Sturdy
Wellell Group

Super Deluxe Series
TABLETOP AUTOCLAVE/STERILIZER

PRESENTATION :

Class B Autoclave (Sterilizer)

Super Deluxe series is a versatile and flexible desktop sterilizer with chamber volumes of 24 / 40 / 50 liters and a powerful built-in vacuum pump that effectively removes air from the chamber, ensuring user safety and convenience while pursuing powerful sterilization functions.

FEATURES :

- Pressure & Temperature Control
- Pre & Post Vacuum
- Auto Door Lock
- Digital Recorder (SD Card) & Printer
- RS-232 Connect to PC
- Digital Calibration
- Diversified Sterilization Programs
- B. D. , Helix, Leakage Test Programs
- Overheat & Overpressure Protection
- Service Remind

STANDARDS & DIRECTIVES :

* CE 93/42/EEC (MDD; European Directive for Medical Devices)
* 2014/68/EU (PED; Pressure Equipment Directive)
* EN 13060 (Small Steam Sterilizers)
* EN/IEC 61010-1 (Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use)
* EN/IEC 61010-2-040 (Safety requirements for sterilizers used to treat medical materials)
* EN/IEC 61326-1 (EMC; Electrical equipment for measurement, control and laboratory use)
* ISO 13485 (Quality Management/Certification)
* RoHs (Restriction of Hazardous Substances Directive)

CHAMBER :

Made of 304 stainless steel, the overall design is pressure-resistant, high-temperature resistant, and has the ability to remove a large amount of water, air and condensed steam. It has an exhaust hole that allow most of the air in the chamber to be exhausted through the vacuum pump, so that the steam can flow better and be distributed to every corner to achieve maximum sterilization effect. The chamber has a thermal insulation effect to reduce heat loss and the effect of external ambient temperature.
Designed in accordance with ASME codes & standards and complies with the PED (Pressure Equipment Directive), with a service life of up to 7 years.

SUS 316 can be selected for chamber material.

Chamber Volume -

- ☐ 24 Liter (SA-260MB)
- ☐ 40 Liter (SA-300MB)
- ☐ 50 Liter (SA-302MB)

Chamber Material -

- ☐ SUS 304 / 304 Stainless Steel (Standard)
- ☐ SUS 316L / 316L Stainless Steel (Optional)

CHAMBER LOAD CAPACITY :

	SA-260MB	SA-300MB	SA-302MB
Chamber Volume (L)	24	40	50
Chamber Size (mm)	260 x 450	300 x 570	300 x 710
Maximum Instrument Length (mm)	350	550	690
Maximum Load (unwrapped, solid) (g)	5,000	10,000	12,000
Maximum Load (wrapped) (g)	1,500	2,400	3,000

DOOR LOCK SYSTEM :

In order to maintain the safety of users, the MB series adopts a multi-safety door lock device, equipped with a pressure sensor, door lock position sensor and solenoid lock, when the door is closed, the system will automatically lock.

When the sterilization program is completed and the unlock button on the operation panel is pressed, the system will automatically detect the pressure in the chamber. When the pressure is between -0.09 bar ~ +0.09 bar and the door is in the locked position, the system will unlock the solenoid lock and remind the user on the LCD screen that the door can be opened manually to safely and smoothly take out the sterilized loads.

According to different models, there are two door lock systems:
Door Knob : Hold the door knob and turn it 90 degrees counterclockwise to open the door, or rotate it 90 degrees counterclockwise to close.
Door Handle : Door can be opened by pulling the handle, close the door and press down the door handle to lock.

(SA-260MB)

(SA-300MB/SA-302MB)

HEATING SYSTEM :

The heating system is divided into two parts
Sterilization heating: The sterilization water is heated by the electric heating tube heater (M Heater) to generate saturated steam for sterilization.
Dry heating: The temperature of the chamber is increased by the bend heater (B-Heater) to completely dry the chamber and the sterilized loads.

M-Heater

Located at the bottom of the chamber. It is made of SUS 316 stainless steel. The steam is generated by heating the water through the heater. It is equipped with an over temperature controller to avoid overheating of the chamber and prolong the service life of the equipment.

Powers -

24 Liter (SA-260MB) : 1,800 W (Standard)

40 Liter (SA-300MB) : 2,300 W (Standard),

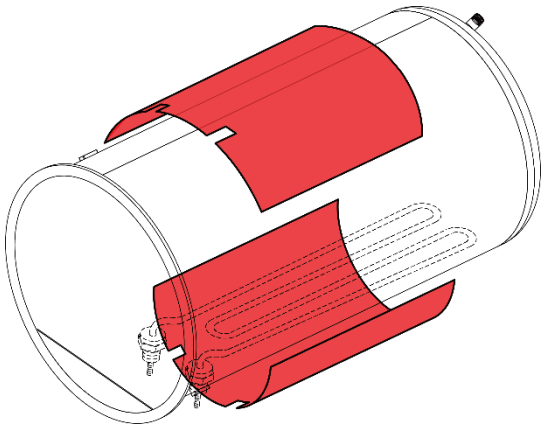
50 Liter (SA-302MB) : 2,300 W (Standard),

B-Heater

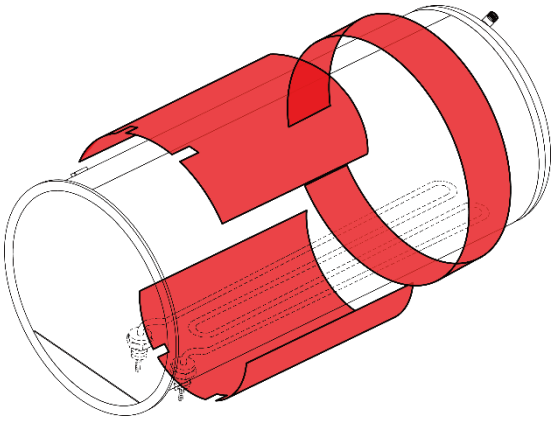
It is activated during the drying process, heats and keeps the chamber warm, and completely exhausts the steam and water in the chamber through the cooperation with the vacuum pump to keep the chamber and the sterilized loads dry.

The configuration and quantity of B-Heaters in the Super Deluxe Series are different according to the size of the chamber:

24 liters has two B-Heaters, one on the top and one on the bottom outside the chamber. 40 and 50 liters have three B-Heaters, and a long strip heater is added to surround the chamber, so that the chamber of different size can be uniformly heated and maintain the temperature.



SA-260MB



SA-300MB / SA-302MB

Powers -

24 Liter (SA-260MB) : 870W (435W + 435W)

40 Liter (SA-300MB) : 826W (263W + 263W + 300W)

50 Liter (SA-302MB) : 826W (263W + 263W + 300W)

VACUUM SYSTEM :

Using high-performance and high-flow diaphragm vacuum pump.
Pre Vacuum: Exhaust the air in the chamber before the sterilization starts, so that the chamber generates negative pressure and releases high-pressure and high-temperature air to allow the steam to flow better and fill the chamber and enter the slender pipe or porous instrument to ensure the sterilization effect reach the standard of complete sterilization.
Post Vacuum: To completely evaporate the steam and steam condensed water to keep the chamber and sterilized loads dry to achieve an ideal sterilization process.

Vacuum Pump -
Max. Flow : 44 LPM
Max. Vacuum : -0.980 bar

COOLING SYSTEM :

The system consists of a finned-tube heat exchanger and a powerful dc 24v cooling fan motor, which quickly cools the steam in the chamber and then exhausts it through the vacuum pump to increase the durability and endurance of the vacuum pump and prolong device life.
It meets the temperature standards of various countries for the emission of sterilization waste gas (under 99°C).

HEPA AIR FILTER :

Using high efficiency HEPA air filter, the filtering effect of air particles below 0.03μm is over 99.99% to ensure that the sterilized items are not affected by the external environment and remain sterilized during the drying process.
The air filter not only meets the requirements of EN 13060 for air filters, but also meets the BFE and VFE filtration efficiency as high as 99.999%

COMMAND AND CONTROL SYSTEM :

It is composed of a command panel fixed on the front of the device and controlled by a microcomputer. The display screen used is a 3-inch LCD with white text on a blue background and supports Japanese, English, Spanish and other languages.
Built-in 7 sterilization programs and 3 diagnostic test programs (Bowie & Dick, Helix and Leakage test), and additional LIQUID , QUICK sterilization programs sterilization programs can be selected according to customer needs, all sterilization programs can be easily selected, and the sterilization will be displayed when the program is selected for parameters such as temperature, sterilization time, drying time, etc., after the program is started, the system does not allow program change or parameter modification.
It has a fault indication system with both visual and auditory warnings. When the

equipment parameters exceed the specified range and are enough to affect the sterilization effect or user safety, the system will be activated and the problem code will be displayed on the panel, user can check the manual and find its solution immediately.

All controls including water injection, pressure, temperature, sterilization, exhaust, drying and auto door lock(solenoid lock) are automatically controlled by a microcomputer, and are equipped with over-temperature and over-pressure protection devices. When the pressure and temperature exceed the allowable safety value, the system will stop the sterilization process or release the pressure to protect the safety of users and extend the life of the equipment. The RS232 serial port can be connected to the computer for program update or maintenance to reduce time cost.

Available Programs -

- ■ Unwrapped 121°C
- ■ Unwrapped 134/126°C
- ■ Customization
- ■ Leakage Test
- ■ Wrapped 121°C
- ■ Unwrapped 134/126°C
- □ LIQUID (Optional)
- ■ Helix Test
- ■ PRION
- ■ Dry
- □ QUICK (Optional)
- ■ Bowie & Dick Test

Temperature, pressure and drying time table for sterilization program

PROGRAM	TEMPERATURE	PRESSURE	STERILIZATION TIME	DRY TIME
Unwrapped 121°C	121°C	1.1 bar	15 mins	15 mins
Unwrapped 134°C	134°C	2.1 bar	4 mins	15 mins
Wrapped 121°C	121°C	1.1 bar	30 mins	30 mins
Wrapped 134°C	134°C	2.1 bar	15 mins	30 mins
PRION	134°C	2.1 bar	18 mins	30 mins
Dry	-	-0.8 bar	-	1 ~ 60 mins
LIQUID (Optional)	105 ~ 135°C	-	1 ~ 60 mins	-
QUICK (Optional)	134°C	2.1 bar	3.5 mins	-
Customization (Pre-Vacuum)	119 ~ 135°C	-	0~60 mins 59 secs	0~60 mins
Customization (No-Vacuum)	105 ~ 135°C	-	0~60 mins 59 secs	0~60 mins
Leakage Test	-	-0.8 bar	-	-
Helix Test	134°C	2.1 bar	3.5 mins	-
Bowie & Dick Test	134°C	2.1 bar	3.5 mins	-
Unwrapped 126℃ (**Altitude>2000m)**	126°C	1.5 bar	10 mins	15 mins
Wrapped 126℃ **(Altitude>2000m)**	126°C	1.5 bar	20 mins	30 mins

DATA RECORDER :

The sterilization temperature, steam pressure and real time information during each cycle can be stored to an onto a SD memory card (hereinafter referred to as SD card) automatically if a SD card is inserted. It records the specified information in *.dat format, and the file can be read by the WordPad or Notepad.

PRINTER :

The thermal printer will automatically print the program parameters of each sterilization program, or press the print button on the operation panel to reprint the last sterilization program parameters.

The following data are included in the printout

- Printout of Unwrapped 134°C Program

Printer output	Description
Model：SA-300MB	Model number
Ver. SA-300MB_A1V2.0	Software version installed in this autoclave
SN：141005204-001	Series number
Program： Unwrapped 134 ºC	Program selected
Pre-Vacuum	Pre-vacuum function enabled
Ster. Temp：134 ºC	Sterilization temperature
Ster. Time： 4 m 0 s	Sterilization duration
Dry Time： 15 m	Dry duration
Date：Apr.02.2015 Time：14：10：27	Date and Time of sterilization
Cycle Counter ：000351	Cycles that had been started

Step	Time mmm:ss	Temp. ºC	Pres. bar
Start	000:00	23.9	0.000
PV1	005:06	24.0	-0.986
H1	022:49	119.0	0.853
PV2	027:19	86.3	-0.363
H2	034:00	119.0	0.874
PV3	038:25	88.4	-0.368
H3	044:47	119.0	0.853
PV4	048:57	89.8	-0.361
H4	054:50	119.0	0.851
PV5	058:40	89.8	-0.362
H5	069:44	135.5	2.121
S00	069:44	135.5	2.121
S02	071:44	136.6	2.184
S04	073:44	136.3	2.156
Ex	078:04	106.6	0.195
D0	078:45	93.6	-0.304
D1	093:46	112.6	-0.381
VR	094:03	114.2	-0.057
End	094:03	114.2	-0.057

Step	action
Time mmm:ss	mmm: minutes starting record, ss: seconds starting record
Temp(ºC)	chamber temperature in ºC
Pres(bar)	Chamber pressure in bar
start	start time
PV1	1st pre-vacuum pulse
H1	1st heating pulse
PV2	2nd pre-vacuum pulse
H2	2nd heating pulse
PV3	3rd pre-vacuum pulse
H3	3rd heating pulse
PV4	4th pre-vacuum pulse
H4	4th heating pulse
PV5	5th pre-vacuum pulse
H5	5th heating pulse
S00	start of sterilization
S02	sterilization time recorded every 2 minutes after “S00”; and also the last sterilization time
EX	exhaust of water and steam
D0	dry time-started

Printer output	Description	
	D1	dry time-finished
	VR	vacuum release
	End	end of recording
Ster. Temp ： 135.0 - 135.8 ºC	The maximum and minimum temperature detected during sterilization period	
Ster. Pres ： 2.123 – 2.160 bar	The maximum and minimum pressure detected during sterilization period	
Ster. Time ： 4 m 0 s	Sterilization period	
Total time ： 94 m 03 s	Time elapsed between start and program complete	
Program complete	Message of ending recording	
Signature:_____	Signature office	

- Printout of LIQUID Program (Optional)

Printer output	Description
Model：SA-300MB	Model number
Ver. SA-300MB_A1V2.0	Software version installed in this autoclave
SN：141005204-001	Series number
Program： LIQUID	Program selected
Ster. Temp：121 ºC	Sterilization temperature
Ster. Time： 15 m	Sterilization duration
Date：Apr.02.2015 Time：14：10：.27	Date and Time of sterilization
Cycle Counter ：000351	Cycles that had been started

Step	Time mmm:ss	Temp. ºC	Pres. bar
Start	000:00	28.2	0.001
PV1	000:54	28.4	-0.110
H1	034:03	122.2	1.093
ET	044:03	122.5	1.120
S00	044:03	122.5	1. 120
S02	046:03	122.1	1.088
S04	048:03	122.6	1.132
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S14	058:03	122.5	1.125
S15	059:03	122.3	1.195
CD	094:03	80.0	-0.015
End	094:03	80.0	-0.015

Step	action
Time mmm:ss	mmm: minutes starting record, ss: seconds starting record
Temp(ºC)	chamber temperature in ºC
Pres(bar)	Chamber pressure in bar
start	start time
PV1	1st pre-vacuum pulse
H1	1st heating pulse
ET	Equilibrium Time
S00	start of sterilization
S02	sterilization time recorded every 2 minutes after “S00”; and also the last sterilization time
CD	Cooling Down
End	end of recording

Ster. Temp ： 121.2 – 122.8 ºC	The maximum and minimum temperature detected during sterilization period
Ster. Pres ： 1.088 – 1.220 bar	The maximum and minimum pressure detected during sterilization period
Ster. Time ： 15 m	Sterilization period
Total time ： 94 m 03 s	Time elapsed between start and program complete
Program complete	Message of ending recording
Signature:_____	Signature office

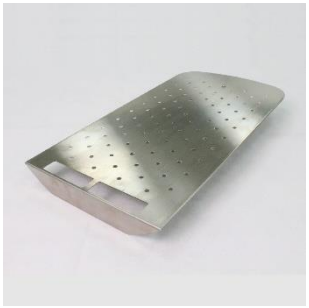
- Printout of Dry Program

Printer output	Description
Model：SA-300MB	Model number
Ver. SA-300MB_A1V2.0	Software version installed in this autoclave
SN：141005204-001	Series number
Program： Dry	Program selected
Date：Apr.02.2015 Time：14：10：27	Date and Time of sterilization
Cycle Counter ：000351	Cycles that had been started
Step Time Temp. Pres. mmm:ss ºC bar Start 000:00 27.8 -0.067 D0 000:41 27.5 -0.296 D1 002:41 28.2 -0.242 VR 002:55 28.3 -0.059 End 002:55 28.3 -0.059	Step / action Time mmm:ss / mmm: minutes starting record, ss: seconds starting record Temp(ºC) / chamber temperature in ºC Pres(bar) / Chamber pressure in bar start / start time D0 / dry time-started D1 / dry time-finished VR / vacuum release End / end of recording
Total time ： 2 m 55 s	Time elapsed between start and program complete
Program complete	Message of ending recording
Signature:_____	Signature office

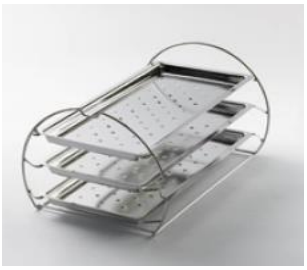
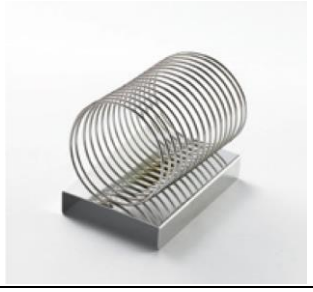
- Printout of Leakage Program

Printer output	Description
Model：SA-300MB	Model number
Ver. SA-300MB_A1V2.0	Software version installed in this autoclave
SN：141005204-001	Series number
Program： Leakage Test	Program selected
Date：Apr.02.2015 Time：14：10：27	Date and Time of sterilization
Cycle Counter ：000351	Cycles that had been started
---------- P0: 1.5 kPa, t0: 0 s P1: -79.6 kPa, t1: 228 s P2: -79.4 kPa, t2: 300 s P3: -79.4 kPa, t3: 600 s ----------	Step / action P0 / ambient atmospheric pressure t0 / start of the test P1 / lowest pressure level t1 / time when the pressure level is reached P2 / pressure after a period of 300 s t2 / start of the leakage period P3 / pressure after a leakage time of 600 s t3 / end of the test
Program complete	Message of ending recording
Total time: 19m 31s	Time elapsed between start and program complete
Leakage Rate：0.00 (kPa/min)	The rate of air leakage into the sterilizer chamber during periods of vacuum, Pass if the value nor grater than 0.13 kPa/min
Leakage Test：Pass	Test result Pass
Signature:_____	Signature office

STANDARD ACCESSORIES :

	Name	Image	Description
☐	Heater Cover		Made of 304 stainless steel. Dimensions (W x H x D) 24 Liter : 208 x 22 x 427 mm 40 Liter : 227 x 15 x 525 mm 50 Liter : 227 x 15 x 620 mm
☐	Tray Set (Wire-Mesh)		Round tray holder, with a capacity of three stainless steel wire-mesh trays, made of 304 stainless steel. Trays dimensions (W x H x D) : 24 Liter : 190 x 21.5 x 380 mm 40 Liter : 231 x 25 x 500 mm 50 Liter : 231 x 25 x 595 mm
☐	HEPA Air Filter		Consumables, filtering effect of air particles under 0.3μm is over 99.99%. Replace the filter according to the ambient air quality. (1 pc of standard)
☐	Cham-mate		Consumables, autoclave chamber & piping cleaner 10 bags/ paper box. (2 bags of standard)
☐	Drain Filter		Filter the impurities in the sterilized waste water to avoid clogging the pipe. According to the filter condition, it needs to be cleaned or renewed.

OPTIONAL ACCESSORIES :

	Name	Image	Description
☐	Tray Set (Plate)		Round tray holder, with a capacity of three stainless steel trays, made of 304 stainless steel. Trays dimensions (W x H x D) : 24 Liter : 187 x 21 x 382 mm 40 Liter : 199 x 22 x 500 mm
☐	Basket		Sterilization basket, made of 304 stainless steel. Dimensions (W x H x D) : 24 Liter : 220 x 120 x 370 mm 40 Liter : 200 x 180 x 500 mm 50 Liter : 250 x 160 x 610 mm
☐	Spring Holder		Made of 304 stainless steel, which is easy to load and unload the bagged instruments, and carry out proper sterilization and drying. Dimensions (W x H x D) : 97 x 122 x 148 mm
☐	Sterilization Pouch		Sterilization pouches are practical and easy to use, providing a fast and effective containment for equipment.
☐	RO Water Filter		Filter out dirt odor, chlorine and salt; extending life usage of the sterilizer and quality. Quicker production & supply RO water
☐	Water Distiller		Water distiller turns water into steam to remove fluoride, arsenic, lead, viruses and other contaminants, protecting your sterilizer and instruments at a fraction of cost.

OVERALL DIMENSIONS :

24 Liter (SA-260MB) : 533mm × 442mm × 655mm (W x H x D)

40 Liter (SA-300MB) : 620mm × 489mm × 766mm (W x H x D)

50 Liter (SA-302MB) : 621mm × 489mm × 906mm (W x H x D)

NET WEIGHT :

24 Liter (SA-260MB) : 57kg

40 Liter (SA-300MB) : 78kg

50 Liter (SA-302MB) : 85kg

ALTITUDE :

☐ Under 2,000 m (Standard)

☐ Under 3,000 m (Optional)

VOLTAGE :

230 V AC, 50/60Hz

WATER TANK VOLUME :

24 Liter (SA-260MB) : 4,200 (cc)

40 Liter (SA-300MB) : 4,200 (cc) x 2

50 Liter (SA-302MB) : 4,200 (cc) x 2

WATER AND ENERGY CONSUMPTION :

	24 Liter	40 Liter	50 Liter
Total Power (W)	2,770	3,226	3,226
Max. Water (cc)	1,270	1,500	1,500

ENVIRONMENTAL CONDITIONS IN THE STERILE AREA :

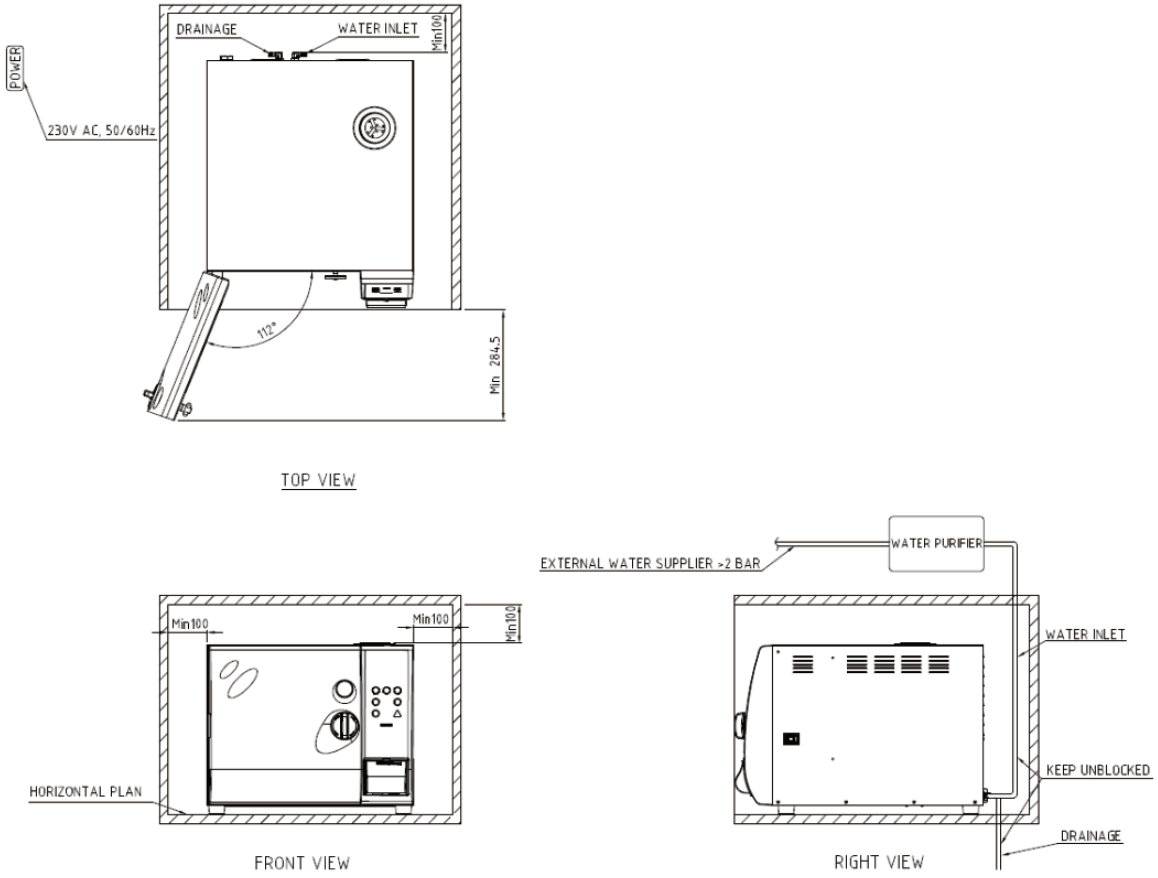
- Indoor use;
- Temperature 5°C to 40°C;
- Relative Humidity 80%RH@31°C to Relative Humidity 50%RH@40°C;
- Voltage fluctuation ±10 %;
- Transient overvoltages category II;
- Pollution degree 2

INSTALLATION INSTRUCTION :

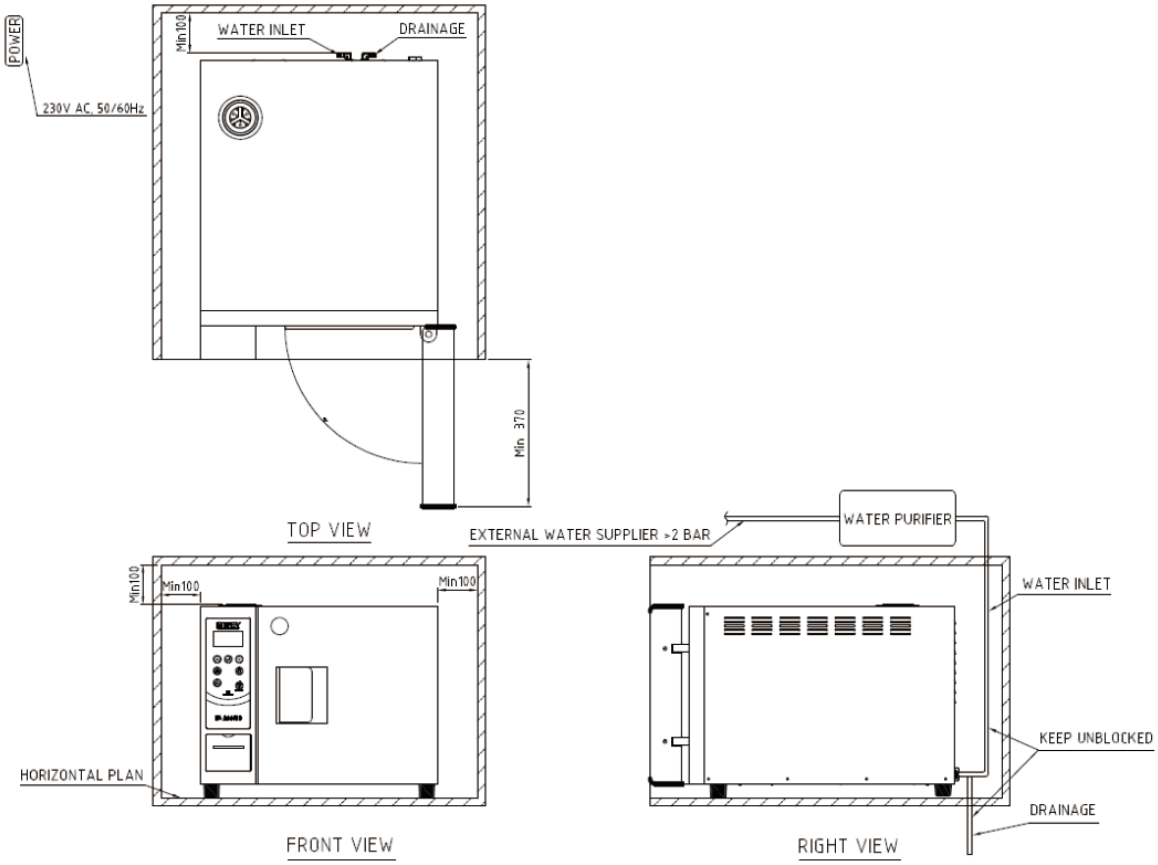
This equipment has been designed for use in accordance with the International EMC (Electromagnetic Compatibility) Standards. In view of different environments, please follow the instructions given below to eliminate interference, if necessary.

1. Please install it in a stable and firm place. When installing, be sure to keep the machine body with a ventilation distance of more than 10 cm on the top, back panel, and left and right sides. Make sure that the door can be opened freely after installation.
2. While installation, please make sure that the bearing capacity of installation table is enough to carry the sterilizer.
3. Do not install or operate the sterilizer in areas where flammable items or volatile substances are used or stored. An explosion could occur, causing personal injury. An installation site with good air circulation is required.
4. Be sure to install the sterilizer on a flat surface, otherwise it may not defect the water level correctly.
5. The optional Exhaust Tank is capable of draining water; you should then drain out the water according to the local national law.

- SA-260MB installation drawing



- SA-300MB / SA-302MB installation drawing



RECOMMENDED SUPPLY WATER QUALITY :

Suggested maximum limits of contaminants in and specification for water for steam sterilization.

	Feed water	Condensate
Evaporate residue	≤ 10 mg/l	≤ 1.0 mg/kg
Silicium oxide, SiO_2	≤ 1 mg/l	≤ 0.1 mg/kg
Iron	≤ 0.2 mg/l	≤ 0.1 mg/kg
Cadmium	≤ 0.005 mg/l	≤ 0.005 mg/kg
Lead	≤ 0.05 mg/l	≤ 0.05 mg/kg
Rest of heavy metals, excluding iron, cadmium, lead	≤ 0.1mg/l	≤ 0.1 mg/kg
Chloride	≤ 2mg/l	≤ 0.1 mg/kg
Phosphate	≤ 0.5 mg/l	≤ 0.1 mg/kg
Conductivity (at 20°C)	≤ 15 µs/cm	≤ 3 µs/cm
pH value	5 to 7.5	5 to 7
Appearance	colourless, clean without sediment	colourless, clean without sediment
Hardness	≤ 0.02 mmol/l	≤ 0.02 mmol/l
NOTE 1 - The use of water for steam generation with contaminants at levels exceeding those given in this table can greatly shorten the working life of a sterilizer and can invalidate the manufacturer's warranty guarantee. NOTE 2 - The condensate is produced from steam that has been taken from the empty sterilizer chamber.		

Compliance should be tested in accordance with acknowledged analytical methods.

For more information, contact

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