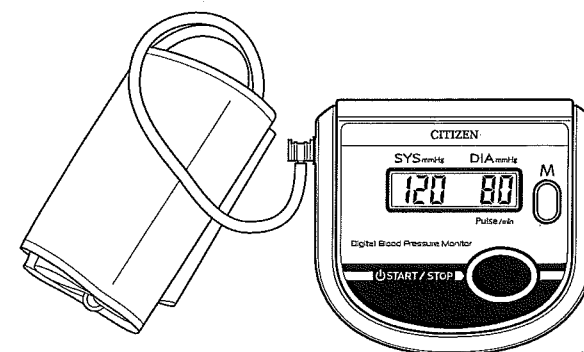


INSTRUCTION MANUAL
FOR
DIGITAL BLOOD PRESSURE MONITOR

English

REF **CH-452**



English

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CITIZEN SYSTEMS JAPAN CO., LTD.

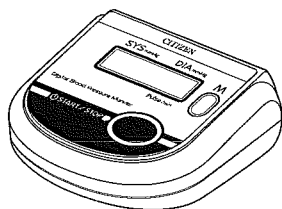
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Tokyo 188-8511, Japan

E-mail: sales-oe@systems.citizen.co.jp
<http://www.citizen-systems.co.jp/>

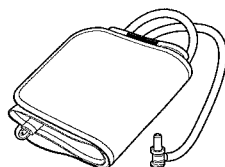
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Ensure that you have all the following components



Blood pressure
monitor unit



Cuff



(for monitor)
4 AA-size
batteries



Instruction
Manual

GENERAL REMARKS

General remarks on blood pressure and blood pressure measurement

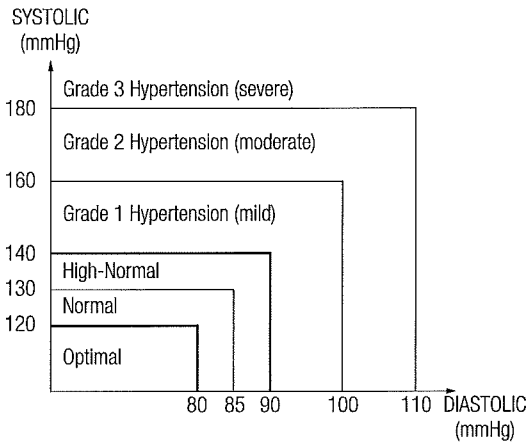
1. To deflate the cuff quickly, press the "START/STOP" switch.
2. The attached cuff is suitable for arm circumferences of 22-32 cm.
3. When attaching the cuff, adjust the position of the cuff so that the blue marker is located in the center of your arm and the hem of the cuff is 1 to 2 cm above your elbow.
4. Self measurement is not therapy! In no event should you change the dosage of your medication prescribed by your physician.
5. As preparation for measuring your blood pressure, you should urinate and then remain relatively still for 10 to 15 minutes prior to measurement.
6. Exercising, eating, drinking, smoking, etc., prior to measurement may affect the results.
7. Your blood pressure varies constantly throughout the day. Measurements should be taken regularly at the same time each day.
8. DO NOT place too much emphasis on the results of one measurement. Keep a continuing record of your blood pressure variations. A complete picture can only be obtained from a large number of readings.
9. Emotional stress tends to cause your blood pressure to rise.

To obtain correct blood pressure measurements

1. Take five or six deep breaths and then relax before measuring your blood pressure. If you are tense when taking the measurement, you will not get a valid reading.
2. Your blood pressure will be elevated if you are anxious or irritated, suffering from lack of sleep or constipation, or have just taken some exercise or eaten a meal.
3. Wrap the cuff around your arm and tighten it so that one finger can be inserted between the cuff and arm. (See page 13, 14)
4. DO NOT measure your blood pressure after bathing or drinking.
5. If you feel the need to urinate, do so before measuring your blood pressure.
6. Measure your blood pressure where the room temperature is around 20°C. DO NOT measure your blood pressure when it is too cold (below 10°C) or too hot (above 40°C) in the room.
7. DO NOT try to measure your blood pressure immediately after drinking coffee or tea or after smoking.
8. Measure your blood pressure when you are relaxed and still. Keep the center of the cuff at the level of your heart and DO NOT move your arm or talk.

GENERAL REMARKS

9. DO NOT measure blood pressure when the cuff has been on your arm for a few minutes or more. During this time, your arm will have built up a higher blood pressure and you will not get valid reading.
10. The figure below shows the blood pressure classifications under the WHO standards.

**Remarks:**

The graph is not exact, but may be used as a guide in understanding non-invasive blood pressure measurements. The device is only intended for use by adults.

Definitions and Classifications of Blood Pressure Levels

Measure your blood pressure at the same time each day.

- * Your blood pressure changes all the time. This means that data gathered over a long period has far more significance than data from just one measurement. For this reason, you must measure your blood pressure on a daily basis. Ideally, you should measure your blood pressure at the same time each day, wherever possible.

PRECAUTIONS FOR USE AND MAINTENANCE ⚠**Precautions for use**

1. If you suffer from heart disease, high blood pressure or other circulatory disease, consult your physician before using the monitor.
2. If the cuff pressure feels abnormal or you experience any other irregularity while using the cuff, reduce the pressure immediately by pressing the "START/STOP" switch, detach the cuff or unplug the air hose connector from the monitor and then consult the sales outlet where you purchased the monitor.
3. If you think the measurement is abnormal or if measurement makes you feel unwell, discontinue use and consult your physician.
4. Blood pressure measurement may not be possible for anyone with a weak pulse or arrhythmia.
5. Repeated blood pressure measurement may cause problems such as congestion or swelling in some people.
6. Frequently repeated blood pressure measurements will not give accurate results. Allow an interval of about 1 minute between measurements.
7. If you suffer from a severe problem with blood circulation in your arms, consult your physician before using the monitor. Failure to do so could be hazardous to your health.
8. Measurement may not be possible for anyone with insufficient blood flow to the area where measurements will be taken or who suffers from a frequent irregular heartbeat. Consult your physician for advice on whether to use the monitor.
9. DO NOT wrap the cuff around an injured arm.
10. DO NOT wrap the cuff around an arm in which a drip (intravenous infusion) is inserted, or which is being used for blood transfusion as part of medical treatment. Doing so could result in an injury or a serious accident.
11. DO NOT use the monitor in the vicinity of flammable gases such as those used for anaesthesia. Doing so could ignite the gases and cause an explosion.
12. DO NOT use the monitor in enriched oxygen environments such as a hospital's hyperbaric chamber or oxygen tent. Doing so could ignite the oxygen and cause a fire.
13. DO NOT use mobile phones near the monitor as this could result in a malfunction.







PRECAUTIONS FOR USE AND MAINTENANCE


- 14. If you use a cardiac pacemaker, consult your physician before using the monitor.
- 15. Be sure to use this unit only for measuring blood pressure. DO NOT use it for any other purpose.
- 16. DO NOT use this unit on infants.
- 17. Blood pressure measurement may not be possible for anyone with common arrhythmias such as atrial or ventricular premature beats or atrial fibrillation.

Maintenance Precautions

- 1. DO NOT store the blood pressure monitor in locations exposed to direct sunlight, high temperatures (over 60°C), low temperatures (below -20°C), high relative humidity (over 95%) or excessive amounts of dust.
- 2. DO NOT drop the blood pressure monitor or subject it to other shocks or vibration.
- 3. Remove the batteries if the monitor will be left unused for a long period.
- 4. DO NOT attempt to disassemble the monitor.
- 5. DO NOT bend the cuff or the air hose excessively.
- 6. If the monitor is very dirty, wipe it clean with a cloth moistened with sterilizing alcohol or a neutral detergent. Then wipe it with a dry cloth.
- 7. NEVER clean the blood pressure monitor with thinners or benzene, as this could damage the monitor.
- 8. To clean the cuff, wipe it with a moist cloth. Avoid hard rubbing, as this will cause air leakages. Take care also not to get water into the air hose.

Symbols Explanation

-  : The CE marking is meant to provide information to market inspectors in the EU member countries.
-  : Type B applied part
-  : Refer to instruction manual before use
-  : Appliance compliance WEEE directive
-  : Accumulators and battery packs for separate collection
-  : Manufacturer

 Warning	The device has been tested and homologated in accordance with EN60601-1-2 for EMC. This does not guarantee in any way that the device will not be affected by electromagnetic interference. Avoid using the device in high electromagnetic environment.
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PRECAUTIONS FOR USE AND MAINTENANCE

Nature and frequency of maintenance:

This product is designed for use over an extended period of time; however, it is generally recommended that it be inspected every two years to ensure proper function and performance.

Protect the nature environment:

Please help to protect natural environment by respecting national and/or local recycling regulations when disposing of the battery and the product at the end of their useful live.

WEEE MARK

If you want to dispose this product, do not mix with general household waste. There is a separate collection systems for used electronics products in accordance with legislation under the WEEE Directive (Directive 2002/96/EC) and is effective only within European Union.



Information for Users on Collection and Disposal of used Batteries.

The symbol in this information sheet means that used batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of used batteries, please take them to applicable collection points.

For more information about collection and recycling of batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.



Information on Disposal in other Countries outside the European Union.

This symbol is only valid in the European Union.

If you wish to discard used batteries, please contact your local authorities or dealer and ask for the correct method of disposal.

Note for the battery symbol.

The symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

Reference European standard:

The blood pressure measuring device corresponds to regulation EN60601-1-2.

Calibration:

The blood pressure measuring device is generally recommended to have the monitor inspected every two years to ensure correct functioning and accuracy. Please contact a distributor.



Name : CITIZEN SYSTEMS (H.K.) LIMITED
 Address : FLAT A-B, 4TH FLOOR, HUNG MOU INDUSTRIAL BUILDING, 62 HUNG TO ROAD, KWUN TONG, KOWLOON, HONG KONG

European Representative:

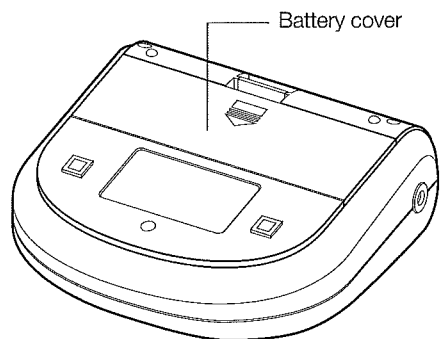
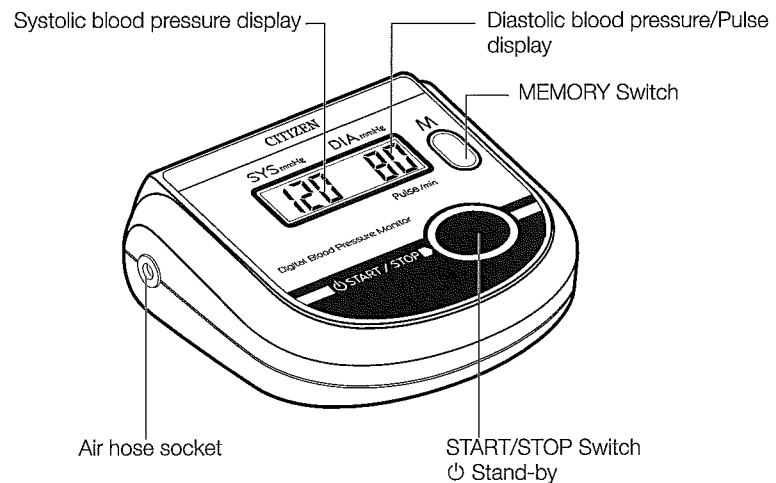
Name : WwW elektronische Geräte Vertrieb GmbH
 Address : Fintelmannstraße 20/Eingang, Martin-Heydert-Straße, D-14109 Berlin, Germany
 • For technical data, please contact our European Representative



IDENTIFICATION OF PARTS

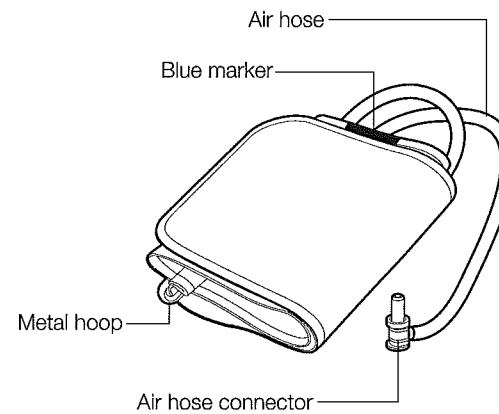
Component names

<Main Unit>



IDENTIFICATION OF PARTS

<Cuff>

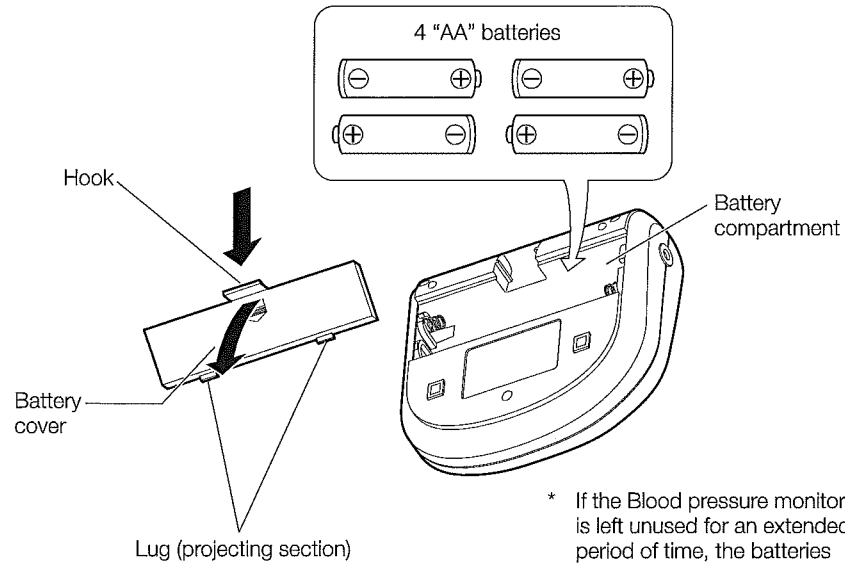


LOADING THE BATTERIES

(Batteries supplied with the unit should be loaded in compartment before you use the blood pressure monitor.)

1 Open the cover of battery compartment.

Pressing the hook down, pull the cover toward you to open.



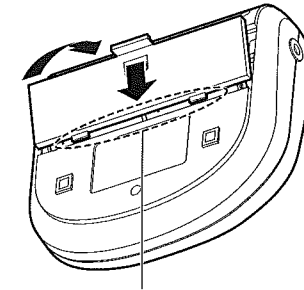
2 Place batteries in the compartment.

Put the batteries paying attention to the positive and negative terminal symbols ⊕ and ⊖.

LOADING THE BATTERIES


3 Close the battery cover.

Fitting the lugs of the cover at the mating recesses of the battery compartment body, push the hook to close the cover.



Fit the lugs (projections) at the recesses.

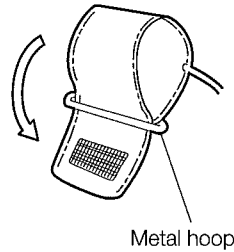
REMOVING THE BATTERIES

- When the icon  is displayed or nothing appears in the display, replace the old batteries with four new ones. All four batteries should be changed at once.
- The memory is erased if the batteries are removed for replacement. It is recommended to make note of the data stored in memory prior to changing batteries.
- Do not use rechargeable batteries.
- Do not use alkaline (LR6) and manganese (R6P) batteries together.
- When disposing of used batteries, comply with governmental regulations or environmental public institution's rules that apply in your country/area.

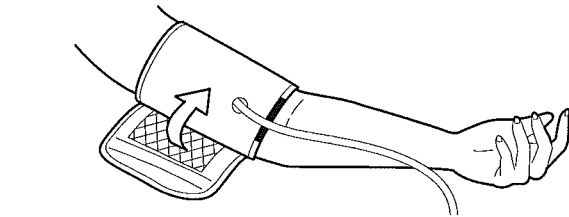
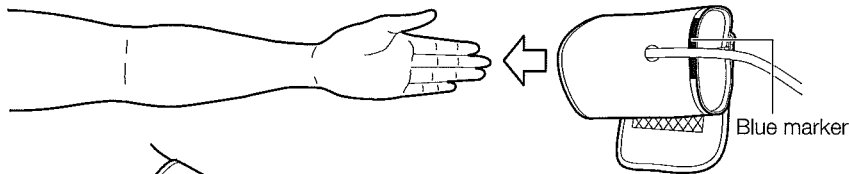
MEASURING YOUR BLOOD PRESSURE

1 ATTACHING THE CUFF

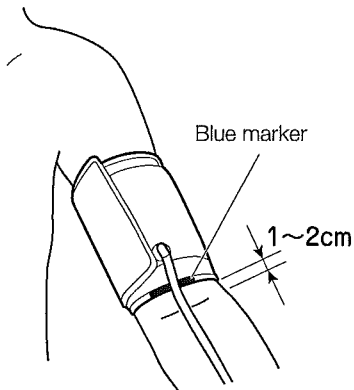
- 1 Unroll the cuff and thread the end through the metal hoop so that the side with the Velcro patch is on the outside.



- 2 Put the cuff around your arm so that the blue marker comes to the palm side.



- 3 Adjust the position of the cuff so that the blue marker is located in the center of your arm and the hem of the cuff is 1 to 2 cm above your elbow.



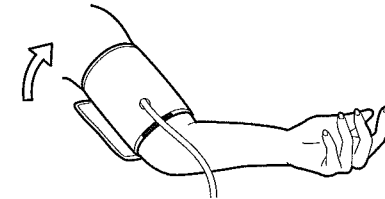
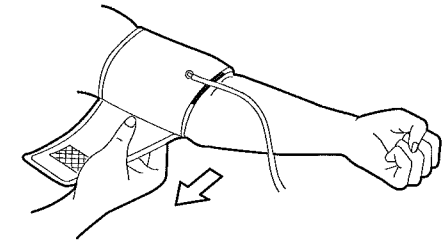
- * The cuff should be put on the bare arm or over a light-weight underwear.
- * If you wear a heavy-weight top, please remove it.

- Eng 12 -

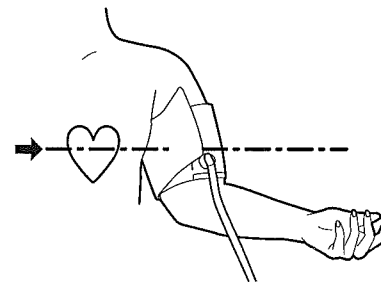
English

MEASURING YOUR BLOOD PRESSURE

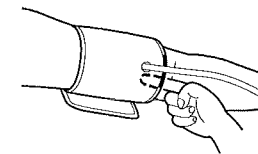
- 4 Pull the end of the cuff outwards so that the cuff is snug around your arm and then secure the end to the Velcro.



- 5 Place your arm on a table or the like, so that the center of the cuff comes to the height of your heart.



- * Carefully place the cuff on your arm, taking care to use the correct tightness. The tightness is correct if you can readily slide a finger between the cuff and your arm.



- 6 Relax your arm and lightly open your hand, with the palm upward.

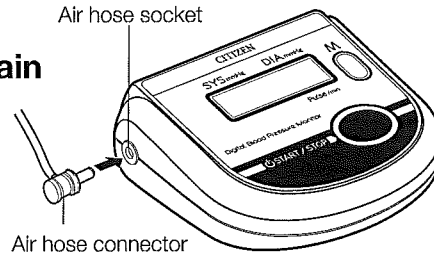
- Eng 13 -

English

MEASURING YOUR BLOOD PRESSURE

2 Plug the air hose connector into the main unit.

- Plug the air hose connector firmly into the air hose socket on the main unit, as illustrated.



3 Place the cuff at the height of the heart.

4 Press the START/STOP switch (the blue switch).

* If the pressurization value exceeds 280mmHg, if pressurization feels abnormal, or if you want to stop the measurement process, press the START/STOP switch again. The cuff deflates, and the power turns off.

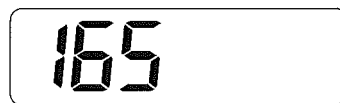
- ① All digits on the display blink for approximately one second.



- ② * ♥ is displayed for approximately one second.



- ③ The cuff is pressurized automatically.



MEASURING YOUR BLOOD PRESSURE

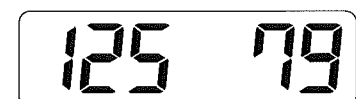
- ④ ♥ is displayed soon after pressurization is complete, and measurement begins automatically.
* If the unit judges that pressurization is insufficient, it automatically repressurizes.



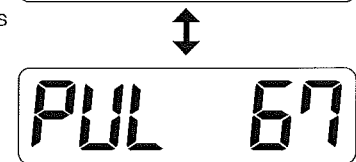
- ⑤ ♥ blinks each time a pulse is detected, and the pressure value is displayed on the diastolic blood pressure display.



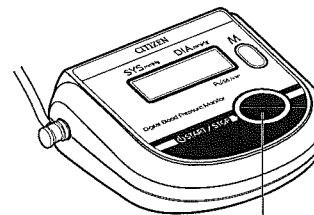
- ⑥ Once measurement is complete, the cuff deflates and the measurement results (systolic/diastolic blood pressure values, pulse) are displayed.



- * Systolic/diastolic blood pressure values (two seconds) and pulse (one second) are displayed alternately.
* Provided there is no error in the measurement results, they are stored automatically.



5 Finishing measurement.



START/STOP Switch

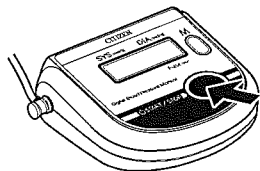
- Press the "START/STOP" switch to turn the monitor off.

- * When you want to stop measurement, press the "START/STOP" switch. The cuff is deflated and measurement stops.

MEASURING YOUR BLOOD PRESSURE

[Manual pressurization]

- If your systolic blood pressure is expected to exceed 200mmHg, use Manual Pressurization when taking a measurement.
- Keep "START/STOP" switch held pressed until the pressure value you want to stop pressurization is reached (approximately 40mmHg higher than the Systolic blood pressure). You can stop pressurization by the unit by releasing the switch at the aforementioned value is reached. The upper pressure limit is 280mmHg



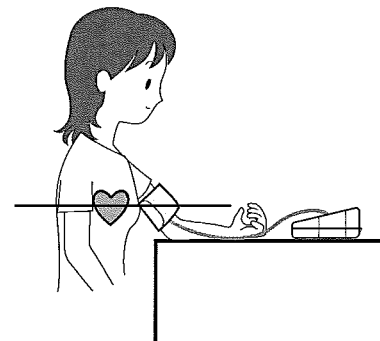
AUTOMATIC POWER OFF FEATURE

- After taking the blood pressure measurement, pressing the "START/STOP" switch will turn the monitor off. However, if you do not press the switch, the monitor's Auto OFF function will automatically turn the monitor off after 3 minutes.

TIPS FOR OBTAINING ACCURATE MEASUREMENTS

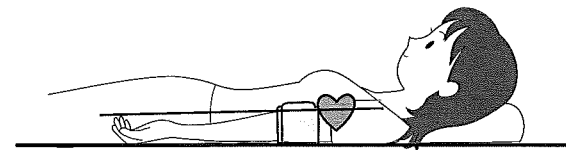
Your blood pressure varies according to your posture, the time of day and a range of other factors. Ideally, you should measure your blood pressure in the same posture at the same time every day.

■ Taking measurements while sitting



- ① Place your arm on a table or similar surface with your forearm extended.
- ② It is important to have the cuff level with your heart.
- ③ Open your hand slightly on the table so that your palm is facing up and your fingers are relaxed.
- ④ Do not move your body or talk while taking the measurement.

■ Measurement in a reclining posture



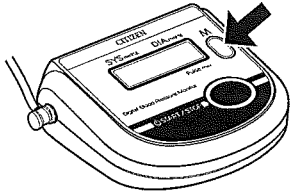
* Relax yourself to avoid placing pressure on the cuff.

- ① Lie down, facing the ceiling.
- ② Lightly open your hand with palm up and straighten your arm.
- ③ Relax your body, arm and fingers.
- ④ Do not move your body or talk during measurement.

■ You may use your right arm to measure your blood pressure.

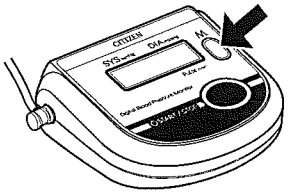
Blood pressure value is likely to differ by as much as 10mmHg when measured on the right arm instead of the left (or vice-versa). Measure your blood pressure on the same arm each day.

CALLING UP THE DATA STORED IN MEMORY



- Except for the case where the unit is engaged in measurement, press "MEMORY" switch to call up the values (measurement results) stored in memory to the display.
- * To erase all the data, remove the batteries. All the stored data is erased.

HOW TO CALL UP THE DATA



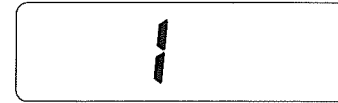
- Press the "MEMORY" switch.



- "3A" indicating the average value appears on the left section of the display. Then, the average value, based on the last three measurements, is displayed. ("3A" and the average value do not appear if there are two or fewer measurements stored in memory.)
- Press the "MEMORY" switch again. This recalls and displays first the memory number and then the last set of data stored.



CALLING UP THE DATA STORED IN MEMORY



- Press the "MEMORY" switch again. This recalls and displays the second last set of data stored. Each time you press this switch, the unit displays the data prior to the last set of data displayed.

- The value stored in memory is numbered in the order of measurements. For example, when 90 sets of data are stored in memory, the data number 1 represents the latest data.

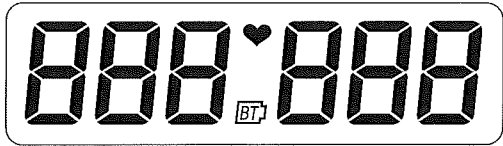
Data number: 1, 2, 3, 89, 90

↑
The latest
data

↑
The earliest
data

- * You can fast-forward the data numbers in display by pressing and holding the "MEMORY" switch.

KEY TO DISPLAY ICONS



Icon displayed		Condition/Cause	
	Displayed during measurement.	Lit	Measurement is under way.
		Blinking	Pulse detected.
	Displayed during measurement.	"PUL Err" is displayed when the pulse value is below 40 or above 181.	

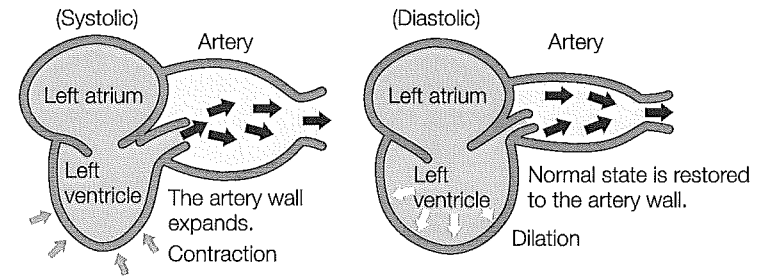
If any of the following marks is displayed, take the specified action, then repeat the operation.

Icon displayed	Condition/Cause	Corrective action
 	<ul style="list-style-type: none"> Appears when the blood-pressure could not be measured accurately. 	Apply cuff properly and measure again.
	The pressure is 281 mmHg or higher.	If the pressure does not automatically decline during measurement, immediately press the "START/STOP" switch and turn the unit off. Take the measurement again.
	Appears when the batteries are running low.	Replace the batteries.
	Detected problem in the device.	Contact the vendor.

ABOUT "BLOOD PRESSURE"

What is blood pressure?

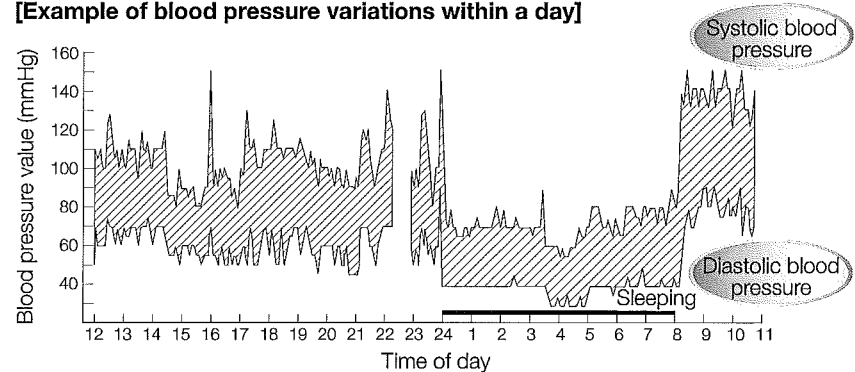
The heart is a pump that circulates blood throughout your body. Blood is pumped from the heart at a constant pressure into arteries. This pressure is called the arterial blood pressure and represents, in general terms, your blood pressure. Blood pressure is indicated by several kinds of pressures, including the systolic pressure that occurs when the heart pumps blood, and the diastolic pressure that occurs when blood returns to the heart.



Your blood pressure changes all the time.

Your blood pressure differs according to your age, gender and a range of other factors. It is likely to be affected by your biorhythm during the day and by your posture, physical activities, mental activities, level of stress and even by the air temperature. The blood pressure of a healthy person generally varies within a day.

[Example of blood pressure variations within a day]



(Blood pressure values measured at five-minute intervals through the day)

● Bevan AT, Honour AJ, Stott FH. Clin Sci 1969;36:329-44.

BLOOD PRESSURE Q&A

- Q** Why is the blood pressure measured at home different from that measured by the physician or at a hospital?
- A** Your blood pressure may vary due to exercise, the ambient temperature or your mental state. When you have a physician or nurse measure your blood pressure, the pressure value is likely to be 10 to 20 mmHg higher than usual due to anxiety and/or stress. Knowing what affects your blood pressure helps you to better monitor your health.
- Q** Why does the blood pressure obtained vary with measurement?
- A** Our blood pressure is adjusted by automatic nerve function. Blood pressure differs with every heart beat. We are likely to think that our blood pressure is constant, but it varies if you take measurements in repetition. Blood pressure is susceptible to the time of day, such as morning and afternoon, season and atmospheric temperature. In addition, blood pressure is easily affected by mental stress or emotional ups and downs. It tends to increase when you feel tension or decrease when you are relaxed.
- Q** What is the benefit of measuring my blood pressure at home?
- A** Blood pressure measurements taken at home give reliable data as they can be taken when you are in a stable and relaxed condition. Physicians place considerable importance on blood pressure measurements taken at home. You should measure your blood pressure at the same time each day and record the variations in your blood pressure.




Always consult your physician for an interpretation of your blood pressure readings and to determine the proper treatment.

BEFORE REQUESTING REPAIRS OR TESTING

Make sure to check the following before sending your blood pressure monitor away to be tested or repaired.

Problem	Checks	Response
Display stays blank when you press the "START/STOP" switch.	Check whether the batteries are dead.	Replace all the batteries with new ones.
	Check whether the batteries are installed the right way round (⊕ and ⊖ oriented correctly).	Load the batteries in the correct direction.
No measurements can be taken.	Check whether the measurement icon ♥ is displayed.	Attach the cuff properly.
	Check whether the cuff is attached correctly.	
	Did you stay calm during measurement?	Measure your blood pressure again, making sure to remain still.
	Note that blood pressure measurement may not be possible for someone with an extremely weak pulse or cardiac arrhythmia (irregular pulse).	
Your blood pressure readings are abnormally high or low compared with those taken in hospital.		☞ See page 22.
Other phenomena		Remove the batteries from the unit and change them with new ones.

SPECIFICATIONS

Model Number:	CH-452		
Measurement system:	Oscillometric method		
Measurement Localization	Upper Arm		
Cuff:	Soft cuff		
Arm circumference range:	22.0 to 32.0 cm		
Measurement range:	Pressure	0 to 280 mmHg	
	Pulse	40 to 180 pulse/min	
Accuracy:	Pressure	±3 mmHg	
	Pulse	±5% of reading	
LCD displays:	Pressure	3 digits	
	Pulse	3 digits	
	Icons	♥: Measurement icon,  : Battery icon	
Switch:	2 (START/STOP, MEMORY)		
Inflation:	Automatic inflation by internal pump		
Deflation:	Automatic speed deflation system.		
Rated voltage:	6V DC --- 3W (--- : direct current)		
Exhaust:	Electromagnetic quick exhaust valve		
Power supply:	4 AA batteries (R6P, LR6)		
Battery duration:	Alkaline	Approx. 1000 times	(170 mmHg, once/day,
	Manganese	Approx. 300 times	23°C)
Automatic Power Off function:	Approx. 3 min. (after activated)		
Dimensions:	129(W) x 55(H) x 119(D) mm		
Weight:	Approx. 240g w/o batteries cuff: approx. 150g		
Operating conditions:	Temperature	10°C to 40°C	
	Humidity	30% to 85% RH	
Storage conditions:	Temperature	-20°C to 60°C	
	Humidity	10% to 95%RH	
Electric shock protection:	Internal power unit		
Safety Classification:	↑ Type B Equipment		
Mode of operation:	Continuous operation		
Protection against ingress of water:	IPX0		
Accessories	Set includes a cuff, 4 AA batteries (R6P) for the monitor, Instruction Manual.		