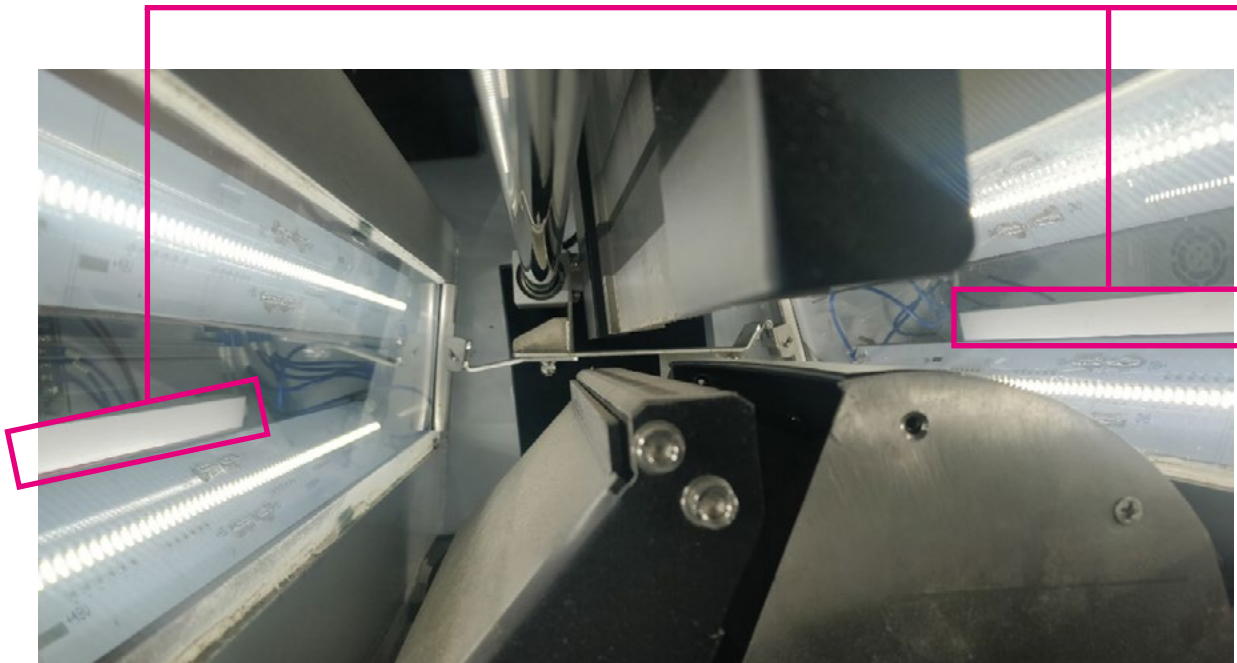
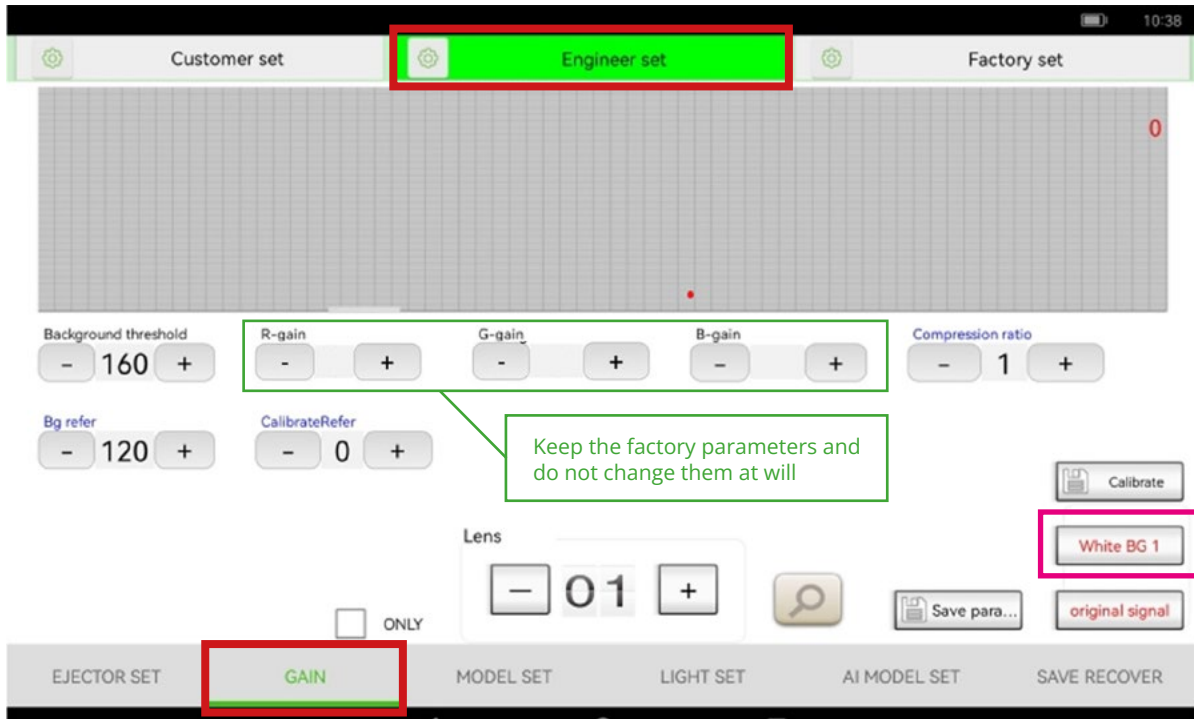
Open valve: The air pressure when opening the valve, adjust according to the actual situation.

Maintain: The period of the valve opening time, adjusted according to the actual situation.

Cleaning time: in seconds, usually set to 10 seconds.

Cleaning interval: in minutes, adjusted according to actual conditions.

Gain page



WHITE BACKGROUND LIGHT



BLUE BACKGROUND LIGHT

Mode settings

Note: Set sorting mode, defective pixels and pattern selection.

How the camera works

Customer set **Engineer set** Factory set

Model same Same Separ... F = B F1=F2

Sensitivity same Same Separ... F1=B1 F1=F2

Save par...

Model set

Model same

Mode setting for sorting colors

Pixels of material bad area

mode1	RG-R ↑_5	Scan lines 1	- 20 +	Percent 1	- 20 +	Bad 1	- 80 +
mode2	GB-R ↑_11	Scan lines 2	- 20 +	Percent 2	- 20 +	Bad 2	- 80 +
mode3	Mode_Off_0	Scan lines 3	- 20 +	Percent 3	- 20 +	Bad 3	- 1 +
mode4	Mode_Off_0					Bad 4	- 1 +

Model name

No_set

No_set

No_set

No_set

EJECTOR SET GAIN **MODEL SET** LIGHT SET AI MODEL SET SAVE RECOVER

Different from the above three modes, generally do not use

The number of rows and columns scanned by the camera, it is recommended to maintain the factory settings

Customer set **Engineer set** Factory set

Model same Same Separ... F = B F1=F2

Sensitivity same Same Separ... F1=B1 F1=F2

Save par...

Model set

Model same

mode1	RG-R ↑_5	Scan lines 1	- 20 +	Percent 1	- 20 +	Bad 1	- 80 +
mode2	GB-R ↑_11	Scan lines 2	- 20 +	Percent 2	- 20 +	Bad 2	- 80 +
mode3	Mode_Off_0	Scan lines 3	- 20 +	Percent 3	- 20 +	Bad 3	- 1 +
mode4	Mode_Off_0					Bad 4	- 1 +

Model name

No_set

No_set

No_set

No_set

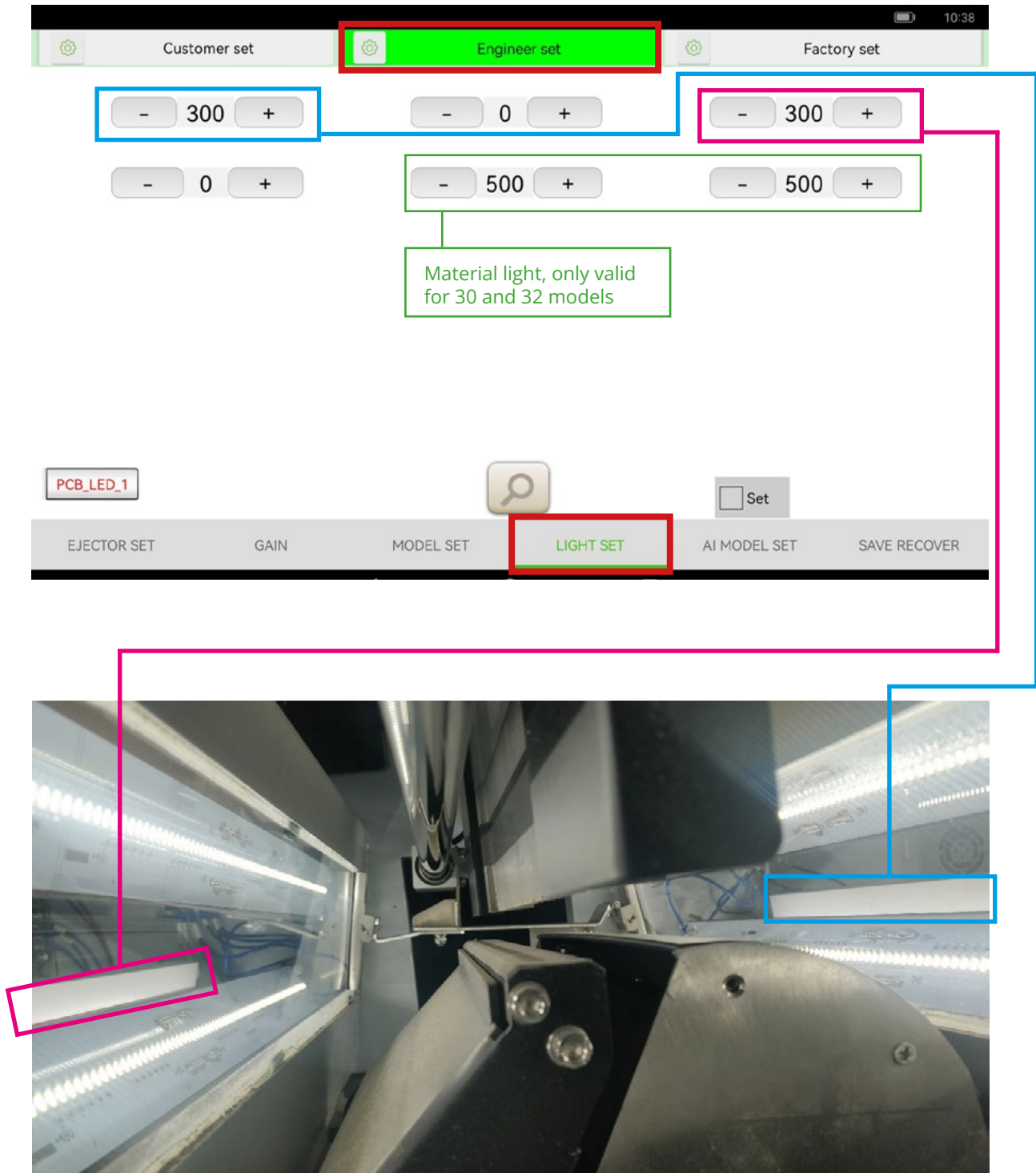
EJECTOR SET GAIN **MODEL SET** LIGHT SET AI MODEL SET SAVE RECOVER

Color_Memory1: null

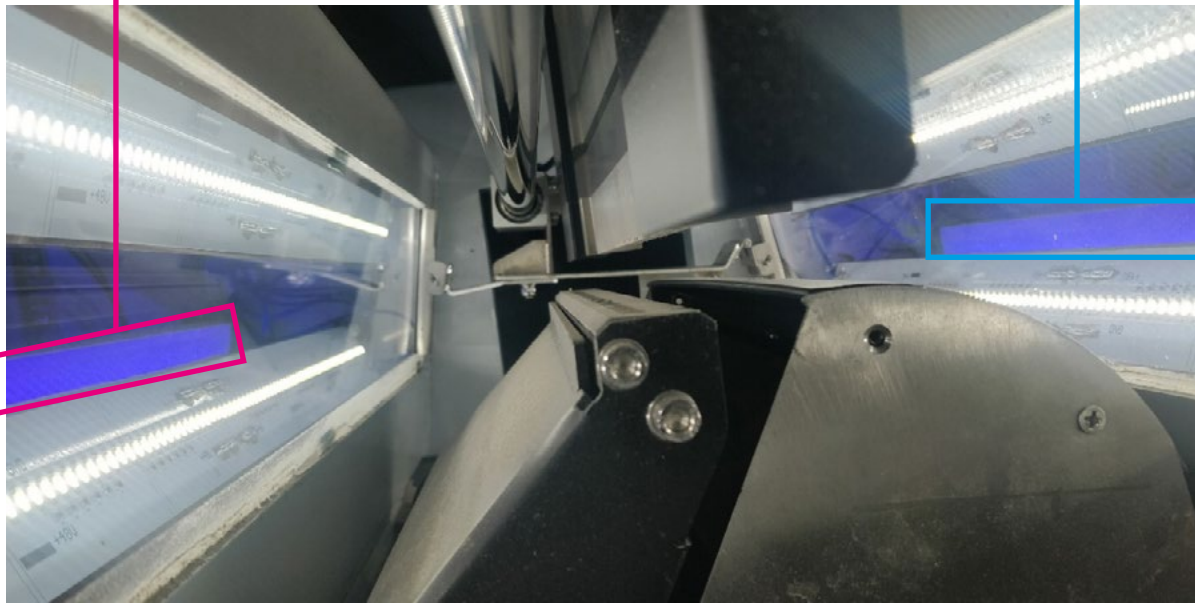
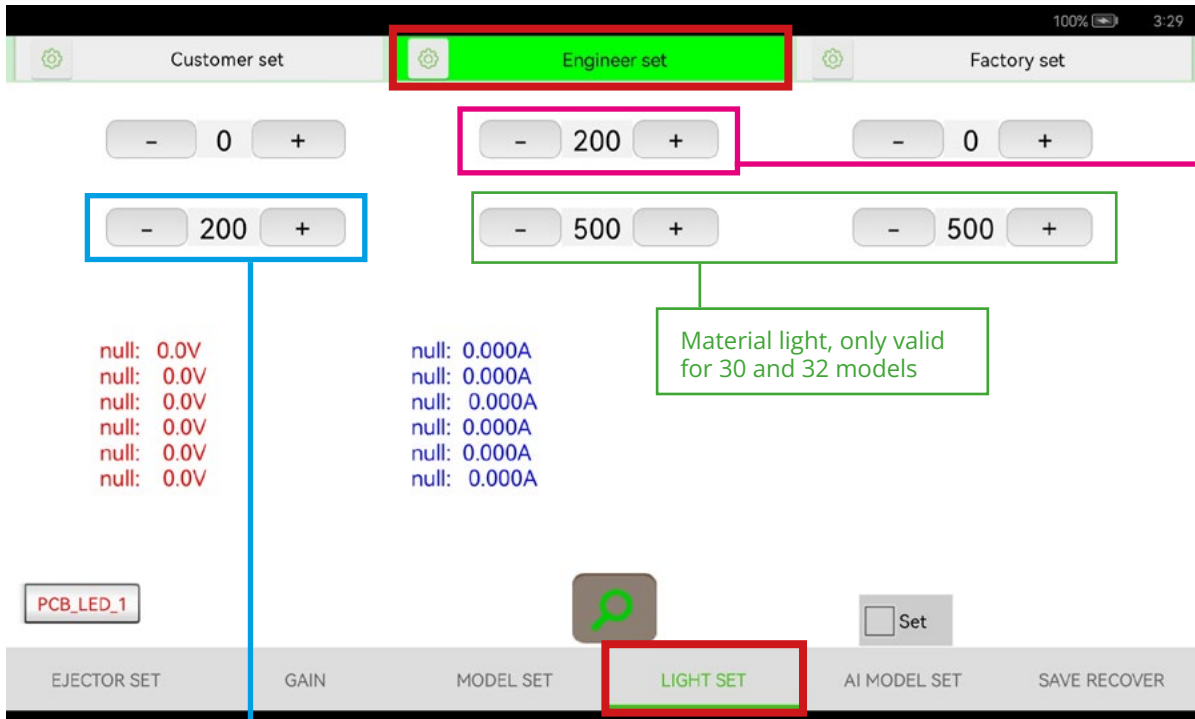
Cur:1m Total:0h20m Ejector OK

Light settings page (ver 2.0)

Note: Lightness of background light and material light may be adjusted according to materials to change color of captured materials by lens, so that captured materials have larger display color difference on operation screen.



WHITE BACKGROUND LIGHT



BLUE BACKGROUND LIGHT

Light settings page (ver 1.0)

Note: Lightness of background light and material light may be adjusted according to materials to change color of captured materials by lens, so that captured materials have larger display color difference on operation screen.

The screenshot shows the 'Light settings' page with three tabs: 'Customer setting', 'Engineer settings' (highlighted in green), and 'Factory setting'. Each tab contains three sliders for LED 1, LED 2, and LED 3, with minus and plus buttons. The values are: Customer (LED 1: 205, LED 2: 0, LED 3: 0), Engineer (LED 1: 197, LED 2: 466, LED 3: 459), and Factory (LED 1: 197, LED 2: 466, LED 3: 459). Below the sliders are fields for Voltage and Current, each with six columns labeled LED_1 through LED_6, all set to 0000. At the bottom, there are 'Capture' and 'Set up' buttons, and a navigation bar with 'EJECTOR SET', 'GAIN', 'MODEL SET', 'LIGHT SET' (highlighted), 'AI MODEL SET', and 'BACKUP'.

AI mode setting

AI mode setting page: Parameters such as AI related mode configuration can be set.

The screenshot shows the 'AI mode setting' page with three tabs: 'Customer set', 'Engineer set' (highlighted in green), and 'Factory set'. It features two sections: 'Model same' and 'Sensitivity same', each with 'Same' (checked), 'Separ...', 'F=B', and 'F1=F2' options. A 'Save' button is present. Below is a 'Model name' field with a green highlight. To the left are four 'Sense' buttons (Sense1-Sense4) with red 'X' icons. To the right are four 'Bad' buttons with minus, 0, and plus icons. A green callout box points to the 'Bad' section with the text 'see other documents'. At the bottom, there is a 'Main interface' button and a navigation bar with 'EJECTOR SET', 'GAIN', 'MODEL SET', 'LIGHT SET', 'AI MODEL SET' (highlighted), and 'SAVE RECOVER'.







Same setting mode: This option must be checked, or else the mode setting will have error.

“Same” - All lenses of the machine have the same mode.

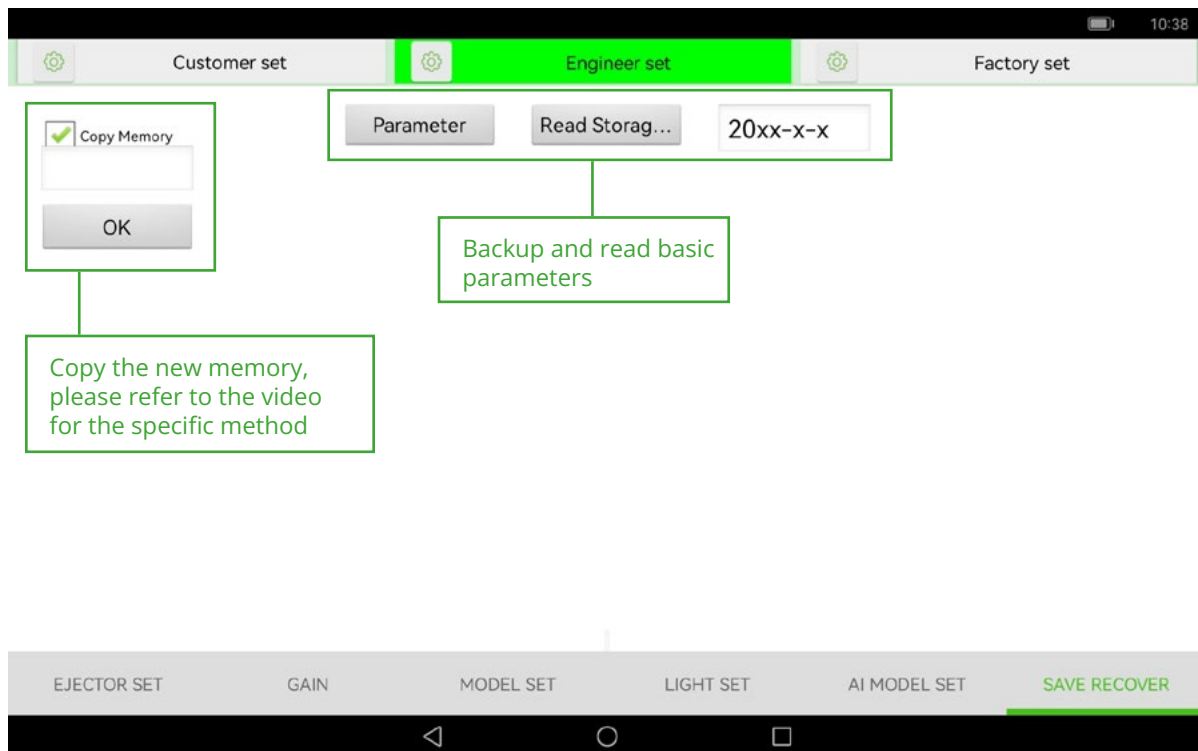
“Separate” - The lens mode of the machine is divided into: primary front lens mode, primary back lens mode, secondary front lens mode, and secondary back lens mode.

«F1=B1» - Indicates that the primary front lens mode is the same as the primary back lens mode, that is, the primary sorting mode is the same and the secondary sorting mode is the same, which can realize separate control of primary and secondary mode.

«F1=F2»- Indicates that the primary front lens mode is the same as the secondary front lens mode, that is, the front and back lenses of the machine are separately controlled, the front lenses have the same mode, and the back lenses have the same mode.

- **Same sensitivity:** The meaning of each sub-item is the same as the above setting mode. This option must be checked, or else the adjustment will be limited by the sensitivity in the main interface.
- **Mode setting:** Set the mode of each grouping module; no major adjustment is needed.
- **Reverse:** If checked, the sensitivity adjustment of the main interface will be reversed, that is, the greater the sensitivity, the smaller the effect.
- **Number of defective points:** Adjust the defective points under each lens module.
- **Mode description:** Briefly set the description for each precision.
- **Note:** Only one of the spot display and shape selection can be selected, or else the main interface will overlap. Be sure to press the «Save» button after adjusting the interface, or else the parameters can't be stored and the commands can't be executed.
- **Mode selection:** Different color sorting modes are selected for different materials: Red up - red down  , green up - green down  , blue up - and blue down.  
- **Number of defective pixels:** Set the size of the spotted area in the material.

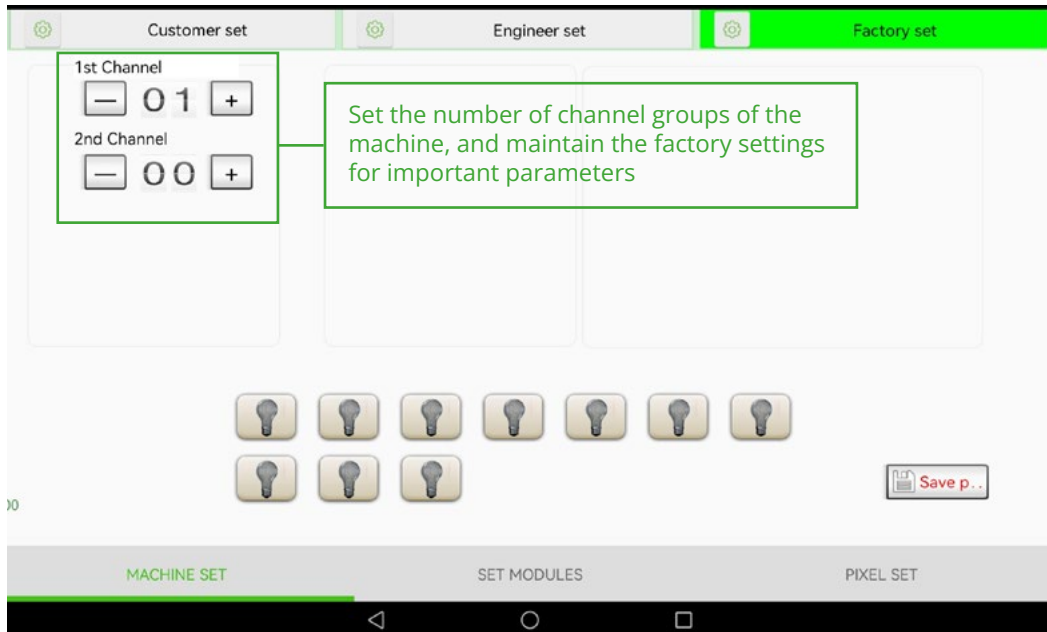
Backup restore settings



2.6.10 Menu->Settings->Factory settings (use with caution)

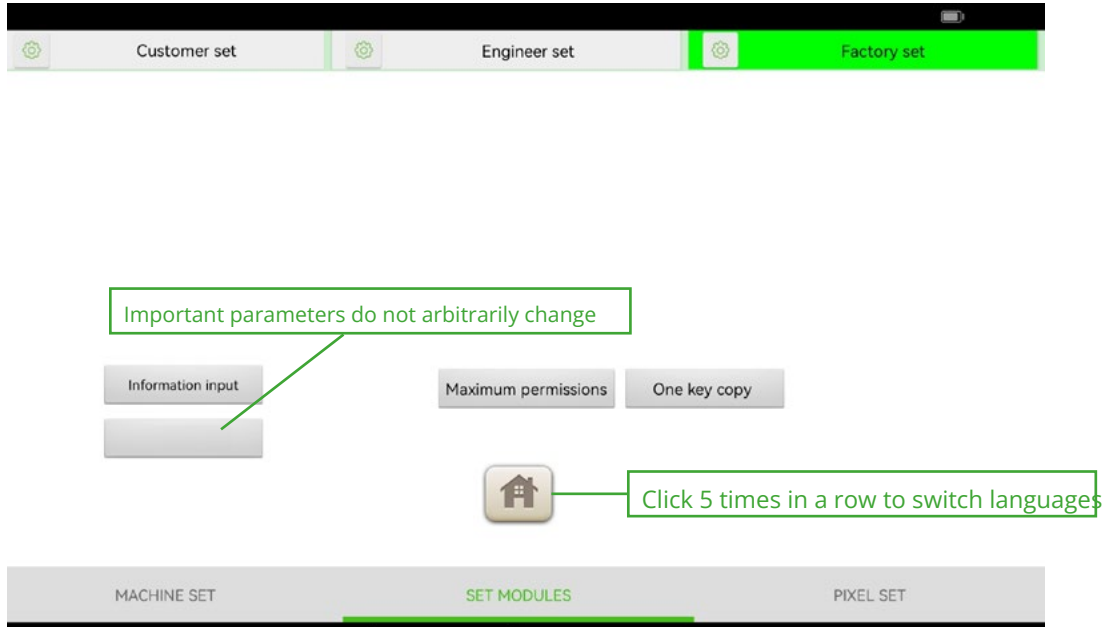
Machine settings (this is set before delivery, please do not modify settings)

Note: Set number of first channels and second channels



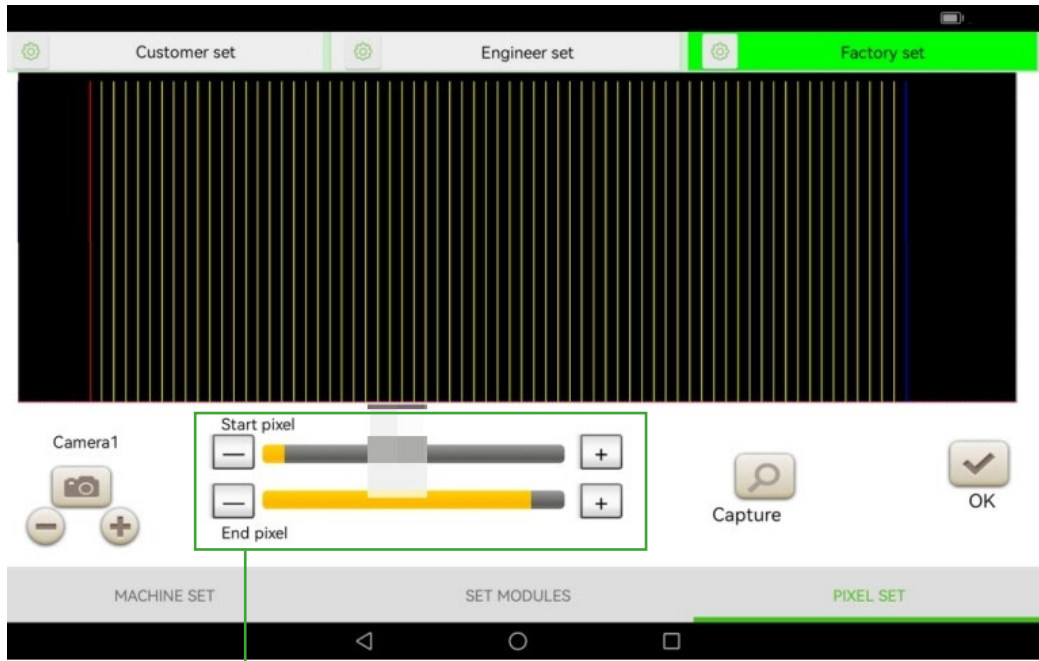
Settings module (language may be changed, please do not change other settings)

Note: Machine information, client information may be entered on this interface; display language of interface may be set.



Pixel classification (this has been set before delivery, please do not change)

Note: Pixels are classified according to materials and model type.



Important parameters, maintain the factory settings, do not arbitrarily change

Mode setting comparison table

White light				Blue light			
Model	Mode arrow direction		Process Result	Model	Mode arrow direction		Process Result
Color	▲	↑-1	No	Color	▲	↑-1	Mainly deal with green and light colors
	▼	↓-2	No		▼	↓-2	All colors will be processed
Sat	▲	↑-3	Process all colors except white	Sat	▲	↑-3	Blow all variegated colors except black and white
	▼	↓-4	Only handle white and black		▼	↓-4	Blow black and white
R-G	▲	↑-5	Mainly blow red, pink, purple	R-G	▲	↑-5	Mainly deal with red, including purple and pink
	▼	↓-6	No		▼	↓-6	Blow black, yellow, gray, green
	▲	↑-7	Mainly blow red, pink, purple		▲	↑-7	Mainly deal with red, including purple and pink
	▼	↓-8	No		▼	↓-8	Blow black, yellow, gray
	▲	↑-9	No		▲	↑-9	No
	▼	↓-10	No		▼	↓-10	No
G-B	▲	↑-11	Mainly blow yellow	G-B	▲	↑-11	Mainly blow yellow
	▼	↓-12	No		▼	↓-12	Mainly white
	▲	↑-13	Mainly blow yellow		▲	↑-13	Mainly blow yellow and green
	▼	↓-14	No		▼	↓-14	Mainly white
	▲	↑-15	No		▲	↑-15	No
	▼	↓-16	No		▼	↓-16	No
R-B	▲	↑-17	Don't blow white, blow all other colors	R-B	▲	↑-17	Mainly blow yellow
	▼	↓-18	Mainly blow transparent blue		▼	↓-18	Mainly white
	▲	↑-19	Don't blow white, blow all other colors		▲	↑-19	Mainly blowing yellow and white
	▼	↓-20	Mainly blow transparent blue		▼	↓-20	Mainly blow green
	▲	↑-21	No		▲	↑-21	No
	▼	↓-22	No		▼	↓-22	No
Value	▲	↑-23	No	Value	▲	↑-23	Process all light colors and white (except red)
	▼	↓-24	Do not process white and red, process all other colors		▼	↓-24	Process all colors (except red and white)
	▲	↑-25	No		▲	↑-25	Process all light colors and white (except green)
	▼	↓-26	Don't deal with white and green, deal with all other colors		▼	↓-26	Process all colors (except green and white)
	▲	↑-27	No		▲	↑-27	Process all light colors and white
	▼	↓-28	Don't deal with white and blue, deal with all other colors		▼	↓-28	Process all colors (except blue and white)

PART IV. AFTER-SALES SERVICE

Chapter 1 Maintenance and Replacement of Consumables

Important: Keep the machine clean and hygienic, and keep the space around the machine ventilated to extend the life of the machine. Please perform the maintenance in strict accordance with the following requirements.

1.1 Maintenance

Every shift:

- Use an air gun to clean the channel and sorting chamber before maintenance starts, start preheating, and the system tests the jet valve; Note - When cleaning the sorting chamber with an air gun, never blow the air gun in the direction of the nozzle to prevent sediment from being blown into the air tube and causing blockage.
- Check the working state of the color sorter (including work and alarm indications) and the action of the jet valve during operation;
- Check if the air compressor, air pressure and sound are normal; the air compressor should be drained at least 3 times per shift (increase appropriately in summer);
- After 10 minutes of shutdown, first close the color sorter software according to the requirements, then turn off the power switch and the air compressor switch, and then discharge the water of the air compressor;
- Clean the sediment on the nozzle plate, the deflector, the passage and the sorting chamber with an air gun;
- Clean the vibrator, the inside of the unit, the hopper, and the dust brush with an air gun.

Every month:

- Check the filter element; clean the filter element every quarter and replace every year (regular cleanup or replacement can extend the life of the nozzle and directly affect the machine performance).
- Check the cleanliness of the dust brush, and replace if it is worn.

Every half year:

- Fill the air compressor oil once

1.2 Dust cleaning

Keeping the machine clean is very important to maintain environmental hygiene and machine productivity. When the machine becomes dirty, the color sorting efficiency will gradually decrease. When dust adheres to the lens glass, it directly affects the color sorting effect, and the machine is prone to malfunction in a dusty state. When you are cleaning the machine, you can check and discover potential problems.

Important matters -

1. Do not use wool thread or a corrosive agent on any part of the machine to prevent contamination of the material to be color-sorted;
2. Take special care not to damage the vibrator, channel, sorting chamber or special surface of the touch screen.

Clean the sorting chamber glass

1. Wipe the inside and outside of the sorting chamber with a soft cloth dampened with alcohol.
2. It is also possible to place a clean soft cloth dampened with alcohol between the dust brush and the glass, and then run the cleaning procedure to obtain a better cleaning effect.

Clean channel

1. When installing the color sorter, do not remove the protective wood board in order to avoid damage to the channel due to solder slag and paint.
2. Wipe the channel with a clean soft cloth.
3. Do not use sharp objects to wipe and touch the channel in order to avoid scratching the channel.

Clean the guide rail of the cleaning cylinder

1. Wipe the cylinder guide rails with a clean soft cloth.
2. Clean the dust on both sides of the cylinder block with an air gun after each shift.

Clean the background plate

1. Open the sorting box and carefully wipe the background plate with a soft cloth dampened with alcohol.

Replace the dust brush

1. Pull up the limit plate on both sides of the dust brush, pinch the adjustment frame and rotate it away from the glass to remove the dust brush downward.

Replace the air filter element

1. Unscrew the four screws on the upper side of the filter.
2. Open the top cover of the filter, and take out the filter element for cleaning or replacement. Please pay attention to the installation direction of the filter element when cleaning or replacing.

Chapter 2 Common faults and solutions

Thank you for using Metra Products. This machine features fault self-test and fault alarm prompts, and it may suddenly stop if the fault significantly exceeds the load borne by the color sorter. If the machine fails, please follow the method described in the table below. If it can't be excluded, please inform the after-sales service department of the company immediately. The general faults can be eliminated by the users.

Common faults and their processing solutions are as follows:

Failure	Reason	Solution
Solenoid valve leaks	Foreign matter in the valve	Backflush, valve repeated test
	Filter element inside the filter is dirty	Clean/replace filter element
	In-valve parts wear	Replace worn parts or solenoid valve
Solenoid valve does not work	Poor contact between the plug and the socket behind the valve	Re-plug, repair poor contact, verify proper contact
	Valve element disconnection	Replace the solenoid valve
	Control circuit board damage	Replace the control circuit board
Solenoid valve has a small injection amount	Dust inside the solenoid valve	Backflush, valve repeated test
	Low air pressure	Check the pressure gauge and the corresponding air path
Chute skipping	The humidity of the grains is too high	Dehumidify, dry and then sort
	Chute dust agglomeration	Clean the chute with a soft cloth
	Chute has scratches	Polish with fine sandpaper or change the chute
Color sorting indicator and solenoid valve actuate frequently	Color sorting mode is not correct	Select correct mode
	Parameter incorrect	Adjust the parameters properly
The machine fails to sort	Sensitivity is too low	Adjust sensitivity
	Valve power is not turned on	Turn on valve power
Sorting quality is getting worse over time	Dust on the glass plate in the sorting chamber	Wipe off dust with a clean cloth
	Dust isn't cleaned during color sorting	Check dust cleaning device
Single-side sorting effect of the machine is poor	Scraper damaged or aging	Replace the dust brush
	Rodless cylinders are not in place for cleaning, cleaning effect is poor	Adjust the scraping speed
	Sensitivity is too high	Re-adjust sensitivity
	Improper adjustment of the background plate (i.e. waveform)	Re-adjust background plate
Color sorter often stops	Impurity content of raw material is too high	Reduce production
	Air supply pressure is insufficient	Check the air pressure if the air path is too far, and adjust the air path again
	Air pressure protection often triggered	Try to make the pipe clear, clean or replace the filter

Chapter 3 List of Consumables

The list of consumables of the machine is as follows:

No.	Model	Part name	Warranty period	Remark
1		Dust brush	3 months	There should not be any oil or other liquids that are corrosive to rubber in the environment, or else the life of the dust brush will be reduced
2	YAFF350-04D	Main filter	12 months	The air compressor and the air storage tank should be drained in time, and the filter element should be cleaned regularly. The dust in the working environment should not be excessive, or else the service life will be reduced
3	YAMG350-04D	Water drop separator	12 months	
4	YAM350-04DT	Microfilter	12 months	
5	YAR40-04	YSC pressure reducing valve	12 months	
6	G50-10-02	YSC pressure gauge	12 months	
7		Cleaning cylinder	12 months	The air compressor and the air storage tank should be drained in time, and the filter element should be cleaned regularly. The dust in a working environment should not be excessive, or else the service life will be reduced
8		Jet valve	12 months	The air path should be drained in time, and the filter device of the air path should be cleaned in time. It is strictly forbidden to use an oil air compressor. If the conditions are not allowed, a high-grade filter device must be used to ensure that no oil enters the color sorter nozzle, or else it will reduce the life of the machine

Chapter 4 Warranty and After-sales Service

Warranty

I. Description of warranty

1. The warranty period of this product is 12 months (Note: the warranty period of consumables is 1 month)
2. Calculation method for the warranty period of the product:
 - From the date of purchase (the date on the invoice);
 - If a replacement occurs, the warranty period is recalculated from the date of replacement, and the dealer shall attach the replacement stamp on the back of the invoice and provide a new warranty certificate;
 - The company provides free warranty for damage caused by quality defects in manufacturing;
 - The company is responsible for the replacement of the product that can't be repaired due to quality defects in manufacturing;
 - The company is responsible for the return of the product that can't be used due to function failure.
 - If the product fails within the warranty period, the fault shall be eliminated within 30 days from the date of sending to repair, and normal use shall be guaranteed;
 - The company shall provide new parts and repair the machine free of charge if any part is damaged due to the repair by the after-sales staff;
 - If the product hasn't been repaired after 30 days from the date of repair in the warranty period, the repair contents shall be filled in the maintenance record form and a product of the same specifications shall be replaced free of charge.

II. Warranty period of parts

1. Calculation method of valid warranty period of parts: The calculation begins on the date of purchase (the date on the invoice) and shall be deducted from the time taken for repair (including the device to be repaired) during the warranty period;
2. If any part fails during the warranty period, the warranty period of the replaced part is recalculated from the date of replacement;
3. The following situations are not within the scope of the warranty:
 - The user can't prove that the product used is within the warranty period;
 - The warranty period expires;
 - The product is damaged due to failure to properly use and maintain in accordance with the User's Manual;
 - The appearance or performance is changed or the product is damaged due to modification or disassembly without permission;
 - The product failure can't be identified due to improper handling by the user;
 - Other man-made damage due to reasons other than product quality;

METRA

Warranty Card

Company name: METRA Group Inc.
 Address: 110 Boston Rd, Taylorsville, NC 28681, United States
 Tel: +1(800)272-2045
 Website: metragraincleaner.com

METRA Group Inc.

Warranty Description	Service Records				
<p>This warranty card shall be properly kept by the client and is to be used as the warranty certificate together with the purchase invoice.</p> <p>This product has a one-year warranty from the date of purchase. If it has any failure caused by the quality defect in the warranty period, please offer this warranty card and the purchase invoice to request service.</p> <p>Warranty</p> <ol style="list-style-type: none"> 1. The product comes with a one-year warranty from the date of purchase. 2. We provide a one time complimentary on-site training for the client purchasing our METRA color sorter. 3. We provide technical support services. <p>The warranty doesn't cover the following cases</p> <ol style="list-style-type: none"> 1. The damage is caused by improper transportation, use, maintenance or storage; 2. No warranty card or valid invoice; 3. The model on the warranty card does not match the product model or it is altered; 4. The damage is caused by force majeure 	Client name				
	Date of purchase		Model		
	Date of service	Records	Replaced parts	Service staff	Client confirmation
					<p>Thank you for your attention, support and for using The Metra Color Sorter. We appreciate your valuable comments on the quality, performance and service of the device.</p> <p>The After-sales Service Department of METRA will answer and handle your concern as soon as possible.</p>



Certificate

METRA Group Inc.

Certificate

This product has been tested and
is approved for release

Inspector: _____

Date of delive: _____

Company name: METRA Group Inc.
Address: 110 Boston Rd, Taylorsville, NC
28681, United States
Tel: +1(800)272-2045
Website: metragraincleaner.com

METRA Grain Color Sorter Training Records

Training date: Year Month Day			Client name		Device ID	
After-sales engineer			Engineer's phone number			
Work completion time			Year Month Day		Trainee's phone number	
Machine structure	Training content				Trainee's comprehension	
					No	Yes
	Machine installation, structural understanding, detachable and non-detachable machine parts					
	Understanding of background light, background plate, material light switches					
	Vibrator adjustment and troubleshooting					
	Adjustment of good product outlet and defective product outlet					
	How to connect the filter to the air compressor					
	How to close tripped leakage switch, grounding line requirements					
	Cleaning machine glass, background plate color from the side of the machine					
Machine parameters	Barometer and air pressure adjustment, air pressure requirements					
	Switching the memory mode, knowing the material selected by saved memory					
	Debugging of sensitivity during color sorting					
	Background plate angle and mean value adjustment, judgment of machine valve test problem					
	Use of switching material lights (single layer dual channel and below)					
	How to deal with the machine when it doesn't sort color					
	Single sensitivity adjustment and understanding of the flicker frequency of the panel light					
Client use	Wireless network connection, IP address setting					
	Commissioning of materials with high impurity content and low impurity content					
	Recovery after parameter adjustment					
	Machine maintenance and cleaning					
	Possibility of doing a good job in regards to machine safety, daily check of air compressor and color sorter					
Machine users can operate with ease						
Quality of service: <input type="checkbox"/> Very satisfied <input type="checkbox"/> Satisfied <input type="checkbox"/> Not satisfied					Client signature	
Client suggestion:						

Address: 110 Boston Rd, Taylorsville, NC 28681, United States States
 Tel.: +1(800)272-2045; +1(402)942-6692