



Laboratory Equipment Manufacturer
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INSTRUCTION MANUAL FOR

STE-Tin

16L Vacuum Autoclave



PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATION

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MRC.VER.02-11.10

STE series steam sterilizers

Operation instruction

Dear End User :

Welcome to Quality Sterilization created by MRC made Autoclaves. Before using the machine, please fill in the “User Registration” form. With your record in our files, we will be able to trace the file of the machine you bought and provide you with fast and efficient services.

User Registration

On the serial number plate at back of the machine, you may find the unit's model number, serial and reference number. Please double check the numbers and fill in the form with them and quote the reference number, when you are in contact with you distributors.

Model number: _____ **Serial:** _____

Reference number: _____

***Before operating the sterilizer, please read carefully all safety cautions and instructions for operation. This operator's manual will help you understand all functions of MRC Autoclaves as far as possible.**

***Please follow carefully the instructions in this operator's manual while servicing and maintaining the units.**

***Please keep this manual safe for your future references.**

***Should error occur during operation of the machine, please get in touch with your local distributor or us for our best qualified services and assistance.**

Important Information on Safety

Please check the voltage before plug the power cord. Don't use electrical outlets other than the correct voltage; otherwise it might cause fire or electric shock.

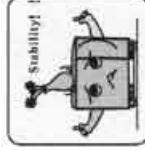
Don't wet your hand before plugging or unplugging the power cord.

Don't place your autoclave on an unstable table top, moving desk, tilted and or shaking surface.

Please don't cover or block the door, ventilation or radiation openings on the autoclave.

Please don't put heavy stuff or liquid containers that might spill on the top of the machine.

Please unplug the power cord when the machine isn't used for a long while or when you travel, etc.



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1. Description & Use.

MRC design and make pressurized steam autoclaves especially to meet the needs for sterilization of instruments and devices in clinics, departments in a hospital and laboratories.

Operators include doctors or his/her assistance under doctors supervisions. The autoclave is computerized, user friendly and easy to operate. Its real time display shows all data during the sterilization cycle. The software program provides auto diagnose, protection against over heating or over pressurizing, and thus ensures reliability of the sterilization results. Build- in condenser water collecting system prevents discharge of waste steam and keeps the machine clean and safe.

STE-Tin Fractionated-Vacuum Pressurized Steam Autoclave

STE-Tin uses the advanced technology of 3 times fractionated -vacuum and vacuum drying. It enables the hot steam to penetrate in thin tube and porous material. This product is suitable for dentistry, ophthalmology, surgical theatres and laboratories to sterilize dental and surgical instruments, dressing and other 135°C autoclavable stuffs.



Fig 1-1

- 1 Power Switch
- 2 Fuse
- 3 Door Knob
- 4 Water reservoir outlet
- 5 Water pump inlet
- 6 Condensed water collector out let

STE-TanPre-Vacuum Pressurized Steam Autoclave

STE-Tan uses the advanced technology of pre-vacuum and vacuum drying. It enables the hot steam to penetrate in thin tube and porous material. This product is suitable for dentistry, ophthalmology, surgical theatres and or research laboratories to sterilize dental and surgical instruments, dressing and other 135°C autoclavable stuffs.



Fig 1-2

1. Power Switch
2. Fuse
3. Door Knob
4. Water reservoir outlet
5. Water pump inlet
6. Condensed water collector out let

STE-Ten Pressurized Steam Autoclave

STE-Ten uses thermal pressure to force hot steam onto medical instruments. It is suitable for sterilization of solid medical instruments and 134°C autoclavable devices for Stomatology, Ophthalmology, surgical or research laboratories. It cannot sterilize porous or cotton materials.

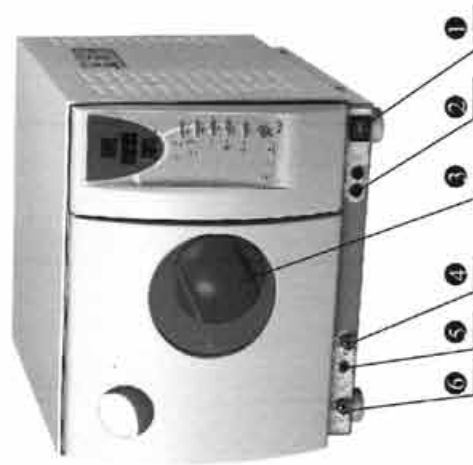


Fig 3-1

1. Power Switch
2. Fuse
3. Door Knob
4. Water reservoir outlet
5. Water pump inlet
6. Condensed water collector out let

2. Specifications

Chamber inner dimensions: (Diameter X depth) ---240mm x 370mm
Power Supply: -----AC 1800VA, 230/110V, 50Hz.

(Please check the working voltage with nameplate)

Sterilizing Temperature/Pressure ---121°C/(0.9-1.3) Bar(Under standard atmospheric pressure)-----134°C/(2.0-2.3) Bar(Under standard atmospheric pressure)

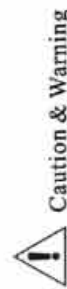
Note: Temperature/Pressure here means the chamber temperature and pressure during the phase of sterilization. The value varies under different atmospheric pressure.

Power Fuse-----T12A

Water reservoir capacity -----1 liter

Operation Temperature range-----0~40°C

3. Number



Caution & Warning



Type B Device



Grounding

Tips Standard atmospheric pressure: It the atmospheric pressure at sea level. It refers to 1 Standard atmospheric pressure. The value is 0.1Mpa=1000Hpa=1.0 Bar. Atmospheric pressure decreases by higher altitude. An increase of altitude of 1000 meters will result in a decrease of ATM PR .of approximately BAF. decreases by about 0.1bar.

4. Installation

The Autoclave should be installed in a drafty place allowing minimum of 10 cm space at all sides and 20 cm at the top. The ventilation openings at the side of the machine should not be blocked. The Autoclave should be placed on a leveled counter top. (Fig 4-1)

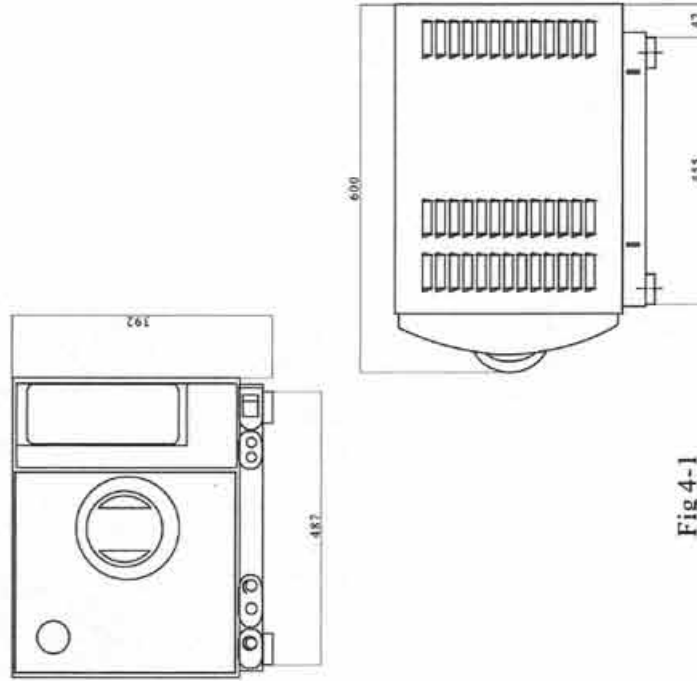


Fig 4-1



Caution:

If the front of the machine is lower than the back the control will display "E3" (E3 means it does not dry completely)

Prepare the machine before use

There are two types crooked tube. A type crooked tube (Fig 4-2), you should install it by yourself. Please installed the crooked tube sent with device according to fig 4-2, insert it in the lower left corner of the chamber as showed in the figure. You should confirm that the head of the crooked tube should touch to the base of chamber. Otherwise it can't be vacuumized completely. So that will effect the sterilization and the sterilization will be failed. B type (Fig 4-3) crooked tube has been install. You should clean the crooked tube when use the autoclave for a long time. The instructions of how to clean please see page 31.

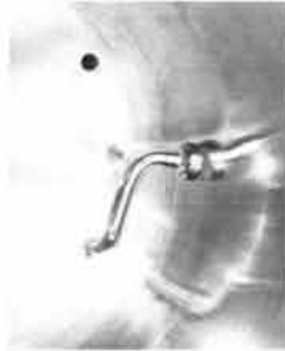


Fig 4-2



Fig 4-3

Before using the device, you should make electrical connections by using the power cord that comes with the unit. Insert the hollowed end of the power cord in to the inlet of the machine and plug the other end on a power outlet. Caution: The power supply can afford 1800w load. Ok, you can turn on the autoclave now.

Caution: This appliance must be correctly grounded!



Tips: Before starting the Autoclave, please check on the local atmospheric pressure. If the pressure is lower than 0.095 Mpa or the Altitude is higher than 500 meters, you will need to contact your distributor who should reconfigure the controller in the device.



5. Control Panel of STE-Tin

Control Panel of STE-Tin (Fig 5-1)

1. Pressure Display
It displays in Real-time the chamber pressure during the cycle.

2. Temperature

It displays chamber temperature during a cycle. The unit is per Degrees Centigrade °C

3. State display/Error Codes

It displays all the state of autoclave. (See the state form) Error Codes when alarm goes off. You may correct the error accordingly by looking it up in the page of error codes and its corrections.

Caution: In case of faults, please contact your distributor or the manufacturer immediately.

4. "SELECT" key

Program choose key. It is used for choosing the temperature. You can choose the right program according to the temperature supported. By the instrument You can also choose cotton program, it can sterilize medical cotton.

5. "PACKAGE" key

Package choose key. It is used to choose two types mode of package. According to fact, you can choose package or non-package. Non-package use one time vacuumize, package use three times vacuumize.

6. "PUMP" key

Pump startup key. It is used for startup pump. Press startup pump, feeding water into water tank, press again, stop pumping, when the water tank is filled with water, the pump will stop automatically.

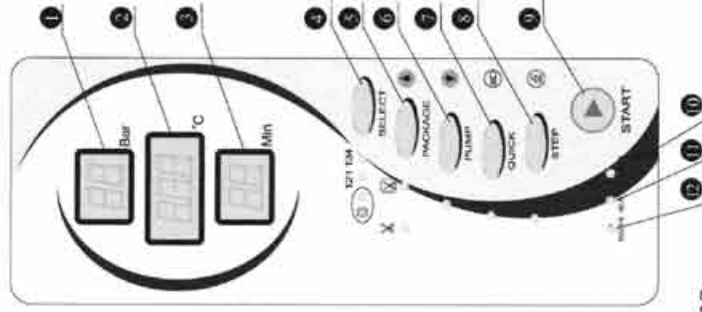


Fig 5-1

7. "QUICK" key

This key selects the Fast sterilization cycle. With unwrapped instruments, you may use the fast cycle by pressing the Quick key once, the indication light goes on and it indicates that machine is in fast cycle mode. Using pouches made by MRC, you may still use this selection to shorten the cycle time.

8. "STEP" key

This is a post cycle selection key. When a sterilize cycle completes, you may press this key to keep on working or stop working. The indication light goes on, and it means that when the cycle is complete, the heating element will stop before the chamber door is opened. When the indication light is off, it means that the chamber will be kept warm after completing a cycle and heating up time is shorter during next cycle.

9. "START" key

It is a key that toggles between start and restart. First pressing the key, it starts a cycle. Keeping pressing the key after the Start for more than 5 seconds, the machine restarts the cycle.

10. "RUNING" indication light

Working light. It means sterilize program is working.

11. "READY" indication light

When the light goes on, the machine gets ready for sterilization, and the operator can press "start" key to start a cycle.

12. "WATER" indication light

When the water volume is low, the light is glinting.

6. Control Panel of STE-Tan

Control Panel of STE-Tan(Fig 6-1).

1. Pressure Display

It displays chamber relative pressure in real time during a cycle. The unit is per bar.

2. Temperature

It displays chamber temperature during a cycle. The unit is per Degrees Centigrade °C.

3. State display/Error Codes

It displays all the state of autoclave. (See the state form) Error Codes when alarm goes on. You may correct the error accordingly by looking it up in the page of error codes and its corrections.

Caution: In case of faults, please contact your distributor or the manufacturer immediately.

4. "SELECT" key

Program choose key. It is used for

Choosing the temperature. You can

choose the right program according to the Temperature that instrument can afford.

You can also choose cotton program, can sterilize medical cotton.

5. "PACKAGE" key

Package choose key. It is used for choosing two types mode of package. It will effect the sterilize time whether it is package dor Non-package d. (See work mode form)

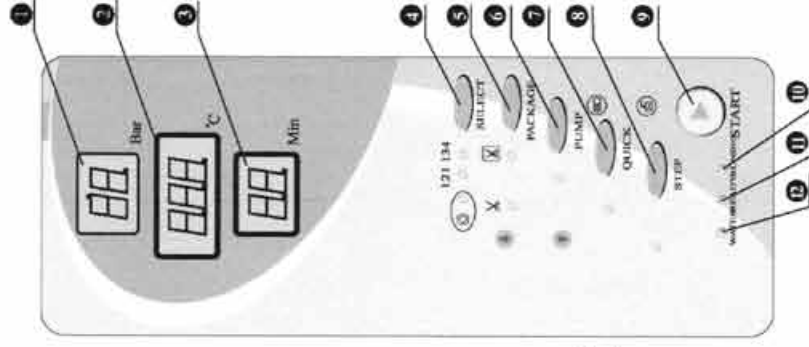


Fig 6-1

6. "PUMP" key

Pump startup key. It is used for startup pump. Press startup pump, feeding water into water tank, press again, stop pumping, when the water tank is filled with water, the pump will stop automatically.

7. "QUICK" key

This key selects the Fast sterilization cycle. With unwrapped instruments, you may use the fast cycle by pressing the Quick key once, the indication light goes on and it indicates that machine is in fast cycle mode. It can shorten the thermal drying time.

8. "STEP" key

This is a post cycle selection key. When a sterilize cycle completes, you may press this key to keep on working or stop working. The indication light goes on, and it means that when the cycle is complete, the heating element will stop before the chamber door is opened. When the indication light is off, it means that the chamber will be kept warm after completing a cycle and heating up time is shorter during next cycle.

9. "START" key

It is a key that toggles between start and restart. First pressing the key, it starts a cycle. If you hold the key after the Start for more than 5 seconds, the machine restarts the cycle.

10. "RUNING" indication light

Working light. It means sterilize program is working.

11. "READY" indication light

When the light goes on, the machines gets ready for sterilization, and the operator can press "start" key to start a cycle.

12. "WATER" indication light

When the water volume is low, the light is flashing.

7. Control Panel of STE-Ten

Control Panel of STE-Ten (Fig 7-1).

- 1、Pressure Display
It displays the chamber relative pressure in real time during a cycle. The unit of measure is per bar.
- 2、Temperature
It displays chamber temperature during a cycle. the unit is per degrees centigrade °C.
- 3、State display/Error Codes
It displays all the states of autoclave during the cycle. (See the state form) Error Codes when alarm goes on. You may correct the error accordingly by looking it up in the page of error codes and its corrections.

Caution: In case of faults, please contact your distributor or the manufacturer immediately.

4、"SELECT" key

Program choose key. It is used for choosing the temperature. You can choose the right program according to the temperature that instrument can afford.

5、"PACKAGE" key

Package choose key. It is used to choose two types modes of package. It will affect the sterilize time whether it is package or non-package. (See work mode form)

6、"PUMP" key

Pump startup key. It is used for startup pump. Press startup pump, feeding water into water tank, press again, stop pumping, when the water tank is filled with water, the pump will stop automatically.

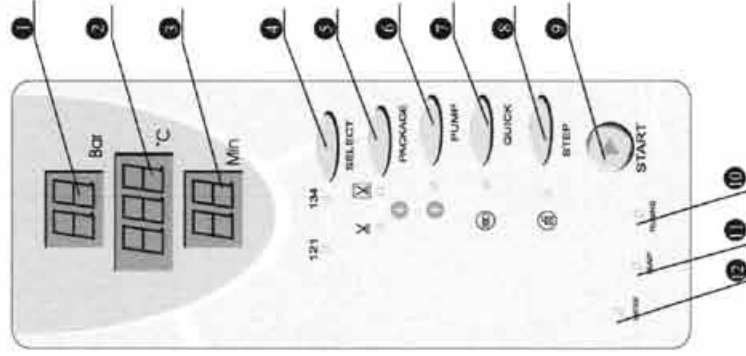


Fig 7-1

8. Operation of STE-Tin

Please connect the power cord before you start the operation. Press the mains power switch at right lower corner of the front panel. The power switch light turns on indicating that electric power is connected. All keyboards goes on, automatically examine. It will indicate error code and alarm when examine failed. It will indicate "Ld" when pass examination.

8.1 Fill water

When the power switch is on, select sterilize program, the "water" indication light may glitting while alarm beeps, the "Start" keys are locked. This means that water volume is too low and you need to refill the water reservoir. At this time, you may connect the water tube that comes with the machine between pump inlet connector and a water bucket (Fig 8-1). Press the "pump" key, the water will be pumped into the water reservoir. The pump stops automatically when water reservoir is full.



1. Distilled water must be used to prolong

life of the machine.

2. Don't tilt the autoclave where there is water in the water reservoir.

3. The condenser water collector should be emptied frequently. It is suggested that the collector be emptied when refilling the water reservoir.

(Please refer to item 13.2 draining the water.)



Fig 8-1

8.2 Start a cycle

When water indication light is off, the machine can be started.

8.2.1 Press "SELECT" to choose one of the programmes. The key toggles between the cycles at 121°C, 134°C and cotton mode. One of the indication lights turns on to show the programme you selected. (Fig 8-2)

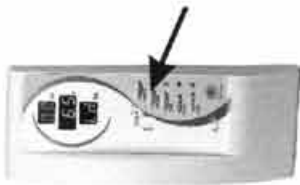


Fig 8-2

8.2.2 You may need to select instruments package mode. According to the instrument you put into the chamber whether it is bareness or sop up, press "package" to select package mode.

8.2.3 You may select "quick" key whether starts the fast sterilization cycle. Press "quick" key, it will reduce the sterilization time.

8.2.4 After selecting above settings, put the instruments into the Steam Sterilizer which need sterilize.

Caution: Instruments that are ready to sterilize should be placed in the tray to touch one another allowing space for steam to pass through. It suggest that the tray holder be used to put the tray with instruments inside the chamber to avoid burning injuries.



Fig 8-3

8.2.5 After the instruments are loaded, you may close and lock the chamber door by turning the door knob clockwise to it is locking position. The "ready" indication light goes on. (Fig 8-4)



Fig 8-4

Caution: The door knob must be turned to its lock position, otherwise, there might be steam leak during a cycle and the alarm goes on and displays error code "E6". If the chamber is in keep warm mode, it is sometimes difficult to close the chamber door because there is still steam inside. You can keep the door open for a while until steam and moisture is vaporized, and the door is easy to close. You may also push the door inwards with some force while turning the door knob to its locking position. If there is still steam leak after you did the above, you may try to read just the door mechanism by a spanner as per item 11. Door adjustments.

8.2.6 Press the "start" key, the "ready" light goes off and displays "HE" the machine starts a sterilization cycle. It takes about 30-60 minutes to complete an automatic cycle that includes heating up, sterilizing and drying. The cycle time depends on the volume of the instruments loaded, the chamber temperature at the beginning of the cycle and the cycle program you selected.

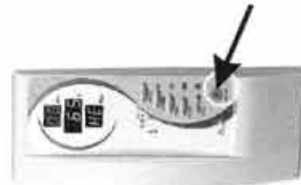


Fig 8-5

8.2.7 When a cycle completes, the display "Ed" the indication light "RUNING" Turns off and the indication light "READY" turns on with sounds. At this time you may then open the chamber door and unload the instruments which are sterilized. (Fig 8-6) At mean time, temperature indicate "prt", it means that it is performing print, whether you have install printer, the process can not be omitted. But you needn't care about it. It will not effect the process of opening the door and unloading the instruments. Print



Fig 8-6

Attention: To ensure autoclave's on the safe side, When water level low alarm sounds, Please be advised add some water first. When you add the water, please don't forget to let condenser water out.

Caution: Always use the tray holder to load or unload the tray with instruments in it, in order to avoid burning injuries.



If you didn't press "STEP" key during a cycle and the indication light is off, it means that the machine is keep warm mode. The sterilization Chamber is keeping warm. This will enable the next cycle to be faster cycle that follows.

If you press "STEP" key before the end of sterilization, "STEP" indication light goes on, it means that the machine is last time cycle. The chamber starts to cool down completely before the chamber door is open. It should normally be used during the very last cycle of the day.

8.2.8 If you decide to stop using the autoclave for a while, please turn the main power switch off, or unplug the power cord should you not want to use the machine for a long time.



Caution: Never try to open the chamber door if and when the pressure display doesn't show "0.0". It is suggested that chemical indicator or bio-indicator be used for each and every cycle to ensure the reliability of each sterilization cycle run.

9. Operation of STE-Tan

Please connect the power cord before you start the operation. Press the main power switch at right lower corner of the front panel. The power switch light turns on indicating that power is connected. It will indicate "Ld" when pass examination.



Fig 9-1

9.1 Fill water

When the power switch is on, select sterilize program, the "WATER" indication light may go on while alarm beeps, the "START" keys are locked. This means that water volume is too low and you need to refill the water reservoir. At this time, you may connect the water tube that comes with the machine between pump inlet connector and a water bucket (Fig9-2). Press the "PUMP" key, the water will be pumped to the water reservoir. The pump stops automatically when water reservoir is full.



Fig 9-2

Caution:

- 1). Distilled water must be used to prolong life of the machine.
- 2). Don't tilt the autoclave whether there is water in the water reservoir.
- 3). The condenser water collector should be emptied frequently. It is suggested that the collector be emptied when refilling the water reservoir. (Please refer to item 13.2 draining the water.)



9.2 Start a cycle

When water indication light is off, the machine can be started.

9.2.1 Press "SELECT" to set one of the cycles. The key toggles between the cycles at 121°C, 134°C and cotton mode. One of the indication lights turns on to show the cycle you selected. (Fig 9-3)



Fig 9-3

9.2.2 You may need to select instruments package mode. According to the instrument you put into the chamber whether it is bareness or spon up, press "PACKAGE" to select package mode.

9.2.3 You may select "QUICK" key whether starts the fast sterilization cycle. Press "QUICK" key, it will reduce the sterilization time.

9.2.4 After select above settings, put the instruments into the autoclave which need sterilize.

Caution: Instruments that are ready to sterilize should be placed in the tray not touching one another allowing space for steam to pass through. It is suggested that the tray holder be used to put the tray with instruments inside the chamber to avoid scald. (Fig 9-4)



Fig 9-4

9.2.5 After the instruments are loaded, you may close and lock the chamber door by turning the door knob clockwise to its locking position. The "READY" indication light goes on. (Fig 9-5)



Fig 9-5

Caution: The door knob must be turned to its lock position, otherwise, there might be steam leak during a cycle and the alarm goes on and displays error code "E6". If the chamber is keeping warm mode, sometimes, it is difficult to close the chamber door because there is still steam inside. You can keep the door open for a while until steam and moisture is vaporized, and then the door is easy to close. You may also push the door inwards with some force while turning the door knob to its locking position. If there is still steam leak after you did the above, you may try to readjust the door mechanism by a spanner as per item 11. door adjustments.

9.2.6 Press "START" key, the "READY" light goes off and display shows "HE" the machine starts a sterilization cycle. It takes about 30-60 minutes to complete an automatic cycle that includes heating up, sterilizing and drying.

The cycle time depends on the volume of the instruments loaded, the chamber temperature at the beginning of the cycle and the cycle program you selected.



Fig 9-6

9.2.7 When a cycle completes, the display shows "Ed" the indication light "RUNING" turns off and the indication light "READY" turns on with sounds. At this time you may then open the chamber door and unload the instruments which are sterilized. (Fig 9-7)

At the same time, temperature indicate "PRT", it means that it is performing print, whether you have install printer, the process can not be omitted. But you needn't care about it. It will not effect the process of opening the door and unloading the instruments. Print process will disappear automatically.

Attention: To ensure autoclave's on the safe side, When water level low alarm sounds, Please be advised add some water first. When you add the water, please don't forget to let condenser water out.

Caution: Always use the tray holder to load or unload the tray with instruments in it, in order to avoid scald.



If you didn't press "STEP" key during a cycle and the indication light is off, it means that the machine is keeping warm mode. The sterilization Chamber is kept being heated. This will enable faster cycle that follows.

If you press "STEP" key before end of sterilization, "STEP" indication light goes on, it means that the machine is last time cycle. The chamber starts to cool down completely before the chamber door is open. It should normally be used during the very last cycle of the day.

9.2.8 If you decide to stop using the autoclave for a while, please turn the main power switch off, or unplug the power cord should you not want to use the machine for a long time.



Caution: Never try to open the chamber door if and when the pressure display doesn't show "0.0". It is suggested that chemical indicator or bio-indicator be used for each and every cycle to ensure the reliability of each sterilization cycle run.

Fig 9-7



10. Operation of STE-Ten

Please connect the power cord before you start the operation. Press the main power switch at right lower corner of the front panel. The power switch light turns on indicating that power is connected. It will indicate "Ld" when pass examination.



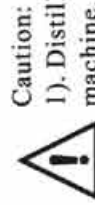
Fig 10-1

10.1 Fill water

When the power switch is on, select sterilize program, the "water" indication light may go on while alarm beeps, the "START" keys are locked. This means that water volume is too low and you need to refill the water reservoir. At this time, you may connect the water tube that comes with the machine between pump inlet connector and a water bucket (Fig 10-2). Press the "PUMP" key, the water will be pumped to the water reservoir. The pump stops automatically when water reservoir is full.



Fig 10-2



Caution:

- 1). Distilled water must be used to prolong life of the machine.
- 2). Don't tilt the autoclave when there is water in the water reservoir.
- 3). The condenser water collector should be emptied frequently. It is suggested that the collector be emptied when refilling the water reservoir. (Please refer to item 13.2 draining the water.)

10.2 Start a cycle

When water indication light is off, the machine can be started.

10.2.1 Press "SELECT" to set one of the cycles. The key toggles between the cycles at 121°C, 134°C and cotton mode. One of the indication lights turns on to show the cycle you selected. (Fig 10-3)



Fig 10-3

10.2.2 You may need to select instruments package mode. According to the instrument you put into the chamber whether it is bareness or sop up, press "PACKAGE" to select package mode.

10.2.3 You may select "QUICK" key whether starts the fast sterilization cycle. Press "quick" key, it will reduce the sterilization time.

10.2.4 After select above settings, put the instruments into the autoclave which need sterilize.



Fig 10-4

Caution: Instruments that are ready to sterilize should be placed in the tray not touching one another allowing space for steam to pass through. It is suggested that the tray holder be used to put the tray with instruments inside the chamber to avoid scald. (Fig 10-4)

10.2.5 After the instruments are loaded, you may close and lock the chamber door by turning the door knob clockwise to it is locking position. The "RDADY" indication light goes on. (Fig 10-5)



Fig 10-5

Caution: The door knob must be turned to its lock position, otherwise, there might be steam leak during a cycle and the alarm appears and displays error code "E6". If the chamber is in keep warm mode, sometimes it is difficult to close the chamber door because there is still steam inside. You can keep the door open for a while until steam and moisture is vaporized, and the door is easy to close. You may also push the door inwards with some force while turning the door knob to its locking position. If there is still steam leak after you did the above, you may try to read just the door mechanism by a spanner as per item 11. Door adjustments.

10.2.6 Press "start" key, the "ready" light goes off, "RUNING" light turns on, and display shows "HE". The machine starts a sterilization cycle. It takes about 30-60 minutes to complete an automatic cycle that includes heating up, sterilizing and drying. The cycle time depends on the volume of the instruments loaded, the chamber temperature at the beginning of the cycle and the cycle program you selected.



Fig 10-6

10.2.7 When a cycle completes, the display shows "Ed" the indication light "RUNING" turns off and the indication light "READY" turns on. At this time you may then open the chamber door and unload the Instruments which are sterilized. (Fig 10-7) At the same time, temperature indicate "prt", it means that it is performing print, whether you have installed printer, the process can not be omitted. But you needn't care about it. It will not effect the process of opening the door and unloading the instruments. Print process will disappear automatically.



Fig 10-7

Attention: To ensure autoclave's on the safe side, When water level low alarm sounds, Please be advised add some water first. When you add the water, please don't forget to let condenser water out.



Caution: Always use the tray holder to load or unload the tray with instruments in it, in order to avoid burning injuries.

If you didn't press "STEP" key during a cycle and the Indication light is off, it means that the machine is Keeping warm mode. The sterilization Chamber is kept being heated. This will enable faster cycle that follows.

If you press "STEP" key before end of sterilization, "STEP" indication light goes on, it means that the machine is last time cycle. The chamber starts to cool down completely before the chamber door is open. It should normally be used during the very last cycle of the day.

10.2.8 If you decide to stop using the autoclave for a while, please turn the main power switch off, or unplug the power cord should you not want to use the machine for a long time.



Caution: Never try to open the chamber door if and when the pressure display doesn't show 0. It is suggested that chemical indicator or bio-indicator be used for each and every cycle to ensure the reliability of each sterilization cycle run.

11. Door Adjustment

Under normal circumstance the door of sterilizer does not need regulating separately. Once steam leaking occurs (the seal fails), you may use the spanner to turn the door seal tightener.

11.1 Open the door first.

11.2 Insert the spanner in the gap beneath the plastic cover; use the spanner to lock on the adjusting nut (Fig 11-2). Turn the nut counter clockwise as the figure below (Fig 11-1). This will tighten the sealing plate.

11.3 Turn the nut until the sealing plate is tight. If the door knob is too tight, you may also turn the nut clockwise to loosen it as long as the seal does not leak.

Caution:

Never try to regulate the chamber door while the door is locked.

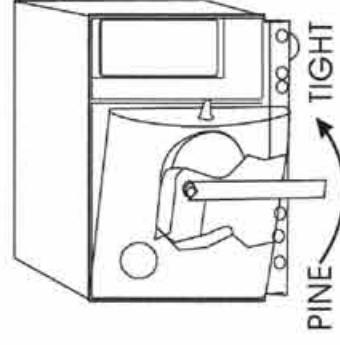


Fig 11-1



Fig 11-2

12. Printer User's Guide

According to the requirement of customer, MRC steam sterilizer can adopt prescriptive printer. Connect the printer and the steam sterilizer with prescriptive cord. Switch on the power, two lights on the printer Panel will goes on, means printer has been installed.

Caution: MRC steam sterilizer can only select miniature printer of Chinese character by MRC

Print information explaining:

Date: Sterilize date

Mode: Sterilize mode

Pac: Package

Dis: Non-package

Nom: Common dry

Qic: Quickly dry

Start: Time begin to sterilize

Max. Min. Ave: The max., min., Average pressure and temperature of chamber when sterilize.

End: Time when drying complete.

Operator: Operator, You can signature name according to practicality instance

Sample:

Sterilization records			
Date: 04.06.25	2.10	Temp.	
Mode: 134	Nom	(°C)	
Pac		Max:	2.10
Start: 9:00		Min:	2.05
		Ave:	2.09
		End:	9:30
		Operator:	
		Welcome to use MRC products	

13. Function setup:

13.1. Enter function setup mode: Press "STEP" key for 20s when on non-work state (time display "Ld") pressure display "1" , enter function setup mode.

13.2. Function mode setup: With 8 options, press SELECT key, you can select 1-8-1 cycle display. The definition and display of 8 options as following:

Option 1: year, display "yer" , press ↑ key increase, press ↓ Key decrease, setup numerical value.

Option 2: month, display "nth" , press ↑ key increase, press ↓ Key decrease, setup numerical value.

Option 3: day, display "day" , press ↑ key increase, press ↓ Key decrease, setup numerical value.

option 4: hour, display "hor" , press ↑ key increase, press ↓ Key decrease, setup numerical value.

Option 5: minute, display "nin" , press ↑ key increase, press ↓ Key decrease, setup numerical value.

Option 6: temperature specification adjust numerical value, display

"pp_ " , press ↑ key increase, press ↓ Key decrease, setup numerical value. you can select from -5 to 5 . Caution: The setup of this option will affect machine work, so please don't change this setup if not necessary.

Option 7: temperature data adjust automatically option, when "ADJ" displays, please press START to confirm it, this option is used to readjust temperature and pressure setup data, you should not change this option if not necessary, also please note: When you setup this option by wrong press buttons or etc., please turnoff the power of the autoclave and restart it, it will not affect other setups of the machine.

Option 8: exit, when "Eit" displays, please press START to exit setup mode.



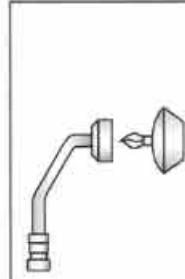
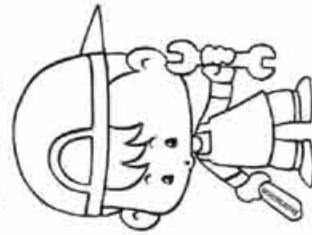
Fig 12-1

14. The cleaning of drain filter

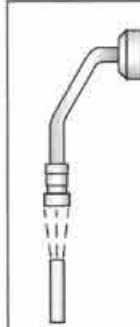
After a long time usage, maybe some small impurity will deposit on the drain filter, it will affect vacuum and drying. All the impurity come from the oil or dirt or dust of the instrument which need sterilization, also maybe comes from the water. In order to prolong the life of the drain filter, please note the following items:

Caution: use eligible distilled water; The instruments should be cleaned before put it into autoclave; If the instruments has oil or other impurity, please be advised package the instruments using special sterilizing package and sealed. Keep utoclave chamber clean.

If drain filter plug up, you can solve according o right figure:



1. put the filter slice on the alcohol to roast, pay attention to not scalding.



2. After the draining filter is cooled , then use the high pressure gas source (such as three using gun)pursue to blow as above to blow and clean the impurity.

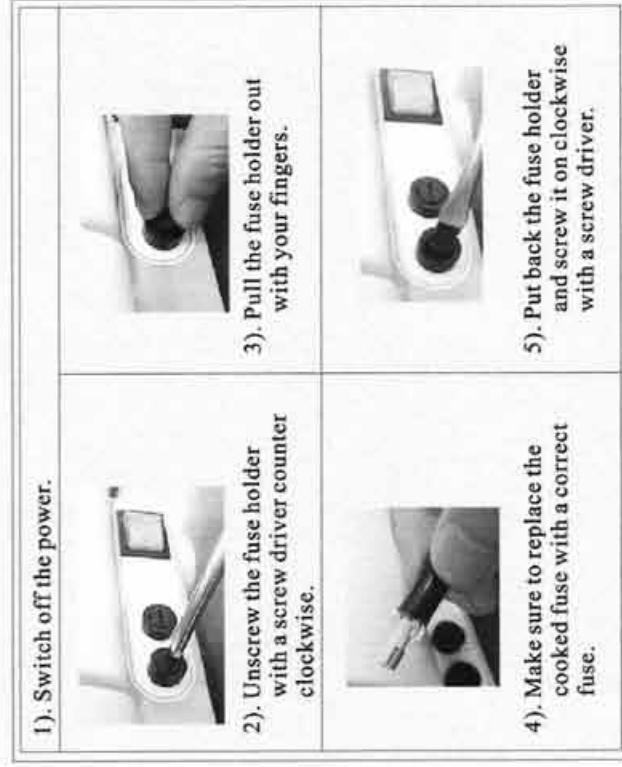
15. Service and Maintenance

15.1 Clean the water reservoir every week by using medical disinfectant. First drain the distilled water in the reservoir, pump in the medical disinfectant then wait for an hour. Flush the reservoir with distilled water after medical disinfectant is drained.

15.2 Clean and disinfect the chamber every month by brushing the chamber inner surface with medical alcohol.

15.3 Rinse the water filter periodically. You may first pull it off; blow it with compressed air the clear dirt on the filter and flush it with distilled water.

15.4 Change fuse (Fig 15-1)



4). Make sure to replace the cooked fuse with a correct fuse.

Fig 15-1

6). you may change the fuse wire and then push the fuse into the fuse holder.

7). Push the fuse holder in place, then turn it clockwise to its locking position.

8). If you have no tool, you may use your hand to change the fuse comfortably.

15.5. Clean the seal plate periodically.

After using some time , the seal plate might have some scale build-up that might cause leaking. You should clean the seal plate periodically, using a soft cloth soaked with distilled water to wipe the rubber seal and the seal plate clean (Fig 15-2 & 15-3). If there is still leaking, you may need to take the rubber seal out for cleaning. Should the seal be broken, you need to change with a new one.



Fig 15-2



Fig 15-3

Remark: providing with seal packing collar for life.

15.5.1 Change of the seal

You will need a flat screw driver without a sharp tip. Pay attention about head of the flat screw driver. The install step according to Fig 15-4.

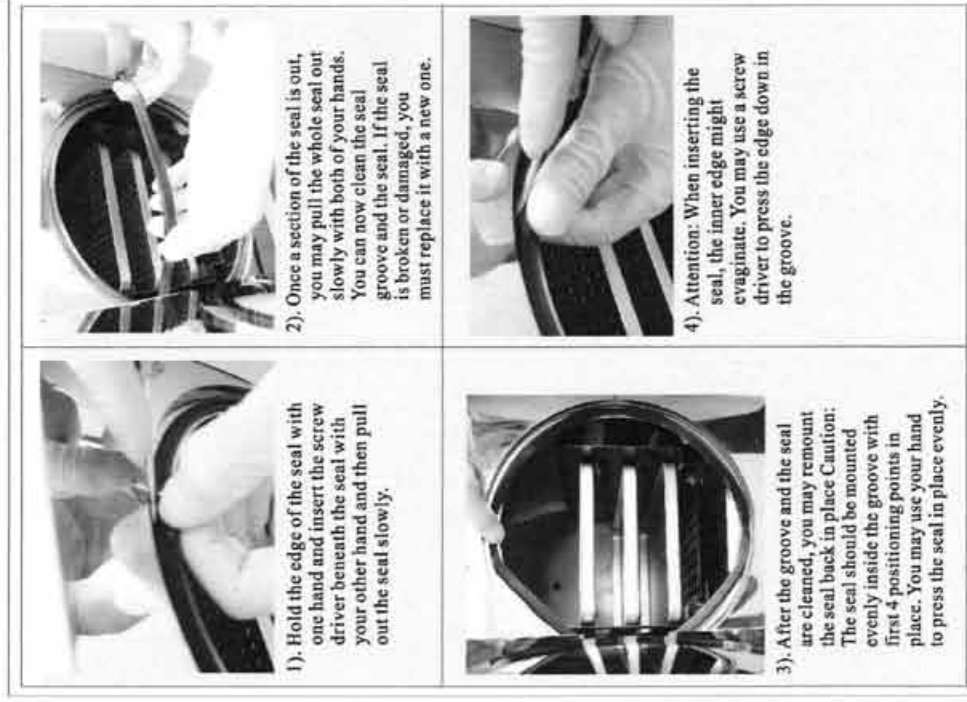


Fig 15-4

⚠ Caution: Power the machine off and let it cool down before you change the seal and avoid any burning injuries.

15.6 Repair and change of parts must be done by qualified service engineer from the manufacturer or an authorized contractor.

16. Transportation & Storage

16.1 Preparation for transportation and storage.

Power the machine off, unplug the power cord and let the chamber cool down.

16.2 Draining of water from the machine

Drain the condenser water collector and water reservoir. Connect the water outlet using the one end of the tube without a connector and the other end of the tube to a drainage sink. Then turn the draining knob open counter clock wise to drain the water from the machine.(Fig 16-1)



Fig 16-1

16.3 The autoclave should be transported and stored in the follow conditions:

Temperature: $-40 \sim +55^{\circ}\text{C}$

Humidity: $< 85\%$

Atmospheric pressure: 500Hpa $\sim$ 1060 Hpa

Caution: Don't drag the machine while moving.

17. Warranty

The manufacturer provides a warranty for repair at not change to the customer for two years after the invoice date with presentation of the invoice. Following are the disclaimers:

17.1 Damage due to improper moving, installing and operating the machine;

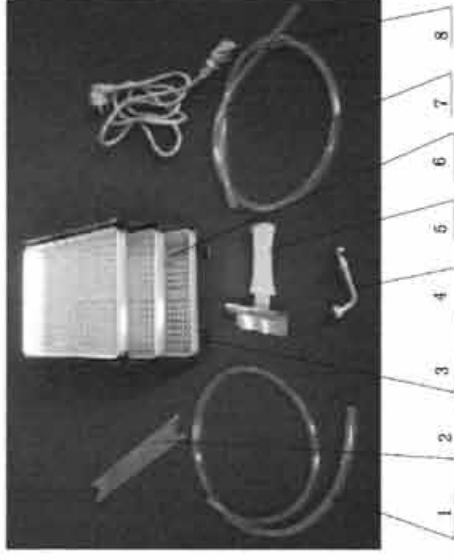
17.2 Damage due to dismantling the machine by unauthorized personnel;

17.3 Unable to present the purchasing invoice or the invoice is altered.

17.4 Inappropriate operation on the machine without following the operator's manual

17.5 Damage caused by power surge, fire or other external matters.

18. Accessories



1). Water inlet tube 1 pc.

2). Door adjustment spanner 1 pc.

3). Instrument tray rack 1 set

4). Water draining filters 1 pc.

9). Fuse 2 pc.

5). Tray holder 1 pc.

6). Instrument tray 3 pcs.

7). Water draining tube 1 pc.

8). Power cord. 1 pc.

10). Seal packing collar 1 pc.

11). Level instrument 1 pc.

Appendix.

Form1 Cycle mode Chart

Item	Digital display	Mode	Description
1	Ld	Pre-heating	Preparation and conditioning of the autoclave
2	HE	Heating	Chamber is being heated and pressurized
3	Cycle time	Sterilizing	Counting down of sterilizing
4	Dr_	Venting	Chamber starts to vent and dry
5	Drying time	Drying	Instruments are being dried.
6	Ed_	Complete	Cycle is complete and chamber door can be opened
7	Faults & Error codes	Error codes	Displays error codes, resets and alarm
8	LE_	Balance state	When change the state, the pressure of inside and outside the Autoclave should be the same.

Form 2 Work mode chart

Sterilize mode, as following form(STE-Tin):

	134℃ package	134℃ non package	121℃ package	121℃ non package	Cotton
Sterilizing temperature	134	134	121	121	134
Sterilizing pressure	2.10	2.10	1.10	1.10	2.10
Vacuumize time	8min	4min	8min	4min	8min
Admission time	2min	2min	2min	2min	4min
Sterilizing time	12min	4min	30min	20min	12min
Drying time	10min	10min	10min	10min	15min
Quick drying time	5min	5min	5min	5min	--
Air balance time	1min	1min	1min	1min	1min
Total time	8+2+12+10 (5) +1	4+2+4+10 (5) +1	8+2+30+10 (5) +1	4+2+20+10 (5) +1	8+4+12+15+1

Form 3 Work mode chart

Sterilize mode form, as following form(STE-Tan):

	134℃ package	134℃ non package	121℃ package	121℃ non package	Cotton
Sterilizing temperature	134	134	121	121	134
Sterilizing pressure	2.10	2.10	1.10	1.10	2.10
Vacuumize time	8min	4min	8min	4min	8min
Admission time	2min	2min	2min	2min	4min
Sterilizing time	12min	4min	30min	20min	12min
Drying time	10min	10min	10min	10min	15min
Quick drying time	5min	5min	5min	5min	--
Air balance time	1min	1min	1min	1min	1min
Total time	4+2+12+10 (5) +1	4+2+4+10 (5) +1	4+2+30+10 (5) +1	4+2+20+10 (5) +1	4+4+12+15+1

Form 4 Work mode chart

Sterilize mode, as following(STE-Ten):

	134℃ package	134℃ non package	121℃ package	121℃ non package
Sterilizing temperature	134	134	121	121
Sterilizing pressure	2.10	2.10	1.10	1.10
Thermal vacuum time	2min	2min	2min	2min
Admission time	2min	2min	2min	2min
Sterilizing time	12min	4min	30min	20min
Thermal drying time	15min	15min	15min	15min
Quick thermal drying time	7min	7min	7min	7min
Air balance time	1min	1min	1min	1min
Total time	2+2+12+15 (7) +1	2+2+4+15 (7) +1	2+2+30+15 (7) +1	2+2+20+15 (7) +1

Form 5 Alarm code chart

Serial number	Code	Error	Solution
1	E0	Need adjust parameter	Run parameter autoadjust program
2	E1-C1	Inner temperature sensor error	Examine inner temperature sensor
3	E1-C2	Steam generator temperature sensor error	Examine steam generator temperature sensor
4	E1-C3	Outer temperature sensor error	Examine outer temperature sensor
5	E1-C4	Pressure sensor error	Examine pressure sensor
6	E2	Super pressure (>2.4Mba)	Examine inner temperature sensor, pressure sensor
7	E3	Chamber temperature (>145degree)	Examine outer temperature sensor
8	E4	Constant temperature and constant pressure failed	Rerun parameter autoadjust program
9	E5	Puts the steam defeat (20S<0.3Mba)	Inspect puts the steam valve, the vacuum valve
10	E6	Door is opened when on working	Examine door switch
11	E7	Steam generator ultra warm(>240 degree)	Inspect steam generator temperature sensor
12	E8	Pre-heating failed	Examine the electric connection of temperature sensor, heat ring and heat stick
13	E9	Admission defeat	Examine electric connection of heat stick, Admission pipeline

Fig 1.

Cycle Chart & Schematics of STE-Tin

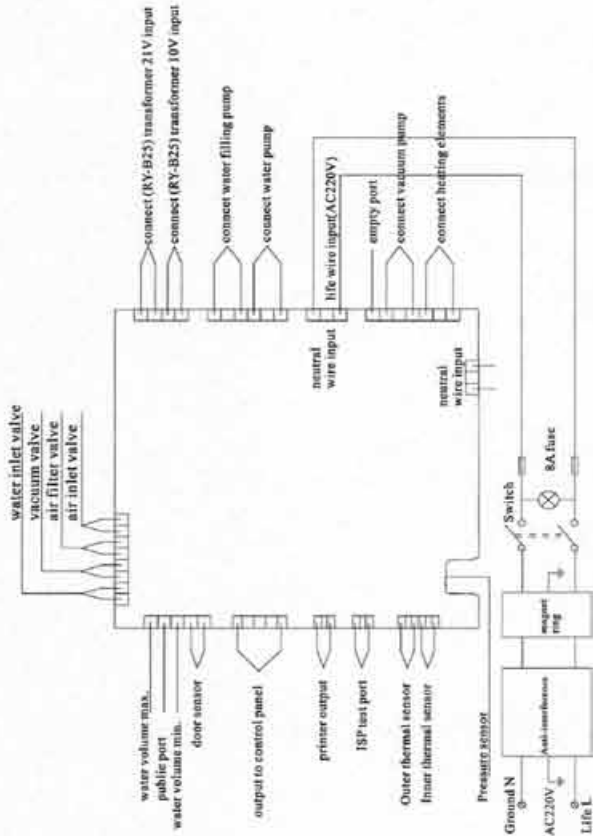
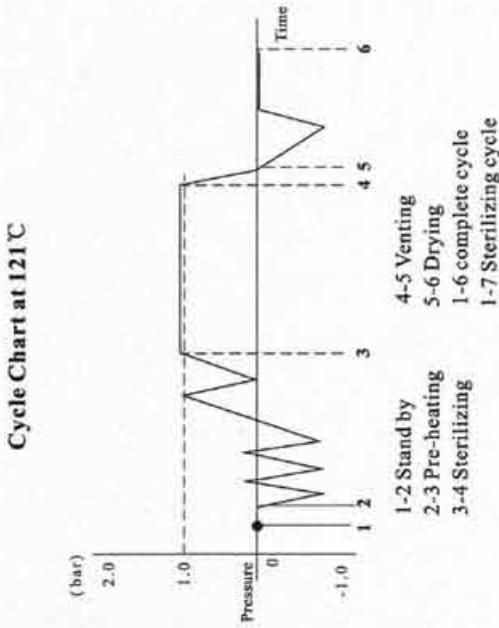
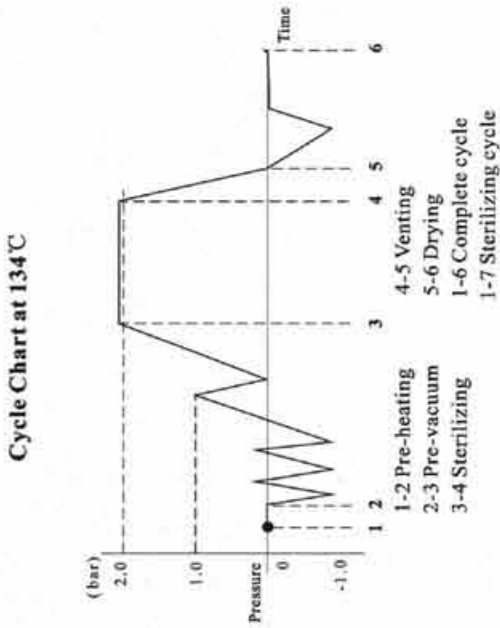
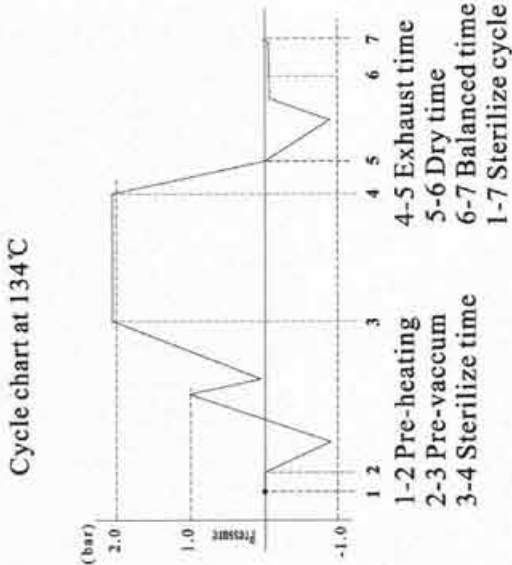


Fig2.

Schematics of STE-Tin

Fig 3.

Cycle chart & schematics of STE-Tan



Cycle chart at 121°C

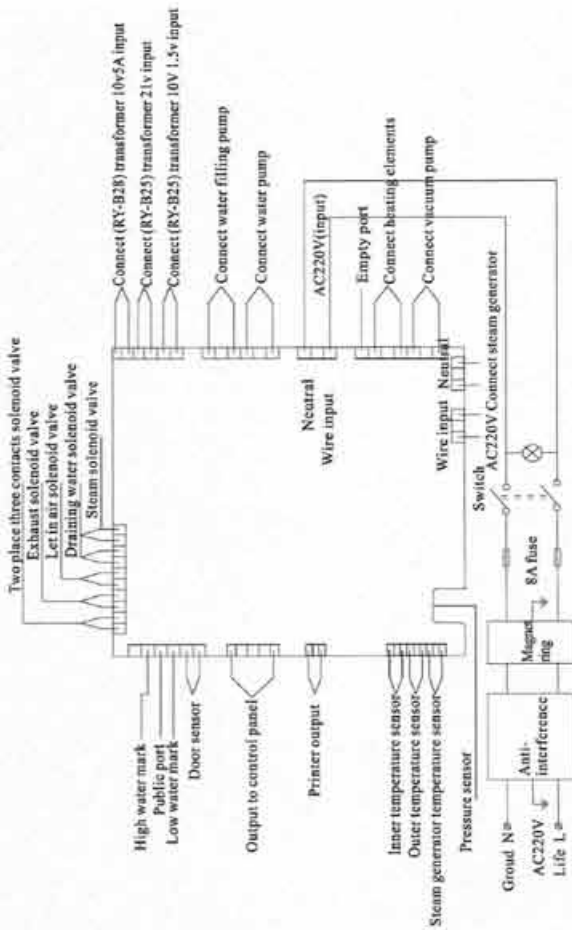
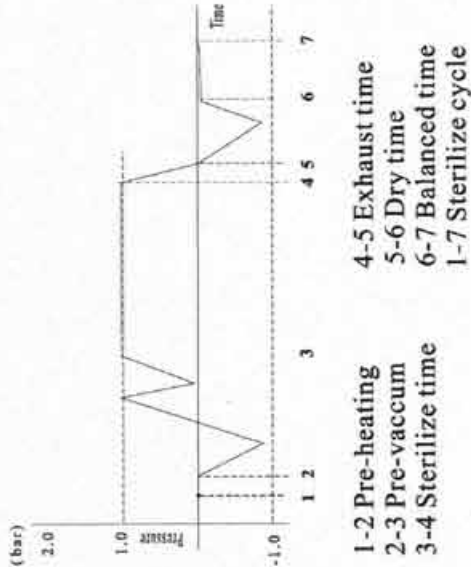


Fig 4.

Schematics of STE-Tan

Fig 5.

Cycle chart & schematics of STE-Ten

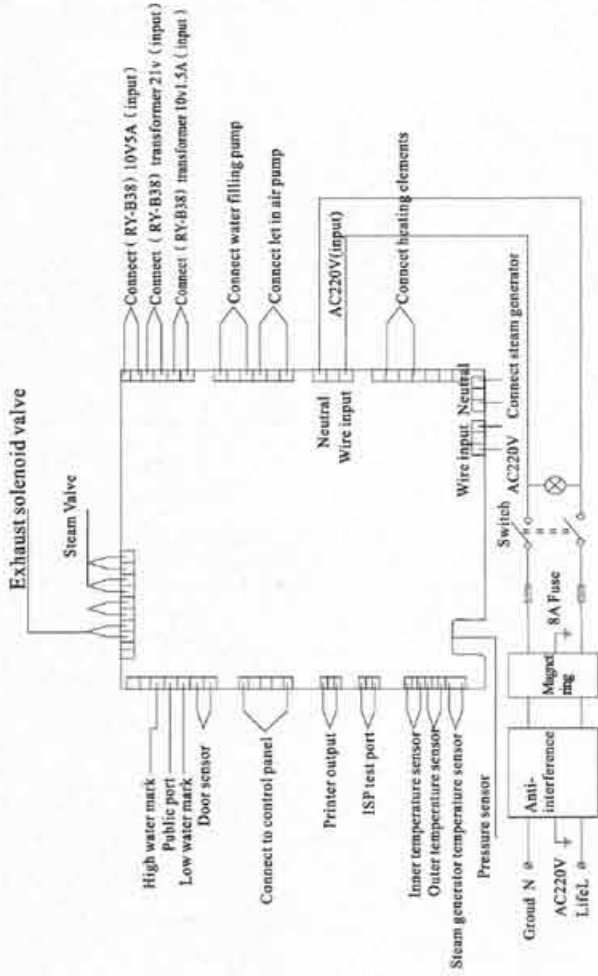
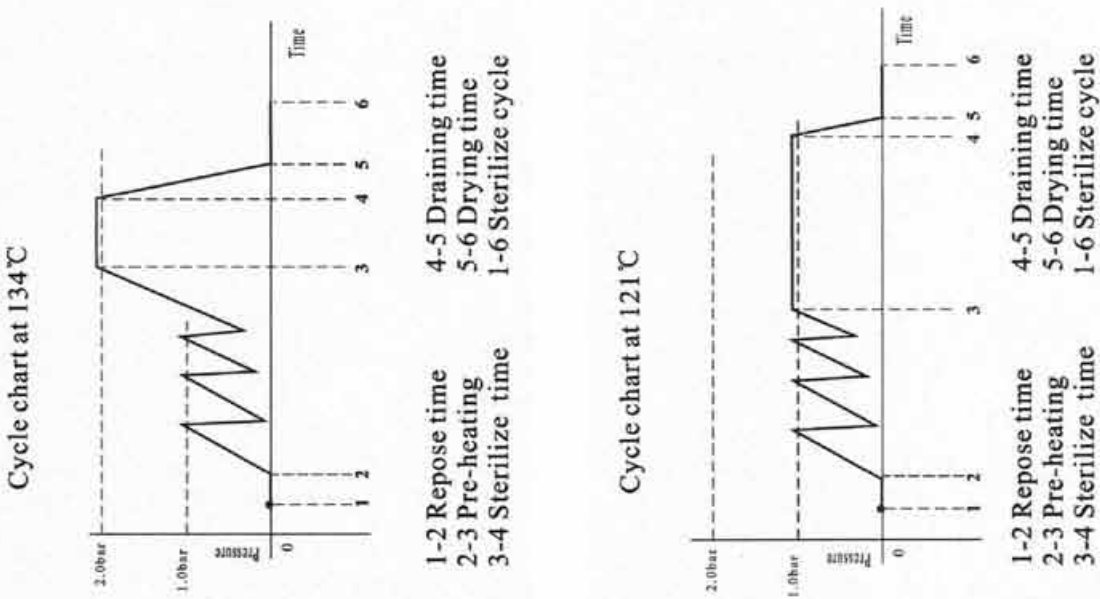


Fig 6.

Schematics of STE-Ten

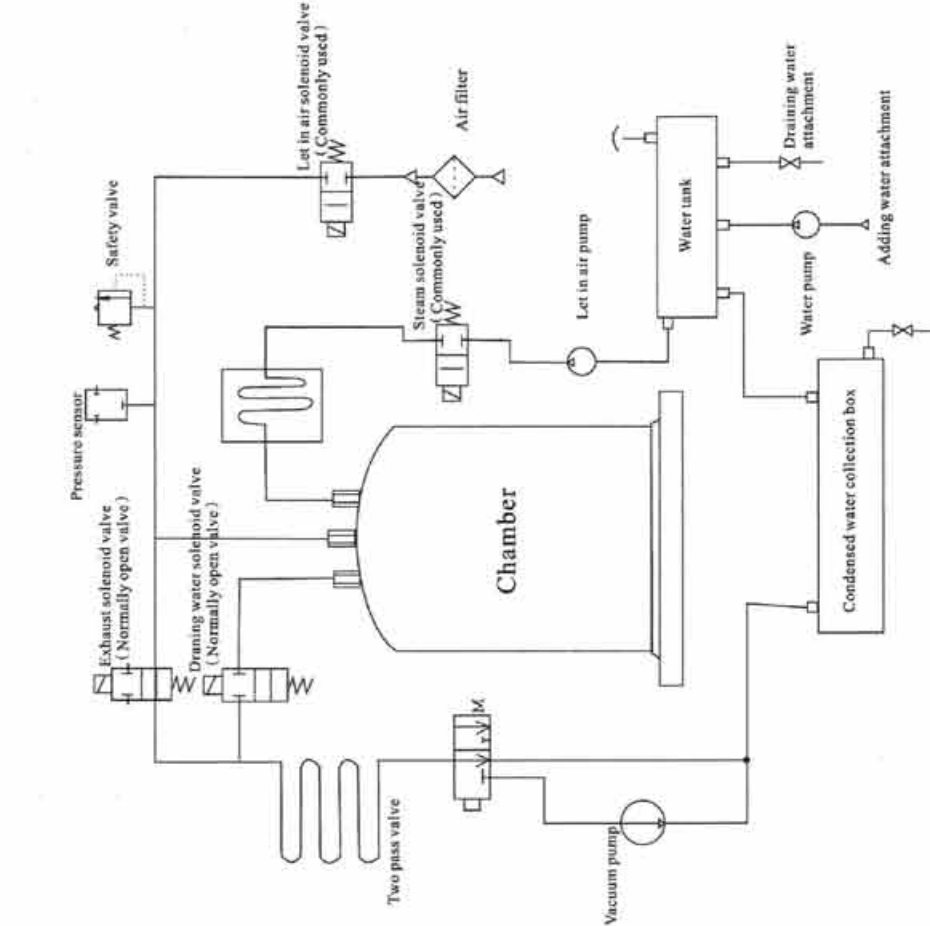


Fig 7.

Piping diagram of STE-Tin, STE-Tan

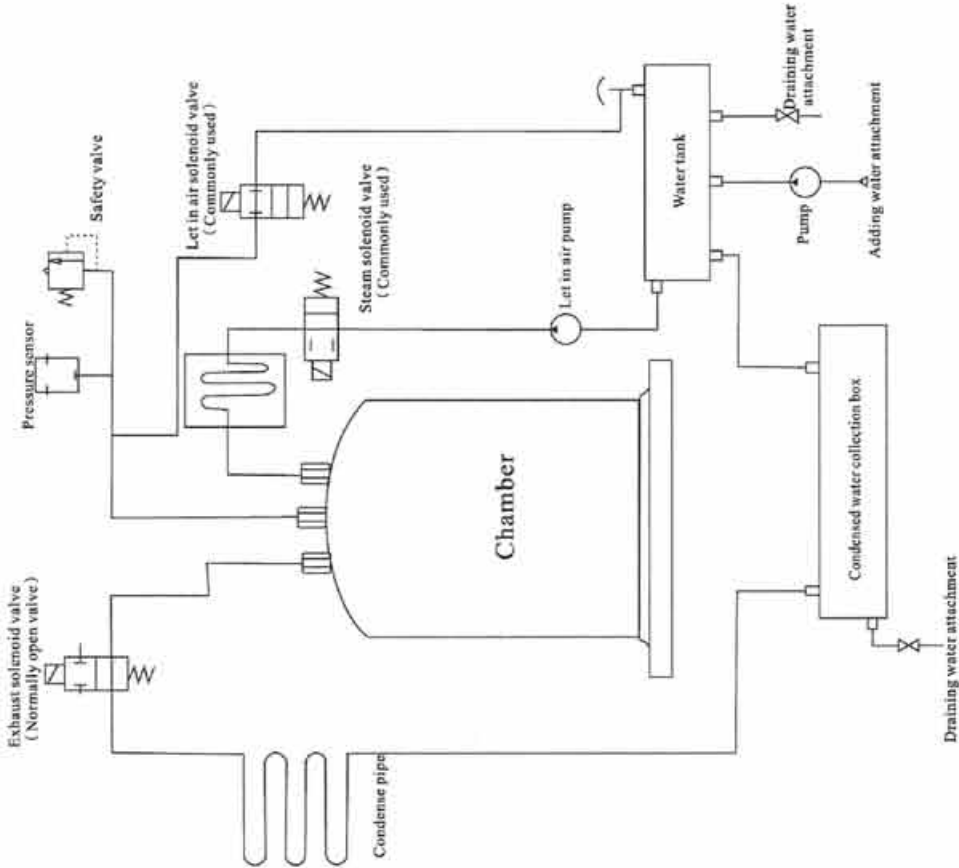


Fig 8.

Piping diagram of STE-Ten

Troubleshooting

1. During venting or drying, the thump sounds. It means that the condensed water collector is full. You must drain the water from the collector.
2. Hissing from the chamber door. (Solving this problem according to item 15.5)
3. During a cycle, a banging sounds and large steam leaks from the chamber door and displays "E6" code. Please verify whether the door knob is properly turned and locked. If the steam leaks at the beginning of a cycle, you need to change the seal according to instructions at page 34.
4. When a cycle completes, there are water drops on the instruments. You may correct the problems by:
 - 1). Please check the drain filter.

- 2). Reduce the load of the instrument in the chamber, especially the porous and dressing and other water absorbent materials.

- 3). You may also wait for a while at the end of a cycle "Ed" for better drying result. The autoclave will continue heating the chamber until you open the door.

Important information

1. The autoclave must be installed on a leveled counter top.
2. When operated at a higher elevation of more than 500 meters, the machine must be reprogrammed. Please get in touch with your distributor for instructions.
3. Distilled water must be used to prolong the life of the machine.
4. The radiation openings in the machine must not be blocked or covered.
5. Instruments should be placed on the tray allowing space between one another and thus allowing steam to pass through.
6. Condensed water collector must be emptied from time to time. It should be emptied when refilling the water reservoir. (Draining of the collector can be followed as per item 10.2)
7. Chamber door knob must be turned to its locking position.
8. Never try to open the chamber door before pressure displays "0.0" .
9. To avoid burning injuries, power off the machine and let it cool down before replacing the seal.
10. No dragging when the machine is moving.
11. Power connection must be grounded properly.
12. Must be provided enough power.(1800W)
13. While the temperature of outside is lower, please pre-heating the machine without instruments for 30minutes before sterilize.