FISON

BENCHTOP AUTOCLAVE

FM-BA-A100

Index

1. Safety Measures

- The machine won't work if the door isn't closed.
- Water-off & over-temperature protection. When the heating element is heating without water, the power supply will be cut.
- Over-current protection. If the current exceeds the rated value, the power broken circuit will cut power automatically.
- Safety valve. When the pressure exceeds 0.24Mpa, the sterilizer will automatically exhaust to drop the pressure.
- Over temperature protection. When the chamber's real temperature is≥140℃, the power supply will be auto-cut.
- When the pressure exceeds 0.24Mpa, the sterilizer should automatically exhaust to drop the pressure. If the safety valve fails and the pressure keeps increasing, kindly cut off the power as soon as possible. The warning mark is on the rear panel of the apparatus.

Warning:

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2. Introduction

Benchtop Autoclave FM-BA-A100 is a fully automatic, microprocessor controlled unit with 35 L capacity, 134°C working temperature, and 0.22 MPa working pressure. Made up of stainless steel chamber, offers four stainless steel sterilizing plates. The process of water addition, temperature rise, sterilization, drying steam discharge are controlled automatically. Equipped with steam water inner circulation system, no steam discharge, keeps the surrounding environment clean and dry.

3. Features

- ✓ Digital LCD display shows working status of autoclave
- ✓ Touch type key control panel
- ✓ 3 fixed cycles sterilization program, can be adjusted by user
- ✓ Automatic controlled processes: water addition, temperature rise, sterilization, drying the steam discharge
- ✓ Automatic shut off with beep reminder after completion of sterilization process
- ✓ Safety protection against water lacking
- ✓ Door safety lock system (hand pull up type handle)
- ✓ Four stainless steel sterilizing plates
- ✓ Automatically exhausts cool air

4. Specifications

Model	FM-BA-A100
Chamber Capacity (Volume)	35 L
Chamber dimension	300 × 500 mm
Working pressure	0.22 MPa
Working temperature	134°C
Temperature adjustment range	105 to 134°C
Heating time	10 to 20 mins
Total sterilization time	40 mins (ready time + heating time + sterilization time)
Timer range	0 to 99 mins
Temperature accuracy	≤ ± 1°C
Sterilizing plate	4 pcs
Sterilizing plate dimension	400 × 200 × 30 mm
Dimension	730 × 550 × 510 mm
Packaging dimension	810 × 680 × 650 mm
Net weight	73 kg
Gross weight	90 kg
Power	2.7 kW
Power supply	AC 220 V, 50 Hz

5. Applications

Used for sterilization of surgical, dental, eye equipment, glassware, culture medium, biological dressing, food etc. across dental clinics, hospitals, school laboratories, scientific research labs, institutes.

6. Instrument Introduction

General Structure

This product buildup by sterilizing the chamber, instrument plate, water tank, and control System (**Figure-1**)

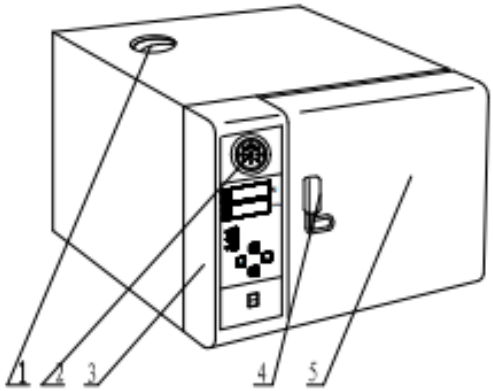


Figure-1

1) Water Tank
2) Gauge
3) Control System
4) Handle
5) Chambers Door

7. Installation

7.1 The working environment and condition of the product

1) Environment temperature: 0~40℃
2) Relative humidity: ≤85%
3) Atmospheric pressure range: 86~106 Kpa
4) Power supply: AC220V±22V, 50Hz±1Hz (should have ground lead)

7.2 Storage environment and condition

1) Environment temperature: -20~50℃
2) Relative humidity: 10%~90%
3) Atmospheric pressure range: 50~106 KPa

This product is equipped with a safety valve and will auto-release when steam pressure is over 0.24Mpa, when the temperature is over 140℃ (284°F), the power auto be cut off with double safety protection. It is also equipped with water-off overheat protection, current overload power cut-off protection, and the sterilizer's door safety interlock device, which is a safe and reliable product.

8. Working Principle

The sterilizer is designed by using the gravity-type pressurized steam sterilization principle. Put 1~1.2 liter of distilled water into the sterilization chamber and use an electric heater to heat directly to produce pressurized steam. The pressurized steam acts with microorganisms on the objects to be sterilized to destroy their structure and reach the purpose of sterilization.

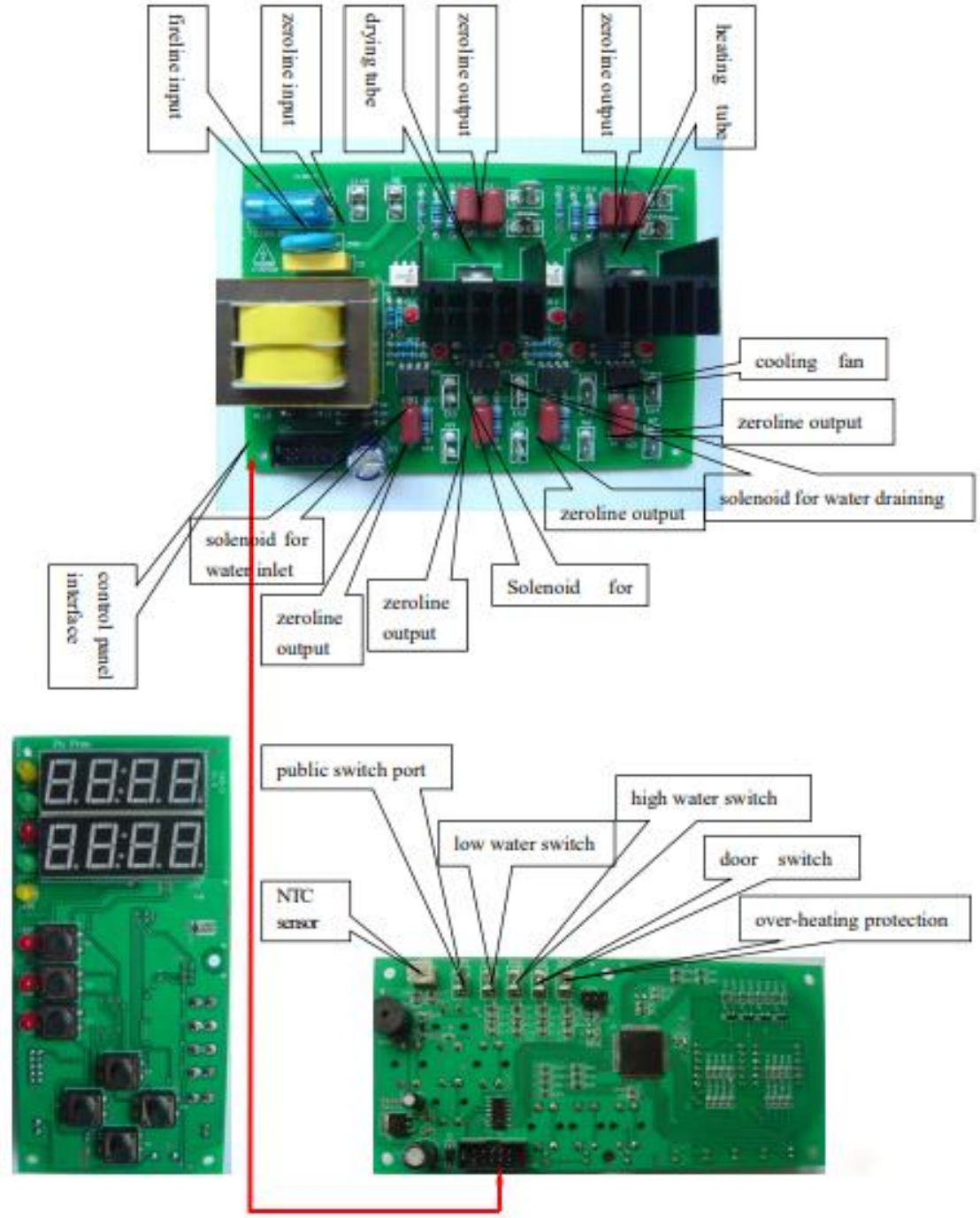


Figure-2

9. Operations

1) The preparation and inspection before use
   Inspection of the power supply and power supply data conform to product requirements. Single phase (AC220V, 50Hz).
   - Prepare 5 Liters of distilled water.
   - The binding of dressing and textile cannot be too tight
   - A certain amount of sterilization indicator (chemical indicating piece or biologic indicating piece)'
   - The instruction of operating key, indicating lamps, switches, and relevant marks.
2) Control panel (see **Figure-3**)
   - Gauge

   Displays the pressure and temperature, shows inner pressure and °C shows the inner temperature.
   - Key

Set
For setting sterilizing temperature (0~134 °C)/ sterilizing time (1~99min59sec.)/ for check while sterilizing
▲ Increase
To increase the value of temperature or time, and to clear the buzzer in use.
▼ decrease
For decreasing the value of temperature or time, and for clearing the buzzer in use.
ENT to confirm the state of sterilizing temperature and time. Also, for emergency stop-in use.
1) Screen

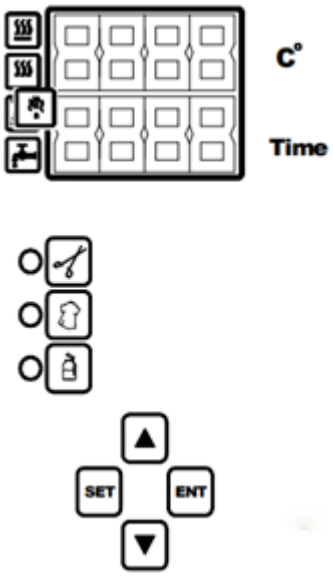


Figure-3

Window for temperature- Display setting & real chamber temperature 0~134℃, range 103~134℃ Window for time- Display setting time and sterile back timing, range 0~99min59sec. when the chamber's temperature reached the setting value, it began back timing and flash.


Heating pilot- Push key ENT, the pilot light tells the sterilizer in heating, the pilot out tells it reached the setting temperature and stop heating.

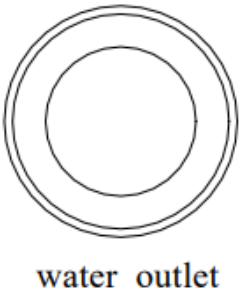

The sterilizing pilot it light tells the objects to be sterilized have reached the setting temperature.


Overheating pilot- The pilot flash means the water fills to chamber from the water tank, the pilot light means the water is lacking and the trouble of overheat.


Water fill pilot- It light means the water is filling now.


Dry pilot- It light tells in dry heating.

2) Outlet of water collect tank
   The distilling water in the tank must be exhausted from this outlet every week.
3) Outlet of the water container
   Water store tank's distilling water must be exhausted from this outlet every day.
4) Switch- Power on/off.



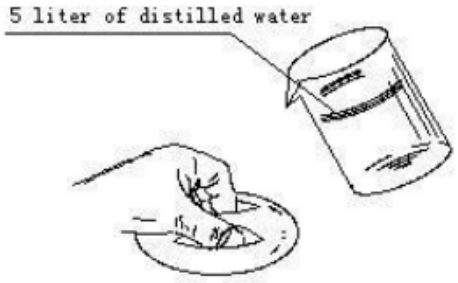


Figure-4

9.1 Sterilizing Operations

1) **Load the objects to be sterilized**
   Load the objects to be sterilized on an instrument plate. Then put in the sterilizer and close the door.
2) **Fill water to the water tank**
   Fill 5 liter distill water into the water tank.
3) **Start the device**
   Connect the power and turn on the power switch. Three times display on the screen and three times buzzer sound, the pilot of temperature and time light, it enters the state of standby.

Different Article Sterilizing Temperature and Time.

Article	Put form	Sterile Temperature ° C	Sterilize time Min
Instrument	Open	134	4
		121	20
		105	25
	Pile	134	12
		121	30
		105	35
		134	12
Solution	Open	121	30
		105	35

- Push key SET enters the state of setting sterilizing temperature, meanwhile the window of temperature flash, time, and heating pilot light.
- The push key increases▲ the value more or the key decreases ▼the value less, Users keep push seconds, and the value increases or decreases continuously.
- Push key SET enters the state of setting sterilizing time, meanwhile the window of time flash, temperature, and heating pilot light.
- The push key increases the minute adding, the push key decreases the value less and keeps pushing the value adding or less continuously. (Useful time setting 1~99min 59sec.).
- Push key SET, enter setting dry time state, meanwhile window of time flash and the heating pilot out, dry pilot light.
- The push key increases the minute adding, the push key decreases the value less, keeps pushing the value adding or less continuously. (Useful time setting 1~99min 59sec.)
- Push key SET, fulfill the task of setting sterilize temperature, time, and dry. meanwhile the window temperature and time stop flash, and the heat pilot out.

4) Start sterilizing

Push key ENT, and the  screen flashes and shows the water filling to the chamber, until the water enters the chamber wholly, the pilot out. Then the program enters the sterilizing, and the window displays the real chamber temperature, heating pilot, and time pilot light, when the temperature reaches the setting value, the heating pilot out, time window display back timing begins, and the heating pilot light and out while sterilizing.

5) Sterilize end

When the back timing shows zero, the temperature is real value, and the sterilize ends the buzzer sound, this time push the key ▲or ▼ cancel the sound.

6) Cooling

This time auto steam release, Users can open the door when the gauge is back to zero.

7) Dry

Open the door, make the door open about 1cm space, push the key DRY, and enter the state of dry, this time the drying time window shows back timing, dry pilot light, and out.

8) Dry ending

When the back timing shows zero, the temperature is real value, the dry end and buzzer sound, this time push key ▲or ▼ cancel the sound.

10. Maintenance

- To ensure the reliability of the sterilization effect chemical indicating piece of biological piece must be put into the sterilization chamber, together with the: objects to be sterilized. After sterilizing, the sterilization effect can be checked.
- If the trouble occurs in the sterilizing, kindly deal with it and wait for 5sec. Then restart the machine, all setting previously is useless.
- The safety valve must be checked once every year If it is malfunctioning, replace it. If the safety valve malfunctions during use and the pressure keeps increasing, the power supply must be cut to ensure safe use.
- The rubber seal ring is easily aged. If aging causes leakage, the seal ring should be replaced in time.
- The temperature & pressure meter must be standardized every year.
- The machine must be kept clean, and protect the incrustant that occurs on the surface, often method is to wash it with distilled water once a week.
- If the water tank use not often, Kindly clean it with distiller water before use; often use clean by distiller water every week.

11. Troubleshooting

1) The door's pilot light and buzzer sound, heat the pilot out, Users can re-close the door and restart the machine.
2) **Check the temperature and time Users have forgotten**
   - Press the SET key during sterilization to display the current set temperature. The temperature will flash, and the ▲,▼keys can be used to adjust it.
   - Press the SET key again to display the current set time, which will flash. The ▲or ▼keys can be used to adjust the time.
   - Press the SET key to return to the sterilizing mode, and the process will resume. If the SET key is not pressed and the ENT key is pressed instead, an error will occur, causing the buzzer to sound. To stop the sound, press the ▲or ▼key, and then reset the temperature and other settings for the sterilizing operation.
3) **Water lack and overheat**

   During operation, the buzzer will sound, and the pilot  light will indicate if the chamber is low on water or overheating. In such cases, the machine will automatically release the pressure to zero. Users can then turn off the power and restart the sterilization process.
4) **Over current protection,**
   When the current occurs, and the fuse auto cuts out, Users can deal with the trouble then restarting and setting temperature and time, etc.
5) **Emergency stop**
   For an accident or mistake operation, Users must stop the machine, push the key ENT, and the buzzer sound, just push the key ▲or ▼stop the sound.

Trouble	Possible Cause	Solve Method
Heating flash	The chamber's water is too little, and the heat element drying heating	Turn the control valve to FILL and fill the water to chamber 1-1.2 L at least.
	Overheating protector broken	Replace the protector.
The circuit switch (power switch) suddenly cut off	Over Current lash.	Inspect the source power net.
	Electric Short Circuit	Inspect the sterilizer's circuit, if the burning smell occurs, replace the part that has been burned.
Power pilot light, heating pilot not light, unnormal operation	The door is not closed, or the door switch damaged	Close the door or change the switch.

Note:

1) The different kinds of objects and the objects that will affect each other during the process of sterilization could not be sterilized in the same sterilization chamber at the same time.

Sterilization of spare parts.

- Sterilizing plate: Mainly to put instruments.
- Drum for put dressing

2) Clamp: Used for moving the sterilization plate from the chamber.