rossmax

Mobile Calibration System

for Blood Pressure Monitor

Model: **CalPro**

Instruction **Manual**

Table of Contents:

Introduction

The calibration system developed by Rossmax Reasearch and Development is equipped with the following features :

- Automatic device pressure checking
- Automatic device pressure calibration
- Measurement count check and reset
- Digital manometer

Which helps our partners to offer on-site and prompt calibration service to end users as well as significantly enhance customer satisfaction!

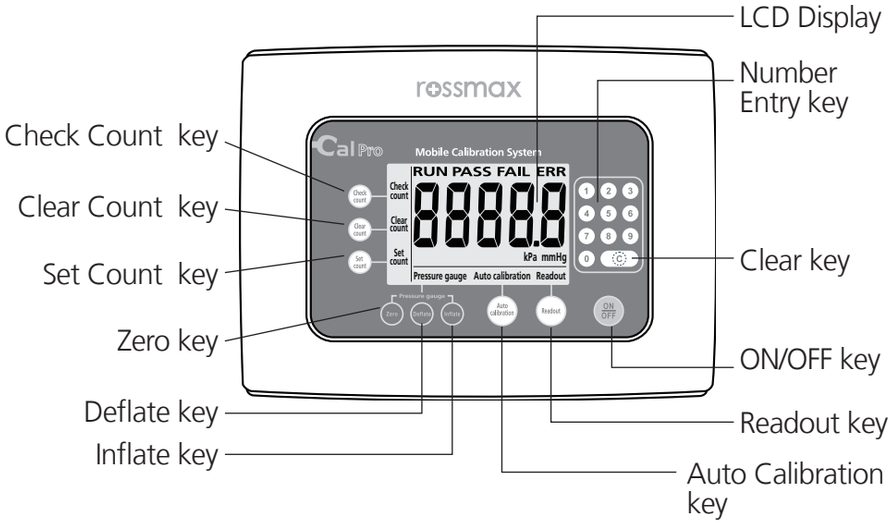
Preliminary Remarks

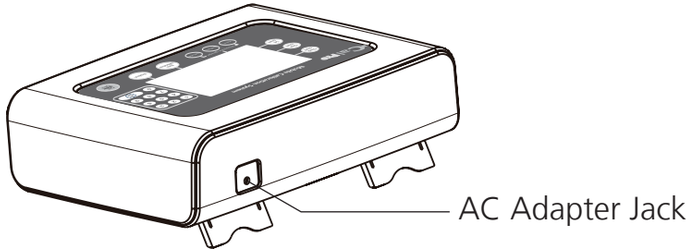
The quality of the device has been verified and conforms to the provisions of the Electromagnetic Compatibility (EMC) Directive 2004/108/EC; Low Voltage Directive (LVD) 2006/95/EC and EN/IEC 61010-1 :2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements.

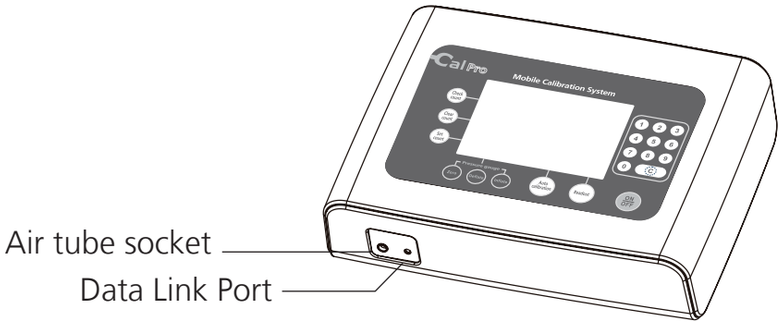
Cautionary Notes

1. The unit contains high-precision assemblies. Therefore, avoid extreme temperatures, humidity, and direct sunlight. Avoid dropping or strongly shocking the main unit, and protect it from dust.
2. The unit should not be operated by children so to avoid hazardous situations.
3. If the unit is stored near freezing, allow it to acclimate at room temperature before use.
4. This unit is not field serviceable. You should not use any tool to open the device nor should you attempt to adjust anything inside the device. If you have any problems, please contact the store or the doctor from whom you purchased this unit or please contact Rossmax International Ltd.
5. Dispose of device, batteries, components and accessories according to local regulations.

Name/Function of Each Part

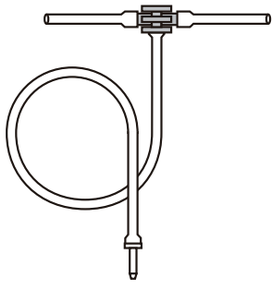




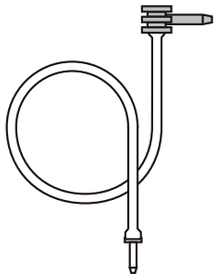


Name/Function of Each Part

Air Tube and Connector for Wrist Monitors

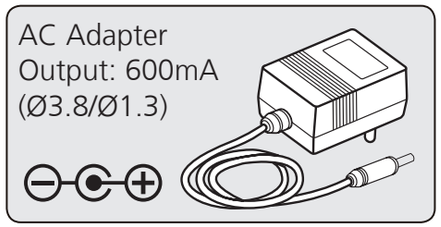


Air Tube and Connector for Upper Arm Monitors

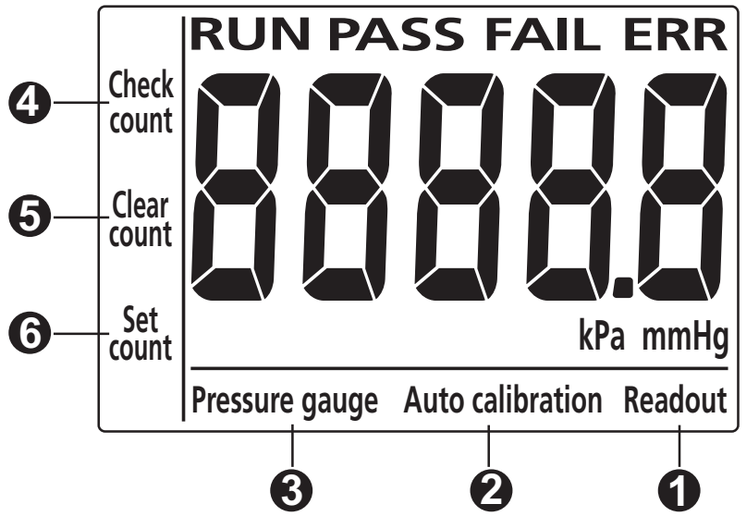


Data Link Cable

Carrying Bag



LCD Display Explanations



❶ **Readout Mode:** Automatic device pressure checking

❷ **Auto Calibration Mode:** Automatic device pressure calibration

❸ **Pressure Gauge Mode:** Digital Manometer feature

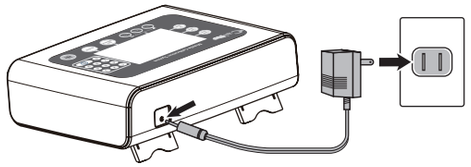
❹ **Measurement Count Display Mode:** Check number of uses

❺ **Measurement Count Clearance Mode:** Zero setting of uses

❻ **Calibration Reminder Setting Mode:** Re-set number of use calibration reminder

Using the AC Adapter

1. Connect the AC adapter with the AC adapter jack in the back of the calibrator.
2. Plug the AC adapter into the socket. Use the compatible AC adapters. (AC adapters with required voltage and current indicated near the AC adapter jack.)

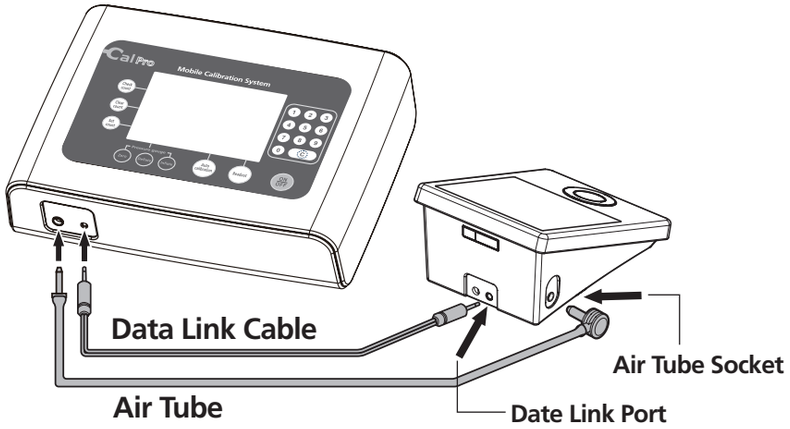


- Do not plug or unplug the AC adapter into the electrical outlet with wet hands.
- Unplug the AC adapter from the electrical outlet after using the device.

Connection Methods

Upper Arm Blood Pressure Monitor:

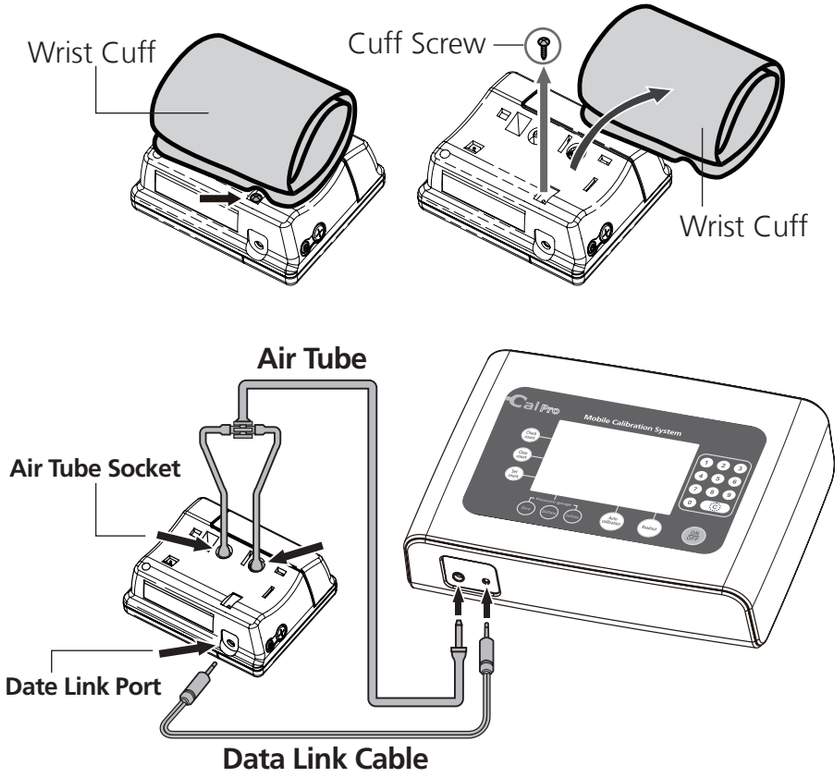
1. Connect the tube between the calibrator and the monitor to the air tube socket.
2. Then connect the data link cable between the calibrator and the monitor to the data link port.



Connection Methods

Wrist Blood Pressure Monitor:

1. Loosen the screw that secures the cuff to the monitor.
2. Remove the cuff from the monitor.
   a. Push cuff to the screw direction.
   b. Slightly pull cuff to remove the cuff from the monitor.
3. Connect the tube between the calibrator and the monitor to the air outlet.
4. Connect the data link cable between the calibrator and the monitors data link port.



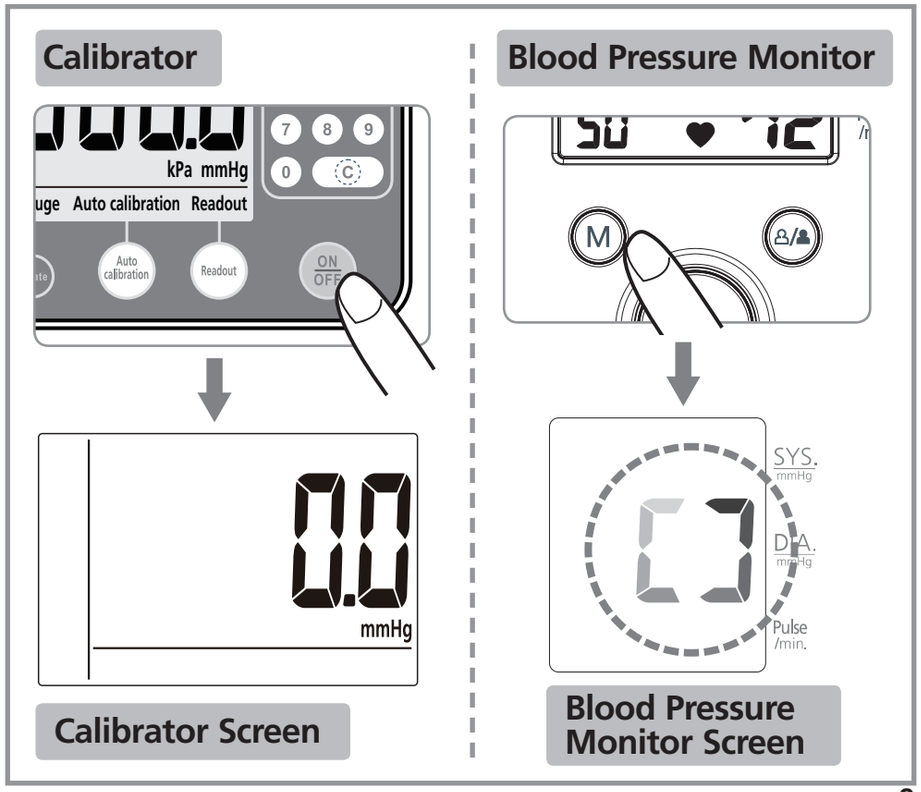
Operation Procedures

1. Data link status operation

Before operation, make sure the air tube and the data link cable are securely connected to the calibrator and the blood pressure monitor. Press the ON/OFF key of the calibrator, then press the M key of the blood pressure monitor.

Note: If there is no M key on the blood pressure monitor, please press the ON/OFF key instead.

A loop will appear on the LCD display of the Blood Pressure Monitor, indicating the data link status.

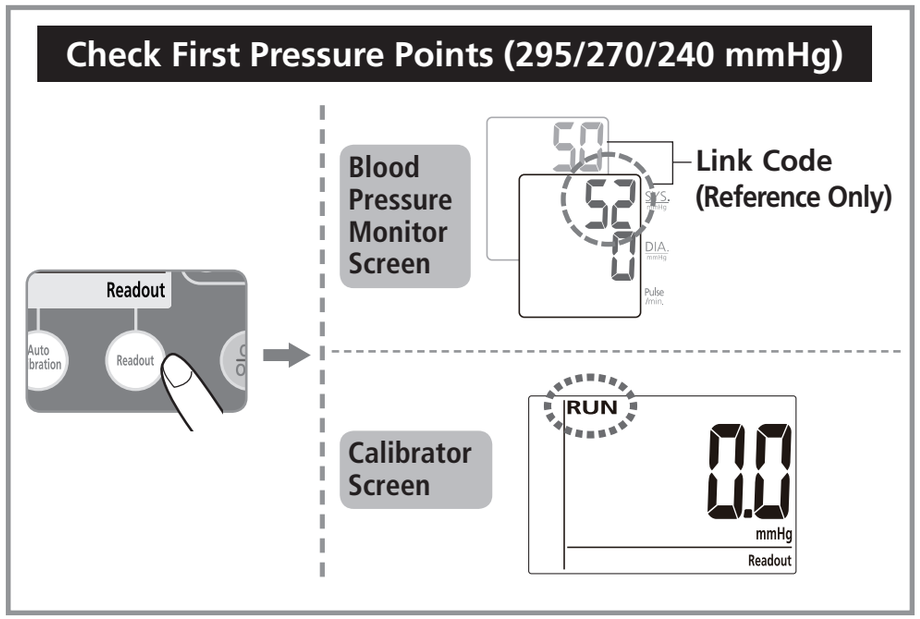


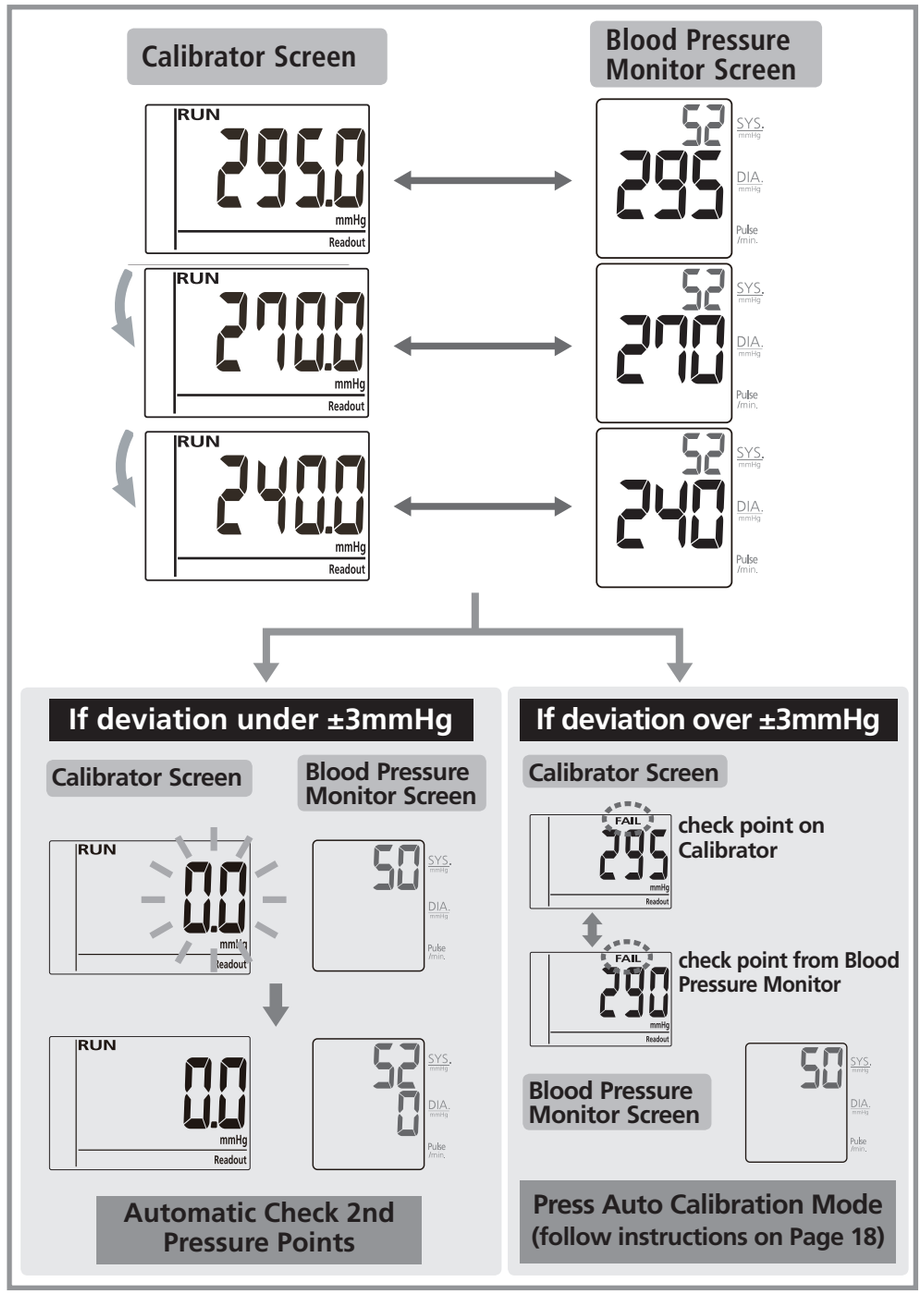
2. Readout Mode

This feature checks monitor pressure, if you would like to ignore pressure checking , skip to "Auto Calibration Mode"(page 18) directly.

Press “Readout” to start. “RUN” will appear on LCD and pressure is checked at 0/295/270/240 mmHg points. If the pressure difference at 0/295/270/240 mmHg is within ± 3mmHg, the calibrator will rapid exhaust to 0 mmHg, then go on checking 2nd points. If "FAIL" appears , the faulty pressure points will be shown (both the default pressure check point and the actual pressure measured will appear alternatively.).

If "FAIL" appears, press the "Auto calibration" key for re-calibration. After this process is complete, press the "Readout" key to verify calibration was successful.

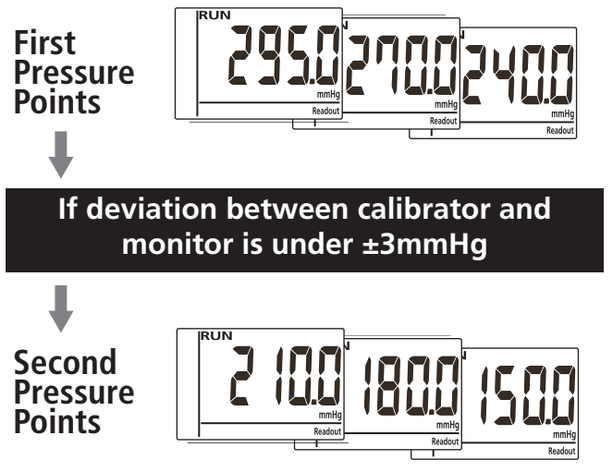


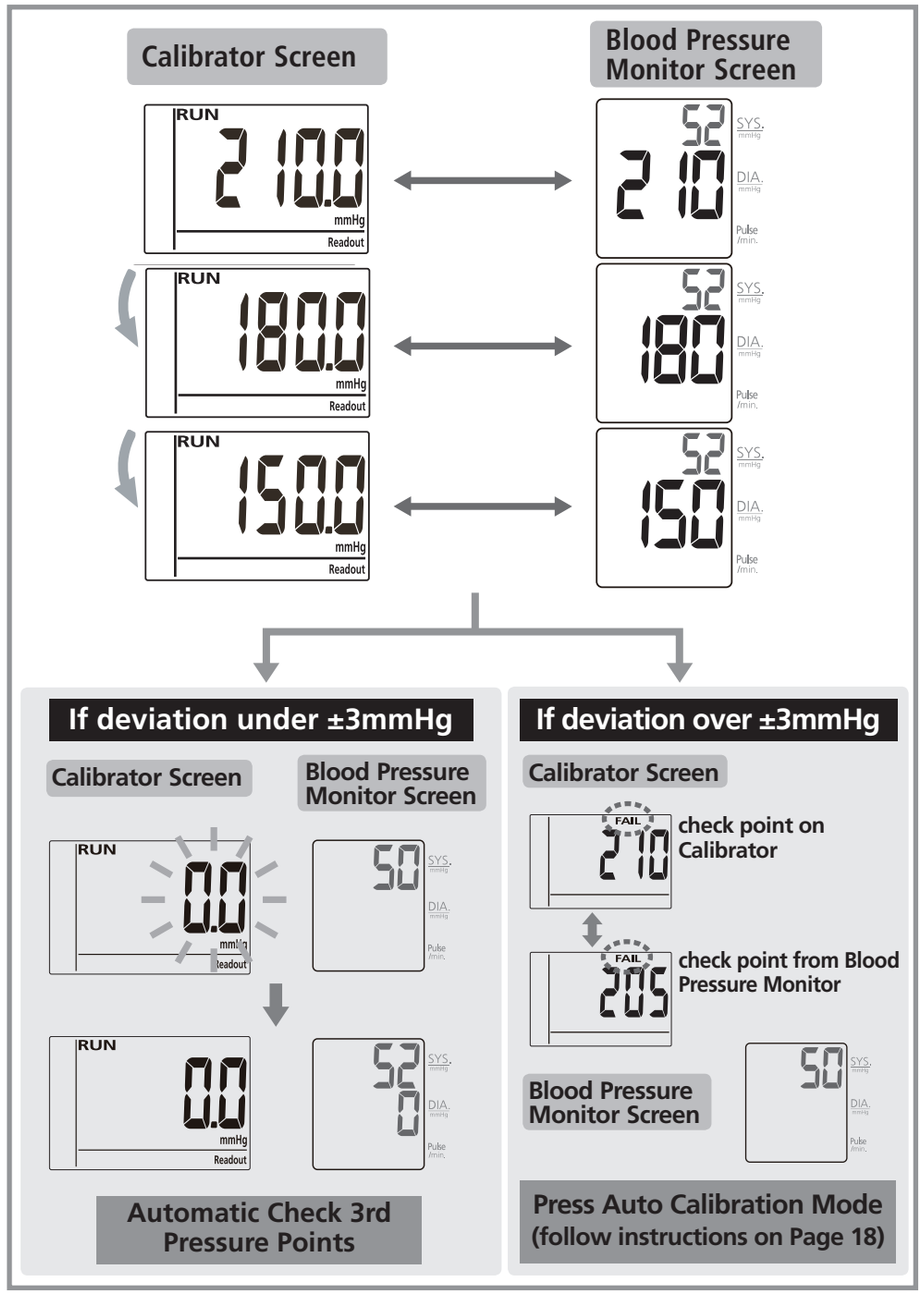


To check the second pressure levels. “RUN” will appear on LCD and pressure is checked at 0/210/180/150 mmHg points. If the pressure difference at 0/210/180/150 mmHg is within ± 3mmHg, the calibrator will rapid exhaust to 0 mmHg, then go on checking 3rd points. if "FAIL" appears, the faulty pressure points will be shown (both the default pressure check point and the actual pressure measured will appear alternatively.).

If "FAIL" happens, press the "Auto calibration" key for re-calibration. After this process is complete, press the "Readout" key for double check.

Checking the pressures between calibrator and monitor. If the deviation of First Pressure Points is under ±3mmHg, the calibrator will automatically check Second Pressure Points (210/180/150 mmHg)

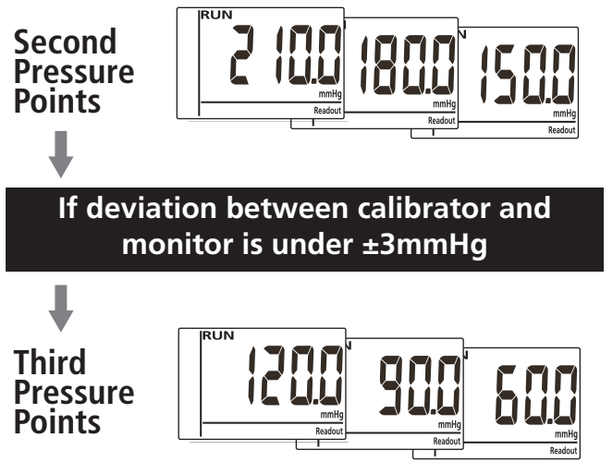


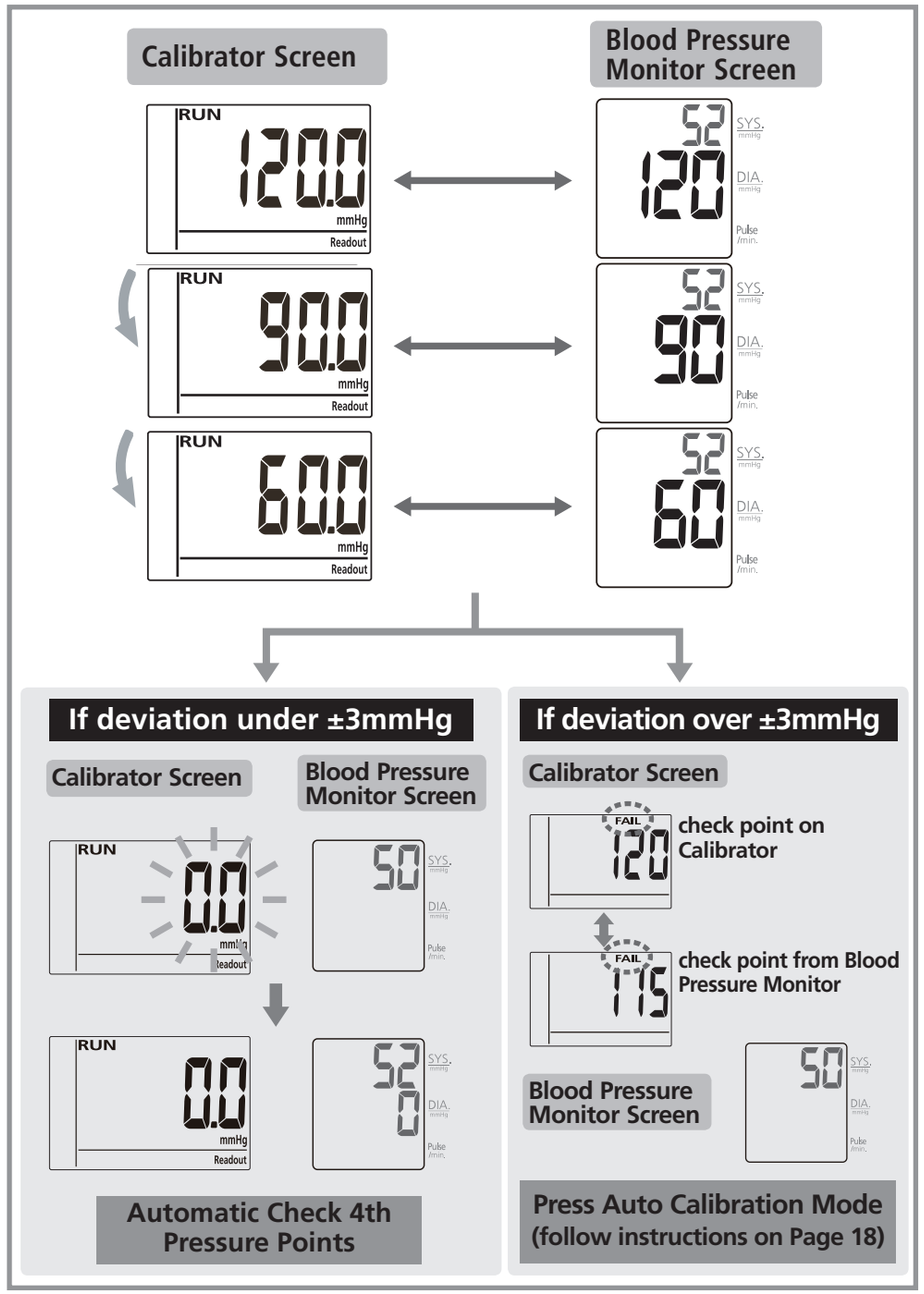


To check the third pressure levels. “RUN” will appear on LCD and pressures is checked at 0/120/90/60 mmHg points. If the pressure difference at 0/120/90/60 mmHg is within ± 3mmHg, the calibrator will rapid exhaust to 0 mmHg, then go on checking 3rd points. If "FAIL" appears, the faulty pressure points will be shown (both the default pressure check point and the actual pressure measured will appear alternatively.).

If "FAIL" happens, press the "Auto calibration" key for re-calibration. After this process is complete, press the "Readout" key for double check.

Checking the pressures between calibrator and monitor. If the deviation of Second Pressure Points is under ±3mmHg, the calibrator would automatic check Third Pressure Points (120/90/60 mmHg)



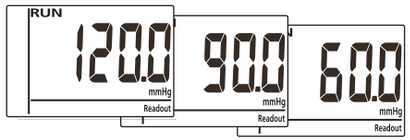


The forth step of checking leves. “RUN” will appear on LCD and pressures are checked at 0/30 mmHg. If the pressure difference at 0/30 mmHg is within ± 3mmHg, the calibrator shows "PASS". If "FAIL" appears, the faulty pressure points will be shown (both the default pressure check point and the actual pressure measured will appear alternatively.).

If "FAIL" happens, press the "Auto calibration" key for re-calibration. After this process is complete, press the "Readout" key for double check.

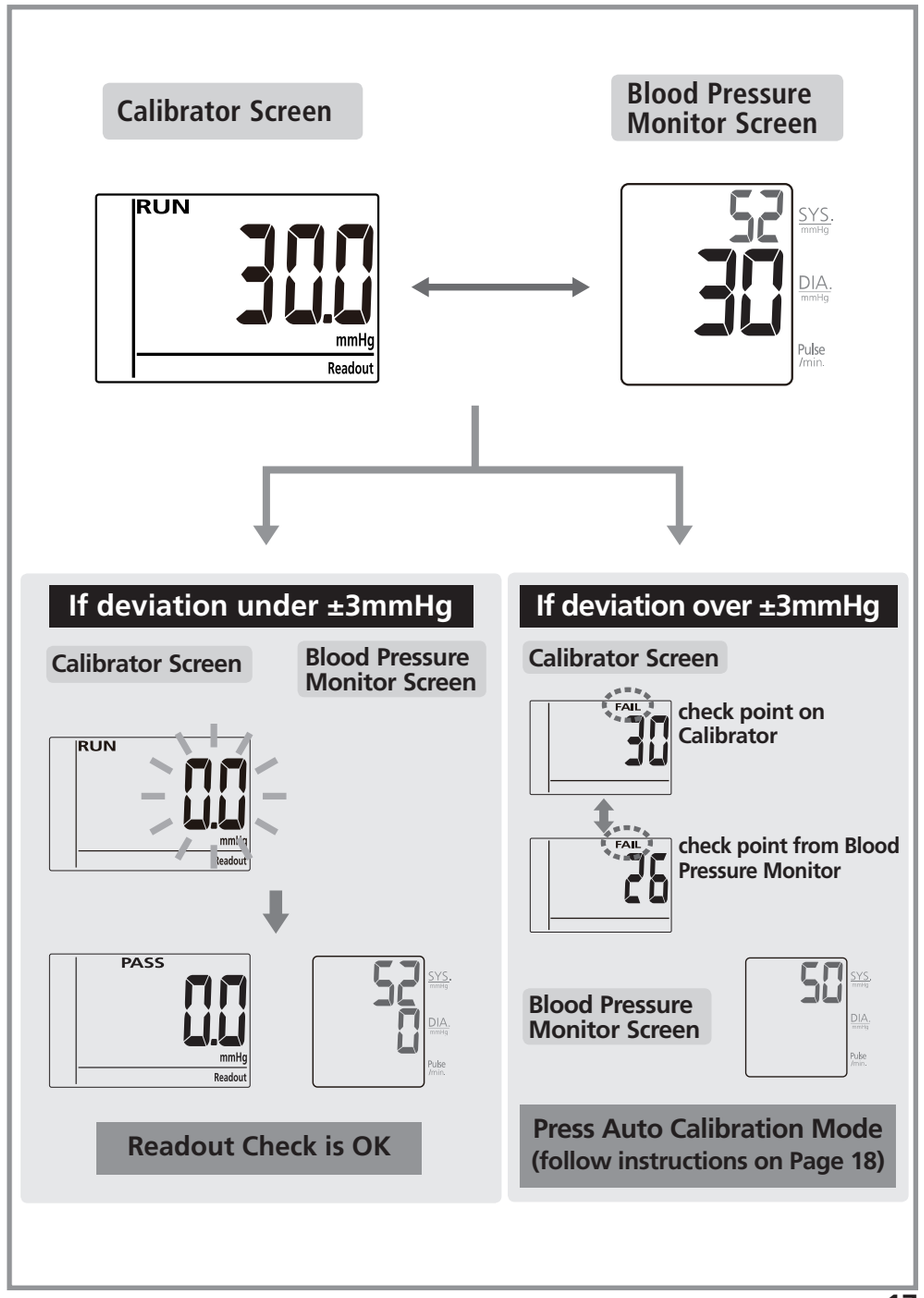
Checking the pressures between calibrator and monitor. If the deviation of Third Pressure Points is under ±3mmHg, the calibrator would automatic check Forth Pressure Points (0/30 mmHg)

Third Pressure Points



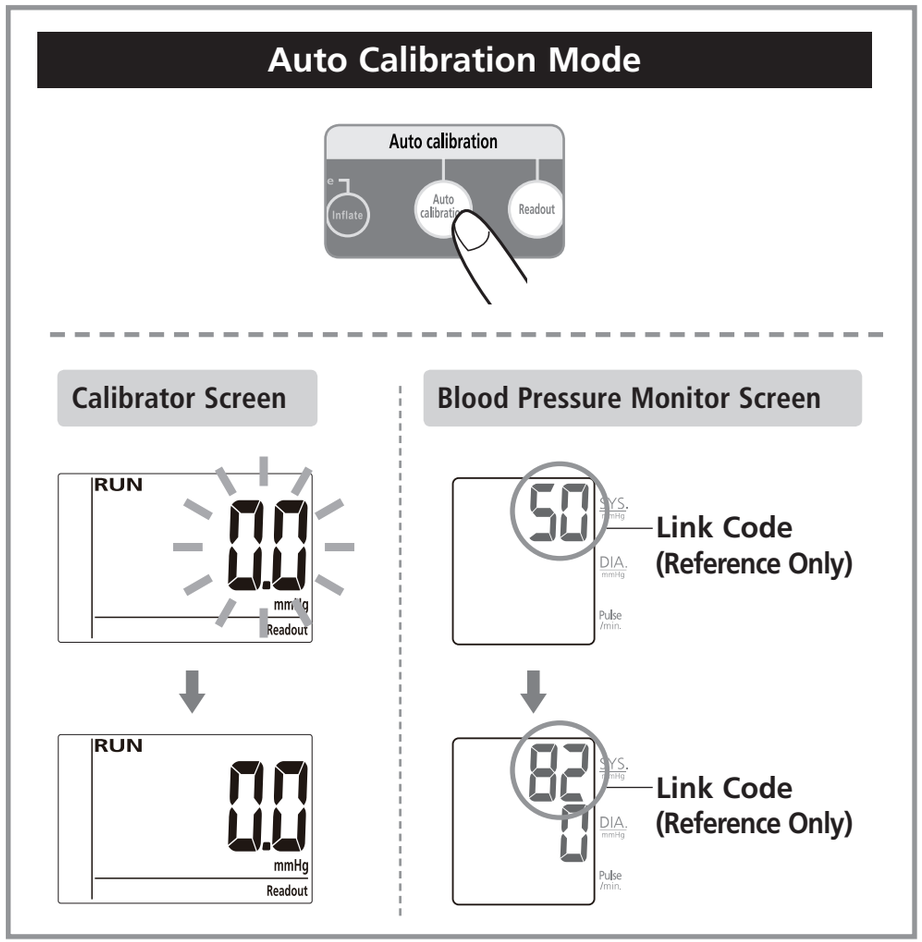
If deviation between calibrator and monitor is under ±3mmHg

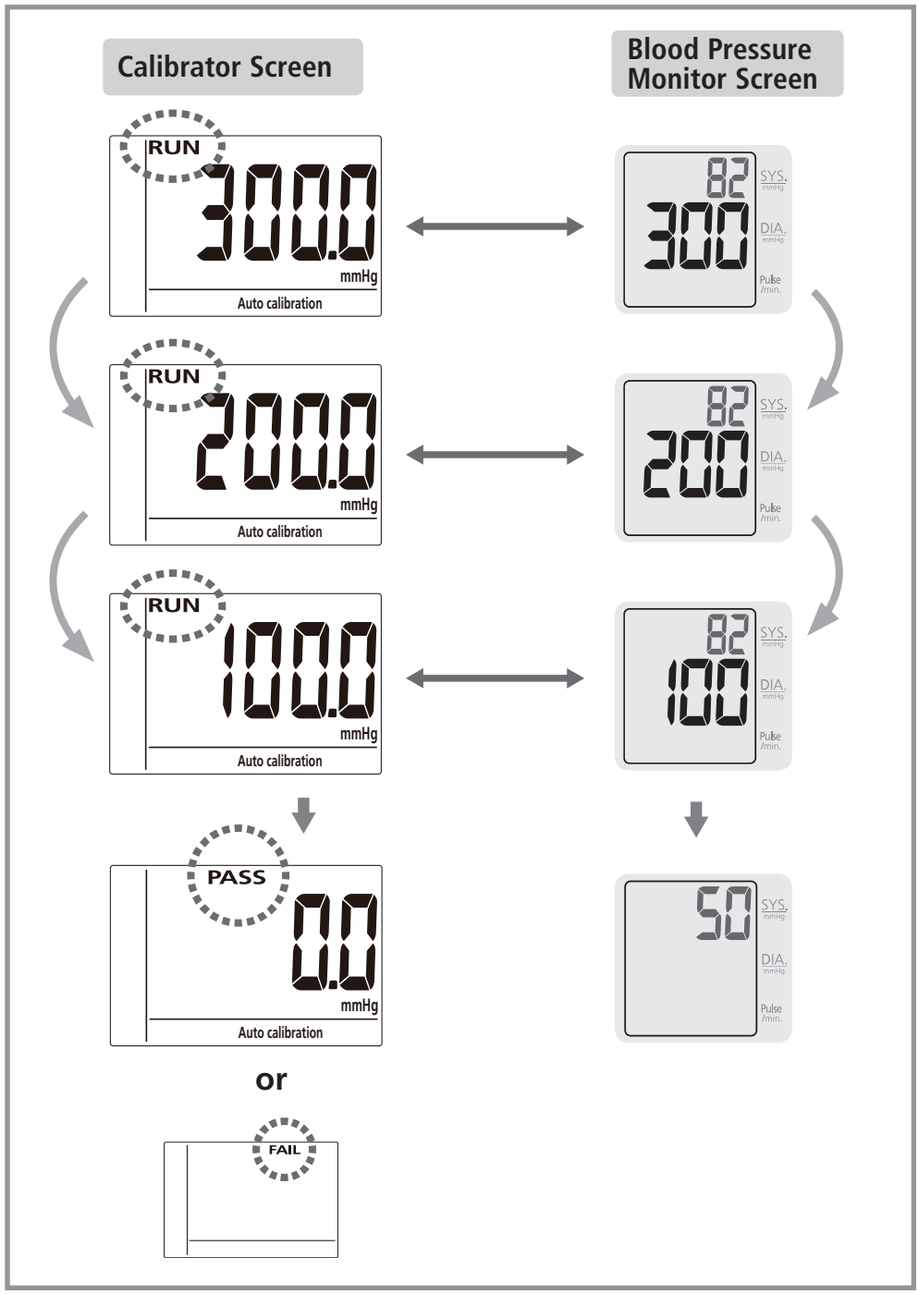
Forth Pressure Points



3. Auto Calibration Mode

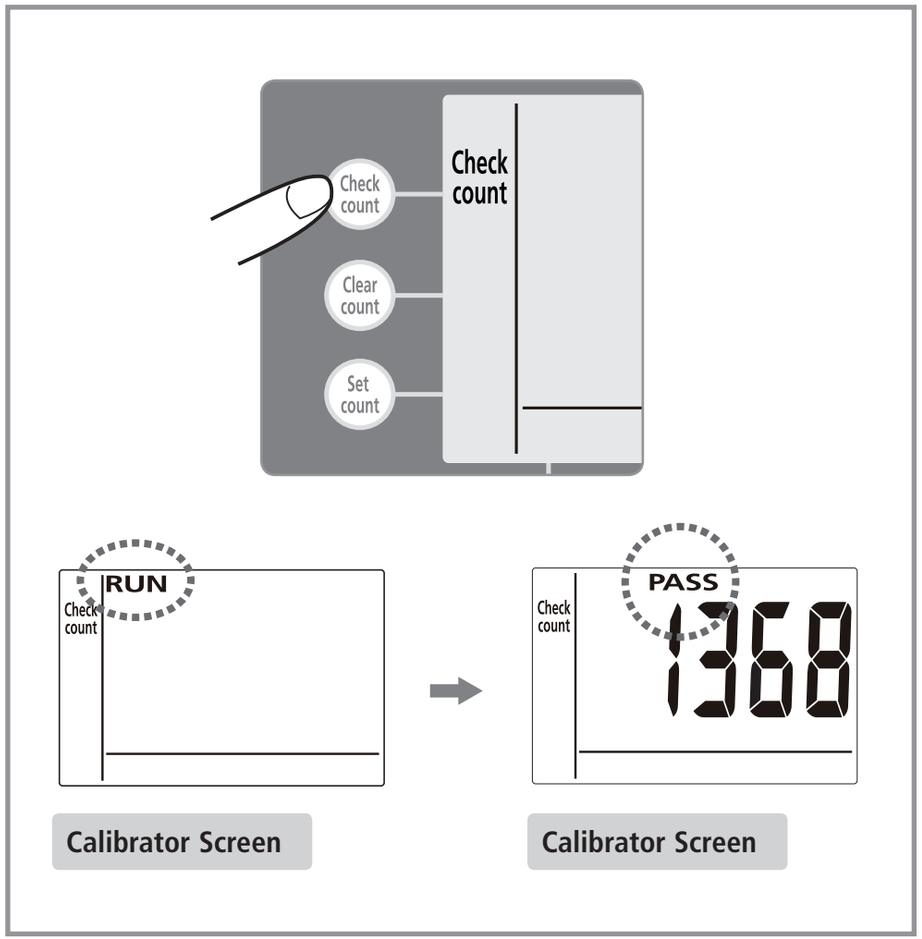
If "Readout Mode" result is FAIL, Press “Auto calibration” key to start. “RUN” appears on LCD, and pressure values are programmed at 0/300/200/100 mmHg. If the programming is successful, “PASS” will appear. Otherwise “FAIL” will appear. If "FAIL" continues to appear, return the monitor to the manufacturer for service.





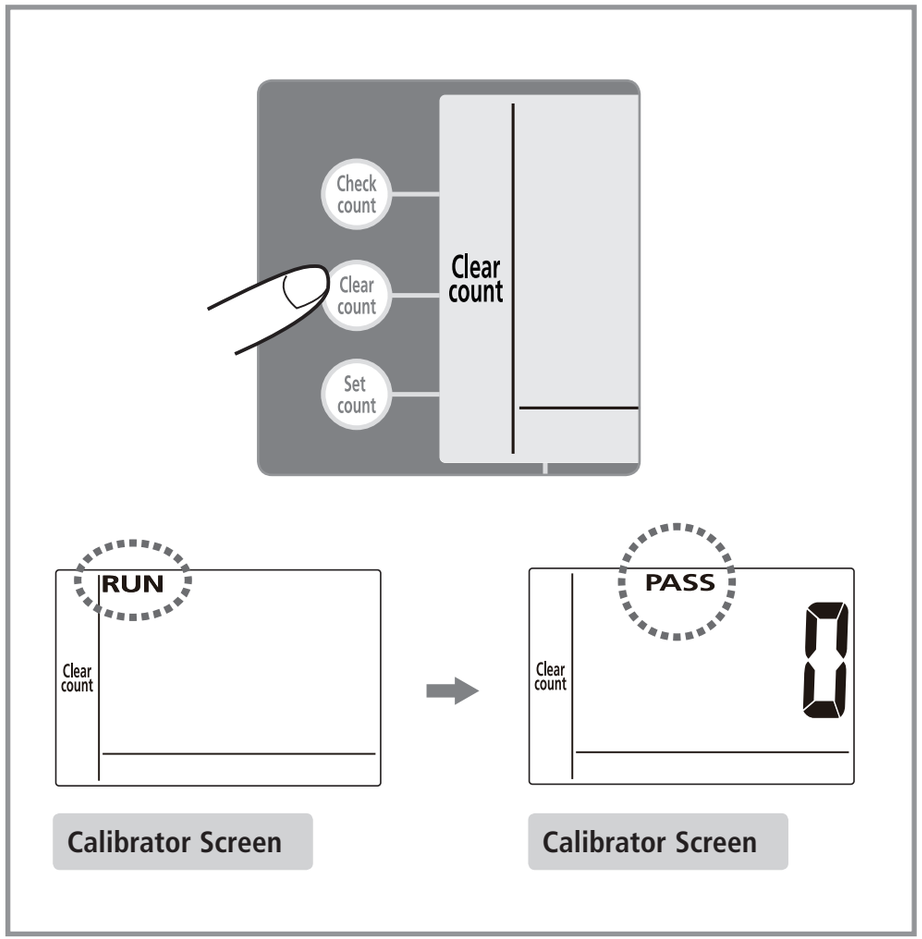
4. Measurement Count Display Mode

Press "Check count" to start. "RUN" appears on LCD, and the measurement cycles (count, number of uses) of the monitor will be calculated. If the calculation is successful, "PASS" will appear and the number of uses appears. Otherwise "FAIL" will appear.



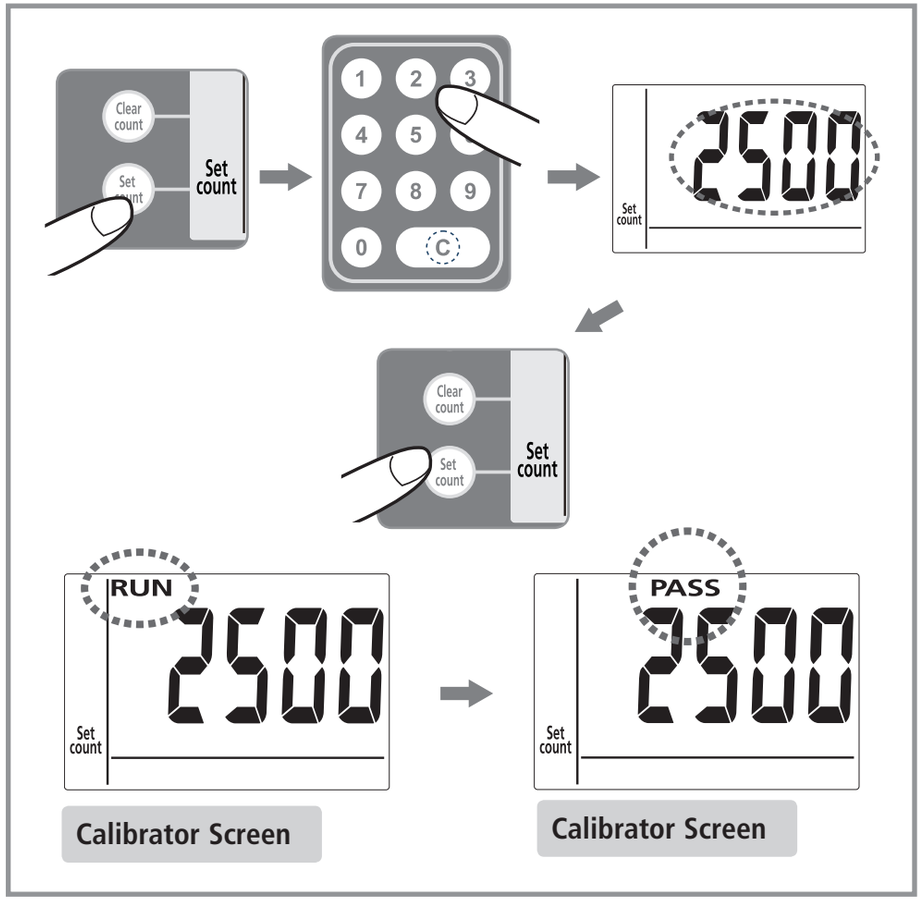
5. Measurement Count Clearance Mode

Press "Clear count" to start. "RUN" appears on LCD, and the measurement cycles (count, number of uses) of the monitor will be zeroed. If the zeroing is successful, "PASS" and "0" will appear. Otherwise "FAIL" will appear.



6. Calibration Reminder Setting Mode

Enter your desired count (number of uses) for the monitor so the CA (the recalibration reminder) will appear on the display every time you turn on the monitor (after reaching the number of desired uses). If the number needs to be changed, press "C" and enter again. Then press "set count" again to confirm the entry. "RUN" will appear on LCD. If the entry is successful, "PASS" and the count (number of uses) will appear. Otherwise "FAIL" will appear.



7. Pressure Gauge Mode

This feature is for static pressure checking of Rossmax digital manometer. Before entering this mode set the monitor to Test Mode.

To set your monitor to Test Mode:

7.1: Remove 1 battery (If using adapter as a power source, disconnect the adapter).

7.2: Press the M or ON/OFF key of monitor a number of times in a row to delete the remaining electricity.

7.3: Put the battery back in or plug in adapter.

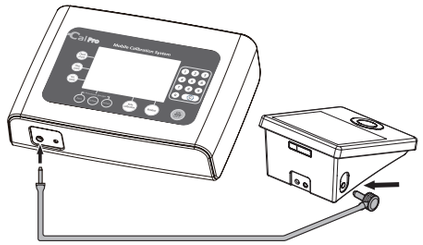
7.4: When the LCD fully lights up, press the ON/OFF key, 3 times in a row.

7.5: "00" appears and the monitor is in Test Mode.

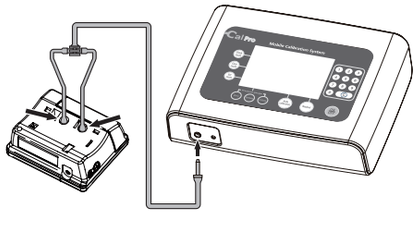
7.6: Connect the tube to both the monitor and the calibrator (please refer to the Connection Method of page 24).

7.7: Press INFLATE / DEFLATE / ZERO keys for "gauge testing".

Blood Pressure Monitor Screen (Test Mode)

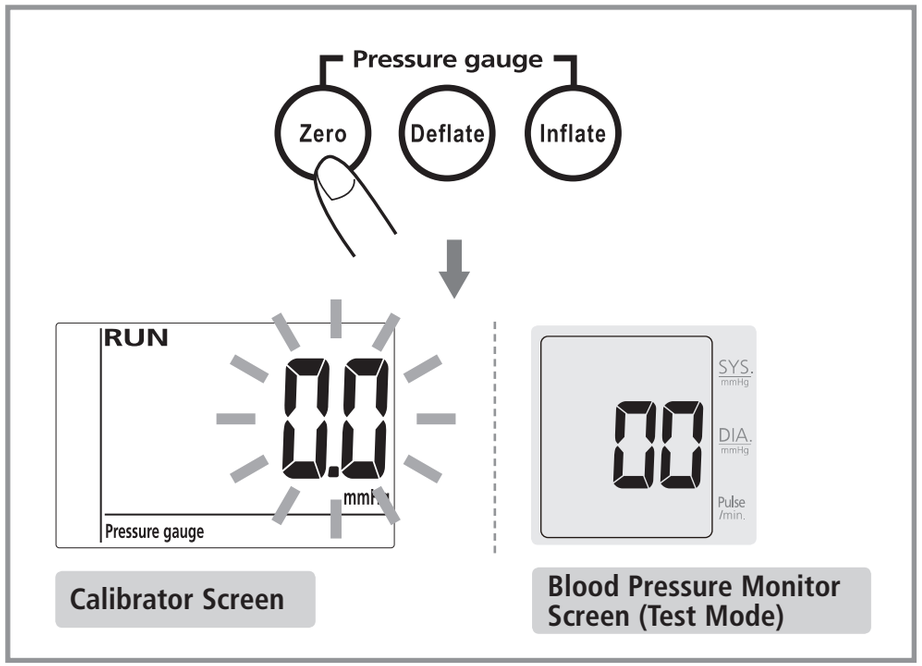


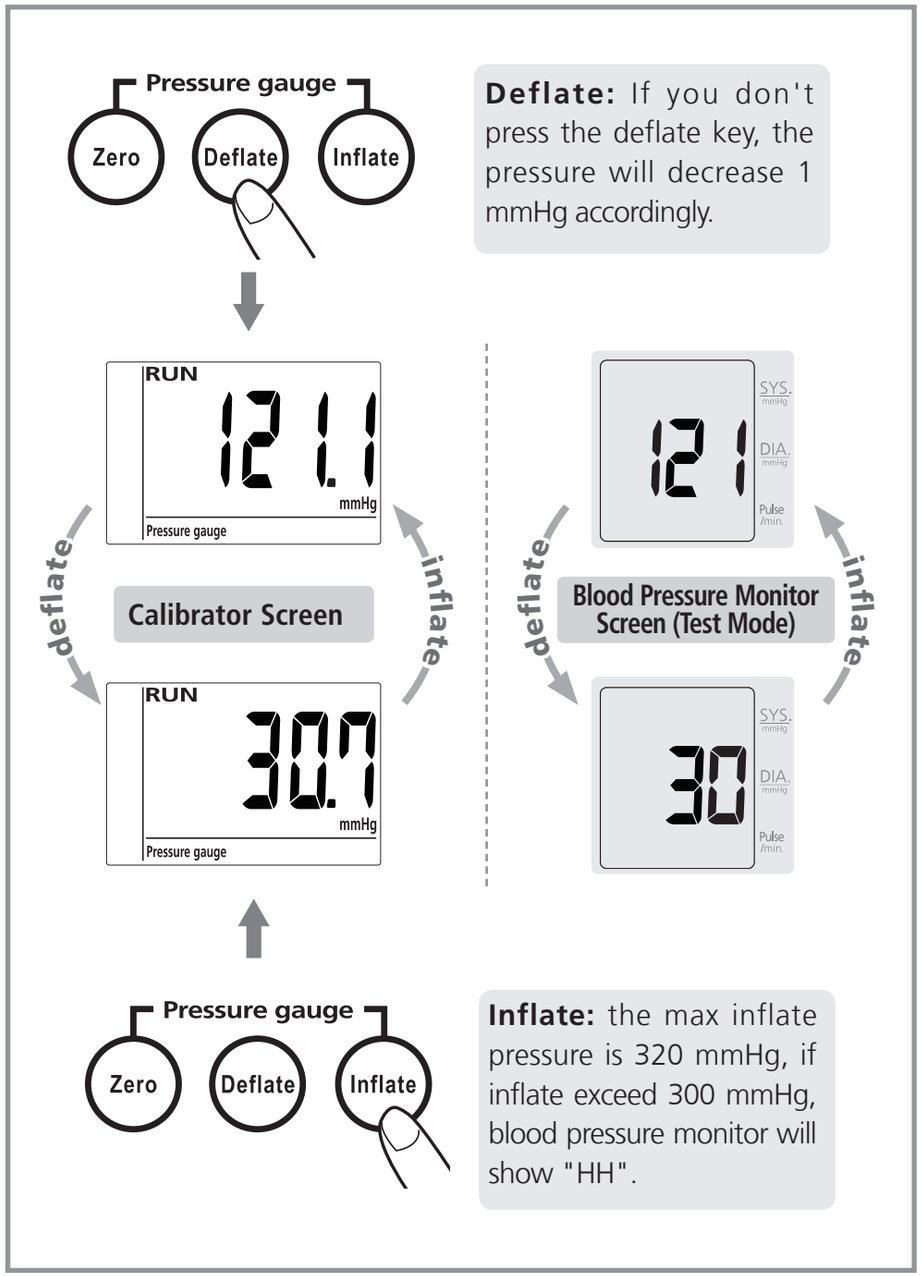
Connect the Calibrator and Upper Arm Blood Pressure Monitor



Connect the Calibrator and Wrist Blood Pressure Monitor

Press “Inflate” to increase the pressure, “Deflate” to decrease the pressure, and “Zero” to rapidly deflate back to 0 mmHg. “RUN” will appear on LCD.



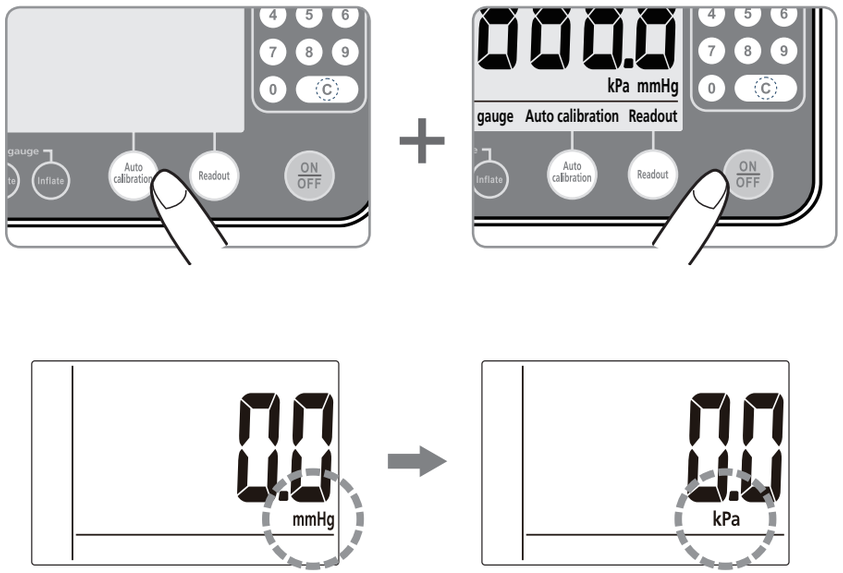


Deflate: If you don't press the deflate key, the pressure will decrease 1 mmHg accordingly.

Inflate: the max inflate pressure is 320 mmHg, if inflate exceed 300 mmHg, blood pressure monitor will show "HH".

Change "mmHg" to "kPa"

When the calibrator is off, press and hold "Auto calibration" key, then press the "ON/OFF" key to turn on the calibrator, "mmHg" will changed to "kPa" (release "Auto calibration" key), the calibrator will show "kPa" on the LCD. Repeat each time, after powering off as the calibrator default in "mmHg".



Error Messages

Error Messages	Root Cause	Correction
FAIL	Connection Error	Turn off the Blood Pressure Monitor, disconnect and reconnect the data link cable, turn on the Blood Pressure Monitor and operate again. If "FAIL" continues to appear, return the monitor to the manufacturer.
	Data Error (the pressure difference between the Blood Pressure Monitor and the calibrator is over 3mmHg)	Turn off the Blood Pressure Monitor, disconnect and reconnect the data link cable, turn on the Blood Pressure Monitor and perform the auto calibration mode again.
ERR	Connection Error	Turn off the Blood Pressure Monitor, disconnect and reconnect the data link cable, turn on the Blood Pressure Monitor and operate again. If "ERR" continues to appear, return the calibrator to the manufacturer.

Specifications

Pressure Sensor	: Semi conductor
Inflation	: Pump Driven
Deflation	: Automatic Air Release Valve
Accuracy	: ± 0.8 mmHg
Weight	: 765g
Dimensions	: 251(L) x 187(W) x 67(H) mm
Pressure indication Range	: 0 – 320 mmHg
Power Source	: Transformer : Input : AC: 110V(120V) / 60 Hz, 220 V(230V) / 50 Hz DC: 12V / 600mA (Plug size: Out (-) 3.8mm, Inner (+) 1.3mm)
Operation Environment	: 10˚C- 40˚C (50˚F - 104˚F); 40%-85% RH max.
Storage Environment	: -10˚C- 60˚C (-14˚F - 140˚F); 10%-90% RH max.
Points of Pressure Programming (towards Blood Pressure Monitor)	: 0/300/200/100 mmHg
Points of Pressure Inspection (towards Blood Pressure Monitor)	: 0/30/60/90/120/150/180/210/240/270/295 mmHg

*Specifications are subject to change without notice.

Safety Certifications

Rossmax's products comply with the standard of LVD and EMC Directire and affix the CE marking, could be placed in the market or put into service within the internal market of the European Union (EU). The CE mark certifies that products have met EU health, safety and environmental requirements, which ensure consumer and workplace safety.

To ensure continued accuracy, it is recommended that the monitor be re-calibrated annually. If you prefer, please send the instruments to the certified calibration laboratory to test and verify the accuracy.

USA FCC Class B

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.

Maintenance of ROSSMAX Calibrator

We highly recommend that ROSSMAX CALIBRATOR be calibrated once a year by your local Metrology Center.

The calibrator at the Metrology Center used to calibrate our calibrator must have accuracy deviation of no more than +/-0.2 mmHg.

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ISO 9001/13485

ORM_IB_GuRo_BL_ver1340
INVCALPROXXXXXXXXX

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