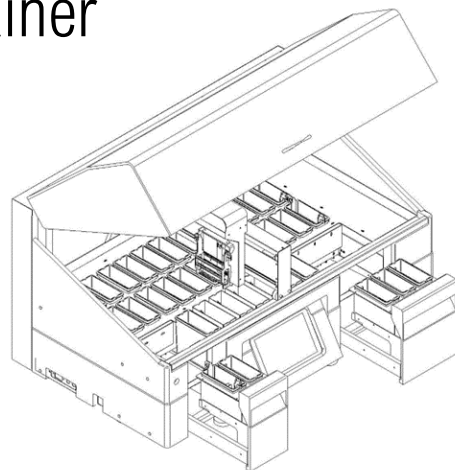


Model YR435-1

Fully Automated Tissue Stainer

Instruction Manual



Thank you very much for purchasing our Fully Automated Tissue Stainer YR435-1.

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.



Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.



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Chapter 1 introduction

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1.1 General Information

1.1.1 Documentation

The information, numerical data, notes and value judgments in this manual represent the current state of scientific knowledge and state-of-the-art technology as we understand it following thorough investigation in this field. We are under no obligation to update the present manual periodically and on an ongoing basis according to the latest technical developments, nor to provide our customers with additional copies, updates etc. of this manual.

For erroneous statements, drawings, technical illustrations etc. contained in this manual we exclude liability as far as permissible according to the national legal system applicable in each individual case. No liability whatsoever is accepted for any financial loss or consequential damage caused by or related to compliance with statements or other information in this manual.

Statements, Drawings, illustrations and other information as regards contents or technical details of the present manual are not to be considered as warranted characteristics of our products. These are determined only by the contract provisions agreed between ourselves and our customers.

Kalstein reserves the right to change technical specifications as well as manufacturing processes without prior notice. Only in this way is it possible to continuously improve the technology and manufacturing techniques used in our products.

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Any reproduction of text and illustrations (or of any parts thereof) by means of print, photocopy, microfiche, web cam or other methods-including any electronic systems and media-requires express prior permission in writing by Kalstein.

For the instrument serial number and year of manufacture, please refer to the name plate at the back of the instrument.

1.1.2 Specified use and application

The instrument may only be operated within the scope of its designated use and in accordance with the instruction manual.

Any other use of the instrument is considered improper.

1.1.3 Ordering Spare Parts



To order replacement parts or modules, specify the following information for each part ordered:

1. Product model and serial number.
2. Kalstein Part number.
3. Part description.
4. Quantity required.

1.1.4 Warranty and Service

Kalstein guarantees that the delivered product has been subjected to a comprehensive quality control procedure based on our strict in-house testing standards to ensure that the product complies with its technical specification.

The warranty conditions depend on the contents of the individual Contract concluded, supplemented by the warranty conditions of your Kalstein sales agency.

Any repairs and/or exchange of parts of the product must be carried out by authorized Kalstein technical service engineers. Otherwise, any warranty becomes invalid and warranty claims can no longer be made.

The local Kalstein representative must be consulted prior to any handling of or changes to the instrument beyond the scope of this instruction manual as well as prior to any modifications or any use of the instrument in combination with non-Kalstein components not expressly authorized by Kalstein.

Spare parts and accessories not supplied by Kalstein can under no circumstances be considered as inspected and/or approved by Kalstein.

Therefore, installation or use of any such parts may impair the technical design features and thus properties of the instrument.

Kalstein assumes no liability whatsoever for any damage caused using non-original spare parts or non-original accessories.

The warranty is only valid and warranty claims can only be made if the instrument has been operated according to its designated use and according to the instructions given in this manual.

Improper use of the product and/or faulty operation invalidate the warranty and any claims based thereon, and like wise Kalstein will not assume liability for any consequential damage.

1.2 Safety instructions

1.2.1 Danger

While this instrument is in operation, certain components of the unit are inevitably live, carrying a current which can cause severe injuries. It is essential to use the precautions mentioned below, to reduce the risk of death and/or injury.

1. Only qualified personnel (see following page), who are familiar with both the instrument and the instructions supplied together with the instrument, may search the instrument for faults and trouble-shoot and/or repair the instrument.
2. Installation of the instrument must be carried out in compliance with the applicable safety regulations (e.g. DIN, VDE, UL) as well as with any other pertinent national or Kalstein rules. Adequate grounding, dimensioning of conductors and corresponding short-circuit protection must be provided, to ensure operational safety.
3. During normal operation, all covers must be installed and must remain closed.
4. Prior to doing visual inspections and/or maintenance work, make sure that the AC power supply is switched off and instrument is unplugged from mains.
Danger! -prior to cutting off the AC power supply, the instrument is live!
5. If certain measuring must be done with the current supply on, never touch the electrical connections! The plastic cover at the power supply unit must be installed. Remove all jewelry from your wrists and fingers. Make sure the test devices are in good, operationally safe working order.
6. When working on a live instrument, stand on insulated ground, i.e., make sure that there is no grounding.
7. This list does not necessarily contain all measures that may be necessary for safe operation of the instrument. If you need further information or if specific problems occur, please contact your local Kalstein office.


1.2.2 Qualified Personnel

As defined in this service manual, are persons who are familiar with installation, maintenance, repair and operation of the product of Kalstein, and who have received adequate training in order to carry out their responsibilities. Adequate training is e.g.:

- Professional training, or receiving specific instructions from a professional, or being licensed to connect/disconnect, ground and label electric circuits and instruments/systems according to all applicable safety regulations.
- Professional training or receiving specific instructions from a professional on who to use/maintain applicable safety regulations, the training itself being carried out according to all applicable safety regulations.

1.2.3 Symbols used in the test and their meanings

 Warning is marked by a warning triangle

 Notes, e.g., important information for the user, are

Marked by an information sign



Flammable solvents and reagents are marked with the following symbol.



Instrument surfaces which become hot during operation are marked with the following symbol. Avoid direct contact with these surfaces-risk of burning.

1.2.4 Liability

This document is strictly for the use of qualified service engineers with the requisite technical skills.

Only persons who have successfully completed the appropriate service training provided by Kalstein, are in the employ of a company in the Kalstein Group or of an agency, distributor, or service workshop duly authorized by Kalstein, have the status of qualified service engineer. Kalstein accepts no liability whatever for direct or indirect damage that may occur due to the unauthorized or improper use or interpretation of this document by any person who is not a

qualified service engineer in accordance with the above definition.

Service technicians have the following obligations:

- To understand and follow the safety information and instructions on the product and in the user manual
- To be familiar with local regulations relating to industrial and non-industrial accident prevention in the knowledge that these regulations are up to date.
- To inform Kalstein immediately in writing if the equipment becomes unsafe.

1.2.5 Note of Danger

To always ensure trouble-free operation of the instrument, the following instructions and warnings should be observed:

- The protective devices on the instrument and its accessories must not be removed or modified.
- Only service engineers authorized by Kalstein may access, service and repair the internal components of the instrument.

1.2.6 Instrument type

All information in this service manual applies only to the instrument type indicated on the title page.

A nameplate with the serial number is fixed on the back of the instrument.

Chapter 2 Mechanics

2.1 Overview

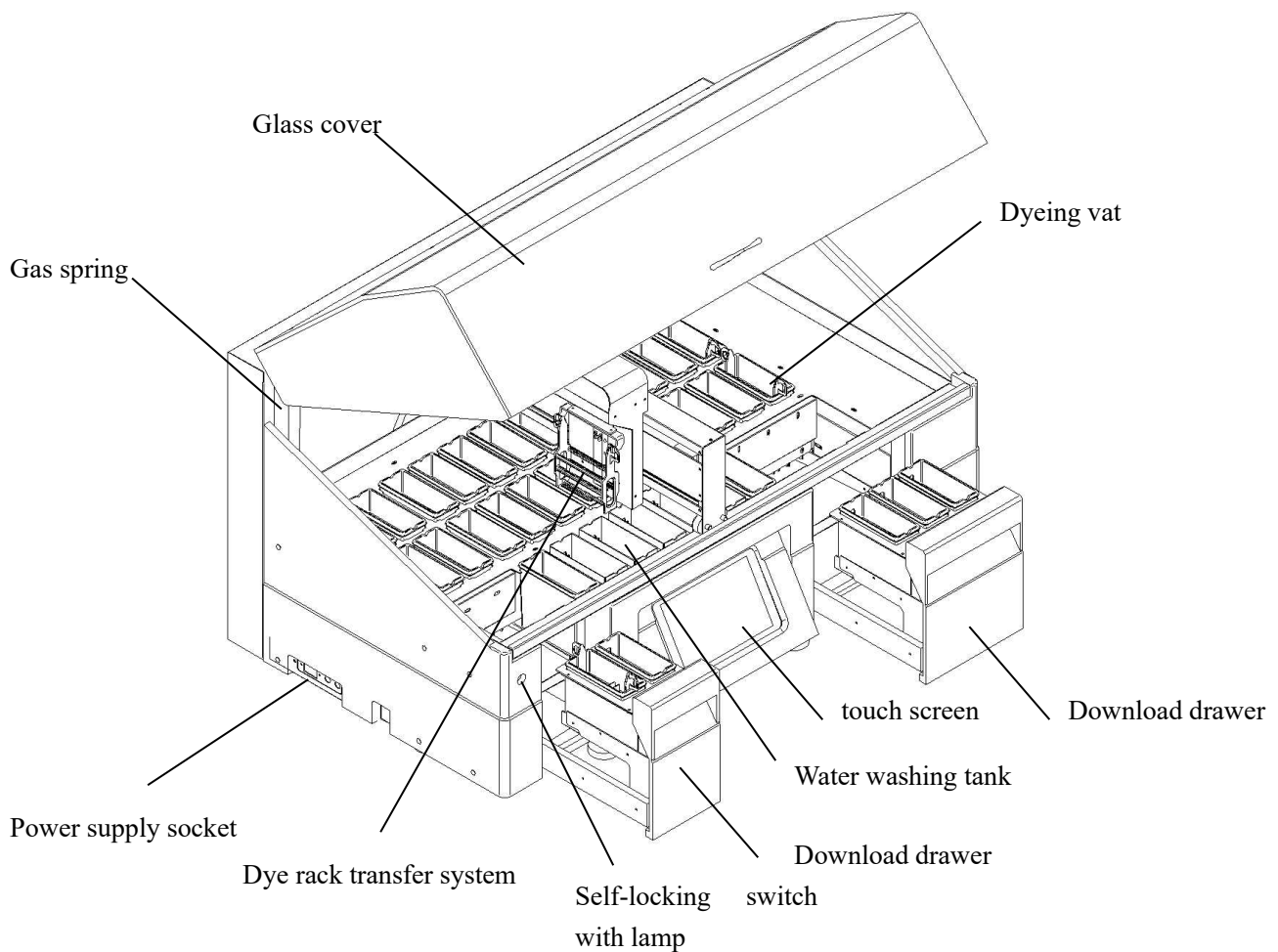
2.2 Dye rack transfer system

2.3 Dye management system

2.4 Water washing system

2.5 Dye vat heating

2.1 Overview





2.2 Dye rack transfer system

According to the dyeing procedure set by the user, the dyeing rack with glass slides is placed into the dye of the corresponding station accurately according to the set time

2.3 Dye management system

Including the management and placement of dye, and the setting of corresponding dye priority

2.4 Water washing system

To meet the automatic washing function when multiple dyeing racks are running at the same time, there are five washing stations

2.5 Dye vat heating

The self-locking switch with lamp is used to control the heating of four dye cylinders 1, 2, 13 and 14. Press this control button, the light will be on, and the heating will be on. After about 1 hour, the reagent temperature in the dye vat can reach 30-35 degrees. Press the button again, the button pops up, the light goes out, and the heating turns off. The reagent temperature gradually returns to room temperature

Chapter 3 Electronics

3.1 Dyeing rack lifting mechanism

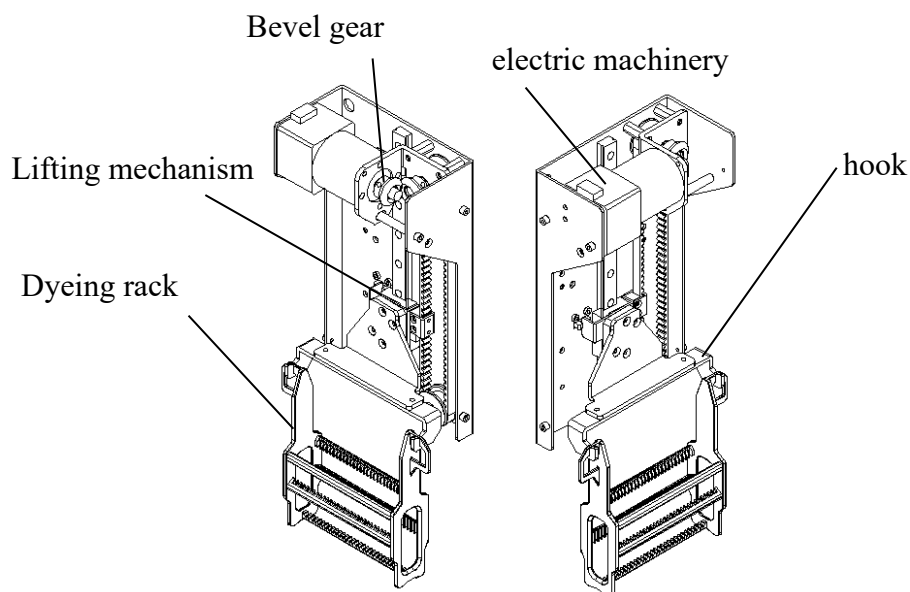
3.2 Y-direction transmission mechanism

3.3 Transmission mechanism

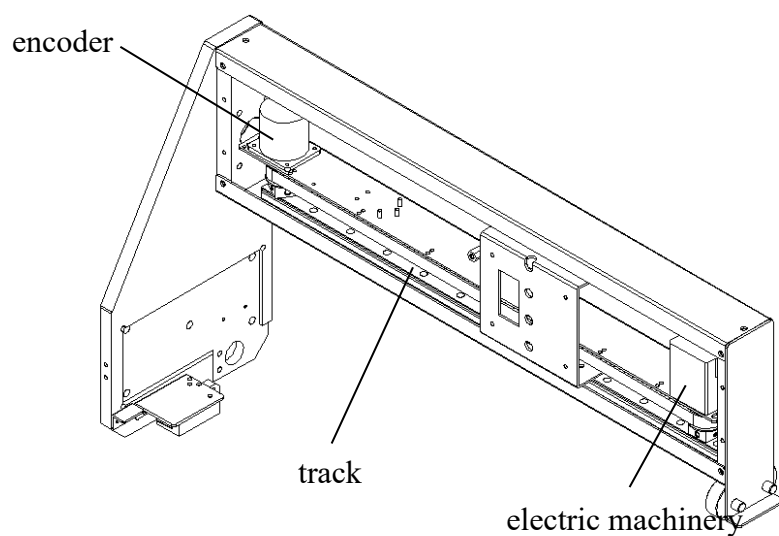
3.4 Water washing pipeline

3.5 Circuit assembly

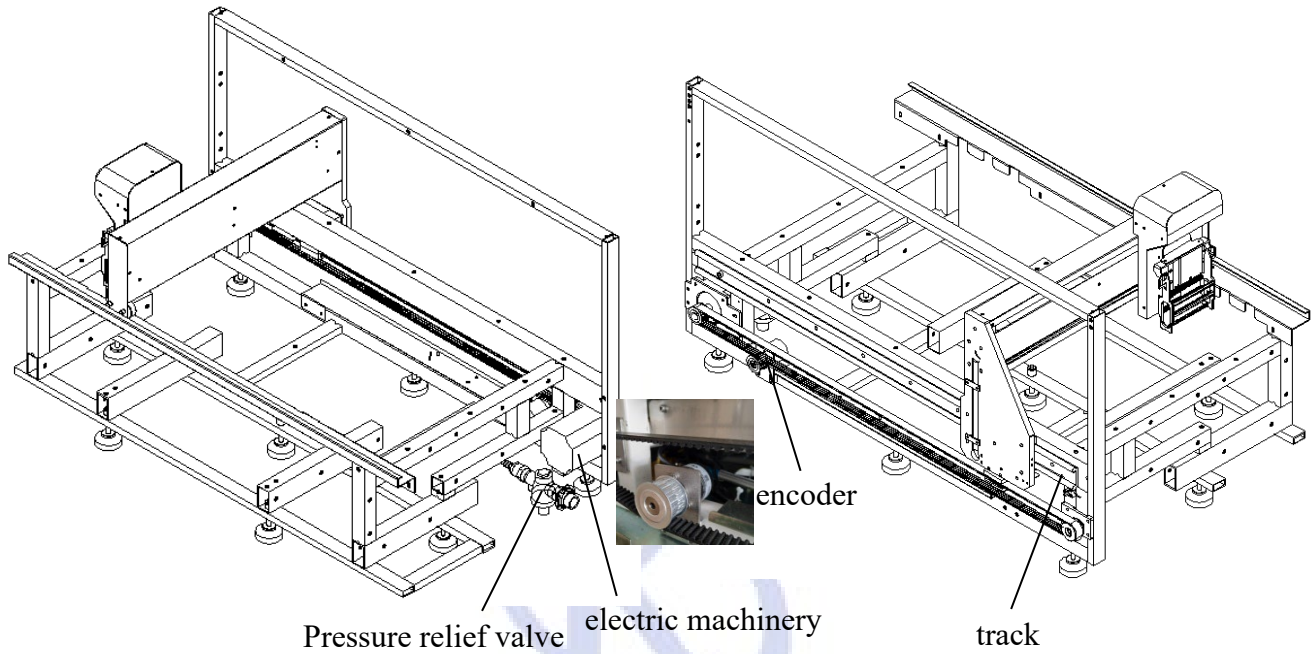
3.1 Dyeing rack lifting mechanism



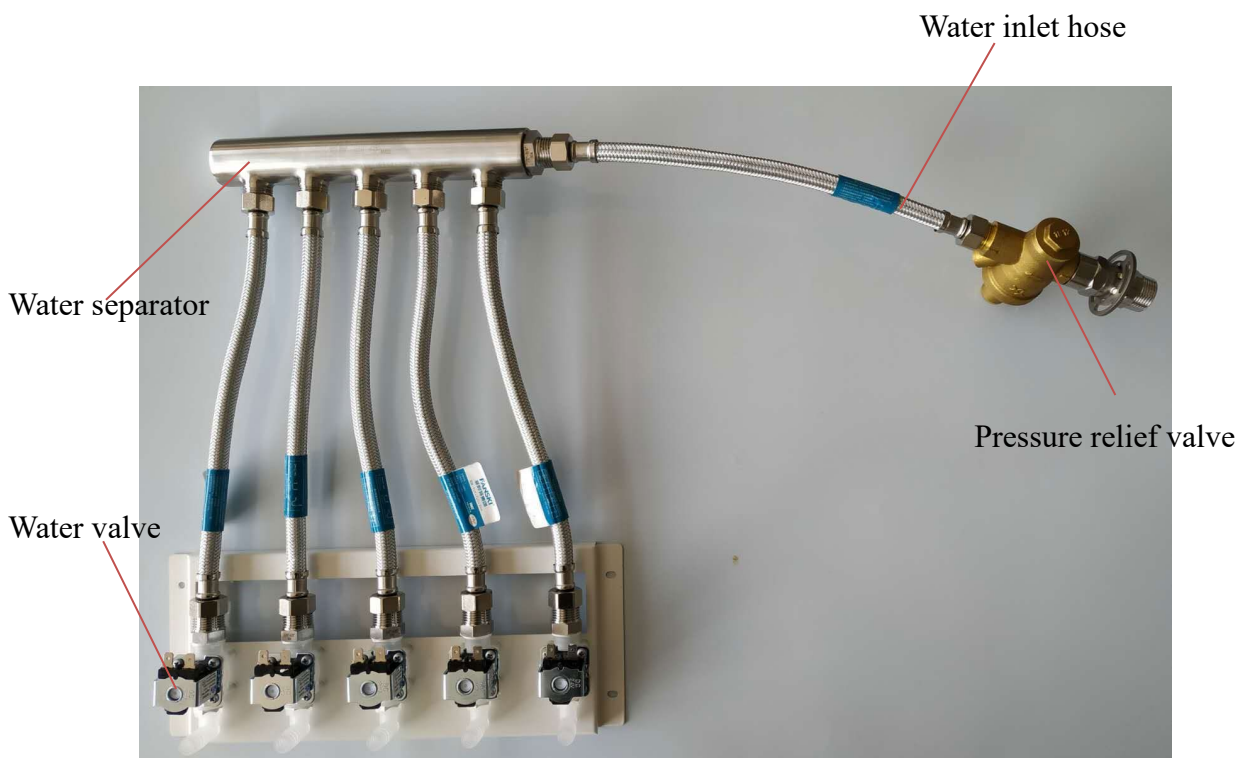
3.2 Y-direction transmission mechanism



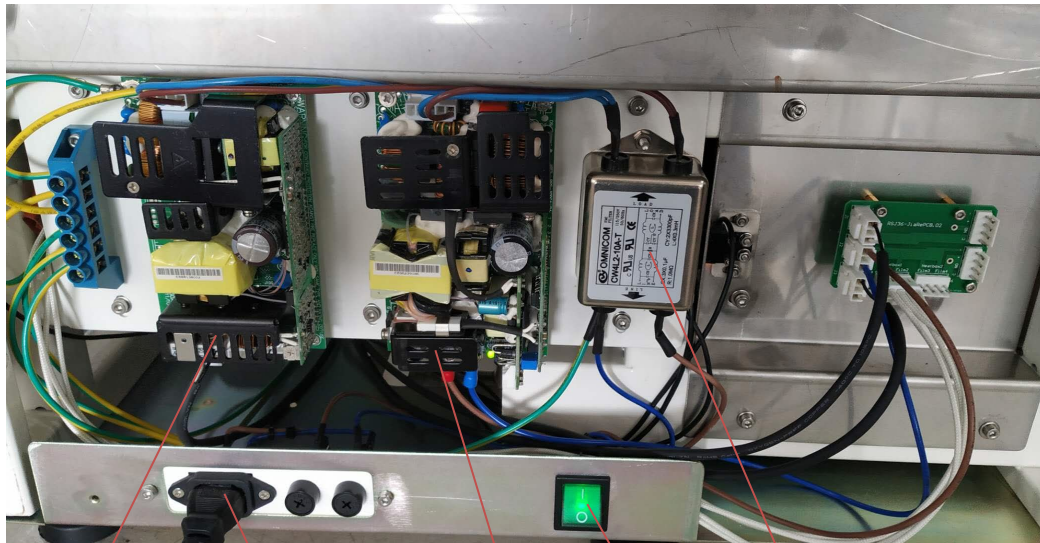
3.3 Transmission mechanism



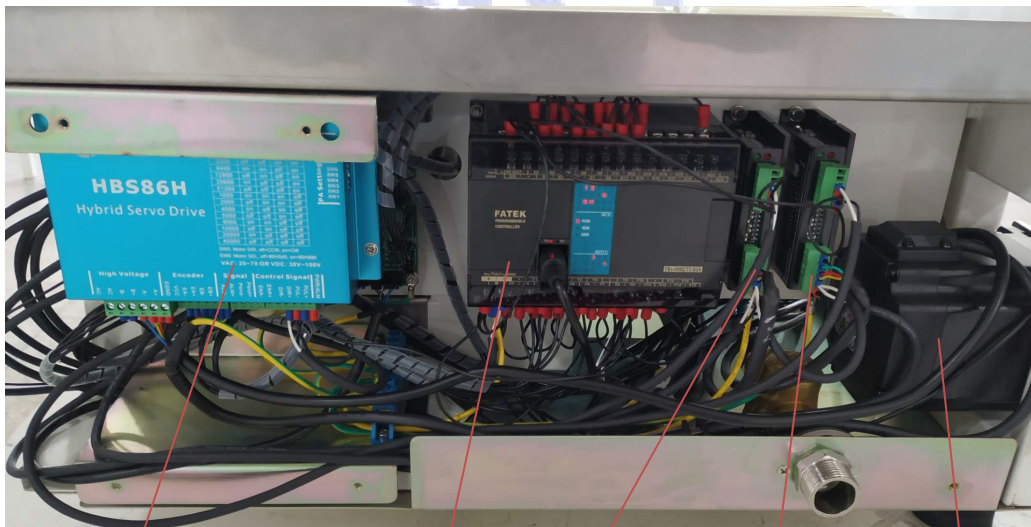
3.4 Water washing pipeline



3.5 Circuit assembly



48V power supply power cord 24V power supply switch wave filter



Left and right motor drivers Main control PLC Lifting motor driver Front and rear motor drivers Left and right motors

Chapter 5 Fault and maintenance

Fault	Reason	maintenance
No display after power on	The triangular plug of the power cord is not plugged in properly or the mains socket is damaged	Reconnect or replace the power cord
	5A fuse is open	replace the fuse
	24V switching power supply (no output)	Replace 24V switching power supply
The startup display is normal, the hook does not move, and the robot arm does not move	48V switching power supply has no output and motor driver has no power.	Replace 48V switching power supply
	PLC reports an error, and the error indicator flashes	Open the right plastic board and check whether the PLC status is normal
The startup display is normal, the hook moves to the top, and the robot arm does not move	The meshing clearance of the bevel gear in the dyeing frame lifting mechanism is too large, and the z-axis (up and down) has not returned to the zero position. Currently, the zero-position indicator is in gray.	Adjust the gear engagement clearance
	After the dyeing rack is lifted in normal dyeing, the hook stops at the top end and the robot arm does not move	Adjust the gear engagement clearance
	The motor and driver controlling the front back, left-right movement are broken, or the driver is out of power	Open the right plastic plate and check whether the motor driver status is normal
During normal dyeing, the hook (there is no dye rack on the hook) stops at the lower end, and the robot arm does not move	The z-axis middle position detection switch is broken, and the middle position indicator is in gray	Replace the detection switch
During normal dyeing, the robot arm moves in only one direction	The motor or driver controlling the front back, left-right movement in one direction is broken or the driver is out of power	Open the right plastic plate and check whether the motor driver status is normal
The manipulator moves normally, and the interface shows that the front, rear or left and right positions are out of tolerance	Check whether the coding wiring is loose	Press in
	Encoder is broken	replace



No water in washing tank	The faucet is forgotten to be turned on or the water volume is too small	
	The filter screen at the water inlet is blocked.	Clean the filter screen
	The water valve is broken	replace
The dyeing rack fails to hook normally and is lifted	Deviation of XY cylinder position coordinates	/
	The dyeing cylinder is not placed flat and inclined	Place flat
After the cylinder drawer is pushed in place, the dye rack cannot be detected	The detection switch of cylinder inlet drawer is broken, or the wiring is loose	Open the right plastic plate, check whether the wiring is loose or replace the detection switch
	The detection switch of cylinder feeding dye rack is broken or the wiring is loose	
After the dyeing is completed and the cylinder drawer is pushed in place, the dyeing rack fails to enter the cylinder outlet position correctly	The detection switch of cylinder outlet drawer is broken, or the wiring is loose	Open the right plastic plate, check whether the wiring is loose or replace the detection switch
There is already a dyeing rack at one cylinder outlet, and the other dyeing rack continues to be put in	The dye rack detection switch at the cylinder outlet position is broken or the wiring is loose	Open the right plastic plate, check whether the wiring is loose or replace the detection switch
Water overflows from the wastewater tank	Bending and bending of drainage hose	Straighten out the drainage hose and ensure that the sewer pipe is smooth
Dyeing was not performed according to the new program after the program was updated	After editing the program, the user does not press the OK key to save the updated program	Press the OK key to save the program
	The key on the screen is misaligned	Needs to be re calibrated

Chapter 6 Routine maintenance

6.1 cleaning.

Note: only use soft common household cleaner or soap solution to clean the instrument!

Paint surface is not resistant to acetone and benzene!

Liquid is not allowed to flow into the instrument during cleaning!

Clean the instrument with a soft cloth. The service life of the instrument can be prolonged by scrubbing all parts after use, such as inject lubricating oil on the guide rail

6.2 maintenance

Daily maintenance

This machine can work for a long time without maintenance. However, to make the instrument work normally for a long time, we still recommend:

- the instrument shall be inspected by the authorized user service technician of the company at least every year.
- sign a maintenance contract after the warranty period ends. For further details, please contact your Kalstein user service organization.
- the instrument shall be kept clean every day.
- please do not repair the instrument by yourself, or you will lose the right of warranty. The instrument can only be repaired by technicians authorized by the



company

