

ARM-IN[™] BLOOD PRESSURE MONITOR

TERUMO DIGITAL BLOOD PRESSURE MONITOR ES-P2000

BEFORE USING
THE ES-P2000

USING THE
ES-P2000

TROUBLESHOOTING

USING THE
AC ADAPTER

Quick Measuring Guide





Be sure to read this instruction manual thoroughly before using the ES-P2000. Keep this manual for future reference.

Safety Precautions



Read carefully
before using.

- Using this product without following the instructions contained in this manual may result in damage/harm. The degree of possible damage/harm is classified as below:


 **WARNING** Possibility of serious or fatal personal injury if used incorrectly.

 **CAUTION** Possibility of serious personal injury and/or material damage* to property.
* Damage to buildings/facilities, household belongings, pets.

- Also pay attention to these symbols:

 indicates something you should not do.  indicates something you should do.


CAUTION

 **Do not attempt to interpret measurement results or formulate a diagnosis on your own.**

Do not formulate a regimen of medication/treatment on your own.


If you are concerned about the results obtained, consult your doctor. Self-diagnosis and self-prescription of medication or treatment may lead to serious health hazards.



 **If you are undergoing dialysis therapy or using anticoagulants, anti-platelets or steroids, using the ES-P2000 may cause internal hemorrhaging.**


Consult a doctor before using this product.



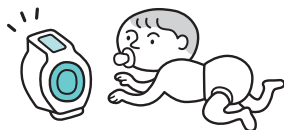
 **Always measure blood pressure on the upper part of your arm.**

Attempting to measure pressure on other parts of your body may cause a malfunction or accident.



 **Do not allow children to use the unit without adult supervision, as they may be injured.**

Keep the unit out of the reach of children.



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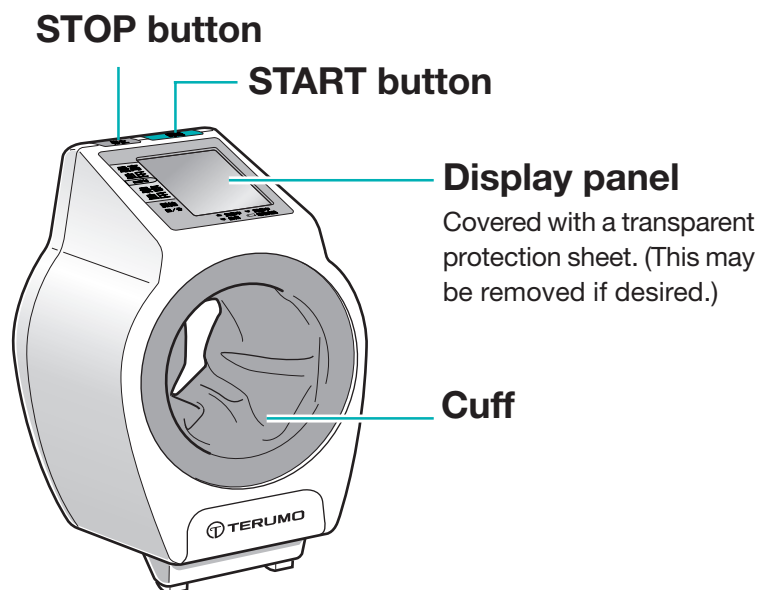
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Contents Checklist

Confirm that the following items are provided. If any are missing or damaged, contact your local TERUMO dealer.

Main Unit

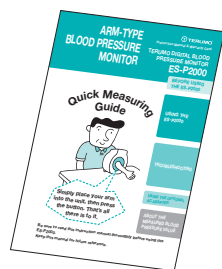


Four C Alkaline Batteries (for test purposes)



The supplied batteries have been used for test purposes and may have a shortened life span.

Instruction Manual/ Warranty

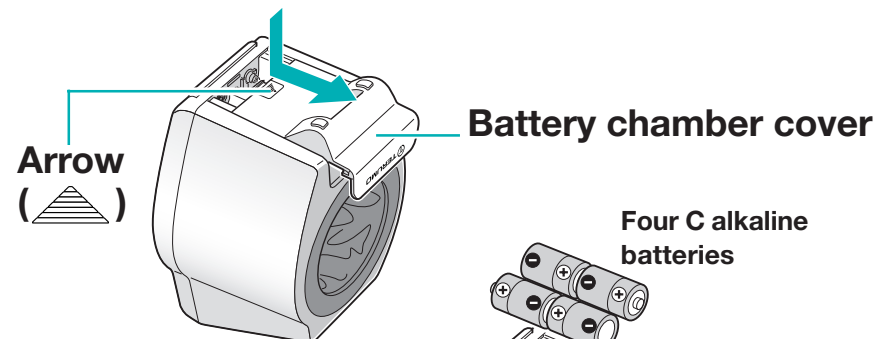


This manual also includes the warranty card. Please retain the manual and warranty card for future use.

Installing Batteries

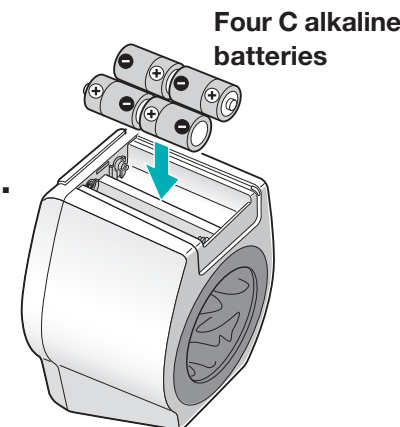
Before using the unit for the first time, install the supplied batteries.

- 1 While pressing the arrow (▲) on the battery chamber cover, slide the cover in the direction of the arrow (→) to remove it.

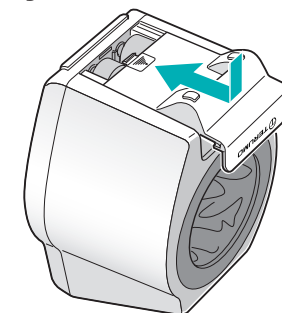


- 2 Install batteries.

Insert the batteries into the battery chamber with the + and - ends positioned as illustrated.



- 3 Reattach the battery chamber cover.



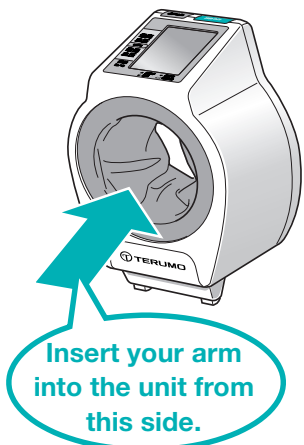
Do not pull or press the battery chamber cover using excessive force. This may damage it or cause the unit to malfunction.

1 Putting Your Arm Through the Unit

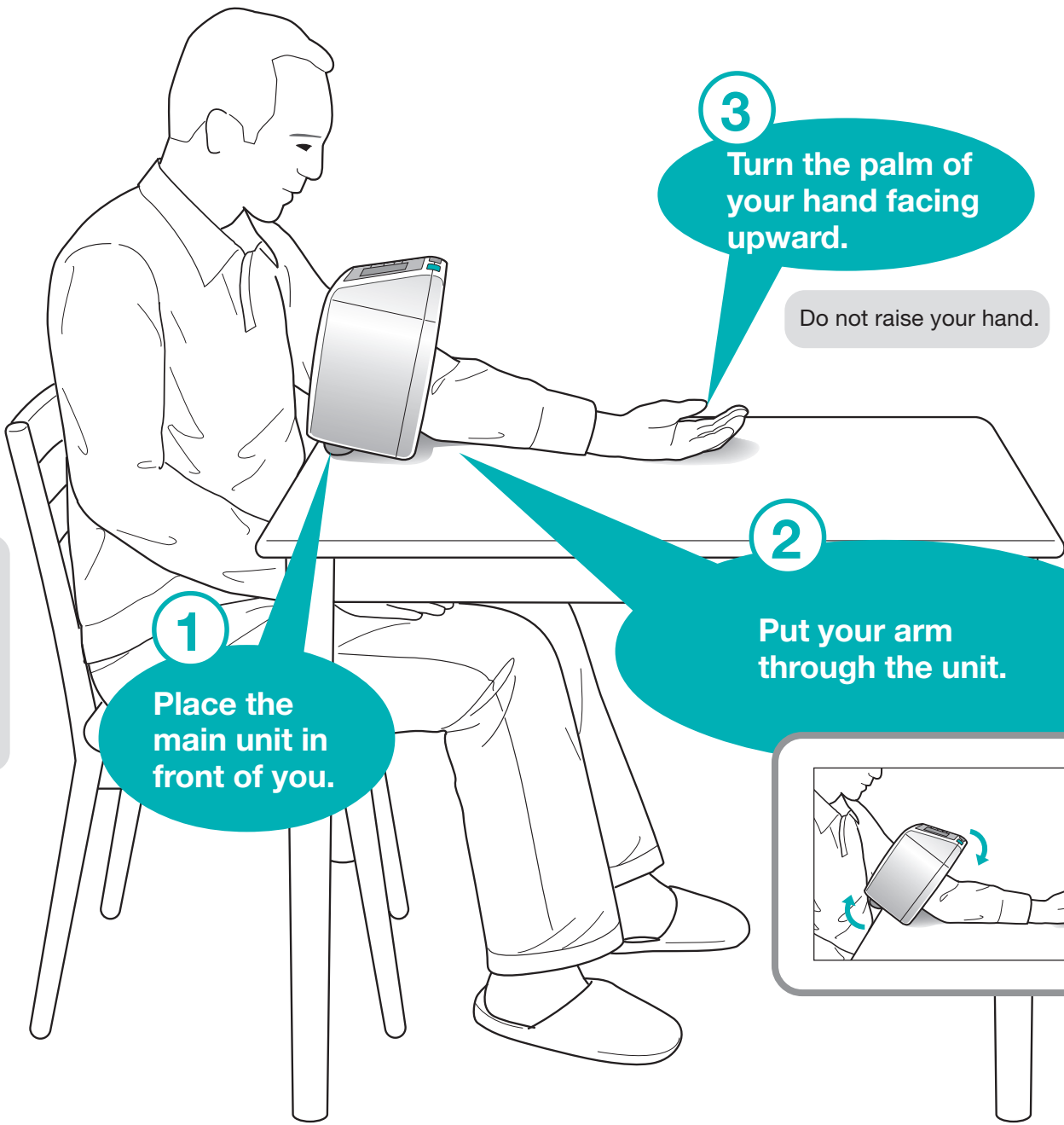
Measurements may be taken from either the left or right arm. To ensure accurate measurement over time, always use the same arm.

USING THE ES-P2000

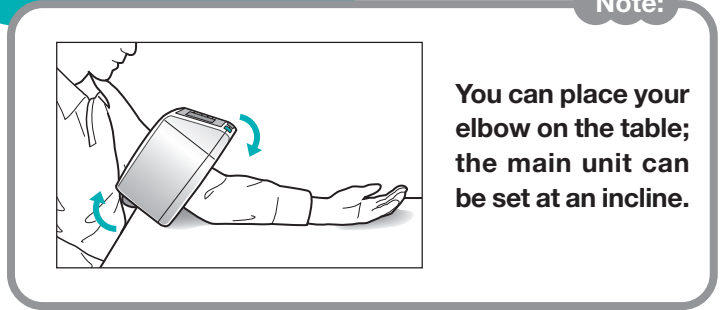
USING THE ES-P2000



Remove any thick outer garments.
You do not have to roll up your sleeve if the clothing is very thin.



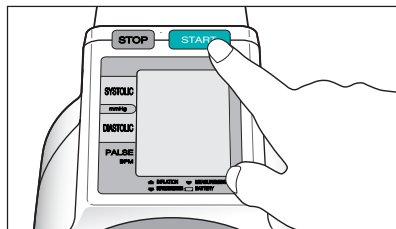
Make sure your arm is properly positioned, and then refer to the next page.



2 Pressing the START button

1

Press the **START** button.



After a few seconds, the cuff will begin to inflate and measurement starts. Do not move your arm or body until the measurement result is shown on the display panel.



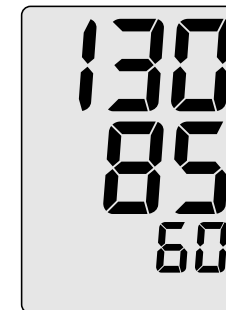
Do not move during measurement.

Do not tap on or jar the main unit, table or desk.

Doing so may cause incorrect measurement.

2

The measurement result appears on the display panel.



Systolic pressure

Diastolic pressure

Pulse

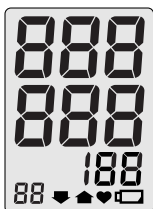
Note:

If “E-3” or “E-8” is displayed:


Measure your blood pressure again making sure you are keeping the correct posture (refer to pages 5 and 6). For other error messages, see pages 17 and 18.

After confirming the measurement result is displayed, refer to next page.

The display panel indicators will change as follows:



When measurement begins

The  symbol will not indicate insufficient battery power at this time.



Excess air is released. (The depressurization symbol will not appear if further deflation is not necessary.)



Inflation starts



During measurement
The measurement symbol lights up then starts blinking when the unit detects a vascular sound.

To stop operation during measurement, press the **STOP** button.

STOP



3 Recording the Measurement Result and Turning the Power Off

1

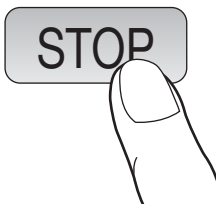
Record the measurement result.



Copy the "Blood Pressure Graph Sheet" on pages 11 and 12, and record your measurement result on the graph.

2

Press the STOP button to turn the power off.



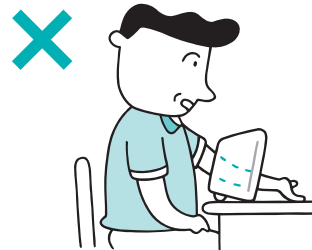
The unit will shut down automatically if it is not used after approximately three and a half minutes.

If the Measurement Result Seems Too High or Too Low

Was your posture correct during measurement?

If you adopt the following postures, your blood pressure may be measured incorrectly and the results may vary. Make sure to measure your blood pressure with the correct posture (see pages 5 and 6).

Your elbow is not completely through the unit.



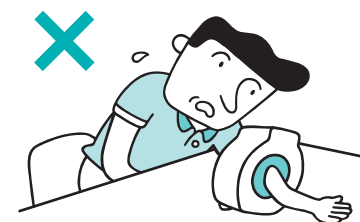
Your hand is not placed on a table, desk, etc.



Your arm is not supported by a table, desk, etc.



You are leaning too far forward.



Note:

Blood pressure always fluctuates.

If you feel under stress or are in a cold environment, your blood pressure will increase. Routine activities such as getting up, eating, walking, etc. also affect blood pressure. Be sure to measure your blood pressure in the same environment and at the same time every day.

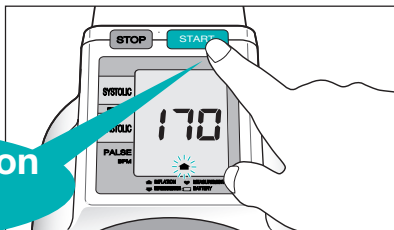
Problems with Cuff Inflation

Manual Inflation

If your blood pressure is high, you may have to inflate the cuff twice. In this case, manual inflation is recommended.

- 1 Press the **START** button and hold it down.

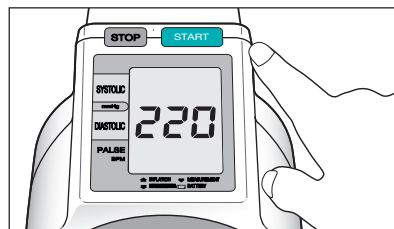
Keep the button pressed.



- 2 Keep pressing the button until the displayed value is around 40 mmHg or 50 mmHg higher than your expected systolic pressure value, then remove your finger from the button.

After a few seconds, the measurement symbol (♥) will light up. It will start blinking when the microphone detects a vascular sound.

After measurement is finished, record the result.

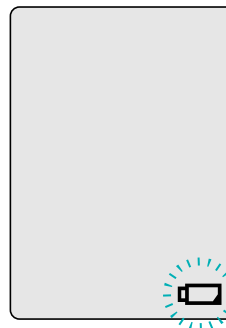


Do not over-inflate the cuff.

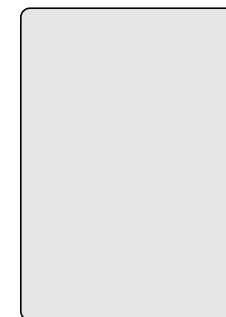
Placing too much pressure on the arm may cause temporary internal bleeding.

Replacing Batteries

In the following instances, replace the batteries with new ones. Always use four fresh C alkaline batteries:
(To install batteries, see page 4)



Battery symbol appears (blinking or non-blinking)



Pressing the **START** button activates no indications.


- The number of measurements per fresh battery set depends on blood pressure. About 300 measurements can be taken after four new C batteries have been installed (with a blood pressure value of 180 mmHg and an arm girth of 25.5cm, at 25°C). Note that the batteries supplied with the unit have been used for test purposes and may have a shortened life span.
- If a battery symbol appears along with the other indicators after the **START** button is pressed, it does not indicate exhausted batteries.
- Although a battery tester may indicate that a particular battery (or batteries) is not exhausted, the battery/batteries may not provide sufficient power for the ES-P2000.

Note:

With the AC adapter, you can use the ES-P2000 without batteries. For further information, see pages 20 and 21.

General Troubleshooting

The following is a general troubleshooting guide. If a problem occurs, check these remedies before contacting a Terumo dealer. If a problem persists, immediately discontinue operation. Read the "Warranty Agreement" on page 30, then contact your local Terumo dealer.

Trouble	Cause	Remedy	Refer to ...
Pressing the START button does not activate indicators (measurement does not start).	Batteries are installed incorrectly.	Install batteries properly.	page 4
	Batteries are exhausted.	Replace batteries with four fresh ones.	page 4
	AC adapter is not connected.	Firmly connect the AC adapter to the unit.	page 20
	AC adapter is not plugged in.	Plug the AC adapter into a power socket, then press the START button again.	page 20
 Battery symbol blinks.	Batteries are exhausted.	Replace batteries with four fresh ones.	page 4
	Battery power temporarily diminishes at low temperatures.	Cup the batteries in your hands to warm them, then reinstall them; or leave the unit in a warm place for a while before using it.	–
Battery symbol blinks when the power is supplied by the AC adapter.	AC adapter is not plugged in.	Plug the AC adapter into a power socket, then press the START button.	page 20
Number of measurements per fresh battery set is less than expected.	Alkaline batteries are not installed.	Install alkaline batteries.	page 4
Operation stops during measurement.	Batteries are exhausted.	Replace all batteries.	page 4
<ul style="list-style-type: none"> • The measured value is too high. • The measured value is too low. 	The measurement was taken in an improper manner.	See "Putting Your Arm Through the Unit" or "If the Measurement Seems Too High or Too Low".	pages 5 and 6 page 10
Pulse frequency is too high or too low.	The arm and/or body moved during measurement.	Take another measurement and remain still.	pages 7 and 8
	Measurement was taken immediately after physical activity.	Rest at least 5 minutes, then measure again.	–
The unit turns off.	The unit will automatically shut down after three and a half minutes.	This is not an indication of a problem with the unit.	–
Cuff inflation starts, stops, then starts again during measurement.	The cuff is reinflated for more accurate measurement.	This is not an indication of a problem with the unit. Continue measurement. You may inflate the cuff manually.	– page 13
	The arm and/or body moved during measurement.	Take another measurement and remain still.	pages 7 and 8

Incorrect measurement results or failure to record measurements may occur with those who have a very light vascular sound, arrhythmia or a greater than normal vascular murmur. In some extremely rare cases, the user's physical condition and/or the shape of the arm may also result in incorrect measurement or measurement failure.

Error Messages

The display panel shows error messages as listed below. Refer to the “Remedy” section and measure your blood pressure again.

If the error message remains, read the “Warranty Agreement” on page 30, then contact your local Terumo dealer. Inform the dealer of the type of error message you encountered.

Auscultation System — the ES-P2000 auscultates a vascular sound to measure blood pressure:

The ES-P2000 auscultates a vascular sound with its built-in highly sensitive microphone; a doctor does the same using a stethoscope.


Error Message	Cause	Remedy	Refer to ...
E - 1	<ul style="list-style-type: none"> There is some malfunction. 	<ul style="list-style-type: none"> Contact your local Terumo dealer. 	—
E - 2	<ul style="list-style-type: none"> There is some malfunction. 	<ul style="list-style-type: none"> Contact your local Terumo dealer. 	—
E - 3	<ul style="list-style-type: none"> You pressed the START button before you put your arm through the cuff. Arm is not correctly positioned. The built-in microphone continuously monitors external sounds. 	<ul style="list-style-type: none"> Measure again by putting your arm through the cuff. Put your arm through the cuff so that your elbow goes through the other side, then measure again using the correct posture. Measure in a quiet place, without tapping on the unit, table/desk, etc. 	<p>pages 5 and 6</p> <p>pages 5 and 6</p> <p>page 7</p>
E - 4	<ul style="list-style-type: none"> You bent your elbow during measurement. 	<ul style="list-style-type: none"> Measure without bending the elbow or moving your arm. 	pages 5 and 6
E - 5	<ul style="list-style-type: none"> You moved your arm during measurement. The built-in microphone continuously monitors external sounds. 	<ul style="list-style-type: none"> Measure without bending your elbow or moving your arm. Measure in a quiet place, without tapping on the unit, table/desk, etc. 	<p>pages 7 and 8</p> <p>page 7</p>
E - 6	<ul style="list-style-type: none"> You moved your arm during measurement. The built-in microphone continuously monitors external sounds. 	<ul style="list-style-type: none"> Measure without bending your elbow or moving your arm. Measure in a quiet place, without tapping on the unit, table/desk, etc. 	<p>pages 7 and 8</p> <p>page 7</p>
E - 7	<ul style="list-style-type: none"> You bent your elbow during measurement. 	<ul style="list-style-type: none"> Measure without bending your elbow or moving your arm. 	pages 5 and 6
E - 8	<ul style="list-style-type: none"> You moved your arm during measurement. The built-in microphone continuously monitors external sounds. 	<ul style="list-style-type: none"> Measure without bending your elbow or moving your arm. Measure in a quiet place, without tapping on the unit, table/desk, etc. 	<p>pages 7 and 8</p> <p>page 7</p>
E - 9	<ul style="list-style-type: none"> You moved your arm during measurement. Your arm is not correctly positioned. 	<ul style="list-style-type: none"> Measure without bending your elbow or moving your arm. Put your arm through the cuff so that your elbow goes through the other side, then measure again using the correct posture. 	<p>pages 7 and 8</p> <p>pages 5 and 6</p>

Precautions/Taking Care of the Blood Pressure Monitor




Be sure to read the following:

Precautions for Use




-  **Do not place the unit near strong electrostatic or electromagnetic waves.**
This can cause malfunctions and/or accidents. 
-  **Never use the unit near fire or combustible gas.**
Otherwise, malfunctions and/or accidents may occur. 
-  **Do not use cellular telephones near the unit.**
Otherwise, malfunctions and/or accidents may occur.
-  **Do not attempt to disassemble, repair or modify the unit.**

-  **If the unit does not function properly or if something appears to be wrong with the unit, stop using it immediately.**
Contact your local TERUMO dealer.

Precautions with Batteries

-  **Install the batteries properly, with the “+” and “-” ends correctly aligned with the diagram in the battery chamber.**
If the batteries have been installed improperly, heat may be generated during operation, causing a malfunction.
-  **Remove batteries when not using the unit for extended periods.**
If left inside the chamber, the batteries may leak, causing a malfunction.
-  **When replacing batteries, use only four fresh C alkaline batteries, all of the same brand.**
Mixing new and old batteries may result in heat generation, causing a malfunction.

Storage Precautions

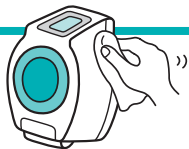
-  **Do not place/store the unit in direct sunlight or in a dusty or humid location.**
Otherwise, it may cause malfunctions.
-  **Always store the unit in a safe and secure place. Also try not to drop or bump the unit against hard surfaces.**
Strong shocks may cause malfunctions. If you suspect damage has been done to the unit, have it examined by a Terumo dealer.
-  **Do not store the unit near insecticides.**
These may harm the unit.

Cleaning Precautions

-  **Do not wash the unit with water.**
Otherwise, it may cause malfunctions.
-  **Do not wipe the unit with alcohol, thinner, benzene, or other similar liquids.**
Otherwise, it may cause malfunctions.

Cleaning the unit:

Wipe with a moist cloth that has been soaked in a neutral detergent and sufficiently wrung out.

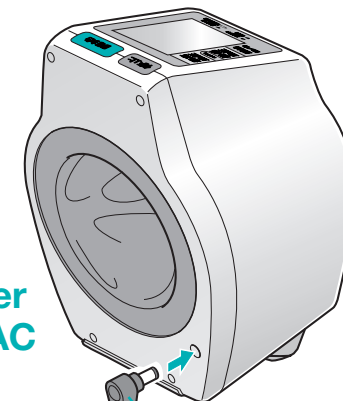


Using the AC Adapter

When using AC power, use only an AC adapter with the appropriate voltage for the unit. Consult your local TERUMO dealer for details.

1

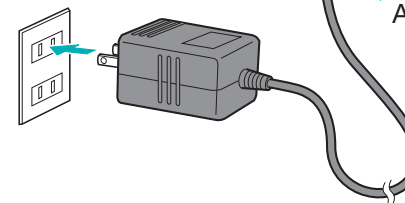
Insert the AC adapter connector into the AC terminal on the unit.



AC adapter connector

2

Plug the AC adapter into a power socket.



Remove the batteries if you plan to use the ES-P2000 unit with the AC adapter for extended periods. If left inside, the batteries may leak and cause the unit to malfunction.

Notes on Using the AC Adapter

When using the AC adapter, observe the following:

⚠ WARNING

! Use only the dedicated AC adapter designed exclusively for the Terumo Digital Blood Pressure Monitor. Otherwise, fire or electric shock may occur.

! Use the AC adapter with only the Terumo Digital Blood Pressure Monitor. Use of the AC adapter with other products may cause fire or electric shock.

! Use only suitable power supply with the appropriate voltage. Otherwise, fire or electric shock may occur.

⊘ Do not place heavy objects on the cord of the AC adapter. Otherwise, the cord may be damaged and fire or electric shock may occur.

⊘ Do not use the AC adapter if the cord/connector is damaged or if the plug is loose. Otherwise, fire, short circuiting or electric shock may occur.

⊘ Do not fasten or secure the cord of the AC adapter with clamps, nails or other similar objects. Otherwise, the cord may be damaged and fire or electric shock may occur.

! Keep the AC adapter away from water. Otherwise, short circuiting or electric shock may occur.

⊘ Do not use the AC adapter if the power cord is damaged. Otherwise, fire or electric shock may occur.

⚠ CAUTION

! Unplug the AC adapter when it's not going to be used for long periods. Leaving the power cord plugged into a power socket for extended periods may deteriorate insulation and result in electric shock or fire.

! Always unplug the AC adapter when you clean it. Never plug/unplug the AC adapter while your hands are wet. Otherwise, electric shock or injury may occur.

! To unplug the AC adapter, hold the plug head firmly and pull. Never pull the cord to unplug the adapter. Otherwise, electric shock or injury may occur.

! Keep the plug of the AC adapter clean and free of dust and dirt. Otherwise, electric shock or malfunction may occur.

Specifications

Name	TERUMO DIGITAL BLOOD PRESSURE MONITOR ES-P2000
Model	ES-P2000
Dimensions	Main unit: 164 (W) x 130 (D) x 252mm (H)
Compatible arm size	Approx. 18 - 33cm
Weight	Main unit: 850g (without batteries)
Measurement range	Pressure: 20 - 280mmHg Continuous reading interval: 1 mmHg Pulse: 30 - 160 beats/min.
Measurement accuracy*	Pressure: ±4mmHg Pulse: ±5%
Measurement method	Riva-Rocci/Korotkoff method
Power source	Four C batteries (6V DC, alkaline batteries recommended); AC adapter (use 6V, 1.5A type)
Power consumption	9W (when using four C alkaline batteries) Number of measurements per battery set: About 300 measurements can be taken after four new C alkaline batteries have been installed (with an applied pressure value of 180mmHg and an arm girth of 25.5cm, at 25°C)
Operating conditions	Temperature: 10°C - 40°C Relative humidity: 30% - 85% (without condensation)
Storage conditions	Temperature: -20°C - 60°C Relative humidity: 10% - 95% (without condensation)
Electrical safety rating	Main unit: Internal power-supply device or Class II (when using the AC adapter); Type B
Supplied accessories	Four C alkaline batteries and instruction manual/warranty card

This equipment complies with the EMC Standard (electromagnetic compatibility: IEC 60601-1-2:1993)
* Measurement accuracy for pressure is based on Japanese measurement regulations.
Specifications are subject to change without notice.

Warranty Agreement

- (1) The warranty is effective from the purchase date for a period of one year.
- (2) If any problems occur during use, detach the warranty card and send the product and the card to your local TERUMO dealer for repair.
- (3) The warranty will not apply in the following circumstances:
 - a. Problems resulting from incorrect operation.
 - b. The product is modified, tampered with or repaired by any unauthorized person(s) or firm(s).
 - c. The product was damaged by fire, flood or natural disaster.
 - d. Problems resulting from factors other than the product itself.
 - e. Consumable/disposable items including batteries and cuff are not covered by this warranty.
 - f. Other problems resulting from circumstances beyond our control or responsibility, but not listed above.
 - g. The product's warranty card is not presented.
 - h. Should the product's warranty card not be completely filled out (i.e., it does not include date of purchase, place of purchase and/or other relevant information) or altered in any way, this warranty is considered null and void.

TERUMO Corporation 2-44-1, Hatagaya, Shibuya-ku, Tokyo, 151-0072 Japan

Inquiries

For advice or any other inquiry, contact the establishment where you purchased the unit or your local TERUMO dealer.



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ES_P2000_E_50_01

<http://www.terumo.com/>

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Warranty Card

Thank you for purchasing this TERUMO product. We have made every possible effort to assure its quality. However, should any problems occur during use under normal conditions, we will repair it free of charge in accordance with the warranty agreement on the back page of this manual. This warranty card cannot be re-issued. Please keep it in a safe place.

Product name: **TERUMO Digital Blood Pressure Monitor ES-P2000**

Customer's name: _____

Customer's address: _____

Tel: _____

Place of purchase: _____

Signature: _____

Date of purchase: _____

TERUMO Corporation 2-44-1, Hatagaya, Shibuya-ku, Tokyo, 151-0072 Japan