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**IVAC<sup>®</sup> TEMP•PLUS<sup>®</sup> II**  
**MANUAL**

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VITAL SIGNS  
MEASUREMENT SYSTEM  
MODEL 2080

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**REVISION/CHANGE RECORD PAGE**

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DATE	REVISION	BY	DESCRIPTION
APRIL 1987	NC	NEF	Original Release

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## **2.0 INTRODUCTION**

This chapter describes the operation of the Model 2080 Thermometer, primarily for testing purposes. Detailed operating instructions for patient use are given in the Directions For Use manual which is packaged with each instrument. All controls and indicators used to operate the TEMP•PLUS II Thermometer are described and illustrated in the following paragraphs.

### **2.1 Controls and Indicators**

The controls and indicators listed in Table 2-1 are used in the operation of the Model 2080 Thermometer.

**Table 2-1. Controls and Indicators**

<i>CONTROL / INDICATOR</i>	<i>FUNCTION</i>
Pulse Timer Button	Starts pulse clock, recalls last reading, and, in monitor mode, activates backlight.
°F/°C Switch	Selects whether temperature will be displayed in °F or °C (°C = ON).
Audible Tone	Sounds when measurement is completed, when pulse timer is activated or terminated, or when an error message occurs.
Display Panel	LCD display indicating temperature readings, tissue contact pinwheel, pulse timer clock, alarm messages, temperature scale, and mode in use.

### **2.2 Setup Procedure**

- a. Carefully unpack the TEMP•PLUS II Thermometer, oral and rectal probes, and carrying strap, checking to ensure that each item is undamaged.
- b. Using the adhesive mounting tape or mounting screws supplied, attach the Probe Cover Dispenser Bracket (Model 896) to a convenient location and install a box of 200 probe covers.
- c. Attach the Home Base (Model 2017) to a convenient location using either the adhesive tape or screws supplied with the instrument. The home base may be attached to either a horizontal or vertical surface.
- d. Battery covers are not installed when units are shipped. (To remove battery cover (Figure 2-1) once cover has been installed in unit, place a coin in the slot on the side of the battery cover and pop open the battery compartment.) Set the instrument to the °F (Fahrenheit) or °C (Celsius) scale, as desired, by adjusting the recessed switch on the left side of the battery compartment with a small screwdriver or pen tip (°F = OFF).

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- e. Install 3 size AA batteries and install cover. *NOTE:* Batteries must be installed exactly as shown on the battery compartment or the instrument will not function. To prevent damage to the battery contacts, install negative end of battery first.

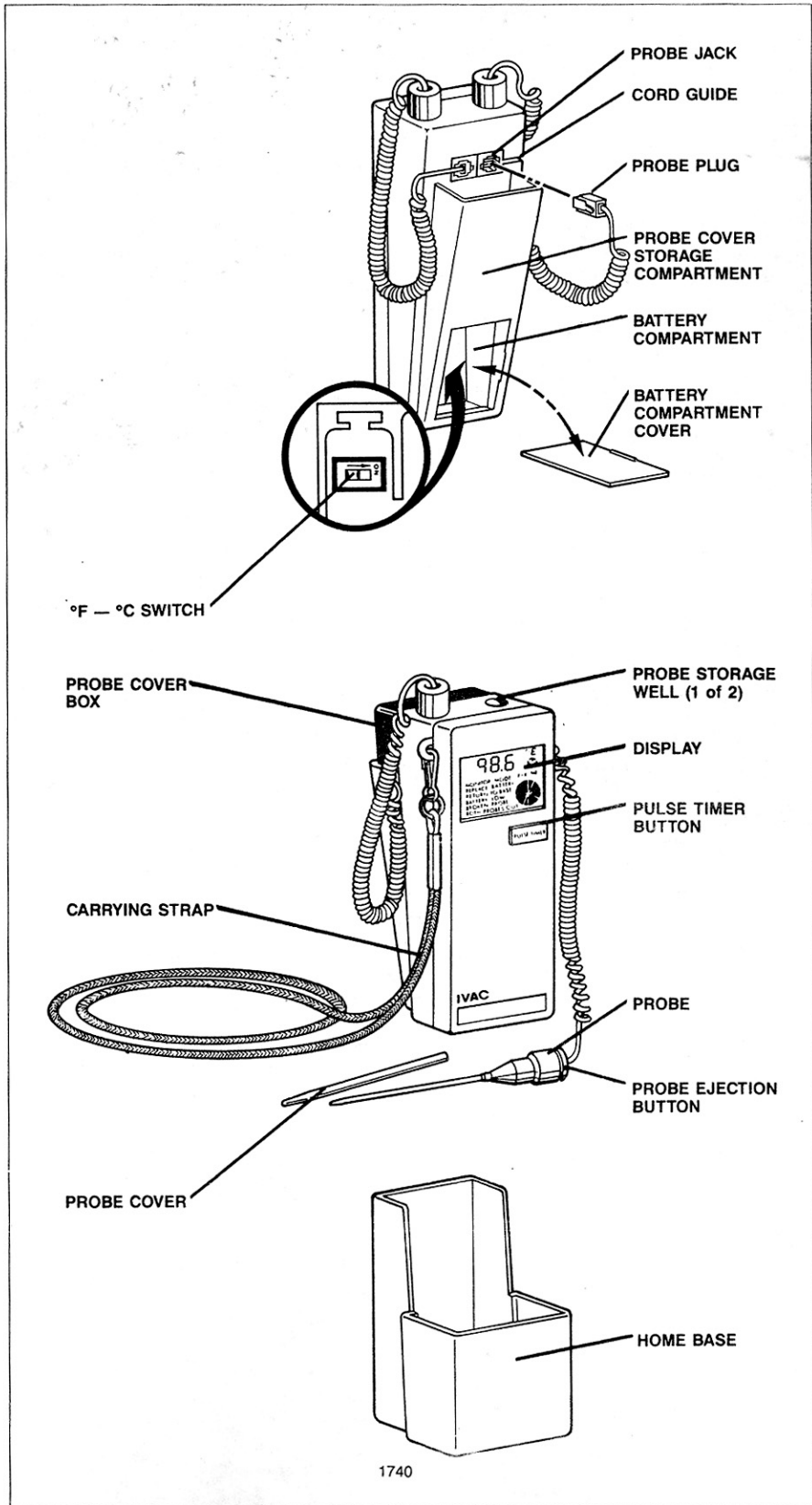
### **NOTE**

*Whenever batteries are removed and replaced, the instrument will perform a self-test of the instrument hardware which will take about two minutes. Should the instrument fail a self-test, a FIX ME message along with a code number will appear in the display. Refer to the Corrective Maintenance section of this manual for further information. At the end of the self-test, the instrument will emit three beeps and display RETURN TO BASE. The TEMP•PLUS II unit must be returned to the home base to reset the antitheft timer whenever batteries are removed and replaced.*

- f. Insert the connectors from the probes (oral or rectal) into the probe connector sockets on the instrument, and route the probe cord through the cord guide (see Figure 2-1). Insert the probes into the probe storage wells in the top of the instrument.



Figure 2-1. Model 2080 Component Identification.



## Operation

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### CAUTION

*Do not use with extender cables between 2880/2882 probe cable and instrument.*

- g. Attach carrying strap to thermometer, if desired.
- h. Place the instrument in the home base to activate.

### 2.3 HOME BASE

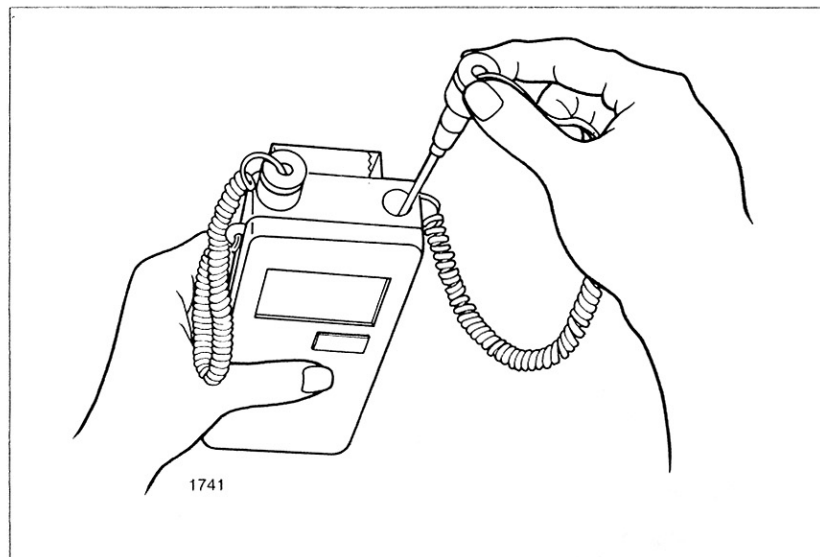
- a. Place the TEMP•PLUS II Thermometer in the home base before using it for the first time or the instrument will not operate. The instrument must also be returned to the home base whenever the batteries are removed and replaced. Always store the instrument in the home base when not in use.
- b. The antitheft timer is reset by returning the thermometer to the home base. Approximately one hour prior to expiration of the predetermined time period, the instrument will continuously display RETURN TO BASE as a warning. When the time period expires, the instrument will emit three long beeps, flash the RETURN TO BASE message and cease to function.

### 2.4 Start-up/Operational Check

Remove the instrument from the home base and install a box of 20 probe covers in the storage compartment at the rear of the instrument. Place the carrying strap around your neck, if desired.

With your thumb and forefinger, grasp the base of the probe and withdraw the probe from the probe storage well (see Figure 2-2). This action automatically turns on the instrument. Verify that all display segments, except the pulse timer clock, momentarily light and that the instrument beeps once (instrument will beep twice in monitor mode). When this sequence is complete, the instrument will display 80°F (26.7°C) indicating the instrument is ready for use.

Figure 2-2. Withdrawing Probe from Probe Storage Well.



## Operation

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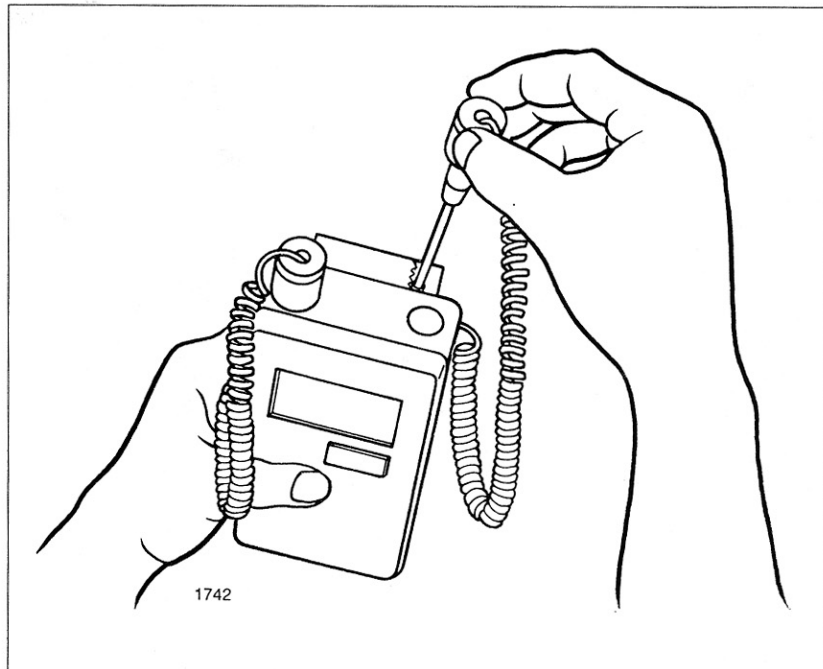
### 2.5 Normal Use Operating Instructions

Insert the probe completely and firmly into a probe cover to ensure a secure fit (see Figure 2-3). Failure to firmly install the probe cover may result in the probe cover becoming loose or disengaging during use. Be careful not to press the colored button where the cord exits the probe as this might loosen or eject the probe cover.

#### CAUTION

*Use only IVAC P850 Probe Covers with the TEMP•PLUS II unit. The size, shape, and thermal characteristics of the probe covers can affect the performance of the TEMP•PLUS II Thermometer. Inaccurate readings or retention problems may occur unless IVAC probe covers are used.*

Figure 2-3. Applying Probe Cover.



**2.5.1 Oral Temperature Measurement.**For oral temperature measurement use the blue, oral probe.

- Have patient open mouth slightly. Holding the probe loosely, insert probe tip to the sublingual pocket where the richest blood supply is located (see Figures 2-4 and 2-5).
- Hold the probe during the entire temperature measurement process (see Figure 2-6) and keep the probe tip in contact with tissue at all times. Do not allow patient to reposition the probe.
- The tissue contact pinwheel will appear in the top right corner of the display while the patient's temperature is being determined. When the

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measurement is complete, an audible tone will sound, the pinwheel will disappear, the display stops advancing, and the patient's final temperature reading (in degrees and tenths of a degree) will appear on the display panel. The display will clear as the probe is returned to the storage well.

Figure 2-4. Sublingual Pocket.

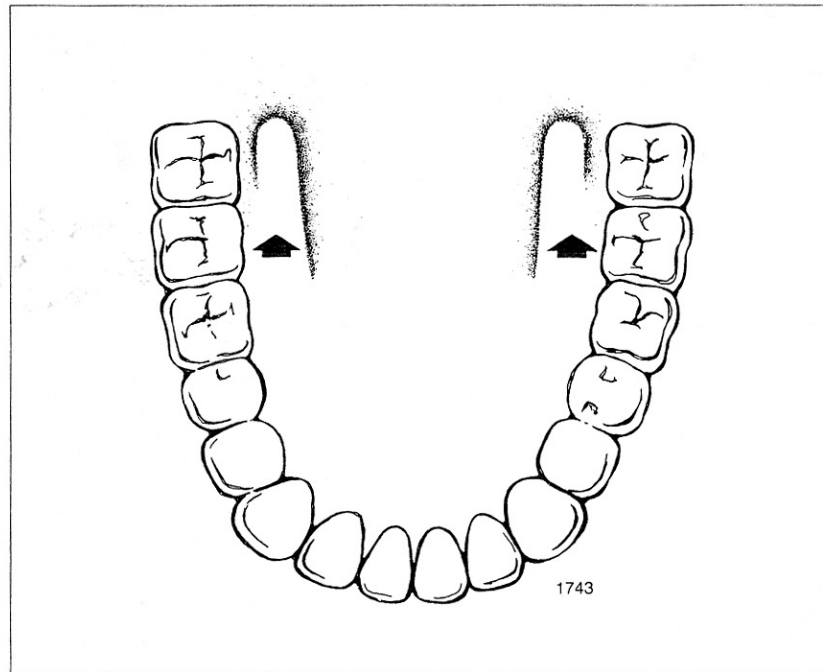
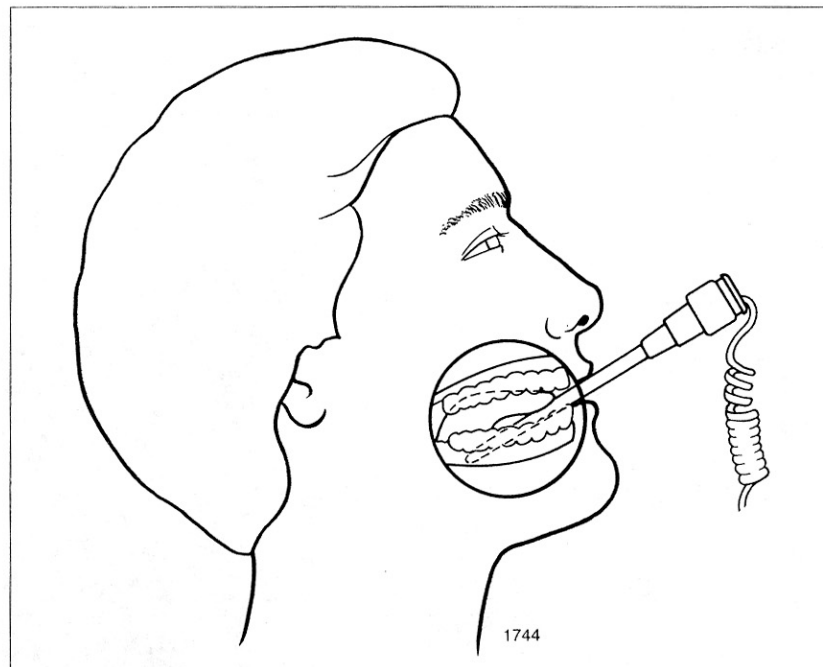


Figure 2-5. Sublingual Pocket - Side View.



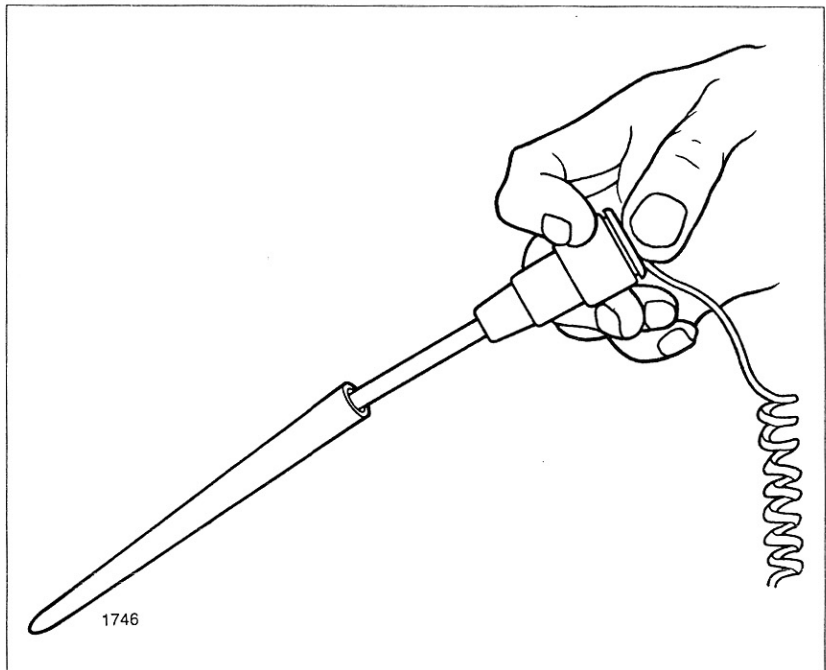
## Operation

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Figure 2-6. Oral Temperature Technique.



Figure 2-7. Ejecting Probe Cover.



## Operation

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### NOTE

*If the probe tip temperature is higher than 92.0°F (33.3°C) when the probe is taken out of the probe well, the thermometer will not be able to quickly predict the patient's temperature. Instead, the thermometer will automatically go into monitor mode. A correct final temperature reading may require 3 minutes or longer. The instrument will not beep at final temperature. It will continue to monitor the patient's temperature until the probe is removed from the patient and returned to the storage well.*

- d. Note the displayed temperature and remove the probe from the patient's mouth. Hold the probe as you would a syringe and press the colored ejection button at the base of the probe to eject the used probe cover into a waste container (see Figure 2-7).
- e. Return the probe to the probe storage well. This will automatically turn off and reset the thermometer for the next temperature.

### NOTE

*To recall the last temperature reading, press PULSE TIMER button. DO NOT withdraw probe from storage well as this will cause memory to be erased.*

### NOTE

*If an unusually high or low temperature reading is obtained, reconfirm the reading before beginning treatment.*

**2.5.2 Rectal Temperature Measurement.** For rectal temperature measurement use the red, rectal probe. Insert the probe completely and firmly into a cover. Failure to firmly install the probe cover may result in the probe cover becoming loose or disengaging during use. Be careful not to press the colored button where the cord exits the probe as this might loosen or eject the probe cover.

- a. Touch the tissue about a half inch above the sphincter muscle and carefully insert the probe, using current hospital technique for penetration. (The use of a lubricant is optional.)
- b. To ensure continuous tissue contact and maximize patient comfort, hold the probe in position until the audible tone sounds, indicating the patient's temperature has been reached.
- c. Note the temperature, withdraw the probe, press the colored ejection button to eject the used probe cover and return the probe to the storage well.

## 2.6 Monitor Mode Operating Instructions

In monitor mode, the TEMP•PLUS II Thermometer continuously measures the patient's temperature as it rises or falls. To operate in monitor mode:

- a. Disconnect one probe connector from the instrument and install a monitor probe adapter (see Figure 1-5). NOTE: The probe adapter can be used with or without an IVAC extension cable.
- b. Attach a disposable monitor probe to the instrument.
- c. Press the adapter ON/OFF switch to turn instrument on. The instrument will emit two beeps, and display the message MONITOR MODE, indicating the start of operation in monitor mode.

**NOTE**

The *BROKEN PROBE* message will display if the instrument is turned on before attaching a disposable monitor probe. To reset the instrument, attach the monitor probe, and cycle the instrument off then on by pressing the adapter ON/OFF switch. If message repeats, refer to the *Corrective Maintenance* section of this manual.

- d. After positioning the probe, observe the changing display reading. When the display stops changing (this may take longer than 3 minutes), the patient's current temperature is indicated on the display, and will change as the patient's temperature rises or falls.

**NOTE**

The monitor probe adapter ON/OFF switch turns the instrument on. The instrument will continue to run while probe adapter switch is on. To conserve batteries, the instrument should be turned off when not in use.

**NOTE**

To activate backlight while in monitor mode, press the PULSE TIMER button. Press again to turn backlight off.

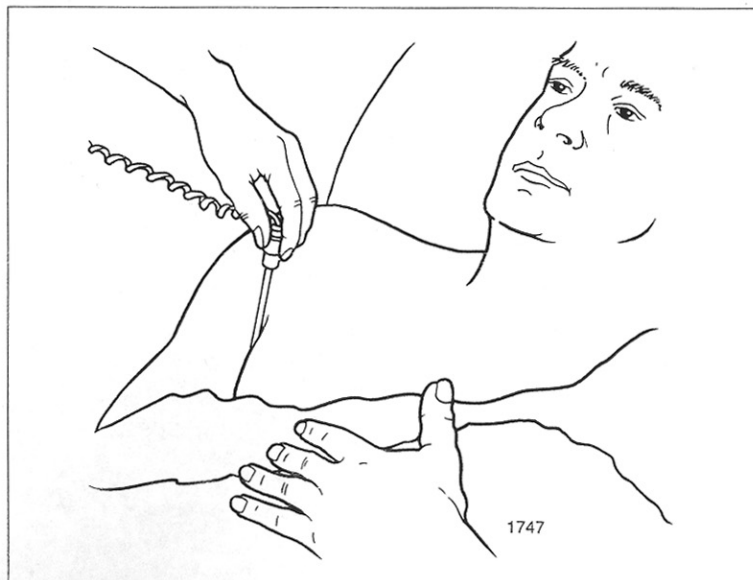
**2.6.1 Axillary Temperature Measurement**

**2.6.1.1 Method I**

Axillary temperatures may be obtained using regular oral or rectal probes.

- a. Select and remove one probe and attach a probe cover.
- b. Place probe in patient's axilla, making sure the tip of the probe is in contact with the skin and positioned as close as possible to the axillary artery with the patients arm held close to their side (see Figure 2-8).
- c. As the temperature display reads 92.0°F (33.3°C), remove second probe from storage well. Watch for BOTH PROBES OUT to appear in the display, then reinsert second probe into storage well.

Figure 2-8. Axillary Temperature Technique.



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- d. The display will momentarily indicate 80.0°F (26.7°C) before switching to monitor mode. (MONITOR MODE will appear in the display indicating start of monitor mode measurement.)

### NOTE

*If the probe tip temperature is higher than 92°F (33°C) when the probe is removed from the probe well, steps c and d of this procedure will not be necessary.*

- e. Leave probe in place for the same length of time as required by standard hospital procedure for taking an axillary temperature (the instrument will not beep to indicate final temperature reading).
- f. Note patient's temperature, remove probe, eject probe cover, and return probe to storage well.

### 2.6.1.2 Method II

- a. Insert a Monitor Probe Adapter (Model 2868 - See Figure 1-5) into either probe well of the instrument and plug it into the connector.
- b. Connect a Disposable Skin Surface Probe (Model 40602 - see Figure 1-6) to the monitor probe adapter and affix an IVAC TEMP•PAD - Model 40702 to the probe.
- c. Place the skin surface probe in patient's axilla, positioned as close as possible to the axillary artery, with the patient's arm held close to their side.
- d. Turn adapter on by pressing button on top of adapter.
- e. Leave probe in place for the same length of time as required by standard hospital procedure for taking an axillary temperature (the instrument will not beep to indicate a final temperature reading).
- f. When finished, remove probe and turn off or disconnect the monitor probe adapter. This will turn instrument off. NOTE: Skin surface probes may be used more than once on the same patient (reaffix with an IVAC TEMP•PAD) but must be thrown away following the completion of a measurement cycle.

### 2.7 Pulse Timer Operation

The pulse timer feature is intended to be used in the same manner as you would use a watch for calculating heart rate. This feature is operational during a temperature measurement.

- a. Hold the TEMP•PLUS II Thermometer in one hand so you can easily press the PULSE TIMER button (see Figure 2-9). With your free hand, locate patient's pulse.
- b. Begin taking pulse and, at the same time, press the PULSE TIMER button. The instrument will emit a single short beep to indicate the start of the pulse timer clock. All twelve segments of the clock will come on. One segment will turn off every five seconds, moving sequentially around the clock, starting at 12 o'clock. The last segment turns off at 60 seconds. The instrument will beep once at 15 seconds, beep twice at 30 seconds, and beep three times and turn off at 60 seconds. Pulse is calculated in the same manner as using a stopwatch.



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- c. Pulse Timer operation can be terminated at any time by pressing the PULSE TIMER button. The instrument will emit three short beeps to indicate termination and the pulse timer display will turn off.

Figure 2-9. Pulse Timer Technique.



### 2.8 Information Display

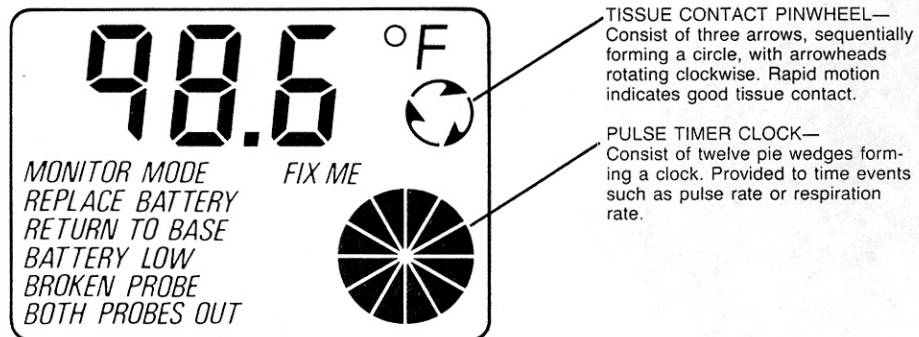
- a. TISSUE CONTACT PINWHEEL - Consists of three arrows, sequentially forming a circle, with arrowheads rotating clockwise. Rapid motion indicates good tissue contact.
- b. FIX ME – (accompanied by three long beeps and a number) indicates instrument detects a self-test failure. Instrument operation is discontinued until the failure is corrected. Remove one battery, then reinstall battery. The instrument will run through self-test routine. If the fix me message appears again, record the fix me number and refer to the Corrective Maintenance section of this manual.
- c. PULSE TIMER CLOCK - Consists of twelve pie wedges forming a clock. Provided to time events such as pulse rate or respiration rate.
- d. MONITOR MODE indicates instrument is being used with a monitor probe to continuously track a patient's temperature. The temperature is indicated on the display and will change as the patient's temperature rises or falls.

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### NOTE

If a monitor probe is not being used with the instrument and this message appears, it indicates that the instrument attempted a temperature measurement when the starting probe tip temperature was above 92.0°F (33.3°C). The instrument is unable to quickly "predict" a patient's temperature, so it automatically switches to monitor mode. The temperature on the display will slowly rise and may require 3 minutes or longer before final temperature is reached. In extreme heat an alcohol wipe may be used, on the probe shaft only, to lower the probe tip temperature.

- e. BATTERY LOW indicates batteries are low and need replacing soon.
- f. REPLACE BATTERY indicates the batteries are unusable and must be replaced.
- g. RETURN TO BASE displayed continuously indicates that approximately one hour or less remains before the expiration of the predetermined antitheft time period (hospital selected). When the time period expires, the instrument will emit three long beeps, flash RETURN TO BASE and cease to function. Return to home base to reset the antitheft timer.
- h. BROKEN PROBE (accompanied by three beeps and broken probe number) indicates a probe is broken and needs to be replaced.
- i. BOTH PROBES OUT indicates both probes are withdrawn from the probe storage wells. The instrument will not run with both probes withdrawn. The message will continue to display until at least one probe is returned to the probe storage well, or one of the probes is disconnected from the instrument.



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## **Operation**

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### **2.9 Cleaning**

Do not autoclave or immerse the TEMP•PLUS II Thermometer as damage will occur.

It is good practice to periodically clean the instrument surface by wiping it with a soft cloth dampened with a mild detergent and warm water. Refer to Housekeeping, Central Service or Infection Control departments in your facility for further information.

#### **CAUTION**

*DO NOT USE ALCOHOL, AMMONIA, OR AMMONIUM CHLORIDE—BASED AGENTS as they will damage the plastic exterior of the instrument.*

If you currently use a specific cleaning agent or disinfectant, we recommend that you examine its chemical ingredients prior to use on the thermometer. If you question the effect your specific cleaning agent or disinfectant has on your instrument, call IVAC Customer Service at (800) 482-4822 for assistance. In Canada, call (416) 291-5858. Outside North America, contact locally listed IVAC representatives, or designated IVAC distributors.

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**Patent Information**

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UNITED STATES: 3,702,076; 3,877,307; 3,942,123.

CANADA: Patented/Brevete 1973; 1976; 1977.

JAPAN: 特許番号 871,877.

U.S. Patents Pending.

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