

JIBIMED

**DESKTOP PULASTING VACUUM
STEAM STERILIZER**

(TM-35DV、TM-50DV)



USER'S MANUAL

JIANGYIN BINJIANG MEDICAL EQUIPMENT CO., LTD



Alarm: In order to ensure the safety use of the device, please read the users' manual carefully before starting, each operating procedure should follow the steps which the manual said as below, or the damages and danger would be caused by the dis-operation.

0.1 PREMISES

THANK YOU FOR YOU CHOOSING OUR VERTICAL PRESSURE STEAM STERILIZER !

*The manual introduces the operation steps for using, please read the MANUAL carefully before the operation to ensure the safety.

*Any question or problem, please call or inquiry to us, we would offer you the service as good as we can.

*The necessary spare parts and the repair information will be offered to you on time.

0.2 SAFETY INSTRUCTIONS

1) Please read this manual carefully and understand the requirements of all WARNINGS and CAUTIONS before using. The users MUST check the safety performance of the sterilizer and check if the sterilizer is in good working condition before using.

2) The sterilizer should be used according to the scope of application, use method, and precautions specified as the manual said. Otherwise, the unit might be damaged or the sterilization may fail.

3) There are some safety protection features equipped with the unit to prevent operators from injury and protect equipment from the damages. The operators should understand each steps before starting using.

4) Requirements for the operator: The operator must be trained be aware of the equipment's performance characteristics, working principles, and on-site operation, has a certain knowledge of the sterilization process. Before the operation, this manual must has been carefully read and understood.

5) Requirements for the maintenance person: the maintenance person should have corresponding qualifications, professional repair capabilities and familiar experience.

6) This equipment is classified as type I pressure vessel. During the using, the relevant provisions of the National Pressure Vessel Regulations should be observed. The responsible person should be identified to ensure the safe and correct use of the equipment.

7) In the process of designing and manufacturing, we have fully considered the safety use of the product, but the operator still have to check and observe the working status constantly while the equipment is running.

8) The connection between the user's network power supply and the power supply should meet the relevant requirements of the national electrical safety standards.

9) If the voltage fluctuation exceeds 10%, the equipment can not work properly.

10) The sterilizer complies with "GB/T18268.1-2010 Electromagnetic Compatibility Requirements of Measurement and controlling for Laboratory Use Electrical Equipment , Part 1: General Requirements." Please ensure an EMC environment for the normal running of the equipment. The sterilizer meets the design and test of Class A equipment in GB4824-2013. Do not use this sterilizer next to a strong radiation source (eg. unshielded RF) as which may affect the normal working. It is suggest that the user evaluate the electromagnetic environment primarily to ensure the sterilizer working normally.

11) In accordance with the relevant provisions of national and industrial laws and regulations, this equipment is designed and manufactured in accordance with the relevant requirements of GB4793.1-2007, and this equipment meets the relevant safety requirements of GB4793.1-2007.

12) The replacement of the door gasket is determined according to the frequency of using, the rate of natural aging, and the conditions of cleaning, disinfection, and sterilization. If no damage occurs, the door seals can continue to be used, or they should be replaced in time.

13) The equipment and accessories should be used within the specified service life, the

overdue use may bring safety risks. Due to the aging of the equipment and accessories, there might be some safety risk and hidden dangers at the tail of the service life. Therefore, the equipment safety should be checked every time before using, and the broken spares should be replaced if necessary.

14) The disposal of the accessories of this equipment and equipment itself after the service life shall be conducted in accordance with the relevant regulations of the national and regional environmental protection, and it shall be avoided to pollute the environment or create safety hazards.

15) Only distilled water or pure water is allowed to be used for the sterilizer.

16) The Safety valves should be regularly tested according to the relevant national regulations. Only the pure water or distilled water is recommend

17) MUST disconnect the device before installing a fuse or performing electrical repairs. The fuse for replacement should be with a suitable current value. The model, specifications, and current values should comply with the specifications of this manual.

18) Confirm the device circuit switch status before operating on which . If malfunction happens, the device's main power switch should be immediately disconnected.

19) To ensure the safety and avoid electric shock, ensure that the equipment is properly grounded. Do not modify the grounding protection wire inside or outside the equipment or remove the wiring of the grounding protection terminal. Or the protection function of the equipment is failed, and cause a shock hazard.

20) MUST pay attention and stay away from the area with hot-proof mark and exhaust port of the device to avoid burns.

0.3 Explanation of symbols

Some symbols and codes are used on the sterilizer's shell or in this manual or on the outer carton instead of the text description. The explanation is as followed:

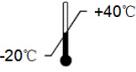
| symbols | instruction |
|---|---|
|  | Fragile items (the transport package containing fragile items, handling with care) |
|  | Keep Up (the transport package should be straight up during transport) |
|  | Avoid wet (the transport packages should be kept in dry) |
|  | Temperature limit (the temperature range during the transport package should be maintained) |
|  | Alternating current |
|  | Protective grounding/ (Protection conductor terminal) |
|  | Disconnect (the main power supply) / (cut (power)) |
|  | Switch on (main power) / (connect (power)) |
|  | Caution, shock hazard / (electricity danger) |
|  | Caution scalds |
|  | Be careful, Dangerous / (NOTE! See random file) |
| SET | SET BUTTON |
| ON/OFF | Turn on or turn off button |

TABLE TOP STEAM STERILIZER

(TM-35DV、TM-50DV)

1. Introduction

The TM-35DV, TM-50DV type table top steam sterilizer, which is a microcomputer full automatic medical device with pulsating vacuum. It adopts external heating to generate the high-pressure steam as the sterilization requires. Equipped with PT100 temperature sensor of which accuracy reaches 0.15%, and temperature sensor which could detect the pressure ranged from -80kpa~300kpa. The control board could provide DC 5W for the thermal printer use, and a 12864 screen used for operation could display various of information for users reference and record.

The sterilizer is suitable for the disinfection and sterilizing for the medical dressings, utensils, drugs and the operation instruments, are widely used in operation room for the fast sterilization of those supplement of the necessary surgical instruments, and is also ideal device for factories, enterprises, scientific research institution to carry out sterile experiment.

2. Scope of application

For the steam sterilization of medical dressings, utensils and surgical instruments.

3. Disable

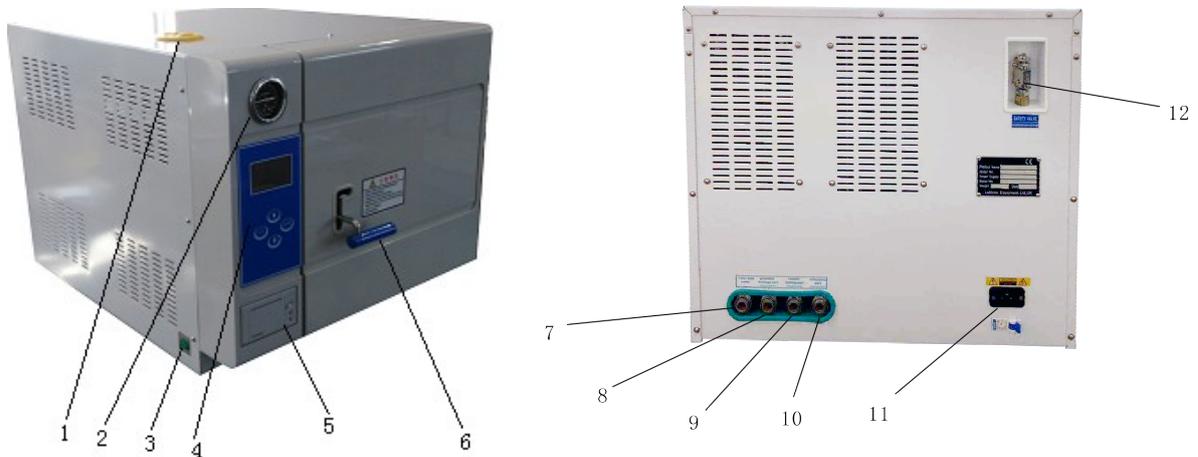
This sterilizer cannot be used to sterilize items that cannot bear the high temperature, high pressure or wet.

4 Normal working conditions

- a) Ambient temperature $+5^{\circ}\text{C}\sim+40^{\circ}\text{C}$
- b) Relative humidity $\leq 85\%RH$
- c) Atmospheric pressure $86\text{kPa}\sim 106\text{kPa}$
- d) Power supply AC $220\text{V}\pm 22\text{V}$, $50\text{Hz}\pm 1\text{Hz}$.

5. composition and working principle

1. Composition



1. Water adding port 2. pressure gauge 3. power switch 4. control system 5. printer
6. open handle 7. water tank outlet 8. Generator drain 9. Vacuum outlet 10. steam
water outlet . 11. Power connection 12. Safety valve

(Pic 1)

2. Working principle

In the sealed chamber, it first performs three pulsating vacuum treatments. Then, it heats water to produce high-pressure saturated steam, which is used to carry out high-temperature and high-pressure sterilization of the items inside the chamber. After sterilization is completed, a vacuum pumping operation is performed on the chamber to thoroughly dry the sterilized items.

7. OPERATION

1. Ambient requirement

✧ The device should be placed on a sturdy and flat table-board.

The device is heavy, safety concerns might happen by the table board was loosen or tilted because of long-term operation.

✧ The ambient temperature should be not exceed 40°C

As the other electronic device, the excessive temperature would cause the control system failure, working procedure disorder and the other abnormal working.

✧ Ensure enough space for placing the device and good ventilation.

It should ensure that the installation space for the door of the sterilizer can be open and closed freely, and the sterilized items can be transported smoothly, which is convenient for the operation, maintenance, reparation and testing.

The installation space should be well ventilated and can quickly diffuse the retained steam, otherwise it will affect Equipment performance and service life.

Attention: The unit is equipped with safety valve, it will automatically release the pressure if the steam pressure exceed 0.24mpa. If the temperature exceed 140°C (284° F) , the power supply will be cut off automatically. It is With double safety protection, water cut-off overheating protection, current overload automatic cut-off protection device.

2.The precautions before using

✧ The unit is sterilizing device by using saturated steam to sterilize the medical dressings and various of medial instrument, note the following items:

a) The sterilized items should be able to withstand high temperature and humidity.

b) Oils and fats is not applicable.

c) The sterilized items should be washed first to prevent the attached dirt from affecting the sterilization effect.

d) The appropriate sterilization temperature and time should be selected according to the wetness rate of the different sterilized items.

✧ For the correct use of the device and ensure the safety, please confirm a person who is responsible for using and a specially-assigned person for operation.

✧ It would exhaust some steam and make some noise during the cycle, this is normal, please continue to use.

3. The checking and preparation before using.

- ✧ Check if the power supply is in accordance with the requirements, ensure the power outlet has sufficient current capacity, and ensure that the ground is reliable before turning on the power.
- ✧ Prepare several liters of distilled water.
- ✧ Dressings and textiles should not be too tight.
- ✧ Prepare several pieces of sterilization indicator (chemical indicator or pressure steam sterilization biological indicator).

8. Operating instructions

1. Start



(figure 3)

2. Buttons

SET, ▲ ▼, ON/OFF

3. Choose the fixed program according to the sterilizing objects.



(figure 4)

Press **ON/OFF** button while it is on "Figure 3", the interface would switch to "Figure 4".

The first line is the name of the item, as shown above, the item is an instrument.
The second line is the sterilization temperature and time ,as shown above.the sterilization temperature is 134 °C, and the sterilization time is 10 minutes.
The third line is drying time, as shown in the above is 10 minutes.
The fourth line is the number of vacuum times, as shown in the above picture is 3 times.

In "Figure 4", press the ▲ and ▼ buttons to select the name of the articles. There are followed 7 fix program for your choosing: instrument, textile ,rubber, liquid, BD Test, Customerize,Vacuum Test.

On the "Figure 4" interface, press the **SET** button to return to the "Figure 3" startup interface.

4.Select the operation program



(figure 5)

Press the **ON/OFF** button while it is in figure 3, the interface switches to "Figure 5", then the program is selected.

The first line is the name of the item, as shown in the figure above is INSTRUMENT.

The second line are the temperature and pressure of the sterilization chamber,as shown in the figure above: The temperature in the sterilization chamber is: 77.7 °C, the pressure is: 0.2kPa

The left side of the third line is the cumulative cycle time of the sterilization process, and the right side is the single-step running time,it would count the time with second. The fourth line shows the current state of the machine: as shown in the figure above, STAND BY, it means the unit is stand by for proceeding.

If the door is closed well, the **STATE** would show the **STAND BY**, as the figure 6 showed below, continue pressing ON/OFF button, the unit would start proceed the STATE---PREHEATING as figure 7 shows. By the preheating is finished, the device would start the cycle automatically.

If it requires to terminate the cycles, press the ON/OFF button for 5 seconds, the STATE will show STAND BY, which means the device is out of cycle.

5. Clock Setting

In “figure 3” START SCREEN, press the ▲ and ▼ buttons together, the machine enters parameter setting as below figure 8 shown.



(figure 8)

press the ▲ and ▼ button while it is in “figure 8” interface, the chosen item would highlight, choose Set Time to set the clock, as “figure 9”



(figure 9)

press the **ON/OFF** button to choose the YEAR, MONTH, HOUR, MINUTE and SECOND, press the ▲ and ▼ button to revise the parameter, then press ON/OFF button to confirm. After all the parameter is revised, press ON/OFF button to save and exit. During setting the parameter, if which is wrong and not for saving, just press **SET** button to exit and revise.

6. Parameter setting

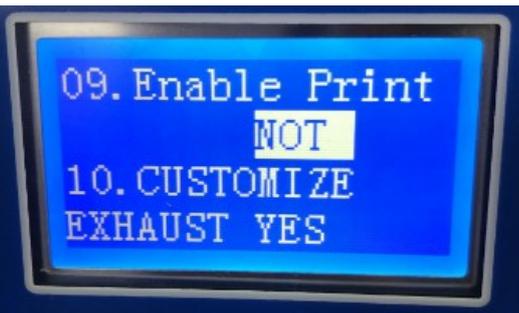
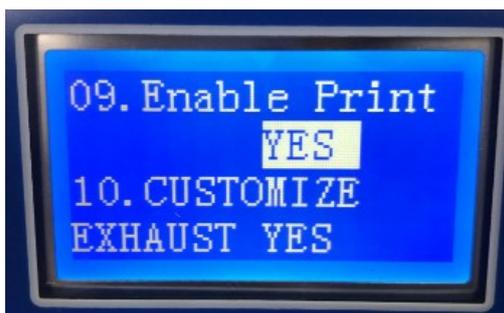


(figure 10)



Press the **ON/OFF** button to choose the parameter need to be set(figure 10), press the ▲ and ▼ button to revise, press **ON/OFF** button to confirm the revise and then proceed the next parameter, if it doesn't required for revising, please press **ON/OFF** button directly for the next one. Press **ON/OFF** till exit, the device will auto save the parameter in 3~5 seconds. During setting the parameter, if which is wrong and not for saving, just press **SET** button to exit and revise.

7. Print set



press the ▲ and ▼ button to chose YES or NO, press **ON/OFF** button to confirm and save, then press **SET** button to exit, if no need to save, press **SET** button to exit directly.

9. Maintenance

1. Ensure the reliability of the sterilization effect, place a chemical sterilization indicator sheet or a pressure steam sterilization biological indicator together with the sterilized item. After the sterilization is completed, the sterilization effect can be checked.
2. In case of malfunction during sterilization, it should be rectified and waited for 5 seconds before restarting. The previous setting is invalid.
3. The safety valve must be checked once a year and replaced if it fails. If the safety valve fails during use and the pressure continues to rise, the power should be cut off in time to ensure safe use. The safety valve is in the water tank. When repairing, just unscrew and open the four screws on the two sides of the outer shell, and then carry the outer shell.
4. The silicone sealing ring is aging, would cause the leakage and should be replaced in time.
5. Pressure gauges should be calibrated once a year. During the sterilization operation, the temperature display is the priority monitoring value.
6. The sterilizer should be kept clean to prevent scale from forming on the surface. It should be washed once a week with distilled water. When the water tank is used occasionally, rinse it with distilled water before use. For frequent use, rinse with distilled water once a week.
7. Regular faults and troubleshooting methods
During operation, if there is an alarm, press the left button to enter the "query", press the ▲ and ▼ buttons, and "ERR", and then press the right button to enter to troubleshoot the display failure.

10. Precautions

1. The operator should read carefully this manual before using, who should have the operation knowledge and intensify the sense of responsibility, strictly operate the unit according to the step of the manual said the is required to do the maintenance as below, to ensure the unit is in good condition and normally running, to prevent the accident from happening.
2. For sterilizing the solution, which should be filled into a glass bottle (or vessel) that is resistant to the high temperature. Caution the overflow, generally, it is advisable to fill the glass bottle (or vessel) with a volume of 1/2 to 3/4. And the bottle mouth should be tightly filled with the gauze. Do not use a stopper (such as a rubber stopper or cork stopper) which is without a through hole to fill the bottle mouth. The glass bottle (or vessel) should be placed in a protective container and put into the sterilization chamber, that is important to prevent the glass bottle from the burst or damage.
3. The equipment is a kind of pressure vessel, Must avoid the impact during working, and forbidden to use over pressure. If the pressure displayed is exceed the maximum allowable value but the safety valve doesn't open to release, the unit should immediately pause to use. The safety valve might has been failed, please check and exchange it. Don't start to use the unit again until the safety valve is qualified. The safety valve should have to be verified every year at the local Technical Supervision Bureau.
4. The gasket is wearing part, which should have to check frequently. If the feature is changed or deformed or aging hardening, the spares should be changed immediately.
5. The replaced fuse should be comply with the provision as the manual said, the model

and the specification should be same as the old one.

6. Ensure the safety grounding of the unit, Ensure the power socket grounding well.

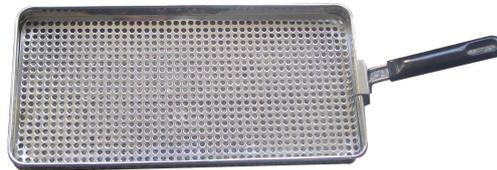
7. Keep clean of the unit.

8.No special requirement for the transportation and storage. If long time no using, which should have to store in a shady , dry and ventilated place, and make the necessary dust proof work.

Appendix spares:

a) Sterilizing plate: for placing the sterilizing items

b) Handle (see figure 12): For putting the sterilizing plate into the chamber or take them out.



(figure 12 handle)

Warning: 1) If the pressure exceeds 0.24 MPa, but the steam is not discharged to release the pressure ,and the pressure continues to rise, the safety valve may have failed. In this case, immediately cut off the power, stop using it, and perform maintenance.

2) The power ground wire must be reliably grounded.

3) Pure or distilled water must be used as sterilizing water!

11. The breaker and the fuse capacity

a) Breaker rating current: 16A/ TM-35DV、 TM-50DV

b)Fuse specification : 220V/0.5A ϕ 5×20mm

12. Durable years

Under the normal using and maintenance, the recommended service life of the unit is 7 years.

13. Producing date

See the nameplate

14. Spare parts and the packing list

| No. | Name | QTY | Remarks |
|-----|-------------------|-----|---------|
| 1 | Main body | 1 | |
| 2 | Sterilizing plate | 4 | |
| 3 | power cord | 1 | |
| 4 | handle | 1 | |
| 5 | water cup | 1 | |
| 6 | rubber pipe | 1 | |
| 7 | users' manual | 1 | |

Appendix : Quick guide

1. Add water: open the water collecting tank cover, add 2~3 cups of distilled water.
2. Piling and sealing: Put the sterilizing items into the sterilizing plates, keep certain gap between each packages, then close the door.
3. Setting: connect the power(220V), it suggest to choose the "CUSTOMIZE" program, turn on the power, will show a blank screen with only time on it, then press SET button, then press ▲ and ▼ button, till the "USER DATA" is highlight, press ON/OFF button to enter to set the sterilizing temperature, press ON/OFF button to set sterilizing time, drying time, vacuum times, each vacuum pressure value, print, exhausting, drainage, exchange temperature and the interval time between two times exhausting, till the USER DATE is displayed again to press SET button again to return to the STRAT screen.
4. Start: Turn on the power switch to display the LOGO screen.
 - ✧ Press the "ON / OFF" key to enter the program
 - ✧ Press "ON / OFF" key to enter standby
 - ✧ Press "ON / OFF" key to enter working state
 - ✧ Water-preheat-three vacuum-sterilization-drying-end
5. End: When the sterilization is over, the buzzer sounds, the pressure gauge returns to zero, the door can be opened to pick up objects, and the power is turned off after the door is opened.

NOTE:

- ✧ Must use distilled water
- ✧ Before each use, the waste water in the waste water tank must be discharged.

