WATER BATH
BM100
BM200
(100V)

First Edition

- Thank you for your Yamato Scientific BM series Water Bath purchase.
- For proper use of this unit, please read the instruction manual and warranty thoroughly before operation. Keep both for any future references.

Read and apprehend important warnings in this instruction manual prior to use.

Table of Contents

1. Specifications

Model		BM100	BM200
Temp. range during operation		Room temp. +5℃ ~ 95℃ *1	
Temp. setting range		0℃ ~ 100℃	
Accuracy of temp. adjustment *2		±2℃ at 60℃	
Control system		ON/OFF control	
Set-up system		Analog set-up	
Display system		Thermometer	
Operation function		Operation at fixed point	
Extra function		No extra function	
Thermoregulator		Liquid-operated thermoregulator	
Heater	Material	SUS316 pipe heater	
	Capacity	500W	1kW
Power switch		Paddle switch	
Power lamp		Lit when power is on	
Others		-	Drain (with plug)
		-	Service outlet for RE
Safety device		Protection from overcurrent (fuse), Thermofuse	
Tank	Capacity	4 ml	7 ml
	Dimension *3	Φ200×Depth 120 (mm)	Φ240×Depth 150 (mm)
External dimensions (W×D×H) *3		240×300×150 (mm)	310×360×230 (mm)
Weight		7.7lb (3.5kg)	13.3lb (6kg)
Required power source		AC100V±10% 50/60Hz 5 A	AC100V±10% 50/60Hz 10A
Liquid used		Water	
Standard accessories		●Bar Thermometer (-10℃～110℃ with immersion line) 1 ●Fuse (BM100 7A, BM200 15A) 1 ●Instruction manual 1 ●Warranty 1	

*1 In case of unloaded operation of bath only. The maximum temperature varies on circumstances and operational conditions.

*2 It shows the performance under rated power supply at the room temperature of 23℃±5℃ and with humidity of 65%±20%.

*3 It does not include projection parts.

2. Safety Information

Safety Symbols

Graphic indications

This instruction manual and our products apply various indications for safety. Ignoring these indications can cause such situations as listed below. Read and understand the following warning and caution signs in this manual prior to use.

WARNING Indicates the possibility of serious or fatal injury (Note 1).

CAUTION Indicates the possibility of injury (Note 2) or damage (Note 3) to the equipment.

(Note 1) Serious injury : Bodily harm by electric shock, bone fracture or poisoning which may require hospitalization.

(Note 2) Injury : Bodily harm by electric shock, bone fracture or poisoning which may not require hospitalization.

(Note 3) Damage : Any damage on equipment, facility, structure, etc.

Meaning of Graphic Indications

	Shows warning or caution. Specific contents are described aside each sign.
	Shows users important information not to do. Specific contents are described aside each sign.
	Shows users important information sure to do. Specific contents are described aside each sign.

Do not use this unit for any purpose other than its intended use, described in this manual.

Do not use this unit in flammable or explosive gas environments.

This unit is not explosion proof. Never use this unit in flammable or explosive gas environments.

Never fail to ground the unit.

This unit uses a 3-core power cord (including ground wire). Be sure to ground the unit for safety.

Do not use this unit if a malfunction occurs.

If smoke or any strange odor should disburse from this unit, turn the power off immediately and pull out the main power cord. Then contact Yamato Scientific. Neglecting this procedure can result in fire or electric shock. Never try repairing the unit yourself.

Do not bundle the power cord.

Overheat or fire can occur if the power cord is bundled or if an object is on the cord.

Do not damage the power cord.

Forcible bending, pulling wrenching or extending the power cord can cause fire or electric shock.

Do not use any explosive or flammable heat medium.

Be sure to use water as heat medium.
Never use any explosive or flammable substances or such compounds as a heat medium which could cause an explosion or fire.

Avoid water contact.

To avoid electric leak or shock, avoid direct contact with water.

Do not heat with low water.

If you operate this unit with low water, fire can be caused by overheating.

Do not disassemble or remodel the unit

To avoid fire or electric shock, never try disassemble this unit.

If it begins to thunder…

If it begins to thunder, turn both the breaker and the main power off. Neglecting this procedure can result in fire, electric shock or other troubles due to thunderbolts.

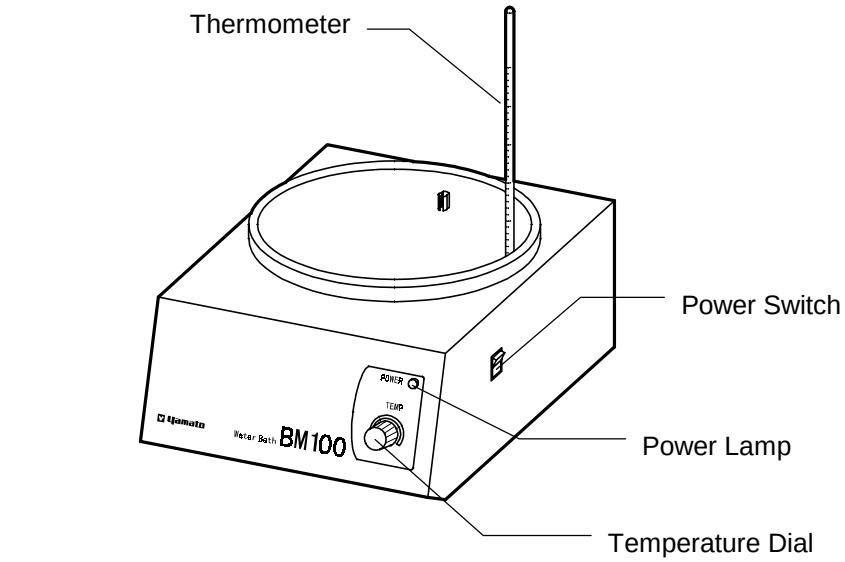
Indication of temperature and operational range.

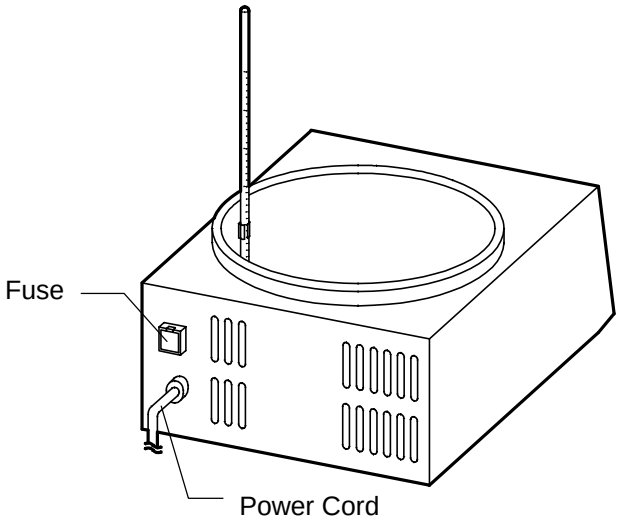
This unit is not equipped with a stirring function. Therefore, the maximum temperature varies according to the environments or operational conditions. This unit does not necessarily reach the maximum operational temperature under such environments as low temperature, windy or highland areas.

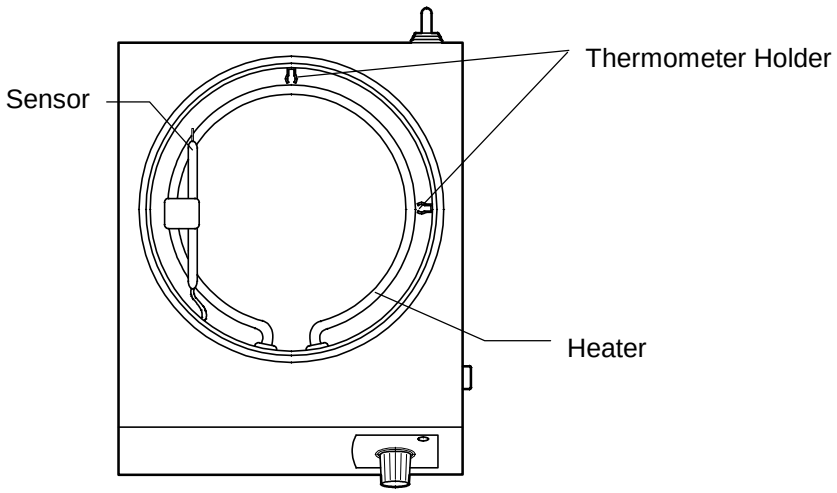
Hazardous material are listed below. Never use these materials as samples or heat media.

Explosive	Explosive Substance	Nitroglycol, Nitroglycerin, Nitrocellulose, and other explosive nitric esters.
		Trinitrobenzene, Trinitrotoluene, Picric acid, and other explosive nitro compounds.
		Peracetic acid, Methyl ethyl ketone peroxide, Benzoyl peroxide, and other organic peroxides.
		Sodium azide, and other metallic azides
Flammable	Combustible Substance	Metallic lithium, Metallic potassium, Metallic sodium, Yellow phosphorus, Phosphorus sulfide, Red phosphorus, Celluloid, Calcium carbide, Lime phosphate, Magnesium powder, Aluminum powder, and other combustible metal powders and sodium dithionite (hydrosulfite).
	Oxidant	Potassium chlorate, Sodium chlorate, Ammonium chlorate, and other chlorates.
		Potassium perchlorate, Sodium perchlorate, Ammonia perchlorate, and other perchlorates.
		Potassium peroxide, Sodium peroxide, Barium peroxide, and other inorganic peroxides.
		Potassium nitrate, Sodium nitrate, Ammonia nitrate, and other nitrates.
		Sodium chlorite and other chlorites.
		Calcium hypochlorite and other hypochlorites.
	Ignitable Substance	Ethyl ether, Gasoline, Acetaldehyde, Propylene Oxide, Carbon disulfide, and other flammable substances with a flash point below minus 30ºC.
		Normal hexane, Ethylene oxide, Acetone, Benzene, Methyl ethyl ketone, and other flammable substances with a flash point between minus 30ºC and 0^{o}C.
		Methanol, Ethanol, Xylene, Pentyl acetate (amyl acetate), and other flammable substance with a flash point between 0ºC and 30ºC.
		Kerosene, Light oil, Turpentine oil, Isoamyl alcohol, Acetic acid, and other flammable substances with a flash point between 30ºC and 65ºC
	Combustible Gas	Hydrogen, Acetylene, Ethylene, Methane, Ethane, Propane, Butane and other flammable gas at 15℃ degree and under 1 atmosphere.

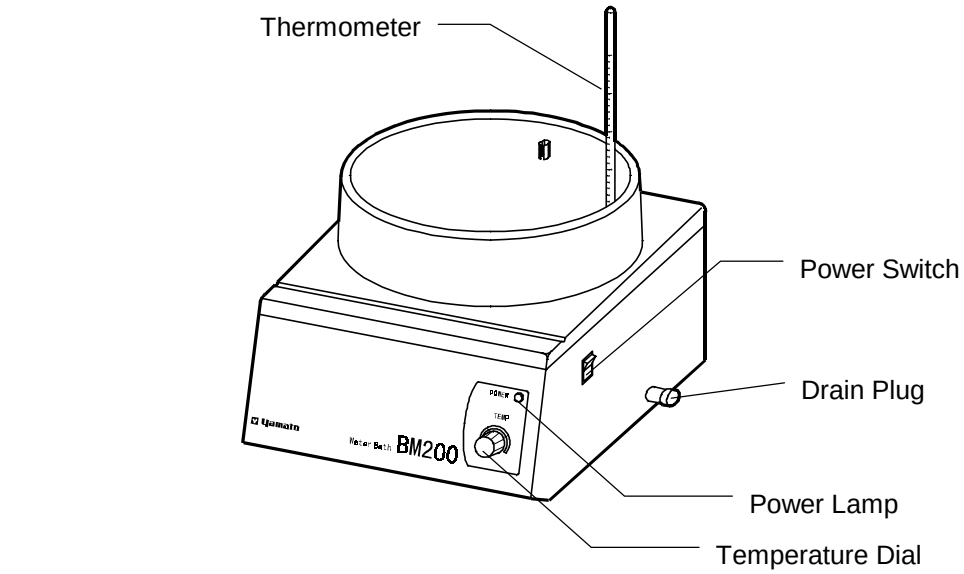
BM100

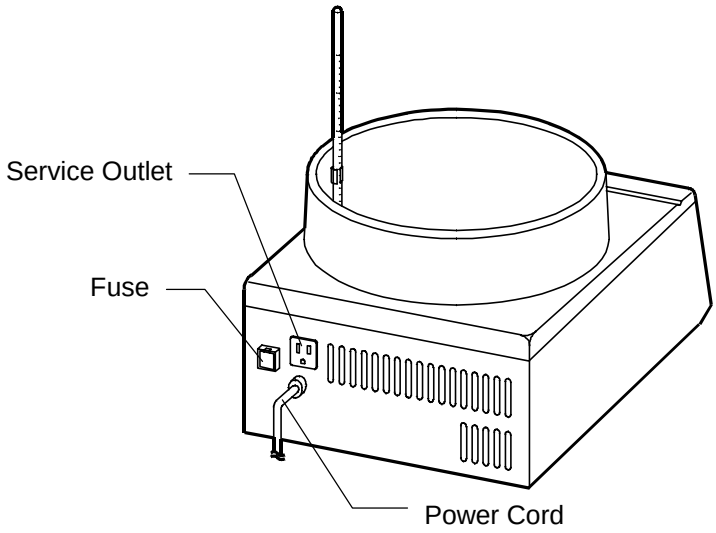

Thermometer
Power Switch
POWER
TEMP
Yamato
Water Bath BM100
Power Lamp
Temperature Dial

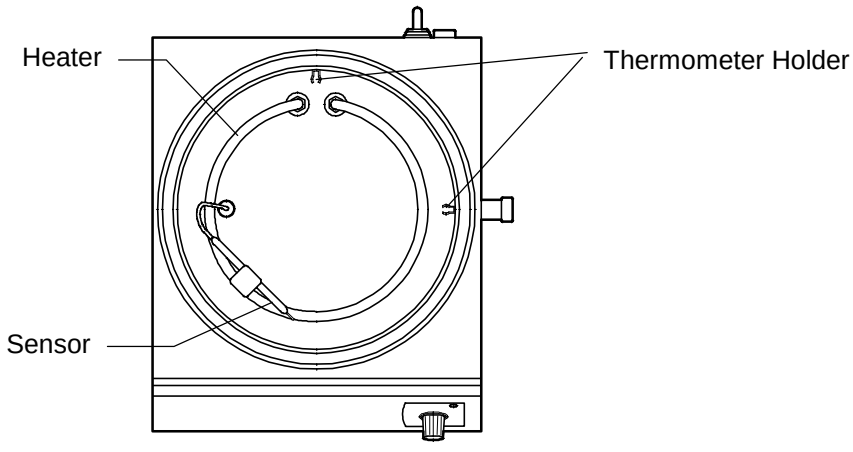

Fuse
Power Cord


Thermometer Holder
Sensor
Heater

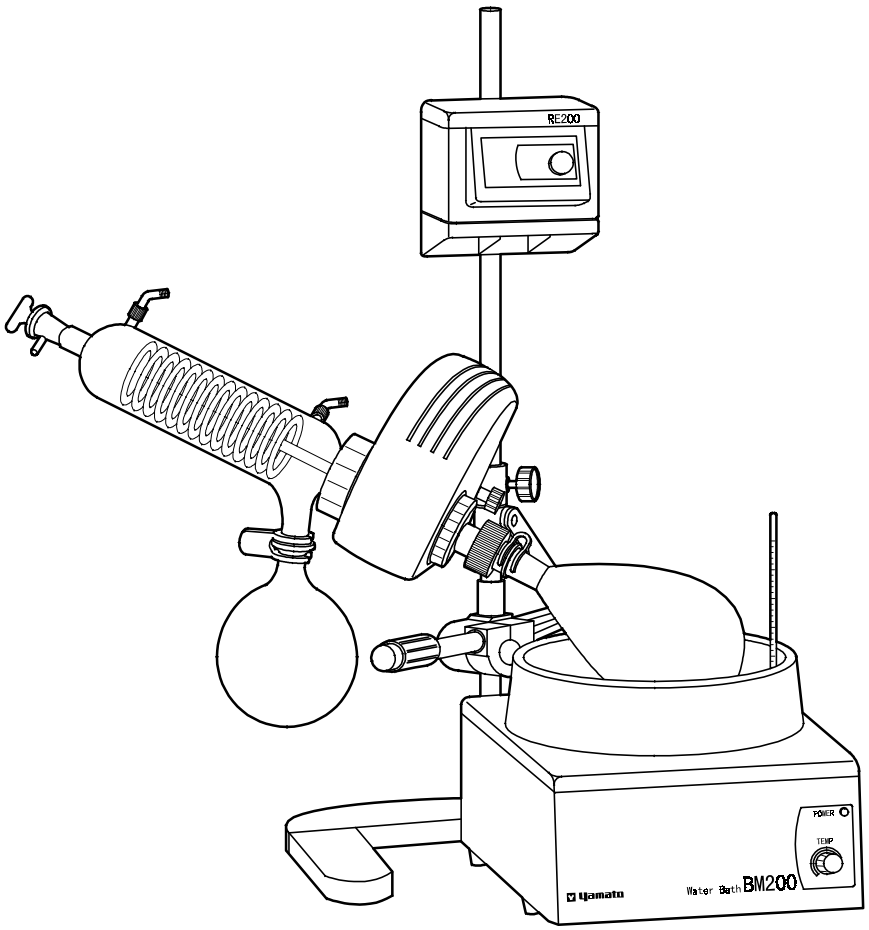
BM200


Thermometer
Power Switch
Drain Plug
Power Lamp
Temperature Dial
BM200

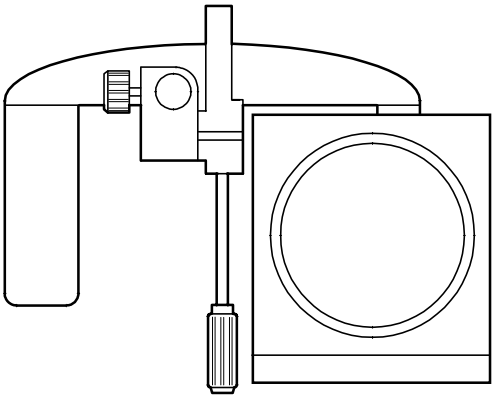

Service Outlet
Fuse
Power Cord


Heater
Thermometer Holder
Sensor

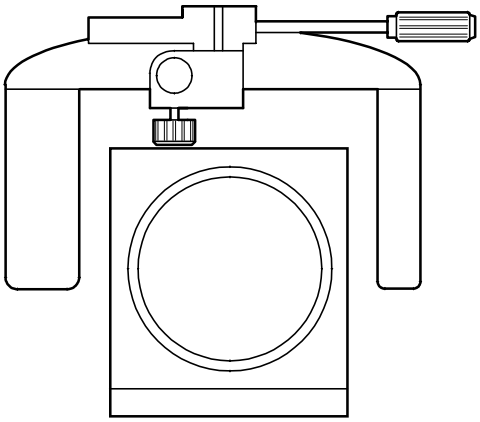
Combination with RE200



Drawing 1



Drawing 2

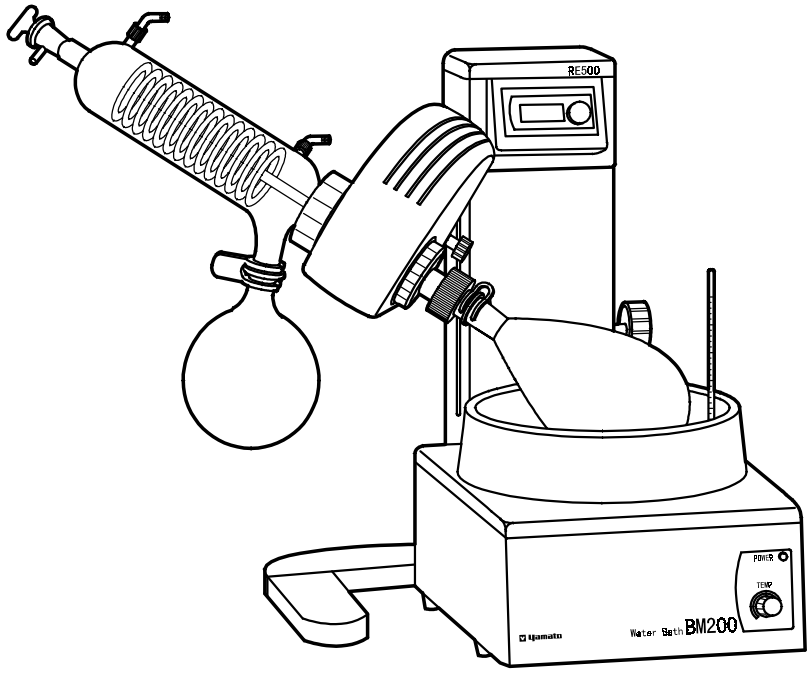


According to the position or space to set the bath and the body, the arm jack can be set in the front (drawing 1)or on the right side (drawing 2) as shown above.

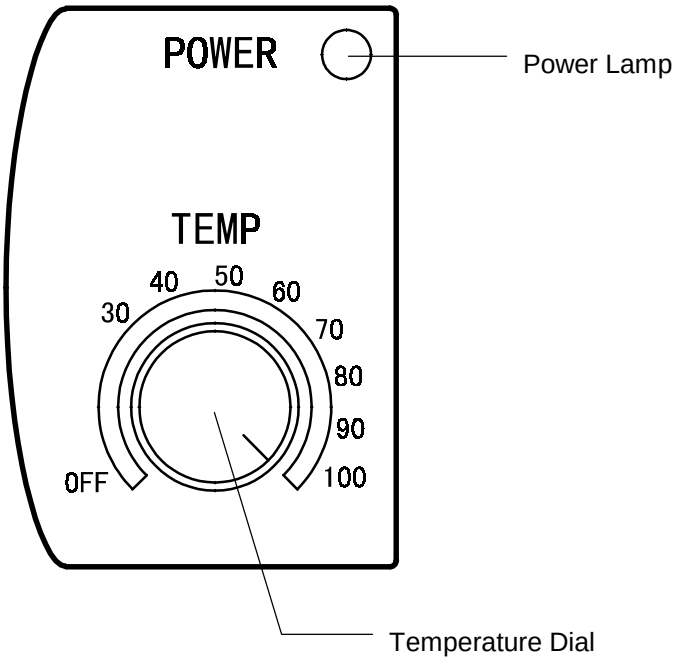
Identification of Parts

Sample : Combined with RE500

Combination with RE500



How to operate



1. Pour adequate water (3000ml for BM100, 5000ml for BM200) into the tank, and place a thermometer in the holder.

2. Connect the unit securely to a power source with AC100V. Never fail to ground the unit. Then set the temperature dial to the temperature to operate and turn on the power switch. The power lamp is lit when the power is on.

3. The temperature scale shows an approximate figure. When the temperature rises close to the set point, read the thermometer to adjust the temperature. Since there are some differences from the set point the first time, check if the current temperature accords with the degree to operate.

This unit does not have a stirring function and the tank temperature varies. We recommend you to use any stirrer (our Lab. Stirrer etc.,) together with this unit.

Operation after Restoration from Power Failure

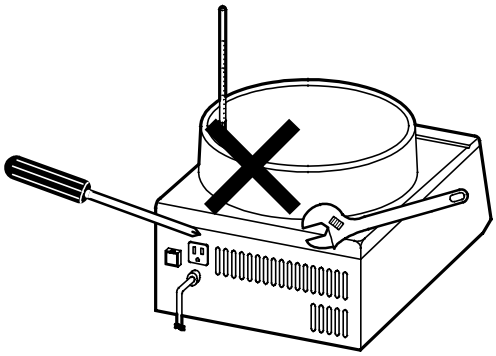
After restoration from power failure, the unit will re-start operation up to the temperature last set.

5. Maintenance

Daily maintenance

Do not disjoint the unit

Never remodel the unit. There are some high-voltage areas inside the unit, which could cause electric shock. Request Yamato Scientific for internal check, adjustment or repair.



For maintenance

For your safety, be sure to turn the power switch off (on the right side) and pull the power cord out for maintenance. You must wait until the inside temperature of the unit goes down to normal. Wipe off any or excess dirt on the packing and the operation panel with a soft dry cloth. Do not use benzine, thinner or cleanser to wipe or scrub with a brush. This could cause change in shape, quality and color.

When you do not use the unit for a long period of time, or dispose of it

When the unit is not in use for a long period of time.

Turn the power switch off and pull the power cord out for safety, when the unit is not use for a long period of time. Be sure to drain the tank.

When you dispose of the unit

Do not leave the unit in child playground etc., on disposal.

When you suspect “trouble”?

Situation	Make Sure
The power lamp on the panel is not lit when the power switch is on.	●If the power cord is connected firmly to an outlet ●If there is no power failure ●If the fuse blows
The temperature does not rise or is different from the set value when the power lamp is on.	●If the temperature setting knob is fixed tightly

If you have any question, contact Yamato Scientific.

6. After Sale Service and Warranty

Request for Repair

When you request repair

If any troubles should occur, stop the operation immediately, turn the power off, pull the power cord out and contact Yamato Scientific's Technical Service Department.

Necessary information

- Model Number
- Serial Number
- Date of Purchase
- Distributor Name
- Information on difficulties

Be sure to show the warranty when the service man visits you.

Warranty

- Keep your warranty card for future references. Check the name of the distributor, date of purchase and any other contents of warranty.

- The terms of the warranty is one year limited commencing the date of purchase. Repair is made without charge according to the contents of warranty.

- As for repair after expiration of the warranty period, consult the seller or our service office. As long as the function of the unit is maintained by repair, upon your request, we will repair it with charge.

Minimum period to keep repair parts in stock

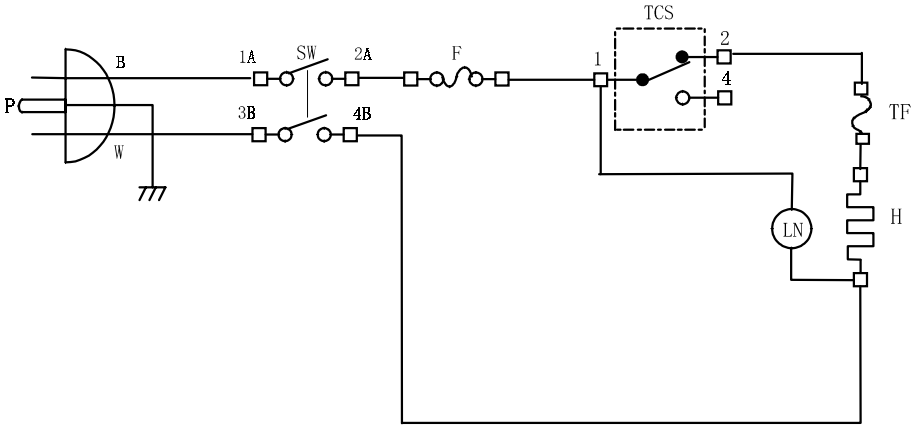
Minimum period to keep repair-parts in stock is 7 years after the production stop. The repair parts means any necessary parts to maintain the performance of the unit.

7. List of Exchange Parts

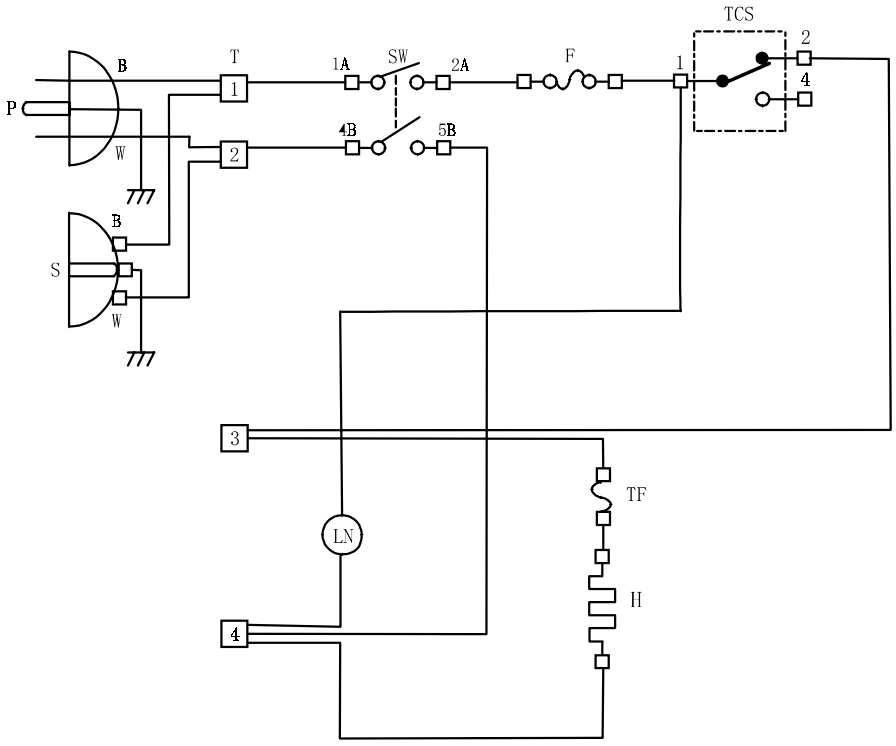
Name of Parts	Parts Number	Application	Specification
Fuse	2100010013	BM100	F7161 Φ6.4×30 125V 7A
Fuse	2100060001	BM200	MF61NR15 Φ6.35×31.8 250V 15A
Thermometer	5020016003	BM100/200	
Drain Plug	7320016005	BM200	
O-Ring	4210026020	BM200	P12.5 Baiton

8. Wiring Diagram

BM100



BM200



Symbol	Name of Parts	Symbol	Name of Parts
F	Fuse	S	Service Outlet
H	Heater	SW	Power Switch
LN	Power Lamp	T	Terminal
P	Power Plug	TCS	Thermoregulator
TF	Thermofuse		