A&D

Digital Blood Pressure Monitor

UA-702

UA-702EX-C U4-5658B

Instruction Manual

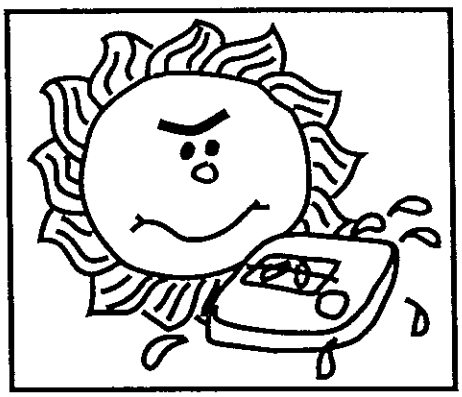
Preliminary remarks

The device conforms to the following requirements: European Directive 93/42 EEC for Medical Products Act; Medical Products Act; European Standards for Electrical Medical Equipment EN 60601-1 (General Safety Provisions), EN 60601-1-2 and EN 55011 (Electromagnetic Compatibility); European Standards pertaining to Non Invasive Blood Pressure Instruments EN 1060-1 (General Requirements), prEN 1060-3 (Supplementary Requirements for Electromechanical Blood Pressure Measuring Systems).
The above is evidenced by the CE mark of conformity accompanied by the reference number of a designated authority.
This device is designed for adults only.

Environment for use

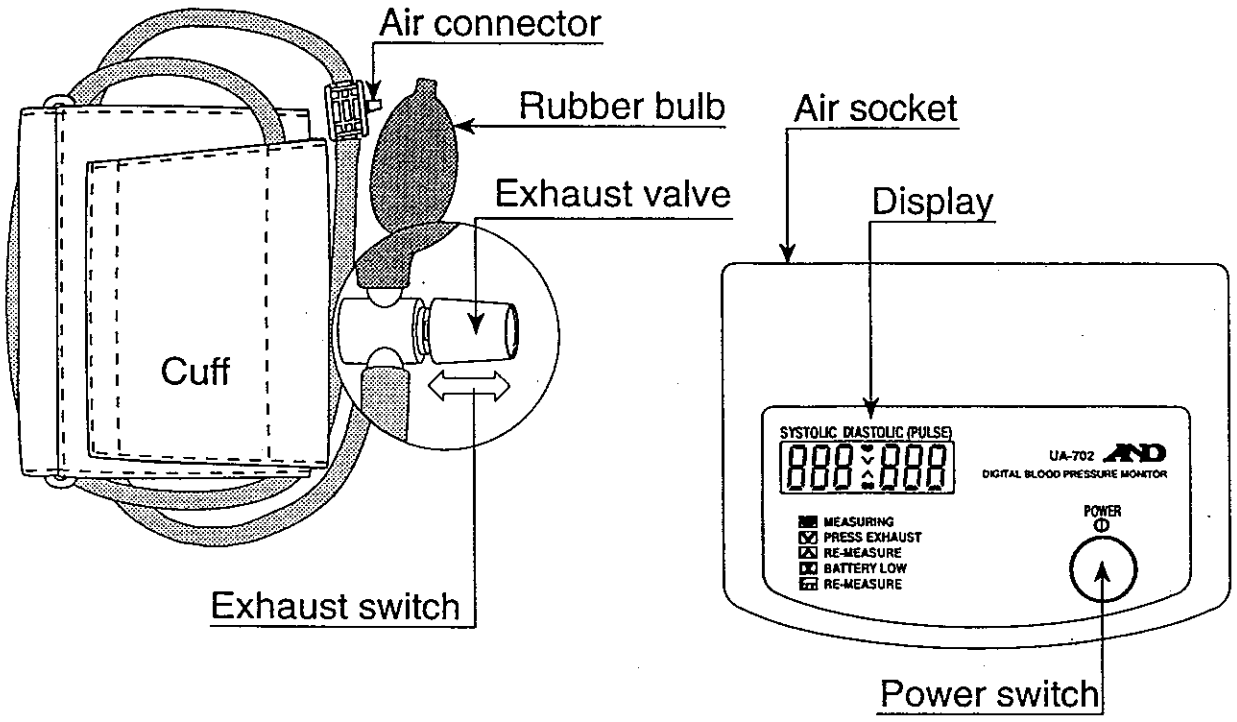
The device is for use in a hospital and / or patient's home.

Precautions



- ❑ Precision components were used in the construction of this device. Extremes in temperature, humidity, direct sunlight, shock or dust should be avoided .
- ❑ Clean the device with a dry, soft cloth (never use thinner, alcohol, benzene, or wet dusters).
- ❑ Avoid tightly folding the cuff or storing the hose tightly twisted for long periods, as such treatment may shorten the life of the components.
- ❑ The device and cuff are not water resistant. Prevent rain, sweat and water from wetting the device and cuff.

Parts Identification



Symbols

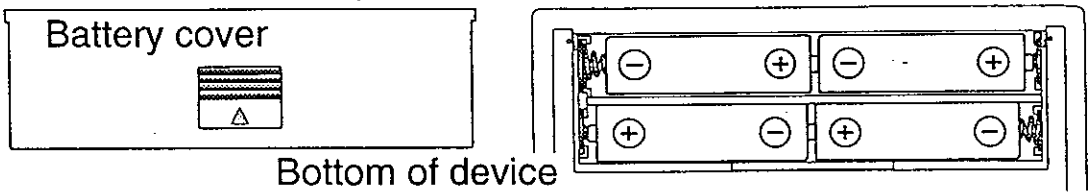
Symbols	Function / Meaning	Treatment
⏻	Turning on or off the device.	——
⊕ ⊖	Direction guide to install battery.	——
⎓	Direct current.	——
SN	Serial number.	——
1997	Date of manufacture.	——
Type BF	Device, Cuff and tubing are designed to provide special protection against electric shocks.	——

Symbols	Function / Meaning	Treatment
 Measuring	Mark appears in the measurement condition and flashes when the pulse is detected.	Measurement is in progress --- remain as still as possible.
 Exhaust	Mark flashes when there is air remaining in the cuff at power up. Mark flashes at the completion of the measurement until exhaust is complete.	Press the exhaust valve to exhaust the air.
 Insufficient pressure	Measurement began, but the pulse was detected immediately.	Increase pressurization by 30 to 40mmHg and measure again.
 Low Battery	This mark appears when the battery voltage is too low for the device to work properly.	Replace all of the batteries with new ones.
Err Measurement error	This message appears when the blood pressure could not be measured accurately.	First exhaust the air from the cuff, then reapply the cuff properly and remeasure.
PUL Err Pulse error	This message appears when the pulse could not be measured accurately.	
Flashing Exhaust velocity	The exhaust rate will flash when the exhaust is greater than 8mmHg/s.	Adjust exhaust rate to 2 to 5mmHg/s.

Preparation for Measurements

Step 1 **Installing / Changing the Batteries**

Remove the battery cover and insert new batteries into the battery compartment as shown, taking extreme care that the polarities (+) and (-) are observed. Use only Mignon (R6Por LR6) or similar type batteries.

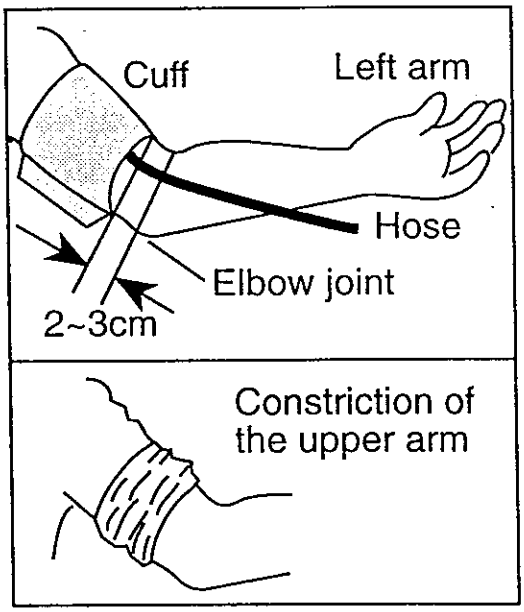


If the function symbol is shown on the display panel, this means that the batteries are depleted. Always change all batteries at the same time. If you do not intend to use the device for longer periods, it is advisable to remove the batteries. Only use high quality, leakproof batteries which correspond to the specified ratings. Never mix new and old batteries or batteries from different manufactures. Used batteries do not fall within the category of household waste, and must be disposed of according to the applicable regulations.

Step 2 **Attaching the arm cuff**

Wrap the cuff around the upper arm about 2-3 cm above the elbow as shown. It is best to place the cuff directly against the skin, as clothing may cause a faint heart beat, and result in a measurement error.

Constriction of the upper arm caused by rolling up a shirt sleeve may prevent accurate readings.



Step 3 **Posture while Measuring**

Remain seated or in a reclining position during measurement. Try to keep the arm with the cuff as still as possible.

Step 4 **Measurement**

Be relax and quiet during measurement. Movement could cause an error, requiring measurement once more.

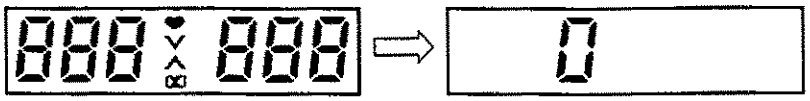
Step 5 **After the Measurement**

After the measurement, remove the cuff and record your data.

Measurements

Step 1 Place the cuff on the arm (preferably the left arm).

Step 2 Press the POWER switch.



Approx. 1 second

- ❑ When the POWER switch is pressed, all of the display symbols will appear for about one second.

- ❑ When the " 0 " is displayed, the device is ready for measurement. If the ∨ mark appears, the cuff has some air trapped in it. Press the exhaust valve switch until "0" appears.

Step 3 Pressurize the cuff by squeezing the rubber bulb.

- ❑ Pressurize the cuff to approximately 30 to 40mmHg above the estimated systolic blood pressure to be measured.

- ❑ A buzzer sounds when pressure reaches 160, 200, 240 and 280mmHg.

Step 4 When pressurization is complete, the automatic exhaust mechanism will gradually reduce the pressure in the cuff and the ❤ symbol will appear along with the current pressure reading on the left and exhaust rate on the right.

Current pressure (gradually being reduced)

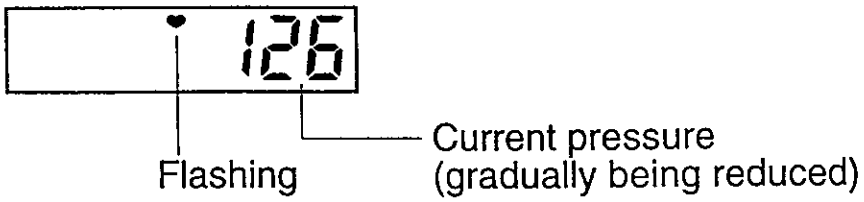
Measurement mark

Exhaust rate

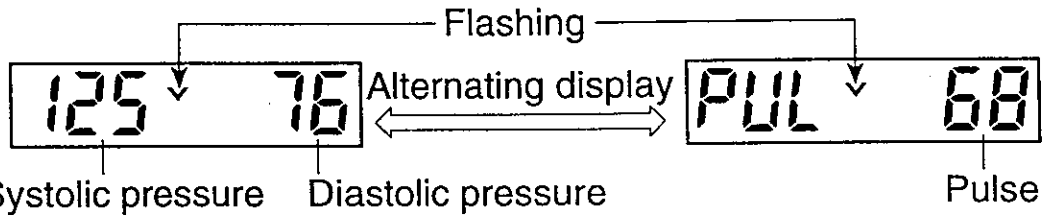
- ❑ Accurate measurement can not be made when the exhaust rate is outside of the 1 to 5mmHg range.

- ❑ Remain still during the measurement. When a pulse is detected, the ❤ symbol will blink in unison with the pulse of the person being monitored and the pressure display will switch to the right side. When the measurement starts, the buzzer will sound at each pulse.

Measurements



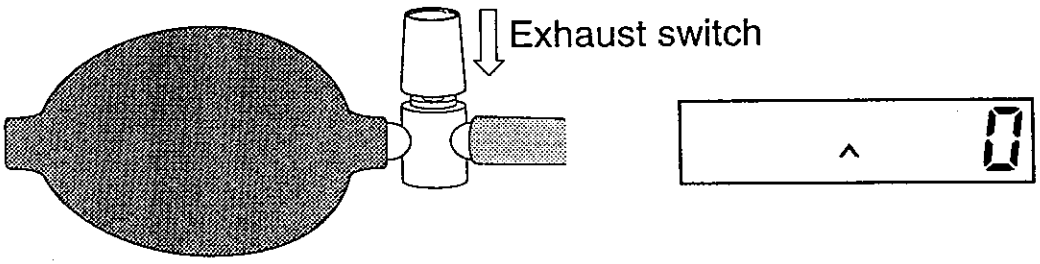
- When the measurement has completed the buzzer will sound for about one second. The systolic pressure is displayed on the left and the diastolic is displayed on the right. The pulse alternates with the systolic and diastolic displays.



Step 5 Press the exhaust switch to completely release all of the air from the cuff.

- When a measurement is made with insufficient pressure, the ^ display will appear, repressurize the cuff to a pressure that is about 30 to 40mmHg higher than the previous time.

- When a measurement is made with an erratic pulse or in a very noisy environment, Err will be displayed.



Step 6 Press the POWER switch to turn the power off. If the device is left on after a measurement, it will turn off automatically after about 2.5 minutes.

Step 7 If a subsequent measurement is required, turn off the power and turn it on again. When the "0 " is displayed, the device is ready for another measurement.

Note for Proper Measurements

- ❑ Sit in a comfortable position where you can place the arm to be used for the measurement on a table or other support that will place the center of the cuff at about the same height as your heart.

- ❑ Relax for about 5 or 10 minutes before starting a measurement. If you are excited or depressed by emotional stress, the measurement will reflect this stress as a higher (or lower) than normal blood pressure reading, the pulse reading will usually be faster than normal.

- ❑ A normal persons blood pressure varies constantly, depending on what you are doing and what you have eaten. What you drink can have a very strong and rapid affect on your blood pressure.

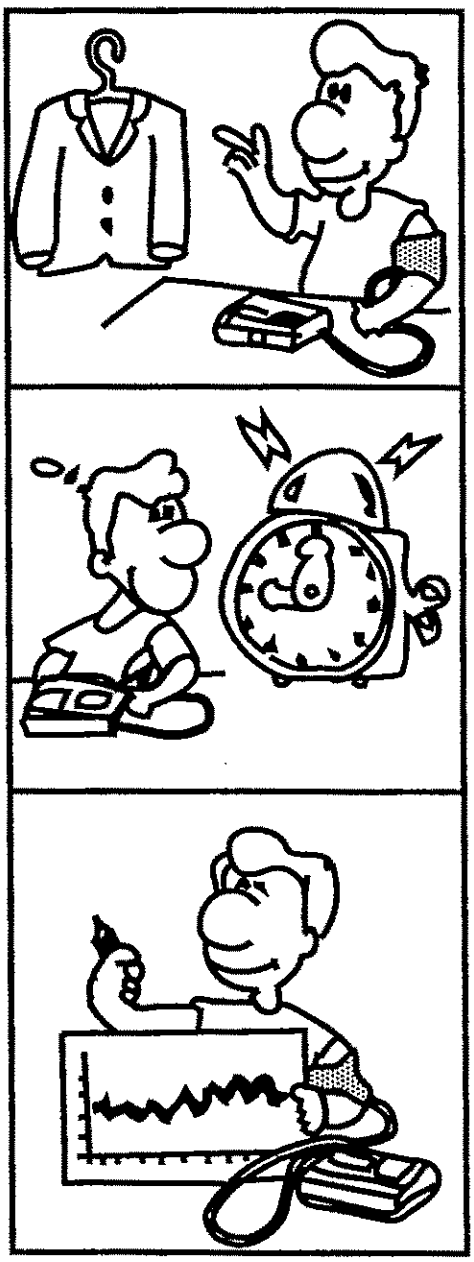
- ❑ This device bases it's measurements on the heart beat. If you have a very weak or irregular heart beat, the device may have difficulty determining your proper blood pressure.

- ❑ Should the device detect a condition that is abnormal, it will stop the measurement and display an error. *Err* is where the device could not accurately measure the blood pressure. See the section on description of display marks for details.

- ❑ This blood pressure device is intended for use by adults only. Consult with your physician before using this device on a child. A child should not be use this device unattended.

How to Make Proper Measurements

Blood pressure varies depending upon the conditions prevailing at the time of the measurement, consider the following so that the most accurate measurements may be made.



- In preparation for blood pressure measurement, the subject should remain relatively still for 5 to 10 minutes before a measurement.
- Shirts or other garments which fit tightly on the upper arm should be removed before fitting the arm cuff.
- Exercise, eating and drinking, smoking, etc., before a measurement can affect the results.
- Blood pressure varies constantly throughout the day. Measurement should be made regularly at the same time each day.
- Do not be too impressed by the results of one measurement. Keep a record of blood pressure measurements. Many readings tell a story.
- When making repeated measurements the arm becomes heavy with blood, resulting in wide variations in measurement values. For this reason, repeated measurements should be made after a rest period of approximately 5 to 10 minutes or after raising the arm until the engorged condition is relieved.
- In general, the blood pressure is low in summer (when it is hot) and high in winter (when it is cold).
- Emotional stresses may cause an increase in blood pressure.

Concerning Measurement

What is Blood Pressure?

The blood pressure is at its highest levels in the large arteries near the heart and drop off towards the peripheral areas of the circulatory system.

The blood pressure varies with the beating of the heart. When the heart contracts, forcing the blood out, the pressure inside the arteries is said to be systolic. When the heart expands, the pressure of the blood inside the arteries is said to be diastolic.

Hypertension

Hypertension, an abnormally high arterial blood pressure, which is most common among older adults, if left unattended, can cause many health problems including stroke, heart attack, etc. It is wise to control the blood pressure to prevent it from becoming high, by reducing salt intake, and by controlling the subject's diet and activities. People who were born with high blood pressure can prevent the progress of heart disease by means of adequate control.

Why is it a Good Thing to Measure Blood Pressure at Home

Having one's blood pressure measured in a hospital or a clinic, tends to stimulate nervousness in the subject and may even cause high blood pressure. Also blood pressure varies in accordance with a variety of conditions, so it is not possible, on the basis of a single measurement, to make an accurate judgment of the hearts condition.

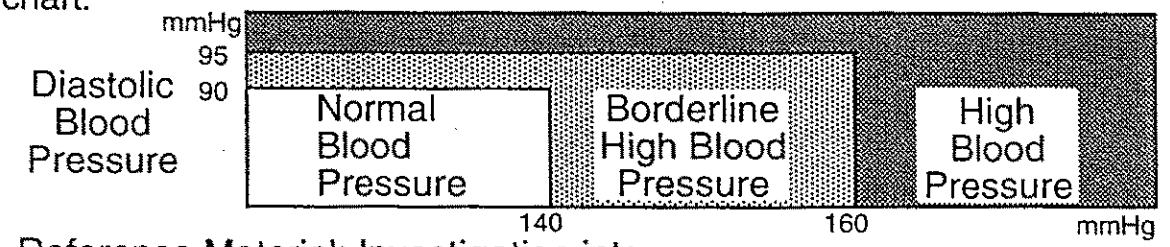
Blood pressure measured first thing in the morning after getting up, with the subject still, and before taking any food or drink, is known as the fundamental blood pressure. This is usually done in a hospital. To come as near as possible to measuring the blood pressure in an environment that is similar to this, it is useful to be able to take the measurement at home.

It is possible for you to carry out your own blood pressure control at home, taking blood pressure readings on a regular basis, with your own blood pressure device. Record the measurements on a regular basis, and if the accumulated results seem to be above normal, it is recommended that a doctor review the record.

Concerning Measurement

WHO Blood Pressure Classifications

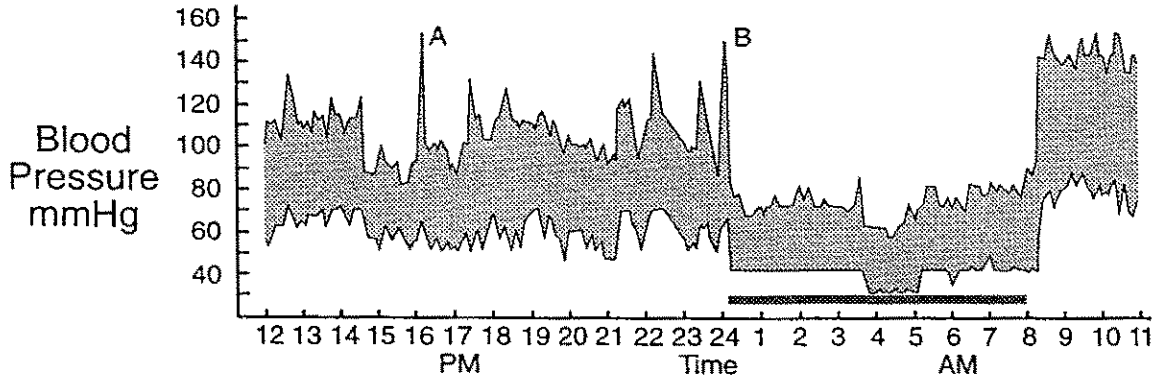
Standards for assessment of high blood pressure, without regard to age, have been established by the World Health Organization (WHO), as shown in this chart.



Reference Material: Investigation into Adult Diseases Report by the Ministry of Health and Social Security,1971.

Variations in Blood Pressure

Individual blood pressures vary greatly both on a daily and a seasonal basis. These variations are even more pronounced in the hypertensive patient. Normally the blood pressure rises while at work and is at its lowest during the sleeping period.



Shown is data for measurements taken every 5 minuets. The thick line represents sleep. The rises in blood pressure at 4PM (A in the graph) and 12PM (B in the graph) correspond to an attack of pain and sexual intercourse. (Beven,Honour & Scott: Clin. Sci. 36:329, 1969)

Maintenance

Do not open the case of the device because it uses delicate electrical components and an intricate air unit that could be damaged. If you can not locate and fix the problem, request service from your supplier, or from the A&D service group. The A&D service group will support authorized suppliers about technical information, spare parts and units.

Specifications

Performance Specifications

Measurement method	Oscillometric measurement
Measurement range	Pressure : 20 ~ 280 mmHg ±3 mmHg
	Pulse : 40 ~ 200 beats / minute ±5 %
Battery	4 x 1.5V batteries Mignon (R6P or LR6)
Cuff	Arm Circumference
Classification	Type BF CE 0366
	Device, Cuff and tubing are designed to provide special protection against electric shocks.
Clinical test	According to ANSI / AAMI SP-10 1987

Standard deviation	Mean error	
Systolic blood pressure	5.43 mmHg	2.24mmHg
Diastolic blood pressure	5.18 mmHg	1.54mmHg

Environment Specifications

Operating environment	+10 °C ~ +40 °C, less than 85 %RH
Storage environment	-20 °C ~ +70 °C, less than 85 %RH

Physical Specifications

Dimensions	135 [W] x 105[D] x 45[H] mm
Weight	Approx. 200g

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