Kalstein

Model YR435-1

Automated Slide Stainer

Instruction Manual

Thank you very much for purchasing our Automated Slide Stainer Model 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.

Kalstein®

OUR SERVICES

Benefits and Support

In Kalstein France, we take care of the full satisfaction of our customers, that is why we provide value-added services of the highest level based on our experience.

Online Inductions and Trainings

In any part of the world, receive your induction or training from our specialized team of engineers

Quick Response

Our work team is always available to response all your consults or questions, in order to support you in any situation.

#Letsgivemore 💚

Thanks to your purchase, a donation will be made to a non-profit foundation that fights against breast cancer and helps most vulnerable communities.

Technical Support

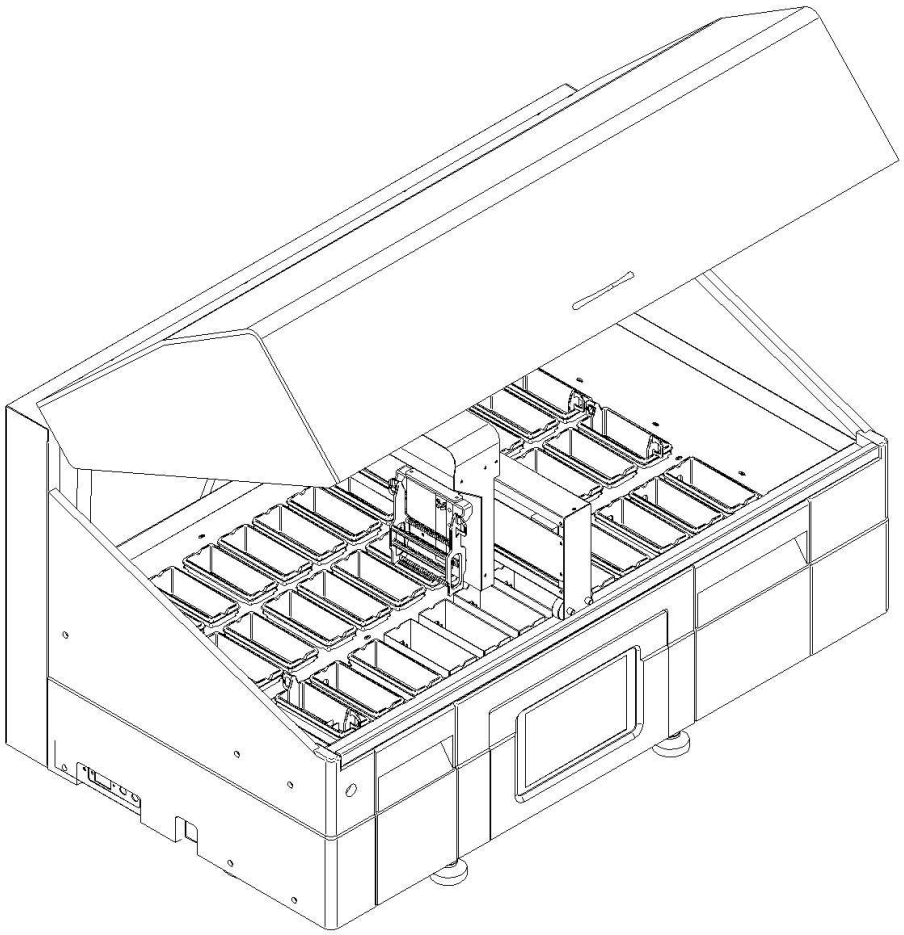
Enjoy of personalized advice for the correct preventive and corrective maintenance of your equipment, thanks to Kalstein's manuals and articles, special catalogues and video tutorials.

Delivery Logistics

We take care of all the necessary logistics for the dispatch of your goods, whether is by sea, land or.air.

Kalstein Worldwide

With more than 25 years growing with our customers, Kalstein's multiformat and modern content, is now present in more than 10 countries and increasing.



This instruction book introduces the function and application method of YR435-1 slide stainer, it also includes attentions for safety. Please read this instruction book carefully before operating the instrument, so that you can know about its performance and fully use all kinds of function of the stainer.

Category

1. Summary

YR435-1 Slide stainer is an environmentally automatic stainer used for normal and special staining of tissues in pathology laboratory. Both normal staining and special staining all can simultaneously or independently process and achieve qualified staining effect.

1.1 Main feature

·Electrical modular design

·We adopt 10.4 inch color touch -screen as the user interface. It will make data input and search very convenient, it can display different staining processes and staining programs in real time.

·Staining programs can start by selecting the color code, and display on the operation interface in real time. Workers can make it clear when operating the machine.

·There are 10 sets of different staining programs can be selected. 10 slide racks can stain at the same time, and can run any program at any time.

·There are 2 staining stations can be set to empty stations. The staining process can be optimized automatically when many slide racks are processing at the same time.

·Slide rack can be loaded and removed by download drawer and upload drawer, 2 upload slide racks, 3 download slide racks.

·It has alarm function when opening the glass shield.

·When download drawer is fully occupied, the buzzer alarms to remind the user to take out the slide rack.

1.2 Environmental condition

Power supply:	220V±22V	50Hz±1Hz

Environmental temperature : 5℃～35℃

Relative humidity : ≤90% （25℃）

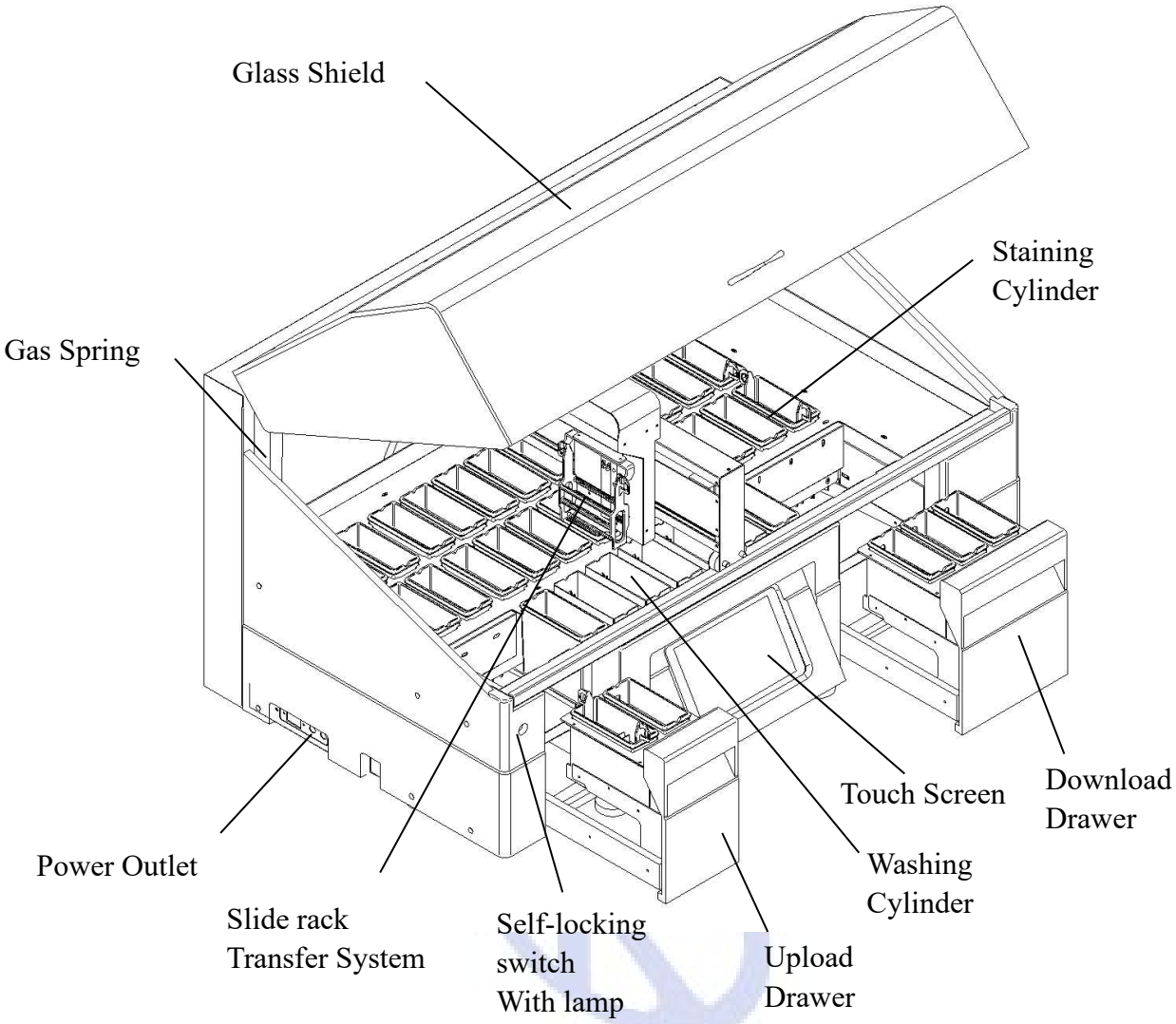
Atmospheric pressure: 86kPa～106kPa

1.3 Safety types

Normal I type .B type

2. Structural feature

2.1 YR435-1 Slide stainer mainly consists of slide rack transfer system, reagent management system and washing system etc. (attached as picture 1)



Picture 1

Please kindly read the following illustrations:

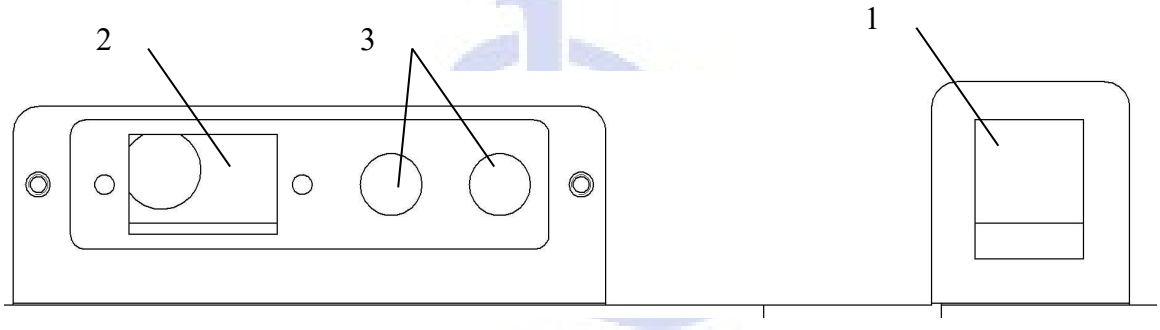
1. Slide rack transfer system: According to the staining programs set by the users, put slide rack with glass slide into corresponding reagent according to setting time.
2. Reagent management system: It includes management and placement of reagent and prioritized setting of corresponding reagent.
3. Washing system: In order to wash slide racks automatically when many slide racks

process at the same time, we set 5 washing stations.

4. Staining cylinder heating: Self-locking switch with light is used to control the heating of 1, 2, 13, and 14 staining cylinders. Press control button. The light is on and the heating has started.

Around 1 hour later, the reagent temperature can reach 30-35 ℃. Press the button again, the button pops up, light is out, and the heating is off. Temperature of reagent is gradually to room temperature

2.2 Electrical illustration (Attached as picture 2)



Picture2

1. Power Switch: AC220V inlet wire power switch

2. Power Socket: AC220V inlet wire power socket

3.Fuse: equipped with fuse BGDP—5A （Φ5×20） 2 pieces

3. Main parameter

Slide rack capacity: 30 pieces of glass

Loading capacity: It can simultaneously deal with 10 slide racks of different programs at most (when uploading continuously)

The total quantity of station: 36

The total quantity of reagent station: 26 (of which 2 stations can be set to the empty stations. The staining process can be optimized automatically when many slide racks are processing at the same time.

The quantity of washing station: 5

Reagent cylinder volume: 500ml

The quantity of upload station: 2

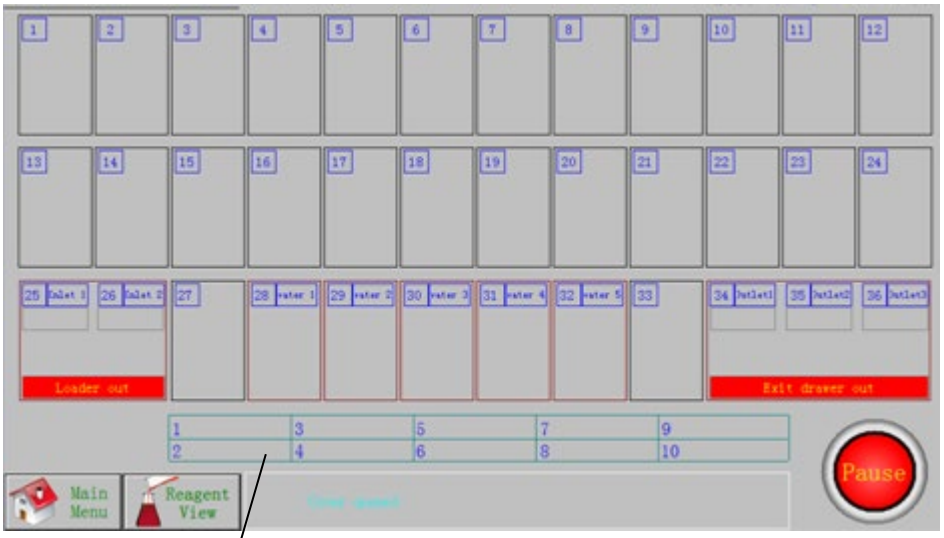
The quantity of download station: 3

Stored programs: 10 sets

4. Interface operation methods

4.1 Boot operation

When turning on the power, the instrument is initialized, after several seconds, welcome interface shows on the screen. Then the instrument will reset to zero, and enter the monitoring screen automatically (Picture 3).



Picture 3

Program directory

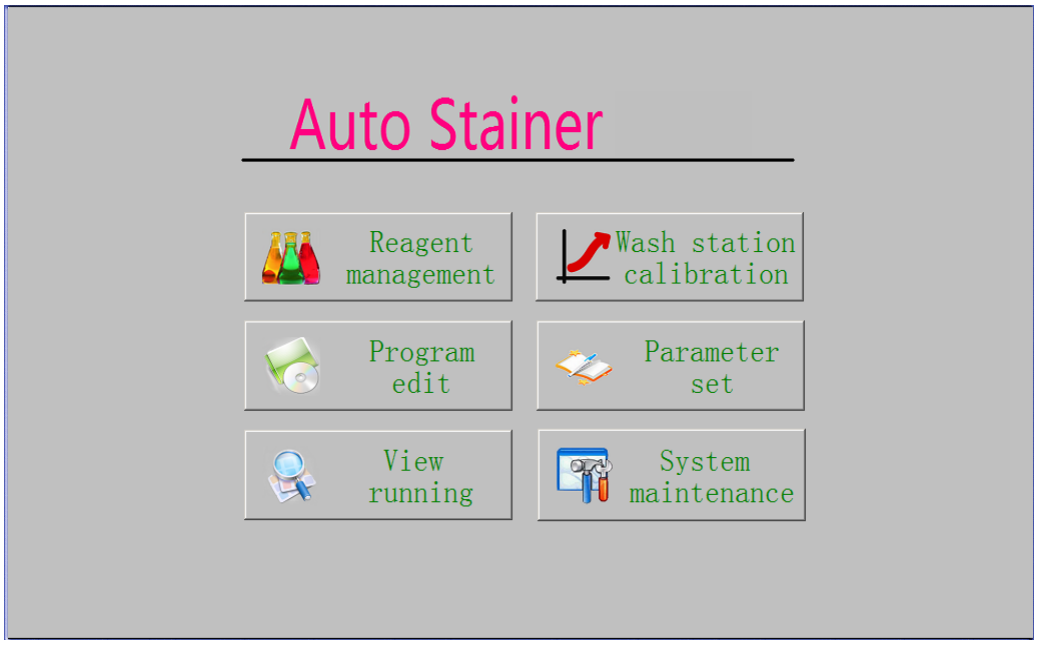
Alarm toolbar

Illustration: If a buzzer sounds, please pay attention to the information of alarm toolbar. The possible situations as below:

1. The glass shield is open.
2. The download drawer is open.
3. Three Positions of download drawer are all be occupied by slide racks.

4.2 Main menu

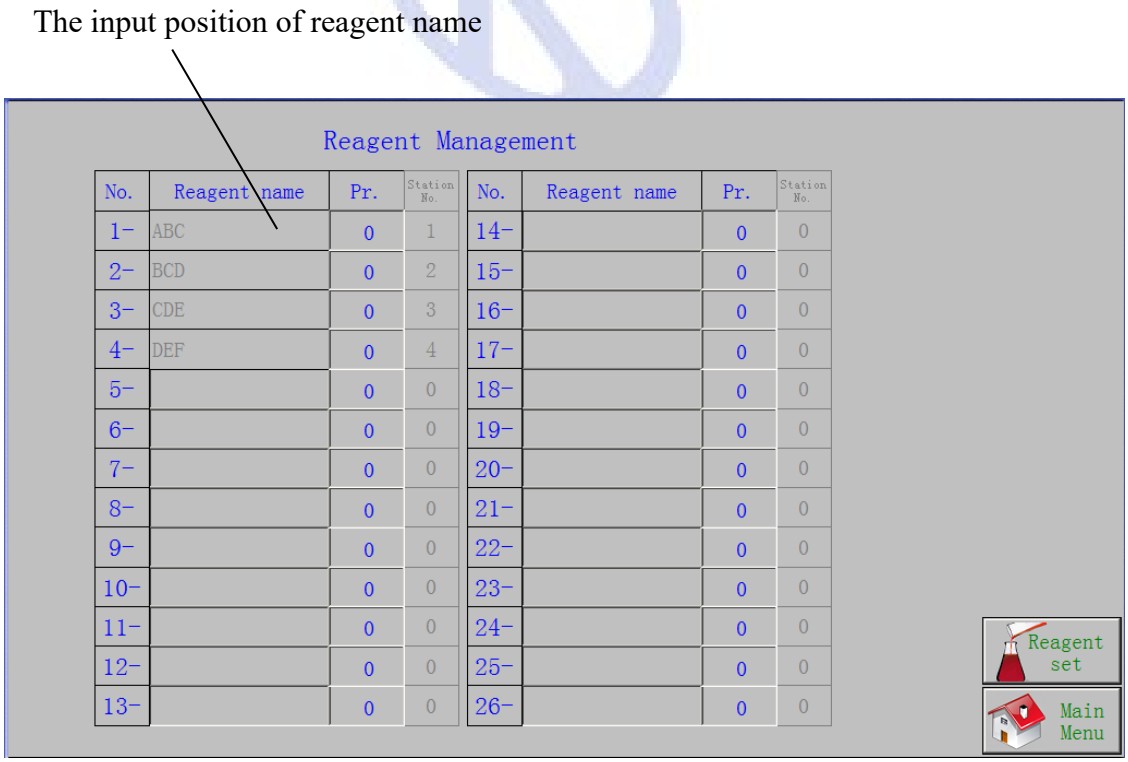
Click the 'main menu' (picture 3) to enter the interface (Picture 4).There are 6 management buttons on the interface (Picture 4).



Picture 4

4.3 Reagent management

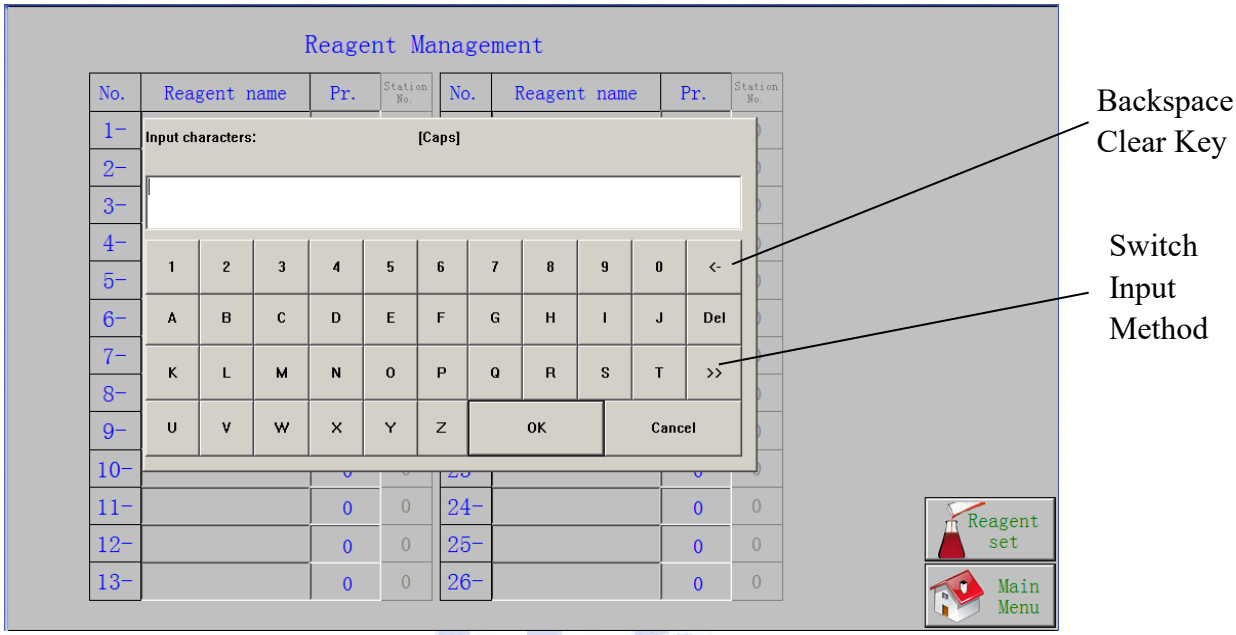
On main menu interface (Picture 4) to enter interface (picture 5).



Picture 5

4.3.1 Input of reagent name and priority of named reagent

Click the input of reagent name on picture 5, then you can input the name of the reagent (picture 6)



Picture 6

Common reagent name: xylene Ⅰ、Ⅱ、Ⅲ、Ⅵ、Ⅴ, 95% alcohol Ⅰ、Ⅱ、Ⅲ、Ⅳ, 100% alcohol Ⅰ、Ⅱ、Ⅲ、Ⅳ, 80%alcohol Ⅰ、Ⅱ , 70%alcohol Ⅰ、Ⅱ, distilled water, hematoxylin, 1% hydrochloric acid alcohol(1% ammonium hydroxide),0.5% eosin etc. Please pay attention: The reagent name cannot be repeated(the same kind of reagent can be distinguished by Ⅰ、 Ⅱ、 Ⅲ)

Once need to repair and clear the reagent name, you can input backspace and clear key. If the reagent name has been specified to the cylinder position, then the name cannot be modified (gray-text). If need to be modified, you can enter reagent place interface, find the reagent cylinder position and click, after deleting reagent , then come back to reagent management interface(picture 5), then the reagent name will turn into blue text .

Switch of input method: switch between upper and lower case and pinyin and symbol.

reagent priority setting: There are 1-3 priorities of reagent, mainly according to the soaking time of tissue in the reagent. The less time, the higher priority, the highest level is the third level. When many slide racks process simultaneously, it will carry out the slide rack

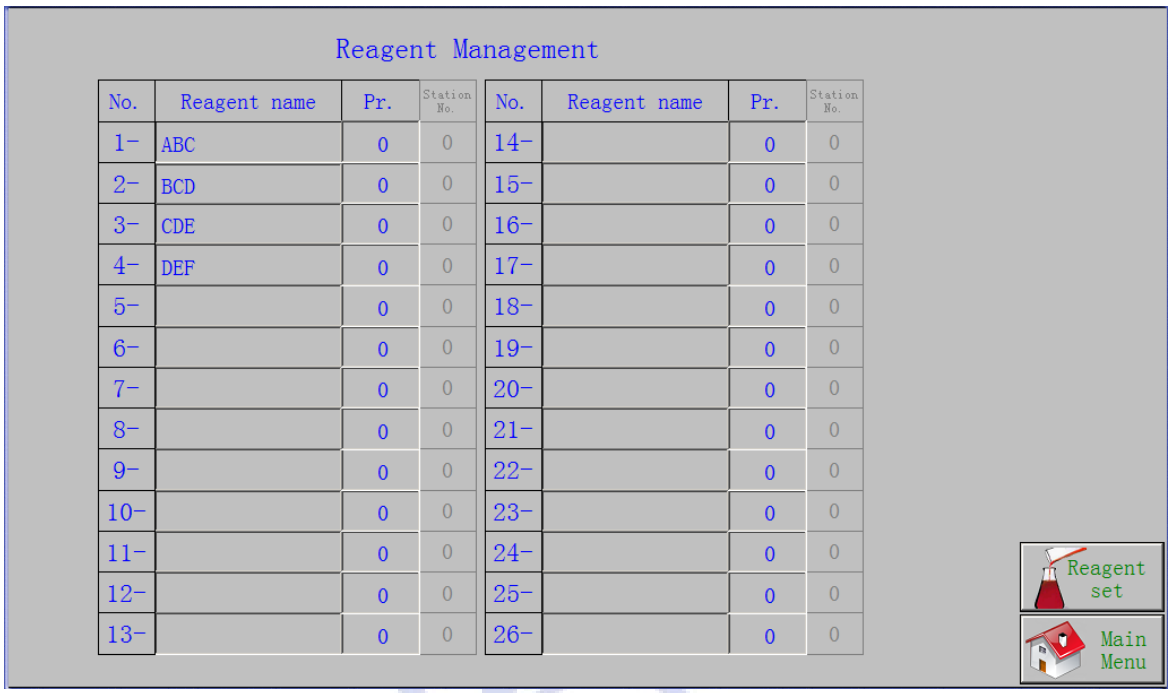
with higher priority automatically.

4.3.2 Reagent placement (for the specified cylinder position of reagent)

On the interface(picture 5), click on the reagent placement icon to enter the reagent placement interface （picture 7)

Picture 7

Users add the corresponding reagent into staining cylinder, then put into corresponding cylinder in the instrument, after that, click the corresponding cylinder icon(picture 7) to enter reagent management interface , then the reagent name on the management interface is raised in blue .(picture 8)

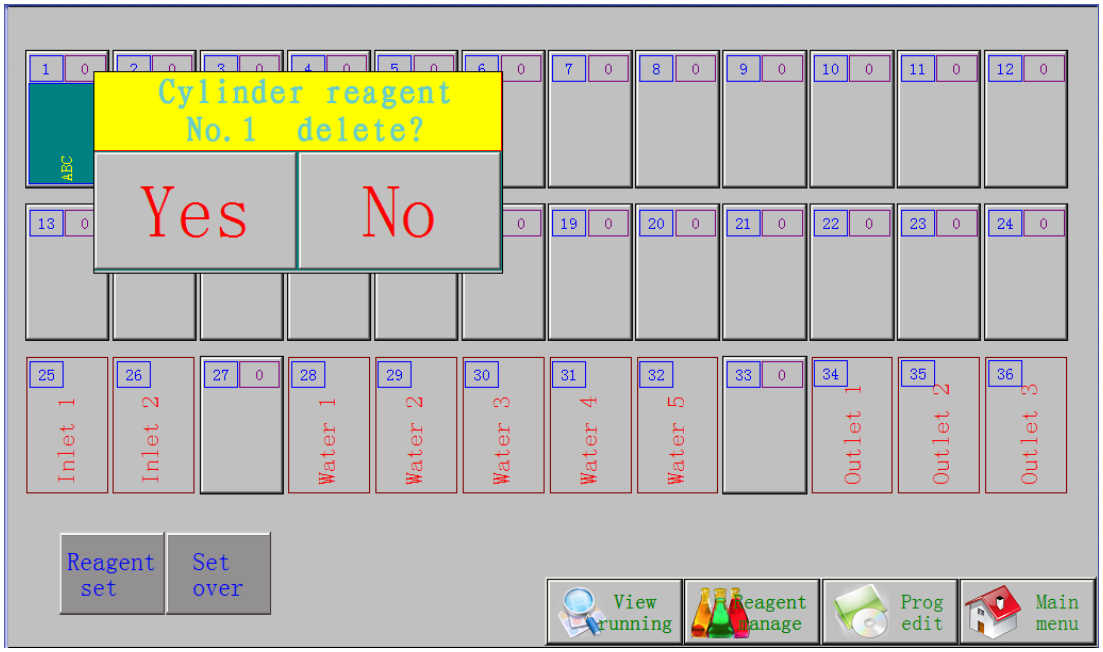


Picture 8

Click the raised button then come back to the picture 7 interface, when the reagent cylinder position is completed, then you can see the corresponding cylinder position have been added the reagent. Cycle above operations, you can specify cylinder position with all the reagent.

Note:

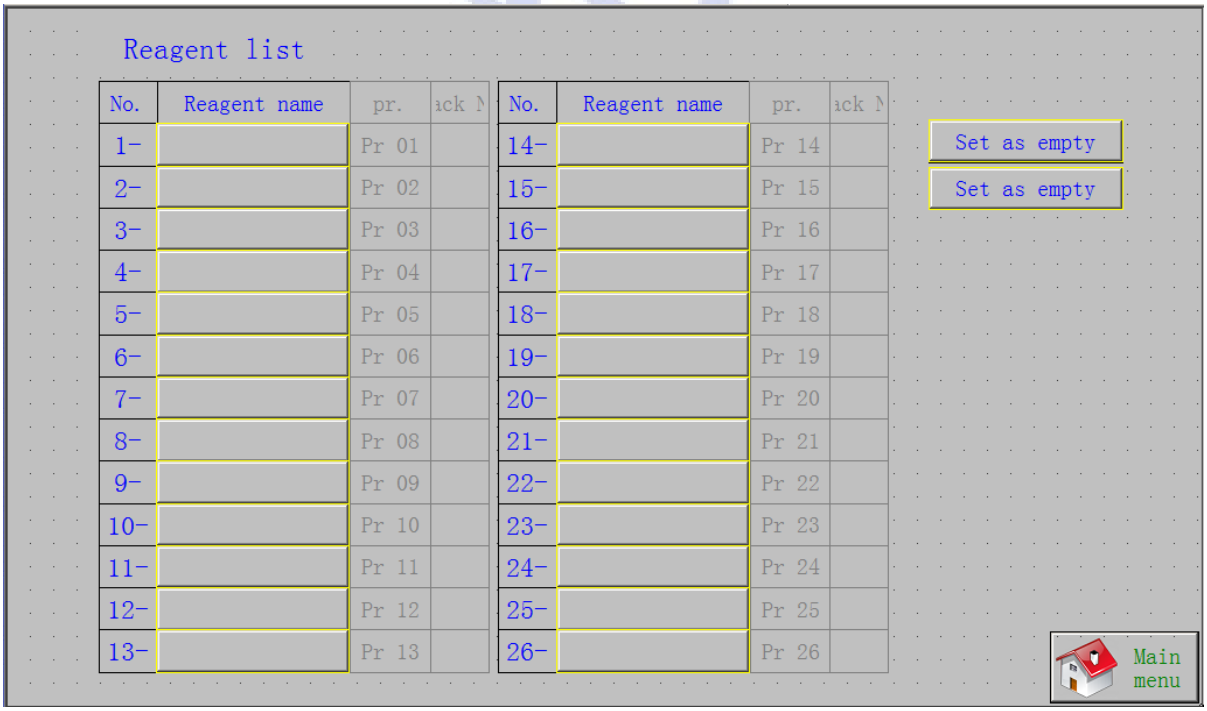
1. When the user places the reagent in the instrument, the form can be used to record the name of the reagent in each cylinder. After setting the reagent cylinder position on the interface, it can be checked on the interface of picture 7 to prevent the reagent from being put in the wrong position
2. When we do not need a reagent or it needs to be changed to another cylinder, you can delete the reagent on the interface of picture 7 and then specify cylinder position again. (picture 9)



Picture 9

4.3 Empty cylinder setting

When you need to set cylinder of 27 and 33 to empty cylinder , please click the 27 or 33 cylinder icon to enter the reagent management interface on the reagent place interface, click “Set as empty” icon. (Picture 10)



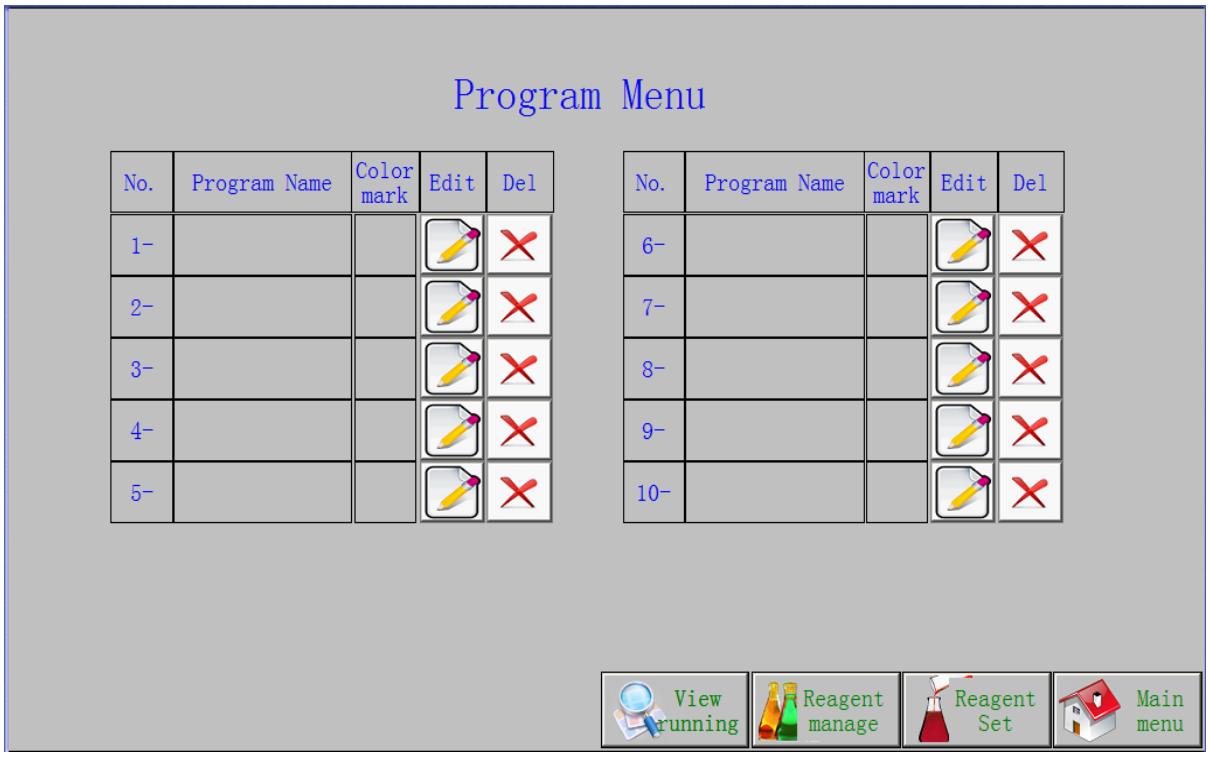
Picture 10

Illustration: Other cylinder positions cannot be set to empty cylinder. When clicking the “set as empty” icon, there is not “set as empty” icon on the reagent management interface.

There are corresponding key icons on the reagent management interface to enable users to quickly enter into other functional interfaces.

4.4 Program editing

On the main menu interface (picture 4), click "Edit" to enter the interface (picture 11).

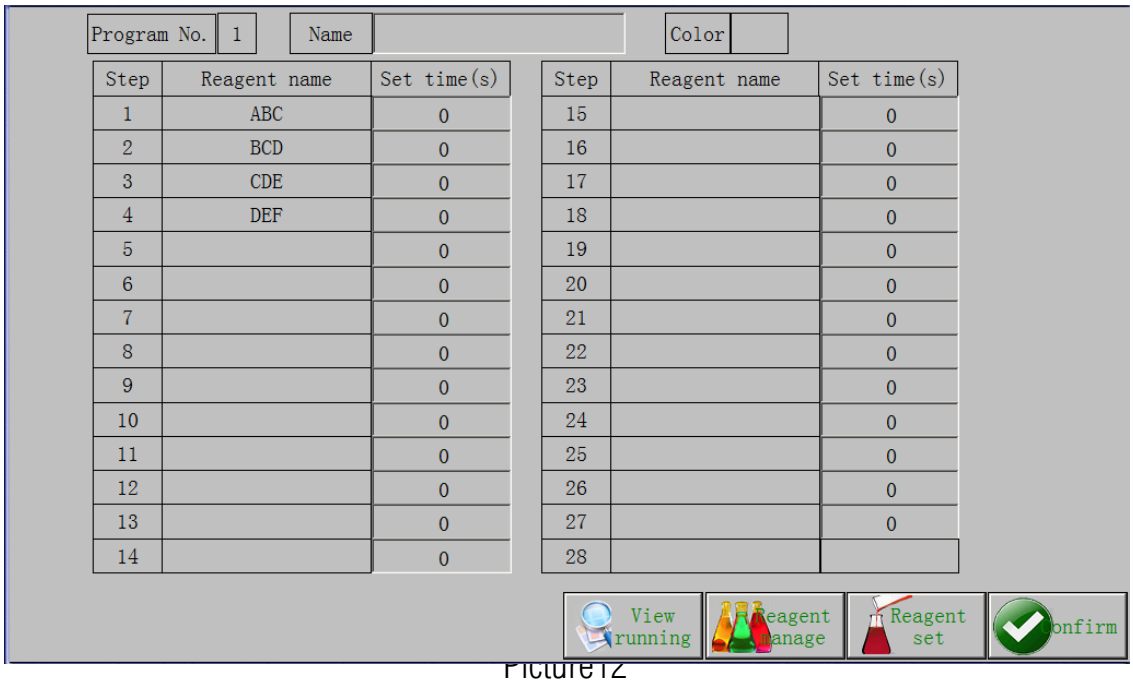


Picture 11

There are 10 sets of programs on the program directory interface.

4.4.1 Program editing

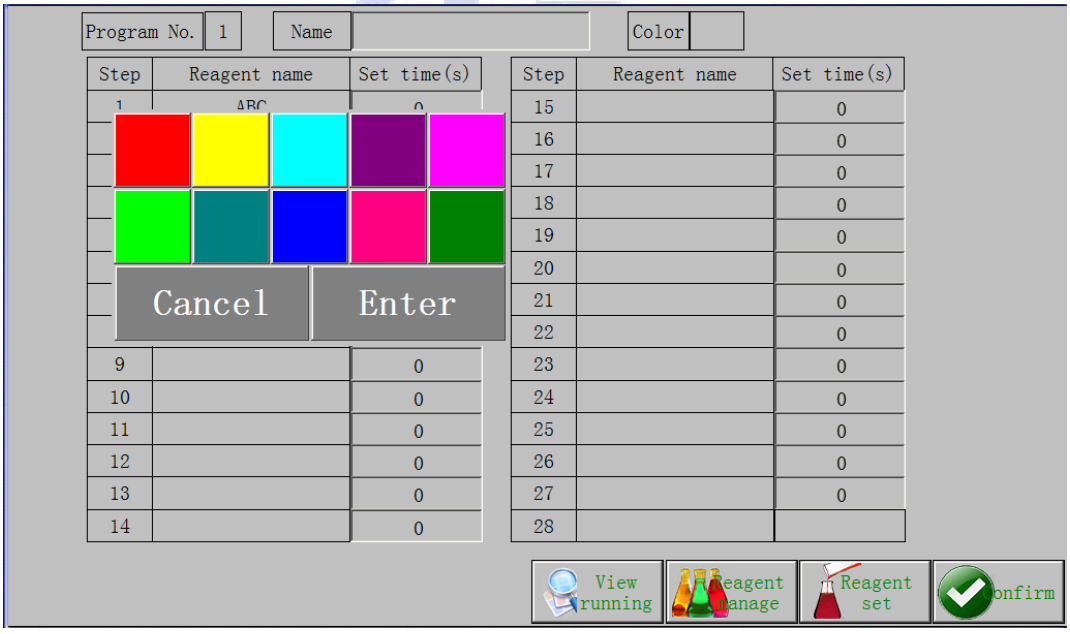
Click the “edit” icon to enter the program editing interface (picture 12).



Picture12

Click the icon next to the name to input the name of the program

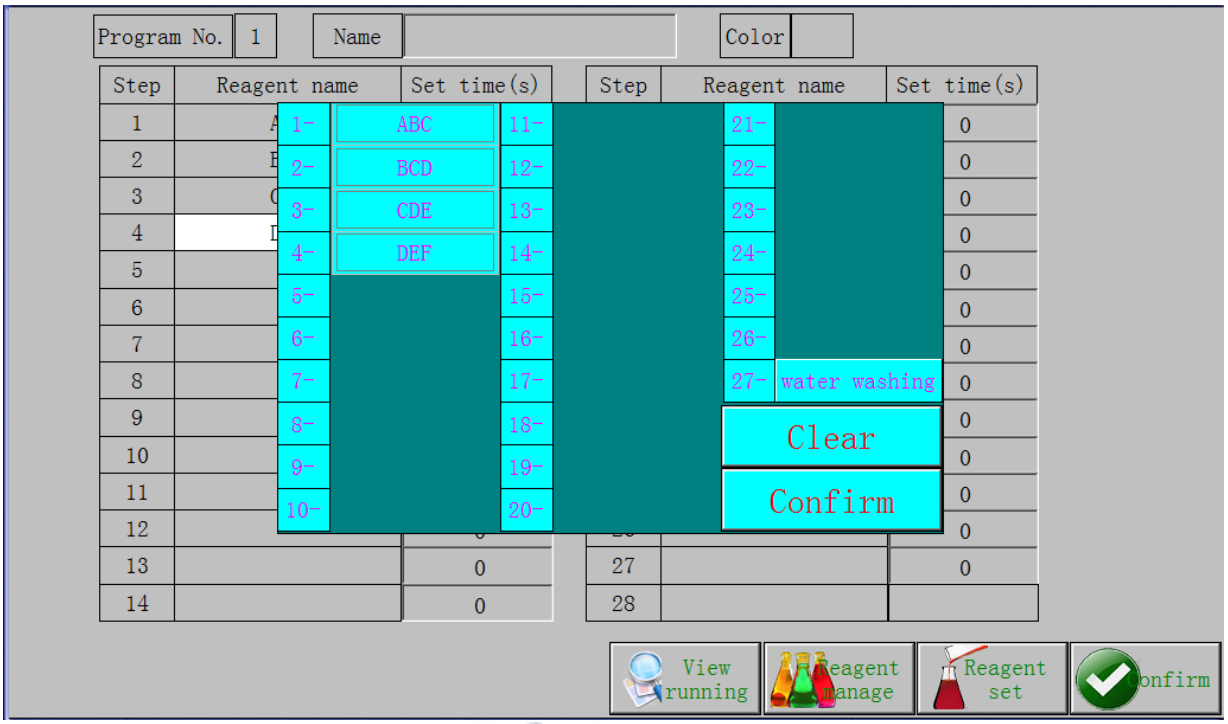
Click the color code to enter the color code setting interface (picture 13)



Picture13

Select the appropriate color code and press the Enter key.

Click the corresponding icon of the reagent name bar to select the reagent needed for each step (picture 14).



(Picture 14)

Illustration: The reagent of the defined cylinder display in the blue box, select the required reagent the press the “Confirm” key. You can also press the “Clear” key to clear the reagent in current bar and select the reagent again.

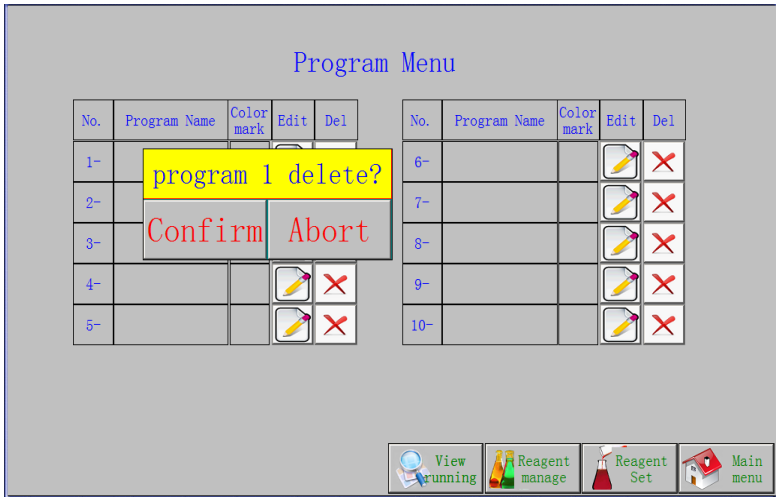
Click the corresponding icon in the setting time bar for each step of staining time to be set.

28 steps can be edited in a program at most , when certain step is not set with reagent , it will not perform this step. When two consecutive steps in the program are not set with reagent, it means staining program is finished. The following staining steps are not performed.

After the program is edited, press the "Confirm" key to save the program. When you need to modify the program, you also need to press the “Confirm" key to save the program after modifying

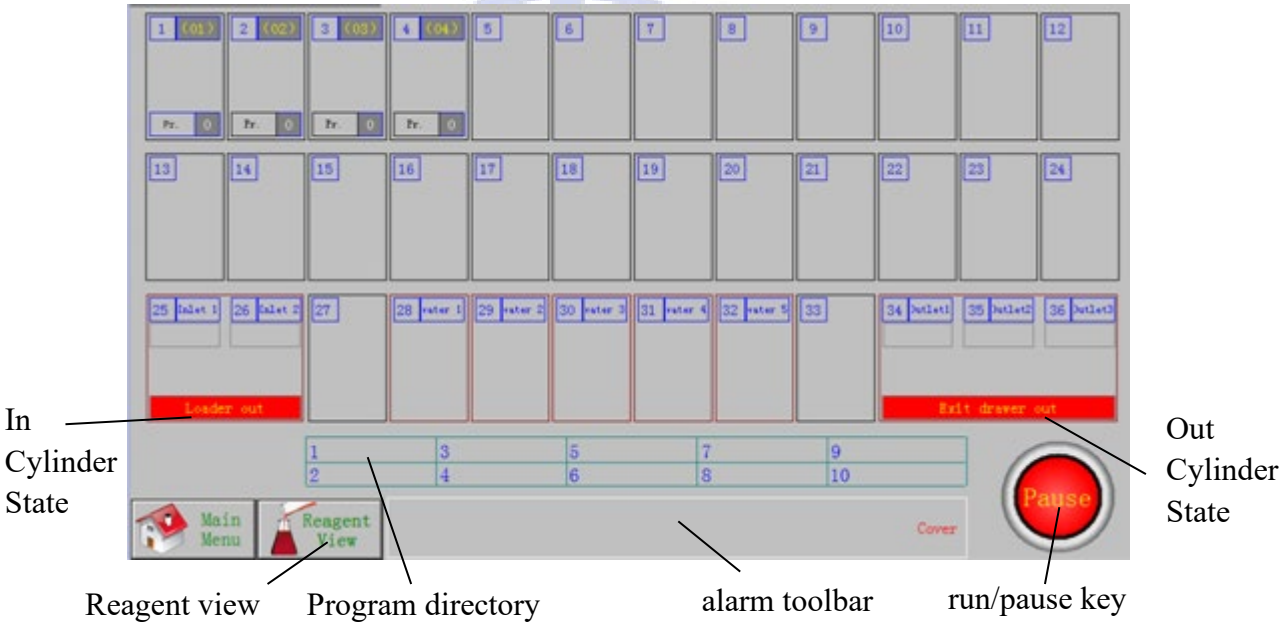
4.4.2 Program delete

As picture 11, on the program directory interface , click the "delete" icon, then you can delete certain program. (picture15)



Picture 15

4.5 Monitoring interface (picture 16)



Picture 16

The use of shortcut keys in the monitoring interface：

To icon quickly and check the current distribution of the reagent in the instrument.

Click the program according to the program directory column then you can quickly check the contents of the program.

4.5 Cylinder position calibration and system maintenance.

Cylinder management key is mainly used for debugging and setting of initial cylinder position. System maintenance management key is used for setting of some variable position parameter and display of sensor state (including the display of output state). Two management functions are provided with password management. (picture 17)

Picture17

Note: Above two functions, users do not need to use.

4.6 Parameter setting

On the main menu interface (picture 4), click “Parameter set” to enter the interface (Picture18).

It is the setting of instrument key time

Picture 18

Staining waiting time: It refers to the reserved time of program changing after placing the rack into the cylinder drawer. (30-60S)

Priority waiting time: It refers to the interval time between the different priorities of the

reagent.(3-5S)

Moving preparation time: It refers to the advance time when the actuator is ready to the position of the taking out the slide rack. (4-6S)

Slide rack waiting time: It refers to the waiting time in the current cylinder position after taking out the slide rack. (3-6S)

Alarm reset: It alarms when there is a fault, and after removing the fault, the alarm signal reset.

5. Instrument installment

a、The device is placed on a flat and solid working platform, and the faucet (Picture 19) is connected to the water pipe network by means of the joint fittings attached to the device according to the local water pipe conditions

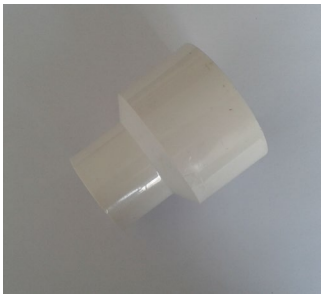
wire tee

Branch wire tee

flexible metal tubing

stopcock

Water inlet

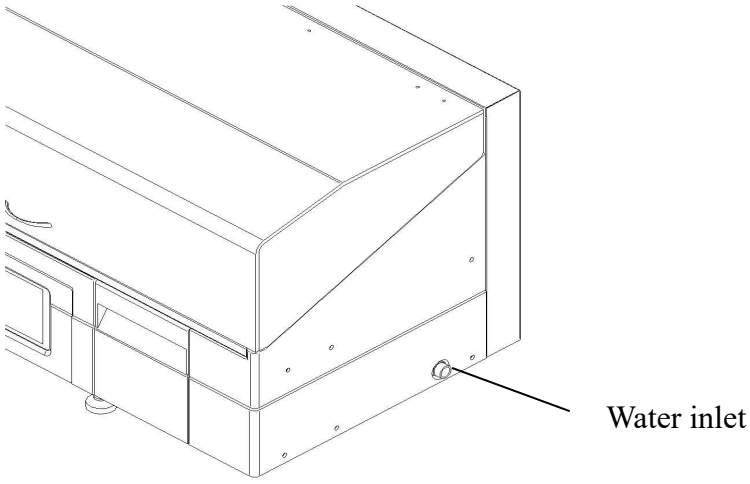


Outlet pipe expansion joint

Picture 19

b、Turn off the faucet and plug one end of the inlet pipe into the faucet The other end is connected to the water inlet on the right side of the stainer.

c、Turn on the faucet and check whether there is any water leakage at each connection of the inlet pipe.



Picture 20

d. Place the drain pipe at the sewer pipe.

Illustration: Combined with the use of the characteristics of the instrument, the working field needs to have a tap water pipe, and be equipped with a sewer, it is recommended that the user equips hood fume for stainer.

6. Staining operation

6.1 Preparation

a、Users configure different reagents (500ml)according to the different staining methods , then add the reagent to the cylinder, and make your mark.

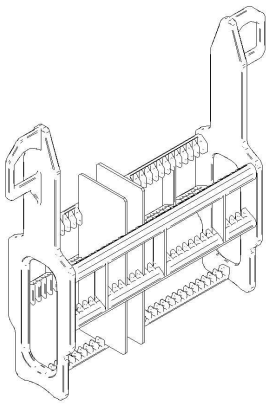
b、After optimizing the process of staining cylinder, and place it into each cylinders in the instrument. Then through stain management interface, specify good cylinder with needed staining reagent.

c、 Through the program editor interface to edit each staining program. (You can edit 10 sets of programs in all)

d、 Through the parameter setting interface ,set normal working time of instruments .

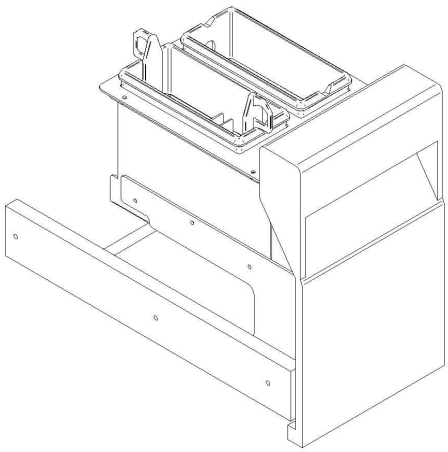
6.2 Upload of slide rack

a. Insert the slides into the slide rack. (Picture 21)



Picture 21

b、Open your upload drawer and place the slide rack to staining cylinder in the upload drawer. (Picture 22)



Picture22

Pay attention: slide rack must aim at v-shaped slot on the cylinder.

There are 2 upload stations of upload drawers.

c. Close the upload drawer, after putting in place, it will prompt the user to select staining program (1-10). If there is no need to change the program, when the waiting time is completed, it will run the last program.

Press the run button on the monitoring interface, then staining starts, slide rack will enter corresponding staining cylinder according to the selected program, when the time to wait for cylinder is up and then enter next step in staining cylinder.

When the slide rack of upload drawer entering the cylinder of the first step,

You can add the next rack again, so as to make the continuous upload of slide rack.

6.3 Download of slide rack

When staining is completed, the slide rack will move to download drawer automatically. And when three download stations are full, the buzzer rings to remind user to take out the rack and sear the slide glass.

6.4 Power off

When the instrument do not need to process for a long time, you can switch off the power.

When current staining program run, Short term power down happens (or press pause), when the call is coming or canceled after suspension, instrument will continue to run with current program but the staining time will extend and may affect the staining .

Note: this instrument has passed the following safety test. Users are strictly forbidden to touch the internal parts of the instrument

GB4793.1-2007 Safety requirements for measuring control and electrical equipment for laboratory use - part 1: safety general requirements

GB/T 14710-2009 Environmental requirements and test methods for medical electrical appliances

YY0505-2012 Medical electrical equipment part 1-2 Safety general requirements parallel standards: requirements and testing

7. Notice

1. Once received the products, please kindly check the appearance of the instrument. Acceptance of the accessories. Please read the instructions book carefully before using the products.

2. In order to ensure the safety of person and equipment, the machine must be used in 220 V three line power supply. It must have reliable grounding device, it is prohibited to use non-grounded wire of power supply, please do not open the glass shield while using, in case of body bruised by mechanical arm .

3. Reagents are mostly flammable items when the instrument is working , to ensure the safety of person and machine, please take the necessary fire prevention measures.

4. When the instruments is in normal operation, please do not interrupt the current staining process, which would affect the staining .

5. When the buzzer alarms or the staining fails to work properly, please check the alarm toolbar and the information on the monitor interface screen.

8. Service

Our commitment: Once the products sold out, we will provide lifelong service for the users. Once the products have equipment fault when using in the correct way, our legitimate dealers will be responsible for repairing the products.

We will provide free service within one year. We provide paid service one year later. The maintenance of this product need to be equipped with professional knowledge and skills, kindly remind the users do not repair the products by yourself.

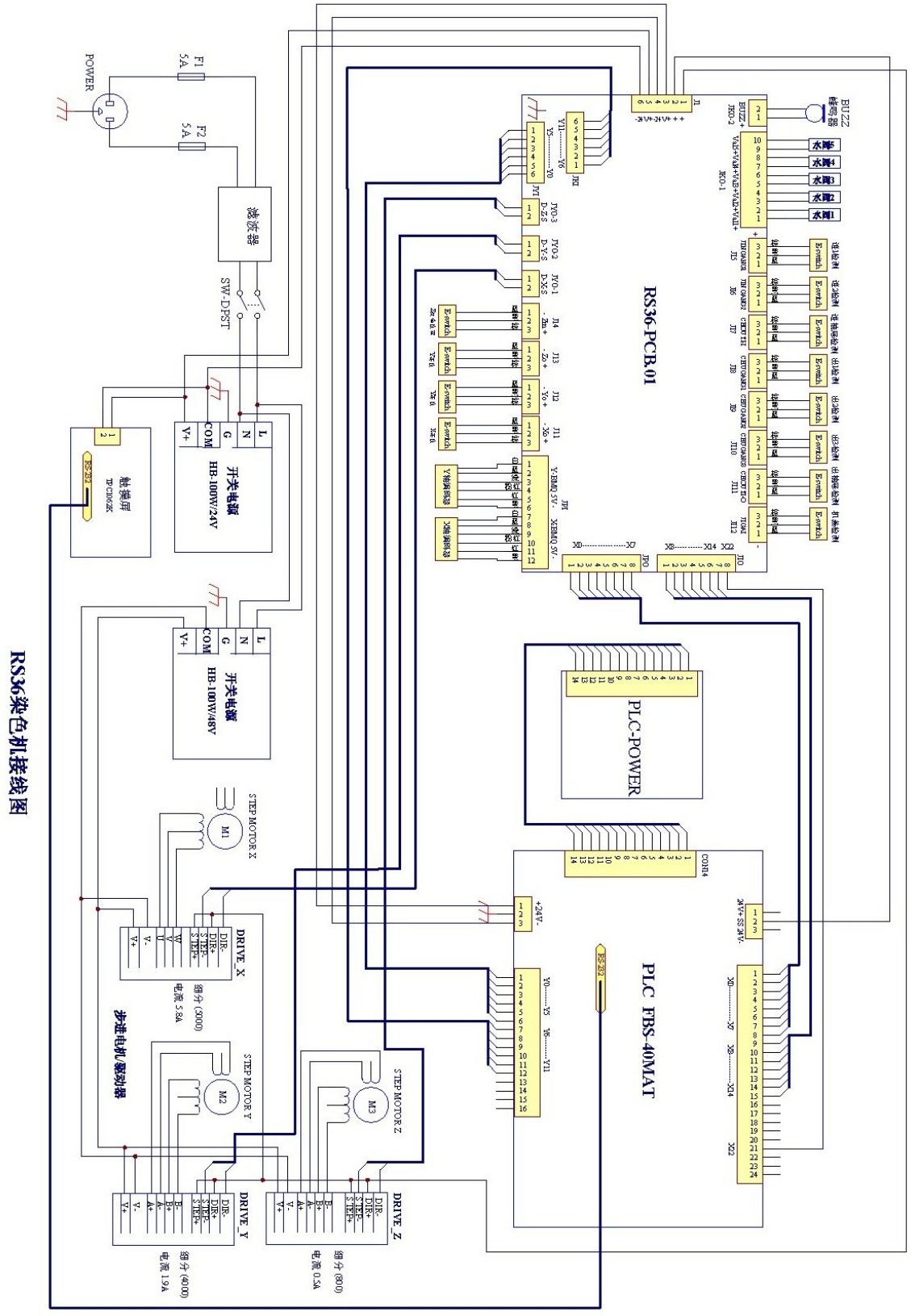
9. Transportation and storage

1. Transportation: Without the crash of the direct rain or snow, the products after packing can adapt to different kinds of transportation mode.

2.Storage:The products after packing can be stored under （0～40）℃. Under the

condition by no acid, alkali and no corrosive gas.

PS1: The wiring schematic drawing



PS2: HE staining process

Step	Reagents	Soak time	Soak way	specification
1	Xylene I	2'-5'		Xylene dewaxing and rehydrate in alcohol gradient
2	Xylene II	2'-5'		
3	95% Alcohol I	1'-3'		
4	95% Alcohol II	1'-3'		
5	80% Alcohol	1'		
6	70% Alcohol	1'-2'		
7	Tapwater washing	1'		
8	Distilled water	1'		
9	Hematoxylin	4'-8'		Hematoxylin staining(H staining): stain karyon into blue
10	Tap water washing	1'		
11	1% hydrochloric acid alcohol	3"-5"		
12	Tap water washing	10"		
13	1% ammonia water	5"-10"		
14	Tap water washing	1'-2'		
15	distilled water	1'-2'		
16	0.5% eosin	1'-2'		Esion staining (E staining)： stain karyon into red etc
17	Tap water washing	1'		dehydration transparent
18	80% Alcohol	30"		
19	95%Alcohol I	2'-3'		
20	95%Alcohol I	2'-3'		
21	100%Alcohol I	3'-5'		

22	100%Alcohol II	3'-5'		
23	Xylene I	2'-3'		
24	Xylene II	2'-3'		
25	Xylene III	2'-3'		

Installation guide

1. Open the wooden case and place the stainer on the flat and tight working platform (The stainer weighs a lot and needs to be carried out by three or four people from the wooden box)
2. Install inlet and outlet piping
3. Installation of inlet pipe
4. a、According to the local tap water situation, connect the tap water to the network of the water pipe using the joint fittings of the instrument (picture 23)

Picture 23

b、Turn off the faucet and connect one end of the pipe to the faucet and the other end to the

water inlet on the right side of the stainer. (Picture 24)

Picture 24

5. Open the faucet and check whether there is any water leakage at each connection of the inlet pipe. If there is any water leakage, find out the cause and handle it until there is no water leakage.
6. Installation of outlet piping.
7. a、Install one end of the lower water pipe fitting of the stainer at the water pipe, fasten with the hoop, and put the other end at the water pipe. (see picture 25)

Picture 25

b. Sewer pipe do not bend, should ensure the sewer pipe fluent.

Attention

Stain cylinder do not lean, ensure the stability. (Picture 26)

Picture 26

Slide rack should be straightly into the drawer, not inclined (Picture 27), push in and out of the drawer should push in place.

Picture 27

Picture 28

3. During the operation of the machine, hands are not allowed to reach in. If any

special circumstances, please pause. The machine cover can be opened without the sound of buzzer.

4. In case the water tank is not fluent, please use tweezers to access the drain hole.

Thank you for choosing YR435-1 Slide Stainer. This instruction will help all the users master the right way to use the product of our company. If you need any more help, please contact with us at any time.