

*Nasco* **Life/form**®

**15-Lead ECG Placement Trainer**  
**LF01300U**  
**Instruction Manual**



Actual product may vary slightly from photo. Nasco reserves the right to change product color, materials, or function as needed.

***Life/form***® **Products by Nasco**



## About the Simulator

This simulator teaches multiple ECG electrode placements anatomically and provides visual feedback on the accuracy of electrode placements. Students will learn the placement of the electrodes on the adult trainer using anatomical landmarks such as intercostal spaces, midclavicular line, anterior axillary line, midaxillary line, and scapula. This trainer features connection sites for four limb (RA, LA, RL and LL) leads and V1 through V9, with the ability to attach right- or left-sided electrodes. *The trainer does not provide ECG output signals, but simulations of rhythms and hands-free defibrillation can be performed by adding any ECG arrhythmia simulator directly to your ECG monitor.* (See back cover for more details.)

## List of Components

- 1 Adult Torso
- 1 Electronics Box
- 2 “C” Batteries
- 1 Universal Power Adapter
- 1 Set of 13 Leads
- 1 Set American ECG/EKG Color Coding Labels
- 1 Set European ECG Color Coding Labels
- 50 Electrodes
- 1 Pack of Alcohol Wipes
- 1 Instruction Manual
- Three-year Warranty Card
- 1 Hard Carry Case

## General Instructions for Use

### Set Up

1. Remove torso from hard carry case, unwrap from protective packaging and set aside. Retain wrapping for storage (**See figure 1.**)
2. Remove leads from packaging. Retain pink static-free wrapping for storage. (**See figure 1.**)
3. Locate lead labels and label each lead. (**See figure 2.**) No specific order is needed. Small rectangular labels are intended to label the prong end of the lead for ease in plugging leads into corresponding lead outlet in the electronics box. (**See figure 3.**) Ensure prong end and lead head labels match. (**See figure 4.**)
4. Locate electronics box. Remove from protective packaging and retain wrapping for storage. (**See figure 1.**)
5. To open the battery compartment, turn the round compartment end counter-clockwise until the end is removed from the electronics box.



Figure 1



Figure 2



Figure 3



Figure 4

6. Install included “C” batteries following the “+” and “-” guide in the battery compartment. (See figure 5.)

7. Replace the round battery compartment end by applying gentle pressure and turning the battery compartment end clockwise until firmly in place.

8. The power adapter may be used in place of batteries. The power adapter is a universal AC Interchangeable Plug for US, EU, UK, and AU Power. Accepts 110V and 220V power. (Plug adapters included.)

9. The male end of the power adapter cord plugs into the female end to the left of the lead outlets. (See figure 6.)

10. Plug the remaining end of the power adapter into your power source.



Figure 5



Figure 6



Figure 7

## Electronics Box

The electronics box has one power switch: o indicates power is off and – indicates the power is on. The electronics box has three indicator lights: STAND BY/Battery Saver Mode (Yellow), Low Battery (Red), and Power (Green). (See figure 7.)

- STAND BY (Yellow): Battery saver mode initiates after approximately one hour of inactivity. The yellow light will flash approximately one time per second when the simulator is in STAND BY. To resume function from STAND BY, the electronics box must be turned off and back on.
- Low Battery (Red): Indicates batteries are in need of replacement.
- Power (Green): Indicates power switch is on.



## Basic 12-Lead Placement

1. Ensure the trainer is clean.
2. Lay out labeled leads and plug them into their designated outlets on the 15-lead electronics box. (See figures 8 & 9.)
3. Position trainer in the desired upright or horizontal position.
4. Feel for anatomical landmarks on trainer, remove electrode from sheet and place adhesive side down on the trainer.
5. Place the electrodes as follows and in the same order.

**NOTE:** Lead placement may vary by institution or instruction.

### American Standards

- V1** V1 (Red): Right 4<sup>th</sup> intercostal space next to the sternum
- V2** V2 (Yellow): Left 4<sup>th</sup> intercostal space next to the sternum

### European Standards

- V1** V1 (Red): Right 4<sup>th</sup> intercostal space next to the sternum
- V2** V2 (Yellow): Left 4<sup>th</sup> intercostal space next to the sternum

**Note:** Sometimes finding the 4<sup>th</sup> intercostal space is a bit difficult. To make it easier for you, find the Angle of Louis. This is a ridge on the sternum that lies at the level where the second rib is attached to the sternum. After finding this palpable landmark, move down two intercostal spaces and place V1 on the right of the sternum and V2 on the left. If these two electrodes are not placed correctly, all of the other electrode placements will also be wrong.

- V4** V4 (Blue): Left 5<sup>th</sup> intercostal space midclavicular line (MCL)
- V3** V3 (Green): Halfway in-between V2 and V4
- V5** V5 (Orange): Horizontal to V4, anterior axillary line (AAL)

- V4** V4 (Brown): Left 5<sup>th</sup> intercostal space midclavicular line (MCL)
- V3** V3 (Green): Halfway in-between V2 and V4
- V5** V5 (Black): Horizontal to V4, anterior axillary line (AAL)



V6 (Purple): Horizontal to V5, midaxillary line (MAL)



RA (White): Right front part of the shoulder



LA (Black): Left front part of the shoulder



RL (Green): Lower right abdominal



LL (Red): Lower left abdominal



V6 (Purple): Horizontal to V5, midaxillary line (MAL)



RA (Red): Right front part of the shoulder



LA (Yellow): Left front part of the shoulder



RL (Black): Lower right abdominal



LL (Green): Lower left abdominal

\*\*Remember this mnemonic for American Standard lead placement: White on right, smoke (black) over fire (red) and snow (white) on grass (green).



Figure 10

6. Snap leads firmly to electrodes and turn electronics box on. The green light will appear when the electronics box power switch is turned on.
7. Wait a couple seconds for the LED lead lights to come on. (**See figure 10.**)
8. Check to make sure all lights are on. If they are not on, you may need to slightly adjust your placement.
9. To remove leads from trainer, grasp lead by head and gently pull off electrode snap. NEVER remove leads by pulling on cable!



Figure 11A

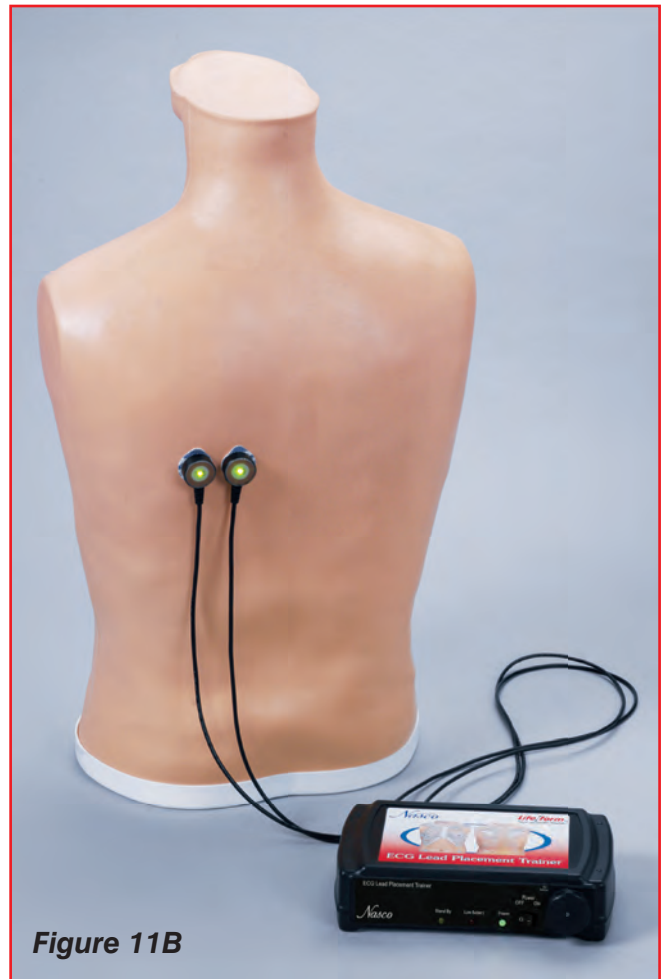


Figure 11B

## 15-Lead Placement

1. Follow all the steps for the basic 12-lead placement.
2. Move three electrodes: V4, V8, and V9. The V4 electrode will move to the same location on the right side of the sternum; V5 moves to V8; V6 moves to V9. You can pull the V5 and V6 off and apply them to these locations, but then you will have to plug these leads into the V8 and V9 lead plug outlets on the electronics box. Instead, to save time, you can have leads V8 and V9 plugged into the box already and apply these as shown below:

### American Standards

- V4** V4 (Blue): Right 5<sup>th</sup> intercostal space midclavicular line (MCL)
- V8** V8 (Brown): Under the bottom of the left scapula
- V9** V9 (Brown): Horizontal to V8, on the right side about a finger space away

### European Standards

- V4** V4 (Brown): Right 5<sup>th</sup> intercostal space midclavicular line (MCL)
- V8** V8 (Brown): Under the bottom of the left scapula
- V9** V9 (Brown): Horizontal to V8, on the right side about a finger space away

(See figures 11A & 11B.)



Figure 12A

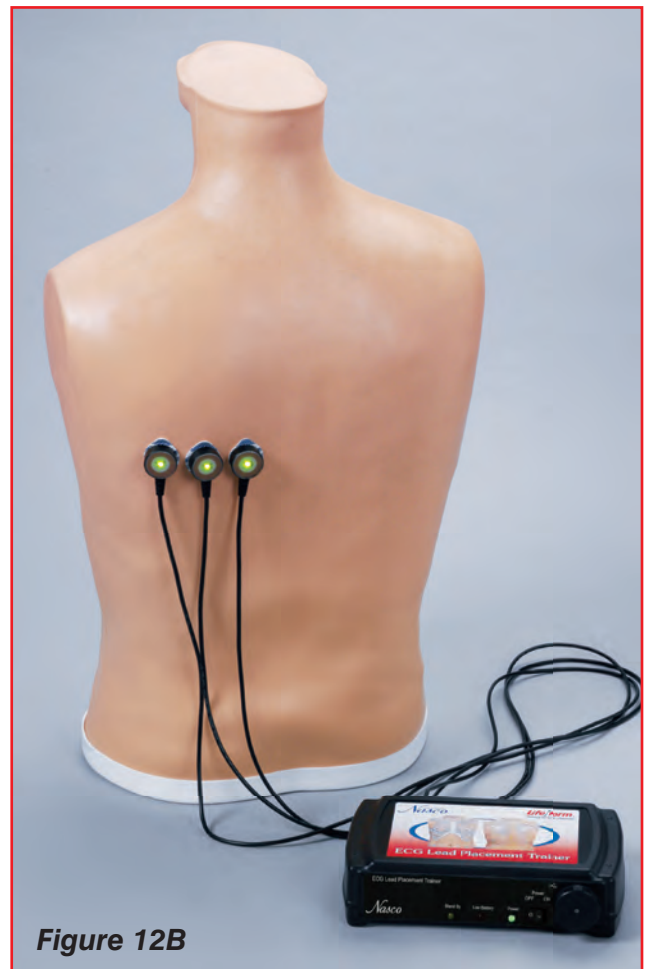


Figure 12B

### Right-Sided ECG with Leads V7-V9

- When moving your left-side placement to a right-side placement, leave V1 and V2 in place.
- The rest of the leads will all move to the right in a mirror image of the placements on the left.
- When moving your left-side placement to a right-side placement, leave V1 and V2 in place.

**Note:** The combination of lead placements will be based on the results from your basic 12-lead printout. Your instructor should give you the scenario or mock printout for this and guide you choosing (selecting) the correct placement.

(See figures 11A & 11B.)

### Care and Maintenance

1. After each use, remove the leads and electrodes from the trainer.
2. Loosely wrap leads and return to the pink static-free packaging.
3. Remove power adapter from electronics box (if used) and place electronics box back into pink static-free wrapping. Remove batteries from electronics box if stored longer than one month.
4. Clean the trainer with alcohol wipes or rubbing alcohol. Another product that may be used for removing the electrode adhesive is Goo Gone®
5. Store your clean, dry trainer in the retained plastic bag and return the trainer to the hard carry case.



## Cautions

Do not leave electrodes on a trainer skin for extended periods of time. The adhesive will cause an indelible stain and permanently mark electrode placement.

Electrodes may be reused. When they start to peel off by themselves, it is time to replace them with new electrodes. Replacement electrodes are available (see Available Supplies/Replacement Parts list below).

Do not place the simulator on newsprint, printed plastic, or ball-point pen. Ink will transfer to the skin and cause indelible stain.

Keep your simulator out of extreme temperatures.

Do not crimp the lead wires.

Never sit, stand, or set anything heavy on the storage case.

Clean storage case with a rag, mild soap, and water.

Keep electronics box and leads covered in pink static-free wrapping when not in use.

Do not force the 15-Lead ECG Lead Placement Trainer items into case. Everything should fit without needing to do so.

## Trainer User Help Guide

If one of your leads does not light up, try taking that lead and plugging it into another lead outlet. Try that lead on the area where the corresponding transponder would be. If the lead lights up, that means that the lead is good. Try the original location again to verify that the transponder is not working. (Be sure to change the lead back to the original outlet on the electronics box.) If it is not working, you may need to send the trainer in for a transponder replacement.

If you tried plugging one lead into multiple plug areas, and it did not work on any of the corresponding transponder locations, then you have a bad lead. If your warranty is still intact, you can send the bad lead back and we will replace it with a new lead. If your warranty has expired, you will have to purchase a new lead.

If all leads are not lighting up, first check the battery in the electronics box. If the batteries are new and it is still not working, try using the AC adapter. If that doesn't work, you will need to send the box and adapter back for testing, repair, and/or possible replacement.

If one or more of the leads flash, move the lead and electrode slightly to correct this. The lead is most likely on the edge of the transponder reading area.

If you don't find the answers you are looking for in the Trainer User Help Guide section please call customer service for assistance at **1-800-558-9595**.

## Available Supplies/Replacement Parts for Electrocardiogram Trainer

<b>LF01305U</b>	15-Lead Replacement Torso
<b>LF01301U</b>	15-Lead Electronics Box
<b>LF01302U</b>	Power Adapter
<b>LF01304U</b>	Electrode Replacements (Pack of 100)
<b>SB09360U</b>	Alcohol Wipes

## Lead Replacements

<b>LF01303U</b>	Single Lead
<b>LF01303(A)U</b>	Set of 13 Leads

## Other Available *Life/form*® Simulators



### Defibrillation Pad & Patient Adapter Packages\*

Nasco's reusable defibrillation pad adapters are designed to be used in place of expensive defib gel pads. They come complete with patient simulator adapters that will enable you to use the patient simulator you already have with the **CRISIS™** Manikin, **CRISIS™** Manikin Update Package, or Defibrillation Chest Skin. The training cables to use with the **CRISIS™** manikin are available with unique cable ends for use with the following defibrillators: Zoll, Survivalink, Vivalink, and Medtronic Physio Control Quick combo. If your defibrillator uses snap-on patches we also have the adapters you need to eliminate the use of pads. Training cables are not recommended for use with non-rechargeable battery AED. This includes FirstSave, HeartStream, and Medtronic Physio Control with non-rechargeable lithium batteries. This package will save you both time and money! Sh. wt. 0.50 lbs.

1. Zoll Training Cables with Adapters\*  
LF03961U
2. Physio Control Training Cables with Adapters for LifePak 12\*  
LF03962U
3. Space Labs/Laerdal/Heartstart/First Medic Adapters\*  
LF03658U
4. Marquette Adapters\*  
LF03657U
5. Physio Control Adapters for LifePak 10 and LifePak 20\*  
LF03656U

### *Life/form*® Interactive ECG Simulator\*

- Defibrillation shock can be delivered through manikin or simulator
- Practice operating your defibrillator/external pacer without a manikin. Connect defibrillator/external pacer to simulator using adapters
- Built-in circuitry allows you to defibrillate and pace directly into the ECG simulator and observe ECG rhythms through the PADS connector
- Convert feature
- Select another rhythm to run immediately after defib discharge
- Pacing can be done on any manufacturer's defibrillator
- Battery saver feature powers-off simulator automatically when not in use
- Marquette, Laerdal, Medtronic Physio Adapters, and chest post set included with purchase



#### Waveforms available for pacing include:

- Junctional Brady
- Sinus Brady
- Second degree type I A-V block
- Second degree type II A-V block
- Third degree A-V block
- V. Fib
- V. Tach (Fast)
- V. Tach (Polymorphic)
- A Fib
- SVT
- Sinus with PVCs
- NSR
- Junctional Brady
- Second degree type I A-V block
- Second degree type II A-V block
- Second degree type II A-V block with PVCs
- Third degree A-V block
- Generate realistic 3-lead or 4-lead ECG rhythms
- Second degree type II A-V block with PVCs
- Third degree A-V block
- V. Tach (Slow)
- A Flutter
- Sinus Tach
- Asystole
- Sinus Brady
- The RA, LA, and LL signal morphologies create accurate representations of the QRS, P, and T axes
- Requires one 9-volt alkaline battery

Sh. wt. 3 lbs.

LF03670U



### Code Simulator 12-Lead Arrhythmia Simulator

Pace and defibrillate directly into this interactive 12-lead ECG simulator through your hands-free defibrillation cable.

- Simulate electrical capture with your external pacer. Press simulator capture key to select one of four preset pacing capture levels: 70, 80, 90, or 100mA. When pacer current is greater than selected capture level, paced beats appear on your monitor. Waveforms for pacing include: Sinus Brady (two), 1st degree A-V block, 2nd degree type I A-V block, 2nd degree type II A-V block, 2nd degree type II A-V block with PVCs, and 3rd degree A-V block.
- Simulate cardioversion with your manual, semi-automatic, or automatic defibrillator. Activate "convert" feature to select — before defib discharge — another rhythm to run immediately after defib discharge. Waveforms for defibrillator training include: V. Fib., V. Tach (high rate), V. Tach (low rate), Torsade, A. Fib, A. Flutter, PSVT, Sinus Tach, Sinus Rhythm, Sinus Rhythm with PVCs, Asystole, and NSR.
- Generate realistic 12-lead ECG rhythms. Connect your ECG cable to simulator's 10 ECG snaps. Independent chest lead and limb lead ECG signals create realistic 12-lead ECGs for each rhythm. Generate ST segment and T wave abnormalities including: Anterior MI, Inferior MI, Antero-Septal ST Elevation, Anterior ST Depression, Lateral ST Elevation, and Inferior ST Elevation.
- LED indicators: pacer pulse detection, defib discharge detection, and low battery.

Connects directly to monitor. Does not work with manikin. Three-year warranty. Sh. wt. 3 lbs.

SB33608U ZOLL

SB33609U Physio Quik Combo

SB33610U Marquette

SB47353U HeartStart/Phillips with Late FV Waveform

SB37728U Phillips

SB37729U R2

*Nasco*

901 Janesville Avenue, P.O. Box 901  
Fort Atkinson, Wisconsin 53538-0901  
1.800.558.9595

eNasco.com • E-mail: lifeform@eNasco.com

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