



# **Cassette Autoclave**

## **NCAC-101**

**Index**

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### 1. Introduction

**Cassette Autoclave NCAC-101** features a 5.2L chamber capacity, providing efficient sterilization. It completes the sterilization cycle in just 6 to 7 minutes, ensuring maximum efficiency. It functions as both a sterilization chamber and a secure container for storage and transport. This autoclave ensures safety by automatically stopping the process in case of low temperature or pressure. Our unit provides fully adjustable sterilization time and temperature to accommodate diverse operational needs.

### 2. Features

- ✓ Three press-button sterilization programs
- ✓ Water shortage alarm
- ✓ Error display and printing
- ✓ Wide operating conditions

### 3. Specifications

|                                                   |                                                                   |
|---------------------------------------------------|-------------------------------------------------------------------|
| <b>Model</b>                                      | <b>NCAC-101</b>                                                   |
| <b>Chamber Capacity</b>                           | 5.2 L                                                             |
| <b>Maximum Steam Temperature</b>                  | 138 °C                                                            |
| <b>Water Tank Volume</b>                          | 3.4L                                                              |
| <b>Water Usage</b>                                | Distilled water, pure water, or ultra-pure water                  |
| <b>Printer</b>                                    | Thermal type                                                      |
| <b>Print Speed</b>                                | 5 mm/s                                                            |
| <b>Paper Roll</b>                                 | Width: 57mm<br>Roll diameter: 48mm<br>Approx. 180 cycles per roll |
| <b>Power Supply</b>                               | 220V±20% 50Hz                                                     |
| <b>Sterilization Cassette Internal Dimensions</b> | 380 × 180 × 78 mm                                                 |
| <b>Sterilization Cassette External Dimensions</b> | 480 × 196 × 80 mm                                                 |
| <b>Dimensions</b>                                 | 580 × 460 × 190 mm                                                |
| <b>Net Weight</b>                                 | 37 kg                                                             |

### 4. Applications

Cassette Autoclave NCAC-101 is used for fast, efficient, and reliable sterilization, ensuring safety and hygiene. It is widely employed in clinics, dental offices, laboratories, and healthcare facilities.

## 5. Introduction

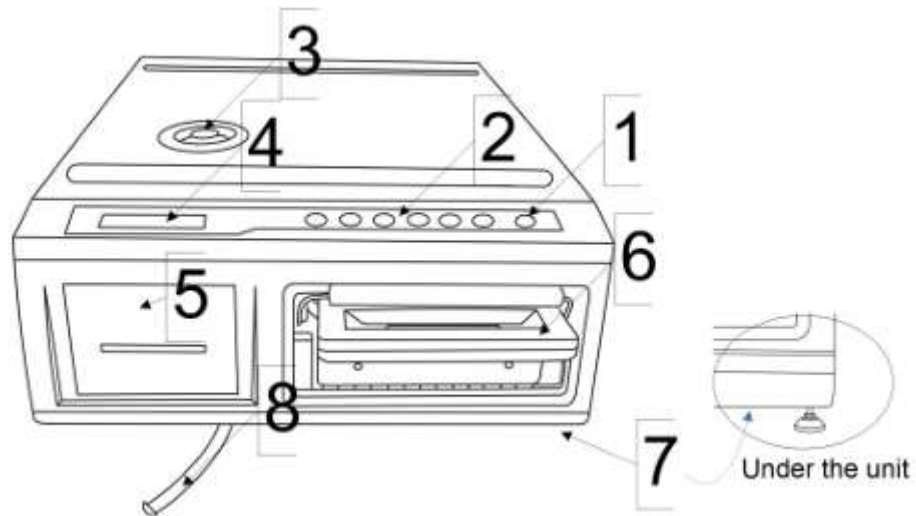


Figure-1 Front View

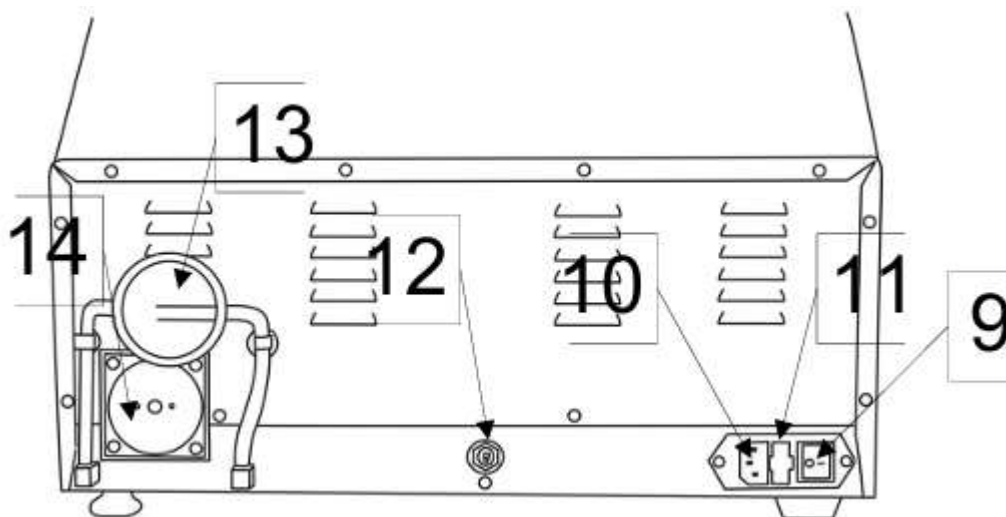


Figure-2 Back View

- |                    |                             |
|--------------------|-----------------------------|
| 1) Level Indicator | 8) Water drain tube         |
| 2) Keypad          | 9) Power switch             |
| 3) Reservoir cap   | 10) Power cable socket      |
| 4) LCD             | 11) Fuse                    |
| 5) Printer         | 12) Steam exhaust tube port |
| 6) Cassette        | 13) Air pump                |
| 7) Adjustable feet | 14) Biological air filter   |

## 5.1 Symbols and Function

| Symbols                                                                             | Function                                              |
|-------------------------------------------------------------------------------------|-------------------------------------------------------|
|    | Unwrapped Cycle<br>Setting Function: +                |
|    | Wrapped Cycle<br>Setting Function: -                  |
|    | Rubber and Plastics Cycle<br>Setting Function: Scroll |
|    | Air Drying Cycle                                      |
|  | Confirm                                               |
|  | Stop                                                  |
|  | Potential Hazard                                      |
|  | Caution, Hot surface                                  |
|  | Important Information                                 |

### 6. Installation

Before the installation and commissioning, Kindly review the following factors, which may affect the performance of the sterilizer.

- 1) Avoid direct sunlight or close to a heated surface. The recommended ambient temperatures are 5°C to 40°C with the relative humidity of 10% to 80%.
- 2) Leave a minimum clearance of 30cm on the top, 10cm at the sides and the back, and enough space in the front for operation.
- 3) To be operated in a clean environment on a flat, level, and water-resistant surface.  
d) Recommend that the unit be kept away from potential electromagnetic sources.
- 4) Use properly grounded and fused power sources, with the same voltage rating as indicated on the label at the back of the unit.
- 5) Adjust the feet to move the bubble inside of the level indicator, which should be balanced in the right quadrant as indicated. (Refer to **Figure 3 a**).
- 6) Connect the waste barrel to the unit to collect the cassette's steam and condensed water. (Refer to **Figure 3 b**).
- 7) Remove the reservoir cap to pour the water into the reservoir, a maximum of 3.4 liters. (Refer to **Figure 3 c**)
- 8) Use distilled water, pure water, or ultra-pure water with a conductivity of less than 10 $\mu$ S/cm. j)
- 9) To empty the reservoir, remove the plug at the end of the drain tube.



**Figure- 3(a)**

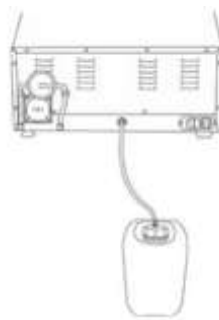


**Figure-3 (b)**



**Figure-3 (c)**

## 7. Operations

### 7.1 Sterilizing Cycle

#### Unwrapped cycle

- Used for the sterilization of solid metal instruments, such as pliers and forceps. Dental handpieces can be sterilized in this cycle. Total load up to 1 kg.
- Put the unwrapped instruments, which neither touch each other nor touch the cassette surface, on the instrument rack.

#### Wrapped cycle

- Used for the sterilization of solid and hollow metal instruments sealed in paper or plastic bags.
- Ensure that all wrapped instrument loads into the cassette are dry before sterilizing. Recommend using the plastic/paper bags for wrapped instruments, the use of cloth wraps is not recommended.
- To allow steam penetration to all instrument surfaces, pack instruments in the bags loosely.

#### Rubber and plastics cycle

- Used for the sterilization of unwrapped instruments constructed of metal and rubber or plastics.
- Materials can be sterilized in this unit, such as Nylon, PTFE, polycarbonate, polypropylene, acetal, polysulfone, silicone, rubber, polyester, etc. Materials cannot be sterilized in this unit, such as Polyethylene, ABS, styrene, PVC, Acrylic, latex, neoprene, etc.

#### Air dry cycle

- This is not a sterilization cycle. It runs automatically after each sterilization cycle; the working time can be adjusted.
- It cannot be restarted if the cassette has been removed and re-inserted.
- To stop the drying, just press the **EXIT** button at any time

### 7.2 Using a Cassette



-Caution, hot surface! While removing and opening the cassette after a sterilization cycle, kindly keep off the potential steam inside the cassette.

### 1) Remove or insert



**Figure-4**

### 2) Push downward on the latch to Open



**Figure-5**

### 3) Open or Close



**Figure-6**

When not in use, don't fully insert the cassette into the unit, leave a gap of about 2 or 3 cm. Otherwise, the unit is ready for running, the solenoid valve will be always powered ON.

A sudden and forcible pushing of the cassette into the unit may damage the components inside.

## 7.3 Language, Date/Time and Printer setting

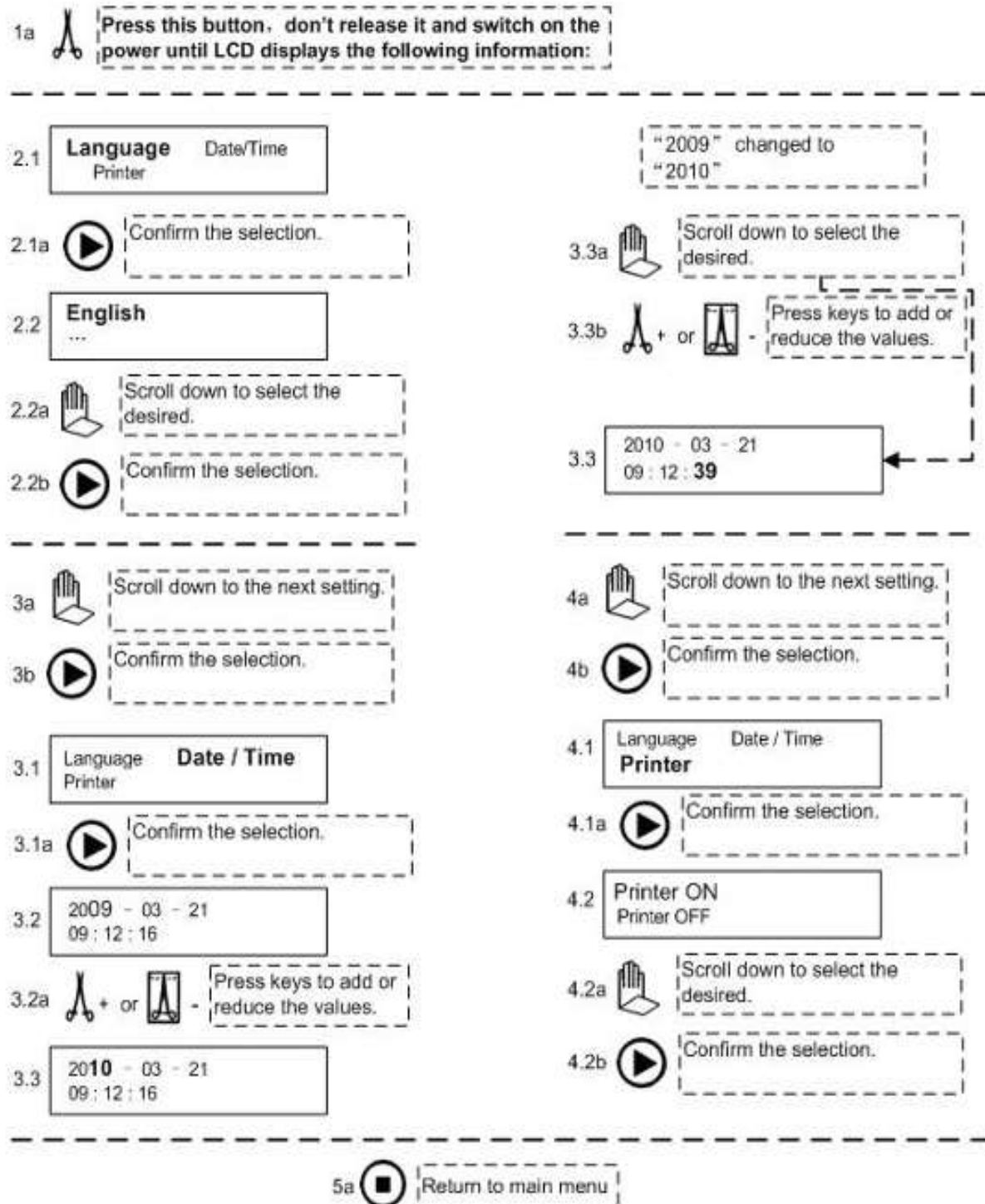


Figure-7

## 7.4 Loading a printer paper

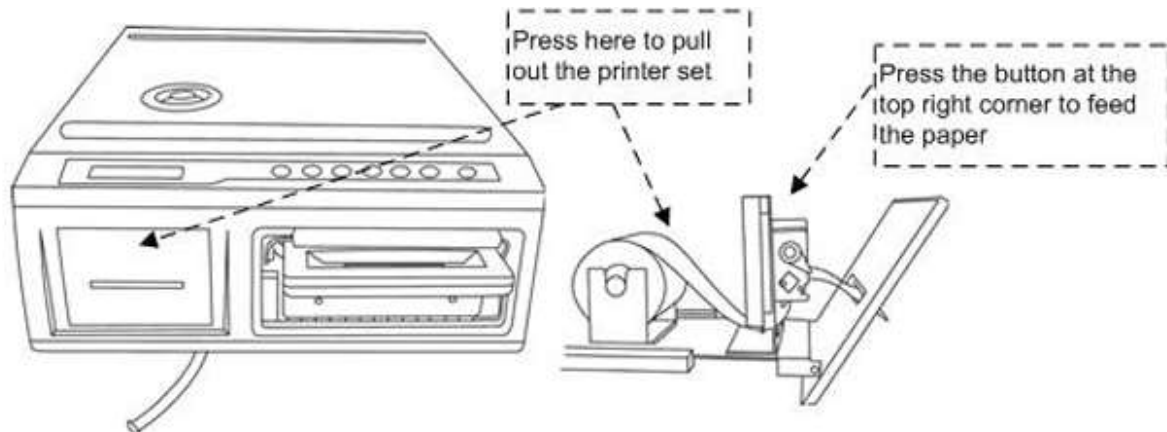


Figure-8

## 7.5 Setting water quality limit and pressure

Recommend using distilled water, pure water, or ultra-pure water with a conductivity of less than 10 $\mu$ S/cm. Even if the above-mentioned water stays in the reservoir for more than 2 or 3 days, its conductivity will become larger, and the quality becomes worse.

### Reset Procedure

Switch on the power, don't insert the cassette, LCDs "INSERT CASSETTE" as follows:

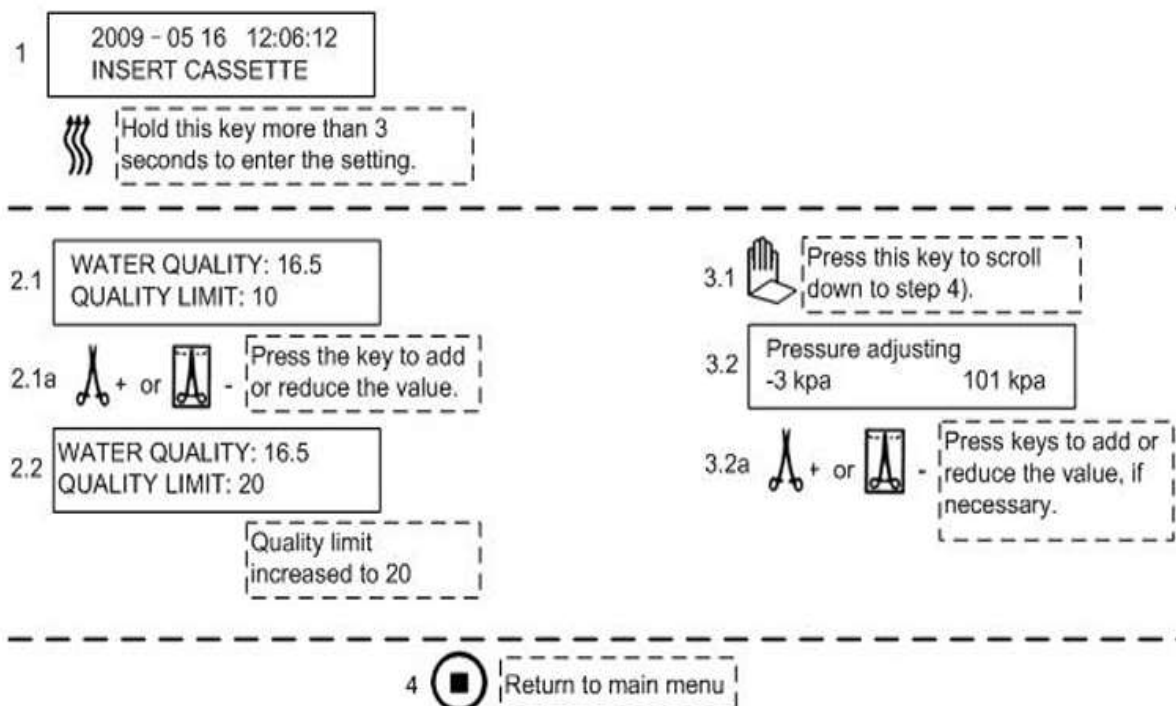


Figure-9

- 1) **Water quality:**16.5, which means the detected quality value of the water in the reservoir. This value is a relevant conductivity value according to the manufacturer's standard.

**Water limit:** 10, which is set by the user, who is not allowed to use the water below this quality.

Usually, **WATER QUALITY** is always lower than **QUALITY LIMIT**, otherwise, LCD shows an error message 3, "water quality not acceptable". Under this circumstance, the user should change the water or enlarge the limit to continue running the unit. The water limit can be set from 0 to 50, not recommended to set larger than 15, unless under an emergency.

- 2) To continue running it without changing the water inside the reservoir, you can just adjust the **QUALITY LIMIT** larger than **WATER QUALITY**.
- 3) This is only for monitoring the pressure inside the cassette, if the first value is from among-5 kpa to 5 kpa, don't need to make any adjustments.

### 7.6 Default sterilization cycle setting

| Cycle name        | Sterilization |          | Air purge** | Air drying*** |
|-------------------|---------------|----------|-------------|---------------|
|                   | Temperature   | Duration |             |               |
|                   | °C            | minute   | time        | minute        |
| Unwrapped         | 135           | 4        | 1           | 5             |
| Wrapped           | 135           | 10       | 3           | 5             |
| Rubber & plastics | 121           | 30       | 3           | 5             |
| value adjustable  | 115-135       | 4-99     | 1-6         | 0-99          |

**The above values are factory settings.**

- To meet different sterilization requirements, users are allowed to adjust the sterilization temperature, the sterilization time, the air-drying time, and the air purge times. The values can be adjusted between the minimum and the maximum.
- More air purges will allow deeper steam penetration to all instrument surfaces. Recommend using at least 3 purges to sterilize the instruments, such as dental hand-pieces.
- 0 minutes means that the air-drying cycle will not start after a sterilization cycle is complete.

### 7.7 Resetting a Sterilization Cycle

The sterilizing temperature, time, air drying, and purges may vary for different instruments and loads to be sterilized. In this case, it's necessary to re-set the above values.

Take the Unwrapped cycle as an example:

- 1) **Default:** 135°C, 4 minutes, 5 minutes of air drying, 1 air purge
- 2) **Re-set:** 134°C, 6 minutes, 3 minutes of air drying, 3 air purges

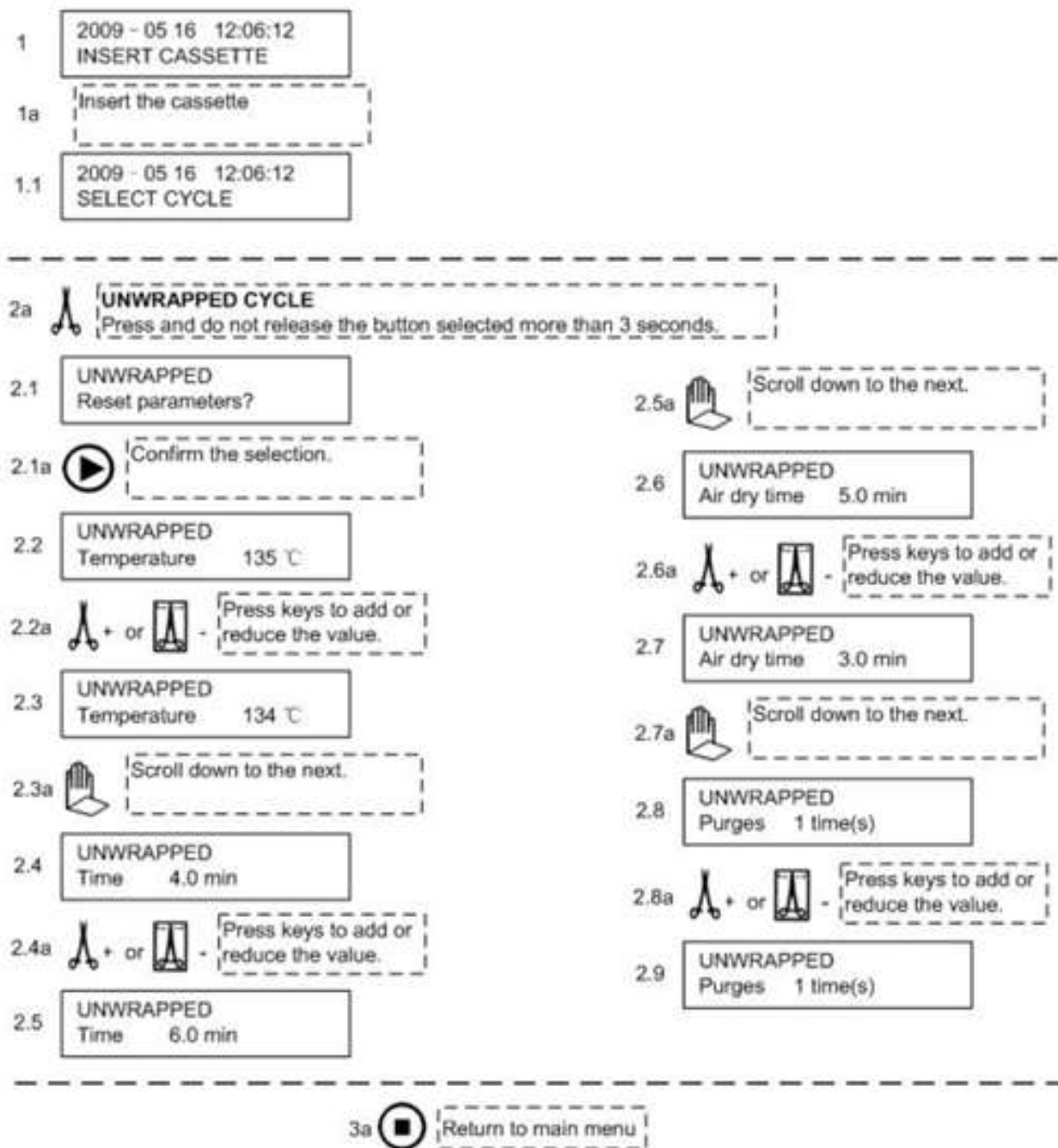


**Figure-10**

Kindly refer to the above steps to re-set Wrapped, Rubber & Plastics and Air-drying cycles in turn, if necessary.

## 7.8 Loading Instruments

Clean and raise all instruments before loading them into the cassette. Disinfectant residues and solid debris may affect the sterilization.

Instruments unwrapped, wrapped, rubber and plastics must not be stacked or piled on the instrument rack in the cassette, not touch each other, and not touch the cassette surface, as this is to ensure the steam can reach all instrument surfaces, otherwise, it may lead to incomplete sterilization.

Best to allow all instruments unwrapped or wrapped to dry completely before loading into the cassette, as this is to enable effective sterilization.

## 7.9 Running a Sterilization Cycle

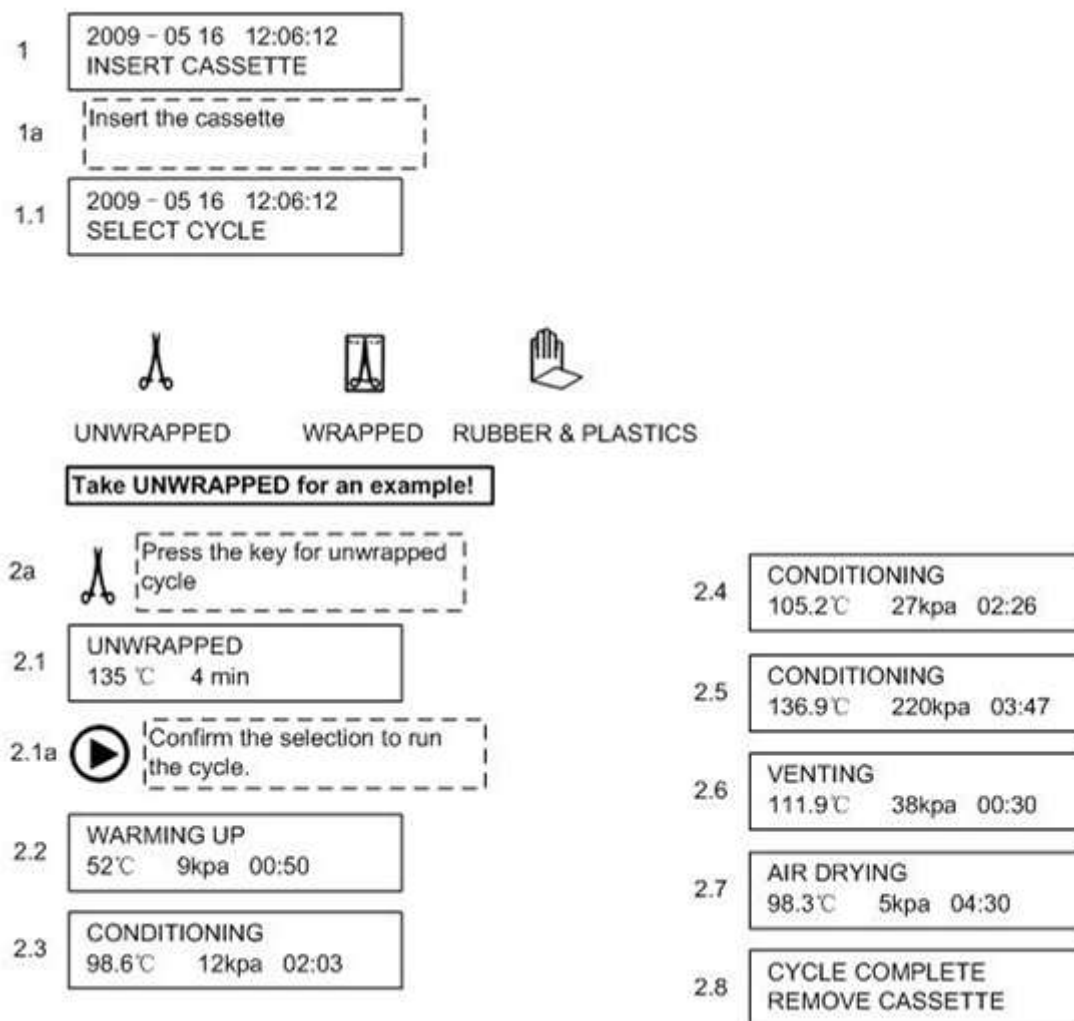


**Figure-11**

When pull out and open the cassette, kindly notice the high temperature inside the cassette. It shows on the LCD as step 2.7 in the above image.



- Caution, hot surface! While removing and opening the cassette after a sterilization cycle, kindly keep off the potential steam inside the cassette.

## 7.10 Sterilization Cycle Report

If the printer is set to “ON” ([refer to Chapter 7.3](#), setting printer), there is a report as follows or a failure report with “low temperature”, “sensor errors” or “aborted”.

|                            |                       |         |            |
|----------------------------|-----------------------|---------|------------|
| Start time:                | 2008-01-01 12: 00: 01 |         |            |
| Cycle:                     | UNWRAPPED             |         |            |
| Temperature:               | 135 °C                |         |            |
| Sterilization:             | 0240 sec              |         |            |
| Drying:                    | 1800 sec              | Purges: | 0001 times |
|                            | Time                  | °C      | kPa        |
| Warming up                 | 12: 00: 10            | 024.3   | 001        |
| Conditioning               | 12: 01: 05            | 095.1   | 016        |
| Pressurizing               | 12: 01: 43            | 104.0   | 027        |
|                            | 12: 02: 43            | 123.5   | 123        |
|                            | 12: 03: 43            | 132.2   | 184        |
| Sterilizing                | 12: 04: 50            | 135.3   | 218        |
|                            | 12: 05: 20            | 136.9   | 223        |
|                            | 12: 05: 50            | 135.4   | 216        |
|                            | 12: 06: 20            | 135.2   | 214        |
|                            | 12: 06: 50            | 135.7   | 218        |
|                            | 12: 07: 20            | 135.4   | 216        |
|                            | 12: 07: 50            | 135.2   | 215        |
|                            | 12: 08: 20            | 135.5   | 219        |
|                            | 12: 08: 50            | 135.1   | 213        |
| Sterilizing cycle complete |                       |         |            |
| Venting                    | 12: 08: 50            | 135.1   | 213        |
| Air Drying                 | 12: 09: 53            | 103.5   | 009        |
| End                        | 12: 39: 53            | 035.8   | 007        |

### 8. Maintenance

**Daily:**

Wash the interior and the exterior of the cassette with chlorine-free detergent, then rinse thoroughly with distilled water.

**Weekly:**

Check the biological air filter. If dirty, replace it. If wet, refer to Errors and error remedy.

Replace the biological air filter every 6 months.

**Every 6 months:**

Check the cassette seal. Or replace the seal every 6 months.

**An annual calibration of the unit:**

It depends on the user's demand.

## 9. Troubleshooting

| Error message                                                                                                                                                                                 | Possible causes                                              | Remedy                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------|
| Cassette removed in running                                                                                                                                                                   | Cassette removed in running                                  |                                                                                |
|                                                                                                                                                                                               | Cassette position switch failure                             | Replace the switch.                                                            |
| Refill Reservoir                                                                                                                                                                              | The level of the water in the reservoir is too low           | Refill the reservoir.                                                          |
|                                                                                                                                                                                               | Water quality is not acceptable                              | Refer to the Water Quality limit setting.                                      |
|                                                                                                                                                                                               | Conductivity sensor failure                                  | Replace the Sensor.                                                            |
| Water Quality is not Acceptable                                                                                                                                                               | Low water quality                                            | Use qualified Water.                                                           |
|                                                                                                                                                                                               |                                                              | Adjust the water quality limit value refer to the water quality limit setting. |
| Low Temperature, Cycle Aborted                                                                                                                                                                | The Solenoid valve keeps open during the pressurizing state. | Replace the valve.                                                             |
|                                                                                                                                                                                               | Temperature sensor failure                                   | Replace the sensor.                                                            |
|                                                                                                                                                                                               | Possible other causes                                        |                                                                                |
| Cycle Aborted in Running                                                                                                                                                                      | The exit key is pressed in running.                          |                                                                                |
|                                                                                                                                                                                               | Key function failure                                         | Replace the keypad.                                                            |
| <ul style="list-style-type: none"> <li>Check the Steam Boiler Sensor.</li> <li><b>Sensor</b></li> <li>Cassettete Temperature</li> <li><b>Sensor</b></li> <li>Check Pressure sensor</li> </ul> | Cable or connector failure                                   | Check with Ohmmeter. Replace them, if necessary.                               |
|                                                                                                                                                                                               | Temperature or pressure sensor failure                       | Replace the sensor.                                                            |
| Warming up time is too long.<br>The conditioning time is too long.<br>Pressurizing time is too long.                                                                                          | Excessive steam leakage from the cassette.                   | Replace the Cassette Seal or the cassette.                                     |
|                                                                                                                                                                                               | Excessive steam leakage from other positions                 | Replace the cassette seal or the cassette.                                     |
|                                                                                                                                                                                               | Water pump failure                                           | Replace the related parts.                                                     |
|                                                                                                                                                                                               | Solenoid valve failure                                       | Replace the pump.                                                              |
|                                                                                                                                                                                               | Possible other cause                                         | Replace the valve.                                                             |
| Steam boiler failure                                                                                                                                                                          | Cable failure                                                |                                                                                |
|                                                                                                                                                                                               | Temperature fuse broken                                      | Check the cable.                                                               |
|                                                                                                                                                                                               | Steam Generations Failure                                    | Replace the fuse or controller.                                                |

## 10. Accessories

### **Optional Accessories**

Sealing ring



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