

INSTRUCTION MANUAL

Ambulatory Blood Pressure Monitor

Model SE-25S

SEIN ELECTRONICS CO., LTD.

Before operating this unit please read these instruction completely

C O N T E N T S

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FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Note : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

1. Introduction

The SE-25S is a compact automatic ambulatory blood pressure monitor. Easy-to-ambulate and ideal for measuring the changes in a patient's blood pressure. It is important to know how human blood pressure fluctuates, since it is not always constant. Also, equipment for regular blood pressure analysis is needed since it can not be measure by doctors or nurses everyday. The SE-25S can measure, store and print blood pressure readings automatically. This enables you to keep a daily record of the changes in the readings for a patient.

"Blood pressure measurement determined with this device are equivalent to those obtained by a trained observer using the cuff/stethoscope auscultation method, within the limits prescribed by the American National Standard for Electronics or Automated Sphygmomanometer,"(ANSI/AAMI SP10-1992)

The fifth Korotkoff sound was used to determine diastolic blood pressure. If cuff pressure reaches 300mmHg, SE-25S automatically deflates cuff. In normal state, it detects the state of micom and controls pump and solenoid. In the fault state of micom, the pump and solenoid are not operated by circuit configuration. If the pump are in fault state, the solenoid are opened by checking pumping time. If the solenoid are in fault state, it is controlled by complement circuit.

2. Preparation

■ Before Using

1. Familiarize yourself with the unit and accessories.
2. Connect the hose valve firmly to the cuff to avoid air leak.
3. Do not connect the unit to any other product, this may cause a malfunction.
4. Check any existing data in the memory and clear it(if you no longer need it)
5. It is recommended that this device should be checked every 2 years in accordance with EN1060-1:1995 and EN1060-3:1997 to ensure eaxct masurement. Carry out the test in pressure steps of 50mmHg between 0mmHg and the maximum pressure of the scale range.
6. Please feel free to contact SEIN should you want any further information such as circuit diagram, part lists, description, calibration instruction, etc.
7. Although such cases are rare, for subject having an extremely week pulse or irregular pulse, error may result which prevent proper measurement.

■ During Use

1. Keep the monitor away from water. If the equipment gets wet, dry completely before use. If the equipment doesn't operate, contact with SEIN ELECTRONICS or distributor.
2. Do not drop the monitor.
3. Take care not to crimp air hose.
4. Don't use with high frequent(HF) surgical equipment, SE-25S is not provided with protective guard against burning.
5. Avoid prolonged impairment of the circulation of the arm from the operation of the equipment.
6. Avoid intense electromagnetic fields such as TV, radio, etc.
7. Please consult a physician for interpretation of blood pressure measurement.
8. There is no programmable features.
9. No specific training is needed to operate this device.
10. Any blood pressure recording can be affected by the position of the subject, his or her physiologic condition, and other factors.

<p>☞ When the monitor is active in the Automatic Measurement Mode, you should try and minimize external pressure to the cuff or shock to your arm.</p>
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■ Care and Maintenance

1. Avoid strong the unit where it will be exposed to direct sunlight, dust or high humidity.
2. Do not wash the main unit or pressure cuff.
3. Do not disassemble the unit.
4. Do not drop the unit. Protect from sudden jars or shocks.
5. Do not clean the unit with volatile liquids. The unit and pressure cuff may be wiped clean with a soft, dry cloth.
6. If this unit is not being used for a long period time, please remove the batteries.

■ Feature

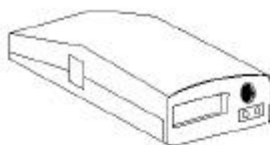
1. The SE-25S is compact and light, weighs only 290g, for easy wear and use.
2. It has six sections of Automatic Measurement interval. The intervals are 5,10,15,20,30 and 60 minutes.
3. It saves 512 measured data. When you start 513th measurement new data will be stored the oldest data will automatically be removed.
4. You can control the beep sound with the in/off mode. You will hear the beep sound when you start in the Automatic Measurement Mode.
5. You can send the your measured data through an external device, such as a PC.
6. Back up system to prevent loss of data when battery is flat, this if only for 20 minutes.

■ Classification according to EN60601-1

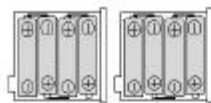
- Type BF applied part.
- Internally powered equipment.
- Ordinary equipment without protection against ingress of water.
- Equipment not suitable for use in presence of a flammable anesthetic mixture.
- Continuous operation.
- Equipment that complies with Class B for Noise-Emission, Level B for noise-immunity by standard of IEC/EN 60601-1-2
(Electromagnetics Compatibility Requirements)

3. Main Unit and Accessories

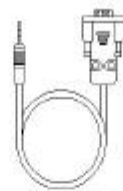
- Check that you have all the items below, before you start.



Monitor(SE-25S)



Battery(Ni-MH)



RS232C Cable



Cuff



Holder



Software



Instruction Manual
&
service Manual

4. Operation Guide

Please review the suggested procedure for the SE-25S.

■ Before measurement

Connect SE-25S to PC by RS-232 cable	See Fig.1
▼	
Select a patient or insert new patient	See 1.Patient
▼	
Change options(Limits, Profile, and Port, Etc...)	See 1.Patient
▼	
Setup SE-25S(Time and interval)	See 2.Edit
▼	
Clear storage data of SE-25S	See 2.Edit
▼	
Disconnect SE-25S from PC	
▼	
Put on the cuff and the measure BP	

■ After measurement

Connect SE-25S to PC by RS-232 cable	See Fig.1
▼	
Select a patient or insert new patient	See 1.Patient
▼	
Change options(Limits, Profile, and Port, Etc...)	See 1.Patient
▼	
Getting data from SE-25S	See 2.Edit
▼	
Confirm Edit, Profile, Histogram, Correlation and statics data	See 2,3,4,5,6
▼	
Printing	See 7.Print

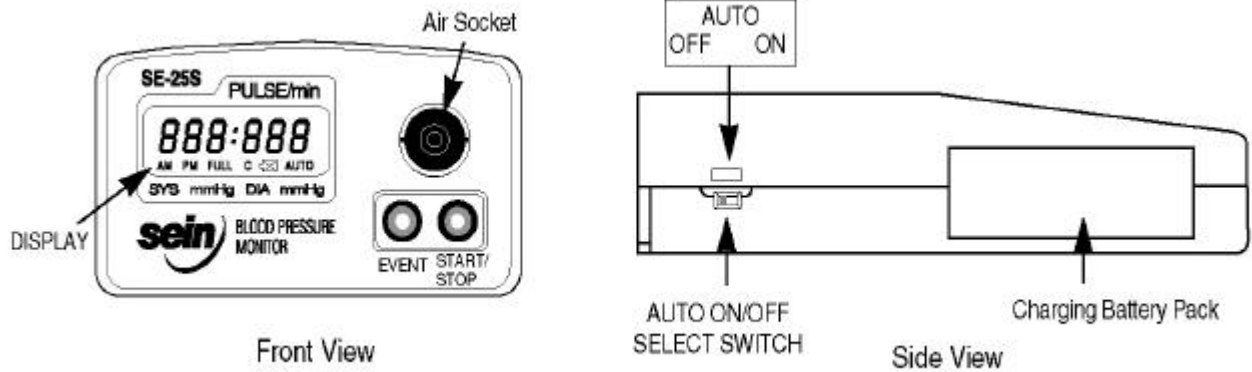
5. Charging

1. Insert the batteries taking care to observe polarities of batteries.
2. Depending on the type of batteries you wish to charge select the correct battery type switch.
3. DO NOT MIX BATTERY TYPE/SIZES WHEN CHARGING.
4. Plug the charger into mains power to begin charging.

When charging RED LED will glow. Once maximum charge time is reached the RED LED will extinguish. The batteries are now ready for use.

6. Monitor Instruction

1. Operation



(1) START/STOP

- Start measurement, Press again to stop measuring.

✍ Press START/STOP button whenever you want to deflate the cuff during measuring.

- Stop pumping, LCD displays present pressure for 16 seconds, Then it returns to clock display.
- When you press this while measuring, displays Error Code "Err 4". It returns to clock display if there is no operation in 16 seconds.

(2) EVENT


- Use this only to start, You can not stop measuring by this.
- " * " is printed at Event column in your printed report.
- You can stop measuring by START/STOP.
- Use this button when you are in an unusual situations(ex: eating, taking medicine, etc)

(3) AUTO ON/OFF

- When you set it on OFF, LCD always displays present time.
- When you set it on ON, Automatic Measurement is ready. If you already set up Automatic Interval, it displays present time and remaining minute 1 second respectively in turn. If you didn't set up Automatic Measurement Interval, present time and "OFF" will appear.
- If you want to send your measured data through PC, set it to OFF.

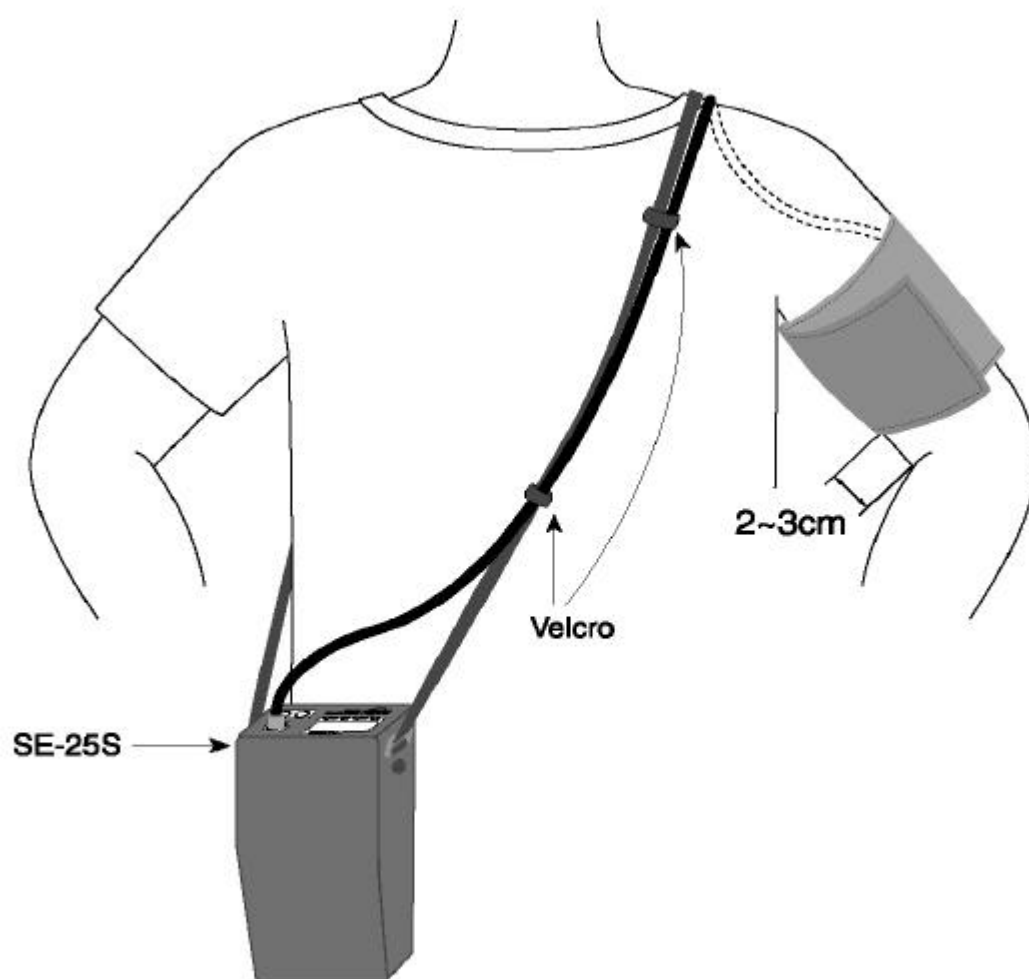
2. DISPLAY



- FULL indicates monitor's memory is full. When you measure 513th measurement the oldest data will be cleared and the newest will be saved.
-  indicates that it needs to replace the batteries. It is inoperative while displaying.
- AUTO indicates Automatic Interval Measurement. This appears with present time and remaining minute 1 second respectively in turn.

3. Cuff placement

For correct measurement, position the cuff as shown.



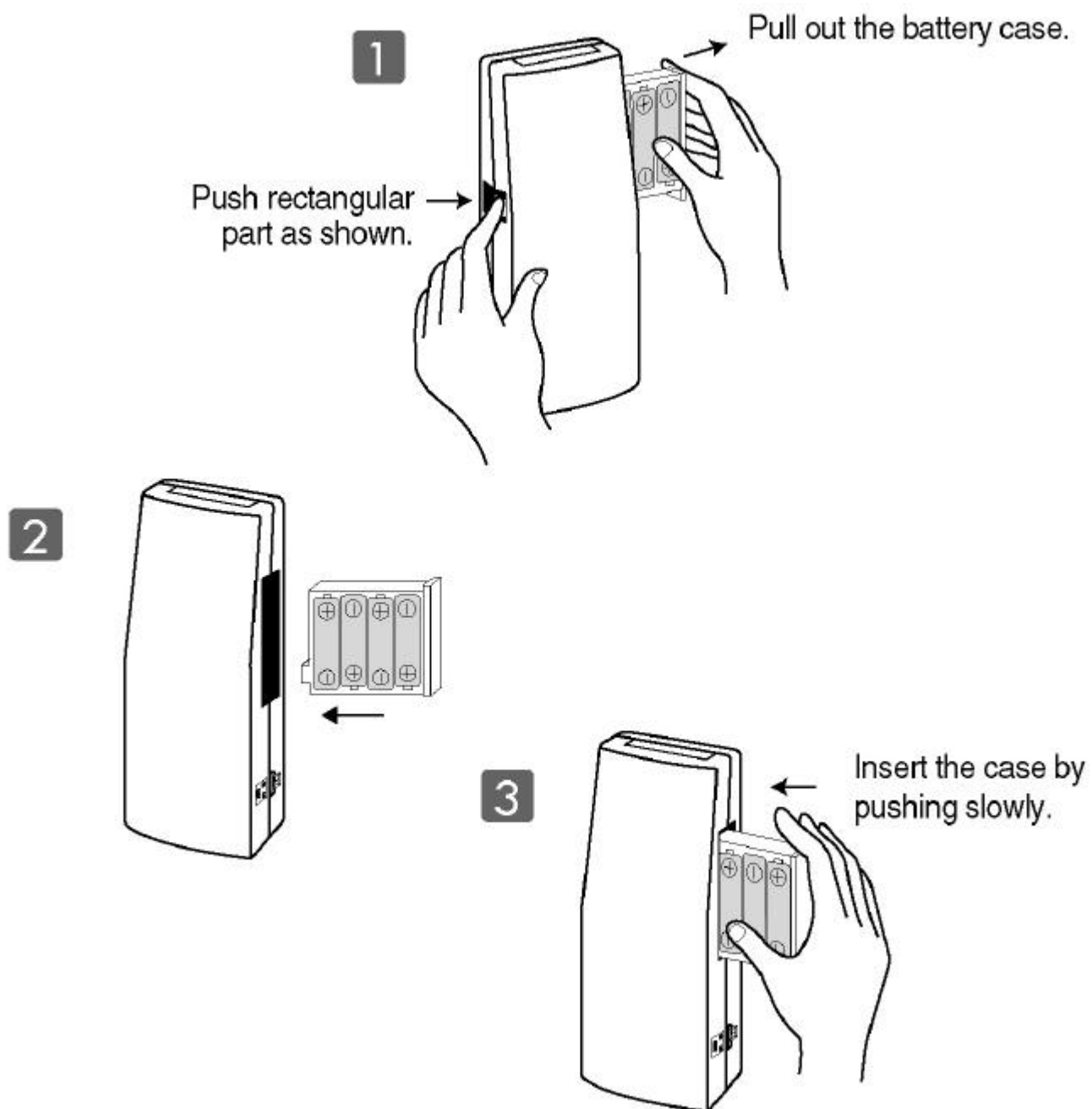
4. Advice for right measurement

- You should consider whether you are ready for automatic measurement. Set AUTO ON/OFF switch to OFF when you change your position during measurement.(ex: Bathing, Changing clothes, etc)
- Check the cuff and keep it straight. Do not bend or fold it, or it may affect your results.
- When measurement starts, keep your position safe and straight. Do not give a direct shock to the cuff. Measurement in driving needs care to minimize external pressure.
- Do not tighten the cuff too firmly. Allow a finger to slide between cuff and arm.
- Please use the only cuff supplied by SEIN ELECTRONICS CO., LTD. Using other cuffs may impede proper measurement.

5. Display while measuring

<i>35</i>	Present pressure appears at left side when pumping (ex: Present pressure 35 mmHg).
<i>134</i>	Present pressure appear at right side when measuring after pumping (ex: Present pressure 134 mmHg)
<i>Err 5</i>	"Err" and Error Code appears when error was occurred in measurement. For the detailed information about error, see the "13. Errors".
<i>P Err</i>	It appears when it is unable to measure pulse rate.
<i>120 80</i>	When measurement is completed, pulse rate and systole and diastole appear for 1 second and 3 seconds respectively (ex: Systole 120 mmHg / Diastole 80 mmHg /
<i>P 75</i>	Pulse Rate 75PUL/min).

7. Battery Replacement



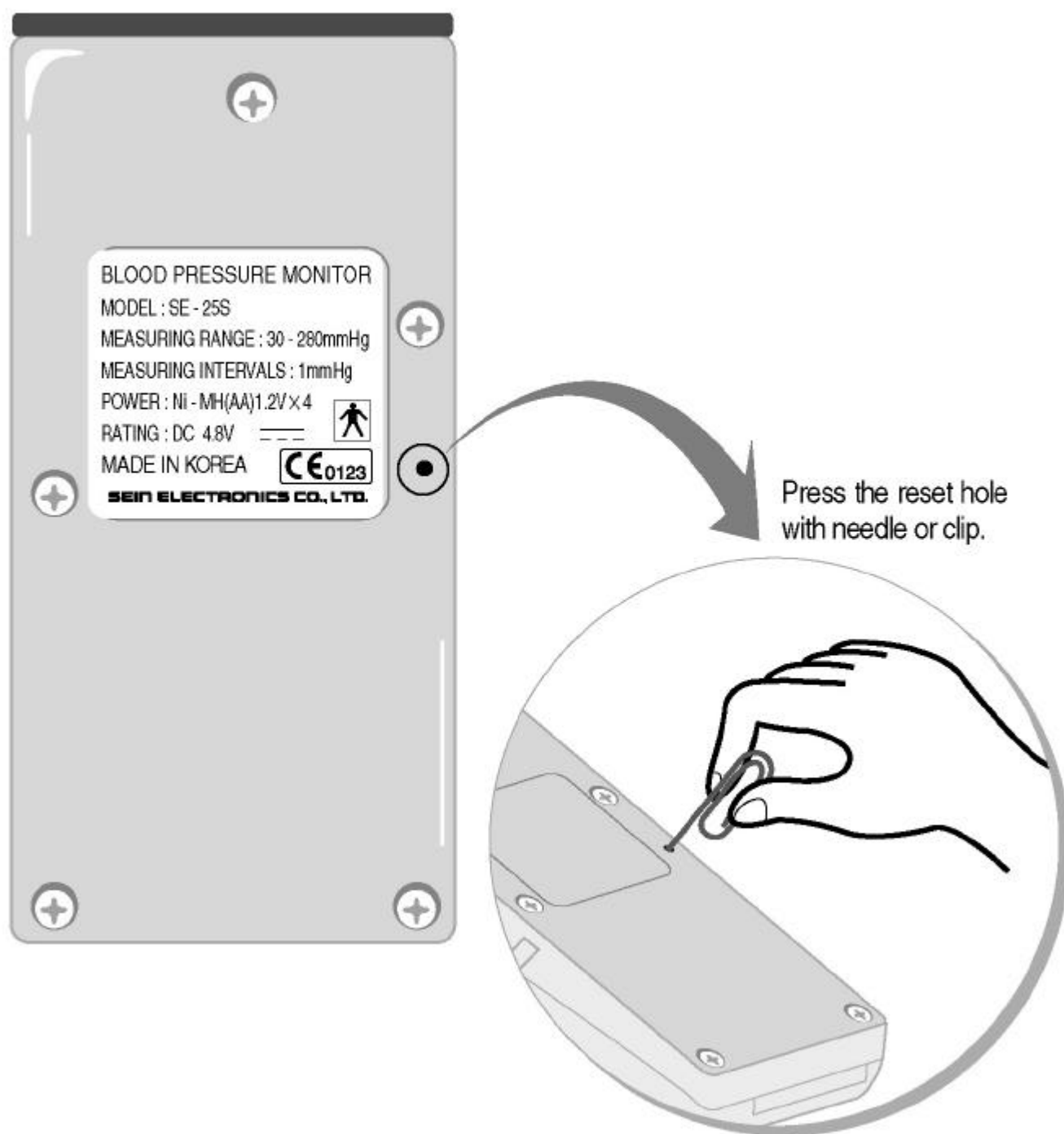
Attention : Take the batteries out of SE-25S when this device will not be used for a long time. If the batteries are not used any more, please dispose of them in accordance with National Regulation

8. Reset

Press the reset hole,

- if the monitor does not work correctly,
- if it has no function,

To reset the monitor, press the reset hole as shown. Be sure that all the data will be cleared.



9. Errors

Following error code are displayed when error was occurred in measurement.

Error Code	Meaning	Cause	Treatment
	Failure of power reset	The monitor does not display LCD correctly.	Refer to 8, Reset
0	Pressurizing for more than 80 seconds	Air leak	It need to repair to avoid air leak.
1	Exceed the pressure limit of 300 mmHg	Hose or cuff blocked	Do not move and try to relax during the measurement. And it need to repair to avoid air leak.
2	Less than 13mmHg after 10-second pumping	Air leak	It need to repair to avoid air leak
3	Diastole is not found to 20mmHg	Unexpected movement while measuring	Do not move and try to relax during the measurement.
4	Measurement failed by ENTER/ START	User operation	Do not press the STOP.
5	Systole is not found	Lock of pressure. Need to re-measure	Do not move and try to relax during the measurement.
6	Pressure is down more than 20mmHg compared with the previous pulse	User folded his arm while measuring	
7	Pulse rate is less than 40 bpm and greater than 200 bpm	Unexpected movement while measuring	Measure the blood pressure by other methods.
8	Diastole is less than 30mmHg or greater than 160mmHg	Unexpected movement while measuring	
9	Systole is less than 60mmHg or greater than 280mmHg	Unexpected movement while measuring	
F	Systole minus Diastole less than 10mmHg	Unexpected movement while measuring	
P	Systole minus Diastole greater than 150mmHg	Unexpected movement while measuring	

10. Specification

SE-25S	
Method	Oscillometric
Range	Systole 60 -280 mmHg
	Diastole 30 -160 mmHg
	Pulse Rate 40 -200 pul/min
Accuracy	According to clinical evalation
	Blood Pressure : ± 3 mmHg
	Pulse rate : $\pm 5\%$
Pressurization	Micro pump
Depressurization	Solenoid valve
Preset pressure	180 mmHg
Resoulution	1 mmHg
Auto Measurement Interval	0, 5, 10, 15, 20, 30, 60 min.
Memory	512 measurements
Display	6 digit
Power	Ni-MH(AA) 1.2V \times 6 batteries or LR6(AA) 1.5V \times 4 batteries
Life	200 measurements using Ni-MH, 250 measurements using LR6
Operation Environment	Temperature +10°C... +40°C
	Humidity 85%
Stirage Environment	Temperature -10°C... +60°C
	Humidity 95%
Unit Dimensions	65 \times 140 \times 34mm (W \times D \times H)
Cuff Dimensions	580 \times 140mm (L \times W)
Arm Circumference	23cm \sim 33cm
Weight	290g(excluding cuff)