

Chapter 8 Maintenance

8.1 Main Unit

 **CAUTION**

- Gently disconnect the patient cable and power cable without forcibly pulling the lead wires.
 - Clean the ECG machine as well as the accessories and cover the unit from dust.
 - Store the unit in a dry and cool environment and avoid excessive shocking and vibration.
 - While cleaning the unit, neutral cleanser is recommended. Do not immerse the unit in the liquid.
-

8.2 Patient Cable

 **CAUTION**

- The lead wires must be periodically checked for good connection. Damage may cause abnormal ECG waveform at some or all leads.
 - The user should avoid twisting the patient cable, or the life time will be shortened.
-

8.3 Cleaning and Disinfection

Before cleaning, power off the ECG machine and disconnect it from the AC power.

Do cleaning first before disinfection.

The process to clean and disinfect the ECG machine, cables, lead wires and reusable electrodes are as follows:

- 1) Use a clean soft cloth absorbing an amount of cleanser or disinfectant to wipe the surface carefully and avoid touching connectors of the ECG machine and accessories.
- 2) When necessary, wipe the superfluous cleanser or disinfectant with dry cloth.
- 3) Place in the ventilated and cool environment to dry the ECG machine and accessories.

Sterilization operation for this ECG machine and accessories is not recommended, unless the manual of the accessories has requirement.

 **CAUTION**

- While cleaning and disinfection, do not splash liquid into the ECG machine and the accessories.
 - Disinfections may cause damage to the ECG machine or accessories to a certain degree. It is suggested that only when necessary, disinfect the ECG machine and accessories.
 - Neutral cleanser or disinfectant is recommended.
-
-

8.4 Recording Paper

 **CAUTION**

- To ensure good ECG recording, please use suitable thermal recording paper for the ECG machine. Incorrect recording paper can damage printer head and cause problem such as blurring trace and incorrect paper running. Pay attention to the following comments on recording paper.
 - Never use recording paper coated with wax for the ECG machine. It may cause serious problems to the printer head.
 - When exposed to high temperature, high humidity and direct sunlight, the recording paper will deteriorate. It is therefore required to store the thermal recording paper in a dry and cool environment.
 - When exposed to fluorescent light for a long time, the recording paper will deteriorate.
 - When stored with polyvinyl chloride (PVC), the recording paper will deteriorate.
 - If the thermal recording paper is stored overlapping for a long time the printing impression which will leave traces in other pages, which will cause mislead readings.
 - Use suitable size recording paper for the ECG machine. Or, it may cause damage to the printer head and Silicon rubber shaft.
-
-

8.5 Battery

The ECG machine is equipped with a built-in rechargeable battery to assure continuous operation when AC power is unavailable. Charging, capacity indication and replacement of the battery are described below:

◆ Charging

The ECG machine is designed with a charger and protector for the battery.

- Please turn off the machine first before charging the battery.
- The battery-charging indicator on the operation keyboard will become green when the battery is charged completely.
- If the ECG machine is to be stored or without use for a long time, discharge and charge the battery at least once every three months (discharge the battery until the machine turns off automatically, and then fully charge the battery).

◆ Capacity indication

When the unit is powered by battery, there will be a symbol of battery capacity indication displayed on the LCD.

For example:



Full battery capacity, it can work continuously for about 3 hours.



Battery capacity is sufficient.



Insufficient battery capacity, charging is required.



Battery capacity is going to running out, immediate charging is demanded.



Battery capacity has already run out and blackout may happen at once, immediate charging is demanded.

◆ Battery replacement

The battery should be replaced by the professionals according to the following procedures.

1. Power off the ECG machine and disconnect the AC power cable.
2. Flip over the ECG machine and disassemble the battery back cover based on the instruction on the back cover.

3. Disconnect the battery plug and take out the battery.
4. Replace the existing battery with a new one. Pay attention to polarity and connection.
5. Install the back cover.

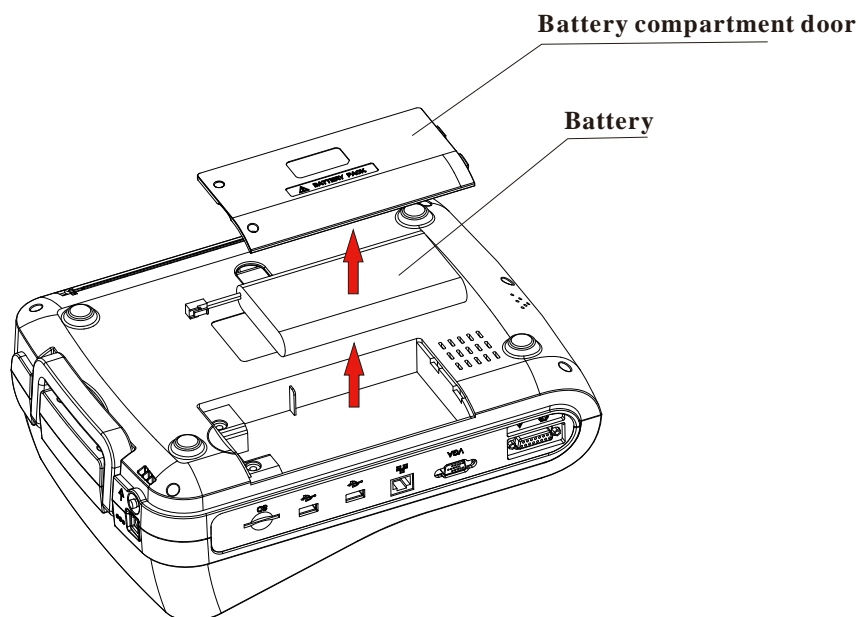


Figure 8- 1 Battery Replacement

EXPLANATION

Refer to *Foreword* for other warning information of battery.

8.6 Silicon Rubber Shaft for Printing

The silicon rubber shaft shall be kept clean, smooth and free from dirt. Otherwise, the ECG machine may print out unsatisfied ECG trace. To clean dirt from the shaft, wipe the shaft with soft cotton moistened with medical alcohol and at the same time rotate shaft until it is clear enough.

8.7 Thermal Printing Head

Residue and dirt on the thermal printer head could affect the clarity of recorded ECG waveform. To clean the thermal printer head, open the paper cover and clean the printer head with soft cotton moistened with medial alcohol. It is not permitted to clean the printer head with a sharp object, which can cause permanent damage to the printer head. Thermal printer head maintenance should be done at least once a month.