OPERATION MANUAL

SAP- Series

422-04018 v.10 01 July 2022

OPERATION MANUAL

SAP-SERIES

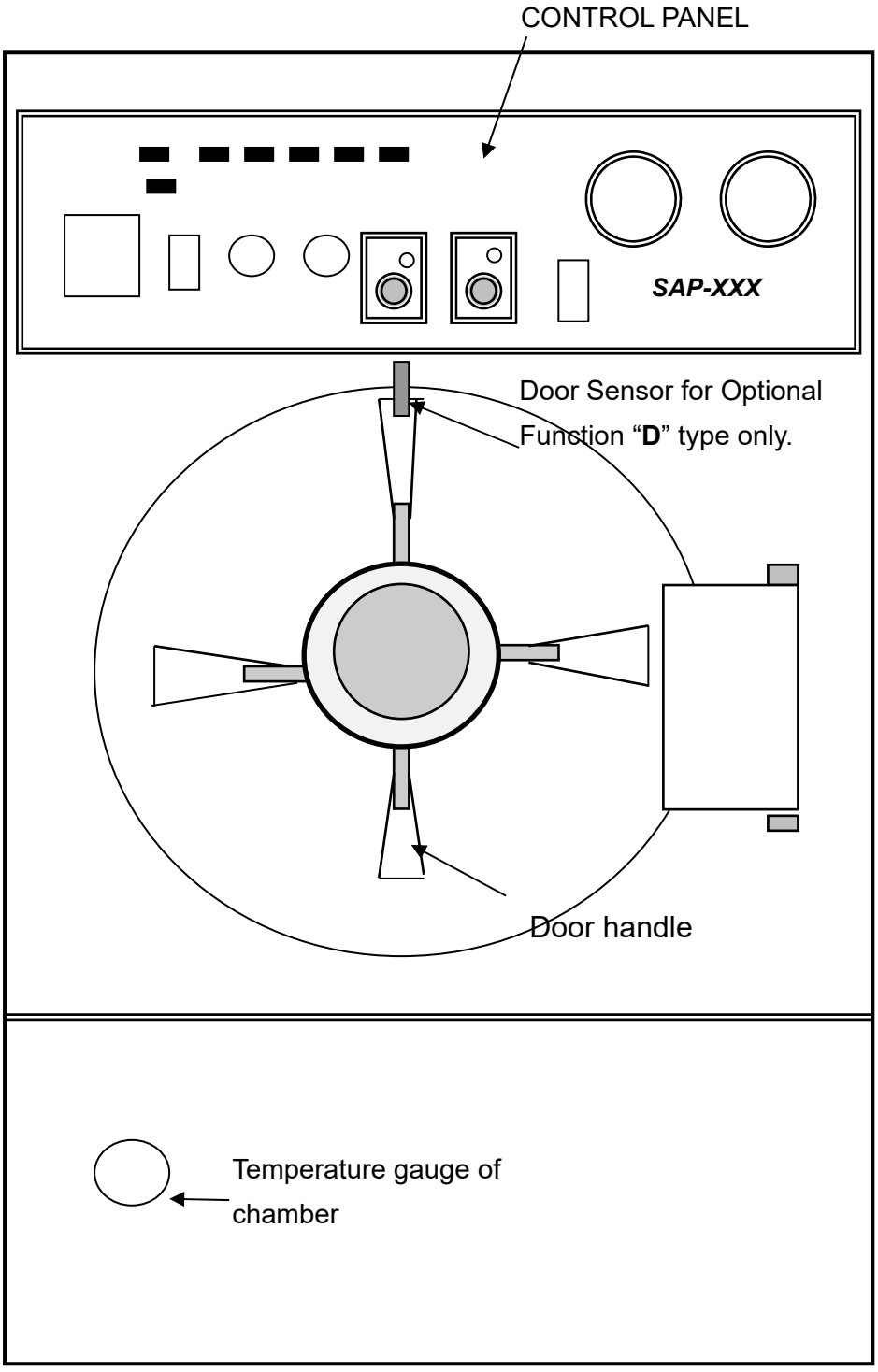
AUTOMATIC AUTOCLAVE STERILIZER

CONTENTS

Please read this manual carefully prior to using your new Autoclaves. Following the simple instructions contained in this manual will help ensure ease of use, trouble free operation and a longer working life for your Autoclave.

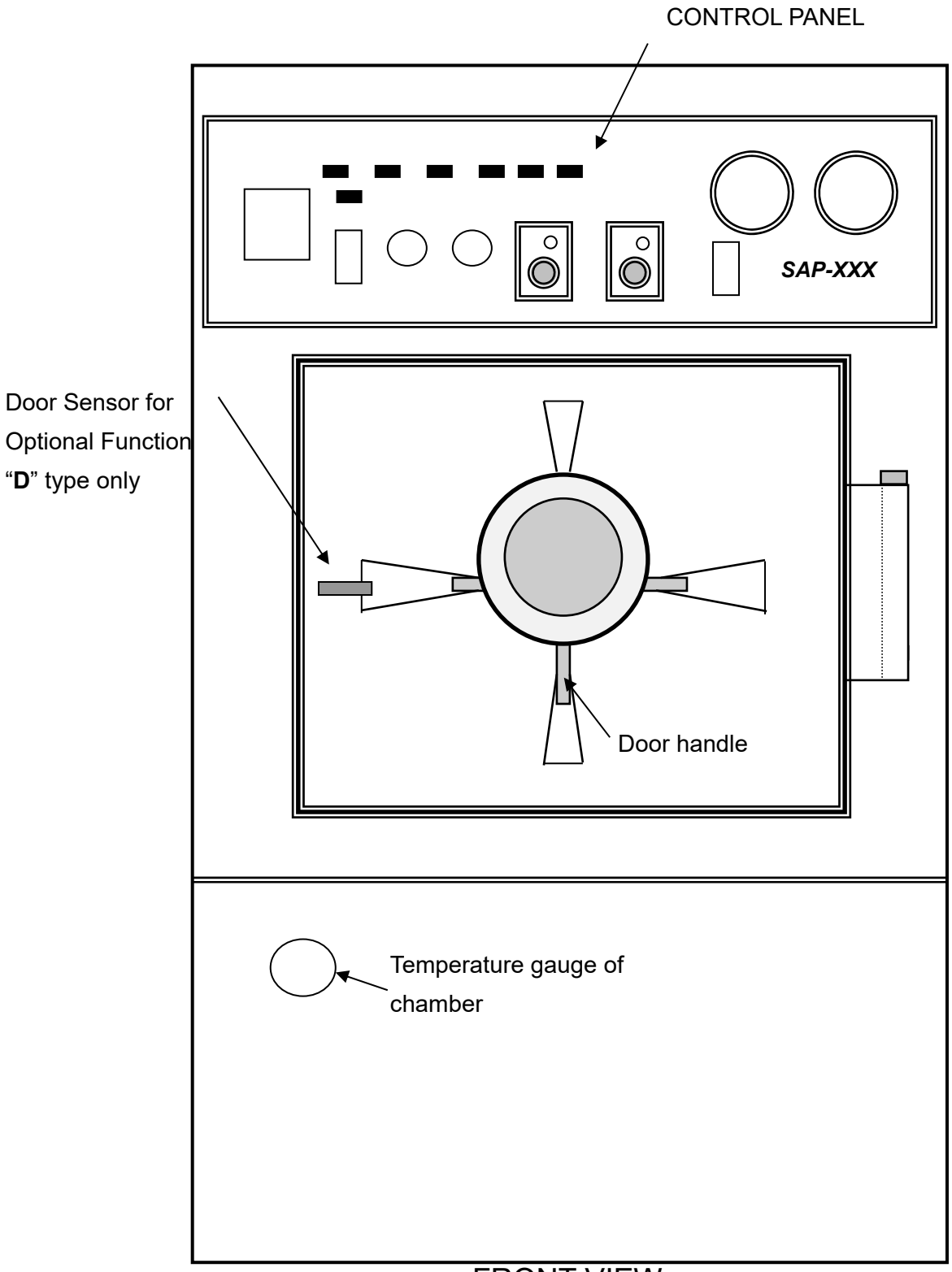
CHAPTER 1 LOCATION of CONTROLS

SAP-SERIES (CYLINDER CHAMBER):



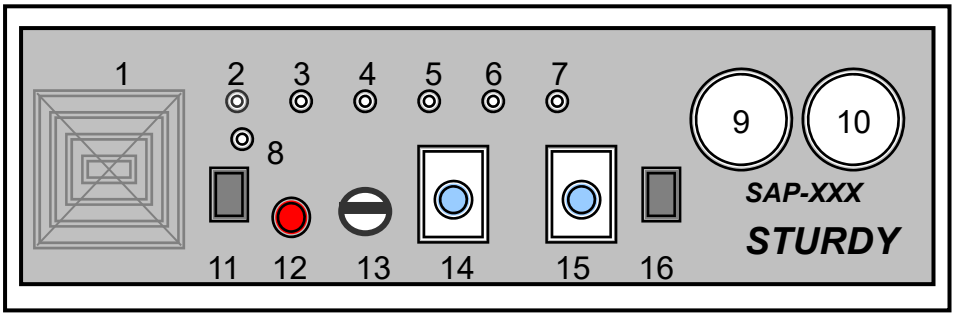
FRONT VIEW

SAP-SERIES (SQUARE CHAMBER):



FRONT VIEW

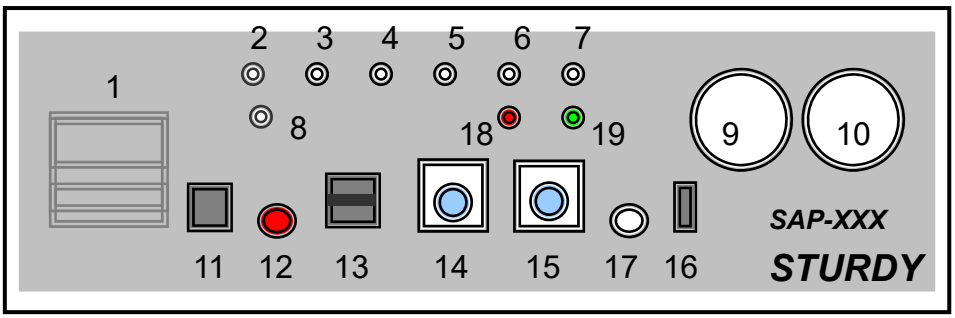
CONTROL PANEL：



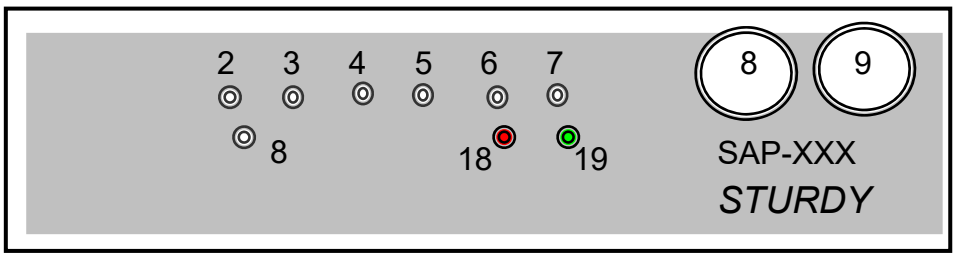
1. PRINTING RECORDER (OPTIONAL ***DEVICE***)
2. POWER INDICATION LAMP
3. ADD WATER INDICATION LAMP
4. HEATING UP INDICATION LAMP
5. STERILIZATION INDICATION LAMP
6. DRY INDICATION LAMP
7. COMPLETE INDICATION LAMP – (ENDING)
8. OVERHEATED INDICATION LAMP
9. CHAMBER PRESSURE GAUGE
10. JACKET PRESSURE GAUGE
11. START SWITCH
12. JACKET STEAM / WATER EXHAUST KNOB (EMERGENCY USE)
13. PRESSURE CONTROL SWITCH (WORKING PRESSURE ADJUSTABLE)
14. STERILIZATION TIMER
15. DRY TIMER
16. LIQUID / NORMAL STERILIZATION PROGRAM SELECTION SWITCH

CONTROL PANEL:

(FOR OPTIONAL FUNCTION “D” “K” “T” “V” “W” “X” “Y” TYPE.)



1. PRINTING RECORDER (OPTIONAL FUNCTION **“X”** or **“Y”** TYPE)
2. POWER INDICATION LAMP
3. ADD WATER INDICATION LAMP
4. HEATING UP INDICATION LAMP
5. STERILIZATION INDICATION LAMP
6. DRY INDICATION LAMP
7. COMPLETE INDICATION LAMP – (ENDING)
8. OVERHEATED INDICATION LAMP
9. CHAMBER PRESSURE GAUGE
10. JACKET PRESSURE GAUGE
11. START SWITCH
12. JACKET STEAM / WATER EXHAUST KNOB (EMERGENCY USE)
13. TEMPERATURE CONTROL & DISPLAY SWITCH
    STERILIZATION TEMPERATURE SET-UP & ADJUSTABLE
    (FOR OPTIONAL FUNCTION “**T**” ONLY)
14. STERILIZATION TIMER
15. DRY TIMER
16. LIQUID / NORMAL STERILIZATION PROGRAM SELECTION SWITCH
17. VACUUM RELEASE SWITCH (FOR OPTIONAL FUNCTION “**V**” ONLY)
18. RED SIGN INDICATION LAMP, MEANS DON’T OPEN THE DOOR
19. GREEM SIGN INDICATION LAMP, MEANS, “DOOR OPEN ALLOWED”
    (No. 18, 19, IS FOR OPTIONAL FUNCTION “**D**” TYPE ONLY)



CONTROL PANEL OF CLEAN ROOM SIDE

CHAPTER 2 SPECIFICATION

SAP Series (CYLINDER CHAMBER):

■ CHAMBER SIZE	SAP-400	400mm (DIA) x 800mm (D) / 100 L
	SAP-450	450mm (DIA) x 900mm (D) / 143 L
	SAP-500	500mm (DIA) x 1000mm (D) / 196 L
	SAP-600	610mm (DIA) x 1200mm (D) / 350 L
■ OVERALL SIZE	SAP-400	830mm(W) x 1800mm(H) x 1150mm(D)
	SAP-450	850mm(W) x 1800mm(H) x 1300mm(D)
	SAP-500	850mm(W) x 1800mm(H) x 1400mm(D)
	SAP-600	930mm(W) x 1900mm(H) x 1680mm(D)

■ POWER CONSUMPTION (No Fuse Breaker installation)

SAP-450 / 7KW 1 Phase / 220V / 50A 3Phases / 220V / 30A 3 Phases / 380V / 30A

SAP-500 / 9KW 1 Phase / 220V / 60A 3Phases / 220V / 30A 3 Phases / 380V / 30A

SAP-600 / 12KW 1Phase / 220V / 75A 3Phases / 220V / 60A 3 Phases / 380V / 30A

■ CHAMBER & HOUSING	MADE BY STAINLESS STEEL #304
■ DESIGN TEMPERATURE	140°C
■ WORKING TEMPERATURE	0.9 kgf/cm² (118°C) to 2.1 kgf/cm² (134°C) ADJUSTABLE.
■ ADD WATER FUNCTION	AUTOMATICAL
■ DRY FUNCTION	AUTOMATICAL
■ COMPLETE INDICATION	YES, BY “END” INDICATION LAMP
■ CHAMBER TEMPERATURE BALANCE	INSTALLED STEAM TRAP FOR CHAMBER
■ SAFETY VALVE	WILL EXHAUST WHEN JACKET PRESSURE OVER TO 2.55 ～ 2.6 kgf/cm². (SIZE: Ø½”)
■ VACUUM (OPTIONAL)	LOW VACUUM WITHOUT VACUUM PUMP (STANDARD) CAN BE OPTIONED WITH VACUUM PUMP.
■LIFE TIME	7 Years
■ SAFETY DEVICE	① PRESSURE SAFETY VALVE ② PRESSURE CONTROL SWITCH ③ TEMPERATURE PROTECT SWITCH ④ LOW WATER INDICATOR ⑤ ELEC. CIRCUIT PROTECTION DESIGN ⑥ CHAMBER DESIGNED BY ASME STANDARD
■ STANDARD ACCESSORIES	Sterilization Tray - 1 pc. (st.st. #304) Water level glass viewer tube x 1 pc.
■ OPTIONAL ACCESSORIES	Please refer Page 7

CHAPTER 2-1 SPECIFICATION

SAP SERIES (SQUARE CHAMBER)

MODEL NO.	SAP-S0110	SAP-S0260	SAP-S0454
CHAMBER SIZE	410mmX410mmX660mm(D)	510mmX510mmX1000mm(D)	610mmX610mmX1220mm(D)
OVERALL SIZE	850(W)X1750(H)X1350(D)mm	980(W)X1850(H)X1600(D)mm	1160(W)X1900(H)X1830(D)mm
CHAMBER CAPACITY	110 LITER	260 LITER	454 LITER
HEATING POWER	9.0KW 50/60Hz	12.0KW 50/60Hz	15.0KW *2 50/60Hz
STANDARD ACCESSORIES	ST.ST.#304 TRAY X 2PC./RAIL VIEWER TUBE X 2PC	ST.ST.#304 TRAY X 2PC./RAIL VIEWER TUBE X 2PC	ST.ST.#304 TRAY X 2PC./RAIL VIEWER TUBE X 2PC

No Fuse Breaker specification for Installation:

SAP-S0110 / 9KW 1 Phase / 220V / 60A 3 Phases / 220V / 30A 3 Phases / 380V / 30A

SAP-S0260 / 12KW 1 Phase / 220V / 75A 3 Phases / 220V / 60A 3 Phases / 380V / 30A

SAP-S0450 / 30KW 3 Phases / 220V /100A 3 Phases / 380V / 60A

MODEL series	SAP series
Control System	Elec. Automatic Control System with Pressure control system
Construction	St.St.#304 Housing, frame, door, chamber and jacket
Design Temperature	140°C
Chamber Design	ASME Standard
Chamber Material Stainless Steel #304	Standard
Chamber Material Stainless Steel #316	Optional
Automatic Add-Water	Yes
Using Temperature	0.9 ～ 2.1kgf/cm^2 adjustable (118°C ～ 134°C)≒246°F～ 273°F
Dry Function	Yes
Electric Voltage	230V 1or 3 Phases, 380V or 415V or 440V 3 Phases
Optional Accessories	Please refer Page 7
Pressure Control Switch	Yes/1 pc.
Water Level Control Switch	Yes
Safety Device	Pressure Control Switch. Water Level Control Switch. Low water Detection. Safety Valve.
Optional Function	Please refer Page 7
Life Time	7 Years

Optional Function

	◎ Optional Function					△ Standard Function					
SAP-XXX	A	B	D	F	K	L	T	V	W	X	Y
	△	△	◎	◎	◎	△	◎	◎	◎	◎	◎

Function Code	A.: Fully automatic control from Sterilization to Dry. With Water level switch.		B.: Automatic add water function
	D.: Double door device	F.: Square chamber with elec. sliding door.	K.: Pressure door lock device.
	L.: Water level switch	T.: Temperature control switch	V.: Dry vacuum function
	W.: Add water pump device	X.: Temperature recorder (with single sensor record)	Y.: Temperature recorder (with 6 sensor record)

Accessories Code	**Big Size Autoclave (over than 80 liter) With Steam Cover Accessories Code**				
	0 = Steam cover only	**1** = Sterilization plate x 2 + Plate frame x 1 (For chamber § 400～700mm only)			
	7 = Chamber rail + Sterilization basket x 2 (For chamber § 400～500mm only)				
	4 = Chamber rail + Sterilization basket x 3 (For chamber § 600～700mm only)				
	2 = Chamber rail + Cart + Sterilization basket x 2 (For chamber § 400～500mm only)				
	3 = Chamber rail + Cart + Sterilization basket x 3 (For chamber § 600～700mm only)				
	6 = Chamber rail + Cart				
	1 Phases (1Ø)	A=AC-100V	B=AC-110V	C=AC-120V	D=AC-200V F=AC-220~240V
	3 Phases (3Ø)	H=AC-220~240V	J=AC-380V	K=AC-415V	L=AC-440V
		PS. Function **V**, Function **R**, = **3 phase only.**			

CHAPTER 3 PREPARATION

CHECKLIST FOR UNPACKING INSTRUCTIONS:

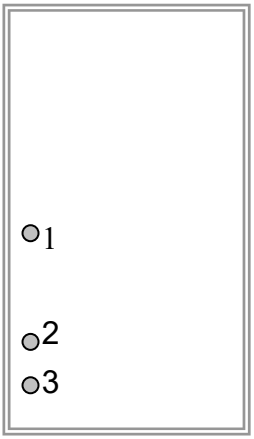
TO UNPACK AUTOCLAVE FROM WOOD

1. Remove top pieces wood.
2. Remove the holder wood (4 pieces).
3. Remove each sidewall pieces (4 pieces) of the case.
4. Remove the fixing holder on each down side.
5. Move the autoclave out from the plank.

INSTALLATION – 1:

1. Fixing Ø½" the fill water inlet.
2. Fixing Ø½" the steam generator exhaust outlet
3. Fixing Ø½" the chamber and jacket exhaust outlet.

PS: No.2, 3, please connected with metal tube, because the water is high temperature.



BACK VIEW

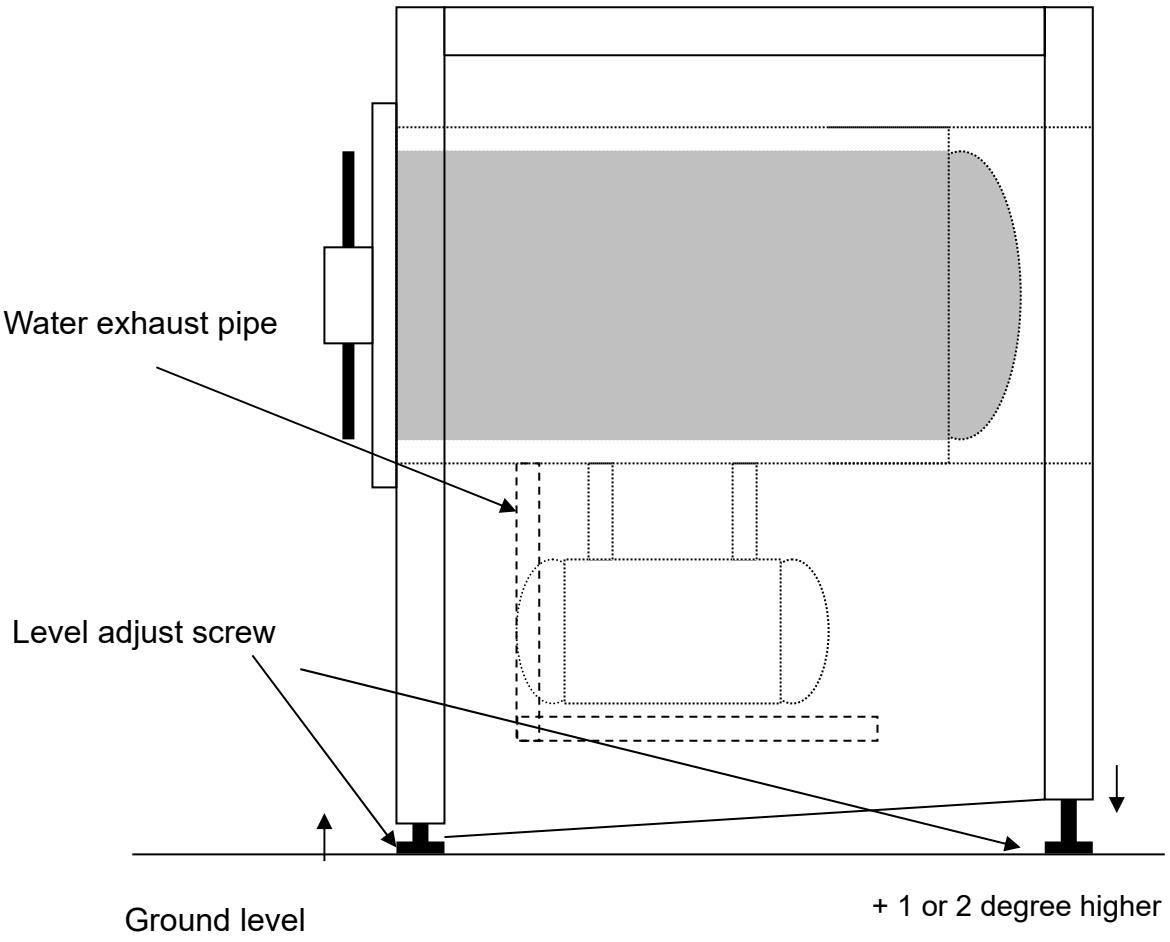
⚠**CAUTION:** Waste water should be brought into the sewerage system following the local rules or requirements.

PS: PLEASE CHECK THE ACCESSORIES ENCLOSED, AT FIRST.

4. Put this autoclave on the ground with level, and keep the distance more than 60 cm between the wall and the case. And **keep this autoclave in level condition.**
5. Check the elec. power source must be same as machine **380VAC or 230 VAC. The no fuse breaker is necessary, do not forget to install for electric power source**
6. The water source must be distilled water. Basically the hard water is not allowed to use in SAP series. If you use hard water, please option one filter before the machine. And must clean the chamber and boil per each month. This autoclave have auto-add-water device. Until the flow water touch the full level sensor on the steam generator, the solenoid valve will cut-off the water flow in automatically.
7. Please see the power indication, if power lamp is light on, that means the power is already stand-by now.

INSTALLATION - 2：

As to the good dry function, please check the level installation.



If the dry is not so well, please check the ground level and adjust the level adjusts screws as our suggestion;

Adjust the backside leg's screw to make back side higher or adjust the front side leg's screw to make front side lower.

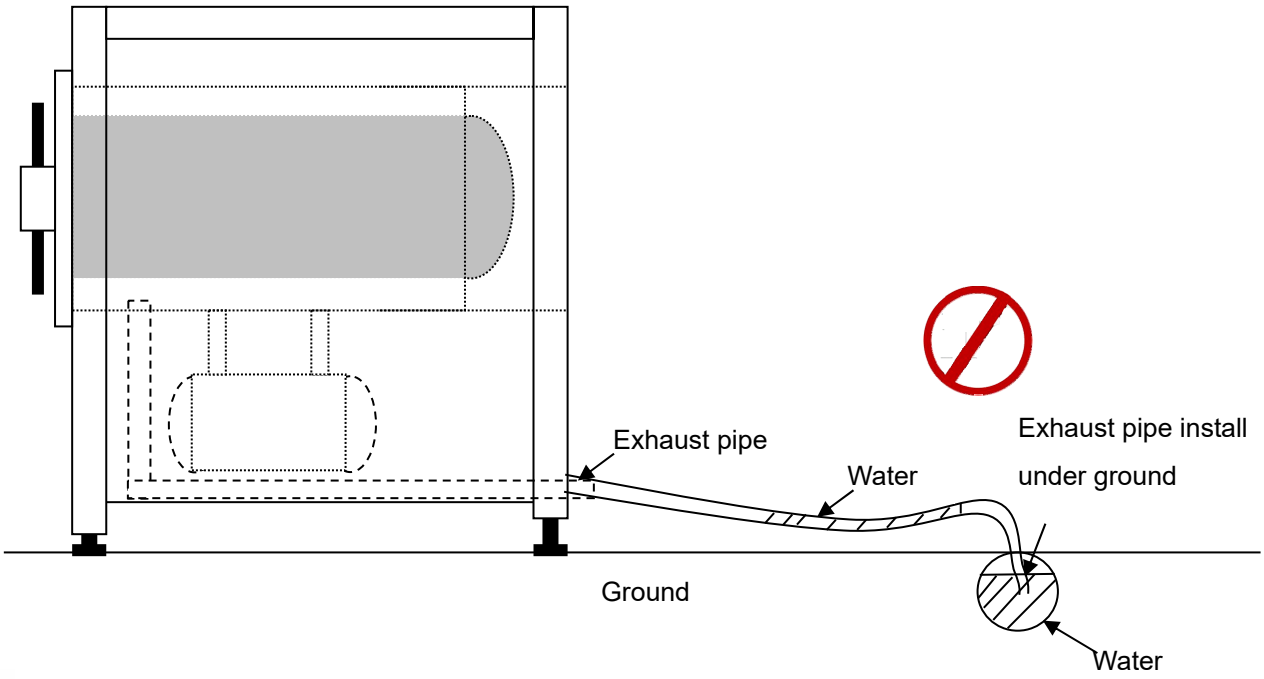
Normally the back will be higher than front side about 1 to 2 degree.

⚠**CAUTION:** The autoclave MUST BE earthed!

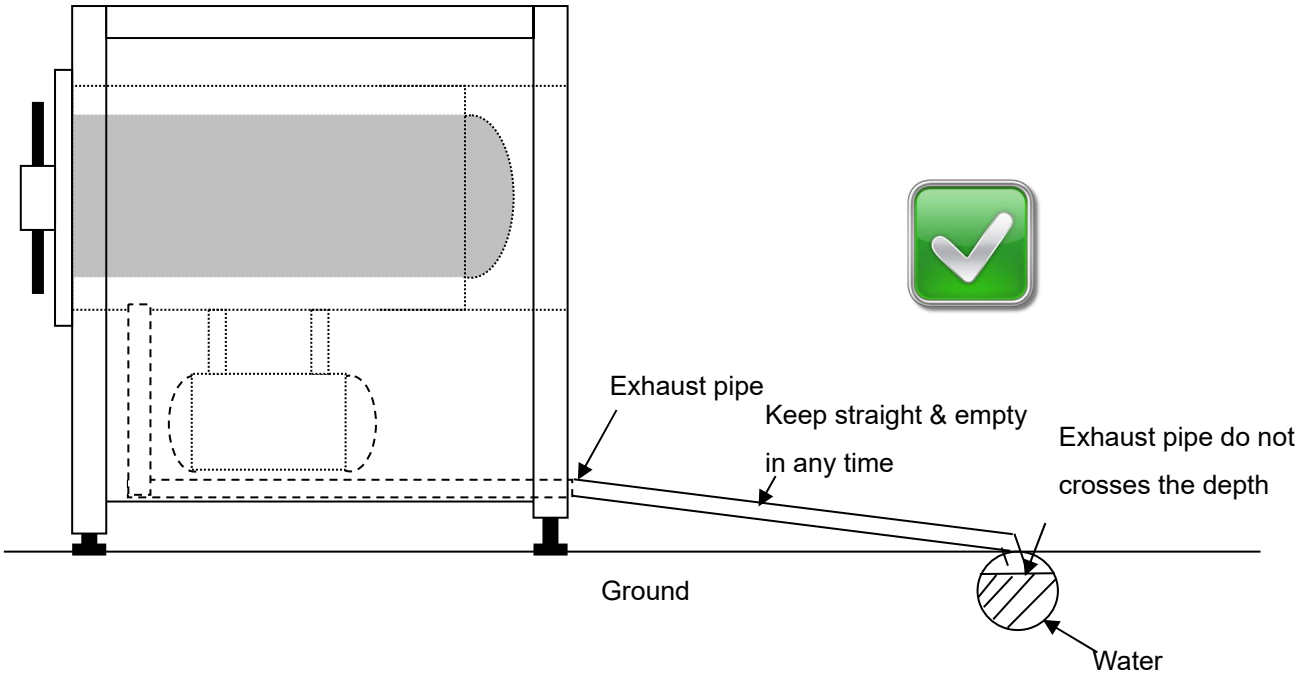
⚠**CAUTION:** The circuit-breaker is also serves as a disconnect device for disconnecting the power, it should be so located that the circuit-breakers are not blocked by any other devices.

INSTALLATION - 3：

◎Exhaust pipe



CAUTION: The balance water in the tube or pipe, it'll make the vacuum release function fail (because it just a little vacuum in the chamber only).Exhaust pipe installation by this way, it will keep the straight and empty in any time.



The exhaust of "LIQUID PROGRAM" is too quick or slow. Please adjust the exhaust of liquid program. The step is as following:

8. Adjust exhaust of "LIQUID PROGRAM":

8-1 Please set the LIQUID program. The parameter is as following:

8-1-1 Set the pressure 1.2 kgf/cm^2.

8-1-2 Set the sterilization timer 40 minutes.

8-1-3 Set the dry timer 15 minutes.

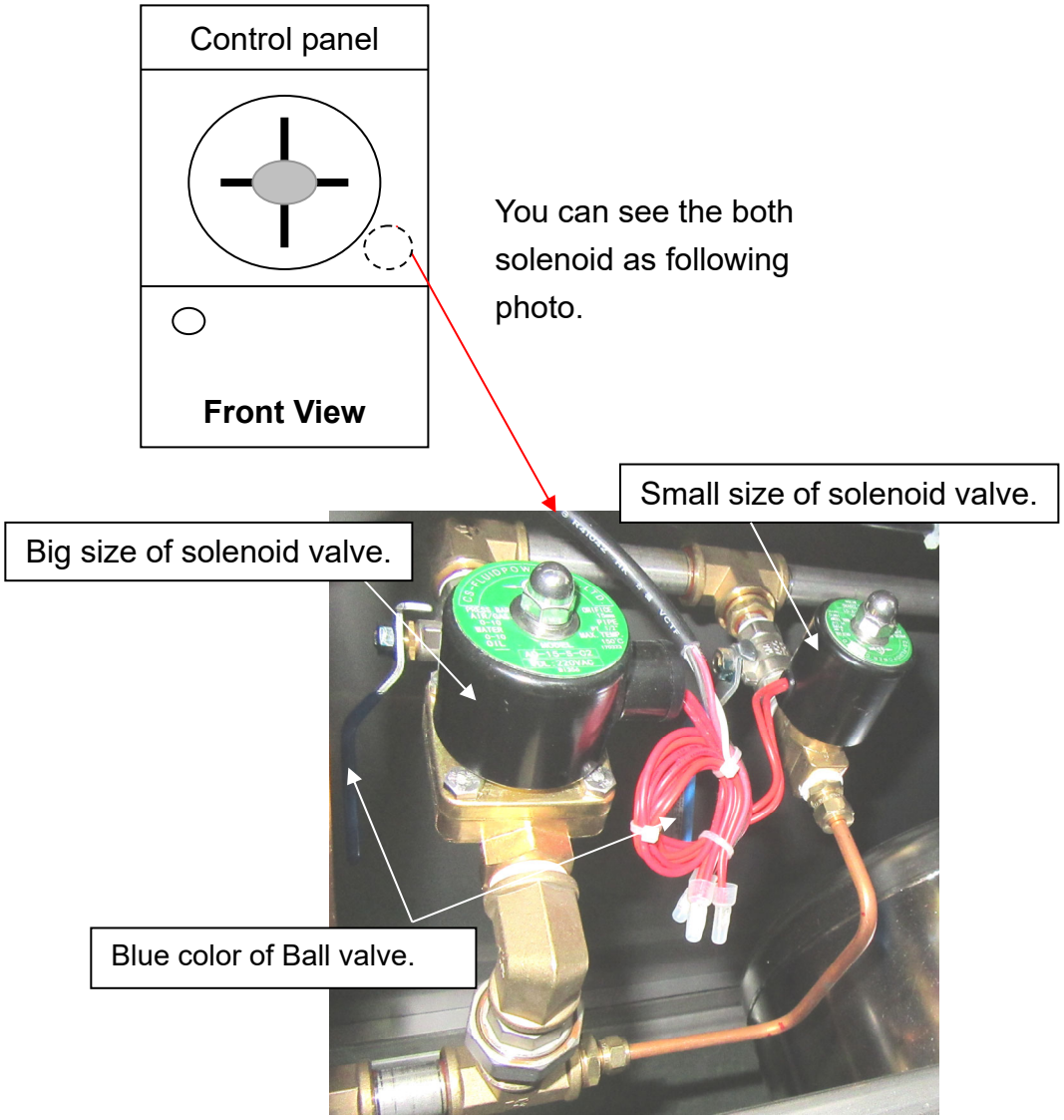
8-2 Pressures the "START " to start the autoclave.

8-3 Now you can adjust exhaust valve when steam cycle is at "DRY" step.

8-4 The two-exhaust ball valve is parallel together (Please see photo).

8-5 The big size of solenoid valve is used for normal program. Another one (small size) solenoid valve is used for liquid program.

8-6 Please you can adjust gap of the "BALL VALVE " that is front of small size solenoid.



Photo

CHAPTER 4 PLACEMENT OF ITEMS TO BE STERILIZED

NOTE: Refer to infection control, such as sterilization and sterility assurance in health care facilities of your local authority, for load placement guidelines.

NOTE: Please place items to be sterilized on the tray properly in order to have the best sterilization and/or drying result.

NOTE: It is recommended not to exceed 70% of pouch if pouch are used for sterilization.

⚠**WARNING:** Be careful when removing the sterilized items as the metal surfaces might still be hot. Always wear suitable hand protection to remove the box or use the appropriate aids (tray holder) to lift the trays.

⚠**WARNING:** To sterilize absorbent cotton or woolen, please wrap it with sterilizing pouch to avoid piping clog. Place a chemical indicator for

⚠**WARNING:** If implements are packed with sterilizing pouches, please make sure not to pile them up.

Figure 1

1. Before loading, ensure instruments are cleaned and rinsed.
2. Be sure there will be enough space between each wrap for better air flow as shown in Figure 2.

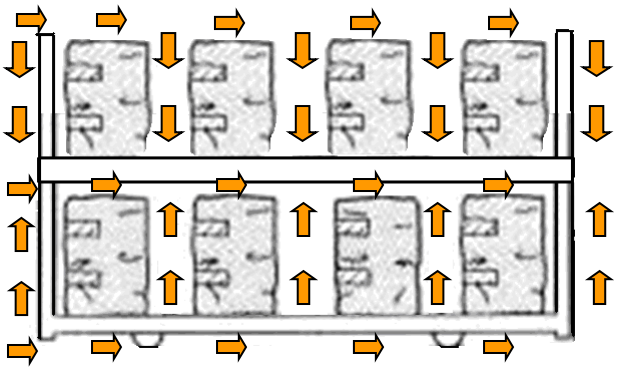


Figure 2

3. If implements are packed with sterilizing pouches and placed inside a sterilization box, make sure to display items as shown in Figure 3.

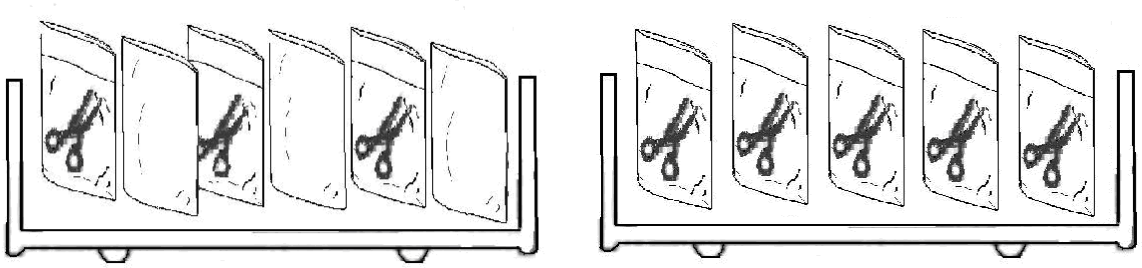


Figure 3

4. If implements are treatment plate, make sure to arrange items as shown in Figure 4.

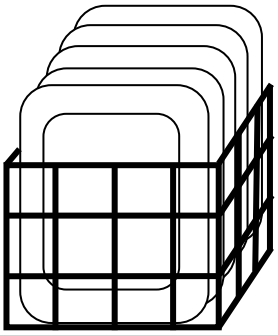


Figure 4

5. If compound items, such as solid loads and porous loads, are packed at the same wrapped, be placed them at the lowest side of the chamber to prevent condensation drops.

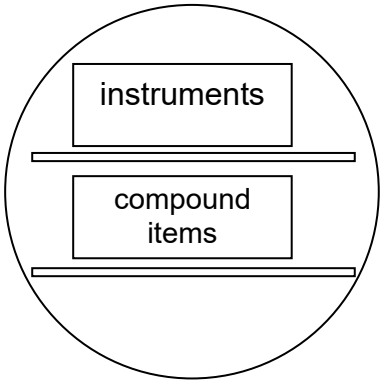


Figure 5

6. Do not exceed to its maximum limit and/or touch the walls of the chamber; and make sure there are enough space for free circulations of steam penetration.
7. Uniform placing of objects that do not overlap.

8. Place tubes or hollows loads horizontal to tray without overlapping. When place sterilizing pouch on the sterilization box or tray, make sure the medical grade paper is facing upward.
9. Round pans, trays, p down as shown in Figure 6.

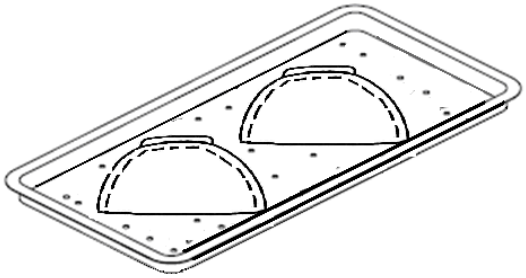


Figure 6

10. Detach caps from can-like items and separated them for sterilization work.
11. If implements are packed with sterilizing pouches, please make sure not to pile them up.

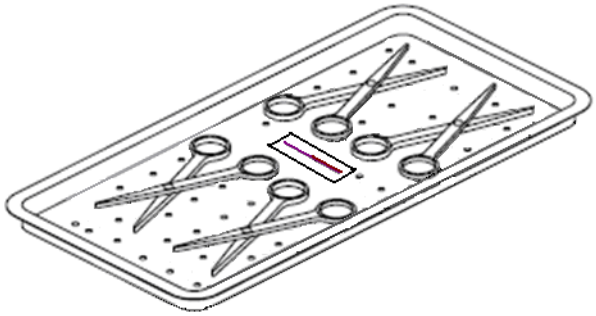


Figure 7

12. Follow the instruction of the instrument to clean and wash the hollow instruments prior sterilizing work, and wipe excess detergents or water. Keep the double ended hollow instrument as straight as possible while keeping two ends opened.
13. An additional temperature sensor and recorder are required for liquid sterilization program as shown in Figure 8.

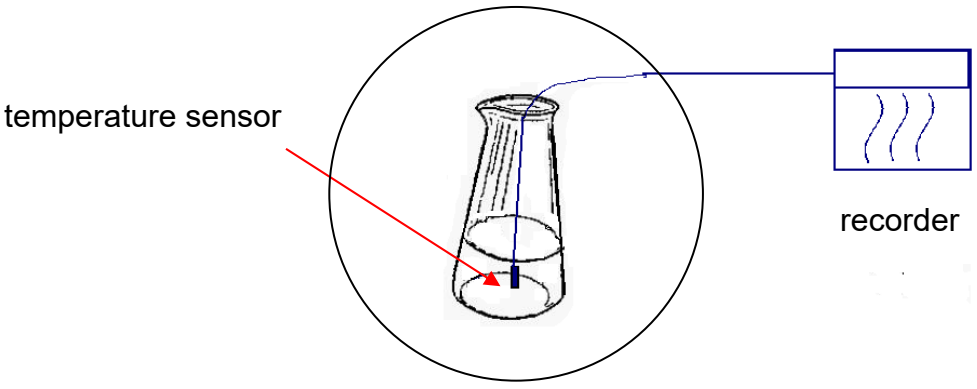


Figure 8

14. Make sure that the items to be sterilized are placed in proper position and then closed the door for sterilization works.

CHAPTER 5 OPERATION

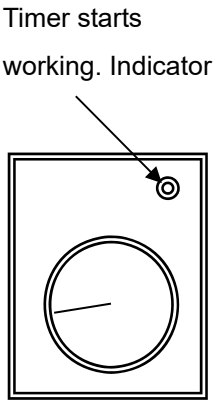
PLEASE CHECK CHAPTER 3. AT FIRST.

1. Open the door and put the sterilized instruments into the chamber. Than closed the door.
   PLEASE DONOT FORGET TO PUT THE STERILIZATION INDICATOR INTO CHAMBER.

2. Set-up the pressure control knob 0.9 kgf/cm^2 to 2.1 kgf/cm^2

PS: Set-up the temperature control switches 118°C to 134°C (For ptional function “**T**” only).

3. Sep-up the sterilization time.
   AS TO THE TIME SET, PLEASE REFER THE ENCLOSED APPENDIX.



Timer

4. Sep-up the dry time. Push-ON the start switch.
5. After the chamber pressure up-to the pressure you set-up, The LED of sterilization timer turn to “flash” that means the sterilization timer starts work. Then the LED turns light on. This means the sterilization timer finished working then the dry-timer starts working.
6. The LED of dry timer turn to “flash” that means the dry timer start work and the “DRY” Indication lamp will be light on. **Meanwhile the jack steam pressure will be exhausted to make the chamber vacuum**. The LED turns light on. This means the dry cycle is finished. Then, the dry-timer stop working, and the “END” (complete) indication lamp light on
7. About 40 second’s buzzer will report you, “MY DEAR MASTER! YOUR COMMAND HAS BEEN COMPLETED.”

⚠ CAUTION

◎BEFORE OPENING THE DOOR ENSURE THE PRESSURE GAUGE IS AT “ZERO” POSITION.
◎PLEASE DON’T FORGET THE CHECK THE STERILIZATION IDICATOR, AFTER STERILIZATION CYCLE.
◎IFYOU NEED DO THE NEXT RUN. PLEASE TURN OFF THE POWER SWITCH THEN TURN ON POWER SWITCH TO RESET MACHINE AGAIN. (IF THE BALANCE WATER IN THE BOIL IS ENOUTH)

CHAPTER 5-1 OPERATION BASIC STEP OF STERILIZING

PLEASE CHECK CHAPTER 4. OPERATION AT FIRST.

SET-UP THE STERILIZATION PRESSURE OR STERILIZATION TEMPERATURE.

⇩

SET-UP THE STERILIZATION TIMER.

1. SET-UP 15 MIN. DRY TIMER. (FOR EXHASUT ONLY)
2. PRESS LIQUID STERILIZATION SWITCH ON

SET-UP THE DRY TIMER.

CLOSED THE DOOR.

⇩

PUSH-ON THE START SWITCH.

⇩

MAIN HEATER START WORKING.

⇩

WHEN THE JACKET PRESSURE 1.4 kgf/cm², THE JACKET PRESSURE WILL GO TO THE CHAMBER.

⇩

STERILIZATION TIMER START WORKING, WHEN PRESSURE OF CHAMBER, ARRIVED SET-UP.

THE CHAMBER SLOW EXHAUST, WHEN STERILIZATION TIMER-OFF.

THE CHAMBER PRESSURE EXHAUST, WHEN STERILIZATION TIMER-OFF.

⇩

THE DRY TIMER START WORKING, WHEN THE CHAMBER PRESSURE EXHAUST COMPLETED. ※ VOCUUM PUMP START WORKING IN DRY TIME. (FOR OPTIONAL "**V**" TYPE ONLY)

⇩

AFTER 40 SECONDS BUZZER, THE COMPLETE INDICATION LAMP TRUNS LIGHT ON.

⇩

IF THE COMPLETE INDICTION LAMP IS NOT LIGH ON PLEASE RE-CYCLE AGAGIN.

⚠ CAUTION

1. HECK THE PRESSURE GAUGE RETURN TO “**ZERO**” POSITION BEFORE THE DOOR OPENED.

2. OPEN THE DOOR, IN 10 MINUTES, AFTER ALARM TO MAKE THE DRY FUNCTION IN GOOD CONDITION.

3. IF YOU NEED DO THE NEXT RUN. FIRST TURN THE “START” SWITCH TO “OFF” POSITION THEN TURN ON THE POWER SWITCH TO RESET MACHIN.

CHAPTER 5-2 OPERATION

Operation for CB-100 Temperature control

※Use CB-100 temperature controller position description：

1. PV: Actual chamber temperature display (green color)
2. SP Set value (set sterilization temperature) display (Orange color)
3. Indication Lamps:
   - “AT”: Auto-tuning Lamp (green): Flashes during auto-tuning execution.
   - “OUT1”: Control Output Lamp (green): Lights when control output is turned On.
   - “ALM 1”: Control Output Lamp (red): Lights when alarm 1 output is turned On.
4. **SET** key: Used for parameter calling up and set sterilization temperature registration.
5. R/S KEY: 1). Shift digits, when settings are changed.

   2). Modify the internal data of the temperature controller with the SET button .
6. Down-key: Decrease numerals.
7. Up-key: increase numerals.

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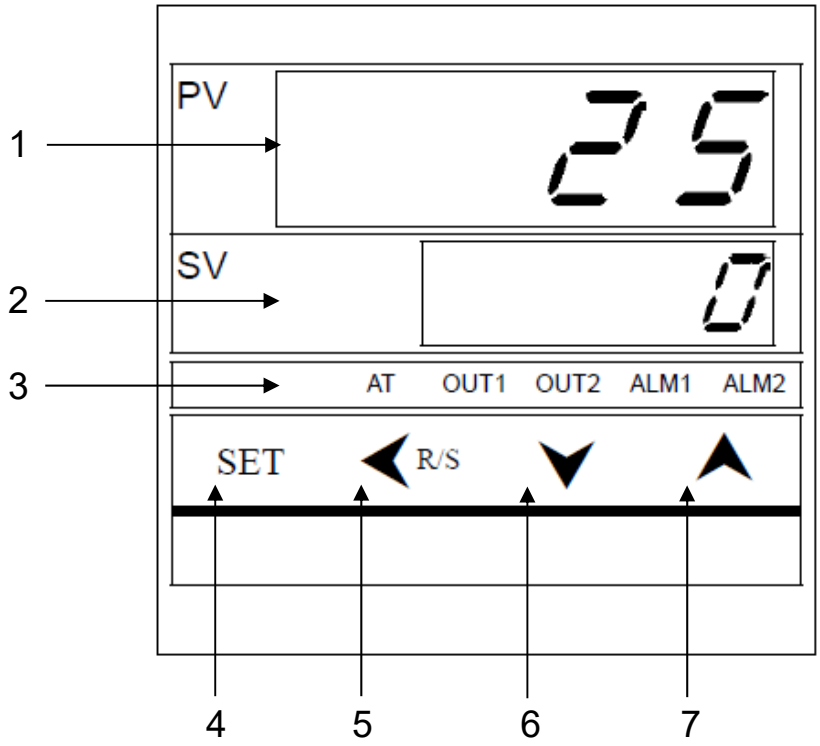

How to operation the CB-100 temperature control.

Turn on the power, and wait 5 seconds for machine to be in standby mode.

⇩

※Set the sterilization temperature.

1. Press ***SET*** key
2. Please press ▼ or ▲ to set sterilization temperature 121°C or 134°C
3. Press ***SET*** key again
4. Temperature set is complete.

⇩

NOTE: ***Do not change the following parameter, changing the parameter would cause damage to the machine. The different series machine has a different parameter, please follow the steps below to set the parameter.***

1. Press ***SET*** key about 3 second. The display is PV … AL1

SP… 0

⇩

2. Press ***SET*** key. The display is PV … ATU

SP … 0

⇩

3. Press ***SET*** key. The display is PV … STU

SP … 0

⇩

4. Press ***SET*** key. The display is PV … P

SP …1.2

⇩

5. Press ***SET*** key. The display is PV … I

SP … 25

⇩

6. Press ***SET*** key. The display is PV … D

SP … 6

⇩

7. Press ***SET*** key. The display is PV … Ar

SP …100

⇩

8. Press ***SET*** key. The display is PV … T

SP … 20

⇩

9. Press ***SET*** key. The display is PV … PT

SP… 0

⇩

10. Press ***SET*** key. The display is PV …LCK

SP …1000

0011 To lock the data

Press “**SET**” key for about 3 seconds, the machine returns to operating mode.

==========

Press ”***SET***” and ”***<R/S***” Key at the same time for about 3 seconds, then enter the next level.

11. Press ***SET*** key. The display is PV … Cod

SP … 0000

⇩

12. Press ***SET*** key. The display is PV … SL 1

SP … 1100

⇩

13. Press ***SET*** key. The display is PV … SL 2

SP … 0000

⇩

14. Press ***SET*** key. The display is PV … SL 3

SP … 0000

⇩

15. Press ***SET*** key. The display is PV … SL 4

SP … 0001

⇩

16. Press ***SET*** key. The display is PV … SL 5

SP … 0000

⇩

17. Press ***SET*** key. The display is PV … SL 6

SP … 0001

⇩

18. Press ***SET*** key. The display is PV … SL 7

SP … 0000

⇩

19. Press ***SET*** key. The display is PV … SL 8

SP …0000

⇩

20. Press ***SET*** key. The display is PV … SL 9

SP … 0000

⇩

21. Press ***SET*** key. The display is PV … SL10

SP … 1000

⇩

22. Press ***SET*** key. The display is PV … SL11

SP … 0000

⇩

23. Press ***SET*** key. The display is PV … Cod

SP … 0001

⇩

24. Press ***SET*** key. The display is PV … SLH

SP … 136

⇩

25. Press ***SET*** key. The display is PV … SLL

SP … 0

⇩

26. Press ***SET*** key. The display is PV … oH

SP … 2.0

⇩

27. Press ***SET*** key. The display is PV … AH1

SP … 2.0

⇩

28. Press ***SET*** key. The display is PV … dF

SP … 1

⇩

29. Press ***SET*** key. The display is PV … STTn

SP … 100

⇩

30. Press ***SET*** key. The display is PV … STPK

SP … 67

⇩

31. Press ***SET*** key. The display is PV … STIK

SP … 16

⇩

32. Press ”SET” and ”<R/S” Key at the same time for about 3 seconds and return to the operating mode.….setting complete.

CAUTION:

1. Turn on the power switch, wait about 5 seconds until the temperature digital display is in standby condition, and set up the sterilization temperature.

2. Press the “SET” bottom over 3 seconds, the display would transfer to other modes. Press the “SET” bottom over 3 seconds again, the display would back to operating mode.

CHAPTER 6 WARNING

1. ALWAYS check the pressure gauge is reading ZERO (0) before opening the door. DO NOT attempt to open the door if the pressure is not zero (0).
2. “USE ONLY DISTILLED or SOFT & FILTERED WATER”. Regular tap water contains minerals, especially chlorides, which have corrosive effects on stainless steel. Failure to use distilled water will invalidate the warranty.
3. Please keep open the water source into the chamber. Or not, the low-water protector will cut-off the elec. power.
4. Please attend the high temperature on the door of the chamber. When she is working.
5. The door handle must be closed well, when the unit is in sterilization.
6. Please install the No Fuse Breaker, between the elec. Power source and autoclave. (Please refer P. 2.)
7. Use only a dedicated power supply.
8. The filter valve inside the housing should be cleaned at least every season.
9. Use Sterilization Indicator Test Strips to check that sterilization has been successful. These strips also are kept as a record of sterilization.
10. In the emergency condition, please push down the emergency switch immediately, And turn-OFF at the mains power switch, and No Fuse Breaker.
11. If the ALARM indicator light  illuminates, the machine is overheated. The sterilizer will shut down automatically. Contact your supplier for service support.
12. Keep the chamber and gasket clean.

13. The sign of caution and indication:

Caution! Hot surface.

Grounding terminal.

This label means indicator for power on

This label means indicator for power off

Consult instructions for use

Disposal of Electrical & Electronic Equipment (WEEE):
This product should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. For more detailed information about the recycling of this product, please contact your local city office, household waste disposal service or the retail store where you purchased this product.

Date of Manufacture: EX: 2008-01 is mean January / 2008.

Authorized Representative at europe.

Manufacturer.

Caution, risk of electric shock.

14. Storage Environment: Temperature:-10°C to +50°C / HUMIDITY: ≤ 80%

15. Working Environment: Temperature: 5°C to +40°C / HUMIDITY: ≤ 80%

16. Transportation Environments: Temperature: -10°C to +60°C / HUMIDITY: ≤ 80%

CHAPTER 7 APPENDIX

SETTING UP THE STERILIZATION TIME:

* PRESSURE ON 2.1 kgf/cm^2 (APPROX. 134°C / 273°F)

UNWRAPPED	Set-up 4 minutes sterilization time.
WRAPPED	Set-up 15 minutes sterilization time.

* PRESSURE ON 1.2 kgf/cm^2 (APPROX. 121°C / 250°F)

UNWRAPPED	Set-up 22 minutes sterilization time.
WRAPPED	Set-up 30 minutes sterilization time.
LIQUID	Set-up 40 minutes sterilization time.

* DRY TIME: 30 minutes (Suggest)

* SPECIAL SELECTION RANGE:

※ STERILIZATION PRESSURE SELECTION RANGE 0.9 to 2.1 kgf/cm^2.

※ STERILIZATION TEMPERATURE SELECTION RANGE 105°C to 136°C.
(For Optional Function "**T**" only.)

※ STERILIZATION TIME SELECTION RANGE 0 to 60 minutes

※ DRY TIME SELECTION RANGE 0 to 60 minutes adjustable.
Please don't set-up the dry time over than 30 minutes. Because Sometime the boil water will be not enough.

 # FOR REFERENCE: ***1 kgf/cm^2 = 0.98 bar = 14.2 psi.***

Sterilization instruments must be made by metal without plate, or autoclaveble plastic or rubber material.

This machine can use liquid sterilization function.

CHAPTER 8 TROUBLE SHOOTING

*** POWER LAMP IS NOT LIGHT ON:**

1. Cause: Power supply is not properly connected.
   Solution: Try to connect power supply until power indicator goes on.
2. Cause: No Fuse Breaker broken.
   Solution: Replace the No Fuse Breaker.
3. Cause: Bulb broken.
   Solution: Replace the bulb.
4. Cause: Power switch broken.
   Solution: Replace power switch.

*** HEATING-UP LAMP IS NOT LIGHT ON:**

1. Cause: Lamp Broken.
   Solution: Replace the bulb.
2. Cause: Heater broken.
   Solution: Replace the heater.
3. Cause: Power relay broken.
   Solution: Replace the power relay.
4. Cause: Pressure control switch broken.
   Solution: Replace the pressure control switch
5. Cause: Temperature control switch broken.
   Solution: Replace it. (For Optional Function “T” only.)

*** DRY LAMP IS NOT LIGHT ON:**

1. Cause: Lamp broken.
   Solution Replace bulb.
2. Cause: Dry timer broken.
   Solution: Replace the dry timer.

*** LOW WATER (OVER HEAT) INDICATION AND ALARM:**

1. Cause: Water is not enough.
   Solution: Check water source.
2. Cause: Water level sensor surface dirty and non-conductive
   Solution: Call service.

3. Cause: Check the water pipe leakage or other problem.
4. Cause: Check manual valves and solenoid valve (and Add-Water Pump for optional function "**W**" type.) by engineers.

PS: THE FILTER MUST BE CLEAN PER EACH SEASON.

*** PRESSURE IN THE CHAMBER CAN'T EXHAUSE AUTOMATICALLY AFTER STERILIZATION:**

1. Cause: Filter is not clean.
   Solution: Clean it.
2. Cause: Check solenoid valve for chamber exhaust.
   Solution: The valve broken, replace it.
3. Cause: Check the power for solenoid.
   Solution: Call service.

*** PRESSURE CAN'T UP:**

1. Cause: Check solenoid valve between chamber and jacket, If no function
   Solution: The valve broken, replace it.
2. Cause: Check the power for solenoid.
   Solution: Call service.
3. Cause: Check Heater function, if it is broken.
   Solution: Replace the heater.
4. Cause: Check the power relay, if it is broken.
   Solution: Replace the power relay.
5. Cause: Water level switch broken, to cut the power for heater.
   Solution: Replace the switch.

*** DRY FUNCTION NOT PERFECT:**

1. Cause: Please open the door in 10 minutes, after alarm. If still have same problem,
   Solution: Please call engineer.
2. Cause: Check the chamber vacuum condition, if the pressure can't under -0.6 kgf/cm^2,
   Solution: Please call engineer. **(For optional function "V" type only)**

*** DOOR CANNOT BE OPENED:**

1. Cause: Air filter clogged with dusts.
   Solution: Replace with a new air filter.
2. Cause: Vacuum release vale not in half-open position.
   Solution: Adjust vacuum release valve in half-open position.

3. Cause: Malfunction of check valve.
Solution: Replace with a new check valve.

*** For optional function "K" type only.**

Due to the "PRESSURE DOOR LOCK DEVICE", so if you can't open the door after work finished, please do following step:

a. Please turn the handle " ↷ "to tight the door.
b. Then, turn the handle " ↶ " back to open it.

*** The sterilization indicator cannot change the color completely.**

1. Cause: The steam traps no function
Solution: Replace the steam trap.
2. Cause: The steam trap dirty inside
Solution: Clean the steam trap as Figure 1.

Figure 1

3. Cause: The chamber or jacket pressure control switch out of order to make chamber In low pressure and low temperature.
Solution: Replace it.

*** For "W" type optional function only:**

1. Cause: No auto-add water function
Solution-1: Add water solenoid valve broken, replace it.
Solution-2: Water pumps broken, replace it.
Solution-3: No water supply.
Solution-4: check the water pipe for leakage.

PS: ANY PROBLEMS PLEASE CHECK THE WIRE CONNECTION AT FIRST.

CHAPTER 9 MAINTENANCE REQUIREMENTS

DAILY:

◎ WIPE THE INSIDE SURFACE OF THE CHAMBER AND THE DOOR WITH NON-LINT CLOTH SUCH AS A WETTEX.

◎ CHECK WATER SOURCE.

WEEKLY:

◎ CLEAN THE RACK AND TRAYS.

◎ CLEAN THE FILTER IN THE CHAMBER. (ON THE EXHAUST HOLE)

MONTHLY:

◎ AFTER STERILIZATION, WHEN THE CHAMBER PRESSURE STILL OVER THAN 0 kgf/cm², PLEASE TURN-OPEN THE JACKET EXHAUST VALVE KNOB. THEN, THE PRESSURE WILL EXHAUST THE BALANCE WATER AND STEAM FROM THE JACKET AND THE BOIL. THIS WAY WILL KEEP THE JACKET AND BOILER CLEAN. AND PUSH-ON THE POWER SWITCH TO REFILL THE WATER. TO THE BOIL AGAIN. AFTER 10 MINUTES, PLEASE PUCH-OFF THE POWER SWITCH, AND TURN-OPEN THE EXHAUST VALVE (KNOB) AGAIN. AFTER 2-3 TIMES, THE BOIL AND JACKET WILL BE CLEAN WELL.

◎ PLEASE CHECK THE WATER LEVEL SENSOR AT TOP OF STERM GENERATOR。

YEARLY: (CHECK BY ENGINEER)

◎ REMOVE, CLEAN AND REPLACE THE WIRE MESH FILTER AT INSIDE OF THE HOUSING. THEN, FIX RETURNS THE FILTER.

◎ CHECK THE ELECTRIC WIRE SYSTEM, FUSE, AND CONNECTORS.

◎ CHECK THE TUBING SYSTEM.

◎ CLEAN THE SOLENOID VALVE.

◎ CHECK THE INDICATION LAMPS, AND ALL CYCLE FUNCTION.

◎ CHECK THE DOOR GASKET. (SUGGESTION: REPLACING THE DOOR GASKET ONCE A YEAR.)

◎ CHECK THE FUNCTION OF THE SAFETY VALVE.

◎ CLEAN THE SURFACE OF THE WATER LEVEL CENSOR.

◎ CHECK IF AIR FILTER CLOGGED WITH DUSTS.

Cleaning Steps to the Water Sensors of the Steam Generator - Model SAP Series

⚠ **WARNING:** Danger of Electric Shock! Disconnect the power prior to the maintenance works.

1. Mark and record the wiring number for subsequent reinstallation works. Do not mix the High-Level-Sensor, Low-Level-Sensor and Ground sensors.
2. Disconnect the three wirings counter-clockwise by using a No. 10 wrench (or an adjustable wrench), as shown in Fig- 2
3. Loosen the two sensors nuts (High-Level-Sensor and Low-Level-Sensor) counter-clockwise by using a No. 27 wrench (or an adjustable wrench), and then loosen the Ground screw nut counter-clockwise by using a No. 17 wrench (or an adjustable wrench).

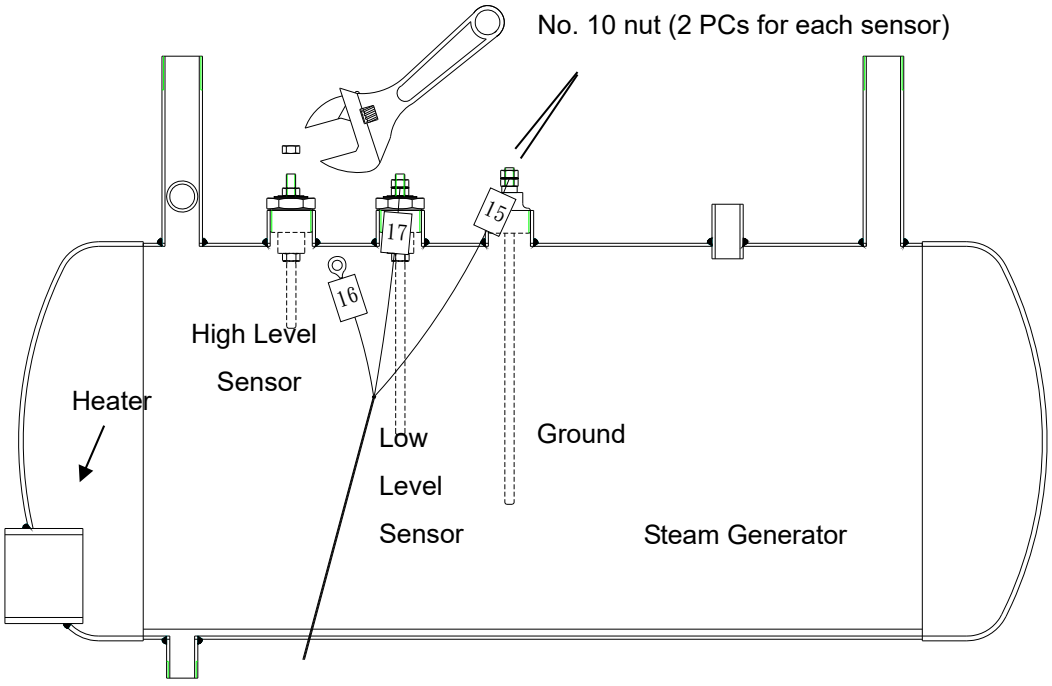

Fig- 2 Layout

4. Disassemble the High-Level-Sensor and Low-Level-Sensor as shown in Fig - 3 and Fig - 4.
5. Clean each part very careful to remove the scale and deposit with clean water, a small brush or scrub sponge may help to the cleaning works. Also clean the Ground Sensor Rod as described above.

NOTE: Each part must be clean completely; there should be no dirt on the surface of the

Teflon Insulator.

6. Dry all of the components after the cleaning work. Wrap the screw thread of the High-Level-Sensor and Low-Level-Sensor rods (Fig- 4) with sealing tape so that they can be tighten with Teflon Insulators.
7. Assemble the components as shown in Fig- 3 and Fig- 4
8. Wrap the screw thread of the nut with sealing tape for assembly purpose.
9. Install the three sensors and their associated wiring with the tools used in step 1. Visual inspect that the position and wiring identification are match to Fig- 2.
10. Restore the power.

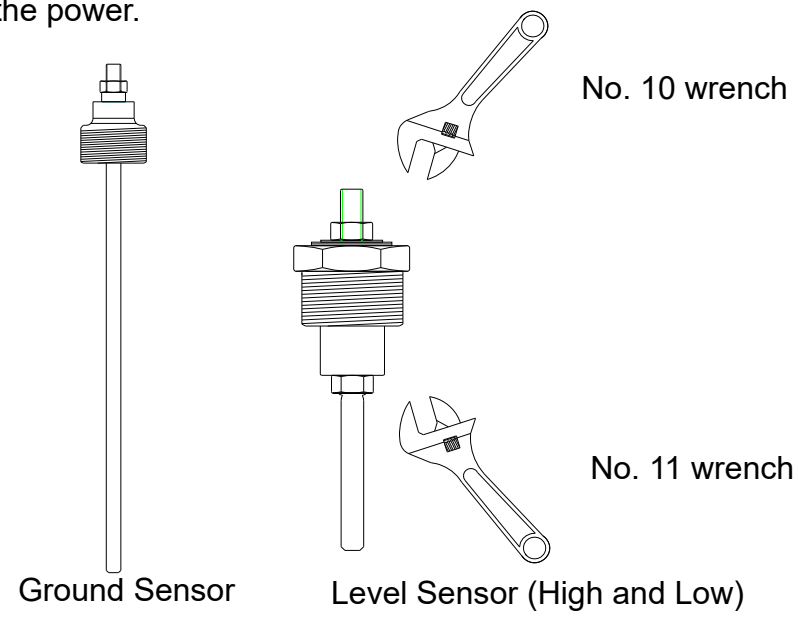

Fig- 3 Sensors

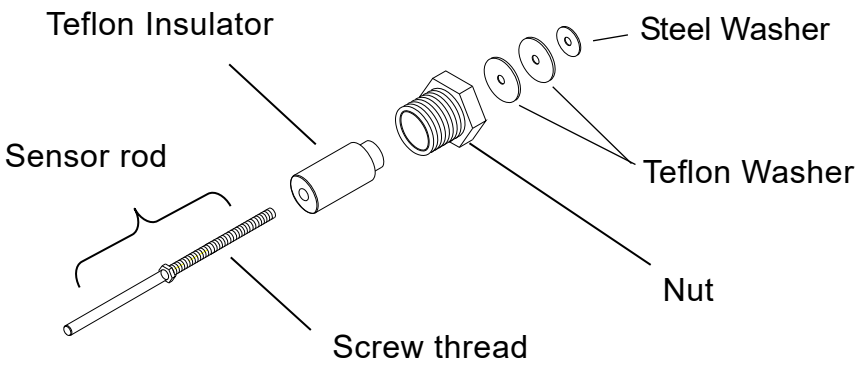

Fig- 4 Sensor Assembly

Cleaning Steps to the Water Sensors of the Steam Generator -

Model SAP-D Series Dual-Door

⚠ **WARNING:** Danger of Electric Shock! Disconnect the power prior to the maintenance works.

1. Mark and record the wiring number for subsequent reinstallation works. Do not mix the High-Level-Sensor, Low-Level-Sensor and Ground sensors.
2. Disconnect the three wirings counter-clockwise by using a No. 10 wrench (or an adjustable wrench), as shown in Fig- 5
3. Loosen the two sensors nuts (High-Level-Sensor and Low-Level-Sensor) counter-clockwise by using a No. 27 wrench (or an adjustable wrench), and then loosen the Ground screw nut counter-clockwise by using a No. 17 wrench (or an adjustable wrench).

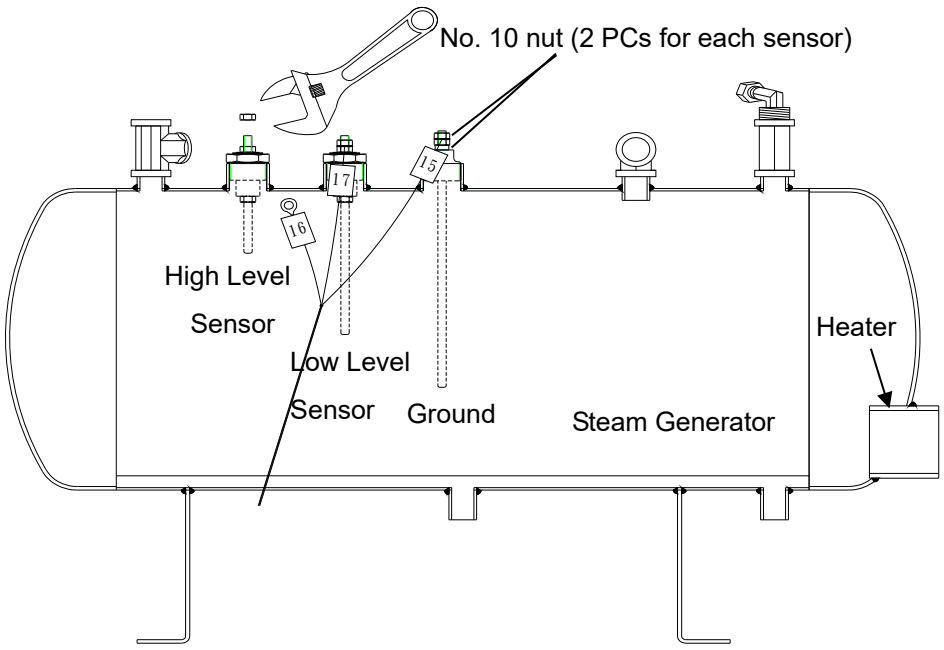

Fig- 5 Layout

4. Disassemble the High-Level-Sensor and Low-Level-Sensor as shown in Fig- 6 and Fig- 7.
5. Clean each part very careful to remove the scale and deposit with clean water, a small brush or scrub sponge may help to the cleaning works. Also clean the Ground Sensor Rod as described above.

NOTE: Each part must be clean completely; there should be no dirt on the surface of the Teflon Insulator.

6. Dry all of the components after the cleaning work. Wrap the screw thread of the

High-Level-Sensor and Low-Level-Sensor rods (Fig- 7) with sealing tape so that they can be tighten with Teflon Insulators.

7. Assemble the components as shown in Fig- 6 and Fig- 7
8. Wrap the screw thread of the nut with sealing tape for assembly purpose.
9. Install the three sensors and their associated wiring with the tools used in step 1. Visual inspect that the position and wiring identification are match to Fig- 5.
10. Restore the power.

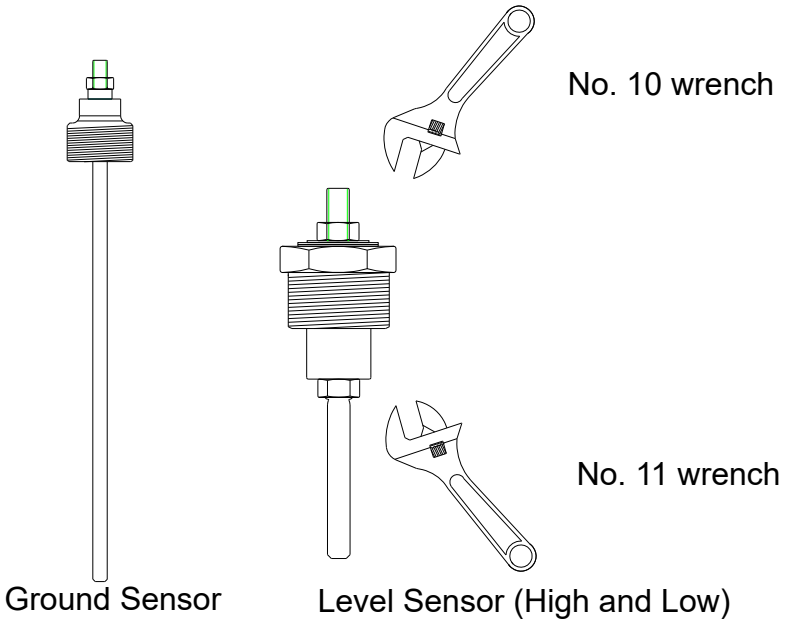

Fig- 6 Sensors

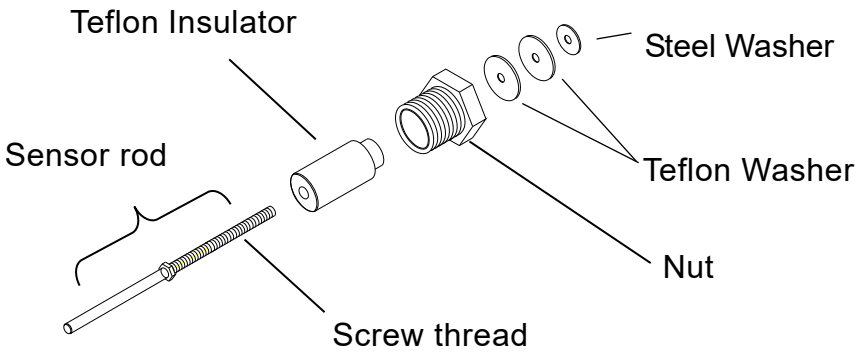

Fig- 7 Sensor Assembly