MEANING OF SYMBOLS

Your instrument may include symbols on the rear or front panel, the meaning for these symbols are listed below:

- **Danger** - do not use in the presence of flammable anesthetics
- **Type BF equipment**
- **Attention! Read Instructions**
- **Not user serviceable**

**EC Representative:**

![FBI Medizintechnik](image)

FBI Fred Berninger Importe
Bergstrasse 12
82024 Taufkirchen
Tel: +49 89 61 453 453
Fax: +49 89 61 453 455
e-mail: info@fbi-medizintechnik.de

**Manufactured by:**

![Life-Tech, Inc.](image)

4235 Greenbriar Drive • Stafford, TX, USA • 77477-3995
800-231-9841 • 281-491-6600 • http://www.life-tech.com
Administrative / Financial Fax: 281-491-6646
Sales / Customer Service Fax: 281-491-7197
Technical and Clinical Support Fax: 281-491-6852

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Declaration of Conformity

Standards to which conformity is declared: ISO 13485
EN ISO 60601-1, EN ISO 60601-1-2
Annex II
Classification: Class IIa

Manufacturer: Life-Tech, Inc.
Manufacturer's Address: 4235 Greenbriar Drive
                      Stafford, TX USA
                      77477-3995

Type of Equipment: Nerve Stimulator/Locator Instrumentation & Accessories

Model Number(s): Tracer III, Tracer II, EZstim II, Ministim MS-IVA
Part Number(s): NL-3, ES400, FC1.5, NL-2, NL2PC, NL2FC-1.5, TPTJ-24S, RBW-5L,
                NSL-5, TPRN-12S, PB, MB-5, RBW-5L/BB

I, the undersigned, hereby declare that the instrument specified above
conforms to the Council Directive(s) specified above.

Stafford, Texas, USA
(Place)
April 28, 2004
(Date)

William R Hardin
(Signature)
(Full Name)

Director, Research & Development
(Title)

Under the supervision of:
SGS United Kingdom Ltd SSC
Weston Super Mare, UK
Notified Body #0120
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SECTION 1
PRECAUTIONS

Before using the instrument, please read these operating instructions carefully. Follow the warnings indicated on the instrument and the safety precautions recommended in this manual.

Warnings
1. Federal law (USA) restricts this device to sale by or on the order of a physician.
2. **DANGER – EXPLOSION HAZARD**: *EZstim II* is not intended for use in explosive atmospheres. Do not use the instrument in pure oxygen environments or in the presence of flammable anesthetics or other flammable products.

General Precautions and Contraindications
1. Follow all instructions for use of the instrument.
2. **Do not** apply electrodes:
   - Over the thoracic area
   - Over the left and/or right temporal regions
   - In the orbital region
   - On broken skin
3. After using an alcohol prep to clean the skin, make sure any flammable liquid and/or vapors have evaporated and dispersed before using the instrument.
4. **Microshock Hazard**: In patients with pacemakers or cardiac abnormalities, the physician in charge must approve the use of the *EZstim II*.
5. **Tetanus Stimulation**: While the Twitch, Train-of-Four and Double-Burst stimuli are usually well tolerated in awake patients, Tetanus stimulation can be uncomfortable for fully conscious patients. It is recommended that Tetanus stimulation be used only during anesthesia.
6. **Foreign Material**: *EZstim II* is designed to be drip resistant, in its normal orientation. Protect this instrument from immersion, spills, the impact of falling objects, and exposure to excessive smoke, dust, mechanical vibration, or shock.
7. **Magnetism**: The instrument should be situated away from devices that generate strong magnetic fields.
8. **Heat**: Situate the unit away from heat sources such as radiators and warming lamps as exposure to high temperatures may affect operation or cause damage. See **Section 2, Specifications** for temperature recommendations.
9. **Electrosurgery:** This unit is certified to function properly during the use of electrosurgery equipment, *only* when the following conditions are met:
   - The unit is operating in the **High** output current range with the NSL-5 lead wire set connected
   - and -
   - The electrosurgery site is at least one (1) foot (30 cm) from the stimulator patient lead electrodes.

10. **Battery Leakage:** If the unit is going to be stored for a prolonged period of time, we recommend that you remove the battery to protect the unit from damage caused by battery chemical leakage.

**Service**

1. **Required Service:** The unit should be serviced by qualified service personnel when:
   a. Liquid has ingressed into the instrument.
   b. It does not appear to operate normally or exhibits a marked change in performance.
   c. The enclosure is damaged.

2. **Servicing:** Do not attempt to service the unit beyond that described in the Operating Manual unless directed by Life-Tech Service Personnel.

**Sterilization**

1. The unit is not sterilizable.
SECTION 2
GENERAL DESCRIPTION AND SPECIFICATIONS

1. Description
The Model ES400 EZstim II is both a constant current Peripheral Nerve Stimulator (HIGH output current range) and a Peripheral Nerve Locator (LOW output current range). Output current range is determined by the model of patient lead cable connected to the unit.

- When the RBW-5L (gray & black) patient lead cable is connected, the unit automatically sets to the LOW output current range (0.05 to 5.0 mA). In this range, the unit functions as a nerve locator for use in regional nerve block procedures and can be operated using the optional SoloStim™ foot control.

- When the NSL-5 (red & black) patient lead cable is connected, the unit automatically sets to the HIGH output current range (0.05 to 80 mA), with no stimulus mode selected (null mode). When the user selects a stimulus mode (1 or 2 Hz Twitch, 50 Hz Tetanus, 100 Hz Tetanus, Double-Burst or Train-of-Four) the unit functions as a nerve stimulator for use in monitoring the effects of skeletal muscle relaxants on the Neuromuscular junction. The optional SoloStim™ foot control is not operational in the High output current range.

**NOTE:** In this manual, the unit is considered to be in a null mode when no stimulus mode/pattern is selected.

The LCD provides a real-time display of user-set functions and battery status, as shown and described in detail in Section 3.

The unit has audible chirp/beep feedback in addition to the visible LCD Output Stimulus Pulse Indicator. If for any reason (lead connection, device fault, dying battery, etc.) the output current is less than the displayed mA value for four sequential pulses, a six beep open lead alarm will sound once per second.

The Stimulus Amplitude Control dial provides variable current control (0.05 to 5.0 mA in the LOW output range or 0.05 to 80 mA in the HIGH output range). All other controls on the face of the unit are buttons. Depending upon the output range in use, any of the available modes is activated by pressing the button for that mode. The buttons are shown and described in detail in Section 3.

The operating modes and associated patterns for the HIGH and LOW output ranges are described below and on the following pages.

**HIGH OUTPUT RANGE PATTERNS:**
With the NSL-5 Patient Lead Cable connected, the unit automatically sets to the HIGH output range, with no stimulation pattern active (null mode). While in the null mode, the unit emits no stimulation output current and no audible chirps. When the user selects a mode, the unit stimulates the target nerve with 200 microsecond (0.2 millisecond) wide pulses, in the selected pattern.
HIGH OUTPUT RANGE PATTERNS (cont):

**Twitch:** When the twitch mode is selected in the HIGH output range, the default pattern is the 2 Hz Twitch. The user can toggle the pattern frequency between 1 Hz and 2 Hz by pressing the twitch mode button. The unit emits an audible chirp with each stimulus pulse.

- **2 Hz Twitch Pattern = 2 twitches per second**

  ![2 Hz Twitch Pattern Diagram]

- **1 Hz Twitch Pattern = 1 twitch per second**

  ![1 Hz Twitch Pattern Diagram]

**Figure 2.1: Twitch Patterns (HIGH Output Range)**

**50 Hz Tetanus:** In this mode, the unit delivers continuous 0.2 millisecond stimulation pulses at a frequency of 50 Hz. The unit delivers tetanic stimulus **ONLY** while the button is depressed and returns to the prior mode setting (including null mode) when the button is released. The unit emits a continuous tone while the tetanus button is pressed and stimulus is delivered.

- **50 Hz ~ Tetanus Pattern**

  ![50 Hz Tetanus Pattern Diagram]

**Figure 2.2: 50 Hz ~ Tetanus Pattern**
**HIGH OUTPUT RANGE PATTERNS (cont):**

100 Hz Tetanus: In this mode, the unit delivers continuous 0.2 millisecond stimulation pulses at a frequency of 100 Hz. The unit delivers tetanic stimulus *ONLY* while the button is depressed and returns to the prior mode setting (including null mode) when the button is released. The unit emits a continuous tone while the tetanus button is pressed and stimulus is delivered.

![100 Hz Tetanus Pattern](image)

**Double-Burst Stimulus (DBS):** In the DBS mode, the unit delivers a stimulation pattern that consists of two groups (bursts) of three 0.2 millisecond pulses. Each of the pulses within a group is separated by 20 milliseconds ± 5%. The delay from the first pulse of the first group to the first pulse of the second group is 750 milliseconds ± 5%. While in the DBS mode, the pattern repeats every ten (10) seconds.

Each burst is accompanied by an audible chirp. In addition, while counting down the 10 second interval between auto-repeating patterns, the unit emits a long beep as a reminder that the next stimulus will be delivered in one (1) second.

![Double-Burst Pattern](image)
HIGH OUTPUT RANGE PATTERNS (cont):

Train-of-Four (TO4): In the TO4 mode, the unit delivers a group of four 0.2 millisecond pulses, spaced 500 milliseconds ± 5% apart (2 Hz Rate). While in the TO4 mode, the pattern repeats every ten (10) seconds.

Each TO4 is accompanied by an audible chirp. In addition, while counting down the 10 second interval between auto-repeating patterns, the unit emits a long beep as a reminder that the next stimulus will be delivered in one (1) second.

![Train-of-Four (TO4) Pattern](image)

Figure 2.5: Train-of-Four Pattern

LOW OUTPUT RANGE PATTERNS:

With the RBW-5L Patient Lead Cable connected, the unit automatically sets to the LOW output range and is then used to locate the target nerve with constant current 100 microsecond (0.1 millisecond) twitch pulses. The user can toggle the pattern frequency between 1 Hz and 2 Hz (power ON default is 2 Hz) by pressing the twitch mode button. The unit emits an audible chirp with each stimulus pulse.

2 Hz Twitch Pattern = 2 twitches per second

![2 Hz Twitch Pattern](image)

1 Hz Twitch Pattern = 1 twitch per second

![1 Hz Twitch Pattern](image)

Figure 2.6: Twitch Patterns (LOW Output Range)
2. Specifications

If your unit fails to meet the following specifications, please contact Life-Tech or your local distributor for service.

Contact information for EC Representative is located at the front of this manual.

Regulatory Standards:  UL2601-1
                      CSA22.2No.601.1
                      CE Marked to MDD EC93/42
                      EN60601-1
                      EN60601-1-2
                      EN61000-4-2
                      EN61000-4-3
                      EN61000-4-8
                      EN55011B, Group 1

Ingress Protection:  IP-21 (EZstim™ II)
                      IP-07 (SoloStim™ foot control)

Size (WxDxH):  Pocket size, 3.25” (8.3 cm) wide x 6.0” (15.3 cm) long x 2.25” (5.7cm) high (including knob)

Weight:  9.6 oz (275gm) w/ 9V battery

Battery:  One 9V Alkaline Battery

Storage Environment:  -40° to 70° Celsius (-40° to 158° F)
                      10% - 100% RH non-condensing

Operating Environment:  10° to 40° Celsius (50° to 104° F)
                        10% - 100% RH non-condensing
Specifications (cont).
The specifications listed in the following tables change dynamically to meet
the requirements of the Output Current Range in use at the time of
operation.

When the **NSL-5 Patient Lead Cable** is connected to the unit, it operates
in the **HIGH** output range as a Peripheral Nerve Stimulator, and the
following apply:

<table>
<thead>
<tr>
<th>Operating Parameter</th>
<th>HIGH output range Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Current</td>
<td>0.05 mA - 80 mA (± 5% from 1.0 - 80 mA into load of 2K Ohms or less)</td>
</tr>
<tr>
<td>Pulse Risetime</td>
<td>&lt; 75 microseconds</td>
</tr>
<tr>
<td>Pulse Width</td>
<td>200 microseconds ± 10%</td>
</tr>
<tr>
<td>Pulse Frequency</td>
<td>Rabbit pattern: 1 Hz or 2 Hz ± 5%</td>
</tr>
<tr>
<td></td>
<td>Tetanus pattern: 50 Hz or 100 Hz ± 5%</td>
</tr>
</tbody>
</table>

When the **RBW-5L Patient Lead Cable** is connected to the unit it operates
in the **LOW** output range, as a Peripheral Nerve Locator, and the following apply:

<table>
<thead>
<tr>
<th>Operating Parameter</th>
<th>LOW output range Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Current</td>
<td>0.05 mA - 5.0 mA (± 1% from 0.2 to 5.0 mA into load of 11.5K Ohms or less)</td>
</tr>
<tr>
<td>Pulse Risetime</td>
<td>&lt; 5.0 microseconds</td>
</tr>
<tr>
<td>Pulse Width</td>
<td>100 microseconds ± 1%</td>
</tr>
<tr>
<td>Pulse Frequency</td>
<td>Rabbit pattern: 1 Hz or 2 Hz ± 1%</td>
</tr>
</tbody>
</table>
SECTION 3
EZstim II DISPLAY, CONTROLS AND INPUTS

Figure 3.1: Display, Controls and Inputs
**Display:**
The LCD displays all of the settings programmed into the unit, as well as the status of various functions, as illustrated and described in detail on the following pages.

![Figure 3.2: EZstim II LCD in HIGH output range - null mode](image)

![Figure 3.3: EZstim II LCD in HIGH output range - stimulus mode selected (Peripheral Nerve Stimulator)](image)
Figure 3.4: EZstim II LCD in LOW output range
(Peripheral Nerve Locator)

**a** Pause Indicator: Vertical bars illuminate when in the Pause mode. The audible chirp ceases when the unit is paused.

**b** Stimulus Setting/Output Display: This field of the LCD displays the stimulus setting/output level of the unit in milliamps (mA).

<table>
<thead>
<tr>
<th>If operating in the HIGH output range (NSL-5 lead set attached)…</th>
</tr>
</thead>
<tbody>
<tr>
<td>The unit powers on in the null mode and the display reads - - - .</td>
</tr>
<tr>
<td>When a mode is selected, then the numeric value for the set stimulus level is displayed:</td>
</tr>
<tr>
<td>• In integers when the current is between 1 and 80 mA (e.g., 1, 2, 3, ... 40, ... 53, ... 78...)</td>
</tr>
<tr>
<td>• With two decimal places only when at 0.05 mA.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If operating in the LOW output range (RBW-5L lead set attached)…</th>
</tr>
</thead>
<tbody>
<tr>
<td>The numeric value for the stimulus display extends to:</td>
</tr>
<tr>
<td>• Two decimal places only when at 0.05 mA.</td>
</tr>
<tr>
<td>• One decimal place when the value is greater than 0.05 (e.g., 0.1, 0.2, ... 0.9, 1.0, 1.1, 1.2, ...)</td>
</tr>
</tbody>
</table>

The stimulus output is set either using the Stimulus Control knob (Figure 3.1.②) or the optional foot control (low output range only).
Whenever the unit detects an open/disconnected lead condition or is unable to deliver the displayed current setting, it will flash the output level display, and emit an audible alarm of 6 micro chirps every second.

The output level display is **static** when the unit is paused and when stimulus pulses are being delivered. The audible chirp heard with each stimulus pulse (or pattern), changes in duration, depending upon the output range and the delivered stimulus output.

<table>
<thead>
<tr>
<th>Output Range</th>
<th>Chirp Duration</th>
<th>Output Current Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>Long</td>
<td>≥ 1.0 mA</td>
</tr>
<tr>
<td>LOW</td>
<td>Long</td>
<td>0.6 mA - 0.9 mA</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>0.4 mA - 0.5 mA</td>
</tr>
<tr>
<td></td>
<td>Short</td>
<td>≤ 0.3 mA</td>
</tr>
</tbody>
</table>

**Stimulus Range Setting:** This field of the LCD displays the maximum stimulus current setting you can achieve by turning the Stimulus Control knob or pressing the foot control.

**When operating in the HIGH output range (as a Peripheral Nerve Stimulator)....**
- The NSL-5 interface cable is plugged into the Patient Lead Output Connector (13), and
- The default range is 0.05 mA to 80 mA (the display reads 80

**When operating in the LOW output range (as a Peripheral Nerve Locator)....**
- The (optional) RBW-5L interface cable is plugged into the Patient Lead Output Connector, and
- The default range is 0.05 mA to 5.0 mA (the display reads 5.0
  - Or -
  If the unit is used with the optional foot control, the current range can be set to a range setting of 1.5 mA (the display
Battery Life Indicator:

The LED segments of the Battery Life Indicator are solidly illuminated to the level of current battery life during use, until the battery life drops below 20% (less than 8 hours of operation remaining).

When the battery life is reduced to a voltage that is indicative of approximately eight hours of operation remaining, the lowest segment (as well as the battery outline itself) will flash at a rate of 1 Hz.

When the battery life is reduced to a voltage that is indicative of less than four hours of operation remaining, the lowest segment (as well as the battery outline itself) will flash at a 2 Hz rate.

Caution: Operation will cease when battery voltage is insufficient for the unit to function within specifications.

Stimulus Repetition Rate: This field of the LCD displays the rate (in Hz) at which the stimulus pulses are delivered when in the Twitch or Tetanus modes. It is blank when the unit is in the null mode, or operating in the DBS or TO4 modes.

Pulse Width: This field of the LCD displays the width (duration) of the stimulus pulses. The pulse width default is determined by the stimulus output range at the time of operation.

<table>
<thead>
<tr>
<th>If operating in the...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH output (Peripheral Nerve Stimulator) range...</td>
<td>The pulse width setting is 0.2 msec.</td>
</tr>
<tr>
<td>LOW output (Peripheral Nerve Locator) range...</td>
<td>The pulse width setting is 0.1 msec.</td>
</tr>
</tbody>
</table>

Pulse Indicator: Displays an LCD waveform representing the operating mode (Twitch, TO4, DBS or Tetanus) that flashes when a stimulus pulse is delivered. Each flash of the pulse indicator is accompanied by an audible chirp.

The stimulus pulse indicator will not flash if the unit is in an open lead condition or paused. If the mode is changed when the unit is paused, the static waveform changes to represent the new mode. This field is blank only when the unit is in the null mode.
2 **Stimulus Control Knob:** Rotation of this knob changes the stimulus setting (if paused or open lead) or the stimulus output current.

*NOTE:* In this manual, this symbol designates operations that only apply when using the Stimulus Control Knob in the absence of a foot control.

3 **On/Off button:** Press this button to turn the unit ON and OFF.

*NOTE:* The unit will auto-power off after 20 minutes of either an open lead or paused or null mode condition.

4 **Pause button:** Press this button to pause and un-pause the stimulus output pulse.

5 **Twitch Mode/Stimulus Repetition Rate button:** Press this button to set the unit to the Twitch Mode and/or toggle the twitch mode between 2 Hz and 1 Hz.

6 **Chirp Volume-Increase button:** Press this button to increase the volume of the chirp that accompanies each stimulus output pulse in increments. Press and hold the button for 4 seconds to reach maximum volume.

7 **Chirp Volume-Decrease button:** Press this button to decrease the volume of the chirp that accompanies each stimulus output pulse in increments. Press and hold the button for 4 seconds to reach minimum volume.

*NOTE:* There are five levels of chirp volume, the default and four (4) levels up from the default.

8 **100 Hz ~ Tetanus Mode button:** This button is only enabled when the unit is operating in the **HIGH** output range. Press and hold the button to operate the unit in the Tetanus Mode, at a stimulus repetition rate of 100 Hz. When the button is released, the unit returns to the previously selected mode, to include null mode.

*NOTE:* The unit will only provide tetanic stimulus pulses while one of the Tetanus Mode buttons is actively pressed.

9 **50 Hz ~ Tetanus Mode button:** This button is only enabled when the unit is operating in the **HIGH** output range. Press and hold the button to operate the unit in the Tetanus Mode, at a stimulus repetition rate of 50 Hz. When the button is released, the unit returns to the previously selected mode, to include null mode.

*NOTE:* The unit will only provide tetanic stimulus pulses while one of the Tetanus Mode buttons is actively pressed.
Double-Burst Mode button: This button is only enabled when the unit is operating in the HIGH output range. Press this button to deliver a Double-Burst stimulus. The DBS pattern auto-repeats every ten (10) seconds until another mode is selected, or the unit is paused or turned OFF.

Train-of-Four Mode button: This button is only enabled when the unit is operating in the HIGH output range. Press the button to deliver a Train-of-Four stimulus. The TO4 pattern auto-repeats every ten (10) seconds until another mode is selected or the unit is paused or turned OFF.

Foot Control Input Connector: 5-pin connector to attach the optional foot control input cable. **NOTE:** In this manual, this symbol designates operations that only apply when using the foot control.

Patient Lead Output Connector: 4-pin connector to attach patient leads for use as follows:

<table>
<thead>
<tr>
<th>If...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>The provided NSL-5 Interface Cable is attached...</td>
<td>The unit operates only in the HIGH output range, as a Peripheral Nerve Stimulator.</td>
</tr>
<tr>
<td>The optional RBW-5L Lead Wire Set is attached...</td>
<td>The unit operates only in the LOW output range, as a Peripheral Nerve Locator.</td>
</tr>
</tbody>
</table>
SECTION 4
ASSEMBLY

1. To apply the optional Protective Boot, roll the sides of the boot open and slide the unit in, as shown below.
   Fold the stand out for tabletop placement of the unit.

![Figure 4.1: Protective Boot (PB)](image)

2. To use the optional Mounting Bracket and Protective Boot:
   a. Remove the stand from the back of the Protective Boot.
   b. Assemble the two components as shown below.
   c. Attach to an IV pole.

![Figure 4.2: Protective Boot - Mounting Bracket (MB-5) Assembly](image)
SECTION 5
OPERATION IN HIGH OUTPUT RANGE
(Peripheral Nerve Stimulator)

Figure 5.1: Connections for use as Peripheral Nerve Stimulator
(high output range)

1. If the EZstim II is on, press I/O to turn it off.
2. Set the Stimulus Control knob to the minimal current setting (full counter-clockwise).
3. Attach the NSL-5 Interface Cable to the 4-pin input connector.
   CAUTION! Take care that you do NOT attempt to force the 4-pin NSL-5 connector into the 5-pin foot control input. This will cause the unit to malfunction and could damage the connector on the lead set.
   When removing the lead wire set, grasp the black connector and pull it straight away from the unit. Do NOT remove the cable by pulling on the wires.
4. Position the unit such that the display is clearly seen during the procedure.

5. Connect the surface electrodes (Figure 5-1).
   a. Attach the lead wire clips to the surface electrodes.
   b. Peel the protective paper off each electrode and confirm that the conductive gel on the electrode has not dried.
   c. Apply the electrodes to clean, degreased and shaved skin.

6. Press the On/Off button to turn the unit on. The LCD displays null mode functionality (see Figure 3.2 on page 10).

7. Operate the unit as follows during the procedure:

<table>
<thead>
<tr>
<th>Press...</th>
<th>To...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hz</td>
<td>Select the Twitch mode at 2 Hz...</td>
<td>Subsequent presses toggle between 2-1-2 Hz.</td>
</tr>
<tr>
<td>2 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select the Train-of-Four stimulus mode...</td>
<td>This pattern repeats until the mode is changed or the unit is paused.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select the Double-Burst stimulus mode...</td>
<td>This pattern repeats until the mode is changed or the unit is paused.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAUSE</td>
<td>Pause the unit...</td>
<td>Delivery of stimulus current for any/all modes is suspended until the Pause button is pressed again.</td>
</tr>
<tr>
<td>II</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Rotate the Stimulus Control knob to set the initial desired stimulus output.
   a. Rotate the knob clockwise to increase current.
   b. Rotate the knob counter-clockwise to decrease current.

9. When the procedure has been completed, ensure that the unit has been turned off and remove the surface electrodes.

10. Clean and disinfect the unit as required by your facility’s infection control protocols, using the procedure outlined on page 24 of this manual.
SECTION 6
OPERATION IN LOW OUTPUT RANGE
(Peripheral Nerve Locator)

Figure 6.1: Connections for use as Peripheral Nerve Locator

1. If the EZstim II is on, press 1/0 to turn it off.
2. Set the Stimulus Control knob to the minimal current setting (full counterclockwise).
3. Attach the RBW-5L Lead Wire Set to the 4-pin input connector.

CAUTION! Take care that you do NOT attempt to force the 4-pin RBW-5L connector into the 5-pin foot control input. This will cause the unit to malfunction and could damage the connector on the lead set.

When removing the lead wire set, grasp the black connector and pull it straight away from the unit. Do NOT remove the cable by pulling on the wires.

4. Position the unit such that the display is clearly seen during the procedure.

5. Connect the surface electrode (Figure 6-1).

6. Attach the lead wire snap to the surface electrode.

NOTE: The surface electrode is connected to the red, positive (+) polarity Output Connector for nerve location.

a. Peel the protective paper off the surface electrode and confirm that the conductive gel on the electrode has not dried.

b. Apply electrode to clean, degreased and shaved skin that is not in the distribution area of the nerve being blocked.

7. Press the On/Off button to turn the unit on. An open lead condition is indicated by the flashing Stimulus Setting/Output display and the audible 6-chirp alarm (both the needle and the surface electrode are not yet connected to the patient).

WARNING: Take care to insure that the foot control is NOT disconnected from the unit when it is ON and connected to the patient. Should this occur, the stimulus output will reset to the Stimulus Control Knob setting.
8. Set the initial desired stimulus output.

If using the ...

Rotate the Stimulus Control knob clockwise to increase current or counter-clockwise to decrease current.

Or, if using the ...

Observe the LCD while you:

- a. PRESS the foot control forward with the toes to increase stimulus output.
- b. DEPRESS back with the heel to decrease the output.

9. Connect the Regional Block Needle (Fig. 6.1). ProBloc and ProLong regional block needles connect directly into the black touch-proof connector on the regional block lead wire set (RBW-5L).

10. Perform the procedure following instructions for the regional block needle and in accordance with preferred clinical techniques.
11. During the procedure,

<table>
<thead>
<tr>
<th>Press...</th>
<th>To...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hz 2 Hz</td>
<td>Toggle the unit between the (default) 2 Hz twitch pattern and a 1 Hz twitch.</td>
<td>The twitch repetition rate is 1 or 2 Hz.</td>
</tr>
<tr>
<td>PAUSE</td>
<td>Pause the Unit.</td>
<td>Delivery of stimulus current for the selected mode is suspended until the Pause button is pressed again.</td>
</tr>
</tbody>
</table>

12. When the procedure has been completed, ensure that the unit has been turned off and remove the surface electrode. Disconnect the reusable regional block lead wire set from the stimulating wire of the needle.

   **NOTE:** For ease of removal, use a slight twist to disconnect the stimulating lead on the needle from the lead wire set.

13. Dispose of the needle in an approved sharps container following the Center for Disease Control & Prevention and OSHA guidelines, or local equivalent.

14. Clean and disinfect the unit as required by your facility's infection control protocols, using the procedure outlined on page 24 of this manual.
SECTION 7
MAINTENANCE

1. General
Other than replacing the battery periodically and keeping the unit free of debris and contaminants, EZstim II requires no user maintenance, and is not user serviceable.

2. Battery Replacement
Replace the 9V alkaline battery whenever the LCD battery life indicator begins to flash, or every year, whichever comes sooner.

To maintain the Warranty for your EZstim II, replace batteries with alkaline type only.

To replace the battery:
   a. Remove the battery compartment cover from the back of the unit.
   b. Remove the old battery by pulling up on it from the bottom end.
   c, d. Using the graphic in the battery compartment as a guide for orienting the (+) and (-) contacts, insert the new battery, bottom (flat end) first. Then, press down on the top of the battery until the contacts are secured in the clips.
   e. Replace the compartment cover.

Figure 7.1: Battery Replacement
3. **Cleaning & Disinfection**

To **clean** the *EZstim II* and/or foot control:

a. Mix approximately a 1% solution of mild dishwashing detergent and water (1cc of detergent mixed with 100cc of water).

b. Turn the unit off.

c. Dampen a clean, soft cloth with the detergent solution and wipe to remove visible contaminants from the outside of the unit. **NEVER** pour or spray cleaning solution directly onto the unit or submerge it in a solution.

d. Dampen another clean, soft cloth with sterile or distilled water and wipe to remove all residual detergent solution.

e. Dry thoroughly with a clean, dry cloth.

To **disinfect** the *EZstim II* and/or foot control:

a. Leave the unit off.

b. Dampen a clean, soft cloth with either 90% isopropyl alcohol, or any commercially available solution intended for surface disinfection of medical electrical equipment, and wipe the exterior surface thoroughly. If solution is in spray form, spray it onto the cloth. **NEVER** pour or spray disinfecting solution directly onto the unit, or submerge it in the solution.

c. Allow the solution to air dry for at least one minute, then dry thoroughly with a clean, dry cloth.
SECTION 8
LIMITED WARRANTY

Refer to LIMITED WARRANTY card for complete information