
Instruction Manual

Autoclave/Pressure Steam Sterilizer

LFSS12AA

LFSS18AA


LFSS23AA



CE 1023

Revision History

Revised Chapter	Content Revised	Date of Revision	Revised By	Number of Revision	Remarks

 Please appoint specific person to operate and maintain the device. The person must be well trained.

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Using Range of This Instruction

This instruction is for models: LF-8L-E, LFSS12AA, LFSS18AA, LFSS23AA



Please do not operate the device according to other instruction manuals.














Information About This Autoclave

Description:	Autoclave	Class B
Model number:		
SN:		

Notice:

- Please read the manual carefully before operating the autoclave.
- Please operate the autoclave strictly according to this manual.
- Please keep this manual for reference.
- Please contact your local distributor or us if there's any problem with the autoclave.
- The person who operate and maintain the autoclave shall be specified and well trained.

Explanation Of Symbols

	Symbol for "Caution!"
	Symbol for "PROTECTIVE CONDUCTOR TERMINAL"
	Symbol for "HOT SURFACE, KEEP AWAY"
	Symbol for "ENVIRONMENTAL PROTECTION – Electrical wastes should not be disposed together with household wastes. If possible, please contact local distributor or government to recycle it."
	Symbol for "MANUFACTURER"
	Symbol for "COMPILES WITH MDD93/42/EEC REQUIREMENTS"
	Symbol for "DATE OF PRODUCTION"
	Symbol for "SERIAL NUMBER"
	Symbol for "EUROPEAN REPRESENTATIVE"
	Symbol for "THIS SIDE UP"
	Symbol for "KEEP AWAY FROM RAIN"
	Symbol for "DO NOT ROLL"
	Symbol for "STACKING LIMITED 3"
	Symbol for "Room Temperature: 5°C~40°C"
	Symbol for "Relative humidity: ≤80% "

Safety Warning

Please read below carefully:



Electric shock, fire or equipment damage might happen if you ignore below warnings.

- ❖ Please use 3-hole socket, and ensure the socket has been connected well with the ground. Do not put the autoclave on a place that the power is difficult to be cut off.
- ❖ Do not use power with different voltage with that stated in this manual.
- ❖ Do not touch the plug or socket with wet hands.
- ❖ Do not pull, change, over-bend or twist the wires, and do not put heavy things on the wires.
- ❖ Do not put the autoclave on an unstable table.
- ❖ Do not block the door of autoclave, and cover the ventilation holes and radiation holes.
- ❖ Do not put anything on the top of autoclave.
- ❖ If you find any abnormal smell or sound during operation, please cut off the power immediately and contact your local distributor or us.
- ❖ If you do not use the autoclave for a long time, please cut off the power and store the autoclave in a dry and cool place.

1. Brief Introduction

This autoclave is automatic type steam sterilizer, which is very easy to operate. The parameters and conditions of the program will be displayed automatically on the digital screen during the sterilization. If there's problem, the autoclave will alarm automatically. If there's over-temperature or over-pressure, the autoclave will automatically cut off the power and ensure the safety of operator. Inside the autoclave, there's a waste water tank to collect waste water and vapor to ensure they will not pollute the inner clean pipes.

2. Using Range

This autoclave can be used for medical purposes, e.g. In general medical practices, dentistry, facilities for personal hygiene and beauty care and also veterinary practices. It is also used for materials and equipment which are likely to come into contact with blood or body fluids, e.g. Implements used by beauty therapists, tattooists, body piercers and hairdressers.

Type of this autoclave	
Type	Description of intended use
B	The sterilization of all wrapped or non-wrapped, solid, hollow load products type A and porous products as represented by the test loads in standard: EN13060:2004+A2:2010



Do not sterilize liquid!

3. Parameters and Sterilization Programs

3.1 Parameters:

The working condition of the autoclave:

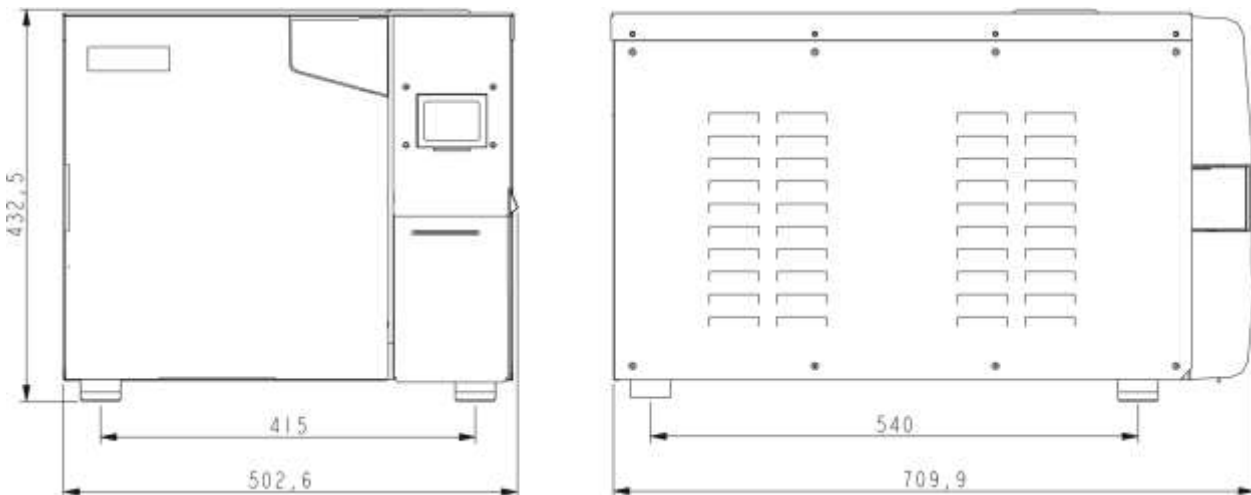
- ❖ Environmental temperature: 5°C~40°C
- ❖ Relative humidity: ≤80%
- ❖ Atmospheric pressure: >70kPa;
- ❖ Voltage:230VAC, 50Hz, 2500VA
- ❖ The highest working pressure: 0.21~0.23MPa
- ❖ The highest working temperature: 134~137°C
- ❖ Life span of the autoclave: 5 years

The requirements of transportation and storage:

- ❖ Environmental temperature range: 5~40°C
- ❖ Relative humidity: ≤80%
- ❖ No corroding gases

Detailed sizes of the autoclave:

(see below pictures)



Net weight of autoclaves

Model	Net Weight
LFSS12AA	47.7 KGS
LFSS18AA	50.25 KGS
LFSS23AA	53.5 KGS

3.2 Sterilization Programs

Process	Vacuum times	Sterilizing time	Sterilization temperature	Sterilization pressure	Vacuum persist time	Dry time
121°C/SOLID	1 *	20min *	121°C	110kPa		3 *
121°C/POROUS	3 *	20min *	121°C	110kPa		7 *
121°C/HOLLOW	3 *	20min *	121°C	110kPa		10 *
134°C/SOLID	1 *	4min *	134°C	210kPa		3 *
134°C/POROUS	3 *	4min *	134°C	210kPa		7 *
134°C/HOLLOW	3 *	4min *	134°C	210kPa		10 *
USER DEFINED	3 *	5min *	134°C*	210kPa		10 *
B-D TEST	3	4min	134°C	210kPa		7
VACUUM TEST				-80kPa	15min	
CLEAN PROCESS	3	5min	105°C	20kPa		10
PRIONEN	3	19min	135°C	210kPa		10

The data have "*" can be adjusted



B&D Test: The display shows 4min, but normally it takes 3.5min.

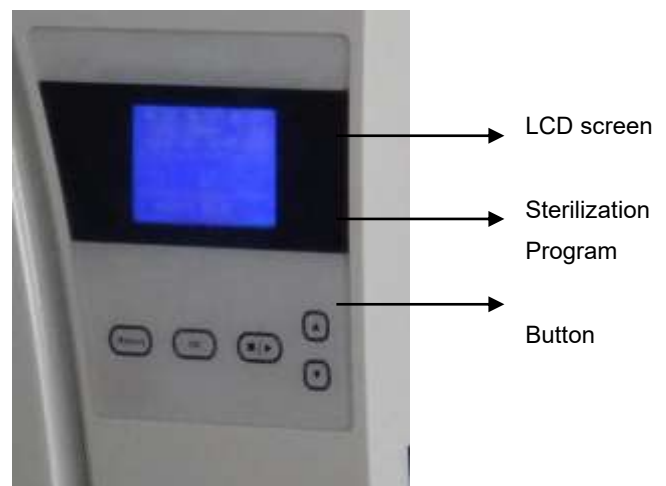
4. Operation Panel

4.1. LCD screen

4.1.1 ■P/ON: Indicate the status of printer

The relative set-up menu for printer:

- ❖ ADV → PRINTER:ON/OFF
- ✓ ON : the printer will work
- ✓ OFF: the printer will not work.



4.1.2 ■K/OFF: Indicate the status of function of "Keep temperature"

The relative menu:

- ❖ ADV → KEEP TEMP:ON/OFF".
- ✓ ON : indicate that the sterilizer will warm up the chamber and steam generator to keep the temperature. When the

door is opened, the sterilizer will stop warming up the chamber and steam generator. The longest time to keep temperature is 8 hours.

This function can shorten the time of your next sterilization program.

- ✓ OFF: Disable the function.

4.1.3 ■W/OFF: Indicate the status of function of “Preheat”

The relative menu:

- ❖ “ADV → PREHEAT:ON/OFF” .
- ✓ ON: It means if user has started a sterilization program, the autoclave will not start the next step until the temperature of chamber reaches 50°C.
User can set up it in menu: “ADV → PREHEAT:ON/OFF”



If user set ■W/ON, the whole sterilization cycle might be very long. In some countries, it is required. Please check your local standards before setting up this function.

4.1.4 COUNT: Times of already running sterilization program

i.e. 00023 indicate the sterilizer have ran 23 times
B&D/helix test and vacuum test are not counted.

4.1.5 2 Kpa:

It indicates that the pressure in the chamber is 2 Kpa;
when the autoclave's door is opened, this pressure is the local air pressure.

4.1.6 14:09:00: Time

User can set it in menu: “ADV → DATE/TIME”

4.1.7 26-11-2011: Date

User can set it in menu: “ADV → DATE/TIME”

4.1.8 USER: User menu

All programs are in this menu, User can select the program in this menu.

4.1.9 ADV: Advance menu/Set-up Menu

User can change options and set the parameters in this menu

4.1.10 SERV: Serve menu

This menu is for maintenance. It requires password. Only the distributor can use this menu. Please don't change the parameters inside this menu without the approval of a professional engineer.

4.1.11 134°C/solid : Current Sterilization Program

It can also record the last sterilization program. Users need not to enter USER menu to select the same program.

4.2 Introduction of “ USER MENU”

There are 11 sterilization programs for user to choose.



- 121°C-program and 134°C-program has no difference in sterilization results. If the instruments cannot be sterilized in 134 °C, please choose 121°C program.
- Solid program can only sterilize solid instruments without wrapped, such as pliers, forfex, forceps etc.
- Porous program can sterilize the loads which made of porous material
- Hollow program can sterilize the hollow A and hollow B loads
- User-defined program: All this program's parameters can be adjusted: The sterilization temperature、 the sterilization time、 dry time and vacuum times.
- B&D test is for hollow A loads test . B-D test and Helix test is the same test program. The only difference is that B-D test uses a B-D test package, while Helix test uses a Helix test device (PCD:process challenge device).
- Vacuum test is air leakage test.



It is recommended to do a vacuum test every month. If the result is FAIL, Do not use this autoclave.

- Clean program: This is used for clean the autoclave. If the autoclave shows “ NEED CLEAN”, please run this program. This program can also be used to clean other loads.
- Prion program: This program is to sterilize prions.

4.3 ADV MENU



▶ : Cursor

User can press button “up” or “down” to move the cursor.

When the cursor is next to the option which user wants to set up , user can press “OK” to set up.

4.3.1、 KEEP TEMP

This is the “■K” in LCD screen.

- ✓ ON: The sterilizer will warm up the chamber and steam generator to keep temperature. When the door is opened, this function is stopped. The longest time to keep temperature is 8 hours. Setting it on can shorten the time of the whole cycle.
- ✓ OFF: Close this function.

4.3.2、 PRINTER

- ✓ ON: The printer will print the sterilization records during the working cycle.
- ✓ OFF: The printer will not print the records during the working cycle.

4.3.3、 LANGUAGE

- ✓ ENG: English
- ✓ PLN: Poland

4.3.4、 USER-DEFINED SET

It is used to set up the parameters of “USER-DEFINED” menu. When the cursor is moved to this option, user can enter it by pressing “OK”. The detailed setting page is as below:



When the cursor is moved to this option, User can press “UP” or “DOWN” to change the setting. Press “OK”, the cursor will move to the next option.

VACUUM TIMES:

It is used to set up the vacuum times during the sterilization cycle.

- ✓ 04: Meaning that: the program “USER-DEFINED” have 4 times vacuum process.
- ✓ The range of the “VACUUM TIMES” is 1~10.

STER TEMP:

It is used to set up the sterilization temperature.

- ✓ 134°C: The sterilizer temperature of program "USER-DEFINED" is 134 °C
- ✓ The range of the "STER TEMP" is 105°C~134°C.

STER TIME:

It is used to set up the sterilization time,

- ✓ 05Min: . The sterilizer time of program "USER-DEFINED" is 05Min
- ✓ The range of the "STER TIME" is 04min-60min.

DRY TIME:

It is used to set up the dry time.

- ✓ 10Min: . The dry time of program "USER-DEFINED" is 10Min
- ✓ The range of the "DRY TIME" is 01min-25min.

OK:

It is used to save setting and return to the previous page.

4.3.5. ADJUST STER PAR:

When the cursor is moved to this option, user can press "OK" to enter the program selection page. There are six programs can be adjusted(Pic1).



(Pic 1)



(Pic2)

For example, you can adjust the parameters of 134°C solid program, after that, the page of Pic2 will be appearing.

Three parameters can be adjusted: STER TIME、VACUUM TIMES and DRY TIME.

The setting method is the same as the setting of user-defined program,

DEFAULT: Return to default.

Move the cursor to the "DEFAULT" option by pressing "OK", press "UP" to default the parameters.

4.3.6. USER PASSWORD

If the user has set up the password and let it "ENABLED", the autoclave will run only after correct password has been input. If you input wrong password, the autoclave will not work.

If user forgets his password, please contact local distributor or us for help.

When the cursor is before the "USER PASSWORD" option in "ADV" menu, press "OK" to enter the next page(pic 3).



(Pic3)



(Pic 4)

USER PASSWORD SET:

When the cursor is before the "USER PASSWORD SET" option, then press "OK" to enter the next page (pic 4)

User can change the "0" with white fill by press "UP" or "DOWN",

- ❖ UP: +1;
- ❖ DOWN: -1

Press "START/STOP" button to move the cursor.

ENABLED:

- ✓ ON: Password enabled.
- ✓ OFF: Password disabled.
- ✓ OK: Return to the previous page.

4.3.7 DATE/TIME

When the cursor is before the "DATE/TIME" option, press "OK" to enter the next page.

Press "UP" or "DOWN" to change the date:

- ✓ UP: +1;
- ✓ DOWN: -1

Press "START/STOP" button to move the cursor.



4.3.8 Button sound

When the cursor is before the "KEY SOUND" option, press "OK" to change "ON" or "OFF".

- ✓ ON: Sound enabled.
- ✓ OFF: Sound disabled.

4.3.9 PREHEAT

It is "■W" in LCD screen.

When the cursor is before the "PREHEAT" option, press "OK" to change "ON" or "OFF".

- ✓ ON: If user has started a sterilizer program, the autoclave will not start the next step until the temperature in chamber reaches 50°C.
- ✓ OFF: If user has started a sterilizer program, the autoclave will start the next step no matter the temperature in chamber reaches 50°C or not.

4.3.10 AUTO START...

User can set the selected program to automatically run at the setting time.

When the cursor is before the "AUTO START..." option, press "OK" to use this function.

After press "OK" key, you can set the time when the sterilizer run automatically. There have two ways to set the time(pic5):

Data and Time: The exact time when the sterilizer run automatically.
XX hours later: To set how long time later, the sterilizer run automatically.



(pic5)



(pic6)



(pic7)

How to set the date/time(pic6 , pic7):

Press "UP" or "DOWN" to change the date:

UP: +1;

DOWN:-1

Press "OK" to change the place of the digit

After setting the time, user must select the program(pic8), then after pressing "OK", the time will count down and the selected program will automatically run when the time arrived(pic9,pic10).



pic8



pic9



pic10

4.3.11 Dry

It have 3 grades: I, II, III. If user find that: after a cycle, loads are wet , you can choose II or III. The dry's temperature of grade II and III are higher than I grade, using grade II or III may short down the device's life.

Press "OK" to set dry.

4.4 Buttons

4.4.1 UP button

Move up or left

4.4.2 DOWN button

Move down or right

4.4.3 RETURN button

Return to previous menu

4.4.4 OK button

Confirm or enter the next menu.

4.4.5 START/STOP button

After the program is selected, the LCD will show "please push the start key to start...", at this time, the user can press the button Start/Stop to start the program.

During the sterilization cycle, the user can press the button Start/Stop and keep 5 seconds to stop the whole cycle.

5. Installation

The autoclave is packed by a wooden carton. To open the carton, you need a flat screwdriver to open the cover. Then, the autoclave can be lifted out by 2 persons.



5.1) When installing the autoclave onto the table, please keep the autoclave at least 10 cm away from surroundings. And keep the rear side of the autoclave at least 20cm away from the surrounding.

It is recommended to install the autoclave in a well-ventilated location. Don't block the radiator of the sterilizer. Keep the table stable & horizontal.



Please ensure the table for installation is strong enough for an autoclave.

5.2) Adjust atmospheric pressure

Because different countries have different atmospheric pressure, the user shall adjust the atmospheric pressure before first use.

Adjust method:

- ◇ Cut off power
- ◇ Open the door of autoclave
- ◇ Turn on the power, and keep it for 20 seconds. Then cut it off.
- ◇ Atmospheric pressure for autoclave is successfully adjusted.



The autoclave might not run if the user does not adjust its atmospheric pressure.

5.3) Adjust time and date

Please refer to information stated in 4.3.7.

6. Operation

Preparation before using

Before using, please connect power supply, turn on the switch. After that, the LCD screen will be turned on and show the main menu. At this moment, the autoclave has been ready for use.

Before the first use, the LCD will show “ Please fill water”, please fill water from the top of the autoclave. After enough water has been filled, the alarm will disappear and user can use this autoclave now.



Please ensure the autoclave is well grounded.

6.1 Fill water

If LCD shows “Please fill water”, that means, the water inside is not enough for run a sterilization cycle and you need to fill water before starting a new sterilization cycle. (If LCD shows during a sterilization cycle, you need not stop the current sterilization cycle because the water inside is only enough for the current cycle. But for next cycle, you must fill water firstly.)

This water can be filled from the top of the autoclave. Please see pic. Above. When you are filling water, you will hear 2 times of beep:

- ❖ First time beep: it means the water inside is enough for a new sterilization cycle. You can stop or continue filling water.
- ❖ Second time beep: It means, the clean water tank is full. Please stop filling water now.



Only distilled water can be used for the autoclave. Otherwise, there will be problem with the steam generator and solenoid valves. The user shall be responsible for the problem if he/she uses other kinds of water.



Before filling water, please turn on the autoclave and ensure the autoclave is horizontal. After filling water, if possible, please drain the waste water.

6.2 If you want to use a flash disk to save the sterilization records, please insert the flash disk into USB port.

6.3 Working

When water tank has enough water and waste water tank is not full, it is ready for working.

6.3.1 Put the loads (instruments etc.) into the chamber

Warning:

- Ensure the total CBM of the loads is less than 70% of the CBM of the chamber.
- Keep the loads away from the surface, air outlet of chamber. Keep the loads at least 10mm away from the inner side of the chamber.
- If you do B&D test, you need to put the test paper at the center of the sterilization package to ensure the reliable test



result.

- When putting into and taking out the loads, you shall use the tool attached to prevent your hands from touching the hot surface.

6.3.3 Set up the parameters

Set the parameters: KEEP TEMP, PRINTER, PREHEAT if in need.

6.3.4 Close the autoclave's door

If the door is not locked, the LCD will show "Please close the door".



If the temperature and pressure inside the chamber are high, the door will be difficult to be closed. We suggest to close the door quickly, or, you can wait 30 seconds, then close the door.

6.3.5 Choose sterilization program, then start

After the door is closed, choose the relative sterilization program according to the kinds of loads in the chamber.

All the sterilization programs are in "USER" menu. You can press UP or DOWN button to move the cursor to USER menu, then press OK to enter the menu. Inside the menu, you can press UP or DOWN to choose the sterilization program. After that, you can press OK. Then, the LCD will show "please push the start key to start", after seeing that, you can press "START/STOP" to run the program you selected.

The whole sterilization cycles will be automatically finished. You need not do anything during the programs. The period of whole cycle is influenced by the initial temperature, the kinds and quantity of the loads.

When the cycle is finished, LCD will show "END" together with 3 beeps. The user can open the door and take out loads inside now.

6.3.6 After using, you shall turn off the autoclave. If you will not use it for a long time, you shall disconnect the power supply.



The user shall fill in water promptly if there is a low-water alert. Otherwise it will show "E08 or E9" error alarm.



You shall use a tray-holder tool when taking out loads to prevent scald. Don't open the door until the pressure is within "-05~05".



To ensure the effectiveness of sterilization, during daily use, we suggest putting test paper or pouches with indicators together with the loads into the sterilization chamber.

6.3.7 If The LCD shows "PLEASE DRAIN WATER FROM WASTER WATER TANK!", this mean the waster water tank is full, you must drain the waste water.



The waste water might be very hot, please be careful when you are draining them.

7. Abnormal Situations

The sterilizer will give alarm, release pressure and stop heating automatically if it has any abnormal situations during

working. It will absolutely keep the user safe and display the error code(See the below page 14).

If alarm appears, please write down the error code No. and cut off the power. Don't open the door and then turn on the power again to wait the pressure turn back to "-0.5~0.5".



We suggest running program once more to see if the error happens again.

Below is a list of alarms. If the user cannot solve the problem according to below chart, please contact your local distributor or us, we will help the user solve problems.

No.	Code	Sound	Conditions	Reason	Resolution
1	E31	"Du"long beep	Temperature in chamber >150℃;	The sensor of steam generator does not work.	Check temperature sensor in chamber
2	E32	"Du"long beep	Temperature of Chamber heater>280℃;	The sensor of steam generator does not work.	Check temperature sensor of the chamber heater
3	E51	"Du"long beep	Temperature in chamber ≤0℃;	The sensor of steam generator does not work.The room temperature is too low.	Check temperature sensor in chamber Check room temperature.
4	E52	"Du"long beep	Temperature of chamber heater≤0℃;	The sensor of steam generator does not work.The room temperature is too low.	Check temperature sensor in chamber Check room temperature.
5	E63	"Du"long beep	1、 steam generator temperature≤0℃; 2、 steam generator temperature>230℃;	steam generator temperature>230℃; Steam temperature control instability, over 230℃, steam generator temperature sensor damaged.	Check steam generator temperature sensor, control board, steam generator
6	E2	"Du"long beep	The sterilization pressure is 40KPA more than designed pressure. (134℃:210kpa /121℃process:110kpa)	vacuum pump damaged.	Check vacuum pump. Do a vacuum test
7	E61	"Du"long beep	134℃process: inner temperature >140℃ or 121℃ process: inner temperature >127℃; temperature control instability.	temperature sensor inside chamber damaged.	Check temperature sensor in chamber.
8	E62	"Du"long beep	Temperature of Chamber heater>155℃; temperature control instability, control board damaged.	temperature sensor is damaged. Circuit board is damaged.	Check temperature sensor, chamber heater, control board, chamber heater
9	E41	"Du"long beep	In preheat period, after 8mins warm-up, temperature Chamber heater<100℃; chamber heater damaged.	Chamber heater is damaged	check the chamber heater.
10	E42	"Du"long beep	In preheat period, after 8mins steam generator temperature <110℃; heating rod damaged.	Chamber heater is damaged	Check heating rod
11	E5	"Du"long beep	When the period of "exhaust", after working 10mins, the pressure in chamber still over 0.5bar; air relief instability.	Outlet solenoid valve is blocked.	Check water drain valve
12	E6	"Du"long beep	The door is opened during working; the door detector switch damaged.	Door sensor is damaged	Check door sensor.
13	E7	"Du"long beep	The local air pressure is < 70KPa;	local air pressure is too low. Wrong air pressure.	Can not use in these area. Adjust atmospheric pressure:see 5.2
14	E8	"Du"long beep	In pre-vacuum period, every 5mins temperature raise < 3℃.	Air leakage. No water inside tank.	Check water pump, heating rod, control board.Check water level inside tank.
15	E9	"Du"long beep	In sterilization period, the sterilization pressure is 0.3 bar lower than the designed pressure.	No water inside tank. Heater inside steam generator is damaged. Water pump damaged.	Check heaters, water pump, water level.
16	E10	"Du"long beep	The electronic locker is in wrong condition	Electronic locked damaged. Circuit board damaged.	check electronic locker and circuit board
17	E11	"Du"long beep	The electronic locker is in wrong condition	Electronic locked damaged. Circuit board damaged.	check electronic locker and circuit board
18	E12	"Du"long beep	The vacuum not reach -70Kpa 2 times during the program which have at least 3 times vacuum.	Vacuum pump damaged.Fan damaged.	Check vacuum pump, fan
20	E99	"Du"long beep	The communication between CPU is wrong.	Connect disabled. CPU loosed.	Check control board data line, and CPU

8. Maintenance

Below parts must be checked or replaced regularly:

- ✓ Germ filter: See 8.5
- ✓ Seal ring: See 8.7 and 8.8.
- ✓ Safety valve: See 8.9

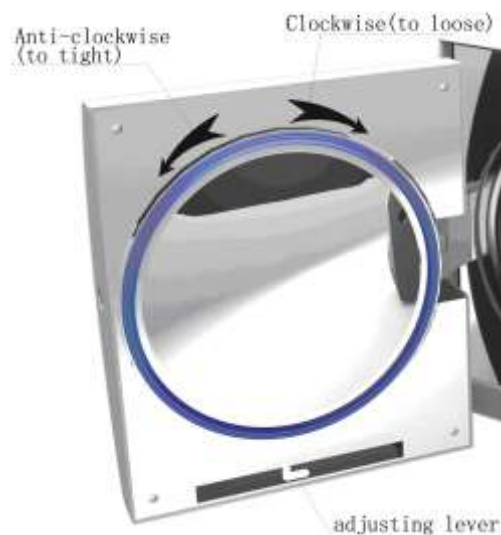
Check schedule:

Item	Checked by	Cycle	Maintenance
Door	Professional engineer	2 years	See 8.1
Seal ring	User	1 year	See 8.5
Printer papers	User	When the printer has no paper	See 8.2
Fuse	Professional engineer	When the fuse is damaged	See 8.6
Safety valve	Professional engineer	1 year	See 8.9

8.1 Door Tightness Adjustment

Door Adjustment

Push down the lever and rotate the door to adjust tightness. As shown in below picture, anticlockwise turning will tighten the door, i.e., the door will be closer to the chamber. Clockwise turning the door will loosen it.



Detailed steps:

- 1) Push down the lever a little
- 2) Rotate the door to a specific angle
- 3) Release the lever

4) Keep turning the door to a place where the door cannot move anymore.



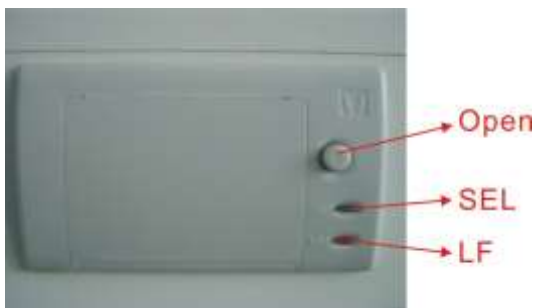
After the door adjustment, it is necessary to do a vacuum test. If there is a leakage, the user shall adjust it again.



If the door is too loose, the sealing ring might be exploded out with a big “bang”. So, please be careful to use this function!

8.2 Replace printer paper and paper feeding

Replace printer paper



press “open” button of the printer to open the door,
change the paper as the pic 6. Cover the door sheet as the pic 7.



(Pic6)



(pic7)

Printer paper feeding

Press “LF” button once to feed the paper. If there’s something wrong, please replace the paper once more.

If the printer is working correctly, but where’s no content on the paper, please install the paper in revised way.



Only one side of the paper can be printed on.

8.3 Use thimerosal to sterilize water tanks every week.

8.4 To use ethyl alcohol to clean the inner surface of the autoclave every month.

8.5 Every 150 cycles, we recommend replacing the germ filter.

8.6 Replace the fuse

- (1) Disconnect power
- (2) Push screwdriver and turn the screws in anti-clockwise, and then take the fuse out.
- (3) Replace the old fuse by a new one , then turn the screws in clockwise.



Check the new fuse if it is suitable for this autoclave before replacement.

8.7 Clean seal ring regularly

The user needs to clean the seal ring regularly by distilled water. If leakage still happens after cleaning, the user may have to replace the seal ring.

8.8 Replace the seal ring

Tool: The user needs a flat screwdriver.

- A. Hold the seal ring by a hand and use another one to hold a screwdriver carefully to separate the door and the seal ring. Then take the seal ring out slowly.
- B. After the user takes the seal ring out, clean and check it. If it is damaged, the user must replace it.
- C. After the seal ring is cleaned, assemble it.
- D. Attention: if the user finds it hard to put the seal ring back, use screwdriver press it carefully until it is done.



8.9 Regular check the safety valve. If the safety valve is invalid, it must be replaced

Replace the safety valve:



(pic8)

- 1, Removing the part 1 in pic8, then removing the pipe which connects the safety valve.
- 2, Removing the screw (part2 in pic8);
- 3, Replace the new safety valve.



The new safety valve shall be same model. If you need any help, please contact your local distributor or us.



Only maintain the autoclave when it cools down by well trained person.

9. Transportation and Storage

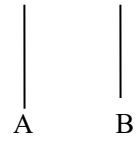


9.1 Preparation

Cool down the sterilizer and disconnect power.

9.2 Drainage

Empty all tanks: assemble the pipe without joint into bleeder valve, A is waste water tank bleeder valve, B is water storage tank bleeder valve. Then turn the drainage switches towards anti-clockwise.



9.3 Terms of transportation:

Please refer to sales contract.

9.4 Terms of storage

The autoclave should be stored in the clean warehouse where room temperature is 5°C~40°C, the relative humidity is no more than 80%, no corroding gases and well-ventilated.



Don't drag during transportation.

10. Warranty

1. Warranty: 2 years.

2. We will not offer free service even in the first year if the things happen as below:

- (1)The damage is caused by incorrect installation
- (2)The damage is caused by fall down or impact by carelessness
- (3)The damage is caused by customer's install or repair
- (4) Without invoice and guarantee card
- (5)The damage is caused by force majeure such as abnormal voltage, fire etc:

11. Accessories

No.	Accessories	Q'ty (PC)
1	Drainage pipe(LF-9-10-1)	1
2	Tray (see table 11.1)	3
3	Cable with plug(LF-9-12-2)	1
4	Tray shelf (see table 11.2)	1
5	Tray-hand-holder(LF-9-12-4)	1
6	Fuse(Φ 6X30 230V20A)	2
7	Manual	1

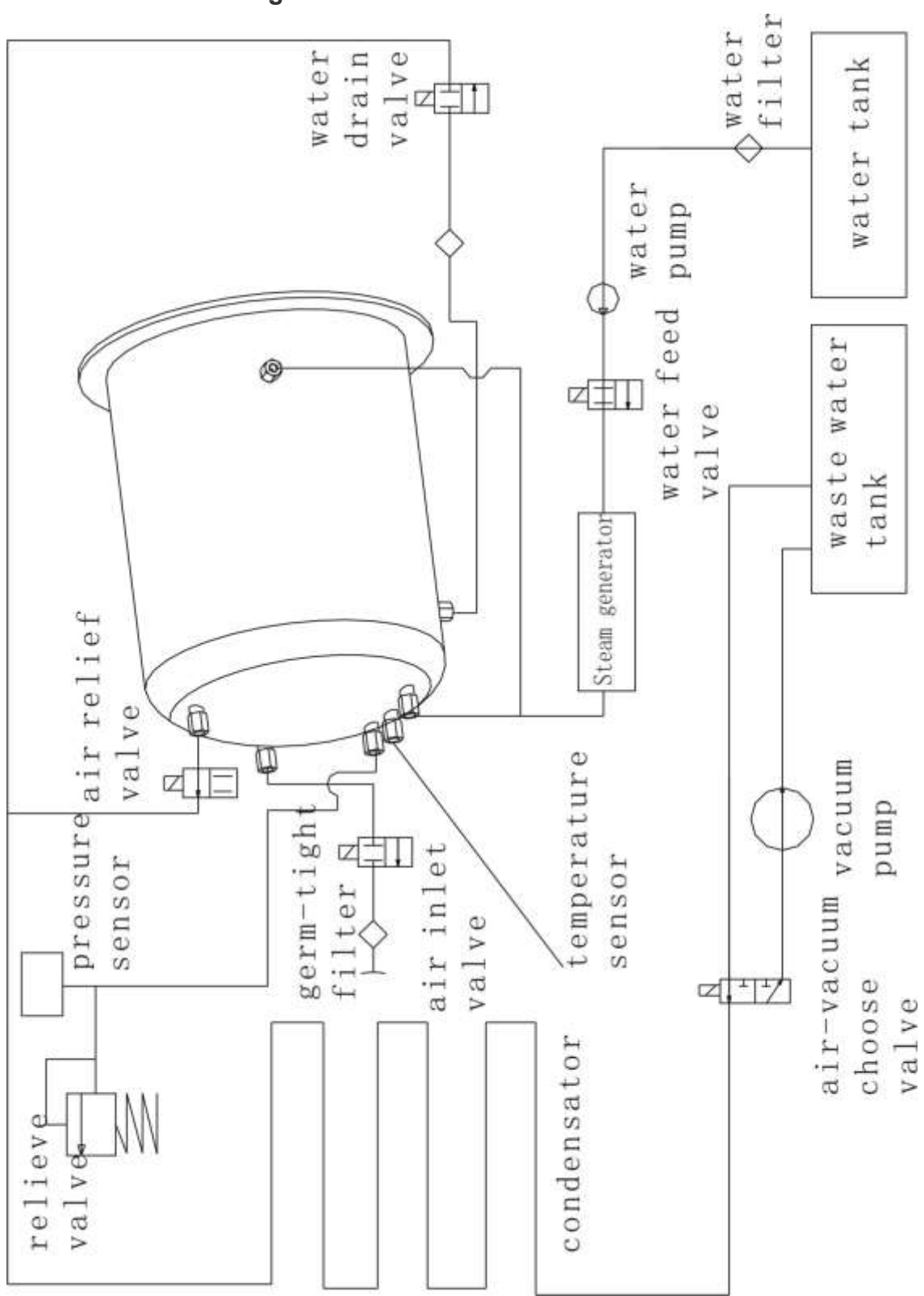


Table 11.1: parts for different models

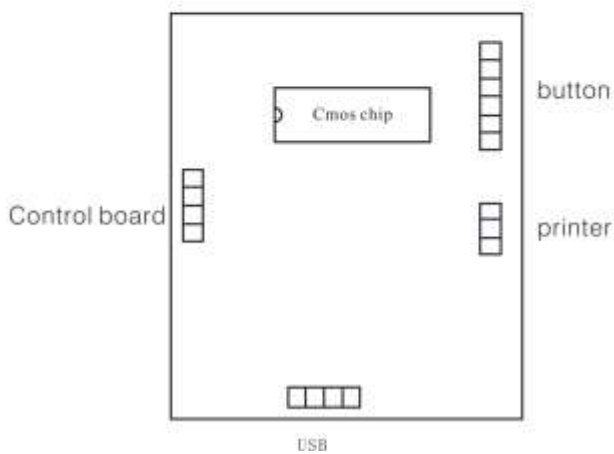
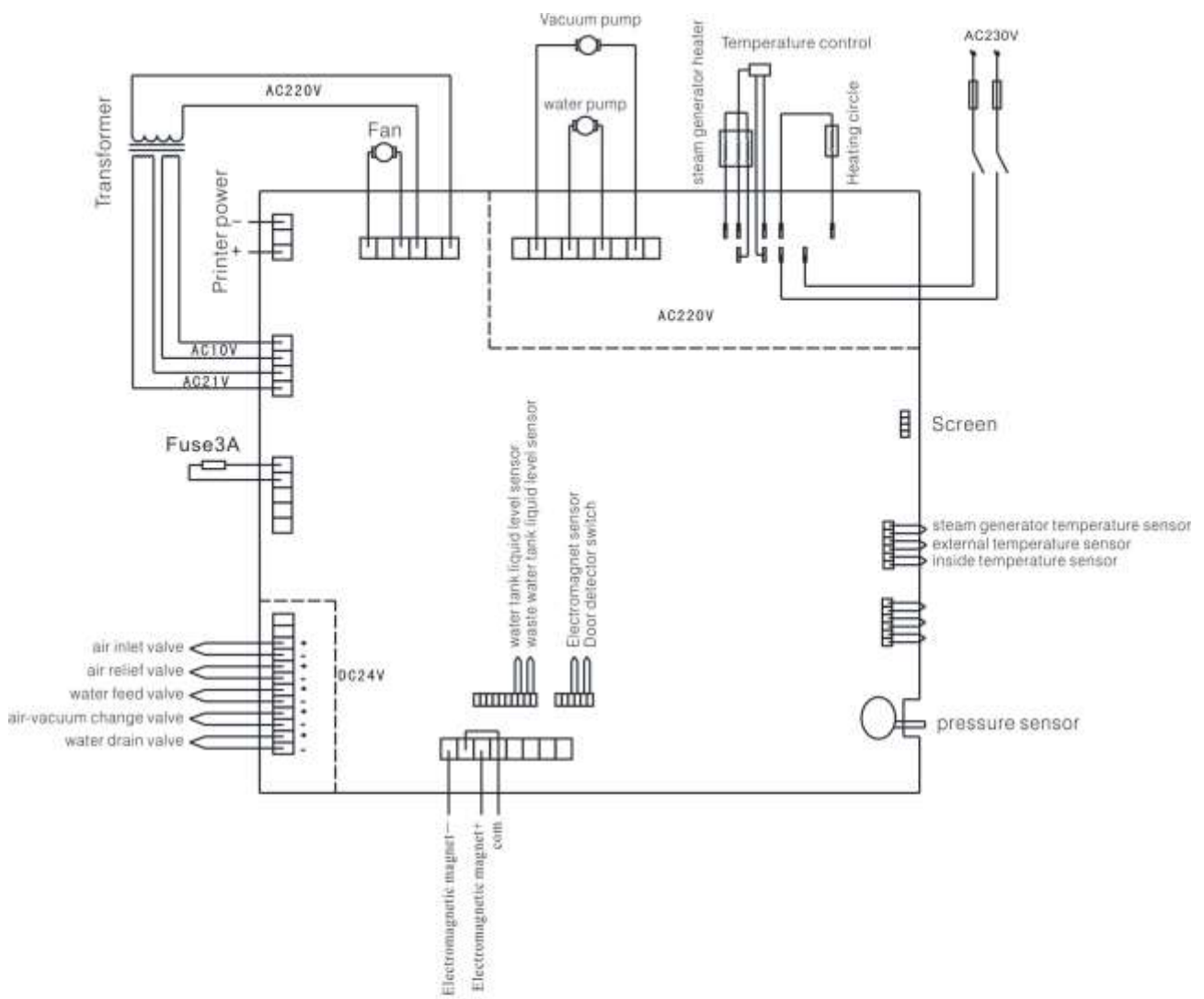
Part/Model	LFSS12AA	LFSS18AA	LFSS23AA
Tray	LF-2-6-1	LF-1-6-1	LF-3-6-1
Tray shelf	LF-2-6-2	LF-1-6-2	LF-3-6-2

Appendixes

Appendix 1: Structure diagram



Appendix 2: Circuit diagram



Vacuum pump power: AC: 230V 50Hz 70W
 Water pump power: AC: 230V 50Hz 47W
 Heating circle: AC: 230V 50Hz 1500W
 Heating rod: AC: 230V 50Hz 750W
 Electromagnetic valve: DC: 24V 5W

Appendix 3: EMC

Electromagnetic emissions

The Steam sterilizer is intended for use in the electromagnetic environment specified below. The customer or the user of the Steam sterilizer should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The Steam sterilizer uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The Steam sterilizer is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Electromagnetic immunity

The Steam sterilizer is intended for use in the electromagnetic environment specified below. The customer or the user of the Steam sterilizer should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	<input type="checkbox"/> 6 kV contact <input type="checkbox"/> 8 kV air	<input type="checkbox"/> 6 kV contact <input type="checkbox"/> 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	<input type="checkbox"/> 2 kV for power supply lines <input type="checkbox"/> 1 kV for input/output lines	<input type="checkbox"/> 2 kV for power supply lines <input type="checkbox"/> 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	<input type="checkbox"/> 1 kV line(s) to line(s) <input type="checkbox"/> 2 kV line(s) to earth	<input type="checkbox"/> 1 kV line(s) to line(s) <input type="checkbox"/> 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % <i>UT</i> (>95 % dip in <i>UT</i>) for 0,5 cycle 40 % <i>UT</i> (60 % dip in <i>UT</i>) for 5 cycles 70 % <i>UT</i> (30 % dip in <i>UT</i>) for 25 cycles <5 % <i>UT</i> (>95 % dip in <i>UT</i>) for 5 sec	<5 % <i>UT</i> (>95 % dip in <i>UT</i>) for 0,5 cycle 40 % <i>UT</i> (60 % dip in <i>UT</i>) for 5 cycles 70 % <i>UT</i> (30 % dip in <i>UT</i>) for 25 cycles <5 % <i>UT</i> (>95 % dip in <i>UT</i>) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Steam sterilizer requires continued operation during power mains interruptions, it is recommended that the Steam sterilizer be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE *UT* is the a.c. mains voltage prior to application of the test level.

Electromagnetic immunity

The Steam sterilizer is intended for use in the electromagnetic environment specified below. The customer or the user of the Steam sterilizer should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	<p>Portable and mobile RF communications equipment should be used no closer to any part of the Steam sterilizer including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1,2 \sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	$d = 1,2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2,3 \sqrt{P}$ 800 MHz to 2,5 GHz <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> <div style="text-align: center;">  </div>

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Steam sterilizer is used exceeds the applicable RF compliance level above, the Steam sterilizer should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Steam sterilizer.

b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

**Recommended separation distances between
portable and mobile RF communications equipment and the Steam sterilizer**

The Steam sterilizer is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Steam sterilizer can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Steam sterilizer as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1,2 \sqrt{P}$	80 MHz to 800 MHz $d = 1,2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2,3 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

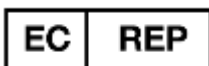
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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Ningbo Haishu Life Medicial Technology CO.,LTD
No.1,Jinghui Road,Hengjie Town,Haishu,Ningbo,China



MDS MEDICAL LTD
93 headlands,Kettering,Northamptonshire,NN15 5EG,UK