



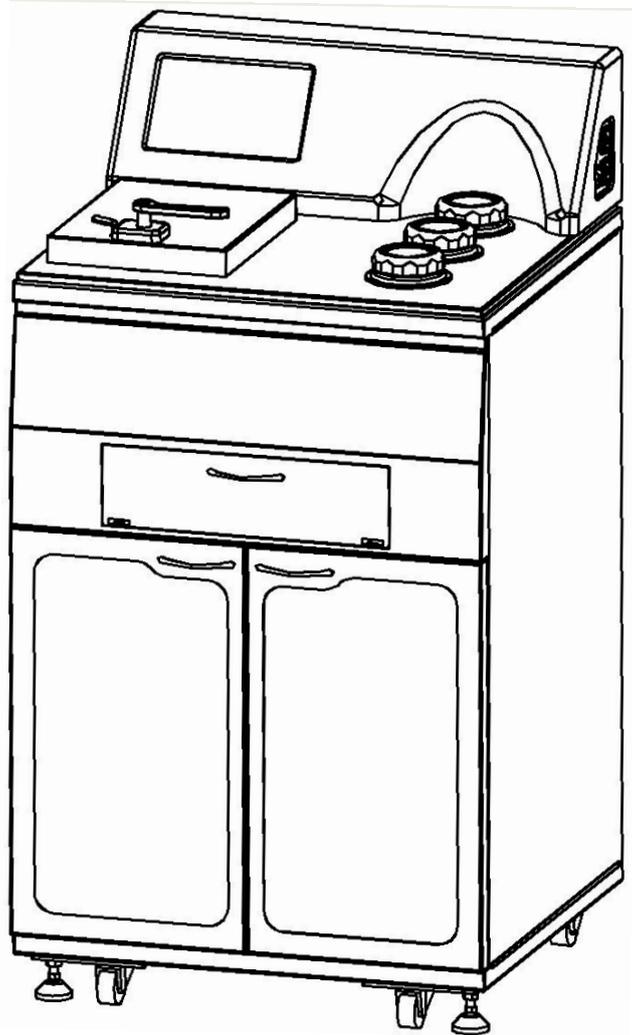
AVTP 2500

Vacuum Tissue Processor

Operational Manual

AMOS SCIENTIFIC PTY.LTD. ABN37 159 778 140

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The operational manual has been designed on purpose describing the structure, performance precautions of this instrument. Before using this instrument, please carefully read this manual.

Foreword

AVTP2500 Vacuum Tissue Processor is designed for the worldwide user. It can meet the different requirement in the fields of biology, medicine and industry.

It is necessary to read this technical manual to ensure that the instrument is snuff, long haul and safely used.

Our company is responsible for service after the microtome have been used, our agents have ability to service, the client all of world can contact our agent in order to get timely service.

Attention: our company products will be mended and updated continually along with development of technology. Regarding of being updated of the technical data and instruments component, we will not inform.

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1、 Safety Matters

1.1 Overview

The Instruction Manual contains important safety instructions and information. The operation manual is an important part of the instrument, which the operator must read carefully prior to startup and use in order to run safely. It will ensure personal safety and avoid instrument damage at a critical moment. Please keep the Manual near the instrument for easy reading.

- ▲ **Notes:** The safety marks and protective device on both instrument and accessories may neither be removed nor modified, so as not to injure human body or instrument.

1.2 Safety Warning

The following safety notes relating to transport, installation, calibration, operation, maintenance, cleaning and all aspects of the instrument. Every principal person must be read carefully and carry out this mentioned strictly.

1.2.1 Warnings-Transport and Installation

- The instrument may only be transported or moved in an upright position always, the tilt angle should not exceed 45°C.
- After installation, the fixed feet have to be adjusted off the ground before transporting or movement
- The input voltage has been preset at the factory, please check this setting complies with your local power requirement before connecting the instrument to the mains power.
- Please use the power cord provided. If changing the power cord, ensure the power cord with earth wire.
- The instrument must be installed in a ventilated environment, Don't operate in rooms with explosion hazard
- The protective parts on instrument and accessories must neither be removed nor modified, in order to avoid injury to instrument or human body

1.2.2 Warnings-during Operation

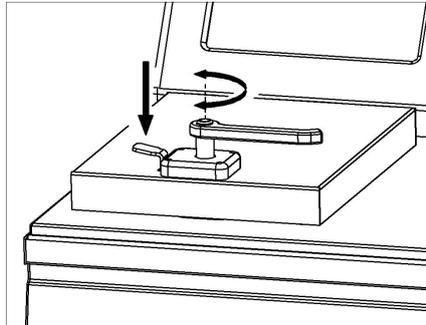
- Turn off the instrument may be used in emergency to stop the instrument during operation.
- Refill the reagent into reagent bottles by auto or manual, the operator should take medical antiseptic plastic gloves and masks, to prevent damage to the body.
- Be cautious to treat wax, tissue tank and waste wax box because of high temperature.
- Don't remove the drain connection until the filing or draining has been completed, to ensure the reagent is clean in tube .
- In any case, it have to ensure smooth pressure in cylinder before opening the retort lid in order to ensure opened safely and easily.
- Replace the reagent with care to ensure the lid seal and reagent bottle back into place, otherwise it will cause leakage or the processing does not work properly
- It have to ensure the paraffin bath lids seal when filling wax, otherwise the processing does not work properly.
- Don't drain the wax until the waste paraffin bath have been cleaned
- Carefully dispose of reagent accordance with waste management system in local regulations of company or organization.

1.2.3 Warning- Maintenance and Cleaning

- Only authorized person may do the service and repair!
- Don't cleaning until the machine switch off and disconnect the power plug.
- Cleaning and maintenance must be carried out regularly depending on the frequency of the instrument using and the sample amount of processing, especially important to pay attention the cleaning liquid used, to prevent pipeline blockage because of excessive use of liquid.
- Don't use corrosive liquids to clean the instrument.
- Ensure that no liquids enter the interior of the instrument when cleaning!
- Cleaning the condensate bottle regularly .Sealed the lid and back into place.
- Turn the instrument off with the mains switch and pull the mains plug before replacing the fuses! Only use fuses of the same specification and operation in this manual.

1.3 Safety devices explanation

1.3.1 Retort Lid locking



The instrument is equipped with cylinder locking system. As the left fig showing, press the lock catch to unfasten firstly, and then rotating the handle to open or close the lid that in order to prevent the hand off dangerous because of the pressure in retort during dehydration process.

1.3.2 Pressure Sensor

Pressure Sensor be located in retort and reagent bottle, used for monitoring air changes in the inner, the interface in words prompts the user when meet abnormal way, that helps judgment and failure.

1.3.3 Liquid limit Sensor

Four liquid limit sensors located in retort bath, used for monitoring liquid inlet/outlet. Once the pipeline clogging or reagent short, it will remind the user timely to fill reagent or find the fault reason, and smart control the inlet/outlet time in each bottle to reduce processing time.

1.3.4 Overheating Protection

The heating parts of Retort and Paraffin bath are provided with a mechanical over temperature protection, that limit the high temperature damage.

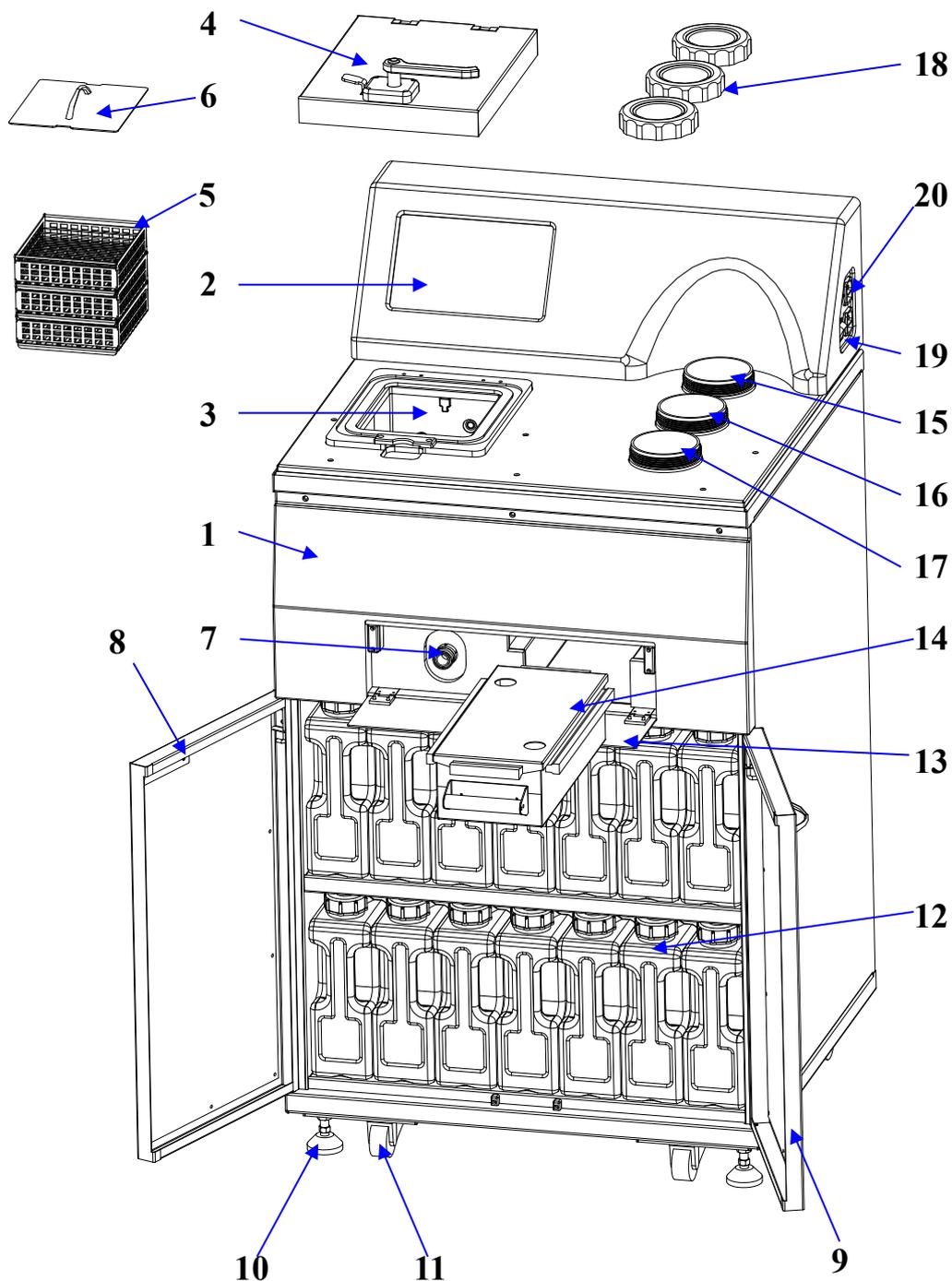
1.3.5 Overcurrent protection

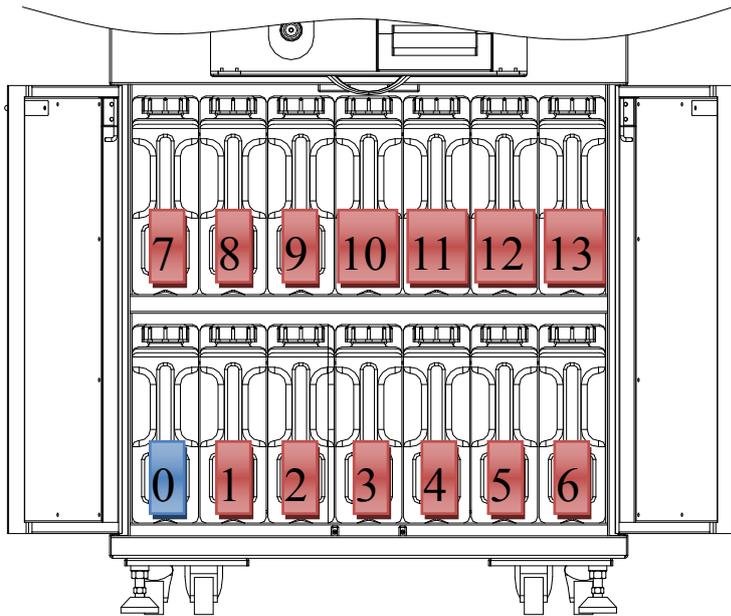
Overcurrent protection are protected against main fuses and the separate heating power fuses.

2、 Performance & Parameters

2.1 Overview - Structure Description

AVTP2500 vacuum tissue processor be worked for processing plant, animal and human cells. This instrument adopts PLC with touch screen control system in reliable performance, complete function and friendly operations. It be widely used in clinical pathology study and analysis of animal and plant, microorganisms cells.





Reagent bottle :
 0: Waste bottle
 1-9: Reagent bottle for processing
 10-13 Reagent bottle for cleaning

- | | |
|----------------------------------|-------------------------|
| 1. Basis instrument | 14. Waste wax bath |
| 2. Touch Screen | 15. Paraffin bath 1 |
| 3. Retort | 16. Paraffin bath 2 |
| 4. Retort Lid | 17. Paraffin bath 3 |
| 5. Basket | 18. Wax bath lid |
| 6. Basket cover | 19. Power supply |
| 7. Fill/Drain reagent connection | 20. Power supply Socket |
| 8. Left door | |
| 9. Right door | |
| 10. Support Foot | |
| 11. Wheel of foot | |
| 12. Reagent bottle | |
| 13. Front panel | |

2.2 Performance Index

The instrument adopts the vacuum suction principle, to make all kinds of reagent runs, so as to good treatment of tissue.

Characteristics:

- ⊙ Tissue was placed in retort bath. Don't contact with air to drying under safety condition during processing.
- ⊙ The whole processing is under vacuum environment to avoid harmful gas overflow to harm health.

Mechanical:

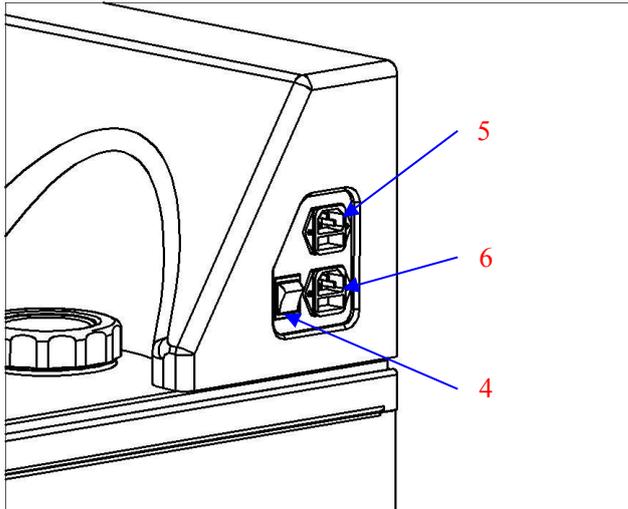
- ⊙ Paraffin bath and Retort bath made by high quality stainless steel
- ⊙ Safe and Reliable seal effect prevent reagent vapor overflowing during processing.
- ⊙ Surface be easy to clean.
- ⊙ Pluggable reagent bottle make it easy to drain and fill reagent.
- ⊙ Two kinds distributing valve for Reagent and wax be treat reagent and wax separately, maximum to prevent the tube blocking under ambient temperature.

Electrical and program:

- ⊙ Every work status be clearly displayed in large touch screen .
- ⊙ Check the seal situation automatically before working, and alarm any problem happens.
- ⊙ Reagent management remind the user maintenance automatically, to ensure the satisfactory results.
- ⊙ Reagent replacement automatically. When the using times of first alcohol bottle arrive to max while the alcohol concentration is lower the required, the first bottle of alcohol be drained firstly and pump the alcohol from bottle 2 on the purpose of saving reagent.
- ⊙ Wax replacement. After pulling wax out from bath 1, it can be filled with the wax in bath 2 on the purpose of saving paraffin.
- ⊙ Up to hundreds protocols meets different tissue processing requirement and modifying the current protocol.
- ⊙ Power failure protection function. The external UPS can protect tissue from suffering damage once meet power failure. When power is restored, the previous protocols is automatically resumed and completed. The standard UPS can keep power in 30 minutes.
- ⊙ Fill the reagent and drain automatically.
- ⊙ Monitoring the processing by manual to help maintenance easily.
- ⊙ Variety cleaning adapts different clean conditions.

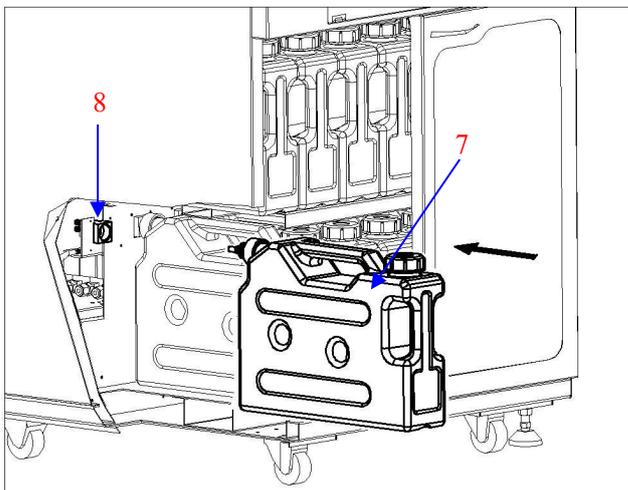
2.3 Technical Data

- ⊙ Surroundings requirements: Working temperature: +10℃—35℃
Working humidity: <80%, defrosting
Working pressure: (86~106) KPa;
- ⊙ Power supply: 220 V AC/110V AC
- ⊙ Frequency: 50/60 Hz
- ⊙ Power: <1000 VA
- ⊙ Fuse: main power 3A, heating power 5 A
- ⊙ Safe classify: Classify I - type B
- ⊙ Dimensions: L: 650mm,
W: 690mm,
H: 1285mm,
- ⊙ Weight (net): approx 190kg
- ⊙ Number of paraffin bath: 3pcs
Capacity 3.5L
Temperature 55-70℃
Temperature accuracy: ±1℃
Melting time 10h
- ⊙ Number of Retort bath: 1pc
Capacity: max 300cassettes(3basket)
Reagent volume 4.5L
Temperature(paraffin):55-70℃ , Temperature(processing reagents): 55℃
Temperature accuracy: ±1℃
Negative pressure max: 700mbar Positive pressure max: 350mbar
- ⊙ Waste reagent bottles: 1pc
Maximum bottle volume:5L
- ⊙ Reagent bottles: 9pcs
Maximum bottle volume:5L
- ⊙ Cleaning bottles: 4pcs
Maximum bottle volume:5L
- ⊙ Waste wax box: 1pc
Maximum bottle volume:4.5L
- ⊙ Color LCD touch screen: 10inches



3.3.2 Connecting the power cord

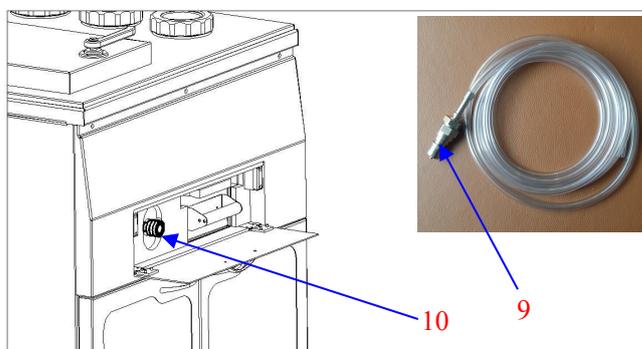
The power switch (4) be supplied two input of Main power (5) and heating power (6) Recommended the main power input (5) be installed with UPS in order to protecting power outages in short time caused the protocols running.



3.3.3 Installing Reagent bottles

Put reagent bottles (7) into connector (8) as direction showing. The bottles be pulling out by counterclockwise direction.

● Note: It must be fully loaded when it is pulled out, otherwise it leads to gas and reagent leakage, and affect normally procedures.

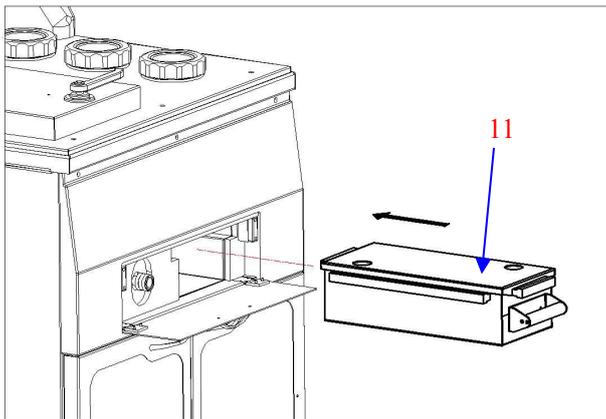


3.3.4 Installing the tube for external

Open the front panel firstly, and put the connector (9) into the socket (10), connection and locking.

It has to unlock and pull out.

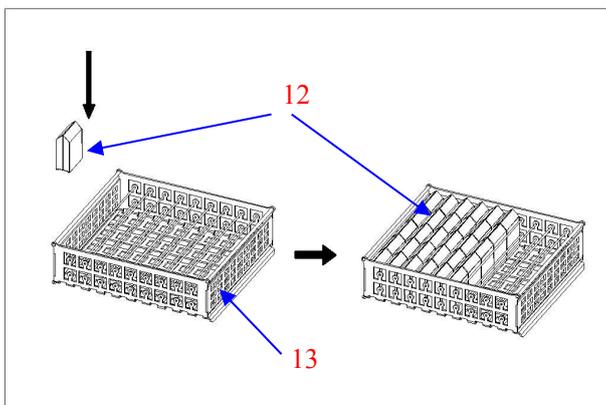
● Note: Don't pull out the tube until finishing the reagent filling and drain, otherwise it is difficult to clean the residual reagent.



3.3.5 Installing waste wax box

Open the front panel firstly. Pull into the waste wax box (11) as direction showing. Pull out as reverse direction.

- Note: Please pull out smoothly by holding the plastic parts. Be careful the high temperature of paraffin burns.

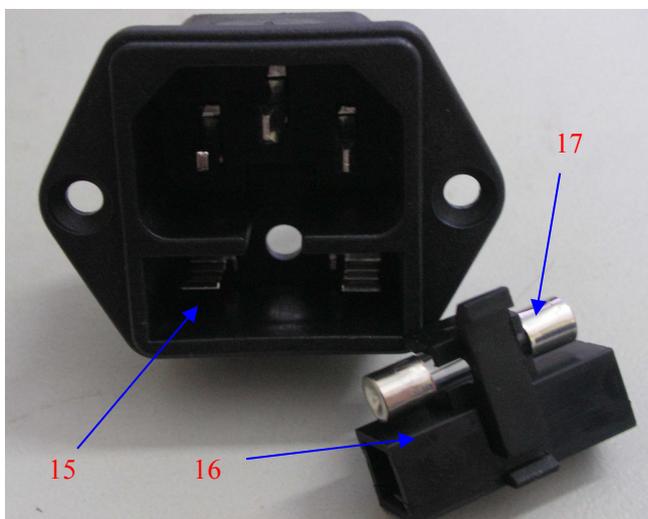


3.3.6 Installing specimen basket

Put the standard cassettes (12) in double pieces as fig showing into specimen basket (13). Up to 100 cassettes fits into each basket.

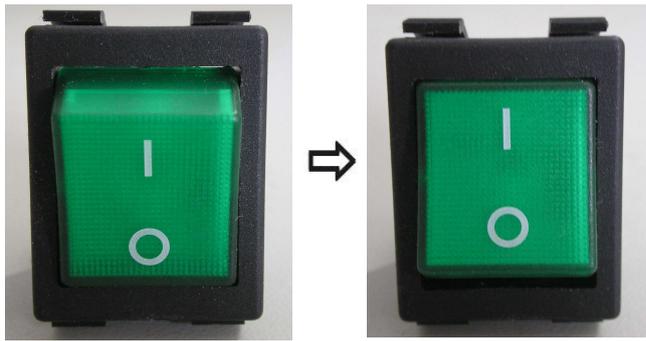
3.4 Electrical Connection

- The voltage has been preset at the factory. Before connecting the instrument to the power, please check that this setting complies with the local power requirements of your laboratory.
- Connect the instrument to a grounded power socket, to avoid accident.
- It is better to use the power cable provided or use an extension cord with a ground wire.



⊙ Insert the fuse(17) into the fuse socket (16) as the Fig showing and insert the whole fuse socket into the socket (15).

- **Attention:** Cut off the power supply and then pull the plug before change the fuse. To ensure trouble-free operation of the instrument, make sure to comply with the explanation in the operation manual.



⊙ Power off as the left fig show and Power on as right fig show.

⊙ The LCD touch screen will display after power switch on, it need several minutes program initialization.

4、 Operation

4.1 Setting up of the instrument

Reliable power connection and then turn on the instrument, the LCD touch screen will be displayed the main menu after program initialization several minutes as fig showing.

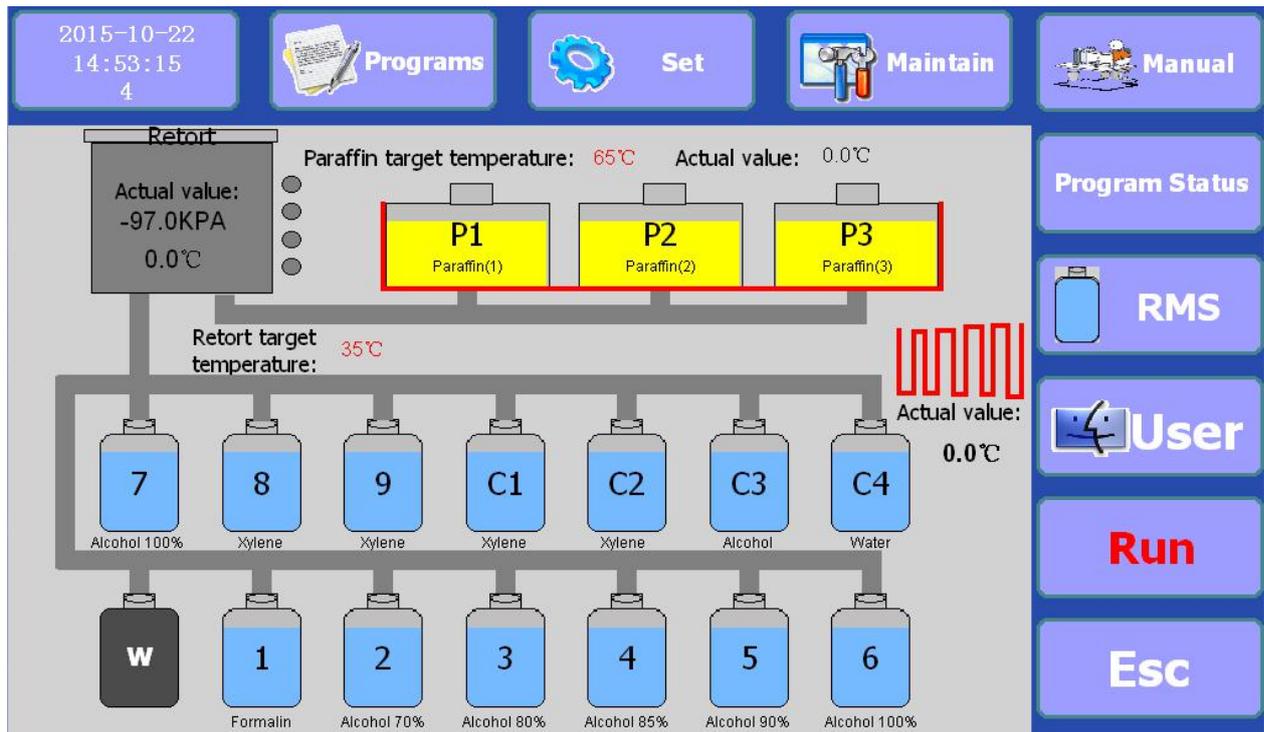
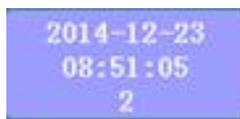


Fig1

- Don't touch the screen until the program initialization finishing!

The main interface is composed of menu and display section, all of the operating parameters setting and running status display are all through this interface, the details be described below:



⊙ **Real time setting button**

If the real time is not accurate, it can reset by opening this button.



⊙ **Operation of Dehydration process button**

Procedures for editing, selection and deletion can be set by this button.



⊙ **Setting of processing parameter button**

Basket number, cassette number, delay time, mixing and protecting cylinder can be set by this button.



⊙ **Maintenance button**

Automatically fill or drain reagents or paraffin, reagent or paraffin alternate replacement, pressure balance and cleaning, etc can be set by this button.



⊙ **Manual operation button**

Manual operation to the reagent or paraffin suction from the reagent bottle or paraffin bath to the retort bath, or manual operation to the reagent or paraffin drain from the retort bath into reagent bottle or paraffin bath, and also manually operated retort bath, paraffin bath or turn on and off heating of electromagnetic valve.



⊙ **Running status of processing program check button**

Check the procedure name, delay time, steps of dehydration procedure, number of baskets by this button.



⊙ **Operation of Reagent Management System button**

Set the number of cassettes or the number of cycle times that each reagent is allowed to use on this system.



⊙ **User Management setting button**

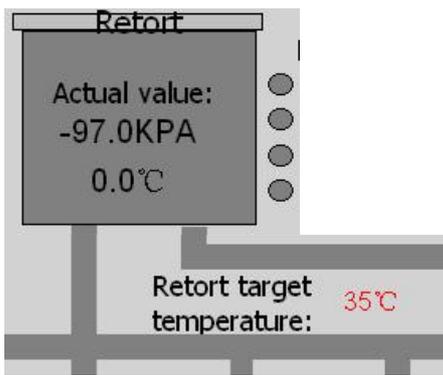
Change the administrator password by this button.
The initial password is default 2".



⊙ **Automatic start running button**

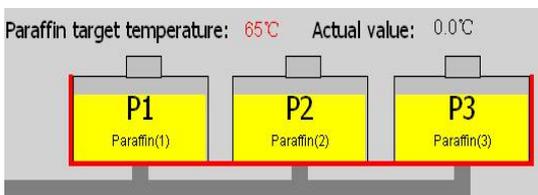


⊙ **Stop processing button**



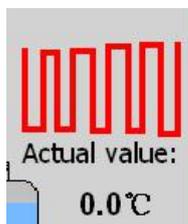
⊙ **State of Retort bath display**

The actual temperature and the actual pressure are displayed at the center of window, and the target temperature is displayed at the lower right of the retort bath. The four black circle at the right of retort bath are liquid level indicator. The liquid level reaches a certain sensor position while the circle will become to green color.



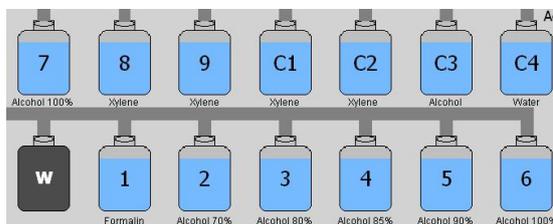
⊙ **State of Paraffin bath display**

The target temperature and actual temperature of the paraffin bath are displayed at upper position of paraffin bath. P1, P2 and P3 are each said as paraffin bath1, paraffinbath 2 and paraffin bath3



⊙ **State of electromagnetic valve display**

The actual temperature of electromagnetic valve for Paraffin pipe is shown in the window.



⊙ **State of reagent bottle display**

The window is shown the reagent bottles, the number of reagent bottles means the reagent bottle position number.

1~9 is position number for dehydration reagent bottle, C1, C2, C3 and C4 are cleaning bottles, the reagent name is displayed at below of reagent bottle.

Reagent name could be edited in RMS window. Gray bottle with "W" is for condensed liquid bottle.

4.2 Real time setting

Press real time setting button to open the window as Fig 2.

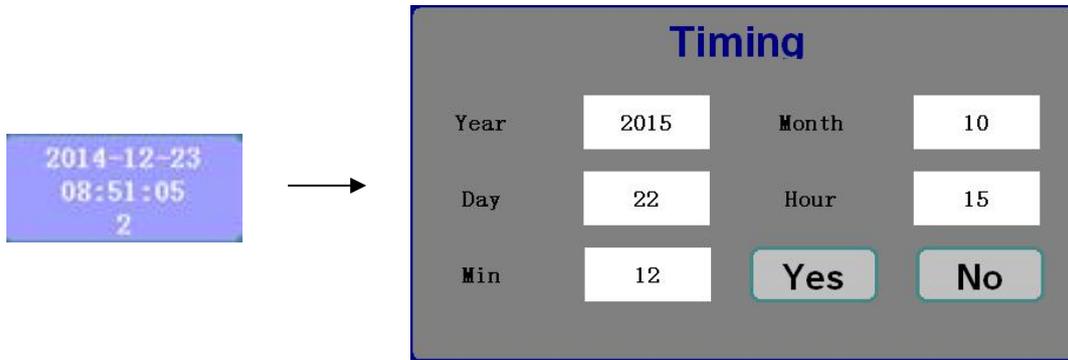


Fig 2

The user could touch the corresponding button symbol to choose and edit the data. Press "YES" to save the all editing parameters and exit, and don't saving by press "NO".

4.3 Operation of Dehydration process

Press "Program" button to open the window as Fig 3



Fig 3

Step	1	2	3

⊙ Processing step

The program automatically runs up to 12 steps from 1 to 12 steps in order to run. 1 to 9 for the reagent bottle parameter setting, 10 to 12 for the paraffin bath parameter setting.

No	1	2	3
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⊙ **Position setting of reagent bottle or paraffin bath**

Set the position of reagent bottle or paraffin bath.

● **Note:** If one step is edited 0 which means the program doesn't perform the step and going to next step directly.

Hour	0	0	0
Min	0	0	0

⊙ **Running time setting**

Edit the running time at every step.

● **Note:** If one step is edited 0 which means the program doesn't perform the step and going to next step directly.

TEMP.	0	0	0
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⊙ **Running temperature setting**

Edit the temperature in retort bath at every step.

35-55 degrees for 1 to 9 steps,

55-70 degrees for 10 to 12 steps.

Status	A	A	A
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⊙ **Operating pressure state setting**

Edit the pressure state in retort bath at every step.

Click the block after "Status" to open the window as Fig 4.

"A" is pressure in normal

"P" is positive pressure

"V" is negative pressure

"V/P" is positive and negative pressure alternatively.

MAX P and MIN V can be set as range -70kp~35kp

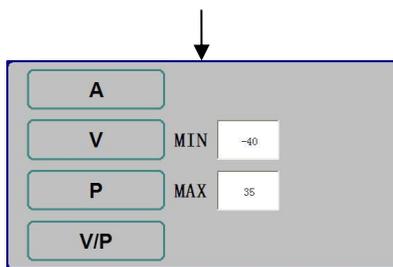


Fig4

4.3.1 Set a new processing program



- I. Set a new processing procedure directly
 - ⊙ Input the processing name and parameters of each step on the operation interface. that includes the position of reagent bottle, the position number of paraffin bath, processing time, temperature and pressure in retort bath during processing.
 - ⊙ Click “SAVE” to save program.
- II. Edit a new processing program on existing programs.
 - ⊙ Select existing program (ref:4.3.2)
 - ⊙ Modify parameters on the selected program. The name of new processing program must be modified because it cannot be same as the saved program name.
 - ⊙ Click “SAVE” to save new program.

4.3.2 Processing program selection

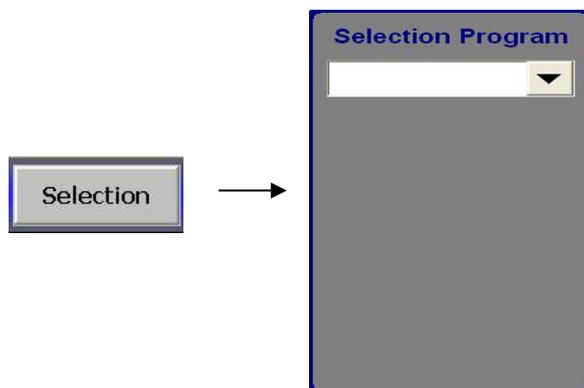


Fig 5

- ⊙ Press “Selection” button to open the window as Fig 5.
- ⊙ Select the required program

● **Note:** be sure the program selection successful and close the window.

4.3.3 Delete a processing program



- ⊙ Select the required delete program (ref: 4.3.2),
- ⊙ Click “DEL” to delete

● **Note:** The program cannot be deleted in the following cases:
 1.The program is only one in system,
 2.The Program is on running.

4.3.4 Enter into Main interface



- ⊙ Press “Enter” into main interface (Fig 1).

4.4 Processing parameter setting

Press “Set” to open the window as Fig 6.

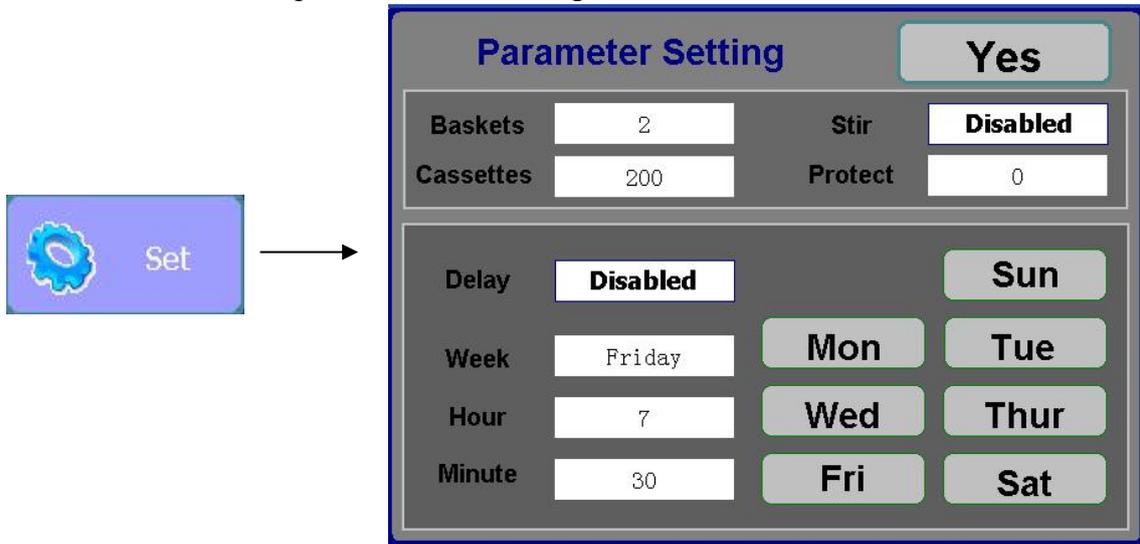
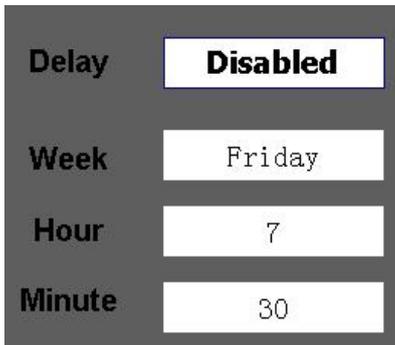


Fig 6



- ⊙ “Baskets” :Input the required basket number.
- ⊙ “Cassettes ” :Input the required cassette number.
- ⊙ “Delay” for delay time setting, “Disabled” means delay cancel, “Enabled” means time delay.
If “enabled” appears that delay action start and edit the “week”、 Hour “、” Minute “in here.(select the right side of "week" indicates the current processing is complete finish.)
- ⊙ ”Stirrer ” for stirrer setting. Touch “Stirrer”button, if “disabled” appears that means stirrer cancel. If “enabled” appears that stirrer action start.
- ⊙ “Protect” reagent protection setting. When the power supply is protected,UPS will help to pump into retort bath.
● Notes: once protection reagent set for bottle “0”, this function is invalid. When power off, heat power stops, UPS provide power supply for data before power off. When power recovers, original program continues running.
- ⊙ After finish selection, press “Yes” to exit.

4.5 Equipment Maintenance

Press “Maintain” to open the window as Fig 7.

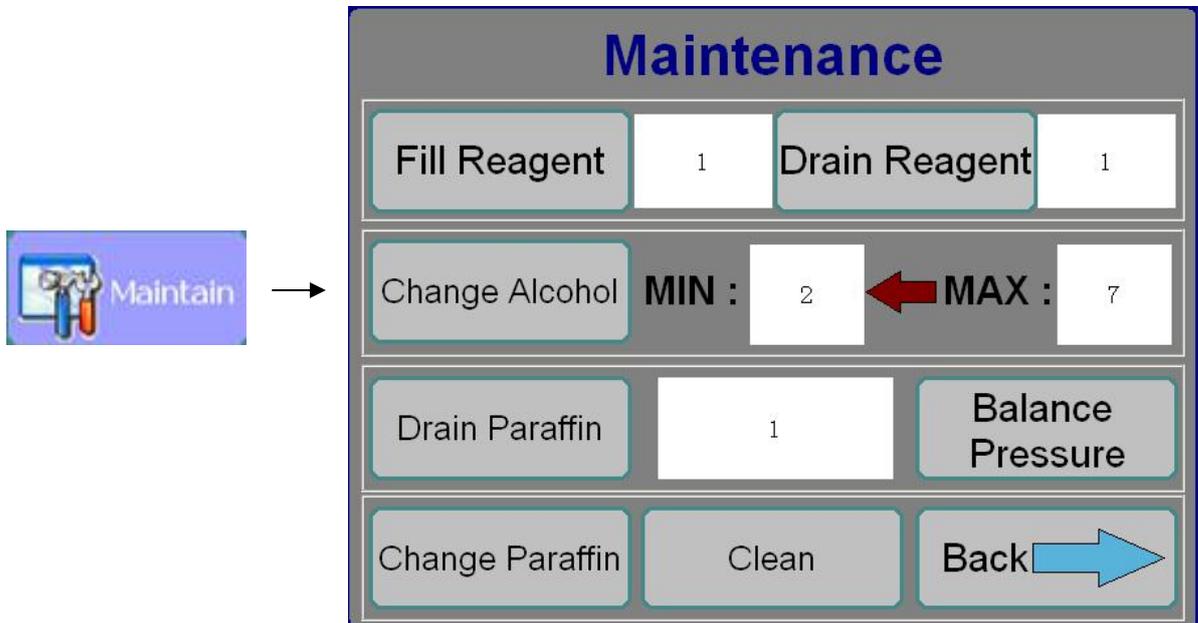
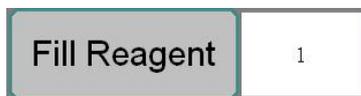


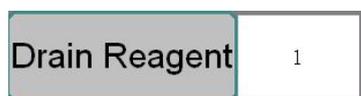
Fig 7



○ Fill new reagent

Connecting the reagent bottles to filling reagent spout, and making sure the retort lid be covered completely.

Input the number of bottles that is need to be filled in the editing space, and click **Fill Reagent** to confirmed with YES. The reagent will be pumped into bottles automatically.



○ Drain waste reagent

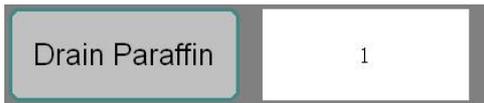
Connecting the bottles of waste reagent to filling reagent spout, and making sure the retort lid be covered completely.

Input the number of bottles that is need to be drained in the editing space, and click **Drain Reagent** to confirmed with YES. The reagent will be drained out automatically



⊙ Alternate alcohol replacement

Make sure the low concentration alcohol had been drained out completely. Then put the bottle number of Low concentration alcohol in “MIN”and“MAX” for high concentration alcohol. Click **Change Alcohol** to confirm with YES, the high concentration alcohol will change to low concentration



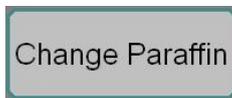
⊙ Drain the waste paraffin

Place the paraffin bath for waste and cover the lid. Input the number of paraffin bath that need to be drained out in the editing space, click **Drain Paraffin** to confirmed with YES. The used paraffin be drained to the bath. Repeat the ways to drain completely.



⊙ Balance Pressure

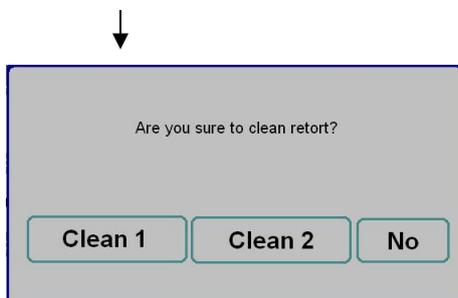
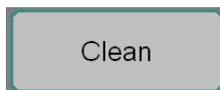
When the retort and paraffin bath with high negative pressure or positive pressure, DON'T open the lids directly. Please press **Balance Pressure** to waiting the pressure balance and open lids.



⊙ Alternate paraffin replacement

Cover the retort lid and paraffin bath lid. Click **Change Paraffin** to confirm with YES, the paraffin in second bath be filled into first bath automatically, and the others in order to change. Should be clean the retort bath completely after the paraffin changed.

● **Note:** Make sure the paraffin in first paraffin bath had been drained out before click the icon.



⊙ Clean retort bath

Make sure the lid of retort be covered.

Click **Clean** and Fig 8 appears two ways of cleaning. Clean 1”be used for the paraffin stilled be in retort bath. “Clean2” be used for the retort bath haven’t paraffin

Fig 8



⦿ Back to main interface.

4.6 Manual Operation

Press “Manual” to open the window as Fig 9.

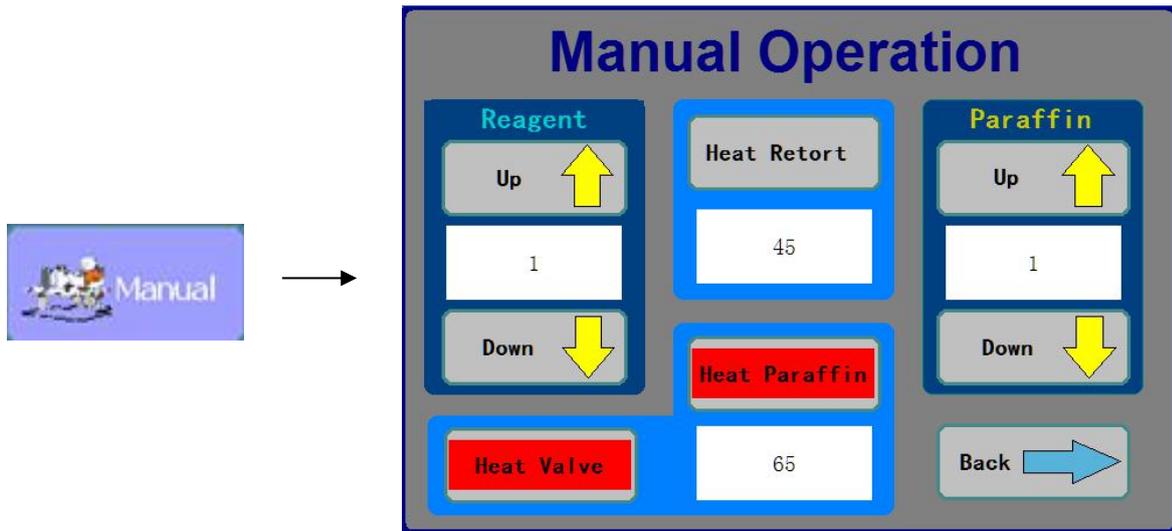
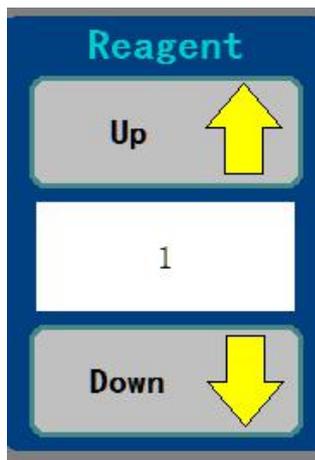


Fig 9



⦿ **Reagent be pumped to retort bath from reagent bottles.**

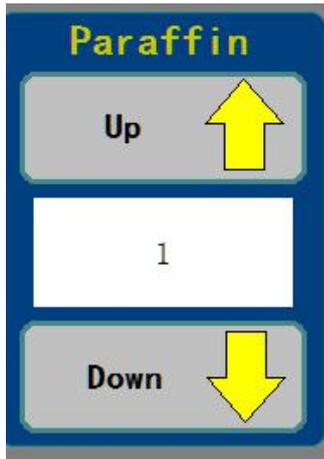
Make sure the retort lid be covered completely firstly. Input the number of bottle that is need to be pumped in the editing space, and click to confirmed with YES.

The reagent will be pumped into retort bath automatically. The volume of pumping depends on baskets qty.

⦿ **Reagent be pumped from retort bath to reagent bottles.**

Make sure the retort lid be covered completely firstly. Input the number of bottle that is need to be pumped in the editing space, and click to confirmed with YES. The reagent will be pumped from retort bath to reagent bottles automatically.

● Notes: cleaning bottle C1, C2, C3, C4 refers to reagent bottle 10, 11, 12, 13



⊙ **The paraffin wax be pumped from paraffin bath to retort bath.**

Cover the retort lid well before pressing the icon.

Then input the number of required pumping paraffin bath and press icon to confirm the data.

After confirmation, the paraffin will be pumped from required paraffin bath to retort bath automatically as parameter setting.

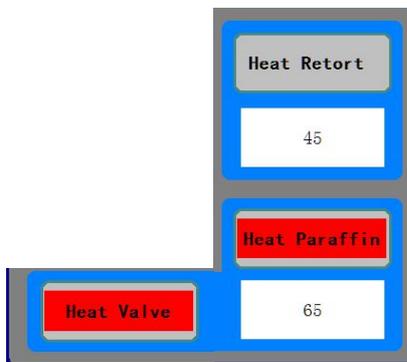
⊙ **The paraffin wax be pumped from retort bath to paraffin bath.**

Cover the retort lid well before pressing the icon.

Then input the number of required pumping paraffin bath and press icon to confirm the data.

After confirmation, the paraffin will be pumped from required retort bath to paraffin bath automatically as parameter setting

● Notes: paraffin bath P1, P2, P3 refers to 1, 2, 3



⊙ **Manual Heating**

“ Heat Retort ”: is for retort bath heating. The target temp be displayed under the buttons. The user could edit it manually

“ Heat Paraffin ” is for paraffin bath heating. The target temp be displayed under the buttons. The user could edit it manually

“ Heat Valve ” is for manual heating to valve and paraffin pipe.

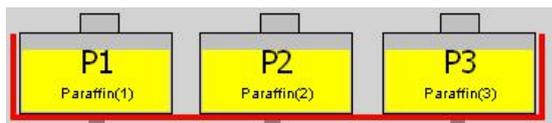


Fig 10

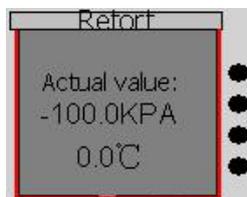


Fig 11

After heating, the corresponding button is changed to red color that displayed for the retort bath and paraffin wax bath is heating, and also display on Main interface as Fig 10 and Fig 11.



⊙ **Back to main interface**

4.7 Processing status check

Click “Program Status” icon to open the window as Fig 12.

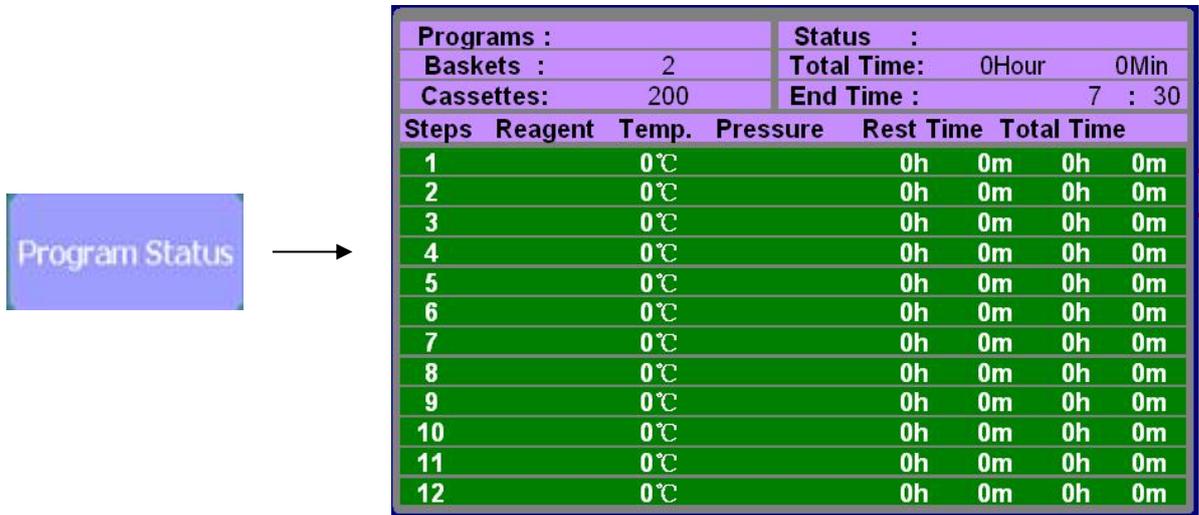


Fig12

Programs :	
Baskets :	2
Cassettes:	200

- ⊙ Program: The current program name.
- ⊙ “Baskets” & “Cassettes”: Number of basket and cassettes

Status :		
Total Time:	0Hour	0Min
End Time :	7	: 30

- ⊙ Status: The current status of processing. Three status on Standby, Stop, Ready.
- ⊙ “Total. Time”: Total time to end the processing.
- ⊙ “End Time” : End time for the processing.

Steps	Reagent	Temp.	Pressure	Rest Time	Total Time
1		0℃		0h 0m	0h 0m
2		0℃		0h 0m	0h 0m
3		0℃		0h 0m	0h 0m
4		0℃		0h 0m	0h 0m
5		0℃		0h 0m	0h 0m
6		0℃		0h 0m	0h 0m
7		0℃		0h 0m	0h 0m
8		0℃		0h 0m	0h 0m
9		0℃		0h 0m	0h 0m
10		0℃		0h 0m	0h 0m
11		0℃		0h 0m	0h 0m
12		0℃		0h 0m	0h 0m

- ⊙ Reagent name, Temperature, Pressure, remaining time, total running time. in each step
- ⊙ The step number of processing end or on air be remarked Red color.
- ⊙ Click the window any place could close the window.

4.8 Reagent Management System

RMS is the necessary permissions, only the responsible person could to operate. The registered person has to log in (Fig 13) firstly with user name and password and go into RMS interface (Fig14)

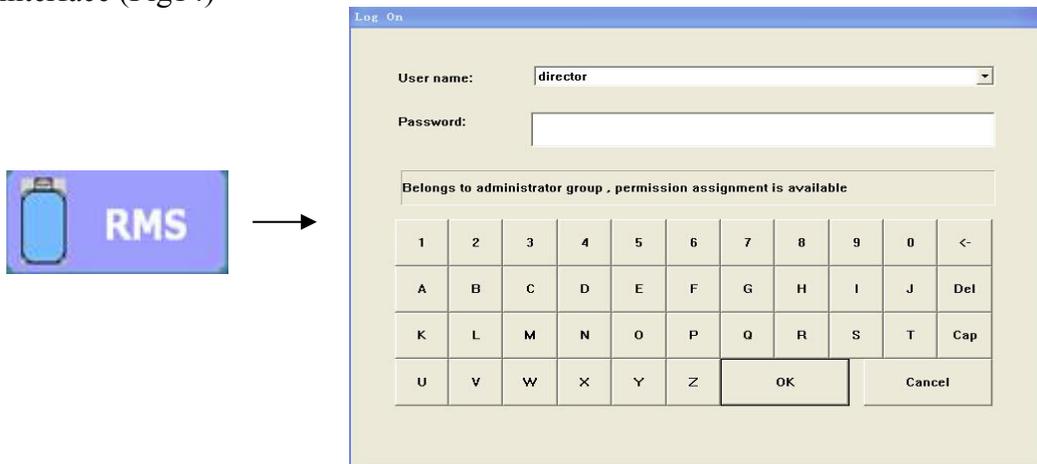


Fig 13



Station	Reagent	Cassettes	Count	Station	Reagent	Cassettes	Count
1	Formalin	0	0	P1	Paraffin(1)	0	0
2	Alcohol 70%	0	0	P2	Paraffin(2)	0	0
3	Alcohol 80%	0	0	P3	Paraffin(3)	0	0
4	Alcohol 85%	0	0	Station	Reagent	Cycles	Count
5	Alcohol 90%	0	0	C1	Xylene	0	0
6	Alcohol 100%	0	0	C2	Xylene	0	0
7	Alcohol 100%	0	0	C3	Alcohol	0	0
8	Xylene	0	0	C4	Water	0	0
9	Xylene	0	0	Back →			

Fig 14

Cycles	Count
30	50

Fig 15



Fig 16

- ⊙ Station: Number of reagent bottle and paraffin bath
- ⊙ Reagent: Reagent name
- ⊙ “Cassettes”: User have to set the max number of cassettes can to be processed with each reagent bottle in here.
- ⊙ “Count”: Number of processed cassettes and cleaning times.
- ⊙ “Cycles”: User have to set the max number of cleaning times
- ⊙ The total number of “Cassettes” less than or equal “Count” or the total number of “Cycles” less than or equal “Count”, “Count” will change to red color as Fig 15.

The reagent bottle be corresponding reagent name that displayed Red color on the main interface as Fig 16.

- ⊙ When the Fig15 and Fig16 appears that remind the reagent has reached to end, user have to replace new reagent.

Double click the red under” Count” to clear to Zero.

4.9 User Management

Click “RMS” to open the window as Fig 17.



- ⊙ The user need to log in by “Enter” and change password and user management.
- ⊙ The registered person can manage the delete, add and modify in “User management” .
- ⊙ User could change password after log in.
- Note: The version only allows to modify the password. The initial password is “2”.

4.10 Processing steps

Before start processing, the reagent and paraffin should be sufficient.

Load the basket, and cover lid of retort and paraffin bath, then please operate as the steps.

- ⊙ Edit the program or selected program (ref:4.3), and go into main interface.
- ⊙ Set the parameter of auto processing.(ref:4.4)
- ⊙ Click **Running** to start auto processing.
- ⊙ Fig 18 will appear after the processing complete finished , and confirm with YES for processing ending and end the last step for paraffin, to protect specimen if high temperature.

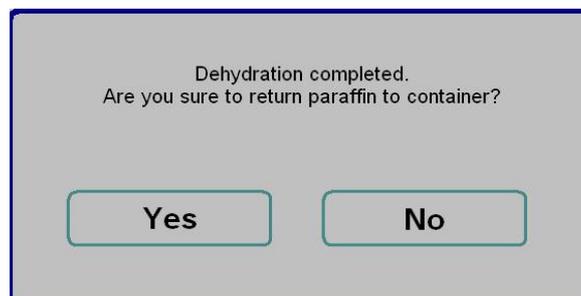


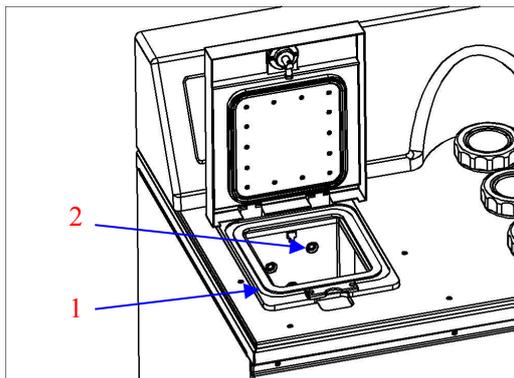
Fig 18

- ⊙ Don't open the retort lid until the paraffin be pumped into paraffin bath completely, and take out specimen basket, then cover retort lid again to cleaning.
- ⊙ If user need to change the step's reagent bottle number, time, temp, pressure status during program running, please back to main interface(Fig 3) to edit the data. But Only accept change the step that has not been performed.
- ⊙ Click **Esc** to end the current processing.

5、Cleaning and Maintenance

5.1 Cleaning the instrument

- ⊙ Cleaning the appearance
Use the dry cloth to clean the outside and wet cloth to clean the areas always be touched when operate the instrument,
- ⊙ Cleaning the retort bath and sensor of liquid level



User have to clean the two parts before processing:
Surface in
Retort bath (1)
Sensor in Retort bath (2)

Clean the surface in retort bath by paper or dry cloth, and soft cloth cleans the sensor in retort bath.

● **Note: MUST DID the cleaning before start processing.**

5.2 Reagent Maintenance

Details referred in item 4.9

- 5.1.1 Set the limit value in RMS, and clear the times to ZERO after any new reagent additional.
- 5.1.2 If the reagent bottle displayed on the screen change to RED color, it means the used times had been reached to the limit, please replace to new reagent.
- 5.1.3 Must clean the waste paraffin bath timely for each new paraffin filling. Fill the paraffin be required by hand.
 - ⊙ Suggest Filling paraffin particles by two times , fill to the max scale position at first time and do the second filling 500g again after paraffin melt.
 - ⊙ Filling the melted paraffin, the filled paraffin volume be required MUST bigger than minimum scale and lower the max scale.

To obtain a high-quality result, it is important to keep cleaning the instrument. So, the user must clean the instrument periodically or irregularly according to the processing quantity to obtain the best result.

- Only authorized and qualified service personnel may access the internal components of the instrument for clearance and maintenance.
- Before do the clearance and maintenance, MUST turn the instrument off firstly, and pull out the plug.
- Cleaning and maintenance must be performed periodically according to the processing quantity. Pay more attention about the cleaning solution be used to protect pipe block because of excessive used solution.
- Do not use any solvents for cleaning!
- Ensure that no liquids enter the interior of the instrument when cleaning.
- Regular cleaning the condensing liquid in waste reagent bottle and sealing cover again for next working.
- Before change the fuse, MUST turn the instrument off firstly, and pull out the plug.

6、 Trouble Shooting

6.1 Malfunctions during do fill and Drain



Reagent pipe is blocked will appear in the picture,
Check whether the electromagnetic valve is damaged.

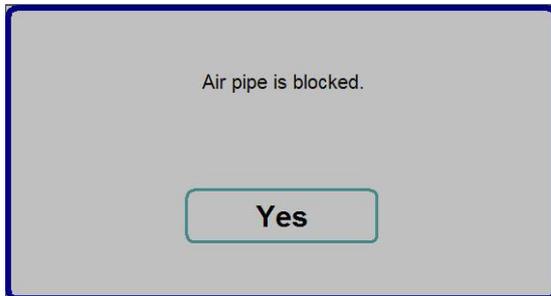
6.2 Malfunctions in Power failure



Paraffin pipe is blocked will appear in the picture,

Check whether the electromagnetic valve is damaged.

6.3 Air pipe is blocked



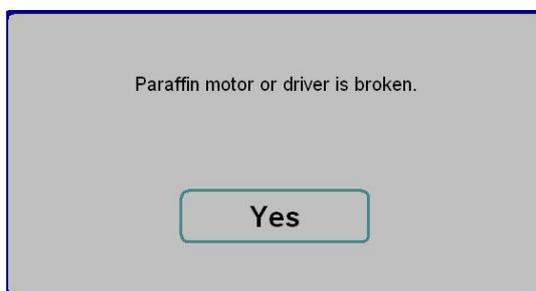
Air pipe is blocked will appear in the picture,
Check whether the air pump, gas solenoid valve or air pipe are damaged.

6.4 Level sensor is error



Level sensor is error will appear in the picture.
Check whether the level sensor is damaged.

6.5 Paraffin motor or driver is broken



Drive or motor for Paraffin was damaged will appear in the picture.
Check the motor for paraffin valve, drive, 24 power supply or photoelectric sensor.

6.6 Reagent motor or driver is broken.



Reagent motor or driver is broken will appear in the picture,
Check the motor for reagent valve, drive, 24 power supply or photoelectric sensor.

6.7 Paraffin is short.



Check the remaining amount of paraffin wax in paraffin baths.

6.8 Reagent is short.



Check the remaining amount of reagent in reagent bottles.

6.9 Malfunctions in Power failure

Protection reagent settled as reagent bottle “1” “2” “3” “4” , when meet power off, main power supply will be continued by external UPS, heating supply will stop.

Power off within 15 minutes, program still run; when over 15 minutes, machine will automatically turn off. System alarm and show as Fig19, power off protection procedure starts.

*If the program runs during reagent cylinder when power off, program stops as Fig20, reagent will be drawing from protection cylinder to retort for protection. Waiting for further dealing.

*If the program runs during paraffin bath when power off, program stops as Fig20, paraffin will be drawing into retort for protection. Waiting for further dealing.



Power-off

Fig 19



Protection Finished

Fig 20

If reagent bottle “0” is set as protection cylinder, when meet power off, main power supply will be continued by external UPS, heating supply will stop. Program runs when power off within 15 minutes, when over 15 minutes, program runs to empty reagent from retort and wait for power. Once power supplies again, system will automatically continue running un-finished program.

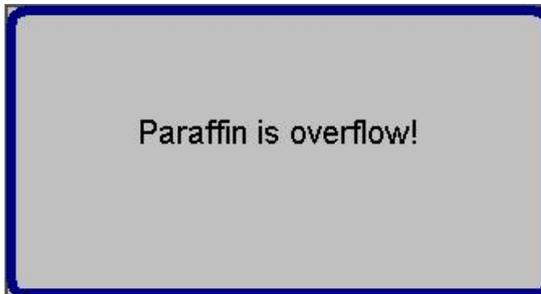
6.10 Malfunctions in heating



Fan is broken

The fan may appear to be faulty

6.11 Paraffin is overflow



Check paraffin bath and the air pipe.

**If there are any other troubles cannot be resolved,
please contact with the manufacturer prior to start working.**

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