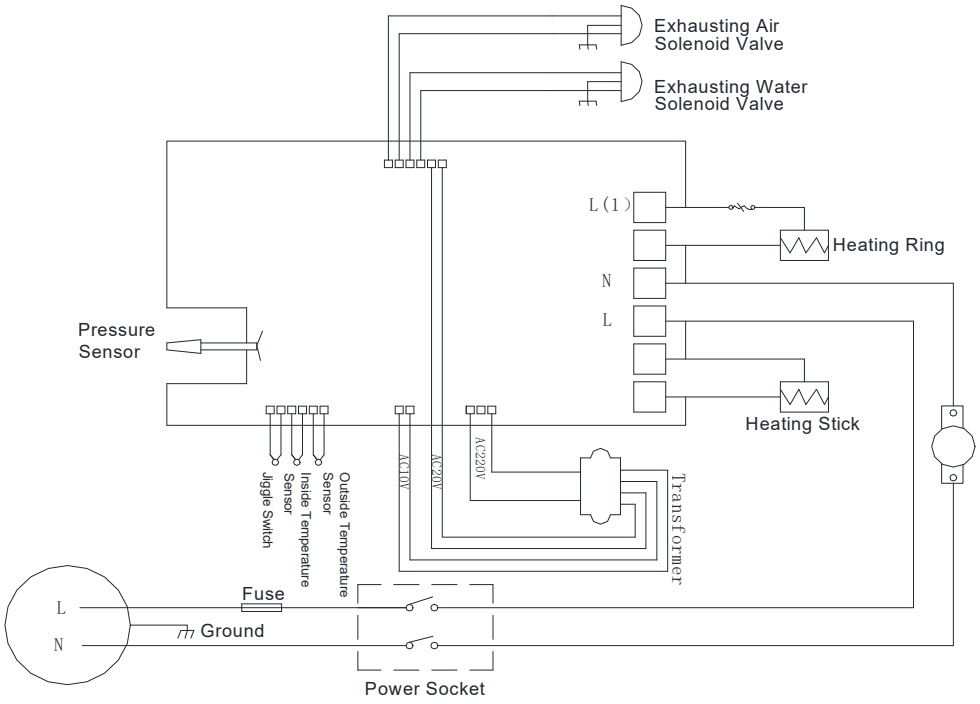
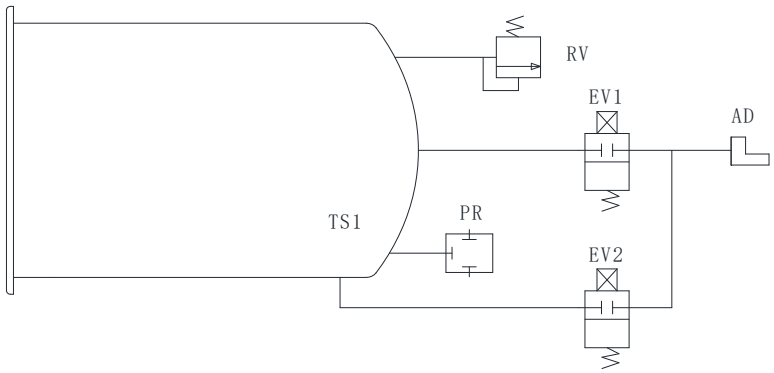
BIOBASE®

BKM-Z18N/Z24N
Service Manual

1.Electrical connection diagram and pipe connection diagram





RV	Safety valve
AD	Discharge pressure joint
EV1	Exhausting air Magnetic valve （closed）
EV2	Exhausting water Magnetic valve （closed）
PR	Pressure sensor
TS1	Temp sensor（PT1000）

2.The temperature of saturated steam (pure steam) at different pressures is certain.

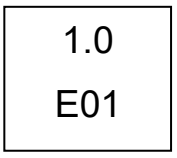
Pressure（Bar）	Temp（℃）
0.0	100
0.2	105
0.7	115
1.1	121
1.7	130
2.1	134

1.The program phase and working status of the sterilizer

Program	Sterilize time	Run time（without drying ）	Default drying time
121℃	20min	35min	+20min
134℃	5min	25min	+20min

Preheat	First boost pressure	First pressure relief	Second boost pressure	Second pressure relief
0.0 34 Pr.0	0.2 100 Pr.1	1.0 110 rE1	0.0 100 Pr.2	1.8 130 rE2
Third boost pressure	**Sterilizing**	**Third pressure relief**	**Drying(if you select）**	**Over**
0.0 100 Pr.3	2.2 134 5	1.3 123 rE3	0.0 100 dry	0.0 100 End

2. Fault code of sterilizer and its solution



Fault code: E01

No	Code	Beep	Describe
1	Er01	Long "beep"	The temp sensor of chamber wall is broken.
2	Er02	Long "beep"	The temp sensor of chamber is broken.
3	Er03	Long "beep"	Sterilization failed（Temp is high）
4	Er04	Long "beep"	Sterilization failed（Temp is low）
5	Er05	Long "beep"	Overheating
6	Er06	Long "beep"	Overpressure
7	Er07	Long "beep"	Boost pressure overtime
8	Er08	Long "beep"	Door opened when program running
14	Er98	Long "beep"	The last sterilization was not completed and the power was accidentally cut off
15	Er99	Long "beep"	Exit manually

Warning: When an alarm occurs, press the "START/STOP" key to cancel the alarm, otherwise, the alarm will continue to be in the alarm state.

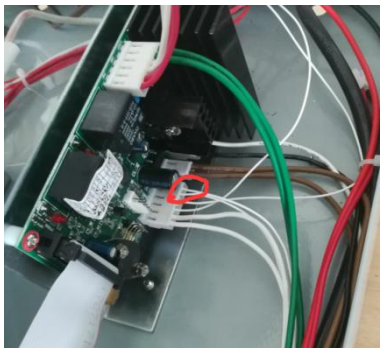
1.Alarm code solution

1. The code Er01: The sensor of chamber wall is broken.

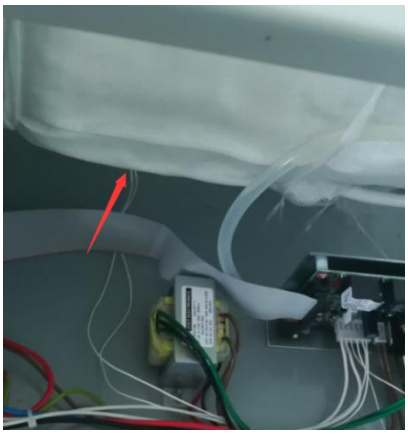
① The wiring of the temperature sensor is loose and shedding;
② The temperature sensor is short-circuited or damaged;

Solution:

(1) Check whether the signal line of the boiler wall temperature sensor is reliably connected to the control motherboard to ensure that the sensor is connected to the control motherboard and is on. As shown in the figure:



(2) If the first step is determined to be correct, the sensor has been short-circuited or damaged, and the external temperature sensor needs to be replaced as shown in the figure:



2. Code Er02:, the temp sensor of chamber is broken.

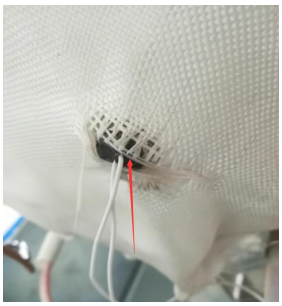
① The wiring of the temperature sensor is loose and shedding;
② The temperature sensor is short-circuited or damaged;

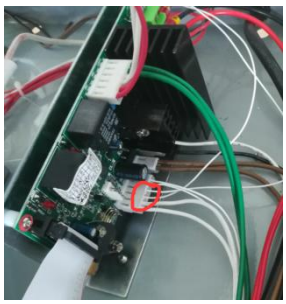
Solution:

(1) Check whether the signal line of the temperature sensor in the pot is reliably connected to the control motherboard to ensure that the sensor is connected to the control motherboard and is in the state of being turned on.

(2) If the internal temperature sensor is reliably connected, the internal temperature

sensor is short-circuited or damaged, and the internal temperature sensor needs to be replaced; see figure:





3. Code Er03: failed to sterilize (high temperature)

① The internal temperature sensor is wrapped and the detection is not allowed or failed.

② The connection interface between the temperature sensor and the circuit board is loosen and falling off, resulting in incorrect monitoring of the internal temperature sensor;

③ The internal temperature sensor is damaged;

④ The motherboard is damaged.

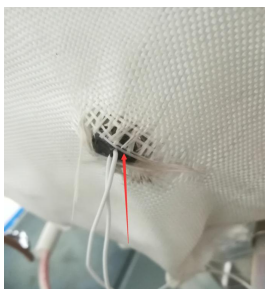
Solution:

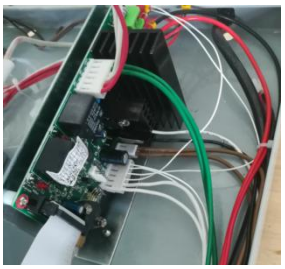
(1) Clean up the sterilizer in the chamber and do not wrap the internal temperature sensor;

(2) Check whether the signal line of the internal temperature sensor is reliably connected to the control motherboard to ensure that the internal temperature sensor is connected to the control motherboard.

(3) Using a multimeter to measure the resistance of the temperature sensor in the pot, referring to the PT1000 table, the abnormal resistance value indicates that the sensor has been short-circuited or damaged and needs to be replaced, as shown in the following figure

(4) If there is no problem above, it is the problem of the circuit board, replace the circuit board.





4. Code Er04: sterilization failed (low temperature)

① The sealing ring of the door body is ejected because of the deformation and ejection of the sealing ring caused by the excessive amount of steam in the working process of the sterilizer.Caused air leakage.

② The internal temperature sensor is wrapped and the detection is not allowed or failed.

③ The connection interface between the temperature sensor and the circuit board is loosen and falling off, resulting in incorrect monitoring of the internal temperature sensor;

④ Internal temperature sensor is damaged;

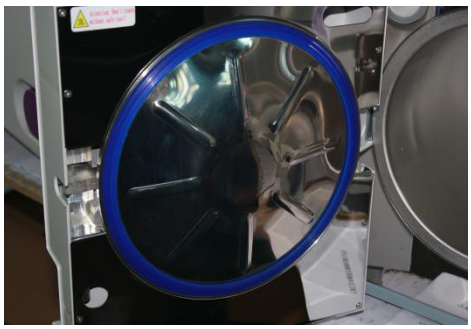
⑤ Solenoid valve or pipeline leakage, constant temperature and constant pressure process of steam out of the solenoid valve or pipeline, can not maintain constant temperature and constant pressure.

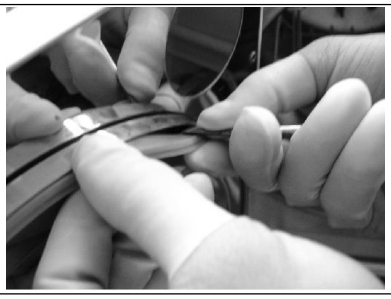
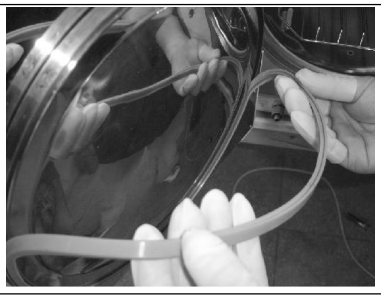
⑥ The motherboard is damaged.

Solution:

(1) The seal ring above the seal cover pop up, pull out the seal ring and reset it and press tight. Or replace the new seal ring directly. The replacement method of the sealing ring is shown in the following figure:

Tools: please prepare a small flat screwdriver and pay attention to the sharp parts of the head.



	
1.Gently press the lip of the seal ring with one hand, and the other handle screwdriver inserted between the sealing ring and slowly turn the sealing ring out。	2.After the sealing ring is turned out, the sealing ring can be pulled out slowly. After the sealing ring is taken out, clean the groove of the packing ring, clean and check the sealing ring for damage. If there is any damage, it is necessary to replace it。

	
3.And after the cleaning is finished, the sealing ring is arranged in the groove of the cylinder body. Note: To insert the seal ring into the groove evenly. Install the four points evenly distributed in the sealing ring before installation, and then insert the other parts into the groove in turn. When the packing is finished, press the sealing ring evenly by hand.	4.Note: when the sealing ring is embedded in the groove, the inner ring of the sealing ring may turn out, and you can carefully press it into the groove with a screwdriver.
图 5	

(2) Do not wrap the internal temperature sensor in the sterilization device in the chamber。

(3) Check whether the signal line of the internal temperature sensor is reliably connected to the control motherboard to ensure that the internal temperature sensor is connected to the control motherboard.

(4) Using multimeter to measure the resistance of temperature sensor in the pot, referring to the PT1000 table, the abnormal resistance value indicates that the sensor has been short-circuited or damaged, which needs to be replaced, as shown in the following figure:

(5) Check the signs of steam and water flow in each line and find out the leakage of solenoid valve or pipe.

The electromagnetic valve is generally a plug in the valve core, and the valve core is taken out for cleaning. If not, replace the corresponding solenoid valve. If the line is leaking, replace a new line.

(6) There is no problem above, it is the problem of the circuit board, replace the circuit board.

5. Code Er05: overtemperature in the chamber.

① Voltage instability;

② The wiring between the internal temperature sensor and the circuit board is loose and shedding.

③ Short circuit or damage to the temperature sensor of the chamber.

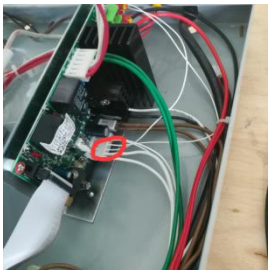
Solution:

(1) First, use multimeter to measure voltage, judge whether the voltage is high and low, whether it is stable or not. If the measurement is more stable, just cool the sterilizer and run it again to see if it can work properly. If it is still unstable, it is necessary to replace the stable power supply or connect with the voltage regulator;

(2) Check whether the signal line of the temperature sensor in the pot is reliably connected to the control motherboard to ensure that the sensor is connected to the control motherboard and is in the state of being turned on.

(3) If the internal temperature sensor has been reliably connected, the internal temperature sensor has been short-circuited or damaged, and the internal temperature sensor needs to be replaced; as shown in the figure:





6. Code Er06: Over-pressure in the chamber.

(1) The internal temperature sensor is wrapped and the detection is not allowed or failed.

(2) The voltage of 220V/110V power supply is on the low side, which is not enough to make the machine run normally.

(3) Normally closed valve blocking, resulting in pressure cannot be released and thus cause overpressure;

(4) The pressure sensor is damaged, resulting in a pressure overpressure due to the sensor's own problems.

Solution:

① The temperature sensor is covered by the sterilization article in the chamber;

② Whether the local voltage is normal or not;

③ Disassemble and check whether there are impurities in the normally closed solenoid valve core and clean them. If the machine still fails to work normally, replace the solenoid valve;

④ Replace the pressure sensor.

7. 7.Code Er07: boost timeout

(1) The leakage of sealing ring is due to the phenomenon of steam leakage caused by excessive amount of steam in the working process of sterilizer, which leads to the weakening of the effect of sealing ring due to deformation or long-term use. It is mainly manifested in the rising process of temperature and pressure, the door body will have water vapor from the dense place, or the ear will have a "hissing" sound.

(2) The steam leakage of the safety valve is due to the loose vibration or other reasons of the safety valve bolt, which leads to the phenomenon of lax sealing and leakage.

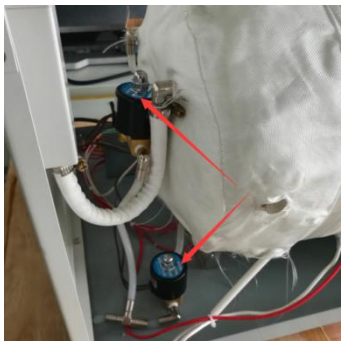
(3) Some or all of the heating rods are damaged, resulting in insufficient temperature.

Solution:

Check if the sealing ring has popped out, if there is a re-position of the sealing ring, press well; confirm that the sealing ring has been pressed, or air leakage, need to replace the sealing ring.

① Check if the safety valve leakage during pressure rise, if air leakage, tighten the screw switch at the top of the safety valve. If there is still steam leakage, the safety valve needs to be replaced.

② Remove the exhaust solenoid valve and the drainage solenoid valve to see if there are impurities in the valve core and clean it if it does not work yet，replace new valve.



③ Use multimeter to test both ends of the heating rod, if the circuit is broken, the heating rod is burned or damaged, and the heating rod needs to be replaced.

8. Code Er08: Open the door while working.

(1) The door is not closed, the door handle is not tightened before use or the pressure in the pot is too great to pop up the door;
(2) The door is forcibly opened in the sterilization operation;
(3) Door detective switch loosening.
(4) Door fretting opening line loosening

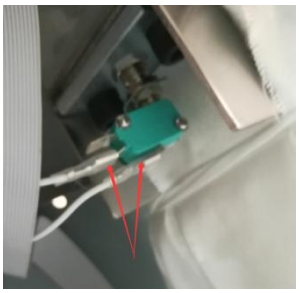
Solution:

① Make sure the doorknob is completely rotated to the end every time the machine runs.


② Do not open the door in order to ensure personal safety

③ Open the door body and check that the fretting switch in the door lock post is loose. If so, open the side plate and fix it with a tool.

④ Open the side plate to check if the fretting switch line is loose or falling off, if it has been re-plugged in



9. Code Er98: was last sterilized and accidentally cut off

During the operation of the sterilizer, the interface displays the "Er98" fault code if there is a fault interruption or a forced exit from the power outage.

Press Start to remove the fault alarm and automatically jump back to the standby interface.

Wait until the Pressure is 0 before opening the door, remove the problem, open and close once, and rerun the sterilization program.

10. Code Er99: Stop program manually.

Long press Start exit manually, E99 interface appears.

Press the 

button to jump back to the standby interface (right above).

2.Other types of problems

1. Display panel does not display

The display panel is located on the right side of the machine and is a display circuit board that displays the work information of the sterilizer. The display panel is not shown after the power supply is turned on, and the key is not responding.

Failure cause:

(1) Fuse burntout
(2) The connection between the display panel and the computer board falls off
(3) Display panel burnt out
(4) Voltage instability
(5) Transformer burnout

Solution:

① Connect the power supply, turn on the power switch and check whether the power switch is on. Check whether the fuse is burned(on the left side of the power switch)and replace the fuse if it is burnt.

② The main control board can be seen by disassembling the right board of the sterilizer with a cross screwdriver. Check to see if the circuit board control line is in good condition with the main control board, if there is loosening or falling off, please reconnect the connection.

③ If there is a "drop" of two sound when the door is closed, and the display panel is not shown, the panel is burned and the display circuit board needs to be replaced.

④ The display panel shows random code or flashes without showing it, which indicates that the user voltage is unstable and can be connected to the voltage regulator or replaced by a stable power supply.

⑤ The transformer burns down and the power switch light is on, but the power display light on the control motherboard is not on and there is no voltage input. Replace the transformer.

Solution:

(1) Connect the power supply, turn on the power switch, and see if the power switch is on. Check if the fuse burns (on the left side of the power switch) and replace the fuse if burned.
(2) Remove the right side panel of the sterilizer with a cross screwdriver to see the main control panel. Check whether the control line of the display circuit board is in good connection with the main control board. If it is loose or fall off, reconnect the wiring.

(3) If there are two drops and drops when opening the door and closing the door, and the display panel is not displayed, it means that the panel is burned and the display circuit board needs to be replaced.

(4) Display panel display random code or only a flash does not show, indicating that the user voltage instability, can be added voltage regulator or replace a stable power supply.

(5) The transformer burns down and the power switch light is on, but the power display light on the control motherboard is not on and there is no voltage input. Replace the transformer.

2. 2.Boot unable to enter program

Sterilizer select a good program, load good items, close the door, press the start key can not enter the program.

"LD" does not flicker and cannot enter the program

① Key failure, no sound, indicating that the display board and control board contact is not good.

② Control motherboard damage

③ The door is not relevant, or the door micro-switch is out of order.

Solution:

(1) Check whether the connection between the display panel and the control motherboard is reliable to ensure that the connection is normal.

(2) Replace the control board

(3) In the hole on the right side of the entry Jack, there is a protruding top rod, press it to see if LD stops flickering. If flicker is stopped, determine the fretting switch problem that needs to be repaired or replaced.

3.The door won't open.

① After sterilization, because the return steam is not complete, the pot will form negative pressure, resulting in the door can not open.

② After sterilization, because the return steam is not complete, the pot will form negative pressure, resulting in the door can not open.

Solution:

(1) Press 

,Switch to OPEN, and in this state, try to open the door until the door opens.

(2) You can also pull the safety valve ring and return steam to the pot.

(3) If the door often does not open after sterilization, clean or replace the return valve.

3.Incomplete drying

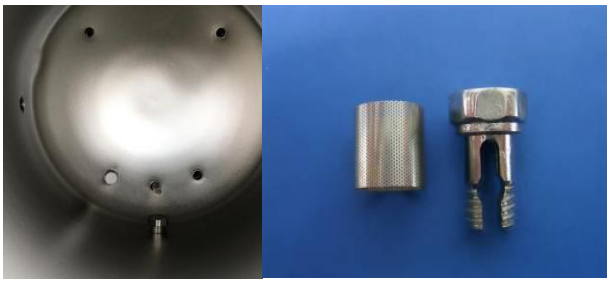
After sterilization, there is amount of water in the chamber.

① The air outlet filter inside the pot body is clogged or not close to the bottom of the pot body. The air hole filter in the pot is an important part of the sterilizer cavity drainage, and its quality directly affects the drying effect of sterilization. If the air hole filter in the pot is clogged, the water can not be discharged, resulting in water accumulation in the pot.

② The sterilizer is not properly placed. If the sterilizer is low before and after high, a large amount of water will be concentrated in the front of the pot, and the filter can not discharge the water, resulting in incomplete drying.

Solution:

(1) Screw out the air outlet filter in the pan, remove it and clean it, and set the filter.



Regular cleaning of the filter is a good guarantee to keep the pot dry.

(2) Place the machine in a horizontal position and adjust the front foot pad of the sterilizer to raise the front so that all the water can be left behind the pot.

4.Drying function setting

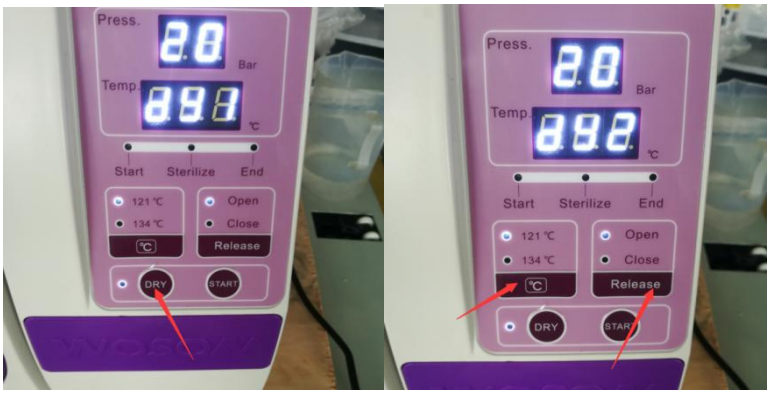
1.the program does not press the DRY lamp to start the automatic drying function before pressing the start key, the program does not have the drying step, after the exhaust steam, the END lamp is often displayed, the pressure window shows the real-time pressure, and the temperature window alternately shows the real-time temperature and " ", indicating that the program is over, you can open the valve and wait 2 minutes for 3 minutes to open the door to remove the item.

2.Before starting sterilization, if the automatic drying function is started by pressing the DRY lamp in advance, the program will automatically complete the default drying time of 20 min after sterilization. In the drying stage, the DRY lamp flicker display, the END lamp flicker display, the pressure window displays the real-time pressure, and the temperature window alternately displays the real-time temperature and " dry".

3.The drying process can be stopped by pressing the DRY lamp in the drying stage.

4.If you need to open the door to dry, just open the door, press the DRY lamp to manually open the door to dry the function, manual drying time default to 20 minutes, drying time can be adjusted, set manual drying time to arrive, the program automatically turn off the drying function.

5.Press the drying key "DRY" for 3 seconds, enter the drying time setting, press the temperature selection key "℃" and the drying key "DRY" to adjust the time, and press the steam release key "Release" to adjust the drying time 1 and 2. Drying time 1 refers to automatic operation drying time, drying time 2 refers to manual operation drying time, press confirm key to save and exit.


Press.
Bar
Temp.
℃
Start
Sterilize
End
121 ℃
134 ℃
Open
Close
℃
Release
DRY
START