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2017

ATS 2010 Linear Tissue Stainer User Manual



Revision Date: 17/01/2017

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1.Important Notes

This instruction manual contains important instructions information and notes regarding the operational safety and maintenance of the instrument. The instruction manual is an important part of the product, which must be read carefully prior to start-up and use and must always be kept near the instrument.

1.1 Symbols used in the text and their meanings



Warning and cautions appear a light blue box and are marked by a warning triangle .



Notes, i.e. important information for the user, appear in a light blue box and are marked with the symbol .



Solvents and reagents that are inflammable are marked with this symbol.



This warning symbol indicates the surface on the instrument that are hot during operation. Avoid direct contact to prevent risk of burning.

(5)

Figures in brackets refer to item numbers in figures.

[ENTER]

Function keys that have to be pressed on the input screen, are displayed in square brackets bold type and capital letters.

1.2 Information and specified use

ATS2010 Tissue Stainer is a compact, bench top, linear tissue stainer. The unique linear design offers reliable technique in a small space in the laboratory. It performs staining for biological tissues, suitable to be used in medical or research institutions for pathologic analysis.

The instrument must be operated only according to the instructions contained in this manual.

1.3 User group

- The Histo-Line ATS2010 may only be operated by trained laboratory personnel.
- The user must read the operating instructions supplied and be familiar with all the instrument's technical details before any work on the instrument.

1.4 Instrument type

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

A name plate with the serial number is attached to the back of the instrument.

2.Safety



**Be sure to comply with the safety instructions provided in this chapter.
Be sure to read these instructions, even if you are already familiar with the operation and use of other Histo-Line Laboratories products.**

2.1 Notes

This instrument has been built and tested in accordance with the safety regulations for electrical measuring, control, regulating and laboratory devices. To maintain this condition and ensure safe operation, the user must observe all notes, warnings and hazards contained in this Operating Manual.



If additional requirements on accident prevention and environmental protection exist in the country of operation, this instruction manual must be supplemented by appropriate instructions to ensure compliance with such requirements.



The protective devices on both instrument and accessories may neither be removed nor modified. Only service personnel qualified by Histo-Line Laboratories may repair the instrument and access the instrument's internal components.

2.2 Regulations on the instrument itself



Safety regulations marked with a warning triangle on the instrument itself mean that when operating or exchanging respective parts of the instrument, the correct operating steps as described in the instruction manual supplied, must be adhered to.

Non-observance can cause accidents, injuries and/or damage to the instrument/accessories



Certain surfaces of the instrument are hot during operation under normal conditions.

Touching these surfaces can cause burns.

2.3 Transport, installation and site requirements



After unpacking the instrument it may only be transported in an upright position. Place the instrument on a laboratory table and adjust it to a horizontal position. The instrument must not be exposed to direct sunlight (window)! Plug the instrument only into a grounded mains socket. The protective effect may not be eliminated by an extension cable without a protective grounding conductor. The installation location must be well-ventilated; there should be no ignition sources there of any kind. The instrument may not be operated in hazardous locations.

- **More than 20cm of space around the equipment for heat dissipation**
- **Free of water-drop, steam, dust(including oily dust and flying dust)**
- **Room temperature constantly between +15 °C and +35 °C.**
- **Relative humidity maximum 90%, non-condensing.**
- **Avoid vibrations, direct sunlight and heavy variation in temperature.**

2.4 Matters



- **Use proper nominal supply voltage;**
- **The input power supply must have a good ground;**
- **Install away from flammable and explosive objects;**
- **Never open instrument without authorization to prevent high voltage shock**
- **Check regularly the parameters showed during operation**
- **Disconnect instrument from power supply after use**
- **Use proper fuses**
- **Use only proper power cord**
- **Install the instrument away from any interference source**
- **Equipment which needs heating must not be heated without liquid**

2.5 Built-in safety devices

The instrument is equipped with the following safety features and devices:

- **Fuses**
- **Thermal breaker**

All resistance mats of the instrument are equipped with overheating fuses, which switch the heating element off if overheated.



Note that the only way the user has for complete disconnection from the mains supply is disconnection of the mains plug.

3. Warnings and hazards



**Be sure to comply with the warnings and hazards instructions provided in this chapter.
Be sure to read these instructions, even if you are already familiar with the operation and use of other Histo-Line Laboratories products.**

The safety devices installed in this instrument by the manufacturer only constitute the basis for accident prevention. Primarily responsible for accident-free operation is above all the owner of the instrument and, in addition, the designated personnel who operates, services or cleans the instrument. To ensure trouble-free operation of the instrument, make sure to comply with the following instructions and warnings and hazards.

3.1 Handling reagent



- **Be careful when handling solvents.**
- **Always wear rubber gloves and safety goggles when handling the chemicals used in this instrument.**
- **Reagent used for tissue infiltration can be both toxic or flammable.**
- **Use caution when handling paraffin wax or removing baskets. Melted paraffin is hot and may cause burns.**
- **Avoid personal contact with paraffin stations and retort walls. Can be very hot as well.**
- **Do not clean reagent bottles in an automatic dishwasher.**

3.2 Maintenance

Access inside the instrument is allowed to authorized and trained technicians only.

3.3 Servicing and cleaning



Switch off and unplug from main power the instrument before servicing.

When using cleaners, please comply with the safety instructions of the manufacturer and the laboratory safety regulations and follow a specific chapter in this manual for the cleaning methods.

Before changing defective fuses, the instrument has to be disconnected from the mains.

Only fuses that are easily accessible may be replaced by the user.

During operation and cleaning, do not allow any liquid to penetrate inside the instrument and the transporting arm.

Service should be done only by authorized personnel.

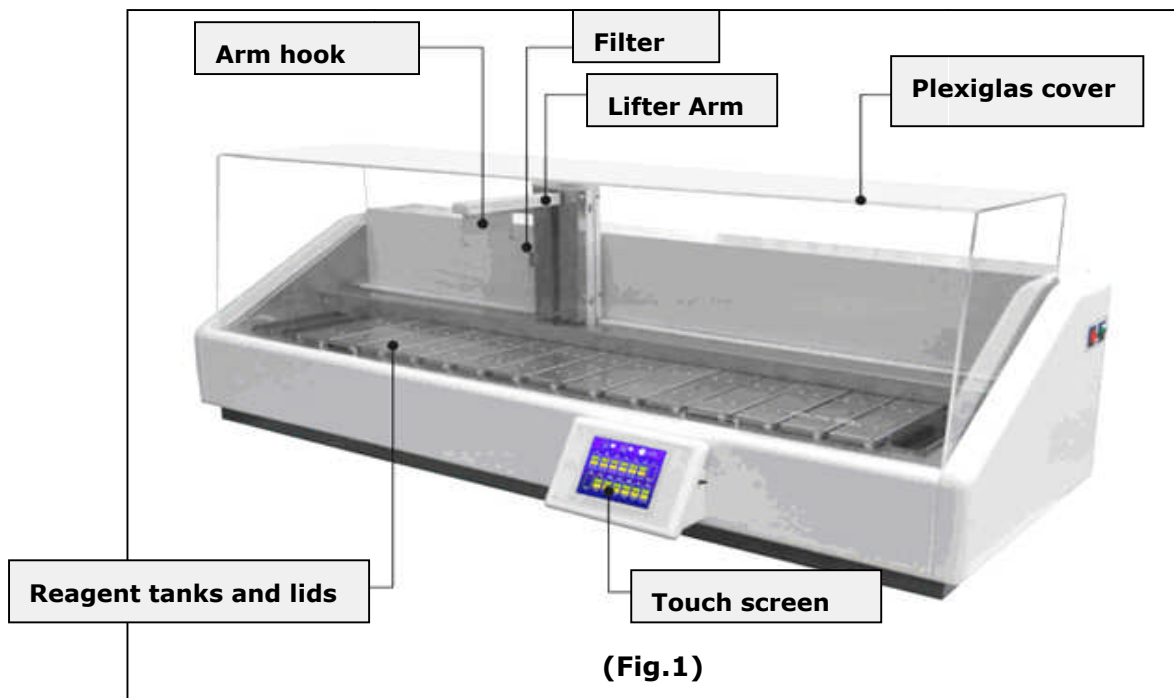
4. Technical parameters

Refer to attached pages, download the electronic version of data sheet from www.histoline.com web site, or request to customercare@histoline.com for detailed information about technical data.

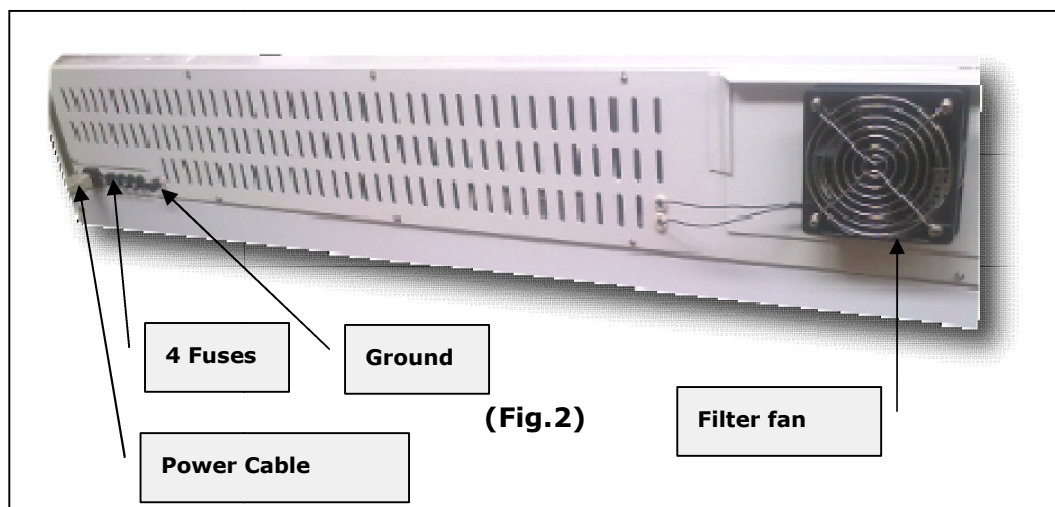
5. Brief descriptions

5.1 Outline of instrument

Front view **(Fig.1)**



Rear view **(Fig.2)**



5.2 Main characteristics

1. Continuous basket loading allow a large slides staining requirements;
2. Three different programs in the memory storable, to meets the different tissue staining requirement;
3. Enclosed design and fume active carbon filtering, make user safe operation;
4. Easy-to-read touch screen display;
5. Linear guide mechanism, high precision, small resistance, steady running, strong reliability;
6. Automatic water rinse step;
7. Heating tank, for drying slides;
8. The system has acoustic alarm function for any wrong operation and operation ending;
9. Microprocessor control

5.3 Accessories

Standard

The equipment is provided with:

- N° 2 racks for slides;
- N° 1 Drain hose;
- N° 1 Water inlet hose;
- N° 1 Water Tap;
- Power cable
- Certificate of conformity
- User manual

Optional

- UPS Power Supply;

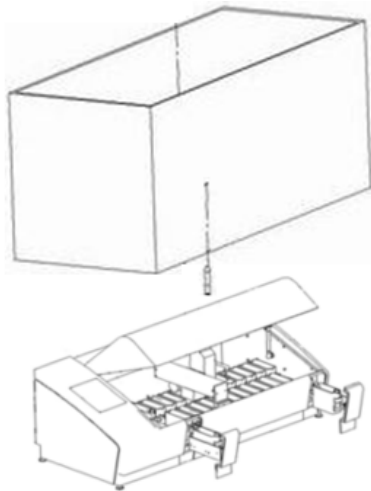
All the above mentioned items and other parts ordered will be properly packed; please check when unpacking.

Contact immediately Histo-Line or local distributor if any damaged or missing parts.

6. Unpacking and installing the instrument

6.1 Unpacking

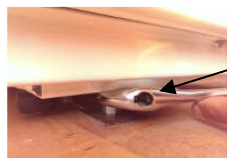
- Remove the safety bolt from top and bottom side of the wood base box
- Unpack the wooded box to take out all components and the Instructions;



Unscrew 2 bolts bottom side of the box



2 bolts bottom side of the unit



Unscrew 2 bolts bottom side of the unit



WARNING:
Hold the base of instrument and take it out.
DO NOT try lifting the unit by any part of the enclosure at any time



WARNING:
For safety purpose, unit is hold by 4 protection bolts. Remove bolts when unit is in final location only

Instrument location

- The instrument must be positioned on the stable platform in the lab;
- Hold the base of instrument and take it out;

6.2 Installation site requirements

- Do not transport the instrument by holding from the handwheel shaft. Keep it safely from the unit basement
- Stable, vibration-free laboratory bench with horizontal and even stage plate; practically vibration-free floor.
- No other instruments nearby which might cause vibrations.
- Room temperature permanently between +15 ° C and +35 ° C.
- Never operate the instrument in rooms with explosion hazard.
- By holding the instrument at the front by the base plate, and at the rear by the recessed grip, lift it out of the molded cushion of the packaging and place it on a stable laboratory table.
- Water connections are located on left side of the unit, for the convenient operation leave enough room for the hose connection to water source;

6.3 Fill and drain water connections

The water rinse cycle is based on main water pipe pressure for water inlet, and gravity for water drainage.

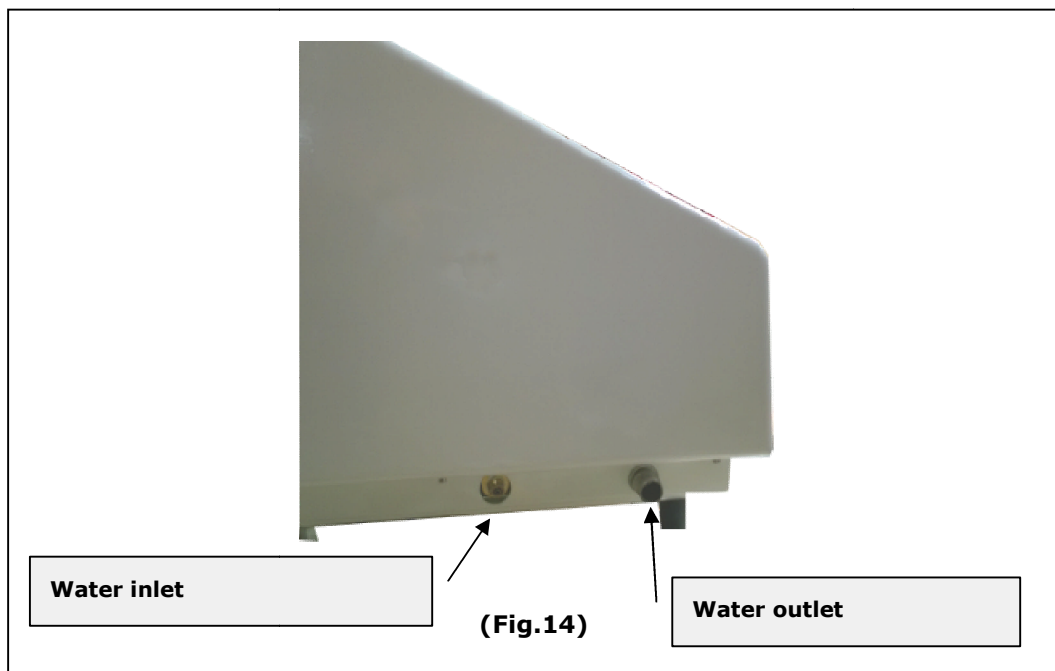


Because of this, for the best drainage, the unit must be located higher than basin drain pipe.

A poor drainage will affect the water rinse steps and could cause safety block of water inlet valve

Inlet water power pressure must be not higher than 1 Bar.

Please install a pressure reducer if necessary.



6.4 Water rinse cycle

The water rinse cycle consists of one wash stations capable of holding one slide rack. Water enters from the station base and exits from the overflow slot at the top left of the station.

To use the water rinse cycle, slowly turn the laboratory tap on. The flow control valve in ATS2010 will limit the total water flow in the wash station to 8 liters/minute.



For safety reasons, is strictly recommended to close the laboratory water tap when not in use.

6.5 Connect power

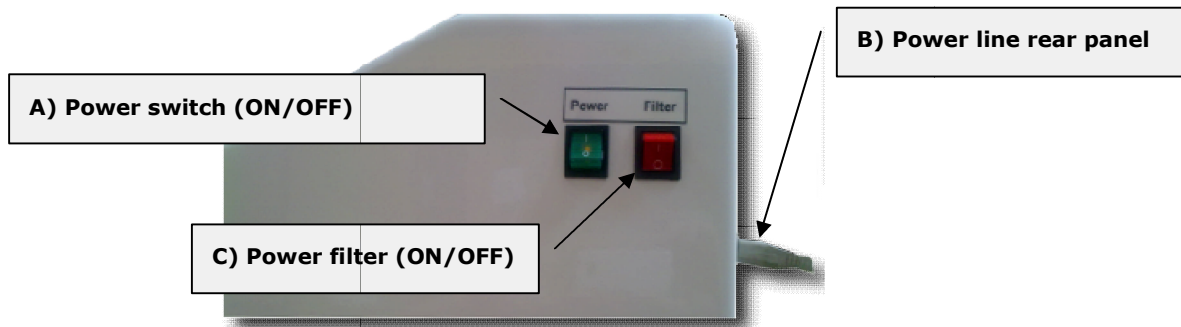
Connect the Power cord to the Mains power inlet socket showed in **(Fig.2)**.



The instrument must be connected to an earthed mains power outlet socket only
The instrument MUST be connected to a grounded power socket!
Use standard power line, do not use other power line without grounded power socket.

6.6 Switching on the instrument

- New instruments are factory-set to customer' s need voltage. This is documented by a sliver label on the rear of the instrument, which covers the power switch and power socket.
- Before connecting the instrument to the power supply, be absolutely certain to check that the voltage is correct voltage according to your area! Severe damage can be caused to the instrument if the voltage is not correct.
- Exposure to extreme temperature changes and high air humidity may cause condensation to form inside the instrument.
- After transporting, please wait at least 2 hours to allow the instrument to adopt the ambient temperature before turning it ON!
- Failure to comply with this may cause damage to the instrument
- Connect the instrument with delivery power line. **(Fig.3B)**



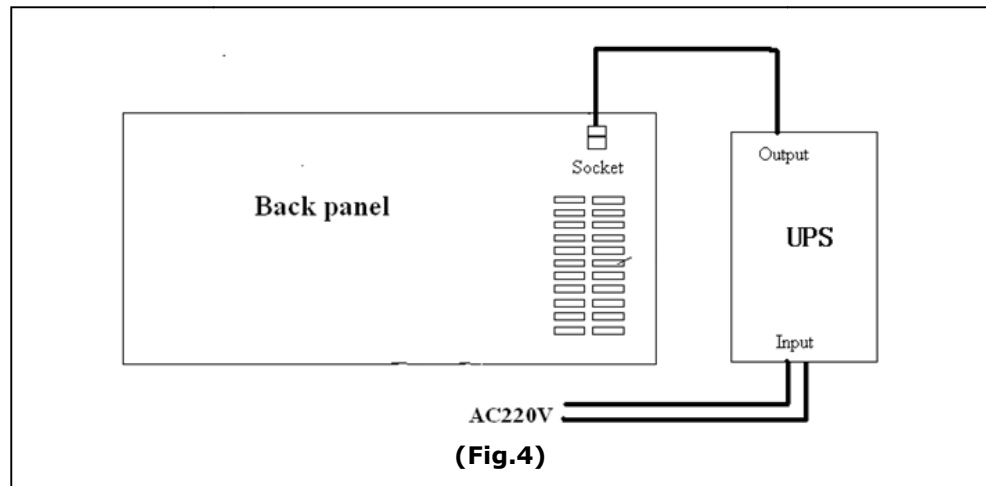
(Fig.3)

-
- Before connecting the power cable, make sure that the power switch on the right side of the instrument is in 0 = OFF (**Fig.3A**) (Off position)
 - Various country-specific power cables are provided with the instrument. Make sure that the power cable provided has the correct plug for the power socket.
 - When switching on the instrument using the power switch, never press any of the buttons on the control panel at the same time
 - Turn the instrument on with the mains switch at the right side. This is followed by a beep.
 - The instrument is ready 0 = OFF 1 = ON (**Fig.3A**)
 - Turn the filter ON with the mains switch at the right side. The filter is ready 0 = OFF 1 = ON (**Fig.3C**)

6.7 Battery backup - External UPS (Optional)

A small UPS can be connected to the rear of the unit, to permit staining of slides to continue during the main power failures.

The connection as shown in following



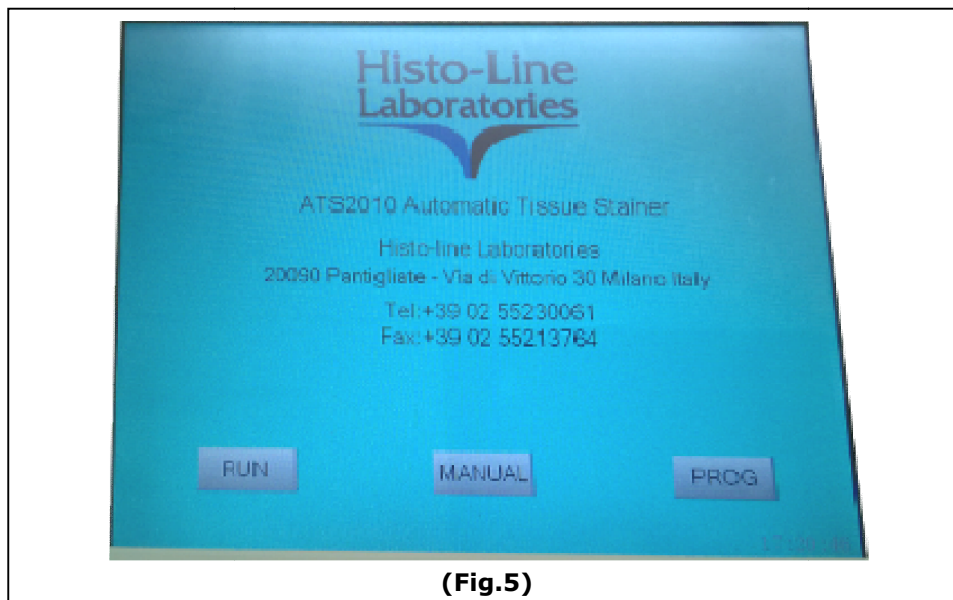
- 1. The UPS must be rated for use with the local mains power. If necessary, your distributor will can recommend a suitable UPS for you.**
- 2. Heating in the oven will not be maintained by the UPS.**

7.Operations

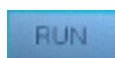
7.1 Initialize interface

The LCD display our company zone way information

7.2 The main menu

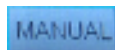


Run key



Touch this key, to **RUN** the program automatically.

Manual key



Touch this key, to **MOVE** the basket manually.

Set key

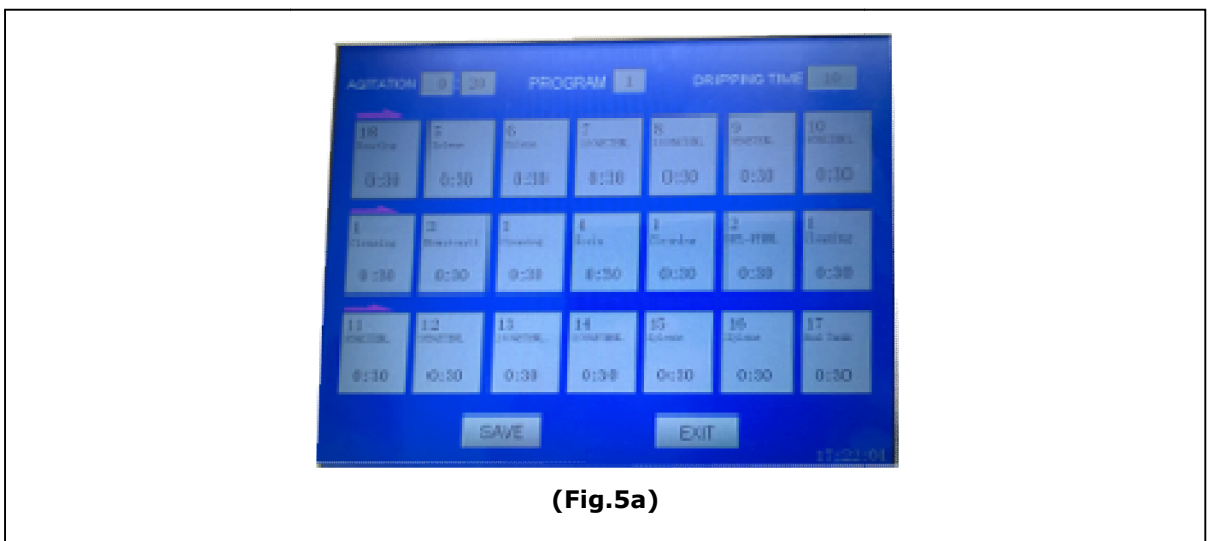


Touch this key, for **SET** the executed program.

7.3 Programs Interface

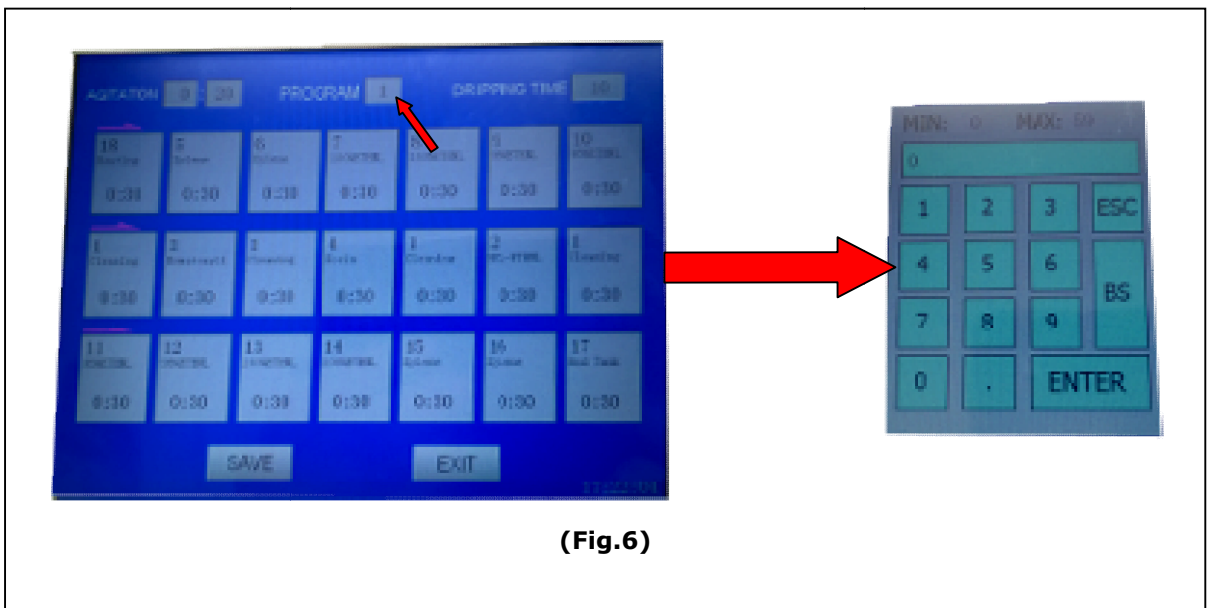
ATS2010 can store 3 programs from 1 to 3 in permanent memory. All information can be entered from the touch screen.

Touch **PROG** on the main menu, to enters to the set interface, the LCD displays as follows: **(Fig.5a)**



(Fig.5a)

Choose program number

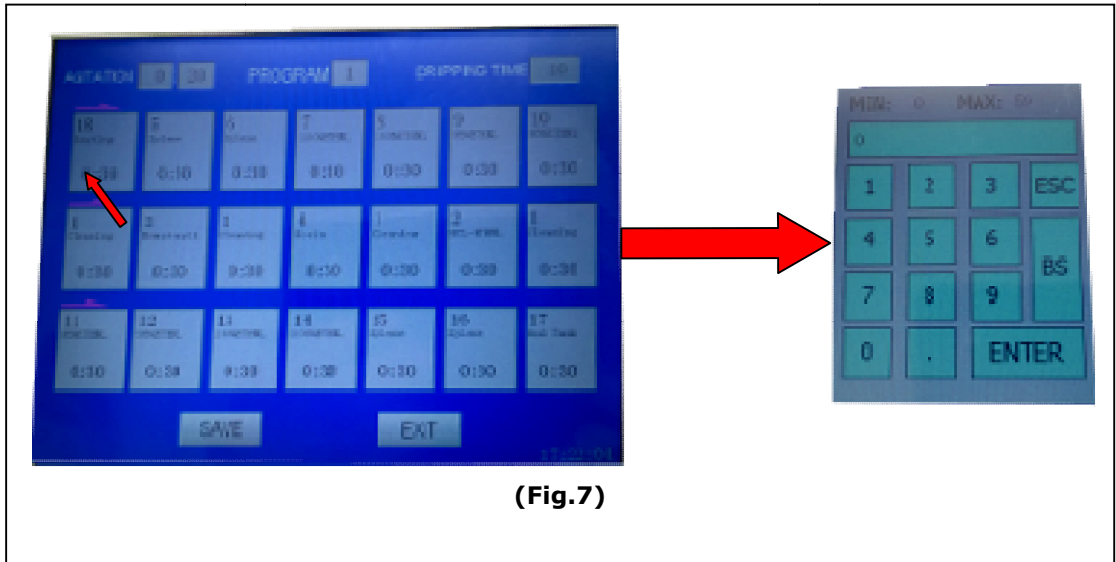


(Fig.6)



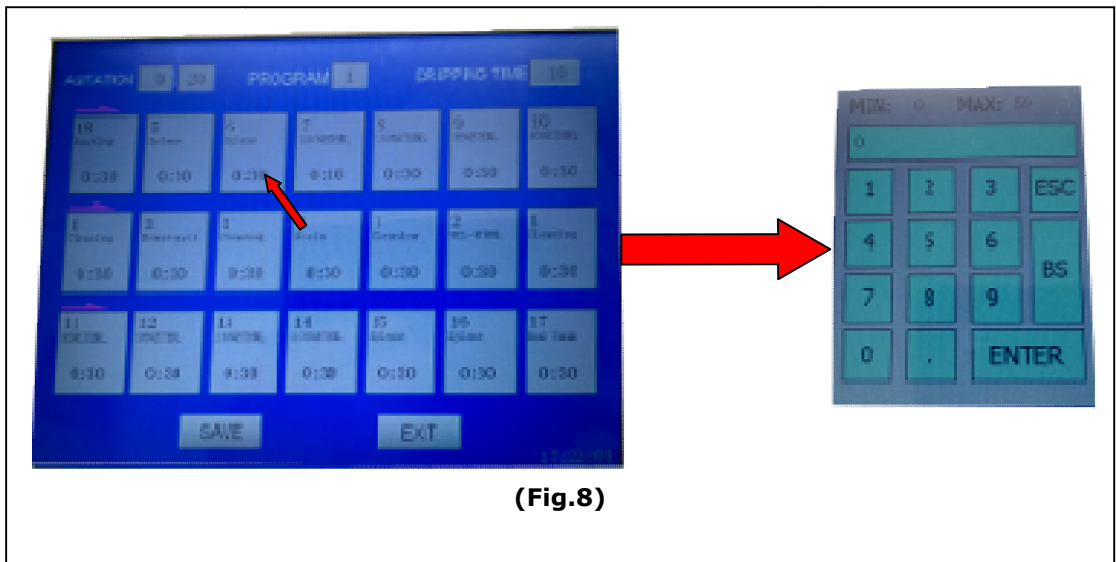
Set staining time for each reagent tank

Touch the hour number on the tank-box to set the hour.



ESC Exit
 BS Delete
 ENTER Save & Exit

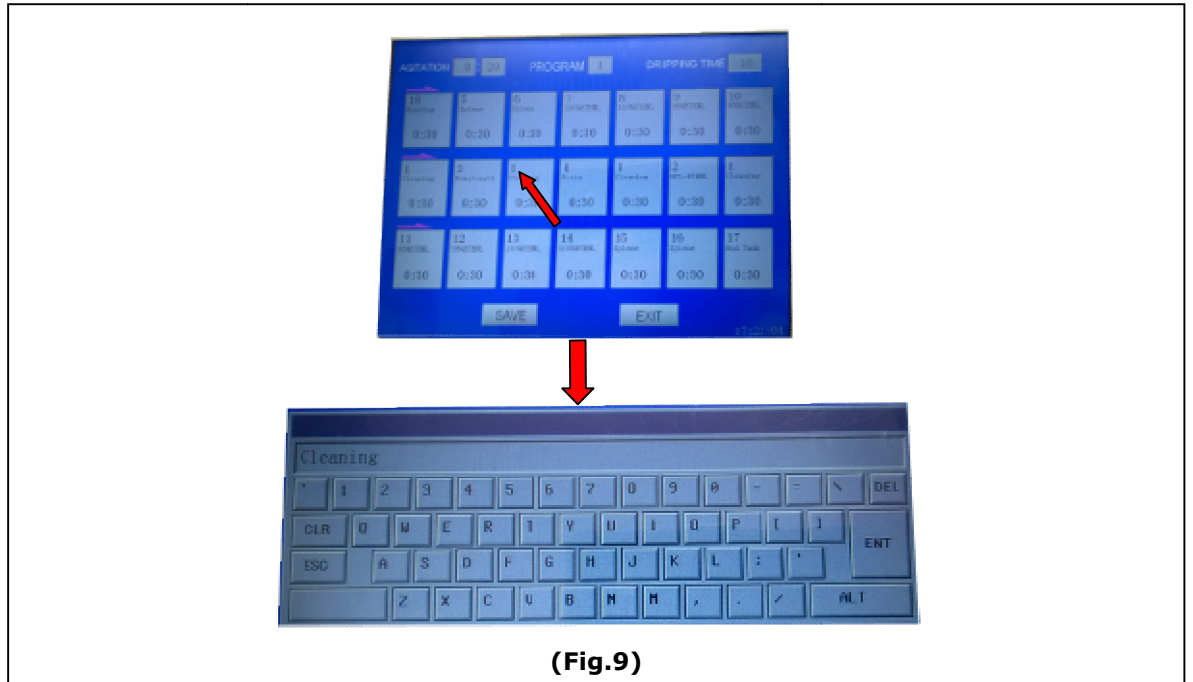
Touch the minute number on the tank-box to set the min.



ESC Exit
 BS Delete
 ENTER Save & Exit

Amend tank name

Touch the tank name to amend the name as your required.
The keyboard appear and the reagent name can set.

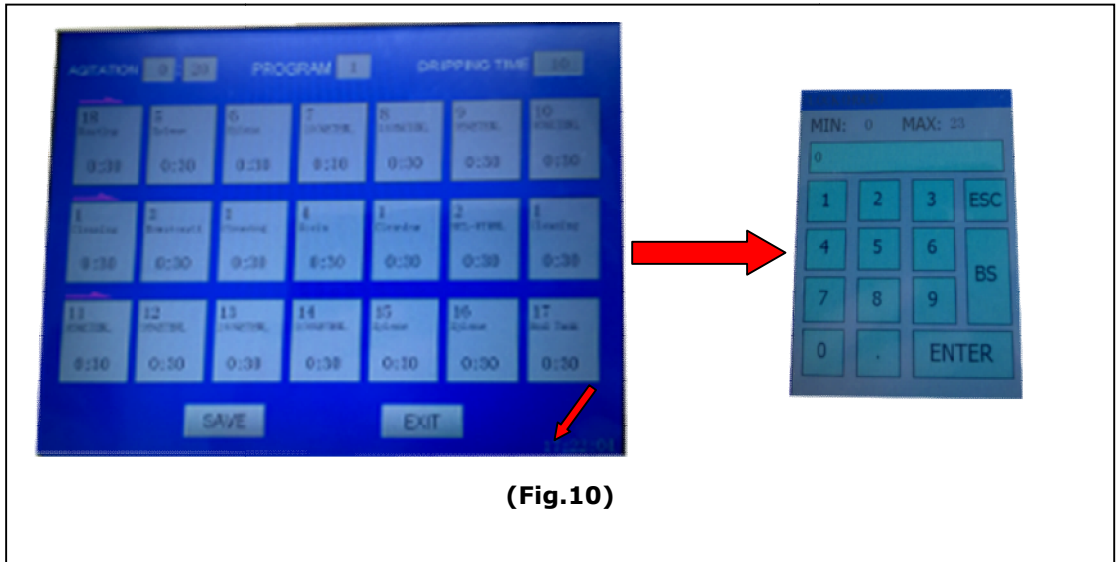


(Fig.9)

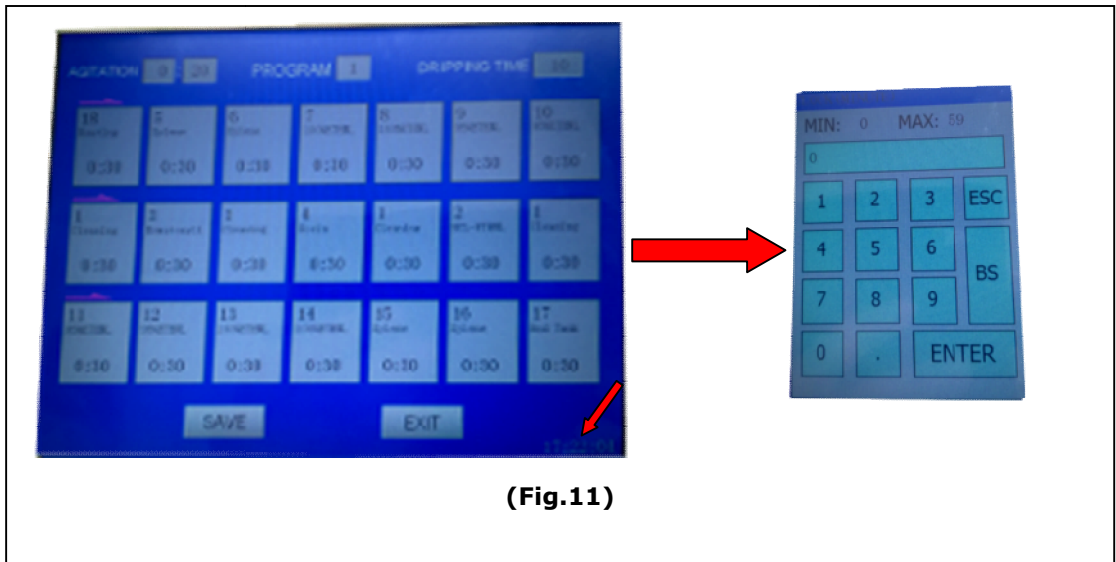


Set clock

Touch the hour number lower right of clock, to set.



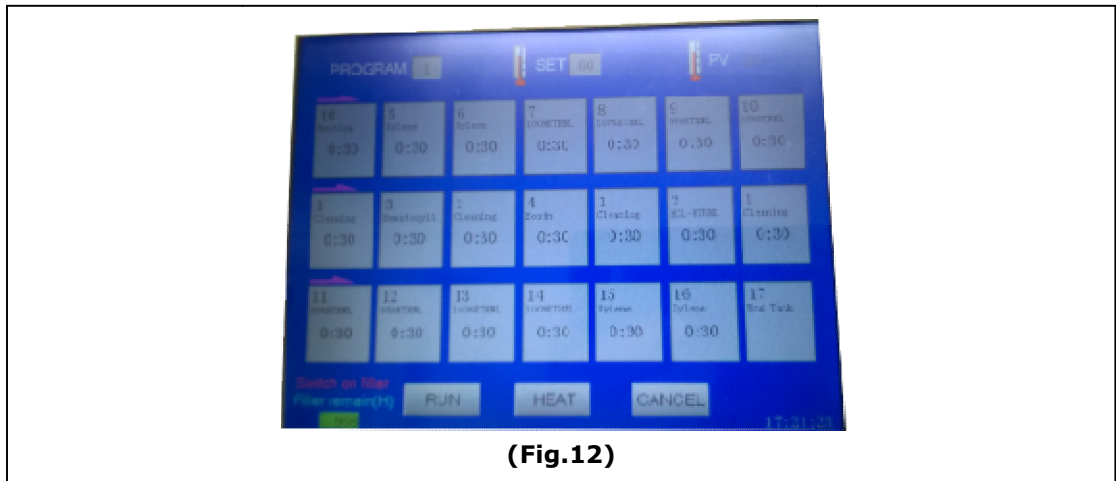
Touch the minute number lower right of clock to set.



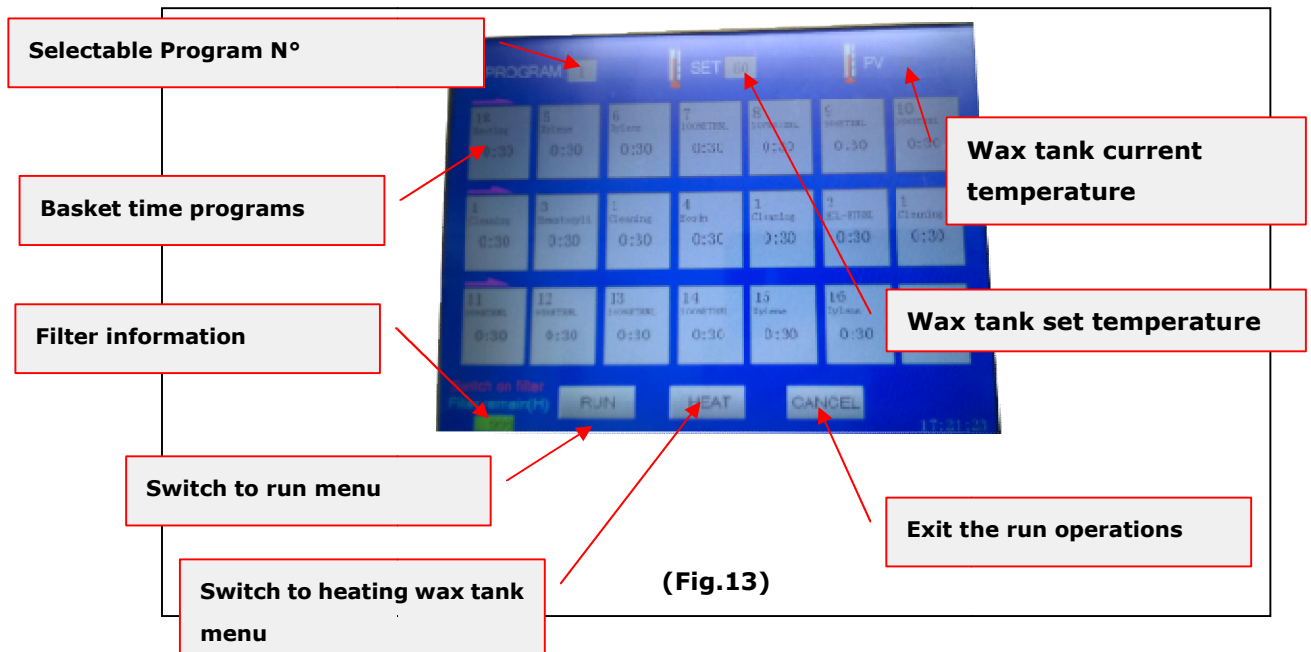
After programmed finished, press **SAVE** to save the program. Otherwise press **EXIT** to exit the set interface.

7.4 Run program

Press **RUN** on the main menu, the system enters to the **[RUN]** interface, the LCD displays as follows: **(Fig.12)**



LCD Display Explanation



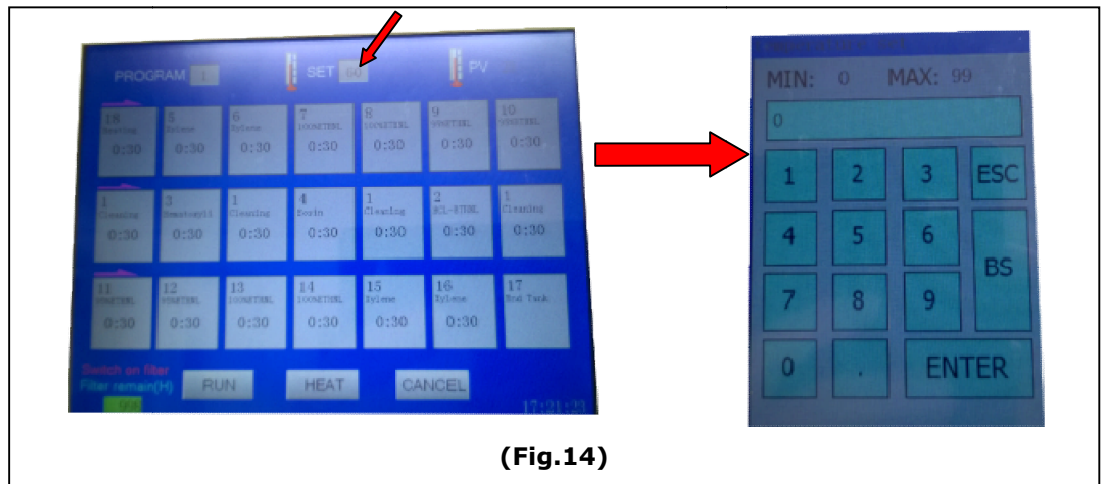
Run operations

1. Before run program, please switch on filter first, as screen shows **[SWITCH ON FILTER]**



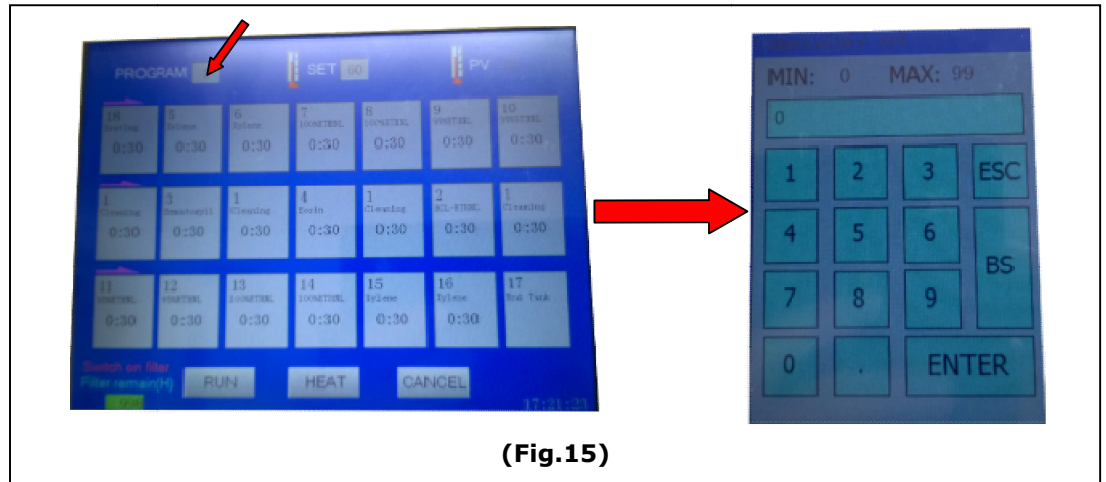
The filter remaining time shows on the screen, as screen shows [FILTER REMAIN HOUR].

2. Position slide rack in Heating tank (Station n. 1)
3. Set a required temperature for the Heating tank by touching **[SET]** input **(Fig.14)**

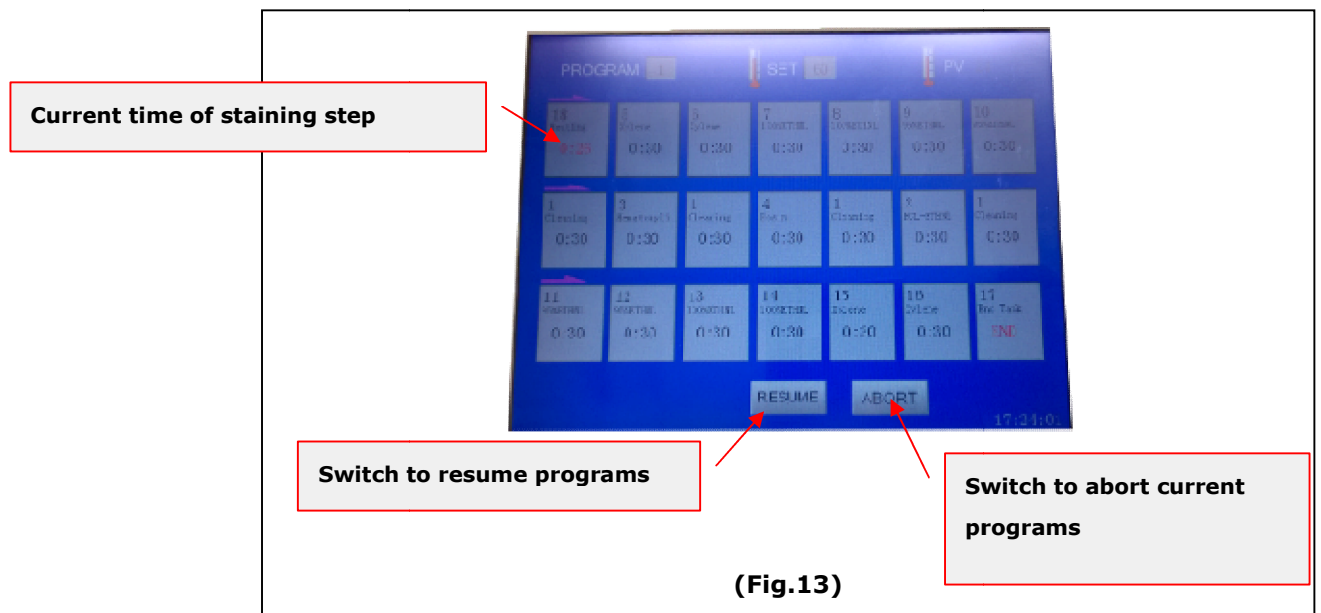


(Fig.14)

- Choose the executed program for the staining tanks by touching **[PROGRAM]** input (If input 0, means this basket will not run) **(Fig.15)**

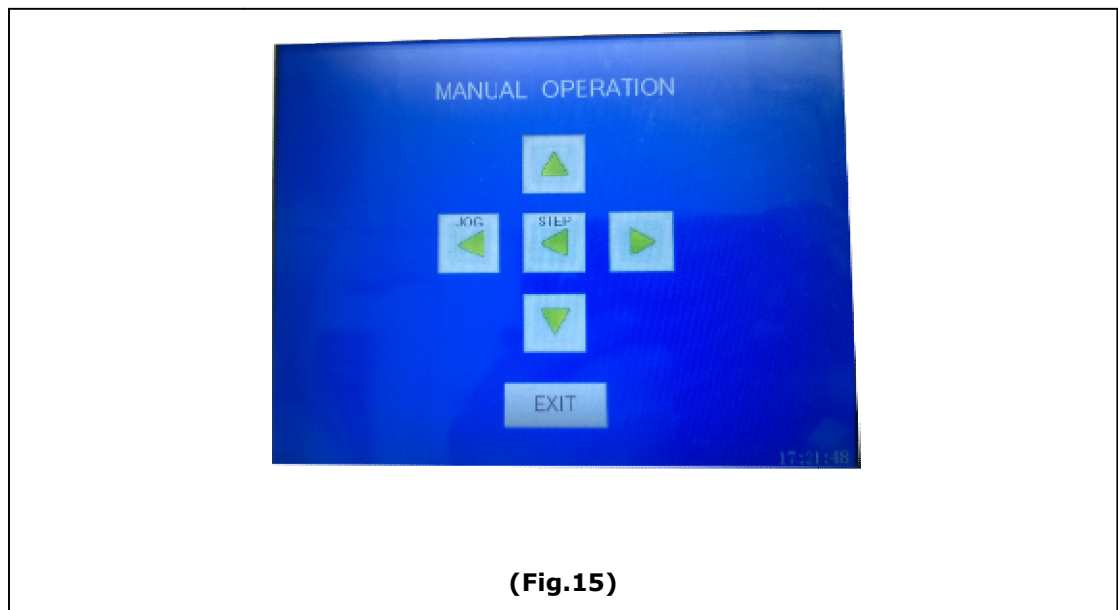


- Touch **[RUN]** key to run the program or touch the **[CANCEL]** key to exit the run operation.
- The **[RUN]** operation is indicating as the following picture shows **(Fig.16)**

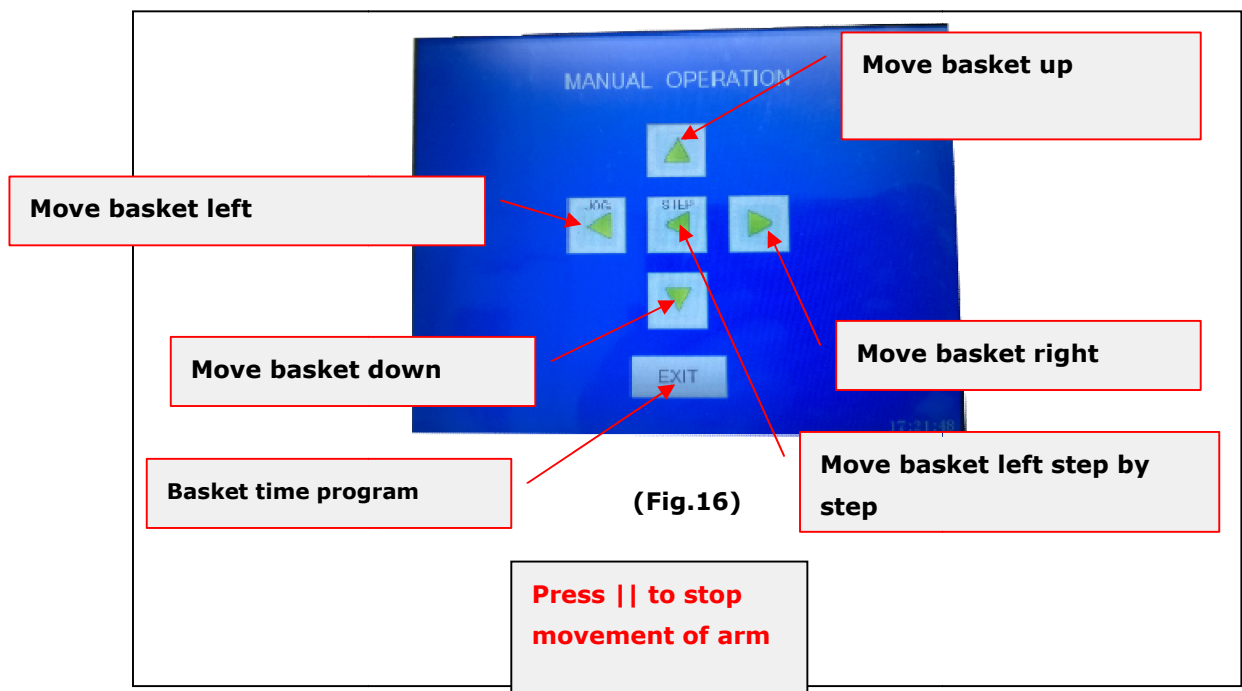


7.5 Service interface

Touch **MANUAL** on the main menu, the system enters to the service interface, useful mode to manual movement of arm in case of maintenance.
The LCD displays as follows: **(Fig.15)**



LCD Display of service explanation

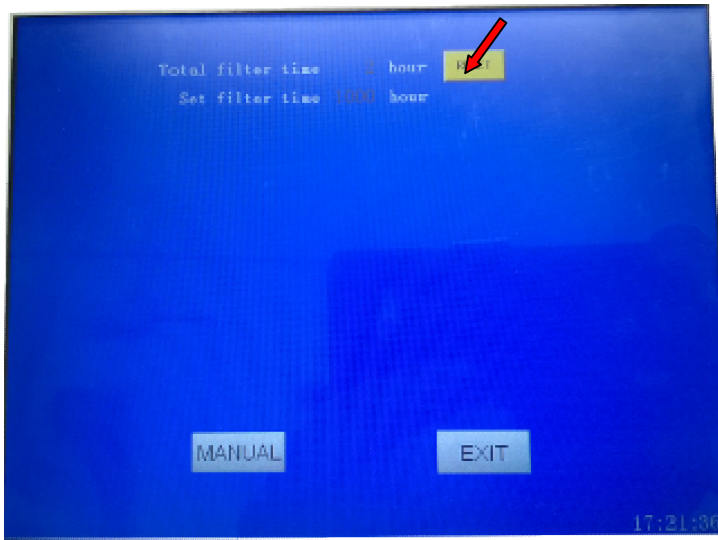


7.6 Filter

Filter time

Total filter time: The current used filter time.

After the filter is replaced, press **[RESET]** reset counter to 0.



(Fig.17)

Set filter time: Set the filter using time. The recommend time is 200 hours.

Replace filter

As soon as the set filter time is reached, the screen shows Filter Remain 0, so user need replace the filter.

Please contact provider for new filter, and replace as following. **(Fig.20)**



(Fig.20)

**Lift and remove Fan plate.
Disconnect fan plug**

**Lift and unlock the 2 hooks
(right/left)**

**Remove carbon filter
cartridge and replace new
one**

**Reposition the 2 hooks.
(right/left)**

**Reconnect Fan plug and re
position Fan plate**

8. Cleaning

Each part of the equipment may be wiped using a tissue or soft cloth moistened with a little water to which a small quantity of mild detergent may be added. Take care to avoid water entering the equipment.



- **Clean interior stainless steel surface with detergent and rinse with water.**
- **Clean with head covers by wiping with a cloth;**
- **Wipe the control panel carefully with a cloth.**
- **Don't use liquids directly on the sensitive electronic components. Wipe clean only.**

Avoid the use of solvents on exterior surface and especially on the control panel.

8.1 Wash reagent containers

Wash the reagent containers in warm water with detergent.

8.2 Wash Slide racks

Wash slide racks clean with detergent or laboratory cleaning agents as required.

9.Troubleshooting

TROUBLE		REASON & SOLVE
LCD Display shows nothing	If inside fan works	The fuse is damaged
		The power supply socket doesn't connect well.
	If inside fan doesn't work	The switch power is damaged
		LCD display is damaged
The rack transfer arm has stalled during operation.		Reagent container not properly seated.
		Handle not properly positioned.
		Lid not properly seated on the reagent container.
		Slide rack bent.
The oven can't be heat		Check the temperature display value. If it is 99°C, the temperature sensor is damaged.
		The PLC control board is damaged.
The oven temperature can't be controlled.		Check the temperature display value. If it is 0°C, the temperature sensor is damaged.
		The PLC control board is damaged.
Program can't be used for staining.		Program parameters are empty.
The basket arm can't be left-right move in transverse.		The Servo motor driver and the PC board connection wire is loosen or disconnection.
		The Servo motor overload, check whether has any obstruction on the basket arm running way.
		The PLC control board is damaged.
		The Servo motor is damaged.

TROUBLE	REASON & SOLVE
The basket can't upward-downward and forward-backward move.	The fuse is broken.
	The transformer is broken.
	The PLC control board is damaged.
The basket can't upward-downward or forward-backward move.	The Step motor driver of upward-downward or forward-backward is damaged.
	The Step motor of upward-downward or forward-backward is damaged.
	The PLC control board is damaged.
Water rinse step is not running properly.	Water is not drained. Check for drain pipe obstructions
	Water is not drained. Lift the grid from the bottle of water rinse container. Free draining hole from obstructions.
	Not inlet water. Check for water pressure
	Not inlet water. Check for backwater (undrained) below station containers