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GETIDY®

CLASS B and S English

Steam Sterilizer Instruction Manual

MODEL: JN-23

ZHEJIANG GETIDY MEDICAL INSTRUMENT CO.,LTD.

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To buyers:

Thank you very much for your choice of using our Desktop Pressure steam sterilizer!
Before you use steam sterilizer,please fill in “User Report” firstly.
Had it,we can check your using file promptly,so we can service you more quickly and effective!

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User Report

Products Name:	KD Series of Desktop Pressure Steam Sterilizer
Item No:	
Series No:	

User Notice

1、Please read the instruction manual carefully especially the safety and operation indication before your operation. The manual will help you to know all functions of the machine.
2、Follow the instruction manual strictly while operating, be sure to use and maintain it properly.
3、Please keep the manual safely for future use.
4、Please contact us or our agent in case of any possible problems while using, we will offer you help and excellent service.

Manual Guide

There is one book named Instruction Manual after wrapping the products, it introduce all the specification about technical data and operations instruction.
Please pay much attention to the following symbols in this manual which indicating some important information.



Warning: Ignoring warning and wrong operation will lead to some serious injury or death; please do pay much attention to warning for your security.

Attention: Ignoring attention and wrong operation will lead to destroy of machine or personal damage, please pay much attention to the attention for your security.



Important: It means some operation are prohibited, Ignoring attention and wrong operation will make the machine destroyed or influence the machine quality. In order to proper use the machine; be sure to avoid such wrong operation.

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Warning, attention and some other importance

Signal	Description	Signal	Description
	High temperature, avoid scalding		Warning, attention and some other importance
	High pressure valve encounter danger to discharge steam		Earthing protection
	Must add distiller water, or will lead obstructions		Waiting power switch

Device class:according directive 93/42/EEC Annex II,excluding section 4.the device is II class B.

Security Notice

In order to proper use the sterilizer, please be sure to read the warning and attention carefully for safety.

Warning: Ignoring the security notices will lead to electrode shock, fire or sterilizer damage.

1、Please use the absolute earth-protection three-hole 220VAC/10A Power supply plug, be sure that the side of earthing protection has been contacted safely.

2、Be sure to completely insert the power supply plug in the electrical jack, Do not use other voltage except the rated one.

3、Do not plug in or out the jack if your hand is wet.

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4、Do not destroy, change, drag, bend or control the power cord, please do not place anything heavy on the cord.

5、Do not place sterilizer on the unsteady worktable, such as wobbling table or chair or bevel.

6、Do not jam or cover the sterilizer's lid, intake or radiator.

7、Do not put anything on sterilizer.

8、Please cut off the power supply immediately if you find peculiar smell and abnormal noise during operation(except the noise produced by water pump),then contact the seller or after service.

9、Please turn off the power if you won't use the sterilizer for a long time.

HOW TO OBTAIN A NEW COPY OF THE MANUAL

If the manual is lost or destroyed,ask our company for a new copy.
Provide the following information:
- name and model of the unit;
- name and address where the manual should be sent.

Send your request to the following address:

ZHEJIANG GETIDY MEDICAL INSTRUMENT CO.,LTD.

ADDRESS:Duancun, Dongnan Industrial Zone, Shuxi Street, Wuyi, Jinhua, Zhejiang321200, China.
TEL:0086-579-87712106 87707499 DOWNLOAD Web: www.getidy.com
E-MAIL:getidy@getidy.com john@getidy.com

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SAFETY DEVICES

Electrical safety

Description	Effect
Double-pole thermal safety switch for protecting the device against short-circuits.	Disconnects main electrical power supply.
Protection of the electronic board against short-circuits: both the transformer and the entire low- voltage circuit are self-protected.	Disconnects one or more low-voltage circuits.

Thermal protection

Description	Effect
The electronic board, the vacuum pump and the vibration pump are all protected by a thermostat.	Temporary cut-off to permit cooling.
Thermal protection of the unit: the device is blocked if made to work under conditions that do not fall within the ambient temperature range.	Alarm message and use of the machine is prevented due to unsuitable environmental parameters.
Resettable safety thermostat, complying with PED 97/23/CE standards, for protecting the steam generator from over-heating	Disconnection of power supply to the steam generator.
Resettable safety thermostat, for protecting the heating resistance of the chamber	Disconnection of power supply to the resistances.
Safety valve, complying with the PED 97/23/CE standards, for protecting the unit from over-pressure.	Discharge of steam and re-balancing of pressure to safety values.

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Mechanical safety devices

Description	Effect
Door safety micro-switch: ensures that the door closes correctly.	Message indicating wrong door position.
Door lock micro-switch: shows the correct position of the locking system.	Indication that the door is not locked.
Door lock: electro-mechanical device that prevents the door from being opened accidentally.	Prevents the door from being opened while the unit is in operation.
Extractor tool. Used to avoid touching the inner parts of the unit. 	Prevents burns while removing the trays containing the sterilized instruments.

Control devices

Description	Effect
Pressure levelling: restores the system to its normal pressure values, in the event of manual stops or alarms and/or arnings during the cycle.	Automatic pressure re-balancing inside the sterilization chamber.
System for evaluating process parameters, managed entirely by the microprocessor.	In the event of faults during the cycle, the program in progress is stopped immediately and alarms are generated.
Constant monitoring of the device: the components of the autoclave are constantly monitored during operation.	Generation of alarm messages and/or warnings in the event of faults.

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1、Summary &Suitable using range

KD series of Desktop Pressure Steam Sterilizer applies for dental clinic laboratory, operation room, emergency room, ophthalmology, gynecology and steam, cosmetic hospital and so on, which are used especially by doctors and professionals. This equipment is automatically controlled by computer, it has fine workmanship, simply operation,and safety system. This equipment is excellent, economic, space-saving, large capacity, high frequency and safety.The situation and specification is directly displayed by LCD screen or LED display. The equipment has following advantages: Automatic system of checking and repair, automatic system of protecting exceed temperature and pressure, insure the sterilizer's steadiness. No used steam discharging with an installed used water collecting tank, it is clean and safe.

KD series of Desktop Pressure Steam Sterilizer adopts pulse pre-vacuum(3 times or 1 times decided by user), which makes the heated steam deeply reaches every corner of the objects, make sterilizer completely. It is suitable for the sterilizing whether solid or hollow instrument in medical treatment institution, dressing, injector and other heat-resistant or moist-resistant medical instrument and articles.

2、Technical parameter

CLASS: B and S

POWER SUPPLY VOLTAGE: AC 230V±10%

MAINS FREQUENCY:50~60Hz

POWER OUTPUT: 1600W

CHAMBER: 23L

DIAMETER x DEPTH: φ250mmx450mm

ABSORBED CURRENT: 10A

STERILIZATION CYCLES: 6

TEST CYCLES: 3

CAPACITY OF CLEAN-WATER TANK: 4.5L

CAPACITY OF USED-WATER TANK: 3.5L

GROSS WEIGHT: 65Kg

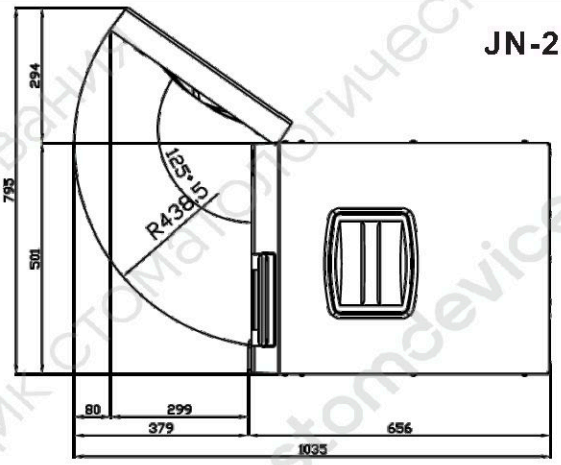
NET WEIGHT: 59Kg

PACKING SIZE(LxWxH):730mmx580mmx560mm

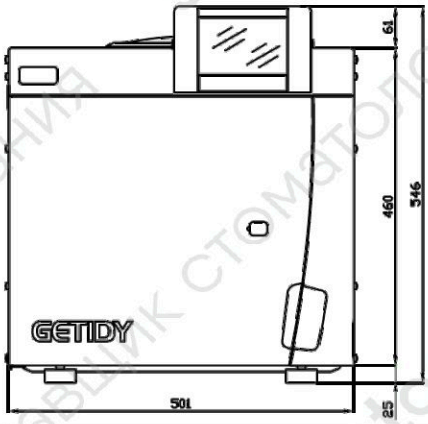
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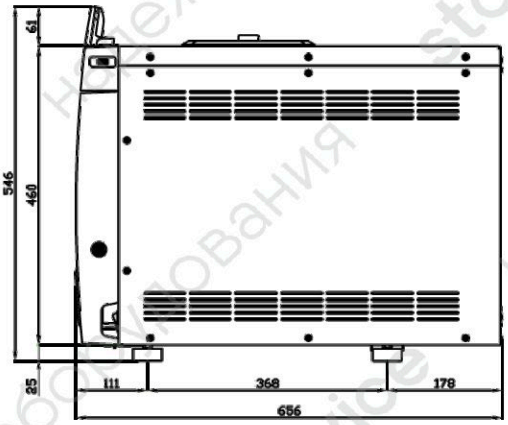
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JN-23 overall space required





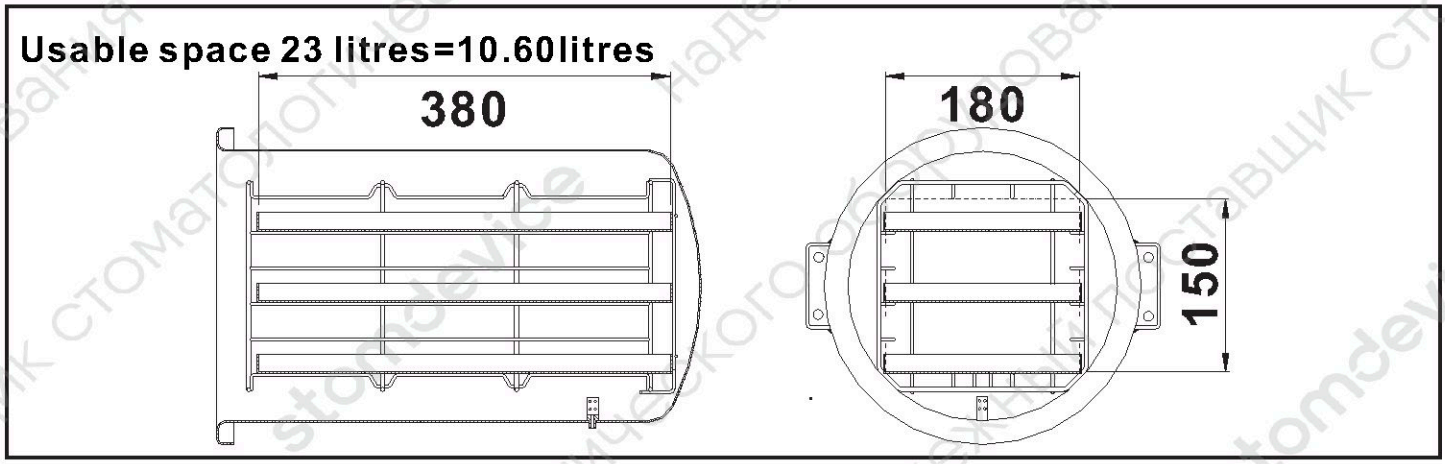




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Usable Space:



2.1 Rating plate

The rating plate(Fig 2.1-1) lists the main data and characteristics of the unit, the information required to identify it when ordering spare parts and/or when requesting information.

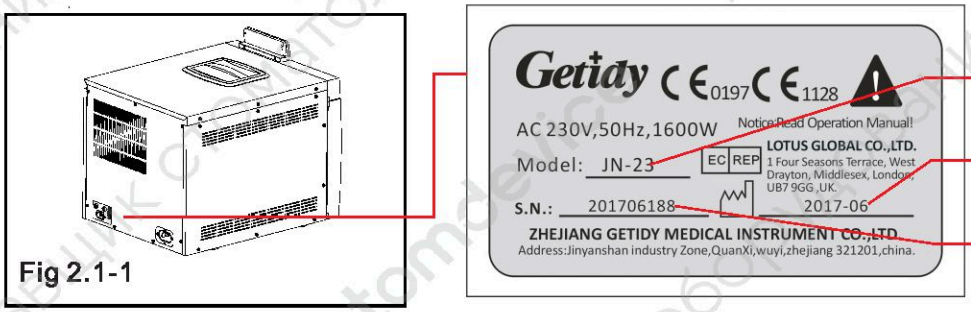


Fig 2.1-1

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The label of the unit contains symbols the meaning of which is shown below.

Symbol	Description
SN	**"SERIAL NUMBER"** The symbol must be accompanied by the manufacturer's serial number.The serial number must be adjacent to the symbol.
	**"PRODUCTION DATE** The symbol must be accompanied by the year. The year must be composed of 4 digits.
	**"WARNING, READ THE INSTRUCTIONS MANUAL"**

2.2 Noise level

The unit has been designed and built to reduce noise to less than 50 dB(A).

2.3 EXTERNAL PRINTER

The unit is set in such a way that the data regarding the sterilization cycle in progress is always printed, as well as the type of cycle selected, the phase of the cycle, the temperature and pressure values, and the split and total work times in minutes. When each cycle is completed, the printer also produces a summary report of the result of the cycle and the total time taken, regardless of whether the cycle was successful or not and regardless of whether it was stopped manually or an alarm was generated. The function of printing the summary report can be excluded if desired.

--The printer only works if paper is inserted.
--If no roll of paper is inserted, the printer does not work.
--The red POW LED is always on while the printer is working.
--The green SEL LED flash indicates a problem, e.g.: the paper has finished, the cover is incorrectly closed, etc..
--Press the OPEN button open the cover, feeds the paper.
--Press the LF button the paper out automatically,press again stop.



External printer

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Use rolls of thermal printer paper with the following characteristics:
width: 55 - 56 mm
maximum diameter: 40 mm .

Do not expose thermal printer paper, both before and after use, to direct sunlight, heat or humidity.
Avoid direct contact with materials in polyvinyl, as well as solvents and various derivatives (filing envelopes in PVC, acrylics and paper treated with ammonia vapours).

Rolls should be kept in a dry place with humidity of no more than 70% and direct temperature lower than 35° centigrade.

3.Installation

3.1 WORK ENVIRONMENT: POSITIONING

The unit is packed as follows: covered with a hood in polyethylene with blisters, protected by totally recyclable mouldings in foamed polyethylene, and placed inside a corrugated cardboard box, certified for transportation by sea.

Lift the unit with care and do not turn it upside down.

The packaging and the equipment are fragile, handle with care. Transport as fragile. THE HANDLES ON THE PACKAGING (1 of Fig. 3.1-1) MUST ONLY BE USED FOR VERTICAL LIFTING. Keep in a dry and protected place. **The packaging must be kept for the whole guarantee period.**

NOTE: **keep the original packaging** and use it to transport the unit.The use of different packaging may damage the product during transport.

The unit must be removed from its packaging using the straps provided for the purpose: this operation must be carried out by **two people at the same time** (Fig.3.1-2):
--Remove the upper protecting piece(s);
--Two people must then lift the unit out, keeping it in a horizontal position all the time;
--Place the unit on the work surface and then remove the straps by lifting it up slightly.

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ATTENTION: follow the indications shown in figure 3.1-2.

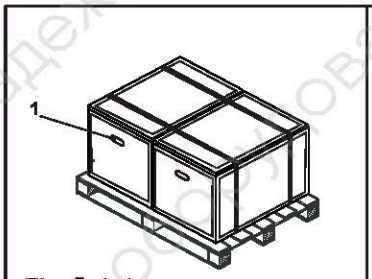
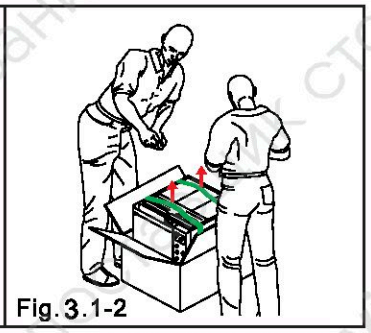


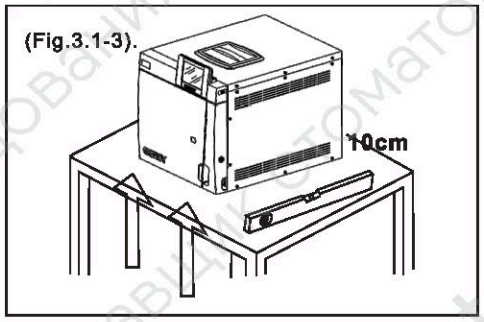
Fig. 3.1-1


Fig. 3.1-2

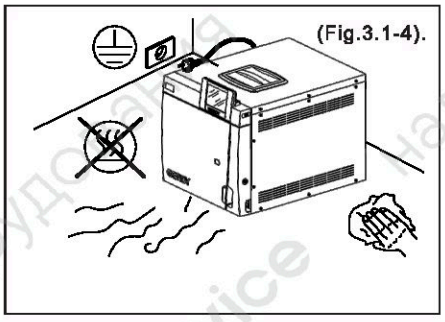
--The unit should be installed inside a laboratory, which is accessible only to authorised personnel.

--Position the unit on a flat and horizontal surface (Fig. 3.1-3).
--It is recommended to assemble the distance - screws (supplied) as described in the pictures (a , b) in order to assure the correct distance between the back wall (Fig.3.1-3).
--Do not place the unit near sources of steam or where it could be splashed by water, which could damage the internal electronic circuitry.
--Do not install the unit where there is poor air circulation (Fig.3.1-4).
--Do not place the unit near sources of heat (Fig.3.1-4).
--The area where the unit is placed must be lit in accordance with standard UNI 12464-1.
--Acceptable environmental conditions:
temperature from 5 to 40°C --- max.humidity 85% without condensation ---- max.altitude 2000 m.

(Fig.3.1-3).



(Fig.3.1-4).



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-The two front feet of the sterilizer are raised by 2 to 3 cm, resulting in the front end point being higher than the rear end point.

-Artificially open the door to the steps:

(1)Open the small cover of the sterilizer door.(Fig.3.1-5)
(2)Insert the hexagon spanner into the door shaft and rotated clockwise until the door is fully opened.(Fig.3.1-6)
(3)Remove the operation panel placed in the chamber and connect the operation panel and the control panel. The connector is tightened.(Fig.3.1-7)
(4)Fixed operation panel.(Fig.3.1-8)

Fig.3.1-5

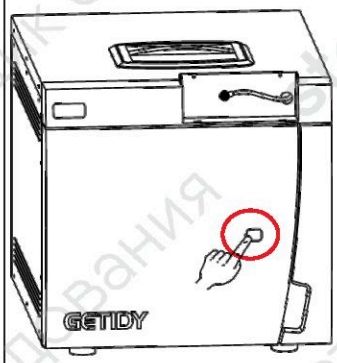


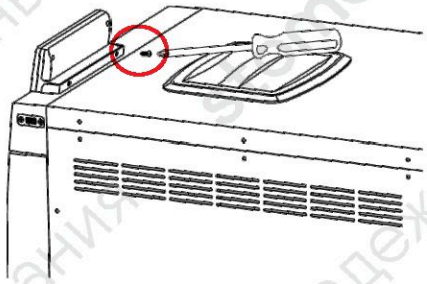
Fig.3.1-6



Fig.3.1-7



Fig.3.1-8



ATTENTION:
When you meet the power supply to stop,you can also follow the above steps to open the door.Remove the instruments in the chamber before the power is restored.
However, before the above operation can be performed,it is important to confirm that the pressure in the chamber is reduced to 0.000bar

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-Bring the instrument tray and accessories, remove the poly bag.
-After you put medical instrument into the tray,turn on the power (green switch indicator light).(Fig.3.1-9)
-Press the power revert button and LCD screen appears the main interface.(Fig.3.1-9)
-Select the sterilization program you want, then press start to sterilization.
-For details, please refer to Chapter 4.

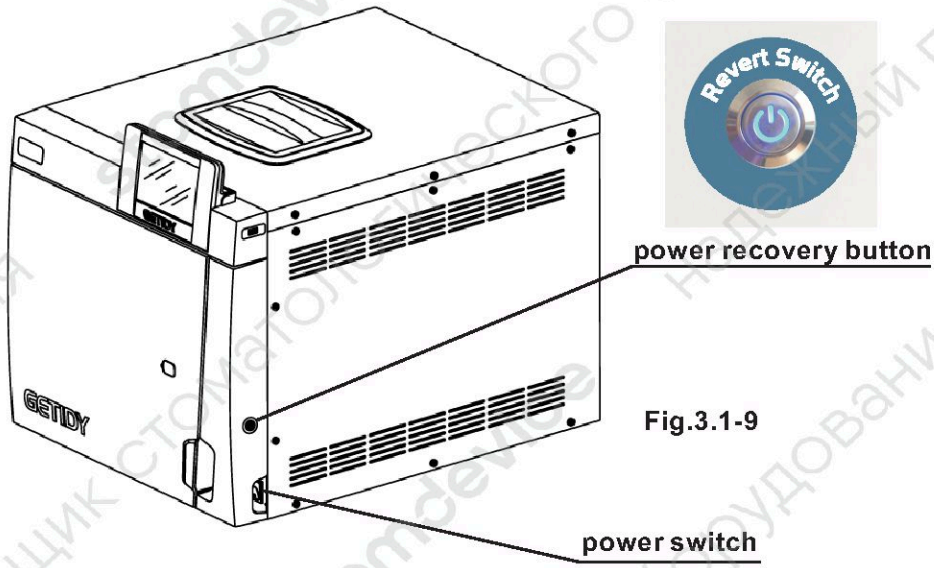


Fig.3.1-9

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4.JN-23 steam sterilizer function and operation instruction

4.1 JN series steam sterilizer contains 1-time(solid/plastic) and 3-times(hollow/prion/cotton) vacuum programs.
With lager color LCD screen for showing pressure, temperature, time, running state and error warning.
Temperature precision: 0.1℃ ;Pressure precision: 0.001bar.

4.2 Operator interface introduction

Turn on the power at the bottom right,click the power revert button located on the right side of the middle.

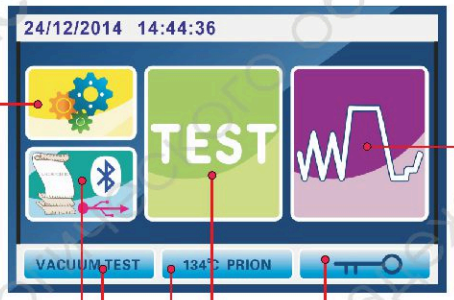
"SET UP 1"

1.Language:
Chinese/Russian/Spanish/Farsi
English/French/Italian
2.Date and time
3.User information
4.Calibration:
Temperature/Pressure/Water quality monitoring
5.Preference:
Sleepmode/Delay Start/Power Saving
6.Service:
Maintenance Infor/Pipeline Cleaning
SystemTest/Alarm Codes/ Auto-Water Supply

"SET UP 2"

1.System information
2.Label Printer
3.USB Record
4.MINI-Printer
5.System Setting
6.Cellphone App

Main Interface



Sterilization Program:

1.Solid (134℃-04Min-1times)
2.Hollow (134℃-04Min-3times)
3.Prion (134℃-20Min-3times)
4.Cotton (121℃-30Min-3times)
5.Plastic (121℃-20Min-1times)
6.User-definned
Temperature:121℃ or 134℃
Sterilization time:04~60Min
Dry time:01~60min
Vacuum times:1times or 3times

Unlock icon.
Only when it is displayed on the screen, can be open the door.

"Vacuum Test" "Helix Test" "B&D Test"

"134℃ PROIN" PROGRAM hot key

"Vacuum Test" hot key

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4.3 Warning icon introduction

Press “program ” (Fig.4.3-1),to enter the program interface(Fig.4.3-2).Select the program you want and click to enter.

4.3.1 Door status



Fig.4.3-1



Fig.4.3-2

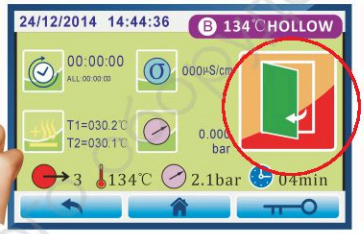


Fig.4.3-3

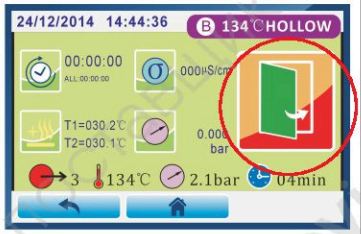


Fig.4.3-4

A)when you turn on the power and the door was closeing,it is show Fig.4.3-3 interface warning.It promps you to open the door and close the door again. Then the warning will be eliminated.

B)when it shows Fig.4.3-4 interface warning,means that the current sterilizer door is open.Prompts you to close the door, the warning will eliminated.

4.3.2 water status

A)when it show Fig.4.3-5 interface warning,means that the clean-water tank is lack of water. Prompts you to add distilled water, the warning will be eliminated.

B)when it show Fig.4.3-6 interface warning,means that the used-water tank is full. Prompts you to drain the waste water, the warningwill be eliminated.



Fig.4.3-5

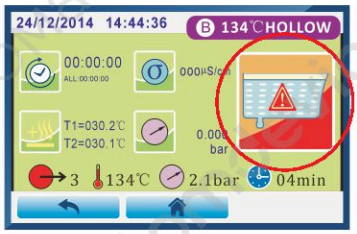


Fig.4.3-6



Fig.4.3-7

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C)when it show Fig.4.3-7 interface warning,means that distilled water was unqualified (σ >80 μ ms).
Prompts you to drain unqualified water in the clean-water tank and add the qualified distilled water again.The warning Will be eliminated. Water supply requirements:

- conductivity ≤15 μ s/cm（Room temperature）
- bleach content≤2mg/L
- PH：5~7
- Hardness：≤0.02mmol/L

D)Automatic water supply and Drain operation (Fig.4.3-8) and adding water manually (Fig.4.3-9)

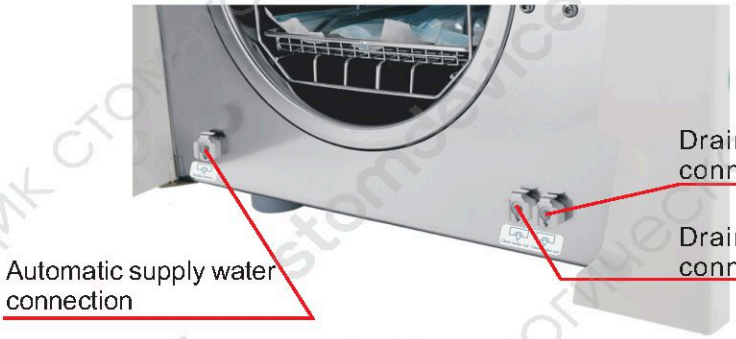


Fig.4.3-8



Fig.4.3-9

WARN:Only if all the warnings were eliminated,the sterilization program can be started. Or it will out of operation.

4.4 "*SET UP 1*" introduction

4.4.1.Language: Chinese/Russian/Spanish/Farsi/English/Franch/Italian
4.4.2.Date and time
4.4.3.User information
4.4.4.Calibration: Temperature/Pressure/Water quality monitoring
4.4.5.Preference: Sleepmode/Delay Start/Power Saving
4.4.6.Service: Maintenance Infor/Pipeline Cleaning/SystemTest/Alarm Codes/ Auto-Water Supply

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Click “**SET UP 1**” (Fig.4.4-1)into Fig.4.4-2 interface.Select the program you want and click to enter.



Fig.4.4-1



Fig.4.4-2



Fig.4.4-3



Fig.4.4-4

4.4.1.Language:

Click “LANGUAGE” (Fig.4.4-3) into Fig.4.4-4 interface.click “ ▲▼ ” ,Select language you want,then click “ OK ” to save and exit.

4.4.2.Date and time

Click “Date and Time” (Fig.4.4-5) into Fig.4.4-6 interface.Click “ ▲▼ ” ,change number of “Year,Month,Date,Hour, Minute,second” ,then click “ OK ” to save and exit.

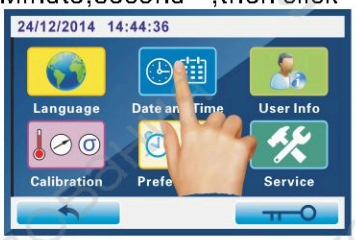


Fig.4.4-5



Fig.4.4-6



Fig.4.4-7



Fig.4.4-8

4.4.3.User information

Click “User info” (Fig.4.4-7) into Fig.4.4-8 interface.Click the corresponding button.After entering the user name,then click “ OK ” to save and exit.

4.4.4.Calibration: **Temperature/Pressure/Water quality monitoring**

Click “Calibration” (Fig.4.4-9) into Fig.4.4-10 interface.Click “▲▼” to change the number of “T1/T2/Pv/P/ σ ” .

ATTENTION: That default value only can be adjusted by professional technicians.

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4.4.5.Preference: **Sleepmode/Delay Start/Power Saving**

Click "Preference" (Fig.4.4-11) into Fig.4.4-12 interface.



Fig.4.4-9

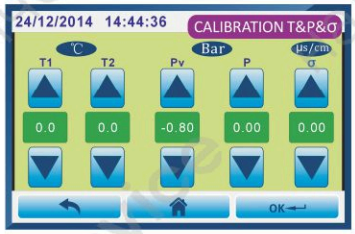


Fig.4.4-10



Fig.4.4-11



Fig.4.4-12

4.4.5.1.Sleepmode

If the sterilizer was not operated for a long time, power will be disconnected for safety and saving power automatically. When you want to revert back to working, sterilizer will get rid of sleep mod after pressing the Revert Switch.

"HH MM": "Hour Minute".

Click "Sleepmode" (Fig.4.4-13) into Fig.4.4-14 interface.Click on "▲▼" to change the number of "Hour/Minute". then click "OK↵" to save and exit.



Fig.4.4-13



Fig.4.4-14



Fig.4.4-15

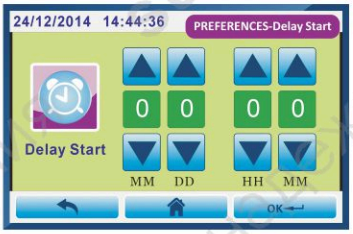


Fig.4.4-16

4.4.5.2.Delay Start

The sterilizer can be started the program in terms of decided time automatically.

"MM DD": "Month Date" "HH MM": "Hour Minute"

Click "Delay Start" (Fig.4.4-15) into Fig.4.4-16 interface.Click "▲▼" to change the number of "Month/Date/Hour/Minute".

Then click "OK↵" to save and exit.

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4.4.5.3.Power Saving

Click "Power Saving" (Fig.4.4-17) into Fig.4.4-18 interface.Press " ▶ " to select power saving mode you want,then click "OK↵" to save and exit.

"NO" :After each sterilization cycle is completed, the power will not be turn off.

"Single" :The power saving will be activated only for this operation. But not effective for next cycle.

"ALL" :After each sterilization cycle is completed, the power will be turn off.



Fig.4.4-17



Fig.4.4-18



Fig.4.4-19



Fig.4.4-20

4.4.6.Service: **Maintenance Infor/Pipeline Cleaning/SystemTest/Alarm Codes/ Auto-Water Supply**

Click "Service" (Fig.4.4-19) into Fig.4.4-20 interface.

4.4.6.1.**Maintenance Infor**

Click " Maintenance Infor" (Fig.4.4-21) into Fig.4.4-22 interface.



Fig.4.4-21

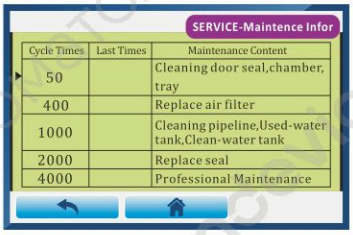


Fig.4.4-22



Fig.4.4-23



Fig.4.4-24

When the cycles of sterilization reached the numbers of listed, it was needed to check according the maintenance contents.

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*4.4.6.2.*Pipeline Cleaning

Click “ Pipeline Cleaning”(Fig.4.4-23) into Fig.4.4-24 interface.Press “ ▶ ” buttom will start,into Fig.4.4-25 interface.



Fig.4.4-25



Fig.4.4-26

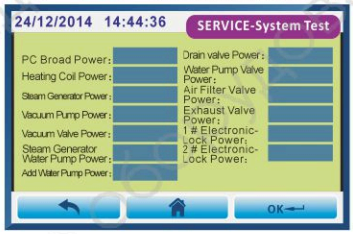


Fig.4.4-27



Fig.4.4-28

WARN:Please after fill with distilled water,closing the door,then press the “ ▶ ” button,Start cleaning. Recommend cleaned once every 3 months.

ATTENTION:Cleaning work will begin only when the steam generator temperature reaches 200℃ below the “ ⏸ ” .

*4.4.6.3.*SystemTest

Click “ System Test”(Fig.4.4-26) into Fig.4.4-27 interface.Press “ OK ” bottom to start the test.After all the items have been tested, press “ OK ” buttom to exit.This function provides maintenance engineer test parts.

*4.4.6.4.*Alarm Codes

Click “ Alarm Codes”(Fig.4.4-28) into Fig.4.4-29 and Fig.4.4-30 interface.Press “ ▲ ▼ ” buttom to turn page.
This function is easy to view fault information.



Fig.4.4-29



Fig.4.4-30

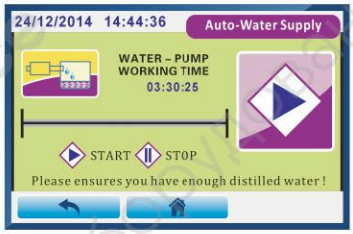


Fig.4.4-31

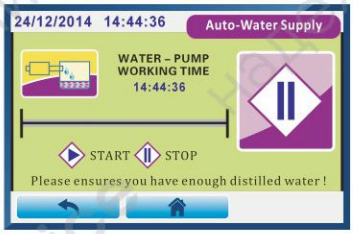


Fig.4.4-32

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***4.4.6.5.*Auto-Water Supply**

Click " Auto-Water Supply" into Fig.4.4-31 interface.Press " " to start(Fig.4.4-32).If you need to stop halfway, press " " to exit.

WARN:Before starting, please provide enough distilled water and plug in the inlet pipe to the valve.

4.5 "*SET UP 2*" introduction

4.5.1. System information
4.5.2. Label Printer
4.5.3. USB Record
4.5.4. MINI-Printer
4.5.5. System Setting
4.5.6. Cellphone App

Click "**SET UP 2**" (Fig.4.5-1)into Fig.4.5-2 interface.Select the program you want and click to enter.

4.5.1. System information



Fig.4.5-1

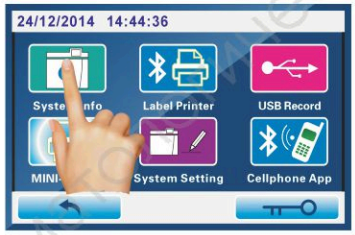


Fig.4.5-2



Fig.4.5-3



Fig.4.5-4

Click " system info" into Fig.4.5-3 interface.

You can see the software version/serial number/production date and other information.

4.5.2. Label Printer

Print the label, paste in each package.It is convenient to trace back the sterilization informationfor doctors.

ATTENTION:When the first time you use label printer, you must enter the label printer's Bluetooth ID into the machine. For details, see Fig.4.5-15 and Fig.4.5-16 of "4.5.5.System Setting".

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Click “ Label Printer” (Fig.4.5-4) into Fig.4.5-5 interface.then press “Bluetooth signal connection” Fig.4.5-6 into Fig.4.5-7 interface.Click “ OK ” bottom to start connection. “**CONNECTING...**” :During the connection; “**SUCCESS**” :connection succeeded.
Back to Fig.4.5-6 interface.click “Label Printer” (Fig.4.5-8) into Fig.4.5-9 interface.
Click on “ ▲ ▼ ” to change the number of labels you want,Click “ OK ” bottom to print.



Label Printer

Sterilization cycle number

Date and Time

Barcode information
“1411008” is the sterilizer S.N.
“00001” is sterilization cycle number





Fig.4.5-5



Fig.4.5-6

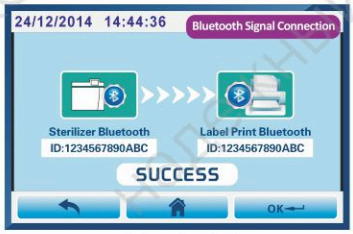


Fig.4.5-7



Fig.4.5-8



Fig.4.5-9



Fig.4.5-10

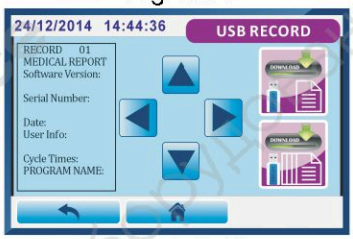


Fig.4.5-11



Fig.4.5-12

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4.5.3. USB Record

If you want to check the sterilization reports, please press "USB Record" (Fig.4.5-10) enter into interface Fig.4.5-11.

" ◀ ▶ " : select the different cycle reports from 1~128; " ▲ ▼ " : move the page up/down.

You can insert U disk to download the sterilization reports .


Download the current a record


Download all the records

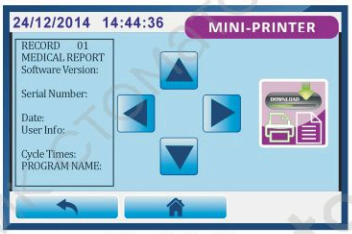


Fig.4.5-13



Fig.4.5-14



Fig.4.5-15



Fig.4.5-16

4.5.4. MIN-Printer (External printer)

Click "MIN-Printer" (Fig.4.5-12) enter into interface Fig.4.5-13. " ◀ ▶ " : select the different cycle reports from 1~128; " ▲ ▼ " : move the page up/down.Select sterilization reports you want,click "DOWNLOAD" buttom to print.

4.5.5. System Setting

Click "System Setting" (Fig.4.5-14) enter into interface Fig.4.5-15. After you enter password "3335", click " OK↵ " into interface Fig.4.5-16.

Then enter 12 words Bluetooth ID of label printer.



Fig.4.5-17



Fig.4.5-18

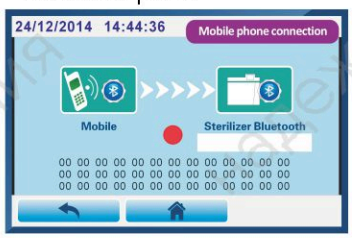


Fig.4.5-19

4.5.6. Cellphone APP(Optional)

Click "Cellphone APP" (Fig.4.5-17) enter into interface Fig.4.5-18.First, confirm that the control panel is inserted with Bluetooth module.Second,you open cellphone APP software,click "Bluetooth Connection" in the top right corner.

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4.6 “Abnormally Exit” function

If you wish to stop the running program, you can click the stop(Fig.4.6-1) and select OK(Fig.4.6-2) .
The LCD screen will show E00 alarm code and alarm cause.After you click on start (Fig.4.6-3),into automatically.(Fig.4.6-4)
After about 3 minutes, the program will be finished. When the screen show the sterilization program initial interface, you can open the door and bring out the medical instrument inside chamber.

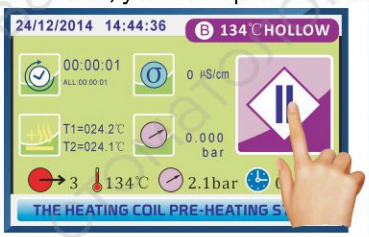


Fig.4.6-1

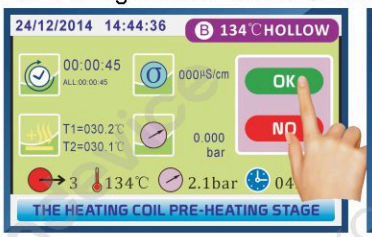


Fig.4.6-2



Fig.4.6-3

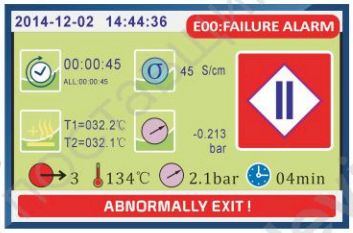


Fig.4.6-4

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5.JN-23 steam sterilizer program introduction

Click “program” (Fig.5-1) into the sterilization program interface(Fig. 5-2).

5.1 Sterilization program list

Program Name	sterilization temperature	sterilization time	drying time	vacuum times
1.Solid	134℃	04min	09min	1 times
2.Hollow	134℃	04min	15min	3 times
3.Prion	134℃	18min	15min	3 times
4.Cotton	121℃	30min	15min	3 times
5.Plastic	121℃	20min	09min	1 times
6.User-Definned	134℃or 121℃	03~60min	01~60min	1or 3 times



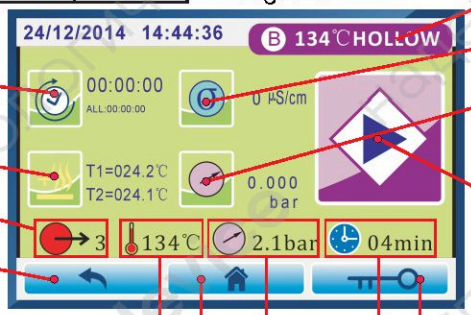
Fig.5-1



Fig.5-2

For example:Press “Hollow program” icon,into the interface(Fig.5-3).it is the interface befor the sterilization program is running.

Fig.5-3



Running time. “00:00:00” is the time each Stage. “ALL:00:00:00” is the whole running.

Temperature. “T1&T2” is temperature inside chamber. “T3” is temperature of heating coil. “T4” is temperature of steam generator.

Vacuum times of this program.

Back to the previous interface

Sterilization temperature of this program.

Back to the main interface.

Name of sterilization program.

Water conductivity.

Pressure inside the chamber

“Start” button.

Unlock icon

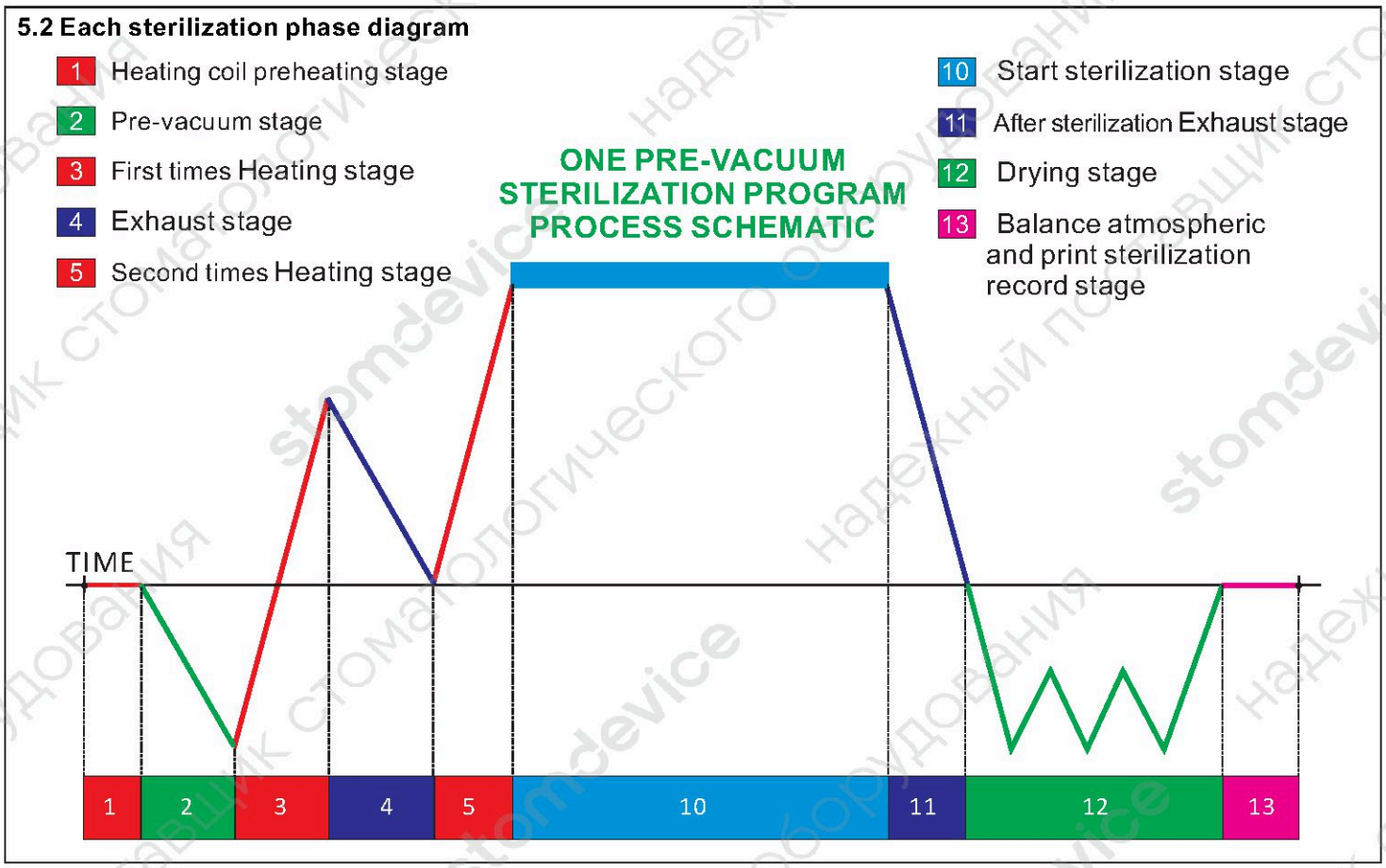
Sterilization time of this program

Sterilization pressure of this program

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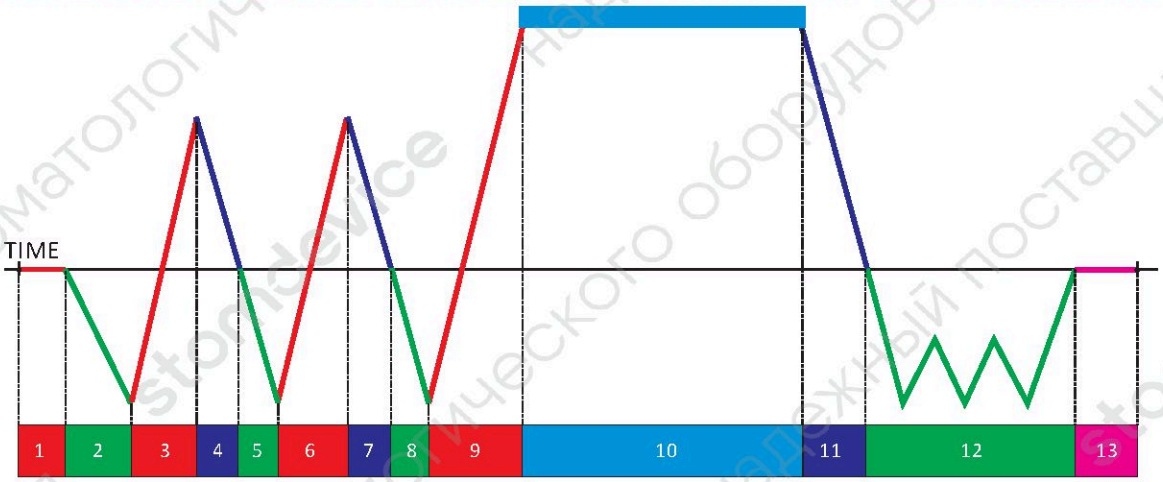
5.2 Each sterilization phase diagram



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THREE PRE-VACUUM STERILIZATION PROGRAM PROCESS SCHEMATIC



1 Heating coil preheating stage
2 The First times pre-vacuum stage
3 The First times Heating stage
4 The First times Exhaust stage
5 The Second times pre-vacuum stage
6 The Second times Heating stage
7 The Second times Exhaust stage
8 The third times pre-vacuum stage
9 The third times Heating stage
10 Start sterilization stage
11 After sterilizationExhaust stage
12 Drying stage
13 Balance atmospheric and print sterilization record stage

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5.3 Run sterilization program

5.3.1 THREE TIMES PRE-VACUUM PROGRAM (HOLLOW PRION COTTON)

Click "start" botton of Fig.5.3-1 interface,the sterilization program will be started and enter into Fig.5.3-2 or Fig.5.3-3 interface.
When temperature of heating coil(T3) rised and less than 100℃,Screen will show Fig.5.3-2 interface (the heating coil pre-heating stage).
When temperature of heating coil(T3) rised and over than 100℃,Screen will show Fig.5.3-3 interface (the first times pre-vacuum stage).

Click "" to check T3 temperature.(Fig.5.3-4)

5.3.1.1.THE FIRST TIMES PRE-VACUUM STAGE(Fig.5.3-3)

when the T3 temperature over than 100℃,the sterilizer will start evacuating and the control system will open the vacuum pump solenoid valve(Ev4).LCD shows "00:03:59" time countdown.If the vacuum value reaches Pv value ahead of time, sterilization program goes into heating stage in advance.

ATTENTION:If the vacuum value of less than Pv (factory default setting Pv=-0.800bar) in "00:03:59", there will be with alarm E12.



Fig.5.3-1

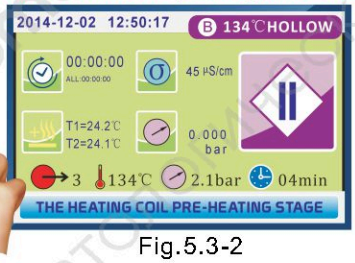


Fig.5.3-2

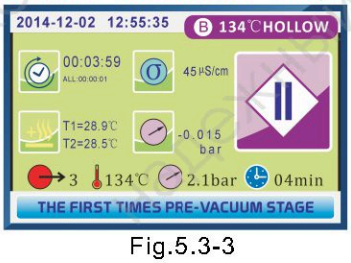


Fig.5.3-3

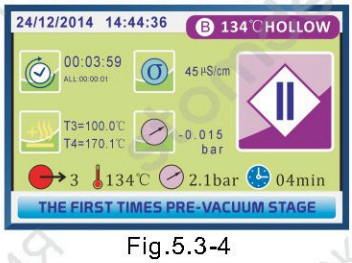


Fig.5.3-4

5.3.1.2.THE FIRST TIMES HEATING STAGE(Fig.5.3-5)

When the vacuum value reachs Pv value,the contrl system will open the water pump-solenoid valve(Ev2).The steam generator start to inject the steam into chamber.The temperatures(T1 and T2) and pressure inside the chamber will be rised at the same time.

5.3.1.3.THE FIRST TIMES EXHAUST STAGE(Fig.5.3-6)

When the pressure inside the chamber reachs 1.100bar,the control system will open the exhaust-solenoid valve(Ev1) for exhausting untill pressure downs to P=0.000bar.LCD shows "00:01:29" time countdown.

5.3.1.4.THE SECOND TIMES PRE-VACUUM STAGE(Fig.5.3-7)

When the pressure inside the chamber downs to 0.000bar,the control system will open the vacuum pump-solenoid valve(Ev4) and start evacuating. LCD shows "00:03:59" time countdown.it the vacuum value reaches -0.700bar ahead of time, sterilization program goes into heating stage in advance.

5.3.1.5.THE SECOND TIMES HEATING STAGE(Fig.5.3-8)

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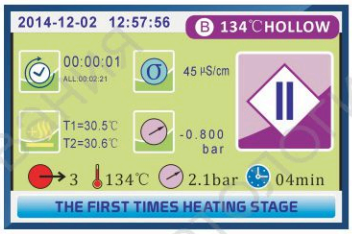


Fig.5.3-5

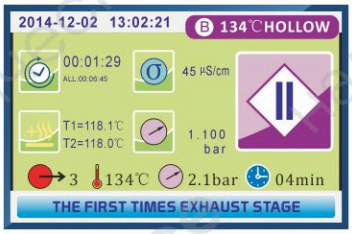


Fig.5.3-6

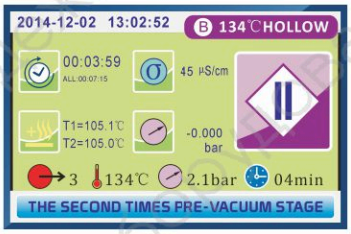


Fig.5.3-7

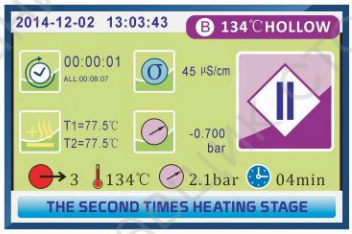


Fig.5.3-8

When the vacuum value reaches -0.700bar value,the control system will open water pump-solenoid valve(Ev2) and steam generator start to inject the steam into chamber.The temperatures(T1 and T2) and pressure inside the chamber will be rised at the same time.

5.3.1.6.THE SECOND TIMES EXHAUST STAGE(Fig.5.3-9)

When the pressure inside the chamber reaches 1.100bar,the control system will open the exhaust-solenoid valve(Ev1) for exhausting untill pressure downs to P=0.000bar.LCD shows "00:01:29" time countdown.

5.3.1.7.THE THREE TIMES PRE-VACUUM STAGE(Fig.5.3-10)

When the pressure inside the chamber downs to 0.000bar,the control system will open the vacuum pump-solenoid valve(Ev4) and start evacuating. LCD show "00:03:59" time countdown.when the vacuum value reaches -0.700bar ahead of time, sterilization program goes into heating stage in advance.

5.3.1.8.THE THREE TIMES HEATING STAGE(Fig.5.3-11)

When the vacuum value reaches -0.700bar value,the control system will open water pump-solenoid valve(Ev2) and steam generator start inject the steam into chamber.The temperatures(T1 and T2) and pressure inside the chamber will be rised at the same time.

5.3.1.9.THE START STERILIZATION STAGE(Fig.5.3-12)

When the temperature inside chamber reaches 134℃(***HOLLOW PRION***) or 121℃(***COTTON***) ,the control system will start sterilizing. LCD shows "sterilization time" countdown.

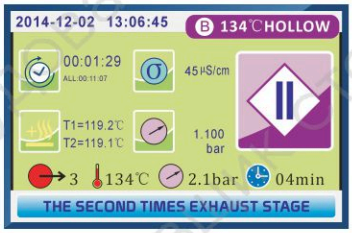


Fig.5.3-9

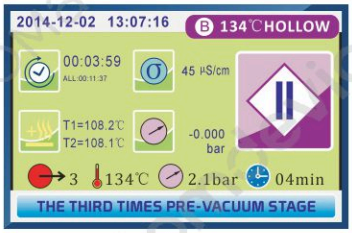


Fig.5.3-10

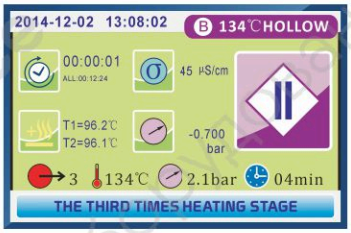


Fig.5.3-11

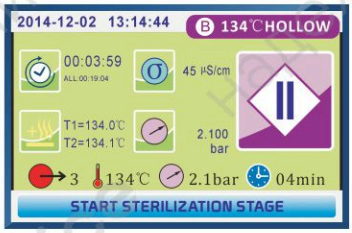


Fig.5.3-12

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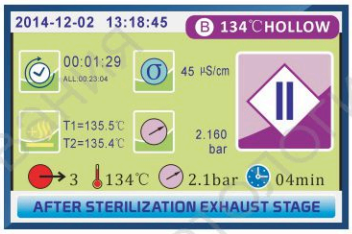


Fig.5.3-13

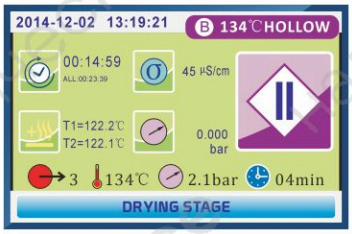


Fig.5.3-14

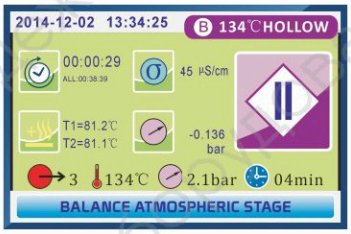


Fig.5.3-15

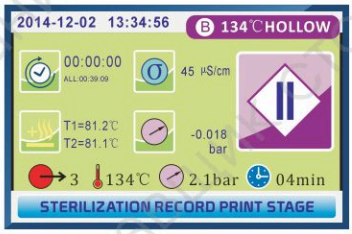


Fig.5.3-16

5.3.1.10.AFTER STERILIZATION EXHAUST STAGE(Fig.5.3-13)

When the “sterilization time” countdown is over,the control system will open the exhaust-solenoid valve(Ev1) for exhausting untill pressure downs to P=0.000bar.LCD shows “00:01:29” time countdown.

5.3.1.11.DRYING STAGE(Fig.5.3-14)

When the pressure inside the chamber downs to 0.000bar,the control system will open the vacuum pump-solenoid valve(Ev4) and start evacuating and drying.LCD shows “00:14:59” time countdown.

5.3.1.12.BALANCE ATMOSPHERIC STAGE(Fig.5.3-15)

When the vacuuming and drying is over(the “00:14:59” time countdown is over).the control system will open the air-solenoid valve(Ev3) to balance the pressure between in chamber and atmospheric.LCD shows “00:00:29” time countdown.

5.3.1.13.STERILIZATION RECORD PRINT STAGE(Fig.5.3-16)

After the balance atmospheric is over,the vacuum pump will be stoped.the control system will transfer sterilization report to external mini-printer and U disk.

5.3.1.14.STERILIZATION EVALUATION STAGE(Fig.5.3-17 OR Fig.5.3-18)

When the sterilization working is over,the control system will evaluates the sterilization results(“PASS” or “FAILURE”).

WARNNING:
If the result of sterilization is “FAILURE”, medical instruments of this time can not be used. And it's need to contact professional engineer to check the machine.



Fig.5.3-17



Fig.5.3-18

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5.3.2 ONE TIMES PRE-VACUUM PROGRAM (SOLID PLASTIC)

Click "start" botton of Fig.5.3-19 interface,the sterilization program starts running, shows Fig.5.3-20 or Fig.5.3-21 interface.
When temperature of heating coil(T3) rised and less than 100℃,screen will show Fig.5.3-20 interface (the heating coil pre-heating stage).
When temperature of heating coil(T3) rised and over than 100℃,screen will show Fig.5.3-21 interface (the first times pre-vacuum stage).

Click "" to check T3 temperature.(Fig.5.3-22)

5.3.2.1.THE FIRST TIMES PRE-VACUUM STAGE(Fig.5.3-21)

when the T3 temperature rised over than 100℃,the sterilizer will start evacuating and the control system will open the vacuum pump solenoid valve(Ev4).LCD show "00:03:59" time countdown.If the vacuum value reaches Pv value ahead of time, sterilization program goes into heating stage in advance.

ATTENTION:If the vacuum value of less than Pv (factory default setting Pv=-0.800bar) in "00:03:59", there will be with alarm E12.

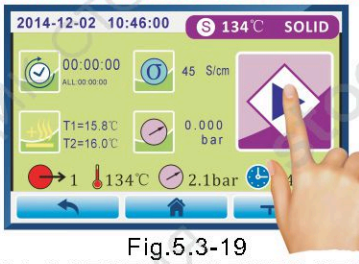


Fig.5.3-19

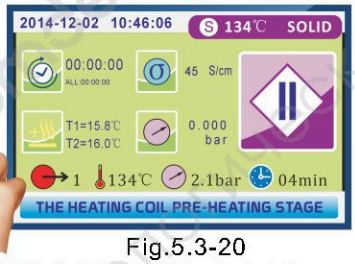


Fig.5.3-20

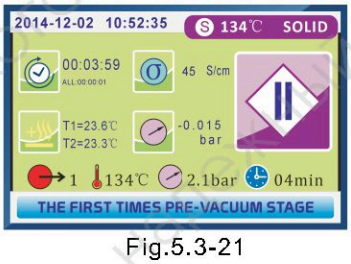


Fig.5.3-21

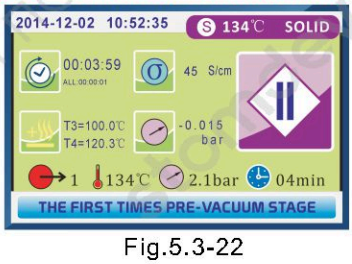


Fig.5.3-22

5.3.2.2.THE FIRST TIMES HEATING STAGE(Fig.5.3-23)

When the vacuum value reachs Pv value,the contrl system will open the water pump-solenoid valve(Ev2).The steam generator start inject the steam into chamber,the temperatures(T1 and T2) and pressure inside the chamber will be rised at the same time.

5.3.2.3.THE FIRST TIMES EXHAUST STAGE(Fig.5.3-24)

When the pressure inside the chamber reachs 1.100bar,the control system will open the exhaust-solenoid valve(Ev1) for exhausting untill pressure downs to P=0.000bar.LCD shows "00:01:29" time countdown.

5.3.2.4.THE SECOND TIMES HEATING STAGE(Fig.5.3-25)

When the pressure inside the chamber reaches 0.000bar,the control system will open the water pump-solenoid valve(Ev2).The steam generator start to inject the steam into chamber,the temperature(T1 and T2) and pressure inside the chamber will be rised at the same time.

5.3.2.5.THE START STERILIZATION STAGE(Fig.5.3-26)

When the temperature inside chamber reaches 134℃(***SOLID***) or 121℃(***PLASTIC***) ,the control system will start sterilizing.LCD shows "sterilization time" countdown.

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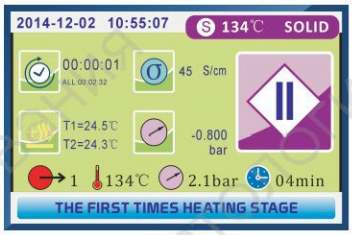


Fig.5.3-23

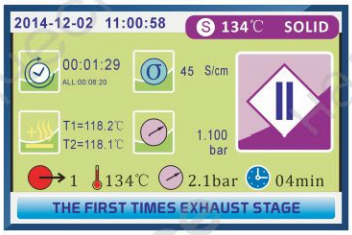


Fig.5.3-24

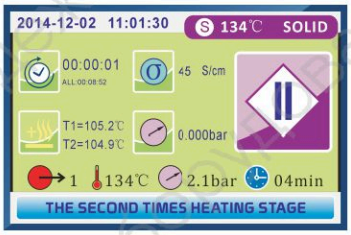


Fig.5.3-25



Fig.5.3-26

5.3.2.10.AFTER STERILIZATION EXHAUST STAGE(Fig.5.3-27)

When the “sterilization time” countdown is over,the control system will open the exhaust-solenoid valve(Ev1) for exhausting untill pressure downs to P=0.000bar.LCD shows “00:01:29” time countdown.

5.3.2.11.DRYING STAGE(Fig.5.3-28)

When the pressure inside the chamber downs to 0.000bar,the control system will open the vacuum pump-solenoid valve(Ev4) and evacuating and drying.LCD shows “00:08:59” time countdown.

5.3.2.12.BALANCE ATMOSPHERIC STAGE(Fig.5.3-29)

When the vacuuming and drying is over(the “00:08:59” time countdown is over).The control system will open the air-solenoid valve(Ev3) to balance the pressure between in chamber and atmospheric.lcd shows “00:00:29” time countdown.

5.3.2.13.STERILIZATION RECORD PRINT STAGE(Fig.5.3-30)

After the balance atmospheric is over,the vacuum pump will be stoped.the control system will transfer sterilization report to external mini-printer and U disk.

5.3.2.14.STERILIZATION EVALUATION STAGE(Fig.5.3-31 OR Fig.5.3-32)

When the sterilization working is over,the control system will evaluates the sterilization results(“PASS” or “FAILURE”).



Fig.5.3-27



Fig.5.3-28

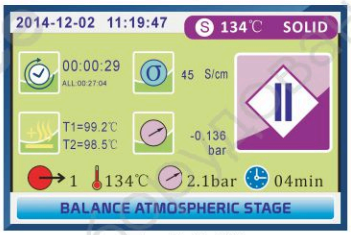


Fig.5.3-29

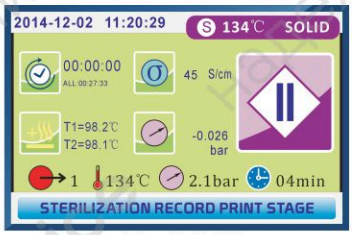


Fig.5.3-30

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Fig.5.3-31



Fig.5.3-32

WARNNING:
If the result of sterilization is "FAILURE", medical instruments of this time can not be used. And it's need to contact professional engineer to check the machine.

5.3.3 USER-DEFINNED PROGRAM



Fig.5.3-33



Fig.5.3-34

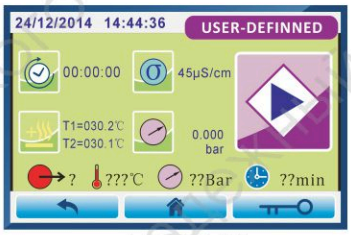


Fig.5.3-35

Click "User-definned" (Fig.5.3-33) enter into interface Fig.5.3-34.Press "▲▼" to change the number of "Temperature/ Vacuum times/Sterilization time/Drying time".

Temperature range:121℃ or 134℃. Vacuum times range: 1 or 3. Sterilization time range:4~60. Drying time:1~60.

Then click "OK" to save and exit,enter into Fig.5.3-35 interface.Then press "Start" buttom to start.Refer to "chapter ***5.3.1 or 5.3.2 PRE-VACUUM PROGRAM***" to check the running state diagram.

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5.4 Test program

When LCD shows main interface,Click “TEST” (Fig.5.4-1) enter into interface Fig.5.4-2.

5.4.1 the “vacuum test” program following steps:

This test is performed in order to check the performance of the unit,particularly:

-the efficiency of the vacuum pump;

-the seal of the pneumatic circuit.

Click “Vacuum Test” enter into interface Fig.5.4-3.Then press “ ” buttom to start vacuum test.

(1)T0~T1 STAGE:the vacuum pump starts evacuating,the operation display appears 4 minutes countdown(Fig.5.4-4).If the pressure inside chamber reaches -0.850bar(P1) ahead of time,go to the next step in advance.

(2)T1~T2 STAGE:when the pressure reaches -0.850bar,the vacuum pump stops work.This pressure will maintain for 5 minutes and then measure P2.(Fig.5.4-5)

(3)T2~T3 STAGE:this pressure maintain for 10 minutes and then measur P3.(Fig.5.4-6)

(4)T3~T4 STAGE:this pressure in chamber will be balance.After 2 minutes,time countdown is over.(Fig.5.4-7)

LCD shows evaluation results “PASS” or “FAILURE” (Fig.5.4-8 or Fig.5.4-9).Press “start lock” button exit to Fig.5.4-3 interface.

If evaluation results is “FAILURE”,please check the leakage of seal and leakage of pipeline.



Fig.5.4-1

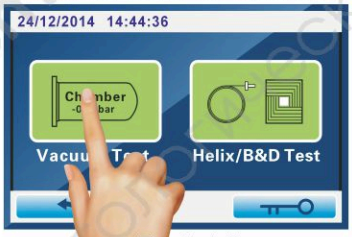


Fig.5.4-2



Fig.5.4-3

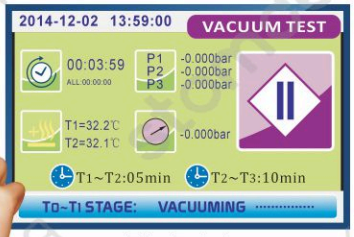


Fig.5.4-4

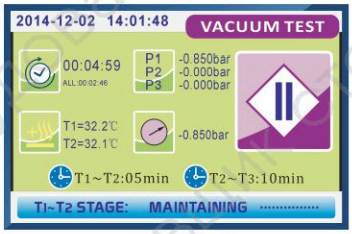


Fig.5.4-5

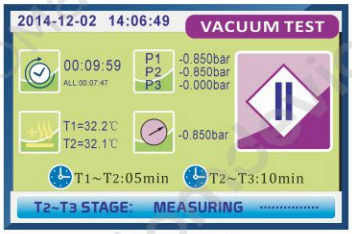


Fig.5.4-6

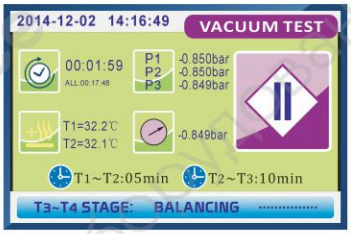


Fig.5.4-7

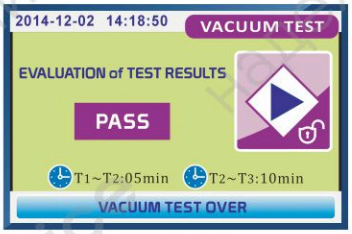
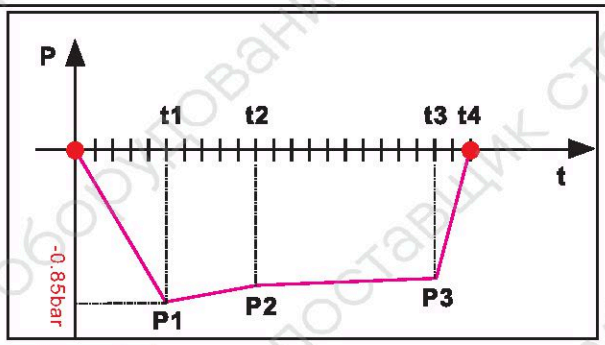


Fig.5.4-8

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In compliance with EN 13060:2004,the test requires a tightness test (less than or equal to 13mbar during the 10 minutes of test).If the leakage is more than this value,the outcome of the test is failed; the seal of the pneumatic circuit of the device must be chceked.



WARNNING:

1、Temperature requirements of vacuum test:
the temperature in chamber must be tested under the normal state. Otherwise, the result of a vacuum test will be inaccurated.

2、We recommend: if you need to do vacuum test,, it should be subjected to vacuum testing at once after turn on the power! Because after the power turned on, the heating coil had begin to warm up slowly, the temperature of chamber will rise gradually .

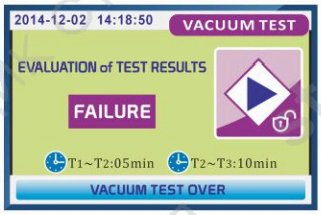


Fig.5.4-9

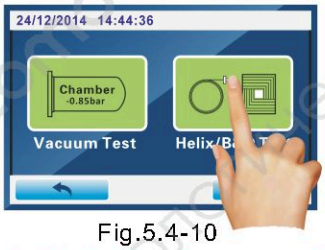


Fig.5.4-10



Fig.5.4-11

5.4.1 the "B & D Test" and "Helix Test" program following steps:

Click "Helix/B & D Test" Fig.5.4-10 enter into interface Fig.5.4-11.Then press " " buttom to start Helix/B & D test.
Refer to "chapter ***5.3.1 THREE TIMES PRE-VACUUM PROGRAM***" to check the running state diagram.

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6.Maintenance

6.1 Safety warnnings



Before performing any maintenance operations, read the following safety instructions carefully.

WARNING:When replacing components that affect the safety directly or indirectly,it is essential to use original spare parts.



DANGER: HIGH INTERNAL VOLTAGE.

WARNING:DISCONNECT THE POWER SUPPLY BEFORE STARTING WORK.Non-obeying action may cause injuy to people and damage the unit seriously.

ALL MAINTENANCE OPERATION SHOULD ONLY BE PERFORMED BY THE RESPONSIBLE AUTHORITY OR THE AUTHORISED TECHNICIANS OR THE ASSOSTANCE SERVICE OF OUR COMPANY.

--Observe the intervals prescribed or shown in this manual.Activates menorandum messages to assist the users to performing both the ordinary and the extraordinary maintenance operations.

-- It is forbidden to eliminate the safety devices installed in the machine

-- Check them at regular intervals.

--If anything emergency happened,pleace turn off the power immediately.

--Unauthorised person must keep a safe distance from the machine during maintenance operations.

After maintenance,the respinsible authority have to make sure that work has been done before starting the unit correctly.All the safety devices have been activated.

6.2 Routine Maintenance

Just like all electric units,this must beused,serviced and checked at regular intervals correctly.These precautions will ensure the unit works continuously, safely and effectively.

To prevent operator hazards,the unit must be checked and serviced under the technical assostance service.

--To keep the unit in good working condition,please clean all the external parts using a soft damp cloth with normal,neutral detergent (do not use corrosive or abrasive products).

--Do not use abrasive cloths, pads or metal brushes (or anything abrasive) to clean the metal.

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--Please using a damp cloth to clean the door seal carefully before starting every cycle.
--The formation of white stains on the base of the chamber shows that the demineralised water used is of poor quality.

Maintenance programme

FREQUENCY	OPERATION
DAY	Cleaning of the door seal. General cleaning of the external surfaces. General cleaning of the internal surfaces.
WEEKLY	Cleaning of the sterilization chamber. Cleaning of the trays and the support.
ANNUALY	Maintain the safety valves.
EVERY 500 CYCLES	Replacement of the bacteriological filter.
EVERY 500 CYCLES	Replacement of the seals.
AFTER 10 YEARS	Request structural check with the chamber.
WHEN NECESSARY	Ajustment of the lock mechanosm.

Cleaning the sterilization chamber, accessories, door and seals.



WARNING:DISCONNECT THE POWER SUPPLY BEFORE STARTING WORK.Non-obeying action may cause injuy to people and damage the unit seriously.

Sterilization chamber

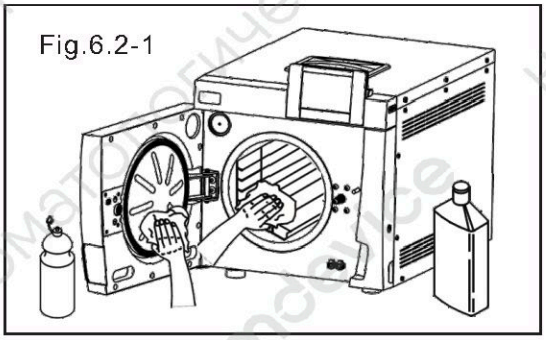
Using a non-abrasive damp cloth to clean the sterilization chamber thoroughly (Fig. 6 .2-1).After removed the tray support,only can be used with qualified dostilled and demineralosed water.Follow the steps to clean the trays and rack.cleaning the sterilization chamber is important to eliminat deposits that will compromise the good working condition of the machine.
Remove the rack the chamber(Fig. 6 .2-2),taking care of the probe at the bottom of chamber not to damage.After

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cleaning, perform the above operation in reverse order.

Fig.6.2-1



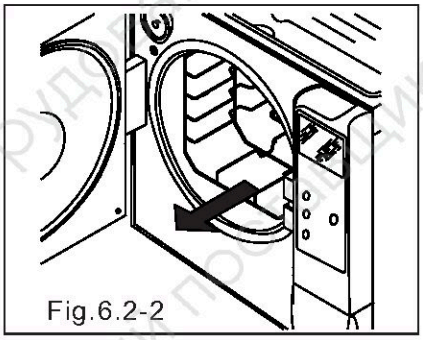


Fig.6.2-2

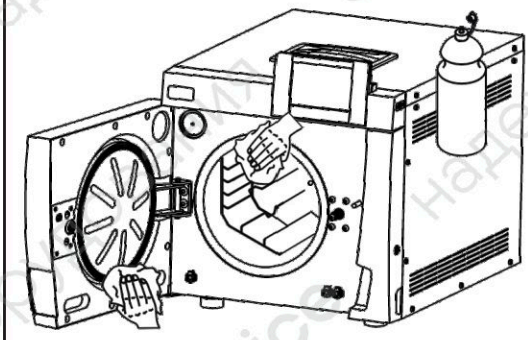
Do NOT use disinfecting substances to clean the chamber.

Seal and door

Clean lime-scale on the seal and door with a damp cloth(Fig.6.2-3), dampen withwater or vinegar.Cleaning should remove all the impurities that may cause the lack of pressure in the sterilization chamber and possible cuts in the seal.

WARNING:Do not allow lime-scale or dirt accumulate on the seal.or seal will be damaged and cause sterilization over time.

Fig.6.2-3



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To maintain the unit in good working order,periodically clean all the external parts using a soft cloth and normal neutral detergents or just water (do not use abrasive products).

Do NOT wash the unit with direct sprays or high-pressure jets or water,since any infiltration into the electrical components could prejudice the working of the machine and the safety systems.

Emptying and cleaning the tanks

WARNING: DISCONNECT POWER SUPPLY. Non-observance may cause serious injury topeople or may seriously damage the unit.

WARNING: if the unit is not used for more than three days, both tanks should be emptied to prevent deposits from forming.

1. Empty the clean water tank: fit the end of the tube with the connector into the connector at the bottom of the front of the unit (Chapter 4.3.2) and the other end into an empty container.
2. Empty the internal tank for collecting used water: fit the end of the transparent tube into the connector at the bottom of the front of the unit (Chapter 4.3.2) and the other end into an empty container.
3. At the end of the draining operation, remove the tube from the connector by pressing on the clip.
4. Remove the cover in order to access the tanks:

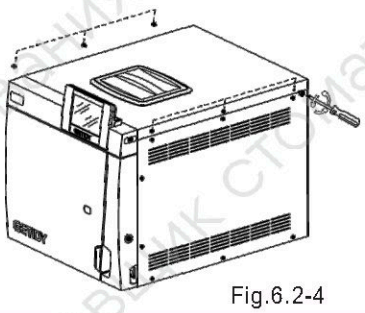


Fig.6.2-4

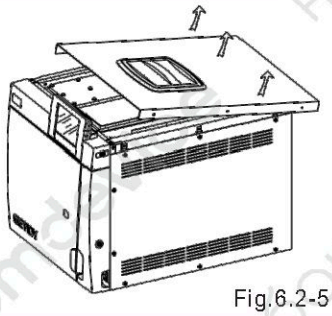


Fig.6.2-5

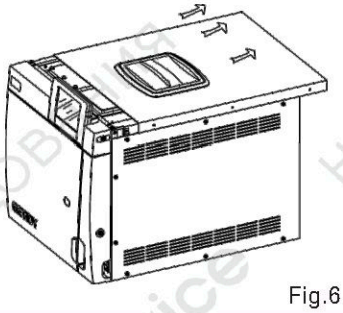


Fig.6.2-6

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5.Carefully clean the tanks with the sponge supplied and water,using it on the spongy side and not on the abrasive side.Clean with care, paying particular attention to any dirt that may have deposited in the corners.
6.**Rinse thoroughly** and empty the water used for this operation.
7.Run a sterilization cycle without loading the unit.

WARNING: while performing all cleaning operations, **be careful not to damage the floating sensors** situated in the tanks.

6.2.1 Periodic Maintenance

WARNING: DISCONNECT POWER SUPPLY BEFORE STARTING WORK. Non-observance may cause serious injury to people or may seriously damage the unit.

Servicing the safety valve

WARNING: HIGH TEMPERATURE. Only perform this operation when the machine is cold.
WARNING: DISCONNECT POWER SUPPLY BEFORE STARTING WORK. Non-observance may cause serious injury to people or may seriously damage the unit.

1.Access the safety valve mounted at the rear of the machine.
2.Turn the plug located on the upper part of the valve anti-clockwise until it reaches the end of the thread and turns loose.
3.Return the plug to its original position,screw it back on and repeat the operation from the beginning at least a couple of times.

WARNING: this operation ensures the safety valve works correctly over time. Make sure the plug is properly closed afterwards.

Adjusting the closing mechanism

WARNING: HIGH TEMPERATURE. Only perform this operation when the machine is cold.

The closing mechanism of the unit occasionally requires adjusting due to normal settling of mechanical parts and wear on the seal gasket.This is particularly important as a poor seal may prevent the pressure from increasing to the level set for the selected program and therefore jeopardise the result of the cycle.Proceed as follows
1. Open the door. **Always work with the unit cold.**

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2.Fit the extraction and adjustment lever between the door gasket and the guard,holding it with its widest part.Slip the tip into the nut in the middle of the door gasket.
3.Turn the adjustment pin anticlockwise, looking at the door gasket, by 1/8 of a turn (to close).
4.Check that the door closes properly. If the handle is too hard to close, turn a little in the opposite direction (clockwise).
5.Carry out a test cycle to check it is correctly adjusted.

Resetting the safety thermostat



WARNING: the safety thermostat can only be reset by the responsible authority.
WARNING: DISCONNECT POWER SUPPLY BEFORE STARTING WORK. Non-observance may cause serious injury to people or may seriously damage the unit.
WARNING: HIGH TEMPERATURE. Only perform this operation when the machine is cold.

To reset the safety thermostat, proceed as follows:
1. Wait for about 10 minutes for the machine to cool down.
2. Unscrew the black protruding cap (the bottom right at the rear of the machine) .
3. Press the red button inside the hole with a pointed object (such as a screwdriver).
4. Screw the black cap on. The machine has now been reset.

After resetting the safety thermostat, reconnect power supply, restart the cycle and make sure the fault has been eliminated.



WARNING: if the fault persists, switch off the unit and call the Technical Assistance Service. Do not reset the thermostat again. PERFORM THIS OPERATION JUST ONCE.

6.3 Extraordinary Maintenance

Any jobs not mentioned above are considered as extraordinary maintenance. In these cases, contact specialists authorised by Getidy M,I.Co.,ltd.

The Air filter and the gasket are components that are not covered by the guarantee.

Service maintenance

After 1000 cycles or after two years from installation,This can only be performed by specialists authorised by our company.

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WARNING:extraordinary maintenance must only be performed by specialists authorised by our company.

Replacing the Air filter

--Unscrew the Air filter by turning it anticlockwise;
--Screw on the new filter by turning it clockwise until it is tight.

Replancing the door sealing

--Grip the lip of the sealing with two fingers and remove it;
--Clean the seat of the seal with a cloth soaked in alcohol;
--Fit the new seal into the seat located in the door and distribute it evenly around the circumference by applying the same pressure on the entire gasket with your fingers.Then lift up the lip of the gasket tomake s ure no points have been badly fitted;
--Switch on the autoclave,close the door making sure the correct closing force is required; if necessary,adjust the closing force with the relative adjustment wrench.

Cleaning the draining water filter

If necessary, cleaning the the draining water filter.Unscrew the filter as showed in the picture and clean it with water.
Take care that the screw or other object fall down into the solenoid valve.(Fig.6.3-1)

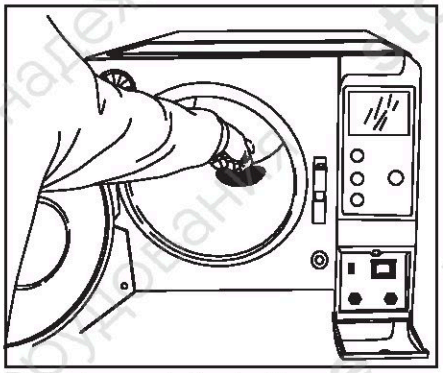


Fig.6.3-1

Power fuse

The fuse on the internal card is of the type:
5X20-10A(AC 230V/50Hz/60Hz);5X20-20A(AC 110V/60Hz)

6.3.1 Rusting

The unit is made from materials that make it impossible for rust to form on the instruments to sterilize.
The formation of rust on the surfaces of the unit or instruments is caused by the introduction of rusty instruments,even if

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made from stainless steel, or of instruments in normal steel that cause galvanisation to take place.
The introduction of a single instrument with a rust stain is often sufficient to form and develop rust on the instruments and in the unit itself.



WARNING: DISCONNECT POWER SUPPLY BEFORE STARTING WORK.Non-observance may cause serious injury to people or may seriously damage the unit.

If rust forms in the unit,clean the walls of the sterilization chamber and the tray holder using special products for stainless steel, as described previously in the paragraph "Cleaning the sterilization chamber, accessories,door and gasket".



WARNING: do not use metal sponges or brushes.Use a damp soft cloth to remove dirt stains.

7 Scraping

7.1 Scraping Instructions

The Sterilizer unit has been manufactured using ferrous materials, electrical components and plastics. To scrap the unit, separate the various components according to the material they are made of in order to simplify reuse or differentiated disposal.
No particular operations are required after scrapping.
Do not dump the unit.
Take it to a disposal company.
Always comply with the current laws governing the scrapping of material in the country of use.

7.2 Resale

If the unit is sold,hand over all the technical documentation to the new purchaser,inform him/her about any repair work carried out and how to use and service the machine. Also infor our compay of the sale and provide it with data about the new purchaser.

APPENDIX 1 Preparing the instruments for sterilization

A correct sterilization depends on the processes described below being carried out correctly; these are allequally important and care must be performed carefully.
1. Preparing the instrumnets to sterilize; 2. Packing; 3. Loading; 4. Sterilizing;
5.Preserving the sterilized instruments; 6.Routine maintenance of the unit.
All the objects must be decontaminated and careful cleaned and dried before sterilized.In the case of instruments with parts that are joined to each other,divide the parts or them as wide apart as possible.

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In the case of overalls or other reusable fabrics, these must be washed and dried after use and before sterilization,to remove organic material and lengthen the "life" of the fabric, restoring it with its natural watercontent (i.e. degree of humidity).

The objectives of the initial decontamination procedure are as follows:
a) inactivating bacterial proliferation; b) preventing mutual contamination while handling instruments;
c) preventing any products present on the instrument from drying up; d) protecting personnel
Decontamination is carried out using detergents and, generally, solutions that are active against HIV, HBV and HCV,or by washing at 93°C for ten minutes in thermo-disinfectors. Observe the indications given in thetechnical data sheets of the products used.
The instruments are cleaned so as to eliminate blood, saliva,dentin and organic substances in general, that may damage the materials to be sterilized or even the sterilizer itself.The use of ultrasound baths isrecommended,which offer numerous advantages with respect to traditional cleaning methods, such as efficacy,speed and delicacy on the object being cleaned; always follow the recommendations provided by the respective manufacturers. In general, after ultrasound cleaning with detergent and/or disinfectant,rinsing the instrument is recommended, in that the disinfectant may take on corrosive characteristics as a result of the heat.

Always clean the solution carefully to avoid residues of moisture.Once dry, the instruments to be sterilized in the unit must be appropriately packaged, whereas those to be cold sterilized must be immersed in the appropriate chemical solution (glutaraldehyde, paracetic acid, etc.).
Checking the instruments to be used is also important: ensure that devices with the following characteristics are not subject to sterilization:
- breaks
- stains
- rust
- mono-use devices that cannot be reused

APPENDIX 2 Packaging

The correct packaging of the materials is essential in ensuring that sterility is maintained.Packaging of the instruments is done so as to maintain the materials sterilized until using.

The way how the sterilized instruments are packaged,and then sticked,determines the state of preservation of sterilization.

The following material can be used as containers:metal containers with lids or perforated buttoms with filters in paper,pouches in paper

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or polypropylene,Medical Grade paper or trays that are perforated or with grilles.
Pouches with paper-polypropylene are excellent packageing systems of steam sterilizing for small sets of surgical instruments and **individual instruments.**



Use materials that comply with EN868-1 for packaging and sterilizing.



Do not re-sterilize the pouches in paper-polypropylene and the Medical Grade . They undergo a substantial change in their structural characteristics and would no longer guarantee the characteristics of "protective barrier".

For packaging, observe the following recommendations (for pouches in paper-polypropylene):
1. **Contents must not exceed ¾ of the volume of the pouch**
2. **The instruments must be positioned so that they can be extracted by their handle**
3. **The sealing strip on the pouch must be continuous with a height of at least 6mm (UNI EN 868-3).**

Each package prepared must at least indicate the date of sterilization, the type of cycle performed and the date in which the preservation of sterility expires; this latter value must be established considering the length of preservation of sterility as indicated by the manufacturer of the packaging material,the internal procedure used and the stocking conditions of the sterilized material itself.
Instruments packaged in individual pouches have a life (in terms of sterility) of 30 days, those in double pouches of 60, if kept in closed cabinets.These values are,in any case,to be considered indicative,in that the date of preservation is influenced by various factors,such as the environmental microbic level,the granulometry of environmental dusts (that act as carriers of micro-organisms),as well as the temperature, pressure and ambient humidity parameters and the degree of handling of the sterilized material.

Packaging methods that make it possible to avoid partial withdrawals and that allow for mono-patient use are optimum.

APPENDIX 3 Positioning the load

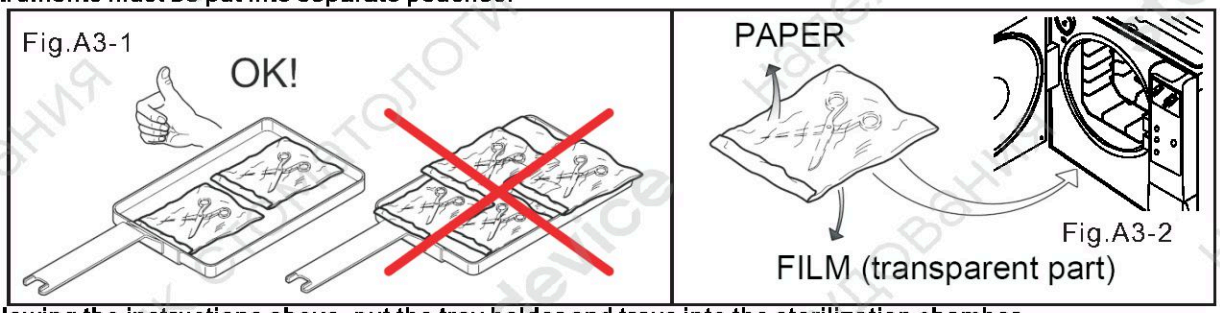
The way how to load to sterilize is arranged is also important to the sterilization process condiderably.Always observe **the maximum load indicated in this manual,a value that has been tested by the manufacturer and that is therefore valid.**
- Always use the tray supports, to facilitate the circulation of steam.
-Do not load trays that are not used.
-Load the unused trays in an upside down position, to avoid any accumulation of water in the boiler.
-If sterilize loose instruments, it is advisable to cover the tray with sheets of (Tray Paper) to avoid any

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direct contact of the instruments.
-Ensure that instruments of different materials are separated and placed in different trays.
-For improving sterilization, open instruments such as pincers, scissors, or other composite instruments.
-Position the instruments sufficient distance from others that they remain separate for the whole sterilization cycle.
-Do not stack instruments on the tray: overloading could compromise sterilization.
-Mirrors should be placed glass side down.
-Do not stack the trays on another and use the tray wupport. It is necessary to leave a space beteen each tray to allow for the circulation of steam during the sterilization phase and facilitate drying.
-Place a chemical sterilization indicator on each tray.

- ***Tubes***
  After the tubes have been cleaned normally, rinse them using water without pyrogene.
  Place them on the tray so that the two ends are open not bend or twist.
- ***Packages***
  Place the packages upwards, next to each other, do not allow them to come into contact with the sides of the chamber.
- ***Material in pouches***
  When sterilizing the material in pouches, **do not overlap the pouches on the trays (Fig. A3-1).**
  Place the pouch with the transparent side face down (in contact with the tray) and with the paper face up (Fig. A3-2).
  Instruments must be put into separate pouches.



After following the instructions above, put the tray holder and trays into the sterilization chamber.

WARNING: insert the tray support and the trays, paying attention not to damage the door gasket.

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APPENDIX 4 Description of Tests

It is important to periodically verify the performance of the unit by performing the appropriate tests;
It can perform three tests:

--B&D test -- Vacuum test -- Helix test

The frequency of these tests should be performed following:

Vcauum Test	Monthly
B&D Test	Daily
Helix Test	Daily

The parameters of the respective cycles are as follows:

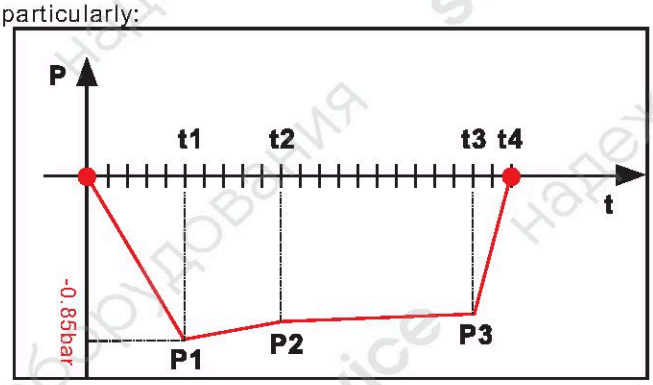
Parameter cycles	Vacuum Test	B&D Test	Helix Test
Temperature	----------	135.5℃	135.5℃
Pressure	-0.85bar	2.16bar	2.16bar
Sterilization	----------	3'30"	3'30"
Drying	----------	9'	9'

Vacuum Test

This test is performed in order to check the performance of the unit,particularly:
- **the efficiency of the vacuum pump;**
- **the seal of the pneumatic circuit.**

The cycle is structured as follows:
1. **a vacuum is created up to -0.85bar.**
2. **this pressure is maintained for 5 minutes and then measured**
3. **pressure is maintained for 10 minutes and then measured**
4. **Pressure in Chamber balance with the air pressure,2 min.**

In compliance with EN 13060,the test requires a tightness test(less than or equal to 13mbar during the 10 minutes of test).if the leakage is more than this value,the outcome of the test is failed;the seal of the pneumatic circuit of the device must be checked.



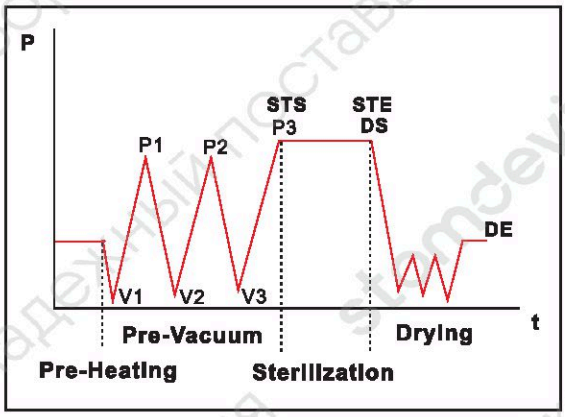
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In order to achieve a correct result, the test must be carried out with the unit cold, i.e.within 3 minutes from machine start-up.

Bowie & Dick test

This is a chemical-physical test that is also known as the Brown test: the indicator is a heat-sensitive sheet that is placed in the middle of a packet made of various layers of paper and foam rubber.
The B&D test simulates the performance of the unit with regard to the sterilization of porous loads, particularly:
--the efficiency of the preliminary vacuum and the penetration of steam within the pores;
--the temperature and pressure values of the saturated steam during the sterilization phase.

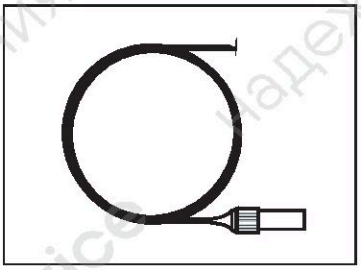


The packet for the B&D test must be inserted on its own, preferably on the lowest tray, with the label facingup.
After performing the cycle, specifically the 134 cycle, verify immediately the test. Be careful while handling
The packet (it is still hot), remove the indicator sheet and follow the instructions given in the package for evaluating the result of the test.

Helix test

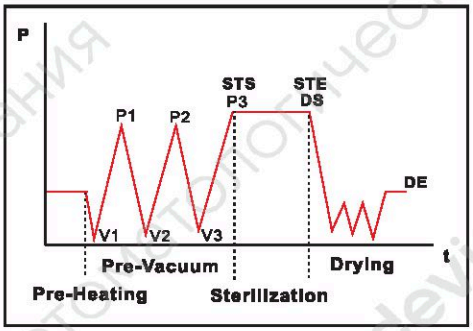
The Helix test represents a hollow A-type load, i.e. the load with themost critical characteristics.
The test consists of a tube in polytetrafluoroethylene (PTFE)with a length of 150mm and internal diameter of 2mm.
The Helix test simulates the performance of the unit with respect to the sterilization of hollow loads,in particular:

--the efficiency of the preliminary vacuum and the penetration of steam within the pores;
--the temperature and pressure values of the saturated steam during the sterilization phase.



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WARNING: carry out the Helix test only after a sterilisation cycle.

After placing the strip in the capsule, position the tube on the lowest tray inside the sterilization chamber.
At the end of the cycle, take the tube out immediately (with care in that the load is still hot)and verify the result of the test,referring to the indications given on the package.

APPENDIX 5 Validating the cycles

With reference to standard EN 13060, the following cycles have been validated:

	134℃-04min-15min-3	134℃-18min-15min-3	121℃-20min-15min-3
Dynamic pressure of the chamber of the sterilizer	●	●	●
Air leakage	●	●	●
Empty chamber	●	●	●
Solid load	●	●	●
Small porous articles	●	●	●
Light porous loads	●	●	●
Full porous loads	●	●	●
Hollow load B	●	●	●
Hollow load A	●	●	●
Multiple packaging	●	●	●
Dryness, solid load	●	●	●
Dryness, porous load	●	●	●

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A number of definitions that are of use in understanding the table above follow:
--Solid load: non-porous article, without notches or other characteristics that may hinder the penetration of steam in an equal or greater amount than those of a hollow load.

--Porous load: material that is capable of absorbing fluids; in particular this regards:
A . a full porous load when the load occupies 95±5% of the usable space.
B . a light porous load when the load occupies 20-25% of the usable space.
C . a small porous load when the load occupies 0.5-5% of the usable space.

--Hollow load **A**:space open at one end in which 1≤L/D≤750,where D is the diameter of the cavity and L the length,with L≤ 1500mm,or space open at both ends in which 2≤L/D≤1500, with L≤3000mm and that is not hollow load B.

-- Hollow load **B**: space open at one end in which 1≤L/D≤5, where D is the diameter of the cavity and L thelength, with D≥ 5mm, or space open at both ends in which 2≤L/D≤10, with D≥5mm.

APPENDIX 6 Quality of process water

With reference to standard EN 13060,the table below indicates the recommended limit values (maximum) for contaminating agents, as well as the chemical-physical characteristics of the water used for condensate and inlet water.

Condensate is produced by the steam that was formed by the empty chamber of the sterilizer.

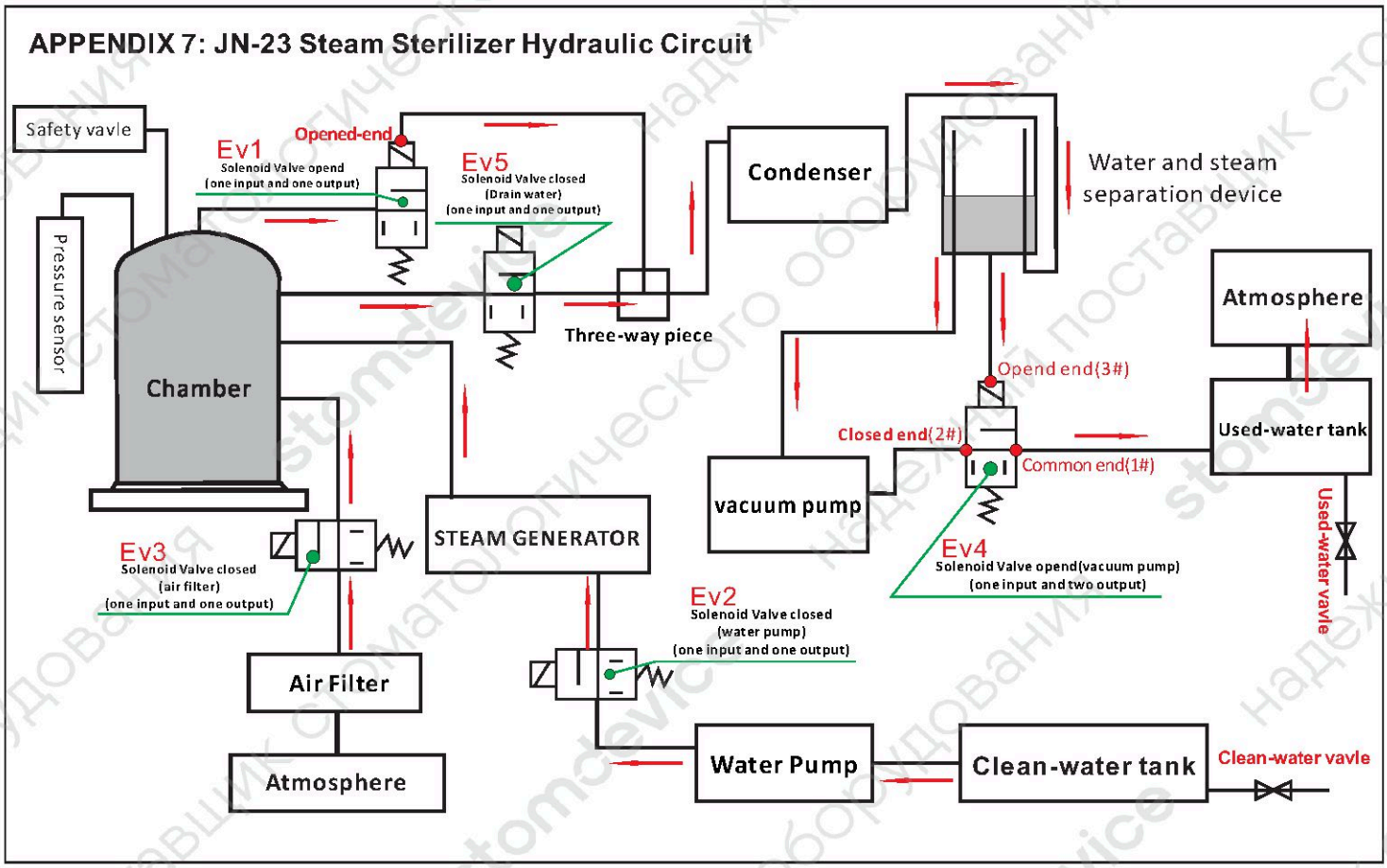
The use of water for generating steam containing contaminants at higher levels than those shown in this table may considerably shorten the working life of a sterilizer and may invalidate the maker's guarantee.

	Inlet water	Condensate
Evaporated residue	<10 mg/l	<1 mg/l
Silicon oxide	≤1 mg/l	≤0.1 mg/l
Iron	≤0.2 mg/l	≤0.1 mg/l
Cadmium	≤0.005 mg/l	≤0.005 mg/l
Lead	≤0.005 mg/l	≤0.05 mg/l
Heavy metal residues	≤0.1 mg/l	≤0.1 mg/l
Chlorides	≤2 mg/l	≤0.1 mg/l
Phosphates	≤0.5 mg/l	≤0.1 mg/l
Conductivity at 20°C	≤15 µS/cm	≤3 µS/cm
PH	5-7	5-7
Appearance	colourless,clean,sediment-free	
Hardness	0.02 mmol/l	

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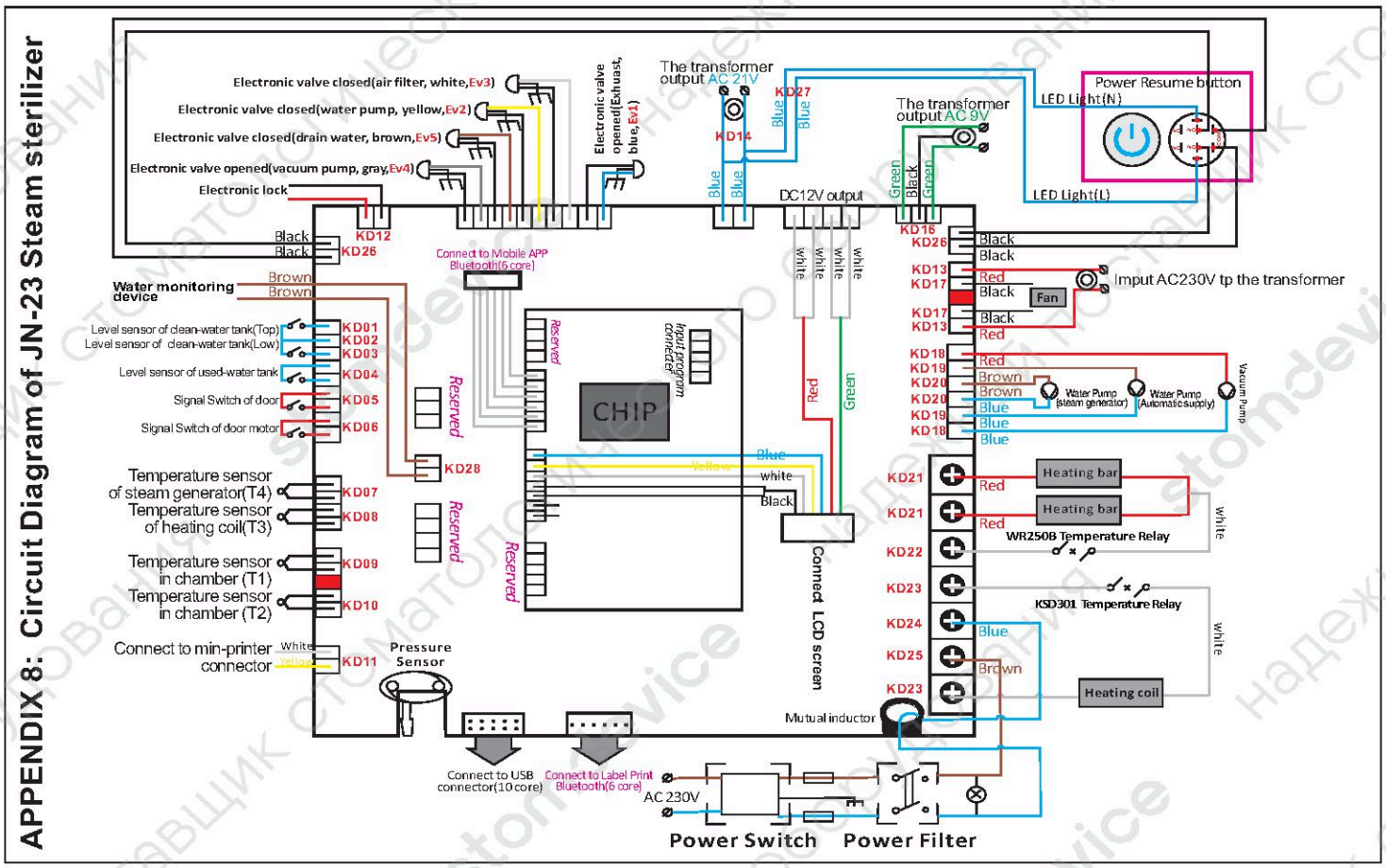
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APPENDIX 7: JN-23 Steam Sterilizer Hydraulic Circuit



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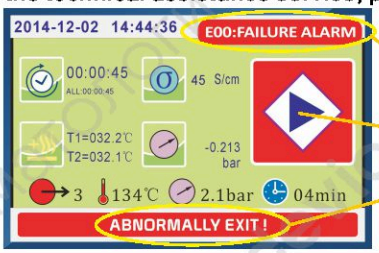


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APPENDIX 9:Alarm code and solutions of JN-23 Steam Sterilizer

The table below lists all the alarm messages with the probable causes of faults; whenever your display shows a screen of this type, before calling the technical assistance service, perform the operations indicated.



Alarm Code	Alarm Cause	Solution
E 00	Abnormally Exit	If need abnormally exit during sterilization,you have to press “ ” button,then click “ ok ” ,LCD appear “E00” alarm code and flashing.Press “ ” button again to relieve Alarm,and start vacuuming-drying process.After 3 minute evacuating,the sterilizer will stop working.This cycle is over,the operation display shows main interface.The door of sterilizer can be opened.
E 98	Power outage during operation	If you encounters abrupt power failure during the sterilizing operation,when the power is restored, the alarm code will appear on the LCD. Press the “ ” button to clear this Code.
E 01	Teperature sensor (steam generator) is broken!	Measure:temperature sensor resistance value(Ω)≈1000+(Ambient temperature ℃*3.8) (1)if measurement result is OK,check poor contact point between the sensor and the control board.(2)if measurement result is No,replacing the temperature sensor.
E 02	Teperature sensor (heating coil) is broken!	Measure:temperature sensor resistance value(Ω)≈1000+(Ambient temperature ℃*3.8) (1)if measurement result is OK,check poor contact point between the sensor and the control board.(2)if measurement result is No,replacing the temperature sensor.
E 03	Teperature sensor (inside chamber) is broken!	Measure:temperature sensor resistance value(Ω)≈1000+(Ambient temperature ℃*3.8) (1)if measurement result is OK,check poor contact point between the sensor and the control board.(2)if measurement result is No,replacing the temperature sensor.

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Alarm Code	Alarm Cause	Solution
E 04	Sterilization failed!	(1)adjust the tightness of door seal may behave leakage.(2)Replace the door seal.
E 05	Pressure can not be exhausted!	(1)check the opened-solenoid valve(Ev1) and drain-solenoid valve(Ev5),take out and clean the spool.(2)check three-way piece to used-water tank,open and clean it.(3)check the opened -Solenoid valve(Ev1) and drain-solenoid valve(Ev5) power is DC 24V.
E 06	Door is opened in the working!	(1)check the door hook and contact point door signal switch is good? To maintain contact between them.(2)open the door,check leading point of electronic lock is retracted? Replace the electronic lock.
E 07	Operation over time!	(1)adjust the tightness of door seal may behave leakage.(2)Replace the door seal. (3)check the opened-solenoid valve(Ev1) and drain-solenoid valve(Ev5)and vacuum-solenoid valve(Ev4),take out and clean spool.(Judgment of leakage Method: mist of water Drop on silicone tube and hot). (4)check the heating bar,Judgment Methods: the measurement resultof resistance(Ω)≈68 ~73Ω(750W);50~55Ω(1000W).if measurement result of resistance(Ω)≈∞Ω,it is broken! (5)check the heating coil,Judgment Method: measurement result of resistance(Ω)≈30 ~37Ω(1500W).if measurement result of resistance(Ω)≈∞Ω,it is broken!and check electronic temperature Relay of heating coil,poor contact point between the connectors and jacks. (6)check the steam generator is blocked?Judgment Methods: the silicone between the water pump and water pump-solenoid valve is be bloated. (7)check water pump is be broken?Judgment Methods: Very loud sound and water in silicone have move forward?
E 08	Over pressure!	check the opened-solenoid valve(Ev1) is be blocked? open the opened-solenoid valve (Ev1),take out and clean spool.
E 09	Over temperature!	Measure:temperature sensor resistance value(Ω)≈1000+(Ambient temperature ℃*3.8) (1)if measurement result is OK,check poor contact point between the sensor and the control board.(2)if measurement result is No,replacing the temperature sensor.

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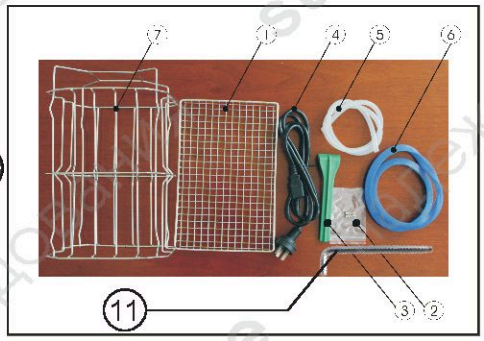
Alarm Code	Alarm Cause	Solution
E 10	Temperature and Pressure do not match!	Measure:temperature sensor resistance value(Ω)≈1000+(Ambient temperature ℃*3.8) (1)if measurement result is OK,check poor contact point between the sensor and the control board.(2)if measurement result is No,replac the temperature sensor.
E 11	Door motor can not work!	(1)check DC 24V door motor power supply indicator is lighted? (2)check connection point between the door motor and the power board. (3)check connection point between micro switch of door motor and touching flakes.
E 12	Vacuum process failure!	(1)check the vacuum pump is working? Focus on checking start capacitor is broken? (2)check the water filter in chamber is be blocked?details operation see Fig.6.4-17. (3)check the opened-solenoid valve(Ev1) ,drain-solenoid valve(Ev5) and vacuum-solenoid valve(ev4),take out and clean spool.(judgment leakage method: mist of water drop on silicone tube and hot) .

APPENDIX 10:Accessories

1、Instrument container plate.....3 Sets
2、Fuse.....2 Piece
3、Instrument plate hand clip.....1 Piece
4、Power cord.....1 Piece
5、Drain tube.....1 Piece
6、Rubber seal.....1 Piece
7、Instrument plate shelf.....1 Piece
8、Instruction manual(Software CD).....1 book
9、Warrenty card.....1 Piece
10、Certificate.....1 Piece
11、Allen wrench.....1Piece



8





9



10

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NOTE:

1.The sterilizer should be put on level worktable.
2.Be sure to use distilled water in order to prolong the use age of sterilizer.
3.Do not jam or cover the sterilizer radiator.
4.Sterilizer instrument should put in the instrument plate,each instrument should have some gap in order to make ventilation.
5.Freezing water tank should drain out constantly,usually it should drain out one time once the water saving tank use up.
6.Push the door to the very end while sterilizing.
7.Be sure not to open the door when the pressure has not fall down to 0.0bar.
8.Do not stand clear the door when the door in order to avoid burning.
9.Be sure to power off when fix or back out the seal ring and be sure to do it after enough freezing.
10.Be sure do not to drag the sterilizer on transport.
11.The electric power must contact the earth.
12.Can not be placed tp some where the power is not easily cut off.

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