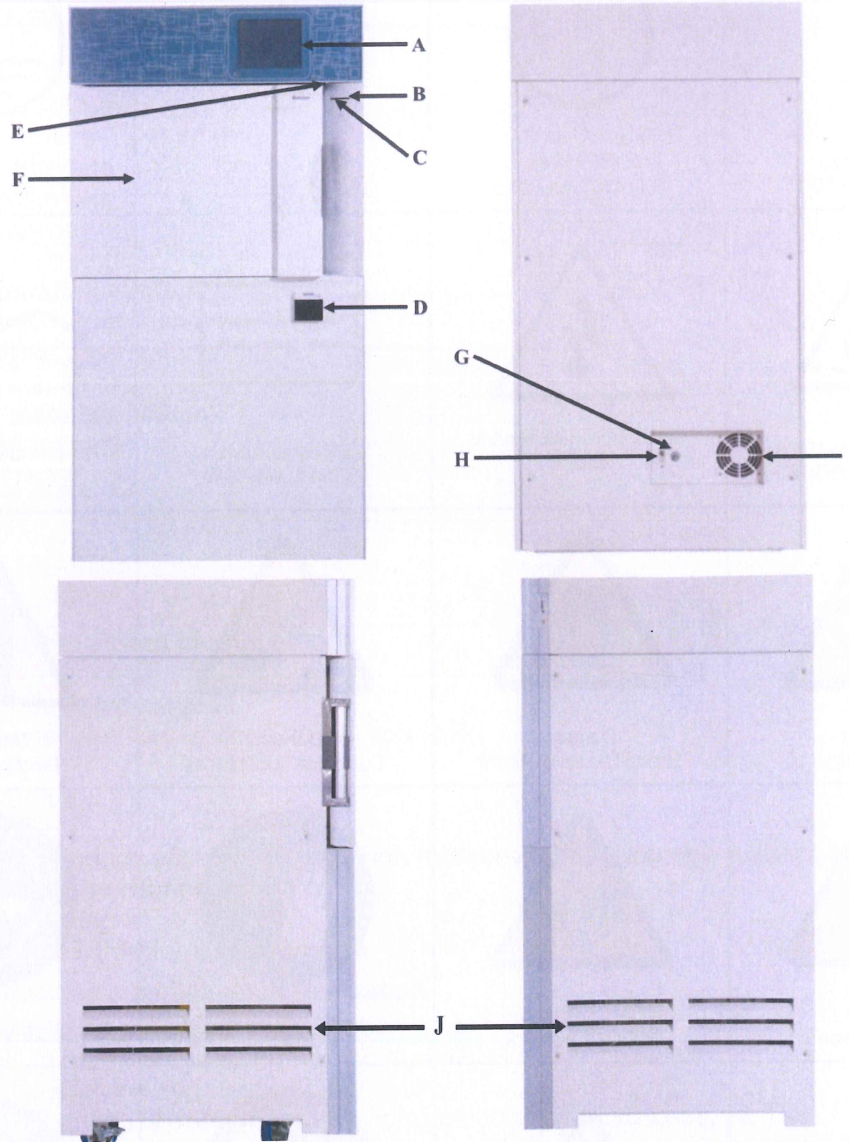


Chapter 2. Explanations of the System

1. Overview

1) Names and Specification of Parts



| No | Item | Function (Specification) |
|----|------------------|--|
| A | Touch Panel | The component can control and monitor operation, and manage the function of the sterilizer. |
| B | Sterilant lamp | The blue LED lamp turns on when the sterilant is inserted into the Sterilant injection hole, so user can check whether the sterilant is present. |
| C | Door ON/OFF lamp | The red LED lamp turns on when the door is closed, so user can check whether the door is open or not |
| D | Printer | Printer displays print out of the status of sterilization including results and errors. |

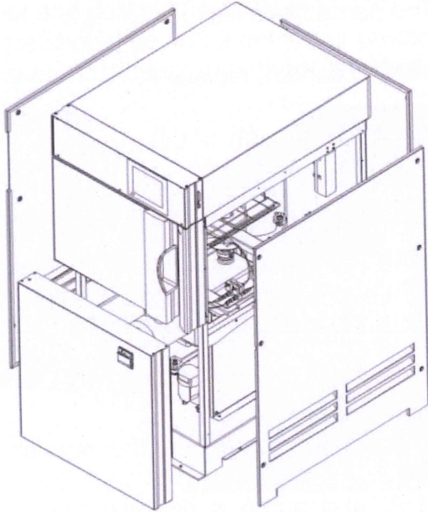
| No | Item | Function (Specification) |
|----|-----------------|--|
| E | Power Switch | The component is used to turn on and off of the machine. |
| F | Sterilizer Door | The door is used not only for loading and unloading the sterilizer, but also concealment for vacuuming and pressurizing chamber. |
| G | Power cord | It is used to connect plug to outlet. |
| H | Main switch | User can switch on and off the power to main system. |
| I | Ventilating fan | It is used to discharge heat. |
| J | Vent Grill | It is used to circulate the air inside sterilizer. |



| No | Item | Function (Specification) |
|----|---------------------------------|--|
| K | Chamber | It is a vessel to contain the medical instruments for sterilization. |
| L | Shelf | It enables the user to place the medical instruments in dual layer. It can be removed if unused. |
| M | Sterilant injection hole | It is to insert the cassettes to supply H2O2 into the chamber. |
| N | Sterilant injection hole button | It is to insert the cassettes to supply H2O2 into the chamber. |

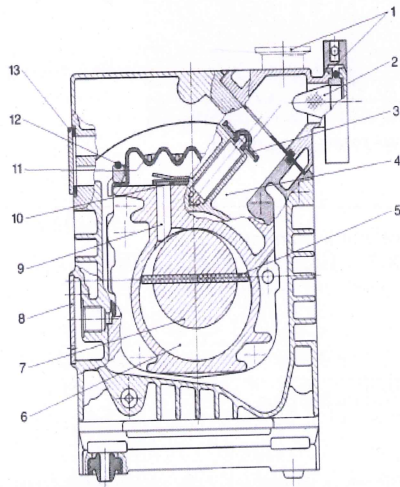
2. Operating Procedure

1) Deal Drawing of the Device



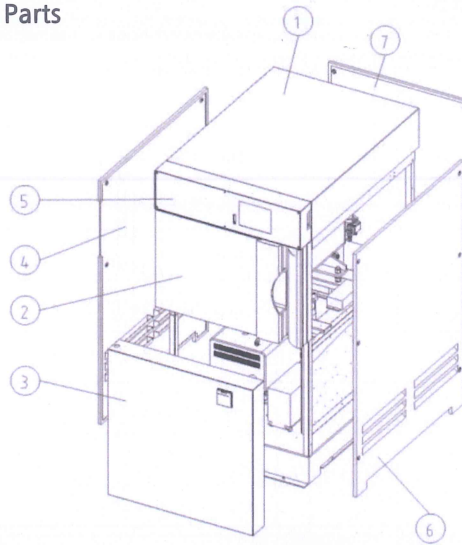
2) Understanding of Each Part's Name and Measures

(1) Vacuum Pump(Rotary Vane Pump)



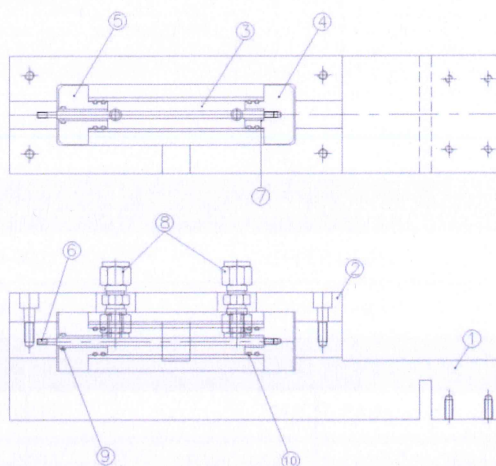
| No | Name of Product | No | Name of Product |
|----|---------------------|----|---|
| 1 | Intake port | 8 | Cover plat, connection for insert gas ballast |
| 2 | Dirt trap | 9 | Exhaust channel |
| 3 | Anti-suckback valve | 10 | Exhaust valve |
| 4 | Intake channel | 11 | Internal demister |
| 5 | Vanes | 12 | Spring buckles |
| 6 | Pump chamber | 13 | Cover plate, connection for oil filter |
| 7 | Rotor | | |

(7) S130 ASM Service Parts



| No | Part Name | Name of Product | Spec | Quantity | Material |
|----|-----------|------------------|------|----------|----------|
| 1 | R302-0020 | S130 FRAME ASM | - | 1 | - |
| 2 | - | DOOR_ASSY | - | 1 | - |
| 3 | R308-0020 | LOWER COVER ASM | 1.6T | 1 | SPCC |
| 4 | R306-0010 | LEFT SIDE COVER | 1.6T | 1 | SPCC |
| 5 | - | UPPER DECO ASSY | - | 1 | - |
| 6 | R307-0010 | RIGHT SIDE COVER | 1.6T | 1 | SPCC |
| 7 | R305-0020 | BACK COVER | 1.6T | 1 | SPCC |

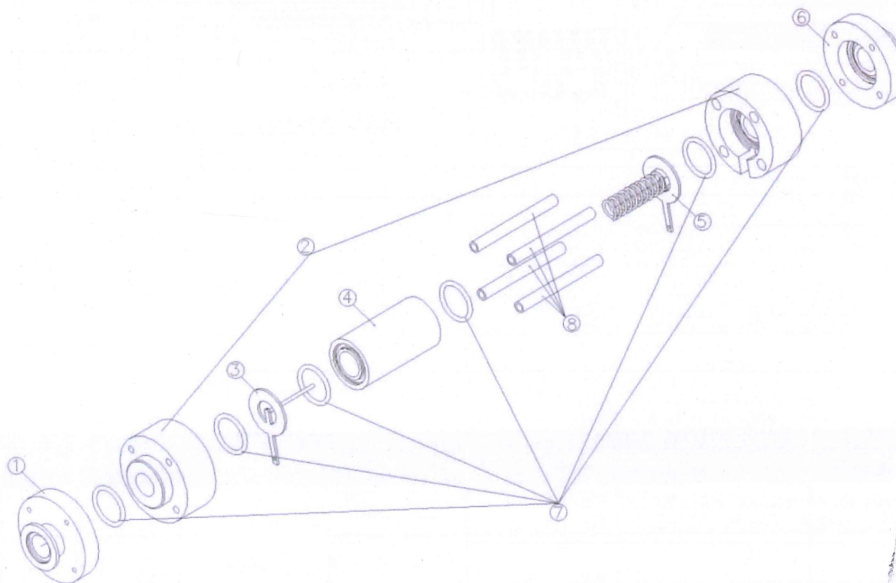
(8) DBD PLASMA ASM Parts



| No | Part Name | Name of Product | Spec | Quantity | Material |
|----|-----------|-------------------|-----------------|----------|----------|
| 1 | R180-0080 | O3 REACTOR BRACKT | 65X255X55 | 1 | ACETAL |
| 2 | R180-0070 | O3 REACTOR COVER | 65X175X20 | 1 | ACETAL |
| 3 | R180-0050 | O3 REACTOR BODY | 3/8", 1/4" PIPE | 1 | STS304 |

| No | Part Name | Name of Product | Spec | Quantity | Material |
|----|-----------|------------------|---------|----------|----------|
| 4 | R180-0030 | O3 REACTOR END | Ø35X30 | 1 | TEFLON |
| 5 | R180-0040 | O3 REACTOR CAP | Ø35X30 | 1 | TEFLON |
| 6 | R180-0060 | O3 REACTOR SHAFT | Ø4X125L | 1 | STS304 |
| 7 | S027-0010 | O3 CERAMIC | 4*6*105 | 1 | - |
| 8 | S010-0130 | UNION | CUA-4 | 2 | STS316 |
| 9 | S016-0050 | O-RING | AN009 | 1 | VITON |
| 10 | S016-0060 | O-RING | AN012 | 4 | VITON |

(9 CORONA PLASMA HOUSING ASM Service Parts



| No | Part Name | Name of Product | Spec | Quantity | Material |
|----|-----------|-----------------|--------------------|----------|----------|
| 1 | R101-0450 | FLANGE CAP-UP | Ø75 X 30 | 1 | AL6061 |
| 2 | R101-0430 | MID CAP | Ø75 X 42 | 2 | PC |
| 3 | R101-0470 | ELECTRODE PIN | STS304 2t, Ø 3X45L | 1 | STS304 |
| 4 | R101-0410 | HOUSING PLASMA | Ø 44X80 | 1 | PC |
| 5 | R101-0480 | ELECTROD COIL | STS304 2t, Ø 2/ 16 | 1 | STS304 |
| 6 | R101-0460 | FLANGE CAP-DOWN | Ø 75 X 30 | 1 | AL6061 |
| 7 | S016-0020 | O-RING | AN216 | 6 | VITON |
| 8 | S051-0010 | TEFLON TUBE | 3/8" X 90L | 4 | TEFLON |

Door lock system - S130

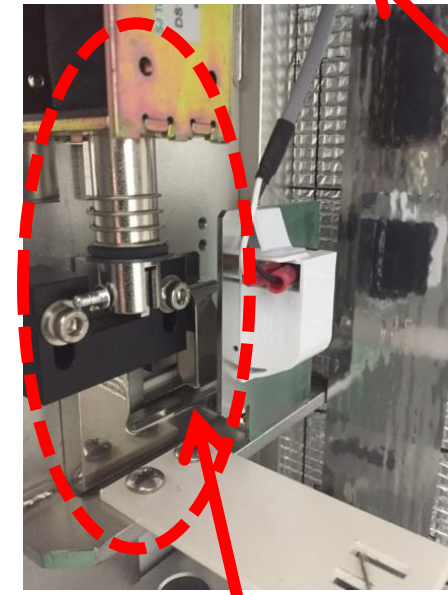
> Door components

> Door lock system

Door hook



Door lock lever



Door Unlocked

Door hook



Door Locked

3) Sterilization Cycle

(1) General Information

There are three sterilization programs, the Non-lumen cycle, the ECO cycle and Advanced cycle. The sterilization process consists of Initializing Stage, Sterilizing I Stage, Sterilizing II Stage, and the Finishing Stage. There is also a self-test program to check and clean the product every morning.

| Program | Subject Materials | Sterilization Time |
|-----------------|--|--------------------|
| Non-lumen cycle | Surgical instruments without Lumen. Load is limited to under 5Kg | About 28 Min |
| ECO cycle | Surgical instruments are limited to under 8Kg or two endoscopes. | About 45 Min |
| Advanced cycle | Instruments with narrow diameter and long distance, such as an endoscope. Load is limited to under 12Kg | About 62 Min |
| Self-Test | Sterilizer inspection and cleaning | About 10 Min |

(2) Sterilization Process

Sterilizing process is shown as follows:

The door is locked automatically after the cycle start. And the door cannot open during the cycle run. (During the first 10 seconds, door is not closed)

- Initializing Stage

Place the materials to be sterilized into the chamber and touch the start button to automatically start the sterilization process. This process makes the sterilizing chamber vacuous.

- Sterilizing I Stage

This is the first actual sterilization process. Sterilant is sprinkled into the chamber and sterilization is conducted through the plasma and processes of diffusion and condensation.

- Sterilizing II Stage

This is the second sterilization process. The first sterilization process is repeatedly performed in the inner chamber.

- Finishing Stage

This process makes the pressure inside of the chamber into atmospheric pressure so that the sterilized materials can be taken out. Within this stage, sterilant remaining on the load is removed.

(3) Processing Chart

RENO Series Low Temperature Plasma Sterilizer

RENOSEM provides full range of model for your maximum productivity.
From Speedy and compact model RENO-S20 to RENO-S130D designed for large-scale hospital

RENO-S20
RENO-S30
RENO-D50
RENO-S90
RENO-S130
RENO-S130D

*RENO Plasma Sterilizer is the Best Solution
for Infection Control.*



Proven Strong Penetrability is ability to sterilize single-channel flexible endoscopes and rigid endoscopes, and much more. Long narrow closed lumen (2Ø × 1,500mm) sterilization is guaranteed without adopter and booster.

Fast sterilization cycle enable to increasing instrument turnaround even reducing costly instrument inventory

Gentle sterilization is ideal for delicate instrument : heat-sensitive and humidity-sensitive

Non Toxic Residue : water vapor(H₂O) and oxygen(O₂) ensure safety for user, patient, and environment. Also complied with all International Environment Laws and Regulations.

User-friendly Interface : touch screen, built-in printer, storage system – maximize user's convenience

Low running cost is feasible using RENO-series : No required additional facilities (water plumbing, aeration systems, and consumables for wasting sterilization cassettes). Single-use cassette type can reduce the sterilization agent expenses.

09

Trouble Shooting

Alarm 9 (Power Outage)

◆ Power Interruption (Main Power Cut or Manual Shutdown)

◆ Possible Scenarios & Solutions

1. Power outage during sterilization process:
Go to the Home screen → Select "Non-lumen cycle" → Press Start.
If the process completes or Error 2 appears:
 - ① Remove the used sterilant cassette.
 - ② Insert a new sterilant cassette.
 - ③ Resume the sterilization process.
2. Power outage during idle state (no operation in progress):
The unit can be used normally once power is restored.
3. If power was off for more than 1 hour:
Allow 10 minutes to 2 hours for chamber reheating before operation.

Vacuum Definition

A vacuum is a space in which the pressure is below atmospheric pressure

Standard Measurement Units:

mTorr, mmHg, mbar,, Pa (N/m²)

1000mTorr (1Torr)= 1mmHg= 1,33mbar= 133Pa

Pressure Gauge Range:

20,000 ~ 0 mTorr

| Atm (Atmospheric pressure) | mTorr | mbar |
|----------------------------|---------|-------|
| 1 Atmospheric pressure | 760,000 | 1013 |
| Pressure Gauge | 20,000 | 26,6 |
| | 1000 | 1,33 |
| | 100 | 0,133 |
| | 10 | 0,013 |