



# **Sterilizer**

Model

## **SK 100C/110C**

### **Instruction Manual**

- Second Edition -

- Thank you for purchasing "Sterilizer, SK Series" of Yamato Scientific Co., Ltd.
- To use this unit properly, read this "Instruction Manual" thoroughly before using this unit. Keep this instruction manual around this unit for referring at anytime.



**WARNING!**

Carefully read and thoroughly understand the important warning items described in this manual before using this unit.

**Yamato Scientific Chongqing Co.,Ltd**

|                                                                 |    |
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## Explanation


### MEANING OF ILLUSTRATED SYMBOLS


#### Illustrated Symbols

Various symbols are used in this safety manual in order to use the unit without danger of injury and damage of the unit. A list of problems caused by ignoring the warnings and improper handling is divided as shown below. Be sure that you understand the warnings and cautions in this manual before operating the unit.

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 **WARNING!** If the warning is ignored, there is the danger of a problem that may cause a serious accident or even fatality.

 **CAUTION!** If the caution is ignored, there is the danger of a problem that may cause injury/damage to property or the unit itself.

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#### Meaning of Symbols



This symbol indicates items that urge the warning (including the caution).  
A detailed warning message is shown adjacent to the symbol.



This symbol indicates items that are strictly prohibited.  
A detailed message is shown adjacent to the symbol with specific actions not to perform.



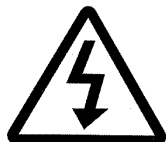
This symbol indicates items that should be always performed.  
A detailed message with instructions is shown adjacent to the symbol.

## Table of Illustrated Symbols

### Warning



Warning,  
generally



Warning,  
high voltage



Warning,  
high temperature



Warning,  
drive train



Warning,  
explosive

### Caution



Caution,  
generally



Caution,  
electrical shock



Caution,  
scald



Caution,  
no road heating



Caution,  
not to drench



Caution,  
water only



Caution,  
deadly poison

### Prohibit



Prohibit,  
generally



Prohibit,  
inflammable



Prohibit,  
to disassemble



Prohibit,  
to touch

### Compulsion



Compulsion,  
generally



Compulsion,  
connect to the  
grounding  
terminal



Compulsion,  
install on a flat  
surface



Compulsion,  
disconnect the  
power plug



Compulsion,  
periodical  
inspection

### Fundamental Matters of "WARNING!" and "CAUTION!"

#### **WARNING!**

##### **Do not use this unit in an area where there is flammable or explosive gas**

Never use this unit in an area where there is flammable or explosive gas. This unit is not explosion-proof. An arc may be generated when the power switch is turned on or off, and fire/explosion may result. (Refer to page 24 "List of Dangerous Substances".)

##### **Always ground this unit**

Always ground this unit on the power equipment side in order to avoid electrical shock due to a power surge.

##### **If a problem occurs**

If smoke or strange odor should come out of this unit for some reason, turn off the circuit breaker right away, and then disconnect the power plug or power terminal. Immediately contact a service technician for inspection. If this procedure is not followed, fire or electrical shock may result. Never perform repair work yourself, since it is dangerous and not recommended.

##### **Do not use the power cord if it is bundled or tangled**

Do not use the power cord if it is bundled or tangled. If it is used in this manner, it can overheat and fire may be caused.

##### **Do not process, bend, wring, or stretch the power cord forcibly**

Do not process, bend, wring, or stretch the power cord forcibly. Fire or electrical shock may result.

##### **Substances that can not be used**

Never use explosive substances, flammable substances and substances that include explosive or flammable ingredients in this unit. Explosion or fire may occur. (Refer to page 24 "List of Dangerous Substances".)

##### **Do not disassemble or modify this unit**

Do not disassemble or modify this unit. Fire or electrical shock or failure may be caused.

##### **Do not get close to the vapor outlet / Do not block the outlet**

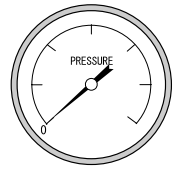
The vapor outlet is provided on the left face of equipment. Do not put your hands or face close to the outlet. Do not block the outlet. A burn injury or equipment failure may result in.

### Fundamental Matters of "WARNING!" and "CAUTION!"

#### **CAUTION!**

##### **When opening the cover...**

Make sure that the pressure of equipment has decreased to 0(zero) MPa before opening the cover. Generally the cover does not open due to the safety lock mechanism under the high pressure condition. The high-temperature and pressure vapor blows out if the cover is forced open under high pressure, which may cause a burn injury. A large amount of vapor blows out from inside of the chamber when opening the cover just after the sterilizing operation has completed (when the temperature inside the chamber is high). Do not put your hands and face close to the cover.



##### **When draining water...**

Make sure that the pressure of equipment has decreased to 0(zero) MPa before draining the sterilizing water. The hot water blows out if the valve is opened under high pressure. The sterilizing water remains very hot just after the sterilizing operation has completed even the pressure reading is 0(zero) MPa. Drain the water after it is sufficiently cooled down.

##### **Do not touch the hot section**

Some sections on the equipment such as the circumference of cover or drain bottle are very hot during or just after the operation of equipment. Do not touch these sections to avoid burn injury.

##### **When taking the sterile samples from the chamber...**

Sufficiently remove the vapor inside the chamber before taking the sterile samples from the chamber. Wear heat-resistant leather gloves to take them from the chamber to protect your hands from high-temperature samples.

##### **Do not touch the heat releasing outlet**

Do not directly touch the heat releasing outlet located around the outer covering. The vapor may blow out from the safety valve by an accident during sterilizing operation. Do not block the outlet.

##### **During a thunder storm**

During a thunderstorm, turn off the power key immediately, then turn off the circuit breaker and the main power. If this procedure is not followed, fire or electrical shock may be caused.

## Requirements for Installation

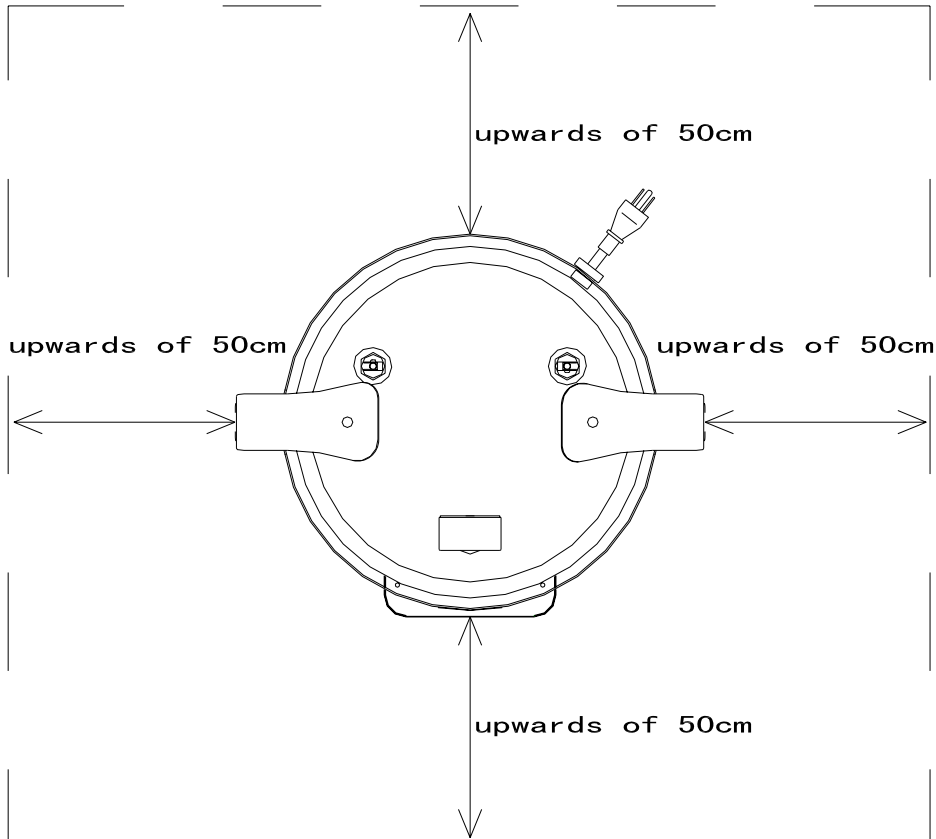
### 1. Choose a proper place for installation



- Do not install this unit in a place where:
  - Rough or dirty surface.
  - Flammable gas or corrosive gas is generated.
  - Ambient temperature  $35^{\circ}\text{C}$  and above or  $5^{\circ}\text{C}$  and below.
  - Ambient temperature fluctuates violently.
  - There is direct sunlight.
  - There is excessive humidity and dust.
  - There is a constant vibration.
  - Not horizontal surface.
  - The power source is instable.



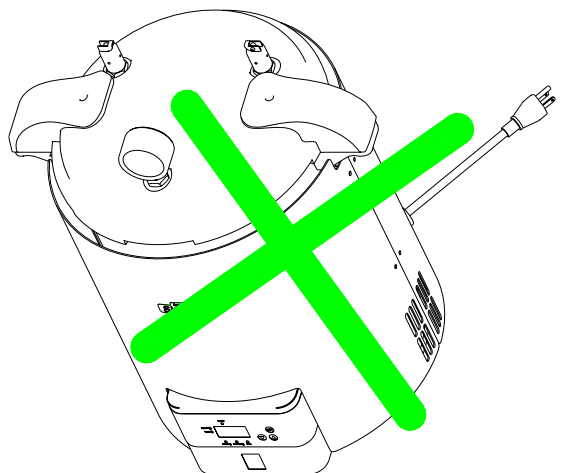
- Install this unit on a stable place with the space as shown below.



### 2. Installation on horizontal surface



- Use the equipment on the horizontal and firm place to keep the water inside the chamber horizontal. If the equipment tilts and the heater appears from the water surface, the temperature on the area above the water rises and a heater failure or operation stop due to water level detector function may occur.
- The weight of main unit is approximately 14kg. Carry and install the equipment carefully by two or more persons.



## Requirements for Installation

### 3. Before/after installing



- It may cause injury to a person if this unit falls down or moves by the earthquake and the impact. etc..To prevent, take measures that the unit cannot fall down, and not install to busy place.

### 4. Ventilate the equipment sufficiently

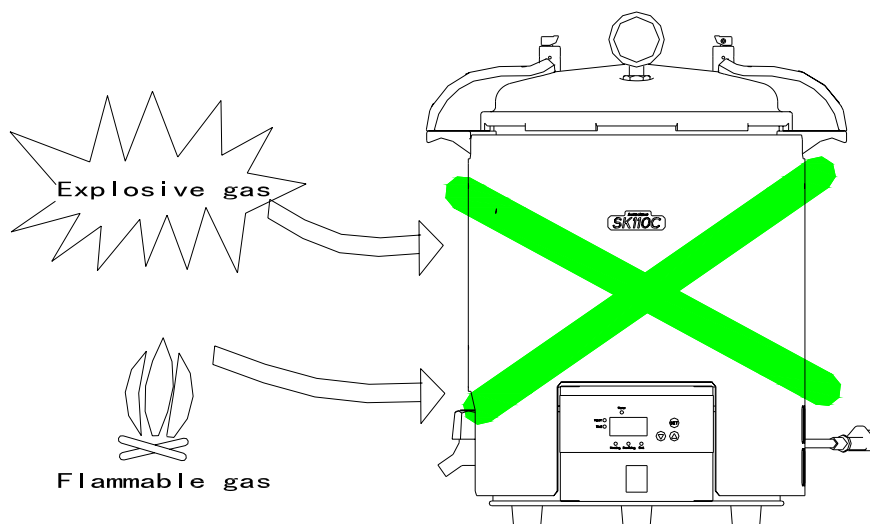


- Do not block the heat releasing outlets on the side face and back face of equipment during operation. The temperature inside the equipment rises, which may cause the deterioration or failure of equipment, accident, or fire disaster.

### 5. Do not use this unit in an area where there is flammable or explosive gas



- Never use this unit in an area where there is flammable or explosive gas. This unit is not explosion-proof. An arc may be generated when the power switch is turned ON or OFF, and fire/explosion may result.
- To know about flammable or explosive gas, refer to page 24 "List of Dangerous Substances".



### 6. Choose a correct power distribution board or receptacle



- Choose a correct power distribution board or receptacle that meets the unit's rated electric capacity.
- Operating voltage range for respective equipment models are as follows.  
models: AC100 to 120V      SK110C models: AC200 to 240V

**Electric capacity:** SK100C: AC100V-120V 9A-12A, SK110C: AC200V-240V 4.5A-6A

#### NOTE)

There could be the case that the unit does not run even after turning ON the power. Inspect whether the voltage of the main power is lowered than the specified value, or whether other device(s) uses the same power line of this unit. If the phenomena might be found, change the power line of this unit to the other power line.

- Starburst connection with a branching receptacle or extended wiring with a cord reel lowers electrical power voltage, which may cause the degradation of refrigeration capability.
- Connect the unit to only the power supply. If it is connected to a gas pipe, water pipe or telephone line, an accident or malfunction may result.



## Requirements for Installation

### 7. Handling of power cord



- Do not entangle the power cord. This will cause overheating and possibly a fire.
- Do not bend or twist the power cord, or apply excessive tension to it. This may cause a fire and electrical shock.
- Do not lay the power cord under a desk or chair, and do not allow it to be pinched in order to prevent it from being damaged and to avoid a fire or electrical shock.
- Keep the power cord away from any heating equipment such as a room heater. The cord's insulation may melt and cause a fire or electrical shock.



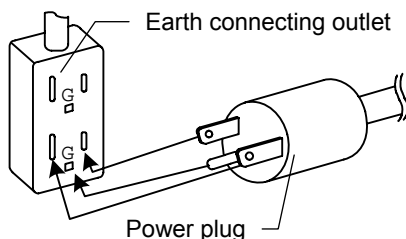
- If the power cord becomes damaged (wiring exposed, breakage, etc.), immediately turn off the power at the rear of this unit and shut off the main supply power. Then contact your nearest dealer for replacement of the power cord. Leaving it may cause a fire or electrical shock.
- Connect the power plug to the receptacle which is supplied appropriate power and voltage.

### 8. Always ground this unit



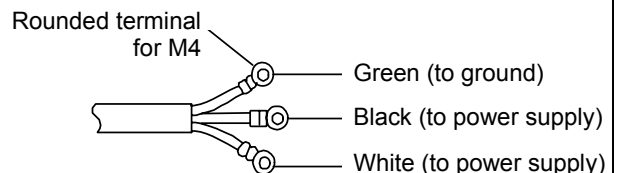
- Be sure to connect the earth wire (the green cable of power cord) to the grounding conductor or ground terminal to prevent accidents caused by electric leakage.
- Do not connect the earth wire to gas or water pipes. If not, fire disaster may be caused.
- Do not connect the earth wire to the ground for telephone wire or lightning conductor. If not, fire disaster or electric shock may be caused.
- Please consult your local electrical contractor for power connecting work.
- Do not use a branching receptacle, which may cause the heat generation.
- The D class earth connecting works is required if no ground terminal is provided. In this case, consult with the selling office where you purchased or our sales office.
- Securely connect it to the switchboard or outlet.

SK100C



An earth connecting outlet is recommended to be used.

SK110C



These models do not include the power plug. Correctly connect the ground to fit with the power supply facility to be connected.

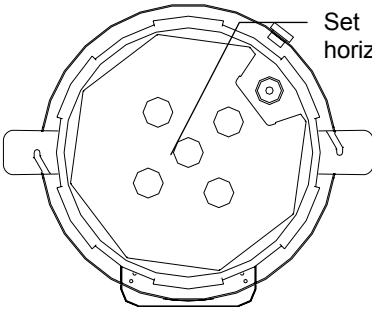
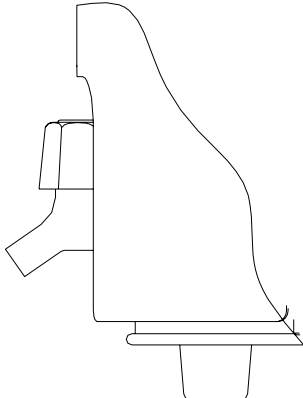
### 9. Connect the power cord paying attention to the color of each core wire



- When connecting the power cord, do check the breaker on the electric power equipment be "OFF". Note that SK100C and SK110C do not equip with the power plug. Select and connect the appropriate plug or terminal corresponding to the power capacity that is adjusted to the status of the power supply equipment side.

| Core Wire Color | Interior Wiring   |
|-----------------|-------------------|
| Black           | Power Supply Side |
| White           | Power Supply Side |
| Green           | Ground Wire Side  |

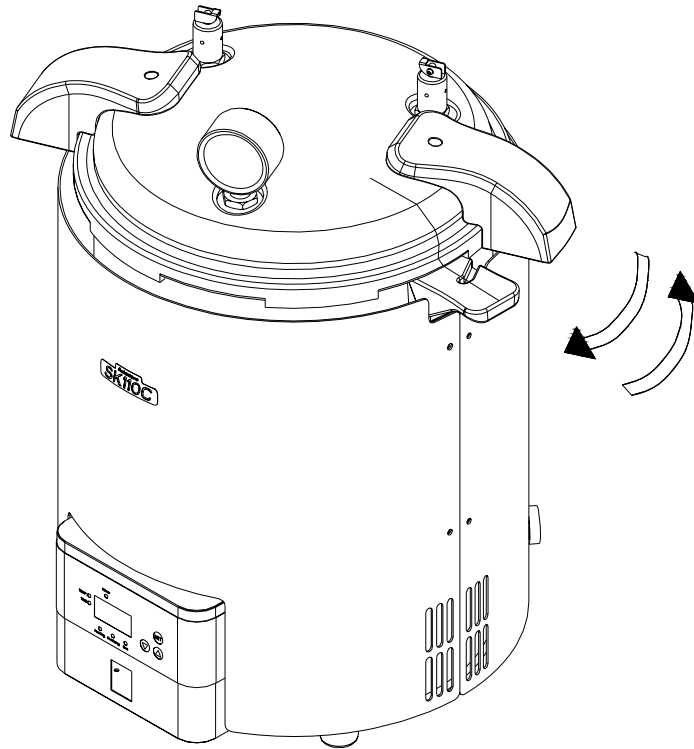
## Installation Procedure

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                            |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1 | <p><b>Set the attached drainboard onto the bottom surface inside the chamber</b></p> <ul style="list-style-type: none"> <li>The drainboard stabilizes the sterile samples inside the chamber as well as protects the heater and sensor. Make sure to set it.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  <p>Set the drainboard horizontally.</p> |
| 2 | <p><b>Close the drain valve</b></p> <ul style="list-style-type: none"> <li>Close the drain valve at the bottom on the left side face of main unit. Water leak occurs if not fully closed, which may cause the burn injury or no-load (water) operation. The drain valve and lead it to the draining site.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                         |
| 3 | <p><b>Pour water into the chamber</b></p> <ul style="list-style-type: none"> <li>Before setting the sterile samples, pour water into the chamber to the water level gauge (notch) position.</li> <li>Insufficient water may cause the no-load (water) operation. Check the water level every time before operation. Refill it before the level becomes too low. Water is required to be poured at dissolution operation, as well as sterilizing operation.</li> <li>When the water level lowers, the equipment cuts off the heater. Depending on the conditions of equipment, however, the detection requires too much time, which may cause the heater deterioration. Refill water before the water level becomes too low.</li> </ul> <p>Refer to the right table for the quantity of water to be refilled.</p>                                                                                                                                                                       |                                                                                                                            |
| 4 | <p><b>Use distilled or purified water for sterilizing water</b></p> <ul style="list-style-type: none"> <li>Fill distilled or purified water inside the chamber. Tap water may be used. Calculus generate inside the chamber when tap water is used. Frequent cleaning is therefore required.</li> <li>Do not use well water. It may cause the corrosion or dirt inside the chamber.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                            |
| 5 | <p><b>Set the sterile samples</b></p> <ul style="list-style-type: none"> <li>Set the samples to the chamber, putting them into the attached rack or cast (sold separately).</li> <li>Put the sample or sterilization bag into the chamber so they should not block or cover the sensor inside the chamber, exhaust outlet and end connection to pressure gauge. If they are blocked or covered, the vapor cannot be discharged and the equipment cannot be operated correctly. Do not spill the samples when taking them out from/putting them into the chamber. The failure in piping system, bad smell or dirt may result in.</li> <li>In case liquid such as medicinal solution or medium is sterilized, the amount of liquid should be 60% or less of the capacity of container. They may be boiled over if too much quantity is supplied.</li> <li>Widely open the opening of sterilization bag when used. If it is closed, the samples are insufficiently sterilized.</li> </ul> |                                                                                                                            |

## Installation Procedure

### 6 Close the door before operation

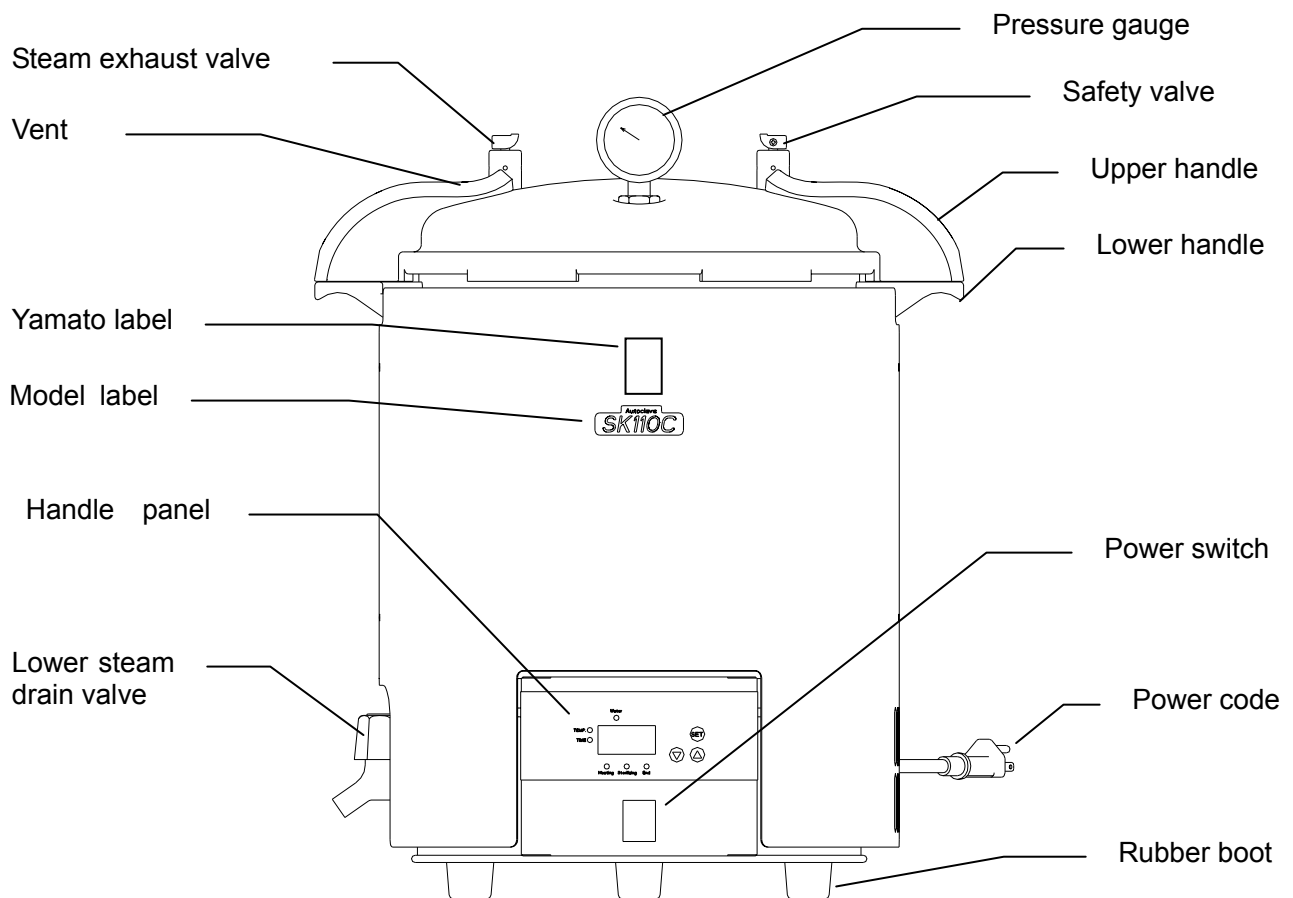
- place the sterilizing drum with properly-piled items into the pot with the positioning mark on the pot lid to be aligned to the center of the lower handle. Press the lid gently by hand and turn it clockwise for the upper and lower handles to close completely and the safety lock to remain in open position, and the safety lock will lock the upper and lower handles automatically when the pressure in pot rises.



- The lock lever on the cover is held by the hook and does not move when the cover remains open.
- Fully close the cover and slide the lock lever on the cover to the left side. If it is closed inappropriately, the vapor blows out from the inside, which may cause a burn injury.
- Do not press the hook and operate the lock lever for purposes other than maintenance of equipment.

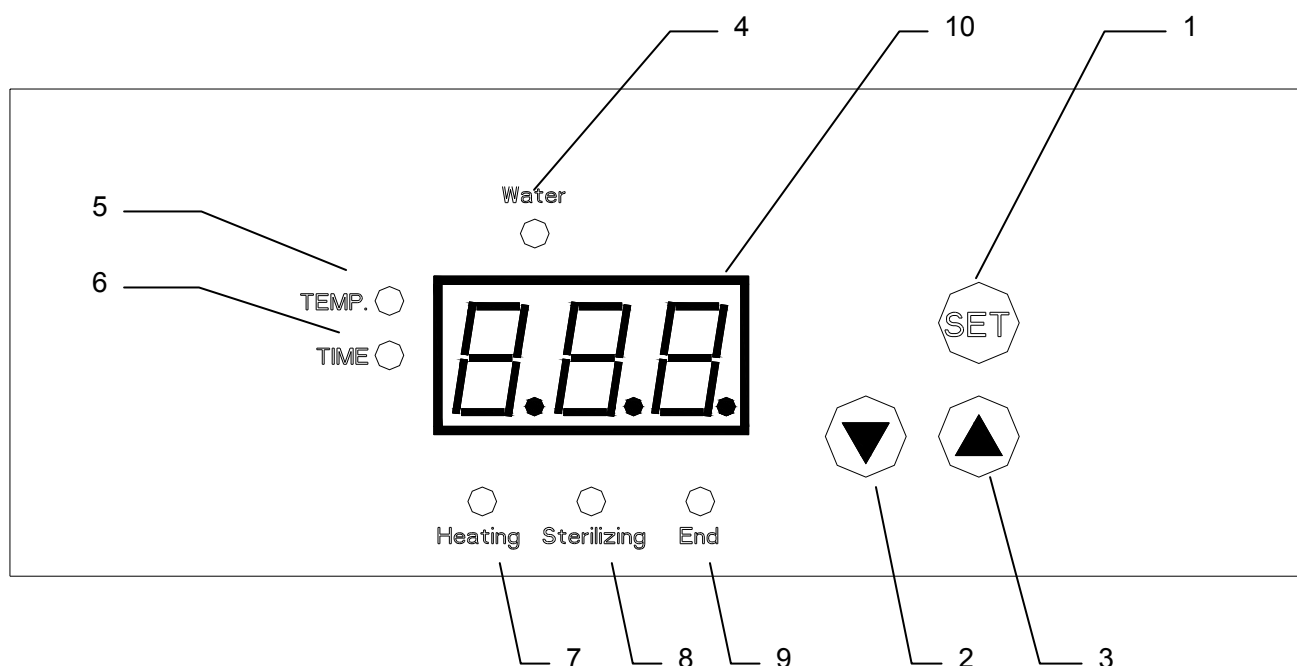
## Description and Function of Each Part

### Main Unit



## Description and Function of Each Part

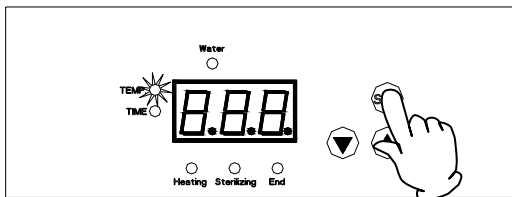
### Control Panel (Keys)



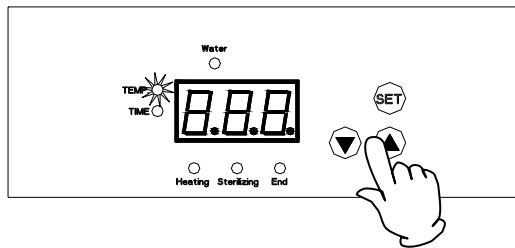
| No. | Name                     | Function                                         |
|-----|--------------------------|--------------------------------------------------|
| 1   | SET key                  | This key is used to select temperature mode.     |
| 2   | ▲ key                    | This key is used to select temperature parameter |
| 3   | ▼ key                    | This key is used to select temperature parameter |
| 4   | Water lever lamp flicker | the water shortage alarm                         |
| 5   | Temperature lamp         | the temperature parameter.                       |
| 6   | Time lamp                | the time parameter.                              |
| 7   | Heating lamp             | indicates the heater is heating                  |
| 8   | Sterilizing lamp         | preservation and sterilization                   |
| 9   | End lamp                 | the sterilizing operation will complete.         |
| 10  | Time display             | The display sterilizing time                     |

## Apparatus/Liquid Sterilization Course

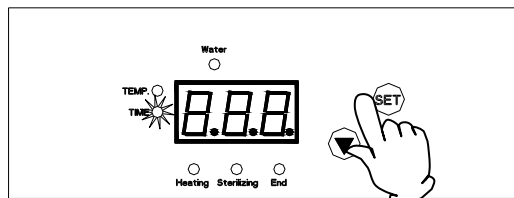
Follow the procedures below for the setting of apparatus sterilization and liquid sterilization courses.



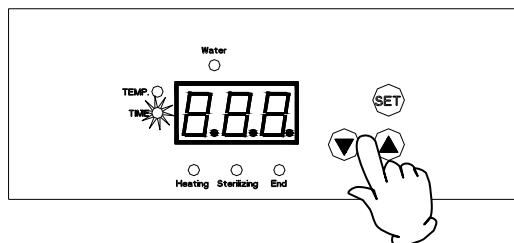
1. Press **SET** key to shift the function light to the position of sterilizing temperature, and now the display window will indicate the temperature mode. The sterilizing temperature may be set as required.



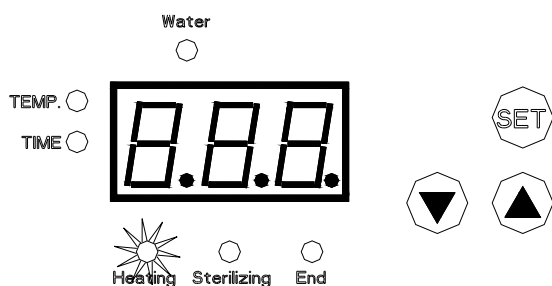
2. Press **▲▼** key to raise the temperature and press to lower it. After adjusting to the required temperature, press another time to confirm the new setting and complete the temperature setting procedures.



3. press **SET** key to shift the function lamp to the position of sterilizing time, and the time mode will be displayed. The sterilizing time may be set as required.



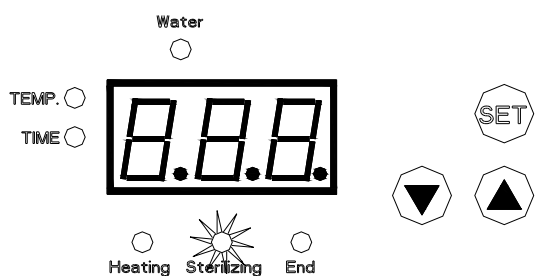
4. Press **▲** key to increase the time and press **▼** key to reduce it. After adjusting to the required time, press **SET** key another time to confirm the new setting and complete the time setting procedures. The sterilizing time may be set with reference to "Sterilizing Parameters"



5. the running light being on indicates the heater is heating, and with the rise of temperature inside the evaporation pot, the cold air inside the pot will be released from the vent automatically. When the pressure inside the pot  $\geq 0.028\text{Mpa}$ , the safety lock will close automatically to lock the upper and lower handles for safety, and now the hand in the pressure gauge and the digits in the display window will go up gradually with heating to indicate the pressure and temperature inside the pot.

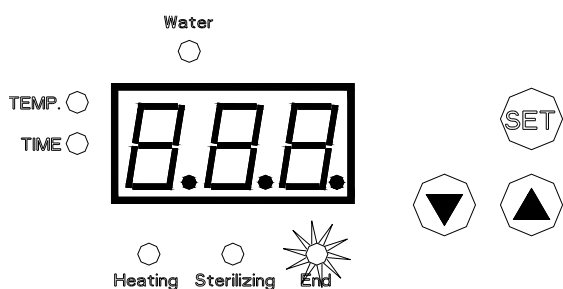
**Note:**The outside surface of this unit may get hot to the touch contact between unprotected skin and outsidessurface of this unit during operation may cause burns.Always use protective gear to shield operator from hot surfaces.

## Apparatus/Liquid Sterilization Course

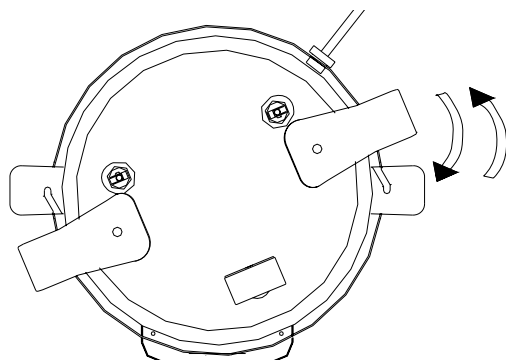


6. when the pressure and temperature reach the set scope, the running light (sterilizing light) will be on and the time will start working for effective heat preservation and sterilization. "Sterilizing Parameters Table" may be referenced for sterilizing time.

**Note: After sterilizing, [End] display, the drain valve shall keep open, from which traces of steam will be exhausted to discharge the cold air in the pot, and the sample will be dried and sterilized completely.**



7. When countdown for sterilizing finishes, the running light (finish lamp) will be on. After the buzzer rings a few times, the sterilizer will stop working automatically, and the sterilizing operation will complete.



8. Opening the lid: After sterilizing finishes, the power shall be switched off. As the liquor and utensils, etc. may spill or be broken, they shall be cooling off naturally after heating stops, and only after the steam exhaust valve releases the steam till the pressure gauge indicates zero, may the upper handle be turned counterclockwise for the tip of the positioning mark to point to center of the lower handle in order to open the lid.

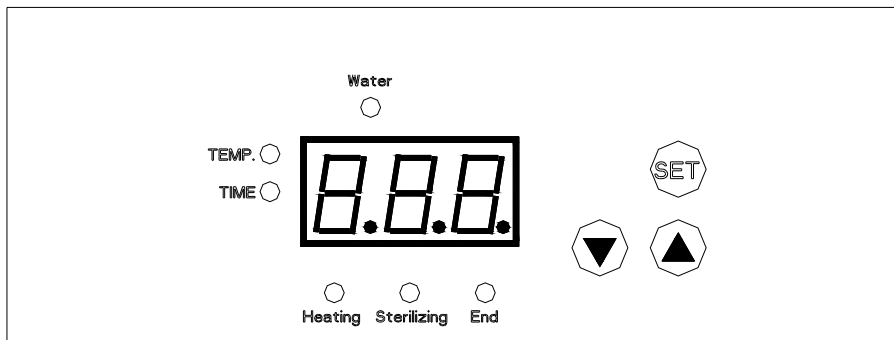
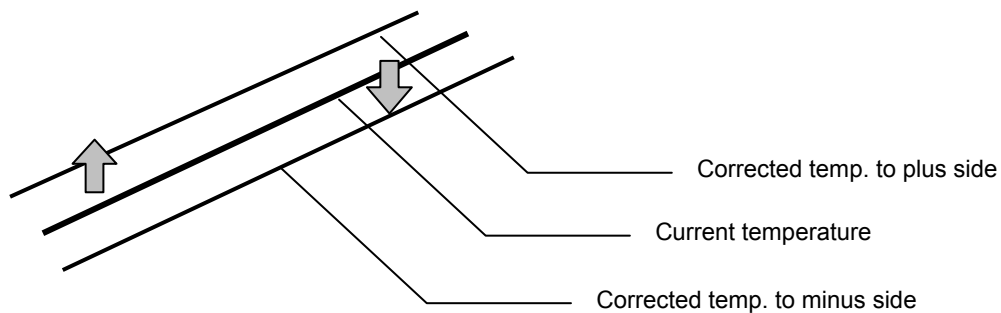
**Note: the lid may only be opened after sterilizing finishes, the remaining steam is released till the pressure gauge indicates zero.**

## Sterilizing Parameters

| Item to be sterilized | Necessary heat preservation time | Relative steam temperature ( °C ) | Relative steam pressure ( MPa ) |
|-----------------------|----------------------------------|-----------------------------------|---------------------------------|
| Rubber                | 15                               | 121                               | 0.1-0.105                       |
| Dressings             | 30-45                            | 121-126                           | 0.105-0.14                      |
| Utensils              | 15                               | 121-126                           | 0.105-0.14                      |
| Apparatus             | 10                               | 121-126                           | 0.105-0.14                      |
| Liquor                | 20-40                            | 121-126                           | 0.105-0.14                      |
| Dishware              | 20                               | 121-126                           | 0.105-0.14                      |

### Use calibration offset function

Calibration offset is a function which corrects the difference between the temperature in furnace and that of controller (sensor temperature) if arises. The function parallel corrects the difference either to the plus or minus side within the whole temperature range of unit. The function can be set or cancelled by the **(SET)** key.



- ① Start operation with the target setting temperature. Check the temperature in furnace (temperature of sample) with a thermograph after it is stabilized.
  - ② Check the difference between the setting temperature and that in furnace (temperature of sample).
  - ③ Press the **(SET)** key. Select the character "SC", which indicates the calibration offset, using the "▲▼", and then press the **(SET)** key.
  - ④ Input the difference using the "▲▼" and then press the **(SET)** key. This completes the setting.
- ❖ The setting range of offset correction temperature is +20°C to plus side and -20°C to minus side respectively.



### WARNING

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#### If a problem occurs



If smoke or strange odor should come out of this unit for some reason, turn off the power key right away, and then turn off the circuit breaker and the main power. Immediately contact a service technician for inspection. If this procedure is not followed, fire or electrical shock may result. Never perform repair work yourself, since it is dangerous and not recommended.

#### Measure for flammability and handling of flammable solvent



This unit is not designed as the explosion-proof construction. Pay special attention to the handling of the sample to be handled with this unit on the consumption with the explosive material, flammable material, and similar ones. The flammable material may be vaporized by leaving it at the temperature higher than room temperature, and could cause the fire or explosion. When handling such material, provide ventilation with enough before the operation. (Refer to page 24 "List of Dangerous Substances".)

#### Do not modify



Do not modify this unit. An accident, malfunction, electric shock or fire may result.

### CAUTION



#### During a thunder storm



During a thunderstorm, turn off the power key immediately, then turn off the circuit breaker and the main power. If this procedure is not followed, fire or electrical shock may be caused.

#### Do not touch the hot section



The temperature on the cover and top board on the chamber are very hot during operation or just after operation is completed. Do not touch these sections to avoid a burn injury.

#### When opening the cover...



Make sure that the pressure gauge reading has decreased to 0(zero) MPa before opening the cover. Open the cover slow carefully. The high-temperature and pressure vapor blows out if the cover is opened during high pressure.

#### When draining water...



The water in the chamber is very hot just after operation is completed. Be careful not to get a burn injury. Drain the water after the water is sufficiently cooled down. Do not drain water during operation. The hot water blows out if the drain valve is opened while the pressure is increasing.

#### Do not damage the packing on the cover or flange on the chamber



Damage or dirt on these areas may cause the vapor leakage, which may be the cause of burn injury. Keep these sections always clean. Do not damage them with the rack when taking out and putting in the sterile samples. The packing degrades wit time. It must be replaced if vapor leak occurs frequently. In this case consult with the selling office where you purchased or our sales office.

#### Replace the packing early



The packing is a consumable. If it shows the sign of damage or hardening, replace it early. Please consult with the selling office where you purchased or our sales office for the replacement of packing.

#### Do not perform procedures other than described in this document



Do not perform procedures other than described in this document. Otherwise an unexpected accident may occur.

### Daily Inspection and Maintenance

---

For the safety use of this unit, please perform the daily inspection and maintenance without fail. Using the city water to this unit might attach dirt. Do inspect and maintain this point while performing daily inspection and maintenance.

#### **WARNING!**

- Disconnect the power cable from the power source when doing an inspection or maintenance unless needed.
- Perform the daily inspection and maintenance after returning the temperature of this unit to the normal one.
- Do not disassemble this unit.

#### **CAUTION!**

- Use a well-drained soft cloth to wipe dirt on this unit. Do not use benzene, thinner or cleanser for wiping. Do not scrub this unit. Deformation, deterioration or color change may result in.

#### **Cleaning inside the chamber**

- Use soft sponge to clean inside the chamber not to damage the surface inside the chamber. Do not remove the filter on the bottom of chamber at cleaning. If it is removed, the pipe fitting is clogged with dirt inside the chamber.
- The heater and sensor are provided on the bottom inside the chamber. Make sure not to bend or damage the filter.

**For any questions, contact the dealer who you purchased this unit from, or the nearest sales division in our company.**

### When not using this unit for long term / When disposing

#### **CAUTION!**

##### When not using this unit for long term...

- Turn off the power and disconnect the power cord.

#### **WARNING!**

##### When disposing...

- Keep out of reach of children.
- Consult with the specialized disposal services when disposing the equipment.

#### ***Environmental protection should be considered***

We request you to disassemble this unit as possible and recycle the reusable parts considering to the environmental protection. The feature components of this unit and materials used are listed below.

| Component Name          | Material                                                             |
|-------------------------|----------------------------------------------------------------------|
| <b>Exterior Parts</b>   |                                                                      |
| Outer covering          | Bonderizing steel plate baked with melamine resin coating, ABS resin |
| Chamber, Cover          | Stainless steel SUS304                                               |
| Packing                 | Silicon rubber                                                       |
| Plates                  | PET resin film                                                       |
| <b>Electrical Parts</b> |                                                                      |
| Switches, Relay         | Resin, copper                                                        |
| Circuit boards          | Composite of glass fiber and other                                   |
| Heater                  | SUS pipe heater                                                      |
| Power cord              | Synthetic rubber coated wiring materials, copper and nickel          |

## Safety Device and Error Code

### Analysis of Common Failures

| Failure                                                                      | Cause                                                                                                             | Solution                                                                                                                     |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 1. Not heating after power is on                                             | 1. abnormal input power supply<br>2. heater being damaged<br>3. incorrect temperature adjustment and time setting | 1. to supply the power according to the nameplate<br>2. to replace the heater<br>3. to reset after switching off the machine |
| 2. Steam ejecting from the safety valve after temperature rises.             | 1. the upper and lower handle failing to reach proper positions<br>2. the safety lock pin being jammed            | 1. to keep the upper and lower handles contacting properly<br>2. to move the safety pin                                      |
| 3. Safety valve failing to work after exceeding the parameters               | 1. the safety valve being blocked<br>2. the safety valve unable to work properly                                  | 1. to unclog the safety valve<br>2. to replace the safety valve with qualified one                                           |
| 4. The pressure gauge failing to return to zero under non-pressure condition | 1. the pressure gauge unable to work properly                                                                     | 1. to replace the pressure gauge with qualified one                                                                          |
| 5. Steam leaking from between the lid and the pot after pressure rises       | 1. the seal being not properly placed<br>2. the seal being damaged                                                | 1. to move the seal to a proper position<br>2. to replace the seal with a qualified one                                      |

**In the case if the error other than listed above occurred, turn off the power switch and primary power source immediately. Contact the shop of your purchase or nearest Yamato Scientific Service Office.**

### In Case of Request for Repair

If the failure occurs, stop the operation, turn OFF the power switch, and unplug the power plug. Please contact the sales agency that this unit was purchased, or the Yamato Scientific's sales office.

#### < Check following items before contact >

- ◆ Model Name of Product
  - ◆ Production Number
  - ◆ Purchase Date
  - ◆ About Trouble (in detail as possible)
- } See the production plate attached to this unit.

### Minimum Retention Period of Performance Parts for Repair

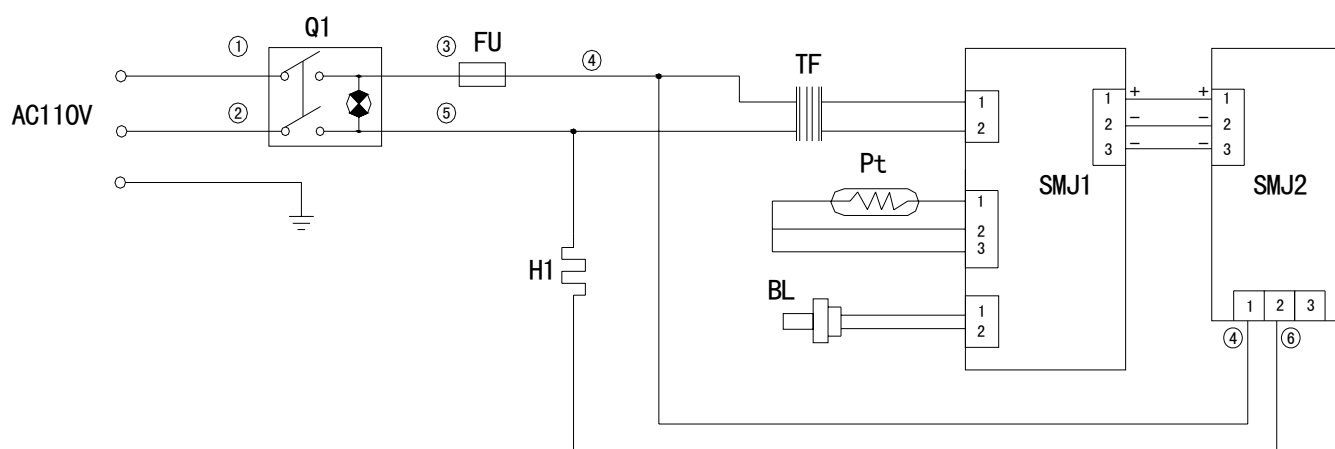
The minimum retention period of performance parts for repair of this unit is 7 years after discontinuance of this unit.

The "performance part for repair" is the part that is required to maintain this unit.

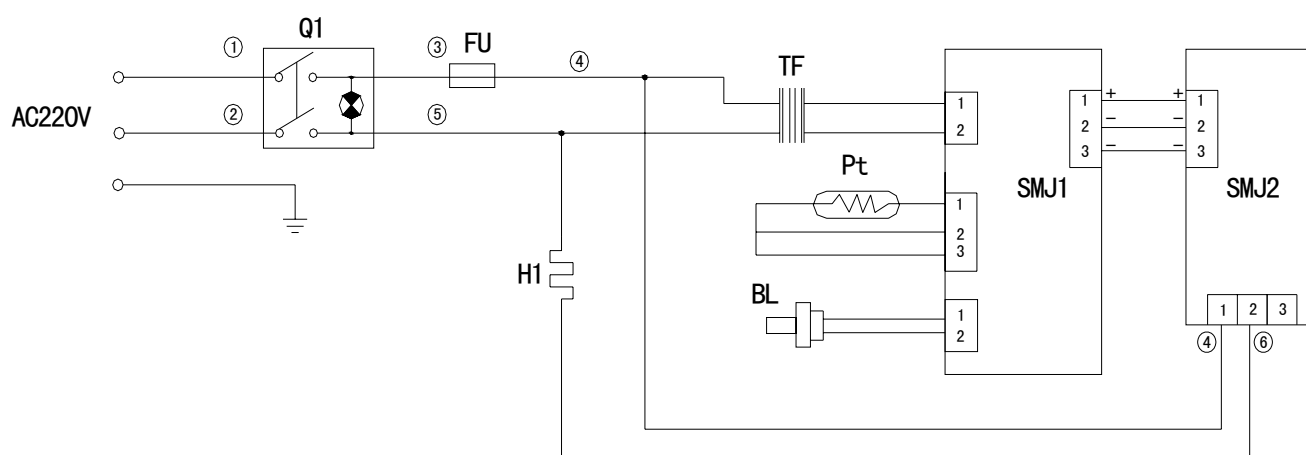
|                          |                                                     |                                                                            |                      |
|--------------------------|-----------------------------------------------------|----------------------------------------------------------------------------|----------------------|
| Product name             |                                                     | Sterilizer                                                                 |                      |
| Model                    |                                                     | SK100C                                                                     | SK110C               |
| Performance              | Temperature control range                           | 50 to 126°C (sterilization )                                               |                      |
|                          | Maximum Operational Pressure                        | 0.165MPa                                                                   |                      |
|                          | Operational ambient temperature                     | 5°C~35°C                                                                   |                      |
| Chamber part             | Heater                                              | 110V /1100W                                                                | 220V /1100W          |
|                          | Exhaust valve                                       | —                                                                          |                      |
|                          | liquid level sensor                                 | —                                                                          |                      |
| Configurations           | Temperature control system                          | PID control by microcomputer                                               |                      |
|                          | Setting/display method                              | Digital setting by UP/DOWN key / Digital display                           |                      |
|                          | Timer                                               | Range: 0 to 999min                                                         |                      |
|                          | Operation functions                                 | Fixed temperature operation procedure                                      |                      |
| Safety devices           |                                                     | Water level detection (liquid expansion method), safety valve (0.165MPa)   |                      |
| Pressure vessel standard |                                                     | Small-sized pressure vessel (notification of installation is not required) |                      |
| Standard                 | Effective dimensions of chamber (Diameter×Depth mm) | 296×245                                                                    |                      |
|                          | External dimensions* (W×D×H mm)                     | 440×440×545                                                                |                      |
|                          | Effective capacity of chamber                       | 18L                                                                        |                      |
|                          | Weight                                              | 14 kg                                                                      |                      |
|                          | Power supply (50/60Hz)                              | AC 100V-120V 9A-12A                                                        | AC 200V-240V 4.5A-6A |
| Accessories              |                                                     | Rack×1 OSM-70 (dia262×depth204mm)                                          |                      |

\*: The external dimensions does not include the dimension of projection areas.

## SK100C



## SK110C



| Symbol | Part name   | Symbol | Part name                |
|--------|-------------|--------|--------------------------|
| Q1     | breaker     | CONT   | PLANAR and display board |
| FU     | shape fuse  | PIO    | Power board              |
| TF     | transformer | Pt     | Sensor for chamber       |
| H1     | Heater      | BL     | liquid level sensor      |



## Replacement Parts Table

### Common parts

| Part Name              | Code No.   | Specification | Manufacturer      |
|------------------------|------------|---------------|-------------------|
| Switch                 | SJA245873  | 15A/250V      | Yamato Scientific |
| Fuse                   | SJK06492   | 15A           | Yamato Scientific |
| SSR board              | SJA245874  | SMJ2(2000W)   | Yamato Scientific |
| Display circuit board  | SJA245875  | SMJ1          | Yamato Scientific |
| Temperature sensor     | SJA245876  | Pt100Ω        | Yamato Scientific |
| Water Level Switch     | SJA245877  | Fast-45lss    | Yamato Scientific |
| Packing                | SJA245878  |               | Yamato Scientific |
| Pressure Gauge         | SJA245879  |               | Yamato Scientific |
| Pressure relief valve  | SJA2458710 |               |                   |
| Pressure Control valve | SJA2458711 |               | Yamato Scientific |
| Drain Valve            | A990100235 |               | Yamato Scientific |
| Terminal block         | SJA06114   | T56-STAO-6P   | Yamato Scientific |

### SK100C

| Part Name   | Code No.  | Specification | Manufacturer      |
|-------------|-----------|---------------|-------------------|
| Heater      | SJA245870 | 1100W/110V    | Yamato Scientific |
| Transformer | SJA245871 | AC110V        | Yamato Scientific |

### SK110C

| Part Name   | Code No.  | Specification | Manufacturer      |
|-------------|-----------|---------------|-------------------|
| Heater      | SJA245860 | 1100W/220V    | Yamato Scientific |
| Transformer | SJA245861 | AC220V        | Yamato Scientific |

## List of Dangerous Substances



Never use explosive substances, flammable substances and substances that include explosive or flammable ingredients in this unit.

### EXPLOSIVE

|                   |                                                                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EXPLOSIVE:</b> | Ethylene glycol dinitrate (nitro glycol), Glycerin trinitrate (nitroglycerine), Cellulose nitrate (nitrocellulose), and other explosive nitrate esters |
|                   | Trinitrobenzene, Trinitrotoluene, Trinitrophenol (picric acid), and other explosive nitro compounds                                                    |
|                   | Acetyl hydroperoxide (peracetic acid), Methyl ethyl ketone peroxide, Benzyl peroxide, and other organic peroxides                                      |

### FLAMMABLE

|                            |                                                                                                                                                                                                                                                                                 |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IGNITING:</b>           | Lithium (metal), Potassium (metal), Sodium (metal), Yellow phosphorus, Phosphorus sulfide, Red phosphorus, Celluloid compounds, Calcium carbide, Lime phosphate, Magnesium (powder), Aluminum (powder), Powder of metals other than magnesium and aluminum, Sodium hydrosulfite |
| <b>OXIDIZING:</b>          | Potassium chlorate, Sodium chlorate, Ammonium chlorate, and other chlorate                                                                                                                                                                                                      |
|                            | Potassium perchlorate, Sodium perchlorate, Ammonium perchlorate, and other perchlorate                                                                                                                                                                                          |
|                            | Potassium peroxide, Sodium peroxide, Barium peroxide, and other inorganic peroxide                                                                                                                                                                                              |
|                            | Potassium nitrate, Sodium nitrate, Ammonium nitrate, and other nitrate                                                                                                                                                                                                          |
|                            | Sodium chlorite and other chlorites                                                                                                                                                                                                                                             |
| <b>INFLAMMABLE LIQUID:</b> | Calcium hypochlorite and other hypochlorites                                                                                                                                                                                                                                    |
|                            | Ethyl ether, Gasoline, Acetaldehyde, Propylene chloride, Carbon disulfide, and other flammable substances having a flash point of lower than -30°C                                                                                                                              |
|                            | Normal hexane, ethylene oxide, acetone, benzene, methyl ethyl ketone, and other flammable substances having a flash point of -30°C or higher but lower than 0°C                                                                                                                 |
|                            | Methanol, Ethanol, Xylene, Pentyl acetate (amyl acetate), and other flammable substances having a flash point of 0°C or higher but lower than 30°C                                                                                                                              |
| <b>FLAMMABLE GAS:</b>      | Kerosene, Light oil (gas oil), Oil of turpentine, Isopentyl alcohol (isoamyl alcohol), Acetic acid, and other flammable substances having a flash point of 30°C or higher but lower than 65°C                                                                                   |
|                            | Hydrogen, Acetylene, Ethylene, Methane, Propane, Butane, and other flammable substances which assume a gaseous state at 15°C and 1 atm                                                                                                                                          |

(Source: Appendix Table 1 of Article 6 of the Industrial Safety and Health Order in Japan)

## **Responsibility**

Please follow the instructions in this document when using this unit. Yamato Scientific has no responsibility for the accidents or breakdown of device if it is used with a failure to comply. Never conduct what this document forbids. Unexpected accidents or breakdown may result in.

## **Note**

- ◆ The contents of this document may be changed in future without notice.
- ◆ Any books with missing pages or disorderly binding may be replaced.

**Instruction Manual for  
Sterilizer  
Model SK100C/110C  
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