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**Clinically Tested**

BHS A/A - BHS Protocol

Instruction Manual  
Model: W100

**WRIST**  
Blood Pressure Monitor



Office and manufacturing plant, Church St, Toronto 1934

## **Trusted by Canadians for 3 Generations**

At BIOS Diagnostics, we are proud of our legacy in blood pressure monitoring across Canada. From the early 1930's to 1987 we manufactured Tycos professional blood pressure equipment for doctors and hospitals in Canada.

In the 1970's we pioneered the first blood pressure devices for monitoring at home, and in the 1980's we introduced digital technology in Canada. We haven't been counting, but we know that millions of our home-use monitors have been used by Canadians in the last 25 years

All Bios Diagnostics devices are developed in collaboration with physicians and clinical tests prove their measurement accuracy. For more information on clinical tests and other Bios medical products, visit our website at **[www.biosdiagnostics.com](http://www.biosdiagnostics.com)**

If you have questions about this device or blood pressure monitoring at home, email us at: **[thermor@thermor-ins.com](mailto:thermor@thermor-ins.com)**

Or: Call the BIOS Diagnostics Hotline **1-866-536-2289**

# Wrist Blood Pressure Monitor Instruction Manual

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# BIOS

*Diagnostics™*

Thank you for purchasing the BIOS Diagnostics™ Wrist Blood Pressure Monitor. Designed for convenient and easy operation, this device provides a simple, yet accurate method to measure your blood pressure.

Your blood pressure is an important parameter that can be used to monitor your health. This device enables you to monitor your blood pressure regularly, and maintain a record of your blood pressure measurements. You can then use this record to assist your physician in diagnosing and maintaining a healthy blood pressure level.

## 1.1 Features

- Displays:
  - Systolic and diastolic pressure
  - Pulse rate
- 2 medication alarms
- 200 memories

Readings taken by the blood pressure monitor are equivalent to those obtained by a trained observer using the cuff and stethoscope method. Clinical performance were successfully done against ANSI/AAMI SP10 and international protocol, and The B.H.S. which has rated this product "recommended for clinical and home use", this is the highest grading available for blood pressure monitors. Please refer to BHS website <http://www.bhsoc.org>



PAD - Pulse Arrhythmia Detection technology displays pulse irregularities detected during a blood pressure reading. If the PAD symbol appears on a regular basis (e.g. several times a week with measurement taken daily,) we advise you to consult your doctor.

Before using the Wrist Blood Pressure Monitor, please read this instruction manual carefully and keep it in safe place.

## 1.2 Important Information

Refer to the following sections to learn about important safety instructions and how to take care of the BIOS Diagnostics™ Wrist Blood Pressure Monitor.

### 1.2A Safety Information

- Self-measurement means control, not diagnosis or treatment. Your values must always be discussed with your doctor or a physician who is familiar with your family history.
- If you are undergoing medical treatment and receiving medication, consult your doctor to determine the most appropriate time to measure your blood pressure. Never alter the dosages of any medication without direction from your doctor.
- Your blood pressure depends on several factors, such as age, gender, weight, and physical condition. It also depends on the environment and your state of mind at the time of measurement. In general, your blood pressure is lower when you are asleep and higher when you are active. Your blood pressure may be higher when recorded at a hospital or a clinic and may be lower when measured in the relaxing comfort of your home. Due to these variations, we recommend that you record your

- blood pressure regularly at home as well as at your doctor's clinic.
- Try to record your blood pressure regularly at the same time of the day and under the same conditions. This will help your physician detect any extreme variations in your blood pressure and thus treat you accordingly.
  - Morning Hypertension ( > 135 / 85 mm Hg): Recently, several studies have identified elevated cardiovascular risks (heart failure, stroke, angina) associated with "morning hypertension". There is a typical rise in blood pressure during the physiological changes from sleep to arising for the day.
  - The ideal time to measure your blood pressure is in the morning just after you wake up, before breakfast and any physical activity, and in the absence of the urge to urinate. If this is not possible, try to take the measurements later in the morning, before you start any physical activity. Relax for a few minutes before you record your blood pressure.
  - Your blood pressure increases or decreases under the following circumstances:

Blood pressure is higher than normal:

- when you are excited, nervous, or tense
- while taking a bath
- during and after exercise or strenuous physical activity
- when it is cold
- within one hour after meals
- after drinking tea, coffee, or other caffeinated drinks
- after smoking tobacco
- when your bladder is full

Blood pressure is lower than normal:

- after consuming alcohol
- after taking a bath

- The pulse display is not suitable for checking the frequency of heart pacemakers.
- If you have been **diagnosed** with a severe arrhythmia or irregular heartbeat, vascular constriction, liver disorders, or diabetes, have a cardiac pacemaker, or are pregnant, measurements made with this instrument should only be evaluated after consultation with your doctor.
- Take care while handling the batteries in the device. Incorrect usage may cause battery fluid leakage.

To prevent such accidents, refer to the following instructions:

- Insert batteries with the correct polarity.
- Turn off power after use. Remove and store the batteries if you are not planning to use the device for an extended period of time.
- Do not mix different types, brands, or size of batteries. This may cause damage to the product.
- Do not mix old and new batteries.
- Remove batteries and dispose of them according to the proper regulations in your area.
- Do not disassemble batteries or expose them to heat or fire.
- Do not short-circuit the batteries.
- Do not use rechargeable batteries.

## **2. About Blood Pressure**

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Your blood pressure level is determined in the circulatory center of your brain. Your nervous system allows your body to adapt or alter blood pressure in response to different situations. Your body alters your pulse or heart rate and the width of blood vessels through changes in muscles in the walls of blood vessels.

Your blood pressure reading is highest when your heart pumps or ejects blood. This stage is called your **systolic blood pressure**.

Your blood pressure is lowest when the heart rests (in-between beats). This is called your **diastolic blood pressure**.

It is critical to maintain blood pressure values within a "normal" range in order to prevent cardiovascular diseases. Increased blood pressure values (various forms of hypertension) have associated long and medium term health risks. These risks concern the arterial blood vessels of your body, which are endangered due to constriction caused by deposits in the vessel walls (arteriosclerosis). A deficient supply of blood to important organs (heart, brain, muscles) can be the result. Furthermore, with long-term increased blood pressure values, the heart will become structurally damaged.

There are many different causes of the appearance of high blood pressure. We differentiate between common primary (essential) hypertension, and secondary hypertension. The latter group can be ascribed to specific organic malfunctions. Please consult your doctor for information about the possible origins of your own increased blood pressure values.



## 2.1 Normal Blood Pressure Values

Blood pressure is too high when, at rest, the diastolic pressure is above 90 mmHg or the systolic blood pressure is over 140 mmHg.

If you obtain readings in this range, consult your doctor immediately. High blood pressure values over time can damage blood vessels, vital organs such as the kidney, and your heart.

Should the systolic blood pressure values lie between 140 mmHg and 160 mmHg or the diastolic blood pressure values lie between 90 mmHg and 95 mmHg, consult your doctor. Regular self-checks will be necessary.

With blood pressure values that are too low (i.e., systolic values under 105 mmHg or diastolic values under 60 mmHg), consult with your doctor.

Even with normal blood pressure values, a regular self-check with your blood pressure monitor is recommended. This way you can detect possible changes in your values early and react appropriately.

Refer to the following table for classifying blood pressure values (units: mmHg) according to the World Health Organization (WHO):

<b>Category</b>	<b>Systolic Blood Pressure</b>	<b>Diastolic Blood Pressure</b>
Optimal	< 120	< 80
Normal	< 130	< 85
High Normal	130 - 139	85 - 89
<b>Hypertension</b>		
• Stage 1: Mild	140 - 159	100 - 109
• Stage 2: Moderate	160 - 179	> 110
• Stage 3: Severe	> 180	90 - 99

**Important for Canadians: The Canadian Hypertension Education Program (CHEP) recommends that patients with average measurements of  $\geq 135$ mmHg (systolic) or  $\geq 85$ mmHg (diastolic) at home be considered hypertensive. Should your average readings be in this range, consult your physician. For further information, see our website [www.biosdiagnostics.com](http://www.biosdiagnostics.com).**

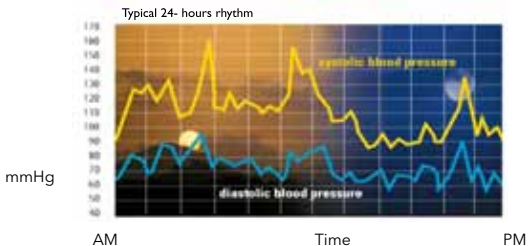
If your values are mostly "normal" under resting conditions but exceptionally high under conditions of physical or psychological stress, it is possible that you are suffering from so-called "labile hypertension". In any case, please discuss the values with your doctor.

Correctly measured diastolic blood pressure values above 120 mmHg require immediate medical treatment.

## 2.2 Common Blood Pressure Questions and Answers

### a) Why is my blood pressure reading always different?

Your blood pressure changes constantly. It is quite normal for blood pressure to fluctuate significantly (50 mmHg to 60 mmHg) throughout the day. Blood pressure is normally lowest at night, but increases during waking hours when the stress and activities of everyday life are highest.



Your blood pressure also increases and decreases under the following circumstances

#### **Blood pressure is higher than normal:**

- when you are excited, nervous, or tense
- while taking a bath
- during and after exercise or strenuous physical activity
- when it is cold
- within one hour after meals

- after drinking tea, coffee, or other caffeinated drinks
- after smoking tobacco
- when your bladder is full

Blood pressure is lower than normal:

- after consuming alcohol
- after taking a bath

### **b) Why is the doctor's reading different from the reading taken at home?**

Your blood pressure can vary due to the environment (temperature, nervous condition). When measuring blood pressure at the doctor's office, it is possible for blood pressure to increase due to anxiety and tension.

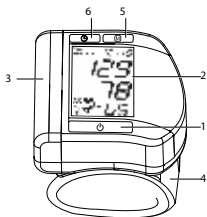
### **c) Why should I monitor blood pressure at home?**

One or two readings will not provide a true indication of your normal blood pressure. It is important to take regular, daily measurements and to keep records over a period of time. This information can be used to assist your physician in diagnosing and preventing potential health problems.

## 3. Getting Started

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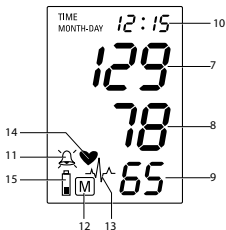
### 3.1 About the W100



1. **ON / OFF BUTTON**
2. **DISPLAY**
3. **BATTERY COMPARTMENT**
4. **CUFF**
5. **M-BUTTON (MEMORY)**
6. **TIME BUTTON**

### 3.2 About the LCD Screen

The LCD screen displays the systolic and diastolic blood pressure measurements along with your heart rate. It also displays previously recorded measurements and the date and time, when the appropriate button is pressed



7. **SYSTOLIC VALUE**
8. **DIASTOLIC VALUE**
9. **PULSE**
10. **DATE / TIME**
11. **ALARM TIME**
12. **STORED VALUE**
13. **HEART ARRHYTHMIA INDICATOR**
14. **PULSE RATE**
15. **BATTERY DISPLAY**

## 3.3 Inserting The Batteries

Follow these steps to insert the two "AAA" batteries in the device.



1. Open the battery compartment cover in the direction shown.
2. Insert the two "AAA" batteries with the correct polarity as indicated.
3. Replace the battery compartment cover.

**NOTE: Replace the batteries whenever the weak battery mark shows, the display is dim, or the display does not illuminate when the power is on. Replace all the batteries at the same time - it is dangerous to mix old and new batteries.**

Contact your local waste disposal authority for instructions on how to dispose of used batteries. Used batteries can be harmful to the environment, and should not be thrown out with household trash.

## 4. Using The Device

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This section describes how to get the maximum benefit from your Wrist Blood Pressure Monitor. Follow the instructions carefully to get an accurate measurement of your blood pressure and pulse rate.

### 4.1 Setting the Date and Time

It is important to set the clock before using your blood pressure monitor, so that the correct time stamp can be assigned to each record that is stored in the memory.

1. After the new batteries are inserted, the year number flashes in the display. You can set the year by pressing the M-button **M**. To confirm and then set the month, press the time button **⌚**.
2. You can now set the month using the M-button **M**. Press the time button **⌚** to confirm and then set the day.
3. Please follow the instructions above to set the day, hour and minutes.
4. Once you have set the minutes and pressed the time button **⌚**, the date and time are set and the time is displayed.
  
5. If you want to change the date and time, press and hold the time button **⌚** down for approximately 3 seconds until the year number starts to flash. Now you can enter the new values as described above.

## **4.2 Obtaining Accurate Measurements**

Your blood pressure can vary based on numerous factors, physiological conditions, and your surroundings. Follow these guidelines to obtain accurate and error-free measurements of your blood pressure and pulse rate.

### **4.2A Before Measuring**

- Avoid eating, smoking as well as all forms of exertion directly before the measurement. All these factors influence the measurement result. Relax by sitting in an armchair in a quiet atmosphere for about 5 minutes before the measurement

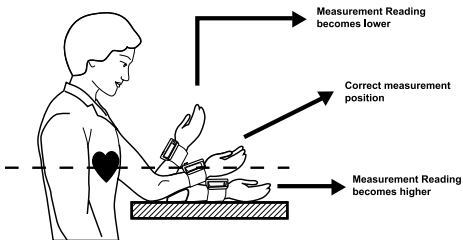
- Always take measurements on the same wrist (normally left) and in the same posture. Do not switch between right and left arms while recording your blood pressure as there may be a difference of up to 10 mmHg pressure between the two wrist.
- Attempt to carry out the measurements regularly at the same time of day, since blood pressure changes during the course of the day. The ideal time to measure your blood pressure is in the morning after you wake up, before breakfast and physical activity, and in the absence of the urge to urinate.
- Rest for 5 minutes sitting quietly and release all the tension in your body especially the arm muscles before beginning with the measurement. Remain calm and quiet when the measurement is in process. Do not speak or move your arm (as well as other body) muscles during the process.
- With repeated measurements, blood accumulates in the arm, which can lead to false results. Consecutive blood pressure measurements should be repeated after at least a 15 second pause or after the arm has been held up in order to allow the accumulated blood to flow away.
- Do not lean backward or bend your wrist inward while taking a measurement.


## **4.2B Fitting the Wrist**


- a) Remove all accessories (watch, bracelet, etc.) from your left wrist. If your physician has diagnosed you with poor circulation in your left arm, use your right wrist.




- b) Roll or push up your sleeve to expose the skin.
- c) Apply the cuff to your left wrist with your palm facing up and the LCD display facing you.
- d) Fit the cuff comfortably but not too tight. The cuff will cover a wrist diameter of 13.5 to 21.5 cm (5.25 to 8.5 inches).
- e) **IMPORTANT:** Support your arm in a relaxed position and ensure that the **instrument is at the same height as your heart.**



- f) Remain seated in a comfortable room temperature for at least 5 minutes, then start the measurement.
- g) Press the ON/OFF button  to start the measurement.
- h) The cuff will now pump up automatically. Relax, do not move and do not tense your arm muscles until the measurement is displayed. Breathe normally and do not talk.
- i) When the correct pressure is reached, the pumping stops and the pressure falls gradually. If the required pressure was not reached, the instrument will automatically pump some more air to the cuff.

- j) During the measurement, the heart symbol  flashes in the display and a beep sounds every time a heartbeat is detected.
- k) The result, comprising the systolic (7) and the diastolic (8) blood pressure and the pulse (9) is displayed and longer beep is heard. See section 3.2 about the LCD screen for explanation of the icons.
- l) Remove and switch off the monitor and enter the result in the blood pressure log book (go to [www.biosdiagnostics.com](http://www.biosdiagnostics.com) to download a free log book).




**Note:** The monitor does switch off automatically after approximately one minute).

You can stop the measurement at any time by pressing the ON/OFF button  (e.g. if you feel uneasy or an unpleasant pressure sensation).

### 4.3 Data Memory

At the end of a measurement, this instrument automatically stores each result, including date and time.



#### Viewing the stored values

- Press the M-button  briefly, when the instrument is switched off. The display first shows << **M** >> and then a value, e.g. << **M17** >>. This means that there are 17 values in the memory. The instrument then switches to the last stored result.
- Press the M-button  again displays the previous value. Pressing the M-button  repeatedly enables you to toggle between one stored value and another.

## Memory Full







- When the memory has stored 200 results, the display shows << **Full M** >> after a measurement. From this point onwards, a new measured value is stored by **overwriting the oldest value**.













## Clear all Values

- If you are sure that you want to permanently remove all stored values, hold down the M-button  (the instrument must have been switched off beforehand) until << **CL** >> appears and then release the button. To permanently clear the memory, press the M-button  while << **CL** >> is flashing. Individual values cannot be cleared.

## 4.4 Setting the Alarm Function


This instrument allows you to set 2 alarm times at which an alarm signal will then be triggered. This can be a useful aid, for instance as a reminder to take medication.

- a) To set an alarm time, without releasing, push the time button "" followed by the M button , do not release until the bell symbol " " appears in the bottom left of the display. Then release both buttons. The flashing <<1>> in the display indicates that the first alarm time can now be set.
- b) Press the time button  to set the hours - the hour display flashes and pressing the M-button  allows you to set the alarm hour. To confirm, press the time button .

- c) The minute display will now flash. The minutes can be set using the M-button . To confirm, press the time button .
- d) The bell symbol will now flash . Use the M-button  to select whether the alarm time is to be active  or inactive . To confirm, press the time button .
- To set a second alarm time, proceed as above but if the << 1 >> flashes, press the M-button  to select << 2 >> and confirm with the time button .
  - An active alarm time is indicated by the bell symbol in the display .
  - The alarm will sound at the set time every time.
  - To switch-off the alarm when it is sounding, press the ON / OFF button .
  - To permanently switch off the alarm, proceed as above and select the crossed-out bell symbol . This will then disappear from the display.
  - The alarm times must be re-entered each time the batteries are replaced.

## **5. PAD - Pulse Arrhythmia Detector**



This symbol  indicates that certain pulse irregularities were detected during the measurement. In this case, the result may deviate from your normal basal blood pressure – repeat the measurement. In most cases, this is no cause for concern. However, if the PAD symbol appears on a regular basis (e.g. several times a week

with measurement taken daily), we advise you to consult your doctor. Please show your doctor the following explanation:

### **Information for the doctor on frequent appearance of the Pulse Arrhythmia Heartbeat Symbol.**

This instrument is an oscillometric blood pressure monitor device that also analyzes pulse frequency during measurement. The instrument is clinically tested.

If pulse irregularities occur during measurement, the irregular heartbeat symbol is displayed after the measurement. If the symbol appears more frequently (e.g. several times per week on measurements performed daily) or if it suddenly appears more often than usual, we recommend the patient seek medical advice. The instrument does not replace a cardiac examination, but serves to detect pulse irregularities at an early stage.

## **6. Trouble Shooting**

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This section includes a list of error messages and frequently asked questions for problems you may encounter with your blood pressure monitor. If the product is not operating as you think it should, check this list before arranging for servicing.

If an error occurs during the measurement, the measurement is interrupted and error message, e.g. << ERR ∃ >>, is displayed.

<b>Error</b>	<b>Description</b>	<b>Remedy</b>
<< ERR 1 >>	Signal too weak	The pulse signals on the cuff are too weak. Reposition the cuff and repeat the measurement*
<< ERR 2 >>	Error signal	During the measurement, error signals were detected by the cuff, caused for instance by movement or muscle tension. Repeat the measurement keeping your arm still.
<< ERR 3 >>	No pressure in the cuff	An adequate pressure cannot be generated in the cuff. A leak may have occurred. Check the cuff is correctly connected and is not too loose. Replace the batteries if necessary. Repeat the measurement.
<< ERR 5 >>	Abnormal result	The measuring signals are inaccurate and no result can therefore be displayed. Read through the checklist for performing reliable measurements and then repeat the measurement.*

<< HI >>	Pulse or cuff pressure too high	The pressure in the cuff is too high (over 300 mmHg) OR the pulse is too high (over 200 beats per minute). Relax for 5 minutes and repeat the measurement.*
<< LO >>	Pulse too low	The pulse is too low (less than 40 beats per minute). Repeat the measurement.*

\* Please consult your doctor, if this or any other problem occurs repeatedly.

If you think the results are unusual, please read through the information in << Section 1 >> carefully.

## **7. Care and Maintenance**

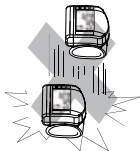
- a) Do not expose the device to either extreme temperatures, high humidity, dust or direct sunlight. If the unit has been stored at very low or freezing temperature, allow to reach room temperature before using it.



- b) Clean the device with a soft, dry cloth. Do not use gas, thinners or similar solvents. Spots on the cuff and unit can be removed carefully with a slightly moistened cloth and soapsuds.



- c) Do not drop or bang the monitor or treat it roughly in any way. Prevent sudden jerks and shocks. Avoid strong vibrations.



- d) Never open the monitor. This invalidates the manufacturer's warranty.



- e) Batteries and electronic instruments must be disposed of in accordance with the locally applicable regulations, not with domestic waste.

- f) Take care while handling the batteries in the device. Incorrect usage may cause battery fluid leakage. To prevent such accidents, refer to the following instructions:

- Insert batteries with the correct polarity.
- Turn off power after use. Remove and store the batteries if you are not planning to use the device for an extended period of time.
- Do not mix different types, brands, or size of batteries. This may cause damage to the product.
- Do not mix old and new batteries.
- Remove batteries and dispose of them according to the proper regulations in your area.



- Do not disassemble batteries or expose them to heat or fire
- Do not short-circuit the batteries.
- Do not use rechargeable batteries.

## 8. Reference To Standards

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**Device standard:** NIBP requirements: EN 1060-1/ -3 /-4, IEC 60601-1

**Electromagnetic compatibility:** ANSI / AAMI SP10

Readings taken by the blood pressure monitor are equivalent to those obtained by a trained observer using the cuff and stethoscope auscultation method. Clinical performance were successfully done against ANSI/AAMI SP10 and international protocol, and the B.H.S has rated this product "recommended for clinical and home use", this is the highest grading available for blood pressure monitors. Please refer to BHS website <http://www.bhsoc.org>.

## 9. Technical Specifications

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<b>Weight:</b>	130g including batteries
<b>Size Height x Width x Depth:</b>	80 mm x 70 mm x 70 mm 3.1" x 2.6" x 2.6"

<b>Storage Temperature:</b>	-20 to 55°C / -4 to 131°F 15-95% relative maximum humidity
<b>Operating Temperature:</b>	10 to 40°C / 50 to 104°F 15-95% relative maximum humidity
<b>Measuring method:</b>	Oscillometric, corresponding to Korotkoff method: Phase I systolic, Phase V diastolic
<b>Measurement range:</b>	20 - 280 mmHg - Blood Pressure 40 - 200 beats per minute - Pulse
<b>Cuff pressure display:</b>	0 - 299 mmHg
<b>Resolution:</b>	1 mmHg
<b>Static accuracy:</b>	pressure within +/- 3 mmHg
<b>Pulse accuracy:</b>	+/- 5% of the readout value
<b>Voltage source:</b>	2 x 1.5V Batteries, Size AAA

## **10. 10 Year Warranty**

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BIOS Diagnostics™ Wrist Blood Pressure Monitor has a 10 year warranty to be free of manufacturing defects for the life of the original owner. This warranty does not include the inflation system including the cuff and inflation bladder. The cuff is warranted for two years. The warranty does not cover damage from misuse or tampering.

## **100% Satisfaction Guarantee**

If at any time, you are not completely satisfied with the performance of this device, call our BP Hotline and speak with a customer service person, who will make arrangements to have the device repaired or replaced to your full satisfaction.

If you have questions regarding the operation of your monitor call the BIOS Diagnostics Blood Pressure Hotline:

1-866-536-2289

Email: [thermor@thermor-ins.com](mailto:thermor@thermor-ins.com)

Should repair be necessary, return the unit with all component pieces. Enclose proof of purchase and \$5.00 for return shipping and insurance. Ship the unit **prepaid** and insured (at owners option) to:

Thermor Ltd.

Repair Department

16975 Leslie Street

Newmarket, ON L3Y 9A1

[www.biosdiagnostics.com](http://www.biosdiagnostics.com)

Please include your name, return address, phone number, and email address. Thermor will repair or replace (at Thermor's option) free of charge any parts necessary to correct the defect in material or workmanship.

Please allow 10 days for repair and return shipping.